NOTICE TO THE PUBLIC
WILLIAMSON COUNTY COMMISSIONER'S COURT
FEBRUARY 14TH, 2017
9:30 A.M.

The Commissioner's Court of Williamson County, Texas will meet in regular session in the Commissioner's Courtroom, 710 Main Street, in Georgetown, Texas to consider the following items:

1. Review and approval of minutes.

2. Consider noting in minutes any off right-of-way work on any County road done by Road & Bridge Division.

3. Hear County Auditor concerning invoices, bills, Quick Check Report, wire transfers and electronic payments submitted for payment and take appropriate action including, but not limited to approval for payment provided said items are found by the County Auditor to be legal obligations of the county.

4. Citizen comments. Except when public hearings are scheduled for later in the meeting, this will be the only opportunity for citizen input. The Court invites comments on any matter affecting the county, whether on the Agenda or not. Speakers should limit their comments to three minutes. Note that the members of the Court may not comment at the meeting about matters that are not on the agenda.

CONSENT AGENDA
The Consent Agenda includes non-controversial and routine items that the Court may act on with one single vote. The Judge or a Commissioner may pull any item from the consent agenda in order that the court discuss and act upon it individually as part of the Regular Agenda.
(Items 5 – 13)

5. Discuss, consider and take appropriate action on a line item transfer for the Sheriff's Office.

Fiscal Impact

From/To	Acct No.	Description	Amount
From	0100-0560-001105	SO/LE Salary	$48,188.39
To	0100-0560-001100	SO/Salary	$48,188.39

6. Discuss, consider and take appropriate action on a line item transfer for Road and Bridge Division.

Fiscal Impact

From/To	Acct No.	Description	Amount
From	0200-0210-005711	Heavy Equipment > $5,000.00	$902.70
To	0200-0210-004419	Property Insurance	902.70

7. Discuss, consider and take appropriate action on authorizing the disposal of various county assets through auction including (1) Printer, (2) Calculators, (2) Desks, (1) Cassette recorder, (1) TV, (1) Computer, (2) VCR's, (1) Entertainment Center, (1) Monitor stand, (7) Chairs, (1) Easel Stand, (1) Loveseat, (2) Power strips, Boxes of Misc. cords, (1) table, (1) Desktop, (1) Monitor holder, (2) Docking stations, (3) Keyboards, (3) Mice, (1) Credit card swiper, (2) Cash trays, (1) Cabinet, (1) 2009 Silver Ford Escape and (1) 2008 Silver Chevy Malibu (see attached list) pursuant to Tx. Local Gov't code 263.152.

8. Discuss, consider and take appropriate action on authorizing the disposal of (1) Guest Chair through destruction, (see attached list), pursuant to Tx. Local Gov't Code 263.152.

9. Discuss, consider and take appropriate action on authorizing the disposal of various county assets through Inter-departmental transfer including (1) Refrigerator and (1) Printer, (see attached lists) pursuant to Tx. Local Gov't code 263.152.

10. Discuss, consider and take appropriate action on authorizing the retirement from the county inventory of assets not found including, (1) Dell Latitude D620, (1) Latitude E6500 laptop, (1) Dell Latitude E6510 Notebook,(1) Dell Optiplex GX280, (1) Dell Latitude D810, (1) Dell Dimension T700, (2) Dell Inspiron's 8600, and (1) Dell Optiplex 740 (see attached lists) per the recommendation of the County Auditor's Office.

11. Discuss, consider and take appropriate action on noting in the minutes the County Investment Academy Certificate of Achievement certifying that Commissioner Valerie Covey is a member for 2016 and has completed 20 hours of investment education that satisfies Section 2256.008 of the Texas Public Funds Investment Act.

12. Discuss, consider and take appropriate action on authorizing the appointment of Williamson County Sheriff's Office Animal Control Supervisor, Tabitha Blewett to be designated as the Local Rabies Control Authority (LRCA) for the purposes of the Rabies Control Act of 1981.

13. Discuss, consider and take appropriate action on approving compensation changes, position titles changes, position grade changes and any corresponding line item transfers.

REGULAR AGENDA

14. Discuss, consider and take appropriate action on proclamation recognizing the 160th anniversary of Leander Presbyterian Church.

15. Discuss, consider and take appropriate action on an appointment of R. Lynn Lantrip to the Solid Waste Advisory Committee.

16. Discuss, consider and take appropriate action on appointment of Jeffery M. Roemer to the ESD #4 Board of Directors, replacing Sandra Taylor for the remainder of a two year term that began on January 1, 2016 and will end on December 31, 2017.

17. Discuss, consider and take appropriate action on the Department of Infrastructure projects and issues update.

18. Discuss, consider and take appropriate action on a Real Estate Contract with Lorena Sandoval for right of way needed on CR 111 (Parcel 28).

19. Discuss, consider and take appropriate action on a Real Estate Contract with Kevin Andrews for ROW needed on CR 305. (PARCEL 4)

20. Discuss, consider and take appropriate action on a Letter Agreement with Robert & Melissa Tyrone for a drainage easement needed on the Forest North Drainage Improvements project. (9306 Meadowheath Dr)

21. Discuss, consider and take appropriate action on a Real Estate Contract with Wilson Family Communities, Inc and Green Builders, Inc regarding 8 tracts of land to be granted to Williamson County and the Williamson County Conservation Foundation.

22. Discuss, consider and take appropriate action on a Real Estate Contract with Mark Kaiser and Grant Kaiser for ROW needed on CR 110 South. (Parcel 1S)

23. Discuss, consider and take appropriate action on an appointment of a Williamson County Commissioners Court member to the CARTS Board of Directors.

24. Discuss, consider and take appropriate action on an appointment of an Elected Official to the Capital Area Regional Transportation Planning Organization.

25. Discuss, consider and take appropriate action on a Property Damage Release between Williamson County, Averitt Express, Inc. and Jaime Simental in the amount of $19,370.80 payable to Williamson County for settlement of a property damage claim regarding a jail dock door at the Williamson County Jail.

26. Discuss, consider and take appropriate action on awarding the IFB 1611-130, to Austin Materials. This Company that submitted the lowest and overall best value to the County for the resurfacing project on University Blvd.

27. Discuss, consider and take appropriate action authorizing the Purchasing Agent to advertise and receive proposals for the renovations to the Justice Center under RFQ 1701-136.

28. Discuss, consider and take appropriate action on authorizing the Purchasing Agent to advertise and receive bids for the purchase of road sign materials, delineators, object markers and traffic control devices under IFB 1702-140.

29. Discuss, consider, and take appropriate action on authorizing Purchasing Agent to advertise and receive bids for IFB # 1702-141 Clinic Supplies for Williamson County Animal Shelter.

30. Discuss, consider and take appropriate action on the approval of Change Order on the Network Switches Quote on CO-OP DIR-TSO-2542, with Presidio Networked Solutions Group, LLC, for $122,028.80 - $752.80 less than the original quote due to incorrect items being shipped.

31. Discuss, consider and take appropriate action on authorizing the renewal of Public Involvement, Contract #1602-055, for the same pricing, terms and conditions as the existing Contract for the term of May 27, 2017 – May 26, 2018, with Buie & Co.

32. Discuss, consider and take appropriate action on approving Agreement between Williamson County and I-Plow.Com, LLC for Government Collections and Compliance Professional Services for Williamson County Justice Of The Peace, Precinct One in the amount of $5,650 annually.

33. Hear update and discuss bills filed during the 85th Texas Legislative Session.

EXECUTIVE SESSION

"The Commissioners Court for Williamson County reserves the right to adjourn into executive session at any time during the course of this meeting to discuss any of the matters listed above, as authorized by Texas Government Code Sections 551.071 (Consultations with Attorney), 551.072 (Deliberations regarding Real Property), 551.073 (Deliberations regarding Gifts and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations regarding Security Devices) and 551.087 (Deliberations regarding Economic Development Negotiations)."

34. Discussion regarding economic development negotiations pursuant to Texas Government Code, Section 551.087:
a) Business prospect(s) that may locate or expand within Williamson County.
b) Discuss Pearson Road District.
c) Discuss North Woods Road District.
d) Project Columbus Balbo

35. Discuss real estate matters (EXECUTIVE SESSION as per VTCA Govt. Code sec. 551.072 Deliberation Regarding Real Estate Property if deliberation in an open meeting would have a detrimental effect on the position of the governmental body in negotiations with third person.)
A. Real Estate Owned by Third Parties
1. Preliminary discussions relating to proposed or potential purchase or lease of property owned by third parties
a) Discuss the acquisition of real property for right-of-way for Mays St. Extension
b) Discuss the acquisition of real property for SW 183 and SH 29 Loop.
c) Discuss the acquisition of real property for CR 176 at RM 2243
d) Discuss the acquisition of real property with endangered species for mitigation purposes.
e) Discuss the acquisition of real property: CR 101
f) Discuss the acquisition of real property: CR 111
g) Discuss the acquisition of real property for CR 278 at Bagdad Rd.
h) Discuss the acquisition of real property for proposed CR 110 project. (All sections)
i) Discuss the acquisition of real property for County Facilities.
j) Discuss the acquisition of real property on CR 305.
k) Discuss the acquisition of Easement interests for the Brushy Creek Trail Project.
l) Discuss acquisition of property located at NEC of Toll 130 and Gattis School Rd.
m) Discuss the acquisition of a drainage easement for CR 108.
n) Discuss easement acquisitions from San Gabriel River Ranch Subdivision.
o) Discuss the acquisition of real property for CR 258.
p) Discuss the acquisition of real property for Lakeline Blvd.
q) Discuss the acquisition of real property for US 183.
r) Discuss options for ingress and egress regarding access to Cedar Hollow Subdivision.
s) Discuss the acquisition of drainage easements for the Forest North Drainage Improvement Project.
t) Discuss the Real Estate Contract with Wilson Family Communities, Inc and Green Builders, Inc.

B. Property or Real Estate owned by Williamson County
1). Preliminary discussions relating to proposed or potential sale or lease of property owned by the County
a) Discuss County owned real estate containing underground water rights and interests.
b) Discuss possible sale of 183 A excess right of way
c) Discuss proposed sale of real estate of Blue Springs Blvd
d) Discuss transfer of right of way for Westinghouse Rd. to the City of Georgetown.
e) Discuss wastewater easements in Berry Springs Park
f) Discuss Development Agreement with Ashby Capital Investments, LLC
g) Discuss sale of County property on Ronald Reagan Blvd.
h) Discuss abandonment of County property on CR 123.

C. Consider intervention in lawsuit regarding de-listing of Bone Cave harvestman.

36. Discuss pending or contemplated litigation, settlement matters and other confidential attorney-client legal matters (EXECUTIVE SESSION as per VTCA Govt. Code sec. 551.071 consultation with attorney.), including the following:

a) Litigation or claims or potential litigation or claims against the County or by the County
b) Status Update-Pending Cases or Claims;
c) Civil Action No.1:13- CV- 505, Robert Lloyd v. Lisa Birkman, et al, In The United States District Court for the Western District of Texas, Austin Division
d) Employee/personnel related matters
e) Other confidential attorney-client matters, including contracts and certain matters related to county defense issues in which the duty of the attorney to the governmental body within the attorney/client relationship clearly conflicts with Chapter 551 of the Texas Government Code.
f) Cause No. 15-0064-C277, Gordon v. Dollahite et al, In The District Court of Williamson County, Texas, 277th District
g) County Road 241 utility and Right-of-Way Issues and matters;
h) Civil Action No. 1:15-cv-431; *Herman Crisp v. Williamson County, et al*; In the USDC-WD-Austin Division
i) Carolyn Barnes, et al v. Texas Attorney General, et al; Cause # D-1-GN-15-000877, in the 419th Judicial District Court of Travis County
j) Appeal of IRS Proposed Worker Classification Changes and Proposed Tax Adjustments 2011 -2013; and Payment of Disputed Employment Taxes Pending Appeal
k) Potential claims and litigation against Volkswagen and Audi related to Volkswagen and Audi emission control systems on diesel engine vehicles in the period 2009 – 2015
l) Discuss proposed acquisition of property for SW 183 and SH 29 Loop
m) Claims of Texas Association for Children and Families
n) Civil Action; American Stewards of Liberty, *et al.* v. Sally Jewell, *et al.*, In the Western District Court, Western District of Texas, Austin Division
o) Legislative changes to firearms laws and possession of firearms on county property
p) LCRA's proposed Leander to Round Rock 138k-V Transmission Line Project including but not limited to filing as an intervenor.
q) Notice of claim and demand of Morgan Lee Roach.
r) Labor and employment law review of Employee Policy Manual provisions and amendments.
s) Berry Springs Park and Preserve pipeline
t) Discuss subrogation claims related to medical claims incurred during the County's contract with Allegiance Benefit Plan Management (TPA).
u) Discuss requirements related to health benefit plan.
v) Case No. 1:16-cv-00505-LY, Saturn v. Barnett et al, In The United States District Court For The Western District of Texas-Austin Division
w) Civil Action No. 1:16-cv-1023 LY, Brian Carrier v. Lt. McKnight, et al, In The United States District Court For The Western District Of Texas, Austin Division
x) Cause No. 1JC-16-1540; *Roy Earl Briggs v. Lt. Doug Wheless,* In The Justice Court Precinct 1, Williamson County, Texas
y) Civil Action No. 1:16-cv-01185-SS-ML, *Jose Refugio Fernandez-Madrid v. Keefe Commissary and the Williamson County Sheriff,* In the United States District Court for the Western District of Texas – Austin Division
z) Law relating requests for the closure, abandonment or vacation of roadway(s) in the Woodland Park Subdivision.
aa) Right of Entry and Wastewater Easement(s) in the Berry Springs Park and Preserve Tract

37. Deliberate the appointment, employment, evaluation, reassignment, duties, discipline and/or dismissal of Williamson County officers, directors, employees and/or positions, including but not limited to conducting deliberation and discussion pertaining to annual reviews of department heads and appointed officials (Executive Session as per Tex. Gov. Code Section 551.074 – Personnel Matters).

38. Discuss the deployment or specific occasions for implementation of security personnel or devices in relation to the Williamson County Justice Center (Executive Session as per Texas Gov't. Code § 551.076).

REGULAR AGENDA (continued)

39. Discuss and take appropriate action concerning economic development.

40. Discuss and take appropriate action concerning real estate.

41. Discuss and take appropriate action on pending or contemplated litigation, settlement matters and other confidential attorney-client legal matters, including the following:

a) Litigation or claims or potential litigation or claims against the County or by the County
b) Status Update-Pending Cases or Claims;
c) Civil Action No.1:13- CV- 505, Robert Lloyd v. Lisa Birkman, et al, In The United States District Court for the Western District of Texas, Austin Division
d) Employee/personnel related matters
e) Other confidential attorney-client matters, including contracts and certain matters related to county defense issues in which the duty of the attorney to the governmental body within the attorney/client relationship clearly conflicts with Chapter 551 of the Texas Government Code.
f) Cause No. 15-0064-C277, Gordon v. Dollahite et al, In The District Court of Williamson County, Texas, 277th District
g) County Road 241 utility and Right-of-Way Issues and matters;
h) Civil Action No. 1:15-cv-431; *Herman Crisp v. Williamson County, et al*; In the USDC-WD-Austin Division
i) Carolyn Barnes, et al v. Texas Attorney General, et al; Cause # D-1-GN-15-000877, in the 419th Judicial District Court of Travis County
j) Discuss, consider and take appropriate action regarding possible appeal of IRS Proposed Worker Classification Changes and Proposed Tax Adjustments 2011 -2013; and approval of payment of disputed employment taxes pending appeal
k) Potential claims and litigation against Volkswagen and Audi related to Volkswagen and Audi emission control systems on diesel engine vehicles in the period 2009 – 2015
l) Discuss proposed acquisition of property for SW 183 and SH 29 Loop
m) Claims of Texas Association for Children and Families
n) Civil Action; American Stewards of Liberty, *et al.* v. Sally Jewell, *et al.*, In the Western District Court, Western District of Texas, Austin Division
o) Action regarding legislative changes to firearms laws, to include but not be limited to the adoption and implementation of regulations and policies relating to the possession of firearms on and within Williamson County property and facilities.
p) LCRA's proposed Leander to Round Rock 138k-V Transmission Line Project including but not limited to filing as an intervenor.
q) Notice of claim and demand of Morgan Lee Roach.
r) Berry Springs Park and Preserve pipeline
s) Discuss, consider, and take appropriate action regarding the handling, including but not limited to, the negotiating and approval of settlement offers, of subrogation claims related to medical claims incurred during the County's contract with Allegiance Benefit Plan Management (TPA).
t) Discuss requirements related to health benefit plan.
u) Case No. 1:16-cv-00505-LY, Saturn v. Barnett et al, In The United States District Court For The Western District of Texas-Austin Division
v) Civil Action No. 1:16-cv-1023 LY, Brian Carrier v. Lt. McKnight, et al, In The United States District Court For The Western District Of Texas, Austin Division
w) Cause No. 1JC-16-1540; *Roy Earl Briggs v. Lt. Doug Wheless,* In The Justice Court Precinct 1, Williamson County, Texas
x) Civil Action No. 1:16-cv-01185-SS-ML, *Jose Refugio Fernandez-Madrid v. Keefe Commissary and the*

Williamson County Sheriff, In the United States District Court for the Western District of Texas – Austin Division
y) Law relating requests for the closure, abandonment or vacation of roadway(s) in the Woodland Park Subdivision.
z) Right of Entry and Wastewater Easement(s) in the Berry Springs Park and Preserve Tract

42. Discuss, consider and take appropriate action regarding the appointment, employment, evaluation, reassignment, duties, discipline and/or dismissal of Williamson County officers, directors or employees, including but not limited to any necessary action pertaining to conducting annual reviews of department heads and appointed officials.

43. Comments from Commissioners.

_____
Dan A. Gattis, County Judge

This notice of meeting was posted in the locked box located on the south side of the Williamson County Courthouse, a place readily accessible to the general public at all times, on the _____ day of _____, 2017 at _____ and remained posted for at least 72 continuous hours preceding the scheduled time of said meeting.

Commissioners Court - Regular Session **5.**

Meeting Date: 02/14/2017

Line Item Transfer

Submitted By: Ashlie Koenig, Budget Office

Department: Budget Office

Agenda Category: Consent

Information

Agenda Item

Discuss, consider and take appropriate action on a line item transfer for the Sheriff's Office.

Background

On the February 7, 2017 agenda, item #7 was approved which included a re-classification of a law enforcement position to a civilian position. This transfer will move the funding out of the law enforcement salary line (line 1105) and into the civilian salary line (line 1100).

Fiscal Impact

From/To	Acct No.	Description	Amount
From	0100-0560-001105	SO/LE Salary	$48,188.39
To	0100-0560-001100	SO/Salary	$48,188.39

Attachments

No file(s) attached.

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 08:02 AM
Form Started By: Ashlie Koenig		Started On: 02/07/2017 10:22 AM
Final Approval Date: 02/08/2017		

Commissioners Court - Regular Session **6.**

Meeting Date: 02/14/2017

Discuss consider and take appropriate action on a line item transfer for Road and Bridge

Submitted For: Robert Daigh **Submitted By:** Lydia Linden, Unified Road System

Department: Unified Road System

Agenda Category: Consent

Information

Agenda Item

Discuss, consider and take appropriate action on a line item transfer for Road and Bridge Division.

Background

Amount Budgeted for TAC property insurance was $6,000.00. Per Budget Office invoice received was for $6902.70.

Fiscal Impact

From/To	Acct No.	Description	Amount
From	0200-0210-005711	Heavy Equipment > $5,000.00	$902.70
To	0200-0210-004419	Property Insurance	902.70

Attachments

TAC INS

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/09/2017 11:06 AM
URS (Originator)	Lydia Linden	02/09/2017 11:12 AM
Budget Office	Ashlie Koenig	02/09/2017 11:14 AM
Form Started By: Lydia Linden		Started On: 02/09/2017 10:38 AM
Final Approval Date: 02/09/2017		

Lydia Linden

From: Ashlie Koenig
Sent: Wednesday, February 08, 2017 1:20 PM
To: Lydia Linden
Cc: Nicole Alderete
Subject: FW: NSF-Texas Assoc of Counties-Inv#16626 for $183,016.00
Attachments: Texas Assoc of Counties-Inv#16626.pdf

Importance: High

Hi Lydia,

See attached. We currently have a bill from TAC for property insurance for R&B. The bill is $6902.70 but we only have $6000 in line 4419 (Property Insurance). Could you please put a line item transfer on the agenda in the amount of $902.70 to cover the shortage in 4419 please?

Thank you.

Ashlie R. Koenig, Budget Officer
Williamson County, Texas
710 Main St., Suite 101
Georgetown, TX 78626
Office: 512.943.1551
Fax: 512.943.1662
www.wilco.org

Distinguished Budget Presentation Award

From: Nicole Alderete
Sent: Wednesday, February 08, 2017 8:39 AM
To: Ashlie Koenig
Cc: Nathan Zinsmeyer
Subject: NSF-Texas Assoc of Counties-Inv#16626 for $183,016.00
Importance: High

Good Moring Ashlie,

We are working on paying the Texas Assoc of Counties invoice#16626 in the amount of $183,016.00. However, attached is the report for (5) budget lines that are NSF at this time. Please help with process an LIT.

Thank you,
Nicole Alderete
Accounts Payable Auditor
Williamson County
nalderete@wilco.org
(512)943-1557 phone
(512)943-3732 fax

Expand All

Application	Payables	Batch Reference	02/07/17NA	Document Reference	16626
Supplier	TEXAS ASSOC OF COUNTIES	Site	SA	Document Status	Partially Passed

Account Combination	Period	Line Reference	Result Status Type	Result Message	Previous Funds Available	Base Amount	Current Funds Available	Amount Type	Boundary	Budget Name
T.T.BLDG.004414	FEB-17	Summary	Passed Check	This transaction passes budgetary control	588.22	-2.17	586.05	YTD	Year	WILLIAMSON CO
T.T.JUVE.004414	FEB-17	Summary	Passed Check	This transaction passes budgetary control	1,139.36	-43.05	1,096.31	YTD	Year	WILLIAMSON CO
T.T.PARK.004414	FEB-17	Summary	Passed Check	This transaction passes budgetary control	242.56	-214.23	28.33	YTD	Year	WILLIAMSON CO
T.T.SHRF.004419	FEB-17	Summary	Failed Check	This summary account fails budgetary control	.00	-30.44	.00	YTD	Year	WILLIAMSON CO
01.0100.0409.004419	FEB-17	2 - 1	Passed Check	This transaction passes budgetary control	230,000.00	-158,784.91	71,215.09	YTD	Year	WILLIAMSON CO
01.0100.0509.004414	FEB-17	13 - 1	Passed Check	This account does not require budgetary control		-2.17				
01.0100.0510.004414	FEB-17	12 - 1	Passed Check	This account does not require budgetary control		-214.23				
01.0100.0560.004419	FEB-17	5 - 1	Failed Check	The summary account for this detailed account fails budgetary control		-30.44				
01.0100.0572.004999	FEB-17	9 - 1	Passed Check	This transaction passes budgetary control	506.00	-6.00	500.00	YTD	Year	WILLIAMSON CO
01.0100.0572.004999	FEB-17	10 - 1	Passed Check	This transaction does not reduce funds available		.00		YTD	Year	WILLIAMSON CO
01.0100.0576.004414	FEB-17	11 - 1	Passed Check	This account does not require budgetary control		-43.05				

01.0100.0630.004414	FEB-17	8 - 1	Failed Check	This account fails budgetary control	.00	-43.76	.00	YTD	Year	WILLIAMSON CO
01.0200.0210.004419	FEB-17	1 - 1	Failed Check	This account fails budgetary control	6,000.00	-6,902.78	6,000.00	YTD	Year	WILLIAMSON CO
01.0390.0390.004414	FEB-17	7 - 1	Passed Check	This transaction passes budgetary control	79.98	-18.68	61.30	YTD	Year	WILLIAMSON CO
01.0507.0507.004419	FEB-17	3 - 1	Passed Check	This transaction passes budgetary control	18,810.00	-15,358.41	3,451.59	YTD	Year	WILLIAMSON CO
01.0545.0545.004419	FEB-17	4 - 1	Passed Check	This transaction passes budgetary control	2,500.00	-1,607.35	892.65	YTD	Year	WILLIAMSON CO
01.0882.0882.004419	FEB-17	6 - 1	Failed Check	This account fails budgetary control	.00	-4.22	.00	YTD	Year	WILLIAMSON CO

Accounting Errors

Document	Event Id	Header Id	Line Num	Message

Push pay for 2/14/17

Property/Mobile Equipment Insurance (October 2016- Sept 2017

Code	Dept	Bldgs	Gross Earnin	Equip	Total	Line Item
210	Road & Bridge	$0.00		$6,902.78	$6,902.78	01.0200.0210.004419
409	General	$157,361.95	$1,403.00	$19.96	$158,784.91	01.0100.0409.004419
507	Radio Comm	$15,307.70		$50.71	$15,358.41	01.0507.0507.004419
545	Animal Shelter	$1,607.35			$1,607.35	01.0545.0545.004419
560	Sheriff	$0.00		$30.44	$30.44	01.0100.0560.004419
882	Fleet	$0.00		$4.22	$4.22	01.0882.0882.004419
390	Records Mngt			$18.68	$18.68	01.0390.0390.004414
630	Health District			$43.76	$43.76	01.0100.0630.004414
572	Comm Superv			$6.00	$6.00	01.0100.0572.004999
				$6.00	$6.00	01.0100.0572.004999
576	Juvenile Service			$43.05	$43.05	01.0100.0576.004414
510	Parks			$214.23	$214.23	01.0100.0572.004414
						510
509	Maintenance			$2.17	$2.17	01.0100.0509.004414
		$174,277.00	$1,403.00	$7,330.00	$183,010.00	

Judge's Approval:

RECEIVED

FEB - 7 2017

AUDITOR'S OFFICE
WILLIAMSON COUNTY, TEXAS

V# 822 SA

TEXAS ASSOCIATION of COUNTIES
RISK MANAGEMENT POOL

INVOICE

Williamson County
Attn: Tara Raymore
301 S/E Inner Loop; Ste 108 Human Resources Department
Georgetown, TX 78626

Invoice Due Date: October 1, 2016
Invoice #: 16626
Coverage #: PR-2460-20161001-2
Coverage Period: October 1, 2016 - October 1, 2017
Member Number: 2460

Contribution for the coverage below is now due.

Coverage	Contribution Due
Property	$183,016
Total Due:	**$183,016**

pay

RECEIVED
FEB - 7 2017
AUDITOR'S OFFICE
WILLIAMSON COUNTY, TEXAS

D= A#2460, Oct 1/16-Oct 1/17, Property Coverages, Various

Commissioners Court - Regular Session **7.**

Meeting Date: 02/14/2017

Asset Auction for 021417

Submitted By: Jayme Jasso, Purchasing

Department: Purchasing

Agenda Category: Consent

Information

Agenda Item

Discuss, consider and take appropriate action on authorizing the disposal of various county assets through auction including (1) Printer, (2) Calculators, (2) Desks, (1) Cassette recorder, (1) TV, (1) Computer, (2) VCR's, (1) Entertainment Center, (1) Monitor stand, (7) Chairs, (1) Easel Stand, (1) Loveseat, (2) Power strips, Boxes of Misc. cords, (1) table, (1) Desktop, (1) Monitor holder, (2) Docking stations, (3) Keyboards, (3) Mice, (1) Credit card swiper, (2) Cash trays, (1) Cabinet, (1) 2009 Silver Ford Escape and (1) 2008 Silver Chevy Malibu (see attached list) pursuant to Tx. Local Gov't code 263.152.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Asset Transfer

Asset Transfer 1

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 04:51 PM
Form Started By: Jayme Jasso		Started On: 02/08/2017 01:45 PM
Final Approval Date: 02/08/2017		

FrmAudASCF01 revision 07/2014

Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- ○ TRANSFER bet ween county departments
- ◉ SALE at the earliest auction *
- ○ TRADE-IN for new assets of similar type for the county
- ○ DONATION to a non-county entity
- ○ DESTRUCTION due to Public Health / Safety
- ○ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
1	HP6980 Printer	MY75S9R090		Working
1	Sharp EL-2196BL calculator	7D02263Y		Non-Working
2	Wood (oak) office desk (old, scratched, missing finish)			Working
1	Realistic cassette recorder	CTR-73		Working
1	RCA - Television	F155CE37U		Working

(CONTINUED ON ATTACHED PAGE)

Parties involved:

FROM (Transferor Department): 0560 - Sheriff's Office

Transferor - Elected Official/Department Head/ Authorized Staff:

Chief Tim Ryle
Print Name

T Ryle
Signature

January 31, 2017
Date

Contact Person:

Peggy Braun
Print Name

+1 (512) 943-1312
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): Auction

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

Print Name

Signature

Date

Contact Person:

Print Name

Phone Number

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WILLIAMSON COUNTY, TEXAS

* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

Quantity	Description	Manufacturer ID	County Tag	Condition of Assets
1	Dell V725 all in one	CN-01XXX6-48734-23K-1FAB		WORKING
1	Emerson VCR	U44496163A	00654	WORKING
1	Panasonic VCR	A3JA11850		WORKING
1	Entertainment Center			WORKING
1	Monitor Stand			WORKING
1	Blue Task Chair	2901W GG 90		WORKING
1	Blue Guest Chair	2403N AB 90		WORKING
1	Blue guest chair			WORKING
1	Blue Office Chair	OM 182 HX 3872TNA17P		WORKING
1	Metal Easel Stand			WORKING
1	Blue Loveseat (stained)			WORKING
2	Power strips			WORKING
1	Miscellaneous cords			WORKING

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WILLIAMSON COUNTY, TEXAS

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Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- ○ TRANSFER bet ween county departments
- ◉ SALE at the earliest auction *
- ○ TRADE-IN for new assets of similar type for the county
- ○ DONATION to a non-county entity
- ○ DESTRUCTION due to Public Health / Safety
- ○ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
3	Chairs			Working
1	Round Table			Working

Parties involved:

FROM (Transferor Department): Mobile Outreach Team

Transferor - Elected Official/Department Head/ Authorized Staff:

Annie Burwell
Print Name

Annie Burwell
Signature

Date

Contact Person:

Jeanne Williby
Print Name

943-3588
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): Auction

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

Print Name

Signature

Date

Contact Person:

Print Name

Phone Number

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AUDITOR'S OFFICE
WILLIAMSON COUNTY, TEXAS

* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

FrmAudASCF01 revision 07/2014

Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- ○ TRANSFER bet ween county departments
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- ○ DONATION to a non-county entity
- ○ DESTRUCTION due to Public Health / Safety
- ○ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
1	Dell Optiplex 790 tower	5KXCXV1	C03342	Working
1	Monitor holder			
2	Dell docking stations			
2	Keyboards (1 Dell, 1 Logitech)			
	Miscellaneous mouse, power supply, computer cords			

Parties involved:

FROM (Transferor Department): Auditor's Office

Transferor - Elected Official/Department Head/ Authorized Staff:

Julie M. Kiley
Print Name

Julie M. Kiley
Signature

January 31, 2017
Date

Contact Person:

Lisa Moore
Print Name

+1 (512) 943-1623
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): Auction

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

Print Name

Signature

Date

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WILLIAMSON COUNTY, TEXAS

Contact Person:

Print Name

Phone Number

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Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

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Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

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- ◉ SALE at the earliest auction *
- ○ TRADE-IN for new assets of similar type for the county
- ○ DONATION to a non-county entity
- ○ DESTRUCTION due to Public Health / Safety
- ○ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
2	Computer mouse			Working
1	Rollerball computer mouse			Working
1	Credit Card Swiper			Working

Parties involved:

FROM (Transferor Department): Tax Assessor/Collector - Round Rock Jester Annex

Transferor - Elected Official/Department Head/ Authorized Staff:

Larry Gaddes
Print Name

Signature Date

Contact Person:

Laura Fatzinger
Print Name

512-244-8674
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): Auction

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

Tony Hill
Print Name

Signature Date

Contact Person:

Print Name

Phone Number

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WILLIAMSON COUNTY, TEXAS

* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

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Williamson County
Asset Status Change Form

Print Form

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- ○ TRANSFER bet ween county departments
- ◉ SALE at the earliest auction *
- ○ TRADE-IN for new assets of similar type for the county
- ○ DONATION to a non-county entity
- ○ DESTRUCTION due to Public Health / Safety
- ○ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
1	Box of old cords			Working
~~2~~	~~Computer Speakers~~	~~DS/N CN 02920V 47781 094 4287~~		~~Working~~
2	Cash trays			Working
1	Calculator			Non-Working
1	Wireless Keyboard			Non-Working

Parties involved:

FROM (Transferor Department): Tax Assessor / Collector - Round Rock Annex

Transferor - Elected Official/Department Head/ Authorized Staff:

Larry Gaddes
Print Name

Signature Date

Contact Person:

Laura Fukujima
Print Name

512-244-8676
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): Auction

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

Tony Hill
Print Name

Signature Date

Contact Person:

Print Name

Phone Number

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WILLIAMSON COUNTY, TEXAS

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Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

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Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- ○ TRANSFER bet ween county departments
- ◉ SALE at the earliest auction *
- ○ TRADE-IN for new assets of similar type for the county
- ○ DONATION to a non-county entity
- ○ DESTRUCTION due to Public Health / Safety
- ○ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
1	CABINET,BLACK STEEL, 14 DRAWER			Working

Parties involved:

FROM (Transferor Department): FLEET SERVICES / 882

Transferor - Elected Official/Department Head/ Authorized Staff:

EDWARD POSPISIL
Print Name

Edward Pospisil
Signature

Date

Contact Person:

SAME
Print Name

+1 (512) 943-3343
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): AUCTION

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-In, no signature is necessary.)

Print Name

Signature

Date

Contact Person:

Print Name

Phone Number

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WILLIAMSON COUNTY, TEXAS

* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

Williamson County
Vehicle Status Change Form

To be completed by **department** releasing vehicle:

1) Identify Vehicle:

Vehicle Identification Number	Department	Door Number
1G1ZS58N08F108473	Juvenile Service	JA0891

License Plate Number	Year	Make	Model	Color
DYC 3801	2008	Chevrolet	Malibu	Silver

2) Reason for Status Change:

☑ Accident

Received: 1. Williamson County Fleet Incident/Crash/Vandalism Report
2. The Official Accident Report
3. A Vehicle Insurance / Litigation Form

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WILLIAMSON COUNTY, TEXAS

☐ High Mileage: List actual mileage 52,500

☑ Not mechanically sound vehicle total

☐ Other: Explain

3) Elected Official/Department Head/Authorized Staff

Print Name JOHN T. PELTZER Signature [signature] Date 10/6/16

To be completed by **Fleet Services Manager:**

1) Method of Status Change: This vehicle is to be considered for: (Select one)

- ☑ SALE at the earliest auction
- ☐ SALVAGE for parts
- ☐ TRADE-IN for new assets of same general type for the county
- ☐ SALE to a government entity / civil or charitable organization in the county at fair market value
- ☐ TRANSFER between county departments
- ☐ Other

Print Name R RODGERS Signature [signature] Date 10/10/16

To be completed by **Human Resources Analyst:**

All applicable accident paperwork has been received and there is no litigation pending on this unit. It has been cleared for retirement.

HR Release Authorization: [signature]

To be completed by **Budget Office** (only for transfers):

Transfer has been reviewed and approved:

Signature:

All forms must be routed to the County Auditor's Office once the final authorization and approval have been received.

Williamson County
Vehicle Status Change Form

To be completed by **department** releasing vehicle:

1) Identify Vehicle:

1FMCU03G09KB19643	560	SB0932
Vehicle Identification Number	Department	Door Number

PWR088	2009	FORD	ESCAPE	SILVER
License Plate Number	Year	Make	Model	Color

2) Reason for Status Change:

☒ Accident

Received: 1. Williamson County Fleet Incident/Crash/Vandalism Report
2. The Official Accident Report
3. A Vehicle Insurance / Litigation Form

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WILLIAMSON COUNTY, TEXAS

☐ High Mileage: List actual mileage 78,058

☐ Not mechanically sound

☐ Other: Explain

3) Elected Official/Department Head/Authorized Staff

Print Name L.C. 'Tony' Marshall Signature [signature] Date 11-22-16

To be completed by **Fleet Services Manager:**

1) Method of Status Change: This vehicle is to be considered for: (Select one)

☒ SALE at the earliest auction
○ TRANSFER between county departments
○ SALVAGE for parts
○ TRADE-IN for new assets of same general type for the county
○ SALE to a government entity / civil or charitable organization in the county at fair market value
○ Other

Print Name Kevin Tellez Signature [signature] Date 12-2-16

To be completed by **Human Resources Analyst:**

All applicable accident paperwork has been received and there is no litigation pending on this unit. It has been cleared for retirement.

HR Release Authorization: [signature]

To be completed by **Budget Office** (only for transfers):

Transfer has been reviewed and approved:

Signature:

All forms must be routed to the County Auditor's Office once the final authorization and approval have been received.

Commissioners Court - Regular Session **8.**

Meeting Date: 02/14/2017

Asset Destruction for 021417

Submitted By: Jayme Jasso, Purchasing

Department: Purchasing

Agenda Category: Consent

Information

Agenda Item

Discuss, consider and take appropriate action on authorizing the disposal of (1) Guest Chair through destruction, (see attached list), pursuant to Tx. Local Gov't Code 263.152.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Asset Transfer

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 04:51 PM
Form Started By: Jayme Jasso		Started On: 02/08/2017 02:25 PM
Final Approval Date: 02/08/2017		

FrmAudASCF01 revision 07/2014

Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- ○ TRANSFER bet ween county departments
- ○ SALE at the earliest auction *
- ○ TRADE-IN for new assets of similar type for the county
- ○ DONATION to a non-county entity
- ◉ DESTRUCTION due to Public Health / Safety
- ○ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
1	Guest chair (frame cracked, unsafe)			Non-Working

Parties involved:

FROM (Transferor Department): Auditor's Office

Transferor - Elected Official/Department Head/ Authorized Staff:

Julie M. Kiley
Print Name

Julie M. Kiley
Signature

January 31, 2017
Date

Contact Person:

Lisa Moore
Print Name

+1 (512) 943-1623
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): Destruction

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

Print Name

Signature

Date

Contact Person:

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WILLIAMSON COUNTY, TEXAS

Print Name

Phone Number

* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

Commissioners Court - Regular Session **9.**

Meeting Date: 02/14/2017

Asset Transfer 021417

Submitted By: Jayme Jasso, Purchasing

Department: Purchasing

Agenda Category: Consent

Information

Agenda Item

Discuss, consider and take appropriate action on authorizing the disposal of various county assets through Inter-departmental transfer including (1) Refrigerator and (1) Printer, (see attached lists) pursuant to Tx. Local Gov't code 263.152.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Asset Transfer

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 04:51 PM
Form Started By: Jayme Jasso		Started On: 02/08/2017 02:30 PM
Final Approval Date: 02/08/2017		

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Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- (•) TRANSFER bet ween county departments
- ( ) SALE at the earliest auction *
- ( ) TRADE-IN for new assets of similar type for the county
- ( ) DONATION to a non-county entity
- ( ) DESTRUCTION due to Public Health / Safety
- ( ) SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
1	Norlake AdvantEdge Refrigerator	10110137		Non-Working

Parties involved:

FROM (Transferor Department): Auction

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TX. TEXAS

Transferor - Elected Official/Department Head/ Authorized Staff:

Tony Hill
Print Name

Signature

1/19/2017
Date

Contact Person:

Tony Hill
Print Name

943-3314
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): Parks

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

RANDY BELL
Print Name

Signature

Date

Contact Person:

Randy Bell
Print Name

512-943-1922
Phone Number

* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

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Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- (X) TRANSFER bet ween county departments
- ( ) SALE at the earliest auction *
- ( ) TRADE-IN for new assets of similar type for the county
- ( ) DONATION to a non-county entity
- ( ) DESTRUCTION due to Public Health / Safety
- ( ) SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
1	Canon Image Formula DR-6010C	FB.301219		working

Parties involved:

FROM (Transferor Department): County Court at Law #2

Transferor - Elected Official/Department Head/ Authorized Staff:

Kevin Kracht
Print Name

Signature 1/31/17 Date

Contact Person:

Print Name

943-1410
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): District Attorney

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

Grace Frias
Print Name

Grace Frias 1/31/17
Signature Date

Contact Person:

Print Name

Phone Number

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WILLIAMSON COUNTY, TEXAS

* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

Commissioners Court - Regular Session **10.**

Meeting Date: 02/14/2017

Assets not Found 021417

Submitted By: Jayme Jasso, Purchasing

Department: Purchasing

Agenda Category: Consent

Information

Agenda Item

Discuss, consider and take appropriate action on authorizing the retirement from the county inventory of assets not found including, (1) Dell Latitude D620, (1) Latitude E6500 laptop, (1) Dell Latitude E6510 Notebook,(1) Dell Optiplex GX280, (1) Dell Latitude D810, (1) Dell Dimension T700, (2) Dell Inspiron's 8600, and (1) Dell Optiplex 740 (see attached lists) per the recommendation of the County Auditor's Office.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Asset Transfer

Asset Transfer 1

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 04:51 PM
Form Started By: Jayme Jasso		Started On: 02/08/2017 02:34 PM
Final Approval Date: 02/08/2017		

FrmAudASCF01 revision 07/2014

Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- ○ TRANSFER bet ween county departments
- ○ SALE at the earliest auction *
- ○ TRADE-IN for new assets of similar type for the county
- ● Not Found - Should be Retired
- ○ DONATION to a non-county entity
- ○ DESTRUCTION due to Public Health / Safety
- ○ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
1	Dell Latitude D620	HBS0BD1	44529	Non-Working
1	Latitude E6500 Laptop	7NHY0M1	53873	Non-Working
1	Dell Latitude E6510 Notebook	37GV3Q1	55988	Non-Working

Parties involved:

FROM (Transferor Department): Treasurer

Transferor - Elected Official/Department Head/ Authorized Staff:

Jerri Jones
Print Name

Signature

February 1, 2017
Date

Contact Person:

Jerri Jones
Print Name

+1 (512) 943-1540
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee):

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

Print Name

Signature

Date

Contact Person:

Print Name

Phone Number

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WILLIAMSON COUNTY, TEXAS

* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

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Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- ○ TRANSFER between county departments
- ○ SALE at the earliest auction *
- ○ TRADE-IN for new assets of similar type for the county
- ● RETIRED; NOT FOUND DURING INVENTORY AUDIT
- ○ DONATION to a non-county entity
- ○ DESTRUCTION due to Public Health / Safety
- ○ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
1	Dell Optiplex GX280 - Asset Number 41350;	1CYX881 / C916		Non-Working
	Not located during audit - location unknown			Non-Working
1	Dell Latitude D810 - Asset Number 42053;	F2LW891 / C1054		Non-Working
	Not located during audit - location unknown			

Parties involved:

FROM (Transferor Department): County Commissioner Office Pct. 4

Transferor - Elected Official/Department Head/ Authorized Staff:

Julia Cooper
Print Name

Julia Cooper 1-23-17
Signature Date

Contact Person:

Julia Cooper
Print Name

+1 (512) 846-1190
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): Not located during audit - location unknown

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

Print Name

Signature Date

Contact Person:

Print Name

Phone Number

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* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

FrmAudASCF01 revision 07/2014

Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- ☐ TRANSFER bet ween county departments
- ☐ SALE at the earliest auction *
- ☐ TRADE-IN for new assets of similar type for the county
- ☒ Remove from Asset List - not found
- ☐ DONATION to a non-county entity
- ☐ DESTRUCTION due to Public Health / Safety
- ☐ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
1	Dell Dimension T700	S/N 64P50B/C697		
1	Dell Inspiron 8600	S/N CBFZP41/0699		
1	Dell Inspiron 8600	S/N H7Y3351/C700		
TC 1	~~Dell Projector 1100MP~~	~~S/N G2RLY51/N/A~~		
TC 1	~~Dell Latitude D810~~	~~S/N D3Z/89Y6105~~		

Parties involved:

FROM (Transferor Department): Commissioner 1

Transferor - Elected Official/Department Head/ Authorized Staff:

Terry Cook
Print Name

Terry Cook
Signature

1/6/15
Date

Contact Person:

Doris Sanchez
Print Name

512-244-8610 8614 direct
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee):

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-In, no signature is necessary.)

Print Name

Signature

Date

Contact Person:

Print Name

Phone Number

RECEIVED
JAN 10 2017
AUDITOR'S OFFICE
WILLIAMSON COUNTY, TEXAS

* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

FrmAudASCF01 revision 07/2014

Williamson County
Asset Status Change Form

Print Form

The following asset(s) is(are) considered for: (select one)

- ☒ Remove from Asset List - item not found
- ○ TRANSFER bet ween county departments
- ○ DONATION to a non-county entity
- ○ SALE at the earliest auction *
- ○ DESTRUCTION due to Public Health / Safety
- ○ TRADE-IN for new assets of similar type for the county
- ○ SALE to a government entity / civil or charitable organization in the county at fair market value

Asset List:

Quantity	Description (year, make, model, etc.)	Manufacturer ID# (serial, service tag, or VIN)	County Tag#	Condition of Assets (Working, Non-Working)
~~1~~	~~Dell Latitude E6520~~	~~S/N 11BF2Q1~~		not found
TCU 1	Dell Optiplex 740	S/N 7JFT7J1		not found

Parties involved:

FROM (Transferor Department): 0211 - Commissioner 1

Transferor - Elected Official/Department Head/ Authorized Staff:

Terry Cook
Print Name

Terry Cook
Signature — 1/9/17 Date

Contact Person:

Terry Cook
Print Name

512 244 8614
Phone Number

TO (Transferee Department/Auction/Trade-in/Donee): _____

Transferee - Elected Official/Department Head/ Authorized Staff OR Donee - Representative: (If being approved for Sale or Trade-in, no signature is necessary.)

_____
Print Name

_____
Signature — Date

Contact Person:

_____
Print Name

_____
Phone Number

RECEIVED
JAN 10 2017
AUDITOR'S OFFICE
WILLIAMSON COUNTY, TEXAS

* If the above asset(s) is (are) listed for sale at auction and no bids are made, the Purchasing Director may dispose of or donate this (these) asset(s). A list of the (these) asset(s) to be donated or disposed of will be sent to the Auditor's Office with a date of donation or disposal.

Forward to County Auditor's Office

This Change Status was approved as agenda item # _____ in Commissioner's Court on _____

If for Sale, the asset(s) was(were) delivered to warehouse on _____ by _____

Commissioners Court - Regular Session **11.**

Meeting Date: 02/14/2017

Commissioner Covey CE

Submitted For: Valerie Covey **Submitted By:** Debra Babcock, Commissioner Pct. #3

Department: Commissioner Pct. #3

Agenda Category: Consent

Information

Agenda Item

Discuss, consider and take appropriate action on noting in the minutes the County Investment Academy Certificate of Achievement certifying that Commissioner Valerie Covey is a member for 2016 and has completed 20 hours of investment education that satisfies Section 2256.008 of the Texas Public Funds Investment Act.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Continuing Education

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 04:51 PM
Form Started By: Debra Babcock		Started On: 02/08/2017 11:50 AM
Final Approval Date: 02/08/2017		

Emmett & Miriam McCoy College of Business Administration

TEXAS ASSOCIATION OF COUNTIES

2016 Certificate of Membership

County Investment Academy

Hon. Valerie Covey

Successfully completed investment education that satisfies Section 2256.008 of the Texas Public Funds Investment Act. This ongoing commitment to continuing education provides maximum benefit to

Williamson County

Issued by the Texas Association of Counties the thirty-first day of December, 2016

Hon. Joyce G. Hudman, President

Mr. Gene Terry, Executive Director

Commissioners Court - Regular Session **12.**

Meeting Date: 02/14/2017

Local Rabies Control Authority Appointment

Submitted For: Robert Chody **Submitted By:** Roy Fikac, Sheriff

Department: Sheriff

Agenda Category: Consent

Information

Agenda Item

Discuss, consider and take appropriate action on authorizing the appointment of Williamson County Sheriff's Office Animal Control Supervisor, Tabitha Blewett to be designated as the Local Rabies Control Authority (LRCA) for the purposes of the Rabies Control Act of 1981.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Rabies Control Authority Designation

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/06/2017 10:52 AM
Form Started By: Roy Fikac		Started On: 02/04/2017 04:37 PM
Final Approval Date: 02/06/2017		

LOCAL RABIES CONTROL AUTHORITY

TEXAS Department of State Health Services

The Commissioners Court (governing body) of Williamson County (city or county)

designates Tabitha Blewett (job title or name) as the Local Rabies Control Authority (LRCA) for the purposes of the RABIES CONTROL ACT OF 1981.

This appointment became effective _____ (date).

AUTHORIZING PERSON'S NAME (print): _____

AUTHORIZING PERSON'S TITLE: _____

AUTHORIZING PERSON'S SIGNATURE: _____

Please print the name and contact information of the appointed individual:

NAME: Tabitha Blewett

AGENCY: Williamson County Sheriff's Office

STREET ADDRESS: 508 S. Rock St

MAILING ADDRESS: 508 S. Rock St

CITY/STATE/ZIP: Georgetown, TX 78626

JOB TITLE: Animal Control Officer

TELEPHONE: 512-864-8282

FAX: 512-943-1444

E-MAIL ADDRESS: tblewett@wilco.org

RETURN THIS FORM TO:

Department of State Health Services Zoonosis Control
2408 South 37th Street
Temple, TX 76504
HSR7.ZOO@dshs.state.tx.us
Fax: 254.771.2662

Commissioners Court - Regular Session **13.**

Meeting Date: 02/14/2017

Compensation Items

Submitted By: Tara Raymore, Human Resources

Department: Human Resources

Agenda Category: Consent

Information

Agenda Item

Discuss, consider and take appropriate action on approving compensation changes, position titles changes, position grade changes and any corresponding line item transfers.

Background

See attached document for details.

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

LIT

Comp Items

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 04:51 PM
Form Started By: Tara Raymore		Started On: 02/08/2017 08:00 AM
Final Approval Date: 02/08/2017		

FROM / TO	ACCOUNT	DESCRIPTION	AMOUNT
From	**01-0100-8004-001130**	**Emergency Services/Merit**	**$ 1,232.23**
From	**01-0100-8004-002010**	**Emergency Services/FICA**	**$ 277.90**
From	**01-0100-8004-002020**	**Emergency Services/Retirement**	**$ 485.68**
To	01-0100-0581-001100	Emergency Services/Merit	$ 1,232.23
To	01-0100-0581-002010	Emergency Services/FICA	$ 277.90
To	01-0100-0581-002020	Emergency Services/Retirement	$ 485.68

Department	PCN	EE ID	Budget Amount	*Requested Amount	Change Amount	% Change	Reason for Change	Available Funds From	Earliest Oracle Effective Date
911 Communications	0124	13972	$34,791.24	$36,547.38	$1,756.14	5.05%	Title, Grade change: Telecommunications Officer Trainee B.20 to Telecommunications Officer I B.21 Career Ladder Progression as approved during budget	Unallocated	2/10/2017
911 Communications	1676	13973	$34,791.27	$36,547.38	$1,756.11	5.05%	Title, Grade, Salary change: Telecommunications Officer Trainee B.20 to Telecommunications Officer I B.21 Career Ladder Progression as approved during budget	unallocated	2/10/2017
911 Communications	0143	13969	$38,894.68	N/A	N/A	N/A	Title, Grade: Telecommunications Officer Trainee B.20 to Telecommunications Officer I B.21 Career Ladder Progression as approved during budget	Unallocated	2/10/2017
911 Communications	0147	13968	$34,791.27	$36,547.38	$1,756.11	5.05%	Title, Grade change: Telecommunications Officer Trainee B.20 to Telecommunications Officer I B.21 Career Ladder Progression as approved during budget	Unallocated	2/10/2017
911 Communications	1672	13975	$34,791.27	$36,547.38	$1,756.11	5.05%	Title, Grade change: Telecommunications Officer Trainee B.20 to Telecommunications Officer I B.21 Career Ladder Progression as approved during budget	Unallocated	2/10/2017
911 Communications	1685	13974	$34,791.27	$36,547.38	$1,756.11	5.05%	Title, Grade, Salary change: Telecommunications Officer Trainee B.20 to Telecommunications Officer I B.21 Career Ladder Progression as approved during budget	Unallocated	2/10/2017
911 Communications	0158	13492	$40,362.71	$41,573.58	$1,210.87	3.00%	Merit	Unallocated	2/10/2017

911 Communications	0140	13261	$40,362.71	$41,573.58	$1,210.87	3.00%	Merit	Unallocated	2/10/2017
911 Communications	0145	13578	$40,362.71	$41,573.58	$1,210.87	3.00%	Merit	Unallocated	2/10/2017
911 Communications	0130	Vacant	$39,571.27	$40,362.70	$791.43	2.00%	Adjustment of the B grade chart approved in the FY17 budget	Unallocated	2/10/2017
Constable Pct. 1	0264	Vacant	$75,364.12	$79,977.00	$4,612.88	6.12%	Grade, Salary change; L4.8 to L4.11 due to peace officer tenure	Unallocated	2/9/2017
Road and Bridge	1573	Vacant	$41,995.01	$50,453.38	$8,458.37	20.14%	Title, Grade, Salary change; Operator III B. 21 to Inspector I B. 23	Unallocated	2/10/2017
Road and Bridge	1519	Vacant	$33,500.00	N/A	N/A	N/A	Title, Grade change; Operator II B.19 to Operator I B.17	Unallocated	2/10/2017
Sheriff's Office	0097	13264	$52,275.00	$55,474.65	$3,199.65	6.12%	Grade, Salary change; L1.1 to L1.4 due to prior correction tenure	Unallocated	2/10/2017
Sheriff's Office	1303	10379	$52,274.99	$64,997.40	$12,722.41	24.34%	Grade, Salary change; L1.1 to L1.12 due to prior correction tenure	Unallocated	2/10/2017

*Amount may vary slightly due to Oracle rounding

Commissioners Court - Regular Session **14.**

Meeting Date: 02/14/2017

Proclamation

Submitted For: Cynthia Long **Submitted By:** Kathy Pierce, Commissioner Pct. #2

Department: Commissioner Pct. #2

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on proclamation recognizing the 160th anniversary of Leander Presbyterian Church.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Proclamation

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 04:51 PM
Form Started By: Kathy Pierce		Started On: 02/08/2017 11:36 AM
Final Approval Date: 02/08/2017		

State of Texas
County of Williamson
Know all men by these presents:

That on the 14th day of February, 2017 the Commissioners Court of Williamson County, Texas met in duly called session at the Williamson County Courthouse, 710 Main Street, Georgetown, Texas, with the following members present:

Dan A. Gattis, County Judge
Terri Cook, Commissioner Precinct One
Cynthia P. Long, Commissioner Precinct Two
Valerie Covey, Commissioner Precinct Three
Larry Madsen, Commissioner Precinct Four

And at said meeting, among other business, the Court considered the following:

PROCLAMATION

WHEREAS, Williamson County has a long, rich history of religious faith that has been a cornerstone for many families; and

WHEREAS, the Leander Presbyterian Church is one of the oldest churches in the county, being formed in 1857 after the establishment of Williamson County in 1848; and

WHEREAS, the church was originally known as "Pleasant Hill Presbyterian Church" and began worship services with Reverend R. M. Overstreet on February 14, 1857 next to the new railroad that bypassed Bagdad, Texas; and

WHEREAS, after the creation of the new town of Leander, Texas in 1882, church parishioners voted to move the church to Leander in 1884, building the current church on land owned by church member, Sarah J. Walker, who later donated to the land to church trustees in 1895; and

WHEREAS, the original church building in Leander is a historic marker and is still in use today; an addition of the Fellowship Hall in 1987 has helped the church to remain an active and a vital part of the community of Leander; and

WHEREAS, the Leander Presbyterian Church allows community organizations such as the Girl Scouts, Boy Scouts, and Leander Garden Club to use the Fellowship Hall free of charge and is an active supporter of Hill County Ministries and helps provide food, clothes and necessities to families in need; and

WHEREAS, approximately 60 families worship at the church, many of which are descendants of the church founders, will be celebrating its 160th anniversary of the church.

NOW THEREFORE BE IT PROCLAIMED; that the Williamson County Commissioners Court recognizes the 160th year anniversary of the Leander Presbyterian Church and the significant impact that it has had in Leander.

PROCLAIMED THIS 14th DAY OF FEBRUARY 2017.

_____
Dan A. Gattis, County Judge

Commissioners Court - Regular Session **15.**

Meeting Date: 02/14/2017

SWAC

Submitted By: Rebecca Clemons, County Judge

Department: County Judge

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on an appointment of R. Lynn Lantrip to the Solid Waste Advisory Committee.

Background

This appointment can be filled by an individual who lives or works in Williamson County. Reappointments are made at the end of odd numbered years, so this appointment would be now through December 31, 2017.

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

SWAC.RLL

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst. (Originator)	Rebecca Clemons	02/09/2017 11:55 AM
Form Started By: Rebecca Clemons		Started On: 02/09/2017 11:46 AM
Final Approval Date: 02/09/2017		



Robert Lynn Lantrip

469-667-2940

https://www.linkedin.com/in/lynnlantrip

Laura and I moved into Williamson County the last quarter of 2014 in the City of Leander. Laura now serves on P & Z for the City.

Having served on North Texas Council of Government's Resource Conservation Council from 1991 to 2013, I have long-term service experience that would allow me to properly represent the County on the Solid Waste Advisory Committee at CAPCOG.

The following is an abbreviated chronology of my work history in Texas.

Principal
Governmental Relations Specialists "GRS"
January 2015 – Present

Director of Public Sector for Southern United States
Waste Management Southern Group
January 2010 – 2014

Manager of Public Sector Services for Texas, Oklahoma and Arkansas
Waste Management
1973 – 2009

Volunteer Experience

Board of Directors
Keep Texas Beautiful
January 1985 – January 2006
Served on Board of Directors until serving as President in 2006

Commissioners Court - Regular Session **16.**

Meeting Date: 02/14/2017

ESD 4 Board Appointment

Submitted For: Cynthia Long **Submitted By:** Kathy Pierce, Commissioner Pct. #2

Department: Commissioner Pct. #2

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on appointment of Jeffery M. Roemer to the ESD #4 Board of Directors, replacing Sandra Taylor for the remainder of a two year term that began on January 1, 2016 and will end on December 31, 2017.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Resume

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/09/2017 10:03 AM
Form Started By: Kathy Pierce		Started On: 02/09/2017 08:04 AM
Final Approval Date: 02/09/2017		

JEFFREY M. ROEMER

400 King Rea ▪ Georgetown, Texas 78633
Cell ▪ 512.688.7607
roemer50@msn.com

Sales/Marketing ★ Liaison/Facilitator ★ Administrative Support

SALES SPECIALIST

Versatile, quality oriented management professional with twenty plus years experience in sales and marketing. Effective in planning and organizing long and short term objectives. Strong aptitude in persuading company management and customers on products and ideas. Solid background in recruiting and managing diverse groups of marketing and sales professionals.

QUALIFICATIONS

COATINGS—Extensive experience in the Aerospace, Marine and Industrial paint and coatings markets.

LIAISON/REPRESENTATION—Proven ability to act on behave of my employer while preserving customer relations and solve complex technical problems.

Sales- Goal oriented success strategy with focus on team achievements.

Distribution—Majority of my career spent developing, training and growing distributor networks in the coatings industry.

MARKETING—Strong ability to plan and coordinate the development of concepts into practical material used to advance sales efforts.

CUSTOMER SATISFACTION—Demonstrated ability to build productive relationships with customers, ensure service excellence and maintain full satisfaction.

VALUE OFFERED

Experienced
Managing Projects/People
Taking Initiative
Goal Oriented
Building Relationships
Communicating Effectively
Achieving Results
Mastering New Systems and Processes
Using Solid Judgment
Analyzing/Solving Problems

CORE COMPETENCIES

- ✓ Aerospace Coatings
- ✓ Military Spec Coatings
- ✓ Research/Analysis
- ✓ Problem Solving
- ✓ Interpersonal Skills
- ✓ Industrial Coatings
- ✓ Customer Service
- ✓ State Regulations
- ✓ Marine Coatings
- ✓ Briefings/Presentations
- ✓ Marketing

EDUCATION

BACHELOR OF BUSINESS ADMINISTRATION DEGREE

San Diego State University
San Diego, California

JEFFREY M. ROEMER

Cell ▪ 512.688.7607
roemer50@msn.com

EXPERIENCE

TECHNICAL SALES REPRESENTATIVE

Hentzen Coatings, Inc., Aerospace Austin, Texas. May 2007-January 2015.

A privately held coatings manufacturer, based in Milwaukee, WI with plants located in Batavia, IL, Greenville, SC and Miami, FL. A world leader in CARC coatings to the US Army, in addition the company has a very successful Industrial and Powder Coatings division.

- Responsible for direct and distributor sales in the Midwest and Western United States including Western Canada for General, Military and Commercial Aerospace markets.
- Responsible for company introduction to Boeing Commercial in Seattle, WA.
- Achieved non chrome primer qualification with Nordam.
- Assisted in expanding distributor sales and refine the distribution network.

Key Accomplishments

- ✓ Met sales goals annually and maintained strong customer base, despite a down economy and other non sales related achievements.
- ✓ Helped to develop new literature and show booth for Aerospace shows nationwide.
- ✓ Member of technical team that helped maintain key Commercial customer through extensive technical difficulties.

TECHNICAL SALES REPRESENTATIVE

Ameron/PPG-PMC, Denver, Colorado April 2004-May 2007.

The company is a global coatings manufacturer with state of the art chemistries. A leader in maintenance coatings for refineries, water tanks, waste water treatment plants, wind generation towers, bridges and nuclear power plants.

- Responsible for direct and distributor sales in four states: Colorado, New Mexico, Utah, Wyoming and El Paso, Texas.
- Moved to the Marine and Industrial Group when PPG acquired Ameron, 2006.

Key Accomplishments

- ✓ Added and grew two successful Distributors in my region.
- ✓ Developed additional nontraditional markets for proven proprietary industrial coating chemistry.

GENERAL MANAGER/CO-OWNER

Chemco LLC, Orange, California. June 2001-April 2004.

A stocking distributor and representative firm for coatings, chemicals and absorbents. Precision Coatings, Inc. was the main line and represented 80% of all revenues.

JEFFREY M. ROEMER

Cell ▪ 512.688.7607
roemer50@msn.com

EXPERIENCE (CONTINUED)

GENERAL MANAGER/CO-OWNER (CONTINUED)

- Responsible for day-to-day sales, inventory and vendor relations.

Key Accomplishments

- ✓ Built and maintained strong working relationships with distribution network for coatings line.
- ✓ Established new dealers and direct customers for an absorbent chemical product.
- ✓ Worked to create and market new pre-treat chemical line for our company.

EARLIER EMPLOYMENT

Precision Coatings, Inc. Beverly Hills, California 1998-2001.

ADVANCED PROFESSIONAL TRAINING AND AFFILIATIONS

ISO 9000 - Certified Auditor
Kepner/Tregoe – Problem Solving Course
Society for Protective Coatings (SSPC)
Paint and Coatings Society (SAE)
NBAA member

REFERENCES

Upon request

Commissioners Court - Regular Session **17.**

Meeting Date: 02/14/2017

Discuss consider and take appropriate action on the Department of Infrastructure projects and issues update

Submitted For: Robert Daigh **Submitted By:** Lydia Linden, Unified Road System

Department: Unified Road System

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on the Department of Infrastructure projects and issues update.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

No file(s) attached.

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	01/23/2017 09:27 AM
Form Started By: Lydia Linden		Started On: 01/20/2017 09:23 AM
Final Approval Date: 01/23/2017		

Commissioners Court - Regular Session **18.**

Meeting Date: 02/14/2017

CR 111 Contract

Submitted For: Charlie Crossfield **Submitted By:** Charlie Crossfield, Road Bond

Department: Road Bond

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on a Real Estate Contract with Lorena Sandoval for right of way needed on CR 111 (Parcel 28).

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Sandoval Contract

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/09/2017 11:06 AM
Form Started By: Charlie Crossfield		Started On: 02/02/2017 09:14 AM
Final Approval Date: 02/09/2017		

REAL ESTATE CONTRACT
CR 111 Right of Way—Parcel 28

THIS REAL ESTATE CONTRACT ("Contract") is made by LORENA SANDOVAL (referred to in this Contract as "Seller") and WILLIAMSON COUNTY, TEXAS (referred to in this Contract as "Purchaser"), upon the terms and conditions set forth in this Contract.

ARTICLE I
PURCHASE AND SALE

By this Contract, Seller sells and agrees to convey, and Purchaser purchases and agrees to pay for, the tract(s) of land described as follows:

> All of that certain 0.083 acre (3,593 Sq. Ft.) tract of land in the J. McQueen Survey, Abstract No. 426, Williamson County, Texas; being more fully described by metes and bounds in Exhibit "A", attached hereto and incorporated herein (**Parcel 28**)

together with all and singular the rights and appurtenances pertaining to the property, including any right, title and interest of Seller in and to adjacent streets, alleys or rights-of-way (all of such real property, rights, and appurtenances being referred to in this Contract as the "Property"), and any improvements situated on and attached to the Property described in Exhibit "A" not otherwise agreed herein to be retained by Seller, for the consideration and upon and subject to the terms, provisions, and conditions set forth below.

ARTICLE II
PURCHASE PRICE

Purchase Price

2.01. The Purchase Price for the Property interests described in Exhibit "A", any improvements on the Property, and any damage to and/or cost to cure for the remaining property of Seller shall be the sum of TEN THOUSAND EIGHT HUNDRED THIRTY FOUR and 00/100 Dollars ($10,834.00).

Payment of Purchase Price

2.02. The Purchase Price shall be payable in cash at the Closing.

Option to Purchase Waterline Easement

2.03. As an agreement and obligation which shall survive the Closing of this transaction, Purchaser shall have the additional option (the "Option") to purchase a waterline easement interest in and across the following Property of Seller:

> All of that certain 0.061 acre (2,666 Sq. Ft.) tract of land in the J. McQueen Survey, Abstract No. 426, Williamson County, Texas; being more fully described by metes and bounds in Exhibit "B", attached hereto and incorporated herein (**Parcel 28-WE**)

for the consideration and terms as set forth in this section, and in the remainder of this Contract.

2.04. The Purchase Price for the Easement described herein shall be ONE THOUSAND and no/100 Dollars ($1,000.00).

2.05. The Option to purchase this easement shall continue until the expiration of two (2) years after the Effective Date of this Contract (the "Option Period"). Purchaser shall have the right to extend the Option Period for an additional two year period by providing written notice to Seller, and if such extension is exercised the Purchase Price for the easement shall be increased by 10%.

2.06. The parties shall record a Memorandum of Option at the Closing of the fee simple Property transaction contemplated in Article I above. The form of the Memorandum of Option shall be as shown in Exhibit "C" attached hereto and incorporated herein. The Option shall be a covenant running with the land, and shall bind Seller's heirs, agents, successors and assigns.

2.06. The Closing for completion of any Easement purchase transaction under this section shall take place within 30 days after Buyer's notice in writing to Seller of its intent to exercise the Option identified herein.

2.07. The form of the Easement to be granted under this section shall be as shown in Exhibit "D" attached hereto and incorporated herein, or as otherwise agreed to between the parties.

ARTICLE III
PURCHASER'S OBLIGATIONS

Conditions to Purchaser's Obligations

3.01. The obligations of Purchaser hereunder to consummate the transactions contemplated hereby are subject to the satisfaction of each of the following conditions (any of which may be waived in whole or in part by Purchaser at or prior to the Closing).

Miscellaneous Conditions

3.02. Seller shall have performed, observed, and complied with all of the covenants, agreements, and conditions required by this Contract to be performed, observed, and complied with by Seller prior to or as of the Closing.

ARTICLE IV
REPRESENTATIONS AND WARRANTIES OF SELLER

Seller hereby represents and warrants to Purchaser as follows, which representations and warranties shall be deemed made by Seller to Purchaser also as of the Closing Date, to the best of Seller's current actual knowledge:

(1) There are no parties in possession of any portion of the Property as lessees, tenants at sufferance, or trespassers, other than as previously disclosed to Purchaser;

(2) Seller has complied with all applicable laws, ordinances, regulations, statutes, rules and restrictions relating to the Property, or any part thereof;

The Property herein is being conveyed to Purchaser under threat of condemnation.

ARTICLE V
CLOSING

Closing Date

5.01. The Closing shall be held at the office of Georgetown Title Company on or before March 31, 2017, or at such time, date, and place as Seller and Purchaser may agree upon, or within 10 days after the completion of any title curative matters if necessary for items as shown on the Title Commitment or in the contract (which date is herein referred to as the "Closing Date").

Seller's Obligations at Closing

5.02. At the Closing Seller shall:

(1) Deliver to Purchaser a duly executed and acknowledged Deed conveying good and indefeasible title to Williamson County, Texas in fee simple to all of the Property described in Exhibit "A", free and clear of any and all liens and restrictions, except for the following:

(a) General real estate taxes for the year of closing and subsequent years not yet due and payable;

(b) Any exceptions approved by Purchaser pursuant to Article III hereof; and

(c) Any exceptions approved by Purchaser in writing.

The Deed shall be in the form as shown in Exhibit "E" attached hereto and incorporated herein.

(2) Deliver to Purchaser a Texas Owner's Title Policy at Purchaser's sole expense, issued by Title Company, in Grantee's favor in the full amount of the Purchase Price, insuring Purchaser's contracted interests in and to the Property subject only to those title exceptions listed herein, such other exceptions as may be approved in writing by Purchaser, and the standard printed exceptions contained in the usual form of Texas Owner's Title Policy, provided, however:

(a) The boundary and survey exceptions shall be deleted;

(b) The exception as to restrictive covenants shall be endorsed "None of Record", if applicable; and

(c) The exception as to the lien for taxes shall be limited to the year of Closing and shall be endorsed "Not Yet Due and Payable".

(d) Deliver to Purchaser possession of the Property if not previously done.

Purchaser's Obligations at Closing

5.03. At the Closing, Purchaser shall:

(a) Pay the cash portion of the Purchase Price.

Prorations

5.04. General real estate taxes for the then current year relating to the Property shall be prorated as of the Closing Date and shall be adjusted in cash at the closing. If the Closing shall occur before the tax rate is fixed for the then current year, the apportionment of taxes shall be upon the basis of the tax rate for the next preceding year applied to the latest assessed valuation. Agricultural roll-back taxes, if any, shall be paid by Purchaser.

Closing Costs

5.05. All costs and expenses of closing in consummating the sale and purchase of the Property shall be borne and paid as follows:

(1) Owner's Title Policy and survey to be paid by Purchaser.

(2) Deed, tax certificates, and title curative matters, if any, paid by Purchaser.

(3) All other closing costs shall be paid by Purchaser.

(4) Attorney's fees paid by each respectively.

ARTICLE VI
BREACH BY SELLER

In the event Seller shall fail to fully and timely perform any of its obligations hereunder or shall fail to consummate the sale of the Property for any reason, except Purchaser's default, Purchaser may: (1) enforce specific performance of this Contract; or (2) request that the Escrow Deposit, if any, shall be forthwith returned by the title company to Purchaser.

ARTICLE VII
BREACH BY PURCHASER

In the event Purchaser should fail to consummate the purchase of the Property, the conditions to Purchaser's obligations set forth in Article III having been satisfied and Purchaser being in default and Seller not being in default hereunder, Seller shall have the right to receive the Escrow Deposit, if any, from the title company, the sum being agreed on as liquidated damages for the failure of Purchaser to perform the duties, liabilities, and obligations imposed upon it by the terms and provisions of this Contract, and Seller agrees to accept and take this cash payment as its total damages and relief and as Seller's sole remedy hereunder in such event. If no Escrow Deposit has been made then Seller shall receive the amount of $500 as liquidated damages for any failure by Purchaser.

ARTICLE VIII
MISCELLANEOUS

Notice

8.01. Any notice required or permitted to be delivered hereunder shall be deemed received when sent by United States mail, postage prepaid, certified mail, return receipt requested, addressed to Seller or Purchaser, as the case may be, at the address set forth opposite the signature of the party.

Texas Law to Apply

8.02. This Contract shall be construed under and in accordance with the laws of the State of Texas, and all obligations of the parties created hereunder are performable in Williamson County, Texas.

Parties Bound

8.03. This Contract shall be binding upon and inure to the benefit of the parties and their respective heirs, executors, administrators, legal representatives, successors and assigns where permitted by this Contract.

Legal Construction

8.04. In case any one or more of the provisions contained in this Contract shall for any reason be held to be invalid, illegal, or unenforceable in any respect, this invalidity, illegality, or unenforceability shall not affect any other provision hereof, and this Contract shall be construed as if the invalid, illegal, or unenforceable provision had never been contained herein.

Prior Agreements Superseded

8.05. This Contract constitutes the sole and only agreement of the parties and supersedes any prior understandings or written or oral agreements between the parties respecting the within subject matter.

Time of Essence

8.06. Time is of the essence in this Contract.

Gender

8.07. Words of any gender used in this Contract shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, and vice versa, unless the context requires otherwise.

Memorandum of Contract

8.08. Upon request of either party, the parties shall promptly execute a memorandum of this Contract suitable for filing of record.

Compliance

8.09. In accordance with the requirements of Section 20 of the Texas Real Estate License Act, Purchaser is hereby advised that it should be furnished with or obtain a policy of title insurance or Purchaser should have the abstract covering the Property examined by an attorney of Purchaser's own selection.

Effective Date

8.10. This Contract shall be effective as of the date it is approved by Williamson County, Texas which date is indicated beneath the County Judge's signature below.

Counterparts

8.11 This Contract may be executed in any number of counterparts, which may together constitute the Contract. Signatures transmitted by facsimile or electronic mail may be considered effective as originals for purposes of this Contract.

[signature page follows]

SELLER:

Lorena Sandoval

Lorena Sandoval

Address: 208 Trey St
Hutto, Tx 78634

Date: 1/26/17

PURCHASER:

WILLIAMSON COUNTY, TEXAS

By: _____
Dan A. Gattis
County Judge

Address: 710 Main Street, Suite 101
Georgetown, Texas 78626

Date: _____

EXHIBIT A

County: Williamson
Parcel: 28
Highway: County Road 111 (Westinghouse Road)

PROPERTY DESCRIPTION FOR PARCEL 28

BEING 0.083 of an acre (3,593 Square Feet) of land, situated in the J. McQueen Survey, Abstract No. 426, in Williamson County, Texas, said land being a portion of Lot 3, Block C of Valley Vista, a subdivision of record in Cabinet P, Slide 18, of the Plat Records of Williamson County, Texas. Surveyed on the ground in the month of June, 2015, under the supervision of Patrick J. Stevens, Registered Professional Land Surveyor, and being more particularly described as follows;

BEGINNING at an iron pin found (Surface Coordinates determined as N=10195851.75, E=3152892.29) at the intersection of the north line of County Road 105 and the west line of County Road No. 105 Spur, marking the Southeast corner of the said Lot 3, for the Southeast corner hereof;

THENCE, along the said north line of County Road No. 105, S 68°38'15" W, 123.38 feet to an iron pin found marking the Southwest corner of the said Lot 3, being the Southeast corner of Lot 2, Block C, of the said Valley Vista for the Southwest corner hereof;

THENCE, along the west line of the said Lot 3, being the east line of the said Lot 2, N 39°05'45' W, 11.34 feet to an iron pin set 68.00 feet left of Engineers Centerline Station 167+80.05 for the Northwest corner hereof;

THENCE, along a curve to the left, (Radius = 1,432.00 feet, Delta = 7°01'15", Long Chord bears N 57°01'30" E, 175.33 feet), an arc distance of 175.44 feet to an iron pin set 68.00 feet right of Engineers Centerline Station 169+63.81 on the east line of the said Lot 3, being the west line of County Road No. 105, for the Northwest corner hereof;

THENCE, along the said west line of County Road No. 105, S 21°50'00" E, 3.32 feet to an iron pin found marking the most easterly corner of the said Lot 3, and S 25°02'30" W, 62.03 feet to the Place of **BEGINNING** and containing 0.083 of an acre of land.

Note: Basis of Bearing GPS Observation Texas Central State Plane

STATE OF TEXAS

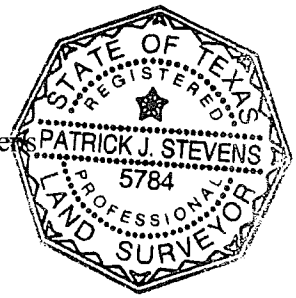
KNOW ALL MEN BY THESE PRESENTS

COUNTY OF WILLIAMSON

I, Patrick J. Stevens, Registered Professional Land Surveyor, do hereby certify that this survey was made on the ground of the property legally described herein and is correct, to the best of my knowledge and belief.

To certify which, witness my hand and seal at Georgetown, Williamson County, Texas, this the 9 day of June, 2016, A.D.

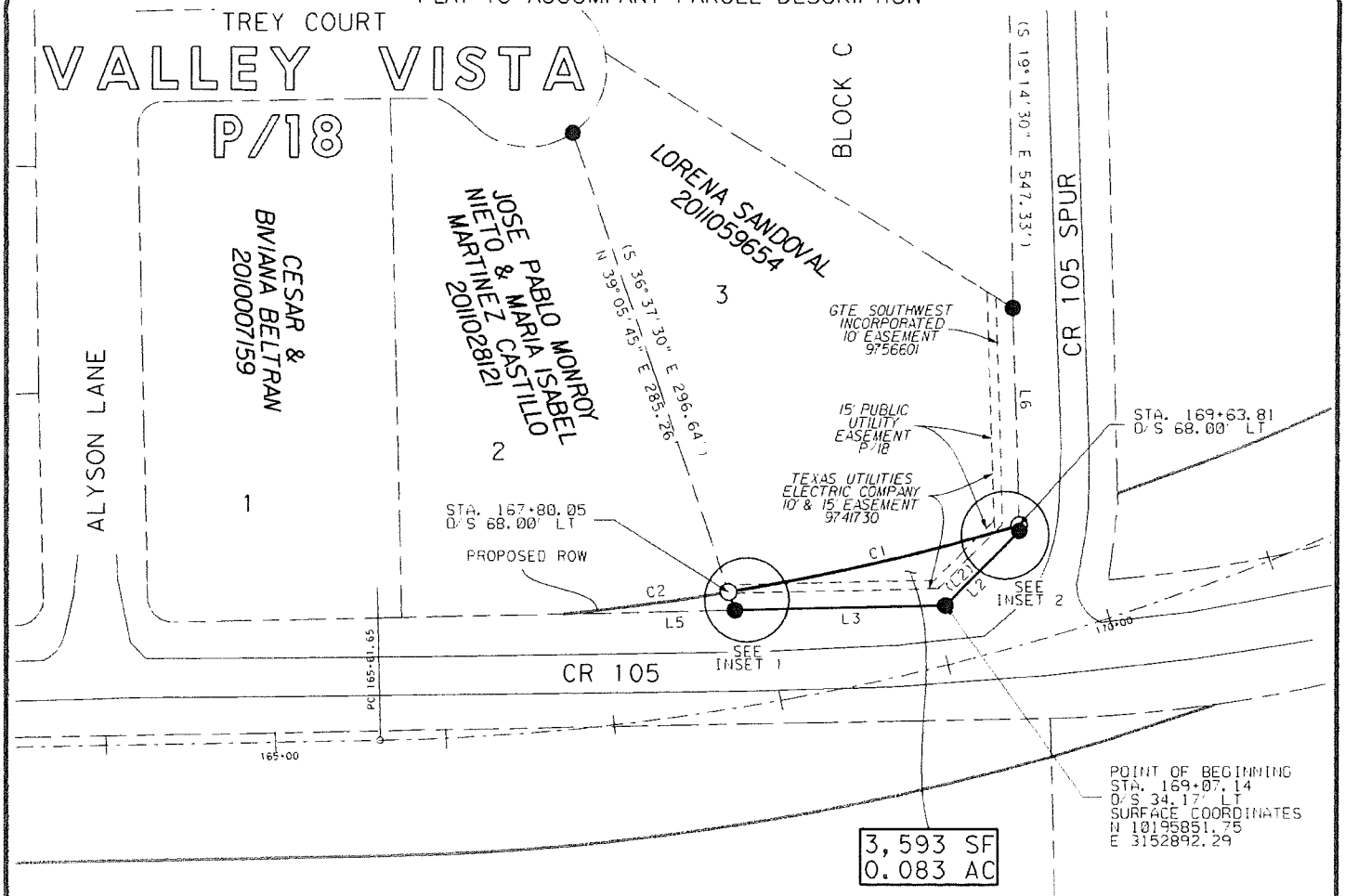
Patrick J. Stevens
Registered Professional Land Surveyor, No. 5784
State of Texas

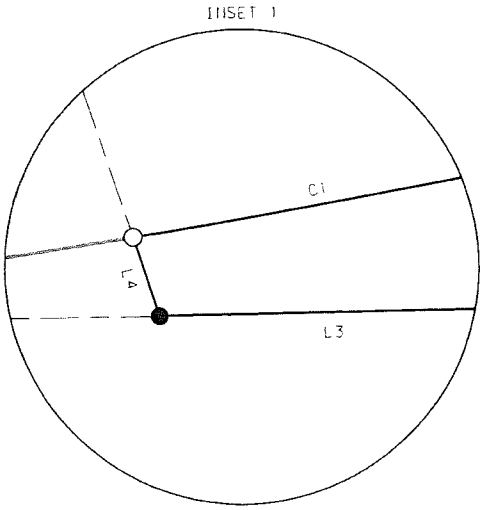


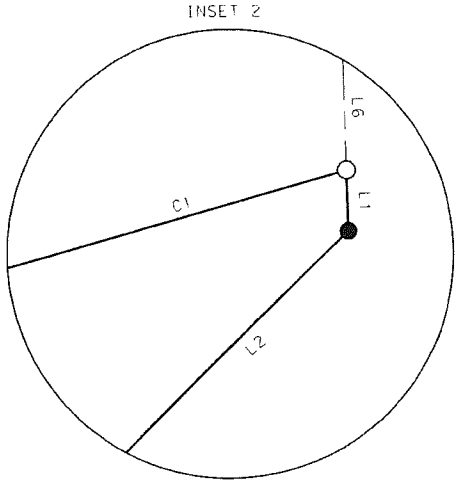
Project No. 22009-28

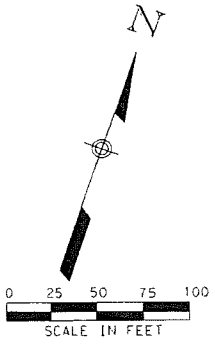
P:\22000-22999\22009 Wilco CR111 Route Study\Parcel Descriptions\Legal Description for Parcel 28.docx

PLAT TO ACCOMPANY PARCEL DESCRIPTION









STEGER BIZZELL
1978 S. AUSTIN AVENUE | GEORGETOWN, TX 78626
512.930.9412 | STEGERBIZZELL.COM
>>ENGINEERS >>PLANNERS >>SURVEYORS

PARCEL PLAT SHOWING PROPERTY OF:

LORENA SANDOVAL

SCALE:	PARCEL:	PROJECT:	COUNTY:
1"=100'	28	CR 111	WILLIAMSON

WILLIAMSON COUNTY
1848

PLAT TO ACCOMPANY PARCEL DESCRIPTION

LEGEND

- ■ TYPE I CONCRETE MONUMENT FOUND
- ◘ TYPE II MONUMENT FOUND
- ⊙ 1/2" IRON PIPE FOUND UNLESS NOTED
- ○ 1/2" IRON REBAR SET W/ CAP STAMPED "RPLS 5784"
- ● 1/2" IRON ROD FOUND UNLESS NOTED
- △ CALCULATED POINT
- ⊕ NAIL FOUND
- ℄ CENTER LINE
- ( ) RECORD INFORMATION
- P.O.R. POINT OF REFERENCE
- P.O.B. POINT OF BEGINNING
- LINE BREAK

CODE	BEARING	DISTANCE
L1	S 21°50'00" E	3.32'
L2	S 25°02'30" W	62.03'
(L2)	S 27°01'30" W	62.75'
L3	S 68°38'15" W	123.38'
L4	N 39°05'45" W	11.34'
L5	N 68°44'45" E	102.58'
L6	N 39°06'15" W	283.25'

CODE	RADIUS	ARC	CHORD BEARING	CHORD	DELTA
C1	1,432.00'	175.44'	N 57°01'30" E	175.33'	7°01'15"
C2	1,432.00'	99.76'	N 62°31'45" E	99.69'	3°59'30"

NOTES:
ALL BEARINGS ARE BASED ON GRID BEARINGS. DISTANCES ARE SURFACE DISTANCES. COORDINATES ARE SURFACE VALUES BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD 83, CENTRAL ZONE USING A COMBINED SURFACE ADJUSTMENT FACTOR OF 1.00013.

THIS TRACT SUBJECT TO THE FOLLOWING EASEMENTS THAT CANNOT BE PLOTTED DUE TO A VAGUE DESCRIPTION(S):
1. TEXAS POWER & LIGHT COMPANY, VOL. 299, PG. 515
2. JONAH WATER SUPPLY CORPORATION, VOL. 563, PG. 513
3. VISUAL SIGHT LINE EASEMENT, CAB. P, SLIDE 18
4. AFFIDAVIT TO THE PUBLIC, DOC. NO. 1999067924

I HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT THE PROPERTY SHOWN HEREIN WAS DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY DIRECTION AND SUPERVISION.

STATE OF TEXAS
REGISTERED
PATRICK J. STEVENS
5784
PROFESSIONAL
LAND SURVEYOR

6-9-16

PATRICK J. STEVENS
REGISTERED PROFESSIONAL LAND SURVEYOR, No. 5784
STATE OF TEXAS

STEGER BIZZELL
1978 S. AUSTIN AVENUE GEORGETOWN, TX 78626
512.930.9412 STEGERBIZZELL.COM
>>ENGINEERS >>PLANNERS >>SURVEYORS

PARCEL PLAT SHOWING PROPERTY OF:

LORENA SANDOVAL

SCALE:	PARCEL:	PROJECT:	COUNTY:
1"=100'	28	CR 111	WILLIAMSON

WILLIAMSON COUNTY
1848

EXHIBIT B

County: Williamson
Parcel: 28E
Highway: County Road 111 (Westinghouse Road)

PROPERTY DESCRIPTION FOR PARCEL 28E

BEING a 0.061 of one acre parcel (2,666 Square Feet) of land, situated in the J. McQueen Survey, Abstract No. 426, in Williamson County, Texas, being a portion of Lot 3, Block C, VALLEY VISTA, a subdivision recorded in Cabinet P, Slide 18-20 of the Plat Records of Williamson County, Texas, said Lot 3 being described in a Special Warranty Deed to Lorena Sandoval, recorded in Document No. 2011059654 of the Official Public Records of Williamson County, Texas. Said 0.061 of one acre parcel (2,666 Square Feet) being more particularly described by metes and bounds as follows:

COMMENCING at a 1/2-inch iron rebar found (Surface Coordinates = N: 10196037.00, E: 3152590.34) for the Northwest corner of said Lot 3 and the Northeast corner of Lot 2, of said Block C, also being in the curving Southerly right-of-way line of Trey Court, said 1/2-inch iron rebar found being 348.25 feet left of and at a right angle to proposed Engineers Centerline Station 167+17.89;

THENCE South 39°05'40" East departing said curving Southerly right-of-way of Trey Court, along the West line of said Lot 3 and the East line of said Lot 2, a distance of 270.04 feet to the Northwest corner and **POINT OF BEGINNING** (Surface Coordinates = N: 10195827.42, E: 3152760.63) of the herein described tract, said corner being 83.00 feet left of and at a right angle to proposed Engineers Centerline Station 167+77.35;

THENCE over and across said Lot 3 and Northeasterly along the arc of a curve to the left having a radius of **1417.00** feet, an arc length of **180.07** feet, a delta angle of **07°16'51"**, and a chord which bears **North 56°59'47" East** a distance of **179.95** feet to the Northeast corner of the herein described tract, being in the East line of said Lot 3 and the existing Westerly right-of-way line of County Road No 105 Spur (a variable width right-of-way), from which a 1/2-inch iron rebar found for the Northeast corner of said Lot 3 and the Southeast corner of Lot 4, of said Block C, also being in said existing Westerly right-of-way line of County Road No. 105 Spur, bears North 21°50'00" West a distance of 112.22 feet;

THENCE **South 21°50'00" East** along said East line of Lot 3 and said existing Westerly right-of-way line of County Road No 105 Spur, a distance of **15.51** feet to a 1/2-inch iron rebar with cap stamped "RPLS 5784" set, from which a 1/2-inch iron rebar found for an angle point in said East line of Lot 3 and said existing Westerly right-of-way line of County Road No. 105 Spur, bears South 21°50'00" East a distance of 3.32 feet;

THENCE departing said existing Westerly right-of-way line of County Road No. 105, over and across said Lot 3, and Southwesterly along the arc of a curve to the right having a radius of **1432.00** feet, an arc length of **175.44** feet, a delta angle of **07°01'10"**, and a chord which bears **South 57°01'27" West** a distance of **175.33** feet to a 1/2-inch iron rebar with cap stamped "RPLS 5784" set in said West line of Lot 3 and said East line of Lot 2, from which a 1/2-inch iron rebar found for the Southwest corner of said Lot 3 and the Southeast corner of said Lot 2, also being in the existing Northwesterly right-of-way line of County Road No. 105 (a variable width right-of-way), bears South 39°05'40" East a distance of 11.34 feet;

THENCE **North 39°05'40" West** along said West line of Lot 3 and said East line of Lot 2, a distance of **15.22** feet to the **POINT OF BEGINNING** and containing 0.061 of one acre (2,666 Square Feet) of land more or less.

All bearings and coordinates shown hereon are based on the Texas State Plane Coordinate System, Central Zone, NAD83 (2011 Adjustment), referenced to the Leica Smartnet Network. Coordinates and distances shown hereon are surface values represented in U.S. Survey Feet. The project grid-to-surface combined adjustment factor is 1.00013.

This property description is accompanied by a separate plat of even date.

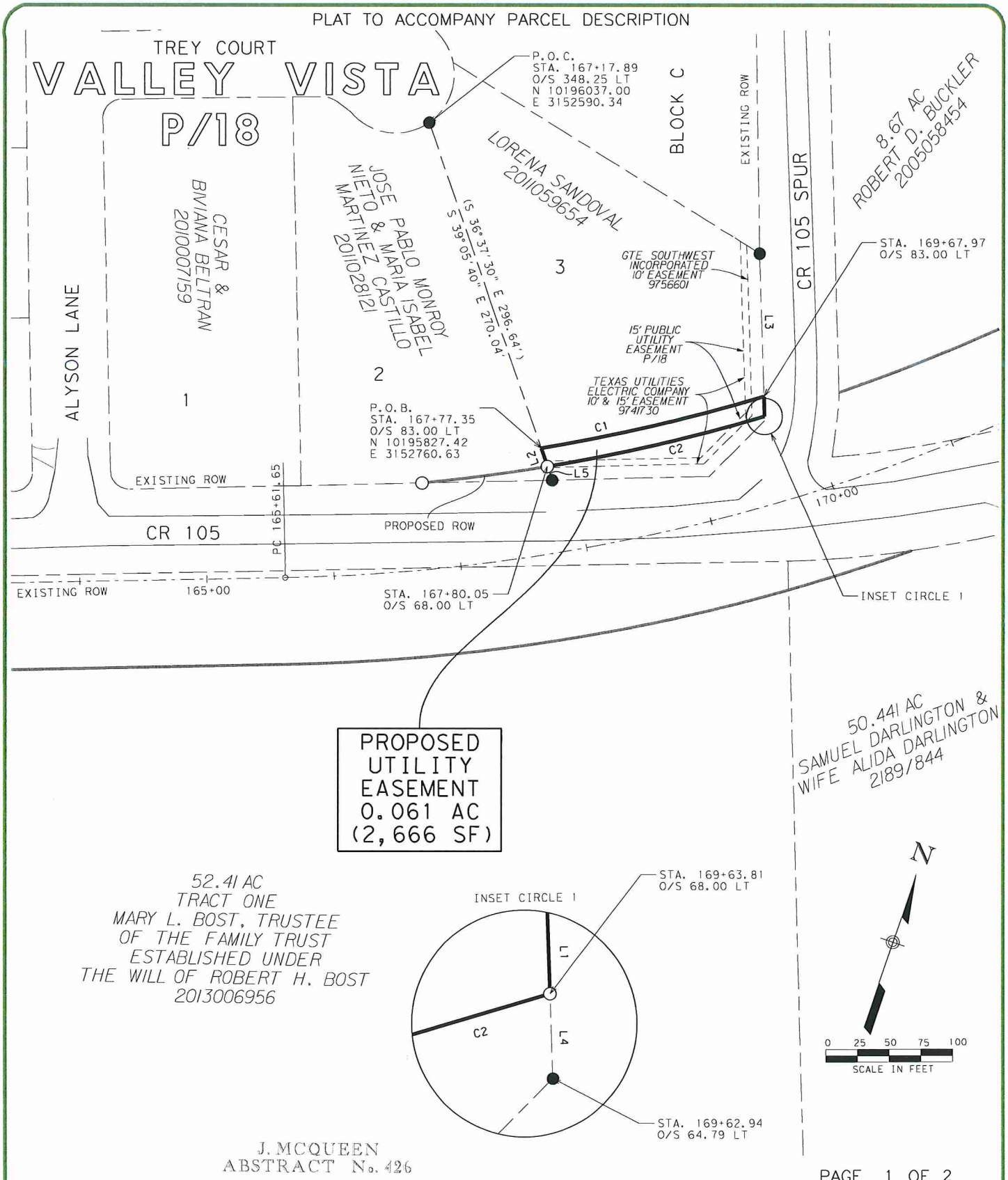
Surveyed on the ground this _____ day of _____, 2016.

PRELIMINARY – FOR REVIEW, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT.

_____

Travis S. Tabor, RPLS No. 6428
Steger & Bizzell Engineering, Inc.
1978 South Austin Avenue
Georgetown, Texas 78626
(512) 930-9412
TBPLS Firm No. 10003700

PLAT TO ACCOMPANY PARCEL DESCRIPTION



STEGER BIZZELL
ADDRESS 1978 S. AUSTIN AVENUE GEORGETOWN, TX 78626
METRO 512.930.9412 WEB STEGERBIZZELL.COM
>>ENGINEERS >>PLANNERS >>SURVEYORS

PARCEL PLAT SHOWING PROPERTY OF:

LORENA SANDOVAL

SCALE:	PARCEL:	PROJECT:	COUNTY:
1"=100'	28E	CR 111	WILLIAMSON

WILLIAMSON COUNTY
1848

PLAT TO ACCOMPANY PARCEL DESCRIPTION

LEGEND

- ■ TYPE I CONCRETE MONUMENT FOUND
- ◘ TYPE II MONUMENT FOUND
- ◉ 1/2" IRON PIPE FOUND UNLESS NOTED
- ○ 1/2" IRON REBAR SET W/ CAP STAMPED "RPLS 5784"
- ● 1/2" IRON ROD FOUND UNLESS NOTED
- △ CALCULATED POINT
- ⊕ NAIL FOUND
- ℄ CENTER LINE
- ( ) RECORD INFORMATION
- P.O.C. POINT OF COMMENCEMENT
- P.O.B. POINT OF BEGINNING
- LINE BREAK

CODE	BEARING	DISTANCE
L1	S 21°50'00" E	15.51'
L2	N 39°05'40" W	15.22'
L3	N 21°50'00" W	112.22'
L4	S 21°50'00" E	3.32'
L5	S 39°05'40" E	11.34'

CODE	RADIUS	ARC	CHORD BEARING	CHORD	DELTA
C1	1,417.00'	180.07'	N 56°59'47" E	179.95'	7°16'51"
C2	1,432.00'	175.44'	S 57°01'27" W	175.33'	07°01'10"

NOTES:
ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NAD83 (2011 ADJUSTMENT), REFERENCED TO THE LEICA SMARTNET NETWORK. COORDINATES AND DISTANCES SHOWN HEREON ARE SURFACE VALUES REPRESENTED IN U.S. SURVEY FEET. THE PROJECT GRID-TO-SURFACE COMBINED ADJUSTMENT FACTOR IS 1.00013.

THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE COMMITMENT OR POLICY. THERE MAY BE ADDITIONAL EASEMENTS OR RESTRICTIONS, NOT SHOWN HEREON, WHICH MAY AFFECT THE PROPERTY.

I HEREBY CERTIFY THAT THIS SURVEY PLAT IS TRUE AND CORRECT TO THE BEST OF MY BELIEF AND THAT THE PROPERTY SHOWN HEREON WAS DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY DIRECTION AND SUPERVISION.

PRELIMINARY – FOR REVIEW, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT.

TRAVIS S. TABOR
REGISTERED PROFESSIONAL LAND SURVEYOR, No. 6428
STATE OF TEXAS

STEGER BIZZELL
ADDRESS: 1978 S. AUSTIN AVENUE | GEORGETOWN, TX 78626
METRO: 512.930.9412 | WEB: STEGERBIZZELL.COM
SERVICES: >>ENGINEERS >>PLANNERS >>SURVEYORS

PARCEL PLAT SHOWING PROPERTY OF:

LORENA SANDOVAL

SCALE:	PARCEL:	PROJECT:	COUNTY:
1"=100'	28E	CR 111	WILLIAMSON

WILLIAMSON COUNTY
1848

EXHIBIT "C"

MEMORANDUM OF WATERLINE EASEMENT OPTION CONTRACT

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF WILLIAMSON §

This Memorandum of Option Contract (this "**Memorandum**") is made and entered into by and between LORENA SANDOVAL ("**Optionor**"), and WILLIAMSON COUNTY, TEXAS referred to in this Option Contract as **"County"**.

1. The parties do hereby give notice that an Option Contract effective _____, 2017 (the "**Option**") has been entered into between the parties, pursuant to which Optionor has granted to the County an option and right to purchase a waterline easement interest in and across the hereinafter described Property at a price to be determined and on terms and conditions as set forth therein.

2. The property covered by the Option is that certain tract of land containing 0.061 acre of land, more or less, located in Williamson County, Texas, as more particularly described on **Exhibit A (Parcel 28-WE)** attached hereto and made a part hereof (the "**Property**").

3. The initial term of the Option expires at 5:00 p.m., _____, and upon certain conditions may be extended by County for an additional period two (2) years if necessary.

4. The parties agree that in the event of the expiration or earlier termination of the Option in accordance with its terms, the County shall have no right, title or interest in and to the Property. The parties expressly confirm and acknowledge that upon the expiration or earlier termination of the Option, the County has agreed to properly execute, acknowledge and deliver to Optionor within thirty (30) days of a request therefor, a release, quitclaim deed or any other document required by Optionor or a title insurance company to verify the termination of the Option. If the County shall fail to execute and deliver such release, quitclaim or other document to verify the termination of the Option within thirty (30) days after the request therefor, Optionor shall be entitled to execute and cause to be recorded an Affidavit confirming the termination of the Option, which Affidavit shall be conclusive evidence of the termination of the Option.

5. This Memorandum does not alter, amend or modify the Option, but is executed solely for the purpose of giving notice of the existence of the Option and the terms and conditions therein, which Option is incorporated herein by reference for all purposes to the same extent and with the same effect as if set forth herein in full.

EXECUTED by the parties on the date of their respective acknowledgements below to be effective the date of the last of such acknowledgements.

OPTIONORS:

Lorena Sandoval

LORENA SANDOVAL

Date: 1-26-17

ACKNOWLEDGMENT

STATE OF TEXAS
COUNTY OF Williamson

This Instrument was acknowledged before me on January 26, 2017, by Lorena Sandoval, in the capacity and for the purposes and consideration recited herein.

_____ [*signature*]
Notary Public
My Commission Expires
10-5-2019 [*date*]

[*notarial seal*]

CHARLES DANIEL JACKSON
Notary Public, State of Texas
Comm. Expires 10-05-2019
Notary ID 4707703

COUNTY:

WILLIAMSON COUNTY, TEXAS

_____
By: Dan A. Gattis
Title: County Judge

Date:_____

ACKNOWLEDGMENT

STATE OF TEXAS
COUNTY OF WILLIAMSON

This Instrument was acknowledged before me on _____ 2017, by Williamson County Judge Dan A. Gattis, in the capacity and for the purposes and consideration recited herein.

_____ [*signature*]
Notary Public
[*notarial seal*] My Commission Expires
_____ [*date*]

AFTER RECORDING, PLEASE RETURN TO:

Sheets & Crossfield, P.C.
309 East Main St.
Round Rock, Texas 78664

EXHIBIT "D"

WATERLINE EASEMENT
County Road 111—Parcel 28

THE STATE OF TEXAS

COUNTY OF WILLIAMSON

GRANT OF EASEMENT:

LORENA SANDOVAL ("Grantor", whether one or more), for the sum of Ten and No/100 Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged and confessed, does hereby grant, sell and convey unto JONAH WATER SPECIAL UTILITY DISTRICT, whose address is 4050 FM 1660, Hutto, Texas 78634, ("Grantee"), an easement and right-of-way ("Easement") upon and across approximately 0.061 acre (**Parcel 28—WE**), being the property of Grantor which is more particularly described on the sketch which accompanies the metes and bounds in Exhibit "A" attached hereto, located in Williamson County, Texas; and incorporated herein by reference. (the "Easement Tract").

TO HAVE AND TO HOLD the same perpetually to Grantee and its successors and assigns, together with the rights and privileges and on the terms and conditions set forth below.

Grantor does hereby covenant and agree to WARRANT AND FOREVER DEFEND title to the Easement herein granted, unto Grantee, its successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof.

CHARACTER OF EASEMENT:

The Easement is an easement in gross.

PURPOSE OF EASEMENT:

The Easement shall be used for water line purposes, including placement, construction, installation, replacement, repair, inspection, maintenance, relocation, removal, and operation of water distribution and transmission lines and related facilities and appurtenances, or making connections thereto.

The Easement shall also be used for the purpose of providing access for the operation, repair, maintenance, inspection, replacement and expansion of the water distribution and transmission lines and related facilities and appurtenances.

Additionally, Grantor hereby grants and conveys to Grantee a non-exclusive right of ingress and egress over Grantor's adjacent lands for the purpose of which this Easement is granted. However, such right shall only be exercised and allowed if access to the Easement Tract is not otherwise available from a public right of way.

DURATION OF EASEMENT:

The Easement shall be perpetual.

EXCLUSIVENESS OF EASEMENT:

The Easement shall be exclusive, and Grantor covenants that Grantor will not convey any other easement or conflicting rights within the Easement Tract. Grantor may alter or otherwise use the surface of the Easement Tract for such purposes that do not interfere with the exercise by Grantee of the rights herein granted provided that the plans for all improvements to be placed in the Easement Tract by Grantor must be approved by Grantee before the improvements are constructed, with such approval not to be unreasonably withheld. Grantee has the right to trim and cut down trees and shrubbery and to remove other improvements and structures to the extent reasonably necessary to prevent interference with the operation or repairs to Grantee's facilities in the Easement Tract, and Grantee will be held harmless by Grantor from any and all claims of Grantor if Grantee exercises such right.

DAMAGES:

The consideration given for this Easement constitutes payment in full for all damage sustained by Grantor by reason of the installation of the improvements referred to herein.

ENCUMBRANCES AND LIENS:

Grantor warrants that no person or business entity owns a present possessory interest in the fee title in the Easement Tract other than Grantor, and that there are no parties in possession of any portion of the Easement Tract as lessees. Furthermore, Grantor warrants that the Easement Tract is free and clear of all encumbrances and liens except the following: _____

WATER SERVICE:

Grantee and Grantor hereby acknowledge and agree that, effective immediately upon execution of this Easement, Grantee will be deemed to be providing and will be obligated to provide Grantor water service to Grantor's property across which the Easement is located. Grantor acknowledges and agrees that Grantor's ability to receive water from Grantee is subject to payment of all fees and charges due to Grantee under its tariff for such service.

ENTIRE AGREEMENT:

This instrument contains the entire agreement between the parties relating to the rights herein granted and the obligations herein assumed. Any oral representation or modification concerning this instrument shall be of no force and effect except for any subsequent modification in writing, signed by the party to be charged.

BINDING EFFECT:

This Agreement shall bind and inure to the benefit of the respective parties hereto, their heirs, legal representatives, successors and assigns.

ASSIGNABILITY:

This Easement and the rights of Grantee hereunder may be assigned in whole or in part by Grantee.

In witness whereof, this instrument is executed this 26 day of January, 2017.

GRANTOR:

Lorena Sandoval

Lorena Sandoval

STATE OF TEXAS

COUNTY OF WILLIAMSON

This instrument is acknowledged before me on the 26 day of January, 2017, by Lorena Sandoval, in the capacity and for the purposes and consideration recited herein.

CHARLES DANIEL JACKSON
Notary Public, State of Texas
Comm. Expires 10-05-2019
Notary ID 4707703

Notary Public, State of Texas
Printed Name: Charles Daniel Jackson
My Commission Expires: 10-5-2019

EXHIBIT "E"

Parcel 28

DEED

County Road 111/Westinghouse Road Right of Way

THE STATE OF TEXAS §
§
COUNTY OF WILLIAMSON §

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OF THE FOLLOWING INFORMATION FROM THIS ANY INSTRUMENT THAT TRANSFERS AN INTEREST IN REAL PROPERTY BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

That LORENA SANDOVAL, a single person, hereinafter referred to as Grantor, whether one or more, for and in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration to Grantor in hand paid by Williamson County, Texas, the receipt and sufficiency of which is hereby acknowledged, and for which no lien is retained, either expressed or implied, have this day Sold and by these presents do Grant, Bargain, Sell and Convey unto WILLIAMSON COUNTY, TEXAS, all that certain tract or parcel of land lying and being situated in the County of Williamson, State of Texas, along with any improvements thereon, being more particularly described as follows:

> All of that certain 0.083 acre (3,593 Sq. Ft.) tract of land in the J. McQueen Survey, Abstract No. 426, Williamson County, Texas; being more fully described by metes and bounds in Exhibit "A", attached hereto and incorporated herein (**Parcel 28**)

SAVE AND EXCEPT, HOWEVER, it is expressly understood and agreed that Grantor is retaining title to the following improvements located on the property described in said Exhibit "A" to wit: NONE

RESERVATIONS FROM AND EXCEPTIONS TO CONVEYANCE AND WARRANTY:

Visible and apparent easements not appearing of record;

Any discrepancies, conflicts, or shortages in area or boundary lines or any encroachments or any overlapping of improvements which a current survey would show;

Easements, restrictions, reservations, covenants, conditions, oil and gas leases, mineral severances, and encumbrances for taxes and assessments (other than liens and conveyances) presently of record in the Official Public Records of Williamson County, Texas, that affect the property, but only to the extent that said items are still valid and in force and effect at this time.

Grantor reserves all of the oil, gas and other minerals in and under the land herein conveyed but waives all rights of ingress and egress to the surface thereof for the purpose of exploring, developing, mining or drilling or pumping the same; provided, however, that operations for exploration or recovery of any such minerals shall be permissible so long as all surface operations in connection therewith are located at a point outside the acquired parcel and upon the condition that none of such operations shall be conducted so near the surface of said land as to interfere with the intended use thereof or in any way interfere with, jeopardize, or endanger the facilities of Williamson County, Texas or create a hazard to the public users thereof; it being intended, however, that nothing in this reservation shall affect the title and the rights of Grantee to take and use without additional compensation any, stone, earth, gravel, caliche, iron ore, gravel or any other road building material upon, in and under said land for the construction and maintenance of CR 111/Westinghouse Road, but shall not be used or exported from the Property for any other purpose.

TO HAVE AND TO HOLD the property herein described and herein conveyed together with all and singular the rights and appurtenances thereto in any wise belonging unto Williamson County, Texas and its assigns forever; and Grantor does hereby bind itself, its heirs, executors, administrators, successors and assigns to Warrant and Forever Defend all and singular the said premises herein conveyed unto Williamson County, Texas and its assigns against every person whomsoever lawfully claiming or to claim the same or any part thereof.

This deed is being delivered in lieu of condemnation.

IN WITNESS WHEREOF, this instrument is executed on this the 26 day of January, 2017.

[signature page follows]

GRANTOR:

Lorena Sandoval
Lorena Sandoval

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF Williamson §

This instrument was acknowledged before me on this the 26 day of January, 2017 by Lorena Sandoval, in the capacity and for the purposes and consideration recited therein.

CHARLES DANIEL JACKSON
Notary Public, State of Texas
Comm. Expires 10-05-2019
Notary ID 4707703

Notary Public, State of Texas

PREPARED IN THE OFFICE OF:

Sheets & Crossfield, P.C.
309 East Main
Round Rock, Texas 78664

GRANTEE'S MAILING ADDRESS:

Williamson County, Texas
Attn: County Judge
710 Main Street, Suite 101
Georgetown, Texas 78626

AFTER RECORDING RETURN TO:

Commissioners Court - Regular Session **19.**

Meeting Date: 02/14/2017

CR 305 Real Estate Contract

Submitted For: Charlie Crossfield **Submitted By:** Charlie Crossfield, Road Bond

Department: Road Bond

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on a Real Estate Contract with Kevin Andrews for ROW needed on CR 305. (PARCEL 4)

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Andrews RE Contract

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/09/2017 11:06 AM
Form Started By: Charlie Crossfield		Started On: 02/09/2017 10:05 AM
Final Approval Date: 02/09/2017		

REAL ESTATE CONTRACT
CR 305 Right of Way—Parcel 4

THIS REAL ESTATE CONTRACT ("Contract") is made by KEVIN ANDREWS f/k/a Kevin W. Cruz (referred to in this Contract as "Seller") and WILLIAMSON COUNTY, TEXAS (referred to in this Contract as "Purchaser"), upon the terms and conditions set forth in this Contract.

ARTICLE I
PURCHASE AND SALE

By this Contract, Seller sells and agrees to convey, and Purchaser purchases and agrees to pay for, the tract(s) of land described as follows:

> All of that certain 0.114 acre (approximately 4,956 Sq. Ft.) tract of land in the E. Davis Survey, Abstract No. 172, Williamson County, Texas; being more fully described by metes and bounds in Exhibit "A", attached hereto and incorporated herein (**Parcel 4**)

together with all and singular the rights and appurtenances pertaining to the property, including any right, title and interest of Seller in and to adjacent streets, alleys or rights-of-way (all of such real property, rights, and appurtenances being referred to in this Contract as the "Property"), and any improvements situated on and attached to the Property described in Exhibit "A" not otherwise agreed herein to be retained by Seller, for the consideration and upon and subject to the terms, provisions, and conditions set forth below.

ARTICLE II
PURCHASE PRICE

Purchase Price

2.01. The Purchase Price for the Property, any improvements thereon, and any damage or cost of cure for the remaining Property of Seller shall be the sum of SIX THOUSAND THREE HUNDRED THIRTY and 00/100 Dollars ($6,330.00).

Payment of Purchase Price

2.02. The Purchase Price shall be payable in cash at the Closing.

Special Provisions

2.03. As an obligation and agreement which shall survive the Closing of this transaction, Seller and Purchaser agree that if any portion of the existing On Site Sewage Facility ("OSSF") drain line improvements are found to be located within the Property and are disturbed or damaged by Purchaser, its contractors, agents or assigns, that Purchaser shall, at the direction of Seller, either reimburse the Seller or pay a third party contractor directly for the reasonable market value cost of any reconfigurations which are determined by Purchaser or other OSSF licensing or permitting entity to be necessary in order to allow continued compliance of the existing system with any applicable rules or regulations governing the operation of such facilities, and additionally including the cost any landscaping or related repairs to return the surface of the affected area as closely as possible to the condition which existed prior to the reconfiguration.

Seller, its successors or assigns shall not be required to obtain any new permit for continued operation of the existing OSSF system as a result of such disturbance or reconfiguration described herein, or shall otherwise be provided with an updated or revised permit for the continued operation of the existing system at no cost to Seller. Any reconfiguration costs required under this section shall be paid to Seller or to the third party contractor, as directed by Seller, within thirty (30) days after receipt of written invoices for the reasonable reconfigurations and related costs as described herein.

ARTICLE III
PURCHASER'S OBLIGATIONS

Conditions to Purchaser's Obligations

3.01. The obligations of Purchaser hereunder to consummate the transactions contemplated hereby are subject to the satisfaction of each of the following conditions (any of which may be waived in whole or in part by Purchaser at or prior to the Closing).

Miscellaneous Conditions

3.02. Seller shall have performed, observed, and complied with all of the covenants, agreements, and conditions required by this Contract to be performed, observed, and complied with by Seller prior to or as of the closing.

ARTICLE IV
REPRESENTATIONS AND WARRANTIES OF SELLER

Seller hereby represents and warrants to Purchaser as follows, which representations and warranties shall be deemed made by Seller to Purchaser also as of the Closing Date, to the best of Seller's current actual knowledge:

(1) There are no parties in possession of any portion of the Property as lessees, tenants at sufferance, or trespassers, other than as previously disclosed to Purchaser;

(2) Seller has complied with all applicable laws, ordinances, regulations, statutes, rules and restrictions relating to the Property, or any part thereof;

The Property herein is being conveyed to Purchaser under threat of condemnation.

ARTICLE V
CLOSING

Closing Date

5.01. The Closing shall be held at the office of Capital Title Company on or before March 31, 2017, or at such time, date, and place as Seller and Purchaser may agree upon, or within 10 days after the completion of any title curative matters if necessary for items as shown on the Title Commitment or in the contract (which date is herein referred to as the "Closing Date").

Seller's Obligations at Closing

5.02. At the Closing Seller shall:

(1) Deliver to Purchaser a duly executed and acknowledged Deed conveying good and indefeasible title to Williamson County, Texas in fee simple to all of the Property described in Exhibit "A", free and clear of any and all liens and restrictions, except for the following:

(a) General real estate taxes for the year of closing and subsequent years not yet due and payable;

(b) Any exceptions approved by Purchaser pursuant to Article III hereof; and

(c) Any exceptions approved by Purchaser in writing.

The Deed shall be in the form as shown in Exhibit "B" attached hereto and incorporated herein.

(2) Deliver to Purchaser a Texas Owner's Title Policy at Purchaser's sole expense, issued by Title Company, in Grantee's favor in the full amount of the purchase price, insuring Purchaser's contracted interests in and to the Property subject only to those title exceptions listed herein, such other exceptions as may be approved in writing by Purchaser, and the standard printed exceptions contained in the usual form of Texas Owner's Title Policy, provided, however:

(a) The boundary and survey exceptions shall be deleted;

(b) The exception as to restrictive covenants shall be endorsed "None of Record", if applicable; and

(c) The exception as to the lien for taxes shall be limited to the year of Closing and shall be endorsed "Not Yet Due and Payable".

(d) Deliver to Purchaser possession of the Property if not previously done.

Purchaser's Obligations at Closing

5.03. At the Closing, Purchaser shall:

(a) Pay the cash portion of the Purchase Price.

Prorations

5.04. General real estate taxes for the then current year relating to the Property shall be prorated as of the Closing Date and shall be adjusted in cash at the closing. If the Closing shall occur before the tax rate is fixed for the then current year, the apportionment of taxes shall be upon the basis of the tax rate for the next preceding year applied to the latest assessed valuation. Agricultural roll-back taxes, if any, shall be paid by Purchaser.

Closing Costs

5.05. All costs and expenses of closing in consummating the sale and purchase of the Property shall be borne and paid as follows:

(1) Owner's Title Policy and survey to be paid by Purchaser.

(2) Deed, tax certificates, and title curative matters, if any, paid by Purchaser.

(3) All other closing costs shall be paid by Purchaser.

(4) Attorney's fees paid by each respectively.

ARTICLE VI
BREACH BY SELLER

In the event Seller shall fail to fully and timely perform any of its obligations hereunder or shall fail to consummate the sale of the Property for any reason, except Purchaser's default, Purchaser may: (1) enforce specific performance of this Contract; or (2) request that the Escrow Deposit, if any, shall be forthwith returned by the title company to Purchaser.

ARTICLE VII
BREACH BY PURCHASER

In the event Purchaser should fail to consummate the purchase of the Property, the conditions to Purchaser's obligations set forth in Article III having been satisfied and Purchaser being in default and Seller not being in default hereunder, Seller shall have the right to receive the Escrow Deposit, if any, from the title company, the sum being agreed on as liquidated damages for the failure of Purchaser to perform the duties, liabilities, and obligations imposed upon it by the terms and provisions of this Contract, and Seller agrees to accept and take this cash payment as its total damages and relief and as Seller's sole remedy hereunder in such event. If no Escrow Deposit has been made then Seller shall receive the amount of $500 as liquidated damages for any failure by Purchaser.

ARTICLE VIII
MISCELLANEOUS

Notice

8.01. Any notice required or permitted to be delivered hereunder shall be deemed received when sent by United States mail, postage prepaid, certified mail, return receipt requested, addressed to Seller or Purchaser, as the case may be, at the address set forth opposite the signature of the party.

Texas Law to Apply

8.02. This Contract shall be construed under and in accordance with the laws of the State of Texas, and all obligations of the parties created hereunder are performable in Williamson County, Texas.

Parties Bound

8.03. This Contract shall be binding upon and inure to the benefit of the parties and their respective heirs, executors, administrators, legal representatives, successors and assigns where permitted by this Contract.

Legal Construction

8.04. In case any one or more of the provisions contained in this Contract shall for any reason be held to be invalid, illegal, or unenforceable in any respect, this invalidity, illegality, or unenforceability shall not affect any other provision hereof, and this Contract shall be construed as if the invalid, illegal, or unenforceable provision had never been contained herein.

Prior Agreements Superseded

8.05. This Contract constitutes the sole and only agreement of the parties and supersedes any prior understandings or written or oral agreements between the parties respecting the within subject matter.

Time of Essence

8.06. Time is of the essence in this Contract.

Gender

8.07. Words of any gender used in this Contract shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, and vice versa, unless the context requires otherwise.

Memorandum of Contract

8.08. Upon request of either party, the parties shall promptly execute a memorandum of this Contract suitable for filing of record.

Compliance

8.09 In accordance with the requirements of Section 20 of the Texas Real Estate License Act, Purchaser is hereby advised that it should be furnished with or obtain a policy of title insurance or Purchaser should have the abstract covering the Property examined by an attorney of Purchaser's own selection.

Effective Date

8.10 This Contract shall be effective as of the date it is approved by Williamson County, Texas which date is indicated beneath the County Judge's signature below.

Counterparts

8.11 This Contract may be executed in any number of counterparts, which may together constitute the Contract. Signatures transmitted by facsimile or electronic mail may be considered effective as originals for purposes of this Contract.

SELLER:

Kevin Andrews
f/k/a Kevin W. Cruz

Address: 150 CR 305

Jarrell, TX 76537

Date: 8 Feb 17

PURCHASER:

WILLIAMSON COUNTY, TEXAS

By: _____
Dan A. Gattis
County Judge

Address: 710 Main Street, Suite 101
Georgetown, Texas 78626

Date: _____

EXHIBIT A

County: Williamson
Parcel: 4
Highway: County Road No. 305

PROPERTY DESCRIPTION FOR PARCEL 4

BEING A 0.114 OF ONE ACRE (4,956 SQUARE FEET) PARCEL OF LAND, SITUATED IN THE E. DAVIS SURVEY, ABSTRACT NO. 172, WILLIAMSON COUNTY, TEXAS, AND BEING A PORTION OF A CALLED 0.66 OF ONE ACRE TRACT OF LAND DESCRIBED IN A GENERAL WARRANTY DEED TO KEVIN W. CRUZ AND WIFE, BRIDGETT L. CRUZ, RECORDED IN DOCUMENT NO. 2013060752 OF THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS. SAID 0.114 OF ONE ACRE (4,956 SQUARE FEET) PARCEL BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a 1/2-inch iron rebar found (Surface Coordinates = N: 10,283,298.67, E: 3,155,365.21) for the Northwest corner of said 0.66 of one acre tract and an interior corner of a called 24.44 acre tract of land described in a Cash Warranty Deed to Dewey R. Blackman and wife, Dorothy H. Blackman, recorded in Document No. 9924499 of the Official Records of Williamson County, Texas, also being 265.25 feet left of and at a right angle to proposed Engineer's Centerline Station 97+09.30, from which a 1/2-inch iron rebar found for an exterior corner of said 24.44 acre tract and the Northeast corner of said 0.66 of one acre tract, also being in the West line of a called 2.512 acre tract of land described in a Warranty Deed to Cynthia Hoyt, recorded in Document No. 2009044130 of said Official Public Records, bears North 81°08'07" East a distance of 160.30 feet;

THENCE South 17°24'42" East along the East line of said 24.44 acre tract and the West line of said 0.66 of one acre tract, a distance of 205.58 feet to a 1/2-inch iron rebar with cap stamped "RPLS 5784" set for the **POINT OF BEGINNING** (Surface Coordinates = N: 10,283,102.50, E: 3,155,426.73) of the herein described tract, also being 60.00 feet left of and at a right angle to proposed Engineer's Centerline Station 96+97.67;

THENCE over and across said 0.66 of one acre tract, the following two (2) courses and distances:

1. **North 69°20'43" East** a distance of **2.33** feet to a 1/2-inch iron rebar with cap stamped "RPLS 5784" set; and

2. **North 53°12'15" East** a distance of **118.32** feet to a 1/2-inch iron rebar with cap stamped "RPLS 5784" set in the East line of said 0.66 of one acre tract and said West line of the 2.512 acre tract, from which a 1/2-inch iron rebar found for the Northeast corner of said 0.66 of one acre tract and an exterior corner of said 24.44 acre tract, also being in said West line of the 2.512 acre tract, bears North 00°01'28" West a distance of 149.17 feet;

THENCE **South 00°01'28" East** along said East line of the 0.66 of one acre tract and said West line of the 2.512 acre tract, a distance of **71.03** feet to a 1/2-inch iron rebar found for the Southeast corner of said 0.66 of one acre tract and the Southwest corner of said 2.512 acre tract, also being in the existing Northwesterly right-of-way line of County Road No. 305 (a variable width right-of-way), from which a 1/2-inch iron rebar found for the Southeast corner of said 2.512 acre tract and the Southwest corner of a called 7.60 acre tract of land described in a Cash Warranty Deed to Douglas C. Buethe and wife, Gail J. Buethe, recorded in Document No. 2001070396 of said Official Public Records, also being in said existing Northwesterly right-of-way line of County Road No. 305, bears North 68°03'19" East a distance of 157.92 feet;

THENCE **South 69°27'41" West** along the South line of said 0.66 of one acre tract and said existing Northwesterly right-of-way line of County Road No. 305, a distance of **92.85** feet to a 1/2-inch iron rebar found for the Southwest corner of said 0.66 of one acre tract and the Southeast corner of said 24.44 acre tract, from which a 1/2-inch iron rebar found for the Southwest corner of said 24.44 acre tract, being in said existing Northwesterly right-of-way line of County Road No. 305, bears South 70°11'37" West a distance of 668.30 feet;

THENCE **North 17°24'42" West** departing said existing Northwesterly right-of-way line of County Road No. 305, along the West line of said 0.66 of one acre tract and said East line of the 24.44 acre tract, a distance of **33.45** feet to the **POINT OF BEGINNING** and containing 0.114 of one acre (4,956 Square Feet) of land more or less.

This project is referenced for all bearing and coordinate basis to the Texas State Plane Coordinate System, North American Datum of 1983 (NAD83 – 2011 Adjustment), Central Zone (4203). All coordinates and distances shown hereon are surface values represented in U.S. Survey Feet based on a grid-to-surface combined adjustment factor of 1.00015.

This property description was prepared from an on-the-ground survey performed under my supervision and is accompanied by a separate plat of even date. The field work was completed on May 4, 2016.

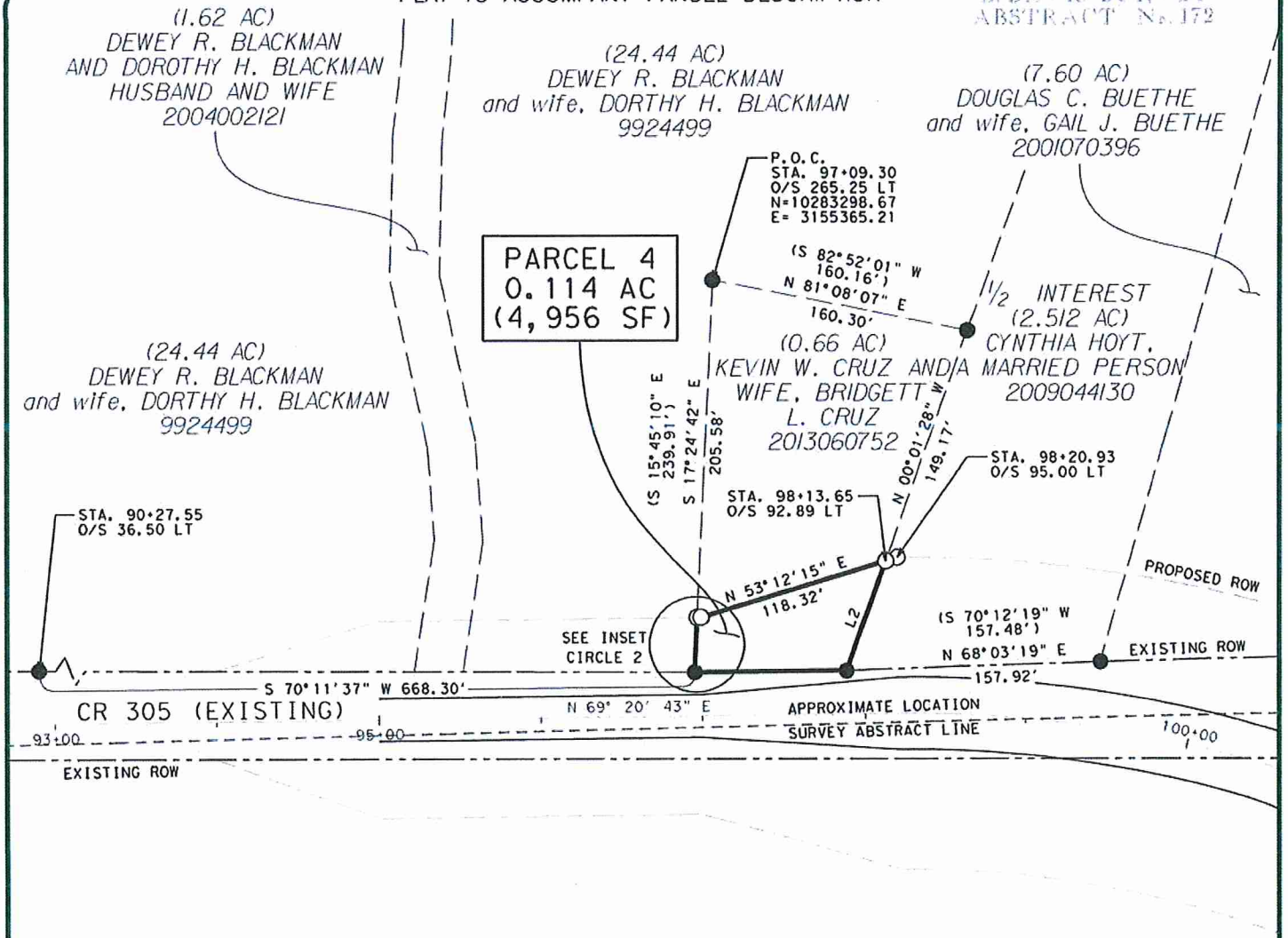


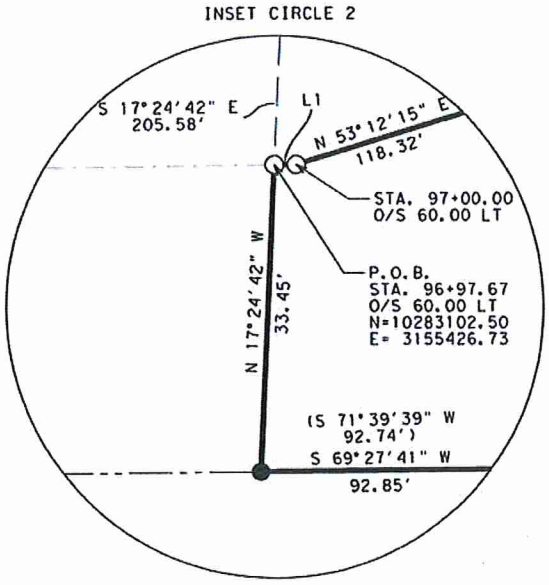
09/01/2016

Travis S. Tabor, RPLS No. 6428
Steger & Bizzell Engineering, Inc.
1978 South Austin Avenue
Georgetown, Texas 78626
(512) 930-9412
TBPLS Firm No. 10003700

PLAT TO ACCOMPANY PARCEL DESCRIPTION

E. DAVIS SURVEY
ABSTRACT No. 172





37.3 AC
MICHAEL SLADECEK, STEVEN SLADECEK,
JAMES SLADECEK, SUSAN SLADECEK VECERA,
ANTON C. SLADECEK, AND THE DONALD P.
SLADECEK MANAGEMENT TRUST
2014048478



R. LILE SURVEY
ABSTRACT No. 391

STEGER BIZZELL
1978 S. AUSTIN AVENUE | GEORGETOWN, TX 78626
512.930.9412 | STEGERBIZZELL.COM
>>ENGINEERS >>PLANNERS >>SURVEYORS

PARCEL PLAT SHOWING PROPERTY OF:

KEVIN W. CRUZ AND WIFE, BRIDGETT L. CRUZ

SCALE:	PARCEL:	PROJECT:	COUNTY:
1"=100'	4	CR 305	WILLIAMSON

WILLIAMSON COUNTY
1848

PLAT TO ACCOMPANY PARCEL DESCRIPTION

LEGEND

- ■ TXDOT TYPE I CONCRETE MONUMENT FOUND
- ⊡ TXDOT TYPE II MONUMENT FOUND
- ◉ 1/2" IRON PIPE FOUND UNLESS NOTED
- ○ 1/2" IRON REBAR SET W/ CAP STAMPED "RPLS 5784"
- ● 1/2" IRON REBAR FOUND UNLESS NOTED
- △ CALCULATED POINT
- ⊕ MAG NAIL FOUND UNLESS NOTED
- ℄ CENTER LINE
- ( ) RECORD INFORMATION
- P.O.C. POINT OF COMMENCING
- P.O.B. POINT OF BEGINNING
- —/\— LINE BREAK
- X FENCE CORNER

CODE	BEARING	DISTANCE
L1	N 69°20'43" E	2.33'
L2	S 00°01'28" E	71.03'

THIS PROJECT IS REFERENCED FOR ALL BEARING AND COORDINATE BASIS TO THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD83 – 2011 ADJUSTMENT), CENTRAL ZONE (4203).

ALL COORDINATES AND DISTANCES SHOWN HEREON ARE SURFACE VALUES REPRESENTED IN U.S. SURVEY FEET BASED ON A GRID-TO-SURFACE COMBINED ADJUSTMENT FACTOR OF 1.00015.

THIS TRACT SUBJECT TO THE FOLLOWING EASEMENTS THAT CANNOT BE PLOTTED DUE TO A VAGUE DESCRIPTION(S):
1. TEXAS POWER & LIGHT COMPANY, VOL. 297, PG. 606
2. TEXAS POWER & LIGHT COMPANY, VOL. 413, PG. 81
3. TEXAS POWER & LIGHT COMPANY, VOL. 1126, PG. 346

I HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECT TO THE BEST OF MY BELIEF AND WAS PREPARED FROM AN ON-THE-GROUND SURVEY PERFORMED UNDER MY SUPERVISION. THE FIELD WORK WAS COMPLETED ON MAY 4, 2016.

STATE OF TEXAS
REGISTERED
TRAVIS S. TABOR
6428
PROFESSIONAL
LAND SURVEYOR

09/01/2016

TRAVIS S. TABOR
REGISTERED PROFESSIONAL LAND SURVEYOR
STATE OF TEXAS – NO. 6428

STEGER BIZZELL
ADDRESS 1978 S. AUSTIN AVENUE GEORGETOWN, TX 78626
METRO 512.930.9412 WEB STEGERBIZZELL.COM
DIVISIONS >>ENGINEERS >>PLANNERS >>SURVEYORS

PARCEL PLAT SHOWING PROPERTY OF:
KEVIN W. CRUZ AND WIFE, BRIDGETT L. CRUZ

SCALE:	PARCEL:	PROJECT:	COUNTY:
1"=100'	4	CR 305	WILLIAMSON

WILLIAMSON COUNTY
1848

EXHIBIT "B"

Parcel 4

DEED
County Road 305 Right of Way

THE STATE OF TEXAS §
§
COUNTY OF WILLIAMSON §

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OF THE FOLLOWING INFORMATION FROM THIS INSTRUMEN BEFORE IT IS FILED FOR RECORD: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

That KEVIN ANDREWS f/k/a Kevin W. Cruz, a single person, hereinafter referred to as Grantor, whether one or more, for and in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration to Grantor in hand paid by Williamson County, Texas, the receipt and sufficiency of which is hereby acknowledged, and for which no lien is retained, either expressed or implied, have this day Sold and by these presents do Grant, Bargain, Sell and Convey unto WILLIAMSON COUNTY, TEXAS, all that certain tract or parcel of land lying and being situated in the County of Williamson, State of Texas, along with any improvements thereon, being more particularly described as follows:

> All of that certain 0.114 acre (4,956 Sq. Ft.) in the E. Davis Survey, Abstract No. 172, Williamson County; being more fully described by metes and bounds in Exhibit "A", attached hereto and incorporated herein (**Parcel 4**)

SAVE AND EXCEPT, HOWEVER, it is expressly understood and agreed that Grantor is retaining title to the following improvements located on the property described in said Exhibit "A" to wit: NONE

RESERVATIONS FROM AND EXCEPTIONS TO CONVEYANCE AND WARRANTY:

Visible and apparent easements not appearing of record;

Any discrepancies, conflicts, or shortages in area or boundary lines or any encroachments or any overlapping of improvements which a current survey would show;

Easements, restrictions, reservations, covenants, conditions, oil and gas leases, mineral severances, and encumbrances for taxes and assessments (other than liens and conveyances) presently of record in the Official Public Records of Williamson County, Texas, that affect the property, but only to the extent that said items are still valid and in force and effect at this time.

Grantor reserves all of the oil, gas and other minerals in and under the land herein conveyed but waives all rights of ingress and egress to the surface thereof for the purpose of exploring, developing, mining or drilling or pumping the same; provided, however, that operations for exploration or recovery of any such minerals shall be permissible so long as all surface operations in connection therewith are located at a point outside the acquired parcel and upon the condition that none of such operations shall be conducted so near the surface of said land as to interfere with the intended use thereof or in any way interfere with, jeopardize, or endanger the facilities of Williamson County, Texas or create a hazard to the public users thereof; it being intended, however, that nothing in this reservation shall affect the title and the rights of Grantee to take and use without additional compensation any, stone, earth, gravel, caliche, iron ore, gravel or any other road building material upon, in and under said land for the construction and maintenance of CR 305, but shall not be used or exported from the Property for any other purpose.

TO HAVE AND TO HOLD the property herein described and herein conveyed together with all and singular the rights and appurtenances thereto in any wise belonging unto Williamson County, Texas and its assigns forever; and Grantor does hereby bind itself, its heirs, executors, administrators, successors and assigns to Warrant and Forever Defend all and singular the said premises herein conveyed unto Williamson County, Texas and its assigns against every person whomsoever lawfully claiming or to claim the same or any part thereof.

This deed is being delivered in lieu of condemnation.

IN WITNESS WHEREOF, this instrument is executed on this the 8th day of February, 2017.

GRANTOR:

Kevin Andrews
f/k/a Kevin W. Cruz

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF WILLIAMSON §

This instrument was acknowledged before me on this the 8th day of February, 2017 by Kevin Andrews f/k/a Kevin W. Cruz, in the capacity and for the purposes and consideration recited therein.

Notary Public, State of Texas

MICHELLE WHITE
Notary Public, State of Texas
Comm. Expires 12-27 2019
Notary ID 128835858

PREPARED IN THE OFFICE OF:

Sheets & Crossfield, P.C.
309 East Main
Round Rock, Texas 78664

GRANTEE'S MAILING ADDRESS:

Williamson County, Texas
Attn: County Judge
710 Main Street, Suite 101
Georgetown, Texas 78626

AFTER RECORDING RETURN TO:

Commissioners Court - Regular Session **20.**

Meeting Date: 02/14/2017

Forest North Letter Agreement

Submitted For: Charlie Crossfield **Submitted By:** Charlie Crossfield, Road Bond

Department: Road Bond

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on a Letter Agreement with Robert & Melissa Tyrone for a drainage easement needed on the Forest North Drainage Improvements project. (9306 Meadowheath Dr)

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Tyrone Agreement

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/09/2017 11:06 AM
Form Started By: Charlie Crossfield		Started On: 02/09/2017 10:07 AM
Final Approval Date: 02/09/2017		

Sheets & Crossfield, P.C.

ATTORNEYS AT LAW

309 East Main Street • Round Rock, TX 78664-5246

Phone 512-255-8877 • fax 512-255-8986

January 12, 2017

UPDATED JANUARY 13, 2017

Robert & Melissa Tyrone
9008 Bancroft Trail
Austin, TX 78729

RE: Williamson County – Forest North Drainage Improvements
Drainage Easement and Temporary Construction Easement at 9306 Meadowheath Drive

Dear Mr. and Mrs. Tyrone:

I am again writing on behalf of Williamson County, Texas regarding the Forest North Drainage Improvement Project. I am glad that we have been able to reach an agreement for the acquisition of the enclosed easements on your property at 9306 Meadowheath Drive (the "Easements"). Please allow this letter to set out our agreement for the County's purchase of the Easements.

In return for granting the Easements, the County will pay you the total sum of $2,400.00.

As we discussed, the enclosed easements reflect the most recent plan you discussed with the County, which allows for all of your trees to remain on the property.

If this meets with your understanding, please execute this letter where indicated and return it to me. Please also execute the Easements with a notarized signature and return them to me.

In order to process your payment, the County also needs a completed W-9 tax form. Please complete the enclosed W-9 and return it to me.

Upon receipt of this letter and the Easements signed by you, we will have the letter executed by the County Judge and processed for payment as quickly as possible. I will return a copy of the fully executed letter to you. The Easements will not be recorded until I have delivered the payment to you.

Please feel free to contact me at any time if you have any questions or concerns. It has been a pleasure working with you to resolve these issues.

Sincerely,

Brian J. Knowles

AGREED:

By:_____
Robert Tyrone

Date: JAN. 17, 2017

By:_____
Melissa Tyrone

Date: 1/17/17

WILLIAMSON COUNTY, TEXAS

By:_____
Dan A. Gattis, County Judge

Enclosures

DRAINAGE EASEMENT
Forest North Estates

THE STATE OF TEXAS ∋
∋ KNOW ALL BY THESE PRESENTS:
COUNTY OF WILLIAMSON ∋

That ROBERT C. TYRONE AND MELISSA J. TYRONE, and their successors and assigns, hereinafter referred to as Grantor (whether one or more), for and in consideration of the sum of Ten and No/100 ($10.00) Dollars cash in hand paid and other good and valuable consideration paid to Grantor by WILLIAMSON COUNTY, TEXAS, its agents and assigns, hereinafter referred to as Grantee, receipt of which consideration is hereby acknowledged, has GRANTED, SOLD and CONVEYED, and by these premises does hereby GRANT, SELL and CONVEY unto Grantee a perpetual easement interest in, on, over, upon, above and across the following property ("Property"):

> All of that certain 0.016 acre (716 square foot), tract of land situated in the Elisha Allen Survey, Williamson County, Texas, being a portion of Lot 273, of Forest North Estates Phase Two, a subdivision according to the plat thereof recorded in Cabinet B, Slide 278-281 of the Plat Records of Williamson County, Texas, and being conveyed to Robert C. Tyrone and Melissa J. Tyrone by instrument recorded in Document No. 9660897 of the Official Records of Williamson County, Texas, said 0.016 acre (716 square foot) tract of land being more particularly described by metes and bounds in Exhibit "A" attached hereto and incorporated herein.

The perpetual easement, rights and privileges herein granted shall be used for the purposes of opening, constructing and maintaining a permanent drainage way and/or channel, along with any structures, pipes and grading which may be necessary to facilitate the proper drainage of the adjacent property and roadway facilities, in, along, upon and across said premises described in Exhibit "A", generally in accordance with the notes, details, specifications or other requirements or restrictions as shown on the plan sheets attached as Exhibit "B" and incorporated herein, together with the right and privilege at all times of the Grantee herein, its agents, employees and representatives of ingress and egress to and from said premises for the purpose of making any improvements, modifications or repairs which Grantee deems necessary.

The perpetual easement, right-of-way, rights and privileges herein granted shall also encompass the right of Grantee to trim, cut, fell and remove therefrom all trees, underbrush, vegetation, and obstructions, structures or obstacles within the limits of the Property, but only such as necessary to carry out the purposes of the easement; reserving to the landowners and their heirs and assigns, however, all such rights and privileges as may be used without interfering with or abridging the rights and purposes of the Easement herein acquired by Grantee.

To the extent allowed by law, Grantee shall indemnify Grantor against any loss and damage which shall be caused by the exercise of the rights of ingress and egress or by any wrongful or

TO HAVE AND TO HOLD the same, in perpetuity, in and to Grantee, and its successors and assigns, together with all and singular all usual and customary rights thereto in anywise belonging, and together with the right and privilege at any and all times to enter said premises, or any part thereof, for the purpose of constructing or maintaining said drainage way and for making connections therewith.

And Grantor does hereby bind his heirs, executors, administrators and assigns to WARRANT AND FOREVER DEFEND, all and singular, the said premises unto Williamson County, Texas, its successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof.

This grant is subject to any easements, restrictions, reservations, covenants, conditions, oil and gas leases, mineral severances, and encumbrances for taxes and assessments (other than liens and conveyances) presently of record in the Official Public Records of Williamson County, Texas, that affect the Property, but only to the extent that said items are still valid and in force and effect at this time. The perpetual easement, right-of-way, rights and privileges granted herein are non-exclusive, however Grantor covenants not to convey any other easement or conflicting rights within the premises covered by this grant that interfere with the purpose or function of any improvements or modifications placed thereon, or the maintenance of the surface of the Property for the conveyance of stormwater drainage, without the express written consent of Grantee, which consent shall not be unreasonably withheld.

EXECUTED on this the 17 day of JAN., 2017.

GRANTORS:

Robert C. Tyrone

Melissa J. Tyrone

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF Williamson §

This instrument was acknowledged before me on this the 17 day of JAN, 2017 by Robert C. Tyrone, in the capacity and for the purposes and consideration recited therein.

Notary Public, State of Texas

BRIAN A GLAUSER
Notary ID # 126464547
My Commission Expires
March 28, 2020

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF Williamson §

This instrument was acknowledged before me on this the 17 day of Jun, 2017 by Melissa J. Tyrone, in the capacity and for the purposes and consideration recited therein.

Notary Public, State of Texas

BRIAN A GLAUSER
Notary ID # 126464547
My Commission Expires
March 28, 2020

After recording return to:
Sheets & Crossfield, P.C.
309 E. Main St.
Round Rock, Texas 78664

County: Williamson
Parcel: Robert & Melissa Tyrone
Project: Forest North Drainage

EXHIBIT A

PROPERTY DESCRIPTION

DESCRIPTION OF A 0.016 ACRE (716 SQUARE FOOT), TRACT OF LAND SITUATED IN THE ELISHA ALLEN SURVEY, WILLIAMSON COUNTY, TEXAS, BEING A PORTION OF LOT 273, OF FOREST NORTH ESTATES PHASE TWO, A SUBDIVISION ACCORDING TO THE PLAT THEREOF RECORDED IN CABINET B, SLIDE 278-281 OF THE PLAT RECORDS OF WILLIAMSON COUNTY, TEXAS, AND BEING CONVEYED TO ROBERT C. TYRONE AND MELISSA J. TYRONE BY INSTRUMENT RECORDED IN DOCUMENT NO. 9660897 THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS, SAID 0.016 ACRE (716 SQUARE FOOT) TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING at a 1/2" iron rod found, being in the curving northerly right-of-way line of Meadowheath Drive (60' right-of-way width) being the southeasterly corner of Lot 272 of said Forest North Estates, same being the southwesterly corner of said Lot 273, for the southwesterly corner of the herein described tract;

1) THENCE, departing said northerly right-of-way line, with the easterly boundary line of said Lot 272, same being the westerly boundary line of said Lot 273, N 25°26'18" W, for a distance of 143.67 feet to a calculated point, being the southerly line of a 70' Drainage Easement per Forest North Estates subdivision, for the northwesterly corner of the herein described tract and from which a 1/2" iron rod found in said right-of-way bears along said curve to the left having a delta angle of 02°27'52", a radius of 970.00 feet, an arc length of 41.72 feet and a chord which bears S 59°26'35" W, at a distance of 41.72 feet;

THENCE, departing the easterly boundary line of said Lot 272, with in part said existing southerly 70' easement line, through the interior of said Lot 273, the following two (2) courses:

1) N 67°57'39" E, for a distance of 5.00 feet to a calculated point, for the northeasterly corner of the herein described tract;

2) S 25°26'18" E for a distance of 143.05 feet to a calculated point, being in said northerly right-of-way line, same being the southerly boundary line of said Lot 273, for the southeasterly corner of the herein described tract;

3) THENCE, with said northery right-of-way line, same being the southerly boundary line of said Lot 273, along said curve to the left having a delta angle of 00°17'45", a radius of 970.00 feet, an arc length of 5.01 feet and a chord which bears S 60°49'24" W for a distance of 5.01 feet the POINT OF BEGINNING, containing 0.016 acres, (716 square feet) of land, more or less.

NOTE: Proposed 10' T.C.E. coincident and easterly of call 3. This description is accompanied by a 0.033 acre (1,425 sq. ft.)

This property description is accompanied by a separate parcel plat.

All bearings recited herein are based on the Texas State Plane Coordinate System, Central Zone No. 4203, NAD 83.

THE STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF WILLIAMSON §

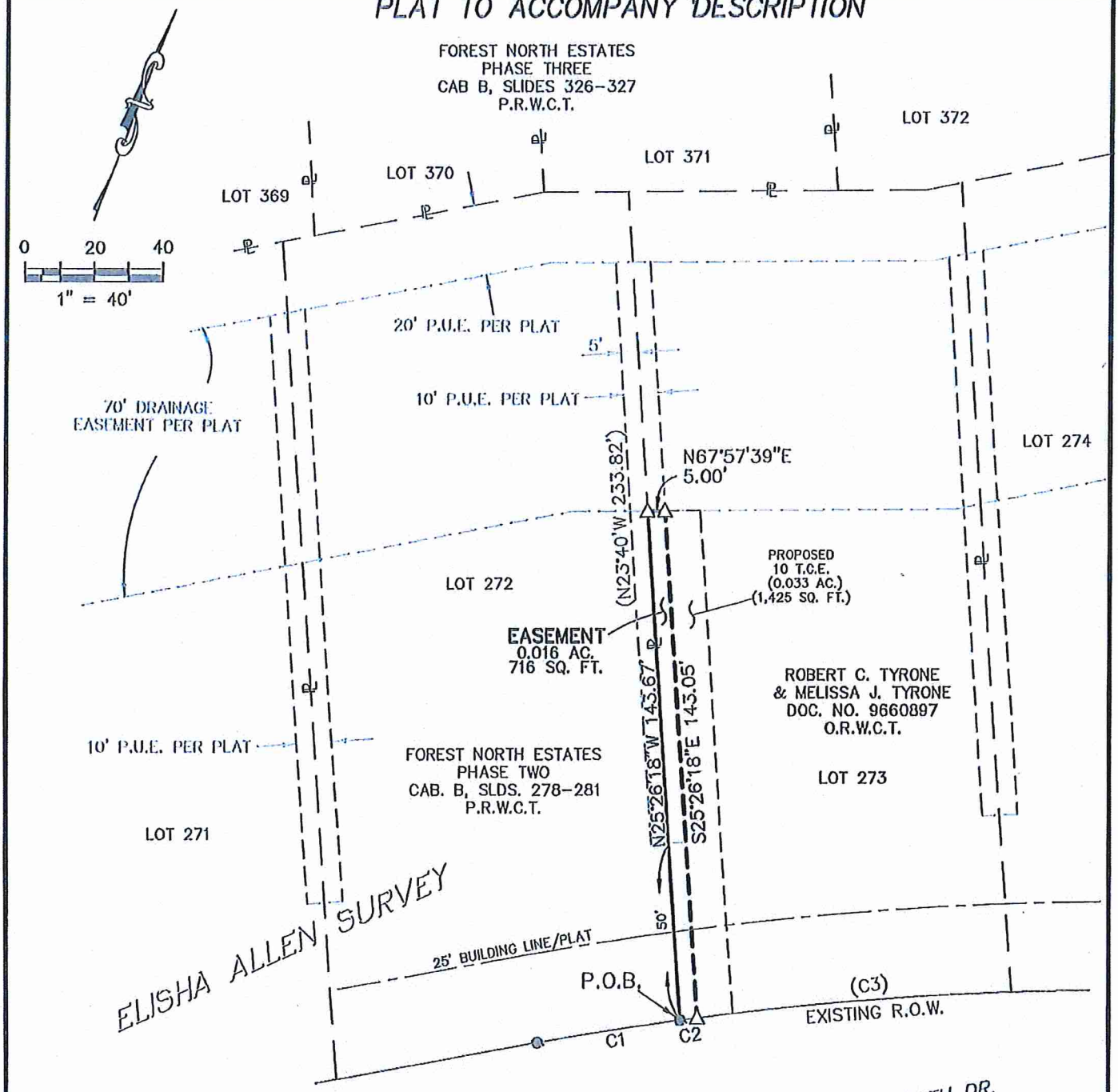
That I, Lawrence M. Russo, a Registered Professional Land Surveyor, do hereby certify that the above description is true and correct and that the property described herein was determined by a survey made on the ground under my direct supervision.

WITNESS MY HAND AND SEAL at Round Rock, Williamson County, Texas.

Lawrence M. Russo 11/05/2015
Lawrence M. Russo Date
Registered Professional Land Surveyor No. 5050
Inland Geodetics, LLC
Firm Registration No: 100591-00
1504 Chisholm Trail Road, Suite 103
Round Rock, TX 78681
S:/_KFRIESE/FOREST NORTH DRAINAGE/PARCELS/LOT 273/EASEMENT -TYRONE

STATE OF TEXAS
REGISTERED
LAWRENCE M. RUSSO
5050
PROFESSIONAL
LAND SURVEYOR

EXHIBIT A
PLAT TO ACCOMPANY DESCRIPTION



NUMBER	DELTA	RADIUS	LENGTH	CHORD LENGTH	CHORD DIRECTION
C1	02°27'52"	970.00'	41.72'	41.72'	S59°26'35"W
C2	00°17'45"	970.00'	5.01'	5.01'	S60°49'24"W
(C3)		(970.00')	(96.04')	(96.00')	(N65°17'E)

INLAND GEODETICS
PROFESSIONAL LAND SURVEYORS
1504 CHISHOLM TRAIL RD. STE. 103
ROUND ROCK, TX. 78681
PH. (512) 238-1200, FAX (512) 238-1251
FIRM REGISTRATION NO. 100591-00

ROBERT C. TYRONE
& MELISSA J. TYRONE
EASEMENT
0.016 ACRES
716 SQUARE FEET

EXHIBIT A
PLAT TO ACCOMPANY DESCRIPTION

LEGEND

o	IRON ROD SET W/ ALUMINUM CAP STAMPED "COG-ROW"	O.R.W.C.T.	OFFICIAL RECORDS WILLIAMSON COUNTY, TEXAS
⊙	1/2" IRON PIPE FOUND	O.P.R.W.C.T.	OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS
◎	IRON ROD WITH CAP FOUND	P.U.E.	PUBLIC UTILITY EASEMENT
●	1/2" IRON ROD FOUND UNLESS NOTED	( )	RECORD INFORMATION
△	CALCULATED POINT	Ⓦ	WATER VALVE
ℙ	PROPERTY LINE	Ⓖ	GAS METER
D.R.W.C.T.	DEED RECORDS WILLIAMSON COUNTY, TEXAS		POWER POLE
P.R.W.C.T.	PLAT RECORDS WILLIAMSON COUNTY, TEXAS	—OE—	OVERHEAD UTILITY
			DENOTES COMMON OWNERSHIP

1) ALL BEARINGS SHOWN HEREON ARE BASED ON GRID BEARING. ALL DISTANCES ARE SURFACE DISTANCES. COORDINATES ARE SURFACE VALUES BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD 83, CENTRAL ZONE.

2) THIS SURVEY WAS PERFORMED WITHOUT BENEFIT OF A TITLE ABSTRACT. THERE MAY BE OTHER INSTRUMENTS OF RECORD THAT AFFECT THIS TRACT NOT DEPICTED HEREON.

I HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECT AND THAT THE PROPERTY SHOWN HEREON WAS DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY DIRECT SUPERVISION.

Lawrence M. Russo 11/05/2015

LAWRENCE M. RUSSO / DATE
REGISTERED PROFESSIONAL LAND SURVEYOR NO. 5050
INLAND GEODETICS, LLC
FIRM REGISTRATION NO. 100591-00
1504 CHISHOLM TRAIL ROAD, SUITE 103
ROUND ROCK, TEXAS 78681

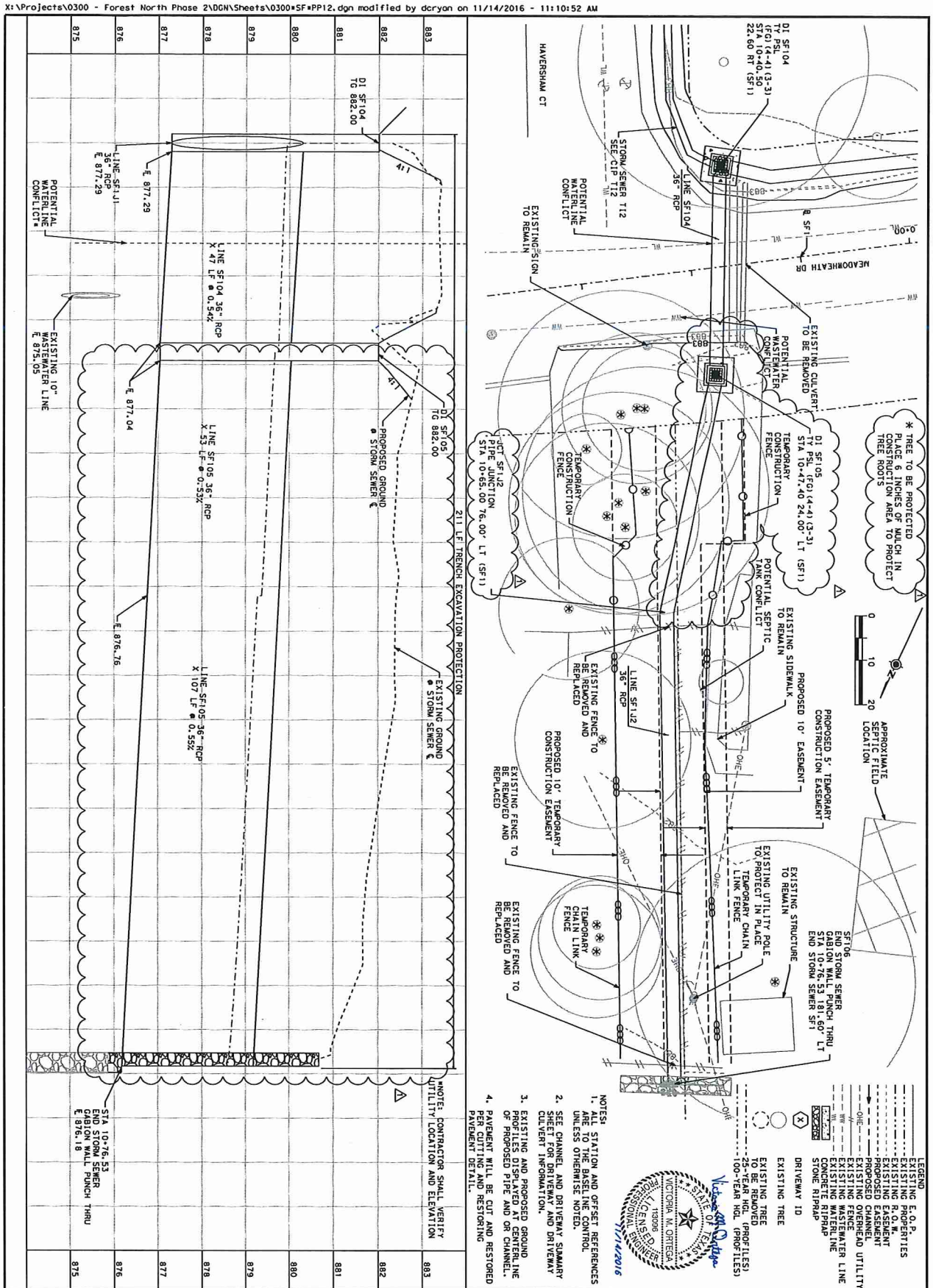
STATE OF TEXAS
REGISTERED
LAWRENCE M. RUSSO
5050
PROFESSIONAL
LAND SURVEYOR

INLAND GEODETICS
PROFESSIONAL LAND SURVEYORS
1504 CHISHOLM TRAIL RD. STE. 103
ROUND ROCK, TX. 78681
PH. (512) 238-1200, FAX (512) 238-1251
FIRM REGISTRATION NO. 100591-00

ROBERT C. TYRONE
& MELISSA J. TYRONE
EASEMENT
0.016 ACRES
716 SQUARE FEET

EXHIBIT B

X:\Projects\0300 - Forest North Phase 2\DGN\Sheets\0300*SF*PP12.dgn modified by dcryan on 11/14/2016 - 11:10:52 AM



REV. NO.	BY	DATE	REVISION DESCRIPTION
1	VO	11/14/16	REVISE INLET SF105

K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HWY, II-100, AUSTIN, TX 78746

WILLIAMSON COUNTY
FOREST NORTH DRAINAGE IMPROVEMENTS

STILLFOREST ZONE CIP SF1
STORM SEWER SF1- STA 10+40.50 TO END

K-FRIESE + ASSOCIATES
Professional Project Delivery
1120 S. Capital of Texas Highway
Building II, Suite 100
Austin, Texas 78746
TBPE Firm #8330 - TBPLS Firm #10030
512.328.1774
www.kfriese.com

WILLIAMSON COUNTY 1848

SCALE	1" = 20'
DATE	6/30/2016
SHEET NO.	SF16 OF SF22

SHEET 84 OF 167

TEMPORARY CONSTRUCTION EASEMENT

Forest North Drainage Improvement Project

THE STATE OF TEXAS §
§ **KNOW ALL BY THESE PRESENTS:**
COUNTY OF WILLIAMSON §

That ROBERT C. TYRONE AND MELISSA J. TYRONE, and their successors and assigns (hereinafter referred to as "Grantor"), for and in consideration of the sum of One and No/100 Dollars ($1.00) and other good and valuable consideration paid by WILLIAMSON COUNTY, TEXAS (hereinafter referred to as "Grantee"), the receipt and sufficiency of which is hereby acknowledged, does hereby GRANT, SELL and CONVEY unto Grantee a Temporary Construction Easement, in, upon, over, under, above and across the following described Property of Grantor, to-wit:

> See Exhibit "A" note, describing a proposed T.C.E. being a 1,425 square foot tract of land situated in the Elisha Allen Survey, Williamson County, Texas, being a portion of Lot 273, of Forest North Estates Phase Two, a subdivision according to the plat thereof recorded in Cabinet B, Slide 278-281 of the plat records of Williamson County, Texas, and being conveyed to Robert C. Tyrone and Melissa J. Tyrone by instrument recorded in Document No. 9660897 of the Official Records of Williamson County, Texas, attached hereto and made a part hereof for all intents and purposes.

Such temporary construction easement shall be for the purpose of allowing Grantee, or its agents, to construct, install, maintain, inspect, reconstruct, rebuild, repair, abandon in place, and remove drainage lines and associated facilities, appurtenances and grading on adjacent property within permanent easement areas or right of way held or owned by Grantee, and generally in accordance with the notes, details, specifications or other requirements or restrictions as shown on the plan sheets attached as Exhibit "B" and incorporated herein. This conveyance is made and accepted subject to any and all conditions and restrictions, if any, relating to the hereinabove described property, to the extent, and only to the extent, that the same may still be in force and effect, shown of record in the office of the County Clerk of Williamson County, Texas.

Grantee shall have the right and privilege at any and all times to enter said premises, or any part thereof, for the purpose of construction, maintenance, abandonment and/or removal of drainage line and related improvements and grading in the adjacent permanent easement or right of way areas, and for making connections therewith; all upon the condition that upon completion of construction of the improvements and connections referenced herein, Grantee shall repair and restore the surface of said premises and improvements as nearly as is reasonably possible to the condition which the Property was in before the work was undertaken given the uses of the Property, including repair or replacement of any fencing, landscaping, ornamental trees, driveway, walkway, irrigation, or other vegetative material.

At no time during the grant of this easement shall Grantor be denied reasonable driveway ingress and egress to its property for the purposes to which the parent tract is currently being put, unless there is an agreement between Grantor and Grantee in advance.

This Temporary Construction Easement shall expire upon the earlier of (1) twelve (12) months after the date the Grantee, its agents or assigns first take possession of the property for the purposes identified herein, or (2) December 31, 2017.

Grantee hereby covenants and agrees:

(a) To the extent allowed by law, Grantee shall indemnify Grantor against any loss and damage which shall be caused by the exercise of the rights of ingress and egress or by any wrongful or negligent act or omission of Grantee's agents or employees in the course of their employment.

(b) Grantor also retains, reserves, and shall continue to enjoy the surface of such Temporary Construction Easement for any and all purposes which do not interfere with and prevent the use by Grantee of the Temporary Construction Easement.

TO HAVE AND TO HOLD the rights and interests described unto Grantee and its successors and assigns, forever, and Grantor does hereby bind itself, its successors and assigns, and legal representatives, to warrant and forever defend, all and singular, the above-described Temporary Construction Easement and rights and interests unto Grantee, its successors and assigns, against every person whomsoever lawfully claiming, or to claim same, or any part thereof.

IN WITNESS WHEREOF, Grantor has caused this instrument to be executed this 17 day of JAN., 2017.

(signatures on following page)

GRANTORS:

Robert C. Tyrone

Melissa J. Tyrone

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF WILLIAMSON §

This instrument was acknowledged before me on this the 17 day of January, 2017 by Robert C. Tyrone, in the capacity and for the purposes and consideration recited therein.

Notary Public, State of Texas

BRIAN A GLAUSER
Notary ID # 126464547
My Commission Expires
March 28, 2020

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF WILLIAMSON §

This instrument was acknowledged before me on this the 17 day of January, 2017 by Melissa J. Tyrone, in the capacity and for the purposes and consideration recited therein.

Notary Public, State of Texas

BRIAN A GLAUSER
Notary ID # 126464547
My Commission Expires
March 28, 2020

After recording return to:
Sheets & Crossfield, P.C.
309 E. Main St.
Round Rock, Texas 78664

County: Williamson
Parcel: Robert & Melissa Tyrone
Project: Forest North Drainage

EXHIBIT A

PROPERTY DESCRIPTION

DESCRIPTION OF A 0.016 ACRE (716 SQUARE FOOT), TRACT OF LAND SITUATED IN THE ELISHA ALLEN SURVEY, WILLIAMSON COUNTY, TEXAS, BEING A PORTION OF LOT 273, OF FOREST NORTH ESTATES PHASE TWO, A SUBDIVISION ACCORDING TO THE PLAT THEREOF RECORDED IN CABINET B, SLIDE 278-281 OF THE PLAT RECORDS OF WILLIAMSON COUNTY, TEXAS, AND BEING CONVEYED TO ROBERT C. TYRONE AND MELISSA J. TYRONE BY INSTRUMENT RECORDED IN DOCUMENT NO. 9660897 THE OFFICIAL RECORDS OF WILLIAMSON COUNTY, TEXAS, SAID 0.016 ACRE (716 SQUARE FOOT) TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING at a 1/2" iron rod found, being in the curving northerly right-of-way line of Meadowheath Drive (60' right-of-way width) being the southeasterly corner of Lot 272 of said Forest North Estates, same being the southwesterly corner of said Lot 273, for the southwesterly corner of the herein described tract;

1) THENCE, departing said northerly right-of-way line, with the easterly boundary line of said Lot 272, same being the westerly boundary line of said Lot 273, N 25°26'18" W, for a distance of 143.67 feet to a calculated point, being the southerly line of a 70' Drainage Easement per Forest North Estates subdivision, for the northwesterly corner of the herein described tract and from which a 1/2" iron rod found in said right-of-way bears along said curve to the left having a delta angle of 02°27'52", a radius of 970.00 feet, an arc length of 41.72 feet and a chord which bears S 59°26'35" W, at a distance of 41.72 feet;

THENCE, departing the easterly boundary line of said Lot 272, with in part said existing southerly 70' easement line, through the interior of said Lot 273, the following two (2) courses:

1) N 67°57'39" E, for a distance of 5.00 feet to a calculated point, for the northeasterly corner of the herein described tract;

2) S 25°26'18" E for a distance of 143.05 feet to a calculated point, being in said northerly right-of-way line, same being the southerly boundary line of said Lot 273, for the southeasterly corner of the herein described tract;

3) THENCE, with said northery right-of-way line, same being the southerly boundary line of said Lot 273, along said curve to the left having a delta angle of 00°17'45", a radius of 970.00 feet, an arc length of 5.01 feet and a chord which bears S 60°49'24" W for a distance of 5.01 feet the POINT OF BEGINNING, containing 0.016 acres, (716 square feet) of land, more or less.

NOTE: Proposed 10' T.C.E. coincident and easterly of call 3. This description is accompanied by a 0.033 acre (1,425 sq. ft.)

This property description is accompanied by a separate parcel plat.

All bearings recited herein are based on the Texas State Plane Coordinate System, Central Zone No. 4203, NAD 83.

THE STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF WILLIAMSON §

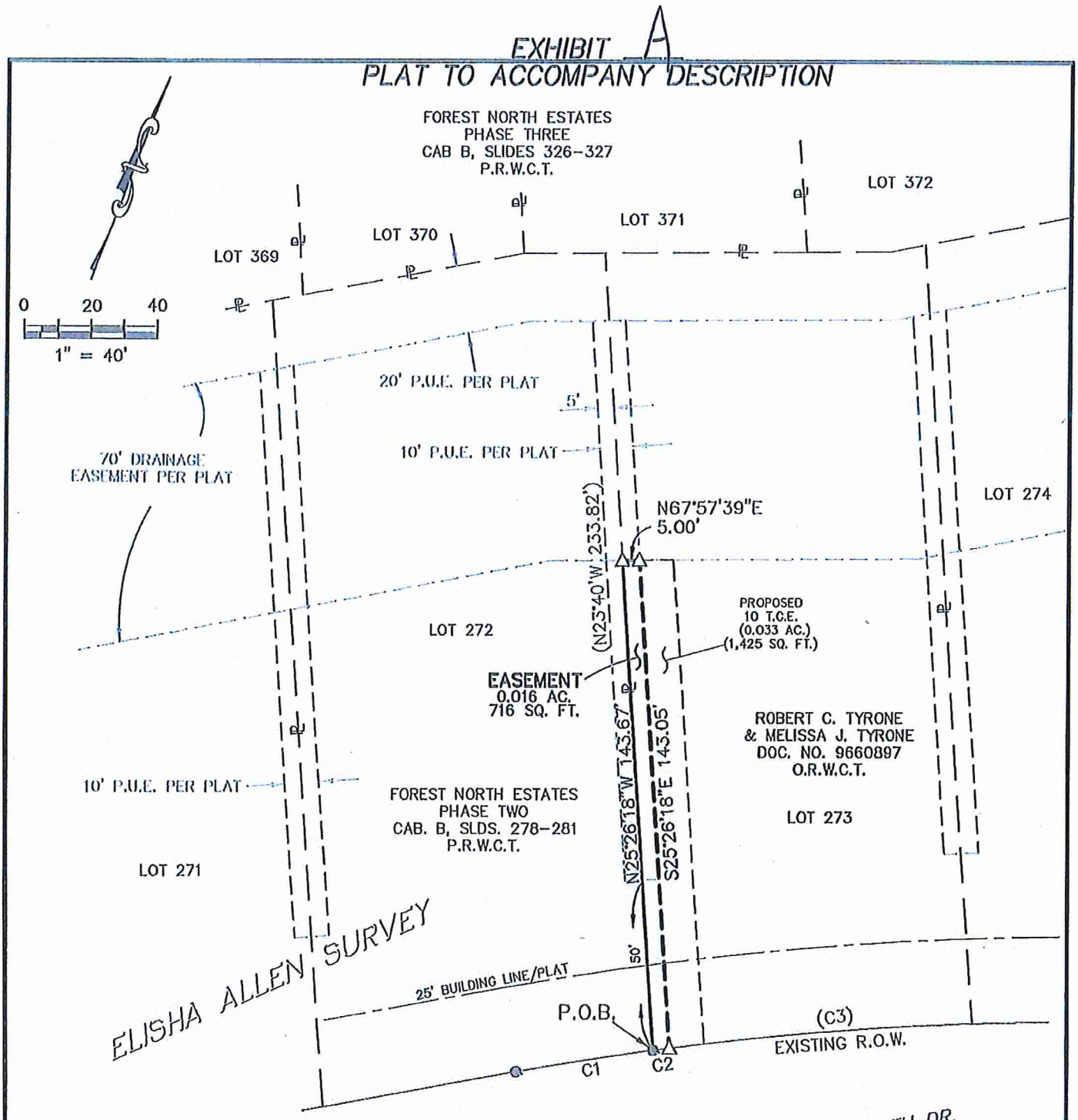
That I, Lawrence M. Russo, a Registered Professional Land Surveyor, do hereby certify that the above description is true and correct and that the property described herein was determined by a survey made on the ground under my direct supervision.

WITNESS MY HAND AND SEAL at Round Rock, Williamson County, Texas.

Lawrence M. Russo 11/05/2015
Lawrence M. Russo Date
Registered Professional Land Surveyor No. 5050
Inland Geodetics, LLC
Firm Registration No: 100591-00
1504 Chisholm Trail Road, Suite 103
Round Rock, TX 78681
S:/_KFRIESE/FOREST NORTH DRAINAGE/PARCELS/LOT 273/EASEMENT -TYRONE

STATE OF TEXAS
REGISTERED
LAWRENCE M. RUSSO
5050
PROFESSIONAL
LAND SURVEYOR

EXHIBIT A
PLAT TO ACCOMPANY DESCRIPTION



NUMBER	DELTA	RADIUS	LENGTH	CHORD LENGTH	CHORD DIRECTION
C1	02°27'52"	970.00'	41.72'	41.72'	S59°26'35"W
C2	00°17'45"	970.00'	5.01'	5.01'	S60°49'24"W
(C3)		(970.00')	(96.04')	(96.00')	(N65°17'E)

INLAND GEODETICS
PROFESSIONAL LAND SURVEYORS
1504 CHISHOLM TRAIL RD, STE. 103
ROUND ROCK, TX, 78681
PH. (512) 238-1200, FAX (512) 238-1251
FIRM REGISTRATION NO. 100591-00

ROBERT C. TYRONE
& MELISSA J. TYRONE
EASEMENT
0.016 ACRES
716 SQUARE FEET

EXHIBIT A
PLAT TO ACCOMPANY DESCRIPTION

LEGEND

o	IRON ROD SET W/ ALUMINUM CAP STAMPED "COG-ROW"	O.R.W.C.T.	OFFICIAL RECORDS WILLIAMSON COUNTY, TEXAS
⊙	1/2" IRON PIPE FOUND	O.P.R.W.C.T.	OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS
◎	IRON ROD WITH CAP FOUND	P.U.E.	PUBLIC UTILITY EASEMENT
●	1/2" IRON ROD FOUND UNLESS NOTED	( )	RECORD INFORMATION
△	CALCULATED POINT	Ⓦ	WATER VALVE
℄	PROPERTY LINE	Ⓖ	GAS METER
D.R.W.C.T.	DEED RECORDS WILLIAMSON COUNTY, TEXAS	⚲	POWER POLE
P.R.W.C.T.	PLAT RECORDS WILLIAMSON COUNTY, TEXAS	—OE—	OVERHEAD UTILITY
		/	DENOTES COMMON OWNERSHIP

1) ALL BEARINGS SHOWN HEREON ARE BASED ON GRID BEARING. ALL DISTANCES ARE SURFACE DISTANCES. COORDINATES ARE SURFACE VALUES BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD 83, CENTRAL ZONE.

2) THIS SURVEY WAS PERFORMED WITHOUT BENEFIT OF A TITLE ABSTRACT. THERE MAY BE OTHER INSTRUMENTS OF RECORD THAT AFFECT THIS TRACT NOT DEPICTED HEREON.

I HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECT AND THAT THE PROPERTY SHOWN HEREON WAS DETERMINED BY A SURVEY MADE ON THE GROUND UNDER MY DIRECT SUPERVISION.

Lawrence M. Russo 11/05/2015

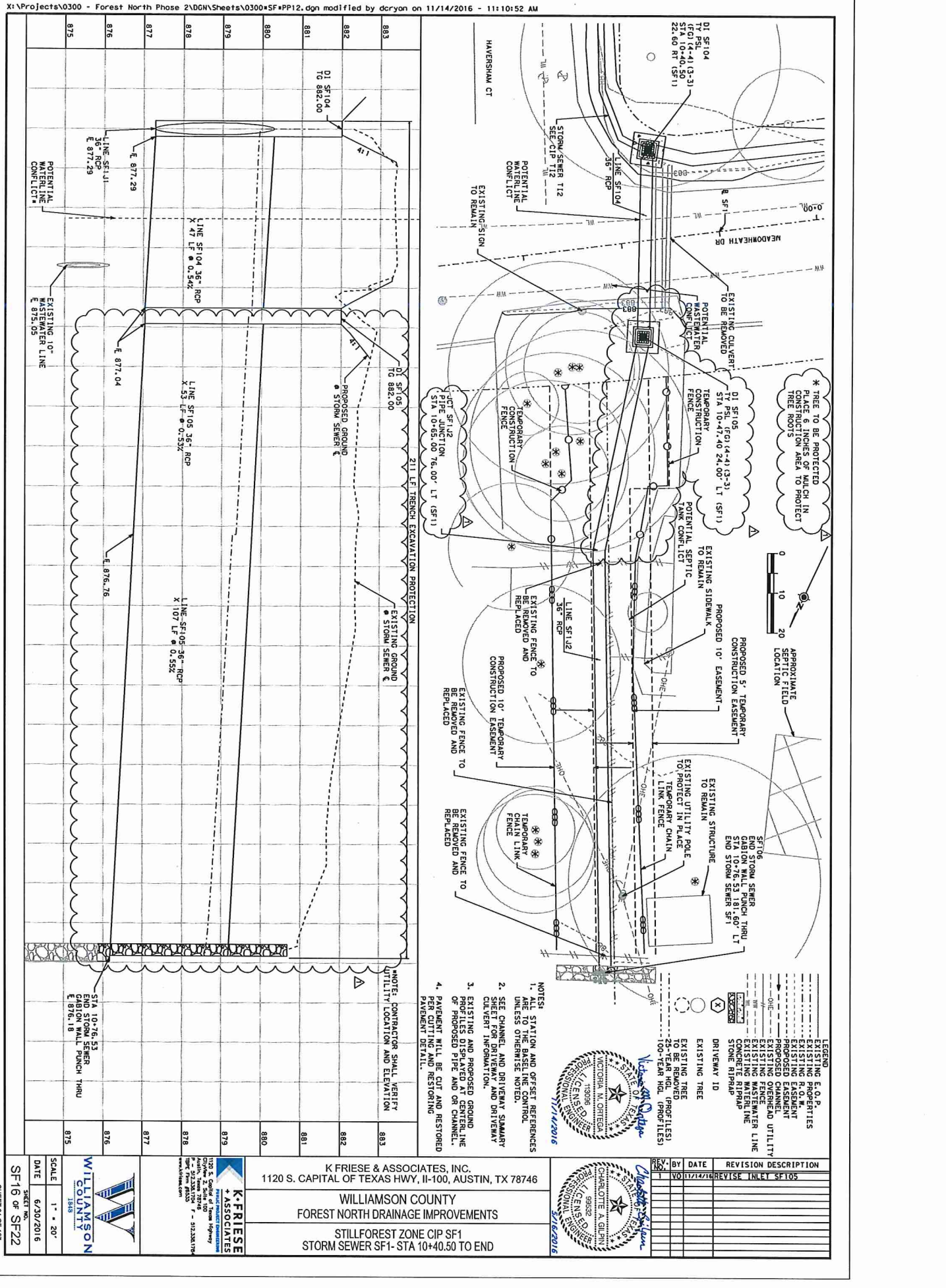
LAWRENCE M. RUSSO / DATE
REGISTERED PROFESSIONAL LAND SURVEYOR NO. 5050
INLAND GEODETICS, LLC
FIRM REGISTRATION NO. 100591-00
1504 CHISHOLM TRAIL ROAD, SUITE 103
ROUND ROCK, TEXAS 78681

STATE OF TEXAS
REGISTERED
LAWRENCE M. RUSSO
5050
PROFESSIONAL
LAND SURVEYOR

INLAND GEODETICS
PROFESSIONAL LAND SURVEYORS
1504 CHISHOLM TRAIL RD. STE. 103
ROUND ROCK, TX. 78681
PH. (512) 238-1200, FAX (512) 238-1251
FIRM REGISTRATION NO. 100591-00

ROBERT C. TYRONE
& MELISSA J. TYRONE
EASEMENT
0.016 ACRES
716 SQUARE FEET

EXHIBIT B


X:\Projects\0300 - Forest North Phase 2\DGN\Sheets\0300*SF*PP12.dgn modified by dcryan on 11/14/2016 - 11:10:52 AM
HAVERSHAM CT
NEADOWHEATH DR
DI SF104 TY PSL (FG) (4-4) (3-3) STA 10+40.50 22.60 RT (SF1)
DI SF104 TG 882.00
LINE SF104 36" RCP
STORM SEWER T12 SEE CIP T12
POTENTIAL WATERLINE CONFLICT
EXISTING 10" WASTEWATER TO REMAIN
EXISTING CULVERT TO BE REMOVED
POTENTIAL WASTEWATER CONFLICT
DI SF105 TY PSL (FG) (4-4) (3-3) STA 10+47.40 24.00' LT (SF1)
* TREE TO BE PROTECTED PLACE 6 INCHES OF MULCH IN CONSTRUCTION AREA TO PROTECT TREE ROOTS
TEMPORARY CONSTRUCTION FENCE
JCT SF1J2 PIPE JUNCTION STA 10+65.00 76.00' LT (SF1)
POTENTIAL SEPTIC TANK CONFLICT
EXISTING SIDEWALK TO REMAIN
PROPOSED 10' EASEMENT
PROPOSED 5' TEMPORARY CONSTRUCTION EASEMENT
APPROXIMATE SEPTIC FIELD LOCATION
LINE SF1J2 36" RCP
EXISTING FENCE TO BE REMOVED AND REPLACED
PROPOSED 10' TEMPORARY CONSTRUCTION EASEMENT
EXISTING STRUCTURE TO REMAIN
EXISTING UTILITY POLE TO PROTECT IN PLACE
TEMPORARY CHAIN LINK FENCE
SF106 END STORM SEWER GABION WALL PUNCH THRU STA 10+76.53 181.60' LT END STORM SEWER SF1
LEGEND
EXISTING E.O.P.
EXISTING PROPERTIES
EXISTING R.O.W.
EXISTING EASEMENT
PROPOSED EASEMENT
EXISTING OVERHEAD UTILITY
EXISTING FENCE
EXISTING WASTEWATER LINE
EXISTING WATERLINE
STONE RIPRAP
DRIVEWAY ID
EXISTING TREE
EXISTING TREE TO BE REMOVED
25-YEAR HGL (PROFILES)
100-YEAR HGL (PROFILES)
NOTES:
1. ALL STATION AND OFFSET REFERENCES ARE TO THE BASELINE CONTROL UNLESS OTHERMISE NOTED.
2. SEE CHANNEL AND DRIVEWAY SUMMARY SHEET FOR DRIVEWAY AND DRIVEWAY CULVERT INFORMATION.
3. EXISTING AND PROPOSED GROUND PROFILES DISPLAYED ALONG PROPOSED PIPE AND OR CHANNEL.
4. PAVEMENT WILL BE CUT AND RESTORED PER CUTTING AND RESTORING PAVEMENT DETAIL.
LINE SF1J1 36" RCP E 877.29
E 877.29
LINE SF104 36" RCP X 47 LF @ 0.54%
E 877.04
PROPOSED GROUND @ STORM SEWER E
DI SF105 TG 882.00
211 LF TRENCH EXCAVATION PROTECTION
EXISTING GROUND @ STORM SEWER E
LINE SF105 36" RCP X 53 LF @ 0.53%
LINE SF105 36" RCP X 107 LF @ 0.55%
E 876.76
EXISTING 10" WASTEWATER LINE E 875.05
POTENTIAL WATERLINE CONFLICT*
*NOTE: CONTRACTOR SHALL VERIFY UTILITY LOCATION AND ELEVATION
STA 10+76.53 END STORM SEWER GABION WALL PUNCH THRU E 876.18
Victoria M. Cotton 110036 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS 11/14/2016
Charlotte A. Gilpin 99532 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS 11/16/2016
REV. NO. 1 BY VO DATE 11/14/16 REVISION DESCRIPTION REVISE INLET SF105
K FRIESE & ASSOCIATES, INC.
1120 S. CAPITAL OF TEXAS HWY, II-100, AUSTIN, TX 76746
WILLIAMSON COUNTY
FOREST NORTH DRAINAGE IMPROVEMENTS
STILLFOREST ZONE CIP SF1
STORM SEWER SF1- STA 10+40.50 TO END
K-FRIESE + ASSOCIATES
WILLIAMSON COUNTY 1848
SCALE 1" = 20'
DATE 6/30/2016
SHEET NO. SF16 OF SF22
SHEET 84 OF 167

Commissioners Court - Regular Session **21.**

Meeting Date: 02/14/2017

Wilson Contract

Submitted For: Charlie Crossfield **Submitted By:** Charlie Crossfield, Road Bond

Department: Road Bond

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on a Real Estate Contract with Wilson Family Communities, Inc and Green Builders, Inc regarding 8 tracts of land to be granted to Williamson County and the Williamson County Conservation Foundation.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Wilson Contract

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/09/2017 11:06 AM
Form Started By: Charlie Crossfield		Started On: 02/09/2017 10:12 AM
Final Approval Date: 02/09/2017		

REAL ESTATE CONTRACT

THIS REAL ESTATE CONTRACT ("Contract") is made by WILSON FAMILY COMMUNITIES, INC. and GREEN BUILDERS, INC. (referred to in this Contract collectively as "Grantor") and WILLIAMSON COUNTY, TEXAS and the WILLIAMSON COUNTY CONSERVATION FOUNDATION (referred to collectively in this Contract as "Grantees"), upon the terms and conditions set forth in this Contract.

ARTICLE I
PURCHASE AND SALE

By this Contract, Grantor agrees to convey, and Grantees accept, the tract(s) of land described as follows:

> All of that certain eight (8) tracts tract of land in Williamson County, being more particularly described in Exhibits "A-H" attached hereto and incorporated herein (the "Property", whether one tract or more);

together with all and singular the rights and appurtenances pertaining to the property, including any right, title and interest of Grantor in and to adjacent streets, alleys or rights-of-way (all of such real property, rights, and appurtenances being referred to in this Contract as the "Property"), and any improvements situated on and attached to the Property described in Exhibit "A" not otherwise agreed herein to be retained by Grantor, for the consideration and upon and subject to the terms, provisions, and conditions set forth below.

ARTICLE II
CONVEYANCE

2.01. Grantor agrees to dedicate the Property to Grantees, free and clear of all liens and encumbrances, for the consideration as stated herein.

ARTICLE III
GRANTEES'S OBLIGATIONS

Conditions to Grantees's Obligations

3.01. The obligations of Grantees hereunder to consummate the transactions contemplated hereby are subject to the satisfaction of each of the following conditions (any of which may be waived in whole or in part by Grantees at or prior to the Closing).

3.02. Grantor shall have performed, observed, and complied with all of the covenants, agreements, and conditions required by this Contract to be performed, observed, and complied with by Grantor prior to or as of the closing.

ARTICLE IV
REPRESENTATIONS AND WARRANTIES OF GRANTOR

Grantor hereby represents and warrants to Grantees as follows, which representations and warranties shall be deemed made by Grantor to Grantees also as of the Closing Date, to the best of Grantor's current actual knowledge:

(1) There are no parties in possession of any portion of the Property as lessees, tenants at sufferance, or trespassers, other than as previously disclosed to Grantees;

(2) Grantor has complied with all applicable laws, ordinances, regulations, statutes, rules and restrictions relating to the Property, or any part thereof;

ARTICLE V
CLOSING

Closing Date

5.01. The Closing shall be held at the office of Georgetown Title, Round Rock office, on or before February 17, 2017, or at such time, date, and place as Grantor and Grantees may agree upon, or within 10 days after the completion of any title curative matters if necessary for items as shown on the Title Commitment or in the contract (which date is herein referred to as the "Closing Date").

Grantor's Obligations at Closing

5.02. At the Closing Grantor shall:

(1) Deliver to Grantees a duly executed and acknowledged Warranty Deed conveying good and indefeasible title in fee simple to all of the Property described in Exhibits "A-F", free and clear of any and all liens and restrictions, except for the following:

(a) General real estate taxes for the year of closing and subsequent years not yet due and payable;

(b) Any exceptions approved by Grantees pursuant to Article III hereof;

(c) Any exceptions approved by Grantees in writing.

(2) Deliver to Grantees a Texas Owner's Title Policy at Grantee's sole expense, issued by Title Company, in Grantee's favor in an amount agreed to prior to Closing by Grantees, insuring Grantee's contracted interests in and to the Property subject only to those title exceptions listed herein, such other exceptions as may be approved in writing by Grantees, and the standard printed exceptions contained in the usual form of Texas Owner's Title Policy, provided, however:

(a) The boundary and survey exceptions shall be deleted;

(b) The exception as to restrictive covenants shall be endorsed "None of Record", if applicable; and

(c) Deliver to Grantees possession of the Property if not previously done.

Grantee's Obligations at Closing

Prorations

5.04. General real estate taxes for the then current year relating to the Property shall be prorated as of the Closing Date and shall be adjusted in cash at the closing. If the Closing shall occur before the tax rate is fixed for the then current year, the apportionment of taxes shall be upon the basis of the tax rate for the next preceding year applied to the latest assessed valuation. Agricultural roll-back taxes, if any, shall be paid by Grantees.

Closing Costs

5.05. All costs and expenses of closing in consummating the sale and purchase of the Property shall be borne and paid as follows:

(1) Owner's Title Policy and survey to be paid by Grantees.

(2) Deed, tax certificates, and title curative matters, if any, paid by Grantees.

(3) All other closing costs shall be paid by Grantees.

(4) Attorney's fees paid by each respectively.

ARTICLE VI
BREACH BY GRANTOR

In the event Grantor shall fail to fully and timely perform any of its obligations hereunder or shall fail to consummate the conveyance of the Property for any reason, except Grantee's default, Grantees reserves all rights in law and equity to enforce specific performance of the Contract.

ARTICLE VII
BREACH BY GRANTEES

In the event Grantees shall fail to fully and timely perform any of its obligations hereunder or shall fail to consummate the conveyance of the Property for any reason, except Owner's default, Grantees agree to reimburse Owner the sum of $1,000 for its reasonable cost incurred as a result of the breach this Contract.

ARTICLE VIII
MISCELLANEOUS

Notice

8.01. Any notice required or permitted to be delivered hereunder shall be deemed received when sent by United States mail, postage prepaid, certified mail, return receipt requested, addressed to Grantor or Grantees, as the case may be, at the address set forth opposite the signature of the party.

Texas Law to Apply

8.02. This Contract shall be construed under and in accordance with the laws of the State of Texas, and all obligations of the parties created hereunder are performable in Williamson County, Texas.

Parties Bound

8.03. This Contract shall be binding upon and inure to the benefit of the parties and their respective heirs, executors, administrators, legal representatives, successors and assigns where permitted by this Contract.

Legal Construction

8.04. In case any one or more of the provisions contained in this Contract shall for any reason be held to be invalid, illegal, or unenforceable in any respect, this invalidity, illegality, or unenforceability shall not affect any other provision hereof, and this Contract shall be construed as if the invalid, illegal, or unenforceable provision had never been contained herein.

Prior Agreements Superseded

8.05. This Contract constitutes the sole and only agreement of the parties and supersedes any prior understandings or written or oral agreements between the parties respecting the within subject matter.

Time of Essence

8.06. Time is of the essence in this Contract.

Gender

8.07. Words of any gender used in this Contract shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, and vice versa, unless the context requires otherwise.

Memorandum of Contract

8.08. Upon request of either party, the parties shall promptly execute a memorandum of this Contract suitable for filing of record.

Compliance

8.09 In accordance with the requirements of Section 20 of the Texas Real Estate License Act, Grantees is hereby advised that it should be furnished with or obtain a policy of title insurance or Grantees should have the abstract covering the Property examined by an attorney of Grantee's own selection.

Effective Date

8.10 This Contract shall be effective as of the date it is executed below.

Counterparts

8.11 This Contract may be executed in any number of counterparts, which may together constitute the Contract. Signatures transmitted by facsimile or electronic mail may be considered effective as originals for purposes of this Contract.

Participation Agreement

8.12 As consideration for the conveyances as stated herein, Grantee Williamson County Conservation Foundation will, at a future date, enter into one or more Habitat Conservation Plan

Participation Agreements ("Participation Agreement") with Grantor wherein Grantor will be given the opportunity to participate in the Williamson County Regional Habitat Conservation Plan. Grantor will receive a credit for a total sum of Three Hundred and Ninety-five Thousand and no/100 Dollars ($395,000) as the Grantor's fee for participation in said Plans.

[signature pages follow]

GRANTOR:

WILSON FAMILY COMMUNITIES, INC.
By:_____
Its: SECRETARY

Address:
WILSON FAMILY COMMUNITIES, INC
c/o Green Builders, Inc.
3613 Williams Drive, Suite 206
Georgetown, Texas 78664
Date: 1/25/17

GREEN BUILDERS, INC.
By:_____
Its: SECRETARY

Address:
Green Builders, Inc.
3613 Williams Drive, Suite 206
Georgetown, Texas 78664
Date: 1/25/17

GRANTEES:

WILLIAMSON COUNTY

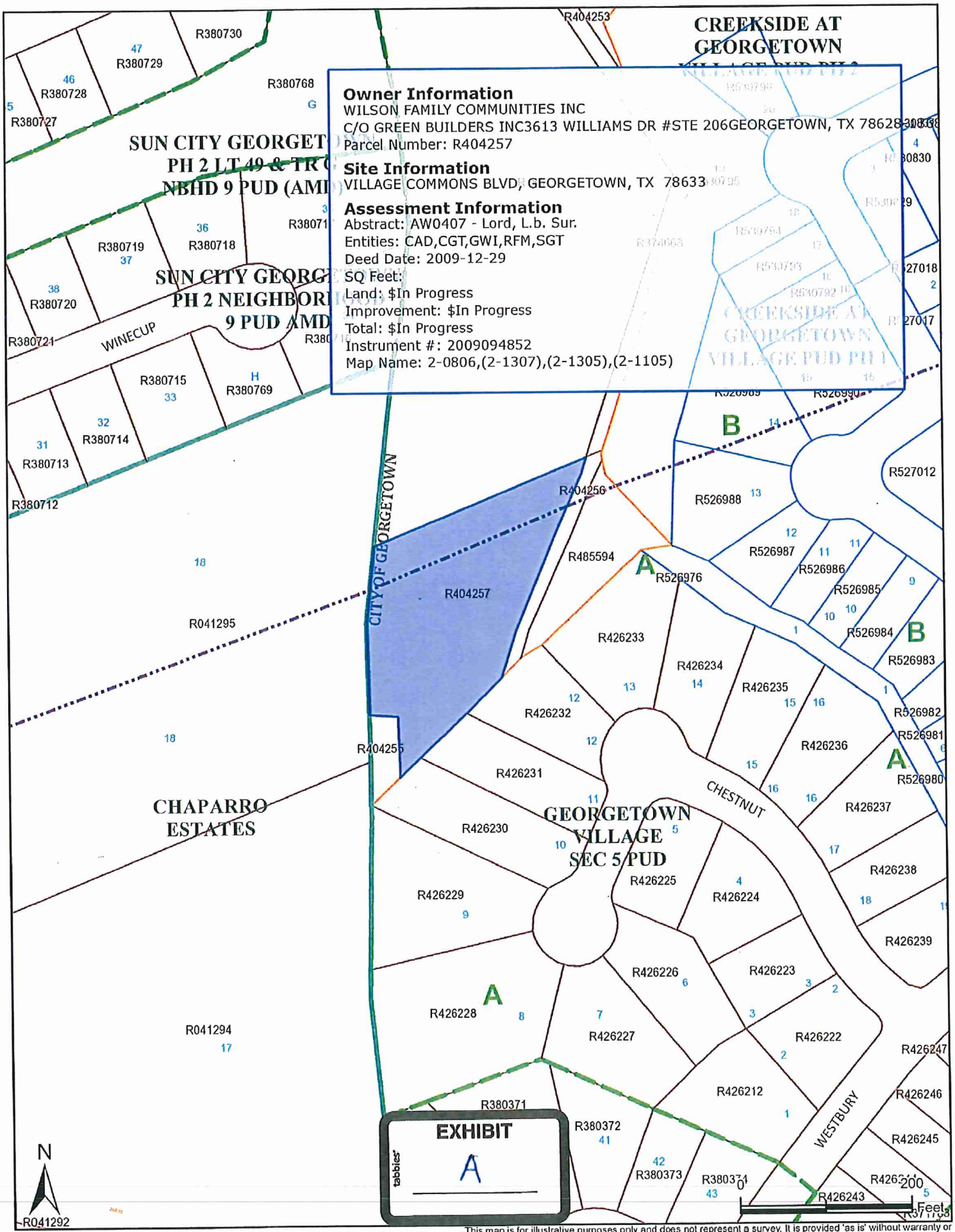
_____
Dan A. Gattis, County Judge

Address:
Williamson County
c/o County Judge
710 Main St., Suite 101
Georgetown, Texas 78628
Date:_____

WILLIAMSON COUNTY CONSERVATION FOUNDATION, INC.

_____
Valerie Covey, President

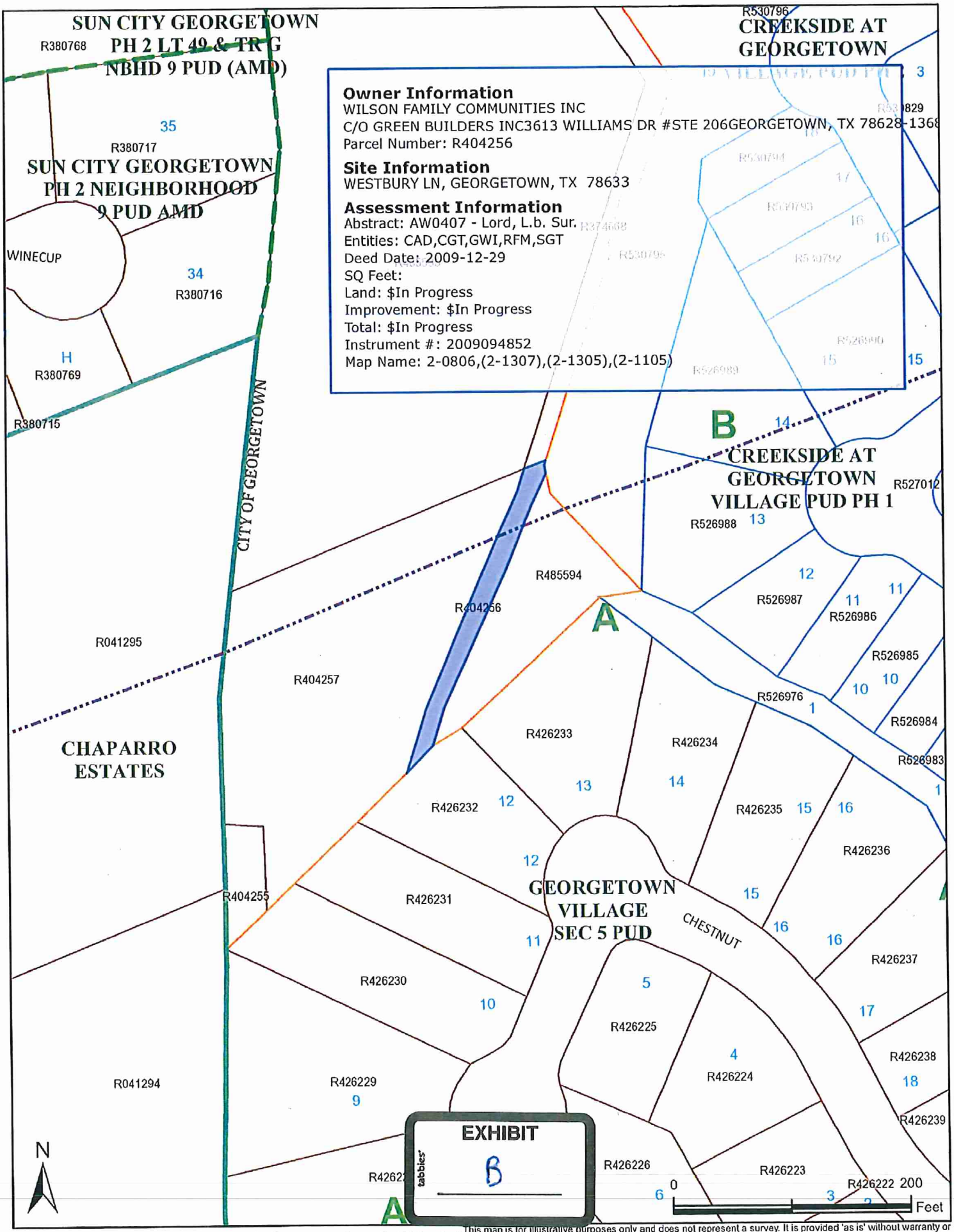
Address:
Williamson County
c/o County Judge
710 Main St., Suite 101
Georgetown, Texas 78628
Date:_____



Williamson Central Appraisal District

Date Printed: January 19, 2017

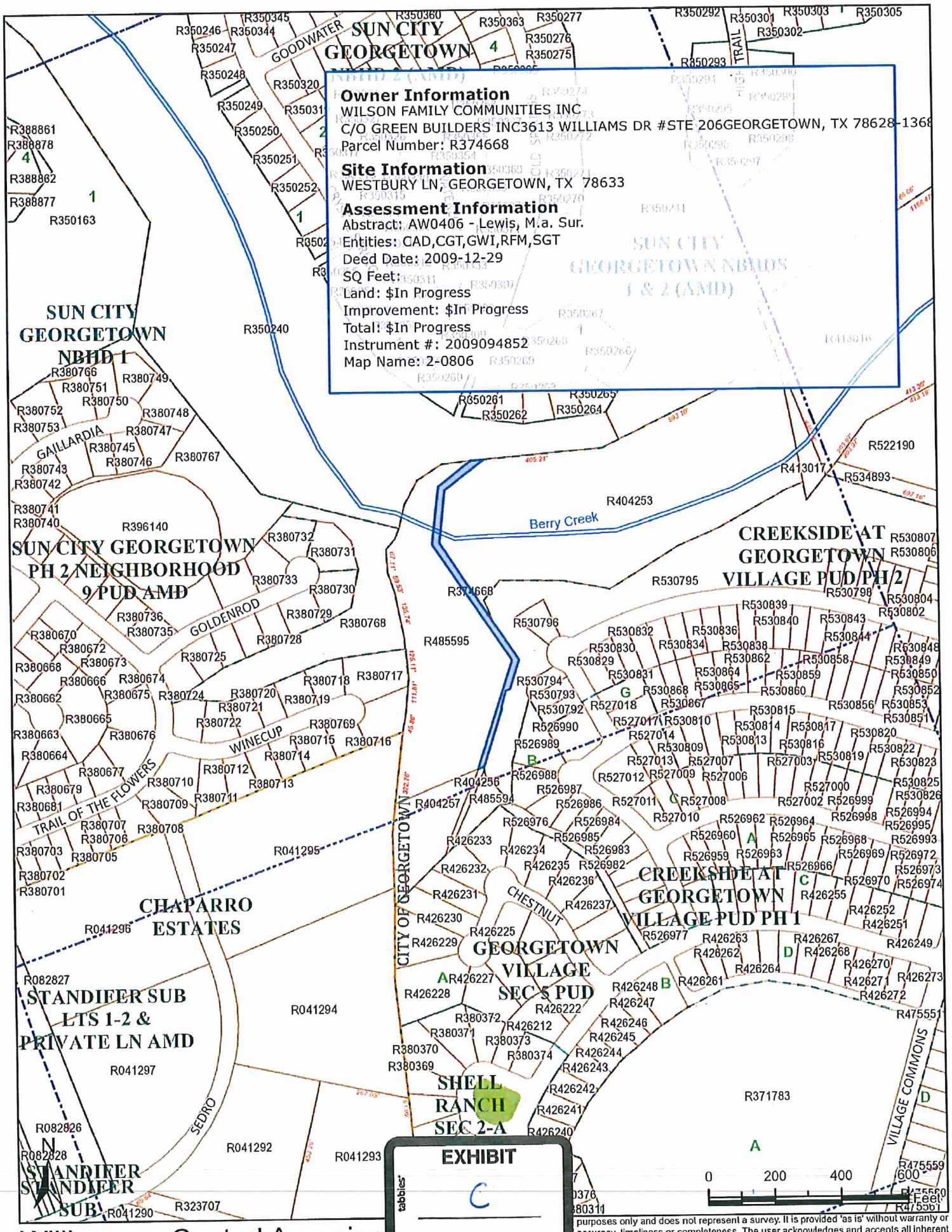
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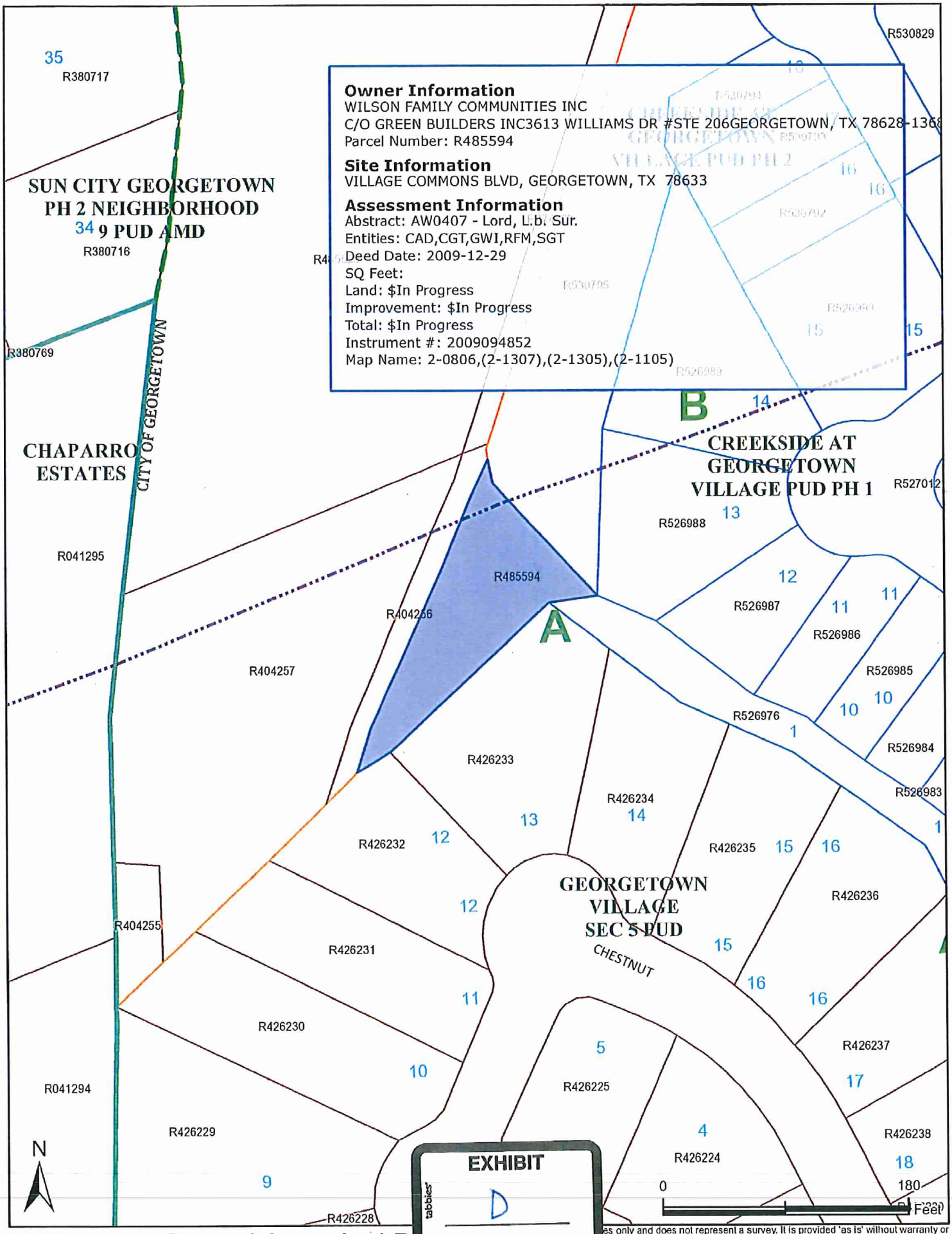


Williamson Central Appraisal District

Date Printed: January 19, 2017

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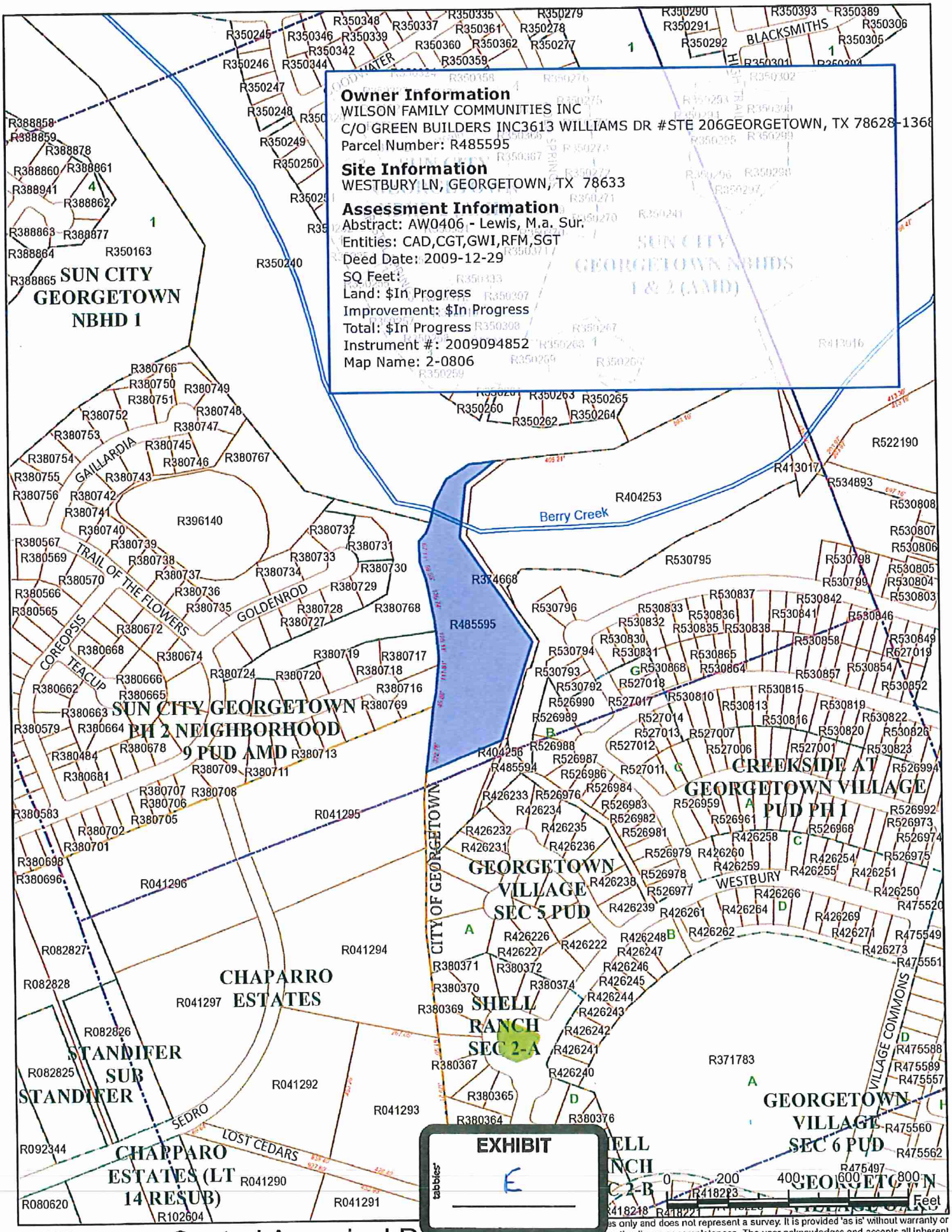

Owner Information
WILSON FAMILY COMMUNITIES INC
C/O GREEN BUILDERS INC3613 WILLIAMS DR #STE 206GEORGETOWN, TX 78628-1368
Parcel Number: R374668
Site Information
WESTBURY LN, GEORGETOWN, TX 78633
Assessment Information
Abstract: AW0406 - Lewis, M.a. Sur.
Entities: CAD,CGT,GWI,RFM,SGT
Deed Date: 2009-12-29
SQ Feet:
Land: $In Progress
Improvement: $In Progress
Total: $In Progress
Instrument #: 2009094852
Map Name: 2-0806
SUN CITY GEORGETOWN NBHD 1
SUN CITY GEORGETOWN PH 2 NEIGHBORHOOD 9 PUD AMD
CREEKSIDE AT GEORGETOWN VILLAGE PUD PH 2
CREEKSIDE AT GEORGETOWN VILLAGE PUD PH 1
GEORGETOWN VILLAGE SEC 5 PUD
CHAPARRO ESTATES
STANDIFER SUB LTS 1-2 & PRIVATE LN AMD
SHELL RANCH SEC 2-A
Berry Creek
GOODWATER
GOLDENROD
WINECUP
TRAIL OF THE FLOWERS
GAILLARDIA
CHESTNUT
SEDRO
VILLAGE COMMONS
CITY OF GEORGETOWN
EXHIBIT
C
0 200 400 Feet
Williamson Central Appraisal
Date Printed: January 19, 2017



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Date Printed: January 19, 2017

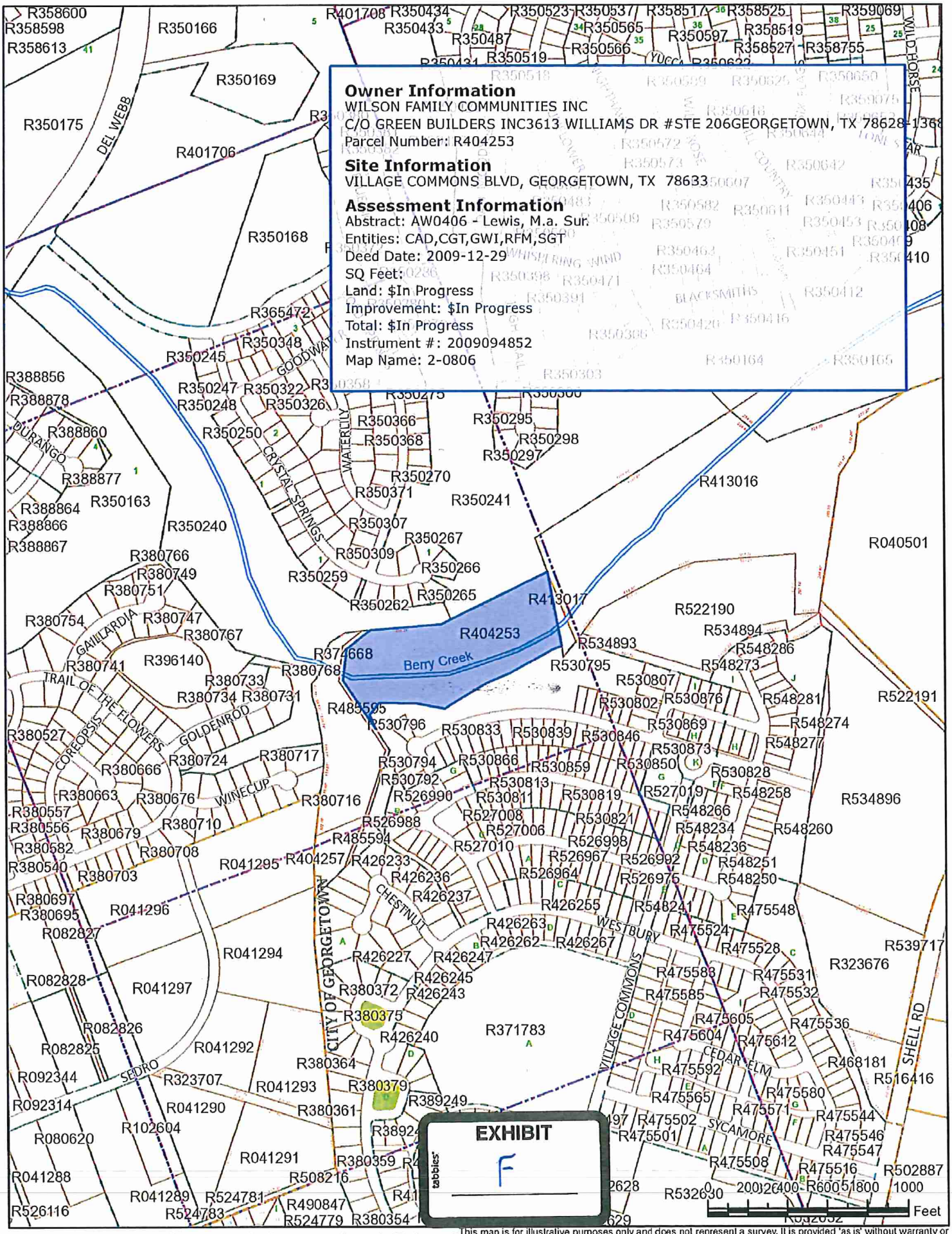
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Williamson Central Appraisal District

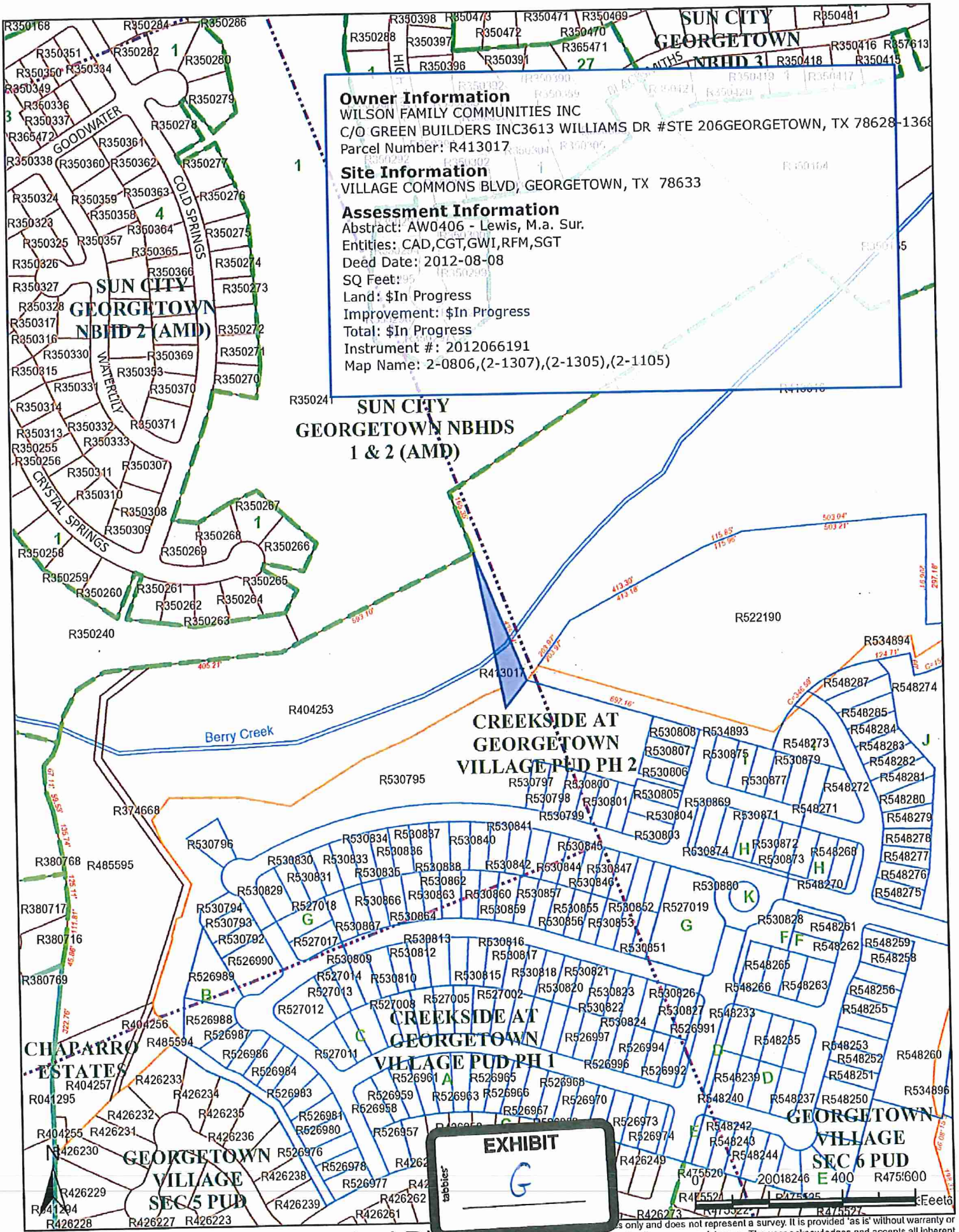
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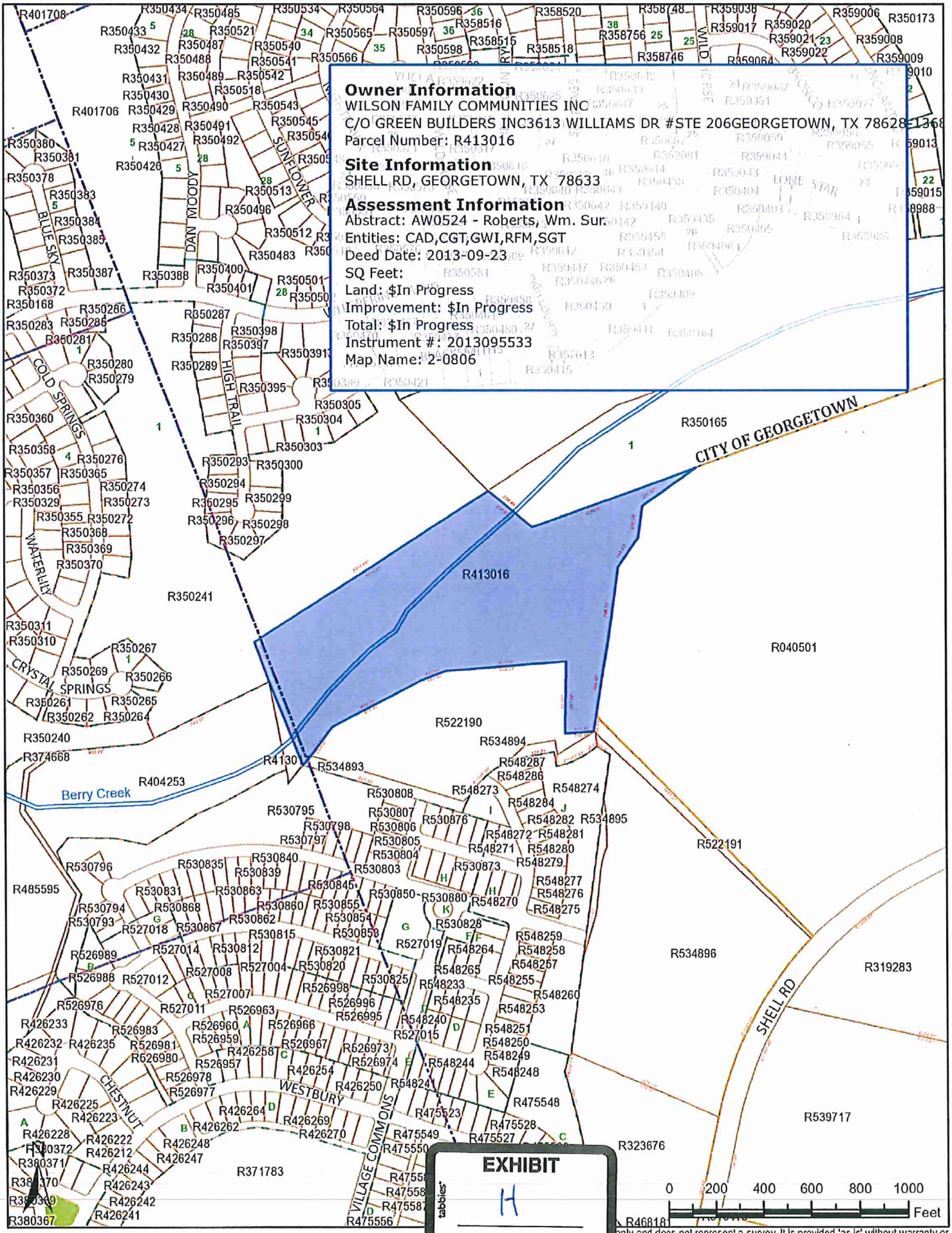
Williamson Central Appraisal District

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Williamson Central Appraisal District

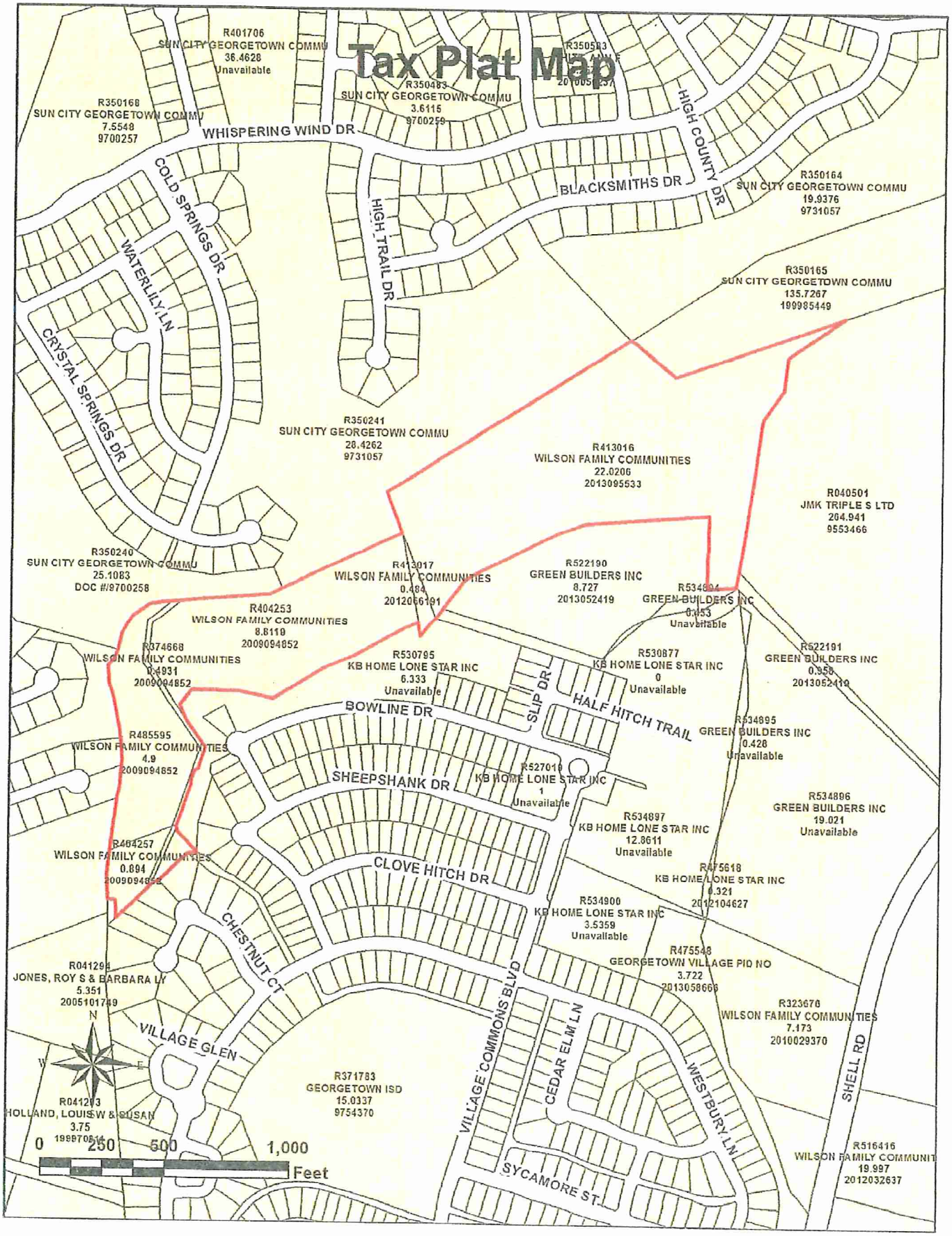
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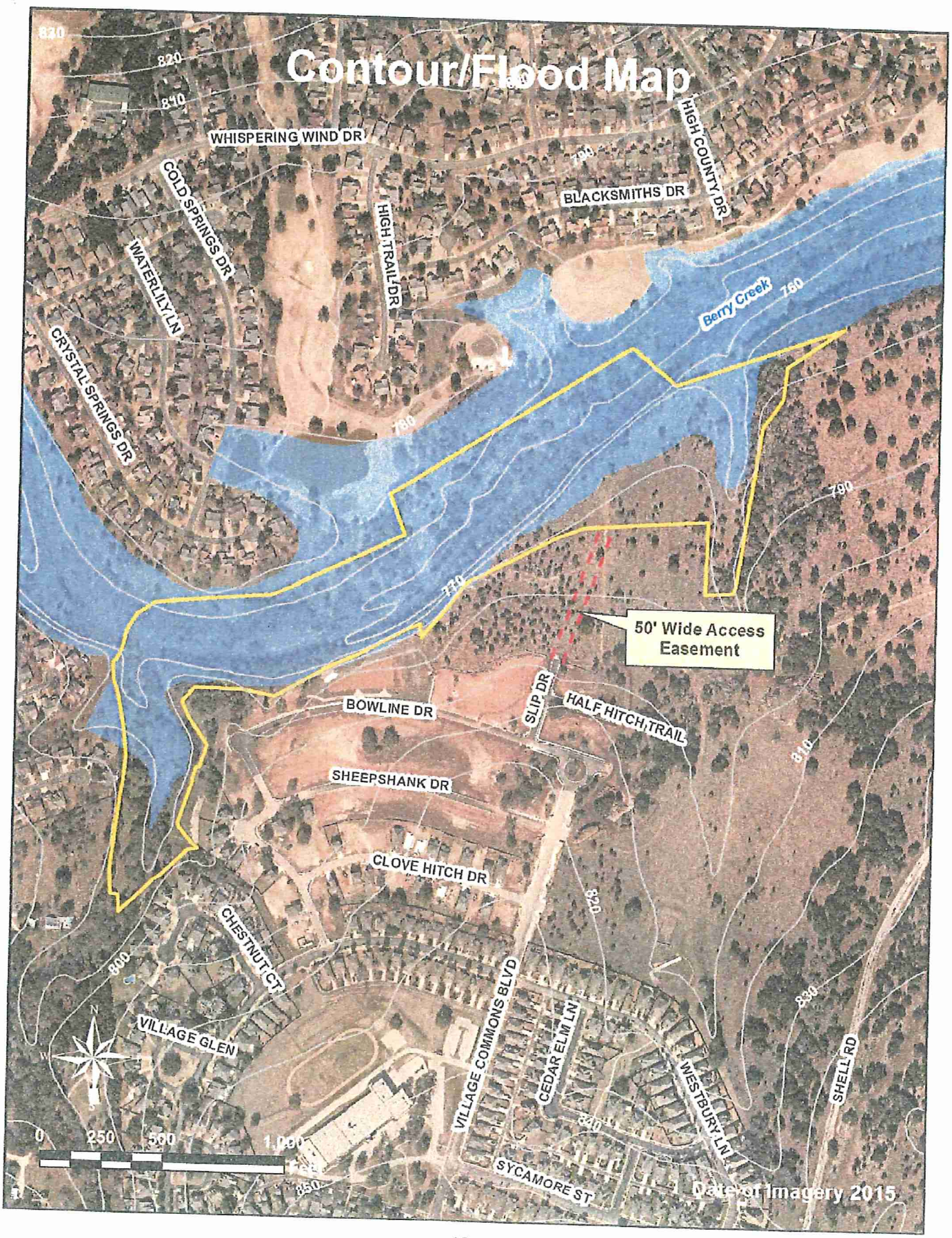


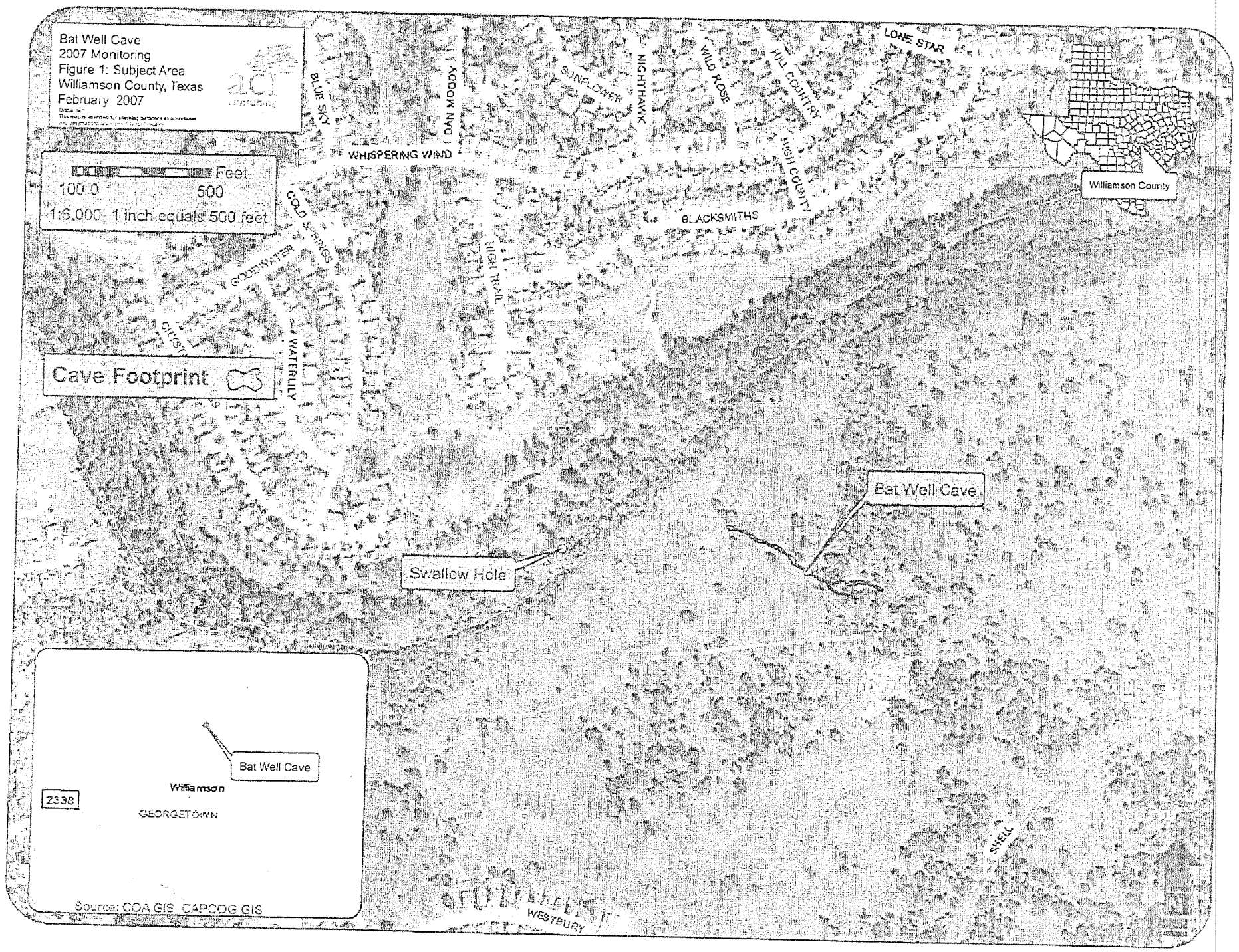
EXHIBIT

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Williamson Central Appraisal Dis
Date Printed: January 19, 2017
only and does not represent a survey. It is provided 'as is' without warranty or timeliness or completeness. The user acknowledges and accepts all inherent cluding the fact that the maps and data are dynamic and in a constant state of


Tax Plat Map
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SUN CITY GEORGETOWN COMMU
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9700259
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COLD SPRINGS DR
WATERLILY LN
CRYSTAL SPRINGS DR
HIGH TRAIL DR
BLACKSMITHS DR
HIGH COUNTY DR
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HALF HITCH TRAIL
BOWLINE DR
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VILLAGE COMMONS BLVD
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WESTBURY LN
SHELL RD
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GEORGETOWN ISD
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R041293
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3.75
199970514
SYCAMORE ST
R516416
WILSON FAMILY COMMUNIT
19.997
2012032637
N
W
E
0
250
500
1,000
Feet


Contour/Flood Map
WHISPERING WIND DR
COLD SPRINGS DR
HIGH TRAIL DR
HIGH COUNTY DR
BLACKSMITHS DR
WATERLILY LN
CRYSTAL SPRINGS DR
Berry Creek
50' Wide Access Easement
BOWLINE DR
SLIP DR
HALF HITCH TRAIL
SHEEPSHANK DR
CLOVE HITCH DR
CHESTNUT CT
VILLAGE GLEN
VILLAGE COMMONS BLVD
CEDAR ELM LN
WESTBURY LN
SHELL RD
SYCAMORE ST
820
810
790
780
770
750
830
840
850
0
250
500
1,000
Date of Imagery 2015


Bat Well Cave
2007 Monitoring
Figure 1: Subject Area
Williamson County, Texas
February 2007
Feet
100 0 500
1:6,000 1 inch equals 500 feet
Cave Footprint
Bat Well Cave
Swallow Hole
Williamson County
Bat Well Cave
Williamson
GEORGETOWN
2338
Source: COA GIS, CAPCOG GIS
BLUE SKY
DAN MOODY
WHISPERING WIND
SUNFLOWER
NIGHTHAWK
WILD ROSE
HILL COUNTRY
LONE STAR
HIGH COUNTY
BLACKSMITHS
GOODWATER
COLD SPRINGS
HIGH TRAIL
CRYSTAL
WATERULY
SHELL
WESTBURY

Commissioners Court - Regular Session **22.**

Meeting Date: 02/14/2017

CR 110 South- Real Estate Contract

Submitted For: Charlie Crossfield **Submitted By:** Charlie Crossfield, Road Bond

Department: Road Bond

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on a Real Estate Contract with Mark Kaiser and Grant Kaiser for ROW needed on CR 110 South. (Parcel 1S)

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Kaiser Contract

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/09/2017 11:06 AM
Form Started By: Charlie Crossfield		Started On: 02/09/2017 10:17 AM
Final Approval Date: 02/09/2017		

REAL ESTATE CONTRACT
CR 110 Right of Way—Parcel 1S

THIS REAL ESTATE CONTRACT ("Contract") is made by MARK KAISER and GRANT KAISER a/k/a David Grant Kaiser (referred to in this Contract as "Seller") and WILLIAMSON COUNTY, TEXAS (referred to in this Contract as "Purchaser"), upon the terms and conditions set forth in this Contract.

ARTICLE I
PURCHASE AND SALE

By this Contract, Seller sells and agrees to convey, and Purchaser purchases and agrees to pay for, the tract(s) of land described as follows:

> All of those certain two tracts of land comprising 2.883 acres in the R. McNutt Survey, Abstract No. 422, Williamson County, Texas; being more fully described by metes and bounds in Exhibit "A", attached hereto and incorporated herein (**Parcel 1S**); and

together with all and singular the rights and appurtenances pertaining to the property, including any right, title and interest of Seller in and to adjacent streets, alleys or rights-of-way (all of such real property, rights, and appurtenances being referred to in this Contract as the "Property"), and any improvements situated on and attached to the Property described in Exhibit "A" not otherwise agreed herein to be retained by Seller, for the consideration and upon and subject to the terms, provisions, and conditions set forth below.

ARTICLE II
PURCHASE PRICE

Purchase Price

2.01. The Purchase Price for the Property described in Exhibit "A", compensation for any improvements on the Property, and any damage or cost of cure for the remaining property of Seller shall be the sum of SEVEN HUNDRED FIFTY ONE THOUSAND TWO HUNDRED FORTY SIX and 00/100 Dollars ($751,246.00).

The parties have previously entered into that certain Possession and Use Agreement recorded in Document No. 2016003554 of the Real Property Records of Williamson County, Texas, wherein as part of its terms Purchaser paid Seller the amount of $585,774.00, and which amount was specifically to be credited against any final Purchase Price or Judgment. As a result, the final portion of the Purchase Price now due and owing from Purchaser is **ONE HUNDRED SIXTY FIVE THOUSAND FOUR HUNDRED SEVENTY TWO AND 00/100 Dollars ($165,472.00)**

Special Provisions

2.02. As additional compensation for the purchase of the Property, and as an obligation which shall survive the closing of this transaction, Purchaser agrees to construct one asphalt (ACP) material driveway connection between the proposed County Road 110 roadway improvements and the remaining property of Seller. The driveway will be constructed as part of the CR 110 Phase I construction project, and shall be constructed at approximately Sta. 102+00RT and according to the design and specifications as additionally shown in Exhibit "B" attached hereto and incorporated herein, unless alternatives are agreed to between Seller and Purchaser prior to the commencement of construction. Upon request Seller agrees to provide Purchaser any necessary temporary right of access to the remaining property which is required to carry out the obligations of this paragraph.

2.03. As additional consideration for this transaction, and as an obligation and agreement which shall survive Closing, Purchaser agrees (i) that Seller shall be permitted to construct at its own expense two (2) driveway connections of up to thirty (30) feet in width with twenty five (25) foot radii between the proposed CR110 roadway improvements and the remaining property of Seller and (ii) to provide reasonable assistance to Seller in the issuance of any permit or approval necessary for such driveway construction. The centerline of the driveways permitted herein shall be located at approximately Station 113+00RT and Station 116+00RT of the proposed CR 110 roadway improvements (as identified on Exhibit "D" attached hereto and incorporated herein), or at other location agreed to in advance between Purchaser and Seller. The parties agree that construction of the commercial driveways permitted herein shall be in replacement of any existing driveway to the property of Seller which would no longer be in compliance with any applicable spacing requirements, and any such existing driveway structures shall be abandoned and removed by Seller upon construction of the driveways permitted herein. Seller shall be responsible for complying with all drainage culvert sizing regulations of Purchaser or other applicable regulatory jurisdiction prior to beginning construction of the driveway, and construction shall comply with any design specifications otherwise required by any applicable Williamson County development rules.

Payment of Purchase Price

2.04. The Purchase Price shall be payable in cash at the Closing.

GK

ARTICLE III
PURCHASER'S OBLIGATIONS

Conditions to Purchaser's Obligations

3.01. The obligations of Purchaser hereunder to consummate the transactions contemplated hereby are subject to the satisfaction of each of the following conditions (any of which may be waived in whole or in part by Purchaser at or prior to the Closing).

Miscellaneous Conditions

3.02. Seller shall have performed, observed, and complied with all of the covenants, agreements, and conditions required by this Contract to be performed, observed, and complied with by Seller prior to or as of the closing.

ARTICLE IV
REPRESENTATIONS AND WARRANTIES OF SELLER

Seller hereby represents and warrants to Purchaser as follows, which representations and warranties shall be deemed made by Seller to Purchaser also as of the Closing Date, to the best of Seller's current actual knowledge:

(1) There are no parties in possession of any portion of the Property as lessees, tenants at sufferance, or trespassers, other than as previously disclosed to Purchaser;

(2) Seller has complied with all applicable laws, ordinances, regulations, statutes, rules and restrictions relating to the Property, or any part thereof;

The Property herein is being conveyed to Purchaser under threat of condemnation.

ARTICLE V
CLOSING

Closing Date

5.01. The Closing shall be held at the office of Capital Title Company on or before February 20th , 2017, or at such time, date, and place as Seller and Purchaser may agree upon, or within 10 days after the completion of any title curative matters if necessary for items as shown on the Title Commitment or in the contract (which date is herein referred to as the "Closing Date").

GW

Seller's Obligations at Closing

5.02. At the Closing Seller shall:

(1) Deliver to Purchaser a duly executed and acknowledged Deed conveying good and indefeasible title to Williamson County, Texas in fee simple to all of the Property described in Exhibit "A", free and clear of any and all liens and restrictions, except for the following:

(a) General real estate taxes for the year of closing and subsequent years not yet due and payable;

(b) Any exceptions approved by Purchaser pursuant to Article III hereof; and

(c) Any exceptions approved by Purchaser in writing.

The Deed shall be in the form as shown in Exhibit "C" attached hereto and incorporated herein.

(2) Deliver to Purchaser a Texas Owner's Title Policy at Purchaser's sole expense, issued by Title Company, in Grantee's favor in the full amount of the purchase price, insuring Purchaser's contracted interests in and to the Property subject only to those title exceptions listed herein, such other exceptions as may be approved in writing by Purchaser, and the standard printed exceptions contained in the usual form of Texas Owner's Title Policy, provided, however:

(a) The boundary and survey exceptions shall be deleted;

(b) The exception as to restrictive covenants shall be endorsed "None of Record", if applicable; and

(c) The exception as to the lien for taxes shall be limited to the year of Closing and shall be endorsed "Not Yet Due and Payable".

(d) Deliver to Purchaser possession of the Property if not previously done.

Purchaser's Obligations at Closing

5.03. At the Closing, Purchaser shall:

(a) Pay the cash portion of the Purchase Price.

GW

Prorations

5.04. General real estate taxes for the then current year relating to the Property shall be prorated as of the Closing Date and shall be adjusted in cash at the closing. If the Closing shall occur before the tax rate is fixed for the then current year, the apportionment of taxes shall be upon the basis of the tax rate for the next preceding year applied to the latest assessed valuation. Agricultural roll-back taxes, if any, shall be paid by Purchaser.

Closing Costs

5.05. All costs and expenses of closing in consummating the sale and purchase of the Property shall be borne and paid as follows:

(1) Owner's Title Policy and survey to be paid by Purchaser.

(2) Deed, tax certificates, and title curative matters, if any, paid by Purchaser.

(3) All other closing costs shall be paid by Purchaser.

(4) Attorney's fees paid by each respectively.

ARTICLE VI
BREACH BY SELLER

In the event Seller shall fail to fully and timely perform any of its obligations hereunder or shall fail to consummate the sale of the Property for any reason, except Purchaser's default, Purchaser may: (1) enforce specific performance of this Contract; or (2) request that the Escrow Deposit, if any, shall be forthwith returned by the title company to Purchaser.

ARTICLE VII
BREACH BY PURCHASER

In the event Purchaser should fail to consummate the purchase of the Property, the conditions to Purchaser's obligations set forth in Article III having been satisfied and Purchaser being in default and Seller not being in default hereunder, Seller shall have the right to receive the Escrow Deposit, if any, from the title company, the sum being agreed on as liquidated damages for the failure of Purchaser to perform the duties, liabilities, and obligations imposed upon it by the terms and provisions of this Contract, and Seller agrees to accept and take this cash payment as its total damages and relief and as Seller's sole remedy hereunder in such event. If no Escrow Deposit has been made then Seller shall receive the amount of $500 as liquidated damages for any failure by Purchaser.

GK

ARTICLE VIII
MISCELLANEOUS

Notice

8.01. Any notice required or permitted to be delivered hereunder shall be deemed received when sent by United States mail, postage prepaid, certified mail, return receipt requested, addressed to Seller or Purchaser, as the case may be, at the address set forth opposite the signature of the party.

Texas Law to Apply

8.02. This Contract shall be construed under and in accordance with the laws of the State of Texas, and all obligations of the parties created hereunder are performable in Williamson County, Texas.

Parties Bound

8.03. This Contract shall be binding upon and inure to the benefit of the parties and their respective heirs, executors, administrators, legal representatives, successors and assigns where permitted by this Contract.

Legal Construction

8.04. In case any one or more of the provisions contained in this Contract shall for any reason be held to be invalid, illegal, or unenforceable in any respect, this invalidity, illegality, or unenforceability shall not affect any other provision hereof, and this Contract shall be construed as if the invalid, illegal, or unenforceable provision had never been contained herein.

Prior Agreements Superseded

8.05. This Contract constitutes the sole and only agreement of the parties and supersedes any prior understandings or written or oral agreements between the parties respecting the within subject matter.

Time of Essence

8.06. Time is of the essence in this Contract.

GK

Gender

8.07. Words of any gender used in this Contract shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, and vice versa, unless the context requires otherwise.

Memorandum of Contract

8.08. Upon request of either party, the parties shall promptly execute a memorandum of this Contract suitable for filing of record.

Compliance

8.09 In accordance with the requirements of Section 20 of the Texas Real Estate License Act, Purchaser is hereby advised that it should be furnished with or obtain a policy of title insurance or Purchaser should have the abstract covering the Property examined by an attorney of Purchaser's own selection.

Effective Date

8.10 This Contract shall be effective as of the date it is approved by Williamson County, Texas which date is indicated beneath the County Judge's signature below.

Counterparts

8.11 This Contract may be executed in any number of counterparts, which may together constitute the Contract. Signatures transmitted by facsimile or electronic mail may be considered effective as originals for purposes of this Contract.

[signature page follows]

SELLER:

Mark Kaiser

Mark Kaiser

Address: 2317 Goldberry Ln
Davis, CA 95616

Date: 11-5-16

_____

Grant Kaiser a/k/a
David Grant Kaiser

Address: _____

_____

Date: _____

SELLER:

_____
Mark Kaiser

Address:_____

_____

Date:_____

Grant Kaiser a/k/a
David Grant Kaiser

Address: 2215 westgate Dr.

Houston, Tx 77019

Date: 2-2-2017

GK

PURCHASER:

WILLIAMSON COUNTY, TEXAS

By: _____
Dan A. Gattis
County Judge

Address: 710 Main Street, Suite 101
Georgetown, Texas 78626

Date: _____

EXHIBIT A

County: Williamson
Parcel No.: 1S
Highway: CR 110
Limits: From: U.S. Highway 79
To: 300 feet north of CR 109 (Limmer Loop)

DESCRIPTION FOR PARCEL 1S

DESCRIPTION OF A 2.883 ACRE (125,568 SQ. FT.) PARCEL, LOCATED IN THE R. McNUTT SURVEY, ABSTRACT 422, WILLIAMSON COUNTY, TEXAS, BEING A PORTION OF A CALLED 38.673 ACRE TRACT OF LAND BELONGING TO GRANT AND MARK KAISER, AS DESCRIBED IN A DEED RECORDED IN DOCUMENT NO. 2011065991 OF THE OFFICAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS (O.P.R.W.C.TX.), SAID 2.883 ACRE (125,568 SQ. FT.) PARCEL, AS SHOWN ON A RIGHT-OF-WAY SKETCH PREPARED BY SAM, LLC. FOR THIS PARCEL, BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a Texas Department of Transportation (TxDOT) Type II monument found 189.90 feet right of Engineer's Centerline Station (E.C.S.) 99+93.30, on the existing north right-of-way line of U.S. Highway 79 (a variable width right-of-way), TxDOT Strip Map, CSJ # 0204-01-052 & 0204-01-059 (unknown date), as conveyed to the State of Texas and recorded in Volume 304, Page 43 of the Deed Records of Williamson County, Texas (D.R.W.C.TX.), same being the south line of said 38.673 acre tract, same being the beginning of a curve;

THENCE, with the existing north right-of-way line of said U.S. Highway 79 and the south line of said 38.673 acre tract, being a curve to the right, an arc distance of 45.90 feet, through a central angle of 02°20'41", having a radius of 7,629.71 feet, and a chord that bears S 75°48'03" W, a distance of 45.90 feet to a 1/2-inch iron rod with an aluminum "WILLIAMSON COUNTY ROW" cap set 144.06 feet right of E.C.S. 99+92.53, said point being on the proposed east right-of-way line of County Road (CR) 110, for the **POINT OF BEGINNING** (Grid = N:10168546.21, E:3156830.60) of the parcel described herein, same being the beginning of a curve;

1) **THENCE,** with the existing north right-of-way line of said U.S. Highway 79 and the south line of said 38.673 acre tract, being a curve to the right, an arc distance of 144.14 feet, through a central angle of 01°04'57", having a radius of 7,629.71 feet, and a chord that bears S 76°32'50" W, a distance of 144.14 feet to a TxDOT Type II concrete monument found 0.08 feet left of E.C.S. 99+99.62;

2) **THENCE** N 52°28'52" W, with the existing north right-of-way line of said U.S. Highway 79 and the southwest line of said 38.673 acre tract, a distance of 64.04 feet to a TxDOT Type II concrete monument found 40.97 feet left of E.C.S. 100+41.02, said point being on the east right-of-way line of CR 110, (no record information found), same being the south corner of said 38.673 acre tract;

THENCE, with the existing east right-of-way line of said CR 110 and the west line of said 38.673 acre tract, the following three (3) courses and distances, numbered 3 through 5:

3) N 02°13'00" W, a distance of 335.22 feet to a ½" iron rod found 1.20 feet left of E.C.S. 103+71.67,

4) N 01°41'55" W, a distance of 574.94 feet to a ½" iron rod found 7.52 feet right of E.C.S. 109+46.62, and

5) N 03°12'37" W, a distance of 812.51 feet to a concrete monument found 2.25 feet left of E.C.S. 117+59.04, said point being the northwest corner of said 38.673 acre tract, same being the southwest corner of a called 79.47 acre tract of land described as Tract 3 in a deed to Siena Kyle Commercial, LP. and recorded in Document No. 2008000334, O.P.R.W.C.TX., from which a ½" iron rod found 1.56 feet left of E.C.S. 117+59.14, bears N 80°11'24" E, a distance of 0.70 feet, for a **POINT OF REFERENCE**;

6) **THENCE** N 87°24'05" E, with the common line of said 38.673 acre tract and 79.47 acre tract, a distance of 70.26 feet to a 1/2-inch iron rod with an aluminum "WILLIAMSON COUNTY ROW" cap set 68.00 feet right of E.C.S. 117+58.61, said point being on the proposed east right-of-way line of CR 110;

THENCE, over and across said 38.673 acre tract, with the proposed east right-of-way line of CR 110, the following five (5) courses and distances numbered 7 through 11:

7) S 02°56'12" E, a distance of 372.02 feet to a 1/2-inch iron rod with an aluminum "WILLIAMSON COUNTY ROW" cap set 68.00 feet right of E.C.S. 113+86.74, for the centerline PT, and the beginning of a curve,

8) Being a curve to right, an arc distance of 169.97 feet, through a central angle of 00°58'02", having a radius of 10,068.00 feet, and a chord that bears S 02°27'40" E, a distance of 169.97 feet to a 1/2-inch iron rod with an aluminum "WILLIAMSON COUNTY ROW" cap set 68.00 feet right of E.C.S. 112+17.92, for the centerline PC,

9) S 01°58'39" E, a distance of 660.44 feet to a 1/2-inch iron rod with an aluminum "WILLIAMSON COUNTY ROW" cap set 68.00 feet right of E.C.S. 105+57.48, for the centerline PT, and the beginning of a curve,

10) Being a curve to right, an arc distance of 477.19 feet, through a central angle of 09°46'30", having a radius of 2,797.00 feet, and a chord that bears S 06°51'54" E, a distance of 476.61 feet to a 1/2-inch iron rod with an aluminum "WILLIAMSON COUNTY ROW" cap set 68.00 feet right of E.C.S. 100+68.69, and

11) S 58°33'23" E, a distance of 105.66 feet to the **POINT OF BEGINNING**, and containing 2.883 acres (125,568 sq. ft.) of land, more or less

This property description is accompanied by a plat of even date.

All bearings are based on the Texas State Plane Coordinate System, Central Zone, NAD83. All distances shown hereon are adjusted to the surface using a combined scale factor of 1.000120

THE STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF WILLIAMSON §

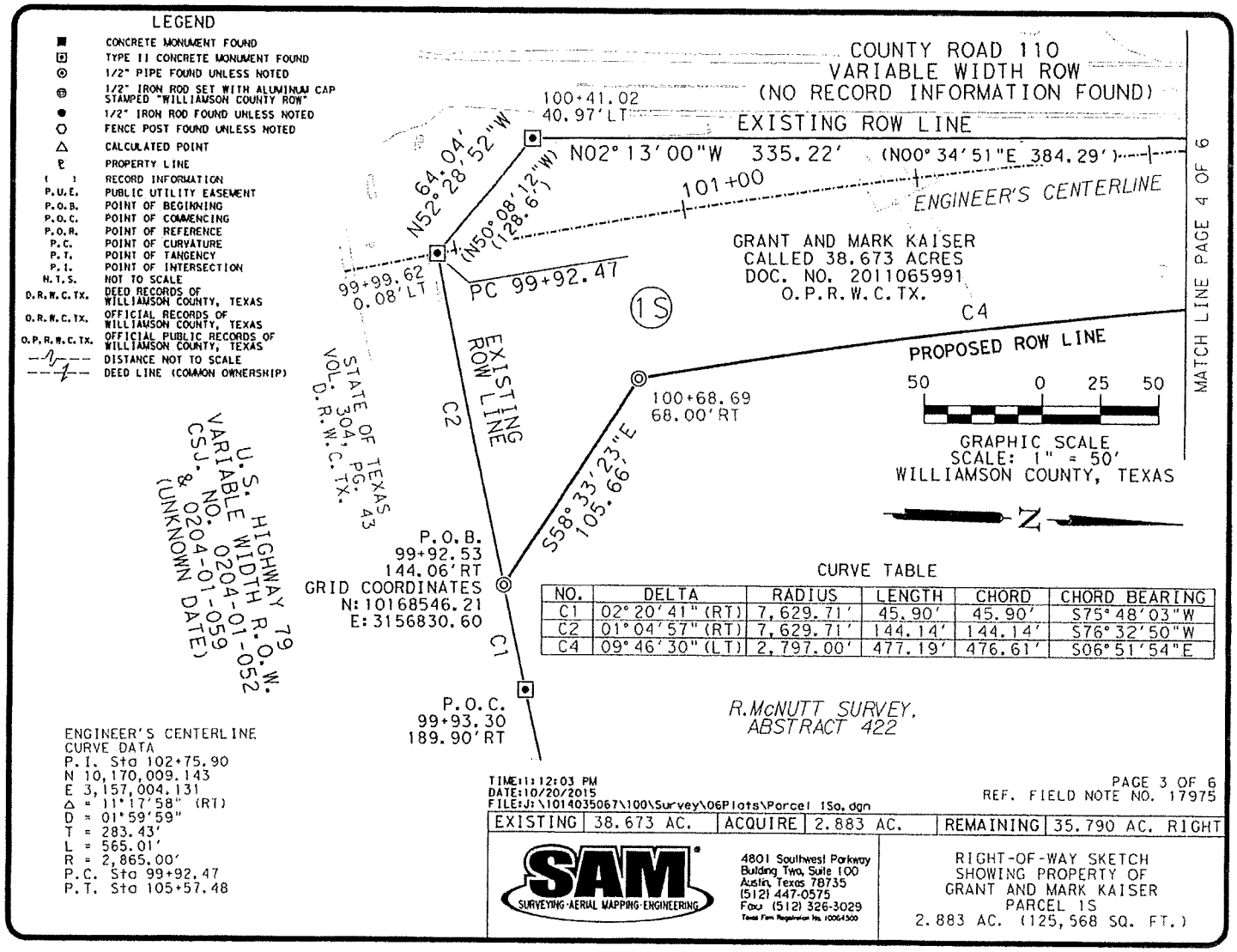
That I, William Reed Herring, a Registered Professional Land Surveyor, do hereby certify that the above description is true and correct to the best of my knowledge and belief and that the property described herein was determined by a survey made on the ground under my direction and supervision.

WITNESS MY HAND AND SEAL at Austin, Travis County, Texas this the 21st day of October, 2015.

SURVEYING AND MAPPING, LLC.
4801 Southwest Parkway
Parkway Two, Suite 100
Austin, Texas 78735
Texas Firm Registration No. 10064300

William Reed Herring
Registered Professional Land Surveyor
No. 6355-State of Texas





CURVE TABLE

NO.	DELTA	RADIUS	LENGTH	CHORD	CHORD BEARING
C1	02° 20' 41" (RT)	7,629.71'	45.90'	45.90'	S75° 48' 03"W
C2	01° 04' 57" (RT)	7,629.71'	144.14'	144.14'	S76° 32' 50"W
C4	09° 46' 30" (LT)	2,797.00'	477.19'	476.61'	S06° 51' 54"E

ENGINEER'S CENTERLINE
CURVE DATA
P.I. Sta 102+75.90
N 10,170,009.143
E 3,157,004.131
Δ = 11° 17' 58" (RT)
D = 01° 59' 59"
T = 283.43'
L = 565.01'
R = 2,865.00'
P.C. Sta 99+92.47
P.T. Sta 105+57.48

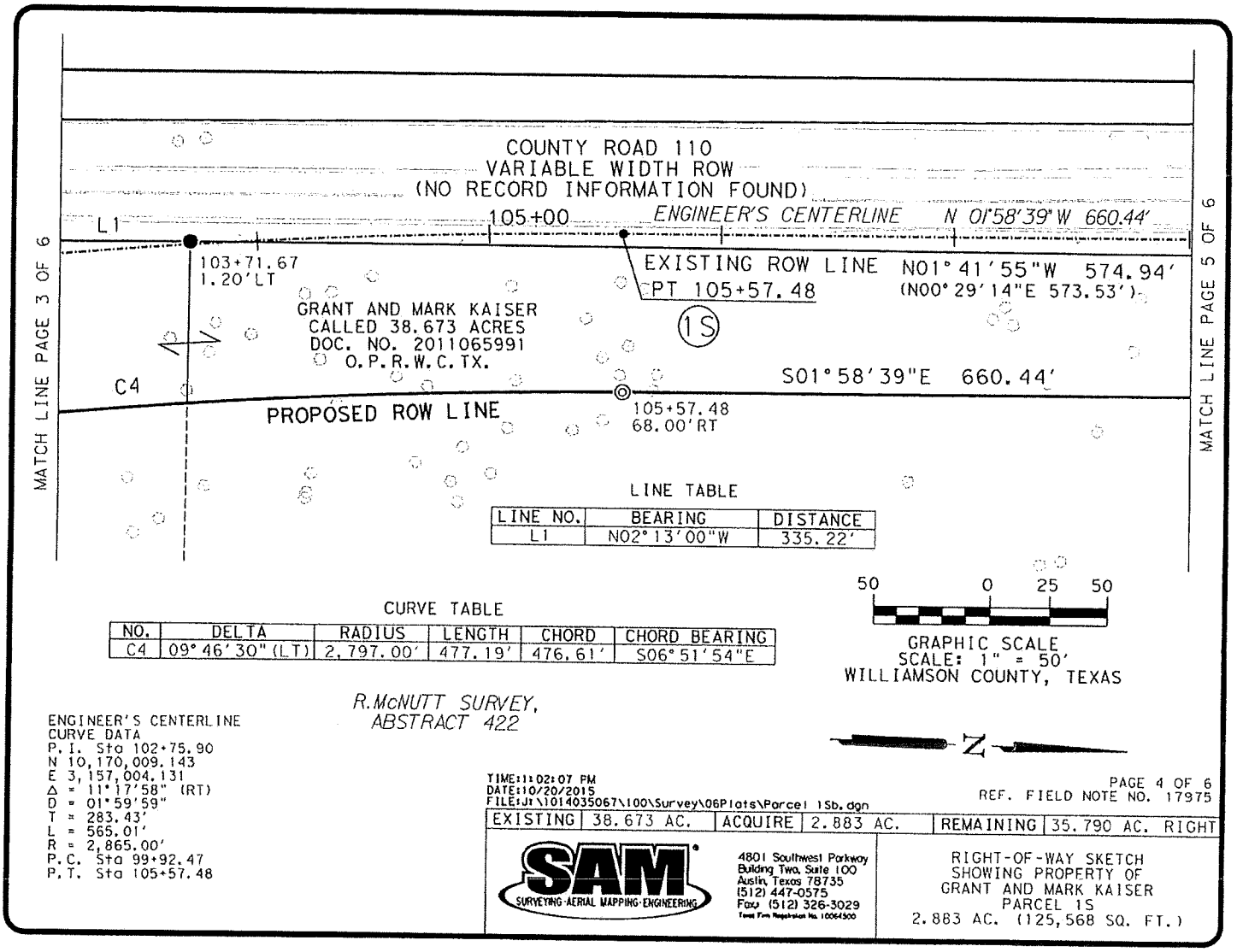
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DATE: 10/20/2015
FILE: J:\1014035067\100\Survey\06Plots\Parcel 1So.dgn

REF. FIELD NOTE NO. 17975

EXISTING	38.673 AC.	ACQUIRE	2.883 AC.	REMAINING	35.790 AC. RIGHT

SAM
SURVEYING · AERIAL MAPPING · ENGINEERING
4801 Southwest Parkway
Building Two, Suite 100
Austin, Texas 78735
(512) 447-0575
Fax (512) 326-3029
Texas Firm Registration No. 100064300

RIGHT-OF-WAY SKETCH
SHOWING PROPERTY OF
GRANT AND MARK KAISER
PARCEL 1S
2.883 AC. (125,568 SQ. FT.)



LINE TABLE

LINE NO.	BEARING	DISTANCE
L1	N02°13'00"W	335.22'

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH	CHORD	CHORD BEARING
C4	09°46'30"(LT)	2,797.00'	477.19'	476.61'	S06°51'54"E

50 0 25 50

GRAPHIC SCALE
SCALE: 1" = 50'
WILLIAMSON COUNTY, TEXAS

R. McNUTT SURVEY,
ABSTRACT 422

ENGINEER'S CENTERLINE
CURVE DATA
P.I. Sta 102+75.90
N 10,170,009.143
E 3,157,004.131
Δ = 11°17'58" (RT)
D = 01°59'59"
T = 283.43'
L = 565.01'
R = 2,865.00'
P.C. Sta 99+92.47
P.T. Sta 105+57.48

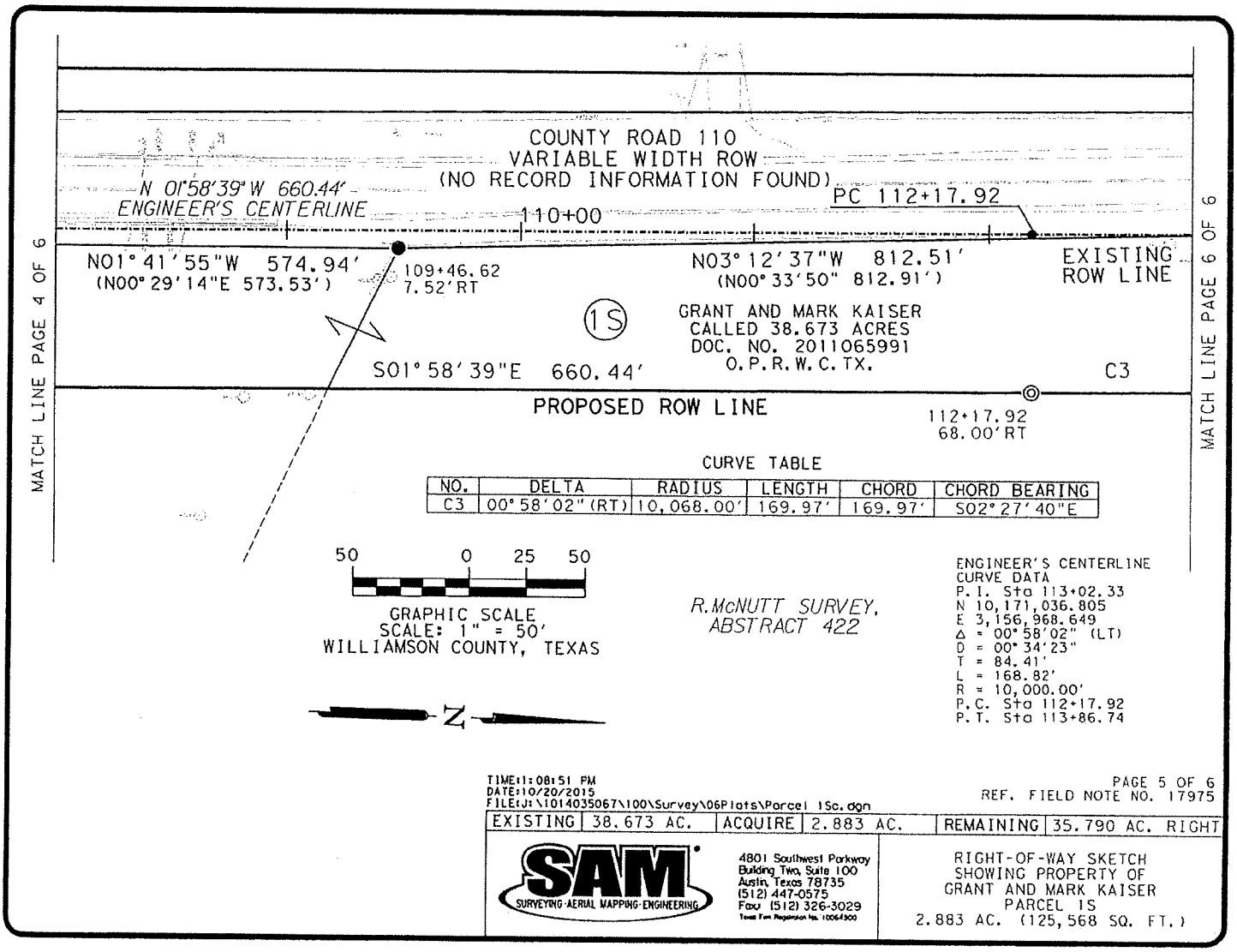
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REF. FIELD NOTE NO. 17975

EXISTING	38.673 AC.	ACQUIRE	2.883 AC.	REMAINING	35.790 AC. RIGHT

SAM
SURVEYING·AERIAL MAPPING·ENGINEERING
4801 Southwest Parkway
Building Two, Suite 100
Austin, Texas 78735
(512) 447-0575
Fax (512) 326-3029
Texas Firm Registration No. 10064500

RIGHT-OF-WAY SKETCH
SHOWING PROPERTY OF
GRANT AND MARK KAISER
PARCEL 1S
2.883 AC. (125,568 SQ. FT.)



CURVE TABLE

NO.	DELTA	RADIUS	LENGTH	CHORD	CHORD BEARING
C3	00°58'02" (RT)	10,068.00'	169.97'	169.97'	S02°27'40"E

ENGINEER'S CENTERLINE
CURVE DATA
P.I. Sta 113+02.33
N 10,171,036.805
E 3,156,968.649
Δ = 00°58'02" (LT)
D = 00°34'23"
T = 84.41'
L = 168.82'
R = 10,000.00'
P.C. Sta 112+17.92
P.T. Sta 113+86.74

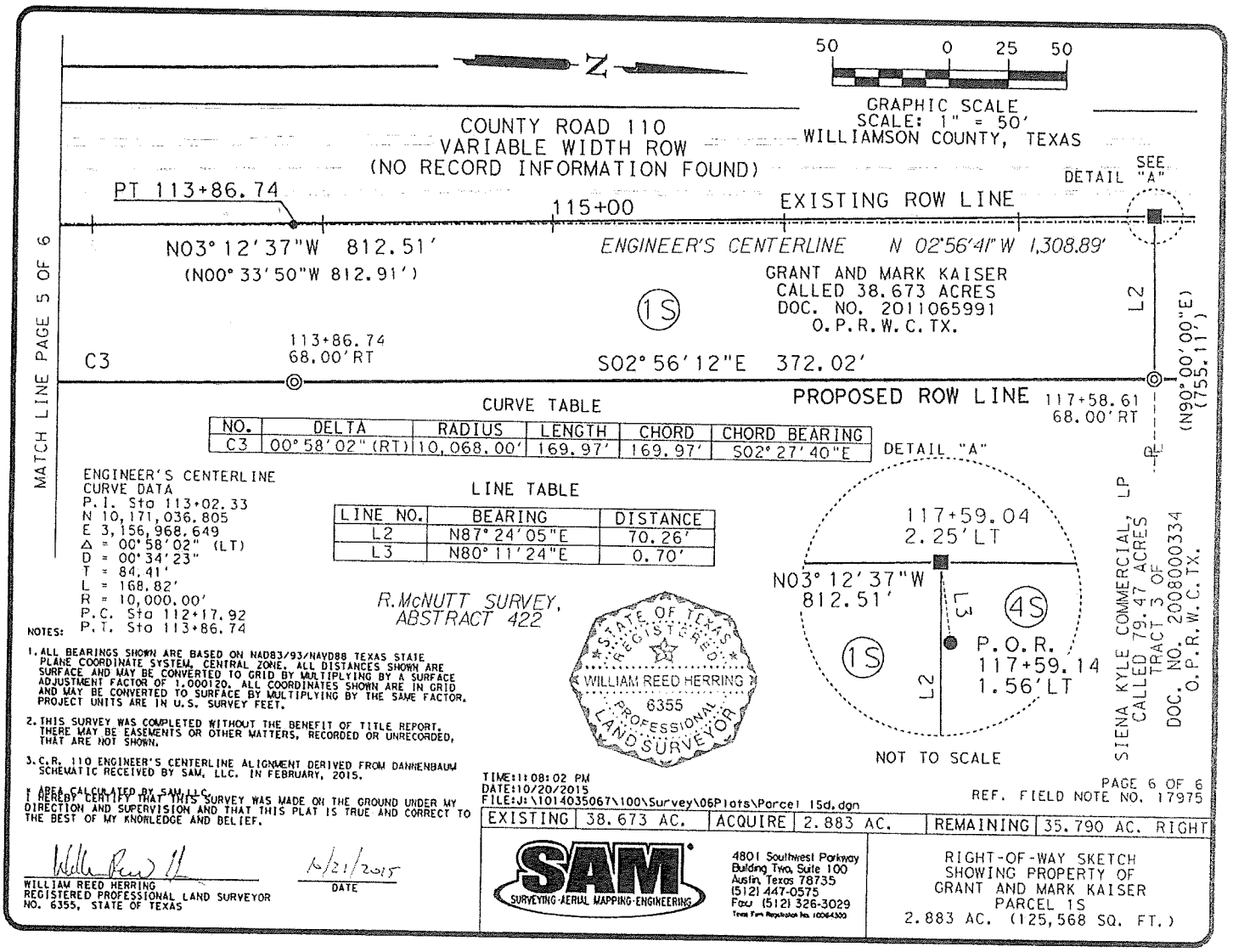
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FILE:J:\1014035067\100\Survey\06Plats\Parcel 1Sc.dgn

REF. FIELD NOTE NO. 17975

EXISTING	38.673 AC.	ACQUIRE	2.883 AC.	REMAINING	35.790 AC. RIGHT

SAM
SURVEYING·AERIAL MAPPING·ENGINEERING
4801 Southwest Parkway
Building Two, Suite 100
Austin, Texas 78735
(512) 447-0575
Fax (512) 326-3029
Texas Firm Registration No. 10064300

RIGHT-OF-WAY SKETCH
SHOWING PROPERTY OF
GRANT AND MARK KAISER
PARCEL 1S
2.883 AC. (125,568 SQ. FT.)



CURVE TABLE

NO.	DELTA	RADIUS	LENGTH	CHORD	CHORD BEARING
C3	00° 58' 02" (RT)	10,068.00'	169.97'	169.97'	S02° 27' 40"E

ENGINEER'S CENTERLINE CURVE DATA
P.I. Sta 113+02.33
N 10,171,036.805
E 3,156,968.649
Δ = 00° 58' 02" (LT)
D = 00° 34' 23"
T = 84.41'
L = 168.82'
R = 10,000.00'
P.C. Sta 112+17.92
P.T. Sta 113+86.74

LINE TABLE

LINE NO.	BEARING	DISTANCE
L2	N87° 24' 05"E	70.26'
L3	N80° 11' 24"E	0.70'

R. McNUTT SURVEY, ABSTRACT 422

DETAIL "A"

NOT TO SCALE

SIENA KYLE COMMERCIAL, LP
CALLED 79.47 ACRES
TRACT 3 OF
DOC. NO. 2008000334
O.P.R.W.C.TX.

NOTES:

1. ALL BEARINGS SHOWN ARE BASED ON NAD83/93/NAVD88 TEXAS STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE. ALL DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SURFACE ADJUSTMENT FACTOR OF 1.000120. ALL COORDINATES SHOWN ARE IN GRID AND MAY BE CONVERTED TO SURFACE BY MULTIPLYING BY THE SAME FACTOR. PROJECT UNITS ARE IN U.S. SURVEY FEET.
2. THIS SURVEY WAS COMPLETED WITHOUT THE BENEFIT OF TITLE REPORT. THERE MAY BE EASEMENTS OR OTHER MATTERS, RECORDED OR UNRECORDED, THAT ARE NOT SHOWN.
3. C.R. 110 ENGINEER'S CENTERLINE ALIGNMENT DERIVED FROM DANNENBAUM SCHEMATIC RECEIVED BY SAM, LLC. IN FEBRUARY, 2015.

* AREA CALCULATED BY SAM, LLC.

I HEREBY CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND UNDER MY DIRECTION AND SUPERVISION AND THAT THIS PLAT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

WILLIAM REED HERRING
REGISTERED PROFESSIONAL LAND SURVEYOR
NO. 6355, STATE OF TEXAS

6/21/2015
DATE

TIME:11:08:02 PM
DATE:10/20/2015
FILE:J:\1014035067\100\Survey\06Plats\Parcel 1Sd.dgn

PAGE 6 OF 6
REF. FIELD NOTE NO. 17975

EXISTING	38.673 AC.	ACQUIRE	2.883 AC.	REMAINING	35.790 AC. RIGHT

SAM
SURVEYING · AERIAL MAPPING · ENGINEERING
4801 Southwest Parkway
Building Two, Suite 100
Austin, Texas 78735
(512) 447-0575
Fax (512) 326-3029
Texas Firm Registration No. 100643-00

RIGHT-OF-WAY SKETCH
SHOWING PROPERTY OF
GRANT AND MARK KAISER
PARCEL 1S
2.883 AC. (125,568 SQ. FT.)

EXHIBIT "B"

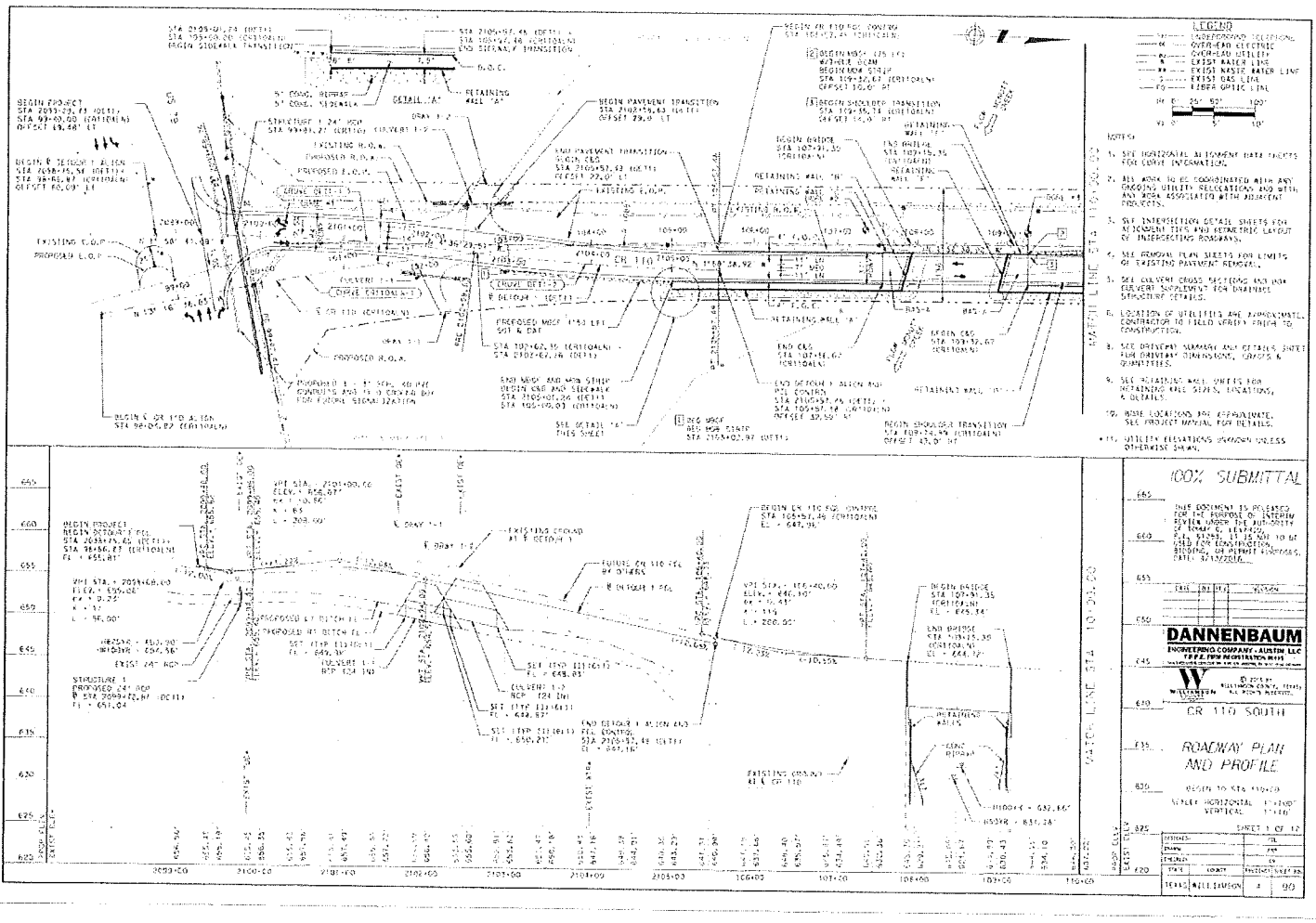

LEGEND
NOTES:
100% SUBMITTAL
DANNENBAUM
ENGINEERING COMPANY - AUSTIN LLC
CR 110 SOUTH
ROADWAY PLAN AND PROFILE
SHEET 1 OF 12

EXHIBIT "C"

Parcel 1S

DEED
County Road 110 Right of Way

THE STATE OF TEXAS §
§
COUNTY OF WILLIAMSON §

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OF THE FOLLOWING INFORMATION FROM THIS INSTRUMENT BEFORE IT IS FILED IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

That MARK KAISER and GRANT KAISER a/k/a David Grant Kaiser, hereinafter referred to as Grantor, whether one or more, for and in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration to Grantor in hand paid by Williamson County, Texas, the receipt and sufficiency of which is hereby acknowledged, and for which no lien is retained, either expressed or implied, have this day Sold and by these presents do Grant, Bargain, Sell and Convey unto WILLIAMSON COUNTY, TEXAS, all that certain tract or parcel of land lying and being situated in the County of Williamson, State of Texas, along with any improvements thereon, being more particularly described as follows:

> All of those certain two tracts of land comprising 2.883 acres in the R. McNutt Survey, Abstract No. 422, Williamson County, Texas; being more fully described by metes and bounds in Exhibit "A", attached hereto and incorporated herein (**Parcel 1S**)

SAVE AND EXCEPT, HOWEVER, it is expressly understood and agreed that Grantor is retaining title to the following improvements located on the property described in said Exhibit "A" to wit: NONE

RESERVATIONS FROM AND EXCEPTIONS TO CONVEYANCE AND WARRANTY:

Visible and apparent easements not appearing of record;

Any discrepancies, conflicts, or shortages in area or boundary lines or any encroachments or any overlapping of improvements which a current survey would show;

Easements, restrictions, reservations, covenants, conditions, oil and gas leases, mineral severances, and encumbrances for taxes and assessments (other than liens and conveyances) presently of record in the Official Public Records of Williamson County, Texas, that affect the property, but only to the extent that said items are still valid and in force and effect at this time.

Grantor reserves all of the oil, gas and other minerals in and under the land herein conveyed but waives all rights of ingress and egress to the surface thereof for the purpose of exploring, developing, mining or drilling or pumping the same; provided, however, that operations for exploration or recovery of any such minerals shall be permissible so long as all surface operations in connection therewith are located at a point outside the acquired parcel and upon the condition that none of such operations shall be conducted so near the surface of said land as to interfere with the intended use thereof or in any way interfere with, jeopardize, or endanger the facilities of Williamson County, Texas or create a hazard to the public users thereof; it being intended, however, that nothing in this reservation shall affect the title and the rights of Grantee to take and use without additional compensation any, stone, earth, gravel, caliche, iron ore, gravel or any other road building material upon, in and under said land for the construction and maintenance of CR 110, but shall not be used or exported from the Property for any other purpose.

TO HAVE AND TO HOLD the property herein described and herein conveyed together with all and singular the rights and appurtenances thereto in any wise belonging unto Williamson County, Texas and its assigns forever; and Grantor does hereby bind itself, its heirs, executors, administrators, successors and assigns to Warrant and Forever Defend all and singular the said premises herein conveyed unto Williamson County, Texas and its assigns against every person whomsoever lawfully claiming or to claim the same or any part thereof.

This deed is being delivered in lieu of condemnation.

IN WITNESS WHEREOF, this instrument is executed on this the ____ day of _____, 2016.

[signature pages follow]

GRANTOR:

_____
Mark Kaiser

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF WILLIAMSON §

This instrument was acknowledged before me on this the ____ day of _____, 2016 by Mark Kaiser, in the capacity and for the purposes and consideration recited therein.

_____
Notary Public, State of Texas

GRANTOR:

_____
Grant Kaiser a/k/a
David Grant Kaiser

ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF WILLIAMSON §

This instrument was acknowledged before me on this the ____ day of _____, 2016 by Grant Kaiser a/k/a David Grant Kaiser, in the capacity and for the purposes and consideration recited therein.

_____
Notary Public, State of Texas

PREPARED IN THE OFFICE OF:

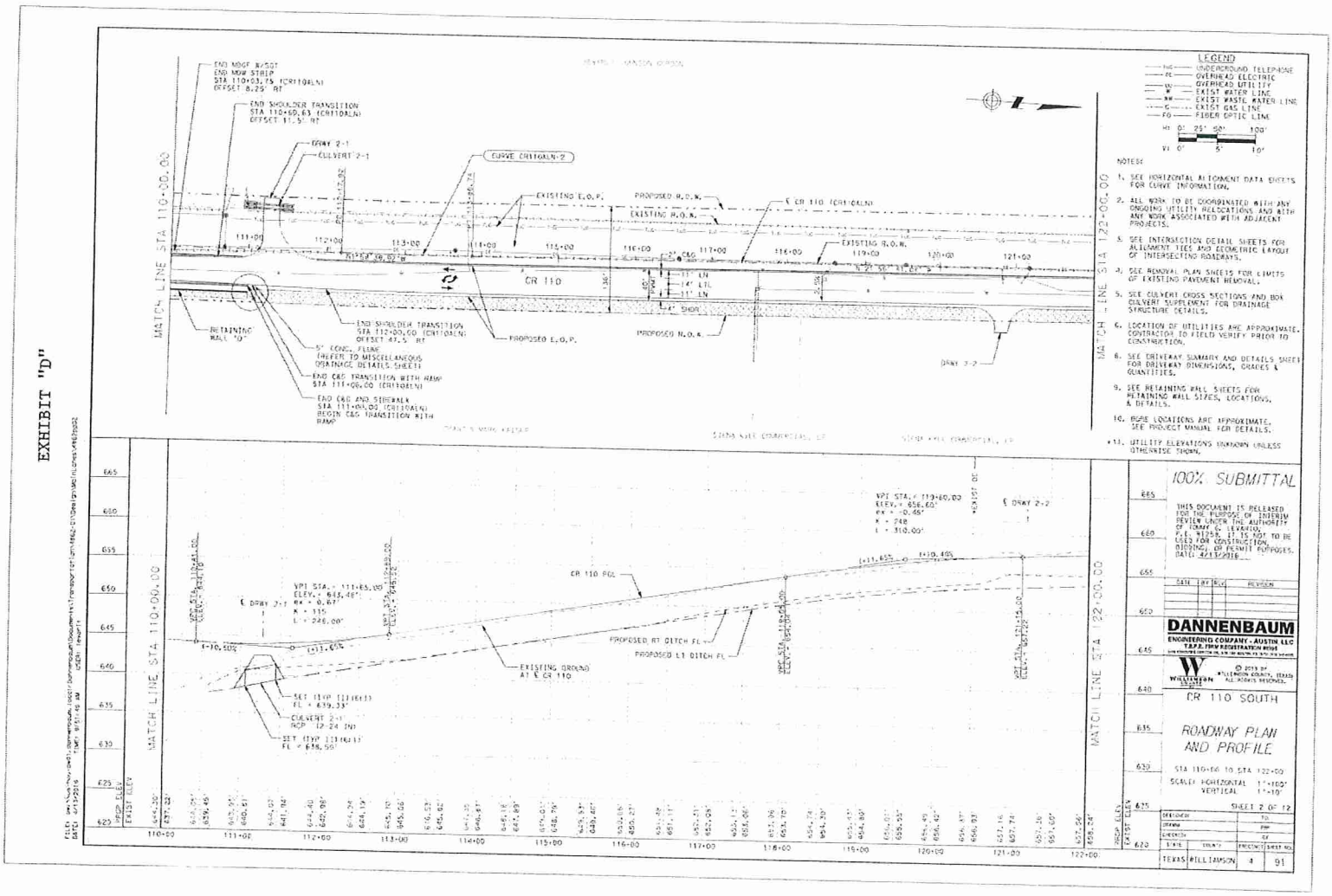
Sheets & Crossfield, P.C.
309 East Main
Round Rock, Texas 78664

GRANTEE'S MAILING ADDRESS:

Williamson County, Texas
Attn: County Judge
710 Main Street, Suite 101
Georgetown, Texas 78626

AFTER RECORDING RETURN TO:

EXHIBIT "D"



LEGEND

- UG — UNDERGROUND TELEPHONE
- OE — OVERHEAD ELECTRIC
- UG/OE — OVERHEAD UTILITY
- W — EXIST WATER LINE
- SW — EXIST WASTE WATER LINE
- G — EXIST GAS LINE
- FO — FIBER OPTIC LINE

HI 0' 25' 50' 100'
VI 0' 5' 10'

NOTES:

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE INFORMATION.
2. ALL WORK TO BE COORDINATED WITH ANY ONGOING UTILITY RELOCATIONS AND WITH ANY WORK ASSOCIATED WITH ADJACENT PROJECTS.
3. SEE INTERSECTION DETAIL SHEETS FOR ALIGNMENT TIES AND GEOMETRIC LAYOUT OF INTERSECTING ROADWAYS.
4. SEE REMOVAL PLAN SHEETS FOR LIMITS OF EXISTING PAVEMENT REMOVAL.
5. SEE CULVERT CROSS SECTIONS AND BOX CULVERT SUPPLEMENT FOR DRAINAGE STRUCTURE DETAILS.
6. LOCATION OF UTILITIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY PRIOR TO CONSTRUCTION.
8. SEE DRIVEWAY SUMMARY AND DETAILS SHEET FOR DRIVEWAY DIMENSIONS, GRADES & QUANTITIES.
9. SEE RETAINING WALL SHEETS FOR RETAINING WALL SIZES, LOCATIONS, & DETAILS.
10. RSAE LOCATIONS ARE APPROXIMATE. SEE PROJECT MANUAL FOR DETAILS.
- *13. UTILITY ELEVATIONS UNKNOWN UNLESS OTHERWISE SHOWN.

100% SUBMITTAL

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF TIMMY G. LEVARIO, P.E. #125??. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES. DATE: 4/13/2016

DATE	BY	P.E.	REVISION

DANNENBAUM
ENGINEERING COMPANY - AUSTIN LLC
T.B.P.E. FIRM REGISTRATION #3126

© 2015 BY WILLIAMSON COUNTY, TEXAS ALL RIGHTS RESERVED.

CR 110 SOUTH

ROADWAY PLAN AND PROFILE

STA 110+00 TO STA 122+00

SCALE: HORIZONTAL 1"=100'
VERTICAL 1"=10'

SHEET 2 OF 12

DESIGNED	TG
DRAWN	RW
CHECKED	GL
SCALE	COUNTY	PROJECT	SHEET NO.
TEXAS	WILLIAMSON	4	91

Commissioners Court - Regular Session **23.**

Meeting Date: 02/14/2017

CARTS

Submitted By: Rebecca Clemons, County Judge

Department: County Judge

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on an appointment of a Williamson County Commissioners Court member to the CARTS Board of Directors.

Background

This is a biennial appointment. Term would be from now until December 31, 2018.

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

No file(s) attached.

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst. (Originator)	Wendy Coco	02/08/2017 08:02 AM
Form Started By: Rebecca Clemons		Started On: 02/06/2017 01:07 PM
Final Approval Date: 02/08/2017		

Commissioners Court - Regular Session **24.**

Meeting Date: 02/14/2017

CARTPO

Submitted By: Rebecca Clemons, County Judge

Department: County Judge

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on an appointment of an Elected Official to the Capital Area Regional Transportation Planning Organization.

Background

The appointment to CARTPO does need to be an elected official, but it can be a representative from a municipality or the County. It is for an indefinite period of time.

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

No file(s) attached.

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst. (Originator)	Wendy Coco	02/08/2017 08:02 AM
Form Started By: Rebecca Clemons		Started On: 02/06/2017 01:08 PM
Final Approval Date: 02/08/2017		

Commissioners Court - Regular Session **25.**

Meeting Date: 02/14/2017

Release

Submitted For: Tara Raymore **Submitted By:** Heather Kirkwood, Human Resources

Department: Human Resources

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on a Property Damage Release between Williamson County, Averitt Express, Inc. and Jaime Simental in the amount of $19,370.80 payable to Williamson County for settlement of a property damage claim regarding a jail dock door at the Williamson County Jail.

Background

Insurance claim payment for property damage at the jail, caused by a delivery driver.

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Release Agreement

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/09/2017 10:03 AM
Form Started By: Heather Kirkwood		Started On: 02/09/2017 08:53 AM
Final Approval Date: 02/09/2017		

Claim: VA2016127703

PROPERTY DAMAGE RELEASE

That the Undersigned, being of lawful age, for sole consideration of **NINETEEN THOUSAND THREE HUNDRED SEVENTY DOLLARS AND EIGHTY CENTS ($19,370.80)** to be paid to Williamson County does hereby and for our heirs, executors, administrators, successors and assigns release, acquit and forever discharge Averitt Express, Inc., Jaime Simental, and his, her, their, or its agents, servants, heirs, executors, administrators and all other persons, firms, corporations, associations or partnerships of and from any and all claims, actions, causes of action, demands, rights, damages, costs, loss of service, loss of use, expenses and compensation whatsoever, which the undersigned now have or which may hereafter accrue on account of or in any way growing out of any and all known and unknown, foreseen and unforeseen property damage and the consequences thereof resulting or to result from the occurrence on or about **September 21**, **2016** at or near **Georgetown, TX 78626**

It is understood and agreed that this settlement is the compromise of a doubtful and disputed claim, and that the payment made is not to be construed as an admission of liability on the part of the party or parties hereby released, and that said releases deny liability therefor and intend merely to avoid litigation and buy their peace.

This Release expressly reserves all rights of the parties released to pursue their legal remedies, if any, against the undersigned, their heirs, executors, agents and assigns.

The undersigned further declare and represent that no promise, inducement or agreement not herein expressed has been made to the undersigned and that this Release contains the entire agreement between the parties hereto, and that the terms of this Release are contractual and not a mere recital.

For your protection, some state laws require the following to appear on this form. Any person who knowingly presents a false or fraudulent claim for the payment of a loss is guilty of a crime and may be subject to fines and confinement in state prison.

Any person who knowingly and with intent to injure, defraud, or deceive any insurer files a statement of claim or an application containing any false, incomplete, or misleading information is guilty of a felony of the third degree.

CAUTION: READ ABOVE BEFORE SIGNING BELOW

Signed this _____ day of _____ 2017

CLAIMANT:

X _____ X_____

AUTHORIZED SIGNATURE FOR WILLIAMSON COUNTY

NAME PRINTED

NOTARY: State of ;

County of ; SS

on this _____ day of_____, 20____, before me appeared _____ who is known to be the person(s) named herein and who voluntarily executed this release.

_____ _____

Notary Signature Date Commission Expires

Commissioners Court - Regular Session **26.**

Meeting Date: 02/14/2017

IFB 1611-130 Request to award contract to lowest bidder- Austin Materials

Submitted By: Teri Jeffries, Purchasing

Department: Purchasing

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on awarding the IFB 1611-130, to Austin Materials. This Company that submitted the lowest and overall best value to the County for the resurfacing project on University Blvd.

Background

This project is for the resurface, milling and overlay to a portion of University Blvd. It was solicited under IFB 1611-130, and three Vendors submitted bids. Austin Materials was evaluated, and determined by the department, to be the lowest and best overall value to the County. Award letter and quote are attached.

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Award letter

Bid Tab

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/06/2017 10:52 AM
Form Started By: Teri Jeffries		Started On: 02/03/2017 08:46 AM
Final Approval Date: 02/06/2017		

WILLIAMSON COUNTY
1848

February 2, 2017

Ms. Kerstin Hancock
Purchasing Agent
Williamson County Purchasing Department
901 S. Austin Ave.
Georgetown, Texas 78626

Subject: Recommendation for Resurface, Milling and Overlay University Blvd – 1611-130

After reviewing all of the pertinent information, it appears that Austin Materials submitted the overall lowest and best offer for the 1611-130 project bid, Resurface, Milling and Overlay on University Blvd from CR 110 to SH 130.

I recommend to the Williamson County Commissioner's Court that they award Austin Materials the contract for the Resurface, Milling and Overlay on University Blvd from CR 110 to SH 130 project.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

Doug Woodall, P.E.
Acting Director of Road & Bridge

2" Overlay for University Blvd - CR 110 to SH 130
Williamson County

IFB 1611-130 - UNIVERSITY BLVD RESURFACING PROJECT
RECOMMENDED ARWARD: AUSTIN MATERIALS

					AUSTIN MATERIALS		LONE STAR		ANGEL BROTHERS	
ITEM	NO	DESCRIPTION	UNITS	QUANTITY	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost
160	6003	FURNISHING AND PLACING TOPSOIL (4")	SY	4438	$ 5.25	$ 23,299.50	$ 2.00	$ 8,876.00	$ 3.60	$ 15,976.80
164	6033	DRILL SEEDING (PERM) (RURAL) (SANDY)	SY	4438	$ 0.34	$ 1,508.92	$ 0.35	$ 1,553.30	$ 0.27	$ 1,198.26
166	6001	FERTILIZER	AC	1	$ 325.00	$ 325.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00
168	6001	VEGETATIVE WATERING	MG	551	$ 30.00	$ 16,530.00	$ 5.00	$ 2,755.00	$ 7.00	$ 3,857.00
316	6175	AGGR (TY-B GR-4 SAC-B)	CY	333	$ 94.00	$ 31,302.00	$ 80.00	$ 26,640.00	$ 100.00	$ 33,300.00
316	6466	ASPH (CHFRS-2P OR CRS-2P)	GAL	13370	$ 1.80	$ 24,066.00	$ 2.80	$ 37,436.00	$ 2.90	$ 38,773.00
341	6010	D - GR HMA TY - B PG70 - 22	TON	2483	$ 64.00	$ 158,912.00	$ 94.00	$ 233,402.00	$ 85.00	$ 211,055.00
341	6043	D - GR HMA TY - D PG70 - 22	TON	4202	$ 69.00	$ 289,938.00	$ 93.00	$ 390,786.00	$ 84.00	$ 352,968.00
354	6021	PLANE ASPH CONC PAV (0" TO 2")	SY	2102	$ 5.80	$ 12,191.60	$ 3.00	$ 6,306.00	$ 5.50	$ 11,561.00
354	6082	PLANE ASPH CONC PAV (10")	SY	4514	$ 9.00	$ 40,626.00	$ 8.00	$ 36,112.00	$ 9.00	$ 40,626.00
500	6001	MOBILIZATION	LS	1	$ 47,700.00	$ 47,700.00	$ 15,000.00	$ 15,000.00	$ 60,000.00	$ 60,000.00
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2	$ 18,000.00	$ 36,000.00	$ 3,000.00	$ 6,000.00	$ 2,000.00	$ 4,000.00
662	6109	WK ZN PAV MRK SHT TERM (TAB) TY W	EA	27	$ 1.50	$ 40.50	$ 0.75	$ 20.25	$ 1.00	$ 27.00
662	6111	WK ZN PAV MRK SHT TERM (TAB) TY Y - 2	EA	810	$ 1.50	$ 1,215.00	$ 0.75	$ 607.50	$ 1.00	$ 810.00
666	6035	REFL PAV MRK TY I (W) 8" (SLD) (090MIL)	LF	645	$ 0.65	$ 419.25	$ 0.70	$ 451.50	$ 0.65	$ 419.25
666	6047	REFL PAV MRK TY I (W) 24" (SLD) (090MIL)	LF	24	$ 6.00	$ 144.00	$ 6.60	$ 158.40	$ 6.00	$ 144.00
666	6053	REFL PAV MRK TY I (W) (ARROW) (090MIL)	EA	4	$ 78.00	$ 312.00	$ 85.00	$ 340.00	$ 80.00	$ 320.00
666	6077	REFL PAV MRK TY I (W) (WORD) (090MIL)	EA	4	$ 98.00	$ 392.00	$ 100.00	$ 400.00	$ 100.00	$ 400.00
666	6146	REFL PAV MRK TY I (Y) 24" (SLD) (090MIL)	LF	823	$ 5.70	$ 4,691.10	$ 6.00	$ 4,938.00	$ 6.00	$ 4,938.00
666	6167	REFL PAV MRK TY II (W) 4" (BRK)	LF	354	$ 0.12	$ 42.48	$ 0.13	$ 46.02	$ 0.12	$ 42.48
666	6170	REFL PAV MRK TY II (W) 4" (SLD)	LF	13244	$ 0.12	$ 1,589.28	$ 0.13	$ 1,721.72	$ 0.12	$ 1,589.28
666	6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	645	$ 0.24	$ 154.80	$ 0.25	$ 161.25	$ 0.25	$ 161.25
666	6182	REFL PAV MRK TY II (W) 24" (SLD)	LF	24	$ 2.50	$ 60.00	$ 2.50	$ 60.00	$ 2.50	$ 60.00
666	6184	REFL PAV MRK TY II (W) (ARROW)	EA	4	$ 35.00	$ 140.00	$ 35.00	$ 140.00	$ 35.00	$ 140.00
666	6192	REFL PAV MRK TY II (W) (WORD)	EA	4	$ 55.00	$ 220.00	$ 60.00	$ 240.00	$ 55.00	$ 220.00
666	6207	REFL PAV MRK TY II (Y) 4" (SLD)	LF	16207	$ 0.12	$ 1,944.84	$ 0.13	$ 2,106.91	$ 0.12	$ 1,944.84
666	6214	REFL PAV MRK TY II (Y) 24" (SLD)	LF	823	$ 2.65	$ 2,180.95	$ 2.95	$ 2,427.85	$ 2.70	$ 2,222.10
666	6299	RE PM W / RET REQ TY I (W) 4" (BRK) (090MIL)	LF	354	$ 0.30	$ 106.20	$ 0.33	$ 116.82	$ 0.30	$ 106.20
666	6302	RE PM W / RET REQ TY I (W) 4" (SLD) (090MIL)	LF	13244	$ 0.29	$ 3,840.76	$ 0.32	$ 4,238.08	$ 0.30	$ 3,973.20
666	6314	RE PM W / RET REQ TY I (Y) 4" (SLD) (090MIL)	LF	16207	$ 0.29	$ 4,700.03	$ 0.32	$ 5,186.24	$ 0.30	$ 4,862.10
672	6007	REFL PAV MRKR TY I-C	EA	37	$ 4.00	$ 148.00	$ 4.45	$ 164.65	$ 4.00	$ 148.00
672	6009	REFL PAV MRKR TY II-A-A	EA	382	$ 4.00	$ 1,528.00	$ 4.45	$ 1,699.90	$ 4.00	$ 1,528.00
		TOTAL				**$ 706,268.21**		**$ 790,591.39**		**$ 797,870.76**

Commissioners Court - Regular Session **27.**

Meeting Date: 02/14/2017

Approval to Advertise for renovations to the Justice Center

Submitted By: Teri Jeffries, Purchasing

Department: Purchasing

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action authorizing the Purchasing Agent to advertise and receive proposals for the renovations to the Justice Center under RFQ 1701-136.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Bid Packet

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 08:02 AM
Form Started By: Teri Jeffries		Started On: 02/03/2017 10:22 AM
Final Approval Date: 02/08/2017		

Solicitation 1701-136

Justice Center -CSCD Remodel

Bid Designation: Public

Williamson County, Texas

Bid 1701-136
Justice Center -CSCD Remodel

Bid Number	1701-136
Bid Title	Justice Center -CSCD Remodel
Bid Start Date	In Held
Bid End Date	Mar 7, 2017 10:00:00 AM CST
Question & Answer End Date	Mar 2, 2017 2:00:00 PM CST
Bid Contact	Teri Jeffries Senior Purchasing Specialist 512-**943**-1553 Teri.jeffries@wilco.org
Contract Duration	**6 months**
Contract Renewal	Not Applicable
Prices Good for	**180 days**
Pre-Bid Conference	**Feb 22, 2017 10:00:00 AM CST** **Attendance is mandatory** **Location: Williamson County Justice Center** **405 Martin Luther King Street, 1st floor shell space, Georgetown, TX**

Bid Comments

The County seeks cost proposals from qualified contractors to remodel the existing first floor shell space within the Justice Center, located at 405 Martin Luther King Street, Georgetown, Texas. This space is to be completed and occupied by the Community Supervision and Corrections Department [CSCD]. All specifications and the scope of the project are attached with this RFP. Proposals shall support a total cost to complete all work, per the specifications, and Addendum 1, as well as demonstrate how the contractor is qualified to complete the project.

RFP 1611-129
Williamson County Justice Center
Shell buildout construction project
405 Martin Luther King Street, Georgetown, Texas

Scope of Work Summary

The Work included in this Contract consists of construction of approximately 2,600 gross square feet of shell build out in the Williamson County Justice Center. Work includes all general building construction, mechanical, plumbing, and electrical work. The general description of the project includes but is not limited to the following:
Suite buildout, per specifications,
Interior finishes as per finish schedule,
All work to be performance must comply fully with the specifications and drawings provided by BLGY Architecture [attached], dated 12/22/2016, Addendum No. 1, dated January 16, 2017, and any and all subsequent Addendums and changes as directed by the architect and County personnel.

Construction Timeframe and requirements

Time is of the essence with the performance of this contract. The work shall be phased so as not to interfere with operations in the exiting building. Reference all specifications for full terms.
Please review the ensuing contract, attached with proposal documents for insurance requirements.
Please review the evaluation criteria and ensure all requirements are satisfied in order to be considered.

Item Response Form

Item	**1701-136--01-01 -** Please add all required documents to this line item.
Quantity	**1 each**
Unit Price	
Delivery Location	**Williamson County, Texas** Purchasing Department 901 S. Austin Avenue Georgetown TX 78626 **Qty** 1

Description
Please add all required documents for the proposal to this line item.

PUBLIC ANNOUNCEMENT AND GENERAL INFORMATION

WILLIAMSON COUNTY PURCHASING DEPARTMENT
SOLICIATION 1701-136
Justice Center -CSCD Remodel

PROPOSALS MUST BE RECEIVED ON OR BEFORE:
Mar 7, 2017 10:00:00 AM CST

PROPOSAL WILL BE PUBLICLY OPENED:
Mar 7, 2017 10:00:00 AM CST

Notice is hereby given that sealed Proposals for the above-mentioned goods and/or services will be accepted by the Williamson County Purchasing Department. Williamson County uses BidSync to distribute and receive proposals. Specifications for this RFP may be obtained by registering at www.bidsync.com.

Williamson County prefers and requests electronic submittal of this Proposal.

All electronic proposal must be submitted via: www.bidsync.com

Electronic proposals are requested, however paper proposals will currently still be received, until further notice and may be mailed or delivered to the address listed below.

Respondents are strongly encouraged to carefully read this entire RFP.

All interested Respondents are invited to submit a Proposal in accordance with the Instructions and General Requirements, Proposal Format, Proposal Specifications, and Definitions, Terms and Conditions stated in this RFP.

Please note that a complete package must be submitted choosing one of the above two methods. Split packages submitted will be considered "unresponsive" and will not be accepted or evaluated.

Williamson County will not accept any Proposals received after the submittal deadline, and shall return such Proposals unopened to the Respondent.

General Information:

- If mailed or delivered in person, Proposal and Proposal addenda are to be delivered in sealed envelope on or before the submittal deadline, as noted in the Public Announcement and General Information listed above for this RFP, to:

  Williamson County Purchasing Department
  Attn: **PROPOSAL NAME AND NUMBER**
  901 South Austin Avenue
  Georgetown, Texas 78626

  - Respondents should list the Proposal Number, Proposal Name, Name and Address of Respondent, and the Date of the Proposal opening on the outside of the box or envelope and note "Sealed Proposal Enclosed."
  - Respondent should submit one (1) original.
  - Williamson County will NOT be responsible for unmarked or improperly marked envelopes.
  - Williamson County will not accept any responsibility for Proposals being delivered by third party carriers.
  - Facsimile transmittals will NOT be accepted.

- Proposals will be opened publicly in a manner; however, to avoid public disclosure of contents, only the names of Respondents and pricing will be read aloud.

- All submitted questions with their answers will be posted and updated on www.bidsync.com.

- It is the Respondent's responsibility to review all documents in BidSync, including any Addenda that may have been added after the document packet was originally released and posted.

  - Any Addenda and/or other information relevant to the RFP will be posted on www.bidsync.com.

  - The Williamson County Purchasing Department takes no responsibility to ensure any interested Respondent has obtained any outstanding addenda or additional information.

RFP 1611-129

Williamson County Justice Center
Shell buildout construction project
405 Martin Luther King Street, Georgetown, Texas

1.0 Scope of Work Summary

The Work included in this Contract consists of construction of approximately 2,600 gross square feet of shell build out in the Williamson County Justice Center. Work includes all general building construction, mechanical, plumbing, and electrical work. The general description of the project includes but is not limited to the following:

1. Suite build out, per specifications,
2. Interior finishes as per finish schedule,
3. All work to be performance must comply fully with the specifications and drawings provided by BLGY Architecture [attached], dated 12/22/2016, Addendum No. 1, dated January 16, 2017, and any and all subsequent Addendums and changes as directed by the architect and County personnel.

2.0 Construction Timeframe and requirements

Time is of the essence with the performance of this contract. The work shall be phased so as not to interfere with operations in the exiting building. Reference all specifications for full terms.

Williamson County – Request for Proposal (RFP)

SECTION 1 - DEFINITIONS

Addendum/Addenda – means any written or graphic instruments issued by the County prior to the consideration of Proposals which modify or interpret the Proposal Documents by additions, deletions, clarifications, or corrections.

Agreement/Ensuing Agreement(s) – means the Successful Respondent may be required by the County to sign an additional Agreement containing terms necessary to ensure compliance with the RFP and the Respondent's Proposal. Such Ensuing Agreement(s) shall contain the Proposal specifications, terms and conditions that are derived from the RFP.

Contract – means this RFP and the Proposal of the Successful Respondent shall become a Contract between the Successful Respondent and the County once the Successful Respondent's Proposal is properly accepted by the Williamson County Commissioners Court (sometimes referred to herein as the Commissioner's Court").

Commissioner's Court – means the Williamson County Commissioners Court.

County – means Williamson County, a political subdivision of the State of Texas.

Executive Summary – means the document submitted by Respondent that represents a concise summary of the contents of the Proposal. It does not include any information concerning costs.

Proposal Documents – means the Legal Notice, RFP including attachments, and any Addenda issued by the County prior to the consideration of any Proposals.

Proposal – means the complete, properly signed document, and ALL required forms and documentation listed in the proposal package which have been submitted in accordance with this RFP package. A Proposal submitted in accordance with this RFP is irrevocable during the specified time period for evaluation and acceptance of Proposals, unless a waiver is obtained from the Williamson County Purchasing Agent.

Respondent – means a person or entity who submits a Proposal in response to this RFP.

Request for Proposals (RFP) – means this document, together with the attachments thereto and any future Addenda issued by the County.

Successful Respondent– means the responsible Respondent who, in the County's sole opinion, submits the Proposal which is in the best interest of the County, taking into account factors identified

herein, and to whom the County intends to award the Contract.

SECTION 2 - RESPONSE FORMAT AND SUBMISSION

2.1 INTRODUCTION

Each Proposal submitted in response to this RFP should clearly reference the numbered sections of this RFP that require a response. Failure to arrange the Proposal as requested may result in the disqualification of the Proposal.

Though there is not a page limit for Proposals, to save natural resources including paper, and to allow the County staff to efficiently evaluate all submitted Proposals, the County requests that Proposals be orderly, concise, but comprehensive in providing the requested information. Conciseness and clarity of content are emphasized and encouraged. If mailed or delivered in person, please limit additional, non requested information.

Please provide your Proposal response using:

A. 8 ½" x 11" pages, inclusive of any cover letter or supporting materials.

B. The least amount of plastic/laminate or other non-recyclable binding materials.

C. Single-sided printing.

Vague and general Proposals will be considered non-responsive, and may, at the County's sole discretion, result in disqualification. Proposals must be legible and complete. Failure to provide the required information may result in the disqualification of the Proposal. All pages of the Proposal should be numbered and the Proposal should contain an organized, paginated table of contents corresponding to the sections and pages of the Proposal.

2.2 ORGANIZATION OF PROPOSAL CONTENTS AND TABLE OF CONTENTS

Each Proposal should be submitted with a table of contents that clearly identifies and denotes the location of all enclosures of the Proposal. The table of contents should follow the RFP's structure as much as is practical.

Each Proposal should be organized in the manner described below:

A. Transmittal Letter. Please see Section 2.3, Transmittal Letter, for more information.

B. Table of Contents.

C. Executive Summary. Please see Section 2.4, Executive Summary.

D. Proposal Response to Criteria. (Please see the sections in this RFP package that list the Specifications & Cost Proposal, Experience and Qualifications, References, and Implementation Strategy to respond to our criteria in a clear and concise manner)

E. Price Sheet.

F. References: Identification of three (3) references within the last four (4) years, for which the Respondent is providing, or has provided, the goods and/or services (public sector) of the type requested in this RFP. Include the name, position/title, and telephone number of a contact person at each entity.

G. Conflict of Interest Questionnaire.

H. Proposal Affidavit (Signature Page).

I. Attach your entities sample Contract, if applicable, for the County's review and consideration. This should include any additional terms or conditions. The County is not required to use the sample Contract submitted.

2.3 TRANSMITTAL LETTER

The Respondent should submit a Transmittal Letter that provides the following information:

A. Name and address of individual or business entity submitting the Proposal.

B. Respondent's type of business entity (i.e., Corporation, General Partnership, Limited Partnership, LLC, etc.). See Section 3.5, Signature of Respondent, for more information.

C. Place of incorporation or organization, if applicable.

D. Name and location of major offices and other facilities that relate to the Respondent performance under the terms of this RFP.

E. Name, physical address, email address, business and fax number of the Respondent's principal contact person regarding all contractual matters relating to this RFP.

F. The Respondent's Federal Employer Identification Number.

G. A commitment by the Respondent to provide the services required by the County;

H. A statement that the Proposal is valid for the time specified on page three (3), under the section named *Prices Good for*, of this Proposal packet. Any Proposal containing a term of less than the required amount, may at the County's sole discretion, be rejected as non-responsive.

I. If the Proposal being submitted will have an effect on air quality for the County (as it relates to any state, federal, or voluntary air quality standard), then the Respondent is encouraged to provide information in narrative indicating the anticipated air quality impact. See Section 4.40, Air Quality for more information.

The Transmittal Letter should be signed by a person legally authorized to bind the Respondent to the representations in the Transmittal Letter and the Proposal. In the case of a joint Proposal, each party must sign the Transmittal Letter.

2.4 EXECUTIVE SUMMARY

The Respondent should provide an Executive Summary of its Proposal that asserts that the Respondent is providing in its response all of the requirements of this RFP. The Executive Summary should not include any information concerning the cost of the Proposal, but instead must represent a full and concise summary of the contents of the Proposal. It is recommended the Executive Summary include the following information:

A. Identify any goods and/or services that are provided beyond those specifically requested. If the Respondent is providing services and/or goods that do not meet the specific requirements of this RFP, but in the opinion of the Respondent are equivalent or superior to those specifically requested, any such differences should be noted in the Executive Summary. However, the Respondent must realize that failure to provide the goods and/or services specifically required, at the County's sole discretion, may result in disqualification of the Proposal.

B. Indicate why the Respondent believes that it is the most qualified Respondent to provide the services described in this RFP. The Successful Respondent must demonstrate extensive experience and understanding of the intent of this project. The Respondent should describe in detail the current and historical experience the Respondent and its subcontractors have that would be relevant to completing the project. References must contain the name of key personnel and telephone numbers for each contact, as described in Section 3.14, References.

C. Briefly state why the Respondent believes its proposed goods and/or services best meet the County's needs and RFP requirements, and the Respondent also should concisely describe any additional features, aspects, or advantages of its goods and/or services in any relevant area not covered elsewhere in its Proposal.

2.5 CONFLICT OF INTEREST

No public official shall have interest in a contract, in accordance with Vernon's Texas Codes Annotated, Local Government Code, Title 5, Subtitle C, Chapter 171, as amended.

As of January 1, 2006, all Respondents are responsible for complying with Local Government Code, Title 5, Subtitle C, Chapter 176. Additional information may be obtained from the County's website at the following link:

http://www.wilco.org/CountyDepartments/Purchasing/ConflictofInterestDisclosure/tabid/689/language/en-US/Default.aspx

Each Respondent must disclose any existing or potential conflict of interest relative to the performance of the requirements of this RFP. **Examples of potential conflicts of interest may include an existing business or personal relationship between the Respondent, its principal, or any affiliate or subcontractor with the County or any other entity or person involved in any way with the project that is subject to this RFP**. Similarly, any personal or business relationship between the Respondent, the principals, or any affiliate or subcontractor with any employee, or official of the County or its suppliers must be disclosed. Any such relationship that might be perceived or represented as a conflict must be disclosed. Failure to disclose any such relationship or reveal personal relationships with the County employees or officials may be cause for termination.

The County will decide if an actual or perceived conflict should result in Proposal disqualification.

By submitting a Proposal in response to this RFP, all Respondents affirm they have not given, nor intend to give, at any time hereafter, any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a the County public servant or any employee, official or representative of same, in connection with this procurement.

Each Respondent must provide a Conflict of Interest Statement with their Proposal Package. Package may be deemed incomplete without this form.

2.6 CERTIFICATE OF INTERESTED PARTIES – FORM 1295

As of January 1, 2016, all Respondents are responsible for complying with the Texas Government Code, Section 2252.908. The law states that the County may not enter into certain contracts with a Respondent unless the Respondent submits a disclosure of interested parties to the County at the time the Respondent submits the signed contract. The law applies only to a contract of the County on or after January 1, 2016 that either:

A. Requires an action or vote by the Commissioners Court before the contract may be signed (all contracts that fall under the jurisdiction of the Commissioners Court approval, such as contracts resulting from an Initiation for Bid (IFB), RFP, Request for Qualifications (RFQ), etc., excluding,

but not limited to, certain Juvenile Service contracts, contracts funded with Sheriff's seized fun monies, etc.); or

B. Has a value of at least $1,000,000.

By January 1, 2016, the Texas Ethics Commission will make available on its website, a new filing application that must be used to file Form 1295. Information regarding how to use the filing application is available on the Texas Ethics Commission website at the following link:

https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

A Respondent must:

A. Use the online application to process the required information on Form 1295.

B. Print a copy of the form which will contain a unique certification number.

C. An authorized agent of the Respondent must sign the printed copy of the form.

D. Have the form notarized.

E. File the completed Form 1295 and certification of filing (scanning and emailing form is sufficient) with Williamson County Purchasing Agent at the time the signed Contract is submitted for approval.

After the Commissioners Court award of the contract, the County shall notify the Texas Ethics Commission, using the Texas Ethics Commission's filing application, of the receipt of the filed Form 1295 and certification of filing not later than the 30th day after the date the contract binds all parties to the contract. The Texas Ethics Commission will post the completed Form 1295 to its website within seven business days after receiving notice from the County.

2.7 PROPOSAL SUBMITTAL DEADLINE

The Proposal is due no later than the submittal date and time set forth in the Public Announcement and General Information listed in this RFP package. Contents of each Proposal shall be submitted in accordance with this RFP.

2.8 ETHICS

The Respondent shall not accept or offer gifts or anything of value, nor enter into any business arrangement with any employee, official or agent of the County.

2.9 DELIVERY OF PROPOSALS

The County uses BidSync to distribute and receive bids and Proposals. It is preferred that Proposals be submitted electronically through BidSync; however, Respondents can submit a hard copy.

Refer to www.bidsync.com for further information on how to submit electronically.

If mailed or delivered in person, Proposal and Proposal Addenda are to be delivered in sealed envelope on or before the submittal deadline, as noted in the Public Announcement and General Information listed in this RFP package, to:

Williamson County Purchasing Department

Attn: **Proposal Name and Number**
901 South Austin Avenue
Georgetown, Texas 78626

Also, all Respondents should list their Name and Address, and the Date of the Proposal opening on the outside of the box or envelope and note "Sealed Proposal Enclosed." Williamson County will not accept any Proposals after the submittal deadline, and shall return such Proposals unopened to the Respondent. The County will not accept any responsibility for Proposals being delivered by third party carriers.

Proposals will be opened publicly; however, in a manner to avoid public disclosure of contents, only names of Respondents will be read aloud: no pricing will be announced at the opening.

SECTION 3 - INSTRUCTIONS AND GENERAL REQUIREMENTS

3.1 INSTRUCTIONS

Read this document carefully, and follow all instructions and requirements. All Respondents are responsible for fulfilling all requirements and specifications. Be sure to have a clear understanding of this RFP.

General requirements apply to all advertised RFPs; however, these may be superseded, in whole or in part, by the proposal specifications, Addenda and modifications issued as a part of this RFP. Be sure your Proposal package is complete.

3.2 AMBIGUITY, CONFLICT, OR OTHER ERRORS IN THIS RFP

If a Respondent discovers any ambiguity, conflict, discrepancy, omission or other error in this RFP, the Respondent shall immediately notify the County Purchasing Department of such error in writing and request modification or clarification of the document.

Modifications will be made by issuing Addenda. If the Respondent fails to notify the County prior to the date and time fixed for submission of Proposals of an error or ambiguity in the RFP known to the Respondent, or an error or ambiguity that reasonably should have been known to the Respondent, then the Respondent shall be deemed to have waived the error or ambiguity or its later resolution.

The County may also modify the RFP, no later than forty-eight (48) hours prior to the date and time fixed for submission of Proposals, by issuance of an Addendum. All Addenda will be numbered consecutively, beginning with one (1).

3.3 NOTIFICATION OF MOST CURRENT ADDRESS

All Respondents in receipt of this RFP shall notify the Williamson County Purchasing Department of any address changes, contact person changes, and/or telephone number changes no later than forty-eight (48) hours prior to the date and time fixed for submission of Proposals.

3.4 SIGNATURE OF RESPONDENT

A Transmittal Letter, which shall be considered an integral part of the Proposal as stated in Section 2.3, Transmittal Letter, shall be signed by an individual who is authorized to bind the Respondent contractually.

A. If the Respondent is a Corporation or Limited Liability Company, the legal name of the Corporation or Limited Liability Company shall be provided together with the signature of the officer or officers authorized to sign on behalf of such entity.

B. If the Respondent is a General Partnership, the true name of the firm shall be provided with the signature of each partner authorized to sign.

C. If the Respondent is a Limited Partnership, the name of the Limited Partner's General Partner shall be provided with the signature of the officer authorized to sign on behalf of the General Partner.

D. If the Respondent is a Sole Proprietor(s) (individual), each Sole Proprietor(s) shall sign.

E. If signature is by an agent, other than the Sole Proprietor(s) or an officer of a Corporation, Limited

Liability Company, General Partner or a member of a General Partnership, a power of attorney equivalent document must be submitted to the Williamson County Purchasing Department.

3.5 ASSUMED BUSINESS NAME

If the Respondent operates business under an Assumed Business Name, the Respondent must have file with the Williamson County Clerk a current Assumed Name Certificate and provide a file marked copy of same prior to contract award.

3.6 ECONOMY OF PRESENTATION

Proposals should not contain promotional or display materials, except as they may directly answer in whole or in part questions contained in the RFP. Such exhibits shall be clearly marked with the applicable reference number of the question in the RFP. Proposals must address the technical requirements as specified in the RFP. All questions posed by the RFP must be answered concisely and clearly. Proposals that do not address each criterion may be, at the sole discretion of the County, rejected and not considered.

3.7 PROPOSAL OBLIGATION

The contents of the RFP, Proposal, and any clarification thereof submitted by the Successful Respondent shall become part of the contractual obligation and incorporated by reference into the Contract and any Ensuing Agreement(s).

3.8 COMPLIANCE WITH RFP SPECIFICATIONS

It is intended that this RFP describe the requirements and the Proposal format in sufficient detail to secure comparable Proposal. Failure to comply with all provisions of the RFP may, at the sole discretion of the County, result in disqualification.

3.9 EVALUATION

The County reserves the right to use all pertinent information (also learned from sources other than disclosed in the RFP process) that might affect the County's judgment as to the appropriateness of award to the best evaluated Respondent. This information may be appended to the Proposal evaluation process results. Information on a Respondent from reliable sources, and not within the Respondent Proposal, may also be noted and made part of the evaluation file. The County shall have sole discretion for determining the reliability of the source. The County reserves the right to conduct written and/or oral discussions/interviews after the Proposal opening. The purpose of such discussions/interviews is to provide clarification and/or additional information to make an award that is in the best interest of the County.

3.10 WITHDRAWAL OF PROPOSAL

The Respondent may withdraw its Proposal by submitting a written request with the company letterhead and the signature of an authorized individual, as described in Section 3.4, Signature of Respondent, to the Williamson County Purchasing Department any time prior to the submission deadline.

The Respondent may submit a new Proposal prior to the deadline. Alterations of the Proposal in any manner will not be considered if submitted after the deadline. Withdrawal of a Proposal after the deadline will be subject to written approval of the Williamson County Purchasing Agent.

3.11 RESPONSIBILITY

It is expected that a Respondent will be able to affirmatively demonstrate responsibility. A prospective Respondent should be able to meet the following requirements:

A. Have adequate financial resources, or the ability to obtain such resources as required;
B. Be able to comply with the required or proposed delivery schedule;
C. Have a satisfactory record of performance that can be determined thru references provided; and
D. Be otherwise qualified and eligible to receive an award.

The County may request representation and other information sufficient to determine the Respondent ability to meet these minimum standards listed above.

3.12 PURCHASE ORDERS

If required by the Williamson County Purchasing Department, a purchase order(s) may be generated to the Successful Respondent for goods and/or services. If a purchase order is issued, the purchase order number must appear on all itemized invoices and/or requests for payment.

3.13 SILENCE OF SPECIFICATIONS

The apparent silence of any RFP specifications as to any detail or to the apparent omission from it of a detailed description concerning any point, shall be regarded as meaning that only the best practices are to prevail. All interpretations of these specifications shall be made on the basis of this statement.

3.14 REFERENCES

Respondents shall furnish a list of contracts where similar responsibilities and goods and/or services have been required and/or performed for the past five (5) years, to include names, titles, phone numbers and email addresses of reference contacts, contract numbers and dates of performance.

Also, Respondents shall include a list of any contracts that have been cancelled or terminated within the last five (5) years, along with an explanation of the cancellation and the names, email address and phone number of a reference person with that institution.

The County may contact some or all of the references in order to determine the Respondent performance record on work similar to that described in this RFP. The County reserves the right to contact references other than those provided in the response and to use the information gained from them in the evaluation process.

References should be provided in accordance with this RFP. Proposal may not be deemed complete without the inclusion of requested references.

SECTION 4 - TERMS AND CONDITIONS

4.1 VENUE AND GOVERNING LAW

The Respondent hereby agrees and acknowledges that venue and jurisdiction of any suit, right, or cause of action arising out of or in connection with this RFP, the Contract and any Ensuing Agreement(s), shall lie exclusively in either Williamson County, Texas or in the Austin Division of the Western Federal District of Texas, and the parties hereto expressly consent and submit to such jurisdiction. Furthermore, except to the extent that this RFP, the Contract and any Ensuing Agreement(s) is governed by the laws of the United States, this RFP, the Contract and any Ensuing Agreement(s) shall be governed by and construed in accordance with the laws of the State of Texas, excluding, however, its choice of law rules.

4.2 INCORPORATION BY REFERENCE AND PRECEDENCE

A. The Contract shall be derived from the RFP and its Addenda (if applicable), and the Respondent Proposal. In the event of a dispute under the Contract, applicable documents will be referred to for the purpose of clarification or for additional detail in the following order of precedence:

   1. The RFP and its Addenda (if applicable); and

   2. The Respondent's Proposal.

B. In the event the County requires that an Ensuing Agreement be executed following award and a dispute arises between the terms and conditions of the Ensuing Agreement, the RFP and its Addenda (if applicable), and the Respondent's Proposal, applicable documents will be referred to for the purpose of clarification or for additional detail in the following order of precedence:

   1. The terms and conditions of the Ensuing Agreement;

   2. The RFP and its Addenda; and

   3. The Respondent's Proposal.

4.3 OWNERSHIP OF PROPOSAL

Each Proposal shall become the property of the County upon submittal and will not be returned to Respondents unless received after the submittal deadline.

4.4 DISQUALIFICATION OF RESPONDENT

Upon signing and submittal of the Proposal, a Respondent offering to sell supplies, materials, services, or equipment to the County, certifies that the Respondent has not violated the antitrust laws of the State of Texas codified in Business & Commerce Code, Section 15.01, or the Federal Antitrust Laws, and has not communicated directly or indirectly the offer made to any competitor or any other person engaged such line of business. Any or all Proposals may be rejected if the County believes that collusion exists among the Respondents.

4.5 FUNDING

The County intends to budget and make sufficient funds available and authorize funds for expenditure to finance the costs of the Contract. All Respondents understand and agree that the County's payment of

amounts under the Contract shall be contingent on the County receiving appropriations or other expenditure authority sufficient to allow the County, in the exercise of reasonable administrative discretion, to make payments under this Contract.

4.6 ASSIGNMENT, SUCCESSORS AND ASSIGNS

The Successful Respondent may not assign, sell, or otherwise transfer the Contract or any other rights or interests obtained under the Contract without written permission of the Williamson County the Commissioners Court. The Contract and any Ensuing Agreement(s) shall be binding upon and inure to the benefit of the contracting parties hereto and their respective successors and permitted assigns.

4.7 IMPLIED REQUIREMENTS

Products or services not specifically described or required in the RFP, but are necessary to provide the functional capabilities described by the Respondent, shall be implied and deemed to be included in the Proposal.

4.8 TERMINATION

A. **Termination for Cause:** The County reserves the right to terminate the Contract and/or any Ensuing Agreement(s) for default if the Successful Respondent breaches any of the Proposal specifications, terms and conditions, including warranties of the Respondent, if any, or if the Successful Respondent becomes insolvent or commits acts of bankruptcy. Such right of termination is in addition to and not in lieu of any other remedies the County may have at law or equity or as may otherwise be provided hereunder. Default may be construed as, but not limited to, failure to deliver the proper goods and/or services within the proper amount of time, and/or to properly perform any and all other requirements to the County's satisfaction, and/or to meet all other obligations and requirements.

B. **Termination for Convenience:** The County may terminate the Contract and/or any Ensuing Agreement(s) for convenience and without cause or further liability, upon no less than thirty (30) calendar days written notice to the Successful Respondent. The County reserves the right to extend this period if it is in the best interest of the County. In the event the County exercises its right to terminate without cause, it is understood and agreed that only the amounts due to the Successful Respondent for goods, commodities and/or services provided and expenses incurred to and including the date of termination, will be due and payable. No penalty will be assessed for the County's termination for convenience.

4.9 NON-PERFORMANCE

It is the objective of the County to obtain complete and satisfactory performance of the requirements set forth herein. In addition to any other remedies available at law, in equity or that may be set out herein, failure to perform may result in a deduction of payment equal to the amount of the goods and/or services that were not provided and/or performed to the County's satisfaction.

In the event of such non-performance, the County shall have the right, but shall not be obligated, to complete the services itself or by others and/or purchase the goods from other sources. If the County elects to acquire the goods or perform the services itself or by others, pursuant to the foregoing, the Successful Respondent shall reimburse the County, within ten (10) calendar days of demand, for all costs incurred by the County (including, without limitation, applicable, general, and administrative expenses, and field overhead, and the cost of necessary equipment, materials, and field labor) in correcting the nonperformance which the Successful Respondent fails to meet pursuant to the requirements set out herein. In the event the Successful Respondent refuses to reimburse the County as set out in this provision, the County shall have the right to deduct such reimbursement amounts from any amounts that may be then owing or that may become owing in the future to the Successful Respondent.

4.10 PROPRIETARY INFORMATION AND THE TEXAS PUBLIC INFORMATION ACT

All material submitted to the County shall become public property and subject to the Texas Public Information Act upon receipt. If a Respondent does not desire proprietary information in the Proposal to be disclosed, each page must be clearly identified and marked proprietary at time of submittal or, more preferably, all proprietary information may be placed in a folder or appendix and be clearly identified and marked as being proprietary. Failure to clearly identify and mark information as being proprietary as set forth under this provision will result in all unmarked information being deemed non-proprietary and available to the public. For all information that has not been clearly identified and marked as proprietary by the Respondent, the County may choose to place such information on the County's website and/or a similar public database without obtaining any type of prior consent from the Respondent.

The County will, to the extent allowed by law, endeavor to protect from public disclosure the information that has been identified and marked as proprietary. The final decision as to what information must be disclosed, however, lies with the Texas Attorney General.

To the extent, if any, that any provision in this RFP or in the Respondent's Proposal is in conflict with Texas Government Code, Chapter 552, as amended (the "Public Information Act"), the same shall be of no force or effect. Furthermore, it is expressly understood, and agreed, that the County, and its officers and employees, may request advice, decisions and opinions of the Attorney General of the State of Texas in regard to the application of the Public Information Act to any items or data furnished to the County as to whether or not the same are available to the public. It is further understood that that the County, and its officers and employees, shall have the right to rely on the advice, decisions and opinions of the Attorney General, and that the County, its officers and employees shall have no liability or obligation to any party hereto for the disclosure to the public, or to any person or persons, of any items or data furnished to the County by a party hereto, in reliance of any advice, decision or opinion of the Attorney General of the State of Texas.

4.11 RIGHT TO AUDIT

The Successful Respondent agrees that the County or its duly authorized representatives shall, until the expiration of three (3) years after termination or expiration of the services to be performed, have access to and the right to examine and photocopy any and all books, documents, papers and records of the Successful Respondent, which are directly pertinent to the services to be performed or goods to delivered for the purposes of making audits, examinations, excerpts and transcriptions. The Successful Respondent agrees that the County shall have access during normal working hours to all necessary facilities and shall be provided adequate and appropriate work space in order to conduct audits in compliance with the provisions of this section. The County shall give the Successful Respondent reasonable advance notice of intended audits.

4.12 TESTING AND INSPECTIONS

The County reserves the right to inspect and test equipment, supplies, materials and goods for quality and compliance with this RFP, and ability to meet the needs of the user. Demonstration units must be available for review. Should the goods or services fail to meet requirements and/or be unavailable for evaluation, the County can deem the Respondent to be in breach and terminate the Contract and/or any Ensuing Agreement(s).

4.13 PROPOSAL PREPARATION COSTS

The cost of developing Proposals is the sole responsibility of the Respondents and shall not be charged to the County. There is no expressed or implied obligation for the County to reimburse the Respondents for any expense incurred in preparing a Proposal in response to this RFP and the County will not reimburse the Respondents for such expenses.

4.14 INDEMNIFICATION

The Successful Respondent shall indemnify, defend and save harmless, the County, its officials, employees, agents and agent's employees from, and against, all claims, liability, and expenses including reasonable attorneys' fees, arising from activities of the Respondent, its agents, servants or employees, performed hereunder that result from the negligent act, error, or omission of the Respondent or any of the Respondent's agents, servants or employees, as well as all claims of loss or damage to the Respondent's and the County's property, equipment, and/or supplies.

Furthermore, the County, its officials, employees, agents and agents' employees shall not be liable for damages to the Successful Respondent arising from any act of any third party, including, but not limited to, theft. The Successful Respondent further agrees to indemnify, defend and save harmless, the County from its officials, employee, agents and agents' employees against all claims of whatever nature arising from any accident, injury, or damage whatsoever, caused to any person, or the property of any person, occurring in relation to the Successful Respondent's performance of any services requested hereunder during the term of the Contract and/or any Ensuing Agreement(s).

The Successful Respondent shall timely report all claims, demands, suits, actions, proceedings, liens or judgements to the County and shall, upon the receipt of any claim, demand, suit, action, proceeding, lien or judgement, not later than the fifteenth (15^{th}) day of each month; provide the County with a written report on each such matter, setting forth the status of each matter, the schedule or planned proceedings with respect to each matter and the cooperation or assistance, if any, of the County required by the Successful Respondent in the defense of each matter. The Successful Respondent's duty to defend, indemnify and hold the County harmless shall be absolute. It shall not abate or end by reason of the expiration or termination of the Contract and/or any Ensuing Agreement(s), unless otherwise agreed by the County in writing. The provisions of this section shall survive the termination of the Contract and shall remain in full force and effect with respect to all such matters no matter when they arise.

In the event of any dispute between the parties, as to whether a claim, demand, suit, action, proceeding, lien or judgement, that appears to have been caused by or appears to have arisen out of or in connection with acts or omissions of the County, the Respondent shall nevertheless fully defend such claim, demand, suit or action, proceeding, lien or judgement, until and unless there is a determination by a court of competent jurisdiction that the acts and omissions of the Respondent are not an issue in the matter.

The Successful Respondent's indemnification shall cover, and the Successful Respondent agrees to, indemnify the County, in the event the County is found to have been negligent for having selected the Successful Respondent to perform the work described in this request. The provision by the Successful Respondent of insurance shall not limit the liability of the Successful Respondent under the Contract and/or any Ensuing Agreement(s).

4.15 WAIVER OF SUBROGATION

The Successful Respondent and the Successful Respondent's insurance carrier waive any and all rights whatsoever with regard to subrogation against the County as an indirect party to any suit arising out of personal or property damages resulting from the Respondent's performance under this Contract and any Ensuing Agreement(s).

4.16 RELATIONSHIP OF THE PARTIES

The Successful Respondent shall be an independent contractor and shall assume all of the rights, obligations, liabilities, applicable to it as such independent contractor hereunder and any provisions herein which may appear to give the County the right to direct the Successful Respondent as to details of doing work herein covered, or to exercise a measure of control over the work, shall be deemed to mean that the Successful Respondent shall follow the desires of the County in the results of the work only. The County shall not retain or have the right to control the Successful Respondent's means, methods or

details pertaining to the Successful Respondent's performance of the work. The County and the Successful Respondent hereby agree and declare that the Successful Respondent is an independent contractor and as such meets the qualifications of an "Independent Contractor" under Texas Workers Compensation Act, Texas Labor Code, Section 406.141, that the Successful Respondent is not an employee of the County, and that the Successful Respondent and its employees, agents and subcontractors shall not be entitled to workers compensation coverage or any other type of insurance coverage held by the County.

4.17 SOLE PROVIDER

The Successful Respondent agrees and acknowledges that it shall not be considered a sole provider of the goods and/or services described herein and that the County may contract with other providers of such goods and/or services if the County deems, at its sole discretion, that multiple providers of the same goods and/or services will serve the best interest of the County.

4.18 FORCE MAJEURE

If the party obligated to perform is prevented from performance by an act of war, order of legal authority, act of God, or other unavoidable cause not attributable to the fault or negligence of said party, the other party shall grant such party relief from the performance. The burden of proof for the need of such relief shall rest upon the party obligated to perform. To obtain release based on force majeure, the party obligated to perform shall file a written request with the other party.

4.19 SEVERABILITY

If any provision of this RFP, the Contract or any Ensuing Agreement(s) shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision thereof, but rather the entire RFP, Contract or any Ensuing Agreement (s) will be construed as if not containing the particular invalid or unenforceable provision or provisions, and the rights and obligation of the parties shall be construed and enforced in accordance therewith. The parties acknowledge that if any provision of this RFP, the Contract or any Ensuing Agreement(s) is determined to be invalid or unenforceable, it is the desire and intention of each that such provision be reformed and construed in such a manner that it will, to the maximum extent practicable, give effect to the intent of this RFP, the Contract or any Ensuing Agreement(s) and be deemed to be validated and enforceable.

4.20 EQUAL OPPORTUNITY

Neither party shall discriminate against any employee or applicant for employment because of race, color, sex, religion or national origin.

4.21 NOTICE

Any notice to be given shall be in writing and may be distributed by personal delivery, or by registered or certified mail, return receipt requested, addressed to the proper party, at the following address:

The County: Williamson County Purchasing Department
Attn: Purchasing Agent
901 South Austin Avenue
Georgetown, Texas 78626

The Respondent: Address set out in Respondent's Transmittal Letter

Notices given in accordance with this provision shall be effective upon (1) receipt by the party to which notice is given, or (2) on the third (3rd) calendar day following mailing, whichever occurs first.

4.22 SALES AND USE TAX EXEMPTION

The County is a body, corporate and politic, under the laws of the State of Texas and claims exemption from sales and use taxes under Texas Tax Code, Section 151.309, as amended, and the services and/or goods subject hereof are being secured for use by the County.

4.23 COMPLIANCE WITH LAWS

The County and the Successful Respondent shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any matter affecting the performance of the Contract and any Ensuing Agreement(s), including, without limitation, Workers' Compensation laws, salary and wage statutes and regulations, licensing laws and regulations. When required, the Successful Respondent shall furnish the County with certification of compliance with said laws, statues, ordinances, rules, regulations, orders, and decrees above specified.

4.24 INCORPORATION OF EXHIBITS, APPENDICES AND ATTACHMENTS

All of the Exhibits, Appendices and Attachments referred to herein are incorporated by reference as if set forth verbatim herein. Any conflicting terms in the Contract documents will be resolved at the sole discretion of the Commissioners Court.

4.25 NO WAIVER OF IMMUNITIES

Nothing herein shall be deemed to waive, modify or amend any legal defense available at law or in equity to the County, its past or present officers, employees, or agents, nor to create any legal rights or claim on behalf of any third party. The County does not waive, modify, or alter to any extent whatsoever the availability of the defense of governmental immunity under the laws of the State of Texas and of the United States.

4.26 NO WAIVER

The failure or delay of any party to enforce at any time or any period of time any of the provisions of this RFP, the Contract or any Ensuing Agreement(s) shall not constitute a present or future waiver of such provisions nor the right of either party to enforce each and every provision. Furthermore, no term or provision hereof shall be deemed waived and no breach excused unless such waiver or consent shall be in writing and signed by the party claimed to have waived or consented. Any consent by any party to, or waiver of, a breach by the other, whether expressed or implied, shall not constitute a consent to, waiver of or excuse for any other, different or subsequent breach.

4.27 CURRENT REVENUES

The obligations of the parties under the Contract and any Ensuing Agreement(s) do not constitute a general obligation or indebtedness of the County for which the County is obligated to levy, pledge, or collect any of taxation. It is understood and agreed that the County shall have the right to terminate the Contract and any Ensuing Agreement(s) at the end of any the County fiscal year if the governing body of the County does not appropriate sufficient funds as determined by the County's budget for the fiscal year in question. The County may effect such termination by giving written notice of termination to t Successful Respondent at the end of its then-current fiscal year.

4.28 BINDING EFFECT

This Contract and any Ensuing Agreement(s) shall be binding upon and inure to the benefit of the parties and their respective permitted assigns and successors.

4.29 ASSIGNMENT

The Successful Respondent's interest and duties hereunder may not be assigned or delegated to a third party without the express written consent of the County.

4.30 SAFETY

The Successful Respondent is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with any services to be provided hereunder. The safety program shall comply with all applicable requirements of the current federal Occupational Safety and Health Act and all other applicable federal, state and local laws and regulations.

4.31 GENERAL OBLIGATIONS AND RELIANCE

The Successful Respondent shall perform all services and/or provide all goods, as well as those reasonably inferable and necessary for completion and provision of services and/or goods required hereunder. The Successful Respondent shall keep the County informed of the progress and quality the services. The Successful Respondent agrees and acknowledges that the County is relying on the Successful Respondent's represented expertise and ability to provide the goods and/or services described herein. The Successful Respondent agrees to use its best efforts, skill, judgment, and abilities to perform its obligations in accordance with the highest standards used in the profession and to further the interests of the County in accordance with the County's requirements and procedures. The Successful Respondent's duties, as set forth herein, shall at no time be in any way diminished by reason of any approval by the County, nor shall the Successful Respondent be released from any liability reason of such approval by the County, it being understood that the County at all times is ultimately relying upon the Successful Respondent's skill and knowledge in performing the services and providing any goods required hereunder.

4.32 CONTRACTUAL DEVELOPMENT

The Commissioners Court may award the Contract on the basis of the initial Proposals received, without any further or additional discussions. Therefore, each initial Proposal should contain the Respondent best terms and offer. The contents of the RFP and the selected Proposal will become an integral part of the Contract, but may be modified, at Williamson County's sole discretion, by provisions of an Ensuing Agreement. Therefore, the Respondent must agree to inclusion in an Ensuing Agreement of t Proposal specifications, terms and conditions of this RFP. Williamson County may, at its discretion, opt to conduct further discussions with responsible offerors and request the highest ranked firm's Best and Final Offer (BAFO).

4.33 ENTIRE AGREEMENT

The Contract and any Ensuing Agreement(s) shall supersede all prior Agreements, written or oral between the Successful Respondent and the County and shall constitute the entire Agreement and understanding between the parties with respect to the services and/or goods to be provided. Each of the provisions herein shall be binding upon the parties and may not be waived, modified, amended or altered, except by writing signed by the Successful Respondent and the County.

4.34 SURVIVABILITY

All applicable agreements that were entered into between the Successful Respondent and the County, under the terms and conditions of the Contract and/or any Ensuing Agreement(s), shall survive the expiration or termination thereof for ninety (90) days unless a new contract has been awarded.

The County may exercise, by written notice to the Successful Respondent no later than ten (10) calendar days of the Contract expiration, this clause for emergency cases only.

4.35 PAYMENT

The County's payment for goods and services shall be governed by the Texas Government Code, Chapter 2251. An invoice shall be deemed overdue the thirty-first (31st) day after the later of the following:

A. The date the County receives the goods under the Contract;
B. The date the performance of the service under the Contract is completed; or
C. The date the Williamson County Auditor receives an invoice for the goods or services.

Interest charges for any overdue payments shall be paid by the County in accordance with Texas Government Code, Section 2251.025. More specifically, the rate of interest that shall accrue on a late payment is the rate in effect on September 1 of the County's fiscal year in which the payment becomes due. The said rate in effect on September 1 shall be equal to the sum of one (1) percent and the prime rate published in the Wall Street Journal on the first (1st) day of July of the preceding fiscal year that does not fall on a Saturday or Sunday.

In the event that an error appears in an invoice submitted by the Successful Respondent, the County shall notify the Successful Respondent of the error not later than the twenty-first (21st) day after the date the County receives the invoice. If the error is resolved in favor of the Successful Respondent, the Successful Respondent shall be entitled to receive interest on the unpaid balance of the invoice submitted by the Successful Respondent beginning on the date that the payment for the invoice became overdue. If the error is resolved in favor of the County, the Successful Respondent shall submit a corrected invoice that must be paid in accordance within the time set forth above. The unpaid balance accrues interest as provided by the Texas Government Code, Chapter 2251, if the corrected invoice is not paid by the appropriate date.

As a minimum, invoices shall include:

A. Name, address, and telephone number of the Successful Respondent and similar information in the event the payment is to be made to a different address.

B. The County Contract, Purchase Order.

C. Identification of items or service as outlined in the Contract.

D. Quantity or quantities, applicable unit prices, total prices and total amount.

E. Any additional payment information which may be called for by the Contract.

Payment inquiries should be directed to the following address:

Williamson County Auditor's Office, Accounts Payable Department
Email: accountspayable@wilco.org
Phone: 512-943-1500

4.36 CONTRACTUAL FORMATION AND ENSUING AGREEMENT

The RFP and the Respondent's Proposal, when properly accepted by the Commissioners Court, shall constitute a Contract equally binding between the Successful Respondent and the County. The Successful Respondent may be required by Williamson County to sign an additional Agreement containing terms necessary to ensure compliance with the RFP and Respondent's Proposal.

4.37 LEGAL LIABILITY INFORMATION

The Successful Respondent shall disclose all legal liability information by listing any pending litigation anticipated litigation that your firm is involved in including, but not limited to, potential or actual legal matters with private parties and any local, state, federal or international governmental entities. The County reserves the right to consider legal liability information in the recommendation of any proposed contract to the Commissioners Court.

4.38 CONFIDENTIALITY

Respondent expressly agrees that it will not use any direct or incidental confidential information that may be obtained while working in a governmental setting for its own benefit, and agrees that it will not access unauthorized areas or confidential information and it will not disclose any information to unauthorized third parties, and will take care to guard the security of the information at all times.

4.39 INCLEMENT WEATHER

In case of inclement weather or any other unforeseen event causing the County to close for business on the date of a Proposal submission deadline, the Proposal closing will automatically be postponed until the next business day the County is open. If inclement weather conditions or any other unforeseen event causes delays in carrier service operations, the County may issue an Addendum to all known Respondents interested in the project to extend the deadline. It will be the responsibility of the Respondent to notify the County of their interest in the project if these conditions are impacting their ability to turn in a submission within the stated deadline. The County reserves the right to make the final judgement call to extend any deadline.

4.40 AIR QUALITY

In determining the overall best Proposal, the County may, to the extent applicable, exercise the option granted to local governments under the Texas Local Government Code, Section 271.907.

This option allows the County to evaluate Proposals and give preference to goods and/or services of Respondent that demonstrates that the Respondent meets or exceeds any and all state or federal environmental standards, including voluntary standards, relating to air quality. If the Proposal being submitted will have an effect on air quality for the County (as it relates to any state, federal, or voluntary air quality standard), then the Respondent is encouraged to provide information in narrative indicating the anticipated air quality impact. All Respondents are expected to meet all mandated state and federal air quality standards.

4.41 COOPERATIVE PURCHASING PROGRAM

During the term of the Contract resulting from this RFP, the County would like to afford the same prices, terms and conditions to other political subdivisions or public entities. Another entity's participation in the Contract resulting from this RFP is subject to a properly authorized Purchasing Cooperative Inter-local Agreement (ILA) with the County. Any liability created by purchase orders issued against the Contract shall be the sole responsibility of the governmental agency placing the order.

4.42 PREVAILING WAGE RATES

To the extent this procurement is for the construction of a public work, including a building, highway, road, excavation, and repair work or other project development or improvement, paid for in whole or in part from public funds, without regard to whether the work is done under public supervision or direction, Texas Government Code, Chapter 2258, shall apply and the contractor shall pay not less than the wage scale of the various classes of labor as shown on the "Prevailing Wage Schedule" provided by the County. Pursuant to Texas Government Code, Section 2258.022(a)(2), the County has determined the general prevailing rate of the "Prevailing Wage Schedule" in the locality in which the public work is to be performed for each craft or type of worker needed to execute the contract and the prevailing rate for legal holiday and overtime work by using the prevailing wage rate as determined by the United States

Department of Labor in accordance with the United States Code, Section 276a (Davis-Bacon Act).

The specified wage rates are minimum rates only, and are not representations that qualified labor adequate to perform the work is available locally at the prevailing wage rates. The County is not bound to pay—and will not consider—any claims for additional compensation made by any contractor because the contractor pays wages in excess of the applicable minimum rate contained in the Contract Documents. The "Prevailing Wage Schedule" is not a representation that quantities of qualified labor adequate to perform the work may be found locally at the specified wage rates.

For classifications not shown, workers shall not be paid less than the wage indicated for laborers. The contractor shall notify each worker commencing work on the project the worker's job classification and the established minimum wage rate required to be paid, as well as the actual amount being paid. The notice must be delivered to and signed in acknowledgement of receipt by the employee and must list both the monetary wages and fringe benefits to be paid or furnished for each classification in which the worker is assigned duties. When requested by the County, competent evidence of compliance with the Texas Prevailing Wage Law shall be furnished by contractor. A copy of each worker wage rate notification shall be submitted to the County with the Application for Payment for the period during which the worker began on-site activities.

Should the contractor at any time become aware that a particular skill or trade not reflected on the County's "Prevailing Wage Schedule" will be or is being employed in the work, whether by the contractor or by a subcontractor, the contractor shall promptly inform the County and shall specify a wage rate for that skill or trade, which shall bind the contractor.

The contractor and any subcontractor shall pay to the County a penalty of sixty dollars ($60.00) for each worker employed for each calendar day, or portion thereof, that the worker is paid less than the wage rates stipulated in the "Prevailing Wage Schedule" or any supplement thereto. The contractor and each subcontractor shall keep, or cause to be kept, an accurate record showing the names and occupations of all workers employed in connection with the work, and showing the actual per diem wages paid to each worker, which records shall be open at all reasonable hours for the inspection by the County.

Within thirty-one (31) days of receipt of information concerning a violation of the Texas Government Code Chapter 2258, the County shall make an initial determination as to whether good cause exists to believe a violation occurred. The County's decision on the initial determination shall be reduced to writing and sent to the contractor or subcontractor against whom the violation was alleged, and to the affected worker. When a good cause finding is made, the County shall retain the full amounts claimed by the claimant or claimants as the difference between wages paid and wages due under the "Prevailing Wage Schedule" and any supplements thereto, together with the applicable penalties, such amounts being subtracted from successive progress payments pending a final decision on the violation.

After the County makes its initial determination, the affected contractor or subcontractor and worker have fourteen (14) calendar days in which to resolve the issue of whether a violation occurred, including the amount that should be retained by the County or paid to the affected worker. If the contractor or subcontractor and affected worker reach an agreement concerning the worker's claim, the contractor shall promptly notify the County in a written document signed by the worker. It the contractor or Subcontractor and affected worker do not agree before the fifteenth (15th) calendar day after the County determination, the contractor or subcontractor and affected worker must participate in binding arbitration in accordance with the Texas General Arbitration Act, Chapter 171, (Texas Civil Practice and Remedies Code). The parties to the arbitration have ten (10) calendar days after the expiration of the fifteen (15) calendar days referred to above, to agree on an arbitrator; if by the eleventh (11th) calendar day there is no agreement to an arbitrator, a district court shall appoint an arbitrator on the petition of any of the parties to the arbitration.

If an arbitrator determines that a violation has occurred, the arbitrator shall assess and award against the contractor or subcontractor the amount of penalty as provided above and the amount owed the worker. The County may use any amounts retained hereunder to pay the worker the amount as designated in the

arbitration award. If the County has not retained enough from the contractor or subcontractor to pay the worker in accordance with the arbitration award, the worker has a right of action against the contractor and subcontractor as appropriate, and the surety of either to receive the amount owed, attorneys' fees and court costs. The contractor shall promptly furnish a copy of the arbitration award to the County.

Money retained pursuant to the provisions above shall be used to pay the claimant or claimants the difference between the amount the worker received in wages for labor on the project at the rate paid by the contractor or subcontractor and the amount the worker would have received at the general prevailing wage rate as provided by the agreement of the claimant and the contractor or subcontractor affected, or in the arbitrator's award. The full statutory penalty of sixty dollars ($60.00) per calendar day of violation per worker shall be retained by Williamson County to offset its administrative costs, pursuant to Texas Government Code, Section, 2258.023. Any retained funds in excess of these amounts shall be paid to the contractor on the earlier of the next progress payment or final payment. Provided, however, that the County shall have no duty to release any funds to either the claimant or the contractor until it has received the notices of agreement or the arbitration award as provided under the provision herein-above.

4.43 CONFIDENTALITY

The Respondent expressly agrees that it will not use any direct or incidental confidential information that may be obtained while working in a governmental setting for its own benefit, and agrees that it will not access unauthorized areas or confidential information and it will not disclose any information to unauthorized third parties, and will take care to guard the security of the information at all times.



2204 Forbes Drive
Suite 101
Austin, TX 78754
512.977.0390 t
512.977.0838 f
www.blgy.com

ADDENDUM NO. 1

Date: January 16, 2017

Project: **Williamson County Justice Center - CSCD**

BLGY Project No.: 21604.00

From: BLGY, Inc.
2204 Forbes Drive, Suite 101
Austin, Texas 78754
(512) 977-0390

To: Prospective Bidders

This Addendum forms a part of the Contract Documents and modifies the original 100% Construction Documents & Specifications for pricing, issued December 22, 2016. Please acknowledge receipt of this Addendum in your proposal. Failure to do so may subject the Bidder to disqualification.

CHANGES TO ARCHITECTURAL SPECIFICATIONS:

SECTION 09 65 00 - Replace page 2 with the attached page.

- END OF ADDENDUM 1 -

1. Resilient Floor Tile:

   Patcraft Wood Planx 1336V LVT 1

2. Rubber Wall Base

   Flexco
   Roppe Rubber Corp.

2.2 MATERIALS

A. Resilient Floor Tile: ASTM F 1066; as follows: 1

   1. Composition 1 - asbestos-free
   2. Size: 9” x 36”
   3. Gage: .197 "
   4. Colors and Patterns: As selected by Architect from manufacturer’s complete color line of patterns listed above.

B. Wall Base: Provide 100% vulcanized rubber base (SBR) complying with ASTM F 1861, Type TS, with matching end stops and preformed, molded, or job fabricated corner units, and as follows:

   1. Height: 4"
   2. Thickness: 1/8" gage
   3. Style: Standard cove style.
   4. Finish: High gloss

C. Resilient Edge Strips: 1/8" thick, homogeneous vinyl or rubber composition, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard colors available; not less than 1" wide.

D. Adhesives (Cements): Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.

E. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.

F. Leveling Compound: Latex type as recommended by flooring manufacturer

PART 3 - EXECUTION

3.1 PREPARATION

A. Broom clean or vacuum surfaces to be covered and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.

B. Verify that concrete slabs comply with ASTM F 710 and as follows:

   1. Slab substrates shall be dry and free of curing compounds, sealers, hardeners, and other materials whose presence would interfere with bonding of adhesive. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by floor covering manufacturer.

GENERAL INFORMATION

SYMBOLS

- SIM 1/A101 SIM 1/A101 — BUILDING SECTION
- SIM 1/A101 — WALL SECTION
- SIM 1/A101 — DETAIL CALLOUT
- 101 — DOOR NUMBER
- 1/ A101 SIM — ELEVATION
- 1 — WALL TYPE
- 1 — WINDOW TYPE
- Room name 101 — ROOM NAME/NUMBER
- 0 View Name 1/8" = 1'-0" — DETAIL NAME
- NORTH ARROW

DESIGN CODES

2012 INTERNATIONAL BUILDING CODE

2012 INTERNATIONAL EXISTING BUILDING CODE

2012 INTERNATIONAL FIRE CODE

2012 INTERNATIONAL PLUMBING CODE

2012 INTERNATIONAL FUEL GAS CODE

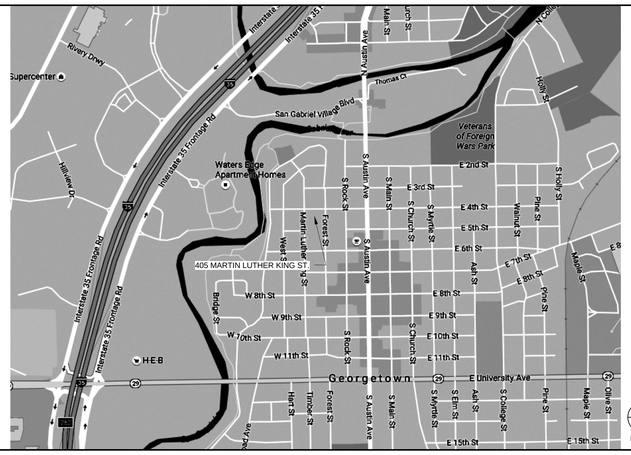
2012 INTERNATIONAL MECHANICAL CODE

2003 INTERNATIONAL ENERGY CONSERVATION CODE

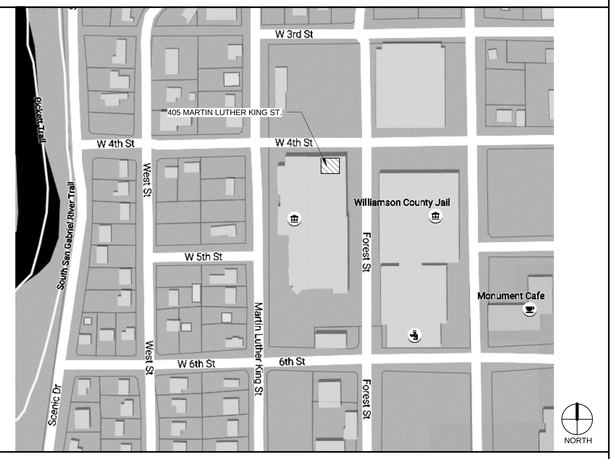
2014 NATIONAL ELECTRICAL CODE

TEXAS ACCESSABILITY STANDARDS - TAS

VICINITY MAP



LOCATION MAP



PROJECT DATA

PROJECT DESCRIPTION

THE PROPOSED BUILD-OUT OF AN EXISTING SHELL SPACE (FUTURE COURT), AS AN OFFICE SUITE. THE OFFICE SUITE WILL CONTAIN BOTH OPEN AND CLOSED OFFICES ALONG WITH A BREAK / CONFERENCE AREA. THE EXISTING 1HR SPEPRATIONS SURROUNDING THE SUITE WILL BE MAINTAINED AND A NEW 1 HOUR WALL WILL BE CREATED TO SEPERATE THE SPACE FROM ANOTHER FUTURE COURT ROOM SHELL SPACE.

PARKING

EXISTING TO REMAIN NO CHANGE

RESTROOM FACILITIES

EXISTING TO REMAIN NO CHANGE

SQUARE FOOTAGES

TOTAL BUILDING SQUARE FOOTAGE = 149,245 SF
FIRST FLOOR = 59,394 SF

FIRST FLOOR SUITE (AREA OF WORK) = 2,621 SF

EGRESS

NO CHANGE IN ACCESS TO BUILDING EGRESS SYSTEM
(2) EXISTING EXITS TO REMAIN

EXISTING SHELL SPACE
= OCCUPANCY TYPE A
= OCCUPANT LOAD 104
(BASED ON SHELL DOCUMENTS)

PROPOSED USE
= OCCUPANCY TYPE B
= OCCUPANT LOAD 26

SHEET INDEX

ARCHITECTURAL

COVER SHEET

A1.01 GENERAL INFORMATION
A1.02 ACCESSIBILITY STANDARDS
A1.03 ACCESSIBILITY STANDARDS
A1.04 ACCESSIBILITY STANDARDS
A2.01 FLOOR AND REFLECTED CEILING PLANS
A3.01 DETAILS AND SCHEDULE
A4.01 INTERIOR ELEVATIONS AND DETAILS

MECHANICAL / ELECTRICAL / PLUMBING

M1.01 SCHEDULES, NOTES AND LEGENDS - MECHANICAL

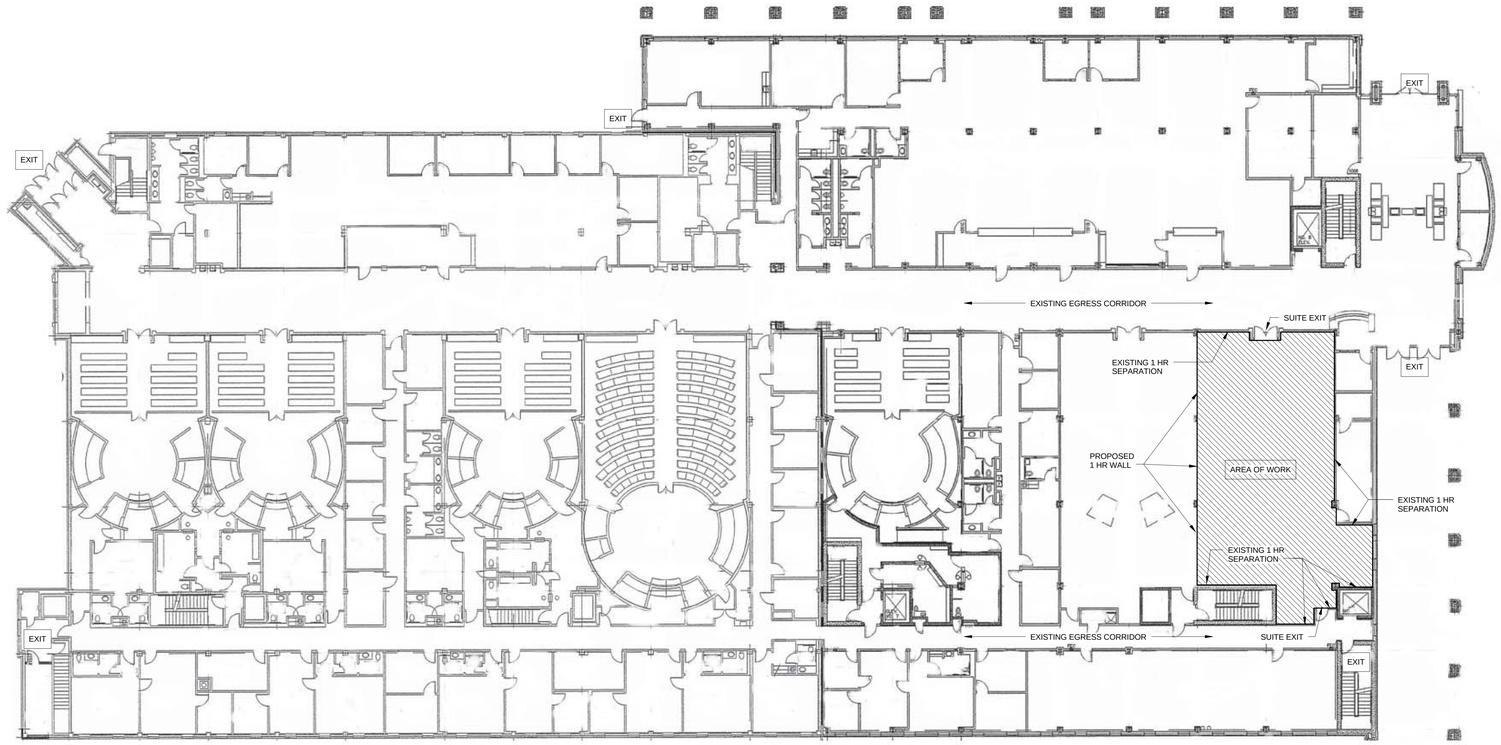
P1.01 SCHEDULES, NOTES AND LEGENDS - PLUMBING

MP2.01 FLOOR PLAN MECHANICAL AND PLUMBING

E1.01 SCHEDULES, NOTES AND LEGENDS - ELECTRICAL
E1.02 SCHEDULES - ELECTRICAL
E2.01 FLOOR PLAN ELECTRICAL

TECHNOLOGY

T000 TECHNOLOGY - INDEX SHEET
T101 TECHNOLOGY - LEVEL ONE
T500 TECHNOLOGY DETAILS
T501 TECHNOLOGY DETAILS
T502 TECHNOLOGY DETAILS



1 **OVERALL FIRST FLOOR PLAN**
NOT TO SCALE

NORTH

BLGY ARCHITECTURE
2204 FORBES DRIVE
SUITE 101
AUSTIN, TX 78754
(512) 977-0390

REGISTERED ARCHITECT JAIME DAVID BLANTON 17980 STATE OF TEXAS
12/22/16

MEP
HCE ENGINEERS
115 EAST MAIN ST.
ROUND ROCK, TX 78664
512-218-0060

ACCOUSTICAL
BAI, LLC
4006 SPEEDWAY
AUSTIN, TX 78751
512-476-3464

TECHNOLOGY
TRUE NORTH
CONSULTING GROUP
P.O. BOX 2169
HEWITT, TX 76643
254-229-0099

JUSTICE CENTER - CSCD
WILLIAMSON COUNTY
405 MARTIN LUTHER KING ST., GEORGETOWN, TX 78626

PROJECT NO.: 21604
ISSUE DATE 12/22/2016

GENERAL INFORMATION

A1.01

CHAPTER 3: BUILDING BLOCKS

302 FLOOR OR GROUND SURFACES

302.2 CARPET. CARPET OR CARPET TILE SHALL BE SECURELY ATTACHED AND SHALL HAVE A FIRM CUSHION, PAD, OR BACKING OR NO CUSHION OR PAD. CARPET OR CARPET TILE SHALL HAVE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE, OR LEVEL CUT/UNCUT PILE TEXTURE. PILE HEIGHT SHALL BE 1/2 INCH (13 MM) MAXIMUM. EXPOSED EDGES OF CARPET SHALL BE FASTENED TO FLOOR SURFACES AND SHALL HAVE TRIM ON THE ENTIRE LENGTH OF THE EXPOSED EDGE. CARPET EDGE TRIM SHALL COMPLY WITH 303.

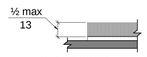


FIGURE 302.2 CARPET TILE HEIGHT

302.3 OPENINGS. OPENINGS IN FLOOR OR GROUND SURFACES SHALL NOT ALLOW PASSAGE OF A SPHERE MORE THAN 1/2" (13 MM) DIAMETER EXCEPT AS ALLOWED IN 407.4.3, 409.4.3, 410.4, 810.5.3 AND 810.10. ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

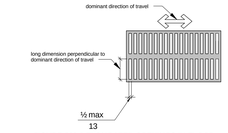


FIGURE 302.3 ELONGATED OPENINGS IN FLOOR OR GROUND SURFACES

303.2 VERTICAL. CHANGES IN LEVEL OF 1/4 INCH (6.4 MM) HIGH MAXIMUM SHALL BE PERMITTED TO BE VERTICAL.



FIGURE 303.2 VERTICAL CHANGE IN LEVEL

303.3 BEVELED. CHANGES IN LEVEL BETWEEN 1/4 INCH (6.4 MM) HIGH MINIMUM AND 1/2 INCH (13 MM) HIGH MAXIMUM SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAT 1:2.

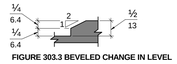


FIGURE 303.3 BEVELED CHANGE IN LEVEL

304 TURNING SPACE

304.3.1 CIRCULAR SPACE. THE TURNING SPACE SHALL BE A SPACE OF 60 INCHES (1525 MM) DIAMETER MINIMUM. THE SPACE SHALL BE PERMITTED TO INCLUDE KNEE AND TOE CLEARANCE COMPLYING WITH 306.

304.3.2 T-SHAPED SPACE. THE TURNING SPACE SHALL BE A T-SHAPED SPACE WITH A 60 INCH (1525 MM) SQUARE MINIMUM WITH ARMS AND BASE 36 INCHES (915 MM) WIDE MINIMUM. EACH ARM OF THE T SHALL BE CLEAR OF OBSTRUCTION 12 INCHES (305 MM) MINIMUM IN EACH DIRECTION AND THE BASE SHALL BE CLEAR OF OBSTRUCTIONS 24 INCHES (610MM) MINIMUM. THE SPACE SHALL BE PERMITTED TO INCLUDE KNEE AND TOE CLEARANCE COMPLYING WITH 306 ONLY AT THE END OF EITHER THE BASE OR ONE ARM.

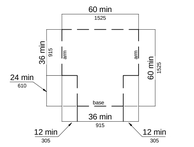


FIGURE 304.3.2 T-SHAPED TURNING SPACE

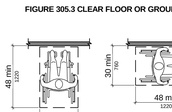


FIGURE 305.3 CLEAR FLOOR OR GROUND SPACE

FIGURE 305.5 POSITION OF CLEAR FLOOR OR GROUND SPACE

305.7.1 FORWARD APPROACH. ALCOVES SHALL BE 36 INCHES (915 MM) WIDE MINIMUM WHERE THE DEPTH EXCEEDS 24 INCHES (610 MM).

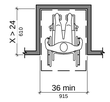


FIGURE 305.7.1 MANEUVERING CLEARANCE IN AN ALCOVE, FORWARD APPROACH

305.7.2 PARALLEL APPROACH. ALCOVES SHALL BE 60 INCHES (1525 MM) WIDE MINIMUM WHERE THE DEPTH EXCEEDS 15 INCHES (380 MM).

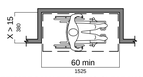


FIGURE 305.7.2 MANEUVERING CLEARANCE IN AN ALCOVE, PARALLEL APPROACH

306 KNEE AND TOE CLEARANCE

306.2 TOE CLEARANCE

306.2.1 GENERAL. SPACE UNDER AN ELEMENT BETWEEN THE FINISH FLOOR OR GROUND AND 9 INCHES (230 MM) ABOVE THE FINISH FLOOR OR GROUND SHALL BE CONSIDERED TOE CLEARANCE AND SHALL COMPLY WITH 306.2.

306.2.2 MAXIMUM DEPTH. TOE CLEARANCE SHALL EXTEND 25 INCHES (635 MM) MAXIMUM UNDER AN ELEMENT.

306.2.3 MINIMUM REQUIRED DEPTH. WHERE TOE CLEARANCE IS REQUIRED AT AN ELEMENT AS PART OF A CLEAR FLOOR SPACE, THE TOE CLEARANCE SHALL EXTEND 17 INCHES (430 MM) MINIMUM UNDER THE ELEMENT.

306.2.4 ADDITIONAL CLEARANCE. SPACE EXTENDING GREATER THAN 6 INCHES (150 MM) BEYOND THE AVAILABLE KNEE CLEARANCE AT 9 INCHES (230 MM) ABOVE THE FINISH FLOOR OR GROUND SHALL NOT BE CONSIDERED TOE CLEARANCE.

306.2.5 WIDTH. TOE CLEARANCE SHALL BE 30 INCHES (760 MM) WIDE MINIMUM.

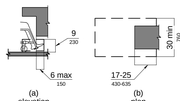


FIGURE 306.2 TOE CLEARANCE

306.3 KNEE CLEARANCE

306.3.1 GENERAL. SPACE UNDER AN ELEMENT BETWEEN 9 INCHES (230 MM) AND 27 INCHES (685 MM) ABOVE THE FINISH FLOOR OR GROUND SHALL BE CONSIDERED KNEE CLEARANCE AND SHALL COMPLY WITH 306.3.

306.3.2 MAXIMUM DEPTH. KNEE CLEARANCE SHALL EXTEND 25 INCHES (635 MM) MAXIMUM UNDER AN ELEMENT AT 9 INCHES (230 MM) ABOVE THE FINISH FLOOR OR GROUND.

306.3.3 MINIMUM REQUIRED DEPTH. WHERE KNEE CLEARANCE IS REQUIRED UNDER AN ELEMENT AS PART OF A CLEAR FLOOR SPACE, THE KNEE CLEARANCE SHALL BE 11 INCHES (280 MM) DEEP MINIMUM AT 9 INCHES(230 MM) ABOVE THE FINISH FLOOR OR GROUND, AND 8 INCHES (205 MM) DEEP MINIMUM AT 27 INCHES (685 MM) ABOVE THE FINISH FLOOR.

306.3.4 CLEARANCE REDUCTION. BETWEEN 9 INCHES (230 MM) AND 27 INCHES (685 MM) ABOVE THE FINISH FLOOR OR GROUND, THE KNEE CLEARANCE SHALL BE PERMITTED TO REDUCE AT A RATE OF 1 INCH (25 MM) IN DEPTH FOR EACH 6 INCHES (150 MM) IN HEIGHT.

306.3.5 WIDTH. KNEE CLEARANCE SHALL BE 30 INCHES (760 MM) WIDE MINIMUM.

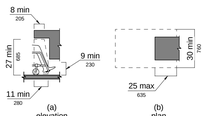


FIGURE 306.3 KNEE CLEARANCE

307 PROTRUDING OBJECTS

307.2 PROTRUSION LIMIT. OBJECTS WITH LEADING EDGES MORE THAN 27 INCHES (685 MM) AND NOT MORE THAN 80 INCHES (2030 MM) ABOVE THE FINISH FLOOR OR GROUND SHALL PROTRUDE 4 INCHES (100 MM) MAXIMUM HORIZONTALLY INTO THE CIRCULATION PATH.

EXCEPTION: HANDRAILS SHALL BE PERMITTED TO PROTRUDE 4 1/2 INCHES (115 MM) MAXIMUM.

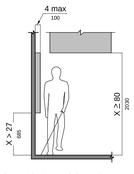


FIGURE 307.2 LIMITS OF PROTRUDING OBJECTS

307.3 POST-MOUNTED OBJECTS. FREE-STANDING OBJECTS MOUNTED ON POSTS OR PYLONS SHALL OVERHANG CIRCULATION PATHS 12 INCHES (305 MM) MAXIMUM WHEN LOCATED 27 INCHES (685 MM) MINIMUM AND 80 INCHES (2030 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND. WHERE A SIGN OR OTHER OBSTRUCTION IS MOUNTED BETWEEN POSTS OR PYLONS AND THE CLEAR DISTANCE BETWEEN THE POSTS OR PYLONS IS GREATER THAN 12 INCHES (305 MM), THE LOWEST EDGE OF SUCH SIGN OR OBSTRUCTION SHALL BE 27INCHES 9685 MM) MAXIMUM OR 80 INCHES (2030) MINIMUM ABOVE THE FINISH FLOOR OR GROUND.

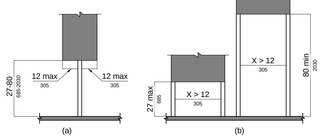


FIGURE 307.3 POST-MOUNTED PROTRUDING OBJECTS

307.4 VERTICAL CLEARANCE. VERTICAL CLEARANCE SHALL BE 80 INCHES (2030 MM) HIGH MINIMUM. GUARDRAILS OR OTHER BARRIERS SHALL BE PROVIDED WHERE THE VERTICAL CLEARANCE IS LESS THAN 80 INCHES (2030 MM) HIGH. THE LEADING EDGE OF SUCH GUARDRAIL OR BARRIER SHALL BE LOCATED 27 INCHES (685 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND.

EXCEPTION: DOOR CLOSERS AND DOOR STOPS SHALL BE PERMITTED TO BE 78 INCHES (1980 MM) MINIMUM ABOVE THE FINISH FLOOR OR GROUND.

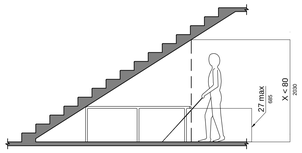


FIGURE 307.4 VERTICAL CLEARANCE

308 REACH RANGES

CHILDREN'S REACH RANGES

FORWARD OR SIDE REACH	HIGH (MAXIMUM)	LOW (MINIMUM)
AGES 3 AND 4	36 IN (915 MM)	20 IN (510 MM)
AGES 5 THROUGH 8	40 IN (1015 MM)	18 IN (455 MM)
AGES 9 THROUGH 12	44 IN (1120 MM)	16 IN (405 MM)

308.2 FORWARD REACH

308.2.1 UNOBSTRUCTED. WHERE A FORWARD REACH IS UNOBSTRUCTED, THE HIGH FORWARD REACH SHALL BE 48 INCHES (1220 MM) MAXIMUM AND THE LOW FORWARD REACH SHALL BE 15 INCHES (380MM) MINIMUM ABOVE THE FINISH FLOOR OR GROUND.

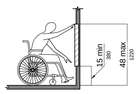


FIGURE 308.2.1 UNOBSTRUCTED FORWARD REACH

308.2.2 OBSTRUCTED HIGH REACH. WHERE A HIGH FORWARD REACH IS OVER AN OBSTRUCTION, THE CLEAR FLOOR SPACE SHALL EXTEND BENEATH THE ELEMENT FOR A DISTANCE NOT LESS THAN THE REQUIRED REACH DEPTH OVER THE OBSTRUCTION. THE HIGH FORWARD REACH SHALL BE 48 INCHES (1220 MM) MAXIMUM WHERE THE REACH DEPTH IS 20 INCHES (510 MM) MAXIMUM. WHERE THE REACH DEPTH EXCEEDS 20 INCHES (510 MM), THE HIGH FORWARD REACH SHALL BE 44 INCHES (1120 MM) MAXIMUM AND THE REACH DEPTH SHALL BE 25 INCHES (635 MM) MAXIMUM.

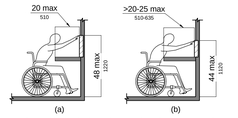


FIGURE 308.3.1 OBSTRUCTED HIGH FORWARD REACH

308.3 SIDE REACH

308.3.1 UNOBSTRUCTED. WHERE A CLEAR FLOOR OR GROUND SPACE ALLOWS A PARALLEL APPROACH TO AN ELEMENT AND THE SIDE REACH IS UNOBSTRUCTED, THE HIGH SIDE REACH SHALL BE 48 INCHES (1220 MM) MAXIMUM AND THE LOW SIDE REACH SHALL BE 15 INCHES (380) MINIMUM ABOVE THE FINISH FLOOR OR GROUND.

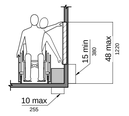


FIGURE 308.3.1 UNOBSTRUCTED SIDE REACH

308.3.2 OBSTRUCTED HIGH REACH. WHERE A CLEAR FLOOR OR GROUND SPACE ALLOWS A PARALLEL APPROACH TO AN ELEMENT AND THE HIGH SIDE IS OVER AN OBSTRUCTION, THE HEIGHT OF THE OBSTRUCTION SHALL BE 34 INCHES (865 MM) MAXIMUM AND THE DEPTH OF THE OBSTRUCTION SHALL BE 24 INCHES (610 MM) MAXIMUM. THE HIGH SIDE REACH SHALL BE 48 INCHES (1220 MM) MAXIMUM FOR A REACH DEPTH OF 10 INCHES (255 MM) MAXIMUM. WHERE THE REACH DEPTH EXCEEDS 10 INCHES (255 MM), THE HIGH SIDE SHALL BE 46 INCHES (1170 MM) MAXIMUM FOR A REACH DEPTH OF 24 INCHES (610 MM) MAXIMUM.

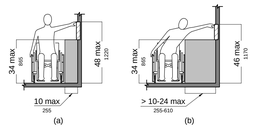


FIGURE 308.3.2 OBSTRUCTED HIGH SIDE REACH

309 OPERABLE PARTS

309.2 CLEAR FLOOR SPACE. A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 SHALL BE PROVIDED.

309.3 HEIGHT. OPERABLE PARTS SHALL BE PLACED WITHIN ONE OR MORE OF THE REACH RANGES SPECIFIED IN 308.

309.4 OPERATION. OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5 POUNDS (22.2 N) MAXIMUM.

CHAPTER 4: ACCESSIBLE ROUTES

402.2 COMPONENTS. ACCESSIBLE ROUTES SHALL CONSIST OF ONE OR MORE OF THE FOLLOWING COMPONENTS: WALKING SURFACES WITH A RUNNING SLOPE NOT STEEPER THAN 1:20, DOORWAYS, RAMPS, CURB RAMPS EXCLUDING THE FLARED SIDES, ELEVATORS, AND PLATFORM LIFTS. ALL COMPONENTS OF AN ACCESSIBLE ROUTE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF CHAPTER 4.

ADVISORY 402.2 COMPONENTS. WALKING SURFACES MUST HAVE RUNNING SLOPS NOT STEEPER THAN 1:20. SEE 403.3. OTHER COMPONENTS OF ACCESSIBLE ROUTES, SUCH AS RAMPS (405) AND CURB RAMPS (406), ARE PERMITTED TO BE MORE STEEPLY SLOPED.

403 WALKING SURFACES

403.1 GENERAL. WALKING SURFACES THAT ARE PART OF AN ACCESSIBLE ROUTE SHALL COMPLY WITH 403.

403.2 FLOOR OR GROUND SURFACE. FLOOR OR GROUND SURFACES SHALL COMPLY WITH 302.

403.3 SLOPE. THE RUNNING SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:20. THE CROSS WALKING SURFACES SHALL NOT BE STEEPER THAN 1:48.

403.4 CHANGES IN LEVEL. CHANGES IN LEVEL SHALL COMPLY WITH 303.

403.5 CLEARANCES. WALKING SURFACES SHALL PROVIDE CLEARANCES COMPLYING WITH 403.5.

EXCEPTION: WITHIN EMPLOYEE WORK AREAS, CLEARANCES ON COMMON USE CIRCULATION PATHS SHALL BE PERMITTED TO BE DECREASED BY WORK AREA EQUIPMENT PROVIDED THAT THE DECREASE IS ESSENTIAL TO THE FUNCTION OF THE WORK BEING PERFORMED.

403.5.1 CLEAR WIDTH. EXCEPT AS PROVIDED IN 403.5.2 AND 403.5.3, THE CLEAR WIDTH OF WALKING SURFACES SHALL BE 36 INCHES (915 MM) MINIMUM.

EXCEPTION: THE CLEAR WIDTH SHALL BE PERMITTED TO BE REDUCED TO 32 INCHES (815 MM) MINIMUM FOR A LENGTH OF 24 INCHES (610 MM) MAXIMUM PROVIDED THAT REDUCED SEGMENTS ARE SEPARATED BY SEGMENTS THAT ARE 48 INCHES (1220 MM) LONG MINIMUM AND 36 INCHES (915 MM) WIDE MINIMUM.

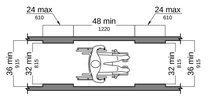


FIGURE 403.5.1 CLEAR WIDTH OF AN ACCESSIBLE ROUTE

403.5.2 CLEAR WIDTH AT TURN. WHERE THE ACCESSIBLE ROUTE MAKES A 180 DEGREE TURN AROUND AN ELEMENT WHICH IS LESS THAN 48 INCHES (1220 MM) WIDE, CLEAR WIDTH SHALL BE 42 INCHES (1065 MM) APPROACHING THE TURN, 48 INCHES (1220 MM) MINIMUM AT THE TURN AND 42 INCHES (1065 MM) MINIMUM LEAVING THE TURN.

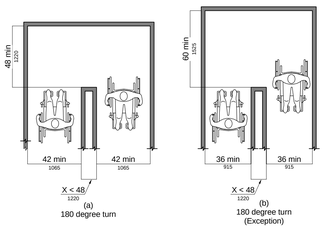


FIGURE 403.5.2 CLEAR WIDTH AT TURN

403.5.3 PASSING SPACES. AN ACCESSIBLE ROUTE WITH A CLEAR WIDTH LESS THAN 60 INCHES (1525 MM) SHALL PROVIDE PASSING SPACES AT INTERVALS OF 200 FEET (61 M) MAXIMUM.

404 DOORS, DOORWAYS, AND GATES

404.2.3 CLEAR WIDTH. DOOR OPENINGS SHALL PROVIDE A CLEAR WIDTH OF 32 INCHES (815 MM) MINIMUM. CLEAR OPENINGS OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES. OPENINGS MORE THAN 24 INCHES (610 MM) DEEP SHALL PROVIDE A CLEAR OPENING OF 36 INCHES (915 MM) MINIMUM. THERE SHALL BE NO PROJECTIONS INTO THE REQUIRED CLEAR OPENING WIDTH LOWER THAN 34 INCHES (865 MM) ABOVE THE FINISH FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34 INCHES (865 MM) AND 80 INCHES (2030 MM) ABOVE THE FINISH FLOOR OR GROUND SHALL NOT EXCEED 4 INCHES (100 MM).

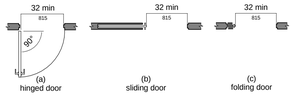


FIGURE 404.2.3 CLEAR WIDTH OF DOORWAYS

404.2.4 MANEUVERING CLEARANCES. MINIMUM MANEUVERING CLEARANCES AT DOORS AND GATES SHALL COMPLY WITH 404.2.4 MANEUVERING CLEARANCES SHALL EXTEND THE FULL WIDTH OF THE DOORWAY AND THE REQUIRED LATCH SIDE OR HINGE SIDE CLEARANCE.

404.2.4.3 RECESSED DOORS AND GATES. MANEUVERING CLEARANCES FOR FORWARD APPROACH SHALL BE PROVIDED WHEN ANY OBSTRUCTION WITHIN 18 INCHES (455 MM) OF THE LATCH SIDE OF A DOORWAY PROJECTS MORE THAN 8 INCHES (205 MM) BEYOND THE FACE OF THE DOOR, MEASURED PERPENDICULAR TO THE FACE OF THE DOOR OR GATE.

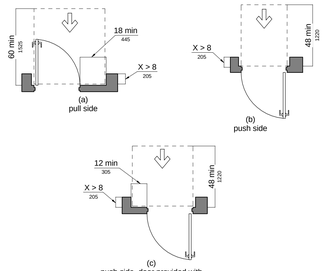


FIGURE 404.2.4.3 MANEUVERING CLEARANCES AT RECESSED DOORS AND GATES

404.2.6 DOORS IN SERIES AND GATES IN SERIES. THE DISTANCE BETWEEN TWO HINGED OR PIVOTED DOORS IN SERIES AND GATES IN SERIES SHALL BE 48 INCHES (1220 MM) MINIMUM PLUS THE WIDTH OF DOORS OR GATES SWINGING INTO THE SPACE.

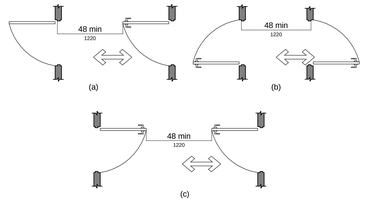


FIGURE 404.2.6 DOORS IN SERIES AND GATES IN SERIES

404.2.7 DOOR AND GATE HARDWARE. HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERABLE PARTS ON DOORS AND GATES SHALL COMPLY WITH 309.4. OPERABLE PARTS OF SUCH HARDWARE SHALL BE 34 INCHES (865 MM) MINIMUM AND 48 INCHES (1220 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND. WHERE SLIDING DOORS ARE IN THE FULLY OPEN POSITION, OPERATING HARDWARE SHALL BE EXPOSED AND USABLE FROM BOTH SIDES.

404.2.8.1 DOOR CLOSERS AND GATE CLOSERS. DOOR CLOSERS AND GATE CLOSERS SHALL BE ADJUSTED SO THAT FROM ON OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO A POSITION OF 12 DEGREES FROM THE LATCH IS 5 SECONDS MINIMUM.

404.2.8.2 SPRING HINGES. DOOR AND GATE SPRING HINGES SHALL BE ADJUSTED SO THAT FROM THE OPEN POSITION OF 70 DEGREES, THE DOOR OR GATE SHALL MOVE TO THE CLOSED POSITION IN 1.5 SECONDS MINIMUM.

404.2.9 DOOR AND GATE OPENING FORCE. FIRE DOORS SHALL HAVE A MINIMUM OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY. THE FORCE OF PUSHING OR PULLING OPEN A DOOR OR GATE OTHER THAN FIRE DOORS SHALL BE AS FOLLOWS:

1. INTERIOR HINGED DOORS AND GATES: 5 POUNDS (22.2 N) MAXIMUM.

2. SLIDING OR FOLDING DOORS: 5 POUNDS (22.2 N) MAXIMUM.

THESE FORCES DO NOT APPLY TO THE FORCE REQUIRED TO RETRACT LATCH BOLTS OR DISENGAGE OTHER DEVICES THAT HOLD THE DOOR OR GATE IN A CLOSED POSITION.

404.2.10 DOORS AND GATE SURFACES. SWINGING DOORS AND GATE SURFACES WITHIN 10 INCHES (255 MM) OF THE FINISH FLOOR OR GROUND MEASURED VERTICALLY SHALL HAVE A SMOOTH SURFACE ON THE PUSH SIDE EXTENDING THE FULL WIDTH OF THE DOOR OR GATE. PARTS CREATING HORIZONTAL OR VERTICAL JOINTS IN THESE SURFACES SHALL BE WITHIN 1/16 INCH (1.6 MM) OF THE SAME PLANE AS THE OTHER. CAVITIES CREATED BY ADDED KICK PLATES SHALL BE CAPPED.

404.2.11 VISION LIGHTS. DOORS, GATES AND SIDE LIGHTS ADJACENT TO DOORS OR GATES, CONTAINING ONE OR MORE GLAZING PANELS THAT PERMIT VIEWING THROUGH THE PANELS SHALL HAVE THE BOTTOM OF AT LEAST ONE GLAZED PANEL LOCATED 43 INCHES (1090 MM) MAXIMUM ABOVE THE FINISH FLOOR.

404.3 AUTOMATIC AND POWER ASSISTED DOORS AND GATES. AUTOMATIC DOORS AND AUTOMATIC GATES SHALL COMPLY WITH 404.3. FULL-POWERED AUTOMATIC DOORS SHALL COMPLY WITH ANSI/BHMA A156.10 (INCORPORATED BY REFERENCE. SEE "REFERENCED STANDARDS" IN CHAPTER 1). LOW-ENERGY AND POWER-ASSISTED DOORS SHALL COMPLY WITH ANSI/BHMA A156.19 (1997 OR 2002 EDITION) (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1).

404.3.2 MANEUVERING CLEARANCE. CLEARANCES AT POWER-ASSISTED DOORS AND GATES SHALL COMPLY WITH 404.2.4. CLEARANCES AT AUTOMATIC DOORS AND GATES WITHOUT STANDBY POWER AND SERVING AN ACCESSIBLE MEANS OF EGRESS SHALL COMPLY WITH 404.2.4.

404.3.7 REVOLVING DOORS, REVOLVING GATES, AND TURNSTILES. REVOLVING DOORS, REVOLVING GATES, AND TURNSTILES SHALL NOT BE PART OF AN ACCESSIBLE ROUTE.

405 RAMPS

405.2 SLOPE. RAMP RUNS SHALL HAVE A RUNNING SLOPE NOT STEEPER THAN 1:12.

405.3 CROSS SLOPE. CROSS SLOPE OF RAMP RUNS SHALL NOT BE STEEPER THAN 1:48.

405.5 CLEAR WIDTH. THE CLEAR WIDTH OF A RAMP RUN AND, WHERE HANDRAILS ARE PROVIDED, THE CLEAR WIDTH BETWEEN HANDRAILS SHALL BE 36 INCHED (915 MM) MINIMUM.

405.6 RISE. THE RISE FOR ANY RAMP SHALL BE 30 INCHES (760 MM) MAXIMUM.

405.7 LANDINGS. RAMPS SHALL HAVE LANDINGS AT THE TOP AND THE BOTTOM OF EACH RAMP RUN. LANDINGS SHALL COMPLY WITH 405.7.

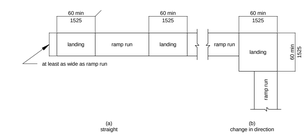


FIGURE 405.7 RAMP LANDINGS

405.7.1 SLOPE. LANDINGS SHALL HAVE SLOPE NO STEEPER THAN 1:48. CHANGES IN LEVEL ARE NOT PERMITTED.

405.7.2 WIDTH. THE LANDING CLEAR WIDTH SHALL BE AT LEAST AS WIDE AS THE WIDEST RAMP RUN LEADING TO THE LANDING.

405.7.3 LENGTH. THE LANDING CLEAR LENGTH SHALL BE 60 INCHES (1525 MM) LONG MINIMUM.

405.7.4 CHANGE IN DIRECTION. RAMPS THAT CHANGE DIRECTION BETWEEN RUNS AT LANDINGS SHALL HAVE A CLEAR LANDING 60 INCHES (1525 MM) MINIMUM BY 60 INCHES (1525 MM) MINIMUM.

405.7.5 DOORWAYS. WHERE DOORWAYS ARE LOCATED ADJACENT TO A RAMP LANDING, MANEUVERING CLEARANCES REQUIRED BY 404.2.4 AND 404.3.2 SHALL BE PERMITTED TO OVERLAP THE REQUIRED LANDING

405.8 HANDRAILS. RAMP RUNS WITH A RISE GREATER THAN 6 INCHES (150 MM) SHALL HAVE HANDRAILS COMPLYING WITH 505.

405.9 EDGE PROTECTION. EDGE PROTECTION COMPLYING WITH 405.9.1 OR 405.9.2 SHALL BE PROVIDED ON EACH SIDE OF RAMP RUNS AND AT EACH SIDE OF RAMP LANDINGS.

405.9.1 EXTENDED FLOOR OR GROUND SURFACE. THE FLOOR OR GROUND SURFACE OF THE RAMP RUN OR LANDING SHALL EXTEND 12 INCHES (305 MM) MINIMUM BEYOND THE INSIDE FACE OF A HANDRAIL COMPLYING WITH 505.

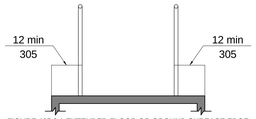


FIGURE 405.9.1 EXTENDED FLOOR OR GROUND SURFACE EDGE PROTECTION

405.9.2 CURB BARRIER. A CURB OR BARRIER SHALL BE PROVIDED THAT PREVENTS THE PASSAGE OF A 4 INCH (100 MM) DIAMETER SPHERE, WHERE ANY PORTION OF THE SPHERE IS WITHIN 4 INCHES (100 MM) OF THE FINISH FLOOR OR GROUND SURFACE.

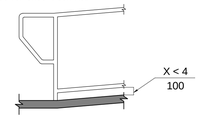


FIGURE 405.9.2 CURB OR BARRIER EDGE PROTECTION

406 CURB RAMPS

406.1 GENERAL. CURB RAMPS ON ACCESSIBLE ROUTES SHALL COMPLY WITH 406, 405.2 THROUGH 405.5, AND 405.10.

406.2 COUNTER SLOPE. COUNTER SLOPES OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO THE CURB RAMP SHALL NOT BE STEEPER THAN 1:20. THE ADJACENT SURFACES AT TRANSITIONS AT CURB RAMPS TO WALKS, GUTTERS, AND STREETS SHALL BE AT THE SAME LEVEL.

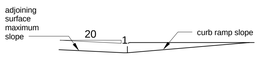


FIGURE 406.2 COUNTER SLOPE OF SURFACES ADJACENT TO CURB RAMPS

406.3 SIDES OF CURB RAMPS. WHERE PROVIDED, CURB RAMP FLARES SHALL NOT BE STEEPER THAN 1:10.

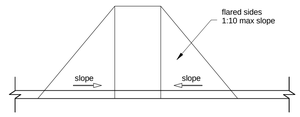


FIGURE 406.3 SIDES OF CURB RAMPS

406.4 LANDINGS. LANDINGS SHALL BE PROVIDED AT THE TOPS OF CURB RAMPS. THE LANDING CLEAR LENGTH SHALL BE 36 INCHES (915 MM) MINIMUM. THE LANDING CLEAR WIDTH SHALL BE AT LEAST AS WIDE AS THE CURB RAMP, EXCLUDING FLARED SIDES, LEADING TO THE LANDING.

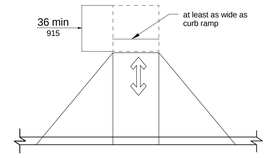


FIGURE 406.4 LANDINGS AT THE TOP OF CURB RAMPS

406.5 LOCATION. CURB RAMPS AND FLARED SIDES OF CURB RAMPS SHALL BE LOCATED SO THAT THEY DO NOT PROJECT INTO VEHICULAR TRAFFIC LANES, PARKING SPACES, OR PARKING ACCESS AISLES. CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.

406.6 DIAGONAL CURB RAMPS. DIAGONAL OR CORNER TYPE CURB RAMPS WITH RETURNED CURBS OR OTHER WELL DEFINED EDGED SHALL HAVE THE EDGES PARALLEL TO THE DIRECTION OF PEDESTRIAN FLOW. THE BOTTOM OF DIAGONAL CURB RAMPS SHALL HAVE A CLEAR SPACE 48 INCHES (1220 MM) MINIMUM OUTSIDE ACTIVE TRAFFIC LANES OF THE ROADWAY. DIAGONAL CURB RAMPS PROVIDED AT MARKED CROSSINGS SHALL PROVIDE 48 INCHES (1220 MM) MINIMUM CLEAR SPACE WITHIN THE MARKING. DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 24 INCHES (610 MM) LONG MINIMUM LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING.

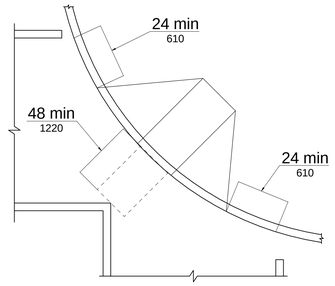


FIGURE 406.6 DIAGONAL OR CORNER TYPE CURB RAMPS

406.7 ISLANDS. RAISED ISLANDS IN CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET OR HAVE CURB RAMPS AT BOTH SIDES. EACH CURB RAMP SHALL HAVE A LEVEL AREA 48 INCHES (1220 MM) LONG MINIMUM BY 36 INCHES (915 MM) WIDE MINIMUM AT THE TOP OF THE CURB RAMP IN THE PART OF THE ISLAND INTERSECTED BY THE CROSSINGS. EACH 48 INCH (1220 MM) MINIMUM BY 36 INCH (915 MM) MINIMUM AREA SHALL BE ORIENTED SO THAT THE 48 INCH (1220 MM) MINIMUM LENGTH IS IN THE DIRECTION OF THE RUNNING SLOPE OF THE CURB RAMP IT SERVES. THE 48 INCH (1220 MM) MINIMUM BY 36 INCH (915 MM) MINIMUM AREAS AND THE ACCESSIBLE ROUTE SHALL BE PERMITTED TO OVERLAP.

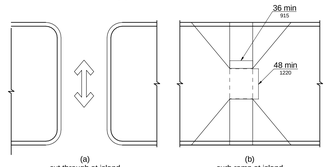


FIGURE 406.7 ISLANDS IN CROSSINGS

408 LIMITED-USE/ LIMITED-APPLICATION ELEVATORS

408.1 GENERAL. LIMITED-USE/ LIMITED-APPLICATION ELEVATORS SHALL COMPLY WITH 408 AND WITH ASME A17.1 (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1). THEY SHALL BE PASSENGER ELEVATORS AS CLASSIFIED BY ASME A17.1. ELEVATOR OPERATION SHALL BE AUTOMATIC.

408.2 ELEVATOR LANDINGS. LANDINGS SERVING LIMITED-USE/LIMITED-APPLICATION ELEVATORS SHALL COMPLY WITH 408.2.

408.2.1 CALL BUTTONS. ELEVATOR CALL BUTTONS AND KEYPADS SHALL COMPLY WITH 407.2.1.

408.2.2 HALL SIGNALS. HALL SIGNALS SHALL COMPLY WITH 407.2.2.

408.2.3 HOISTWAY SIGNS. SIGNS AT ELEVATOR HOISTWAYS SHALL COMPLY WITH 407.2.3.1.

408.3 ELEVATOR DOORS. ELEVATOR HOISTWAY DOORS SHALL COMPLY WITH 408.3.

408.3.1 SLIDING DOORS. SLIDING HOISTWAY AND CAR DOORS SHALL COMPLY WITH 407.3.1 THROUGH 407.3.3 AND 408.4.1.

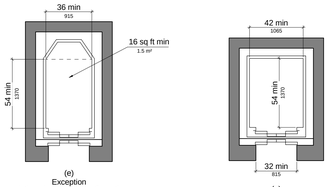
408.3.2 SWINGING DOORS. SWINGING HOISTWAY DOORS SHALL OPEN AND CLOSE AUTOMATICALLY AND SHALL COMPLY WITH 404, 407.3.2, AND 408.3.2.

408.3.2.1 POWER OPERATION. SWINGING DOORS SHALL BE POWER OPERATED AND SHALL COMPLY WITH ANSI/BHMA A156.19 (1997 OR 2002 EDITION) (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1).

408.3.2.2 DURATION. POWER-OPERATED SWINGING DOORS SHALL REMAIN OPEN FOR 20 SECONDS MINIMUM WHEN ACTIVATED.

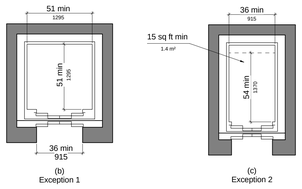
408.4 ELEVATOR CARS. ELEVATOR CARS SHALL COMPLY WITH 408.4.

408.4.1 CAR DIMENSIONS AND DOORS. ELEVATOR CARS SHALL PROVIDE A CLEAR WIDTH 42 INCHES (1065 MM) MINIMUM AND A CLEAR DEPTH 54 INCHES (1370 MM) MINIMUM. CAR DOORS SHALL BE POSITIONED AT THE NARROW ENDS OF CARS AND SHALL PROVIDE 32 INCHES (815 MM) MINIMUM CLEAR WIDTH.



(e) Exception existing elevator car configuration

(a) new construction



(b) Exception 1

(c) Exception 2

FIGURE 408.4.1 LIMITED USE/ LIMITED APPLICATION (LULA) ELEVATOR CAR DIMENSIONS

408.4.2 FLOOR SURFACES. FLOOR SURFACES IN ELEVATOR CAR SHALL COMPLY WITH 302 AND 303.

408.4.3 PLATFORM TO HOISTWAY CLEARANCE. THE PLATFORM TO HOISTWAY CLEARANCE SHALL COMPLY WITH 407.4.3.

408.4.4 LEVELING. ELEVATOR CAR LEVELING SHALL COMPLY WITH 407.4.4.

408.4.5 ILLUMINATION. ELEVATOR CAR ILLUMINATION SHALL COMPLY WITH 407.4.5.

408.4.6 CAR CONTROLS. ELEVATOR CAR CONTROLS SHALL COMPLY WITH 407.4.6. CONTROL PANELS SHALL BE CENTERED ON A SIDE WALL.

408.4.7 DESIGNATIONS AND INDICATIONS OF CAR CONTROLS. DESIGNATIONS AND INDICATORS OF CAR CONTROLS SHALL COMPLY WITH 407.4.7.

408.4.4 EMERGENCY COMMUNICATIONS. CAR EMERGENCY SIGNALING DEVICES COMPLYING WITH 407.4.9 SHALL BE PROVIDED.

409 PRIVATE RESIDENCE ELEVATORS.

409.1 GENERAL. PRIVATE RESIDENCE ELEVATORS THAT ARE PROVIDED WITHIN A RESIDENTIAL DWELLING UNIT REQUIRED TO PROVIDE MOBILITY FEATURES COMPLYING WITH 809.2 THROUGH 809.4 SHALL COMPLY WITH 409 AND WITH ASME A17.1 (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1). THEY SHALL BE PASSENGER ELEVATORS CLASSIFIED BY ASME A17.1 ELEVATOR OPERATION SHALL BE AUTOMATIC.

409.2 CALL BUTTONS. CALL BUTTONS SHALL BE 3/4 INCH (19 MM) MINIMUM IN THE SMALLEST DIMENSION AND SHALL COMPLY WITH 309.

409.3 ELEVATOR DOORS. HOISTWAY DOORS, CAR DOORS, AND CAR GATES SHALL COMPLY WITH 409.3 AND 404.

EXCEPTION: IN ELEVATOR CARS WITH MORE THAN ONE OPENING, HOISTWAY DOORS AND GATES SHALL BE PERMITTED TO BE OF THE MANUAL-OPEN, SELF-CLOSE TYPE.

409.3.1 POWER OPERATION. ELEVATOR CAR AND HOISTWAY DOORS AND GATES SHALL BE POWER OPERATED AND SHALL COMPLY WITH ANSI/BHMA A156.19 (1997 OR 2002 EDITION) (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1). POWER OPERATED DOORS AND GATES SHALL REMAIN OPEN FOR 20 SECONDS MINIMUM WHEN ACTIVATED.

409.3.2 LOCATION. ELEVATOR CAR DOORS OR GATES SHALL BE POSITIONED AT THE NARROW END OF THE CLEAR FLOOR SPACE REQUIRED BY 409.4.1.

409.4 ELEVATOR CARS. PRIVATE RESIDENCE ELEVATOR CARS SHALL COMPLY WITH 409.4.

409.4.1 INSIDE DIMENSIONS OF ELEVATOR CARS. ELEVATOR CARS SHALL PROVIDE A CLEAR FLOOR SPACE OF 36 INCHES (915 MM) MINIMUM BY 48 INCHES (1220 MM) AND SHALL COMPLY WITH 305.

409.4.2 FLOOR SURFACES. FLOOR SURFACES IN ELEVATOR CARS SHALL COMPLY WITH 302 AND 303.

409.4.3 PLATFORM TO HOISTWAY CLEARANCE. THE CLEARANCE BETWEEN THE CAR PLATFORM AND THE EDGE OF ANY LANDING SILL SHALL BE 1 1/2 INCH (38 MM) MAXIMUM.

409.4.4 LEVELING. EACH CAR SHALL AUTOMATICALLY STOP AT A FLOOR LANDING WITHIN A TOLERANCE OF 1/2 INCH (13 MM) UNDER RATED LOADING TO ZERO LOADING CONDITIONS.

409.4.5 ILLUMINATION LEVELS. ELEVATOR CAR ILLUMINATION SHALL COMPLY WITH 407.4.5.

409.4.6 CAR CONTROLS. ELEVATOR CAR CONTROL BUTTON SHALL COMPLY WITH 409.4.6, 309.3, 309.4, AND SHALL BE RAISED OR FLUSH.

409.4.6.1 SIZE. CONTROL BUTTONS SHALL BE 3/4 INCH (19 MM) MINIMUM IN THEIR SMALLEST DIMENSION.

409.4.6.2 LOCATION. CONTROL PANELS SHALL BE ON A SIDE WALL, 12 INCHES (305 MM) MINIMUM FROM ANY ADJACENT WALL.

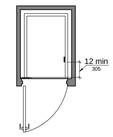


FIGURE 409.4.6.2 LOCATION OF PRIVATE RESIDENCE ELEVATOR CONTROL PANEL

409.4.7 EMERGENCY COMMUNICATIONS. EMERGENCY TWO-WAY COMMUNICATION SYSTEMS SHALL COMPLY WITH 409.4.7.

409.4.7.1 TYPE. A TELEPHONE AND EMERGENCY SIGNAL DEVICE SHALL BE PROVIDED IN THE CAR.

409.4.7.2 OPERABLE PARTS. THE TELEPHONE AND EMERGENCE SIGNALING DEVICE SHALL COMPLY WITH 309.3 AND 309.4.

409.4.7.3 COMPARTMENT. IF THE TELEPHONE OR DEVICE IS IN A CLOSED COMPARTMENT, THE COMPARTMENT DOOR HARDWARE SHALL COMPLY WITH 309.

409.4.7.4 CORD. THE TELEPHONE CORD SHALL BE 29 INCHES (735 MM) LONG MINIMUM.

410 PLATFORM LIFTS

410.1 GENERAL. PLATFORM LIFTS SHALL COMPLY WITH ASME A18.1 (1999 EDITION OR 2003 EDITION) (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1). PLATFORM LIFTS SHALL NOT BE ATTENDANT-OPERATED AND SHALL PROVIDE UNASSISTED ENTRY AND EXIT FROM THE LIFT.

ADVISORY 410.1 GENERAL. INCLINED STAIRWAY CHAIRLIFTS AND INCLINED AND VERTICAL PLATFORM LIFTS ARE AVAILABLE FOR SHORT-DISTANCE VERTICAL TRANSPORTATION. BECAUSE AN ACCESSIBLE ROUTE REQUIRES 80 INCH (2030 MM) VERTICAL CLEARANCE, CARE SHOULD BE TAKEN IN SELECTING LIFTS AS THEY MAY NOT BE EQUALLY SUITABLE FOR USE BY PEOPLE USING WHEELCHAIRS AND PEOPLE STANDING. IF A LIFT DOES NOT PROVIDE 80 INCH (2030 MM) VERTICAL CLEARANCE, IT CANNOT BE CONSIDERED PART OF AN ACCESSIBLE ROUTE IN NEW CONSTRUCTION.

THE ADA AND OTHER FEDERAL CIVIL RIGHTS LAWS REQUIRE THAT ACCESSIBLE FEATURES BE MAINTAINED IN WORKING ORDER SO THAT THEY ARE ACCESSIBLE TO AND USABLE BY THOSE PEOPLE THEY ARE INTENDED TO BENEFIT. BUILDING OWNERS ARE REMINDED THAT THE ASME A18 SAFETY STANDARD FOR PLATFORM LIFTS AND STAIRWAY CHAIRLIFTS REQUIRE ROUTINE MAINTENANCE AND INSPECTIONS. ISOLATED OR TEMPORARY INTERRUPTIONS IN SERVICE DUE TO MAINTENANCE OR REPAIRS MAY BE UNAVOIDABLE; HOWEVER, FAILURE TO TAKE PROMPT ACTION TO EFFECT REPAIRS COULD CONSTITUTE A VIOLATION OF FEDERAL LAWS AND THESE REQUIREMENTS.

410.2 FLOOR SURFACES. FLOOR SURFACES IN PLATFORM LIFTS SHALL COMPLY WITH 302 AND 303.

410.3 CLEAR FLOOR SPACE. CLEAR FLOOR SPACE IN PLATFORM LIFTS SHALL COMPLY WITH 305.

410.4 PLATFORM TO RUNWAY CLEARANCE. THE CLEARANCE BETWEEN THE PLATFORM SILL AND THE EDGE OF ANY RUNWAY LANDING SHALL BE 1 INCH (32 MM) MAXIMUM.

410.5 OPERABLE PARTS. CONTROLS FOR PLATFORM LIFTS SHALL COMPLY WITH 309.

410.6 DOORS AND GATES. PLATFORM LIFTS SHALL HAVE LOW-ENERGY POWER-OPERATED DOORS OR GATES COMPLYING WITH 404.3. DOORS SHALL REMAIN OPEN FOR 20 SECONDS MINIMUM. END DOORS AND GATES SHALL PROVIDE A CLEAR WIDTH 32 INCHES (815 MM) MINIMUM. SIDE DOORS AND GATES SHALL PROVIDE A CLEAR WIDTH 42 INCHES (1065 MM) MINIMUM.

EXCEPTION: PLATFORM LIFTS SERVING TWO LANDINGS MAXIMUM AND HAVING DOORS OR GATES ON OPPOSITE SIDES SHALL BE PERMITTED TO HAVE SELF-CLOSING MANUAL DOORS OR GATES.

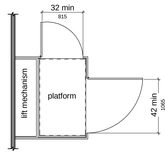


FIGURE 410.6 PLATFORM LIFE DOORS AND GATES

501 GENERAL

501.1 SCOPE. THE PROVISIONS OF CHAPTER 5 SHALL APPLY WHERE REQUIRED BY CHAPTER 2 OR WHERE REFERENCED BY A REQUIREMENT IN THIS DOCUMENT.

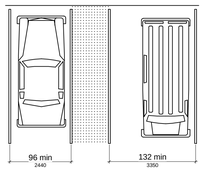
502 PARKING SPACES

502.1 GENERAL. CAR AND VAN PARKING SPACES SHALL COMPLY WITH 502. WHERE PARKING SPACES ARE MARKED WITH LINES, WIDTH MEASUREMENTS OF PARKING SPACES AND ACCESS AISLES SHALL BE MADE FROM THE CENTERLINE OF THE MARKINGS.

EXCEPTION: WHERE PARKING SPACES OR ACCESS AISLES ARE NOT ADJACENT TO ANOTHER PARKING SPACE OR ACCESS AISLE, MEASUREMENTS SHALL BE PERMITTED TO INCLUDE THE FULL WIDTH OF THE LINE DEFINING THE PARKING SPACE OR ACCESS AISLE.

502.2 VEHICLE SPACES. CAR PARKING SPACES SHALL BE 96 INCHES (2440 MM) WIDE MINIMUM AND VAN PARKING SPACES SHALL BE 132 INCHES (3350 MM) WIDE MINIMUM, SHALL BE MARKED TO DEFINE THE WIDTH, AND SHALL HAVE AN ADJACENT ACCESS AISLE COMPLYING WITH 502.3.

EXCEPTION: VAN PARKING SPACES SHALL BE PERMITTED TO BE 96 INCHES (2440 MM) WIDE MINIMUM WHERE THE ACCESS AISLE IS 96 INCHES (2440 MM) WIDE MINIMUM.



(a) car

(b) van

FIGURE 502.2 VEHICLE PARKING SPACES

502.3 ACCESS AISLE. ACCESS AISLES SERVING PARKING SPACES SHALL COMPLY WITH 502.3. ACCESS AISLES SHALL ADJOIN AN ACCESSIBLE ROUTE. TWO PARKING SPACES SHALL BE PERMITTED TO SHARE A COMMON ACCESS AISLE.

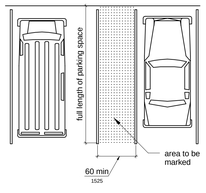


FIGURE 502.3 PARKING SPACE ACCESS AISLE

502.3.1 WIDTH. ACCESS AISLES SERVING CAN AND VAN PARKING SPACES SHALL BE 60 INCHES (1525 MM) WIDE MINIMUM.

502.3.2 LENGTH. ACCESS AISLES SHALL EXTEND THE FULL LENGTH OF THE PARKING SPACES THEY SERVE.

502.3.3 MARKING. ACCESS AISLES SHALL BE MARKED SO AS TO DISCOURAGE PARKING IN THEM.

502.3.4 LOCATION. ACCESS AISLES SHALL NOT OVERLAP THE VEHICULAR WAY. ACCESS AISLES SHALL BE PERMITTED TO BE PLACED ON EITHER SIDE OF THE PARKING SPACE FOR ANGLED VAN PARKING SPACES WHICH SHALL HAVE ACCESS AISLES LOCATED ON THE PASSENGER SIDE OF THE PARKING SPACES.

502.4 FLOOR OR GROUND SURFACES. PARKING SPACES AND ACCESS AISLES SERVING THEM SHALL COMPLY WITH 302. ACCESS AISLES SHALL BE AT THE SAME LEVEL AS THE PARKING SPACES THEY SERVE. CHANGES IN LEVEL ARE NOT PERMITTED.

EXCEPTION: SLOPES NOT STEEPER THAN 1:48 SHALL BE PERMITTED.

502.5 VERTICAL CLEARANCE. PARKING SPACES FOR VANS AND ACCESS AISLES AND VEHICULAR ROUTES SERVING THEM SHALL PROVIDE A VERTICAL CLEARANCE OF 98 INCHES (2490 MM) MINIMUM.

502.6 IDENTIFICATION. PARKING SPACE IDENTIFICATION SIGNS SHALL INCLUDE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY COMPLYING WITH 703.7.2.1. SIGNS IDENTIFYING VAN PARKING SPACES SHALL CONTAIN THE DESIGNATION "VAN ACCESSIBLE." SIGNS SHALL BE 60 INCHES (1525 MM) MINIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE BOTTOM OF THE SIGN.

502.7 RELATIONSHIP TO ACCESSIBLE ROUTE. PARKING SPACES AND ACCESS AISLES SHALL BE DESIGNED SO THAT CARS AND VANS, WHEN PARKED, CANNOT OBSTRUCT THE REQUIRED CLEAR WIDTH OF ADJACENT ACCESSIBLE ROUTES.

503 PASSENGER LOADING ZONES

503.2 VEHICLE PULL-UP SPACE. PASSENGER LOADING ZONES SHALL PROVIDE A VEHICULAR PULL-UP SPACE 96 INCHES (2440 MM) WIDE MINIMUM AND 20 FEET (6100 MM) LONG MINIMUM.

503.3 ACCESS AISLE. PASSENGER LOADING ZONES SHALL PROVIDE ACCESS AISLES COMPLYING WITH 503 ADJACENT TO THE VEHICLE PULL-UP SPACE. ACCESS AISLES SHALL ADJOIN AN ACCESSIBLE ROUTE AND SHALL NOT OVERLAP THE VEHICULAR WAY.

503.3.1 WIDTH. ACCESS AISLES SERVING VEHICLE PULL-UP SPACES SHALL BE 60 INCHES (1525 MM) WIDE MINIMUM.

503.3.2 LENGTH. ACCESS AISLES SHALL EXTEND THE FULL LENGTH OF THE VEHICLE PULL-UP SPACES THEY SERVE.

503.3.3 MARKING. ACCESS AISLES SHALL BE MARKED SO AS TO DISCOURAGE PARKING IN THEM.

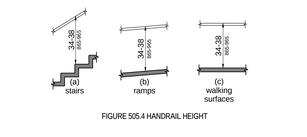


Figure 503.3 Passenger Loading Zone Access Aisle

503.4 FLOOR AND GROUND CLEARANCES. VEHICLE PULL-UP SPACES AND ACCESS AISLES SERVING THEM SHALL COMPLY WITH 302. ACCESS AISLES SHALL BE AT THE SAME LEVEL AS THE VEHICLE PULL-UP SPACE THEY SERVE. CHANGES IN LEVEL ARE NOT PERMITTED.

EXCEPTION: SLOPES NOT STEEPER THAN 1:48 SHALL BE PERMITTED.

503.5 VERTICAL CLEARANCE. VEHICLE PULL-UP SPACES, ACCESS AISLES SERVING THEM, AND A VEHICULAR ROUTE FROM AN ENTRANCE TO THE PASSENGER LOADING ZONE, AND FROM THE PASSENGER LOADING ZONE TO A VEHICULAR EXIT SHALL PROVIDE A VERTICAL CLEARANCE OF 114 INCHES (2895 MM) MINIMUM.

504 STAIRWAYS

504.1 GENERAL. STAIRS SHALL COMPLY WITH 504.

504.2 TREADS AND RISERS. ALL STEPS ON A FLIGHT OF STAIRS SHALL HAVE UNIFORM RISER HEIGHTS AND UNIFORM TREAD DEPTHS. RISERS SHALL BE 4 INCHES (100 MM) HIGH MINIMUM AND 7 INCHES (180 MM) HIGH MAXIMUM. TREADS SHALL BE 11 INCHES (280 MM) DEEP MINIMUM.

504.3 OPEN RISERS. OPEN RISERS ARE NOT PERMITTED.

504.4 TREAD SURFACE. STAIR TREADS SHALL COMPLY WITH 302. CHANGES IN LEVEL ARE NOT PERMITTED.

504.5 NOSINGS. THE RADIUS OF CURVATURE AT THE LEADING EDGE OF THE TREAD SHALL BE 1/2 INCH (13 MM) MAXIMUM. NOSINGS THAT PROJECT BEYOND RISERS SHALL HAVE THE UNDERSIDE OF THE LEADING EDGE CURVED OR BEVELED. RISERS SHALL BE PERMITTED TO SLOPE UNDER THE TREAD AT AN ANGLE OF 30 DEGREES MAXIMUM FROM THE VERTICAL. THE PERMITTED PROJECTION OF THE NOSING SHALL EXTEND 1 1/2 INCHES (38 MM) MAXIMUM OVER THE TREAD BELOW.

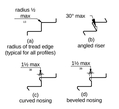


FIGURE 504.5 STAIR NOSINGS

504.6 HANDRAILS. STAIRS SHALL HAVE HANDRAILS COMPLYING WITH 505.

504.7 WET CONDITIONS. STAIR TREADS AND LANDINGS SUBJECT TO WET CONDITIONS SHALL BE DESIGNED TO PREVENT THE ACCUMULATION OF WATER.

505 HANDRAILS

505.1 GENERAL. HANDRAILS PROVIDED ALONG WALKING SURFACES COMPLYING WITH 403, REQUIRED AT RAMPS COMPLYING WITH 405, AND REQUIRED AT STAIRS COMPLYING WITH 504 SHALL COMPLY WITH 505.

ADVISORY 505.1 GENERAL. HANDRAILS ARE REQUIRED ON RAMP RUNS WITH A RISE GREATER THAN 6 INCHES (150 MM) (SEE 405.8) AND ON CERTAIN STAIRWAYS (SEE 504). HANDRAILS ARE NOT REQUIRED ON WALKING SURFACES WITH RUNNING SLOPES LESS THAN 1:20. HOWEVER, HANDRAILS ARE REQUIRED TO COMPLY WITH 505 WHEN THEY ARE PROVIDED ON WALKING SURFACES WITH RUNNING SLOPES LESS THAN 1:20 (SEE 403.6). SECTIONS 505.2, 505.3, AND 505.10 DO NOT APPLY TO HANDRAILS PROVIDED ON WALKING SURFACES WITH RUNNING SLOPES LESS THAN 1:20 AS THESE SECTIONS ONLY REFERENCE REQUIREMENTS FOR RAMPS AND STAIRS.

505.2 WHERE REQUIRED. HANDRAILS SHALL BE PROVIDED ON BOTH SIDES OF STAIRS AND RAMPS.

505.3 CONTINUITY. HANDRAILS SHALL BE CONTINUOUS WITHIN THE FULL LENGTH OF EACH STAIR FLIGHT OR RAMP RUN. INSIDE HANDRAILS ON SWITCHBACK OR DOGLEG STAIRS AND RAMPS SHALL BE CONTINUOUS BETWEEN FLIGHTS OR RUNS.

505.4 HEIGHT. TOP OF GRIPPING SURFACES OF HANDRAILS SHALL BE 34 INCHES (865 MM) MINIMUM AND 38 INCHES (965 MM) MAXIMUM VERTICALLY ABOVE WALKING SURFACES, STAIR NOSINGS, AND RAMP SURFACES. HANDRAILS SHALL BE AT A CONSTANT HEIGHT ABOVE WALKING SURFACES, STAIR NOSINGS, AND RAMP SURFACES.

FIGURE 505.4 HANDRAIL HEIGHT

505.5 CLEARANCE. CLEARANCE BETWEEN HANDRAIL GRIPPING SURFACES AND ADJACENT SURFACES SHALL BE 1 1/2 INCHES (38 MM) MINIMUM.

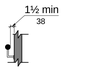


FIGURE 505.5 HANDRAIL CLEARANCE

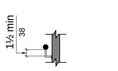


FIGURE 505.6 HORIZONTAL PROJECTIONS BELOW GRIPPING SURFACE

505.6 GRIPPING SURFACE. HANDRAIL GRIPPING SURFACES SHALL BE CONTINUOUS ALONG THEIR LENGTH AND SHALL NOT BE OBSTRUCTED ALONG THEIR TOPS OR SIDES. THE BOTTOM OF HANDRAIL GRIPPING SURFACES SHALL NOT BE OBSTRUCTED FOR MORE THAN 20 PERCENT OF THEIR LENGTH. WHERE PROVIDED, HORIZONTAL PROJECTIONS SHALL OCCUR 1 1/2 INCHES (38 MM) MINIMUM BELOW THE BOTTOM OF THE HANDRAIL GRIPPING SURFACE.

505.7.1 CIRCULAR CROSS SECTIONS. HANDRAIL GRIPPING SURFACES WITH A CIRCULAR CROSS SECTION SHALL HAVE AN OUTSIDE DIAMETER OF 1 1/4 INCHES (32 MM) MINIMUM AND 2 INCHES (51 MM) MAXIMUM.

505.7.2 NON-CIRCULAR CROSS SECTIONS. HANDRAIL GRIPPING SURFACES WITH A NON-CIRCULAR CROSS SECTION SHALL HAVE A PERIMETER DIMENSION OF 4 INCHES (100 MM) MINIMUM AND 6 1/4 INCHES (160 MM) MAXIMUM, AND A CROSS-SECTION DIMENSION OF 2 1/4 INCHES (57 MM) MAXIMUM.

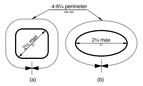


FIGURE 505.7.2 HANDRAIL NON-CIRCULAR CROSS SECTIONS

505.8 SURFACES. HANDRAIL GRIPPING SURFACES AND ANY SURFACES ADJACENT TO THEM SHALL BE FREE OF SHARP OR ABRASIVE ELEMENTS AND SHALL HAVE ROUNDED EDGES.

505.9 FITTINGS. HANDRAILS SHALL NOT ROTATE WITHIN THEIR FITTINGS.

505.10 HANDRAIL EXTENSIONS. HANDRAIL GRIPPING SURFACES SHALL EXTEND BEYOND AND IN THE SAME DIRECTION OF STAIR FLIGHTS AND RAMP RUNS IN ACCORDANCE WITH 505.10.

505.10 HANDRAIL EXTENSIONS. HANDRAIL GRIPPING SURFACES SHALL EXTEND BEYOND AND IN THE SAME DIRECTION OF STAIR FLIGHTS AND RAMP RUNS IN ACCORDANCE WITH 505.10.

505.10.1 TOP AND BOTTOM EXTENSION ON RAMPS. RAMP HANDRAILS SHALL EXTEND HORIZONTALLY ABOVE THE LANDING FOR 12 INCHES (305 MM) MINIMUM BEYOND THE TOP AND BOTTOM OF RAMP RUNS. EXTENSIONS SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT RAMP RUN.

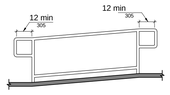


FIGURE 505.10.1 HANDRAIL EXTENSION AT RAMPS

505.10.2 TOP OF EXTENSION AT STAIRS. AT THE TOP OF A STAIR FLIGHT, HANDRAILS SHALL EXTEND HORIZONTALLY ABOVE THE LANDING FOR 12 INCHES (305 MM) MINIMUM BEGINNING DIRECTLY ABOVE THE FIRST RISER NOSING. EXTENSIONS SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT FLIGHT.

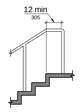


FIGURE 505.10.2 TOP HANDRAIL EXTENSION AT STAIRS

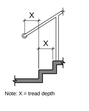


FIGURE 505.10.3 BOTTOM HANDRAIL EXTENSION AT STAIRS

505.10.3 BOTTOM EXTENSION AT STAIRS. AT THE BOTTOM OF A STAIR FLIGHT, HANDRAILS SHALL EXTEND AT THE SLOPE OF THE STAIR FLIGHT FOR A HORIZONTAL DISTANCE AT LEAST EQUAL TO ONE TREAD DEPTH BEYOND THE LAST RISER NOSING. EXTENSION SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT STAIR FLIGHT.

CHAPTER 6: PLUMBING ELEMENTS AND FACILITIES

602 DRINKING FOUNTAINS

602.2 CLEAR FLOOR SPACE. UNITS SHALL HAVE CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 POSITIONED FOR A FORWARD APPROACH AND CENTERED ON THE UNIT. KNEE AND TOE CLEARANCE COMPLYING WITH 306 SHALL BE PROVIDED.

EXCEPTION: A PARALLEL APPROACH COMPLYING WITH 305 SHALL BE PERMITTED AT UNITS FOR CHILDREN'S USE WHERE THE SPOUT IS 30 INCHES (760 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND AND IS 3 1/2 INCHES (90 MM) MAXIMUM FROM THE FRONT EDGE OF THE UNIT, INCLUDING BUMPERS.

602.3 OPERABLE PARTS. OPERABLE PARTS SHALL COMPLY WITH 309.

602.4 SPOUT HEIGHT. SPOUT OUTLETS SHALL BE 36 INCHES (915 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND.

602.5 SPOUT LOCATION. THE SPOUT SHALL BE LOCATED 15 INCHES (380 MM) MINIMUM FROM THE VERTICAL SUPPORT AND 5 INCHES (125 MM) MAXIMUM FROM THE FRONT EDGE OF THE UNIT, INCLUDING BUMPERS.



FIGURE 602.5 DRINKING FOUNTAIN SPOUT LOCATION

602.6 WATER FLOW. THE SPOUT SHALL PROVIDE A FLOW OF WATER 4 INCHES (100 MM) HIGH MINIMUM AND SHALL BE LOCATED 5 INCHES (125 MM) MAXIMUM FROM THE FRONT OF THE UNIT. THE ANGLE OF THE WATER STREAM SHALL BE MEASURED HORIZONTALLY RELATIVE TO THE FRONT FACE OF THE UNIT. WHERE SPOUTS ARE LOCATED LESS THAN 3 INCHES (75 MM) OF THE FRONT OF THE UNIT, THE ANGLE OF THE WATER STREAM SHALL BE 30 DEGREES MAXIMUM. WHERE SPOUTS ARE LOCATED BETWEEN 3 INCHES (75 MM) AND 5 INCHES (125 MM) MAXIMUM FROM THE FRONT OF THE UNIT, THE ANGLE OF THE WATER SHALL BE 15 DEGREES MAXIMUM.

602.7 DRINKING FOUNTAINS FOR STANDING PERSONS. SPOUT OUTLETS OF DRINKING FOUNTAINS FOR STANDING PERSONS SHALL BE 38 INCHES (965 MM) MINIMUM AND 43 INCHES (1090 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND.

603 TOILET AND BATHING ROOMS

603.2 CLEARANCES. CLEARANCES SHALL COMPLY WITH 603.2.

603.2.1 TURNING SPACE. TURNING SPACE COMPLYING WITH 304 SHALL BE PROVIDED WITHIN THE ROOM.

603.2.2 OVERLAP. REQUIRED CLEAR FLOOR SPACES, CLEARANCE AT FIXTURES, AND TURNING SPACE SHALL BE PERMITTED TO OVERLAP.

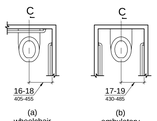
603.2.3 DOOR SWING. DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE OR CLEARANCE REQUIRED FOR ANY FIXTURE. DOORS SHALL BE PERMITTED TO SWING INTO THE REQUIRED TURNING SPACE.

603.3 MIRRORS. MIRRORS LOCATED ABOVE LAVATORIES OR COUNTERTOPS SHALL BE INSTALLED WITH THE BOTTOM EDGE OF THE REFLECTING SURFACE 40 INCHES (1015 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND. MIRRORS NOT LOCATED ABOVE THE LAVATORIES OR COUNTERTOPS SHALL BE INSTALLED WITH THE BOTTOM EDGE OF THE REFLECTING SURFACE 35 INCHES (890 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND.

603.4 COAT HOOKS AND SHELVES. COAT HOOKS SHALL BE LOCATED WITHIN ONE OF THE REACH RANGES SPECIFIED IN 308. SHELVES SHALL BE LOCATED 40 INCHES (1015 MM) MINIMUM AND 48 INCHES (1220 MM) MAXIMUM ABOVE THE FLOOR.

604 WATER CLOSETS AND TOILET COMPARTMENTS

604.2 LOCATION. THE WATER CLOSET SHALL BE POSITIONED WITH A WALL OR PARTITION TO THE REAR AND TO ONE SIDE. THE CENTERLINE OF THE WATER CLOSET SHALL BE 16 INCHES (405 MM) MINIMUM TO 18 INCHES (455 MM) MAXIMUM FROM THE SIDE WALL OR PARTITION, EXCEPT THAT THE WATER CLOSET SHALL BE 17 INCHES (430 MM) MINIMUM AND 19 INCHES (485 MM) MAXIMUM FROM THE SIDE WALL OR PARTITION IN THE AMBULATORY ACCESSIBLE TOILET COMPARTMENT SPECIFIED IN 604.8.2. WATER CLOSETS SHALL BE ARRANGED FRO A LEFT-HAND OR RIGHT-HAND APPROACH.



(a) wheelchair accessible water closets

(b) ambulatory accessible water closets

FIGURE 604.2 WATER CLOSET LOCATION

604.3.1 SIZE. CLEARANCE AROUND A WATER CLOSET SHALL BE 60 INCHES (1525 MM) MINIMUM MEASURED PERPENDICULAR FROM THE SIDE WALL AND 56INCHES (1420 MM) MINIMUM MEASURED PERPENDICULAR FROM THE REAR WALL.



FIGURE 604.3.1 SIZE OF CLEARANCE AT WATER CLOSETS

604.3.2 OVERLAP. THE REQUIRED CLEARANCE AROUND THE WATER CLOSET SHALL BE PERMITTED TO OVERLAP THE WATER CLOSET, ASSOCIATED GRAB BARS, DISPENSERS, SANITARY NAPKIN DISPOSAL UNITS, COAT HOOKS, SHELVES, ACCESSIBLE ROUTES, CLEAR FLOOR SPACE AND CLEARANCES REQUIRED AT OTHER FIXTURES, AND THE TURNING SPACE. NO OTHER FIXTURES OR OBSTRUCTIONS SHALL BE LOCATED WITHIN THE REQUIRED WATER CLOSET.

604.4 SEATS. THE SEAT HEIGHT OF A WATER CLOSET ABOVE THE FINISH FLOOR SHALL BE 17 INCHES (430 MM) MINIMUM AND 19 INCHES (485 MM) MAXIMUM MEASURED TO THE TOP OF THE SEAT. SEATS SHALL NOT BE SPRUNG TO RETURN TO A LIFTED POSITION.

604.5 GRAB BARS. GRAB BARS FOR WATER CLOSETS SHALL COMPLY WITH 609. GRAB BARS SHALL BE PROVIDED ON THE SIDEWALL CLOSEST TO THE WATER CLO

607.4.2 BATHTUBS WITHOUT PERMANENT SEATS. FOR BATHTUBS WITHOUT PERMANENT SEATS, GRAB BARS SHALL COMPLY WITH 607.4.2.

607.4.2.1 BACK WALL. TWO GRAB BARS SHALL BE INSTALLED ON THE BACK WALL, ONE LOCATED IN ACCORDANCE WITH 609.4 AND THE OTHER LOCATED 8 INCHES (205 MM) MINIMUM AND 10 INCHES (255 MM) MAXIMUM ABOVE THE RIM OF THE BATHTUB. EACH GRAB BAR SHALL BE 24 INCHES (610 MM) LONG MINIMUM AND SHALL BE INSTALLED 24 INCHES (610 MM) MAXIMUM FROM THE HEAD END WALL AND 12 INCHES (305 MM) MAXIMUM FROM THE CONTROL END WALL.

607.4.2.2 CONTROL END WALL. A GRAB BAR 24 INCHES (610 MM) LONG MINIMUM SHALL BE INSTALLED ON THE CONTROL END WALL AT THE FRONT EDGE OF THE BATHTUB.

607.4.2.3 HEAD END WALL. A GRAB BAR 12 INCHES (305 MM) LONG MINIMUM SHALL BE INSTALLED ON THE HEAD END WALL AT THE FRONT EDGE OF THE BATHTUB.

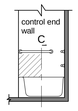


FIGURE 607.5 BATHTUB CONTROL LOCATION

607.5 CONTROLS. CONTROLS, OTHER THAN DRAIN STOPPERS, SHALL BE LOCATED ON AN END WALL. CONTROLS SHALL BE BETWEEN THE BATHTUB RIM AND GRAB BAR, AND BETWEEN THE OPEN SIDE OF THE BATHTUB AND THE CENTERLINE OF THE WIDTH OF THE BATHTUB. CONTROLS SHALL COMPLY WITH 309.4.

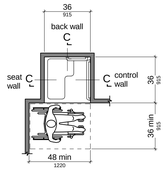
607.6 SHOWER SPRAY UNIT AND WATER. A SHOWER SPRAY UNIT WITH A HOSE 59 INCHES (1500 MM) LONG MINIMUM THAT CAN BE USED BOTH AS A FIXED-POSITION SHOWER HEAD AND AS A HAND-HELD SHOWER SHALL BE PROVIDED. THE SHOWER SPRAY UNIT SHALL HAVE AN ON/OFF CONTROL WITH A NON-POSITIVE SHUT-OFF. IF AN ADJUSTABLE-HEIGHT SHOWER HEAD ON A VERTICAL BAR IS USED, THE BAR SHALL BE INSTALLED SO AS NOT TO OBSTRUCT THE USE OF GRAB BARS. BATHTUB SHOWER SPRAY UNITS SHALL DELIVER WATER THAT IS 120 °F (49 °C) MAXIMUM.

607.7 BATHTUB ENCLOSURES. ENCLOSURES FOR BATHTUBS SHALL NOT OBSTRUCT CONTROLS, FAUCET, SHOWER AND SPRAY UNITS OR OBSTRUCT TRANSFER FROM WHEELCHAIRS ONTO BATHTUB SEATS OR INTO BATHTUBS. ENCLOSURES ON BATHTUBS SHALL NOT HAVE TRACKS INSTALLED ON THE RIM OF THE OPEN FACE OF THE BATHTUB.

608 SHOWER COMPARTMENTS

608.2 SIZE AND CLEARANCES OF SHOWER COMPARTMENTS. SHOWER COMPARTMENTS SHALL HAVE SIZES AND CLEARANCES COMPLYING WITH 608.2.

608.2.1 TRANSFER TYPE SHOWER COMPARTMENTS. TRANSFER TYPE SHOWER COMPARTMENTS SHALL BE 36 INCHES (915 MM) BY 36 INCHES (915 MM) CLEAR INSIDE DIMENSIONS MEASURED AT THE CENTER POINTS OF OPPOSING SIDES AND SHALL HAVE A 36 INCH (915 MM) WIDE MINIMUM ENTRY ON THE FACE OF THE SHOWER COMPARTMENT. CLEARANCE OF 36 INCHES (915 MM) WIDE MINIMUM BY 48 INCHES (1220 MM) LONG MINIMUM MEASURED FROM THE CONTROL WALL SHALL BE PROVIDED.

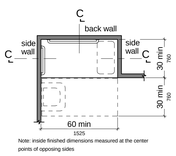


Note: inside finished dimensions measured at the center points of opposing sides

FIGURE 608.2.1 TRANSFER TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE

608.2.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS. STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS SHALL BE 30 INCHES (760 MM) WIDE MINIMUM BY 60 INCHES (1525 MM) DEEP MINIMUM CLEAR INSIDE DIMENSIONED MEASURED AT THE CENTER POINTS OF OPPOSING SIDES AND SHALL HAVE A 60 INCH (1525 MM) WIDE MINIMUM ENTRY ON THE FACE OF THE SHOWER COMPARTMENT.

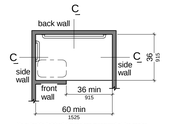
608.2.2.1 CLEARANCE. A 30 INCH (760 MM) WIDE MINIMUM BY 60 INCH (1525 MM) LONG MINIMUM CLEARANCE SHALL BE PROVIDED ADJACENT TO THE OPEN FACE OF THE SHOWER COMPARTMENT.



Note: inside finished dimensions measured at the center points of opposing sides

FIGURE 608.2.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE

608.2.3 ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS. ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS SHALL BE 36 INCHES (915 MM) WIDE AND 60 INCHES (1525 MM) DEEP MINIMUM CLEAR INSIDE DIMENSIONS MEASURED AT CENTER POINTS OF OPPOSING SIDES. A 36 INCH (915 MM) WIDE MINIMUM ENTRY SHALL BE PROVIDED AT ONE END OF THE LONG SIDE OF THE COMPARTMENT.



Note: inside finished dimensions measured at the center points of opposing sides

FIGURE 608.2.3 ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE

608.3 GRAB BARS. GRAB BARS SHALL COMPLY WITH 609 AND SHALL BE PROVIDED IN ACCORDANCE WITH 608.3. WHERE MULTIPLE GRAB BARS ARE USED, REQUIRED HORIZONTAL GRAB BARS SHALL BE INSTALLED AT THE SAME HEIGHT ABOVE THE FINISH FLOOR.

608.3.1 TRANSFER TYPE SHOWER COMPARTMENTS. IN TRANSFER TYPE COMPARTMENTS, GRAB BARS SHALL BE PROVIDED ACROSS THE CONTROL WALL AND BACK TO A POINT 18 INCHES (455 MM) FROM THE CONTROL WALL.

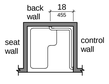


FIGURE 608.3.1 GRAB BARS FOR TRANSFER TYPE SHOWERS

608.3.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS. WHERE A SEAT IS PROVIDED IN STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS, GRAB BARS SHALL BE PROVIDED ON THE BACK WALL AND THE SIDE WALL OPPOSITE THE SEAT. GRAB BARS SHALL NOT BE PROVIDED ABOVE THE SEAT. WHERE A SEAT IS NOT PROVIDED IN STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS, GRAB BARS SHALL BE PROVIDED ON THREE WALLS. GRAB BARS SHALL BE INSTALLED 6 INCHES (150 MM) MAXIMUM FROM ADJACENT WALLS.

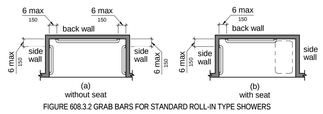


FIGURE 608.3.2 GRAB BARS FOR STANDARD ROLL-IN TYPE SHOWERS

608.3.3 ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS. IN ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS, GRAB BARS SHALL BE PROVIDED ON THE BACK WALL AND THE SIDE WALL FARTHEST FROM THE COMPARTMENT ENTRY. GRAB BARS SHALL NOT BE PROVIDED ABOVE THE SEAT. GRAB BARS SHALL BE INSTALLED 6 INCHES (150 MM) MAXIMUM FROM THE ADJACENT WALLS.

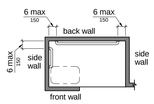


FIGURE 608.3.3 GRAB BARS FOR ALTERNATE ROLL-IN TYPE SHOWERS

608.4 SEATS. A FOLDING OR NON-FOLDING SEAT SHALL BE PROVIDED IN TRANSFER TYPE SHOWER COMPARTMENTS. A FOLDING SEAT SHALL BE PROVIDED IN ROLL-IN TYPE SHOWERS REQUIRED IN TRANSIENT LODGING GUEST ROOMS WITH MOBILITY FEATURES COMPLYING WITH 806.2. SEATS SHALL COMPLY WITH 610.

608.5 CONTROLS. CONTROLS, FAUCETS, AND SHOWER SPRAY UNITS SHALL COMPLY WITH 309.4.

608.5.1 TRANSFER TYPE SHOWER COMPARTMENTS. IN TRANSFER TYPE SHOWER COMPARTMENTS, THE CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT SHALL BE INSTALLED ON THE SIDE WALL OPPOSITE THE SEAT 38 INCHES (965 MM) MINIMUM AND 48 INCHES (1220 MM) MAXIMUM ABOVE THE SHOWER FLOOR AND SHALL BE LOCATED ON THE CONTROL WALL 15 INCHES (380 MM) MAXIMUM FROM THE CENTERLINE OF THE SEAT TOWARD THE SHOWER OPENING.

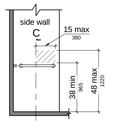


FIGURE 608.5.1 TRANSFER TYPE SHOWER COMPARTMENT CONTROL LOCATION

608.5.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS. IN STANDARD ROLL-IN TYPE SHOWER COMPARTMENTS, THE CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT SHALL BE LOCATED ABOVE THE GRAB BAR, BUT NO HIGHER THAN 48 INCHES (1220 MM) ABOVE THE SHOWER FLOOR. WHERE A SEAT IS PROVIDED, THE CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT SHALL BE INSTALLED ON THE BACK WALL ADJACENT TO THE SEAT WALL AND SHALL BE LOCATED 27 INCHES (685 MM) MAXIMUM FROM THE SEAT WALL.

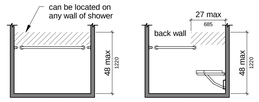


FIGURE 608.5.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENT CONTROL LOCATION

608.5.3 ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS. IN ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENTS, THE CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT SHALL BE LOCATED ABOVE THE GRAB BAR, BUT NO HIGHER THAN 48 INCHES (1220 MM) ABOVE THE SHOWER FLOOR. WHERE A SEAT IS PROVIDED, THE CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT SHALL BE LOCATED ON THE SIDE WALL ADJACENT TO THE SEAT 27 INCHES (685 MM) MAXIMUM FROM THE SIDE WALL BEHIND THE SEAT OR SHALL BE LOCATED ON THE BACK WALL OPPOSITE THE SEAT 15 INCHES (380 MM) MAXIMUM, LEFT OR RIGHT, OF THE CENTERLINE OF THE SEAT. WHERE A SEAT IS NOT PROVIDED, THE CONTROLS, FAUCETS, AND SHOWER SPRAY UNIT SHALL BE INSTALLED ON THE SIDE WALL FARTHEST FROM THE COMPARTMENT ENTRY.

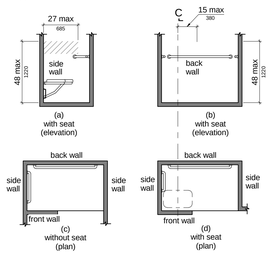


FIGURE 608.5.3 ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENT CONTROL LOCATION

608.6 SHOWER SPRAY UNIT AND WATER. A SHOWER SPRAY UNIT WITH A HOSE 59 INCHES (1500 MM) LONG MINIMUM THAT CAN BE USED BOTH AS A FIXED-POSITION SHOWER HEAD AND AS A HAND-HELD SHOWER SHALL BE PROVIDED. THE SHOWER SPRAY UNIT SHALL HAVE AN ON/OFF CONTROL WITH A NON-POSITIVE SHUT-OFF. IF AN ADJUSTABLE-HEIGHT SHOWER HEAD ON A VERTICAL BAR IS USED, THE BAR SHALL BE INSTALLED SO AS NOT TO OBSTRUCT THE USE OF GRAB BARS. SHOWER SPRAY UNITS SHALL DELIVER WATER THAT IS 120°F (49°C) MAXIMUM.

608.7 THRESHOLDS. THRESHOLDS IN ROLL-IN TYPE SHOWER COMPARTMENTS SHALL BE 1/2 INCH (13 MM) HIGH MAXIMUM IN ACCORDANCE WITH 303. IN TRANSFER TYPE SHOWER COMPARTMENTS, THRESHOLDS 1/2 INCH (13 MM) HIGH MAXIMUM SHALL BE BEVELED , ROUNDED, OR VERTICAL.

608.8 SHOWER ENCLOSURES. ENCLOSURES FOR SHOWER COMPARTMENTS SHALL NOT OBSTRUCT CONTROLS, FAUCETS, AND SHOWER SPRAY UNITS OR OBSTRUCT TRANSFER FROM WHEELCHAIRS ONTO SHOWER SEATS.

609 GRAB BARS

609.1 GENERAL. GRAB BARS IN TOILET FACILITIES AND BATHING FACILITIES SHALL COMPLY WITH 609.

609.2 CROSS SECTION. GRAB BARS SHALL HAVE A CROSS SECTION COMPLYING WITH 609.2.1 OR 609.2.2.

609.2.1 CIRCULAR CROSS SECTION. GRAB BARS WITH CIRCULAR CROSS SECTIONS SHALL HAVE AN OUTSIDE DIAMETER OF 1 1/4 INCHES (32 MM) MINIMUM AND 2 INCHES (51 MM) MAXIMUM.

609.2.2 NON-CIRCULAR CROSS SECTION. GRAB BARS WITH NON-CIRCULAR CROSS SECTIONS SHALL HAVE A CROSS-SECTION DIMENSION OF 2 INCHES (51 MM) MAXIMUM AND A PERIMETER DIMENSION OF 4 INCHES (100 MM) MINIMUM AND 4.8 INCHES (120 MM) MAXIMUM.

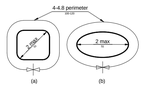


FIGURE 609.2.2 GRAB BAR NON-CIRCULAR CROSS SECTION

609.3 SPACING. THE SPACE BETWEEN THE WALL AND THE GRAB BAR SHALL BE 1 1/2 INCHES (38 MM). THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS BELOW AND AT THE ENDS SHALL BE 1 1/2 INCHES (38 MM) MINIMUM. THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS ABOVE SHALL BE 12 INCHES (305 MM) MINIMUM.

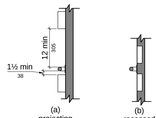


FIGURE 609.3 SPACING OF GRAB BARS

609.4 POSITION OF GRAB BARS. GRAB BARS SHALL BE INSTALLED IN A HORIZONTAL POSITION, 33 INCHES (840 MM) MINIMUM AND 36 INCHES (915 MM) MAXIMUM ABOVE THE FINISH FLOOR MEASURED TO THE TOP OF THE GRIPPING SURFACE, EXCEPT THAT AT WATER CLOSETS FOR CHILDREN'S USE COMPLYING WITH 604.9, GRAB BARS SHALL BE INSTALLED IN A HORIZONTAL POSITION 18 INCHES (455 MM) MINIMUM AND 27 INCHES (685 MM) MAXIMUM ABOVE THE FINISH FLOOR MEASURED TO THE TOP OF THE GRIPPING SURFACE. THE HEIGHT OF THE LOWER GRAB BAR ON THE BACK WALL OF THE BATHTUB SHALL COMPLY WITH 607.4.1.1 OR 607.4.2.1.

609.5 SURFACE HAZARDS. GRAB BARS AND ANY WALL OR OTHER SURFACES ADJACENT TO GRAB BARS SHALL BE FREE OF SHARP OR ABRASIVE ELEMENTS AND SHALL HAVE ROUNDED EDGES.

609.6 FITTINGS. GRAB BARS SHALL NOT ROTATE WITHIN THEIR FITTINGS.

609.7 INSTALLATION. GRAB BARS SHALL BE INSTALLED IN ANY MANNER THAT PROVIDES A GRIPPING SURFACE AT THE SPECIFIED LOCATIONS AND THAT DOES NOT OBSTRUCT THE REQUIRED CLEAR FLOOR SPACE.

609.8 STRUCTURAL STRENGTH. ALLOWABLE STRESSES SHALL NOT BE EXCEEDED FOR MATERIALS USED WHEN A VERTICAL OR HORIZONTAL FORCE OF 250 POUNDS (1112 N) IS APPLIED AT ANY POINT ON THE GRAB BAR, FASTENER, MOUNTING DEVICE, OR SUPPORTING STRUCTURE.

610 SEATS

610.2 BATHTUB SEATS. THE TOP OF BATHTUB SEATS SHALL BE 17 INCHES (430 MM) MINIMUM AND 19 INCHES (485 MM) MAXIMUM ABOVE THE BATHROOM FINISH FLOOR. THE DEPTH OF A REMOVABLE IN-TUB SEAT SHALL BE 15 INCHES (380 MM) MINIMUM AND 16 INCHES (405 MM) MAXIMUM. THE SEAT SHALL BE CAPABLE OF SECURE PLACEMENT. PERMANENT SEATS AT THE HEAD END OF THE BATHTUB SHALL BE 15 INCHES (380 MM) DEEP MINIMUM AND SHALL EXTEND FROM THE BACK WALL TO OR BEYOND THE OUTER EDGE OF THE BATHTUB.

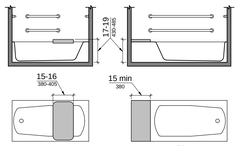


FIGURE 610.2 BATHTUB SEATS

610.3 SHOWER COMPARTMENT SEATS. WHERE A SEAT IS PROVIDED IN A STANDARD ROLL-IN SHOWER COMPARTMENT, IT SHALL BE A FOLDING TYPE, SHALL BE INSTALLED IN THE SIDE WALL ADJACENT TO THE CONTROLS, AND SHALL EXTEND FROM THE BACK WALL TO A POINT WITHIN 3 INCHES (75 MM) OF THE COMPARTMENT ENTRY. WHERE A SEAT IS PROVIDED IN AN ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENT, IT SHALL BE A FOLDING TYPE. SHALL BE INSTALLED ON THE FRONT WALL OPPOSITE THE BACK WALL, AND SHALL EXTEND FROM THE ADJACENT SIDE WALL TO A POINT WITHIN 3 INCHES (75 MM) OF THE COMPARTMENT ENTRY. IN TRANSFER-TYPE SHOWERS, THE SEAT SHALL EXTEND FROM THE BACK WALL TO A POINT WITHIN 3 INCHES (75 MM) OF THE COMPARTMENT ENTRY. THE TOP OF THE SEAT SHALL BE 17 INCHES (430 MM) MINIMUM AND 19 INCHES (485 MM) MAXIMUM ABOVE THE BATHROOM FINISH FLOOR. SEATS SHALL COMPLY WITH 610.3.1 OR 610.3.2.



FIGURE 610.3.1 RECTANGULAR SHOWER SEAT

610.3.1 RECTANGULAR SEATS. THE REAR EDGE OF THE RECTANGULAR SEAT SHALL BE 2 1/2 INCHES (64 MM) MAXIMUM AND THE FRONT EDGE 15 INCHES (380 MM) MINIMUM AND 16 INCHES (405 MM) MAXIMUM FROM THE SEAT WALL. THE SIDE EDGE OF THE SEAT SHALL BE 1 1/2 INCHES (38 MM) MAXIMUM FROM THE ADJACENT WALL.

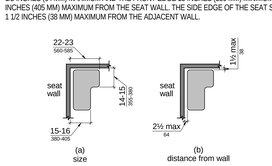


FIGURE 610.3.2 L-SHAPED SHOWER SEAT

610.3.2 L-SHAPED SEATS. THE REAR OF AN L-SHAPED SEAT SHALL BE 2 1/2 INCHES (64 MM) MAXIMUM AND THE FRONT EDGE 15 INCHES (380 MM) MINIMUM AND 16 INCHES (405 MM) MAXIMUM FROM THE SEAT WALL. THE REAR OF THE "L" PORTION OF THE SEAT SHALL BE 1 1/2 INCHES (38 MM) MAXIMUM FROM THE WALL AND THE FRONT EDGE SHALL BE 14 INCHES (355 MM) MINIMUM AND 15 INCHES (380 MM) MAXIMUM FROM THE WALL. THE END OF THE "L" SHALL BE 22 INCHES (560 MM) MINIMUM AND 23 INCHES (585 MM) FROM THE MAIN SEAT WALL.

610.4 STRUCTURAL STRENGTH. ALLOWABLE STRESSES SHALL NOT BE EXCEEDED FOR MATERIALS USED WHEN A VERTICAL OR HORIZONTAL FORCE OF 250 POUNDS (1112 N) IS APPLIED AT ANY POINT ON THE SEAT, FASTENER, MOUNTING DEVICE, OR SUPPORTING STRUCTURE.

611 WASHING MACHINES AND CLOTHES DRYERS

611.2 CLEAR FLOOR SPACE. A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 POSITIONED FOR PARALLEL APPROACH SHALL BE PROVIDED. THE CLEAR FLOOR OR GROUND SPACE SHALL BE CENTERED ON THE APPLIANCE.

611.3 OPERABLE PARTS. OPERABLE PARTS, INCLUDING DOORS, LINT SCREENS, AND DETERGENT AND BLEACH COMPARTMENTS SHALL COMPLY WITH 309.

611.4 HEIGHT. TOP LOADING MACHINES SHALL HAVE THE DOOR TO THE LAUNDRY COMPARTMENT LOCATED 15 INCHES (915 MM) MAXIMUM ABOVE THE FINISH FLOOR. FRONT LOADING MACHINES SHALL HAVE THE BOTTOM OF THE OPENING TO THE LAUNDRY COMPARTMENT LOCATED 15 INCHES (380 MM) MINIMUM AND 36 INCHES (915 MM) MAXIMUM ABOVE THE FINISH FLOOR.

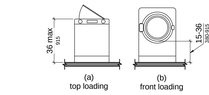


FIGURE 611.4 HEIGHT OF LAUNDRY COMPARTMENT OPENING

612 SAUNAS AND STEAM ROOMS

612.2 BENCH. WHERE SEATING IS PROVIDED IN SAUNAS AND STEAM ROOMS, AT LEAST ONE BENCH SHALL COMPLY WITH 903. DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE REQUIRED BY 903.2.

612.3 TURNING SPACE. A TURNING SPACE COMPLYING WITH 304 SHALL BE PROVIDED WITH SAUNAS AND STEAM ROOMS.

CHAPTER 7: COMMUNICATION ELEMENTS AND FEATURES

702 FIRE ALARM SYSTEMS

702.1 GENERAL. FIRE ALARM SYSTEMS SHALL HAVE PERMANENTLY INSTALLED AUDIBLE AND VISIBLE ALARMS COMPLYING WITH NFPA 72 (1999 OR 2002 EDITION) (INCORPORATED BY REFERENCE, SEE "REFERENCED STANDARDS" IN CHAPTER 1), EXCEPT THAT THE MAXIMUM ALLOWABLE SOUND LEVEL OF AUDIBLE NOTIFICATION APPLIANCES COMPLYING WITH SECTION 4-3.2.1 OF NFPA 72 (1999 EDITION) SHALL HAVE A SOUND LEVEL NO MORE THAN 110 DB AT THE MINIMUM HEARING DISTANCE FROM THE AUDIBLE APPLIANCE. IN ADDITION, ALARMS IN GUEST ROOMS REQUIRED TO PROVIDE COMMUNICATION FEATURES SHALL COMPLY WITH SECTIONS 4-3 AND 4-4 OF NFPA 72 (1999 EDITION) OR SECTIONS 7.4 AND 7.5 OF NFPA 72 (2002 EDITION).

703 SIGNS

703.1 GENERAL. SIGNS SHALL COMPLY WITH 703. WHERE BOTH VISUAL AND TACTILE CHARACTERS ARE REQUIRED, EITHER ONE SIGN WITH BOTH VISUAL AND TACTILE CHARACTERS, OR TWO SEPARATE SIGNS, ONE WITH VISUAL, AND ONE WITH TACTILE CHARACTERS, SHALL BE PROVIDED.

703.2 RAISED CHARACTERS. RAISED CHARACTERS SHALL COMPLY WITH 703.2 AND SHALL BE DUPLICATED IN BRAILLE COMPLYING WITH 703.3. RAISED CHARACTERS SHALL BE INSTALLED IN ACCORDANCE WITH 703.4.

703.2.1 DEPTH. RAISED CHARACTERS SHALL BE 1/32 INCH (.08 MM) MINIMUM ABOVE THEIR BACKGROUND.

703.2.2 CASE. CHARACTERS SHALL BE UPPERCASE.

703.2.3 STYLE. CHARACTERS SHALL BE SANS SERIF. CHARACTERS SHALL NOT BE ITALIC, OBLIQUE, SCRIPT, HIGHLY DECORATIVE, OR OF OTHER UNUSUAL FORMS.

703.2.4 CHARACTER PROPORTIONS. CHARACTERS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 55 PERCENT MINIMUM AND 110 PERCENT MAXIMUM OF THE HEIGHT OF THE UPPERCASE LETTER "I".

703.2.5 CHARACTER HEIGHT. CHARACTER HEIGHT MEASURED VERTICALLY FROM THE BASELINE OF THE CHARACTER SHALL BE 5/8 INCH (16 MM) MINIMUM AND 2 INCHES (51 MM) MAXIMUM BASED ON THE HEIGHT OF THE UPPERCASE LETTER "I".

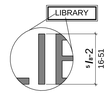


FIGURE 703.2.5 HEIGHT OF RAISED CHARACTERS

703.2.6 STROKE THICKNESS. STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 15 PERCENT MAXIMUM OF THE HEIGHT OF THE CHARACTER.

703.2.7 CHARACTER SPACING. CHARACTER SPACING SHALL BE MEASURED BETWEEN THE TWO CLOSEST POINTS OF ADJACENT RAISED CHARACTERS WITHIN A MESSAGE, EXCLUDING WORD SPACES. WHERE CHARACTERS HAVE RECTANGULAR CROSS SECTIONS, SPACING BETWEEN INDIVIDUAL RAISED CHARACTERS SHALL BE 1/8 INCH (3.2 MM) MINIMUM AND 4 TIMES THE RAISED CHARACTER STROKE WIDTH MAXIMUM. WHERE CHARACTERS HAVE OTHER CROSS SECTIONS, SPACING BETWEEN INDIVIDUAL RAISED CHARACTERS SHALL BE 1/16 INCH (1.6 MM) MINIMUM AND 4 TIMES THE RAISED CHARACTER STROKE WIDTH MAXIMUM AT THE BASE OF THE CROSS SECTIONS, AND 1/8 INCH (3.2 MM) MINIMUM AND 4 TIMES THE RAISED CHARACTER STROKE WIDTH MAXIMUM AT THE TOP OF THE CROSS SECTIONS. CHARACTERS SHALL BE SEPARATED FROM THE RAISED BORDERS AND DECORATIVE ELEMENTS 3/8 INCH (9.5 MM) MINIMUM.

703.2.8 LINE SPACING. SPACING BETWEEN THE BASELINES OF SEPARATE LINES OF RAISED CHARACTERS WITHIN A MESSAGE SHALL BE 135 PERCENT MINIMUM AND 170 PERCENT MAXIMUM OF THE RAISED CHARACTER HEIGHT.

703.3 BRAILLE. BRAILLE SHALL BE CONTRACTED (GRADE 2) AND SHALL COMPLY WITH 703.3 AND 703.4.

703.3.1 DIMENSIONS AND CAPITALIZATION. BRAILLE DOTS SHALL HAVE A DOMED OR ROUNDED SHAPE AND SHALL COMPLY WITH TABLE 703.3.1. THE INDICATION OF AN UPPERCASE LETTER OR LETTERS SHALL ONLY BE USED BEFORE THE FIRST WORD OF SENTENCES, PROPER NOUNS AND NAMES, INDIVIDUAL LETTERS OF THE ALPHABET, INITIALS, AND ACRONYMS.

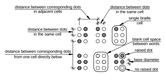


FIGURE 703.3.1 BRAILLE MEASUREMENT

703.3.2 POSITION. BRAILLE SHALL BE POSITIONED BELOW THE CORRESPONDING TEXT. IF TEXT IS MULTI-LINED, BRAILLE SHALL BE PLACED BELOW THE ENTIRE TEXT. BRAILLE SHALL BE SEPARATED 3/8 INCH (9.5 MM) MINIMUM FROM ANY OTHER TACTILE CHARACTERS AND 3/8 INCH (9.5 MM) MINIMUM FROM RAISED BORDERS AND DECORATIVE ELEMENTS.

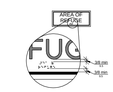


FIGURE 703.3.2 POSITION OF BRAILLE

703.4 INSTALLATION HEIGHT AND LOCATION. SIGNS WITH TACTILE CHARACTERS SHALL COMPLY WITH 703.4.

703.4.1 HEIGHT ABOVE FINISH FLOOR OR GROUND. TACTILE CHARACTERS ON SIGNS SHALL BE LOCATED 48 INCHES (1220 MM) MINIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE, MEASURED FROM THE BASELINE OF THE LOWEST TACTILE CHARACTER AND 60 INCHES (1525 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE, MEASURED FROM THE BASELINE OF THE HIGHEST TACTILE CHARACTER.

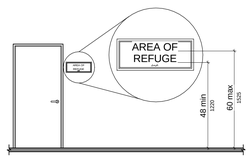


FIGURE 703.4.1 HEIGHT OF TACTILE CHARACTERS ABOVE FINISH FLOOR OR GROUND

703.4.2 LOCATION. WHERE A TACTILE SIGN IS PROVIDED AT A DOOR, THE SIGN SHALL BE LOCATED ALONGSIDE THE DOOR AT THE LATCH SIDE. WHERE A TACTILE SIGN IS PROVIDED AT DOUBLE DOORS WITH ONE ACTIVE LEAF, THE SIGN SHALL BE LOCATED ON THE INACTIVE LEAF. WHERE A TACTILE SIGN IS PROVIDED AT DOUBLE DOORS WITH TWO ACTIVE LEAFS, THE SIGN SHALL BE LOCATED TO THE RIGHT OF THE RIGHT HAND DOOR. WHERE THERE IS NO WALL SPACE AT THE LATCH SIDE OF A SINGLE DOOR OR AT THE RIGHT SIDE OF DOUBLE DOORS, SIGNS SHALL BE LOCATED ON THE NEAREST ADJACENT WALL. SIGNS CONTAINING TACTILE CHARACTERS SHALL BE LOCATED SO THAT A CLEAR FLOOR SPACE OF 18 INCHES (455 MM) MINIMUM BY 18 INCHES (455 MM) MINIMUM, CENTERED ON THE TACTILE CHARACTERS, IS PROVIDED BEYOND THE ARC OF ANY DOOR SWING BETWEEN THE CLOSED POSITION AND 45 DEGREE OPEN POSITION.

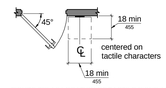


FIGURE 703.4.2 LOCATION OF TACTILE SIGNS AT DOORS

703.5 VISUAL CHARACTERS. VISUAL CHARACTERS SHALL COMPLY WITH 703.5.

702.5.1 FINISH AND CONTRAST. CHARACTERS AND THEIR BACKGROUND SHALL HAVE A NON-GLARE FINISH. CHARACTERS SHALL CONTRAST WITH THEIR BACKGROUND WITH EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.

703.5.2 CASE. CHARACTERS SHALL BE UPPERCASE OR LOWERCASE OR A COMBINATION OF BOTH.

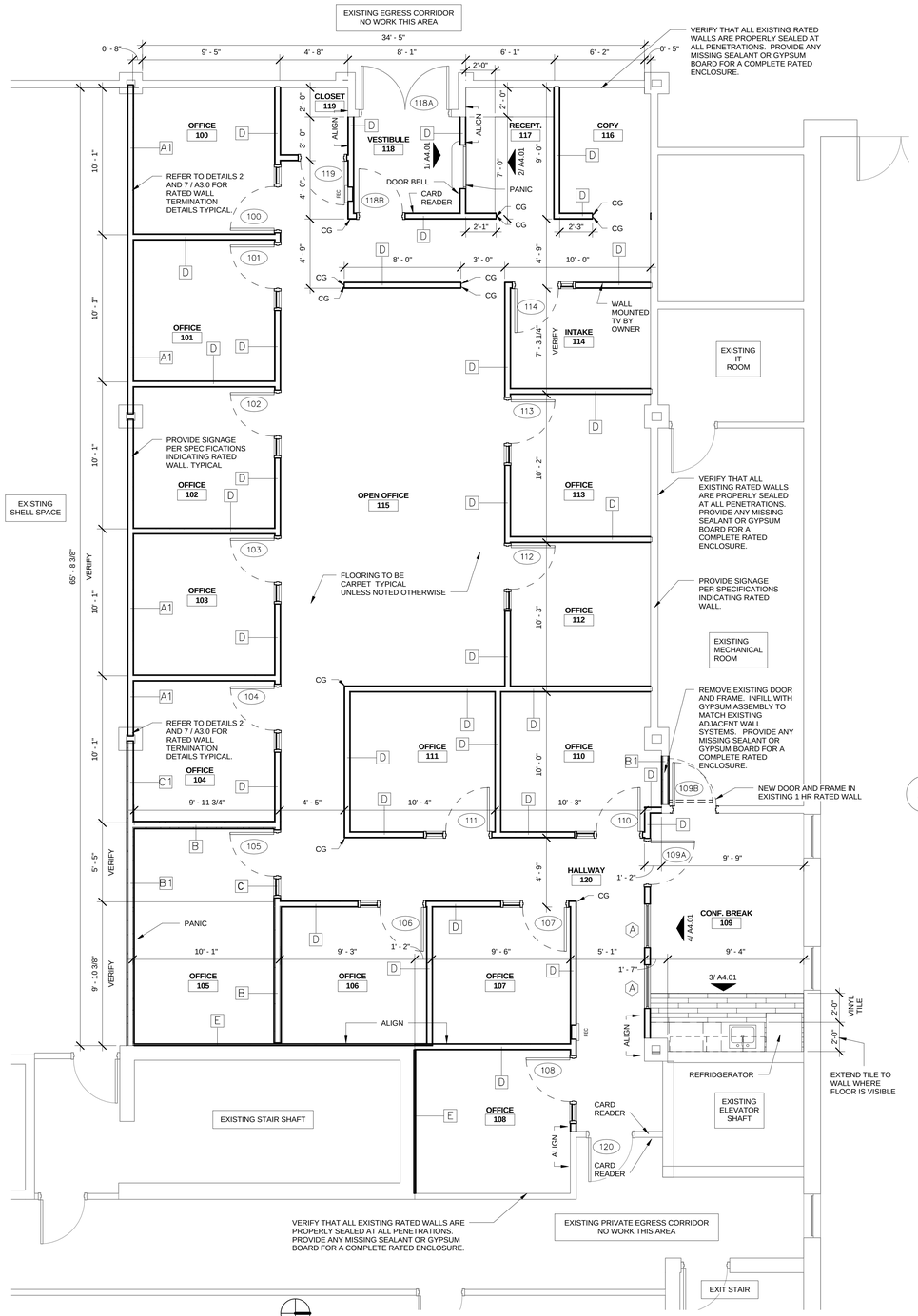
703.5.3 STYLE. CHARACTERS SHALL BE UNCONVENTIONAL IN FORM. CHARACTERS SHALL NOT BE ITALIC, OBLIQUE, SCRIPT, HIGHLY DECORATIVE, OR OF OTHER UNUSUAL FORMS.

703.5.4 CHARACTER PROPORTIONS. CHARACTERS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 55 PERCENT MINIMUM AND 110 PERCENT MAXIMUM OF THE HEIGHT OF THE UPPERCASE LETTER "I".

703.5.5 CHARACTER HEIGHT. MINIMUM CHARACTER HEIGHT SHALL COMPLY WITH 703.5.5. VIEWING DISTANCE SHALL BE MEASURED AS THE HORIZONTAL DISTANCE BETWEEN THE CHARACTER AND AN OBSTRUCTION PREVENTING FURTHER APPROACH TOWARDS THE SIGN. CHARACTER HEIGHTS SHALL BE BASED ON THE UPPERCASE LETTER "I".

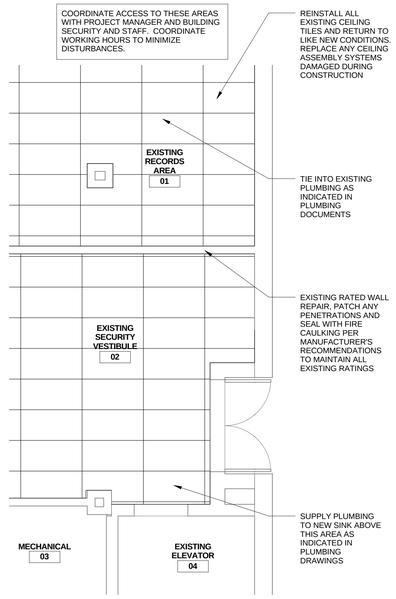
703.5.6 HEIGHT FROM FINISH FLOOR OR GROUND. VISUAL CHARACTERS SHALL BE 40 INCHES (1015 MM) MINIMUM ABOVE THE FINISH FLOOR OR GROUND.

703.5.7 STROKE THICKNESS. STROK



1 SUITE FLOOR PLAN

1/4" = 1'-0"

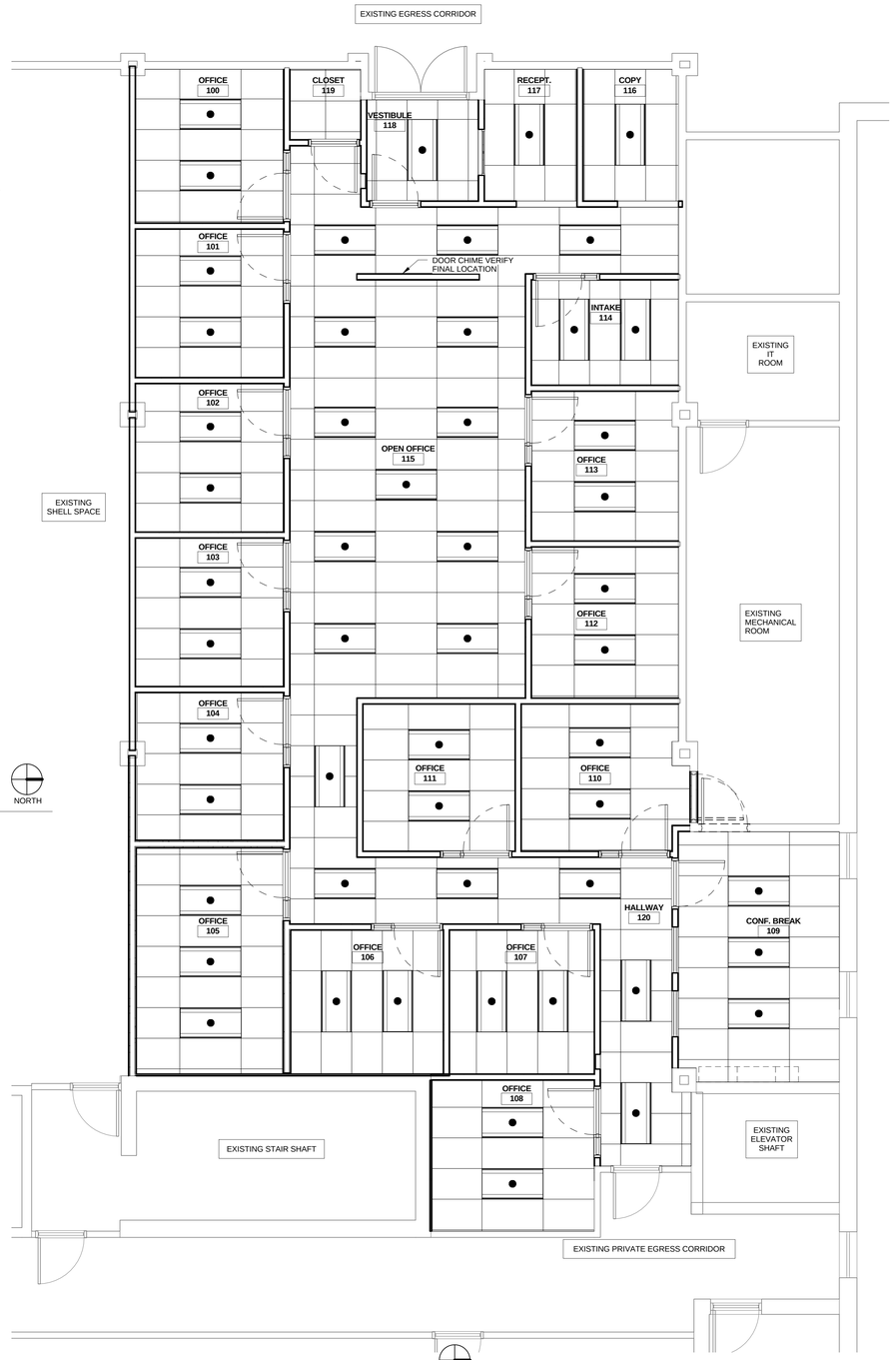


3 PARTIAL BASEMENT CEILING PLAN

1/4" = 1'-0"

FLOOR PLAN GENERAL NOTES

1. ALL INTERIOR PARTITIONS ARE DIMENSIONED TO THE FACE OF STUD UNLESS OTHERWISE NOTED.
2. REFER TO SHEET A3.01 FOR PARTITION TYPES.
3. REFER TO SHEET A3.01 AND A4.01 FOR GENERAL WALL DETAILS
4. INSTALL VERTICAL WALL CONTROL JOINTS IN ALL GYP. BD. PARTITIONS THAT EXCEED 30'-0" LENGTH. REFER TO DETAILS ON SHEET A4.01 FOR TYPICAL LOCATIONS.
5. INTERIOR DOOR FRAMES SHALL BE HELD 4 INCHES FROM BACKBEND OF FRAME TO ADJACENT WALLS AT HINGE JAMB UNLESS NOTED OTHERWISE.
6. DIMENSIONS NOTED "VERIFY" SHALL BE CONFIRMED IN THE FIELD. REPORT VARIATIONS TO THE ARCHITECT FOR RESOLUTION BEFORE PROCEEDING WITH WORK AFFECTED.
7. DIMENSIONS NOTED "CLEAR" ARE MEASURED FROM THE FACE OF FINISH MATERIAL TO THE FACE OF FINISH MATERIAL.
8. ALIGN DIFFERENT WALL TYPES SO THAT FINISHED FACES OF WALLS ARE FLUSH.
9. ELECT. PANELS, FIRE EXTINGUISHERS AND OTHER ITEMS IN WALLS SHALL BE BACKED WITH DRYWALL TO MAINTAIN REQUIRED RATINGS.
10. REFER TO ACCESSIBILITY INFORMATION SHEETS FOR INFORMATION RELATED TO ACCESSIBILITY, INCLUDING CLEARANCES, MOUNTING HEIGHTS AND OTHER REQUIREMENTS. REFER TO APPLICABLE ACCESSIBILITY STANDARDS FOR ADDITIONAL ACCESSIBILITY INFORMATION NOT SHOWN ON THE ACCESSIBILITY INFORMATION SHEETS.
11. ROOM NAMES AND NUMBERS SHOWN ARE FOR PURPOSES OF COORDINATION DURING CONSTRUCTION AND DO NOT NECESSARILY REPRESENT FINAL ROOM NAMES OR NUMBERS.
12. ALL CONCEALED BLOCKING IS TO BE FIRE TREATED. VERIFY BLOCKING REQUIREMENTS FOR OWNER PROVIDED EQUIPMENT WITH OWNER.
13. GENERAL CONTRACTOR IS TO COORDINATE AND INSTALL ALL OWNER-PROVIDED ITEMS.
14. NOTES AND LEGENDS ARE TYPICAL FOR ALL FLOOR PLAN SHEETS, AND MAY NOT APPLY TO EACH SHEET.
15. REFERENCE MECHANICAL, ELECTRICAL, PLUMBING AND TECHNOLOGY FOR ITEMS NOT SHOWN. COORDINATE AS REQUIRED INCLUDING NECESSARY FRAMING, BLOCKING, ETC.
16. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OF ANY CABINETRY, FRAMES, ETC..
17. COORDINATE CLEAR OPENINGS AND DIMENSIONS AS REQUIRED AT EQUIPMENT TO ACCOMODATE INDIVIDUAL MANUFACTURER'S REQUIREMENTS. NOTIFY ARCHITECT AND SUBMIT PROPOSED REVISIONS PRIOR TO ANY MODIFICATIONS.
18. ALL DOORS IN FIRE RATED WALLS SHALL BE RATED. SEE DOOR SCHEDULE FOR SPECIFIC RATING REQUIREMENTS.
19. BLOCKING IS TO BE PROVIDED IN ALL OFFICE WALLS FOR FUTURE USE VERIFY EXACT LOCATION WITH OWNER.



2 SUITE REFLECTED CEILING PLAN

1/4" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. REFER TO MEP DRAWINGS AND SPECIFICATIONS FOR DESIGN OF THEIR RESPECTIVE SYSTEMS (DUCT SIZES, CIRCUITING, ETC.). LOCATIONS OF FIXTURES SHALL BE AS SHOWN ON ARCHITECTURAL PLANS AND DETAILS. NOTIFY ARCHITECT OF ANY CONFLICTS PRIOR TO CONSTRUCTION
2. VERIFY FIELD CONDITIONS AND LOCATIONS OF ALL PLUMBING, DUCTS, STRUCTURAL ELEMENTS, AND OTHER APPLICABLE ITEMS. ARRANGE AND MODIFY NON-VISIBLE ITEMS TO ENSURE ADEQUATE CLEARANCE FOR CEILING LAYOUT AS SHOWN.
3. REFER TO ELECTRICAL DRAWINGS FOR FIXTURE TYPE AND SCHEDULE
4. REFER TO INTERIOR ELEVATIONS AND ROOM FINISH SCHEDULE FOR ADDITIONAL INFORMATION CONCERNING CEILING HEIGHTS, MATERIALS AND FURRED DOWNS
5. MEASURE EACH CEILING AREA AND ESTABLISH LAYOUT OF ACOUSTICAL UNITS AS SHOWN TO BALANCE BORDER WIDTHS AT OPPOSITE EDGES OF EACH CEILING
6. ALL LIGHT SWITCHES SHALL BE LOCATED 48" TO CENTERLINE ABOVE FINISH FLOOR AND BE LOCATED 6" FROM STRIKE SIDE OF DOOR U.N.O.
7. ALL THERMOSTATS SHALL BE LOCATED 48" TO CENTERLINE ABOVE FINISH FLOOR
8. REFER TO MECHANICAL DRAWINGS FOR QUANTITY AND LOCATION OF THERMOSTATS
9. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR DIFFUSERS, FIXTURES, EQUIPMENT, GRILLES, DUCTS, ETC. - TYPES AND SIZES.
10. CEILINGS AND OTHER SUSPENDED ITEMS SHALL BE ATTACHED TO STRUCTURE BY FULLY EMBEDDED OR "SHEAR" CONNECTION. PULL OUT CONNECTIONS ARE NOT ACCEPTABLE
11. CENTER ALL DEVICES IN CEILING TILES
12. PROVIDE CONTINUOUS SOUND BATT INSULATION ABOVE ALL CEILINGS
13. PROVIDE PERMANENT MARKING FOR ALL EQUIPMENT LOCATED ABOVE CEILING TILE

ROOM FINISH SCHEDULE

NO.	NAME	FLOOR	BASE	WALLS NORTH	WALLS EAST	WALLS SOUTH	WALLS West	CEILING	REMARKS
100	OFFICE	CPT	RB	PT 1	PT 1	PT 1	PT 2	ACT	
101	OFFICE	CPT	RB	PT 1	PT 2	PT 1	PT 1	ACT	
102	OFFICE	CPT	RB	PT 1	PT 2	PT 1	PT 1	ACT	
103	OFFICE	CPT	RB	PT 1	PT 2	PT 1	PT 1	ACT	
104	OFFICE	CPT	RB	PT 1	PT 2	PT 1	PT 1	ACT	
105	OFFICE	CPT	RB	PT 1	PT 2	PT 1	PT 1	ACT	
106	OFFICE	CPT	RB	PT 1	PT 1	PT 2	PT 1	ACT	
107	OFFICE	CPT	RB	PT 1	PT 1	PT 2	PT 1	ACT	
108	OFFICE	CPT	RB	PT 1	PT 2	PT 1	PT 1	ACT	
109	CONF. BREAK	CPT/LVT	RB	PT 2	PT 1	PT 1	PT 1	ACT	
110	OFFICE	CPT	RB	PT 1	PT 1	PT 2	PT 1	ACT	
111	OFFICE	CPT	RB	PT 1	PT 1	PT 2	PT 1	ACT	
112	OFFICE	CPT	RB	PT 1	PT 2	PT 1	PT 1	ACT	
113	OFFICE	CPT	RB	PT 1	PT 2	PT 1	PT 1	ACT	
114	INTAKE	CPT	RB	PT 1	PT 2	PT 1	PT 1	ACT	
115	OPEN OFFICE	CPT	RB	PT 1	PT 1	PT 2	PT 1	ACT	
116	COPY	CPT	RB	PT 1	PT 1	PT 1	PT 2	ACT	
117	RECEPT.	CPT	RB	PT 1	PT 1	PT 1	PT 2	ACT	
118	VESTIBULE	CPT	RB	PT 2	PT 1	PT 1	PT 1	ACT	
119	CLOSET	CPT	RB	PT 1	PT 1	PT 1	PT 1	ACT	
120	HALLWAY	CPT	RB	PT 1	PT 2	PT 2	PT 1	ACT	

FINISH SCHEDULE GENERAL NOTES

1. PROVIDE TRANSITION STRIPS AT DISSIMILAR FLOORING MATERIAL JOINTS.
2. PROVIDE AND INSTALL HORIZONTAL LOUVER BLINDS AT ALL INTERIOR AND EXTERIOR WINDOWS. COLOR TO BE SELECTED BY ARCHITECT.
3. PROVIDE BLOCKING IN ALL OFFICE WALLS FOR FUTURE USE.
4. ALL OPENINGS IN WALLS ARE TO BE PAINTED TO MATCH ADJACENT WALL FINISHES.
5. FLOORING TRANSITIONS AT DOORWAYS ARE TO OCCUR AT THE CENTER LINE OF THE DOOR.

FINISH LEGEND

CPT - CARPET
LVT - LUXURY VINYL TILE
RB - RUBBER BASE
PT 1 - PAINT TYPE 1
PT 2 - PAINT TYPE 2
ACT - ACOUSTICAL CEILING TIILE
CG - CORNER GUARD
FEC - FIRE EXTINGUISHER CABINET

BLGY ARCHITECTURE
2204 FORBES DRIVE
SUITE 101
AUSTIN, TX 78754
(512) 977-0390

MEP
HCE ENGINEERS
115 EAST MAIN ST.
ROUND ROCK, TX 78664
512-218-0060

ACCOUSTICAL
BAI, LLC
4006 SPEEDWAY
AUSTIN, TX 78751
512-476-3464

TECHNOLOGY
TRUE NORTH
CONSULTING GROUP
P.O. BOX 2169
HEWITT, TX 76643
254-229-0099

REGISTERED ARCHITECT JAIME DARIO PENA 17980 STATE OF TEXAS 12/22/16

JUSTICE CENTER - CSCD

WILLIAMSON COUNTY

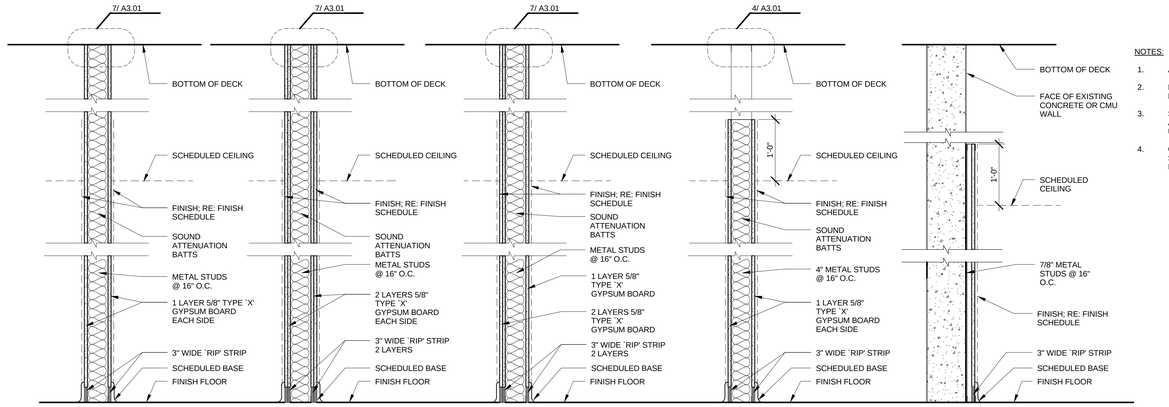
405 MARTIN LUTHER KING ST., GEORGETOWN, TX 78626

PROJECT NO.: 21604

ISSUE DATE 12/22/2016

FLOOR AND REFLECTED CEILING PLANS

A2.01



A — 4" STUD WALL TO UNDERSIDE OF DECK, GYP BOARD EACH SIDE

A1 — SAME AS 'A', 1 HR. RATED

U.L. ASSEMBLY - U419

B — 4" STUD WALL TO UNDERSIDE OF DECK, GYP BOARD EACH SIDE

B1 — SAME AS 'B', 1 HR. RATED

U.L. ASSEMBLY - U407

C — 4" STUD WALL TO UNDERSIDE OF DECK, GYP BOARD EACH SIDE

C1 — SAME AS 'C', 1 HR. RATED

U.L. ASSEMBLY - U419

D — STUD WALL TO UNDERSIDE OF DECK, GYP BOARD EACH SIDE, ABOVE CEILING

E — STUD FURRING WALL

NOTES:

1. ALL WALLS ARE TO HAVE SOUND ATTENUATION
2. FIRE TAPE GYPSUM BOARD ABOVE CEILING @ FIRE RATED PARTITIONS.
3. SEAL ALL PENETRATIONS IN WALLS CONTAINING ACOUSTICAL INSULATION WITH ACOUSTICAL SEALANT UNLESS NOTED OTHERWISE
4. CUT GYPSUM BOARD TO FOLLOW PROFILE OF STRUCTURAL DECK AT PARTITIONS WITH ACOUSTICAL INSULATION, RE: 6/A3.01

DOOR SCHEDULE

DR. NO.	ROOM NAME	SIZE W	SIZE H	DOOR TYPE	DOOR MAT'L	FRAME TYPE	FRAME MAT'L	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	HDWR SET	RATING	NOTES
100	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
101	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
102	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
103	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
104	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
105	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01	8E/A3.01	01		4
106	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
107	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
108	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
109A	CONF. BREAK	3' - 0"	7' - 0"	A	PL	B	ALUM	8A/A3.01	8B,C/A3.01		02		1,3
109B	CONF. BREAK	3' - 0"	7' - 0"	A	PL	A	ALUM	8A/A3.01	8B,C/A3.01	8E/A3.01	03	45	1
110	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
111	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
112	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
113	OFFICE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
114	INTAKE	3' - 0"	7' - 0"	B	PL	B	ALUM	8A/A3.01	8B,D/A3.01		01		1,4
118A	VESTIBULE	6' - 0"	7' - 0"	EXISTING		C EXIST					05	20	1
118B	VESTIBULE	3' - 0"	7' - 0"	A	PL	A	ALUM	8A/A3.01	8B,C/A3.01		06		1
119	CLOSET	3' - 0"	7' - 0"	A	PL	A	ALUM	8A/A3.01	8B,C/A3.01		04		5
120	HALLWAY	3' - 0"	7' - 0"	EXISTING		A EXIST					07	20	1

DOOR SCHEDULE NOTES

1.) PROVIDE SOUND SEALS (PK55)

2.) ACCESS CONTROL CARD READER

3.) PROVIDE TEMPERED GLAZING IN DOOR

4.) PROVIDE TEMPERED GLAZING IN DOOR AND SIDELITE.

5.) NO CLOSER

DOOR SCHEDULE LEGEND

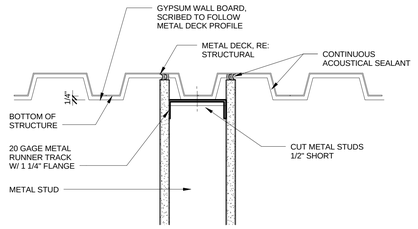
HM = HOLLOW METAL

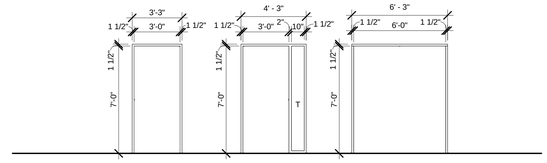
T = TEMPERED

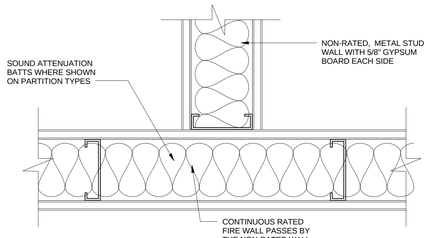
SC = SOLID CORE WOOD DOOR

PL = PLASTIC LAMINATE

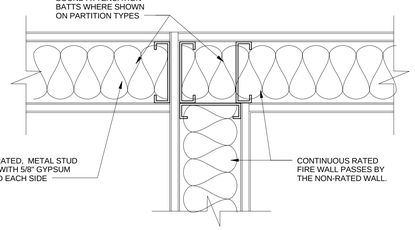
ALUM = ALUMINUM







1 FIRE RATED WALL DETAIL



2 FIRE RATED WALL DETAIL

2 FIRE RATED WALL DETAIL

3" = 1'-0"

INTERIOR STUD SIZE SCHEDULE

STUD SIZE	LIMITING HEIGHT/L360
4" x 25 GA.	12'-0"
4" x 20 GA.	14'-7"
4" x 18 GA.	16'-5"
4" x 16 GA.	17'-6"
4" x 14 GA.	18'-9"
6" x 22 GA.	19'-11"
6" x 20 GA.	20'-2"
6" x 18 GA.	22'-9"
6" x 16 GA.	24'-4"
6" x 14 GA.	26'-2"

NOTES:

1.) REFER TO FLOOR PLAN FOR STUD DEPTH.

2.) IF WALL IS BRACED TO THE ROOF STRUCTURE WITH KICKERS, THE STUD SPAN BETWEEN THE BRACE AND THE FLOOR, AND THE STUD SPAN BETWEEN THE BRACE AND THE ROOF, SHALL NOT EXCEED THE GIVEN LIMITING HEIGHT. PROVIDE A WEB STIFFENER AT THE BRACE POINT STUDS MAY BE SPLICED AT BRACE POINTS, BUT ONLY IF NECESSARY DUE TO LENGHT.

3.) REFER TO DETAILS ON THIS PAGE FOR FLOOR AND TOP ANCHORAGE AND STUD BRIDGING

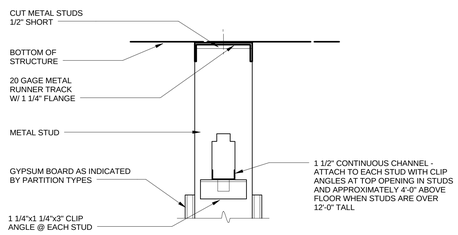
4.) ALL STUDS TO BE SPACED AT A MAXIMUM OF 16" O.C..

3 INTERIOR STUD SIZE SCHEDULE

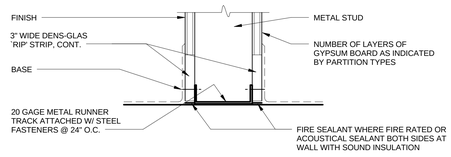
1 1/2" = 1'-0"

NOTES:

1. PARTITION TYPES WHERE STUDS ARE EXPOSED ON ONE OR BOTH SIDES, CUT STUDS 1/2" SHORT
2. WHERE PARTITION TYPES ARE PERPENDICULAR TO PURLINS, ATTACH TOP RUNNER TRACK TO BOTTOM OF PURLINS.
3. WHERE PARTITION TYPES ARE PARALLEL TO PURLINS, ATTACH TOP RUNNER TRACK TO 18 GAGE METAL STUDS THAT ARE ATTACHED TO BOTTOM OF PURLINS @ 48" O.C. (PERPENDICULAR TO THE WALL AND PURLINS)



1) TOP ANCHORAGE OF PARTITION



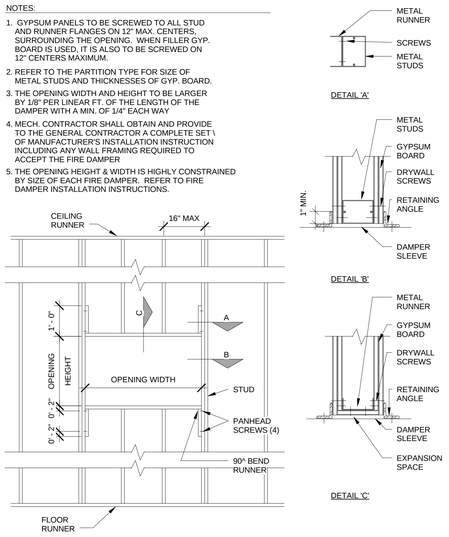
2) FLOOR ANCHORAGE OF PARTITION

4 PARTITION ANCHORAGE DETAIL

3" = 1'-0"

NOTES:

1. GYPSUM PANELS TO BE SCREWED TO ALL STUD AND RUNNER FLANGES ON 12" MAX. CENTERS, SURROUNDING THE OPENING. WHEN FILLER GYP. BOARD IS USED, IT IS ALSO TO BE SCREWED ON 12" CENTERS MAXIMUM.
2. REFER TO THE PARTITION TYPE FOR SIZE OF METAL STUDS AND THICKNESSES OF GYP. BOARD.
3. THE OPENING WIDTH AND HEIGHT TO BE LARGER BY 1/8" PER LINEAR FT. OF THE LENGTH OF THE DAMPER WITH A MIN. OF 1/4" EACH WAY
4. MECH. CONTRACTOR SHALL OBTAIN AND PROVIDE TO THE GENERAL CONTRACTOR A COMPLETE SET \ OF MANUFACTURER'S INSTALLATION INSTRUCTION INCLUDING ANY WALL FRAMING REQUIRED TO ACCEPT THE FIRE DAMPER
5. THE OPENING HEIGHT & WIDTH IS HIGHLY CONSTRAINED BY SIZE OF EACH FIRE DAMPER. REFER TO FIRE DAMPER INSTALLATION INSTRUCTIONS.



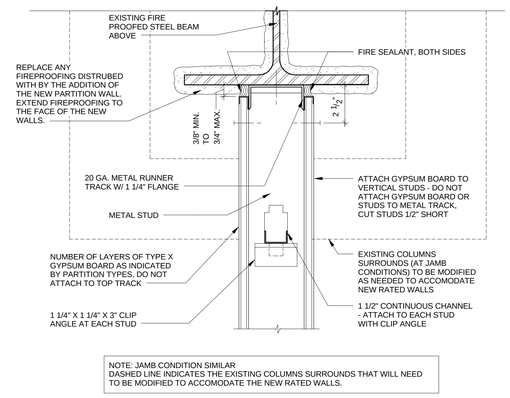
FIRE DAMPER IN METAL STUD PARTITION

5 DAMPER IN STUD PARTITION

1/2" = 1'-0"

6 GYP AT METAL DECK

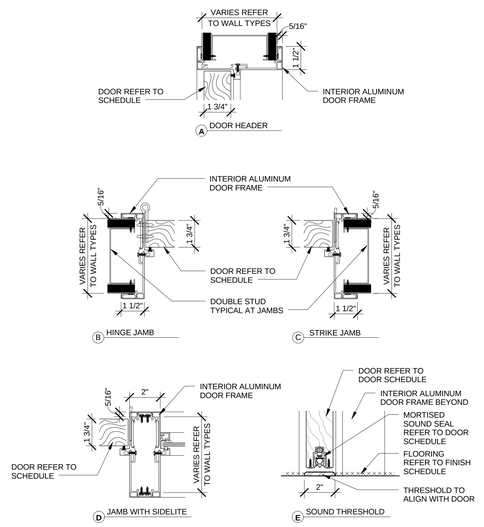
3" = 1'-0"



NOTE: JAMB CONDITION SIMILAR
DASHED LINE INDICATES THE EXISTING COLUMNS SURROUNDS THAT WILL NEED TO BE MODIFIED TO ACCOMODATE THE NEW RATED WALLS.

7 RATED PARTITION ANCHORAGE DETAIL

3" = 1'-0"

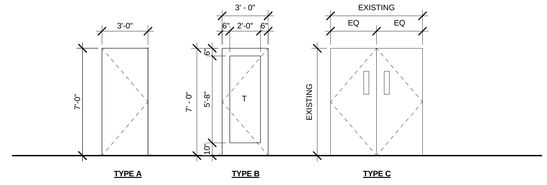


8 DOOR DETAILS

3" = 1'-0"

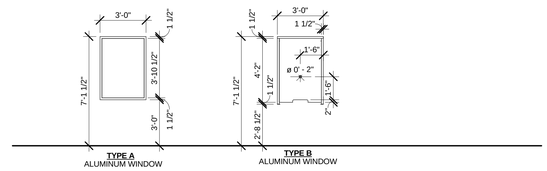
DOOR FRAME TYPES

1/4" = 1'-0"



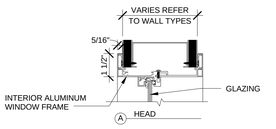
DOOR TYPES

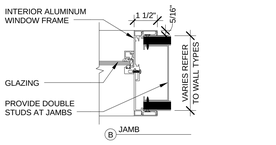
1/4" = 1'-0"

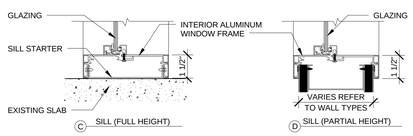


WINDOW TYPES

1/4" = 1'-0"







9 WINDOW DETAILS

3" = 1'-0"

BLGY ARCHITECTURE
2204 FORBES DRIVE
SUITE 101
AUSTIN, TX 78754
(512) 977-0390

REGISTERED ARCHITECT JAIME DARIEN BLANTON 17980 STATE OF TEXAS
12/22/16

MEP
HCE ENGINEERS
115 EAST MAIN ST.
ROUND ROCK, TX 78664
512-218-0060

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WILLIAMSON COUNTY

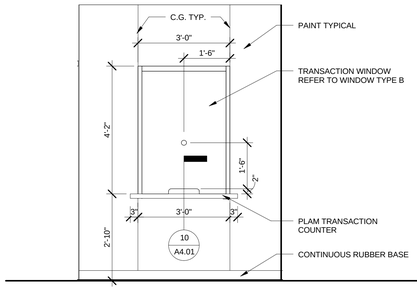
405 MARTIN LUTHER KING ST., GEORGETOWN, TX 78626

PROJECT NO.: 21604

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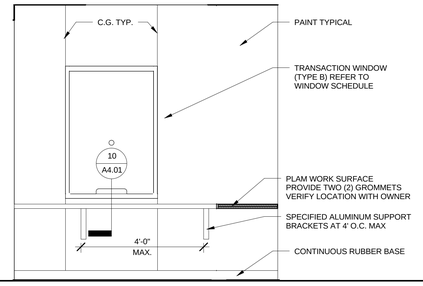
DETAILS AND SCHEDULE

A3.01



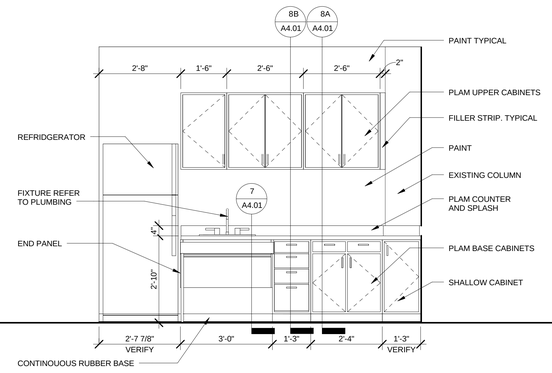
1 TRANSACTION (VEST.)

1/2" = 1'-0"



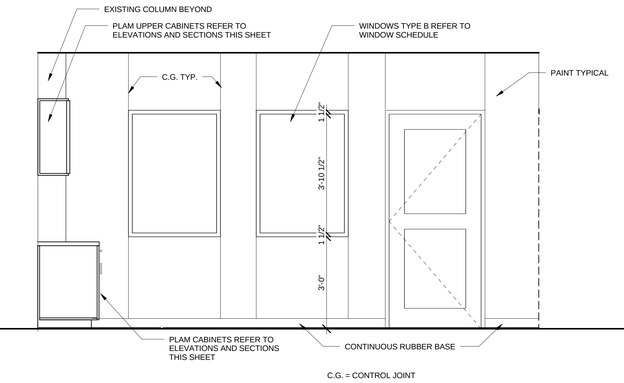
2 TRANSACTION (RECEPT.)

1/2" = 1'-0"



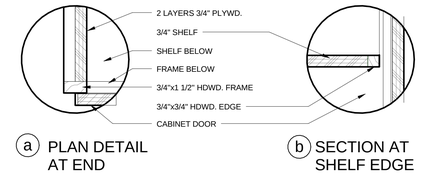
3 BREAK COUNTER AREA

1/2" = 1'-0"



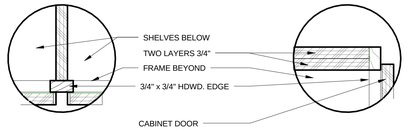
4 BREAK ROOM

1/2" = 1'-0"



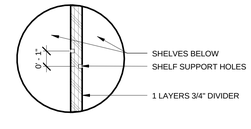
a PLAN DETAIL AT END

b SECTION AT SHELF EDGE



c PLAN DETAIL AT INTERMEDIATES

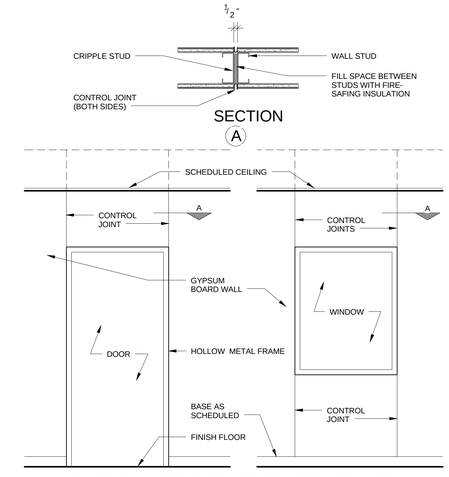
d SECTION AT TOP BOTTOM SIMILIAR



e PLAN DETAIL @ SHELF SUPPORT

5 CASEWORK DETAILS

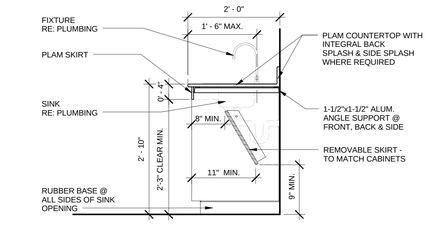
3" = 1'-0"



NOTE: DO NOT INSTALL CONTROL JOINTS IN GYP. BD. @ DOOR HEADS W/ TILE WALL AT TILE WALLS, CAULK THE VERTICAL TILE JOINTS ABOVE DOOR HEADS.

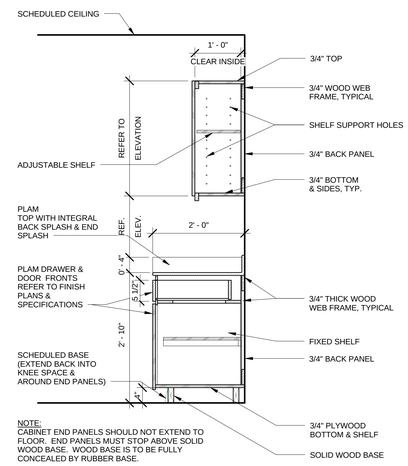
6 CONTROL JOINTS AT DOORS AND WINDOWS

1/2" = 1'-0"

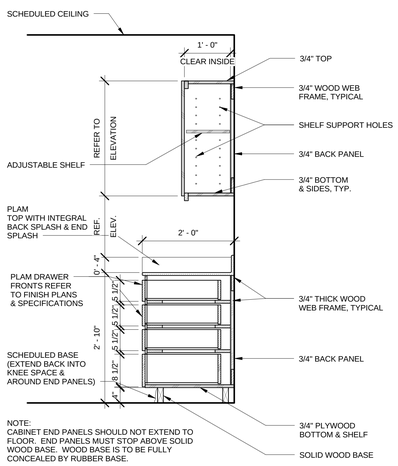


7 SINK BASE DETAIL

3/4" = 1'-0"



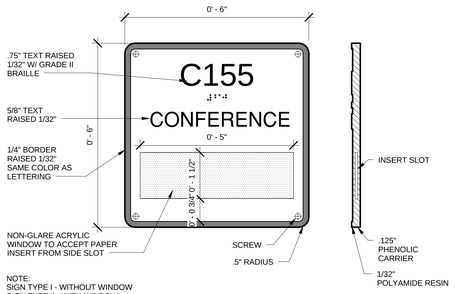
A TYP. SECTION @ UPPER & LOWER CABINETS



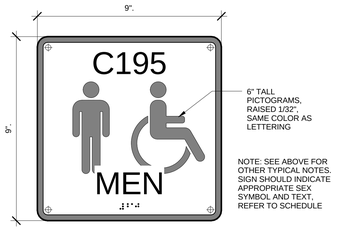
B TYP. SECTION @ UPPER & LOWER CABINETS

8 TYPICAL CABINET SECTIONS

3/4" = 1'-0"



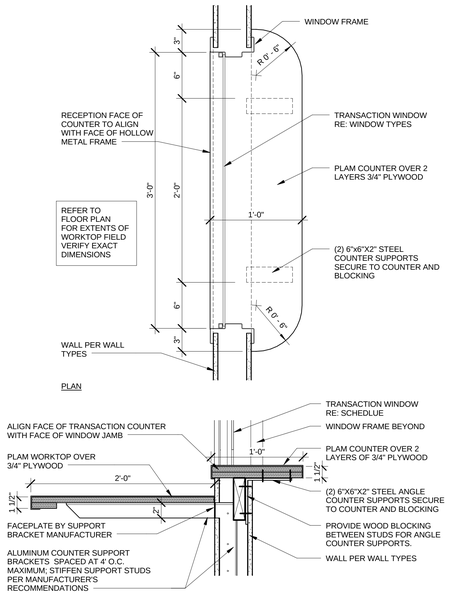
SIGN TYPES I & II



SIGN TYPE III

9 ROOM SIGNS

6" = 1'-0"



10 COUNTER DETAIL

1 1/2" = 1'-0"

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AUSTIN, TX 78754
(512) 977-0390



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115 EAST MAIN ST.
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405 MARTIN LUTHER KING ST., GEORGETOWN, TX 78626

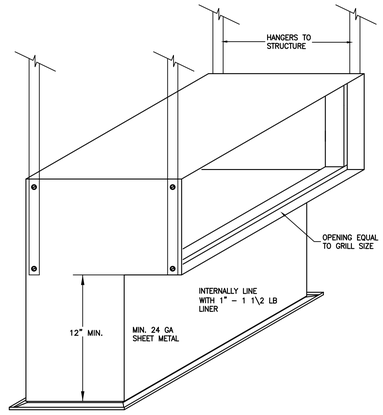
PROJECT NO.: 21604

ISSUE DATE 12/22/2016

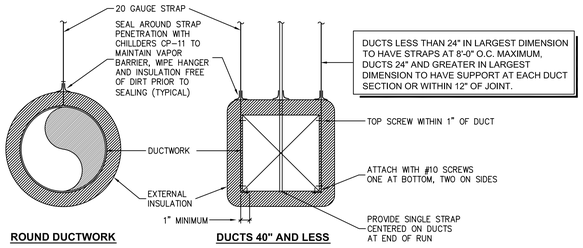
INTERIOR ELEVATIONS AND DETAILS

A4.01

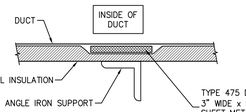
Bid 17011-136



RETURN AIR BOOT
NO SCALE MDE80A

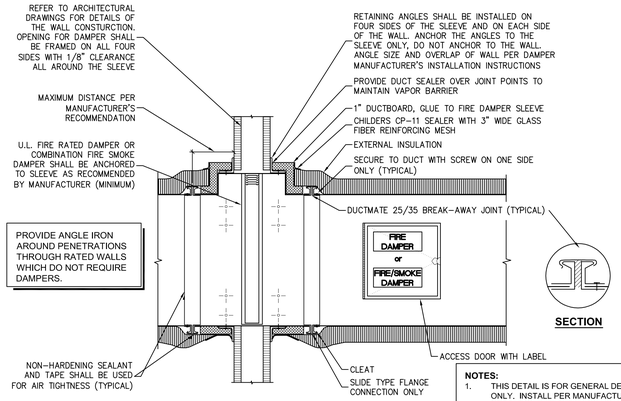


ROUND DUCTWORK **DUCTS 40" AND LESS**



DUCTS OVER 40"

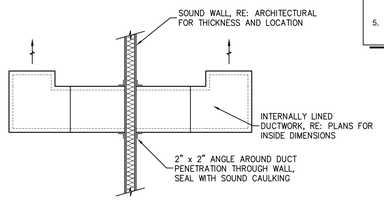
DUCT DETAILS
NO SCALE



FIRE DAMPER OR COMBINATION FIRE/SMOKE DAMPER

RATED WALL PENETRATION
NO SCALE

NOTES:
1. THIS DETAIL IS FOR GENERAL DETAIL ONLY. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
2. SUBMIT MANUFACTURER'S RECOMMENDED INSTALLATION DETAIL AT SUBMITTAL TIME.
3. ONE COPY OF MANUFACTURER'S RECOMMENDED INSTALLATION DETAIL TO BE KEPT ON JOB SITE.
4. PROVIDE DAMPERS WITH UL RATINGS (1.5 OR 3 HR) THAT MATCH WALL RATINGS. VERIFY WALL TYPE WITH ARCHITECTURAL PLANS PRIOR TO ORDERING DAMPERS.
5. ALL TAPES AND MASTICS MUST COMPLY WITH IECC.



SUPPORT THE ENDS OF DUCTWORK ACCORDING TO SMACNA LOW PRESSURE DUCT STANDARDS. COORDINATE WITH EXISTING CONDITIONS.

SOUND BOOT TRANSFER DUCT
NO SCALE MDE152

GENERAL NOTES

A. THE CONTRACTOR IS TO VISIT THE SITE PRIOR TO BID TO FAMILIARIZE HIMSELF WITH ALL CONDITIONS AS THEY EXIST. SUBMISSION OF BID INDICATES THE CONTRACTOR'S UNDERSTANDING OF EXISTING CONDITIONS AND HIS WILLINGNESS TO WORK WITH THESE CONDITIONS. NO ADDITIONAL TIME OR MONEY WILL BE ALLOTTED DUE TO LACK OF COORDINATION WITH EXISTING CONDITIONS OR OTHER TRADES.

B. CONTRACTORS TO REVIEW AND COMPARE ALL DRAWINGS SO ALL WORK IN THEIR RESPECTIVE TRADE IS INCLUDED IN BID. EACH CONTRACTOR SHALL INCLUDE ALL MATERIALS AND INSTALLATION REQUIRED FOR HIS PARTICULAR TRADE AFTER COMPLETE REVIEW OF ALL CONTRACT DRAWINGS AND SPECIFICATIONS.

C. ALL WORK SHALL COMPLY WITH THE CURRENT APPLICABLE LOCAL, STATE AND FEDERAL CODES AND ORDINANCES. FOLLOW RECOMMENDED PRACTICES AS SET DOWN BY ASME, SMACNA, ASHRAE, NFPA, APPLICABLE BUILDING CODE, APPLICABLE MECHANICAL CODE, APPLICABLE PLUMBING CODE, NATIONAL ELECTRICAL CODE, AGA, ADA AND OSHA, AS THEY APPLY TO THIS PROJECT, EXCEPT IN CASES WHERE LOCAL STATUTES GOVERN. THE CONTRACTOR SHALL VERIFY WITH THE LATEST ADOPTED LOCAL CODES, ORDINANCES AND AMENDMENTS THAT APPLY TO THIS PROJECT WITH THE AUTHORITY HAVING JURISDICTION.

D. MECHANICAL CONTRACTOR TO COMPLETE A MECHANICAL/ELECTRICAL EQUIPMENT COORDINATION SHEET IN SPECIFICATION SECTION 20 00 00 AND SUBMIT COMPLETED FORM WITH EQUIPMENT SUBMITTAL AND PROVIDE A COMPLETED FORM TO THE ELECTRICAL CONTRACTOR.

E. CONTROLS TO BE PROVIDED BY ALC TO MATCH EXISTING.

F. CONFIRM LOCATION AND MOUNTING HEIGHT OF EACH THERMOSTAT/SENSOR PRIOR TO INSTALLATION. COORDINATE WITH ARCHITECT, OWNER, MILLWORK, SWITCHES, EQUIPMENT, FURNITURE, ETC. PROVIDE INSULATED SUBBASE FOR EACH THERMOSTAT/SENSOR.

G. PROVIDE ENGRAVED LABELS FOR ALL EQUIPMENT. LABEL ALL THERMOSTATS/SENSORS TO CORRESPONDING EQUIPMENT NUMBER. PROVIDE ENGRAVED ACCESS PANEL MARKERS ON THE CEILING GRID TO INDICATE ACCESS LOCATIONS FOR EQUIPMENT ABOVE CEILING.

H. WHERE STRUCTURAL BRIDGING IS REMOVED, RE-BRIDGE ON EACH SIDE OF JOIST. VERIFY WITH STRUCTURAL ENGINEER PRIOR TO REMOVING ANY BRIDGING.

I. COORDINATE WITH ALL STRUCTURAL BRACING FOR ROUTING OF DUCT AND DIFFUSERS.

J. BEFORE ANY CUTTING OR TRENCHING OPERATIONS BEGIN, VERIFY WITH OWNER'S REPRESENTATIVE, UTILITY COMPANIES AND OTHER INTERESTED PARTIES THAT ALL AVAILABLE INFORMATION HAS BEEN PROVIDED CONCERNING EXISTING UTILITY LOCATION. VERIFY LOCATIONS GIVEN. CONTACT ARCHITECT IMMEDIATELY UPON UNCOVERING UNKNOWN UTILITIES FOR FURTHER DIRECTION. INDICATE ALL UNCOVERED UTILITIES ON RECORD DRAWINGS.

K. FIRE/SMOKE AND/OR FIRE DAMPERS: INSTALL DAMPERS AT ALL DUCT PENETRATIONS OR RATED WALLS, TUNNELS AND CEILINGS. ALL DAMPERS TO BE OUT OF AIRSTREAM TYPE. DAMPERS TO BE INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE FACTORY WALL SLEEVE AND ANGLE KIT. ACCESS PANEL TO BE PROVIDED IN DUCT FOR ACCESS TO FUSIBLE LINK AND FOR INSPECTION AND MAINTENANCE. VERIFY THE EXACT LOCATION OF ALL RATED WALLS, TUNNELS AND CEILINGS WITH ARCHITECTURAL DRAWINGS. COMBINATION FIRE/SMOKE DAMPERS TO BE INSTALLED IN ALL SMOKE WALLS AND RATED EGRESS WAYS.

L. COORDINATE LOCATION AND MOUNTING TYPE OF ALL CEILING AIR DEVICES IN ACCORDANCE WITH ARCHITECTURAL REFLECTED CEILING PLANS.

M. ALL MECHANICAL EQUIPMENT OR GROUPS OF EQUIPMENT SERVING A COMMON AREA AND DISCHARGING OVER 2000 CFM OR SERVING EGRESS PATHWAYS SHALL HAVE SMOKE DETECTORS LOCATED IN RETURN AND DISCHARGE AIR DUCTS, AS REQUIRED BY CODE AND LOCAL AHJ. THE MECHANICAL CONTRACTOR IS TO PROVIDE, INSTALL AND WIRE SMOKE DETECTORS COMPLETE WITH REMOTE TEST SWITCH INDICATOR UNLESS THE BUILDING HAS A FIRE ALARM SYSTEM. WHEN BUILDING HAS A FIRE ALARM SYSTEM THE ELECTRICAL/FIRE ALARM CONTRACTOR IS TO PROVIDE AND WIRE THE DUCT DETECTORS BACK INTO THE FIRE ALARM CONTROL PANEL AND PROVIDE A RELAY AT THE UNIT FOR LOCAL SHUTDOWN. MECHANICAL CONTRACTOR (CONTROLS CONTRACTOR) IS TO WIRE HIS CONTROL CIRCUIT THROUGH THE RELAY CONTACTS. REFERENCE MECHANICAL AND ELECTRICAL GENERAL NOTES, SCHEDULES, PLANS AND SPECIFICATIONS FOR MORE INFORMATION.

N. PROVIDE INTERNALLY LINED RETURN AIR BOOT WITH NINETY DEGREE ELBOW OR TEE FITTING ON BACK OF ALL RETURN AIR GRILLES UNLESS OTHERWISE NOTED. REFERENCE DETAIL SHEETS AND SPECIFICATIONS FOR MORE INFORMATION.

O. PROVIDE ALL APPROPRIATE TOOLS, WRENCHES, KEYS, ETC. AS REQUIRED FOR ACCESS AND OPERATION OF VALVES, COVERS, ETC.

P. SEAL AROUND ALL DUCTWORK AND PIPING AT PENETRATIONS THROUGH SOUND WALLS WITH ACOUSTICAL SEALANT.

Q. ALL DUCTS 30" AND LARGER IN ANY DIMENSION TO HAVE DUCTMATE FITTINGS.

R. ALL ACCESS DOORS SHALL BE INSTALLED IN EASILY ACCESSIBLE LOCATIONS. RELOCATE ANY ACCESS DOOR THAT IS NOT INSTALLED IN THIS MANNER. THIS SHALL BE DONE AT NO ADDITIONAL COST TO OWNER. INSTALL MINIMUM 12" x 12" HINGED ACCESS DOORS WITH CAM LOCKS AT THE END OF ALL DUCT RUNS, AT 20' INTERVALS ALONG LENGTH OF RUN, AND ON EACH SIDE OF ELBOWS WITH TURNING VANES. REFERENCE SPECIFICATIONS FOR MORE INFORMATION.

BB. COORDINATE LOCATION OF DUCTWORK WITH LOCATION AND DEPTH OF ALL LIGHT FIXTURES PRIOR TO INSTALLATION.

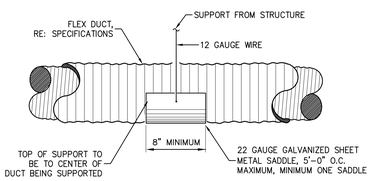
CC. MECHANICAL CONTRACTOR TO HAVE STAMPED AND REVIEWED DUCT SHOP DRAWINGS PRIOR TO INSTALLATION OF ANY DUCTWORK IN FIELD.

DD. ABSOLUTELY NO PIPING OR DUCTWORK CAN BE ROUTED ABOVE ELECTRICAL PANELS, GEAR OR TRANSFORMERS. THE ONLY HVAC, PLUMBING, SPRINKLER PIPING OR DUCTWORK THAT CAN ENTER AN ELECTRIC ROOM ARE THOSE SPECIFICALLY SERVING THAT ROOM. THESE SERVICES CAN ONLY ENTER INTO ELECTRIC ROOM ABOVE ENTRY DOOR.

GG. SEAL AROUND ALL DUCTWORK AND PIPING AT PENETRATIONS THROUGH RATED WALLS WITH FIRE SEALANT. ALL PENETRATIONS THROUGH RATED WALLS ARE TO BE SEALED ACCORDING TO THE FIRE SEALANT MANUFACTURER'S INSTALLATION INSTRUCTIONS. SUBMIT ON U.L. SYSTEM TO BE USED FOR EACH TYPE OF PENETRATION, POST A COPY OF INSTALLATION INSTRUCTIONS AT JOB SITE ACCESSIBLE TO ALL WORKERS PERFORMING WORK.

HH. ALL OPENINGS OF DUCTWORK AND MECHANICAL EQUIPMENT MUST BE COVERED WITH PLASTIC AND TIGHTLY SEALED TO PREVENT DUST AND CONSTRUCTION DEBRIS FROM ENTERING SYSTEMS, THIS INCLUDES EQUIPMENT AND DUCTWORK STORED ON SITE. IF THE MECHANICAL EQUIPMENT IS OPERATED PRIOR TO ACCEPTANCE OF THE BUILDING BY OWNER, ALL OUTLET AND INLETS OF THE SYSTEM MUST BE PROTECTED WITH ROLLED FILTER MEDIA EQUAL TO (FIBERBOND DUAL-PLY DUSTLOC MEDIA). UNITS MUST BE SHUT DOWN WHEN PAINTING, SANDING AND SIMILAR CONSTRUCTION OPERATIONS ARE BEING PERFORMED. SYSTEMS THAT ARE OPERATED DURING CONSTRUCTION MUST BE CLEANED TO NEW CONDITION BEFORE FINAL PAYMENT WILL BE APPROVED. ITEMS TO BE CLEANED INCLUDE: WHOLE DUCT SYSTEM, AIR DEVICES, BLOWERS, MOTORS, UNIT CASING, EVAPORATOR COILS, CONDENSER COILS AND ALL OTHER COMPONENT EFFECTED BY THE OPERATION OF THE SYSTEMS.

JJ. ALL SUPPLY BRANCH DUCTS ARE TO HAVE BALANCING DAMPERS WITH MANUAL LOCKING QUADRANT OPERATORS. PROVIDE STAND-OFF BRACKETS EQUIVALENT TO INSULATION THICKNESS.PROVIDE BALANCING DAMPERS IN OTHER DUCT SYSTEMS AS REQUIRED TO PROPERLY BALANCE SYSTEMS. SINGLE BLADE DAMPERS ARE ACCEPTABLE IN DUCTS 14" ROUND OR 14" TALL. LARGER DUCTS TO HAVE MULTIPLE BLADE DAMPERS. ALL DAMPER BLADES AND HARDWARE ARE TO BE FABRICATED OF SUFFICIENT GAGE AND HAVE REINFORCEMENTS AS REQUIRED TO PREVENT VIBRATION.



FLEX. DUCT SUPPORT DETAIL
NO SCALE

AIR DEVICE SCHEDULE

MARK	NECK SIZE	FRAME SIZE	FRAME TYPE	VOLUME DAMPER	SUPPLY	RETURN	EXHAUST	MODEL	FLEX SIZE	MAXIMUM CFM
A1	9 x 9	24 x 24	LAY–IN	–	●	–	–	PRICE MODEL SMD	6"ø	100
A2	12 x 12	24 x 24	LAY–IN	–	●	–	–	PRICE MODEL SMD	8"ø	220
A3	12 x 12	24 x 24	LAY–IN	–	●	–	–	PRICE MODEL SMD	10"ø	350
A4	15 x 15	24 x 24	LAY–IN	–	●	–	–	PRICE MODEL SMD	12"ø	600
A5	18 x 18	24 x 24	LAY–IN	–	●	–	–	PRICE MODEL SMD	14"ø	900
B1	22 x 10	24 x 12	LAY–IN	–	–	●	–	PRICE MODEL 530TB	12"ø	700
B2	22 x 22	24 x 24	LAY–IN	–	–	●	–	PRICE MODEL 530TB	18"ø	1400
C1	6 x 6	15 x 15	SURFACE	–	●	–	–	PRICE MODEL SMD	6"ø	100
C2	12 x 12	18 x 18	SURFACE	–	●	–	–	PRICE MODEL SMD	8"ø	220
C3	12 x 12	18 x 18	SURFACE	–	●	–	–	PRICE MODEL SMD	10"ø	350
D1	8 x 8	10 x 10	SURFACE	●	–	–	●	PRICE MODEL 630DF	–	250
D2	12 x 12	14 x 14	SURFACE	●	–	–	●	PRICE MODEL 630DF	–	450
E1	10 x 4	12 x 6	SURFACE	●	●	–	–	PRICE MODEL 620DAS	8"ø	150
E2	12 x 6	14 x 8	SURFACE	●	●	–	–	PRICE MODEL 620DAS	10"ø	280
E3	18 x 6	20 x 8	SURFACE	●	●	–	–	PRICE MODEL 620DAS	12"ø	400
F1	20 x 10	24 x 12	LAY–IN	–	–	●	●	PRICE MODEL 530FF 2" FILTER GRILLE	12"ø	600
F2	20 x 20	24 x 24	LAY–IN	–	–	●	●	PRICE MODEL 530FF 2" FILTER GRILLE	18"ø	1200
T1	8"ø	24 x 24	LAY–IN	–	●	–	–	THERMAFUSER THFC	8"ø	220

NOTES:
1. COORDINATE EXACT LOCATION OF DIFFUSERS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
2. ALL SUPPLY DIFFUSERS SHALL BE 4-WAY THROW UNLESS NOTED OTHERWISE.
3. ALL FLEX SHALL BE SIZED AS SCHEDULED UNLESS NOTED OTHERWISE.
4. ALL DIFFUSERS SHALL BE OFF-WHITE UNLESS NOTED OTHERWISE.
5. VERIFY FRAME TYPE WITH ACTUAL CEILING TYPE PRIOR TO PURCHASE OF AIR DEVICES.
6. ALL VOLUME DAMPERS SHALL BE OPPOSED BLADE TYPE.
7. RUN-OUTS AND DROPS FROM R/A MAIN TRUNKS SHALL BE AS FOLLOWS: UP TO 250 CFM USE 10" DIAMETER OR 10" x 8"; 251 CFM TO 450 CFM USE 12" DIAMETER OR 12" x 10"; 451 CFM TO 700 CFM USE 14" DIAMETER OR 12" x 12"; 701 CFM TO 1000 CFM USE 16" DIAMETER OR 14" x 16"; 1001 CFM TO 1400 CFM USE 18" DIAMETER OR 16" x 18", UNLESS SHOWN OTHERWISE.
8. INSULATE BACKS OF ALL AIR DEVICES.
9. PROVIDE PRICE PLASTER FRAME FOR ALL AIR DEVICES LOCATED IN GYP OR PLASTER CEILINGS.
10. AIR DEVICES LOCATED IN DAMP AREAS (SHOWERS/LOCKER ROOMS/TRAINING ROOMS) ARE TO BE OF THE SAME SIZE AND TYPE AS SHOWN ON THE AIR DEVICE SCHEDULE BUT MUST BE OF ALL ALUMINUM CONSTRUCTION. ALL DEVICES SCHEDULED TO BE ALUMINUM MUST BE ALUMINUM NO MATTER WHERE THEY ARE LOCATED.
11. TRANSISTION TO AIR DEVICE NECK SIZE AS REQUIRED.
12. ALL LAY-IN AIR DEVICES ARE TO BE CONNECTED WITH FLEX DUCT. PROVIDE WITH MINIMUM 3" HIGH ROUND NECK OR SQUARE TO ROUND ADAPTER WITH 3" HIGH NECK FOR PROPER CONNECTION OF FLEX DUCT (SIZED PER SCHEDULE) TO AIR DEVICE.

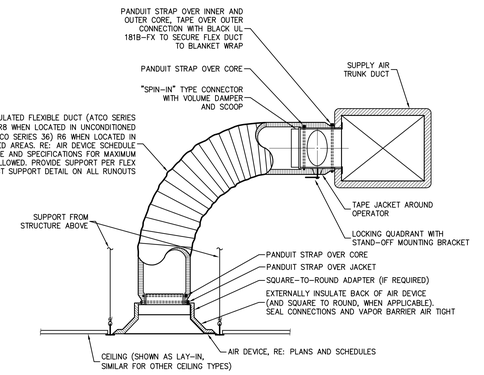
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MECHANICAL LEGEND

SYMBOL	ABB.	DESCRIPTION
	FD	FIRE DAMPER (RE: ARCHITECTURAL DRAWINGS FOR RATED WALL LOCATIONS)
	FSD	COMBINATION FIRE/SMOKE DAMPER
	DB	DUCT BARRIER WITH SECURITY 1/2" BARS (6 x 6) EQUAL TO PRICE MODEL MSBG
T	TSTAT	THERMOSTAT/CONTROL DEVICE
TS		REMOTE TEMPERATURE SENSOR
H		HUMIDISTAT
CO2		CARBON DIOXIDE SENSOR
F		FIRESTAT
SD		SMOKE DETECTOR
AH		ABSOLUTE HUMIDITY SENSOR
M	MOD	MOTOR OPERATED DAMPER
V		VENTILATION SWITCH
SA	SINGLE LINE	LONG RADIUS 90° ELBOW
SA	SINGLE LINE	BRANCH TAKE–OFF WITH DAMPER
SA	SINGLE LINE	RADIUS DUCT SPLIT W/LOCKING SPLITTER DAMPER
		CEILING SUPPLY AIR DEVICE
		CEILING RETURN OR EXHAUST DEVICE
D		CONDENSATE DRAIN
		BALL VALVE – 2" AND SMALLER (BUTTERFLY VALVE – LARGER THAN 2"
RADIUS	O.B.D.	OPPOSED BLADE DAMPER
		SMOKE SUPPLY GRILLE
		POINT OF CONNECTION
		MANUAL DAMPER (OBD WHEN ON MAU DUCTWORK)
40		DUCT ACCESS DOOR

M/P ABBREVIATION SCHEDULE

AD	ACCESS DOOR	MAINT	MAINTENANCE
ABV	ABOVE	MAU	MAKEUP AIR UNIT
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
ARCH	ARCHITECT	MC	MECHANICAL CONTRACTOR
AUTO	AUTOMATIC	MBH	1000 BTU PER HOUR
AUX	AUXILIARY	MECH	MECHANICAL
AHU	AIR HANDLING UNIT	MFR	MANUFACTURER
		MIN	MINIMUM
BD	BALANCE DAMPER	MISC	MISCELLANEOUS
BFF	BELOW FINISHED FLOOR	MTD	MOUNTED
BLDG	BUILDING	MOD	MOTOR OPERATED DAMPER
BOD	BOTTOM OF DUCT		
BOP	BOTTOM OF PIPE	NIC	NOT IN CONTRACT
BF	BOOSTER FAN	N.O.	NORMALLY OPEN
		N.C.	NORMALLY CLOSED
CLG	CEILING	NUMB	NUMBER
CLR	CLEAR/CLEARANCE	NTS	NOT TO SCALE
CO	CLEANOUT		
COL	COLUMN	O/A	OUTDOOR AIR
CONC	CONCRETE	OBD	OPPOSED BLADE DAMPER
CONTR	CONTRACTOR	OC	ON CENTER(S)
CW	COLD WATER	OPNG	OPENING
CU	CONDENSER	ORL	OVERFLOW RAINLEADER
CU	CONDENSING UNIT	OAH	OUTSIDE AIR HOOD
Cu	COPPER		
CHS	CHILLED WATER SUPPLY	PC	PLUMBING CONTRACTOR
CHR	CHILLED WATER RETURN	PH	PHASE
		PLBG	PLUMBING
DIA	DIAMETER		
DN	DOWN	R/A	RETURN AIR
DWG	DRAWING	RL	REFRIGERANT LIQUID REFER TO
DH	DUCT HEATER	REFRIG	REFRIGERANT
E/A	EXHAUST AIR	REF	REFRIGERATOR
EC	ELECTRICAL CONTRACTOR	REQD	REQUIRED
EF	EXHAUST FAN	RHP	RADIANT HEAT PANEL
ELEC	ELECTRIC/ELECTRICAL	RL	RAINLEADER
EQ	EQUAL	RM	ROOM
EQUIP	EQUIPMENT	RTU	ROOFTOP UNIT
EXH	EXHAUST		
EXH	EXHAUST	S/A	SUPPLY AIR
E.S.P.	EXTERNAL STATIC PRESSURE	SCH	SCHEDULE
ERV	ENERGY RECOVERY VENTILATOR	SP	STATIC PRESSURE
		SPEC	SPECIFICATION
FCO	FLOOR CLEAN OUT	SD	STORM DRAIN
FCU	FAN COIL UNIT	SF	SUPPLY FAN
FF	FINISHED FLOOR		
FLEX	FLEXIBLE	TSP	TOTAL STATIC PRESSURE
FLR	FLOOR/FLOORING	TYP	TYPICAL
GA	GAUGE	UON	UNLESS OTHERWISE NOTED
GC	GENERAL CONTRACTOR	UG	UNDERGROUND
GEN	GENERAL	UH	UNIT HEATER
GYP	GYPSUM BOARD	V	VENT (PLUMBING)
		V	VOLTAGE (ELECTRICAL)
HP	HEAT PUMP	VTR	VENT THROUGH ROOF
Hp	HORSEPOWER		
HT	HEIGHT	W/	WITH
HW	HOT WATER	W/O	WITHOUT
HWC	HOT WATER CIRC	WP	WEATHERPROOF
HR	HOUR	WT	WEIGHT
HWR	HEATING WATER RETURN	WW	WASTE WATER
HWS	HEATING WATER SUPPLY	WCO	WALL CLEANOUT
		WH	WATER HEATER
LOC	LOCATION		



CEILING SUPPLY AIR DEVICE CONNECTION DETAIL
NO SCALE

BLGY ARCHITECTURE
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STATE OF TEXAS — BRIAN J. HENDRIX — 94813 — LICENSED — PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY B.J. HENDRIX, P.E. NO. 94813 ON 01/04/17

PROJECT NO.: 21604
ISSUE DATE 01/04/2017

REFERENCE GENERAL NOTES ON SHEETS M1.01, P1.01 AND E1.01 FOR ADDITIONAL INFORMATION

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HCE job no.: 16-076

SCHEDULES, NOTES & LEGENDS – MECHANICAL

M1.01

Williamson County, Texas
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Bid 17/01-136

Williamson County, Texas

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PIPE SIZING REQUIREMENTS

1. ALL FLOOR DRAINS AND FLOOR SINKS MUST HAVE TRAP PRIMERS. PROVIDE INVERTED TEE CONNECTION FROM SINK TAILPIECE OR FLUSH VALVE TYPE TRAP PRIMER CONNECTION TO ALL FLOOR DRAINS, FLOOR SINKS AND HUB DRAINS. AS LAST RESORT PROVIDE MECHANICAL TYPE TRAP PRIMER (PPP INC. "OREGON #1" TYPE). CONNECT TO NEAREST WATER SERVING THAT AREA PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. IN JURISDICTIONS WHERE PRESSURE ACTIVATED MECHANICAL PRIMERS ARE NOT ALLOWED, USE ELECTRONIC TRAP PRIMERS. COORDINATE POWER REQUIREMENTS WITH ELECTRICAL CONTRACTOR. PROSET "TRAP GUARD" DEVICE MAY BE USED IN LIEU OF TRAP PRIMERS WHEN ALLOWED BY LOCAL CODE AUTHORITY HAVING JURISDICTION. BEFORE USING PROSET "TRAP GUARD" CONTRACTOR MUST OBTAIN WRITTEN APPROVAL FROM LOCAL CODE AUTHORITY HAVING JURISDICTION AND PROVIDE COPIES TO ARCHITECT AND ENGINEER.
2. PIPING SIZE FOR WATER MAIN DROPS AND MANIFOLD IN CHASE OR WALL TO REMAIN FULL SIZE OF DROP INDICATED. REFERENCE FIXTURE CONNECTION SCHEDULE FOR INDIVIDUAL LINE SIZE TO EACH FIXTURE.
3. COORDINATE ALL WASTEWATER FLOOR PENETRATIONS AND PIPING PENETRATIONS WITH STRUCTURAL PRIOR TO INSTALLATION. PIPING MAY BE OFFSET SLIGHTLY TO AVOID STRUCTURAL CONFLICTS.
4. ROUTE VENT FROM EACH FIXTURE TO HORIZONTAL VENT HEADER IN CHASE/WALL OR TO NEAREST COMMON VTR ABOVE CEILING. REFERENCE FIXTURE CONNECTION SCHEDULE FOR INDIVIDUAL FIXTURE VENT SIZES. VENT HEADERS IN CHASE TO BE SIZED ACCORDINGLY: 1 1/2" VENT UP TO 6 DRAIN FIXTURE UNITS MAXIMUM DEVELOPED LENGTH OF 60 FEET (EXCEPT FOR WATER CLOSETS), 2" VENT UP TO 20 DRAIN FIXTURE UNITS MAXIMUM DEVELOPED LENGTH OF 120 FEET, 3" VENT UP TO 84 DRAIN FIXTURE UNITS MAXIMUM DEVELOPED LENGTH OF 212 FEET AND 4" VENT UP TO 256 DRAIN FIXTURE UNITS MAXIMUM DEVELOPED LENGTH OF 300 FEET. BRANCH VENTS EXCEEDING 40 FEET IN DEVELOPED LENGTH ARE TO BE INCREASED BY ONE PIPE SIZE. NO MORE THAN 1/3 OF THE CODE PERMITTED DEVELOPED LENGTH SHALL BE IN HORIZONTAL POSITION. EXTEND COMMON VENT UP THROUGH ROOF.
5. ROUTE ALL VENTS TO NEAREST COMMON VENT THRU ROOF (VTR) TO MINIMIZE ROOF PENETRATIONS. **VTR TO BE MINIMUM 15 FEET AWAY FROM OUTSIDE AIR INTAKES. COORDINATE WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.**

FIXTURE CONNECTION SCHEDULE

MARK	CW	HW	TW	WASTE	DRAIN FIXTURE UNITS	VENT
WATER CLOSET (FLUSH VALVE)	1"	–	–	4"	6	2"
WATER CLOSET (TANK TYPE)	1/2"	–	–	4"	4	2"
URINAL	3/4"	–	–	2"	2	2"
LAVATORY ∗	1/2"	–	1/2"	2"	1	1 1/2" ∗∗
SINK ∗∗∗	1/2"	1/2"	1/2"	2"	2	1 1/2" ∗∗
SERVICE SINK	3/4"	3/4"	–	3"	2	2"
WASH FOUNTAIN	1/2"	–	1/2"	2"	2	1 1/2" ∗∗
EWC	1/2"	–	–	2"	1	1 1/2" ∗∗
WASHING MACHINE	3/4"	3/4"	–	2"	2	2"
HOSE BIBB	3/4"	–	–	–	–	–
SHOWER ∗∗∗∗	1/2"	1/2"	–	3"	2	1 1/2"
FLOOR DRAIN	–	–	–	3"	2	2"

∗ HOT (TEMPERED) AND COLD WATER REQUIRED UNLESS NOTED OTHERWISE ON PLUMBING FIXTURE SCHEDULE. PROVIDE TEMPERATURE MIXING VALVE (ASSE 1070) AT THE FIXTURE.

∗∗ IF HORIZONTAL VENT LENGTH EXCEEDS 20 FEET, INCREASE VENT SIZE TO TWO INCHES.

∗∗∗ COMMERCIAL KITCHEN SINKS GET HOT WATER, REMAINDER TO BE PROVIDED WITH TEMPERATURE MIXING VALVE (ASSE 1070) AT THE FIXTURE.

∗∗∗∗ SHOWER VALVES TO BE BALANCED-PRESSURE, THERMOSTATIC OR COMBINATION BALANCED-PRESSURE/THERMOSTATIC CONFORMING TO ASSE 1016.

PLUMBING LEGEND

SYMBOL	ABB.	DESCRIPTION
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
	HWR	HOT WATER RETURN PIPING
	WW	WASTE WATER
		VENT PIPING
— T —		TEMPERED WATER
— G —		GAS PIPING
— F —		FIRE LINE
— GT —		GREASE TRAP LINE
— A —		COMPRESSED AIR PIPING
— D —		RELIEF OR CONDENSATE DRAIN PIPING
— SD —	SD	STORM DRAIN
— RL —	RL	RAIN LEADER
— ORL —	ORL	OVERFLOW RAIN LEADER
		FULL PORT BALL PIPE ISOLATION VALVE
	HB	HOSE BIBB/WALL HYDRANT
		UNION
	FD/FS	FLOOR DRAIN/FLOOR SINK
	HD	HUB DRAIN
	CO	CLEAN OUT
		DOUBLE CLEAN OUT
	WCO	WALL CLEAN OUT
		GAS COCK
		BALANCE VALVE
		CHECK VALVE
		POINT OF CONNECTION
		GAS PRESSURE REGULATOR

M/P ABBREVIATION SCHEDULE

AD	ACCESS DOOR	MAINT	MAINTENANCE
ABV	ABOVE	MAU	MAKEUP AIR UNIT
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
ARCH	ARCHITECT	MC	MECHANICAL CONTRACTOR
AUTO	AUTOMATIC	MBH	1000 BTU PER HOUR
AUX	AUXILIARY	MECH	MECHANICAL
AHU	AIR HANDLING UNIT	MH	MANHOLE
		MIN	MINIMUM
BD	BALANCE DAMPER	MISC	MISCELLANEOUS
BFF	BELOW FINISHED FLOOR	MTD	MOUNTED
BLDG	BUILDING	MOD	MOTOR OPERATED DAMPER
BOD	BOTTOM OF DUCT		
BOP	BOTTOM OF PIPE	N.IC.	NOT IN CONTRACT
BF	BOOSTER FAN	N.O.	NORMALLY OPEN
		N.C.	NORMALLY CLOSED
CLG	CEILING	NCL	NO CHANGE
CLR	CLEAR/CLEARANCE	NTS	NOT TO SCALE
CO	CLEANOUT		
COL	COLUMN	O/A	OUTDOOR AIR
CONC	CONCRETE	OBD	OPPOSED BLADE DAMPER
CONTR	CONTRACTOR	OC	ON CENTER(S)
CW	COLD WATER	OPNG	OPENING
CONN	CONNECTION	ORL	OVERFLOW RAINLEADER
CU	CONDENSING UNIT	OAH	OUTSIDE AIR HOOD
Cu	COPPER		
CHS	CHILLED WATER SUPPLY	PC	PLUMBING CONTRACTOR
CHR	CHILLED WATER RETURN	PH	PHASE
		PLBG	PLUMBING
DIA	DIAMETER		
DN	DOWN	R/A	RETURN AIR
DWG	DRAWING	REL	REFERENCE/REFER TO
DH	DUCT HEATER	REFRIG	REFRIGERANT
E/A	EXHAUST AIR	REF	REFRIGERATOR
EC	ELECTRICAL CONTRACTOR	REQD	REQUIRED
EF	EXHAUST FAN	RHP	RADIANT HEAT PANEL
ELEC	ELECTRIC/ELECTRICAL	RL	RAINLEADER
EL	ELEVATION	RM	ROOM
EQUIP	EQUIPMENT	RTU	ROOFTOP UNIT
EX	EXISTING		
EXH	EXHAUST	S/A	SUPPLY AIR
E.S.P.	EXTERNAL STATIC PRESSURE	SCH	SCHEDULE
ERV	ENERGY RECOVERY VENTILATOR	SP	STATIC PRESSURE
		SPEC	SPECIFICATION
FCO	FLOOR CLEAN OUT	SD	STORM DRAIN
FCU	FAN COIL UNIT	SF	SUPPLY FAN
FF	FINISHED FLOOR		
FLEX	FLEXIBLE	TSP	TOTAL STATIC PRESSURE
FLR	FLOOR/FLOORING	TYP	TYPICAL
GA	GAUGE	UON	UNLESS OTHERWISE NOTED
GC	GENERAL CONTRACTOR	UG	UNDERGROUND
GEN	GENERAL	UH	UNIT HEATER
GYP	GYPSUM BOARD		
		V	VENT (PLUMBING)
HP	HEAT PUMP	V	VOLTAGE (ELECTRICAL)
Hp	HORSEPOWER	VTR	VENT THROUGH ROOF
HT	HEIGHT		
HW	HOT WATER	W/	WITH
HWC	HOT WATER CIRC	W/O	WITHOUT
HR	HOUR	WR	WATERPROOF
HWR	HEATING WATER RETURN	WT	WEIGHT
HWS	HEATING WATER SUPPLY	WTR	WATER
		WW	WASTE WATER
LOC	LOCATION	WCO	WALL CLEANOUT
		WH	WATER HEATER

GENERAL NOTES

A. THE CONTRACTOR IS TO VISIT THE SITE PRIOR TO BID TO FAMILIARIZE HIMSELF WITH ALL CONDITIONS AS THEY EXIST. SUBMISSION OF BID INDICATES THE CONTRACTOR'S UNDERSTANDING OF EXISTING CONDITIONS AND HIS WILLINGNESS TO WORK WITH THESE CONDITIONS. NO ADDITIONAL TIME OR MONEY WILL BE ALLOTTED DUE TO LACK OF COORDINATION WITH EXISTING CONDITIONS OR OTHER TRADES.

B. CONTRACTORS TO REVIEW AND COMPARE ALL DRAWINGS SO ALL WORK IN THEIR RESPECTIVE TRADE IS INCLUDED IN BID. EACH CONTRACTOR SHALL INCLUDE ALL MATERIALS AND INSTALLATION REQUIRED FOR HIS PARTICULAR TRADE AFTER COMPLETE REVIEW OF ALL CONTRACT DRAWINGS AND SPECIFICATIONS.

C. ALL WORK SHALL COMPLY WITH THE APPLICABLE LOCAL, STATE AND FEDERAL CODES AND ORDINANCES. FOLLOW RECOMMENDED PRACTICES AS SET DOWN BY ASME, SMACNA, ASHRAE, NFPA, APPLICABLE BUILDING CODE, APPLICABLE MECHANICAL CODE, APPLICABLE PLUMBING CODE, NATIONAL ELECTRICAL CODE, AGA, ADA AND OSHA, AS THEY APPLY TO THIS PROJECT EXCEPT IN CASES WHERE LOCAL STATUTES GOVERN.

D. THE CONTRACTOR SHALL VERIFY WITH AUTHORITY HAVING JURISDICTION THE LATEST ADOPTED LOCAL CODES, ORDINANCES AND AMENDMENTS THAT APPLY TO THIS PROJECT. PROVIDE CONDENSATE DISPOSAL POINT FOR ALL MECHANICAL EQUIPMENT TO CODE APPROVED DISPOSAL. COORDINATE WITH MECHANICAL CONTRACTOR.

E. ABSOLUTELY NO PIPING OR DUCTWORK CAN BE ROUTED ABOVE ELECTRICAL PANELS, GEAR OR TRANSFORMERS. THE ONLY HVAC, PLUMBING, SPRINKLER OR DUCTWORK THAT CAN ENTER AN ELECTRIC ROOM ARE THOSE SPECIFICALLY SERVING THAT ROOM. THESE SERVICES CAN ONLY ENTER INTO ELECTRIC ROOM ABOVE ENTRY DOOR.

F. PROVIDE VALVE TAGS FOR ALL VALVES. PROVIDE CEILING ACCESS MARKERS FOR VALVES LOCATED ABOVE CEILING OR BEHIND WALL MOUNTED PANEL.

G. PLUMBING PIPING SHALL NOT BLOCK ACCESS TO EQUIPMENT, JUNCTION BOXES, DISCONNECTS, ACCESS DOORS, ETC.

H. ALL VALVES ARE TO BE ACCESSIBLE AND SHALL NOT BE LOCATED MORE THAN FOUR FEET ABOVE THE CEILING.

I. CONTRACTOR TO CONNECT COLD WATER, TEMPERED WATER, WASTE WATER AND VENT PIPING TO ALL FIXTURES PER MANUFACTURER'S RECOMMENDATIONS, UNLESS OTHERWISE NOTED ON DRAWINGS.

J. BEFORE ANY CUTTING OR TRENCHING OPERATIONS BEGIN, VERIFY WITH OWNER'S REPRESENTATIVE, UTILITY COMPANIES AND OTHER INTERESTED PARTIES THAT ALL AVAILABLE INFORMATION HAS BEEN PROVIDED CONCERNING EXISTING UTILITY LOCATION. VERIFY LOCATIONS GIVEN. CONTACT ARCHITECT IMMEDIATELY UPON UNCOVERING UNKNOWN UTILITIES FOR FURTHER DIRECTION. INDICATE ALL UNCOVERED UTILITIES ON RECORD DRAWINGS.

K. FIRE SEAL AROUND ALL PIPING AT PENETRATIONS THROUGH RATED WALLS, CEILINGS AND TUNNELS PER UL LISTED MATERIAL FOR ACTUAL SEALANT BEING USED. COORDINATE WITH ARCHITECTURAL PLANS FOR RATED WALL LOCATION.

L. PROVIDE ALL APPROPRIATE TOOLS, WRENCHES, KEYS, ETC. AS REQUIRED FOR ACCESS AND OPERATION OF VALVES, COVERS, ETC.

M. DO NOT ROUTE PIPING UNDER EQUIPMENT LOCATED ABOVE CEILING. ROUTE PIPING AROUND EQUIPMENT TO ALLOW FOR ACCESS AROUND EQUIPMENT AND FOR FUTURE REMOVAL OF EQUIPMENT.

N. PLUMBING CONTRACTOR IS RESPONSIBLE FOR PROVIDING FLUES AND COMBUSTION AIR PIPING TO EXTERIOR FOR GAS FIRED WATER HEATERS AND BOILERS.

PLUMBING FIXTURE SCHEDULE

NOTES:

1. REFERENCE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. ALL WALL HUNG FIXTURES TO BE INSTALLED WITH WALL CARRIERS, VERIFY CONFIGURATION TYPE.
3. PROVIDE VANDAL RESISTANT SCREWS AT ALL FIXTURES.
4. INSTALL STAINLESS STEEL CAPS AT ALL UNUSED LAVATORY FAUCET HOLES.
5. NO OFFSET FLANGES WILL BE ALLOWED FOR WATER CLOSET INSTALLATIONS.
6. GROUT FOR LEVELING WATER CLOSETS SHALL NOT EXTEND UP ON SIDE OF WATER CLOSET BASES. TAKE GROUT BACK TO MINIMUM 1/8" UNDER BASE AND CAULK FOR FINAL FINISH. VERIFY CAULK COLOR AND TYPE WITH ARCHITECT.
7. REFERENCE ARCHITECTURAL CONTRACT DOCUMENTS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF ALL PLUMBING FIXTURES. CONTACT ARCHITECT FOR ADDITIONAL INFORMATION AS REQUIRED.
8. PROVIDE INVERTED TEE CONNECTION FROM SINK TAILPIECE OR FLUSH VALVE TYPE TRAP PRIMER CONNECTION TO ALL FLOOR DRAINS, FLOOR SINKS AND HUB DRAINS. AS LAST RESORT PROVIDE MECHANICAL TYPE TRAP PRIMER (PPP INC. "OREGON #1" TYPE). CONNECT TO NEAREST WATER SERVING THAT AREA PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
9. ALL PLUMBING FIXTURES TO BE "LEAD FREE" AB1953 COMPLIANT (.25% OR LESS AVERAGE LEAD CONTENT). PROVIDE DOCUMENTATION IN SUBMITTALS THAT THIS REQUIREMENT IS MET FOR EACH APPLICABLE FIXTURE.

SKH

SINK (ADA): ELKAY ELRAD-2219-55 (OFF-CENTER DRAIN), 18 GAUGE STAINLESS STEEL, SELF-RIM, 18" x 14" x 5.5" DEEP BOWL, THREE (3) FAUCET HOLES WITH STAINLESS STEEL BASKET STRAINER. PROVIDE WITH TEMPERATURE MIXING VALVE EQUAL TO POWERS HYDROGUARD T/P e480 SERIES, .5 GPM MINIMUM FLOW, ASSE 1070, INTEGRAL CHECKS, 1.9 GPM AT 10 psi DROP.
FAUCET: ELKAY #2442BHC, SWING GOOSENECK, WRIST BLADE HANDLES.

BLGY ARCHITECTURE
2204 FORBES DRIVE
SUITE 101
AUSTIN, TX 78754
(512) 977-0390

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WILLIAMSON COUNTY

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STATE OF TEXAS
B.J. HENDRIX
94813
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY B.J. HENDRIX, P.E. NO. 94813
On 01/04/17

PROJECT NO.: 21604

ISSUE DATE 01/04/2017

REFERENCE GENERAL NOTES ON SHEETS M1.01, P1.01 AND E1.01 FOR ADDITIONAL INFORMATION

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HCE job no.: 16-076

SCHEDULES, NOTES & LEGENDS – PLUMBING

P1.01

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Williamson County, Texas

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MECHANICAL KEYED NOTES

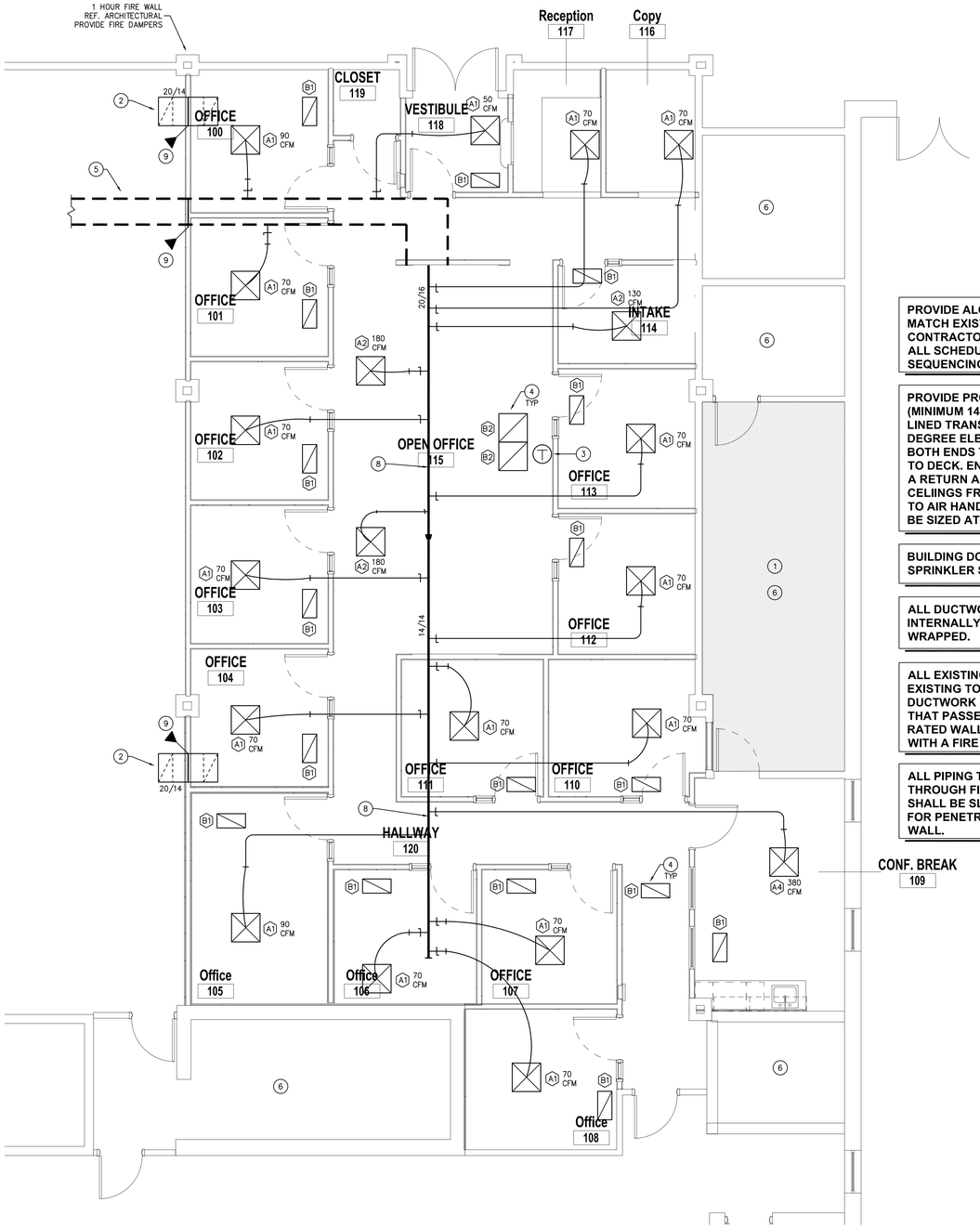
THESE NOTES APPLY TO THIS SHEET ONLY

1. DO NOT ROUTE ANY DUCTWORK ABOVE THIS AREA.
2. INTERNALLY LINED RETURN AIR TRANSFER DUCT THROUGH WALL TO DECK ABOVE CEILING. TURN A NINETY DEGREE ELBOW UP ON BOTH ENDS.
3. NEW LOCATION OF EXISTING THERMOSTAT. PROVIDE NEW IF REQUIRED. COORDINATE FINAL LOCATION OF THERMOSTAT WITH ARCHITECT PRIOR TO ROUGH-IN. PROVIDE NEW WIRE IF NEEDED. TEST CALIBRATION AND FUNCTION.
4. PROVIDE INTERNALLY LINED RETURN AIR BOOT WITH WITH NINETY DEGREE ELBOW ON BACK OF ALL RETURN AIR GRILLES UNLESS OTHERWISE NOTED. REFERENCE DETAIL SHEETS FOR MORE INFORMATION. TYPICAL ALL RETURN AIR GRILLES.
5. EXISTING DUCT FED BY EXISTING TERMINAL UNIT. REBALLANCE EXISTING TERMINAL UNIT AS REQUIRED. FIELD VERIFY. PROVIDE DUCT MOUNTED SMOKE DETECTOR IN SUPPLY AIR DUCT AT TERMINAL UNIT IF ONE IS NOT ALREADY PRESENT.
6. NO SCOPE OF WORK IN THIS AREA.
7. EXTEND EXISTING DUCT. ESTIMATED SIZE SHOWN. FIELD VERIFY.
8. MAIN SUPPLY AIR DUCT SHALL BE INTERNALLY LINED SHEET METAL DUCTWORK.
9. NEW FIRE DAMPER.

PLUMBING KEYED NOTES

THESE NOTES APPLY TO THIS SHEET ONLY

1. EXISTING FLOOR DRAIN IN MECHANICAL ROOM.
2. CONNECT WASTE FOR SINK TO WASTE PIPE BELOW EXISTING FLOOR DRAIN. MAKE ALL TRANSITIONS AS REQUIRED. CONNECT VENT TO NEAREST VENT PIPE ABOVE CEILING.
3. 1/2" COLD WATER (CW) DOWN TO FIXTURE. CONNECT TO EXISTING COLD WATER MAIN ABOVE CEILING. PROVIDE SHUT-OFF VALVE, FIELD VERIFY.
4. 1/2" HOT WATER (HW) DOWN TO FIXTURE. CONNECT TO HOT WATER MAIN ABOVE CEILING. PROVIDE SHUT-OFF VALVE, FIELD VERIFY.
5. NO SCOPE OF WORK IN THIS AREA.



01 FLOOR PLAN - MECHANICAL

SCALE: 1/4" = 1'-0"

PROVIDE ALC CONTROLS TO MATCH EXISTING. CONTROLS CONTRACTOR TO COORDINATE ALL SCHEDULES AND SEQUENCING WITH OWNER.

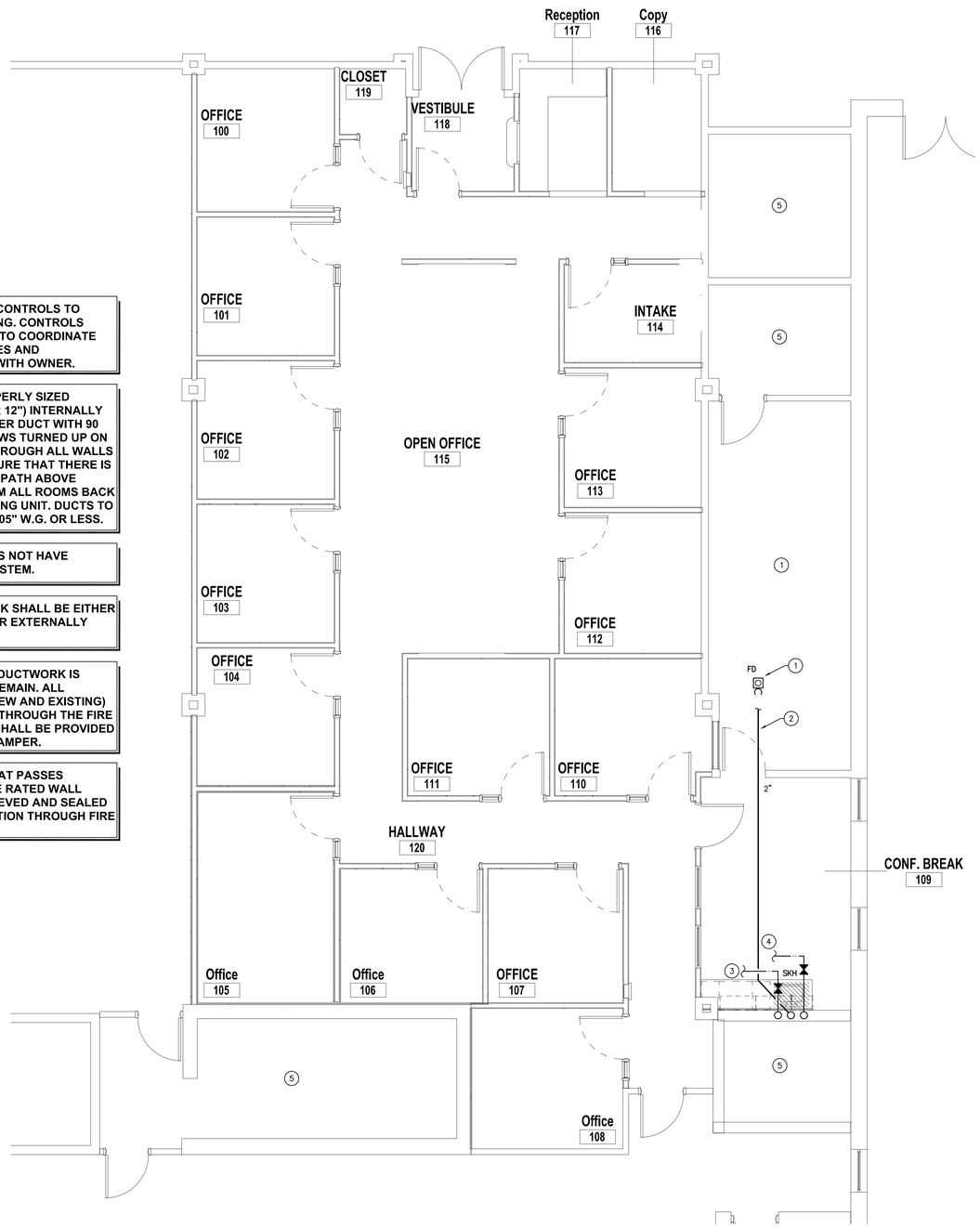
PROVIDE PROPERLY SIZED (MINIMUM 14" x 12") INTERNALLY LINED TRANSFER DUCT WITH 90 DEGREE ELBOWS TURNED UP ON BOTH ENDS THROUGH ALL WALLS TO DECK. ENSURE THAT THERE IS A RETURN AIR PATH ABOVE CELIINGS FROM ALL ROOMS BACK TO AIR HANDLING UNIT. DUCTS TO BE SIZED AT 0.05" W.G. OR LESS.

BUILDING DOES NOT HAVE SPRINKLER SYSTEM.

ALL DUCTWORK SHALL BE EITHER INTERNALLY OR EXTERNALLY WRAPPED.

ALL EXISTING DUCTWORK IS EXISTING TO REMAIN. ALL DUCTWORK (NEW AND EXISTING) THAT PASSES THROUGH THE FIRE RATED WALL SHALL BE PROVIDED WITH A FIRE DAMPER.

ALL PIPING THAT PASSES THROUGH FIRE RATED WALL SHALL BE SLEEVED AND SEALED FOR PENETRATION THROUGH FIRE WALL.



02 FLOOR PLAN - PLUMBING

SCALE: 1/4" = 1'-0"

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HCE job no.: 16-076

PROJECT NO.: 21604

ISSUE DATE 01/04/2017

FLOOR PLAN - MECHANICAL AND PLUMBING

MP2.01

2/2/2017 1:38 PM

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Bid 17.01-1.36

Williamson County, Texas

GENERAL NOTES

A. THE CONTRACTOR IS TO VISIT THE SITE PRIOR TO BID TO FAMILIARIZE HIMSELF WITH ALL CONDITIONS AS THEY EXIST. SUBMISSION OF BID INDICATES THE CONTRACTOR'S UNDERSTANDING OF EXISTING CONDITIONS AND HIS WILLINGNESS TO WORK WITH THESE CONDITIONS. NO ADDITIONAL TIME OR MONEY WILL BE ALLOTTED DUE TO LACK OF COORDINATION WITH EXISTING CONDITIONS OR OTHER TRADES.

B. CONTRACTOR IS TO REVIEW AND COMPARE ALL DRAWINGS SO ALL WORK IN THEIR RESPECTIVE TRADE IS INCLUDED IN BID. EACH CONTRACTOR SHALL INCLUDE ALL MATERIALS AND INSTALLATION REQUIRED FOR HIS PARTICULAR TRADE AFTER COMPLETE REVIEW OF ALL CONTRACT DRAWINGS AND SPECIFICATIONS.

C. ALL WORK SHALL COMPLY WITH THE CURRENT APPLICABLE LOCAL, STATE AND FEDERAL CODES AND ORDINANCES. FOLLOW RECOMMENDED PRACTICES AS SET DOWN BY NFPA, BUILDING CODE, MECHANICAL CODE, PLUMBING CODE, NATIONAL ELECTRICAL CODE, ADA AND OSHA, AS THEY APPLY TO THIS PROJECT, EXCEPT IN CASES WHERE LOCAL STATUTES GOVERN. THE CONTRACTOR SHALL VERIFY WITH AUTHORITY HAVING JURISDICTION THE LATEST ADOPTED LOCAL CODES, ORDINANCES AND AMENDMENTS THAT APPLY TO THIS PROJECT.

D. THE ELECTRICAL CONTRACTOR SHALL VERIFY SIZES OF BREAKERS, FUSES, WIRES, ETC., FOR ALL EQUIPMENT PROVIDED AND REPORT DISCREPANCIES TO THE ENGINEER/ARCHITECT PRIOR TO INSTALLATION OF CONDUIT. COORDINATE WITH MECHANICAL/ELECTRICAL COORDINATION SHEET PROVIDED BY MECHANICAL CONTRACTOR FOR ACTUAL EQUIPMENT BEING USED.

E. HOMERUNS SHALL BE COORDINATED WITH PANELBOARDS. ALL WIRING AND CONDUIT SHALL BE CONCEALED, EXCEPT IN ELECTRICAL ROOMS AND EXPOSED STRUCTURE AREAS.

F. ALL WIRING SHALL BE FREE OF SHORTS AND GROUNDS. NO WIRING SHALL BE LOADED BEYOND THE PERMITTED AMPACITIES ALLOWED BY N.E.C.

G. MINIMUM WIRE/CONDUIT SIZES, EXCEPT FOR CLASS 2 LOW VOLTAGE CIRCUITS, ARE #12 AWG COPPER IN 1/2" CONDUIT. WHERE THE DISTANCE BETWEEN THE SUPPLYING PANEL AND THE FIRST BRANCH CIRCUIT RECEPTACLE OR LIGHT FIXTURE IS MORE THAN 100 FEET, UP SIZE CONDUCTOR TO ALLOW FOR MAXIMUM OF 3% VOLTAGE DROP FOR ACTUAL ROUTING OF CONDUITS TO DEVICE.

H. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, LABOR AND MATERIALS NECESSARY TO MAKE A COMPLETE AND WORKABLE SYSTEM.

I. CONFIRM THE EXACT LOCATION AND MOUNTING HEIGHTS OF LIGHTING FIXTURES WITH ARCHITECT BEFORE ROUGH-IN. COORDINATE REQUIRED CLEARANCES ABOVE FIXTURES WITH OTHER TRADES.

J. PROVIDE A TYPED UPDATED PANEL DIRECTORY FOR ALL PANELBOARDS MODIFIED INDICATING FINAL INSTALLED CONDITION. CIRCUIT LABELING SHALL AGREE WITH EQUIPMENT DESIGNATIONS AND OWNERS FINAL ROOM NUMBERS.

K. LABEL ALL RECEPTACLES AND LIGHT SWITCHES WITH CIRCUIT NUMBER USING AN ELECTRONIC LABELER (BLACK ON CLEAR).

L. COORDINATE AND WIRE ALL DOOR HOLD OPEN DEVICES, AS REQUIRED. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS. ROUTE 120 VOLT POWER FROM NEAREST AVAILABLE CIRCUIT AS REQUIRED. PROVIDE ALL WIRING NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.

M. PROVIDE SLEEVES FOR SPECIAL SYSTEMS ABOVE EACH DOOR INTO A RATED EGRESS CORRIDOR. (1 - 2" AND 3 - 3/4"). FIRE SEAL ENDS AND UNUSED SLEEVES SHALL HAVE A SCREW CAP INSTALLED ON BOTH SIDES. USE THREADED CONDUIT.

N. ALL EXPOSED CONDUIT SHALL BE RUN PARALLEL AND PERPENDICULAR TO STRUCTURE AND BUILDING LINES. COORDINATE FINAL CONDUIT ROUTING PATH WITH ARCHITECT AND ENGINEER PRIOR TO INSTALLATION.

O. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL 120 VOLT WIRING AND CONNECTIONS REQUIRED TO FIRE/SMOKE DAMPERS. COORDINATE EXACT LOCATIONS OF DAMPERS WITH MECHANICAL CONTRACTOR AND RELAY REQUIREMENTS WITH FIRE ALARM CONTRACTOR. CONNECT TO NEAREST AVAILABLE UNSWITCHED CIRCUIT UNLESS OTHERWISE INDICATED ON DRAWINGS.

P. ELECTRICAL CONTRACTOR TO SEAL ALL PENETRATIONS OF ELECTRICAL WORK IN FIRE AND SMOKE RATED PARTITIONS, CEILINGS, ETC.

Q. ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECTING MEANS FOR ALL EQUIPMENT PER N.E.C. UNLESS OTHERWISE NOTED.

R. COORDINATE ALL DEVICES IN MILLWORK WITH ARCHITECTURAL MILLWORK SHOP DRAWINGS PRIOR TO ROUGH-IN.

S. DO NOT HANG ANY FIXTURES, EQUIPMENT OR CONDUIT FROM ROOF DECK.

BB. LABEL ALL JUNCTION BOXES WITH CIRCUIT NUMBERS.

CC. IDENTIFY RECEPTACLE CIRCUITS IN PANELBOARDS TO INDICATE FINAL ROOM NUMBERS. VERIFY FINAL ROOM NUMBERS PRIOR TO TYPING PANELBOARD SCHEDULES.

DD. MECHANICALLY FASTEN ALL LABELS TO EQUIPMENT.

FF. ELECTRICAL CONTRACTOR IS TO PROVIDE ROUGH-IN FOR ALL MECHANICAL CONTROL DEVICES IN WALLS AND PENETRATIONS FOR CONTROL WIRES TO EXTERIOR UNITS. COORDINATE ALL LOCATIONS WITH MECHANICAL CONTRACTOR AND MECHANICAL SHEETS.

GG. DISCONNECTS MOUNTED ABOVE CEILING MUST BE MOUNTED TO BE READILY ACCESSIBLE NEAR UNIT. HANDLE TO BE NO MORE THAN 36" ABOVE CEILING GRID.

SPECIAL SYSTEMS SCOPE

ACCESS CONTROL SYSTEM
1. REFERENCE TECHNOLOGY DRAWINGS FOR ALL INFORMATION.

SECURITY SYSTEM
1. REFERENCE TECHNOLOGY DRAWINGS FOR ALL INFORMATION.

TECHNOLOGY SYSTEM
1. REFERENCE TECHNOLOGY DRAWINGS FOR ALL INFORMATION.

INTERCOM SYSTEM
1. REFERENCE TECHNOLOGY DRAWINGS FOR ALL INFORMATION.

FIRE ALARM SYSTEM (CONNECT TO EXISTING FACP)
1. EXPAND EXISTING SIMPLEX FIRE ALARM SYSTEM, MATCH ALL DEVICES TO EXISTING BRAND
2. PROVIDE CODE REQUIRED FIRE ALARM SYSTEM/DEVICE REQUIRED BY AHJ FOR FINISH OUT, DUCT DETECTORS SUPPLIED BY FIRE ALARM CONTRACTOR INSTALLED BY MECHANICAL CONTRACTOR. FIELD VERIFY ALL REQUIREMENTS FOR CONNECTION OR ADDITION TO CORE SYSTEM.
3. THE CONTRACTOR IS EXPECTED TO MAKE ALLOWANCES FOR NECESSARY ADJUSTMENT DURING THE ACTUAL SYSTEM INSTALLATION, TO EXAMINE PHYSICAL CONDITIONS. COORDINATE THE ACTUAL DEVICE LOCATIONS AS NECESSARY TO ACCOMMODATE THE EXISTING CONDITIONS. OBSTRUCTIONS, MANUFACTURER'S INSTALLATION SPECIFICATIONS, APPLICABLE CODES AND THE WORK OF OTHERS. NO EXTRA PAYMENTS WILL BE ALLOWED FOR THE CONTRACTOR ON ACCOUNT OF EXTRA WORK MADE NECESSARY BY HIS FAILURE TO MAKE SUCH ALLOWANCES.
4. CONTRACTOR TO PROVIDE ALL DEVICES REQUIRED BY CODE AND LOCAL AUTHORITIES AND SHOULD BE SHOWN ON FIRE ALARM SHOP DRAWINGS.
5. SIMPLEX IS THE ONLY COMPANY ALLOWED BY THE OWNER TO WORK ON THE FIRE ALARM SYSTEM.

ESC-01-NLIGHT

NLIGHT - DEVICE SYMBOL SCHEDULE

NOTES:
A. ALL SYMBOLS DO NOT NECESSARILY APPEAR ON THESE DRAWINGS.
B. ALL DEVICE PART NUMBERS ARE NLIGHT UNLESS OTHERWISE NOTED.
C. THESE DEVICES SHOULD BE USED IN ALL AREAS TO BE CONTROLLED BY NLIGHT.
D. MOTION SENSOR: WHERE MOTION SENSORS ARE SHOWN ON THE PLANS, THAT INDICATES AREA SHOULD BE COVERED IN FULL BY MOTION SENSORS. IT IS UP TO MOTION SENSOR PROVIDER TO PROVIDE APPROPRIATE QUANTITY, LAYOUT, AND TYPE OF MOTION SENSORS FOR COMPLETE COVERAGE. PROVIDE SHOP DRAWING AT SUBMITTAL PHASE.
E. PHOTOCELL: WHERE PHOTOCELLS ARE SHOWN ON PLANS OR IN TYPICAL DETAILS. IE:CLASSROOMS, PHOTOCELL LOCATION AND QUANTITY SHOULD BE DETERMINED BY PHOTOCELL PROVIDER. PHOTOCELLS ARE INTENDED TO DIM LIGHTS IN DAYLIGHT ZONES AS INDICATED BY IECC 2015.
F. IF MULTIPLE ZONE CONTROL IS INDICATED FOR A SPACE AND THOSE ZONES ARE NOT CLEAR TO CONTRACTOR, THE CONTRACTOR IS TO MAKE BEST ASSUMPTION IN SHOP DRAWING PHASE AND NOTE AREAS IN QUESTION. ENGINEER WILL REVIEW AND MAKE ANY ADJUSTMENTS TO ZONES AT THAT TIME.
G. MANUFACTURER TO PROVIDE A COMPLETE SET OF SHOP DRAWINGS INDICATING ALL ASPECTS OF LIGHTING CONTROL AT A MINIMUM OF 1/8" = 1' SCALE WITH CLEAR DESCRIPTIONS AND LEGENDS FOR SYMBOLS.
H. BASIC COMPONENTS ARE CALLED FOR HERE, IT IS EXPECTED THAT MANUFACTURER PROVIDES ALL COMPONENTS FOR A COMPLETE WORKABLE SYSTEM.
I. FACTORY START-UP IS REQUIRED FOR ALL NLIGHT SPACES.
J. CONTRACTOR SHOULD SEND COMPLETE SET OF ELECTRICAL PLANS TO NLIGHT FACTORY REP TO ENSURE A COMPLETE BID.
K. CONTRACTOR TO ASSUME ALL DEVICES INTER-CONNECTED WITH CAT-5 CABLE. PROVIDE ALL REQUIRED CABLING BETWEEN DEVICES.

SYMBOL	DESCRIPTION	REMARKS
^{DT}	DUAL TECHNOLOGY WALL MOUNT MOTION AND DIMMING	nWSX-PDT-D-SA
^{C1}	ONE ZONE CONTROLLER, ON/OFF AND DIMMING	nPODM-DX
^{C2}	TWO ZONE CONTROLLER, ON/OFF AND DIMMING	nPODM-2P-DX
^{C4}	FOUR ZONE CONTROLLER, 4 PRESET TOGGLE BUTTONS	nPODm-4S-DX
M DT	MOTION SENSOR, DT (DUAL TECHNOLOGY)	nCM-PDT-9
M DT	MOTION SENSOR, DT (DUAL TECHNOLOGY)	nCM-PDT-10
M DT	MOTION SENSOR, DT (DUAL TECHNOLOGY)	nWV-PDT-16
P	PHOTOCELL	nCM-ADCX

NLIGHT INTERIOR LIGHTING SCHEDULE

GENERAL NOTES:

MOTION SENSORS
PROVIDE MOTION SENSORS AS SHOWN ON PLANS. PROVIDE DUAL TECHNOLOGY MOTION SENSORS IN EVERY ROOM AS REQUIRED BY IECC 2015.

CONTROL STATION
ALL ROOMS SHALL HAVE A CONTROL STATION FOR CONTROL OF LIGHTS IN ROOM. IF NO CONTROL STATION IS SHOWN, ASSUME A TWO ZONE CONTROLLER FOR ROOMS LARGER THAN 9' X 9' AND A WALL MOUNT DUAL TECHNOLOGY CONTROLLER FOR ROOMS SMALLER THAN 9' X 9'.

SPACE TYPE DESCRIPTION:

COMMON AREAS
A. PROVIDE CONTROL STATIONS AS SHOWN ON PLANS.
B. TWO (2) BUTTON ZONE CONTROL, ZONES INDICATED ON PLANS.
C. PROVIDE COMPLETE MOTION SENSOR COVERAGE FOR MAJOR MOVEMENTS. SHOP DRAWING REQUIRED. WHEN NO MOTION IS DETECTED AFTER 15 MINUTES, LIGHTS SHALL BE DIMMED TO 50%, IF NO ADDITIONAL MOTION IS DETECTED AFTER 30 MINUTES, LIGHTS SHALL POWER OFF.

HALLWAYS
A. PROVIDE CONTROL STATIONS AS SHOWN ON PLANS.
B. PROVIDE COMPLETE MOTION SENSOR COVERAGE FOR MAJOR MOVEMENTS. WHEN NO MOTION IS DETECTED AFTER 10 MINUTES, LIGHTS SHALL BE DIMMED TO 50%, IF NO ADDITIONAL MOTION IS DETECTED AFTER 2 HOURS, LIGHTS SHALL POWER OFF.

SINGLE ZONE ROOMS
A. PROVIDE CONTROL STATIONS AS SHOWN ON PLANS.
B. ONE OVERALL ZONE TO CONTROL ALL LIGHTS IN ROOM.
C. PROVIDE COMPLETE MOTION SENSOR COVERAGE FOR MINOR MOVEMENTS. SHOP DRAWING REQUIRED.

LIGHT FIXTURE SCHEDULE

GENERAL NOTES:
A. CONFIRM CEILING TYPE AND CONSTRUCTION PRIOR TO ORDERING LIGHT FIXTURE. PROVIDE FLANGE KIT FOR PROPER INSTALLATION OF LAY-IN FIXTURE IN GYPSUM CEILING. PROVIDE FIXTURE TYPE 'H2' IN LIEU OF FIXTURE TYP 'A2' IN ROOMS WITH NO CEILING. CHAIN HANG AT 10' A.F.F.
B. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF WALL MOUNTED LIGHT FIXTURES WITH ARCHITECT PRIOR TO ROUGH-IN.
C. REFER TO ARCHITECTURAL REFLECTIVE CEILING PLAN FOR EXACT LOCATION OF LIGHT FIXTURE.
D. CONFIRM FINISH WITH ARCHITECT PRIOR TO ORDERING LIGHT FIXTURES.
E. 'E' DESIGNATION ADJACENT TO LIGHTING FIXTURE TYPE INDICATES FIXTURE SHALL BE PROVIDED WITH EMERGENCY BATTERY PACK UNIT (LITHONIA PS1400 OR EQUAL). LIGHT FIXTURE SHALL BE SWITCHED, BATTERY PACK SHALL BE UNSWITCHED.
F. 'N' DESIGNATION ADJACENT TO LIGHTING FIXTURE TYPE INDICATES FIXTURE SHALL BE PROVIDED WITH EMERGENCY BATTERY PACK UNIT (LITHONIA PS1400 OR EQUAL). LIGHT FIXTURE AND BATTERY PACK SHALL BE UNSWITCHED.
G. FIXTURES SHALL HAVE A MAXIMUM OF TWO (2) LAMPS PER BALLAST.
H. CONNECT ALL EXIT LIGHTING TO THE NEAREST UNSWITCHED CIRCUIT OR THE NEAREST EMERGENCY CIRCUIT.
(*) PROVIDE UNIT PRICE FOR THIS FIXTURE. INCLUDE MATERIAL AND LABOR TO BE ADDED AT ANY TIME DURING THE PROJECT.

MARK	MANUFACTURER'S CATALOG NUMBER	LAMPS NO./TYPE/WATTS	FIXTURE VOLTS/WATTS	DESCRIPTION AND COMMENTS
M2	LITHONIA 2FSL4-40L-ADP-MVOLT-EZ1-L835-N100	1/4000L/LED	MVOLT/35	FSL SERIES 2 x 4 LAY IN LED WITH ENERGY SAVING LAMPS AND ELECTRONIC ELDO 1% DIMMING DRIVER. WHITE FINISH, SMOOTH CURVED LENS. NLIGHT
M3	LITHONIA 2FSL4-48L-ADP-MVOLT-EZ1-L835-N100	1/4800L/LED	MVOLT/46	FSL SERIES 2 x 4 LAY IN LED WITH ENERGY SAVING LAMPS AND ELECTRONIC ELDO 1% DIMMING DRIVER. WHITE FINISH, SMOOTH CURVED LENS. NLIGHT
X1	LITHONIA LES-1R-MVOLT-ELN	INCLUDED	MVOLT/5	LED SINGLE FACE EXIT SIGN WITH DIE CAST ALUMINUM HOUSING, EMERGENCY BATTERY PACK.
Y1	LITHONIA ELM2-LED	INCLUDED	MVOLT/20	EMERGENCY EGRESS FIXTURE WITH POLYCARBONATE HOUSING, EMERGENCY BATTERY PACK AND AMMETER. WHITE FINISH. MOUNT FIXTURE ON WALL AS HIGH AS POSSIBLE. CONNECT TO NEAREST UNSWITCHED MVOLT VOLT CIRCUIT.

ESC-15

ELECTRICAL ABBREVIATION SCHEDULE

A	AMPERES	MECH	MECHANICAL
A/C	AIR CONDITIONING	MH	MANHOLE
AFF	ABOVE FINISHED FLOOR	MIN	MINIMUM
AHJ	AUTHORITY HAVING JURISDICTION	MISC	MISCELLANEOUS
AL	ALUMINUM	MLO	MAIN LUG ONLY
AUTO	AUTOMATIC	MSB	MAIN SWITCHBOARD
AUX	AUXILIARY	NEC	NATIONAL ELECTRICAL CODE
BFF	BELOW FINISHED FLOOR	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
BLDG	BUILDING		
C	CONDUIT	NF	NON-FUSED
CB	CIRCUIT BREAKER	NIC	NOT IN CONTRACT
CKT	CIRCUIT	NTS	NOT TO SCALE
COL	COLUMN	OC	ON CENTER(S)
CONC	CONCRETE	OE	OVERHEAD ELECTRIC
CONST	CONSTRUCTION	OT	OVERHEAD TELEPHONE
CONTR	CONTRACTOR	PC	PLUMBING CONTRACTOR
CTV	CABLE TELEVISION	PH	PHASE
DWG	DRAWING	PNL	PANEL
EC	ELECTRICAL CONTRACTOR	PVC	POLYVINYL CHLORIDE
EF	EXHAUST FAN	RE:	REFERENCE/REFER TO
DN	DOWN	RECPT	RECEPTACLE
ELEC	ELECTRIC/ELECTRICAL	RGS	RIGID GALVANIZED STEEL CONDUIT
EMT	ELECTRICAL METALLIC TUBING	RM	ROOM
EQUIP	EQUIPMENT	SCH	SCHEDULE
EX	EXISTING	SPEC	SPECIFICATIONS
FA	FIRE ALARM	TEL	TELEPHONE
FF	FINISHED FLOOR	TTB	TELEPHONE TERMINAL BOARD
FLR	FLOOR/FLOORING	TYP	TYPICAL
G	GROUND	UE	UNDERGROUND ELECTRIC
GC	GENERAL CONTRACTOR	UL	UNDERWRITER'S LABORATORIES
GFI	GROUND FAULT INTERRUPT	UON	UNLESS OTHERWISE NOTED
HD	HEAVY DUTY	UT	UNDERGROUND TELEPHONE
HP	HORSEPOWER	V	VOLTS/VOLTAGE
IMC	INTERMEDIATE METAL CONDUIT	VA	VOLT-AMPERES
KVA	KILOVOLT-AMPERES	W	WATTS
KW	KILOWATTS	W/	WITH
LGT	LIGHT/LIGHTING	W/O	WITHOUT
MAX	MAXIMUM	WP	WEATHER PROOF
MC	MECHANICAL CONTRACTOR	XFMR	TRANSFORMER
MCB	MAIN CIRCUIT BREAKER		
MDP	MAIN DISTRIBUTION PANEL		

ESC-08

SPECIAL SYSTEM SYMBOL SCHEDULE

NOTE:
A. REFERENCE OWNER SPECIFICATIONS FOR ADDITIONAL INFORMATION.
B. THIS IS FOR GENERAL LOCATION ONLY. ALL DEVICES AND CABLING PER OWNER SPECIFICATIONS.

SYMBOL	DESCRIPTION	REMARKS
FACP	FIRE ALARM CONTROL PANEL	
FAAP	FIRE ALARM ANNUNCIATOR PANEL	
RVEP	REMOTE VOICE EVACUATION PANEL	
SWP	SPEAKER, WALL MOUNTED WEATHER RESISTANT, 120" AFF U.O.N.	
TV	TELEVISION POWER	
UC	UTILITY CONTROLLER	
	CLOCK, SINGLE FACED WALL MOUNTED, 96"± AFF UON	
	CLOCK, DOUBLE FACED WALL MOUNTED, 96"± AFF UON	
CDU	CENTRAL DISPLAY UNIT	
WP	WEATHER PROOF EXTERIOR FIRE ALARM HORN	
	SECURITY KEY PAD, 48" AFF UON	3/4"C TO ABOVE CEILING
	BADGE READER FOR SECURITY SYSTEM, 48" AFF UON	3/4"C TO ABOVE CEILING
	LIGHTING RELAY ZONE OVERIDE CONTROL BUTTON	3/4"C TO ABOVE CEILING
M	MICROPHONE JACK	3/4"C TO ABOVE CEILING
	ROUGH-IN FOR CAMERA (WEATHERPROOF BOX FLUSH WITH EXTERIOR WALL)	1"C TO ABOVE CEILING
CM	CEILING MOUNTED CAMERA LOCATION (DATA DROP, CAMERA BY OTHERS)	
	INTERCOM PROGRAM PHONE LOCATION	3/4"C TO ABOVE CEILING
	MAG DOOR HOLD OPEN. POWERED BY SPECIAL SYSTEMS	
LD	LOCK DOWN DEVICE	3/4"C TO ABOVE CEILING
D	120V POWER FOR DOOR SECURITY POWER SUPPLY	
HC	120V POWER FOR HANDICAP DOOR POWER SUPPLY	
B	DOOR BUZZER, CONFIRM LOCATION WITH OWNER.	3/4"C TO ABOVE CEILING
V	INTERCOM VOLUME CONTROL	3/4"C TO ABOVE CEILING
DO	OVERHEAD DOOR POWER	
DC	OVERHEAD DOOR CONTROL LOCATION	
S	INTERCOM SPEAKER	
HD	HAND DRYER	
DW	DISHWASHER	
CF	CIRCULATING FAN POWER	
	WALL MOUNTED MOTION SENSOR	
F	FIRE SPRINKLER POWER	

MISCELLANEOUS EQUIPMENT SCHEDULES

GENERAL NOTES:
A. ELECTRICIAN TO PROVIDE 120V POWER TO ALL EQUIPMENT FROM NEAREST PANEL HAVING CAPACITY, UNLESS OTHERWISE NOTED.
B. ELECTRICAL CONTRACTOR IS TO PROVIDE ALL PARTS AND LABOR TO MAKE FINAL CONNECTIONS TO ALL EQUIPMENT SHOWN IN CONTRACT DOCUMENTS. POWER MAY BE SHOWN IN GENERAL LOCATION. IT IS EXPECTED THAT THE ELETRICAL CONTRACTOR COORDINATE FINAL LOCATION FOR ROUGH-IN AND CONNECTION REQUIREMENTS WITH EXACT EQUIPMENT BEING INSTALLED. THESE ITEMS INCLUDE, BUT NOT LIMITED TO, BOOK SECURITY, EXHAUST FANS, KILNS, HAND DRYERS, SENSOR OPERATED PLUMBING DEVICES, ELECTRIC OVERHEAD DOORS, FIRE SMOKE DAMPERS, AIR PURIFICATION UNITS, ETC.

MOTION SENSORS
PROVIDE MOTION SENSORS AS SHOWN ON PLANS. PROVIDE DUAL TECHNOLOGY MOTION SENSORS IN EVERY ROOM OVER 250 SQ.FT. WIRE SO THAT MOTION SENSOR ACTIVATES SWITCHES ON WALL.

POWER FOR SPECIAL SYSTEMS POWER SUPPLIES
1. ELECTRICAL CONTRACTOR TO PROVIDE POWER TO ALL SECURITY, FIRE ALARM, ACCESS CONTROL, ETC. POWER SUPPLIES. COORDINATE EXACT LOCATION WITH SPECIAL SYSTEMS CONTRACTOR AND FLOOR PLANS. PROVIDE DEDICATED LOW VOLTAGE CIRCUIT TO NEAREST PANEL HAVING CAPACITY U.O.N.
2. LABEL ALL SPECIAL SYSTEMS POWER SUPPLIES WITH PANEL AND CIRCUIT NUMBERS.

ESC-01

DEVICE SYMBOL SCHEDULE

NOTES:
A. ALL SYMBOLS DO NOT NECESSARILY APPEAR ON THESE DRAWINGS.
B. ALL DEVICE PART NUMBERS ARE HUBBELL UNLESS OTHERWISE NOTED.

SYMBOL	DESCRIPTION	REMARKS
	SINGLE RECEPTACLE 20A/120V 16" AFF UON	HBL 5361-W
	DUPLEX RECEPTACLE 20A/120V 16"AFF UON	CR20-W
U	DUPLEX RECEPTACLE WITH DUAL USB 20A/120V 16" AFF UON	USB20X2W
	DUPLEX RECEPTACLE 20A/120V 16" AFF UON WITH GROUND FAULT INTERRUPTER	GF20ILA
IG	DUPLEX RECEPTACLE 20A/120V 16" AFF UON WITH ISOLATED/INSULATED GROUND	CR5352IG
	FOURPLEX RECEPTACLE 20A/120V 16" AFF UON	(2) CR20-W
K(1)	CLOCK RECEPTACLE 120V 96" AFF UON	HBL 5235
	SPECIAL PURPOSE RECEPTACLE 16" AFF SEE PLANS FOR DETAILS	
	CEILING MOUNTED DUPLEX RECEPTACLE 20A/120V (FLUSH)	CR20-W
	DUPLEX RECEPTACLE 20A/120V MOUNTED HORIZONTALLY 48" AFF UON	CR20-W
P	FOURPLEX RECEPTACLE FOR PROJECTOR	
WP	WEATHER/TAMPER-RESISTANT DUPLEX RECEPTACLE WITH "IN-USE" COVER 20A/120V 18"AFF UON	GFTR20W/ WP26M
	8" ABOVE COUNTER - GFI	
SG	DUPLEX RECEPTACLE W/ SURGE SUPPRESSION 20A/120V 16" AFF UON	IG5362-SA
S	SAFETY TYPE DUPLEX RECEPTACLE 20A/120V 16" AFF UON	CR20TR-W
	DUPLEX RECEPTACLE, FLOOR MOUNTED FLUSH	CR20-W,PFBRG1 SB3083,S3825
	FOURPLEX RECEPTACLE, FLOOR MOUNTED FLUSH	(2) HBL-5362-W,PFBRG2 SB3084, (2)S3825
	EXISTING DUPLEX RECEPTACLE	
	EXISTING FOURPLEX RECEPTACLE	
	EXISTING 208V RECEPTACLE	
$	SINGLE POLE SWITCH 20A, 48"AFF UON	CS120-W
$3	THREE-WAY SWITCH 20A, 48"AFF UON	CS320-W
$4	FOUR-WAY SWITCH 20A, 48"AFF UON	CS1224-W
$K	SINGLE POLE KEY OPERATED SWITCH 20A, 48"AFF UON	HBL 1221-RKL
$2K	DOUBLE POLE KEY OPERATED SWITCH 20A, 48" AFF UON	HBL 1222-RKL
$3K	THREE-WAY KEY OPERATED SWITCH 20A, 48"AFF UON	HBL 1223-RKL
$4K	FOUR-WAY KEY OPERATED SWITCH 20A, 48"AFF UON	HBL 1224-RKL
$D	DIMMER SWITCH, 48"AFF UON, SEE PLANS FOR DETAILS	
$P	SWITCH WITH PILOT LIGHT, 48"AFF UON	HBL1221-PL
$2	TWO POLE SWITCH 20A, 48"AFF UON	CS1222-W
$T	TIMER SWITCH, 48"AFF UON	INTERMATIC FF60MC
$F	FAN SWITCH, 48"AFF UON	RF51
$W	WALL MOTION SENSOR: 48" AFF UON, (IR) INFRARED	WS1277-W
$US	WALL MOTION SENSOR: 48" AFF UON, (US) ULTRASONIC	AU1277W1
$DT	WALL MOTION SENSOR: 48" AFF UON, (DT) DUAL TECHNOLOGY	AD1277-W1
M US	MOTION SENSOR: US (ULTRASONIC)	ATU2000C
M IR	MOTION SENSOR: IR (INFRARED)	ATP1500C
M DT	MOTION SENSOR: DT (DUAL TECHNOLOGY)	ATD2000C

ESC-02

DISTRIBUTION SYMBOL SCHEDULE

NOTES:
A. ALL SYMBOLS DO NOT NECESSARILY APPEAR ON THESE DRAWINGS.

SYMBOL	DESCRIPTION	REMARKS
	HOMERUN (REFER TO PANEL SCHEDULES FOR CONDUIT/WIRING)	
F	CIRCUIT ROUTED THRU CONTACTOR OR RELAY	
UE	UNDERGROUND ELECTRIC	
UT	UNDERGROUND TELEPHONE	
OE	OVERHEAD ELECTRIC	
OT	OVERHEAD TELEPHONE	
4T1	CIRCUIT INDICATORS (HOT, NEUTRAL, GROUND, SWITCHLEG)	
P	PHOTOCELL	
J	JUNCTION BOX	
J	JUNCTION BOX, FLOOR MOUNTED FLUSH	
J	JUNCTION BOX, WALL MOUNTED - 3/4"C TO ABOVE CEILING	
$M	MANUAL STARTER WITH THERMAL TRIP	
	DISCONNECT SWITCH, REFER TO DISCONNECT SCHEDULE	
	STARTER	
	COMBINATION STARTER/DISCONNECT SWITCH, REFER TO SCHEDULE	
	POWER AND/OR LIGHTING PANELBOARD, REFER TO PANELBOARD SCHEDULE	
	SWITCHBOARD, REFER TO SWITCHBOARD SCHEDULE	
	TRANSFORMER, REFER TO TRANSFORMER SCHEDULE	

ESC-19

BRANCH CIRCUIT WIRE AND CONDUIT SCHEDULE

NOTE:
A. PROVIDE INDIVIDUAL NEUTRALS FOR EACH CIRCUIT. NO SHARED NEUTRALS ALLOWED.

C - CONDUIT G - GROUND L - LINE OR PHASE N - NEUTRAL

MARK	WIRE AND CONDUIT	SYSTEM	MARK	WIRE AND CONDUIT	SYSTEM	MARK	WIRE AND CONDUIT	SYSTEM
1	2#12, 1/2"C.	LN	31	2#4, 1#8G., 1"C.	LLG	61	3#1/0, 1#6G., 2" C.	LLNG
2	2#12, 1#12G., 1/2" C.	LNG	32	3#4, 1" C.	LLL	62	3#1/0, 1#6G., 2" C.	LLLG
3	2#12, 1#12G., 1/2" C.	LLG	33	3#4, 1#8G., 1" C.	LLNG	63	4#1/0, 1#6G., 2" C.	LLLNG
4	3#12, 1/2" C.	LLL	34	3#4, 1#8G., 1" C.	LLLG	64	2#2/0, 1 1/2" C.	LN
5	3#12, 1#12G., 1/2" C.	LLNG	35	4#4, 1#8G., 1 1/4" C.	LLLNG	65	2#2/0, 1#4G., 1 1/2"C.	LNG
6	3#12, 1#12G., 1/2" C.	LLLG	36	2#3, 1" C.	LN	66	2#2/0, 1#4G., 1 1/2" C.	LLG
7	4#12, 1#12G., 1/2" C.	LLLNG	37	2#3, 1#8G., 1"C.	LNG	67	3#2/0, 1 1/2" C.	LLL
8	2#10, 1/2"C.	LN	38	2#3, 1#8G., 1" C.	LLG	68	3#2/0, 1#4G., 2" C.	LLNG
9	2#10, 1#10G., 1/2" C.	LNG	39	3#3, 1" C.	LLL	69	3#2/0, 1#4G., 2" C.	LLLG
10	2#10, 1#10G., 1/2" C.	LLG	40	3#3, 1#8G., 1 1/4" C.	LLNG	70	4#2/0, 1#4G., 2" C.	LLLNG
11	3#10, 1/2" C.	LLL	41	3#3, 1#8G., 1 1/4" C.	LLLG	71	2#3/0, 1 1/2" C.	LN
12	3#10, 1#10G., 1/2" C.	LLNG	42	4#3, 1#8G., 1 1/4" C.	LLLNG	72	2#3/0, 1#4G., 2" C.	LNG
13	3#10, 1#10G., 1/2" C.	LLLG	43	2#2, 1"C.	LN	73	2#3/0, 1#4G., 2" C.	LLG
14	4#10, 1#10G., 1/2" C.	LLLNG	44	2#2, 1#8G., 1" C.	LNG	74	3#3/0, 2" C.	LLL
15	2#8, 1/2" C.	LN	45	2#2, 1#8G., 1" C.	LLG	75	3#3/0, 1#4G., 2" C.	LLNG
16	2#8, 1#10G., 3/4" C.	LNG	46	3#2, 1 1/4" C.	LLL	76	3#3/0, 1#4G., 2" C.	LLLG
17	2#8, 1#10G., 3/4" C.	LLG	47	3#2, 1#8G., 1 1/4" C.	LLNG	77	4#3/0, 1#4G., 2 1/2" C.	LLLNG
18	3#8, 3/4" C.	LLL	48	3#2, 1#8G., 1 1/4" C.	LLLG	78	2#4/0, 2" C.	LN
19	3#8, 1#10G., 3/4" C.	LLNG	49	4#2, 1#8G., 1 1/4" C.	LLLNG	79	2#4/0, 1#4G., 2" C.	LNG
20	3#8, 1#10G., 3/4" C.	LLLG	50	2#1, 1 1/4" C.	LN	80	2#4/0, 1#4G., 2" C.	LLG
21	4#8, 1#

Bid 17D1-136

CIRCUIT BREAKER PANELBOARD 'L1'
WILCO - JUSTICE CENTER SHELL BUILD OUT

STANDARD NOTES:
1. PROVDE BALANCED LOAD ON EACH PHASE. CIRCUIT NUMBERS SHOWN ON DRAWINGS ARE FOR REFERENCE ONLY.
2. REFERENCE BRANCH CIRCUIT WIRE AND CONDUIT SCHEDULE.

NOTES: (THESE ITEMS APPLY ONLY WHERE SPECIFIED BELOW)

(a)	REFERENCE SPLT SYSTEM / ROOFTOP EQUIPMENT CONNECTION SCHEDULE.	(d)	PROVDE WITH SHUNT TRIP BREAKER.
		(e)	PROVDE WITH 200% NEUTRAL BUS AND WIRE.
(b)	REFERENCE TRANSFORMER SCHEDULE.	(f)	PROVDE WITH GFCI BREAKER.
(c)	REFERENCE FAN POWERED BOX / VAV CONNECTION SCHEDULE.	(g)	REFERENCE ASSOCIATED PANEL SCHEDULE.
		(h)	PROVDE 6" PANEL EXTENSION AND CT'S AS NOTED.

120/208 VOLT, 3 PHASE, 4 WIRE, 400A. MLO, KA. RMS SYM.
SURFACE MOUNTED, NEMA 1 ENCLOSURE, S/N
FEEDER REFERENCE PANELBOARD CONNECTION SCHEDULE

CKT		LOAD DESCRIPTION	WIRE/CONDUIT	KVA	C/B	C/B	KVA	WIRE/CONDUIT		LOAD DESCRIPTION		CKT
1	R	RECEPTACLES	2	1.1	20/1	20/2	1.0	3		COPIER		2
3	R	RECEPTACLES	2	1.1	20/1	--	--	--		--		4
5	R	RECEPTACLES	2	1.1	20/1	20/1	1.6	2		COPIER	E	6
7	R	RECEPTACLES	2	1.1	20/1	20/1	1.6	2		SHREDDER	E	8
9	R	RECEPTACLES	2	1.1	20/1	20/1	1.0	2		RECEPTACLES	R	10
11	R	RECEPTACLES	2	1.1	20/1	20/1	1.1	2		RECEPTACLES	R	12
13	R	RECEPTACLES	2	1.1	20/1	20/1	1.0	2		DOOR SECURITY POWER	E	14
15	R	RECEPTACLES	2	1.1	20/1	20/1	1.0	2		SYSTEMS FURNITURE	E	16
17	R	RECEPTACLES	2	1.1	20/1	20/1	1.0	2		SYSTEMS FURNITURE	E	18
19	R	RECEPTACLES	2	1.1	20/1	20/1	1.1	2		RECEPTACLES	R	20
21	E	UNDER COUNTER REFRIG.	2	1.0	20/1	20/1	1.1	2		RECEPTACLES	R	22
23	E	COFFEE MAKER	2	1.0	20/1	20/1	1.1	2		RECEPTACLES	R	24
25	E	MICROWAVE	2	1.0	20/1	20/1	1.1	2		RECEPTACLES	R	26
27	R	RECEPTACLES	2	1.1	20/1	20/1	1.1	2		RECEPTACLES	R	28
29	S	SPARE	--	0.5	20/1	20/1	1.0	2		RECEPTACLES	R	30
31	S	SPARE	--	0.5	20/1	20/1	1.0	2		RECEPTACLES	R	32
33	S	SPARE	--	0.5	20/1	20/1	1.0	2		REFRIGERATOR	E	34
35	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	36
37	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	38
39	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	40
41	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	42
43	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	44
45	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	46
47	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	48
49	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	50
51	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	52
53	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	54
55	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	56
57	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	58
59	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	60
61	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	62
63	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	64
65	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	66
67	S	SPARE	--	0.5	20/1	20/1	0.5	--		SPARE	S	68
69	S	SPARE	--	0.5	20/1	20/2	1.0	--		SPARE	S	70
71	S	SPACE	--	0.5	20/1	--	--	--		-		72
73	S	SPACE	--	--	--	--	--	--		SPACE	S	74
75	S	SPACE	--	--	--	--	--	--		SPACE	S	76
77	S	SPACE	--	--	--	--	--	--		SPACE	S	78
79	S	SPACE	--	--	--	--	--	--		SPACE	S	80
81	S	SPACE	--	--	--	--	--	--		SPACE	S	82
83	S	SPACE	--	--	--	--	--	--		SPACE	S	84

ELECTRICAL LOAD CALCULATIONS:

CONNECTED LOAD		DEMAND FACTOR	DEMAND LOAD		REMARKS
LIGHTING = 0.0 KVA		X 1.25	LIGHTING = 0.0 KVA		* PROVIDE WITH FED THROUGH LUGS FOR FUTURE THIRD SECTION.
RECEPTACLE = 21.7 KVA		NEC 220 - 14	RECEPTACLE = 15.9 KVA		
EQUIPMENT = 10.2 KVA		X 1.0	EQUIPMENT = 10.2 KVA		
KITCHEN = 0.0 KVA		NEC 220 - 56	KITCHEN = 0.0 KVA		
SPARES = 20.5 KVA		X 0.5	SPARES 10.3 KVA		
TOTAL = 52.4 KVA			TOTAL 36.3 KVA	101	AMPS

SURGE PROTECTION DEVICE SCHEDULE

STANDARDS:
A. PROVIDE TVSS SURGE SUPPRESSION PER LATEST UL. BASIS OF DESIGN, CURRENT TECHNOLOGY. TVSS MUST BE ABLE TO BE SERVICEABLE WITHOUT SHUTTING PANEL OFF.

B. 3RD PARTY SURGE TEST MUST BE PROVIDED WITH SUBMITTAL VERIFYING PERFORMANCE MEETS SPECIFICATIONS.

C. WHERE FLUSH MOUNT PANELS ARE SPECIFIED, COORDINATE 'PX3' PANEL MANUFACTURER OPTION WITH ELECTRICAL CONTRACTOR.

D. REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

E. VOLTAGE AND CONFIGURATION TO MATCH PANEL BEING SERVICED. REFERENCE RISER DIAGRAM AND PANEL SCHEDULES.

E. PROVIDE FILTER OPTION.

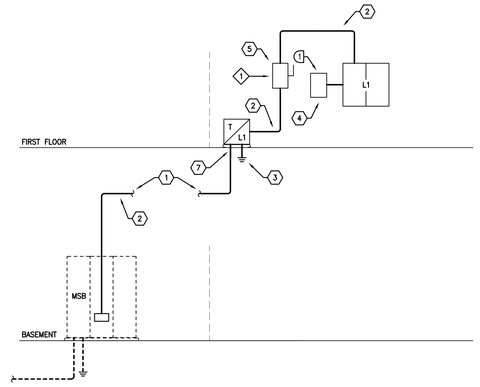
F. 15 YEAR WARRANTY STANDARD.

G. CABLE ENTRY TO BE COORDINATED WITH ELECTRICAL CONTRACTOR.

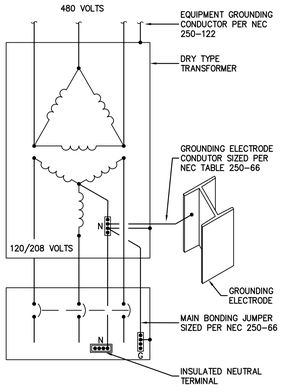
H. QUANTITIES PER RISER DIAGRAM.

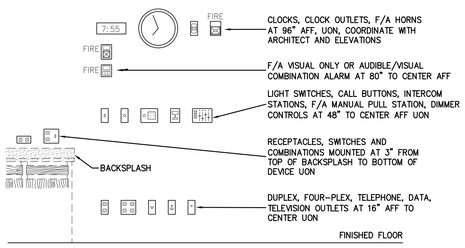
MARK	TYPE: T/X3	PX3	CG	SURGE CURRENT RATING (KA PER MODE/KA PER PHASE): 50/100	80/160	100/200	125/250	150/300	200/400	250/500	300/600	ENCLOSURE: MD	PN	MF	MONITORING: M1	M2	M3	MOUNT: SURFACE	FLUSH (C)	ANY CABLE	APPLICATION (WHERE SPECIFIED ON RISER)
1	○							○					○			○		○			PANEL 'L1'
2																					

TRANSFORMER GROUNDING DETAIL
SCALE: NO SCALE

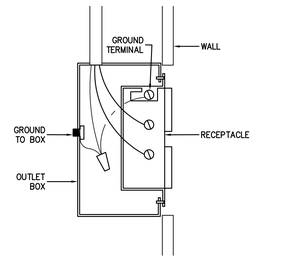


01 ELECTRICAL RISER DIAGRAM
SCALE: NONE

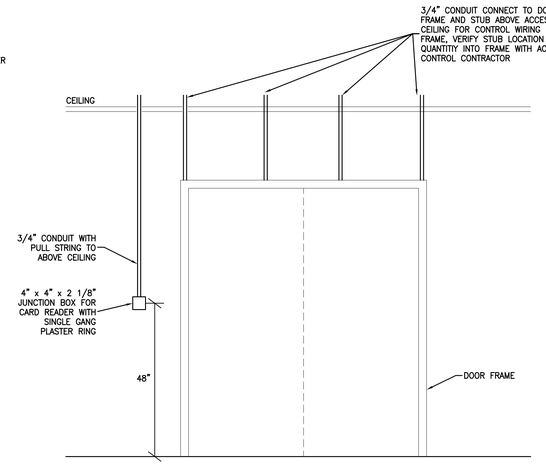




MOUNTING HEIGHT DETAIL
NO SCALE

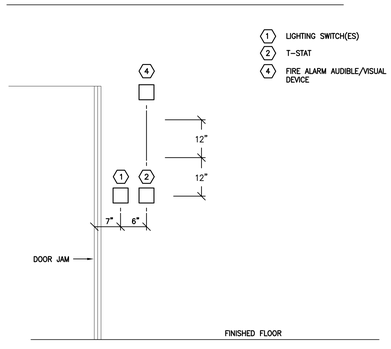


RECEPTACLE GROUNDING DETAIL
NO SCALE



NOTES:
1. **ALL ACCESS CONTROL DEVICES AND WIRING BY SCHOOL DISTRICT.**
2. **IF DEVICE IS FOR FUTURE, PROVIDE A BLANK COVER.**

CARD SWIPE DETAIL TYPICAL
SCALE: NONE



NOTES:
1. **THE PURPOSE OF THIS DETAIL IS TO SET A STANDARD FOR DEVICE ROUGH-IN. ADJUSTMENT FOR FIELD CONDITIONS WILL BE ALLOWED.**
2. **PROVIDE HORIZONTAL MULTIDEVICE BRACKET AS REQUIRED.**
3. **MARKER BOARD IN CLASSROOMS SHOULD BE 30" FROM DOOR TO ALLOW ALL DEVICES TO BE ROUGHED-IN PER DETAIL.**

TYPICAL DEVICE OUTLET LOCATIONS ADJACENT TO DOORS
NO SCALE

RISER KEYED NOTES

1. ELECTRICAL CONTRACTOR MUST VISIT SITE PRIOR TO BID TO VERIFY FIELD CONDITIONS AND CONDUIT ROUTING.
2. REFERENCE TRANSFORMER SCHEDULE FOR CONDUIT/WIRING SIZES AND QUANTITIES.
3. REFERENCE TRANSFORMER GROUNDING DETAIL FOR GROUNDING REQUIREMENTS.
4. REFERENCE SURGE PROTECTION DEVICE SCHEDULE FOR ADDITIONAL INFORMATION.
5. REFERENCE DISCONNECT SCHEDULE FOR ADDITIONAL INFORMATION.
6. PROVIDE 175 AMP FUSES IN EXISTING 200 AMP SWITCH. FIELD VERIFY PRIOR TO BID. PROVIDE ALL REQUIRED COMPONENTS.
7. FIRE SEAL ALL FLOOR PENETRATIONS.
8. TRANSFORMER AND PANEL ARE SIZED TO ALLOW CAPACITY FOR FUTURE ADJACENT CONSTRUCTION.

GENERAL DISCONNECT NOTES

A. WHEN THE LENGTH OF THE SECONDARY CONDUCTORS OF ANY TRANSFORMER EXCEEDS TEN FEET, PROVIDE AN ENCLOSED CIRCUIT BREAKER OR FUSED DISCONNECT WITHIN TEN FEET OF THE TRANSFORMER SECONDARY TERMINALS IN ACCORDANCE WITH NEC ARTICLE 240-21(C)(2). THIS OVERCURRENT DEVICE SHALL HAVE AN AMP RATING EQUAL TO THE AMP RATING OF THE PANEL BEING SERVED. THE PANEL BEING FED MAY BE CHANGED TO MAIN LUG ONLY.

B. PROVIDE LUG KITS AND/OR WIRING GUTTERS FOR PANELS WITH OVERSIZED CONDUCTORS DUE TO VOLTAGE DROP AND/OR DISTANCE. MAKE CONNECTIONS IN ACCORDANCE WITH THE NEC,

C. PROVIDE SHOP DRAWINGS OF ALL ELECTRIC ROOMS INDICATING ALL PANEL, TRANSFORMER AND DISCONNECT LOCATIONS. ELECTRICAL EQUIPMENT MAY SHIFT IN LOCATION TO INSURE PROPER CLEARANCES.

D. REFERENCE "DISCONNECT SCHEDULE" FOR ADDITIONAL DISCONNECT INFORMATION.

THE ELECTRICAL RISER DIAGRAM IS SHOWN SCHEMATICALLY IN NATURE TO INDICATE THE RELATIONSHIP OF THE ELECTRICAL SYSTEM COMPONENTS. IT DOES NOT REFLECT THE ACTUAL ROUTING OF CONDUITS. CONTRACTOR SHALL DETERMINE OVERHEAD OR UNDERGROUND CONDUIT ROUTING. CONDUIT SHALL NOT BE ROUTED EXPOSED ON EXTERIOR WALLS UNDER OUT OF THE BOTTOM OF THE PANEL TO RUN UNDER SLAB OR TO AN ADJACENT PANEL WITHIN 24". EXTERIOR EXPOSED CONDUIT SHALL BE MINIMIZED.

GEAR MANUFACTURER TO PROVIDE COORDINATION STUDY, FAULT CURRENT ANALYSIS AND DETERMINE FINAL KAIC RATINGS FOR ALL GEAR.

PANELBOARD CONNECTION SCHEDULE

A. USE TABLE FOR WIRE AND CONDUIT SIZES FOR ALL PANELBOARDS UNLESS NOTED OTHERWISE.
B. WIRE SIZES BASED ON 86° AMBIENT, 75° COLUMN OF CHART. NEC 310.15(B)(16)
C. TABLE FOR 120/208/3PH4W AND 277/480/3PH4W PANELBOARDS.
D. PROVIDE 200% NEUTRAL BUS BAR AND 200% NEUTRAL WIRE WHEN SPECIFIED.

PANEL SIZE OR MCB SIZE	WIRE SIZE	GROUND	CONDUIT
60	4 #6	#10	1"
100	4 #3	#8	1 1/4"
125	4 #1	#6	1 1/2"
150	4 #1/0	#6	2"
200	4 #3/0	#6	2"
225	4 #4/0	#4	2 1/2"
300	4 #350	#4	3"
400	2 SETS 4 #3/0 OR 1 SET 4 #600	#3	2" PER SET 4"
600	2 SETS 4 #350	#1	3" PER SET
800	2 SETS 4 #600	#1/0	4" PER SET

TRANSFORMER SCHEDULE

GENERAL NOTES:
A. ALL FLOOR MOUNTED AND GROUND MOUNTED TRANSFORMERS SHALL HAVE A 3 1/2" CONCRETE PAD. COORDINATE CONCRETE WORK WITH GENERAL CONTRACTOR.

B. COORDINATE WALL HUNG AND/OR TRAPEZE HUNG TRANSFORMERS WITH STRUCTURAL ENGINEER AND ARCHITECT FOR BLOCKING AND STRUCTURAL SUPPORT.

C. PROVIDE PAD TYPE VIBRATION ISOLATORS FOR FLOOR, GROUND AND ROOF MOUNTED TRANSFORMERS. PROVIDE PAD TYPE AND SPRING TYPE VIBRATION ISOLATORS FOR HUNG AND WALL MOUNTED TRANSFORMERS.

D. ROOF MOUNTED TRANSFORMERS SHALL BE MOUNTED ON STRUCTURAL SUPPORTS OR RACK.

E. ALL CONDUCTORS/BREAKERS AND TERMINATIONS ARE BASED ON 75°C. RATING.

F. WHEN THE LENGTH OF THE SECONDARY CONDUCTORS OF ANY TRANSFORMER EXCEEDS TEN FEET, PROVIDE AN ENCLOSED CIRCUIT BREAKER OR FUSED DISCONNECT WITHIN TEN FEET OF THE TRANSFORMER SECONDARY TERMINALS IN ACCORDANCE WITH NEC ARTICLE 240-21(C)(2). THIS OVERCURRENT DEVICE SHALL HAVE AN AMP RATING EQUAL TO THE AMP RATING OF THE PANEL BEING SERVED. THE PANEL BEING FED MAY BE CHANGED TO MAIN LUG ONLY.

G. PROVIDE LUG KITS AND/OR WIRING GUTTERS FOR PANELS WITH OVERSIZED CONDUCTORS DUE TO VOLTAGE DROP AND/OR DISTANCE. MAKE CONNECTIONS IN ACCORDANCE WITH THE NEC.

H. PROVIDE SHOP DRAWINGS OF ALL ELECTRIC ROOMS INDICATING ALL PANEL, TRANSFORMER AND DISCONNECT LOCATIONS. ELECTRICAL EQUIPMENT MAY SHIFT IN LOCATION TO ENSURE PROPER CLEARANCES.

I. WIRE SIZES SHOWN ARE MINIMUMS. IF LARGER BREAKERS OR PANELS ARE LISTED IN PANEL SCHEDULES, LARGER WIRE SIZE AND QUANTITY RULES.

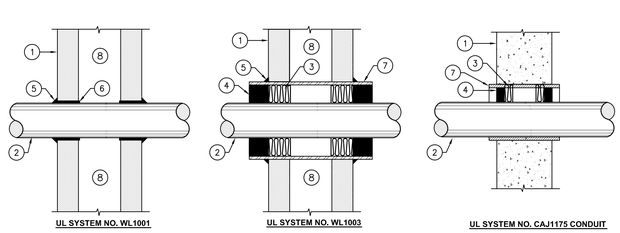
KVA SIZE	PRIMARY: CIRCUIT BREAKER	PRIMARY: WIRE	PRIMARY: EQUIPMENT GROUNDING CONDUCTOR	PRIMARY: CONDUIT	SECONDARY: GROUNDING ELECTRODE CONDUCTOR	SECONDARY: MAIN BONDING JUMPER	SECONDARY: BREAKER/ FUSE	SECONDARY: WIRE	SECONDARY: EQUIPMENT GROUNDING CONDUCTOR	SECONDARY: CONDUIT	MAXIMUM WEIGHT
15	25	3 #10	#10	3/4"	#8	#8	60	4 #6	1 #10	1"	-
30	50	3 #8	#10	3/4"	#8	#8	100	4 #3	1 #8	1 1/4"	-
45	70	3 #4	#8	1"	#6	#6	150	4 #1/0	1 #6	1 1/2"	370
75	125	3 #1	#6	1 1/2"	#2	#2	225	4 #4/0	1 #4	2 1/2"	875
112.5	175	3 #2/0	#6	2"	#1/0	#1/0	400	4 #600	1 #1	4"	1100
150	225	3 #4/0	#4	2 1/2"	#2/0	#2/0	500	2 SETS (4#250kcm)	2 #2	3"	1500
225	350	3 #400	#3	2 1/2"	#3/0	#3/0	800	2 SETS (4 #600KCM)	2 #1/0	4"	1700
300	450	3 #600	#2	3"	#3/0	#3/0	1000/1000	3 SETS (4 #400KCM)	3 #2/0	4"	2600
500	800	2 SETS (3 #500KCM)	#1/0	3"	#3/0	300KCM	1600/1600	4 SETS (4 #600KCM)	4 #4/0	4"	2100

* TRANSFORMER MUST MEET LISTED ENERGY RATING CRITERIA. PROVIDE A SUBMITTAL OF LOAD CURVE SHOWING LOADING AT 15%, 35%, 50%, 75% AND 100% WITH K-7 NON LINERAR LOADING PROFILE.

DISCONNECT SWITCH SCHEDULE

REMARKS:
A. THIS SCHEDULE IS NOT A COMPREHENSIVE DISCONNECT SCHEDULE. REFERENCE OTHER ELECTRICAL CONNECTION SCHEDULES FOR ADDITIONAL DISCONNECT REQUIREMENTS.
B. COORDINATE FINAL FUSE SIZES WITH EQUIPMENT BEING PROVIDED PRIOR TO ROUGH-IN.
C. WHEN THE LENGTH OF THE SECONDARY CONDUCTORS OF ANY TRANSFORMER EXCEEDS TEN FEET, PROVIDE AN ENCLOSED CIRCUIT BREAKER OR FUSED DISCONNECT WITHIN TEN FEET OF THE TRANSFORMER SECONDARY TERMINALS IN ACCORDANCE WITH NEC ARTICLE 240-21(C)(2). THIS OVERCURRENT DEVICE SHALL HAVE AN AMP RATING EQUAL TO THE AMP RATING OF THE PANEL BEING SERVED. THE PANEL BEING FED MAY BE CHANGED TO MAIN LUG ONLY.
D. PROVIDE LUG KITS AND/OR WIRING GUTTERS FOR PANELS WITH OVERSIZED CONDUCTORS DUE TO VOLTAGE DROP AND/OR DISTANCE. MAKE CONNECTIONS IN ACCORDANCE WITH THE N.E.C.
E. PROVIDE SHOP DRAWINGS OF ALL ELECTRIC ROOMS INDICATING ALL PANEL, TRANSFORMER AND DISCONNECT LOCATIONS. ELECTRICAL EQUIPMENT MAY SHIFT IN LOCATION TO INSURE PROPER CLEARANCES.
F. PROVIDE DISCONNECTING MEANS FOR ALL EQUIPMENT PER N.E.C.
G. **DISCONNECTS MOUNTED ABOVE CEILING MUST BE MOUNTED TO BE READILY ACCESSIBLE NEAR UNIT. HANDLE TO BE NO MORE THAN 36" ABOVE CEILING GRID.**
H. **ALL EXTERIOR DISCONNECTS ARE TO BE MOUNTED BELOW LINE OF SIGHT OF A SCREEN WALL OR IF SINGLE DISCONNECT, LEVEL WITH TOP OF CONDENSER. VERIFY LOCATION WITH ARCHITECT/ENGINEER PRIOR TO ROUGH-IN.**

MARK	VOLTAGE: 120	240	277	480	1 PHASE	3 PHASE	AMPERES RATING: 30	60	100	200	400	600	800	1200	1600	2000	2500	3000	POLES: 1	2	3	ENCLOSURE: S/N	NEMA 1	NEMA 3R	FUSES: NON-FUSED	FUSE SIZE	ENCLOSED CIRCUIT BREAKER	REMARKS
1			○			○					○										○		○			400		PANEL 'L1'
2																												
3																												
4																												



KEYED NOTES
1. RATED WALL BARRIER
2. PIPE OR CONDUIT
3. FORMING MATERIAL (MINERAL - WOOL BATT INSULATION
4. FIRE CAULK
5. FIRE CAULK - CONTINUOUS BEAD AROUND PENETRATING ITEM
6. FIRE CAULK - CONTINUOUSLY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT THROUGHOUT THICKNESS OF WALL BOARD LAYERS
7. SLEEVE FOR UL SYSTEM NO. WL1003, OPTIONAL FOR UL SYSTEM NO. CAJ1175
8. WALL CAVITY

GENERAL NOTES
A. REFERENCE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL RATED WALLS, FLOORS AND CEILINGS.
B. REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION CONCERNING MATERIALS AND METHODS.
C. REFERENCE UL FIRE RESISTANCE DIRECTORY FOR ADDITIONAL DATA, INCLUDING WALL RATINGS FOR WHICH DETAILS ARE AND SUPPORT REQUIREMENTS.
D. ALL MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH UL SYSTEM NUMBER AND MANUFACTURER'S INSTRUCTIONS PROVIDED WITH MATERIALS.
E. ONLY MATERIALS TESTED FOR SPECIFIC UL SYSTEM NUMBER MAY BE USED.
F. ANNULAR SPACE BETWEEN FIRE BARRIER SURFACE AND PENETRATING ITEM IS EXTREMELY CRITICAL. REFER TO PARTICULAR UL SYSTEM NUMBER AND FIRE RATING FOR THIS CRITERIA.

TYPICAL CONDUIT PENETRATION
NO SCALE (FIRE RATED GYPSUM/STUD WALL ASSEMBLY AND CONCRETE WALL/FLOOR ASSEMBLY)

STATE OF TEXAS
BJ HENDRIX
94813
LICENSED
PROFESSIONAL ENGINEER
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY B.J. HENDRIX, P.E. NO: 94813
ON 12/22/17

REFERENCE GENERAL NOTES ON SHEETS M1.01, P1.01 AND E1.01 FOR ADDITIONAL INFORMATION

HCE

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HCE job no.: 16-076

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JUSTICE CENTER - CSCD
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PROJECT NO.: 21604
ISSUE DATE 12/22/2016

SCHEDULES - ELECTRICAL

E1.02

Williamson County, Texas
G:\2016\WILCO JUSTICE CENTER REMODEL 0787\E1\02.dwg, 1/4/2017 8:57:01 AM, Hendrix, Bluebeam PDF, ARCH_E1_(30.00_X_42.00_Inches), 0.125:12
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Bid 17-01-136

Williamson County, Texas

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LIGHTING KEYED NOTES

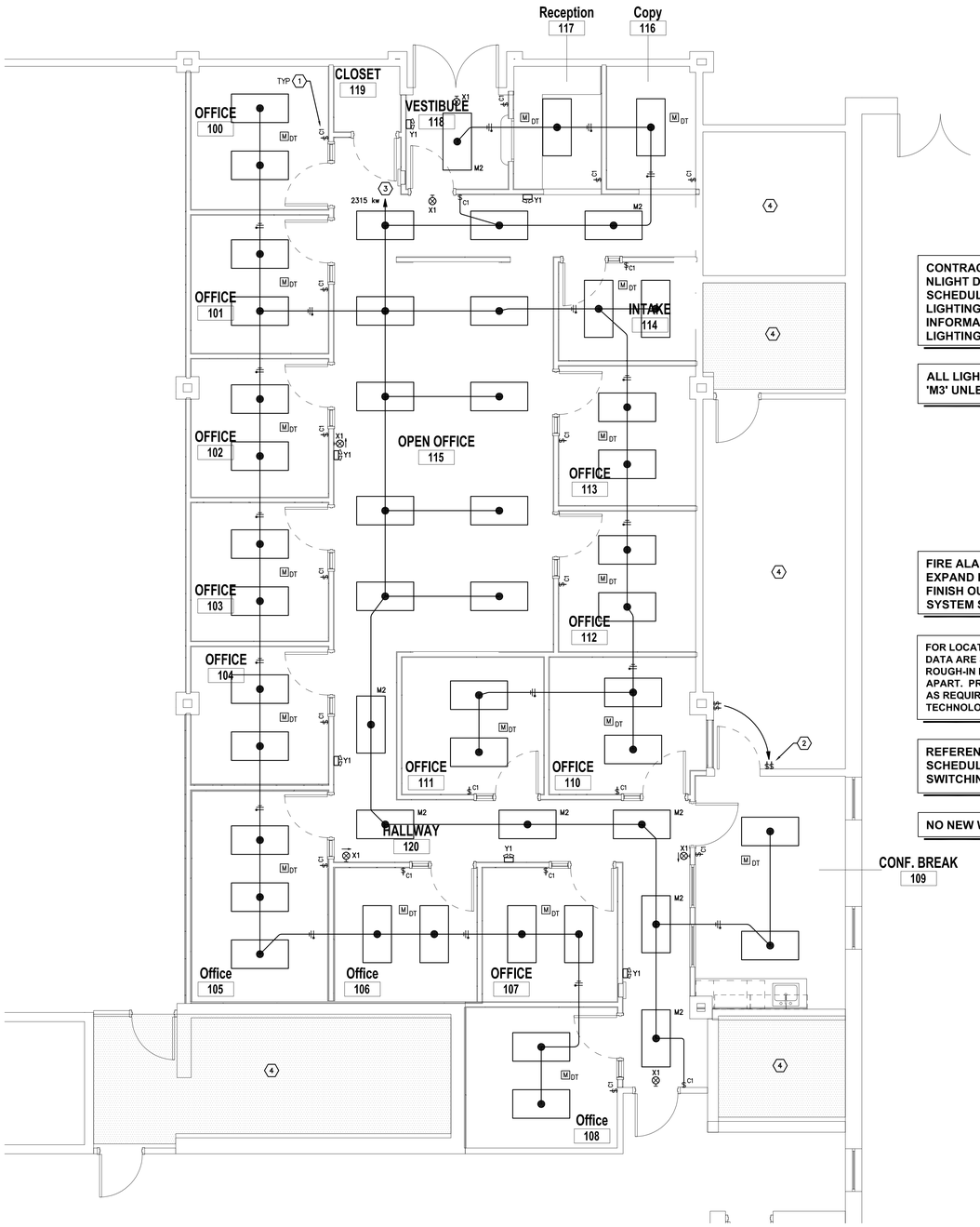
THESE NOTES APPLY TO THIS SHEET ONLY

1. LOW VOLTAGE LIGHTING CONTROL BUTTON. REFERENCE MISCELLANEOUS EQUIPMENT SCHEDULE AND NLIGHT INTERIOR LIGHTING SCHEDULE.
2. RELOCATE LIGHT SWITCHES AS SHOWN. RECONNECT TO LIGHTING AND CIRCUIT IN ROOM.
3. CONNECT LIGHTING FIXTURES TO SPARE CIRCUIT IN PANEL 1HL1 (PANEL IS 200A 277/480V). FIELD VERIFY. WIRE/ CONDUIT #2.
4. LIGHTING EXISTING TO REMAIN.

POWER KEYED NOTES

THESE NOTES APPLY TO THIS SHEET ONLY

1. COORDINATE FINAL RECEPTACLE LOCATIONS WITH MILLWORK PRIOR TO ROUGH-IN. REVIEW FINAL ARCHITECTURAL INTERIOR ELEVATIONS FOR FINAL LAYOUTS OF EQUIPMENT TO BE POWERED.
2. POWER FOR CHIME. COORDINATE TYPE WITH OWNER.
3. SPECIAL SYSTEMS POWER SUPPLY ABOVE CEILING. COORDINATE EXACT LOCATION WITH SPECIAL SYSTEMS CONTRACTOR.
4. DO NOT RUN ANY PIPING OR DUCTWORK OVER HATCHED REGIONS.
5. DOOR BELL/ CHIME. CONTRACTOR TO COORDINATE TYPE WITH OWNER.
6. CONVENIENCE RECEPTACLE MOUNTED ON WALL AT STANDARD RECEPTACLE HEIGHT. TV RECEPTACLE MOUNTED HIGH IN WALL. COORDINATE TV RECEPTACLE LOCATION WITH TECHNOLOGY PLANS PRIOR TO ROUGH-IN.
7. RECEPTACLE FOR "TLETS" BACKGROUND CHECK COMPUTER STATION. COORDINATE WITH TECHNOLOGY PLANS PRIOR TO ROUGH-IN.
8. RECEPTACLES FOR COFFEE MAKER AND MICROWAVE ON COUNTER.
9. RECEPTACLE FOR UNDER COUNTER REFRIGERATOR. REFERENCE INTERIOR ARCHITECTURAL ELEVATION.
10. FEED NEW 112V TRANSFORMER FROM EXISTING 200 AMP SPARE ON THE MAIN SWITCH BOARD LOCATED IN THE MAIN ELECTRIC ROOM ON LOWER LEVEL. CONTRACTOR MUST VISIT SITE TO REVIEW ROUTING AND DISTANCE PRIOR TO BID. REFERENCE TRANSFORMER SCHEDULE FOR MORE INFORMATION.
11. RELOCATE EXISTING POWER FOR EXISTING ACCESS CONTROL PANEL AS REQUIRED. COORDINATE FINAL REQUIREMENTS WITH TECHNOLOGY CONSULTANT/ CONTRACTOR.
12. LEAVE SPACE FOR FUTURE THIRD PANEL SECTION.
13. POWER EXISTING TO REMAIN,
14. POWER FOR DIRECT CONNECT SYSTEMS FURNITURE. COORDINATE ACTUAL LOCATION AND CONNECTION TYPE WITH OWNER SYSTEM FURNITURE TO BE INSTALLED. ASSUMED TWO WORK STATIONS PER CIRCUIT.
15. PROVIDE SIX (QTY 6) 1" SLEEVES FOR FUTURE POWER CIRCUITS AND TWO (QTY 2) 2" SLEEVES FOR FUTURE DATA.



01 FLOOR PLAN - LIGHTING

SCALE: 1/4" = 1'-0"

CONTRACTOR SHALL REFERENCE NLIGHT DEVICE SYMBOL SCHEDULE AND NLIGHT INTERIOR LIGHTING SCHEDULE FOR INFORMATION ON INTERIOR LIGHTING REQUIREMENTS.

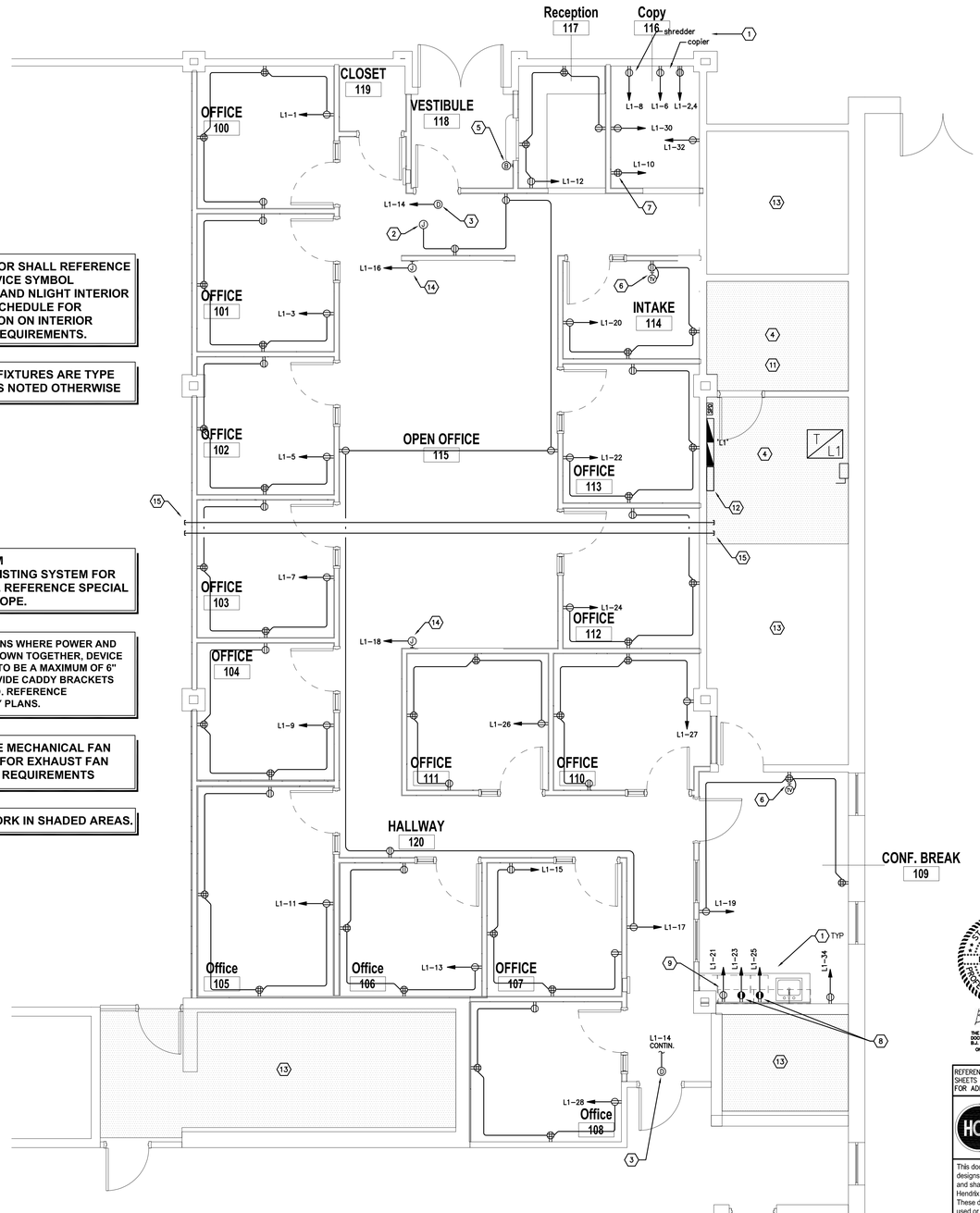
ALL LIGHT FIXTURES ARE TYPE 'M3' UNLESS NOTED OTHERWISE

FIRE ALARM EXPAND EXISTING SYSTEM FOR FINISH OUT. REFERENCE SPECIAL SYSTEM SCOPE.

FOR LOCATIONS WHERE POWER AND DATA ARE SHOWN TOGETHER, DEVICE ROUGH-IN IS TO BE A MAXIMUM OF 6" APART. PROVIDE CADDY BRACKETS AS REQUIRED. REFERENCE TECHNOLOGY PLANS.

REFERENCE MECHANICAL FAN SCHEDULE FOR EXHAUST FAN SWITCHING REQUIREMENTS

NO NEW WORK IN SHADED AREAS.



02 FLOOR PLAN - POWER

SCALE: 1/4" = 1'-0"

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JUSTICE CENTER - CSCD

WILLIAMSON COUNTY

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STATE OF TEXAS
B. J. HENDRIX
94813
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY B.J. HENDRIX, P.E. NO. 94813 on 01/04/17

REFERENCE GENERAL NOTES ON SHEETS M1.01, P1.01 AND E1.01 FOR ADDITIONAL INFORMATION

HCE

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F - 4095

HCE job no.: 16-076

PROJECT NO.: 21604

ISSUE DATE 12/22/2016

FLOOR PLAN - ELECTRICAL

E2.01

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AUDIO/VISUAL MULTIMEDIA LEGEND

SYMBOL	DESCRIPTION
GENERAL NOTE:	REFER TO DRAWINGS/SPECS FOR OUTLET HARDWARE TYPE/LAYOUT/DESIGN
AV# AV# AV#	GENERAL AUDIO/VISUAL OUTLET (LEFT TO RIGHT, WALL MOUNTED CEILING MOUNTED, FLOOR MOUNTED)
TWS PWS	TEACHER/PRESENTER WORK STATIONS
CP#	CONTROL PANEL
P## P##	PROJECTOR (LINE TO WALL DENOTES SHORT THROW/WALL MOUNT)
S# S#	SPEAKER (CEILING MOUNTED/WALL MOUNTED RESPECTIVELY)
VC	VOLUME CONTROL
1 2	DIGITAL CLOCK ("1" SIDED OR "2" SIDED RESPECTIVELY)
D#	DIGITAL DISPLAY
ENC	CEILING ENCLOSURE
EC#	AUDIO/VISUAL SYSTEMS WALL MOUNTED EQUIPMENT CABINET
HM	HANGING/CEILING MOUNTED MICROPHONE
ML#	MICROPHONE JACK/HOOKUP
PTT	PUSH TO TALK BUTTON
ECB	EMERGENCY CALL BUTTON FOR 2-WAY PA COMMUNICATIONS
ADP	ADMINISTRATIVE DISPLAY PHONE FOR 2-WAY PA COMMUNICATIONS
USB	USB OUTLET

PREMISE SECURITY LEGEND

SYMBOL	DESCRIPTION
CR CR M	CARD READER ("M" DENOTES MULLION MOUNTED)
KP	INTRUSION SYSTEM KEYPAD
IC IC MS	INTERCOM STATION ("MS" DENOTES INTERCOM MASTER STATION)
DB	DOOR BELL/BUZZER
LD	LOCKDOWN CONTROL/BUTTON
DR	DOOR RELEASE CONTROL
DR	DOOR RELEASE HARDWARE
PB	PANIC/DURESS BUTTON
DC	DOOR CONTACT/MONITOR
MD MD	MOTION DETECTOR (LINE DENOTES WALL MOUNT)
GB	GLASS BREAK SENSOR
	STANDARD IP SURVEILLANCE CAMERA, (1) CAT 6 CABLE
O	180° IP SURVEILLANCE CAMERA, (1) CAT 6 CABLE
C	360° IP SURVEILLANCE CAMERA, (1) CAT 6 CABLE

STRUCTURED CABLING LEGEND

SYMBOL	DESCRIPTION
#	TELECOMMUNICATIONS OUTLET, # =NUMBER OF CAT 6 VOICE/DATA CABLES/JACKS
#/#	TELECOMMUNICATIONS OUTLET, #/# = NUMBER OF CAT 6 DATA CABLES/JACK AND NUMBER OF CAT 6 VOICE CABLES/JACKS
#	TELECOMMUNICATIONS OUTLET, # =NUMBER OF CAT 6 VOICE/DATA CABLES/JACKS, SURFACE MOUNT
#/#	TELECOMMUNICATIONS OUTLET, #/# = NUMBER OF CAT 6 DATA CABLES/JACK AND NUMBER OF CAT 6 VOICE CABLES/JACKS, SURFACE MOUNT
W	WALL MOUNT PHONE (ONE CAT 6 CABLE/JACK)
W	WALL MOUNT PHONE, SURFACE MOUNT (ONE CAT 6 CABLE/JACK)
#	FLOOR MOUNTED OUTLET, # =NUMBER OF CAT 6 VOICE/DATA CABLES/JACKS (FLOOR BOX BY E.C.)
#/#	FLOOR MOUNTED OUTLET, #/# = NUMBER OF CAT 6 DATA CABLES/JACK AND NUMBER OF CAT 6 VOICE CABLES/JACKS (FLOOR BOX BY E.C.)
#	CEILING MOUNTED DATA OUTLET, # =NUMBER OF CAT 6 VOICE/DATA CABLES/JACKS
AP	CEILING MOUNTED OUTLET FOR WIRELESS ACCESS POINT (1 CAT 6 CABLE/JACK)
AP	WALL MOUNTED OUTLET FOR WIRELESS ACCESS POINT (1 CAT 6 CABLE/JACK)
O C	IP BASED SURVEILLENCE CAMERA, (1) CAT 6 CABLE TERMINATED IN BACKBOX (APPLIES TO ALL STANDARD, 180°, AND 360° CAMERAS UNLESS NOTED OTHERWISE)

GENERAL SYMBOLS LEGEND

SYMBOL	DESCRIPTION
##/###	DETAIL REFERENCE (TOP = DETAIL NUMBER, BOTTOM = SHEET NUMBER)
	VIEWPORT/DETAIL NOTATION
00	KEYNOTES
MDF	MAIN DISTRABUTION FRAME
IDF	INTERMEDIATE DISTRABUTION FRAME
ETR	EXISTING TO REMAIN
PBO	PROVIDED BY OTHERS
AFF	ABOVE FINISHED FLOOR
AC	ABOVE COUNTER
UNO	UNLESS NOTED OTHERWISE
EC	DIVISION 26 ELECTRICAL CONTRACTOR
PSC	PREMISE SECURITY CONTRACTOR
SCC	STRUCTURAL CABLING CONTRACTOR
AVC	AV/MULTIMEDIA CONTRACTOR

TECHNOLOGY SHEET INDEX

SHEET NUMBER	SHEET NAME
T000	TECHNOLOGY - INDEX SHEET
T101	TECHNOLOGY - LEVEL ONE
T500	TECHNOLOGY DETAILS
T501	TECHNOLOGY DETAILS
T502	TECHNOLOGY DETAILS

TECHNOLOGY - GENERAL NOTES

1. FURNISH = TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION.
2. INSTALL = TO PLACE IN POSITION OF SERVICE OR USE.
3. PROVIDE = TO FURNISH AND INSTALL, COMPLETE READY FOR INTENDED USE.
4. ALL CABLES SHALL BE CONCEALED.
5. ALL CONDUIT MEASUREMENTS REFER TO STANDARD CONDUIT TRADE SIZES.
6. NOT ALL KEYNOTES MAY BE UTILIZED ON EVERY SHEET.
7. IT IS THE INTENT THAT EACH CONTRACTOR INCLUDE ALL REQUIRED MATERIALS FOR A NEATLY DRESSED CABLING PATHWAY SYSTEM AS INDICATED ON THESE DRAWINGS AND SPECIFICATIONS. ALL REQUIRED MATERIALS SHALL BE INCLUDED IN BID.
8. ALL CONDUIT ENDS TO HAVE NYLON BUSHING AND PULL STRING.
9. EACH CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY SLEEVES, WHETHER OR NOT SPECIFICALLY NOTED ON PROJECT DRAWINGS. ALL SLEEVES SHALL BE 1-1/4" UNLESS NOTED OTHERWISE ON THE DRAWINGS. CABLE FILL PERCENTAGE SHALL COMPLY WITH NEC.
10. EACH CONTRACTOR SHALL MAKE NECESSARY ADJUSTMENTS IN J-HOOK SUPPORT PATHS TO AVOID CONFLICTS WITH HVAC AND ELECTRICAL DEVICES/EQUIPMENT AND WORK OF OTHER TRADES.
11. EVERYTHING SHOWN ON THE DRAWINGS SHALL BE PROVIDED AND INSTALLED BY THE APPROPRIATE CONTRACTOR UNLESS NOTED OTHERWISE. ALL CONDUIT, BACKBOXES, JUNCTION BOXES, FLOOR BOXES AND IN-WALL BOXES SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR (EC) UNLESS NOTED OTHERWISE.
12. DEVICE LOCATION: CONTRACTOR SHALL COORDINATE ALL AV/MULTIMEDIA DEVICE LOCATIONS WITH OWNER AND CONSULTANT DURING PRECONSTRUCTION PHASE. LOCATIONS SHOWN HEREIN ARE APPROXIMATE AND AV/MULTIMEDIA CONTRACTOR (AVC) SHALL DETAIL LOCATIONS IN PRECONSTRUCTION SUBMITTAL PLANS FOR CONSULTANT APPROVAL. CONTRACTOR SHALL NOT PROCEED WITHOUT WRITTEN APPROVAL OF SUBMITTED DRAWINGS.
13. ALL ELECTRICAL POWER WIRING FOR AUDIO/VISUAL CIRCUITS SHALL DEDICATED FOR AUDIO/VISUAL USE. SHALL BE ON THE SAME PHASE, AND SHALL NOT BE SHARED WITH OTHER BUILDING EQUIPMENT, INCLUDING BUT NOT LIMITED TO LIGHTING, HVAC, MECHANICAL, ETC.
14. DIV. 26 EC SHALL PROVIDE ALL CONDUIT, BACK BOXES, JUNCTION BOXES AND CUSTOM BOXES AS NOTED ON INFRASTRUCTURE DETAILS SHEET.
15. AT EACH DOOR WITH CARD READER, THE PREMISE SECURITY CONTRACTOR (PSC) SHALL PROVIDE AND INSTALL A DPDT DOOR POSITION SWITCH (CONNECTED TO BOTH THE ACCESS CONTROL SYSTEM AND THE INTRUSION DETECTION SYSTEM), CARD READERS, AND PROVIDE AND INSTALL ALL NECESSARY LOW-VOLTAGE WIRING FROM ELECTRONIC LOCKING HARDWARE (ELECTRIC STRIKE, POWERED CRASHBAR OR ELECTRIC TRIMHINGE) TO POWER SUPPLIES. OTHERS WILL PROVIDE LOCKING HARDWARE. REQUEST TO EXIT DEVICE SHALL BE INTEGRAL TO THE DOOR HARDWARE.
16. DEVICE LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL REVIEW CONDITIONS AND COORDINATE WITH OTHER TRADES AS NECESSARY FOR EXACT PLACEMENT.

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JUSTICE CENTER REMODEL
WILLIAMSON COUNTY
405 MARTIN LUTHER KING
ST, GEORGETOWN, TX, 78626

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PROJECT NO.: 0000
ISSUE DATE 12/22/2016

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TECHNOLOGY - INDEX SHEET

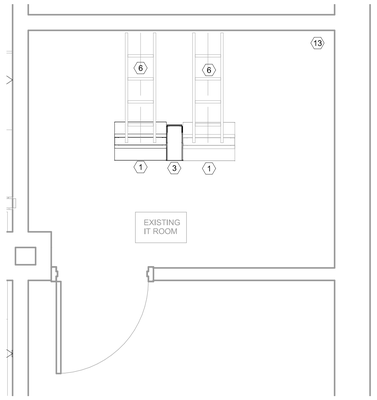
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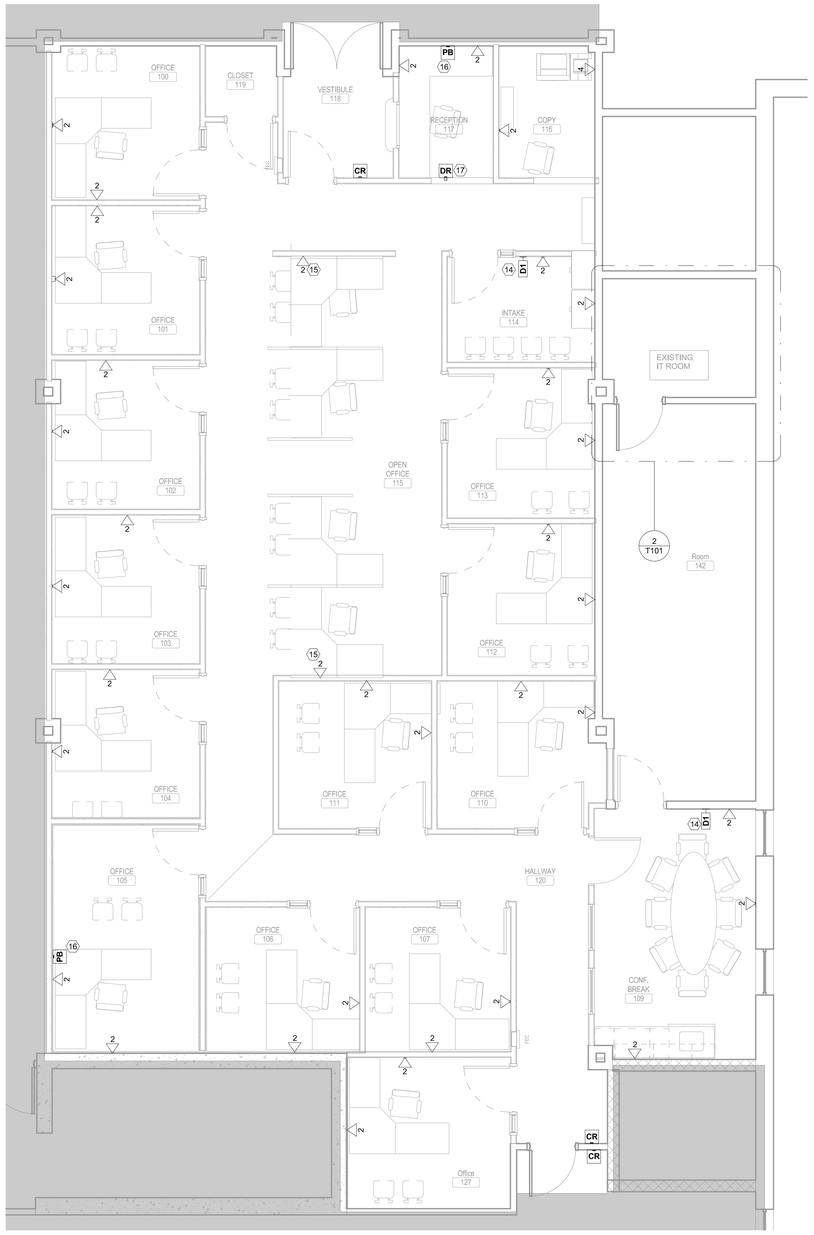
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TECHNOLOGY - KEYNOTES

1. 2-POST RACK, SECURED TO FLOOR WITH EXPANSION ANCHORS. FIRST RACK SHALL BE 6" FROM WALL. IF VERTICAL WIRE PRESENT BETWEEN RACK AND WALL THEN VERTICAL WIRE MANAGER ATTACHED TO WALL SIDE OF RACK SHALL BE 6" FROM WALL. (TYPICAL)
2. 4-POST RACK, SECURED TO FLOOR WITH EXPANSION ANCHORS. FIRST RACK SHALL BE 6" FROM WALL. IF VERTICAL WIRE PRESENT BETWEEN RACK AND WALL THEN VERTICAL WIRE MANAGER ATTACHED TO WALL SIDE OF RACK SHALL BE 6" FROM WALL. (TYPICAL)
3. 6" VERTICAL WIRE MANAGER SECURED TO SIDE OF RACK (TYPICAL)
4. 10" VERTICAL WIRE MANAGER SECURED TO SIDE OF RACK (TYPICAL)
5. GROUND BUS BAR, MOUNTED 6' AFF, ELECTRON PLATED AND PREDRILLED TO ACCEPT STANDARD TWO-HOLE LUGS.
6. 18"x2" LADDER RACK SECURED TO TOP OF RACK WITH LADDER RACK MOUNTING PLATE AND BOLTED TO WALL, WITH WATER FALLS INTO VERTICAL WIRE MANAGERS (TYPICAL)
7. 12"x4" CABLE TRAY (BASKET STYLE) WITH 6" CLEARANCE FROM WALL (TYPICAL)
8. 3/4" FIRED RATED PLYWOOD SECURED TO WALL AT 22" AFF. IF THE PLYWOOD IS PAINTED, THE PAINT SHALL BE FIRE RETARDANT PAINT ON BOTH SIDES AND THE RATING STAMP ON THE PLYWOOD SHALL BE EXPOSED.
9. (4) 4" CONDUIT SLEEVES STUBBED UP 4", FROM FLOOR BELOW, WITH UL-LISTED 2-HOUR RATED RE-ENTERABLE FIRE STOP SYSTEM.
10. (4) 4" CONDUIT SLEEVES STUBBED UP TO FLOOR ABOVE, WITH UL-LISTED 2-HOUR RATED RE-ENTERABLE FIRE STOP SYSTEM.
11. FIRESTOP SLEEVES, STI EZPATH OR HILTI SPEED SLEEVES.
12. SPACE RESERVED FOR TELEPHONE TERMINAL BLOCKS OR FRAME.
13. SPACE RESERVED FOR SECURITY PANELS.
14. CONTRACTOR TO PROVIDE CABLING FOR WALL MOUNTED TV PROVIDED AND INSTALLED BY OWNER.
15. CONTRACTOR TO PROVIDE DATA WHIP LONG ENOUGH TO BE ROUTED THROUGH MODULAR FURNITURE
16. CONTRACTOR SHALL PROVIDE SINGLE GANG J-BOX WITH 1/2" CONDUIT TO NEAREST ACCESSIBLE CEILING FOR FUTURE WIRING OF PANIC BUTTONS.
17. DOOR RELEASE BUTTON SHALL BE MOUNTED UNDER DESK KNEE SPACE. CONTRACTOR SHALL COORDINATE ROUTING OF WIRING FROM WALL BOX TO PLACEMENT OF THE DEVICE UNDER THE DESK WITH THE OWNER.



2 01-Tech-Level 1 - EXISTING IT ROOM
SCALE: 1/2" = 1'-0"



1 TECHNOLOGY - LEVEL ONE - FLOOR PLAN
SCALE: 1/4" = 1'-0"

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WILLIAMSON COUNTY

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TECHNOLOGY - LEVEL ONE

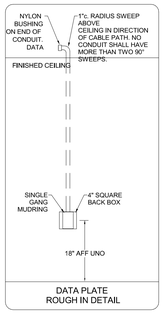
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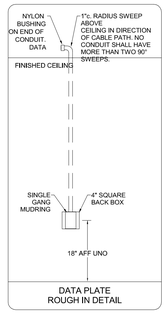
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GENERAL NOTE

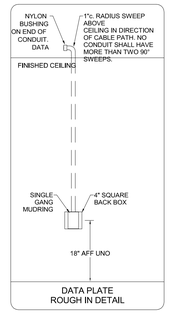
1. FACE PLATE DETAIL FOR OUTLET CONFIGURATION PURPOSES ONLY. CONTRACTOR TO SELECT TYPE OF FACE PLATE TO MATCH CONNECTIVITY HARDWARE, FLOOR BOX AND/OR MODULAR FURNITURE OPENING.



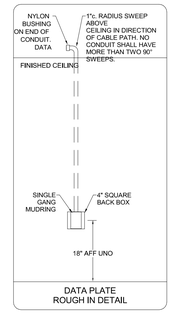
DATA PLATE ROUGH IN DETAIL



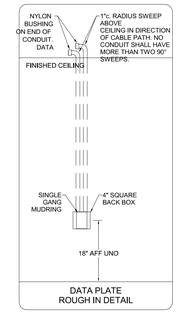
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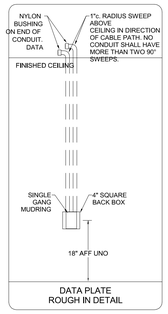
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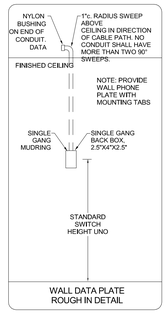
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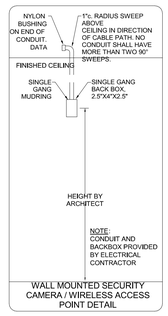
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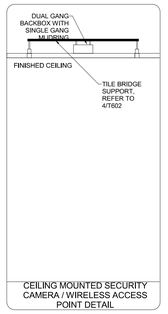
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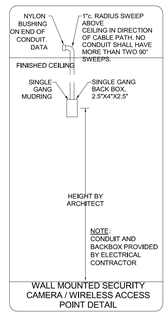
WALL DATA PLATE ROUGH IN DETAIL



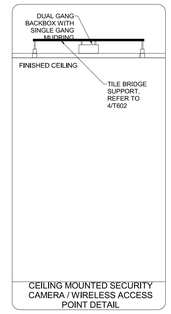
WALL MOUNTED SECURITY CAMERA / WIRELESS ACCESS POINT DETAIL



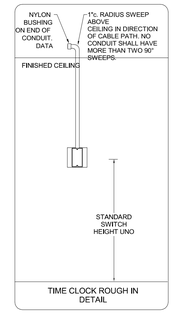
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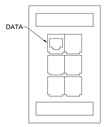
WALL MOUNTED SECURITY CAMERA / WIRELESS ACCESS POINT DETAIL



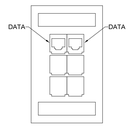
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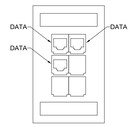
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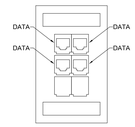
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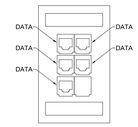
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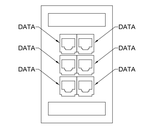
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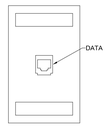
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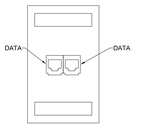
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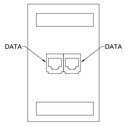
DATA WALL PLATE
6



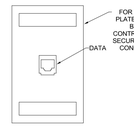
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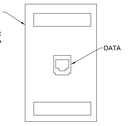
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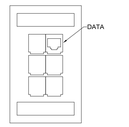
CEILING WIRELESS ACCESS POINT PLATE
AP



WALL CAMERA / WIRELESS ACCESS POINT PLATE
C



CEILING CAMERA / WIRELESS ACCESS POINT PLATE
C



DATA WALL PLATE

1 DATA ROUGH-IN DETAILS
SCALE: NS

NOTES:
RF DISTRIBUTION SHOULD ROUTE ALONG PERIMETER WALLS. DO NOT INSTALL IN CABLE TRAY.

BASKET TRAY PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR IN ALL AREAS EXCEPT IDFS AND MDF SPACES

2 CABLE TRAY LAYOUT
SCALE: NTS

3 TYPICAL CABLING SLEEVE
SCALE: NTS

4 CABLE PATHWAY CROSS SECTION
SCALE: NTS

5 DROPPED CEILING MOUNTING DETAIL
SCALE: NS

6 I-JOIST MOUNTING DETAIL
SCALE: NS

7 BAR JOIST MOUNTING DETAIL
SCALE: NS

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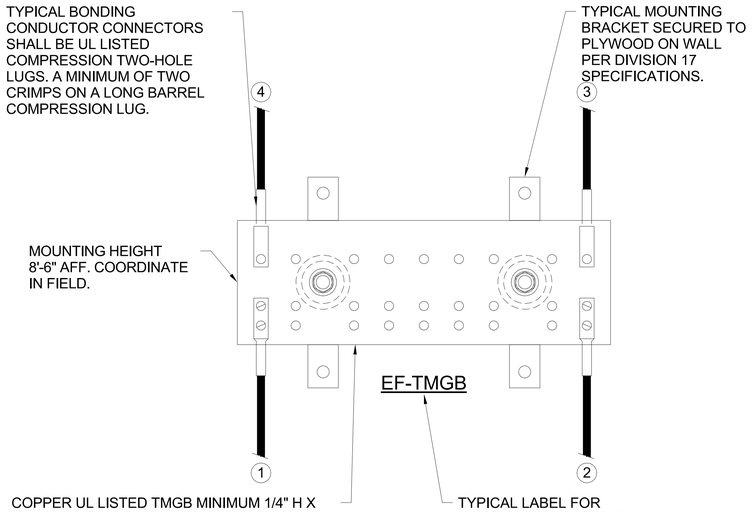
PROJECT NO.: 0000
ISSUE DATE 12/22/2016

TECHNOLOGY DETAILS

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BONDING CONDUCTOR SIZING CHART

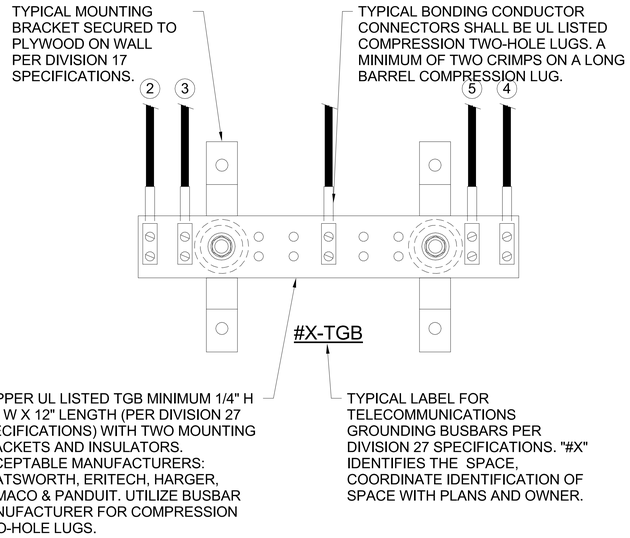
LENGTH (FEET)	SIZE (AWG)
LESS THAN (<) 13'	# 6
GREATER THAN (>) 13'	# 2

GROUNDING & BONDING GENERAL NOTES

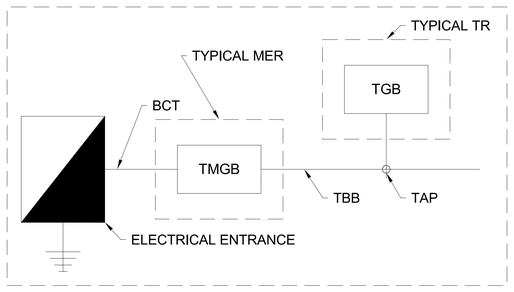
1. ELECTRICAL CONTRACTOR RESPONSIBILITY - TELECOMMUNICATION MAIN GROUNDING BUSBAR (TMGB), TELECOMUNICATION GROUNDING BUSBAR(S) (TGBS), AND THE BONDING CONDUCTORS TO THE BUILDING GROUNDING ELECTRODE, BUILDING STRUCTURAL STEEL, AND BONDING OF ALL TGBS TO THE TMGB SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. ALL GROUNDING OF OF EQUIPMENT, RACKS, CABINETS, AND DEVICES SHALL BE THE REPONSIBILITY OF THE DIVISION 27 TECHNOLOGY CONTRACTOR.
2. REFER TO GROUNDING AND BONDING DIVISION 27 SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. BONDING CONDUCTORS SHALL BE #3/0 AWG COLOR GREEN INSULATED COPPER CONDUCTOR OR SIZED PER "BONDING CONDUCTOR SIZING CHART" (ANSI J-STD-607-B) IN PATHWAY.
3. FASTENING BONDING CONNECTOR TWO -HOLE LUGS TO ALL BUSBARS SHALL BE CLEANED AND APPLY A COPPER ANTI-OXIDANT TO THE CONTACT AREA OF BOTH THE CONNECTOR LUG AND THE BUSBAR.
4. BONDING CONDUCTORS AND BUSBARS SHALL BE LABELED. WITH IDENTIFICATION IN ACCORDANCE WITH THE REQUIREMENTS OF ANSI/TIA/EIA-606-B.
5. BONDING CONDUCTORS SHALL BE LABELED WITH IDENTIFICATION LABEL NOTED BELOW AND SECURED WITH CABLE TIE TO EACH CONDUCTOR. (ANSI J-STD-607-B) "IF THIS CONNECTOR OR CABLE IS LOOSE OR MUST BE REMOVED, PLEASE CALL THE BUILDING TELECOMMUNICATIONS MANAGER".
6. DIVISION 27 CONTRACTOR SHALL PERFORM CONTINUITY TESTING MEASUREMENTS OF THE GROUNDING RESISTANCE TO NOT EXCEED 0.1 OHM BETWEEN:
   A. THE TMGB AND THE NEAREST GROUNDING ELECTRODE.
   B. THE TGB AND THE NEAREST GROUNDING ELECTRODE.
   C. EACH TGB AND THE PATHWAY(S), RACK(S), CABINETS(S) AND APPLICABLE EQUIPMENT.

GROUNDING & BONDING RISER DETAIL NOTES

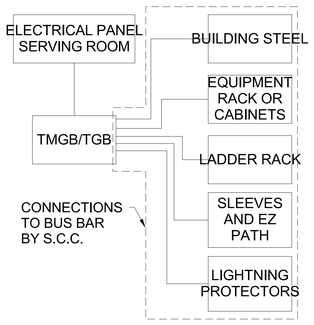
1. BONDING CONDUCTOR FOR TELECOMMUNICATIONS (BCT) TO BUILDING GROUNDING ELECTRODE. BCT SHALL NOT BE SMALLER THEN THE TBB.
2. BCT TO NEAREST BUILDING STEEL STRUCTURE. IF APPLICABLE UTILIZED EXOTHERMIC WELDING CONNECTION TO BUILDING STEEL.
3. TELECOMMUNICATIONS BONDING BACKBONE (TBB) FOR GROUNDING EQUIALIZER (GE), IF APPLICABLE.
4. TYPICAL TBB(S) THAT INTERCONNECTS ALL TGB(S) WITH THE TMGB.
5. BCT TO TELECOMMUNICATIONS CABLE RUNWAYS(S), RACK(S), CABINET(S) AND APPLICABLE EQUIPMENT. DAISY CHAINING OF BCT AT RELAY RACKS IS NOT ACCEPTABLE. EACH RACK IS TO HAVE A BCT TO A COMPRESSION LUG TAP TO DEDICATED HOMERUN ACT BACK TO THE TGB. SEE DETAILS.



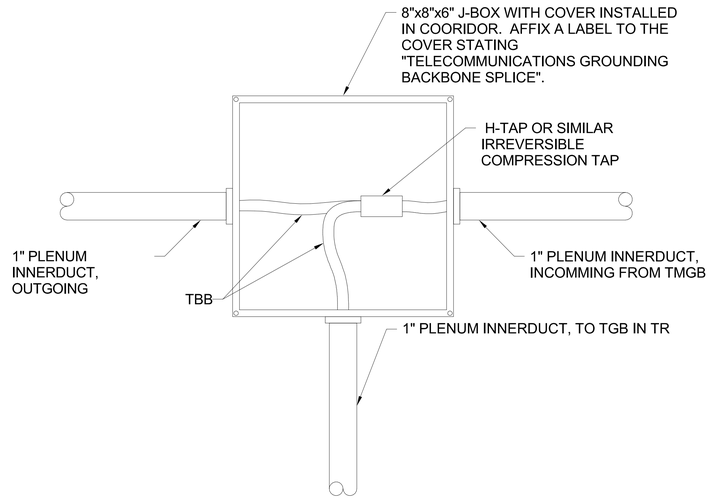
1 GROUNDING AND BONDING DETAIL
SCALE: NTS



2 TYPICAL GROUNDING FLOW DIAGRAM
SCALE: NTS



3 TELECOM ROOM BONDING DIAGRAM
SCALE: NTS



4 TELECOM BONDING BACKBONE SPLICE DETAIL
SCALE: NTS

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TECHNOLOGY DETAILS

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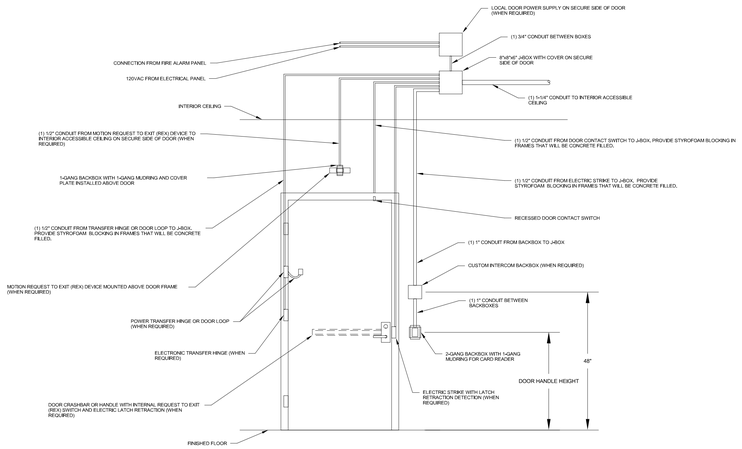
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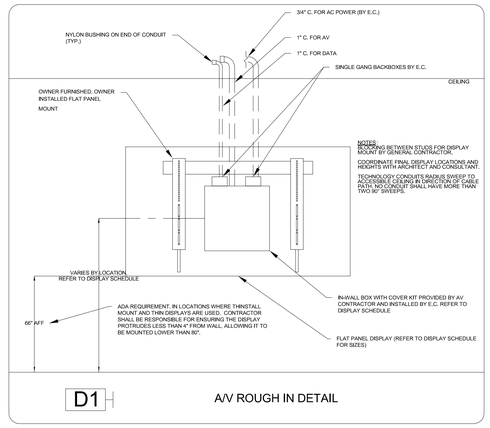
GENERAL NOTES:

1. DOOR DETAIL INDICATES DOOR HANDLE OR CRASHBAR ON SECURED SIDE OF DOOR FOR REFERENCE ONLY. REFER TO DOOR HARDWARE DIVISION SPECIFICATIONS FOR ADDITIONAL INFORMATION.

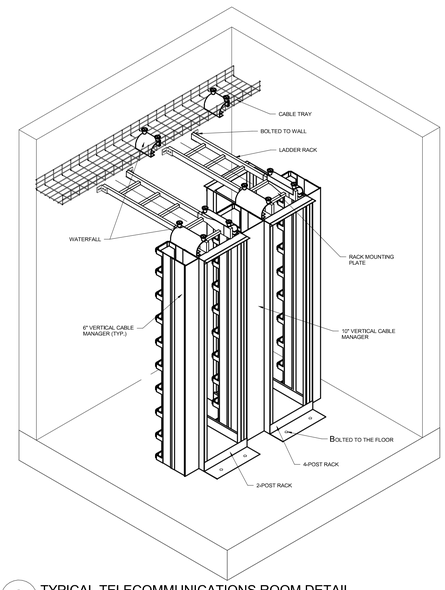
2. LOCK POWER WILL VARY DEPENDING ON LOCK TYPE AND DOOR HARDWARE. REFER TO SECURITY SCHEDULES FOR COORDINATED POWER REQUIREMENTS. CONTRACTOR SHALL CROSS REFERENCE WITH OFFICIAL DOOR HARDWARE SCHEDULE/SPECIFICATIONS TO CONFIRM FINAL REQUIREMENTS.



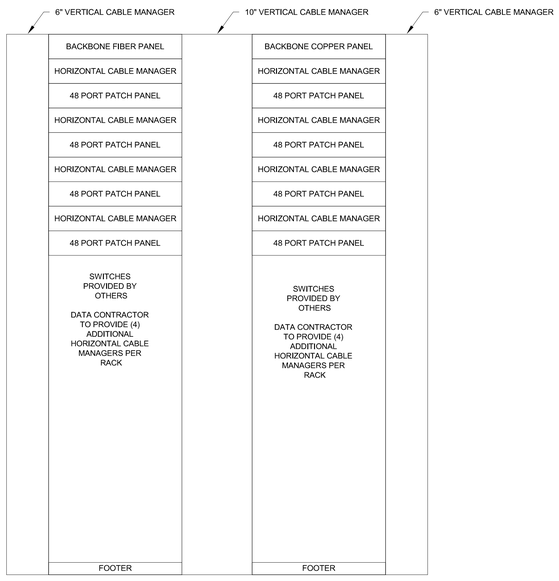
1 TYPICAL UNIVERSAL SINGLE DOOR ROUGH-IN DETAIL
SCALE: NTS



2 A/V ROUGH-IN DETAILS, PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE
SCALE: NTS



3 TYPICAL TELECOMMUNICATIONS ROOM DETAIL
SCALE: NTS



4 TYPICAL IDF RACK ELEVATION
SCALE: NTS

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PROJECT MANUAL - SPECIFICATIONS
VOLUME 1

Project No. 21604

Construction Documents Package

12/22/2016

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WILLIAMSON COUNTY
NORTH CAMPUS FACILITY



PROJECT NO.: 21604
DATE: 12/22/2016

VOLUME 1 OF 2
PROJECT MANUAL

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HCE ENGINEERS mechanical/electrical/plumbing engineers
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True North Consulting Group Acoustical Consultant
6807 Woodway Drive, Suite 3, Waco, Texas 76712 (512) 476-3464

BAI Acoustical Consultant
4006 Speedway, Austin, TX 78751 (512) 476-3464

JUSTICE CENTER - CSCD **MANUAL INDEX**
WILLIAMSON COUNTY VOLUME 1 OF 2

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DIVISION 1 - GENERAL REQUIREMENTS

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JUSTICE CENTER - CSCD **SECTION 01 11 00**
WILLIAMSON COUNTY **SUMMARY OF WORK**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to all Sections of these Specifications.

1.2 PROJECT/WORK IDENTIFICATION

A. All drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to all Sections of these specifications.

B. The Work included in this Contract consists of construction of approximately 2,600 gross square feet of shell build out in the Williamson County Justice Center. Work includes all general building construction, mechanical, plumbing, and electrical work. The general description of the project includes but is not limited to the following:

1. Suite build out
2. Interior finishes as per finish schedule

C. Indications on the Drawings or mention in the construction documents of articles, materials, operations, or methods require that the Contractor or his Subcontractors provide each item indicated or mentioned of the quality or subject to the qualifications noted.

D. Perform, according to conditions stated, each operation described; and provide, therefore, all necessary labor, equipment, services and incidentals required for the execution of the Work.

1.3 RELATED SECTIONS

A. Refer to Section 01 29 00 - Application for Payment for procedures for submitting the application for Payment.

B. Refer to Section 01 33 00 - Submittals for procedures and requirements of submittals.

C. Refer to Section 01 25 00 - Products and Substitutions for procedures and allowable times to request for substitution of new products.

D. Refer to Section 01 77 00 - Project Closeout for procedures for keeping record drawings during construction and for submitting final closeout documents including warranties, operation and maintenance manuals, submittals, record drawings, etc.

1.4 WORK SEQUENCE

A. The existing facility will remain open and functioning during construction. All work shall be phased so as to not interfere with operations in the existing building.

B. Interruption of utilities shall be coordinated with the Owner at least 48 hours prior to needed interruption. Work shall be performed after operation hours or on weekends when required.

1.5 CONTRACTOR USE OF PREMISES

A. General: Limit use of the premises to construction activities in areas indicated; allow for Owner occupancy and use by the public.

1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.

2. Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees and the public, at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

B. Use of the Existing Building: Maintain the existing building in a weather-tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1.6 OCCUPANCY OF BUILDING

A. Where construction penetrates the existing building and will cause disruption of operations, work shall be scheduled and coordinated with the Owner.

B. During the entire period of construction, protection shall be provided for employees and the general public and the building shall be protected from damage.

C. Required shut down of any utilities shall be scheduled and coordinated with the Owner so as not to disrupt operations.

D. Required fire exits from the existing building shall be maintained, accessible, and clear at all times that the building is occupied.

E. Areas of construction shall be secured so that they are inaccessible to employees or the general public.

F. Where the existing building is opened for additions, temporary protection from weather and the elements shall be provided to protect interior from damage.

1.7 RECORD DOCUMENTS

A. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Where Shop Drawings are used for changes, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to

measure and record at a later date. Keep set updated weekly and review set with Architects representative at each site visit.

1. Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect's reference during normal working hours.
2. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
3. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.
4. Note related change-order numbers where applicable.
5. Include all changes generated from Requests for Information (RFI's) and supplemental drawings.
6. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
7. At completion of project submit the complete set of blue-line prints, including plans, details and specifications of Architectural, Structural, Plumbing, Mechanical and Electrical, as required in Section 01 77 00, Project Closeout.
8. At contractor's option, Record Drawings may be maintained electronically and turned over to the Owner & Architect in .pdf format.

B. Record Specifications: Maintain one complete copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.

1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
3. Note related record drawing information and Product Data.
4. At contractor's option, Record Specifications may be maintained electronically and turned over to the Owner & Architect in .pdf format.

1.8 SALVAGED MATERIALS TO BE REUSED

A. Refer to Section 02 41 19 for items to be salvaged and reinstalled.

B. Coordinate, with County Project Manager, any items to be maintained for future use.

1.9 LAYING OUT WORK, MEASUREMENTS, LEVELS AND SURVEYS

A. The General Contractor shall establish and maintain all lines and levels and shall be responsible for the accuracy thereof.

B. Other contractors shall lay out their work and be responsible therefore. All measurements at the building shall be verified and no extra compensation will be allowed on account of difference between actual dimensions and dimensions on the Drawings.

C. Before ordering any materials or doing any work, each Contractor shall verify all measurements at the building and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of differences between actual dimensions and the measurements indicated on the Drawings. Any difference that may be found shall be submitted to the Architect for consideration before proceeding with the work.

1.10 HAZARDOUS MATERIALS

A. Non Use of Hazardous Materials: The Contractor shall not use asbestos, or products containing toxic or hazardous materials, including but not limited to asbestos, PCB's, or lead on this Project. The Contractor shall use only lead free pipe solder and flux on this Project. See certification letter requirements in Section 01 33 00 - Submittals.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 01 25 00**
WILLIAMSON COUNTY **PRODUCTS AND SUBSTITUTIONS**

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. Definitions: Definitions used in this paragraph are not intended to negate the meaning of other terms used in the Contract Documents, including such terms as, "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction" and similar terms. Such terms are self-explanatory and have recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, regardless of whether they were specifically purchased for the project or taken from the Contractor's previously purchased stock. The term "product" as used herein includes the terms "material", "equipment", "system" and other terms of similar intent.

2. "Named Products" are products identified by use of the manufacturer's name for a product, including such items as a make or model designation, as recorded in published product literature, of the latest issue as of the date of the Contract Documents.

3. "Materials" are products that must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form units of work.

4. "Equipment" is defined as a product with operational parts, regardless of whether motorized or manually operated, and in particular, a product that requires service connections such as wiring or piping.

B. Substitutions: Requests for changes in the products, materials, equipment and methods of construction required by the Contract Documents are considered requests for "substitutions", and are subject to the requirements specified herein. The following are not considered as substitutions:

1. Revisions to the Contract Documents, where requested by the Owner, Architect or Engineer are considered as "changes" not substitutions.
2. Specified Contractor options on products and construction methods included in the Contract Documents are choices available to the Contractor and are not subject to the requirements for substitutions as herein specified.
3. Except as otherwise provided in the Contract Documents, the Contractor's determination of and compliance with governing regulations and orders as issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders.

1.2 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same generic kind, from a single source, for each unit of work.

1. When it is discovered that specified products are available only from sources that do not or cannot produce an adequate quantity to complete project requirements in a timely manner, consult with the Architect/Engineer for a determination of what product qualities are most important before proceeding. The Architect/Engineer will designate those qualities, such as visual, structural, durability, or compatibility, that are most important. When the Architect/Engineer's determination has been made, select products from those sources that produce products that possess the most important qualities, to the fullest extent possible.

B. Compatibility of Options: Compatibility of products is a basic requirement of product selection. When the Contractor is given the option of selecting between two or more products for use on the project, the product selected must be compatible with other products previously selected, even if the products previously selected were also Contractor options. The complete compatibility between the various choices available to the Contractor is not assured by the requirements of the Contract Documents, but must be provided by the Contractor.

1.3 SUBSTITUTION REQUEST

A. Only during Bidding will written Request for Substitutions will be considered except as noted below in paragraph “B.”. Written requests must be submitted on the "Request for Substitution Form (For substitutions prior to bidding)" at the end of this Section. Substitution requests made during the bidding period must be submitted in writing to Architect 10 days prior to bid date. Substitutions requested during the bidding period, which have been accepted prior to the Contract Date, are included in the Contract Documents by Addendum.

1. Request for Substitution submitted prior to bidding must include the following:

a. Complete data substantiating compliance of proposed substitution with Contract Documents.
(1) Product identifications, including manufacturer's name and address.
(2) Manufacturer's literature including product description, performance and test data, and reference standards.
(3) Name and address of similar projects on which product was used and date of installation.

b. Itemized comparison of proposed substitution with product or method specified.
c. A statement setting forth changes in other materials, equipment, or other portions of the Work including changes in the work of other contracts that incorporation of the proposed substitution would require shall be included. The burden of proof of the merit of the proposed substitution is upon the Contractor.

B. After date of Contract, the Owner may consider formal requests from Contractor for substitution of products in place of those specified when submitted in accordance with the requirements of this Section.

1. **One or more of the following conditions must also be documented.** Written requests must be submitted on the "Request for Substitution Form (For substitutions during construction)" at the end of this Section.

a. The substitution must be required for compliance with interpretation of code requirements or insurance regulations.
b. The substitution must be due to the unavailability of the specified products, through no fault of the Contractor.
c. The substitution may be requested when subsequent information discloses the inability of the specified products to perform properly or to fit in the designated space.
d. The substitution may be due to the manufacturer's or fabricator's refusal to certify or guarantee performance of the specified product as required.
e. The substitution may be requested when it is clearly seen, in the judgement of the Architect/Engineer, that a substitution would be substantially to the Owner's best interest in terms of cost, time or other considerations.

2. Request for Substitution submitted after contract is signed indicates that the Manufacturer, Subcontractor or Contractor makes the following representations.
   a. They have personally investigated proposed product and insure that it is acceptable or superior in all respects to that specified.
   b. They will provide the same guarantee for substitution as for product specified, and that substitution will not adversely effect any related specified products guarantee.
   c. They will coordinate installation of accepted substitution into Work, making such changes as required for Work to be completed in all respects as originally specified.
   d. They waive all claims for additional costs related to substitution which consequently become apparent.
   e. They have included accurate cost data on proposed substitution in comparison with products or method specified and date relating to changes in construction schedule.
   f. Cost data is complete and includes all related costs under the Contract, but excludes:

      (1) Cost under separate Contracts.
      (2) Design consultant's redesign.

C. Substitutions will not be considered if:

1. They are indicated or implied on Shop Drawings or Product Data submittals without request.
2. Acceptance will require substantial revision of Contract Documents.

PART 2 - PRODUCTS

2.1 GENERAL PRODUCT COMPLIANCE

A. General: Requirements for individual products are indicated in the Contract Documents; compliance with these requirements is in itself a contract requirement. These requirements may be specified in any one of several different specifying methods, or in any combination of these methods. These methods include the following:

1. Proprietary
2. Descriptive
3. Compliance with Reference Standards.
4. Compliance with codes, compliance with graphic details, allowances, and similar provisions of the Contract Documents.

B. Procedures for Selecting Products: The Contractor's options in selecting products are limited by requirements of the Contract Documents and governing regulations. They are not controlled by industry traditions or procedures experienced by the Contractor on previous construction projects. Required procedures include the following for the various indicated methods of specifying:

1. Proprietary and Semiproprietary Specification Requirements:

   a. Proprietary Specification: Where only a single product or manufacturer is named, provide the product indicated, unless the specification indicates possible consideration of other products. Advise the Architect/Engineer before proceeding, when it is discovered that the named product is not a reasonable or a feasible solution.

b. Semiproprietary Specification: Where two or more products or manufacturers are named, provide one of the products named, at the Contractor's option. Exclude products that do not comply with specification requirements. Do not provide or offer to provide an unnamed product, unless the specification indicates possible consideration of Aacceptable substitutions@. Advise the Architect/Engineer before proceeding where none of the named products comply with specification requirements, or are feasible for use.

2. Descriptive Specification Requirements: Where the specifications describe a product or assembly generically, in detail, listing the exact characteristics required, but without use of a brand or trade name, provide products or assemblies that provide the characteristics indicated and otherwise comply with contract requirements.

C. Compliance with Standards, Codes and Regulations: Where the specifications require only compliance with an imposed standard, code or regulation, the Contractor has the option of selecting a product that complies with those standards.

D. Visual Matching: Where matching an established sample is required, the final judgement of whether a product proposed by the Contractor matches the sample satisfactorily will be determined by the Architect. Where there is no product available within the specified product category that matches the sample satisfactorily and also complies with other specified requirements, comply with the provisions of the Contract Documents concerning "substitutions" and "change orders" for the selection of a matching product in another product category, or for non-compliance with specified requirements.

E. Visual Selection: Where specified product requirements include the phrase "....as selected from the manufacturer's standard colors, patterns, textures...." or similar phrases, the Contractor has the option of selecting the product and manufacturer, provided the selection complies with other specified requirements. The Architect is subsequently responsible for selecting the color, pattern and texture from the product line selected by the Contractor.

F. Allowances: Refer to individual sections of the specifications and "Allowance" provisions in Division 1 sections for an indication of product selections that are controlled by established allowances, and for the procedures required for processing such selections.

2.2 GENERAL PRODUCT REQUIREMENTS

A. Provide products that comply with the requirements of the Contract Documents and that are undamaged and unused at the time of installation. Provide products that are complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. General: Except as otherwise indicated in individual sections of these specifications, comply with the manufacturer's instructions and recommendations for installation of the products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other work. Clean exposed surfaces and protect surfaces as necessary to ensure freedom from damage and deterioration at time of acceptance.

END OF SECTION.

REQUEST FOR SUBSTITUTION FORM

(For Substitutions Prior to Bidding)

Project Name:_____ Date: _____
Architects Project Number:_____

To: BLGY, Inc. Tel: (512) 977-0390
2204 Forbes Drive, Suite 101 Fax: (512) 977-0838
Austin, Tx. 78754

Specification Title: _____ Product:_____
Specification Section: _____

Proposed Substitution:_____ Model No._____
Manufacturer's Name:_____ Tel:_____
Manufacturer's Address:_____ Fax:_____
Description of Product:_____

History of Product ☐ New product ☐ 2-5 years old ☐ 5-10 years old ☐ More than 10 years old

Product Comparison	Specified Product	Proposed Substitution Product
Name or Brand		
Warranty		
Finish		
List Variations		

Attached data includes manufacturer's literature, product description, performance and test data, specifications, and reference standards for evaluation of request.

Attached data also includes the names, addresses, and telephone numbers of contact persons of similar projects on which product was used and date of installation.

Supporting Data Attached: ☐ Product Data ☐ Drawings ☐ Tests ☐ Reports ☐ Samples ☐ __

The undersigned certifies the following:

1. The substitution has been fully investigated and determined to be acceptable or superior in all respects to that specified.
2. The warranty for the substitution is the same as for the specified product.
3. The substitution will have no adverse effects on other trades, dimensions or functional clearances.

Submitted by: _____

Signed by: _____

Firm Name: _____ Address:_____

REQUEST FOR SUBSTITUTION FORM

(For Substitutions During Construction)

Project Name:_____ Date: _____
Architect's Project Number:_____

To: BLGY, Inc. Tel: (512) 977-0390
2204 Forbes Drive, Suite 101 Fax: (512) 977-0838
Austin, Tx. 78754

Specification Title: _____ Product:_____
Specification Section: _____

Proposed Substitution:_____ Model No._____
Manufacturer's Name:_____ Tel: _____
Manufacturer's Address:_____ Fax:_____
Description of Product:_____

History of Product: □ New product □ 2-5 years old □ 5-10 years old □ More than 10 years old

Product Comparison	Specified Product	Proposed Substitution
Manufacturer:		
Delivery Time:		
Material Type & Thickness:		
Finish:		
Operation:		

Cost to Owner (Submit itemized breakdown): Add:_____ Deduct:_____

Supporting Data Attached: □ Product Data □ Drawings □ Tests □ Reports □ Samples
□ Itemized Cost Breakdown _____

Reason for not providing specified item: _____

Proposed substitution affects other parts of Work: □ No □ Yes; explain _____

Similar installation in local area:

Project: _____ Architect:_____Phone:_____
Address: _____ Owner: _____Phone:_____
_____

Date Installed: _____

The Undersigned certifies:

- The substitution has been fully investigated and determined to be acceptable or superior in all respects to the specified product.
- The same guarantee will be provided for the substitution as for product specified, and that substitution will not adversely affect any related specified products guarantee.
- We will coordinate installation of accepted substitution into Work, making such changes as may be required for Work to be completed in all respects as originally specified.
- Maintenance service and replacement parts are available in the local area of the project.
- We waive all claims for additional costs related to substitution which subsequently become apparent.
- Cost data is complete and includes all related costs under the Contract.
- Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.
- Payment will be made to the Owner for all changes to building design, including A/E re-design, detailing, and additional construction costs caused by the substitution.

Submitted by: _____
Signature: _____
Firm: _____
Address: _____
Tel: _____
Fax: _____

A/E's REVIEW AND ACTION

- o Substitution approved - Make submittals in accordance with Specification Section 01300.
- o Substitution approved as noted - Make submittals in accordance with Specification Section 01300.
- o Substitution rejected - Use specified materials.

Signed By: _____ Date: _____

Comments By: □ Architect □ Contractor □ Subcontractor □ Supplier

_____
_____
_____
_____
_____

JUSTICE CENTER - CSCD **SECTION 01 29 00**
WILLIAMSON COUNTY **APPLICATION FOR PAYMENT**

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

1. Coordinate the Schedule of Values and Applications for Payment with the Architect.

1.2 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

1. Submit the Schedule of Values to the Architect at the earliest possible date but no later than 7 days before the date scheduled for submittal of the initial Applications for Payment.
2. Sub-schedules: Where Work is separated into phases requiring separately phased payments, provide sub-schedules showing values correlated with each phase of payment.

B. Format and Content: Format for the Schedule of Values will be the same as the Applications for Payment, as identified in this Section.

1. Use the Project Manual table of contents as a guide to establish the line items for the Schedule of Values. Provide separate labor and material line items for each Specification Section.

2. Identification: Include the following Project identification on the Schedule of Values:

a. Project name and location.
b. Name of the Architect.
c. Project number.
d. Contractor's name and address.
e. Date of submittal.

3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.

a. Provide sub-total for each group of subcontract line items.

4. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.

a. Differentiate between items stored on-site and items stored off-site. Include requirements for insurance and bonded warehousing, if required.
b. Provide a separate line item for cost of “Trench Excavation Safety Protection” for all trenches over 5'-0" deep.

6. Provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

7. Margins of Cost: Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.

    a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at the Contractor's option.

1.3 APPLICATIONS FOR PAYMENT

A. Payment-Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment or a computer generated form using the same format as above.

B. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.

1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

C. Payment-Application Times: Each progress-payment date shall be established in the Pre-construction meeting. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application. Include each Change Order as a separate line item, or multiple line items, at the bottom of the Application for Payment.

E. Submit one (1) copy of the Application for Payment to the Architects field representative prior to the monthly meeting for his review. The Architects field representative will verify percentage of construction completed and discuss any discrepancies encountered during the meeting.

1. Application for Payment shall be modified as agreed upon in the meeting. Submit 3 signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall be complete, including invoices, waivers of lien and similar attachments, when required.

2. Transmit copies with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.

3. At contractor's option, a single signed notarized copy of the application for payment may be sent to the architect in pdf format.

F. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics liens from subcontractors, sub-subcontractors and suppliers for the construction period covered by the previous application.

1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit waivers of lien on forms, and executed in a manner acceptable to the Owner.

G. Initial Application for Payment: Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment, include the following:

1. List of subcontractors and list of principal suppliers and fabricators.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Schedule of unit prices.
5. Copies of building permits and copies of authorizations and licenses from governing authorities for performance of the Work.
6. Report of preconstruction meeting.
7. Certificates of insurance and insurance policies.
8. Performance and payment bonds.

H. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.

1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
2. Administrative actions and submittals that shall precede or coincide with this application include:

    a. Occupancy permits and similar approvals.
    b. Warranties (guarantees) and maintenance agreements.
    c. Test/adjust/balance records.
    d. Maintenance instructions and startup performance reports.
    e. Meter readings.
    f. Changeover information related to Owner's occupancy, use, operation, and maintenance and advice on shifting insurance coverages
    g. Final cleaning.
    h. Submittal of completed AIA forms G706 (Affidavit of Payment of Debts and Claims), G706A (Affidavit of Release of Liens), and G707 (Consent of Surety Company to Final Payment).
    i. Application for reduction of retainage.
    j. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

I. Final Payment Application: Administrative actions and submittals that must **precede** or coincide with submittal of the final Application for Payment include the following:

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Ensure that unsettled claims will be settled.

4. Ensure that incomplete Work that is not accepted, will be completed without undue delay.
5. Transmittal of required Project construction records to the Owner.
6. Proof that taxes, fees, and similar obligations were paid.
7. Removal of temporary facilities and services.
8. Removal of surplus materials, rubbish, and similar elements.
9. Change of door locks to Owner's access.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 01 31 19**
WILLIAMSON COUNTY **PROJECT MEETINGS**

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:

1. Preconstruction conferences.
2. Pre-installation conferences.
3. Progress meetings.
4. Coordination meetings.

B. The following Sections contain requirements that relate to this Section:

1. Section - "Submittals," for submitting the Contractor's Construction Schedule.

1.2 PRECONSTRUCTION CONFERENCE

A. Schedule a preconstruction conference before starting construction, at a time convenient to the Owner and the Architect, but no later than 10 days after execution of the Agreement. Hold the conference at the Project Site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

B. Authorized representatives of the Owner, Architect, and their consultants; the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect progress, including the following:
1. Designation of responsible personnel from each project team member.
2. Coordination and interface with Owner’s personnel and operations
3. Submittal of Shop Drawings, Product Data, and Samples.
4. Procedures and forms for processing field decisions and Change Orders.
5. Procedures and forms for processing Applications for Payment.
6. Preparation of record documents.
7. Scheduling of progress meetings
8. Working hours.
9. Use of the premises.
10. Parking availability.
11. Office, work, and storage areas.
12. Equipment deliveries and priorities.
13. Security.
14. Housekeeping.
15. Tentative construction schedule.
16. Critical work sequencing.

1.3 PRE-INSTALLATION CONFERENCES

A. Conduct a pre-installation conference at the Project Site before each construction activity that requires coordination with other construction.

B. The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect of scheduled meeting dates.

C. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for the following:

1. Contract Documents.
2. Related Change Orders.
3. Deliveries.
4. Shop Drawings, Product Data, and quality-control samples.
5. Review of mockups.
6. Possible conflicts.
7. Time schedules and weather limitations.
8. Manufacturer's recommendations.
9. Warranty requirements.
10. Compatibility of materials and acceptability of substrates.
11. Temporary facilities.
12. Space and access limitations.
13. Governing regulations.
14. Inspecting and testing requirements.
15. Required performance results.
16. Recording requirements.
17. Protection.

D. Record significant discussions and agreements and disagreements of each conference, and the approved schedule. Promptly distribute the record of the meeting to everyone concerned, including the Owner and the Architect.

E. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.4 PROGRESS MEETINGS

A. Conduct monthly progress meetings at the Project Site at regular intervals. Notify the Owner and the Architect of scheduled meeting dates. Coordinate dates of meetings with preparation and processing of the payment request.

B. In addition to representatives of the Owner and the Architect, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Review and/or approve correct minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.

D. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.

E. Review the present and future needs of each entity present, including the following:

1. Sequences of construction in progress.

2. Status of submittals.
3. Status of Requests for Information
4. Status of Change Proposals and status of Change Orders
5. Application for Payment (at end of month meetings)
6. Deliveries.
7. Off-site fabrication problems.
8. Access and site utilization.
9. Temporary facilities and services.
10. Hours of work.
11. Hazards and risks.
12. Housekeeping.
13. Quality and work standards.
14. Documentation of information for payment requests.

F. No later than 3 days after each meeting, distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

G. Revise the Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

1.5 COORDINATION MEETINGS

A. Conduct project coordination meetings at regular intervals convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special pre-installation meetings.

B. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.

C. Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 01 33 00**
WILLIAMSON COUNTY **SUBMITTALS**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:

Administrative Submittals Schedule	Shop Drawings
Material Safety Data Sheets (MSDS)	Product Data
Contractor's construction schedule	Samples
Close-out Documents	

1.2 ADMINISTRATIVE SUBMITTALS

A. Certificates of Insurance and Performance and Payment Bonds which are required in these specifications shall be submitted to the Architect within 10 calendar days after award of Contract.

B. List of Subcontractors and a Schedule of Values shall be submitted within 21 calendar days after Notice to Proceed.

1.3 SUBMISSION REQUIREMENTS

A. Submit all documents/data required by this specification sufficiently in advance of construction activity, to allow for review, fabrication and delivery, so as not to delay the construction schedule. See individual sections of specifications for detail on required submittals.

B. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

C. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Number of Submittals Required

1. Shop Drawings: One (1) set of reproducible transparencies and minimum of four (4) sets of opaque prints to the Architect. (Reproduction media of Contract Documents are not to be used in the preparation of shop drawings and will not be accepted.)
2. Product/Equipment Data: Minimum of five (5) copies of manufacturer's illustrated literature.
3. Samples: Number stated in each specification section.
4. Samples for color selection: Minimum of two (2) complete sets.
5. One complete set of submittals, bearing the stamp and signature of the Contractor and the Architect shall be retained by the Contractor and turned over to the Owner at the completion of the Project.
6. At contractor's option, single electronic .pdf format documents may be submitted for Product/Equipment data and Shop Drawings, in lieu of paper copies.

E. Content of Submittals
1. Project title and number.
2. Date of submission.
3. Applicable Submittal Number, including the Specification Section number, in a format to be established at the Pre-Construction Conference.
4. Name of sub-contractor or supplier submitting the information.

5. Identification of specific products or other pertinent data being submitted underlined or circled in red, or highlighted in yellow.
6. The General Contractor shall review (and mark, if necessary) all submittals prior to sending them to the Architect, then stamp them with a stamp that certifies his review and verification of materials, field measurements and field construction criteria and that he has checked and coordinated the information contained in the submittal. Stamp shall be signed by the contractor. Documents not reviewed, stamped and signed by the General Contractor will be rejected.
7. The Contractor and/or sub-contractor shall include, with his submittal, written notice of any variations or deviations from the contract drawings or specifications.

F. Architect's Review: Allow an average of 21 calendar days following receipt in the Architect's office of an acceptable submittal for the Architect's review.

G. Review and approval of submittals, by the Architect or Owner, does not relieve the Contractor from compliance with the contract documents.

1.4 ELECTRONIC MEDIA

A. The Architect will provide electronic backgrounds of the floor plans to the General Contractor, upon receipt of the indemnity letter at the end of this section, signed by the Contractor.

1. Documents will be provided on the Architect's standard software used to develop the plans.
2. Electronic documents shall be read only documents and the title blocks shall be removed.
3. Documents shall be used strictly for the development of submittals for this project.
4. **Electronic media will be provided only to the General Contractor. The General Contractor will be responsible for providing to Sub-contractors.**

1.5 SHOP DRAWINGS

A. Completely detail and dimension shop drawings of all items of equipment and materials as required by these specifications. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents.

B. Furnish shop drawings for field-fabricated items whenever called for by the specification, when subsequently requested by the Architect, or where required by the job conditions to clear up a point of reference. Shop Drawings shall show:

Dimensions
Identification of products and materials included
Compliance with specified standards
Notation of coordination requirements
Notation of dimensions established by field measurement

C. All marks by the General Contractor shall be in a color other than in red and shall be accompanied by the individuals initials. **If it becomes apparent to the Architect that the General Contractor has not review the submittal, it will be returned without review by the Architect and the General Contractor shall review it and re-submit.**

D. The Contractor shall pay for all prints of this shop drawing procedure.

E. Color Selections: No color selections will be made until all submittals requiring color selection are in the Architect's office. Allow 30 calendar days, following the Architect's acknowledgment that all color selection items have been submitted, for preparation and Owner's approval of a color schedule.

1.6 PRODUCT AND EQUIPMENT DATA

A. Furnish illustrated brochures displaying the kinds and types of fixtures, devices and equipment proposed for use.

B. Clearly indicate which products and data are proposed, by use of a thick felt-tip or similar pen, or by X-ing out all non proposed items. In case of multiple items to be used, indicate location proposed by each item.

C. Show performance characteristics or capabilities, dimensions and clearances required and wiring or piping diagrams and controls.

D. Modify manufacturer's standard drawings and diagrams to delete or supplement information as required.

E. Provide Material Safety Data Sheets (MSDS) sheets, with product data, on all products to be used in the project.

1.7 SAMPLES

A. Provide two (2) samples of all products that require a color selection. Provide samples to clearly illustrate the following:

1. Functional characteristics of the product, with integrally related parts and attachment devices.
2. Full range of color, texture and pattern on the material to which they will be applied. Photographs or paper replicas of colors will not be acceptable.

1.8 CONTRACTOR'S STAGING PLAN

A. At the Pre-construction Conference, submit a staging plan indicating such information as the following:

1. Location of Field Office
2. Entrances and exits to the site that will be used.
3. Location of construction employee parking.
4. Primary locations of major equipment and working areas.
5. Location of temporary fences.

1.9 SCHEDULE

A. Schedule: Prepare a fully developed construction schedule using the network analysis diagram system known as the Critical Path Method (CPM) Submit within 14 days after the date established for "Commencement of the Work."

1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week.
2. Prepare the schedule on a sheet, or series of sheets, of sufficient width to show data for the entire construction period.
3. Train and inform key project personnel, including sub-contractors, in the proper methods of providing time commitments for performing critical elements of the

Work. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.

4. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
5. Indicate Substantial Completion on the schedule to allow approximately two weeks for the Architect's procedures necessary for certification of Substantial Completion.

B. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.

C. Distribution: Following response to the initial submittal, distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project temporary field office.

D. Schedule Updating: Establish procedures for monitoring and updating the CPM schedule and for reporting progress; coordinate procedures with progress meeting and payment request dates. Use “five working days” as the unit of time. Issue the updated schedule concurrently with Request for Payment, each month.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

AGREEMENT WITH REGARD TO RELEASE OF ELECTRONIC (CADD) FILES

At your request, BLGY Inc. will provide electronic files for your convenience and use in the preparation of shop drawing related to Williamson Count North Campus Facility, subject to the following terms and conditions:

BLGY makes no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced specifications.

The undersigned further agrees not to use, or allow to be used by others, these drawings and data, in part or in whole, for any purpose or project other than the project which is the subject as noted below. Any other use or reuse by the undersigned or by others, will be at your sole risk of the undersigned and without liability or legal exposure to BLGY. The undersigned agrees to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against BLGY, its officers, directors, employees, agents or sub-consultants which may arise out of or in connection with your use of the electronic files.

In addition, the undersigned agrees, to the fullest extent permitted by law, to indemnify and hold BLGY harmless from all claims, damages, losses, liability, or costs, including attorney's fees arising out of or resulting from your use of these electronic files.

These electronic files are not contract documents. Significant differences may exist between these electronic files and corresponding hard copy contract documents due to addenda, change orders or other revisions. BLGY makes no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed contract documents prepared by BLGY and electronic files, the signed contract documents shall govern. In the event that a conflict arises between the signed contract documents prepared by BLGY and electronic files, the signed contract documents shall govern. The undersigned is responsible for determining if any conflict exists. By use of electronic files, the undersigned is not relieved of its duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate his work with that of other contractors for the project.

Because of the potential that the information presented on the electronic files can be modified, unintentionally or otherwise, BLGY reserves the right to remove all indication of its ownership and/or involvement from each electronic display.

A service fee of $50 (fifty dollars) shall be remitted to BLGY prior to delivery of the electronic files.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by BLGY and BLGY makes no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall BLGY be liable for any loss of profit or any consequential damages.

All terms and conditions above are hereby agreed to and accepted in their entirety as a condition of receipt of the referenced CADD file.

Project for which electronic files are to be used is: _____

Company Name: _____

Signature: _____

Printed Name: _____

Date: _____

JUSTICE CENTER - CSCD **SECTION 01 42 19**
WILLIAMSON COUNTY **REFERENCE STANDARDS AND DEFINITIONS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. Indicated: The term "indicated" refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help the reader locate the reference; no limitation on location is intended.

C. Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean "directed by the Architect," "requested by the Architect," and similar phrases.

D. Approve: The term "approved," where used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

E. Regulation: The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."

G. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."

H. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."

I. Not In Contract: Items indicated on Drawings as "NIC" or noted "Not In Contract" are shown for convenience only and are not a part of the Contractor's work unless specifically indicated.

J. Installer: An "Installer" is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term "experienced," when used with the term "Installer," means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.

2. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

K. Project Site is the space available to the Contractor for performance of construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

L. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT CONTENT EXPLANATION

A. Specification Content: This Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language: Language used in Specifications and other Contract Documents is the abbreviated type. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated shall be interpolated as the sense required. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the context of the Contract Documents so indicates.
2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standard in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two or more standards is specified, the standards may establish different or conflicting requirements for minimum quantities or quality levels. Refer requirements and uncertainties that are different, to the Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum where required by design requirements or where noted otherwise. In complying with these requirements, indicated numeric values are minimum or maximum, as appropriate for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.

1.5 Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean the associated names. Names and addresses are subject to change and are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

AA	Aluminum Association 900 19th St., NW, Suite 300 Washington, DC 20006	(202) 862-5100
AAMA	American Architectural Manufacturers Assoc. 2700 River Rd., Suite 118 Des Plaines, IL 60018	(312) 699-7310
ACI	American Concrete Institute P.O. Box 19150 Detroit, MI 48219	(313) 532-2600
ACPA	American Concrete Pipe Assoc. 8300 Boone Blvd., Suite 400 Vienna, VA 22180	(703) 821-1990
AHA	American Hardboard Assoc. 520 N. Hicks Rd. Palatine, IL 60067	(312) 934-8800
AI	Asphalt Institute Research Park Drive P.O. Box 14052 Lexington, KY 40512-4052	(606) 288-4960
AIA	American Institute of Architects 1735 New York Ave., NW Washington, DC 20006	(202) 626-7300
AISC	American Institute of Steel Construction One East Waker Drive, Suite 3100 Chicago, IL 60601-2001	(312) 670-2400
AISI	American Iron and Steel Institute 1133 Fifteenth St., NW Washington, DC 20005	(202) 452-7100
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018	(212) 354-3300
APA	American Plywood Assoc. P.O. Box 11700 Tacoma, WA 98411	(206) 565-6600
ASA	Acoustical Society of America 500 Sunnyside Blvd. Woodbury, NY 11797	(516) 349-7800
ASC	Adhesive and Sealant Council 1627 K Street, NW, Suite 1000 Washington, DC 20006	(202) 452-1500

ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers 1791 Tullie Circle, NE Atlanta, GA 30329	(404) 636-8400
ASME	American Society of Mechanical Engineers 345 East 47th St. New York, NY 10017	(212) 705-7722
ASPE	American Society of Plumbing Engineers 3617 Thousand Oaks Blvd., Suite 210 Westlake, CA 91362	(805) 495-7120
ASTM	American Society for Testing and Materials 1916 Race St. Philadelphia, PA 19103	(215) 299-5400
AWI	Architectural Woodwork Institute 2310 S. Walter Reed Drive Arlington, VA 22206	(703) 671-9100
AWPA	American Wood Preservers' Assoc. P.O. Box 849 Stevensville, MD 21666	(301) 643-4163
AWPB	American Wood Preservers Bureau P.O. Box 5283 Springfield, VA 22150	(703) 339-6660
AWS	American Welding Society 550 LeJeune Road, NW P.O. Box 351040 Miami, FL 33135	(305) 443-9353
BHMA	Builders' Hardware Manufacturers Assoc. 355 Lexington Ave., 17th Floor New York, NY 10017	(212) 661-4261
BIA	Brick Institute of America 11490 Commerce Park Drive, Suite 300 Reston, VA 22091	(703) 620-0010
CISCA	Ceiling and Interior Systems Construction Assoc. 104 Wilmot Road, Suite 201 Deerfield, IL 60015-5195	(312) 940-8800
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Rd. Schaumburg, IL 60173	(312) 517-1200
CTI	Ceramic Tile Institute of America 700 N. Virgil Ave. Los Angeles, CA 90029	(213) 660-1911
DHI	Door and Hardware Institute 7711 Old Springhouse Rd. McLean, VA 22102	(703) 556-3990
FM	Factory Mutual Research Organization 1151 Boston-Providence Turnpike Norwood, MA 02062	(617) 762-4300
GA	Gypsum Association 810 First Street, NE, Suite 510 Washington, DC 20002	(202) 289-5440

MCAA	Mechanical Contractors Association of America 1385 Piccard Dr. Rockville, MD 20832	(301) 869-5800
NAAMM	National Association of Architectural Metal Manufacturers 600 S. Federal St., Suite 400 Chicago, IL 60605	(312) 922-6222
NAPA	National Asphalt Pavement Assoc. Calvert Building, Suite 620 6811 Kenilworth Ave. Riverdale, MD 20737	(301) 779-4880
NCMA	National Concrete Masonry Assoc. P.O. Box 781 Herndon, VA 22070	(703) 435-4900
NECA	National Electrical Contractors Assoc. 7315 Wisconsin Ave. Bethesda, MD 20814	(301) 657-3110
NEII	National Elevator Industry, Inc. 185 Bridge Plaza, North Fort Lee, NJ 07024	(201) 944-3211
NEMA	National Electrical Manufacturers Assoc. 2101 L St., NW, Suite 300 Washington, DC 20037	(202) 457-8400
NFPA	National Fire Protection Assoc. One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101	(617) 770-3000
NPA	National Particleboard Assoc. 18928 Premiere Court Gaithersburg, MD 20879	(301) 670-0604
NRCA	National Roofing Contractors Assoc. One O'Hare Centre 6250 River Road, Suite 8030 Rosemont, IL 60018	(708) 318-6722
NWWDA	National Wood Window and Door Assoc. 1400 E. Touhy Ave., #G54 Des Plaines, IL. 60018 (Formerly NWMA)	(708) 299-5200 (800) 223-2301
RFCI	Resilient Floor Covering Institute 966 Hungerford Drive, Suite 12-B Rockville, MD 20805	(301) 340-8580
SDI	Steel Deck Institute P.O. Box 9506 Canton, OH 44711	(216) 493-7886
S.D.I.	Steel Door Institute 30200 Detroit Road Cleveland, OH 44145	(216) 889-0010
SGCC	Safety Glazing Certification Council Route 11, Industrial Park Cortland, NY 13045	(607) 753-6711
SJI	Steel Joist Institute 1205 48th Avenue North, Suite A Myrtle Beach, SC 29577	(803) 449-0487

SMACNA	Sheet Metal and Air Conditioning Contractors National Association P.O. Box 70 Merrifield, VA 22116	(703) 790-9890
SPIB	Southern Pine Inspection Bureau 4709 Scenic Highway Pensacola, FL 32504	(904) 434-2611
TCA	Tile Council of America P.O. Box 326 Princeton, NJ 08542	(609) 921-7050
TIMA	Thermal Insulation Manufacturers Assoc. 29 Bank Street Stamford, CT 06901	(203) 324-7533
UL	Underwriters Laboratories 333 Pfingsten Rd. Northbrook, IL 60062	(708) 272-8800
WRI	Wire Reinforcement Institute 1760 Reston Parkway, Suite 403 Reston, VA 22090	(703) 790-9790
WSFI	Wood and Synthetic Flooring Institute 4415 W. Harrison St., Suite 242 C Hillside, IL 60162	(708) 449-2933

1.6 Federal Government Agencies: Names and titles of federal government standard or Specification producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard or Specification producing agencies of the federal government. Names and addresses are subject to change but are believed to be, but are not assured to be, accurate and up to date as of the date of the Contract Documents.

CFR	Code of Federal Regulations Available from the Government Printing Office N. Capitol St. between G and H St. NW Washington, DC 20402 (Material is usually first published in the "Federal Register")	(202) 783-3238
CPSC	Consumer Product Safety Commission 5401 Westbard Ave. Bethesda, MD 20816	(800) 638-2772
CS	Commercial Standard (U.S. Department of Commerce) Government Printing Office Washington, DC 20402	(202) 377-2000
EPA	Environmental Protection Agency 401 M St., SW Washington, DC 20460	(202) 382-2090
FCC	Federal Communications Commission 1919 M St., NW Washington, DC 20554	(202) 632-7000
FS	Federal Specification (from GSA) Specifications Unit (WFSIS) 7th and D St., SW Washington, DC 20406	(202) 472-2205 or 472-2140

GSA	General Services Administration F St. and 18th St., NW Washington, DC 20405	(202) 472-1082
NIST	National Institute of Standards and Technology (U.S. Department of Commerce) Gaithersburg, MD 20899	(301) 975-2000
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor) Government Printing Office Washington, DC 20402	(202) 523-6091
PS	Product Standard of NBS (U.S. Department of Commerce) Government Printing Office Washington, DC 20402	(202) 783-3238
REA	Rural Electrification Administration (U.S. Department of Agriculture) 14th St. and Independence Ave., SW Washington, DC 20250	(202) 447-8732

1.7 GOVERNING REGULATIONS/AUTHORITIES

A. The Architect has contacted authorities having jurisdiction where necessary to obtain information necessary for preparation of Contract Documents. The Contractor shall contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.

1.8 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 01 45 01**
WILLIAMSON COUNTY **CUTTING AND PATCHING**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Contractor shall be responsible for all cutting and patching required to complete the Work. By definition, this Work shall include, but is not limited to:

1. Removing and replacing defective work.
2. Uncovering work in place for access or inspection.
3. Obtaining samples of installed work for testing.
4. Uncovering portions of nominally completed work to accommodate coordination of work.
5. Removing and replacing work that does not conform to the requirements of Contract Documents.
6. Providing routine penetration of non-structural surfaces for installation of piping and electrical conduit.

1.2 QUALITY ASSURANCE

A. Contractor shall ensure that cutting and patching does not result in reduction of:

1. Structural load-bearing capacity.
2. Capacity of operational and safety-related components.
3. Aesthetic or visual qualities.
4. Effectiveness of weather-exposed or moisture-resistant elements or systems.

1.3 SUBMITTALS

A. Submit a written request for approval prior to performing any cutting and patching.

B. Include in the request:

1. Description of the affected work.
2. Reason for cutting and patching.
3. Affect cutting and patching will have on other work.
4. Description of proposed work, trades involved and materials to be used.
5. List of utilities that will be disturbed, relocated or temporarily out of service.
6. Alternative procedures.
7. Cost proposal, if applicable.
8. Date the cutting and patching work is proposed to occur.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual

effect. Use materials whose installed performance will equal or surpass that of existing materials. Comply with specifications and standards for each specific material or product involved.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect existing conditions, including items subject to damage or the movement during cutting and patching.

B. After uncovering work, inspect conditions affecting installation or performance of work.

C. Report unsatisfactory conditions. Do not proceed with work until Architect has provided further instructions.

3.2 PREPARATION

A. Provide adequate temporary support as required to assure structural stability.

B. Provide protection of other work from damage and weather during cutting and patching. Avoid interference with the use of adjoining areas or, interruption of free passage to adjoining areas.

C. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork, scheduled to be removed or relocated, until provisions have been made to bypass them.

3.3 PERFORMANCE

A. Employ methods for cutting and patching which will prevent damage to other work and will provide proper surfaces to receive installation of repairs. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

B. Employ original installer or fabricator to perform cutting and patching.

C. Perform fitting and adjustment of items to provide a finished installation to comply with specified products, functions, tolerances and finishes.

D. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

E. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Where removal of walls or partitions extends from one finished area into another, patch and repair floor, ceiling, and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.

    a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken area containing the patch, after the patched area has received primer and second coat.

F. Restore work which has been cut and removed. Install new items as required to provide completed work.

G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes.

3.4 CLEANING

A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION.

JUSTICE CENTER - CSCD **SECTION 01 51 00**
WILLIAMSON COUNTY **TEMPORARY FACILITIES AND CONTROLS**

PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. All contractors and subcontractors will be required to pass a background check. At least the onsite lead from each group or trade will be required to pass a background check. This person will then be required to be available and control all those under his or her authority.

B. Daily site access will be through the main security check point.

C. All tool and materials are to be delivered through the main security check point and may be subject to inspection at any time.

D. A preconstruction meeting is to be coordinated with the head Bailiff and attended by all trade leads that will be on site during construction.

1. Items to be discussed are as follows:
   a. Hours of operation
   b. Hours for deliveries
   c. Hours for work that could disturb others within the building.
   d. Procedure for and scheduling of working in secure areas

C. Nothing in this Section is intended to limit types and amounts of temporary work required and no omission from this Section will be recognized as an indication by Architect or Engineer that such temporary activity is not required for successful completion of the Work and compliance with requirements of Contract Documents.

D. Provisions of this Section are applicable to, but not by way of limitation, utility services, construction facilities, support facilities and security/protection provisions.

1.2 QUALITY ASSURANCE

A. Comply with Federal, State and local codes and regulations and with utility company's requirements and/or public authorities having jurisdiction.

PARTS 2 and 3 - PRODUCTS AND EXECUTION

2.1 MATERIALS, GENERAL

A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions and must not violate requirements of applicable codes and standards. Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures.

2.2 TEMPORARY UTILITIES

A. Temporary Sanitary Facilities: From commencement to the completion of the work, Contractor is allowed to use the existing public facilities within the building. These

facilities are not to be used for any purpose beyond those intended and any abuse of these privileges may require the contractor to supply and maintain approved sanitary facilities in compliance with the laws and regulation of the authority having jurisdiction.

B. Temporary Water: The contractor is allowed to use the existing water for his use during construction. The contractor may install a faucet to be removed at the completion of the project should water be needed during construction.

C. Temporary Light and Power:

1. Install temporary lighting that will fulfill security and protection requirements.
2. Tie into existing systems and provide temporary light and power service line to a point convenient for, and available to, all trades and subcontractors.

D. Temporary Heat and Ventilation: The permanent heating system may be used for temporary heat when installed. Repair any damage caused by such temporary use upon completion of construction and replace all filters prior to turnover to owner.

2.3 TEMPORARY STORAGE

A. The adjacent shell space will be available for use throughout construction. The contractor is to maintain a temporary passage to this space as long as possible to minimize the use of the main corridor. Should the main corridor be used all debris is to be immediately removed and any damage to existing finishes is to be repaired to new or like new conditions at the contractor’s expense.

2.4 PROTECTION

A. Building Protection

1. During the execution of the work, close open ends of all piping and conduit and all openings in equipment before leaving the work at any time.
2. Protect all heating, ventilating, plumbing and electrical equipment during the execution of the work.
3. Protect and cover all plumbing fixtures to prevent them being used by workmen or others during the work. Cover all drains until they are put in service to prevent the entrance of foreign matter.
4. All workmen shall protect and properly utilize all materials and equipment furnished them during and after installation.
5. When any room in the building is utilized as a shop, storeroom, etc., it shall become the responsibility of the using party to repair, patch or clean any surfaces, materials, or equipment which becomes damaged as a result of this use.
6. Handle all materials as directed so as not to hinder inspection.

B. Persons

1. The building will be occupied during construction. Protection for facility employees and the public shall be maintained throughout construction.
2. Signs shall be posted at entrances to site, as well as around interior of site, designating "HARD HATS" for all persons on site.

3. Provide barricades and signage at hazard areas to protect personnel and the public.

C. Cleaning During Construction: Do not allow the accumulation of waste materials, rubbish, empty packaging and other debris. Remove trash and debris from job site daily or more often.

1. Concealed or encapsulated work shall be cleaned of all dust, or debris prior to concealing, wall tracks and similar locations must be vacuum clean.
2. Thoroughly clean entire building area and maintain building free of dust and other contaminants during finish operations.

D. Dust Control: Execute work by methods to minimize raising dust from construction operations.

1. Provide positive controls such as dustproof enclosures, negative air machines and air filtering devices to prevent air-borne dust from dispersing into adjacent improvements and into the atmosphere.
2. Dust producing operations, such as cutting ceiling tile and lumber, shall be performed in properly controlled centralized locations.
3. Before installation of ceiling grid or other ceiling systems, clean all structure, ductwork, and other construction above the ceiling height.

E. Protect all existing finishes to remain throughout construction.

1. Existing finishes which are damaged during construction, shall be repaired or replaced to like new or existing condition.

F. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."

1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires.
4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
5. Smoking is prohibited within the building.

2.5 TEMPORARY AND TRIAL USAGE

A. The temporary or trial usage by the Owner of any mechanical device, machinery, apparatus, equipment or any material supplied under the contract before final completion and written acceptance by the Owner will not be construed as evidence of acceptance by the Owner of the same.

B. The Owner shall have the privilege of such temporary and trial usage for such reasonable length of time as the Architect shall deem to be proper for making a complete and thorough test of same and no claim for damage will be made by the Contractor for the injury to or breaking of any part of such work which may be defective material or workmanship.

C. The Contractor has the option, at his own expense, to place a competent person or persons satisfactory to the Owner to make such trial usage, under the supervision of the Architect.

2.6 MAINTENANCE AND CLEANING

A. Perform periodic maintenance and cleaning for temporary structures, furnishings, equipment and services.

2.7 REMOVAL AND CLEAN-UP

A. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of the Contractor.
2. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:

    a. Replace air filters and clean inside of ductwork and housings.
    b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
    c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

B. Restore existing facilities used for temporary purposes to specified, or to original, condition.

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 01 77 00**
WILLIAMSON COUNTY **PROJECT CLOSEOUT**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:

1. Inspection procedures.
2. Project record document submittal.
3. Operation and maintenance manual submittal.
4. Submittal of warranties and material safety data sheets(MSDS).
5. Reduction of retainage
6. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 33.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for Certification of Substantial Completion, Contractor must complete the following.

1. Certificates required Prior to Substantial Completion: Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include the following:

a. Certificate of Occupancy from governing authority.
b. Certificate from governing authority that water system has passed required tests from Texas Department of Health or independent testing lab.
c. Certificate from governing authority (Fire Marshall or Fire Alarm Installer) that fire alarm system has passed required tests.
d. Certificate from governing authority (Fire Marshall) that fire sprinkler system has passed required tests.

2. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.

a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
3. Insurance: Advise the Owner of pending insurance changeover requirements.
4. Warranties: Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
5. Record Drawings: Submit record drawings, maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra stock, and similar items.
7. Locks: Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
8. Mechanical Systems: Complete the startup, testing, and balancing of systems and provide instruction to the Owner's maintenance personnel. All start-up reports must be submitted, reviewed and accepted by the A/E.

a. All adjustments required by the testing and balancing reports must be completed, prior to payment and issuance of substantial completion.

9. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
10. Complete final cleanup requirements, including touch-up painting.
11. Touch up and otherwise repair and restore marred, exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection and a list of uncompleted items, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction what must be completed or corrected before the certificate will be issued.

1. The Architect will repeat inspection one time when requested and assured that the Work is substantially complete.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.3 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, endorsed and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect.
4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.
5. Submit consent of surety to final payment.
6. Submit a final liquidated damages settlement statement.

B. Inspection Procedure: The Architect will inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect.

1. Upon completion of inspection, the Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

1.4 REDUCTION OF RETAINAGE

A. Retainage will not be reduced until after substantial completion is established. After it is established, retainage will not be reduced to an amount less than that required by an independent contractor to complete all punchlist items.

1. The amount of reduction of retainage shall be established by the Architect and must be approved by the contractor’s surety company.

1.5 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Where Shop Drawings are used for changes, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date. Keep set updated weekly and review set with Architects representative at each site visit.

1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
2. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.
3. Note related change-order numbers where applicable.
4. Include all changes generated from Requests for Information (RFI’s) and supplemental drawings.
5. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
6. At completion of project submit the complete set of blue-line prints, including plans, details and specifications of Architectural, Structural, Civil, Plumbing, Mechanical and Electrical, showing all changes (including dimensional changes) to the Drawings as accomplished during the construction process and two CD’s with red-lines from the blue-line set of prints transferred to the drawings.
7. At contractor's option, Record Drawings may be maintained electronically, and turned over to A/E in .pdf format.

C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.

1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
3. Note related record drawing information and Product Data.
4. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.
5. At contractor's option, Record Specifications may be maintained electronically, and turned over to A/E in .pdf format.

D. Record Product Data: Maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.

1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.

2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
3. Upon completion of markup, submit complete set of record Product Data to the Architect for the Owner's records.

E. Record Sample Submitted: Immediately prior to Substantial Completion, the Contractor shall meet with the Architect and the Owner's personnel at the Project Site to determine which Samples are to be transmitted to the Owner for record purposes. Comply with the Owner's instructions regarding delivery to the Owner's Sample storage area.

1.6 OPERATION AND MAINTENANCE MANUALS

A. Upon completion of construction, submit all operation and maintenance manuals. Include the following types of information:

1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Wiring diagrams.
5. Recommended "turn-around" cycles.
6. Inspection procedures.
7. Shop Drawings and Product Data.
8. Fixture lamping schedule.
9. Operation and Maintenance Manuals shall be submitted electronically in .pdf format on a recordable DVD disc.

1.7 WARRANTIES AND MATERIAL SAFETY DATA (MSDS) SHEETS

A. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

B. Form of Submittal: At Final Completion compile 2 copies of each required warranty properly executed by the Contractor and the subcontractor, supplier, or manufacturer and MSDS sheets for all products. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual. Under separate tab provide copies of Material Safety Data Sheets organized in sequence of specification sections.

C. Bind warranties, bonds and material safety data sheets (MSDS) in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper. Organize and tab warranties and MSDS in sequence of their respective specification sections.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
3. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

4. At contractor's option, Warranties And MSDS Sheets may be turned over to A/E in .pdf format.

1.8 AFFIDAVITS

A. Upon completion of construction, submit the Affidavit of Payment of Debts and Claims, the Contractor's Affidavit of Release of Liens, and Consent of Surety Company to Final Payment. Refer to Section 00 65 19 for forms.

1.9 CERTIFICATIONS

A. Upon completion of construction, the Contractor is required to submit a letter of certification that no product containing asbestos, PCBs, lead, or any other hazardous material was used on this project.

1.10 EXTRA STOCK

A. Provide quantities of extra stock of materials as required in sections of this specification to Owner. Deliver to location requested by Owner.

1. Provide a letter of certification, signed by the Owner, that maintenance stock of material required by these specifications has been turned over to the Owner.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefitted from use of the Work through a portion of its anticipated useful service life.

D. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

3.2 CLOSEOUT PROCEDURES

A. Operation and Maintenance Instructions: Arrange for each Installer or manufacturer=s representative of equipment that requires regular maintenance to meet with the Owner's

personnel to provide instruction in proper operation and maintenance. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Identification systems.
7. Control sequences.
8. Hazards.
9. Cleaning.
10. Warranties and bonds.
11. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Startup.
2. Shutdown.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

3.3 FINAL CLEANING

A. General: The General Conditions require general cleaning during construction. Regular site cleaning is included in Division 1 Section "Temporary Facilities and Controls."

B. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
f. Remove debris and surface dust from limited access spaces, including roofs, plenums, manholes, and similar spaces.
g. Sweep concrete floors broom clean in unoccupied spaces.
h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
j. Remove labels that are not permanent.
k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
l. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances, so as not to damage finish surfaces.
n. Replace parts subject to unusual operating conditions.
o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
q. Clean ducts, blowers, and coils if units were operated without filters during construction.
r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
s. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests.

D. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

END OF SECTION

DIVISION 2 - EXISTING CONDITIONS

02 41 19 - SELECTIVE BUILDING DEMOLITION

JUSTICE CENTER - CSCD **SECTION 02 41 19**
WILLIAMSON COUNTY **SELECTIVE BUILDING DEMOLITION**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Extent of selective demolition is indicated on Drawings.

B. Type of Selective Demolition Work: Demolition requires the selective removal and turning over to the Owner those designated items and subsequent offsite disposal of remaining items being removed. Demolition work consists, but not be limited to the following:

1. Portions of building structure indicated on Drawings and as required to accommodate new construction.
2. Removal of doors and/or frames noted to be removed.

1.2 JOB CONDITIONS

A. Occupancy: Owner will be continuously occupying areas of the building immediately adjacent to areas of selective demolition. Conduct selective demolition work in manner that will minimize the need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner, of demolition activities which will severely impact Owner's normal operations.

B. Conditions of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished. Conditions existing at time of commencement of contract will be maintained by Owner insofar as practicable.

C. Partial Demolition and Removal: Items indicated to be removed but of salvageable value to Contractor may be removed from structure as work progresses. Transport salvaged items from site as they are removed. Storage or sale of removed items on site will not be permitted.

D. Protections: Provide temporary barricades and other forms of protection as required to protect Owner's personnel, employees and general public from injury due to selective demolition work.

1. Erect temporary covered passageways and other protective measures to assure the safety of general public.
2. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished, and adjacent facilities or work to remain.
3. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
4. Protect floors and equipment with suitable coverings when necessary.
5. Remove protections at completion of work.

E. Damages: Promptly repair damages caused to facilities by demolition work at no cost to Owner, to like new conditions.

F. Explosives: Use of explosives will not be permitted.

G. Utility Services: Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition and construction operations.

H. Environmental Controls: Use temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.

I. If asbestos-containing materials are encountered during removal operation, the Contractor shall notify the Architect-Engineer immediately. Discontinue demolition in the immediate area, seal off to prevent migration of asbestos dust, fibers, or debris into other areas of the building. A certified Industrial Hygienist will be required to review and make recommendations on what procedures must be taken to remove and dispose of the asbestos-containing material. Work in the contaminated area can only begin when clean-up is done in accordance with regulatory requirements. In the event this does occur, the Owner, Architect and Contractor will negotiate the additional cost and make the appropriate change to the Contract amount by Change Order.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 INSPECTION

A. Prior to commencement of selective demolition work, inspect areas in which work will be performed. Photograph existing conditions to structure surfaces, equipment or to surrounding properties which could be misconstrued as damage resulting from selective demolition work; file with Owner's representative prior to starting work.

3.2 PREPARATION

A. Provide shoring, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent structures to remain.

Cease operations and notify the Architect immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.

B. Cover and protect furniture, equipment and fixtures to remain from soiling or damage when demolition work is performed in rooms or areas from which such items have not been removed.

C. Erect and maintain dust-proof partitions and closures as required to prevent dust or fumes to occupied portions of the building.

3.3 DEMOLITION

A. Perform selective demolition work in a systematic manner. Use methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.

1. Provide services for effective indoor air quality control and ensure that no adverse conditions spread from the remodel area to any other area in the building.

B. If unanticipated mechanical, electrical or structural elements, which conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Architect in written, accurate detail. Pending receipt of directive from Architect rearrange selective demolition schedule as necessary to continue overall job progress without delay.

3.4 SALVAGE MATERIALS

A. Prior to commencing demolition, Contractor shall check with Owner on salvageable items they may wish to retain.

B. Carefully remove designated items, clean, store and turn over to Owner and obtain receipt.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris, rubbish and other materials resulting from demolition operations from building site. Transport and legally dispose of materials off site.

B. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution.

C. Burning of removed materials is not permitted on project site.

3.6 CLEAN-UP AND REPAIR

A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections and leave interior areas broom clean.

B. Repair demolition performed in excess of that required. Return structures and surfaces to remain to condition existing prior to commencement of selective demolition work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

END OF SECTION.

DIVISION 5 - METALS

05 41 00 - STRUCTURAL COLD-FORMED METAL FRAMING
05 50 00 - METAL FABRICATIONS

JUSTICE CENTER - CSCD **SECTION 05 41 00**
WILLIAMSON COUNTY **STRUCTURAL COLD FORMED METAL FRAMING**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Types of metal framing units include the following:

1. Interior load-bearing steel studs.

B. Related materials specified in other Sections

1. Non-load bearing metal studs, refer to Section 09 21 16.

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Engineer, fabricate and erect cold formed metal framing with the following minimum physical and structural properties:

1. Design framing systems to withstand design loads without deflections greater than the following:

Interior Load-Bearing Walls: Lateral deflection of l/360 of wall height.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product information and installation instructions for each item of cold-formed metal framing and accessories.

B. Shop Drawings: Submit shop drawings for the following:

1. Installations not fully dimensioned in manufacturer's product data.
2. Components not fully dimensioned or detailed in manufacturer's product data.
3. Include placing drawings for framing members showing size and gage designations, number, type, location, and spacing. Indicate supplemental strapping, bracing, splices, bridging, accessories, and details required for proper installation.

C. Mill certificates certifying that their products comply with requirements, including uncoated steel thickness, yield strength, tensile strength, total elongation, and galvanized-coating thickness.

D. Welder certificates signed by Contractor certifying that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.4 QUALITY ASSURANCE

A. Component Design: Compute structural properties of studs and joists in accordance with AISI "Specification for Design of Cold-Formed Steel Structural Members".

B. Fire-Rated Assemblies: Where framing units are components of assemblies indicated for a fire-resistance rating, including those required for compliance with governing regulations, provide units which carry a classification label from a testing laboratory acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 METAL FRAMING

A. Manufacturer: Subject to compliance with requirements, provide "C"-shaped, load-bearing steel studs and "C"-shaped steel joists from one of the following or an acceptable substitute approved prior to bidding:

Ceco Corp.
Clark Dietrich Building Systems
Norton Metal
Studco

B. System Components: With each type of metal framing required, provide manufacturer's standard steel runners (tracks), blocking, lintels, clip angles, shoes, reinforcements, fasteners, and accessories as recommended by manufacturer for applications indicated, as needed to provide a complete metal framing system.

2.2 MATERIALS AND FINISHES

A. For l8-gage and lighter units, fabricate metal framing components of commercial quality steel sheet, Grade A, with a minimum yield point of 33,000 psi; ASTM A 1003, zinc coating ASTM A 653.

B. For 16-gage and heavier units, fabricate metal framing components of structural quality steel sheet, Grade C, with a minimum yield point of 40,000 psi; ASTM A 1003, zinc coating ASTM A 653.

C. Provide galvanized finish to metal framing components complying with ASTM A 653 for minimum G 60 coating.

D. Steel Studs: Manufacturer's standard C-shaped steel studs of size, shape, and gage indicated and as follows:

1. Flange width: 1-5/8" with flange return lip.
2. Web: Punched

E. Steel Track: Manufacturer's standard U-shaped steel track, unpunched, of web depths indicated, with straight flanges

1. Design Uncoated-Steel Thickness: Matching steel studs.
2. Flange Width: Manufacturers standard deep flange where indicated, standard flange elsewhere.

F. Deflection Track Slotted: Single, deep-leg, U-shaped steel track, punched with vertical slots in both legs. Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; thickness not less than indicated for studs and width to accommodate depth of studs.

G. Headers and Jambs: Shape used to form header beams and jambs, columns, or posts, of web depths indicated, unpunched, with stiffened flanges.

H. Channel Bridging or Bracing: U-Channel assembly. Base metal thickness of .0538 inch and minimum 2" wide flanges

2.3 ACCESSORIES

A. Miscellaneous Accessories: Provide all accessories, including end clips, foundation clips, runner tracks, C-closures, strap bracing, etc., as required to install all framing.

B. Steel Shapes and Clips: ASTM A 36 (ASTM A 36M), zinc coated by the hot-dip process according to ASTM A 123.

C. Cast-in-Place Anchor Bolts and Studs: ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); carbon-steel hex-head bolts and studs; carbon-steel nuts; and flat, unhardened-steel washers. Zinc coated by the hot-dip process according to ASTM A 153.

D. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times the design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

E. Powder-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times the design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.

F. Mechanical Fasteners: Corrosion-resistant coated, self-drilling, self-threading steel drill screws.

1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

G. Welding Electrodes: Comply with AWS standards.

2.4 FABRICATION

A. General: Framing components may be prefabricated into panels prior to erection. Fabricate panels plumb, square, true to line and braced against racking with joints welded. Perform lifting of prefabricated panels in a manner to prevent damage or distortion.

B.. Fastenings: Attach similar components by welding. Attach dissimilar components by welding, bolting, or screw fasteners, as standard with manufacturer.

C. Wire tying of framing components is not permitted.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Manufacturer's Instructions: Install metal framing systems in accordance with manufacturer's printed or written instructions and recommendations, unless otherwise indicated.

3.2 WALL FRAMING

A. Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to layout at base and tops of studs. Secure tracks as recommended by stud manufacturer for type of construction involved, except do not exceed 24" o.c. spacing for nail or

power-driven fasteners, or 16" o.c. for other types of attachment. Provide fasteners at corners and ends of tracks.

B. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements.

C. Where stud system abuts structural columns or walls, including masonry walls, anchor ends of stiffeners to supporting structure.

D. Install supplementary framing, blocking and bracing in metal framing system wherever walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishings, and similar work requiring attachment to the wall or partition. Where type of supplementary support is not otherwise indicated, comply with stud manufacturer's recommendations and industry standards in each case, considering weight or loading resulting from item supported.

E. Installation of Wall Stud System: Secure studs to top and bottom runner tracks by either welding or screw fastening at both inside and outside flanges.

F. Frame wall openings larger than 2'-0" square with double stud at each jamb of frame except where more than 2 are either shown or indicated in manufacturer's instructions. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of wall. Secure stud system wall opening frame in manner indicated.

G. Frame both sides of expansion and control joints, with separate studs; do not bridge the joint with components of stud system.

H. Install headers over wall openings wider than the stud spacing. Locate headers above openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.

1. Frame wall openings with not less than a double stud at each jamb of frame as indicated or required by manufacturer.
2. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.

I. Install horizontal bridging in stud system, spaced not more than 4'-6" o.c. vertically.

1. Bridging: Cold-rolled steel channel, clip angle welded to each stud or fastened with clip angle screwed to studs and channel.

END OF SECTION.

JUSTICE CENTER - CSCD **SECTION 05 50 00**
WILLIAMSON COUNTY **METAL FABRICATIONS**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Definition: Metal fabrications includes items made from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of structural steel or other metal systems specified elsewhere.

B. Types of work in this section include metal fabrications for:

Rough Hardware
Miscellaneous framing and supports

1.2 QUALITY ASSURANCE

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting where taking field measurements before fabrication might delay work.

B. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's specifications, anchor details and installation instructions for products used in metal fabrications, including paint and grout.

B. Shop Drawings

1. Submit shop drawings for fabrication and erection of miscellaneous metal fabrications. Include plans, elevations and details of sections and connections. Show anchorage and accessory items. Provide templates for anchor and bolt installation by others.

2. Where materials or fabrications are indicated to comply with certain requirements for design loadings, include structural computations, material properties and other information needed for structural analysis.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Metals, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.

1. Steel Plates, Shapes and Bars: ASTM A 36.
2. Steel Bar Grating: ASTM A 569 or ASTM A 36.
3. Steel Tubing: Cold formed, ASTM A 500; or hot-rolled, ASTM A 501.
4. Structural Steel Sheet: Hot-rolled, ASTM A 570; or cold-rolled ASTM A 611, Class 1; of grade required for design loading.
5. Galvanized Structural Steel Sheet: ASTM A 446, of grade required for design loading. Coating designation as indicated, or if not indicated, G 90.

6. Steel Pipe: ASTM A 53, Type and grade (if applicable) as selected by fabricator and as required for design loading; Galvanized at exterior locations; standard weight (schedule 40), unless otherwise indicated.
7. Gray Iron Castings: ASTM A 48, Class 30.
8. Malleable Iron Castings: ASTM A 47, grade as selected by fabricator.
9. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.
10. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers and shims as required, hot-dip galvanized, ASTM A 153.

B. Grout

1. Metallic Non-Shrink Grout: Pre-mixed, factory-packaged, ferrous aggregate grout complying with CE CRD-C588, Type M.

2. Non-Shrink Non-Metallic Grout: Pre-mixed, factory-packaged, non-staining, non-corrosive, non-gaseous grout complying with CE CRD-C588. Provide grout specifically recommended by manufacturer for interior and exterior applications of type specified in this section.

C. Fasteners

1. General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required.
2. Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.
3. Lag Bolts: Square head type, FS FF-B-561.
4. Machine Screws: Cadmium plated steel, FS FF-S-92.
5. Wood Screws: Flat head carbon steel, FS FF-S-111.
6. Plain Washers: Round, carbon steel, FS FF-W-92.
7. Masonry Anchorage Devices: Expansion shields, FS FF-S-325.
8. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class and style as required.
9. Lock Washers: Helical spring type carbon steel, FS FF-W-84.

D. Paint

1. Metal Primer Paint: Fabricator's standard, complying with FS TT-P-636, red iron oxide.

a. Primer selected must be compatible with finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified in Division 9.

2. Galvanizing Repair Paint: High zinc dust content paint for re-galvanizing welds in galvanized steel, complying with the Military Specifications MIL-P-21035 (Ships).

2.2 FABRICATIONS, GENERAL

A. Workmanship: Use materials of size and thicknesses indicated or, if not indicated, as required to produce strength and durability in finished product for use intended. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.

B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

C. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.

D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, Phillips flat-head (countersunk) screws or bolts.

1. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
2. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware and similar items.

E. Galvanizing

1. Provide a zinc coating for those items shown or specified to be galvanized and all exterior metal fabrications, as follows:

a. ASTM A 153 for galvanizing iron and steel hardware.
b. ASTM A 123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strip 1/8" thick and heavier.
c. ASTM A 386 for galvanizing assembled steel products.

F. Fabricate joints which will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.

G. Shop Painting

1. Shop paint miscellaneous metal work, except members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded, and galvanized surfaces, unless otherwise indicated.

2. Remove scale, rust and other deleterious materials before applying shop coat. Clean off heavy rust and loose mill scale in accordance with SSPC SP-2 "Hand Tool Cleaning", or SSPC SP-3 "Power Tool Cleaning", or SSPC SP-7 "Brush-Off Blast Cleaning".

3. Remove oil, grease and similar contaminants in accordance with SSPC SP-1 "Solvent Cleaning".

4. Immediately after surface preparation, brush or spray on primer in accordance with manufacturer's instructions, and at a rate to provide uniform dry film thickness of 2.0 mils for each coat. Use painting methods which will result in full coverage of joints, corners, edges and exposed surfaces.

5. Apply one shop coat to fabricated metal items, except apply 2 coats of paint to surfaces inaccessible after assembly or erection. Change color of second coat to distinguish it from the first.

2.3 MISCELLANEOUS METAL FABRICATIONS

A. Rough Hardware

1. Fabricate items to sizes, shapes and dimensions required. Furnish malleable iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

2. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures.

B. Miscellaneous Framing and Supports

1. Provide miscellaneous steel framing and supports which are not a part of structural steel framework, as required to complete work.

2. Fabricate miscellaneous units to sizes, shapes and profiles shown or, if not shown, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.

3. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.

4. Except as otherwise shown, space anchors 24" o.c. and provide minimum anchor units of 1-1/4" x 1/4" x 8" steel straps.

5. Galvanize exterior miscellaneous frames and supports.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction.

B. Coordinate delivery with construction requiring such items at project site.

3.2 INSTALLATION

A. General

1. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.

2. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in form work for items which are to be built into concrete, masonry or similar construction.

3. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded

because of shipping size limitations. Grind exposed joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

4. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.

3.3 ADJUST AND CLEAN

A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Touch-Up Painting: Cleaning and touch-up painting of field welds, bolted connections and abraded areas of the shop paint on miscellaneous metal is specified in Division 9 of these specifications.

C. For Galvanized Surfaces: Clean field welds, bolted connections and abraded areas and apply 2 coats of galvanizing repair paint.

END OF SECTION.

DIVISION 6 - WOODS, PLASTICS, AND COMPOSITES

06 10 00 - ROUGH CARPENTRY
06 40 23 - INTERIOR ARCHITECTURAL WOODWORK

JUSTICE CENTER - CSCD **SECTION 06 10 00**
WILLIAMSON COUNTY **ROUGH CARPENTRY**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes the following:

1. Wood furring, grounds, nailers, and blocking.
2. Plywood backboard for telephone equipment

B. Related Sections: The following Sections contain requirements that relate to this Section.

1. Division 6 Section "Interior Architectural Woodwork" for nonstructural carpentry items exposed to view.

1.2 STANDARDS

A. Meet requirements and recommendations of applicable portions of Standards listed.

1. American Plywood Association - APA (DFPA)
2. American Wood Preserver’s Institute - AWPI
3. American Wood Preserver’s Association - AWPA
4. Southern Pine Inspection Bureau – SPIB
5. ANSI/AF&PA NDS - 2005

1.3 SUBMITTALS

A. Product Data for the following products:

1. Metal framing anchors.
2. Construction adhesives.

B. Material certificates for dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee's (ALSC) Board of Review.

C. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:

1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site.

D. Material test reports from a qualified independent testing agency indicating and interpreting test results relative to compliance of fire-retardant-treated wood products with requirements indicated.

E. Warranty of chemical treatment manufacturer for each type of treatment.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.

1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

PART 2 - PRODUCTS

2.1 LUMBER, GENERAL

A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.

B. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.

C. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.

1. Provide dressed lumber, S4S, unless otherwise indicated.
2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.
3. Provide lumber with 15 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.

1. Do not use chemicals containing chromium or arsenic.

B. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. (4.0 kg/cu. m). After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:

1. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

C. Pressure treat wood members in contact with ground or freshwater with waterborne preservatives to a minimum retention of 0.40 lb/cu. ft. (6.4 kg/cu. m).

D. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWPA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

2.3 DIMENSION LUMBER

A. General: Where wood framing from 2" and 5" (but not including 5") in nominal thickness, and 2" or more in nominal width is shown or schedule: Provide lumber complying with grading rules which conform to the requirements of the "National Grading Rule for Dimension Lumber" of the American Lumber Standards Committee established under PS 20.

B. Framing: Provide framing of the following grade and species:

1. Grade: Construction, Stud, or No. 2.
2. Douglas Fir (WCLB or WWPA) or Southern Pine (SPIB)
3. Boards: Where lumber less than 2" in nominal thickness and 2" or more in nominal width is shown or specified, provide boards complying with dry size requirements of PS 20.

2.4 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including blocking, furring, grounds, stripping, and similar members.

B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.

C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

D. Grade: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species.

2.5 PLYWOOD

A. Trademark: Identify each plywood panel with appropriate APA trademark.

B. Concealed Performance-Rated Plywood: Where plywood panels will be used for concealed types of applications, provide APA Performance-Rated Panels complying with requirements indicated for grade designation, span rating, exposure durability classification, edge detail (where applicable) and thickness.

C. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant treated plywood panels with grade designation, APA C-D Plugged INT with exterior glue, not less than 3/4".

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of Type 304 stainless steel.

B. Nails, Wire, Brads, and Staples: FS FF-N-105.

C. Power-Driven Fasteners: CABO NER-272.

D. Wood Screws: ASME B18.6.1.

E. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M)

F. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.

C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

D. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. CABO NER-272 for power-driven staples, P-nails, and allied fasteners.
2. Published requirements of metal framing anchor manufacturer.
3. "Recommended Nailing Schedule" of referenced framing standard and with AFPA's "National Design Specifications for Wood Construction."

F. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.

G. Use hot-dip galvanized or stainless-steel nails where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity.

H. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

3.2 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

A. Install wood grounds, nailers, blocking, and sleepers where shown and where required for screeding or attaching other work. Form to shapes shown and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Ledgers in contact with masonry shall be treated with preservative.

3.3 WOOD FURRING

A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

1. Firestop furred spaces of walls at each floor level and at ceiling with wood blocking or noncombustible materials, accurately fitted to close furred spaces.

B. Furring to Receive Gypsum Board: Install 1-by-2-inch nominal- (19-by-38-mm actual-) size furring at 16 inches (406 mm) o.c., vertically.

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 06 40 23**
WILLIAMSON COUNTY **INTERIOR ARCHITECTURAL WOODWORK**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes the following:

1. Plastic Laminate cabinets (casework).
2. Plastic Laminate countertops.
3. Shop finishing of woodwork.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 6 Section "Rough Carpentry" for exposed framing and for furring, blocking, and other carpentry work concealed in the wall.

1.2 SUBMITTALS

A. Product data for each type of product and process specified and incorporated into items of architectural woodwork during fabrication, finishing, and installation.

1. Provide manufacturer’s data sheets on each type of hardware.

B. Shop Drawings

1. Submit shop drawings for casework and counter tops; showing plans, elevations, ends, cross-sections, service run spaces, location and type of service fixtures with lines thereto.
2. Show details and location of anchorages and fitting to floors, walls, and base.
3. Include layout of units with relation to surrounding walls, doors, windows, and other building components.
4. Coordinate shop drawings with other work involved.

C. Samples

1. Submit 6" x 6" samples of specified finishes, including top material. Samples will be reviewed by Architect for color, texture, and pattern only. Compliance with other specified requirements is exclusive responsibility of Contractor.
2. Acceptable sample units will be used for comparison inspections at project. Unless otherwise directed, acceptable sample units may be incorporated in work. Notify Architect of their exact locations. If not incorporated in work, retain acceptable sample units in building until completion of work. Remove sample units from premises when directed by Architect.
3. Finished hardware, one sample of each type.

D. Certification: Product certificates signed by woodwork fabricator certifying that products comply with specified requirements.

1. Submit MSDS for each adhesive used with VOC emissions documented.

1.3 QUALITY ASSURANCE

A. Provide casework with tops manufactured or furnished by same casework furniture company for single responsibility.

B. All plywood or particle board used that contains formaldehyde shall be sealed two coats of sealer to provide a maximum formaldehyde emission rate of .03 ppm.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.

B. Do not deliver or install woodwork until building is enclosed, wet-work, painting and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas and HVAC system is operating and will maintain temperature to a minimum of 55 degrees Fahrenheit and relative humidity not to exceed 70% during the remainder of the construction period. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions."

1.5 PROJECT CONDITIONS

A. All mechanical and electrical rough-in and overhead work shall be complete and light fixtures shall be operational.

B. All flooring must be installed, if required under casework, prior to installation of casework.

C. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.
2. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

PART 2 - PRODUCTS

2.1 INSTALLATION MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

B. Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1 for applicable requirements.

1. For metal framing supports, provide screws as recommended by metal-framing manufacturer.

C. Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.

D. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.

2.2 CASEWORK MATERIALS

A. Manufacturer: Subject to compliance with requirements of these specifications, provide products from one of the following manufacturers or an acceptable substitute approved prior to bidding. For substitution request, refer to Section 01 25 00.

Casework Services Inc.	Fixtures Concepts
LSI Corporation of America, Inc.	Mohon International, Inc.
NLS	Pechal Cabinets
Stevens Laminate Casework	Terrill Manufacturing Co.
Texwood (Wood Cabinets)	Tru-Bilt (Calmar)
Plas-Clad	

B. Definitions: The following definitions apply to casework units:

1. Exposed portions of casework include surfaces visible when doors and drawers are closed. Bottoms of cases more than 4'-0" above floor shall be considered as exposed. Visible members in open cases or behind glass doors also shall be considered as exposed portions.
2. Semi-exposed portions of casework includes those members behind opaque doors, such as shelves, divisions, interior faces of ends, case back, drawer sides, backs and bottoms, and back face of doors. Tops of cases 6'-6" or more above floor shall be considered semi-exposed.
3. Concealed portions of casework include sleepers, web frames, dust panels, and other surfaces not usually visible after installation.

C. Materials: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade indicated and, where the following products are part of interior woodwork, with requirements of the referenced product standards that apply to product characteristics indicated:

1. Hardboard: Industrial grade, pre-finished 1/4" thick, composed of wood fibers, phenolic resin binders and moisture inhibitors that meet ANSI/AHA A135.4.
2. Medium-Density Fiberboard: Grade MD-21, 48 lb. density, made without formaldehyde and complying with ANSI A208.2.
3. Particleboard: ANSI A208.1, Grade M-2 industrial grade, 45 lb. density, made with phenol-formaldehyde resins.
4. Softwood Plywood: PS 1.
5. Hardwood Plywood and Face Veneers: HPVA HP-1.
6. Thermoset Decorative Overlay (Melamine): Decorative surface of thermally fused polyester or melamine-impregnated web, bonded to specified substrate and complying with ALA 1992.

    a. Substrate: Medium-density particleboard.
    b. Substrate: Medium-density fiberboard.

7. Concealed Members, provide one of the following:

    a. Solid Lumber or Plywood: Any species, with no defects affecting strength or utility. Provide treated wood for members in contact with wood.
    b. Hardboard: PS 58, Class 1, tempered.

8. Laminate Cladding for Surfaces: High-pressure decorative laminate.
    a. Exposed Horizontal surfaces: GP-50
    b. Exposed Vertical surfaces: GP-28
    c. Semi-exposed surfaces: CL-20
    d. Semi-exposed surfaces on medium density fiberboard core: Melamine

e. Semi-exposed surfaces on particle board core: Melamine
f. Colors, Patterns, and Finishes: cabinet faces, door and drawer fronts to be Wilsonart - Solar Oak #7816-60

D. Cabinet Hardware and Accessory Materials

1. Hardware Standards: Except as otherwise indicated, comply with ANSI/BIFMA X5.6 "Business and Institutional Furniture Manufacturers Association". For substitution request on cabinet hardware refer to Section 01 25 00.

2. Provide manufacturer's standard hardware units, equal to the following.

3. Hinges: five knuckle steel hinge, with hospital tip and adjustable screw holes.

   a. Provide one pair for doors less than 4 foot high and 1-1/2 pair for doors over a 4 foot.
   b. Finish to be 32D, dull stainless steel.

4. Door and Drawer Wire Pulls: Stanley 4484, aluminum or an acceptable substitute. Provide 2 pulls for drawers over 24" wide.

5. Sliding Door Pulls: Provide recessed flush pulls equal to Stanley model #301.

6. Door Catches: Heavy duty spring catch with 11/16" roller with strike plate. Provide catch at top and bottom on doors over 4 ft. high.

7. Drawer Slide: Equip each drawer with rail-mounted, full extension, ball-bearing, drawer slides with load capacity of 100 lbs. per pair equal to the following. Provide drawer stops designed to permit easy removal, and yet prevent inadvertent drawer removal.

Drawers 16" wide or less:	Accuride Model 3832SC
Drawers 17" to 24" wide:	Accuride Model 7434
Drawers 25" to 42" wide:	Accuride Model 40340 (150 lbs. load capacity)

   a. Acceptable Manufacturers: Accuride
      Knape & Vogt
      Hafele

8. Adjustable Shelf Supports: Support clips for shelves shall be injection molded clear polycarbonate. Clip shall have double pin engagement into precision bored hole pattern in cabinet vertical members and shall have a molded ridge which provide pressure against edge of shelves to maintain positive pin engagement. Static load must exceed 200 lb. per clip.

9. Provide a 1" diameter wall bumper, equal to 404-B-10 B as manufactured by H. B. Ives in any location where casework door strikes an adjacent wall when opened.

10. Provide manufacturer's standard silencers on all casework doors and drawers.

11. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA code number indicated.

    a. Satin Stainless Steel, Stainless-Steel Base: BHMA 630.

12. For concealed hardware provide manufacturer's standard finish that complies with product class requirements of BHMA A156.9.

13. Clothes Rod: 1 ¼ " stainless steel rod.

E. Plastic Laminate Casework

1. AWI Type of Cabinet Construction: Flush overlay.
2. Wall and Tall Cabinet Ends: 3/4" thick particle board, laminate clad.
3. Tall Cabinet Tops and Bottoms: 3/4" thick particle board, laminate clad.
4. Wall Cabinet Tops and Bottoms: 1" thick particle board, laminate clad.
5. Vertical Cabinet Members: 3/4" thick particle board, laminate clad.
6. Cabinet Backs: 1/4" thick pre-finished industrial hardboard.
7. Bases: Bases shall be separate panel and shall be constructed of continuous solid lumber with bridging on two foot centers to form a level platform.
8. Drawer Sides and Ends: 5/8" thick medium density fiberboard with melamine laminate and PVC top edges.
9. Drawer Bottoms: To be 1/4" thick medium density fiberboard with melamine laminate.
10. Doors and Drawer Fronts: Plastic laminate GP-28 with PVC edging to match plastic laminate.
11. Laminate Cladding for Surfaces: High-pressure decorative laminate.
    a. Exposed Horizontal surfaces: GP-50
    b. Exposed Vertical surfaces: GP-28
    c. Semi-exposed surfaces: CL-20
    d. Semi-exposed surfaces on medium density fiberboard core: Melamine
    e. Semi-exposed surfaces on particle board core: Melamine
    f. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures as selected by Architect from manufacturer's full range of colors and finishes.
12. Adjustable shelves: 1" thick particle board, covered with plastic laminate on all faces, edges and ends.
13. Provide dust panels of 1/4-inch plywood or tempered hardboard above compartments and drawers except where located directly under tops.

2.3 CASEWORK FABRICATION, GENERAL

A. Interior Woodwork Grade: Provide interior woodwork complying with AWI Section 400 requirements for wood cabinets.

1. Grade: Custom.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to relative humidity conditions existing during time of fabrication and in installation areas.

C. Cabinet parts shall be accurately machined and precision bored for premium grade quality joinery construction.

D. Cabinet ends and dividers shall be prepared to receive adjustable shelf hardware at approximately 1-1/4" o.c.

E. Cabinet components shall be joined with dowels or screwed and glued, with minimum of six fasteners at each joint of 24" deep cabinets and minimum of four fasteners at each joint of 12" deep cabinets.

F. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

1. Corners of cabinets and edges of solid-wood members 3/4 inch thick or less: 1/16 inch.
2. Edges of rails and similar members more than 3/4 inch thick: 1/8 inch.
3. Corners of cabinets and edges of solid-wood (lumber) members and rails: 1/16 inch.

G. Complete fabrication, including assembly, finishing, and hardware application, before shipment to project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Trial fit assemblies at the fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on approved shop drawings before disassembling for shipment.

H. Shop-cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and, where located in countertops and similar exposures, seal edges with a water-resistant coating.

I. Install glass to comply with applicable requirements of Division 8 Section "Glazing" and of FGMA "Glazing Manual." For glass in wood frames, secure glass with removable stops.

J. End Panels and Bases: End panels shall not extend to the floor but rather stop above the base. Bases shall be constructed form solid lumber (no particle board) and finished with rubber base.

K. Bodies: Cabinet bodies shall be constructed for flush overlay drawers and doors. Cabinet bodies shall be reinforced with hardwood web frames or solid panels at the top of each base cabinet and below the first drawer in each cabinet.

L. Drawers

1. Drawer boxes shall be at least 3/4 the height of the drawer fronts.
2. Rabbet the drawer sides to receive 2" back and groove to receive tongue of 2" front. Sides, back and front shall be grooved 3/8" above the lower edge to receive the 1/4" hard board drawer bottom.
3. Assembled drawer to be sealed, sanded and resealed with a two-coat conversion varnish.
4. A 3/4" drawer front shall be screwed and glued to the completed drawer.
5. Drawers shall operate on drawer slides as scheduled.

M. Shelves

1. All shelves less than 36" long shall be constructed of 3/4" core material.
2. All shelves greater than 36" but less than 48" long shall be constructed of 1" thick core material.

2.4 COUNTERTOPS

A. Plastic Laminate Countertops

1. Quality Standard: Comply with AWI Section 400 requirements for countertops.

   a. Grade: Custom.

2. Plastic laminate, GP-50, shop-bonded with fully waterproof bond glue to 3/4" thick sub-top hardwood faced exterior plywood.
3. Smooth sand surfaces to which plastic laminate is to be bonded.
4. Apply standard phenolic backing sheet to back of panels.

a. Build up exposed edges of tops to 1-1/4" thickness.

5. Self-edge exposed edges of top, splash, and openings with same plastic laminate used for tops.
6. Splash shall extend from countertops vertically 4”.
7. Intersections of end splash with top and backsplash need not be coved. Intersection to be caulked, caulk color to match laminate.
8. Colors, Patterns, and Finishes: Countertops and splashes are to be Wilsonart – Desert Zephyr #4841-60

2.5 MAXIMUM VOC EMISSIONS

A. VOC requirements not to exceed the following.

1. Wood Glues: 30 g/L.
2. Contact Adhesive: 80 g/L
3. Adhesive Primer for Plastic: 650 g/L
4. Sealants: 250 g/L
5. Varnishes and Sanding Sealers: VOC not more than 350 g/L

2.6 SHOP FINISHING OF INTERIOR ARCHITECTURAL WOODWORK

A. Quality Standard: Comply with AWI Section 1500, unless otherwise indicated.

B. General: The entire finish of interior architectural woodwork is specified in this Section, regardless of whether shop applied or applied after installation.

1. Shop Finishing: To the greatest extent possible, finish architectural woodwork at the fabrication shop. Defer only final touch up, cleaning, and polishing until after installation.
2. Shop Finishing: The extent to which the final finish is applied to architectural woodwork at the fabrication shop is the Contractor's option, except shop apply at least the prime/base coat to the greatest extent possible before delivery.

C. General: The priming and shop finishing (if any) of interior architectural woodwork required to be performed at the fabrication shop are specified in this Section

D. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer compatible with finish coats to concealed surfaces of woodwork, including backs of trim and cabinets.

E. Washcoat for Stained Finish: Apply a vinyl washcoat to woodwork made from closed-grain wood before staining and finishing.

F. Filled Finish for Open-Grain Woods: After staining (if any), apply paste wood filler to open-grain woods and wipe off excess. Tint filler to match stained wood.

1. Apply vinyl washcoat sealer after staining and before filling.

G. Transparent Finish: Comply with requirements indicated below for grade, finish system, staining, and sheen, with sheen measured on 60-degree gloss meter per ASTM D 523.

1. Grade: Custom.
2. AWI Finish System TR-5: Catalyzed polyurethane.
3. Staining: Match approved sample for color.
4. Staining: As selected by Architect.
5. Sheen: Semigloss 55-75 gloss units.

PART 3 - EXECUTION

3.1 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas before installing.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

3.2 INSTALLATION

A. Quality Standard: Install woodwork to comply with AWI Section 1700 for the same grade specified in Part 2 of this Section for type of woodwork involved.

B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches.

C. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

D. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.

E. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. Do not use pieces less than 36 inches (900 mm) long, except where necessary. Stagger joints in adjacent and related members. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished.

1. Install standing and running trim with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) variation from a straight line.

F. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.

1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.

2. Maintain veneer sequence matching of cabinets with transparent finish.

G. Tops: Anchor securely to base units and other support systems as indicated. Caulk space between backsplash and wall with specified sealant.

1. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
2. Secure backsplashes to tops with concealed metal brackets at 16 inches o.c.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semi exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

3.4 PROTECTION

A. Provide final protection and maintain conditions in a manner acceptable to fabricator and Installer that ensures that woodwork is without damage or deterioration at the time of Substantial Completion.

B. Protect all countertops and do not allow them to be used as work benches for other trades. Keep free of debris and tools.

END OF SECTION

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

07 21 00 - BUILDING INSULATION
07 81 00 - APPLIED FIREPROOFING
07 84 00 - FIRESTOPPING
07 92 00 - JOINT SEALANTS

JUSTICE CENTER SHELL BUILD OUT **SECTION 07 21 00**
WILLIAMSON COUNTY **BUILDING INSULATION**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Extent of insulation work is shown on Drawings and indicated by provisions of this section.

B. Applications of insulation specified in this section include the following:

Batt/Blanket-type building insulation.
Sound attenuation blankets
Safing insulation

1.2 QUALITY ASSURANCE

A. Thermal Conductivity: Thicknesses indicated are for thermal conductivity (k-value at 75 degrees F or 24 degrees C) specified for each material. Provide adjusted thicknesses as directed for equivalent use of material having a different thermal conductivity. Where insulation is identified by "R" value, provide thickness required to achieve indicated value.

B. Fire and Insurance Ratings: Comply with fire-resistance, flammability and insurance ratings indicated, and comply with regulations as interpreted by governing authorities.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product specifications and installation instructions for each type of insulation and vapor barrier material required.

B. Provide National Insulation Association (NIA-404) certification for metal building insulation.

1.4 REFERENCES

A. ASTM C 553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.

B. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

C. ASTM E 96- Test Method for Water Vapor Transmission of Material

D. Federal Specification HH-I-521F: Insulation Blankets, Thermal (Mineral Fiber, For Ambient Temperatures).

E. National Fire Protection Association (NFPA) Life Safety Code

1.5 PRODUCT HANDLING

A. General Protection: Protect insulations from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following or an acceptable substitute approved prior to bidding. For substitution request, refer to Section 01 25 00.

Certain-Teed Corporation.
Clecon, Inc.
Johns Manville, Inc.
Guardian
Owens-Corning Fiberglas Corporation.
Thermafiber Rain Barrier 45

B. Faced Mineral-Fiber Blanket Insulation: Thermal insulation combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665, Type III, Class A (blankets with reflective vapor-retarder membrane facing and flame spread of 25 or less); with foil-scrim-kraft, foil-scrim, or foil-scrim-polyethylene vapor-retarder membrane on 1 face.

1. Mineral-Fiber Type: Fibers manufactured from glass, slag wool, or rock wool.
2. Flanged Units: Provide blankets fabricated with facing incorporating 5-inch- wide flanges along edges for attachment to framing members.

C. Sound Attenuation Blankets: ASTM C 665, Type 1; semi-rigid mineral fiber blanket without membrane, 3 ½" minimum.

a. Flame-Spread Rating: Units with flame-spread rating of 25 or less, ASTM E 84.

D. Fire Safing Insulation: Semi-rigid boards designed for use as a fire stop, produced by combining semi-refractory mineral fiber manufactured from slag with thermosetting resin binders to comply with ASTM C 612, Class 1 and 2; nominal density of 4.0 pcf; passing ASTM E 136 for combustion characteristics: r-value of 4.0 at 75 deg F (23.9 deg C).

1. Fire Caulking Compound: Material approved by manufacturer of safing insulation.

a. Where firerated walls terminate against metal roof or floor deck, fill open flutes at top of wall with fire safing and seal each side with fire caulking compound.

2. Safing Clips: Galvanized steel safing clips approved by manufacturer of safing insulation for holding safing insulation in place.

PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION

A. Installer must examine substrates and conditions under which insulation work is to be performed, and must notify Contractor in writing of unsatisfactory conditions. Do not proceed with insulation work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

B. Clean substrates of substances harmful to insulations or vapor barriers, including removal of projections which might puncture vapor barriers.

3.2 INSTALLATION

A. General

1. Comply with manufacturer's instructions for particular conditions of installation in each case. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.

2. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.

3. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.

B. General Building Insulation

1. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

C. Acoustical Insulation

1. Provide sound attenuation in all walls around restrooms, mechanical rooms, and where shown on plans.

3.3 PROTECTION

A. General: Protect installed insulation and vapor barriers from harmful weather exposures and from possible physical abuses, where possible by non-delayed installation of concealing work or, where that is not possible, by temporary covering or enclosure. Installer shall advise Contractor of exposure hazards, including possible sources of deterioration and fire hazards.

END OF SECTION.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes sprayed fire-resistive materials (SFRM).

1.3 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of fireproofing.

B. Evaluation Reports: For fireproofing, from ICC-ES.

C. Preconstruction Test Reports: For fireproofing.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Do not apply fireproofing when ambient or substrate temperature is 40 deg F (4.4 deg C) or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.

B. Ventilation: Ventilate building spaces during and after application of fireproofing, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.

B. Source Limitations: Obtain fireproofing from single source.

C. Fire-Resistance Design: Indicated on Drawings, tested according to **ASTM E 119 or UL 263** by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Steel members are to be considered unrestrained unless specifically noted otherwise.

D. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction.

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 150 g/L.
3. Primers, Sealers, and Undercoaters: 200 g/L.
4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.

E. Low-Emitting Materials: Fireproofing used within the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

F. Asbestos: Provide products containing no detectable asbestos.

G. Dry mix sprayed fire resistive materials containing mineral fibers are not allowed.

2.2 SPRAYED FIRE-RESISTIVE MATERIALS

A. Standard Durability SFRM: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application.

1. Products: Subject to compliance with requirements, provide the following:
   a. Grace Construction Products; W.R. Grace & Co.; Grace Construction Products; Monokote MK-6 Series
2. Bond Strength: Minimum 200-lbf/sq. ft. (9.58-kPa) cohesive and adhesive strength based on field testing according to ASTM E 736.
3. Density: Not less than 15 lb/cu. ft. (240 kg/cu. m) and as specified in the approved fire-resistance design, according to ASTM E 605.

4. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch (9 mm).
5. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

    a. Flame-Spread Index: 0.
    b. Smoke-Developed Index: 0.

6. Compressive Strength: Minimum 10 lbf/sq. in. according to ASTM E 761.
7. Corrosion Resistance: No evidence of corrosion according to ASTM E 937.
8. Deflection: No cracking, spalling, or delamination according to ASTM E 759.
9. Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.
10. Air Erosion: Maximum weight loss of 0.0 g/sq. ft. in 24 hours according to ASTM E 859.
11. Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21.
12. Finish: Spray-textured finish.

2.3 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that are compatible with fireproofing and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.

B. Substrate Primers: Primers approved by fireproofing manufacturer and complying with one or both of the following requirements:

1. Primer and substrate are identical to those tested in required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
2. Primer's bond strength in required fire-resistance design complies with specified bond strength for fireproofing and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E 736.

C. Bonding Agent: Product approved by fireproofing manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.

D. Metal Lath: Expanded metal lath fabricated from material of weight, configuration, and finish required, according to fire-resistance designs indicated and fireproofing manufacturer's written recommendations. Include clips, lathing accessories, corner beads, and other anchorage devices required to attach lath to substrates and to receive fireproofing.

E. Reinforcing Fabric: Glass- or carbon-fiber fabric of type, weight, and form required to comply with fire-resistance designs indicated; approved and provided by fireproofing manufacturer.

F. Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire-resistance design indicated; approved and provided by fireproofing manufacturer. Include pins and attachment.

PART 3 - EXECUTION

3.1 PREPARATION

A. Cover other work subject to damage from fallout or overspray of fireproofing materials during application.

B. Clean substrates of substances that could impair bond of fireproofing.

C. Prime substrates where included in fire-resistance design and where recommended in writing by fireproofing manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.

3.2 APPLICATION

A. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.

B. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.

C. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.

1. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
2. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.

D. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.

E. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.

F. Extend fireproofing in full thickness over entire area of each substrate to be protected.

G. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.

H. Cure fireproofing according to fireproofing manufacturer's written recommendations.

I. Finishes: Where indicated, apply fireproofing to produce the following finishes:

1. Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.

3.3 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Test and inspect as required by Chapter 17 of the applicable IBC.

B. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.

C. Fireproofing will be considered defective if it does not pass tests and inspections.

1. Remove and replace fireproofing that does not pass tests and inspections, and retest.
2. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.

D. Prepare test and inspection reports.

3.4 CLEANING, PROTECTING, AND REPAIRING

A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

B. Protect fireproofing, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.

C. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.

D. Repair fireproofing damaged by other work before concealing it with other construction.

E. Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 07 84 00**
WILLIAMSON COUNTY **FIRESTOPPING**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Provide firestopping products, assemblies, and systems at each penetration of a fire rated building element or assembly including, but not necessarily limited to, walls, floors, ceilings and floor-ceiling assemblies.

B. Contractor shall examine Construction Documents and existing conditions, if any, to identify fire rated building elements or assemblies that will require firestopping at penetrations.

C. General Performance: Except as otherwise indicated, joint sealers are required to establish and maintain fire resistive continuous seals on a permanent basis, within recognized limitations of wear and ageing as indicated for each application.

D. Contractor shall examine existing conditions, if any, to determine accessibility, difficulty of work, nature of occupancy, etc. that might affect the project cost or schedule.

1.2 REFERENCES

A. Test Requirements: ASTM E-814, "Standard Method of Fire Tests of Through Penetration Fire Stops" (July 1983).

B. Underwriters Laboratories (UL) of Northbrook, IL “FIRE RESISTANCE DIRECTORY” UL 1479.

C. ASTM E-84, Standard Test for Surface Burning Characteristics of Building Materials.

D. UL 723, Standard Test for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Product Data and Material Safety Data Sheets: Submit manufacturer's product specifications for each product and assembly proposed for use in anticipated openings requiring firestopping, including handling/installation/curing instructions, and performance tested data sheets for each fire rated product required. Indicate with each product, the type of penetration for which it will be used.

B. Each submittal shall contain a copy of the manufacturer's written application instructions, listing all application constraints, as well as indicating precisely which products and assemblies are proposed for use in anticipated openings requiring firestopping and the U.L. number for the product or assembly.

1.4 CONTRACTOR

A. Qualifications: Firestopping contractor shall have experience in providing and installing firestop systems or assemblies.

1.5 SEQUENCING

A. Firestopping work shall be properly sequenced and coordinated with other trades so that few or no penetrations requiring firestopping will be made after an area is firestopped. Contractor shall include some time for inspection by Authority Having Jurisdiction, by Architect, and by Engineer.

1.6 QUALITY ASSURANCE

A. Manufacturer: Provide fire stopping products by one of manufacturers listed, who will, upon request, send a qualified technical representative to the job site to advise installer on proper procedures for use of product.

B. Installer: A firm who is approved by the manufacturer of the product, with a minimum of 5 years successful experience in applications of fire stopping materials specified.

C. Job supervisor shall inspect at least one-half of all firestopping applications before such applications are covered up. Architect/Engineer shall be notified prior to cover up so that installation can be reviewed.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and UL label where applicable.

B. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements.

C. Comply with recommended procedures, precautions or remedies described in Material Safety Data Sheets as applicable.

D. Do not use damaged or expired materials.

1.8 SAFETY

A. Contractor shall take safety precautions as listed by product manufacturer as related to ventilation, flammability, toxicity, clean-up, disposal or any other matters of an environmental, health, or safety aspect.

1.9 WARRANTY

A. Contractor shall guarantee material and labor against failure in adhesion, cohesion, abrasion resistance, weather resistance (if appropriate), extrusion resistance, migration resistance, stain resistance, or general durability for a period of one year from date of substantial completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Products from one of the following manufacturers shall be provided or an acceptable substitute approved prior to bidding. For substitutions refer to Section 01 25 00.

AD Firebarrier
3M Fire Protection Products — Dow Corning Corp.
Firestop Systems, Inc. — Hilti Construction Chemicals, Inc.
Tremco Inc. — Specified Technologies Inc.

2.2 MATERIALS

A. Penetration Sealants / Putty: Non-combustible penetrating items (conduit, steel pipe, EMT, copper).

1. AD Firebarrier: Firebarrier Seal & Seal NS
2. Hilti: FS-ONE Firestop Sealant.
3. Dow Corning: Firestop Sealant 2000.
4. 3M Brand: Fire Barrier Caulk CP-25 and CP-25WB.
5. Firestop Systems, Inc.: 4100NS and 4100 SL
6. Tremco: "Tremstop", Fyre-Shield

B. Firestop materials for use at openings and sleeves involving combustible penetrating items (plastic pipe, insulated pipe, or P.V.C. coated, flexible cable).

1. AD Firebarrier: Intumescent Sealant
2. Hilti: CS 2420 Intumescent Wrap.
3. Dow Corning: Firestop Intumescent Wrap Strip 2002.
4. 3M Brand: "Fire Barrier" FS-195 Wrap Strip.
5. Firestop Systems, Inc.: 4800DW
6. Tremco ; "Tremstop, Fyre-Can or Fyre-Can Sleeve"

C. UL Classification: Provide material classified by UL to provide firestopping equal to time rating of construction being penetrated.

D. Firestopping materials shall be asbestos-free, emit no toxic or combustible fumes, and be capable of maintaining an effective barrier against flame, smoke, water and toxic gases in compliance with referenced standards in Paragraph 1.3.

E. Firestopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating item(s) without affecting the adhesion or integrity of the system.

2.3 ACCESSORIES

A. Provide all accessories such as damming materials, clips, retainers, sleeves, nuts, washers, etc. as required by the manufacturers application instructions and in conformance with the products listing.

2.4 WARNING LABELS

A. Above ceiling, near each penetration of a fire rated wall, the contractor shall provide a 5" x 3", adhesive backed warning label with black letters on an orange background as follows:

WARNING

THIS WALL IS A FIRE-RATED WALL. MAKE NO PENETRATIONS OF THIS WALL WITHOUT INSTALLING AN APPROVED FIRESTOPPING ASSEMBLY AT EACH PENETRATION. EACH FIRESTOPPING ASSEMBLY MUST BE APPROPRIATE FOR THE WALL TYPE, FOR THE PENETRATING ITEM, AND FOR THE SIZE OF THE OPENING.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine substrates, (joint surfaces) and conditions under which fire stopping is to be performed, and must notify Contractor in writing of unsatisfactory conditions.

B. Do not proceed with fire stopping work until unsatisfactory conditions have been corrected in a manner acceptable to Installer. All penetrations must be framed or cut to straight, consistent lines. Irregular holes or substrates will not be accepted.

3.2 JOINT PREPARATION

A. Clean surfaces to be in contact with fire stopping immediately before installation. Remove dirt, insecure coatings, moisture and other substrates which could interfere with bond. Etch concrete and masonry joint surfaces as recommended by sealant manufacturer. Roughen vitreous and glazed joint surfaces as recommended by sealant manufacturer.

B. Prime or seal joint surfaces where indicated, and where recommended by manufacturer. Confine primer/sealer to areas of sealant bond; do not allow spillage or migration onto adjoining surfaces,

3.3 INSTALLATION

A. Regulatory requirements: Install penetration seal materials in accordance with published “Through-Penetration Firestop Systems” in the UL Fire Resistance Directory.

B. Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.

C. Set fire stopping at depth or position in joint as indicated to coordinate with other work, including installation of damming or other backing material such as bond breakers, backer rods and sealants. Do not leave voids or gaps between ends of joint fillers.

D. Install accessories, if required, such as retainers, wire, tape, etc. in conformance with manufacturers recommended.

E. Seal holes or voids with approved firestopping caulk or other approved product to ensure an effective smoke barrier.

3.4 CURE AND PROTECTION

A. Cure in compliance with manufacturer's instructions and recommendations, to obtain high bond strength, internal cohesive strength and surface durability.

B. Replace or restore fire stopping which is damaged or deteriorated during construction period.

C. Fire stopping which is not installed as per specifications, or that appear inconsistent in width or sloppy will be required to be replaced.

3.5 CLEAN-UP

A. Clean up spills of liquid components per manufacturer'' cleaning and safety instructions.

B. Neatly cut and trim excess material as needed. Remove all materials, accessories, tools, etc. from site.

END OF SECTION.

JUSTICE CENTER - CSCD **SECTION 07 92 00**
WILLIAMSON COUNTY **JOINT SEALANTS**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. The extent of joint sealers is indicated on Drawings and Schedules, and by provisions of this section. The applications for joint sealers as work of this section are indicated on Sealant Schedule at end of Section.

B. General Performance: Except as otherwise indicated, joint sealers are required to establish and maintain airtight and waterproof continuous seals on a permanent basis, within recognized limitations of wear and ageing as indicated for each application. Failures of installed sealers to comply with this requirement will be recognized as failures of materials and workmanship.

C. Related Sections

1. Section 01 33 00, “Submittals”.

1.2 SUBMITTALS

A. Product Data and Material Safety Data Sheets: Submit manufacturer's product specifications, handling/installation/curing instructions, and performance tested data sheets for each elastomeric product required.

1. With each sealant submitted, identify the intended locations or substrate for application.

B. Guarantee: Furnish a written guarantee covering all defects of materials and workmanship that occur within a period of two (2) years from date of final completion of project. Should any leaks or other defects in materials or workmanship develop within this time, the joint sealer installer shall be bound by the guarantee to make all necessary repairs and replacement at no cost to the Owner.

1.3 JOB CONDITIONS

A. Weather Conditions: Do not proceed with installation of liquid sealants under unfavorable weather conditions. Install elastomeric sealants when temperature is in lower third of temperature range recommended by manufacturer for installation.

1.4 QUALITY ASSURANCE

A. Manufacturer: Provide joint sealers by one of manufacturers listed, who will, upon request, send a qualified technical representative to the job site to advise installer on proper procedures for use of product.

B. Installer: A firm with a minimum of 5 years successful experience in applications of joint sealers specified.

PART 2 - PRODUCTS

2.1 GENERAL SEALER REQUIREMENTS

A. Select materials for compatibility with joint surfaces and other indicated exposures, and except as otherwise indicated, select modulus of elasticity and hardness or grade recommended by manufacturer for each application indicated.

B. All sealants must meet or exceed the VOC thresholds of the Bay Area Air Quality Management Systems and South Coast Air Quality Management District.

C. Provide colors as selected by Architect from manufacturer's standard colors.

2.2 ELASTOMERIC SEALANTS

A. Provide low modulus sealants at all locations except at areas subject to vandalism or noted otherwise. At areas subject to vandalism use medium modulus sealants (35- 40).

B. The manufacturers listed for the following sealants are to establish a standard. Request for acceptable substitute prior to bidding, refer to Section 01 25 00. For substitution materials provide printed statement of VOC content.

C. Single-Component Urethane Sealant (Use urethane sealants at areas prone to standing water)

1. Type S-2: Nonmodified, One-Part Moisture Cure, polyurethane-based, Low Modulus, elastomeric sealant, complying with ASTM C 920, Type S, Grade NS, Class 25, Use NT,.

a. Manufacturer: Vulkem 116 - Tremco
Dynatrol I-XL - Pecora Corp.
Sonolastic NP 1 - Sonneborn (BSAF)
*Sonolastic 150 - Sonneborn (BSAF)
Dymonic - Tremco
Dymonic FC - Tremco

D. Single Component Silicone Rubber Sealant

1. Type S-3: One Part Moisture Curing, Low Modulus, Conforming to ASTM C 920, Type S, Grade NS, Class 25; manufactured by one of the following:

a. Manufacturer:
Architectural Silicone 864 NST- Pecora Corp.
Dow Corning 795- Dow Corning Co.
Spectrem 1 - Tremco (Low Modulus)
Spectrem 2 - Tremco (Medium Modulus)
Spectrem 3 - Tremco (General Purpose, low modulus)
Spectrem 4TS - Tremco (Multi-component, >50% movement)

2. Type S-4: Mildew-Resistant; One part neutral cure, Medium Modulus, Conforming to ASTM C 920, Type S, Grade NS, Class 25, manufactured by one of the following:

a. Manufacturer:
Dow Corning 786
Sanitary 1700, G. E. Corp.
898 Silicone Sanitary Sealant, Pecora

2.3 NON-ELASTOMERIC SEALANTS

A. General: Provide manufacturer's standard one-part, nonsag, mildew-resistant, paintable latex sealant of formulation indicated that is recommended for exposed applications on interior and protected exterior locations and that accommodates indicated percentage

change in joint width existing at time of installation without failing either adhesively or cohesively.

B. Type S-5: Acrylic-Emulsion Sealant - Provide product complying with ASTM C 834 that accommodates joint movement of not more than 5 percent in both extension and compression for a total of 10 percent.

1. Manufacturer: AC-20+Silicone Acrylic Latex - Pecora Corp.
Sonolac - Sonneborn (BSAF)
Tremflex 834- Tremco

C. Type S-6: Acoustical Sealant: Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.

1. Paintable Acoustical Sealant: Non-sag, paintable, non-staining latex sealant complying with ASTM C 834.

USG Sheetrock Acoustical Sealant
Owens Corning Quietzone

2. Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, non-hardening, non-skinning, non-staining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

Dynatrol II; Pecora Corp.
Acoustical Sealant; Tremco

D. Low VOC sealant: General purpose polyether construction sealant. Non-shrinking, 100% solids, moisture-cure polymer and containing no solvents or VOC’s

“GreatSeal PE-150” by STS Coatings, Inc.

2.4 MISCELLANEOUS MATERIALS

A. Joint Primer/Sealer: Provide type of joint primer/sealer recommended by sealant manufacturer for joint surfaces to be primed or sealed.

B. Bond Breaker Tape: Provide polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.

C. Sealant Backer Rod: Provide compressible rod stock of polyethylene foam, polyurethane foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended by sealant manufacturer for back-up of and compatibility with sealant. Where used with hot-applied sealant, provide heat-resistant type which will not be deteriorated by sealant application temperature as indicated.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine substrates, (joint surfaces) and conditions under which joint sealer work is to be performed, and must notify Contractor in writing of unsatisfactory conditions.

B. Verify that sealers and coatings applied to sealant substrates are compatible with specified sealants.

C. Ensure that releasing agents, coatings, or other treatments have not been applied to the surfaces to receive sealants.

D. Do not proceed with joint sealer work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 JOINT PREPARATION

A. Clean joint surfaces immediately before installation of sealant compounds. Remove dirt, dust, silt, scale, insecure coatings, moisture and other substrates which could interfere with bond of sealant by grinding, wire brush, sandblasting or approved cleaning solvent. Etch concrete and masonry joint surfaces as recommended by sealant manufacturer. Roughen vitreous and glazed joint surfaces as recommended by sealant manufacturer.

B. Verify that joint sizes are correct as required to allow for anticipated joint movement and to achieve proper width and depth.

C. Where necessary to protect adjacent surfaces, mask adjacent surfaces with tape prior to priming and/or caulking.

D. Prime or seal joint surfaces where indicated, and where recommended by sealant manufacturer. Confine primer/sealer to areas of sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3 INSTALLATION

A. Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.

B. Set joint filler units at depth or position in joint as required to provide proper depth and width for anticipated joint movement and coordinate with other work, including installation of bond breakers, backer rods and sealants. Do not leave voids or gaps between ends of joint fillers.

C. Install sealant backer rod for liquid-applied sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for application indicated.

D. Install bond breaker tape where indicated and where required by manufacturer's recommendations to ensure that liquid-applied sealants will perform as intended and to prevent three sided adhesion.

E. Employ only proven installation techniques, which will ensure that sealants are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

F. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of slightly concave profiles, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

G. Install liquid-applied sealant to depths as shown or, if not shown, as recommended by sealant manufacturer but within the following general limitations, measured at center (thin) section of beads; (not applicable to sealants in lapped joints):

1. For sidewalks, pavements and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to a depth equal to 75% of joint width, but neither more than 5/8" deep not less than 3/8" deep.
2. For normal moving joints sealed with elastomeric sealants but not subject to traffic, fill joints to a depth equal to 50% of joint width, but neither more than 2" deep nor less than 1/4" deep.
3. For joints sealed with non-elastomeric sealants, fill joints to a depth in range of 75% to 125% of joint width.

H. Spillage: Do not allow sealants or compounds to overflow from confines of joints, or to spill onto adjoining work, or to migrate into voids of exposed finishes. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.

I. Clean adjacent surfaces immediately and leave work neat and clean. Remove excess and droppings using recommended cleaners as work progresses. Remove masking tape immediately after tooling of joints.

3.4 CURE AND PROTECTION

A. Cure sealants in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.

B. Advise contractor of procedures required for cure and protection of joint sealers during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of substantial completion.

C. Cure and protect sealants in a manner which will minimize increases in modulus of elasticity and other accelerated aging effects.

D. Replace or restore sealants which are damaged or deteriorated during construction period.

E. Sealants that are not installed as per specifications, or that appear inconsistent in width or sloppy will be required to be replaced.

SEALANT SCHEDULE FOLLOWS

SEALANT SCHEDULE

Use sealants specified for each type listed below. Where more than one sealant is listed, Contractor has option of which one to use, within performance requirements.

Substrate #1	Substrate #2	Concealed	Exposed Interior
Concrete	Concrete	S-2	S-5
Concrete	Gypsum board	S-6	S-5
Concrete	Metal	S-2	S-2
Concrete	Wood	S-6	S-5
Gypsum board	Gypsum board	S-6	S-5
Gypsum board	Metal	S-6	S-5
Gypsum board	Wood	S-6	S-5
Metal	Metal	S-2	S-2
Metal	Wood	S-2	S-5
Metal	Glass	--	S-3
Glass	Glass	--	S-3
Wood	Wood	S-6	S-5
Plumb Fixture	Concrete, Tile	S-4	S-4
Plumb Fixture	Fiberglass	S-4	S-4

END OF SECTION.

DIVISION 8 - OPENINGS

08 11 16 - ALUMINUM DOORS, DOOR FRAMES, AND GLAZING FRAMES
08 14 24 - PLASTIC FACED DOORS
08 31 00 - ACCESS DOORS
08 71 00 - FINISH HARDWARE
08 81 00 - GLASS AND GLAZING

JUSTICE CENTER - CSCD SECTION 08 11 16
WILLIAMSON COUNTY ALUMINUM DOORS, DOOR FRAMES, AND GLAZING FRAMES

PART 1 – GENERAL

1.01 Summary

A. Section includes:

1. Pre-finished aluminium door frames for interior use.
2. Pre-finished aluminium window frames for interior use.
3. Pre-finished aluminium framing systems for interior use.
4. Pre-finished aluminium and glass doors for interior use.

B. Related sections:

1. Section 08 14 24 – Plastic faced doors.
2. Section 08 71 00 – Finish hardware.
3. Section 08 81 00 – Glass and glazing.

1.02 Submittals

A. Submit under provisions of Section 01 33 00 “Submittals”.

B. Product data: Manufacturer’s fabrication and installation instructions.
1. Include information on factory finish, glazing gaskets, accessories and other required components.

C. Shop drawings: Submit schedule indicating opening numbers, frame types, dimensions, swings and hardware requirements.

D. Include elevations and details indicating frame types, profiles, conditions at openings, methods and locations of anchoring, glazing requirements, hardware locations and reinforcements for hardware.

E. Samples: Submit the following:

1. Full range of manufacturer’s standard finishes for the Architect’s selection

2. Where normal color variations are expected, include additional samples to show range of such variation.

F. Instructions: Provide copies of manufacturer’s data for fabrication and installation of aluminium door frames.

1.03 Quality Assurance

A. Single Source Responsibility: Provide aluminium frames, aluminium and glass doors and accessories produced by a single manufacturer for each type of product indicated.

B. Manufacturer's qualifications: Company specializing in the manufacturing of door frame systems with a minimum of 10 years of documented experience on a comparable sized project.

C. Fire and smoke rated assemblies:

1. In locations where fire rated openings are scheduled or required by regulatory agencies, provide fire rated aluminium frames that have been tested and certified for specified exposure by an agency acceptable to governing authorities.

2. Provide labels permanently fastened on each fire rated frame that are within size limits established by NFPA and the testing authority.

A. Provide 20 minute labels.
B. Provide and frames to match existing wall ratings.

1.04 Delivery, Storage and Handling

A. Deliver frames and doors cartooned to provide protection during transit and storage at project site.

B. Inspect frames and doors upon delivery for damage.

1. Repair minor damage to pre-finished products by means as recommended by the manufacturer.

2. Replace frames that cannot be satisfactorily repaired.

C. Store frames at the project site under cover and as near as possible to the final installation location. Do not use covering material that will cause discoloration of aluminium finish.

1.05 Environmental Requirements

A. Do not begin installation of the frames or doors until the area of work has been completely enclosed and the interior is protected from the elements.

B. Maintain temperature and humidity in areas of installation within reasonable limits, as close as possible to final occupancy. If necessary, provide temperature control and ventilation to maintain required environmental conditions.

1.06 Warranty

A. Warrant against defects in manufacturing of materials for a period of 2 years from date of substantial completion.

B. Warrant framing finish against defects, including cracking, flaking, blistering, peeling and excessive fading, chalking and non-uniformity in color for a period of 5 years.

PART 2 – PRODUCTS

2.01 Acceptable Manufacturers and Products

A. Provide products manufactured by:

1. Wilson Partitions
2221 Manana Drive
Suite 150
Dallas, TX 75220
(214) 295-2165
(214) 496-0156 Fax

B. Substitutions: Comply with provisions of Section 01 25 00 for substitution requests.

2.02 Materials

A. Aluminium: Controlled alloy billets meeting requirements of ASTM B221, 6063 T5 alloy, to assure compliance with tight dimensional tolerances and maintain color uniformity.

2.03 Extruded Aluminium Frames

A. Snap-On Trim Profile: Provide frames with the following characteristics:

1. Rectilinear design.
2. Trim: 2”
3. Series 200: expandable throat from 3” up to 9-1/2”.
4. Accepts 1/4” and 3/8” Glass.

2.04 Fabrication

A. Pre-machine jambs and prepare for hardware, with concealed reinforcement plates, drilled and tapped as required, and fastened within the frame.

B. Provide corner reinforcements and alignment clips for precise butt or mitered connections.

C. Fabricate all components to allow secure installation without exposed fasteners.

D. Manufacturer shall pre-cut and ship all frame materials knock-down.

2.05 Finishes

A. Factory finish extruded frame components so that any part exposed to view upon completion of installation will be uniform in finish and color.

B. Standard Dark Bronze Anodic Coating (AB-7), Comply with AAMA 611.

1. Class II, AAM12C22A34 anodized coating, 0.4 mil minimum thick.

PART 3 – EXECUTION

3.01 Examination

A. Examine project conditions and verify that the work of this section may properly commence. Do not proceed with the installation until unsatisfactory conditions have been corrected.

B. Verify that the wall thickness does not exceed manufacturer's recommended tolerances of specified frame throat size.

3.02 Installation

A. Comply with frame manufacturer's printed installation instructions and approved shop drawings. Strictly adhere to maintaining specified wall thickness to insure dimension does not exceed frame throat size specified. Installation not to be attempted in areas where the wall thickness exceeds the tolerance of the specified throat size.

B. Install frames plumb and square, securely anchored to substrates with fasteners recommended by frame manufacturer.

1. Use concealed installation clips to assure that splices and connections are tightly butted and properly aligned.

2. Secure clips to main structural extrusion components and not to snap-in or trim members.

3. Do not use screws or other fasteners that will be exposed to view when installation is complete.

3.03 Adjusting and Cleaning

A. Clean exposed frames promptly after installation, using cleaning methods recommended by frame manufacturer.

B. Touch up marred areas so that touch-up is not visible from a distance of 4 feet. Remove and replace frames that cannot be satisfactorily adjusted.

3.04 Protection

A. Provide protection required to assure that frames will be without damage or deterioration upon substantial completion of the project.

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 08 14 24**
WILLIAMSON COUNTY **PLASTIC FACED DOORS**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. The extent and location of each type of plastic faced door is shown on the Drawings and in schedules.

B. The types of doors required include solid core, plastic faced doors fire-rated and non-fire rated doors.

1.2 RELATED WORK

A. Refer to Section 08 71 00, Finish Hardware, for hardware requirements.

B. Refer to Section 08 11 16, Aluminum Doors and Frames, for door frame requirements.

C. Refer to Section 08 81 00, Glazing, for glass requirements.

1.3 QUALITY ASSURANCE

A. General: Comply with the requirements of the following standards unless otherwise indicated.

1. Non-Fire-Rated Wood Doors: NWMA Industry Standard 1.S.1 "Wood Flush Doors" of the National Woodwork Manufacturer's Association.

2. Fire-Rated Wood Doors: Where fire-resistant classifications are shown or scheduled for plastic faced wood door assemblies, provide doors which comply with the requirements of NFPA No. 80 "Standard for Fire Doors and Windows" and which have been tested and rated with single point hardware by UL according to ASTM E 152 "Fire Test of Door Assemblies".

a. Doors that require 3/4, 1, 1-1/2, 2 or 3 hour fire rating shall be tested under positive pressure conditions as per UL-10C.

b. Provide UL label on each fire rated door

3. 20 minute doors are to be tested in accordance with NFPA 252 or UL -10C, without the hose test, as outlined in 2012 IBC

1.4 SUBMITTALS

A. Manufacturer's Data: Submit door manufacturer's product data, specifications and installation instructions for each type of plastic faced door including other data to show compliance with the specified requirements. Transmit a copy of each instruction to the Installer.

a. Include certifications to show compliance with the specifications.
b. Include details of core and edge construction for each type of door.
c. Include details of trim for openings in doors.

B. Shop Drawings: Submit door schedule indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware, blocking, fire ratings, and other pertinent data. Number doors with same system as contract documents.

1. Indicate dimensions and locations of cutouts for locksets and other cutouts.

C. Samples
   1. Submit samples for each required color, finish and pattern of plastic laminate. Samples will be reviewed for color pattern and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor.
   2. Metal Frames for Light Openings: Metal light frames in 6" lengths; for each material, type and finish required.

1.5 WARRANTY

A. Submit written agreement guaranteeing materials, and workmanship, signed by the Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or which show photographing of construction below in plastic laminate faces, or do not conform to tolerance limitations of NWMA.

   1. Warranty shall also include reinstallation which may be required due to repair or replacement of defective doors where defect was not apparent prior to hanging.
   2. Warranty shall be in effect during the following period of time after the date of acceptance.

      Solid Core Plastic Faced Interior Doors: Life

   3. Contractor's Responsibilities: Replace or refinish doors where Contractor's work contributed to rejection or to voiding of manufacturer's warranty.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect plastic faced doors during transit, storage and handling to prevent damage, soiling and deterioration.

B. Package each plastic faced door at the factory in a separate heavy paper type carton. Mark each carton for location to correspond with shop drawings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering doors which may be incorporated in the work include the following or an acceptable substitute approved prior to bidding. Refer to Section 01 25 00 for substitutions.

   1. Algoma Hardwoods, Inc.
   2. Buell Door Company.
   3. Cal-Wood Door Div., Timberland Industries, Inc.
   4. Eggers Industries, Architectural Door Division.
   5. Graham Manufacturing Corp.
   6. Gulf Coast Door Openings, Inc.
   7. Marshfield
   8. VT Industries

2.2 CORE MATERIAL AND FABRICATION

A. General Fabrication Requirements

   1. Construct doors to comply with requirements of AWI Custom grade doors.

2. Openings: Factory cut openings through doors and panels as shown.

B. Solid Core Plastic Faced Wood Doors

1. Door Construction: Provide door construction as follows:

a. Solid core particleboard, Commercial Standard CS 236, Density C (average 30 pcf).
b. Type II water-resistant bond, unless Type I required to meet specified warranty period.
c. Provide hardwood stiles and edges and solid wood blocking at locations for mounting hardware.

2.3 EXPOSED SURFACES

A. Plastic Laminate: NEMA LD 3, General-Purpose Type, .050 minimum thickness. Apply to both faces of door.

Color, finish and pattern to be: Wilsonart Premium Laminate, Nepal teak 7209k-78 fine grain finish, to match existing.

B. Vertical Door Edges: Hardwood to be painted or stained to match plastic laminate faces. If laminate face is wood grain, edge to be stained to match.

2.4 ACCESSORIES

A. Metal Frames for Light Openings: Manufacturer's standard frame formed of 18-gage cold-rolled steel, factory-primed, and approved for use in door of fire-rating indicated.

B. Provide 20 gage metal astragal for fire-rated pairs of doors.

2.5 FIRE RATED DOORS

A. Fire-Rated Solid Core Doors: Comply with the following requirements.

1. Faces and AWI Grade: Provide faces and grade to match non-rated doors in same area of building, unless otherwise indicated.
2. Construction: Manufacturer's standard core construction as required to provide fire-resistance rating indicated.
3. Edge Construction: Provide manufacturer's standard laminated edge construction for improved screw-holding capability and split resistance as compared to edges composed of a single layer of treated lumber.

a. Provide concealed intumescent edge strips at perimeter of fire rated doors to comply with NFPA 252 and UL 10C.

4. Pairs: Furnished formed steel edges and astragals for pairs of fire-rated doors, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine installed door frames prior to hanging door:

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.

2. Reject doors with defects.

3.2 INSTALLATION

A. General: Install plastic faced doors in accordance with manufacturer's instructions. Refer to Section 08 71 00 of these specifications for installation of hardware.

B. Job Fit Doors: Align door to frame for proper fit and uniform clearance at each edge and machine for hardware. Seal cut surfaces after fitting and machining.

Bevel non-fire-rated doors 1/8" in 2" at lock and hinge edges.

C. Clearances:

1. For non-fire-rated doors provide clearances of 1/8 inch at jambs and head.
2. At meeting stiles for pairs of doors: 1/8 inch
3. At bottom of door to top of decorative floor finish or covering: 1/2 inch
4. Where threshold is shown or scheduled, provide 1/4 inch clearance from bottom of door to top of threshold.

D. Fire-Rated Doors: Install in corresponding fire-rated frames in accordance with the requirements of NFPA Standard No. 80. Provide clearances complying with the limitations of authorities having jurisdiction.

3.3 ADJUST AND CLEAN

A. Operation: Rehang or replace doors which do not swing or operate freely, as directed by the Architect.

B. Replace doors damaged during installation, as directed by the Architect.

C. Protection of Completed Work: Advise Contractor of proper procedures required for protection of installed plastic faced doors from damage or deterioration until acceptance of the work.

END OF SECTION.

JUSTICE CENTER - CSCD **SECTION 08 31 00**
WILLIAMSON COUNTY **ACCESS DOORS**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Access doors: Provide where required for access to plumbing or mechanical equipment.

1.2 RELATED SECTIONS

A. Refer to Division 15 and 16 and electric, plumbing and mechanical plans for locations of access doors.

1.3 QUALITY ASSURANCE

A. Size Variations: Obtain Architect's acceptance of manufacturer's standard size units which may vary slightly from sizes indicated.

B. Coordination: Furnish inserts and anchoring devices which must be built into other work for installation of access doors. Coordinate delivery with other work to avoid delay.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical data and installation instructions for each type of access door assembly, including setting drawings, templates, instructions and directions for installation of anchorage devices.

B. Shop Drawings: Submit shop drawings for fabrication and installation of access doors and frames, including details of each frame type, elevations of door design types, anchorage and accessory items.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Provide access doors by one of the following or an acceptable substitute approved prior to bidding. For substitution request, refer to Section 01 25 00.

Access Doors:

J.L. Industries, Inc.	Karp Associates, Inc.
Larsen’s Manuf. Co.	Milcor Div.; Inryco, Inc.
Nystrom, Inc.	Williams Brothers Corp.

2.2 ACCESS DOORS

A. General: Furnish each access door assembly manufactured as an integral unit, complete with all parts and ready for installation.

B. Steel Access Doors and Frames: Fabricate units of continuous welded steel construction, unless otherwise indicated. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of support shown.

C. Frames: Fabricate from 16 gage steel.

1. Fabricate frame with exposed flange approximately 1" wide around perimeter of frame for units installed in the following construction:

Drywall finish.

D. Flush Panel Doors: Fabricate from not less than 14 gage sheet steel, with concealed spring hinges or concealed continuous piano hinge set to open 175 degrees. Finish with manufacturer's factory-applied prime paint.

1. Provide flush panel doors, unless otherwise indicated.

E. Locking Devices: Furnish flush, screwdriver-operated cam locks of number required to hold door in flush, smooth plane when closed.

F. Fire Rating: Provide fire rated access doors at locations and of same fire resistance as walls or assemblies in which doors are installed.

1. Fire rated access doors shall be 20 gage hollow metal doors with a positive latch.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine areas and conditions under which access doors are to be installed and must notify Contractor in writing of conditions detrimental to proper and timely completion of work.

B. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 INSTALLATION

A. Comply with manufacturer's instructions for installation of access doors.

B. Coordinate installation with work of other trades.

C. Set frames accurately in position and securely attach to supports with face panels plumb or level in relation to adjacent finish surfaces.

3.3 ADJUST AND CLEAN

A. Adjust hardware and panels after installation for proper operation.

B. Remove and replace panels of frames which are warped, bowed or otherwise damaged.

END OF SECTION.

SECTION 087100 – FINISH HARDWARE

PART 1 – GENERAL:

1.01 SUMMARY:

A. Section includes Finish Hardware

B. Work under this section comprises of furnishing and installing hardware specified herein and noted on drawings for a complete and operational system, including all required mechanical and electrified hardware components, systems and controls. All doors that are fire rated shall be provided with fire rated hardware to comply with the local code requirements. The general contractor and hardware supplier shall coordinate cylinder types with all door manufacturers prior to submittal of finish hardware. There will be no additional change orders issued due to the general contractor or hardware supplier's failure to include any hardware item required by local code or required for functional and/or proper installation of hardware items due to failure to coordinate with other trades and/or related products.

C. The General Contractor and Hardware Supplier shall notify the Architect in writing of any discrepancies five (5) days prior to bid date that could and/or would result in hardware being supplied that is none functional, hardware specified and/or hardware that has not been specified that will result in any code violations and any door that is not covered in this specification. Failure of the general contractor and hardware supplier to address any such issue shall be considered acceptance of the hardware specified and all discrepancies shall be corrected at the general contractor and hardware supplier's expense and considered a part of their base bid. Change orders shall not be issued if deemed by the Architect to fall under and/or be covered as a part of the supplier's base bid, due to failure to comply with this instruction notification.

D. Items include but are not limited to the following:

1. Hinges - Pivots
2. Flush Bolts
3. Exit Devices
4. Locksets and Cylinders, Cores, Keys
5. Push Plates - Pulls
6. Coordinators
7. Closers
8. Kick, Mop and Protection Plates
9. Stops, Wall Bumpers, Overhead Controls
10. Electrified Hold Open Devices
11. Thresholds, Gasketing and Door Bottoms
12. Silencers
13. Miscellaneous Trim and Accessories
14. Mounting Plates, Brackets, Fasteners
15. Electrified Hardware Items, Controls and Power Supplies
16. Wiring diagrams
17. Wire and Communication Cable (Furnish & Install)
18. Installation & Testing of the Complete Access Control System

E. Related Sections:

1. Finish Carpentry – Division 6
2. Metal Doors and Frames – Division 8
3. Wood Doors – Division 8
4. Aluminum Storefront – Division 8

5. Acoustically Gasketed Doors – Division 8
6. Electrical - Division 16

1.02 REFERENCES:

A. Documents and Institutes that shall be used in estimating, detailing and installing the items specified.

1. International Building Code – Current Edition
2. ICC/ANSI A117.1 – Accessible and Usable Building and Facilities – Current Edition
3. NFPA80 –Standards For Fire Doors and Fire Windows – Current Edition
4. NFPA101 – Life Safety Code – Current Edition
5. NFPA105 – Installation of Smoke-Control Door Assemblies – Current Edition.
6. UL Labeled for Rated Doors.
7. DHI – Door and Hardware Institute
8. SDI- Steel Door Institute
9. ANSI - American National Standards Institute
10. BHMA – Builders Hardware Manufacturers Association
11. Local Building Codes
12. Leed – version 2.2

1.03 SUBMITTALS

A. Comply with pertinent provisions of Section 01300.

B. Finish Hardware Schedule to be in vertical format to include:
1. Heading #/Hardware Set
2. Door #, Location, Hand, Degree of Opening, Door Size and Type, Frame Size and Type, Fire Rating
3. Quantity, type, style, function, product, product number, size, fasteners, finish and manufacturer of each hardware item.
4. Location of hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
5. Keying schedule
6. Title Sheet, Index, Abbreviations, Manufacturers List, Template List and Templates.
7. Mounting locations for hardware.
8. Explanation of abbreviations, symbols, and codes contained in schedule.

C. Product Data: Product data shall be provided, in the form of a binder, manufacturer's technical product fact sheets for each item of hardware. Include whatever information may be necessary to show compliance with requirements, including instructions for installation and for maintenance of operating parts and finish.

D. Wiring Diagrams: Riser/Elevation and Point to Point Wiring Diagrams shall be provided. Include whatever information may be necessary for coordination with other trades.

E. Samples: Samples shall be provided as requested by owner or architect with Heading # and Door# marked on boxes. All samples shall be returned to the contractor and used on doors for which they were marked

F. Templates: Templates of finish hardware items to be supplied are to be furnished to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware.

G. Keying Schedule: A keying schedule shall be submitted using keyset symbols referenced in DHI manual “Keying Systems and Nomenclature." The keying schedule shall be indexed by door number, keyset, hardware heading number, cross keying instructions and special key stamping instructions.

H. Operations and maintenance data: At the completion of the job, furnish to the owner two copies of an owner’s operation and maintenance manual. The manual shall consist of a labeled hardcover three ring binder with the following technical information:
1. Title page containing: Project name, address and phone numbers. Supplier’s name, address and phone numbers.
2. Table of Contents.
3. Copy of final Finish Hardware Schedule and Keying Schedule
4. Maintenance instruction for each item of hardware.
5. Catalog pages for each product.
6. Installation Instructions and Parts List for all Locks, Exit Devices and Door Closers.

1.04 QUALITY ASSURANCES

A. Substitutions: Request for substitutions shall not be accepted within this project. Architect, owner and Hardware Consultant have selected one (1) specified and two (2) equals listed hereinafter in the Hardware Schedule. By this selection process they have established three (3) equal products for competitive pricing, while insuring no unnecessary delays by a substitution process. If any specified product is listed as a “No Substitution” product, this product will be supplied as specified, with no alteration or request of substitution. The reason for this is to comply with the uniformity established at this project. Parts and supplies are inventoried for these particular products for ease and standardization of replacement.

B. Supplier Qualifications: Supplier shall be recognized architectural finish hardware supplier, with warehousing facilities, who have been furnishing hardware in the project vicinity for a period of not less than 2 year and who is or employs a DHI Certified AHC or person with a minimum of 10 years of experience as a hardware supplier. This person shall be available at reasonable times during the course of the work for consultation about products hardware requirements, to the owner, architect and contractor.

C. Installation Review: A Distributor Representative (AHC) shall perform a jobsite walk-through after completion of installation in order to review correct installation, adjustment, hardware applications and to verify that the correct hardware has been installed at the correct doors.

D. Installer Qualifications: Installer for mechanical hardware shall have a minimum of 2 years of experience of installing architectural finish hardware and attend a pre-installation meeting with the manufacturer’s representative of locks, exit devices and closers.

E. Wiring and termination of electrified door hardware by security contractor shall be concurrent with the installation of these electrified components by the door hardware subcontractor.

1.05 DELIVERY, STORAGE AND HANDLING

A. Marking and packaging: Mark each item or package separately, with identification related to hardware set number, door number and keyset symbol.

B. Delivery:

1. Deliver individually packaged and properly marked finish hardware at the proper time and location to avoid any delays in construction or installation.
2. At time of delivery, inventory hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

C. Storage: Store hardware in enclosed, dry and locked area.

1.06 WARRANTY

A. All finish hardware products shall be covered by a 1 year factory warranty from the date of substantial completion of the project.

B. Supply warranty verification to the owner for products that provide factory warranties for periods longer than one year. Mechanical Door Closers shall carry a 10-year warranty.

1.07 MAINTENANCE:

A. Maintenance Service
1. None

B. Extra Materials:
1. Furnish 3 dozen extra screws and other fasteners of each size, type and finish used with the hardware items provided. These screws and fasteners are to be delivered to the hardware installer for use during installation. All extra screws and fasteners and all special installation tools furnished with the hardware shall be turned over to the owner at the completion of the job.
2. All installation tools provided by the manufacturers shall be turned over to the owner at the completion of the job.

PART 2 – PRODUCTS

2.01 MANUFACTURER

A.

Manufacturer	Abbrv	Website
Bommer Industries, Inc.	BOM	www.bommer.com
Doromatic	COR	www.doromatic.com
Falcon	FAL	www.falconlock.com
Glynn Johnson	GLY	www.glynn-johnson.com
Hager Hinge Company	HAG	www.hagerhinge.com
Ives	IVE	www.iveshardware.com
LCN	LCN	www.lcnclosers.com
Monarch	MON	www.monarchhardware.com
National Guard	NGP	www.ngpinc.com
Pemko	PEM	www.pemko.com
Rockwood	ROC	www.rockwoodmfg.com
Schlage	SCH	www.schlage.com
Trimco/BBW/Quality	TRI	www.trimcobbw.com
Von Duprin	VON	www.vonduprin.com
Zero	ZER	www.zerointernational.com

2.02 MATERIALS

A. Screws and Fasteners:
1. Closers and exit devices provided for exterior doors shall be provided with thru-bolts.

2. All finish hardware shall be installed to manufacturer's recommendations, using screws, attachments and installation tools provided with the hardware. No other screws or attachments are acceptable.
3. All other products to meet door and frame conditions.

B. Hinges:
1. Template: Provide templated units only.
2. Exterior: All exterior hinges shall be standard weight (.134 or .146 ga) five knuckle, ball bearing, full mortise type, stainless steel.
3. Interior: All interior hinges shall be standard weight (.134 or .146 ga) five knuckle, ball bearing, full mortise type.
4. Provide non-removable pins for all outswinging exterior and interior doors to receive locking hardware (whether indicated or not) at individual HW Sets in the schedule.
5. Size: Provide 4 ½ x 4 ½ hinges on doors up to 3'0" in width. Provide 5 x 4 ½ hinges on door from 3'2" to 4'0" in width. Reference manufacturers catalog for all other sizes.
6. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges for door leaf for doors 90" or less in height and one additional hinge for each 30" of additional height.
7. The width of hinge shall be sufficient to clear all trim.
8. Supply from the following list of manufacturers:

   Ives
   Hager
   Bommer

C. Cylindrical Locks/Latches
1. Provide cylindrical locksets that comply with ANSI A156.2, Series 4000, Grade 1; tested to exceed 3,000,000 cycles. Functions as listed in Hardware Sets.
2. Provide cylindrical locksets that meet ANSI A117.1, Accessibility Code.
3. Provide cylindrical locksets that meet UL A label; to have a minimum listing for single doors 4' x 8'
4. Chassis to be one-piece, modular assembly.
5. Levers to be bi-directional, independent assemblies.
6. Levers are to be plated to match BHMA finishes.
7. Thru-bolts to be a minimum of ¼" in diameter.
8. Thru-bolts to secure anti-rotation plate without sheer line. Manufacturers utilizing fully threaded thru-bolts are not acceptable.
9. Adjustment plate to be threaded for door thickness adjustment.
10. Adjustment plate to adjust for doors from 1 5/8" thickness to 2 1/8" thickness.
11. Adjustment plate to have visual chassis marking for doors 1 ¾" thick.
12. Strike to be ANSI curved lip, 1 ¼" x 4 7/8", 16 gauge, with 1" deep box construction.
13. All locksets and cylinders are to be provided by the same manufacturer, unless otherwise specified.
14. Supply from the following list of manufacturers:
    Best – 93K (No Substitution)

D. Exit Devices
1. All exit devices are to be architectural grade touch bar type. Mechanism case to be smooth.
2. All exit devices to meet ANSI A156.3, 1994, Grade 1. All exit devices are UL listed for Accident Hazard or Fire Exit Hardware.
3. All lever trim to match lock trim in design and finish.

4. Dogging: All non-rated devices are to be provided with dogging. Cylinder dogging as shown in hardware sets.
5. All devices are to be supplied and installed with thru-bolts.
6. Mullion shall be removable. Keyed removable as shown in hardware sets.
7. All push pads shall be metal, no plastic inserts allowed.
8. Function and type as listed in hardware sets.
9. All exit devices are to be provided by the same manufacturer, unless otherwise specified.
10. Supply from the following list of manufacturers:
    Von Duprin 33/99 Series (Von Duprin XP99 where indicated – no substitution)

E. Pull Plates
1. Pull Plates to meet ANSI 156.6 for .050" thickness. Plate size to 4" x 16" with 1" round on pull plate.
2. Supply from the following list of manufacturers
    Ives
    Trimco
    Rockwood

F. Push Plates
1. Push Plates to meet ANSI 156.6 for .050" thickness. Plate size to be 4" x 16".
2. Supply from the following list of manufacturers
    Ives
    Trimco
    Rockwood

G. Door Closers
1. Door closers shall meet the minimum requirements of the 1990 ADA act, in lieu of ANSI Standard A156.4 and ANSI, Grade 1.
2. Door closers shall be furnished with backcheck, delayed action, hold-open and advanced backcheck as listed in the Hardware Schedule.
3. Door closers shall be mounted out of the line of sight wherever possible (i.e., room side of corridor doors, etc.) with parallel arm mounting on out swinging doors. Mount closer top jamb or on brackets and/or drop plates, where special conditions call for it. All closer installation on wood doors shall include sex nut bolts.
4. Supply from the following list of manufacturers
    Falcon SC81/SC71
    Sargent 1431/281
    LCN 1460/4040 (LCN 4040XP where indicated – no substitution)

H. Door Protection Plates
1. Protective plates shall meet ANSI A156.6 requirements for .050 thickness.
2. Kickplates shall be 10" by 2" less than door width on single door and 1" less than door width on pair of doors or as indicated in hardware sets. Beveled 3 edges.
3. Armor plates shall be 34" by 2" less than door width or as indicated in hardware sets. Beveled 4 edges.
4. Supply from the following list of manufacturers:
    Ives
    Rockwood
    Trimco

I. Door Stops and Holders:
1. Wall and Floor Stops: Supply wall stops where needed to protect doors or door hardware. When wall conditions do not permit use of wall stop provide floor stops with risers as needed to adjust for floor conditions.

2. Overhead Stops: Where wall or floors stops are not applicable provide surface overhead stops.
3. Supply from the following list of manufacturers:
   Ives
   Glynn Johnson
   Trimco

J. Silencers
1. Provide silencers on all doors without smoke seal or weatherstrip. 3 for single doors and 2 for pairs.
2. Provide silencers as required for frame conditions
3. Supply from the following list of manufacturer's
   Ives
   Rockwood
   Trimco

K. Thresholds/Weatherstripping
1. All thresholds shall conform to state and local handicap codes.
2. Smoke seal shall be as specified.
3. Perimeter seal shall be as specified.
4. Drip strips shall protrude 2 ½".
5. Provide door sweeps shall be as specified.
6. Provide UL meeting stile gasketing for fire rated doors.
7. Supply from the following list of manufacturer's
   Zero
   National Guard (Product equivalency to be determined during Submittal Review)
   Pemko (Product equivalency to be determined during Submittal Review)

2.03 FINISHES

CATEGORY		FINISH
Butts		
	Interior Non Labeled	652
	Interior Labeled	652
	Interior Corrosive Area	630
	Exterior	630
Continuous Hinges		ALUM
Flush Bolts/Dust Proof Strikes		626
Locks/Latches		626
Cylinders		626
Exit Devices		626/630
Door Closers		689
Push Plates		630
Pull Plates		630
Protective Plates		630
Door Stops and Holders		626
Overhead Stops/Holders		630
Weatherstrip and Threshold		ALUM

2.04 KEYING:

A. General: Supplier will meet with owner to finalize keying requirements and match existing Best Grand Masterkey System for the project as directed.

B. Keys: Provide nickel silver keys only. Furnish 3 change keys for each lock: 6 control keys: 12 construction masterkeys: 6 master keys for each master system and 6 grandmaster keys for each grandmaster key system. Deliver all keys to owners' representative.

C. Provide brass construction core keying for this project with keys as required per Owner.

D. Permanent cores shall be installed by the General Contractor when directed by Owner.

2.05 KEY CONTROL:

A. Key Management: Provide a complete key storage and management system. Each key shall be fully cut, indexed, tagged and installed on cabinet hooks by the lock supplier and shipped with the locks. Key cabinet provided shall be wall-mounted type with capacity plus 50%.

2.06 KNOX BOX:

A. Provide 3200-Series with swinging door and mortise kit "RMK" as manufactured by The Knox Company (See architectural drawings for location).

PART 3 – EXECUTION:

3.01 EXAMINATION:

A. Examine doors, frames and related items for conditions that would prevent the proper application of any finish hardware items. Do not proceed with installation until all defects are corrected.

3.02 INSTALLATION:

A. Follow Door and Hardware Institute Publication for:
Recommended Location for Architectural Hardware for Standard Steel Doors and Frames
Recommended Location for Builder's Hardware for Custom Steel Doors and Frames
Recommended Locations for Architectural Hardware for Wood Flush Door

B. Follow ANSI A117.1-1998 Accessible and Usable Building and Facilities

C. Review mounting locations with Architect.

D. Pre Installation meeting required with attendees to include Architect, Contractor, Carpenter, Supplier and Manufacturer's Representative for Exit Device, Locks and Closers before installation begins.

3.03 FIELD QUALITY CONTROL:

A. After installation has been completed, obtain the services of a qualified hardware consultant to check for proper application of finish hardware, according to the finish hardware schedule and keying schedule. In addition, check all hardware for adjustments and proper operation.

3.04 ADJUST AND CLEAN:

A. Adjust, clean and inspect all hardware, to ensure proper operation and function of every opening. Replace items, which cannot be adjusted to operate freely and smoothly as intended for the application made.

3.05 PROTECTION:

A. The contractor shall use all means at his disposal to protect all finish hardware items from abuse, corrosion and other damage until the owner accepts the project as complete.

3.06 HARDWARE SCHEDULE

GENERAL NOTES:

(The following notes supersede all instruction per individual HW Sets to follow)

1. A joint Access Control/Auto Operator/Electronic Hardware meeting (to be organized by the GC) shall take place prior to the ordering of any materials. The meeting should include "all related trades & interested parties" such as; the GC, Architect, Owner, Access Control Contractor, Auto Operator Supplier/Installer, Hardware Supplier, Electrician (and any additional parties deemed necessary). The purpose of this meeting is to address each opening designated to receive "Access Control/Auto Operators/Electronic Hardware Devices" to coordinate the specific application/function required (and verify that all components/accessories are being provided) but not duplicated.

VERIFY/COORDINATE EXACT "ACCESS CONTROL/OPERATOR FUNCTION" FOR EACH OPENING AT SECURITY ACCESS CONTROL "COORDINATION MEETING" (PRIOR TO ORDERING MATERIALS). NOTE: MEETING SHALL INCLUDE ALL RELATED TRADES, SUBCONTRACTORS, ARCHITECT AND OWNER.

RISER DIAGRAMS/OPERATIONAL DESCRIPTIONS TO BE PREPARED (AND SUBMITTED FOR APPROVAL) AS A RESULT OF THE SECURITY ACCESS CONTROL "COORDINATION MEETING"

2. Provide NRP hinges at all outswinging locking doors – Exterior and Interior.

3. Provide additional hinges at all doors in excess of 7'-6" in height, per manufacturer's requirements.

4. Provide Heavy Weight - 5" hinges at all doors in excess of 3FT in width.

5. Provide Wall/Floor stops as appropriate (in the proper height/length) at all opening locations.

6. Provide OH Stops at all openings where Floor/Wall stops are inappropriate.

7. Provide proper closers arms SCUSH (or otherwise) at all openings where Floor/Wall stops are Inappropriate.

8. Provide Closer mounting plates where required, at narrow top rails.

9. Omit Kickplates at full glass doors, regardless of HW Set Assignment.

10. Omit Weatherstrip at Storefront doors, regardless of HW Set Assignment.

11. GC and Hardware Supplier to verify and match existing Masterkey System requirements to include;

Lock/Cylinder Manufacturer, Required Keyway (Restricted or Conventional) and “Interchangeable Core vs. Conventional Core”. No cylinders or cores are to be ordered without owner’s written approval of keying system requirements.

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12. Provide door seals/sweeps or acoustic seals where indicated on the Door Schedule.

Typical Acoustic Seals, consist of the following “ZERO” items (where indicated/required);

Perimeter Seals	139A	
Auto Bottoms	369AA X Z49	(Mortised to meet ADA Rqmnts)
Threshold	564A	(Where reqd/indicated for Acoustic Doors)
Threshold	(as specified/detailed)	(Where detailed – see drawings)
Astragal (Set)	8193AA	(Pairs)

Note: Product Equivalency of ALL Seal/Threshold/Gasketing products, to be determined during Submittal Review.

HARDWARE SET # 01 SGL OFFICE LOCK

100	101	102	103	104	105
106	107	108	110	111	112
113	114				

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	641	IVE
1	EA	OFFICE LOCK	93K7AB14D S3	626	BST
1	EA	WALL/FLOOR STOP	FS13/WS407CCV (AS REQD)	626	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	SET	SEALS	188FS	CL	ZER
1	EA	MORTISE AUTO BOTTOM	369AA X Z49	CL	ZER
1	EA	THRESHOLD	AS DETAILED/REQUIRED	CL	ZER

NOTE: AUTO BOTTOM AND DOOR BOTTOM THRESHOLD @ DOOR # 105 ONLY.

HARDWARE SET # 02 SGL BREAK RM (CLASSROOM LOCK)

109A

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	641	IVE
1	EA	CLASSROOM LOCK	93K7R14D S3	626	BST
1	EA	WALL/FLOOR STOP	FS13/WS407CCV (AS REQD)	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE SET # 03 SGL RATED STOREROOM LOCK

109B

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	641	IVE
1	EA	STOREROOM LOCK	93K7D14D S3	626	BST
1	EA	SURFACE CLOSER	SC81 RW/PA SNB	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL/FLOOR STOP	FS13/WS407CCV (AS REQD)	626	IVE
1	SET	SEALS	188FS	CL	ZER
1	EA	MORTISE AUTO BOTTOM	369AA X Z49	CL	ZER
1	EA	THRESHOLD	AS DETAILED/REQUIRED	CL	ZER

HARDWARE SET # 04 SGL CLOSET (STOREROOM LOCK)
119

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	641	IVE
1	EA	STOREROOM LOCK	93K7D14D S3	626	BST
1	EA	WALL/FLOOR STOP	FS13/WS407CCV (AS REQD)	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE SET # 05 PAIR RATED CORRIDOR – (EXISTING) EGRESS DOORS – PANIC DEVICES
118A

EACH TO HAVE:

2	EA	CYLINDER	1E72/1E74 AS REQUIRED	BST
		BALANCE HARDWARE	EXISTING/REUSED	

NOTE: GC/HARDWARE SUPPLIER TO FIELD-VERIFY CYLINDER TYPE/QUANTITY/FINISH REQUIRED

HARDWARE SET # 06 SGL VEST – PANIC DEVICE (CARD READER)
REMOTE RELEASE @ RECEPT

118B

3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	641	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	FSE-RX-25-R-L QUAN SNB	628	FAL
1	EA	CYLINDER	AS REQD	626	BST
1	EA	SURFACE CLOSER	SC71 X 3077SS SNB	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	POWER SUPPLY	PS914 900-2RS	LGR	VON
1	EA	PUSH BUTTON	660-PB (MOMENTARY)		VON
		CARD READER	PROVIDED BY SECURITY CONTRACTOR		
		DOOR BELL	PROVIDED BY SECURITY CONTRACTOR		
3	EA	SILENCER	SR64	GRY	IVE

NOTE: VERIFY/COORDINATE POWER REQMNTS & PROVIDER @ “ACCESS CONTROL MEETING”
REMOTE RELEASE PUSH BUTTON LOCATED @ RECEPTION 117

HARDWARE SET # 07 SGL RATED EXISTING DOOR – PANIC DEVICE (CARD READER/CARD READER)
ALARM KIT (LOCAL)

120

3	EA	HINGE	POSSIBLY REUSE (FIELD VERIFY)	641	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ALARMED ELEC PANIC	EA-FSE-RX-25-R-L QUAN SNB	628	FAL
1	EA	CYLINDER	AS REQD (LEVER TRIM)	626	BST
1	EA	CYLINDER	AS REQD (ALARM KIT)	626	BST
1	EA	SURFACE CLOSER	SC71 X 3077SS SNB	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	POWER SUPPLY	PS914 900-2RS	LGR	VON
		CARD READERS	PROVIDED BY SECURITY CONTRACTOR		
1	SET	SEALS	188FS	CL	ZER

NOTE: VERIFY/COORDINATE POWER REQMNTS & PROVIDER @ “ACCESS CONTROL MEETING”
GC/HARDWARE SUPPLIER TO FIELD-VERIFY (AND CONFIRM) EXISTING
DOOR/FRAME/HARDWARE REQUIREMENTS AND PROVIDE THE NECESSARY PATCHING,

FILLER PLATES, DOOR PREPS IN ORDER TO ACCOMPLISH SPECIFIED HARDWARE APPLICATION.

MISC ITEMS

PROVIDE THE FOLLOWING:

		(12) CONSTR MKYS			BST
		(6) CONSTR CONTROL			BST
		(1) XTRA KY PER CORE	KEY		BST
		(6) GMKYS	KEY		BST
		(6) MKYS (PER SET)	KEY		BST
		KEY STAMPING	STAMPING (AS DIRECTED BY OWNER)		BST
1	EA	KEY CABINET	1200-SERIES (PLUS 50% CAPACITY)	GRY	LUN
1	EA	KNOX BOX	3200-SERIES X RMK (HINGED DOOR)	BLK	KNO
1	EA	INSTALLATION REVIEW	BY DISTRIBUTOR AHC, AFTER INSTALLATION		
1	EA	FACTORY BITTING LIST			
1	EA	HARDWARE SCHEDULE			

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 08 81 00**
WILLIAMSON COUNTY **GLASS AND GLAZING**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes glazing for the following products, including those specified in other Sections where glazing requirements are specified by reference to this Section:

Window units Glazing in doors
Vision lites

1.2 QUALITY ASSURANCE

A. Glass and glazing materials must meet the safety requirements of the Consumer Product Safety Commission Title 16 Commercial Practices, Part 1201 and safety glass to conform to ANSI Z97.1 with label on each piece.

B. Fire resistance glazing in door assemblies: Products identical to those tested per ASTM E 152, labeled and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1.3 SUBMITTALS

A. Product data for each glass product and glazing material indicated.

B. Samples: 12 inch square samples of each type of glass indicated except for clear monolithic glass.

1.4 EXAMINING

A. Examine surfaces and items that are to receive glass and mirrors. Report unsatisfactory conditions.

B. Correct defects that could interfere with proper glazing. Correct warped planes that could place glass or mirrors in a strain when installed. Do not start glazing until unsatisfactory conditions have been corrected and approved.

C. Proceeding with glazing work will be construed as evidence that surfaces to receive glass and mirrors are in condition to permit satisfactory installation.

1.5 PROTECTING

A. Handle glass and glazing materials to avoid injury to persons and to avoid damage to materials or to work in place. Satisfactorily repair or remove and replace work that has been damaged.

B. Protect glass and mirrors from scratching, breaking or other injury while storing, during installation and until work is completed.

C. Install temporary coverings necessary to prevent damage to finished surfaces during construction. Tape or temporarily paint markings on installed glass sufficient to clearly indicate that glass is in place.

1.6 DELIVERING AND STORING

A. Deliver packaged materials to site in manufacturer's original, unopened, labeled containers. Do not remove labels from individual items until glazing materials have been installed and approved. Always keep spaces between individual frames while in storage.

PART 2 - PRODUCTS

2.1 PRIME GLASS

A. Clear polished plate glass, 1/4" conforming to Type I, Class 1, Quality q3., complying with ASTM C 1036,

2.2 PROCESSED GLASS

A. Tempered Glass

1. Provide prime glass of color and type indicated which has been heat treated to strengthen glass in bending to not less than 4.5 times annealed strength.

2. Provide tempered glass at all interior locations and all locations required by codes.

3. Clear, 1/4" Type I, Class 1, of FS DD-G-451 tempered to 4.5 times normal strength.

2.3 LAMINATED ACOUSTICAL GLASS PRODUCTS

A. Laminated Glass Products: Comply with ASTM C 1172 for kinds of laminated glass indicated and other requirements specified. Refer to primary and heat-treated glass requirements relating to properties of glass products comprising laminated glass products.

1. Inner Lite: 3/16 clear tempered glass

2. Outer Lite: 3/16 clear tempered glass

3. Interlayer Material: 0.030 inch clear polyvinyl butyral sheet.

B. Interlayer: Interlayer material as indicated above with a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after laminating glass lites and installation.

1. Products: Subject to compliance with requirements, provide one of the following:
a. Polyvinyl Butyral Interlayer: Saflex, Monsanto Co.
Butacite, E. I. du Pont de Nemours & Co., Inc.

C. Laminating Process: Fabricate laminated glass to produce glass free of foreign substances and air or glass pockets as follows:

1. Laminate lites with polyvinyl butyral interlayer in autoclave with heat plus pressure.

2.4 GLAZING GASKETS

A. Molded Neoprene Glazing Gaskets: Molded or extruded neoprene gaskets of the profile and hardness required for watertight construction; comply with ASTM D 2000 designation 2BC 4l5 to 3BC 620, black.

B. Vinyl Foam Glazing Tape (VF-GT): Closed cell, flexible, self-adhesive, non-extruding, polyvinyl chloride foam tape; recommended by manufacturer for exterior, exposed,

watertight installation of glass, with only nominal pressure in the glazing channel; comply with ASTM D 1667.

2.5 MISCELLANEOUS GLAZING MATERIALS

A. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

B. Setting Blocks: Neoprene or EPDM, 70-90 durometer hardness, with proven compatibility with sealants used.

C. Spacers: Neoprene or EPDM, 40-50 durometer hardness with proven compatibility with sealants used.

D. Compressible Filler (Rod): Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with sealants used, flexible and resilient, with 5-10 psi compression strength for 25% deflection.

PART 3 - EXECUTION

3.1 STANDARDS AND PERFORMANCE

A. Watertight and airtight installation of each glass product is required, except as otherwise shown. Each installation must withstand normal temperature changes, wind loading, impact loading (for operating sash and doors), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects in the work.

B. Protect glass from edge damage during handling and installation, and subsequent operation of glazed components of the work. During installation, discard units with significant edge damage or other imperfections.

C. Glazing channel dimensions as shown are intended to provide for necessary bite on glass, minimum edge clearance, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.

D. Comply with combined recommendations and technical reports by manufacturers of glass and glazing products as used in each glazing channel, and with recommendations of Flat Glass Marketing Association "Glazing Manual", except where more stringent requirements are indicated.

3.2 PREPARATION FOR GLAZING

A. Clean glazing channel and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrate. Remove lacquer from metal surfaces where elastomeric sealants are used.

3.3 INSTALLING GLASS

A. Comply with recommendations of manufacturer's of glass, sealants, gaskets and other glazing materials except where more stringent requirements are indicated. Do not dilute compounds without specific approval. Do not install compounds when temperature is below 40^{o} F or when excessive dampness or dust is present.

B. Prime joint surfaces in metal for adhesion of sealants before setting glass. Clean and prepare surfaces to receive compound.

C. Install elastomeric setting blocks in sill rabbets, sized and located to comply with referenced glazing standard, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

D. Set glass without forcing or springing. Provide adequate clearances at edges. Provide space blocks, setting blocks and shims as necessary.

E. Avoid chipping or nipping factory cut edge of heat-absorbing plate glass during storage or setting.

F. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

1. Square cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 SEALANT GLAZING

A. Where sealants are used install continuous spacers between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel weep systems until sealants cure. Secure spacers in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

1. Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

2. Tool exposed surfaces of sealants to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.

3.5 GASKET GLAZING

A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit opening exactly, with stretch allowance during installation.

B. Secure compression gaskets in place with joints located at corners to compress gaskets producing a weathertight seal without developing bending stresses in glass. Seal gaskets joints with sealant recommended by gasket manufacturer.

C. Install gaskets so they protrude past face of glazing stops.

3.6 CLEANING

A. Remove soil, stain and extraneous materials caused by glazing from adjacent surfaces. Replace items that cannot be satisfactorily cleaned.

B. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

C. Wash and polish glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Comply with glass product manufacturer's recommendations for final cleaning.

END OF SECTION.

JUSTICE CENTER - CSCD
WILLIAMSON COUNTY

405 MARTIN LUTHER KING STREET
GEORGETOWN, TEXAS 78626

PROJECT MANUAL - SPECIFICATIONS
VOLUME 2

Project No. 21604

Construction Documents Package

12/22/2016

2204 FORBES DRIVE, SUITE 101
AUSTIN, TEXAS 78754
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JUSTICE CENTER - CSCD **MANUAL INDEX**
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JUSTICE CENTER - CSCD **SECTION 09 21 16**
WILLIAMSON COUNTY **GYPSUM BOARD ASSEMBLIES**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Types of work include:

Gypsum drywall including screw-type metal support system.
Gypsum drywall applied to solid substrate
Gypsum board base layer for application of other finishes
Joint and tape treatment.

1.2 RELATED SECTIONS

A. Refer to Section 06 10 00, Rough Carpentry for coordination of wood blocking in walls for support of equipment.

B. Refer to Section 07 84 00 for firestopping at fire rated walls and assemblies.

C. Refer to Division 9 sections for painting, coatings, wall-coverings and other decorative finishes to be applied to drywall work.

D. Refer to Section 05 41 00, Cold Formed Metal Framing, for heavy gage studs and joists.

1.3 QUALITY ASSURANCE

A. Fire-Resistance Rating: Where gypsum drywall systems with fire-resistance ratings are indicated or are required to comply with governing regulations, provide materials and installations identical with applicable assemblies which have been tested and listed by recognized authorities, including the Gypsum Association.

1.4 REFERENCES

A. Gypsum Board Standard: Comply with applicable requirements of ANSI/ASTM C 840 for application and finishing of gypsum board, unless otherwise indicated.

B. Steel Framing Standard: Comply with applicable requirements of ASTM C 754 for installation of steel framing for gypsum board.

C. Gypsum Board Terminology Standard: GA-505 by Gypsum Associations.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's product specifications for each gypsum drywall material, metal framing and support members, fasteners, joint treatment materials and trim and accessories.

B. Submit certificate signed by manufacturer certifying that products comply with specified requirements.

1.6 DELIVERY, STORAGE, AND HANDLING:

A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

C. Handle gypsum boards to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

D. Do not install gypsum board until the area of installation is protected from adverse weather conditions ("dried in").

1.7 PROJECT CONDITIONS:

A. Environmental Conditions, General: Establish and maintain environmental conditions for application and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.

B. Minimum Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously thereafter until drying is complete.

C. Ventilate building spaces for drying joint treatment materials. Avoid drafts during dry, hot weather to prevent materials from drying too rapidly.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following or an acceptable substitute approved prior to bidding. Refer to Section 01 25 00 for substitution request.

1. Metal Support Materials: Aegis Metal Framing
Clark Dietrich Building Systems
Studco-Rollforming, Inc.

3. Gypsum Board and Related Products

Georgia-Pacific Corp.
Gold Bond Building Products Div., National Gypsum Co.
Certainteed
Temple Inland
United States Gypsum Co.

2.2 METAL SUPPORT MATERIALS

A. Ceiling Support Materials and Systems

1. General: Size ceiling support components to comply with ASTM C 754 unless otherwise indicated.

2. Main Runners: Galvanized steel channels, cold-formed.

3. Hanger Wire: ASTM A 641, soft, Class 1 galvanized.

4. Hanger Anchorage Devices: Screws, clips, bolts, cast-in-place concrete inserts or other devices applicable to the indicated method of structural anchorage for ceiling hangers and whose suitability for use intended has been proven through standard construction practices or by certified test data. Size devices for 3x calculated load supported except size direct pull-out concrete inserts for 5x calculated loads.

5. Furring Members: ASTM C 645; 25-gage, hat-shaped.

6. Furring Anchorages: 16-gage galvanized wire ties, manufacturer's standard wire-type clips, bolts, nails or screws as recommended by furring manufacturer and complying with C 754.

B. Gypsum Board Ceiling Grid Suspension System (Contractor's Option): ASTM C 645, manufacturer's standard grid suspension system composed of main beams and cross furring members which interlock to form a modular supporting network.

1. Face width” 1 3/8"
2. Material: Galvanized steel

C. Wall/Partition Support Materials

1. Studs: Meeting requirements of ASTM C 645; roll formed from hot dipped galvanized steel, complying with ASTM A 1003 and ASTM A 653. 25 gage at interior, unless required otherwise by manufacturer’s span table or as noted on plans.

   a. Depth of Section: As indicated on Drawings.
   b. Runners: Type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall work at other work. Match gauge of studs but no lighter than 20 gauge.
   c. Provide 20 gauge runner channel with 1-1/4" deep legs where required for expansion or deflection at wall to floor or roof structure.

2. Slide Clips: 1 3/4 inch x 2 1/4 inch channel shaped steel section for attaching studs to horizontal supports to allow vertical deflection of structure without damage to studs.

3. “U” channel: 1-1/2", 16 gauge, galvanized steel channel.

4. Deflection Track Slotted: Single, deep-leg, U-shaped steel track, punched with vertical slots in both legs. Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; thickness not less than indicated for studs and width to accommodate depth of studs.

5. Headers and Jambs: Shape used to form header beams and jambs, columns, or posts, of web depths indicated, unpunched, with stiffened flanges.

6. Channel Bridging or Bracing: U-Channel assembly. Base metal thickness of .0538 inch and minimum 1/2“ wide flanges

7. Furring Members: ASTM C 645; 25-gage, hat-shaped, galvanized.

   a. Z-Furring Members: Manufacturer's standard screw-type zee-shaped furring members; of not thinner than 26-gage galvanized steel, ASTM A 525, G 90; of

depth indicated; designed for mechanical attachment of insulation boards or blankets to monolithic concrete and masonry walls.

b. Fasteners for Furring Members: Type and size recommended by furring manufacturer for the substrate and application indicated.

2.3 GYPSUM BOARD

A. Gypsum Wallboard ASTM C 1396, or types, edge configuration and thickness indicated; in maximum lengths available to minimize end-to-end butt joints.

1. Type: Type X for all applications.
2. Edges: Tapered and featured (rounded or beveled) for prefilling.
3. Thickness: All drywall 5/8 inch unless noted otherwise.

B. Gypsum Board Base Layer for Multi-layer Applications: ASTM C 1396, with square or v-groove edges, of types and thickness indicated, in maximum lengths available to minimize end-to-end butt joints.

1. Type: Type X for all applications.
2. Edges: Square
3. Thickness: 5/8 inch unless noted otherwise

2.4 TRIM ACCESSORIES

A. General: Provide manufacturer's standard trim accessories of types indicated for drywall work, formed of galvanized steel, with either knurled and perforated or expanded flanges for nailing or stapling, and beaded for concealment of flanges in joint compound. Provide corner beads, L-type edge trim-beads, U-type edge trim-beads, special L-kerf-type edge trim-beads, radius corner trim and one-piece control joint beads.

2.5 GYPSUM BOARD JOINT TREATMENT MATERIALS

A. General: ASTM C 475; type recommended by the manufacturer for the application indicated, except as otherwise indicated.

B. Joint Tape: Perforated cross fiber paper tape or heavy duty fiber paper tape.

C. Joint Compound: On interior work provide all-purpose joint compound ready-mixed or all-purpose vinyl-base powder joint compound.

2.6 MISCELLANEOUS MATERIALS

A. General: Provide auxiliary materials for gypsum drywall work of the type and grade recommended by the manufacturer of the gypsum board.

B. Laminating Adhesive: Special adhesive specifically recommended for laminating gypsum boards by board manufacturer

C. Gypsum Board Screws: Comply with ASTM C 1002.

D. Acoustical Sealant: Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.

1. Paintable Acoustical Sealant: Non-sag, paintable, non-staining latex sealant complying with ASTM C 834.

   Sheetrock Acoustical Sealant
   Acoustiseal
   Owens Corning Quietzone

2. Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, non-hardening, non-skinning, non-staining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

   Dynatrol II; Pecora Corp.
   Acoustical Sealant; Tremco

E. Control Joints: Equal to USG Control Joint No. 093.

PART 3 - EXECUTION

3.1 PREPARATION FOR METAL SUPPORT SYSTEMS

A. Ceiling Anchorages: Coordinate work with structural ceiling work to ensure that inserts and other structural anchorage provisions have been installed to receive ceiling hangers.

B. Furnish steel deck hanger clips and similar devices to other trades for installation well in advance of time needed for coordination with other work.

3.2 INSTALLATION OF METAL SUPPORT SYSTEMS

A. Do not bridge building expansion joints with support system, frame both sides of joints with furring and other support as indicated.

B. Ceiling Support Suspension Systems:

1. Secure hangers to structural support by connecting directly to structure where possible, otherwise connect in inserts, clips or other anchorage devices or fasteners as indicated.
2. Space main runners 4'-0" o.c. and space hangers 4'-0" o.c. along runners, except as otherwise shown.

3. Level main runners to a tolerance of 1/4" in 12'-0", measured both lengthwise on each runner and transversely between parallel runners.

4. Wire-tie or clip furring members to main runners and to other structural supports.

5. Space furring member 16" o.c., except as otherwise indicated.

6. Install auxiliary framing at termination of drywall work, and at openings for light fixtures and similar work, as required for support of both the drywall construction and other work indicated for support thereon.

C. Wall/Partition Support Systems:

1. Space studs 16" o.c., except as otherwise indicated.

2. Install supplementary framing, blocking and bracing to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported on gypsum board alone.

3. Bridging: At all stud walls install continuous “U” channel for bridging through upper most openings of studs and at maximum vertical spacing of 5'-0" o.c. Attach to each stud with 1/8 inch weld or with a 1-1/2 inch 1-1/2 inch, 16 gauge clip angle screwed to channel and each stud.

4. Isolate stud system from transfer of structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.

    a. Where a slip track is required, do not screw studs to top track.

5. Install runner tracks at floors, ceilings and structural walls and columns where gypsum drywall stud system abuts other work, except as otherwise indicated.

6. Extend partition stud system through acoustical ceilings and elsewhere as indicated to the structural support and substrate above the ceiling.

7. Slide Clips: Where exterior studs by-pass roof structure to form parapet, attach studs to roof structure with slide clips welded to structure or edge angle.

8. Frame door openings with vertical studs securely attached by screws at each jamb either directly to frames or to jamb anchor clips on door frame; install runner track sections (for jack studs) at head and secure to jamb studs.

    a. Provide runner tracks of same gage as jamb studs. Space jack studs same as partition studs.
    b. At each jamb install studs sandwiched into runner track or use double studs.

9. Frame openings other than door openings in same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.

    a. At openings for fire dampers in fire rated walls, frame opening as above, 1/4" larger than duct size and attach gypsum board on all sides with screws no more than 12" o.c.

10. Space wall furring members 16" o.c., except as otherwise indicated.

11. Install supplementary framing, runners, furring, blocking and bracing at opening and terminations in the work, and at locations required to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported directly on gypsum board alone.

3.3 GENERAL GYPSUM BOARD & GYPSUM SHEATHING INSTALLATION REQUIREMENTS

A. Install all gypsum products in accordance with building codes and as per manufacturer’s recommendations.

B. Pre-Installation Conference: Meet at the project site with the installers of related work and review the coordination and sequencing of work to ensure that everything to be concealed by gypsum drywall has been accomplished, and that chases, access panels,

openings, supplementary framing and blocking and similar provisions have been completed.

C. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.

D. At bottom of wall, install 3” strip of water resistant gypsum board with bottom edge ½” from concrete slab.

E. Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.

F. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'-0" in alternate courses of board.

G. Install ceiling boards in the direction and manner which will minimize the number of end-butt joints, and which will avoid end joints in the central area of each ceiling. Stagger end joints at least 1'-0".

H. Install wall/partition boards vertically to avoid end-butt joints wherever possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.

I. Remove and replace damaged gypsum board and gypsum board with mold or mildew growth, with full size boards, where possible, that are dry and in new, undamaged condition.

J. Attach gypsum board to framing and blocking as required for additional support at openings and cutouts.

K. Control Joints: Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories. Unless otherwise noted, install control and expansion joints where shown on plans and spaced as recommended by the manufacturer (maximum 30 feet apart).

1. Install control joints at each jamb of all doors and windows from the head of the opening to the top of the wall and from sill of windows to the floor.
2. Install control joints at gypsum board partitions, ceilings and furr downs as shown or if not shown, a maximum of 30 feet apart.
3. Control joints shall be located where control joints fall in the exterior wall or structure.
4. Control joints shall be located where the framing changes direction and over joints in dissimilar materials.
5. Separate framing at the control joints. In partitions, separate the studs on each side of the control joint.

L. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls which are braced internally.

1. Except where concealed application is required for sound, fire, air or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. area, and may be limited to not less than 75% of full coverage.

M. Do not fasten drywall directly to stud system top runner tracks attached to structure. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4" to 1/2“ space and trim edge with J-type semi-finishing edge trim. Seal joints with acoustical sealant.

N. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum board with "floating" internal corner construction, unless isolation of the intersecting boards is indicated, unless control or expansion joints are indicated, or unless fire rating is indicated.

O. Space fasteners in gypsum board in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

P. At rated walls which extend to roof deck, fill all voids between metal stud top runner track and roof deck with fire safing insulation and firestopping.

Q. At penetrations in shaft wall, maintain fire resistance rating of entire shaft wall assembly by installing supplementary fire protection behind boxes containing wiring devices, elevator call buttons, elevator floor indicators, and similar items.

3.4 METHODS OF GYPSUM DRYWALL APPLICATION

A. Single-Layer Application: Install gypsum wallboard.

1. On ceilings apply gypsum board prior to wall/partition board application to the greatest extent possible.
2. On partitions/walls apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.
3. On Z-furring members apply gypsum board vertically (parallel) with no end joints. Locate edge joints over furring members.

B. Double-Layer Application: Install gypsum board for base layer and exposed gypsum board for face layer.

1. On ceilings apply base layer prior to base layer application on walls/partitions; apply face layers in same sequence. Offset joints between layers at least 10". Apply base layers at right angles to supports unless otherwise indicated.
2. On partitions/walls apply base layer and face layers vertically (parallel) with joints of base layer over supports and face layer joints offset at least 10" with base layer joints.
3. On Z-furring members apply base layer vertically (parallel) and face layer either vertically (parallel) or horizontally (perpendicular) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.

C. Single-Layer Fastening Methods: Apply gypsum boards to supports with screws.

D. Double-Layer Fastening Methods: Apply base layer of gypsum board and face layer to base layer with screws and face layer with adhesive and supplementary fasteners.

3.5 INSTALLATION OF DRYWALL TRIM ACCESSORIES

A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.

B. Install metal corner beads at external corners of drywall work.

C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

3.6 FINISHING OF DRYWALL

A. General: Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for decoration. Pre-fill open joints and rounded or beveled edges, if any, using type of compound recommended by manufacturer.

1. Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.

B. Provide finishes in accordance with ASTM C 840 and as described below.

C. Level 5 Drywall Finish: All joints and interior corners shall have tape embedded in joint compound and three separate coats of joint compound applied over all joints, angles corners, fastener heads, and accessories. Entire surface to receive a skim coat of joint compound. Excess material shall be immediately sheared off, leaving a film covering the paper.

1. Provide at all walls and ceilings unless noted otherwise.

D. Level 4 Drywall Finish: All joints and interior corners shall have tape embedded in joint compound and three separate coats of joint compound applied over all joints, angles corners, fastener heads, and accessories. All joint compound shall be smooth and free of tool marks and ridges.

1. Provide at walls to receive plywood

E. Level 2 Drywall Finish(Fire taping): All joints and interior corners shall have tape embedded in joint compound and one separate coat of joint compound applied over all tape joints, corners, fastener heads, and accessories. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.

1. Provide at concealed areas that do not require painting of walls that require fire rating or smoke rating.
2. Provide at gypsum board substrate for ceramic tile using organic adhesive.
3. Provide at water-resistant gypsum board base for ceramic tile and use water-resistant joint compound and comply with directions of water-resistant joint compound manufacturer.

a. Fold and embed tape in all interior angles to form true angle.

F. Level 1 Drywall Finish: All joints and interior corners shall have tape embedded in joint compound. Tape and fastener heads not required to be covered. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.

1. Provide at concealed areas that do not require painting of non-rated walls.

3.7 PROTECTION OF WORK

A. Installer shall advise Contractor of required procedures for protecting gypsum drywall work from damage and deterioration during remainder of construction period.

END OF SECTION.

JUSTICE CENTER - CSCD **SECTION 09 51 13**
WILLIAMSON COUNTY **ACOUSTICAL CEILING**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Extent of each type of acoustical ceiling is shown and scheduled on Drawings. Types of acoustical ceilings specified in this section include the following:

1. Acoustical ceilings with exposed suspension.

1.2 QUALITY ASSURANCE

A. Installer: Firm with not less than three years of successful experience in installation of acoustical ceilings similar to requirements for this project and which is acceptable to manufacturer of acoustical panels, as shown by current written statement from manufacturer.

B. Fire Performance Characteristics: Provide acoustical ceilings that are identical to those tested for the following fire performance characteristics, per ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.

a. Flame Spread: 25 or less.
b. Smoke Developed: 10 or less.

2. Fire-Resistance Ratings: As indicated by reference to design designations in UL "Fire Resistance Directory," for types of assemblies in which acoustical ceilings function as a fire protective membrane and tested per ASTM E 119.

a. Protect lighting fixtures and air ducts to comply with requirements indicated for rated assembly.

1.3 SUBMITTALS

A. Product Data

1. Manufacturer's product specifications and installation instructions for each acoustical ceiling material required, and for each suspension system, including certified laboratory test reports for fire and acoustical ratings and other data as required to show compliance with these specifications.

B. Maintenance Instructions

1. Include manufacturer's recommendations for cleaning and refinishing acoustical panels, including precautions against materials and methods which may be detrimental to finishes and acoustical performances.

C. Samples

1. Set of 6" square samples for each acoustical panel required, showing full range of exposed color and texture to be expected in completed work.
2. Set of 12" long samples of each exposed runner and molding.

D. Maintenance Stock

1. At time of completing installation, deliver stock of maintenance material to Owner. Furnish full size panels matching panels installed, packaged with protective covering for storage, and identified with appropriate labels.

2. Furnish two cartons and left over panels of acoustical panels.

3. With close-out documents, provide letter of certification that maintenance stock has been turned over to Owner. Letter must be signed by Owner.

1.4 JOB CONDITIONS

A. Space Enclosure: Do not install interior acoustical ceilings until the space is enclosed and weatherproof, the air conditioning system is operating with the proper filters in place, wet-work in space is completed and nominally dry, work above ceilings is completed, and until the proper temperature and humidity conditions are stabilized and will be continuously maintained at values near those indicated for final occupancy.

B. Building shall be free of construction dust and debris.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with specifications, provide products from one of the following manufacturers or an acceptable substitute approved prior to bidding. Refer to Section 01 25 00 for substitutions.

Armstrong	Celotex
Certainteed	U.S. Gypsum Co.

2.2 CEILING PANELS

A. General: Provide manufacturer's standard fire rated panels prepared for mounting system indicated.

1. Type AC-1: Mineral Fiber Acoustical Panels designed for use where temperatures may reach 120 degrees F. and. high humidity conditions occur. Provide fire resistive panels where required to meet UL design.

a. Size: 24" x 48"
b. Thickness: 7/8"
c. Edge Detail: Square
d. NRC per ASTM C 423: 0.7 minimum with Underwriters Laboratories label on carton.
e. CAC per ASTM E 1414: 40 minimum with Underwriter Laboratories label on carton.
f. Light reflectance: LR 0.85
g. Antimicrobial Treatment: Treat with solution which inhibits mold and mildew growth.
h. Manufacturer: Equal to Armstrong – School Zone Fine Fissured # 1714
i. Grid System: Prelude Plus XL 15/16"
j. Warranty: Ten (10) year limited warranty against sagging or warping when installed according to conditions outlined in manufacturer’s written warranty.

2.3 CEILING SUSPENSION MATERIALS

A. General: Comply with ASTM C 635, as applicable to type of suspension system required for type of ceiling panels indicated. Coordinate with other work supported by or penetrating through ceilings, including light fixtures, HVAC equipment, and partition system (if any).

1. Structural Class: Intermediate-duty system.
2. Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung.
3. Hanger Wires: Galvanized carbon steel, ASTM A 641, soft temper, pre-stretched, yield-stress load of at least 3 times design load, but not less than 12 gage (0.106").
4. Type of System: Hot dipped galvanized (ASTM G 30) or stainless steel as noted, direct-hung, fire rated suspension system. Provide 15/16" exposed grid except where note to be 9/16" exposed grid.
5. System Manufacturer: Same as acoustical panel manufacturer or one of the following or an acceptable substitute. For substitution request, refer to Section 01 25 00.

   Chicago Metallic Corp.
   U.S. Gypsum Co.
   Armstrong

6. Edge Moldings and Trim: Metal of types and profiles indicated or, if not indicated, provide manufacturer's standard molding for edges and penetrations of ceilings which fits with type of edge detail and suspension system indicated.
7. Exposed Suspension System: Main beams and cross tees shall be hot dipped galvanized steel coating per ASTM A 635, of types and profiles indicated, with exposed cross runners coped to lay flush with main runners. Cross tees shall have staked on end detail allowing easy tee removal and remounting.
8. Finish of Exposed Members: Provide uniform factory-applied, baked polyester paint finish on capping of exposed surfaces of ceiling suspension system, including moldings, trim, and accessories

   a. Color : White unless otherwise selected by Architect.

2.4 MISCELLANEOUS MATERIALS

A. Hold-Down Clips: Where required for wind uplift resistance or fire-resistance rating, provide standard spring steel clips, except provide accessible type at locations indicted on drawings.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine conditions under which acoustical ceiling work is to be performed and must notify Contractor in writing of unsatisfactory conditions.

B. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 PREPARATION

A. Before installation of ceiling grid or other ceiling systems, verify that all structure, ductwork, and other construction above the ceiling height has been blown clean with leaf blowers.

B. Coordination: Furnish layouts for inserts, clips, or other supports required to be installed by other trades for support of acoustical ceilings.

C. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width panels at borders, and comply with reflected ceiling plans wherever possible.

3.3 INSTALLATION

A. General: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire resistance rating requirements as indicated, and industry standards applicable to work.

B. Arrange acoustical panels in manner shown by reflected ceiling plans.

C. Install suspension systems to comply with ASTM C 636, with hangers supported only from building structural members. Locate hangers within 6" of each end and spaced maximum of 4'-0" along each carrying channel or direct-hung runner, unless otherwise indicated, leveling to tolerance of 1/8" in 12'-0".

D. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws, or other devices which are secure and appropriate for substrate, and which will not deteriorate or fail with age or elevated temperatures. Where unable to attach to structure, provide cold rolled channels between joists for attachment of wires.

E. Provide a support wire to suspension grid at each corner of each light fixture.

F. At firerated assemblies, a support wire shall also be installed at the mid-span of cross tees adjacent to 4 foot light fixtures, air duct outlets and adjacent to each main runner splice joint.

G. Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical panels.

H. Screw-attach moldings to substrate at intervals not over 16" o.c. and not more than 3" from ends, level with ceiling suspension system to tolerance of 1/8" in 12"-0". Miter corners and connect securely.

3.4 ADJUST AND CLEAN

A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor damage.

B. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage. All repair work will be undetectable.

END OF SECTION.

JUSTICE CENTER - CSCD **SECTION 09 65 00**
WILLIAMSON COUNTY **RESILIENT FLOORING**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Extent of resilient flooring and accessories is shown on Drawings and in schedules and includes the following:

Resilient floor tile
Rubber base

1.2 QUALITY ASSURANCE

A. Manufacturer: Provide resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.

1.3 SUBMITTALS

A. Product Data: Submit 2 copies of manufacturer's technical data and installation instructions for each type of resilient flooring and accessory.

B. Samples: Submit samples of each type, color, and pattern of resilient flooring, including accessories, required, indicating full range of color and pattern variation. Provide full-size tile units and 2-1/2" long sections of resilient flooring accessories.

C. Maintenance Instructions: Submit 2 copies of manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

D. Replacement Material: After completion of work, deliver to project site replacement materials from same manufactured lot as materials installed, and as follows:

1. Tile flooring, two boxes of each type, size, and color installed.

E. Material Safety Data Sheets for adhesives.

1.4 JOB CONDITIONS

A. Maintain minimum temperature of 65 degrees F (18 degrees) in spaces to receive resilient flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55 degrees F (13 Degrees C) in areas where work is completed.

B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following or an acceptable substitute approved prior to bidding. Refer to Section 01 25 00 for substitution request

1. Resilient Floor Tile:

   Patcraft Highland Forest 1800V LVT

2. Rubber Wall Base

   Flexco
   Roppe Rubber Corp.

2.2 MATERIALS

A. Resilient Floor Tile: ASTM F 1066; as follows:

1. Composition 1 - asbestos-free
2. Size: 6” x 48”
3. Gage: .098"
4. Colors and Patterns: As selected by Architect from manufacturer’s complete color line of patterns listed above.

B. Wall Base: Provide 100% vulcanized rubber base (SBR) complying with ASTM F 1861, Type TS, with matching end stops and preformed, molded, or job fabricated corner units, and as follows:

1. Height: 4"
2. Thickness: 1/8" gage
3. Style: Standard cove style.
4. Finish: High gloss

C. Resilient Edge Strips: 1/8" thick, homogeneous vinyl or rubber composition, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard colors available; not less than 1" wide.

D. Adhesives (Cements): Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.

E. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.

F. Leveling Compound: Latex type as recommended by flooring manufacturer

PART 3 - EXECUTION

3.1 PREPARATION

A. Broom clean or vacuum surfaces to be covered and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.

B. Verify that concrete slabs comply with ASTM F 710 and as follows:

1. Slab substrates shall be dry and free of curing compounds, sealers, hardeners, and other materials whose presence would interfere with bonding of adhesive. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by floor covering manufacturer.

2. Subfloors shall be free of cracks, ridges, depressions, scale, and foreign deposits of any kind.

C. Use leveling compound as recommended by flooring manufacturer for filling small cracks and depressions in subfloors and grind any ridges to be flush and level.

D. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.2 INSTALLATION

A. General: Install flooring using method indicated in strict compliance with manufacturer's recommendations. Extend flooring into toe spaces, door reveals, and into closets and similar openings.

1. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
2. Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections.

B. Tile Floors

1. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room area of equal width. Adjust as necessary to avoid use of cut widths less than 2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.
2. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped, or deformed tiles are not acceptable.
3. Lay tile in a pattern to be provided by the Architect consisting of not more than 2 different colors of tile.
4. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.
5. Roll entire surface with medium size (100 lb.) steel roller to remove entrapped air. Clean any adhesive from surface of flooring.

C. Accessories

1. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units, or fabricated from base materials with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.

2. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.

3. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.3 CLEANING AND PROTECTION

A. Remove any excess adhesive or surface blemishes, using neutral type cleaners as recommended by flooring manufacturer. Protect installed flooring with heavy Kraft paper or other covering.

B. Finishing: After completion of project and just prior to final inspection of work, thoroughly clean floors and accessories.

END OF SECTION.

JUSTICE CENTER - CSCD **SECTION 09 68 13**
WILLIAMSON COUNTY **CARPET TILE**

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes carpet tile and installation.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 9 Section "Resilient Wall Base and Accessories" for materials and installation

1.2 SUBMITTALS

A. Product Data for each type of carpet tile material and installation accessory specified. Submit manufacturer's printed data on physical characteristics, durability, fade resistance, and fire-test-response characteristics. Submit methods of installation for each type of substrate.

B. Shop Drawings showing columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tile. Indicate the following:

1. Seam locations, types, and methods.
2. Type of installation.
3. Pattern type, location, and direction.
4. Pile direction.
5. Transition details to other flooring materials.

C. Samples for selection of materials showing the full range of manufacturer's colors, textures, and patterns available for each type of carpet tile indicated. Submit the following:

1. Full-size sample of each type of carpet tile required.
2. 12-inch (300-mm) Samples of each type of exposed edge stripping and accessory item.

D. Maintenance data for carpet tile to include in the operation and maintenance manual. Include the following:

1. Methods for maintaining carpet tile, including manufacturer's recommended frequency for maintaining carpet tile.
2. Precautions for cleaning materials and methods that could be detrimental to finishes and performance. Include cleaning and stain-removal products and procedures.

1.3 QUALITY ASSURANCE

A. Single-Source Responsibility: Obtain each type of carpet tile from one source and by a single manufacturer.

B. Fire-Test-Response Characteristics: Provide carpet tile with the following fire-test-response characteristics as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify carpet tile with appropriate markings of applicable testing and inspecting agency.

1. Surface Flammability: Passes CPSC 16 CFR, Part 1630.
2. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E 648.
3. Flame Spread: 25 or less per ASTM E 84.
4. Smoke Developed: 450 or less per ASTM E 84.

C. Mockups: Prior to installing carpet tile, construct mockups for each form of construction and finish required to verify selections made under Sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for final unit of Work.

1. Locate mockups on-site in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Notify Architect one week in advance of the dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before start of final unit of Work.
5. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

    a. When directed, demolish and remove mockups from Project site.
    b. Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

1.4 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 5: "Storage and Handling."

B. Deliver materials to Project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.

C. Store materials on-site in original undamaged packages, inside well-ventilated area protected from weather, moisture, soilage, extreme temperatures, and humidity. Lay flat, with continuous blocking off ground.

1.5 PROJECT CONDITIONS

A. General: Comply with CRI 104, Section 6: "Site Conditions."

B. Space Enclosure and Environmental Limitations: Do not install carpet tile until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work

above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

C. Subfloor Moisture Conditions: Moisture emission rate of not more than 3 lb/1000 sq. ft./24 hours when tested by calcium chloride moisture test in compliance with CRI 104, 6.2.1, with subfloor temperatures not less than 55 deg F (12.7 deg C).

D. Subfloor Alkalinity Conditions: A pH range of 5 to 9 when subfloor is wetted with potable water and pHydrion paper is applied.

1.6 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Carpet Tile Warranty: Submit a written warranty executed by carpet tile manufacturer and Installer agreeing to repair or replace carpet tile that does not meet requirements or that fails in materials or workmanship within the specified warranty period. Failures include, but are not limited to, more than 10 percent loss of face fiber, tile curling, snags, runs, and delamination.

C. Warranty Period: 5 years from date of Substantial Completion.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed, packaged with protective covering for storage, and are identified with labels clearly describing contents.

1. Carpet Tile: Before installation begins, furnish quantity of full-size units equal to 2 percent of amount installed.

PART 2 - PRODUCTS

2.1 CARPET TILE

A. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the products specified in each carpet tile Product Data sheet at end of this Section.

2.2 CARPET TILE

A. Available Products: Subject to compliance with requirements, provide the following product or an approved equal.

1. Manufacturer and Pattern: Patcraft Dazzle Bewitching 00714

a. Size: 24" x 24"

b. Construction: Multi-Level Pattern Loop
c. Fiber Type: Eco Solution Q Nylon
d. Dye Method: 81% solution dyed, 19% yarn dyed
e. Gauge: 1/12
f. Stiches per Inch: 10.0
g. Tufted Yarn Weight: 20 oz
h. Protective Treatments: SSP Shaw Soil Protection
i. Primary Backing: Synthetic
j. Secondary Backing: EcoWorx®

2.3 INSTALLATION ACCESSORIES

A. Concrete-Slab Primer: Nonstaining type as recommended by carpet tile manufacturer.

B. Trowelable Underlayments and Patching Compounds: As recommended by carpet tile manufacturer.

C. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated and to comply with flammability requirements for installed carpet tile as recommended by carpet tile manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine subfloors and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting performance of carpet tile. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Verify that subfloors and conditions are satisfactory for carpet tile installation and comply with requirements specified in this Section and those of carpet tile manufacturer.

3.2 PREPARATION

A. General: Comply with carpet tile manufacturer's installation recommendations to prepare substrates indicated to receive carpet tile installation.

B. Level subfloor within 1/4 inch in 10 feet (6 mm in 3 m), noncumulative, in all directions. Sand or grind protrusions, bumps, and ridges. Patch and repair cracks and rough areas. Fill depressions.

1. Use leveling and patching compounds to fill cracks, holes, and depressions in subfloor as recommended by carpet tile manufacturer.

C. Remove subfloor coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone.

D. Broom or vacuum clean subfloors to be covered with carpet tile. Following cleaning, examine subfloors for moisture, alkaline salts, carbonation, or dust.

E. Concrete-Subfloor Preparation: Apply concrete-slab primer, according to manufacturer's directions, where recommended by carpet tile manufacturer.

3.3 INSTALLATION

A. General: Comply with CRI 104, Section 13: "Carpet Modules (Tiles)."

B. Where demountable partitions or other items are indicated for installation on top of finished carpet tile floor, install carpet tile before installation of these items.

C. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.

D. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

E. Install borders parallel to walls.

3.4 CLEANING

A. Perform the following operations immediately after completing installation:

1. Remove visible adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove protruding yarns from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

3.5 PROTECTION

A. General: Comply with CRI 104, Section 15: "Protection of Indoor Installation."

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure carpet tile is without damage or deterioration at the time of Substantial Completion.

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 09 91 00**
WILLIAMSON COUNTY **PAINTING**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Extent of painting is shown on Drawings and schedules, and as herein specified.

B. The work includes painting and finishing of interior exposed items and surfaces throughout project, except as otherwise indicated.

C. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.

D. The work includes field painting of exposed bare and covered pipes and ducts (including color coding), and of hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under mechanical/electrical work, except as otherwise indicated.

E. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.

F. Paint exposed surfaces whether or not colors are designated in "schedules", except where natural finish of material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint same as adjacent similar materials or areas. If color or finish is not designated, Architect will select from standard colors available for materials specified.

G. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under various sections for structural steel, miscellaneous metal, hollow metal work, and similar items. Also, shop priming for fabricated components such as architectural woodwork, wood casework, and shop-fabricated or factory-built mechanical and electrical equipment or accessories may be included in their various sections.

H. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory finishing or installer finishing is specified for such items as (but is not limited to) toilet partitions, acoustic materials, architectural woodwork and casework, finished mechanical and electrical equipment including light fixtures, switchgear and cabinets.

I. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed and generally inaccessible areas, foundation spaces, furred areas, pipe spaces, duct shafts and elevator shafts.

J. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.

K. Operating Parts and Labels

1. Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts will not require finish painting, unless otherwise indicated.
2. Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

L. Related Sections

1. Section 05 50 00 - Metal Fabrications
2. Section 06 40 23 - Interior Architectural Woodwork
3. Section 07 92 00 - Joint Sealers
4. Section 08 11 00 - Hollow Metal Doors and Frames

1.2 SUBMITTALS

A. Product Data and Material Safety Data Sheets: Submit manufacturer's technical information including paint label analysis and application instructions for each material proposed for use. **If a manufacturer other than the specified products is submitted, provide a comparison chart, for each coating specified and the proposed product, to verify that the submitted product is equal to the specified product.**

B. Submit VOC threshold for each product to be used. All interior paints and primers must meet or exceed the VOC limit of Green Seal Environmental Standard GS-11. (South Coast Air Quality Management District (SCAQMD, Rule 1113).

C. Samples: Submit samples for Architect's review of color and texture only. Provide a listing of material and application for each coat of each finish sample.

1. On 12" x 12" hardboard, provide two samples of each color and material, with texture to simulate actual conditions. Resubmit samples as requested by Architect until acceptable sheen, color, and texture is achieved.

2. On actual wood surfaces, provide two 4" x 8" samples of natural and stained wood finish. Label and identify each as to location and applications.

3. On actual wall surfaces and other interior building components, duplicate painted finishes of prepared samples when requested by Architect. On at least 100 sq. ft. of surface as directed, provide full-coat finish samples until required sheen, color and texture is obtained; simulate finished lighting conditions for review of in-place work.

4. Do not proceed with painting until materials and finishes are approved by Architect.

1.3 DELIVERY AND STORAGE

A. Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:

Name or title of material
Fed. Spec. number, if applicable
Manufacturer's stock number and date of manufacturer
Manufacturer's name
Contents by volume, for major pigment and vehicle constituents
Thinning instructions
Application instructions
Color name and number

B. Do not begin finish painting in any area until sufficient materials are at site to complete work in that area.

C. Store and handle materials to prevent damage to materials or to work in place and to eliminate unnecessary fire hazard. Store materials in well ventilated spaces. Promptly remove from site empty containers and paints no longer needed for completion of work.

1.4 JOB CONDITIONS

A. Apply water-base paints only when temperature of surfaces to be painted and surrounding air temperatures are between 50 degrees F (10 degrees C) and 90 degrees F (32 degrees C), unless otherwise permitted by paint manufacturer's printed instructions.

B. Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45 degrees F (7 degrees C) and 95 degrees F (35 degrees C), unless otherwise permitted by paint manufacturer's printed instructions.

C. Do not apply paint in snow, rain, fog or mist; or when relative humidity exceeds 85%, or to damp or wet surfaces; unless otherwise permitted by paint manufacturer's printed instructions.

D. Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

1.5 WARRANTY

A. Provide a two year warranty against defects in materials and workmanship.

1.6 MAINTENANCE STOCK

A. At completion of painting, provide Owner with a minimum of one un-opened gallon of each different paint and color used, with manufacturer's name and color clearly marked on the label.

1. With close-out documents, provide letter of certification that maintenance stock has been turned over to Owner. Letter must be signed by Owner.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Except as otherwise specified, provide products by one of the following manufacturers or an acceptable substitute approved prior to bidding. Refer to Section 01 25 00 for substitution request.

Benjamin Moore Paint Company	Glidden Professional
Kelly Moore	Kwal Paints
Pittsburgh Paints	Sherwin Williams Company

2.2 COLORS AND FINISHES

A. Color Selection

1. Prior to beginning Work, Architect will furnish color chips for surfaces to be painted.
2. Use representative colors when preparing samples for review.
3. Final acceptance of colors will be from samples submitted at Pre-Painting Conference.

B. Pre-Painting Conference

1. Prior to any finish painting Contractor to schedule a "Pre-Painting Conference" to be attended by the Architect, Contractor, Painting Subcontractor and Manufacturer's Representative (when required for special finishes.)

2. Agenda to include submittal of color and finish sample (RE: Article 1.3 "Submittals and Samples") and a review of color schedule.

3. Contractor to record discussions of conference including agreements and/or disagreements and distribute a copy of record to each party in attendance.

C. Paint Coordination

1. Provide finish coats compatible with prime paints used. Review other sections of these Specifications in which prime paints are to be provided to ensure compatibility of the total coatings system for the various substrates.

2. Upon request from other subcontractors, furnish information on the characteristics of the finish materials proposed for use, to ensure the compatibility of prime coats. Notify the Architect in writing of any anticipated problems using the coating systems as specified with substrates primed by others.

2.3 MATERIAL QUALITY

A. Provide best quality grade of types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.

B. Provide undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within limits recommended by manufacturer.

C. All interior paints and primers must meet or exceed the VOC limit of Green Seal Environmental Standard GS-11.

D. All paints and primers must meet or exceed the current VOC limits of SCAQMD, Rule1113.

2.4 SCHEDULE OF PAINTING

A. To establish a level of quality, products and numbers referenced below are Sherwin Williams, except as otherwise indicated

B. Interior Work

1. Iron and Steel (Galvanized and Non-Galvanized)
Gloss Finish
1st Coat: Pro-Cryl Universal Primer, B66-310 Series (VOC - <100 g/L)
2nd Coat: Pro Industrial 0 VOC Acrylic, Series B66-600 (VOC - 0 g/L)
3rd Coat: Pro Industrial 0 VOC Acrylic, Series B66-600 (VOC - 0 g/L)

2. Wood - Painted
Semi Gloss
1st Coat: S-W Harmony Low Odor Interior Latex Primer, B11W900 (0 VOC) (4 mils wet, 1.3 mils dry per coat)
2nd Coat: Pro Industrial 0 VOC Acrylic, B66-650 Series (VOC - 0 g/L)
3rd Coat: Pro Industrial 0 VOC Acrylic, B66-650 Series (VOC - 0 g/L)

3. Wood - Transparent (Stain)
   One Coat Stain: Wood Classics 250 VOC Stain, Minwax 250 VOC Stains (VOC <250)
   1st Coat: Minwax Waterbased Polyurethane Varnish, Semi-gloss 710320 (VOC - <275 g/L)
   2nd Coat: Minwax Waterbased Polyurethane Varnish, Semi-gloss 710320 (VOC - <275 g/L)

4. Gypsum Board Finish
   Eg-Shell
   1st Coat: Harmony Low Odor Interior Latex Primer, B11W900 (VOC - 0 g/L)
   2nd Coat: Pro Mar 200 Zero VOC Interior Latex Eg-Shel, B20-2600 Series (VOC - 0 g/L)
   3rd Coat: Pro Mar 200 Zero VOC Interior Latex Eg-Shel, B20-2600 Series (VOC - 0 g/L)

5. Dryfall Paint
   Flat
   1st Coat: Low VOC Waterborne Acrylic Dryfall, White - Series B42W00081 (Black - Series B42B000081) (VOC = 39 g/L)
   2nd Coat: Low VOC Waterborne Acrylic Dryfall, White - Series B42W00081 (Black - Series B42B000081) (VOC = 39 g/L)

PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION

A. Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator.

B. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

D. Seal off areas, where painting is to take place, to prevent spray from migrating to adjacent areas. In buildings where areas are occupied, shut down HVAC systems, seal air grilles, and take all precautions necessary to prevent fumes and odors from migrating to occupied areas.

3.2 SURFACE PREPARATION

A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's recommendations and as herein specified, for each particular substrate condition.

1. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide

surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.

2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

3. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Perform cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly-painted surfaces.

4. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing of problems anticipated with using the specified finish-coat material with substrates primed by others.

B. Cementitious Materials: Prepare cementitious surfaces of concrete, concrete block, and cement plaster to be painted by removing efflorescence, chalk, dirt, grease, oils, and by roughening as required to remove glaze. Surface preparation - SSPC-SP13.

1. Use abrasive blast-cleaning methods if recommended by paint manufacturer.

2. Determine alkalinity and moisture content of surfaces to be painted by performing appropriate tests. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's literature.

3. Cementitious materials shall have cured for a minimum of 30 days prior to painting.

4. Damaged areas shall be repaired using appropriate materials.

5. At interior concrete walls clean all foreign matter and remove all curing compounds and form release agents using spray or roll-on PPG Durapres 7-512 etching material or equal.

C. Wood: Clean wood surfaces to be painted of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required.

1. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat.

2. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

3. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, cases, paneling, and wood drawers.

4. When transparent finish is required, use spar varnish for backpriming.

5. Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

D. Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by mechanical cleaning

(sanding, scraping with wire brush or sand blasting to bright metal). Surface preparation - SSPC-SP11

1. Touch-up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications. Clean and touch-up with same type shop primer.

E. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent, such as vinegar.
Surface preparation - Sherwin Williams S-W 10.
Clean per SSPC-SP1 using detergent and water or a degreasing cleaner, then prime as required. When weathering is not possible or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test area, priming as required. Allow the coating to dry at least one week before testing.
If adhesion is poor, Brush Blast per SSPC-SP7 as necessary to remove these treatments.

F. Drywall: All surfaces to receive paint must be thoroughly clean and dry.

1. Spot-prime steel corner lath with Primer Sealer before water-thinned products are applied to wall surfaces.

2. Application of Texture Finish to Gypsum Drywall

a. Surface Preparation and Primer: Prepare and prime drywall and other surfaces in strict accordance with texture finish manufacturer's instructions. Apply primer to all surfaces to achieve texture finish.

b. Mix and apply texture finish to drywall and other surfaces indicated to receive finish in strict accordance with manufacturer's instructions to produce a uniform texture without starved spots or other evidence of thin application, and free of application patterns.

c. Finish: To be selected by Architect.

d. Remove any texture droppings or overspray from door frames, windows, floors, and other adjoining work.

G. Caulking: Caulk joints before final coat of paint is applied to adjacent surfaces.

1. Where joint depth exceeds 3/4 inch, back joint to that depth with compressible, closed-cell polyethylene backer rod.

2. Caulk meeting edges of millwork/casework and backsplash where joint is not otherwise sealed.

H. Prime Coats: Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others.

1. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

2. At masonry walls, provide finished prime (block filler) surface without pin holes.

3.3 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

3.4 APPLICATION

A. General

1. Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

2. Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

3. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment or furniture with prime coat only before final installation of equipment.

4. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.

5. Where ceilings in rooms are scheduled to “paint structure”, paint exposed roof deck, duct work, roof trusses, conduit, piping, and all mechanical, electrical and plumbing exposed in that area.

6. Paint frames for all door glazing prior to installation of glass.

7. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.

8. Finish metal doors on tops, bottoms and side edges same as faces, unless otherwise indicated. Stain and varnish wood faced doors tops, bottoms and side edges, the same as wood faces with transparent finish.

9. Sand lightly between each succeeding enamel or varnish coat.

10. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.

B. Scheduling Painting

1. Apply first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

2. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky

under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as recommended by coating manufacturer.

D. Mechanical and Electrical Work

1. Mechanical items to be painted include, but are not limited to, the following:

Exposed ductwork	
Mechanical supports	Accessory items
Exposed piping	Exposed piping, pipe hangers, and supports

2. Electrical items to be painted include, but are not limited to, exposed conduit, wiremold and fittings.

E. Completed Work

1. Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

2. Upon final acceptance, provide to the Owner a complete finish schedule showing location, brand, type of paint, and color used on the project.

3.5 FIELD QUALITY CONTROL

A. The right is reserved by Owner to invoke the following material testing procedure at any time, and any number of times during period of field painting:

1. Engage services of an independent testing laboratory to sample paint being used. Samples of materials delivered to project site will be taken, identified and sealed, and certified in presence of Contractor.

2. Testing laboratory will perform appropriate tests for any or all of following characteristics: Abrasion resistance, apparent reflectivity, flexibility, washability, absorption, accelerated weathering, dry opacity, accelerated yellowness, recoating, skinning, color retention, alkali resistance and quantitative materials analysis.

B. If test results show that material being used does not comply with specified requirements, Contractor may be directed to stop painting work, and remove non-complying paint; pay for testing; repaint surfaces coated with rejected paint; remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the two coatings are non-compatible.

3.6 CLEAN-UP AND PROTECTION

A. Clean-Up

1. During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.

2. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

B. Protection

1. Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

2. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

3. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION.

DIVISION 10 - SPECIALTIES

10 14 00 - SIGNAGE
10 26 00 - WALL SURFACE PROTECTION
10 44 13 - FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES
10 59 10 – COUNTER SUPPORT BRACKETS

JUSTICE CENTER - CSCD **SECTION 10 14 00**
WILLIAMSON COUNTY **SIGNAGE**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Extent of specialty signs is shown on the drawings.

B. Forms of specialty signs required include the following:

1. Room identification interior panel signs
2. Suite identification cast aluminum letters and numbers

1.2 RELATED SECTIONS

A. Refer to Section 06 10 00, Rough Carpentry for coordination of wood blocking in walls for support of signage.

1.3 SUBMITTALS

A. Shop Drawings: Submit shop drawings for fabrication and erection of specialty signs. Include plans, elevations, and large scale details of sign wording and lettering layout. Show anchorages and accessory items. Furnish location template drawings for items supported or anchored to permanent construction.

B. Product Data: Submit manufacturer's technical data and installation instructions for each type of sign required.

C. Samples: Submit samples of each sign form and material showing finishes, colors, surface textures and qualities of manufacturer and design of each sign component including graphics.

1. Dimensional Letters: Provide full-size representative samples of each type of signage required, showing letter style, color, and material finish and method of attachment.

1.4 DESIGN CRITERIA

A. All signage must comply with the requirements of the Americans with Disabilities Act and the State of Texas Accessibility Standards..

PART 2 - PRODUCTS

2.1 CAST LETTERS AND NUMBERS

A. Manufacturer: Subject to compliance with requirements, manufacturer's offering products which may be incorporated in the work include the following, or an acceptable substitute. Refer to Section 01 25 00 for substitutions.

A.R.K. Ramos Manufacturing Co.
InPro Corporation
OMC Industries, Inc.
South Texas Graphic
Gemini, Inc.
Metal Arts
The Southwell Company

B. Aluminum Castings: Provide aluminum castings of alloy and temper recommended by the aluminum producer and finisher for the casting process used and for the use and finish indicated.

2.2 INTERIOR SIGNAGE

A. Manufacturers: Subject to compliance with requirements, manufacturer's offering products which may be incorporated in the work include the following, or an acceptable substitute approved prior to bidding. Refer to Section 01 25 00 for substitutions.

Allenite	A.R.K. Ramos Manufacturing Co.
ASI Sign Systems	Best Manufacturing Sign Systems.
InPro Corporation	Intelligent Signage Inc. (ISI)
The Southwell Company	South Texas Graphic

B. Interior Signage: Raised copy signage to comply with requirements of ADA.

C. Provide one sign for each room accessed from within the suite and for the suite itself.

1. Provide blank plates the same size of the sign for mounting on back side of sign when mounted on glass.

D. Signage Fabrication

1. Tactile characters and symbols shall be raised 1/32 inch from sign plate face. Signs shall be of one-piece construction. **Added on or engraved letters will not be accepted**.
2. Lettering style shall be upper case, sans serif or simple serif typeface.
3. Size of letters and numbers shall be as follows:
   a. Room numbers: 3/4" high
   b. Lettering for room usage and directional identification shall be 5/8" high.
   c. Spacing between vertical elements of the characters shall be 1/8" minimum. Spacing between characters and braille shall be 3/16" minimum.
   d. 3/8" wide, 1/32" raised perimeter border with 1/8" inside radius.
   e. All letters, numbers and symbols shall contract with their background, either light characters on a dark background or dark characters on a light background. Characters and background shall have a matte finish.
4. Letters and numbers shall be centered on sign.
5. Grade 2 braille shall be placed directly below last line of letters or numbers, except for room number signs, where they shall be placed directly behind the last number.
6. Radius corners: ½”

E. Sign Size

1. Room identification signs: 6" x 6"
2. Suite Identification signs: 6” x 12”

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Locate sign units and accessories where shown or scheduled, using mounting methods of the type described and in compliance with the manufacturer's instructions.

1. Install sign units level, plumb and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

B. Dimensional Letters and Numbers: Mount letters and numbers using fastening methods recommended by the manufacturer for letter form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish letter spacing and to locate holes for fasteners.

1. Projected Mounting: Mount letters at the projection distance of 1 inch from the wall surface.

C. Mounting Interior Signs

1. Fasteners: Use manufacturers standard recommended concealed fasteners fabricated from metals that are non-corrosive to either the sign materials or the mounting surface.
2. Mount signs to wall with manufacturer’s recommended adhesive.
3. When signs are mounted on glass, adhere to glass surface with manufacturer’s recommended adhesive and adhere matching back plate to opposite side of glass in exact alignment with sign to hide adhesive.

3.2 CLEANING AND PROTECTION

A. At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 10 26 00**
WILLIAMSON COUNTY **WALL SURFACE PROTECTION**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes the following types of wall surface protection systems:

1. Corner guards.

1.2 RELATED SECTIONS

A. Refer to Section 06 10 00, Rough Carpentry for coordination of wood blocking in walls for support of protection systems.

1.3 SUBMITTALS

A. Product data for each wall surface protection system component and installation accessory required.

B. Samples: Provide the manufacturer's standard full range of materials, colors, and textures available.

1.4 QUALITY ASSURANCE

A. Fire Performance Characteristics: Provide wall surface protection system components that are identical to those tested in accordance with ASTM E 84 for the fire performance characteristics indicated below.

1. Flame Spread: 25 or less.
2. Smoke Developed: 450 or less.

B. Impact Strength: Provide wall surface protection system components with a minimum impact resistance of 25.4 ft. lbs per sq. ft. when tested in accordance with ASTM D 256 (Izod impact, ft. lbs per inch notch).

C. Fire Performance Characteristics: Provide polycarbonate materials with V2, rating as tested in accordance with UL94.

D. Impact Resistance: 15 ft-lbs/inch of notch as tested per ASTM D 256, Notched Izod Test.

1.5 PROJECT CONDITIONS

A. Environmental Conditions: Do not install wall surface protection system components until the space is enclosed and weatherproof and until the ambient temperature within the building is maintained at not less than 70 deg F (21 deg C) for not less than 72 hours prior to beginning of the installation. Do not install rigid plastic wall surface protection systems until that temperature has been attained and is stabilized.

1.6 WARRANTY

A. Provide manufacturer’s standard warranty for a period of five (5) years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, provide products from the following or an acceptable substitute approved prior to bidding. Refer to Section 01 25 00 for substitutions.

1. Arden Architectural Specialties
2. Balco, Inc.
3. Construction Specialties, Inc.
4. InPro Corporation
5. IPC Door and Wall Protection Systems
6. Koroseal Wall Protection Systems
7. A. R. Nelson Co., Inc.
8. Pawling Corporation.

2.2 MATERIALS

A. Rigid Plastic Material: Extruded, textured, chemical- and stain-resistant, high-impact, polyvinyl chloride (PVC) or acrylic modified vinyl plastic, thickness as indicated. Comply with specified requirements of ASTM D 256 for impact resistance and ASTM E 84 for flame spread and smoke developed characteristics.

1. Colors and Textures of Plastic Material: Provide extruded plastic material that matches selections made by the Architect from the manufacturer's full range of standard colors and textures.

2.3 CORNER GUARDS

A. Surface-Mounted Plastic Corner Guards: Provide manufacturer's standard, embossed, resilient plastic polyvinyl chloride (PVC) or acrylic modified vinyl sheet corner guards, height as indicated. Provide 90-degree turn, unless otherwise indicated, and formed edges.

1. Wing Size: 2 inch by 2 inch wings.
2. Mounting Method: Contact cement.

B. Corner guards shall be extruded of polycarbonate material.

1. Size: 2” x 2”
2. Thickness: .100 inch
3. Shape: 901
4. Mounting Method: Adhesive

2.4 FABRICATION

A. General: Fabricate wall and door protection systems to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thicknesses of components.

B. Provide surfaces free of evidence of wrinkling, chipping, uneven coloration, dents, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions in which wall surface protection components and wall protection systems will be installed.

1. Complete all finishing operations, including painting, before beginning installation of wall surface protection system materials.

3.2 INSTALLATION

A. General: Install corner guards at all gypsum board corners in corridors. Install corner guards plumb, level, and true to line without distortions.

1. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished work.

3.3 CLEANING

A. General: Immediately upon completion of installation, clean plastic covers in accordance with manufacturer's instructions.

B. Remove excess adhesive using methods and materials recommended by manufacturer.

C. Remove surplus materials, rubbish, and debris resulting from installation upon completion of work and leave areas of installation in neat, clean condition.

END OF SECTION

JUSTICE CENTER - CSCD **SECTION 10 44 13**
WILLIAMSON COUNTY **FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes providing and installing fire extinguisher cabinets and fire extinguishers.

1.2 RELATED SECTIONS

A. Refer to Section 06 10 00, Rough Carpentry for coordination of wood blocking in walls for support of extinguishers and cabinets.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified. For fire extinguisher cabinets include rough-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style, door construction, panel style, and materials.

C. Samples: Manufacturer's color charts showing full range of colors available for those units with factory-applied color finishes.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility: Obtain fire extinguishers from one source from a single manufacturer.

B. U.L. Listed Products: Fire extinguishers UL listed and bear UL "Listing Mark" for type, rating, and classification of extinguisher.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, additional manufacturers offering products that may be incorporated in the Work include the following or an acceptable substitute approved prior to bidding. Refer to Section 01 25 00 for substitutions.

J.L. Industries	Larsen's Manufacturing Co.
Potter-Roemer, Inc.	Watrous Inc.

2.2 FIRE EXTINGUISHERS

A. Provide Cosmic 10E Multi-purpose (ABC, dry chemical) Fire Extinguisher as manufactured by J.L. Industries. Red enamel, heavy duty, steel cylinder, completely replaceable chrome valve assembly, pressure gauge, discharge hose and nozzle.

2.3 FIRE EXTINGUISHER CABINETS

A. General: Provide ADA compliant fire extinguisher cabinets where indicated, of suitable size for housing fire extinguishers of types and capacities indicated.

B. Basis of Design: Ambassador Steel Model 1017F17 fire extinguisher cabinets, semi-recessed as manufactured by J.L. Industries.

1. Provide fire rated cabinet, Model 1017F17FX, semi-recessed, where located in fire rated walls.

C. Construction: Manufacturer's steel box, with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld all joints and grind smooth. Miter and weld perimeter door frames.

1. Semi-recessed cabinet box semi-recessed into wall.

D. Trim Style: Fabricate trim in one piece with corners mitered, welded, and ground smooth.

1. Exposed Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).

a. Rolled-Edge Trim at semi-recessed cabinets with 2-1/2 inch or 4 inch backbend depth as required for thickness of wall.
b. Trim Metal: Of same metal and finish as door.

E. Door Material and Construction: Manufacturer's standard steel door construction, coordinated with cabinet types and trim styles selected.

F. Door Style: Manufacturer's standard design.

1. Glass: Tempered float glass complying with ASTM C 1048, Type I, Quality q3, Class 1 (transparent).

G. Door Hardware: Provide manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide either lever handle with cam action latch, or door pull with friction latch. Provide concealed or continuous-type hinge permitting door to open 180 deg.

2.4 FINISHES FOR FIRE EXTINGUISHER CABINETS

A. General

1. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.
2. Protect mechanical finishes on exposed surfaces from damage by application of strippable, temporary protective covering prior to shipment.

B. Steel Cabinet Finishes

1. Surface Preparation: Solvent-clean surfaces complying with SSPS-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5 (white metal blast cleaning) or SSPC-SP 8 (pickling).

2. Factory Painted Finish:

a. Shop Primer: Manufacturer's or fabricator's standard fast-curing, lead-free, universal primer, selected for resistance to normal atmospheric corrosion, for compatibility with substrate and field-applied finish paint system indicated, and

for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure. Apply shop primer specified below immediately following surface preparation and pretreatment.

b. Finish: Manufacturer’s optional (SI) silver paint.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install items included in this section in locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.

1. Provide type and size required by code at mechanical rooms, electrical rooms, boiler rooms, equipment rooms, kitchens and stages. At areas accessible to maintenance personnel only, install extinguishers on wall brackets, no cabinets required.

2. Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.

3. Securely fasten fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Wall mounted, heavy duty, welded aluminum brackets for supporting work surfaces.

B. Related sections:

1. Section 06 40 23 – Interior Architectural Woodwork: Fabrication of work surfaces to be supported by welded aluminum brackets.

2. Section 09 21 16 - Gypsum Board Assemblies: Blocking installed in stud partitions for support and anchorage of support brackets.

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA):

1. AAMA 607.1 - Voluntary Guide Specification and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.

B. American Society for Testing and Materials: ASTM B221 - Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube.

1.3 SUBMITTALS

A. Provide in accordance with Section 01 33 00 - Submittal Procedures:

1. Product data for support brackets.

2. Shop drawings indicating dimensions and installation details.

3. Installation instructions.

1.4 QUALITY ASSURANCE

A. Manufacturer qualifications: Firm specializing in designing, patenting, and fabricating unique aluminum storage systems, support brackets, handrails, and other architectural specialties with 10 years minimum successful experience.

PART 2 - PRODUCTS

2.5 ACCEPTABLE MANUFACTURERS

A. Rangine Corporation, 330 Reservoir Street, Needham, Massachusetts 02494; 800-826-6006; www.rakks.com.

B. Requests to use equivalent products of other manufacturers shall be submitted in accordance with Section 01 25 13 - Product Substitution Procedures.

2.6 MATERIALS

A. Material: Fabricate components from extruded aluminum sections complying with ASTM B221, 6063-T5 alloy and temper.

B. Factory applied finishes: Exposed aluminum surfaces shall be free of scratches and other serious blemishes and be factory finished with clear anodized coating complying with AAMA 607.1 - MM10C22A31.

2.7 WELDED ALUMINUM BRACKETS

A. Type: Support brackets fabricated by welding miter cut extruded aluminum sections, grinding and deburring sharp edges and welds, drilling holes for field attachment, and factory finishing.

B. Flush mounted counter brackets: Bracket for 24inches wide work surface; Model No. EH-1818FM as manufactured by Rangine Corporation.

1. Construction: Fabricated from horizontal aluminum T section and vertical aluminum L section. Vertical leg designed to attach to side of supporting stud and be concealed by gypsum board or other wall finish.

2. Size (height by depth): 18 by 20 inches

3. Load capacity per bracket: 300 pounds.

4. Faceplates: Provide 4 by 4 inches aluminum faceplates with adhesive backing and notched to fit around vertical flange of flush mounted counter support bracket and conceal penetration through gypsum board providing neat, finished appearance.

C. Wire management grommets: Provide brackets with holes and rubber grommets with 5/8 inch diameter opening to accommodate RJ-45 connector or wire ties.

PART 3 - EXECUTION

3.1 COORDINATION

A. Coordinate provision of support brackets with design and fabrication of work surfaces to be supported as specified in Section 06 40 23 to ensure compatibility of dimensions and load capacity.

B. Coordinate requirements for stud spacing, blocking, and auxiliary structural supports to ensure adequate means for installation and anchorage of support brackets.

C. Coordinate installation of flush mounted support brackets with application of gypsum board finish specified in Section 09 21 16 - Gypsum Board Assemblies. Ensure that brackets are delivered to site and installed in a timely manner to allow for vertical bracket leg to be concealed by gypsum board.

D. After gypsum board has been applied to stud framing, install adhesive backed

aluminum face plates around flush mounted brackets penetrating gypsum board.

3.2 INSTALLATION

A. Install support brackets in accordance with reviewed shop drawings and manufacturer's installation instructions.

B. Install brackets rigidly to metal studs so that they are secure, plumb, and aligned.

C. Install with fasteners of type, size, and quantity as supplied or recommended by bracket manufacturer for type of application and substrate.

END OF SECTION

DIVISION 11 – EQUIPMENT

11 31 13 – APPLIANCES

JUSTICE CENTER - CSCD **SECTION 11 31 13**
WILLIAMSON COUNTY **APPLIANCES**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes the following types of residential appliances:

1. Refrigerator

B. Related Sections: The following sections contain requirements that relate to this Section:

1. Plumbing connections for appliances are specified in Division 22.
2. Electrical services and connections for appliances are specified in Division 26.

1.2 SUBMITTALS

A. Product data for each appliance type required indicating compliance with requirements, including installation instructions. Provide complete operating and maintenance instructions for each appliance.

B. Schedule: Submit schedule of appliances, using the same room designations as shown on drawings.

1.3 QUALITY ASSURANCE

A. Energy Ratings: Provide appliances that carry labels indicating energy cost analysis (estimated annual operating costs) and efficiency information as required by Federal Trade Commission.

B. UL and NEMA Compliance: Provide electrical components required as part of appliances that are listed and labeled by UL and comply with applicable NEMA standards.

C. Design Criteria: The drawings indicate sizes, profiles, and dimensional requirements of residential appliances and are based on the specific types and models indicated. Appliances by other manufacturers may be considered, provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

1.4 DELIVERY AND STORAGE

A. Deliver appliances to the Project site in the manufacturer's undamaged protective packaging. Deliver of appliances when utility rough-in is complete and construction in the spaces to receive appliances is substantially complete and ready for installation.

1.5 WARRANTIES

A. Warranty: Submit written warranties executed by the manufacturer of each appliance specified agreeing to repair or replace units or components that fail in materials or workmanship within the specified warranty period.

1. Refrigerator: 4-year limited warranty

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with specifications, provide appliances manufactured by one of the following:

Frigidaire Appliance Company.	General Electric Company.
Hotpoint.	Kitchen Aid, Inc.
Maytag Company.	Scotsman
Whirlpool Corporation.	Ice O Matic

2.2 REFRIGERATOR/FREEZERS

A. Side-By-Side Refrigerator/Freezer: Provide a freestanding, frost-free, two-door, side-by-side model refrigerator/freezer on adjustable rollers, with five shelves minimum in each door.

1. Capacity: Provide the following minimum values, measured according to ANSI/AHAM HRF-1 and certified by AHAM:

   a. Total volume: 21.0 cu. ft
   b. Refrigerator volume: 14.0 cu. ft
   c. Total shelf area: 25.0 sq. ft

2. Energy Consumption: Measured and certified at not more than 3.0 kWh/day under average conditions.
3. Temperature Controls: Include separate temperature controls for each compartment and a switch for condensation-control heating element at the freezer opening.
4. Storage Features: Provide the following standard storage features:

   a. Adjustable glass interior cabinet shelves.
   b. Meat compartment.
   c. Vegetable crisper.
   d. Butter conditioning compartment.

2.3 FINISHES

A. General: Provide the manufacturer's standard porcelain enamel finish.

B. Colors: Provide stainless steel for all appliances

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with manufacturer's instructions and recommendations.

B. Built-In Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and rough openings are completely concealed.

C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

D. Utilities: Refer to Divisions 15 and 16 for plumbing and electrical requirements.

3.2 ADJUST AND CLEAN

A. Testing: Test each item of residential equipment to verify proper operation. Make necessary adjustments.

B. Accessories: Verify that accessory items required have been furnished and installed.

C. Cleaning: Remove packing material from residential equipment items and leave units in clean condition, ready for operation.

END OF SECTION

DIVISION 12 - FURNISHINGS

12 21 00 - WINDOW TREATMENT

JUSTICE CENTER - CSCD **SECTION 12 21 00**
WILLIAMSON COUNTY **WINDOW TREATMENT**

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Horizontal blinds.

B. Provide horizontal blinds at all windows exterior and interior including door lites.

1.2 RELATED SECTIONS

A. Refer to Section 06 10 00, Rough Carpentry for coordination of wood blocking in walls for support of window treatment.

1.3 QUALITY ASSURANCE

A. Provide each blind as a complete unit produced by one manufacturer, including hardware, accessory items, mounting brackets and fastenings.

B. Unless otherwise acceptable to the Architect, furnish all blind units by one manufacturer for the entire project.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for each type of blind unit required. Include methods of installation for each type of opening and supporting structure. Transmit copy of instructions and recommendations to the Installer.

B. Shop Drawings: Submit shop drawings for special blind components which are not fully dimensioned or detailed in manufacturer's product data. Include typical elevation layout indicating proposed division between blind units and meeting edges at corners.

C. Samples: Submit samples of entire range of colors for exposed metal finish samples of cords, tapes and tassels required. Review of samples will be for design, color and finish only. Compliance of all other requirements is the exclusive responsibility of the Contractor. In addition, submit one complete small size operating unit for each type of blind required.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Provide horizontal venetian blinds as manufactured by one of the following or an acceptable substitute. For substitution request, refer to Section 01 25 00.

Hunter Douglas, Inc.
Levelor Lorentzen, Inc.
Springs Window Fashions Division, Inc. (Graber)

2.2 MATERIALS AND COMPONENTS

A. Headrail: Manufacturer's standard headrail, channel-shaped section fabricated from minimum 0.024" thick phosphate treated steel. Increase metal thickness as recommended by the manufacturer for large blind units. Cross-brace for extra rigidity. Furnish complete with tilting mechanism, top and end brace, top cradle, cord lock, and accessory items required for the type of blind and installation indicated.

B. Bottom Rail: Manufacturer's standard 0.024 inch thick tubular steel bottom rail, designed to withstand twisting or sagging. Contour top surface to match slat curvature, with flat or slightly curved bottom. Close ends with manufacturer's standard metal or plastic end caps, of the same color as rail. Finish rail the same color as slats.

C. Slats: Manufacturer's standard, spring-tempered slats (louver blades), with rounded corners and forming burrs removed, as follows:

1. Aluminum slats not less than .008 inch thick and .991 inch wide.

D. Braided Ladders: Manufacturer's standard polyester support cords with integrally braided ladder rungs. Provide cord size and rung spacing as required for each type of blind shown. Distance between slats shall not exceed 19.6 mm (nominally 15.7 slats per vertical foot)

E. Tilter: Manufacturer's standard enclosed, lubricated, tilting mechanism which will tilt and securely hold the tilting rod, slats and bottom rail at any set angle, as follows:

1. Furnish drum type tilter of worm and gear drive, with tilt-cord attached to drum to prevent slippage.
2. Furnish wand (or rod) type tilter consisting of standard tilter mechanism adopted for rotating wand operation. Furnish manufacturer's standard plastic or aluminum rod of proper length to suit blind installation.

F. Cords: Manufacturer's standard braided polyester or nylon cord, sized to suit blind type, equipped with soft-molded plastic, rubber or composition tassels securely attached to each cord end.

G. Cord Locks: Manufacturer's standard cord locks as required for each type of blind. Furnish crash-proof cord locks with cord separators, attached to headrail.

H. Cord Equalizers: Nylon, self-aligning type, designed to maintain horizontal blind position.

I. Hardware: Furnish manufacturer's standard brackets, supports and internal reinforcement as required to suit blind type and size. Finish exposed hardware and accessories to match rail color.

J. Finish: Galvanize and phosphate coat all steel parts, followed by manufacturer's standard glass-smooth, baked-on synthetic resin enamel finish.

K. Prime aluminum slats with chromate conversion coating, followed by manufacturer's standard glass-smooth, baked-on synthetic resin enamel finish, colors to match existing.

L. Colors: Provide materials in colors as selected by the Architect from manufacturer's standard colors.

2.3 FABRICATION AND OPERATION

A. Prior to fabrication, verify actual opening dimensions by accurate site measurements. Adjust blind dimensions for proper fit in all openings.

B. Fabricate components of blinds from non-corrosive, non-staining, non-fading materials which are completely compatible with each other, and which do not require lubrication during normal expected life.

C. Fabricate blind units to completely fill the openings as indicated, from head to sill and jamb to jamb.

D. For continuous window wall installation, fabricate blinds so that ends occur over mullions or other defined vertical separations, unless otherwise indicated.

E. Space supporting tapes or cords in accordance with manufacturer's standards, unless otherwise indicated.

F. Space louver blades (slats) to provide overlap for light exclusion when in the fully closed position.

G. Equip blind units, unless otherwise indicated, for the following operations:

1. Full-tilting operation with slats rotating approximately 180 degrees. Place tilt operating controls on left-hand side of blind units, unless indicated otherwise.
2. Full-height raising, to manufacturer's minimum stacking dimension, with lifting cord locks for stopping blinds at any point of ascending or descending travel. Place pull cords on right-hand side of blind units, unless indicated otherwise.

H. Provide Owner with twenty (20) extra slats of each color of blinds for his stock.

PART 3 - EXECUTION

3.1 INSPECTION

A. Installer must examine the substrates and conditions under which the horizontal venetian blinds are to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.2 INSTALLATION

A. Install horizontal venetian blinds in accordance with the manufacturer's instructions. Provide intermediate supports at intervals to permit easy entrance and removal of head, and to ensure level head and slat position.

B. Provide adequate clearance between sash and divisions between blinds to permit unencumbered operation of sash hardware.

C. Divisions between blinds are permitted only at mullions of continuous windows or openings where more than one blind for one opening occurs.

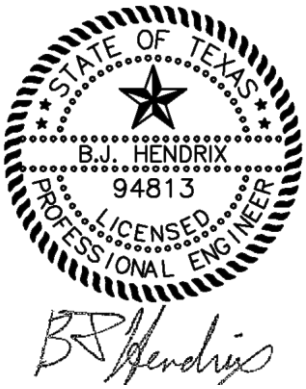
END OF SECTION.

DIVISION 20 - SYSTEMS GENERAL CONDITIONS

20 00 00 - GENERAL PROVISIONS
20 01 00 - BASIC MATERIALS AND METHODS
20 07 00 - INSULATION

WILLIAMSON COUNTY JUSTICE CENTER CSCD

Mechanical/Electrical Specifications



12/22/16

MEP/ENERGY CONSULTANTS

HCE HENDRIX CONSULTING ENGINEERS

COMMISSIONING • FIELD INVESTIGATIONS

115 E. MAIN
ROUND ROCK, TX 78664
F-4095

DIVISION 20, 22 & 23
WILLIAMSON COUNTY
JUSTICE CENTER - CSCD
MECHANICAL SPECIFICATIONS

CONTENTS:

20 00 00. . . . . .GENERAL PROVISIONS

20 01 00. . . . . BASIC MATERIALS AND METHODS

20 07 00. . . . . INSULATION

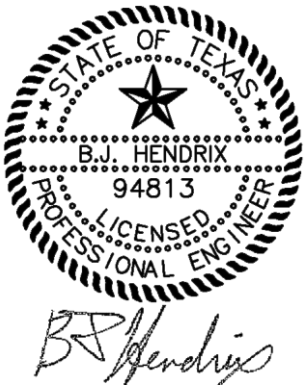
22 11 16. . . . . WATER DISTRIBUTION SYSTEM

22 13 16. . . . . LIQUID WASTE TRANSFER

22 30 00. . . . . .PLUMBING FIXTURES AND TRIM

23 05 93. . . . . TEST AND BALANCE

23 30 00. . . . . AIR DISTRIBUTION



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SECTION 20 00 00 - GENERAL PROVISIONS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The work of Division 20-24 consists of providing labor, materials, products, and all operations required for the complete operating installation of all mechanical systems as shown and specified, in strict compliance with applicable drawings, specification, terms and conditions of the contract and all applicable codes and ordinances governing the installation of the various mechanical systems. Contractor shall provide all equipment and materials necessary and usually furnished in connection with such work and systems whether or not specifically mentioned in the specifications or on the drawings. All work shall be fully correlated with the work of other crafts. This section of Division 20-24 is a part of all other sections of Division 20-24.

B. Each Contractor shall study the Contract Documents included under this contract to determine exactly the extent of work provided under this contract, as well as to ascertain the difficulty to be encountered in performing the work on the drawings and outline hereinafter and in making new connections to existing utilities, installing new equipment and systems and coordinating the work with the other Trades.

C. Notwithstanding any approvals or instructions which must be obtained by the Contractor from the Architect in connection with use of premises, the responsibility for the safe working conditions at the site shall remain that of the Contractor's, and the Architect or Owner shall not be deemed to have any responsibility or liability in connection therewith.

D. The Agreement Forms, Uniform General Conditions, Supplementary Conditions, Division 00 and Division 01 of the specifications shall apply to the work specified in Division 20-24.

E. Additional Site Visit Costs: Contractor shall be charged with any cost resulting from uncompleted items that require additional site trips by the Architect/Engineer.

F. The Contractor shall obtain and pay for all permits and fees associated with his work.

G. REMODEL WORK: COORDINATE ALL CONNECTIONS OF NEW EQUIPMENT WITH EXISTING SERVICE. CONTRACTOR SHALL FURNISH AND INSTALL ALL EQUIPMENT, MATERIALS, AND INCIDENTAL ITEMS REQUIRED TO MAKE SYSTEM COMPLETE AND OPERABLE.

H. **NO TOXIC OR HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO PRODUCTS OR MATERIALS CONTAINING ASBESTOS, PCB AND LEAD SHALL BE PROVIDED OR INSTALLED. ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113. ALL PAINTS MUST MEET VOC LIMIT OF GREEN SEAL ENVIRONMENTAL STANDARD GS-11. ALL INSULATION IS TO BE FREE OF UREA-FORMALDEHYDE AND/OR BE GREENGUARD CERTIFIED.**

I. An extra copy of all Field Reports shall be kept in a separate notebook set up in the Construction Manager's Trailer. Contractors shall use these reports to check off that each individual item noted has been completed. Each item shall be initialed and noted when completed. Use this notebook to keep record of all test and results (i.e. wastewater test, water line tests, etc.

J. **Drawings:**
Architectural Background Files – Architectural Revit Models and CAD files to be used for background files, MEP drawings are not background files. Architectural Revit Models and CAD files are used for shop drawings backgrounds. They must be obtained from the architect and cannot be given from the engineer. Reference Architect for cost of Architectural Files.

MEP Drawings – These drawings cannot be used for shop drawings, as they are diagrammatic in nature only. Actual shop drawings prepared by sub-contractors must be used for coordination between all trades. If MEP floorplan files are requested they may be obtained with a signed confidentiality release form, only as outlined below. These files may be used in conjunction with this project only. There are no guarantees of compatibility or accuracy; all technical support will be billed hourly at current Engineer's Rates. Engineer does not charge for actual file, but does charge for time required to prepare the files in format as requested by the Contractor. Fees will be based on Engineer's current hourly rates. Deposit of $500 must be paid prior to beginning file preparation and balance must be paid prior to release of any files. Total fee based on actual time required by Contractor's request. See submittal and shop drawing section for additional information.

MEP CAD Files that will be released.
- If no Architectural RCP is available for light locations. Lighting Floorplans will be released.
- Mechanical Floorplan will be released to Mechanical Contractor for aid in production of his own shop drawings. HCE mechanical drawings may not be submitted as shop drawings.
- Fire Alarm/Fire Sprinkler/Intercom etc… Contractors must use Architectural Backgrounds and Architectural RCP's (when available or lighting floorplan) and **Mechanical Contractor Shop Drawings** for coordination purposes. Do not request MEP floorplans, this will be cut and paste into an email for you to read.

1.02 PRE CONSTRUCTION MEETING

A. DDC Contractor, Mechanical Contractor, Test and Balance Representative and representatives for each type of HVAC gear that requires interface beyond 'on/off' control will meet in the office of HCE prior to initial control submittal.

B. The purpose of this meeting is to introduce all representatives who will need to coordinate with each other to insure a working project.

C. Each representative is to come prepared with sequences of operation, schematics and written instructions as to which points require what type of signal for each function and how tie-ins and integrations are to occur. If pulsed signals are required to keep a device on, bring it to the attention of the team and provide specific information. Do not assume others understand the inner workings of your gear or controls. Discuss exactly what type signals are acceptable to gear and how to set it up to receive and act on that signal.

D. Newer multistage air volume split systems, RTU's, etc. have different sequences and control tie-ins than older conventional units. Exact requirements for a given type and brand of equipment must be coordinated by the equipment supplier with the Controls Contractor and with the Test and Balance Contractor.

E. Test and Balance Contractor must verify air flow and delta T's at every stage of unit capacity to insure that unit is providing the correct CFM based on the capacity stage it is on so that the unit does not end up with low stage cooling and high stage blower which will not dehumidify. Equipment supplier is to provide Test and Balance Contractor with a quick start up guide to show where and how to set up fan speed selections and outside air dampers so that only minor balancing occurs at dampers serving grilles.

1.03 SITE INSPECTION

A. Prior to bidding the Contractor shall visit and examine the site verifying all existing items and familiarize himself with existing work conditions and understand the conditions which affect performance of the work of this Division before submitting bids for this work. The submission of bids shall be deemed as evidence of such visits and examinations.

B. All bids shall take the existing conditions into consideration and the lack of specific information on the drawings shall not relieve the Contractor of any responsibility. No subsequent allowance for time or money will be allowed for work or change related to failure to examine site conditions.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. All work covered by this section of these specifications shall be accomplished in accordance with the respective drawings, information or instructions to bidders, and general provisions of these specifications. Any supplementary conditions, special conditions, addenda, or directives which may be issued by the Owner's representative herewith or otherwise shall be complied with in every respect.

1. Electrical Specifications: Division 26-28.

2. Mechanical, Electrical, Plumbing Drawings

B. Unless otherwise indicated on the Electrical Drawings or in Mechanical Specifications, provide all mechanical equipment motors, motor starters, disconnect switches, thermal overload switches, control relays, time clocks, thermostats, motor valves, damper motors, electric switches, electric components, wiring, and any other miscellaneous Division 20-24 controls.

C. Carefully coordinate all work with the electrical work shown and specified elsewhere in these documents.

D. Motors: Furnish electric motors designed for the specific application and duty applied, and to deliver rated horsepower without exceeding temperature ratings when operated on power systems with a combined variation in voltage and frequency not more than plus or minus 10 percent of rated voltage.

E. Verify from the drawings and specifications the available electrical supply characteristics and furnish equipment that will perform satisfactorily under the conditions shown and specified.

F. Size motors for 1.15 service factor, not to exceed 40 degrees temp. Rise above ambient.

G. Provide self-resetting thermal overload switch for fractional horsepower motors.

H. Electrical Contractor to provide conduit and junction boxes for all sensors and exterior conduit for controls to mechanical equipment. Conduit for space sensor to extend from junction box to above accessible ceiling. Conduit for exterior equipment to extend from equipment through wall or roof to above an accessible ceiling. Any control wiring in exposed ceiling areas to be in conduit by Controls Contractor for protection. Controls Contractor to coordinate on all conduit requirements. Coordinate locations with Electrical Contractor.

I. When Mechanical Contractor furnishes motor starter, provide each three phase motor 25 HP and larger with phase failure and phase reversal monitoring relay in all three phases. Relay shall open motor starter contacts at 10% voltage unbalance and shall automatically reset when voltage returns to normal. Provide adjustable time delay set at .2 second on drop-out to prevent nuisance tripping on momentary voltage dips.

J. Duct smoke detector in supply and return air to be provided by Fire Alarm Contractor, installed by Mechanical Contractor, tied into HVAC control circuit by Mechanical Contractor and to fire alarm panel by Fire Alarm Contractor.

K. The electrical design and electrical drawings are based on the equipment and/or electric motors of the type, size and electrical characteristics shown and specified on the mechanical drawings and any change in equipment and/or motor size or type brought on directly or indirectly by a substitution of mechanical equipment having characteristics requiring a change, shall be the responsibility of the Mechanical Contractor and the entire cost of such change, including conduit, wiring, motor starting equipment, etc., shall be paid for by the Mechanical Contractor at no additional charge, unless the substitution was initiated by the Owner. Submittals must clearly show any deviations. Mechanical Contractor is responsible for coordinating any required changes with the Electrical Contractor, prior to Electrical Contractors ordering of panels and associated equipment.

L. Mechanical contractor assumes requirements of Controls Contractor when there is no separate Controls Sub-Contractor.

1.05 WORK NOT INCLUDED

A. Certain labor, materials, or equipment may be provided under other sections of these specifications, by utility companies, or by the Owner. When such is the case, the extent, source and description of these items will be as indicated on the Drawings or described in the specifications, but the Contractor is responsible for verifying with all parties involved as to the extent of his requirements of work.

1.06 SPECIFICATION TERMINOLOGY (Definitions)

A. Streamlining: In many instances, the products, reference standards, and other itemized specifications have been listed without verbiage. In these cases, it is implied that the Contractor shall provide the products and perform in accordance with the references listed.

B. "Furnish" means to purchase and deliver material as shown and specified, including mark-ups, and cart the material to an approved location at the site or elsewhere, as noted or agreed.

C. "Provide/Install", as used in these specifications, means furnish all material, labor, sub-contracts, and appurtenances, including mark-up required for a complete, operating, finished system.

D. "Rough-in and Connect Only" means provide an appropriate system connection, such as supplies with stops, continuous wastes with traps, shut-off valves required, and all piping connections, testing, etc., for proper operation, and to install equipment furnished. Equipment furnished is received, uncrated, assembled and set in place by supporting crafts unless they make prior arrangements to hire the mechanical installer for this work.

E. "Accessible" means arranged so that an appropriately dressed maintenance man may approach the area in question with tools and products necessary for the work intended, and may then position himself to properly perform the task to be accomplished, without disassembly or damage to the surrounding installation. It shall also be no more than four feet (4') above a ceiling.

F. "Serviceable" means arranged so that the component or product in question may be properly removed, and replaced without disassembly, destruction, or damage to the surrounding installation.

G. "Product" is a generic term which includes materials, equipment, fixtures, and any physical item used on the project.

H. Wherever the term "shown on drawings" is used in the specifications, it shall mean "noted", "indicated", "scheduled", "detailed", or any other diagrammatic or written reference made on the drawings.

I. "Conduit" includes, in addition to conduit, all fittings, hangers and other accessories relative to such conduit. "Piping" includes, in addition to piping, all fittings, valves, hangers and other accessories relative to such piping.

J. "Concealed" means hidden from sight in chases, furred spaces, shafts, hung ceilings, embedded in construction, crawl spaces, etc.

1.07 DIAGRAMMATIC DRAWINGS

A. Drawings and specifications encompass a system that will integrate with the structural, electrical, and Architectural design of the building.

1. Drawings and specifications are complementary, each to the other; what is shown on one is as binding as if called for in both.

2. Where drawing details, plans, and/or specification requirements are in conflict, and where conduit, duct and piping sizes of the same run are shown to be different between plans and specifications or details, the most stringent requirement will be included in the Contract. Systems and equipment called for in the specification and/or shown on the drawings shall be provided under the contract of each Trade as if it were required by both the drawings and the specifications. However, prior to ordering or installation of any portion of work which appears to be in conflict, such work shall be brought to the Architect's attention for direction as to what is to be provided.

B. The drawings are partly diagrammatic in character and do not show exact locations, all offsets or give exact elevation in piping, fittings, duct, conduits, etc. Also, the drawings do not necessarily show in minute detail all features of the installation. Contractor shall physically arrange the systems to fit in the space available and shall carefully investigate structural and finish conditions, arrange work accordingly and provide a complete and satisfactorily working installation. Provide all work shown on the drawings and specified, unless otherwise stated. No subsequent allowance will be made due to failure to coordinate work prior to installation.

C. The Architectural, Structural, Civil and Electrical plans and Specifications and other pertinent documents issued by the Architect are a part of these Specifications and the accompanying Mechanical Drawings and shall be complied and coordinated with in every respect. All drawings and specifications mentioned above shall be examined by all bidders. Failure to examine all drawings for coordination and quantities shall not relieve the Contractor of responsibility and no subsequent allowance for time or money will be allowed.

1.08 MATERIAL AND EQUIPMENT SUBMITTALS

A. Submittals: Provide submittals for all products and systems described in Division 20-24 and shown on the drawings to demonstrate compliance with the requirements of the project. Furnish equipment submittals in the manner described elsewhere in these specifications.

B. Submit to the Engineer, after the award of the contract or as dictated by project schedule, a type written list of those items of equipment and appurtenances which will be furnished. Include the name or description of the item, name of manufacturer, model or type, catalog number and manufacturer's printed information. The information submitted shall include overall dimensions, weights, voltage rating, phase, wiring diagrams, etc., and nameplate data. Assemble cut sheets into separate submittals as defined in this section or by Specification Section. Submit priority items and long lead time first. Then follow with remaining items. This will allow for faster review and response to accommodate project schedule. **Any submittal with all sections under one (1) cover will be returned and required to be broken into separate submittals.** The Engineer's check will be general and does not relieve the Contractor of final responsibility to comply with the Contract Documents in all respects.

C. Submittal review is for general design and arrangement only and does not relieve the Contractor from any of the requirements of the Contract Documents. Submittals will not be checked for quantity, dimension, fit or proper technical design of manufactured equipment. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provision of a complete and satisfactory working installation is the sole responsibility of the Contractor. **Warranties cannot be reduced through the submittal process.**

D. Contractor shall indicate items being used on cut sheets by highlighting or arrowing to actual part number. Submittals may be returned without checking if submittals not appropriately marked.

E. **'Individual submittals' means separate submittals with unique submittal numbers for each specification section. Separate PDFs for each Submittal number.**

F. HARDCOPY SUBMITTAL REQUIREMENT: Hardcopy submittals will not be required by Engineer.

G. PDF SUBMITTAL REQUIREMENT:
For submittal sections listed below as allowed pdf's the following requirements must be met or the submittal will not get through email security and will be auto-deleted and not checked. Each specifications section must be a separate pdf file, **one giant pdf for all sections will be rejected**.

PDF FILE: MUST BE NAMED AS FOLLOWS:
JOB NAME – SUBMITTAL No. XX – SUBMITTAL DESCRIPTION

EMAIL TITLE/SUBJECT: FOR SUBMITTALS MUST BE AS FOLLOWS:
JOB NAME – SUBMITTAL No. XX – SUBMITTAL DESCRIPTION

Failure to follow these instructions will result in the submittal never reaching the engineer and not being checked. Delays cause by not following these procedures are the sole responsibility of the contractor. Emailed submittals must come from the Architect and must not be emailed directly from the contractor. Do not Carbon Copy the Engineer on Emailed submittals.

H. **Multiple re-reviews required due to Contractor not following instructions, specifications, etc. will be billed to Contractor at Engineer's current hourly rates. This shall be paid prior to submittal approval.**

I. **SUBMITTALS WILL BE RETURNED IN ORDER OF CONSTRUCTION OF THE PROJECT, NOT NECESSARILY IN ORDER SUBMITTED**. If all sections are submitted under one binder and transmittal, each section will be returned at the appropriate time for construction phasing. Mechanical Equipment will not be reviewed until "Mechanical/Electrical Coordination Sheet" has been submitted. Mechanical Equipment, Mechanical Controls and Plumbing Fixtures may required extended review time. **IF SUBMITTALS ARE SUBMITTED EARLY RELATIVE TO CONSTRUCTION PHASING, SUBMITTALS MAY BE HELD, REVIEWED AND RETURNED AT THE APPROPRIATE TIME FOR CONSTRUCTION PHASING, NOT NECESSARILY 2 WEEKS.**

J. **DO NOT SUBMIT THE FOLLOWING SECTIONS UNLESS DEVIATING FROM THE SCHEDULES/SPECIFICATIONS. Provide directly to General Contractor/CMR for inclusion into O & M Manuals. If deviating from the specifications submittal will be required. (Highlight items that are different to allow for proper review.):**

Isolators	Fire Smoke Dampers / Details
Relief Valves	Valves
Insulation	Gauges
Spin-in Fittings	Flexible Duct
Fire Dampers Installation Detail	Volume Damper
Fire Damper	Air Extractors
Valve Tag / Markers	Access Panels
Flexible Connector	Pipe Identification / Labels
Grease Traps	Duct Tape

K. **PDF Submittals Allowed** for Product Cut-Sheets for are limited to the following items: **Separate PDF for each Submittal number is required.**

Fire Sprinkler Product Data	Chillers
Air Handlers	Condensers
Internal Lining	Metal Jacket & Fittings
Exhaust Fans	Exhaust/Relief Caps
Supply Fans	Grilles/Registers/Diffusers
Unit Heaters	Controls
Pumps	Boilers
Water Heaters	Plumbing Fixtures and Trim
Cleanouts	Floor Drains
Condensing Units/Heat Pumps	Lint Trap
Acid Dilution Basin	Roof Opening Shop Drawings
Fire Proofing/Fire Caulk	Rooftop HVAC Units
Make up Air Units	Water Hammer Arrestors
Piping	Mechanical/Electrical Coordination Sheet

L. **Data Required for Review: Mark submittal literature and shop drawings clearly by individual sections, and include all equipment and material shown on drawings and specified. ANY DATA NOT CLEARLY MARKED OR NOT APPROPRIATELY SUBMITTED WILL BE RETURNED WITHOUT CHECKING. Indicate the following:**

1. Specification reference and/or drawing reference for which literature is submitted for review with an index, following specification format, and item by item identification.

2. Manufacturer's name and address, and supplier's name, address, and phone number.

3. Catalog designation or model number.

4. Rough-in data and dimensions.

5. Performance curves and rated capacities with performance data marked.

6. Motor characteristics and wiring diagrams.

7. Operation characteristics.

8. Complete customized listing of equipment, characteristics, accessories, etc., specified. Indicate whether item is "As specified." Mark out all non-applicable items. The terminology "As specified" used without this customized listing is not acceptable.

9. Wiring diagrams for the specific system operation. Complete wiring with diagrams showing all connections to each type of actual equipment being installed on project, complete with part numbers of controls for each type of equipment.

10. **Submit written sequence of operation for all modes of operation for each piece of mechanical equipment. Give narrative explaining exactly what control signals are required to activate <u>each</u> mode of a particular unit's operation. Include information about which signals override others internally (when applicable). Submit this information with equipment submittal and provide a copy to the Controls Contractor so it can be integrated into the control scheme and control submittals. Indicate whether 24 VAC, 4-20 MA, 0-10VDC or line voltage is required for controls.**

11. **Provide HVAC equipment with a controls interface that is suitable for connection to a standard conventional thermostat and/or non-proprietary DDC control systems.**

12. Ductwork Shop Drawings: Engineer requires 1 (one) HARDCOPY, full-size at 1/8" scale, sheets size to match project for engineer review and engineer records. Additional copies per Architect and Owner requirements. PDF's will be required for owner and architect records.

13. **<u>BREAKOUT SUBMITTALS INTO PRIORITY ITEMS.</u>**

M. **Contractor to submit "Mechanical/Electrical Equipment Coordination Sheet" with equipment submittal for all HETD's, RTU's, GU's, AHU's, CU's, HP's and MAU's. Reference chart at end of section.**

N. When requested, present samples of all materials proposed for use to the Engineer for his approval.

O. Certify Shop Drawings have been checked for compliance with Contract Documents. Certify that the materials submitted can be delivered and installed according to the construction schedule.

P. Select all other materials, not specifically described on the Drawings or in these specifications but required for a complete and operable facility, and submit to the Engineer for approval.

Q. **Substitutions:** ("Substitution Request" form must be submitted)

1. Equipment listed as equal is indicated to be equal in quality to equipment designed around. It does not mean equal in dimension or fit. It is the Contractor's responsibility to confirm dimensional differences and space requirements.

2. Request for proposed substitution of materials, methods, or processes shall be made to the Architect and if found acceptable, will be confirmed by an addendum to the Construction Documents. Where proposed substitutions are not incorporated into the Construction Documents by addendum **PRIOR** to time of the General Contract bid opening, all bids shall be held to have been made on the basis of the materials, methods and processes required by the Construction Documents.

3. Equal Materials: It is not the intent of the Specifications to limit materials to the product of any particular manufacturer. Where definite materials, equipment and/or fixtures have been specified by name, manufacturer or catalog number, it has been done so as to set a definite standard and a reference for comparison as to quality, application, physical conformity, and other characteristics.

4. Acceptance of substitution by the Engineer does not relieve the Contractor of responsibility for proper operation of the systems, compliance with specifications, necessary changes due to dimensional differences or space requirements, and of work on schedule.

5. Where equipment of the acceptable manufacturers requires different arrangement or connections from those shown, it shall be the responsibility of the Contractor to install the equipment to operate properly and in harmony with the original intent of the drawings and specifications. When directed by the Architect, the Contractor proposing substitutions shall submit drawings showing the proposed installation. If the proposed installation is approved, the Contractor shall make all necessary changes in all affected related work provided under other Sections, including location of rough-in connections by other Trades, conduit supports, insulation, etc. All changes shall be made at no increase in the Contract amount or additional cost to the other Trades and/or Owner.

6. **Submit fully completed "Substitution Request" form located at end of this section. If this form is not submitted, all substitution request will be automatically rejected.**

8. For substitutions that require substantial review by engineer to ensure equality, the contractor requesting substitutions shall reimburse the engineer at current hourly rates for all review time. This shall be paid prior to submittal approval. This applies to all equipment not previously approved on construction documents.

a. Mechanical Equipment

b. Contractor Cost Savings Packages Requiring Substantial Review Time

1.09 SHOP DRAWINGS REQUIRED

A. Prepare and submit working construction drawings as requested, specified, and otherwise necessary to demonstrate proper planning for installation and arrangement of all work. Layout drawings to scale and show dimensions where accuracy of location is necessary for coordination or communication purposes. Show work of all

trades, including Architectural, Structural, Mechanical, and Electrical items which may be pertinent to proper and accurate coordination. Provide shop drawings for all products, ductwork, systems, system components and special supports which are not standard catalog products and which may be fabricated for the Contractor or by the Contractor. Show top and bottom elevation of ductwork and equipment as it will be installed. Show offsets required to miss structural and other items of interference. Identify all shop drawings as to which section and paragraph of the specifications and/or drawing number the item is covered under. Ductwork layout/shop drawings to be done at a minimum 1/8" = 1'-0" scale. AHU's, CU's, HP's, RTU's, etc. are to be shown actual scaled size and configuration of the actual equipment being used.

B. Architectural Revit Models and CAD files to be used for backgrounds in preparation of ductwork and sprinkler shop drawings and shall be obtained from the Architect. Confirm requirements and stipulations for obtaining floor plan backgrounds with Architect and with other sections of specification. Engineer's drawings and CAD files **may not** be used for Shop Drawings. Reference 1.01-L.

C. ALL SHOP DRAWINGS OF MECHANICAL ROOMS/MEZZANINES SHALL SHOW ALL FLOOR DRAINS, HVAC, PLUMBING, AND ELECTRICAL EQUIPMENT, INCLUDING ELECTRIC PANELS, TRANSFORMERS AND DISCONNECT SWITCH LOCATIONS. COORDINATE WITH ELECTRICAL AND PLUMBING CONTRACTOR.

D. Provide roof shop drawing indicating dimensioned locations and sizes for all roof mounted equipment, supports, openings and plumbing vents in ample time for proper coordination of all trades.

E. Submission of copies of the Engineer's drawings does not constitute shop drawings and is not acceptable.

F. Submittal of complete engineering submittal data for products and equipment shall be made in sufficient copies to provide one (1) hardcopy of all data to be retained by the Engineer, additional copies as required by the Contractor, Architect and Owner. Provide an electronic copy in PDF format and CAD if available for record keeping purposes for Engineer, Architect, and Owner with close out documents described elsewhere in specifications.

G. General Contractor shall transmit a CAD copy of ductwork shop drawings to sprinkler contractor prior to submission of sprinkler shop drawings.

H. Ductwork shop drawings shall be submitted and reviewed prior to any ductwork being installed.

I. MECHANICAL CONTRACTOR MUST SUBMIT "MECHANICAL/ELECTRICAL COORDINATION SHEET" WITH MECHANICAL EQUIPMENT SUBMITTAL FOR PROPER COORDINATION PURPOSES WITH ELECTRICAL CONTRACTOR FOR ACTUAL EQUIPMENT BEING INSTALLED OR SUBMITTAL WILL BE REJECTED.

1.10 RECORD DRAWINGS

A. Reference requirements stated elsewhere in the Specifications.

B. THE CONTRACTOR SHALL TAPE ALL ADDENDA'S ISSUED DURING BIDDING TO HIS CONSTRUCTION AND RECORD DRAWING SET PRIOR TO COMMENCING CONSTRUCTION. PAY REQUESTS WILL NOT BE PROCESSED UNTIL THE CONTRACTOR HAS COMPLIED WITH THIS REQUIREMENT.

C. In addition to other requirements, a master Record Drawing print set (separate from field sets) shall be kept in the General's site trailer and marked up weekly as the work progresses, to show exact dimensioned location and routing of all mechanical work which will be permanently concealed. Show routing and location of items cast in concrete or buried underground. Work located in spaces with access, or above suspended ceilings, is not considered permanently concealed. Show complete routing and sizing of any significant revisions to the systems shown. Show the location of all valves and their appropriate tag identification. Indicate locations of all existing active and inactive piping uncovered during construction. **Keep marked up set at site for review at site meetings.**

D. The marked-up and colored-up prints will be used as a guide for determining the progress of the work installed for draw requests. They shall be inspected periodically by the Architect and Owner's Representatives, and they shall be corrected immediately if found either inaccurate or incomplete. **This procedure is mandatory.**

E. The Contractor shall be responsible for updating and/or marking all items, including but not limited to floor plan changes, system changes, addendums, change orders, etc. on the prints to “As-Built” conditions. At the completion of the job, marked up As-Built Drawings shall be submitted to the Architect for final review and comment. These corrected prints together with corrected prints indicating all the revisions, additions and deletions of work, shall form the basis for preparing a set of record drawings.

F. Using the “Record Drawing Set”, the Contractor shall print two (2) complete sets of prints one for submission to the Owner and one rolled in a 4” PVC pipe in main electric room mounted to wall and labeled. Tape all edges. The contactor shall provide pdf copies/scans for owner record purposes.

G. The Contractor shall bear all the costs of producing the “Record Drawing Set”.

H. All equipments **model and serial numbers** must be included on start up forms turned in to the owner. For split systems, this includes all model and serial numbers for all indoor sections or components as well as outdoor units. These are required for owner inventory and for processing of any utility rebate forms. Utility rebates require the model and serial numbers associated with a given unit number to match in case the job is spot checked prior to issuing a rebate

1.11 CODES, REGULATIONS AND ORDINANCES

A. All work shall comply with the current applicable local, state and federal codes and ordinances. Follow recommended practices as set down by ASME, SMACNA, ASHRAE, NFPA, applicable Building Code, applicable Mechanical Code, applicable Plumbing Code, National Electrical Code (NEC), AGA, ADA AND OSHA, as they apply to this project, except in cases where local statutes govern. The contractor shall verify with the latest adopted local codes, ordinances and amendments that apply to this project with the authority having jurisdiction. **PROVIDE LOCKING REFRIGERATION ACCESS PORT CAPS FOR ALL EQUIPMENT WITH REFRIGERANT LOCATED OUTDOORS ON GROUND OR ON ROOF.**

B. In cases of difference between Building Codes, State Laws, Local Ordinances and Industry Standards and the Contract Documents, each Subcontractor shall promptly notify the Architect in writing of any such difference, as applicable to his work.

C. In case of conflict between the Contract Documents and the requirements of any Code or Authorities having jurisdiction, the most stringent requirements of the aforementioned shall govern.

D. Should the Contractor perform any work that does not comply with the requirements of the applicable Building codes, State laws, Local Ordinances and Industry Standards, he shall bear all costs arising in correcting the deficiencies, as approved by the Architect.

1.12 DELIVERY AND STORAGE OF EQUIPMENT AND MATERIAL

A. All equipment and materials shall be protected from physical, moisture absorption, metallic corrosion and weather damage from the time of delivery until completion of the project. This includes erection of temporary shelters and covering items in the building with protective covering. Store items subject to moisture damage such as controls in dry, heated space. Failure to comply with the above to the satisfaction of the Owner/Architect will be sufficient cause for the rejection of the equipment or material in question. Upon such rejection, the damaged equipment or material will be completely replaced with new by the Contractor at no charge to the Owner.

B. Provide covers on all ends and openings of pipes, conduits, ducts, etc. to keep out insects, dirt, dust and debris during entire construction process. This includes properly covering unassembled ductwork, etc. stored on jobsite prior to installation.

C. The Manufacturer's directions are to be followed from delivery, storage, protection and installation of equipment and materials. Notify the Architect in writing of conflicts between requirements of Contract Documents and manufacturer's direction.

D. Large pieces of equipment which are too large to permit access through doors, stairways or access opening shall be placed in the space before enclosing the structure. After equipment is placed, it shall be thoroughly protected from damage.

1.13 CLEAN-UP

A. Remove debris and waste materials from within the construction areas and transport off-site, daily.

B. Keep the construction area clean, free from hazard, and orderly arranged.

C. Pay all costs of waste removal and disposal. Reference General Conditions for further information.

D. Dispose of waste materials in accordance with all regulations which govern.

E. Take all precautions to protect persons who enter the construction area from hazardous conditions, hazardous waste, toxic waste, or other unsafe conditions.

F. Upon completion of construction, remove all debris, waste materials, unused materials, temporary constructions, vehicles, tools, fencing, etc. to Owner’s satisfaction.

G. All equipment and materials shall be protected from physical moisture absorption, metallic corrosion and weather damage from time of delivery to completion of project. Replace any damaged materials.

PART 2 – PRODUCTS

2.01 EQUIPMENT AND MATERIALS

A. Unless otherwise indicated, provide only new equipment and materials.

B. On all major equipment components, provide manufacturer's name, address, model number, and serial number permanently attached in a conspicuous location.

C. All materials furnished under these specifications shall be the standard product of manufacturer's regularly engaged in the production of such equipment and shall be the manufacturer's latest approved standard design.

D. GUARANTEE

1. The Contractor and Manufacturers shall provide a ONE (1) YEAR guarantee for all work under the Electrical, HVAC, Plumbing and Fire Protection Trade. However, such guarantees shall be in addition to and not in lieu of all other liabilities which the manufacturer and Contractor may have by law or by other provisions of the Contract Documents. **In any case, such guarantees and warranties shall commence when the Owner accepts the mechanical/electrical system, as determined by the Architect, and shall remain in effect for a period of TEN (10) YEARS thereafter.**

2. All materials, items of equipment and workmanship furnished under each Section shall carry a ONE (1) YEAR warranty against all defects in material and workmanship. Any fault under any Contract, due to defective or improper material, equipment, workmanship or design which may develop shall be made good, forthwith, by and at the expense of the Contractor for the work under his Contract, including all other damage done to areas, materials and other system resulting from this failure.

3. The Contractor shall guarantee that all elements of the system, which are to be provided under his Contract, are of sufficient capacity to meet the specified performance requirements as set forth herein or as indicated.

4. Upon receipt of notice from the Owner of failure of any part of any systems or equipment during the guarantee period, the affected part or parts shall be replaced by the Contractor for his respective work, as applicable.

5. Additional extended guarantee's required for work on this project. The additions and/or extensions to the standard one year guarantee previously described are to be provided in writing, by the manufacturer or an approved insurance underwriter. The guarantee is to cover all parts and/or labor as specified below.

PART 3 - EXECUTION

3.01 CUTTING AND PATCHING

A. The Contractor shall notify the General Contractor and other Subcontractors in ample time of the location of all chases, sleeves and openings required in the construction for the proper installation of his work. The Contractor shall do all core drilling of individual holes and all cutting for his work except square or rectangular openings in the structural slabs which shall be cut by the Contractor at locations shown on the drawings. In no case, however, shall a beam or column be cut without the approval of the Project Structural Engineer.

B. On completion of this work or as work progresses the Contractor shall make all repairs and do all patching required as a result of the work under this contract. All patching shall be performed in a manner that will restore the surrounding work to its original conditions and to the satisfaction of the Owner.

C. Any cutting and patching necessary as a result of the Contractor's failure to notify the General Contractor of all the required openings shall be at the expense of the Contractor.

3.02 OBLIGATIONS/RESPONSIBILITIES

A. The Contractor binds himself, his partners, successors, assigns and legal representatives to the Owner in respect to all covenants, agreements and obligations contained in the Contract Documents. The Contractor shall not assign the Contract or sublet it as a whole without the written consent of the Architect/Owner, nor shall the Contractor assign any monies due or to become due to him hereunder, without the previous written consent of the Owner/Architect.

B. The Contractor shall supervise and direct the Work using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, safety, sequences and procedures, and for coordinating all portions of the work under his Contract.

C. The Contractor shall provide, without extra charge, all incidental items required as a part of the work, even though not particularly specified or indicated, and if he has good reason for objecting to the use of a material, appliance, or type of construction shown or specified, he shall register his objections with the Architect/Engineer, in writing; otherwise, he shall proceed with the work under the stipulation that a satisfactory job is required.

3.03 TESTS AND INSPECTIONS

A. Schedule, obtain, and pay for all fees and/or services required by local authorities and by these specifications, to test the mechanical systems as specified in these specifications.

B. Request for Tests: Notify the Architect a minimum of 24 hours in advance of tests. In the event the Architect does not witness the test, certify in writing that all specified tests have been made in accordance with the specifications.

C. Deficiencies: Immediately correct all deficiencies which are evidenced during the test and repeat test until system is approved. Do not cover or conceal piping, equipment or other portions of the mechanical installations until satisfactory tests are made and approved.

D. Operating Tests: Upon request from the Architect, place the entire mechanical installation and/or any portion thereof, in operation to demonstrate satisfactory operation.

E. Log of Tests: The Contractor shall set up a testing log form to be kept at the job site with the record drawings. All tests shall have pertinent data logged at the time of testing. Pertinent data is to include: date, time, description, personnel, system tested (and extent), test conditions, test results, etc.

F. Completion: Upon completion of the mechanical installation, demonstrate to the Architect's satisfaction that the systems have been installed in a satisfactory manner in accordance with the plans, specifications, and applicable codes. Demonstrate dynamic operation of all systems. Show that all controls are operable and are properly adjusted in accordance with the requirements of the final systems balance, that all systems are properly balanced, that all equipment operates properly, that filters and strainers are clean, and that all components of all systems are installed and adjusted for proper operation.

1. Prior to final inspection, all work under this Division to be completed, insure all equipment is operational and final testing and balance reports have been submitted and approved.

3.04 OPERATING INSTRUCTIONS

A. Prior to final acceptance, instruct an authorized representative of the Owner on the proper operation and maintenance of all mechanical systems, equipment, and controls under this contract. Make available a qualified technician for each component of the installation for this instruction. Give these operation instructions after the operation and maintenance manuals have been furnished to the Owner. Submit written certification, signed by the Contractor, and an authorized representative of the Owner, that this has been completed.

3.05 COORDINATION OF WORK

A. Each Contractor shall compare his Drawings and Specifications with those of other Trades and report any discrepancies between them to the Architect and obtain from the Architect written instructions to make the necessary changes in any of the affected work. All work shall be installed in cooperation with other Trades installing interrelated work. Before installation, all trades shall make proper provisions to avoid interferences in a manner approved by the Architect.

B. Each Contractor shall coordinate the location of his systems so that all outside air intakes are located in such a way as to prevent cross-contamination from plumbing vents, flue pipes, exhaust fans, etc. Such a distance shall be not less than 10 feet.

C. Locations of conduit, ducts, piping, sprinkler heads and equipment shall be adjusted to accommodate the work with interferences anticipated and encountered. Exact routing and location of system shall be determined prior to fabrication or installation. Coordinate routing of major electrical conduits with Electrical Contractor prior to fabrication of ductwork and piping.

D. Offsets and changes of direction in all conduit, ducts and piping systems shall be made as required to maintain proper headroom and pitch of sloping lines whether or not indicated on the drawings.

E. Where discrepancies in scope of work as to what Trade provides items, such as starters, disconnects, flow switches and the like exist, such conflicts shall be reported to the Architect prior to signing of the Contract. If such action is not taken, the various Trades shall furnish such items as part of their work for complete and operable systems and equipment, as determined by the Architect.

F. The HVAC, Plumbing and Fire Protection Subcontractors shall verify with Electrical Subcontractor the available electrical characteristics for all motors and equipment before ordering and submitting of respective gear. Verify actual connection points prior to installation and roughing-in. Mechanical and Electrical Contractor are responsible for coordination of electrical requirements and final fuse sizes of all A/C equipment. When Mechanical Contractor substitutes equipment that requires additions or upgrades to electrical system, he shall bear all costs arising from such substitutions. Reference "Mechanical/Electrical Coordination Sheet" in specifications.

G. The Contractors are to avoid routing conduit through fire rated assemblies where practical. Each trade is responsible for proper coordination of required sleeves or block-outs with rated assembly installers. Each trade is responsible for providing sleeves, as required, for his work. Each trade shall verify acceptable tolerances around penetrating item in fire assembly before beginning fire sealing.

H. Mechanical Contractor and Controls Contractor shall coordinate all requirements of equipment and controls to insure a fully operational system.

I. Coordinate all plumbing rough-in through floor(s) with structural concrete TEE's/structural steel. Do not pass through stem of TEE's.

3.06 OPERATION AND MAINTENANCE MANUALS

A. Provide one (1) Operation and Maintenance manual for training of Owner's personnel in operation and maintenance of systems and related equipment in the manner described elsewhere in these specifications. In addition, organize manuals and include data and narrative as noted below (bind each manual in a hard-backed loose-leaf binder. Use 8-1/2" x 11" white paper). Provide PDF copy of O&M for owner records

B. Operating Sequence and Procedures:

1. Contents: In each chapter, describe the procedures necessary for personnel to operate the system and equipment covered in that chapter. Also, include a copy of System Balancing Report.

2. Typewritten Operating procedures: Write procedures for start-up, operation, and shutdown.

a. Start-up: Give complete step-by-step instructions for energizing equipment, making initial setting and adjustments whenever applicable.

b. Shutdown Procedure: Include instructions for stopping and securing the equipment after operation. If a particular sequence is required, give step-by-step instruction in that order.

C. Maintenance Instructions:

1. Provide a schedule of preventive maintenance for each product. Recommend frequency of performance for each preventive maintenance task: i.e., cleaning, inspection, etc.

D. Manufacturer's Brochures: Include manufacturers' descriptive literature covering all appurtenances used in each system, together with illustrations, exploded views and renewal parts lists. Provide nearest manufacturers' representatives name, address and phone number.

E. Shop Drawings: Provide a copy of all corrected, approved submittals and shop drawings covering equipment for the project either with the manufacturers' brochures or properly identified in a separate subsection.

F. Spare Parts Lists: Include a list of all equipment furnished for project, with a tabulation of descriptive data of all the spare parts proposed for each type of equipment or system. Properly identify each part by part number and manufacturer.

G. All major Owner training sessions to be videotaped in non-pixelated video in Windows file format,

3.07 OPERATION PRIOR TO COMPLETION

A. When any piece of mechanical or electrical equipment is operable and it is the advantage of the Contractor to operate the equipment, he may do so providing that he properly supervises the operation. **All HVAC equipment shall be shut down when painting, sanding and**

similar construction operations detrimental to the equipment are being done. The warranty period shall, however, not commence until such time as the equipment is operated solely for the benefit of the Owner at his request or as listed in 'C'. Contractor shall clean any ductwork and equipment that is dirty due to equipment operation or improper protection.

B. Any units that are operated during construction shall have filter media (Fiberbond Dual-Ply DustLok Media) placed over the exterior of return air grilles. Media shall be changed as frequently as required to keep ductwork clean.

C. Regardless of whether or not the equipment has been operated, the Contractor shall properly clean the equipment, install clean filter media, properly adjust the equipment and complete all punch list items before final acceptance by the Owner. The day following final acceptance by the Owner will be the start date of the warranty period.

3.08 RECORD FOR OWNER

A. Each Contractor shall accumulate and bind in an "Operating and Maintenance" manual the following data to be presented to the Owner at the completion of the Project.

1. All warranties and guarantees and manufacturer's instruction on equipment and material covered by the contract.

2. Approved equipment brochures, wiring diagrams and control diagrams.

3. Copies of approved shop diagrams.

4. Operating instructions for heating and cooling and other mechanical systems. Operating instructions shall also include recommended maintenance and seasonal changeover procedures.

5. Repair parts lists of all major items and equipment including name, address and telephone number of local supplier or agent.

6. Valve tag charts and diagrams herein before specified.

7. HVAC balance and test results.

8. HVAC equipment start-up forms that include model and serial numbers of each piece of mechanical equipment installed, by unit mark number. For split units provide this information for all components.

9. "As-Built" Drawings as specified under "Construction Drawings" (these are not to be bound in the O&M Manual).

B. Provide reduced set of record drawing (11 x 17) indicating location and mark number of all mechanical equipment.

3.09 SITE OBSERVATION

A. Periodically, the Engineer will visit the site and review the construction progress. Field Reports will be issued noting any discrepancies or items that do not meet the intent of the contract documents found during said site visit. The contractor must answer each item listed on each field report, item by item.

B. It shall be the duty of the Contractor to personally make a careful inspection trip of the entire project, assuring himself that the work on the project is ready for final acceptance before calling upon the Owner, Architect or Engineer to make final acceptance of the work. Subsequent trips required because of Contractor's failure to do so, will be made at Contractor's expense.

C. The final acceptance of the work will be made jointly by the Architect and the Owner.

3.10 MECHANICAL/ELECTRICAL

A. **Contractor to submit Mechanical/Electrical equipment coordination sheet with equipment submittal for actual equipment (HETD's, RTU's, AHU's, CU's, HP's, Airhawks, AFU's, MAU's, etc) being installed. Reference chart at end of section. This is for Contractor coordination purposes.**

MEP/ENERGY CONSULTANTS
HENDRIX CONSULTING ENGINEERS
COMMISSIONING • FIELD INVESTIGATIONS
115 East Main Street Round Rock, Texas 78664
PH: (512) 218-0060 FIRM F-4095 FAX: (512) 218-0077

PRE-CONSTRUCTION INSTRUCTION SHEET

Submittal/RFI Requirements

A. 'Individual submittals' means separate submittals with unique submittal numbers. One single giant PDF will be rejected.

B. 3 Submittal CATEGORIES (Reference Specifications)

a. Not required unless deviating from specification

b. PDF allowed.

PDF SUBMITTAL/RFI FILE TITLE REQUIREMENT:
For submittal sections listed below as allowed pdf's the following requirements must be met or the submittal will not get through email security and will be auto-deleted and not checked. Each pdf submittal must be a separate pdf file.

PDF FILE: MUST BE NAMED AS FOLLOWS:
JOB NAME – SUBMITTAL No. XX – SUBMITTAL DESCRIPTION
JOB NAME – RFI No. XX – RFI DESCRIPTION

Example: Texas ISD ES No. 2 – Submittal 8 – Plumbing Fixtures
Example: Texas ISD ES No. 2 – RFI 3 – Library Light Fixture Mounting Height

EMAIL TITLE/SUBJECT REQUIREMENTS:
Emails without Job Name and proper format will not get through email security and will be auto-deleted and not checked.

JOB NAME – SUBMITTAL No. XX – SUBMITTAL DESCRIPTION
JOB NAME – RFI No. XX – RFI DESCRIPTION

C. If submittals are submitted early relative to construction phasing, submittals may be held, reviewed and returned at the appropriate time for construction phasing, not necessarily 2 weeks. In some cases, if submittals are received vastly out of order of construction, submittal may be rejected.

D. Time Critical Submittal Coordination Items

Mechanical to provide to General Contractor for Structural Roof Coordination

a. Mechanical to provide roof opening shop drawing as early as possible for structural coordination. Per specifications.

Mechanical to provide to General and Electrical Contractors for Gear Coordination

b. Mechanical to complete "MECHANICAL/ELECTRICAL COORDINATION SHEET" prior to electrical gear submittals for coordination with electrical contractor. Per specifications.

E. **Do not submit non pre-approved substitutions during submittal time. These submittals will be automatically REJECTED. Substitution Pre-approval was at bid time.**

F. **Review time for multiple resubmittals of non-approved equipment will result in Contractor being billed for review time that is not part of Engineer's Scope. Engineer will bill Contractor at Engineer's Current hourly rates.**

G. **Email of all Submittals/RFI's must go directly to Architect. Do not Copy Engineer.**

H. **Engineer is not the Contractors plan reference resource. Do not submit an RFI until drawings and specifications have been reviewed first. If the answer is clearly on the drawings the response will be "The answer is clearly on the drawings, Engineer is not the Contractors plan reference resource."**

I. **Call before submitting a written RFI.**

J. **All formal Job emails must come from Architect.**

K. **Do not email send recurring jobsite meeting requests to Engineer. Engineer does not attend all weekly meetings. Architect will coordinate when Engineer is to be required at job site for specific meetings.**

Shop Drawings and Cad Files

A. Contractor Shop Drawings must use Architectural Backgrounds and Architectural RCP's (when available or lighting floorplan) and **Mechanical Contractor Shop Drawings** for coordination purposes. Do not request MEP floorplans, this will be cut and paste into an email for you to read. Engineer cannot send architectural backgrounds.

B. If no Architectural RCP is available for light locations. Lighting Floorplans will be released.

C. Mechanical Floorplan will be released to Mechanical Contractor for aid in production of his own shop drawings. HCE mechanical drawings may not be submitted as shop drawings.

D. Fire Alarm, Sprinkler, Intercom etc. all to use Architectural Backgrounds, must be obtained from Architect.

E. Schedule and Details sheets will not be released.

MEP/ENERGY CONSULTANTS

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COMMISSIONING • FIELD INVESTIGATIONS

MECH / ELEC EQUIPMENT COORDINATION SHEET

MARK #	UNIT TYPE	MANUFACTURER'S RECOMMENDED MOCP	VOLTAGE	PHASE	MARK #	UNIT TYPE	MANUFACTURER'S RECOMMENDED MOCP	VOLTAGE	PHASE

END OF SECTION

SECTION 20 01 00 - BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section describes specific requirements, products, and methods of execution which are typical throughout the mechanical work of this project. Additional requirements for the specific systems will be found in the sections specifying those systems, and supersede these requirements.

B. SPECIAL NOTE: All provisions and divisions of these specifications are a part of this section of these specifications. The Contractor shall consult these divisions and provisions in detail for instructions and include all items pertaining to this work. The Contractor shall consult all other divisions of these specifications, determine the extent of impact on the work required to complete the work required by this section of the specifications or portion thereof and related work shown on the drawings.

1.02 JOB CONDITIONS

A. Obtain approval from Architect prior to cutting any structural elements or furring members.

B. Structural Interferences: Should structural members prevent the installation of piping, ducting or equipment, notify the Architect before proceeding.

C. Consider minor changes in position of equipment, piping, or ducting, as part of the contract at no additional cost to the Owner.

D. Coordinate with Structural and Architectural work to determine acceptable locations for sleeves and supports which are required but may not be specifically shown on the plans. SCHEDULE INSTALLATION OF SLEEVES AND SPECIAL SUPPORTS IN MANNER TIMELY TO THE WORK OF OTHER CRAFT. Anticipate minor offsets necessary for proper coordination with other work, and reroute systems appropriately.

E. It is the Contractor's responsibility to properly use all information found on the Architectural, Structural, Civil and Electrical Drawings where such drawings affect his work.

1.03 DIMENSION AND FIT

A. Cut materials accurately from measurements taken on the JOB SITE.

B. Do not spring or bend pipe to fit conditions or make up joints.

1.04 INTERFERENCES

A. Interferences between piping and other trades shall be handled by giving precedence to pipe lines requiring grade for proper operation. Where space requirements conflict, the following order of precedence shall generally be observed.

1. Building Lines

2. Structural Members

3. Soil and Drain Piping

4. Vent Piping
5. Refrigerant Piping
6. Supply, Return, O/A Ductwork
7. Exhaust Ductwork
8. Chilled and Hot Water Piping
9. Domestic Hot and Cold Water Piping
10. Natural Gas Piping
11. Electrical Conduit
12. Fire Protection Piping

1.05 SERVICEABILITY OF PRODUCTS

A. Furnish all products to provide the proper orientation of serviceable components to access space provided.

B. Coordinate installation of piping, ductwork, equipment, coils, system components, and other products to allow proper service of all items requiring periodic maintenance or replacement.

C. **Replace or relocate all products incorrectly ordered or installed to provide proper serviceability.**

1.06 ACCESSIBILITY OF PRODUCTS

A. Arrange all work to provide permanent, convenient, and safe access to all serviceable and/or operable products. Layout work to optimize net usable access space within confines of space available. Advise Architect, in a timely manner, of areas where proper access cannot be maintained. Furnish layout drawings to verify this claim, if requested.

B. Provide access doors in ceilings, walls, floors, etc., for access to traps, valves, dampers, automatic devices, and all serviceable or operable equipment in concealed spaces. Location of panels shall be submitted for approval in sufficient time to be installed in the normal course of work.

1.07 ROUTING

A. Route all pipelines and ductwork parallel with building lines, and as high as possible, except where under ground or shown otherwise on the plan.

B. Route piping and ducts to clear all doors, windows, and other openings and to avoid all other pipes and ducts, light fixtures, and similar products.

C. Conceal all pipes and ducts where routed through finished areas, unless authorized by Architect or otherwise indicated on plans.

PART 2 - PRODUCTS

2.01 MATERIAL PRODUCTS

A. Provide all products new, unused, and undamaged, of standard manufacture, and of latest design and best quality. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113. ALL PAINTS MUST MEET VOC LIMIT OF GREEN SEAL ENVIRONMENTAL STANDARD GS-11. ALL INSULATION IS TO BE FREE OF UREA-FORMALDEHYDE AND/OR BE GREENGUARD CERTIFIED.**

B. When a manufacturer's name appears in these specifications or schedule, it is not to be construed that the manufacturer's material does not have to meet the full requirements of the specifications or that his standard catalogue item will be acceptable.

C. All equipment installed on this project shall have local representation, local factory authorized service and local stock of repair parts.

D. All materials exposed within a plenum shall be noncombustible or shall have a flame spread index of not more than 25 and a smoke developed index of not more than 50 when tested in accordance with ASTM E 84.

2.02 Where more than one type of material (i.e., cast iron or PVC) is specified, the Contractor may choose one type; however, he must state which type of material he proposes to use in his submittal. ONLY ONE TYPE OF MATERIAL MAY BE USED IN A SPECIFIC PIPING SYSTEM, UNLESS SPECIFICALLY NOTED OTHERWISE. (I.E. WHEN DIFFERENT SIZES OF THE SAME TYPE SYSTEM REQUIRE DIFFERENT MATERIALS PER SPECIFICATIONS.)

2.03 PIPE AND FITTINGS

A. Steel Pipe: **All steel piping and fittings are to be domestically manufactured (USA).**

1. PROVIDE DOCUMENTATION IN SUBMITTAL STATING LOCATION OF MANUFACTURING.

2. Threaded: Schedule 40, ASTM A53 grade B or ASTM A120, American Standard pipe thread. Pipe 2" and under to be made up with threaded fittings.

3. Welded: Schedule 40 black, ASTM A53 grade B or ASTM A120, ANSI B16 butt weld fittings of type and wall thickness to suit pipe. Weld-O-Lets and Thread-O-Lets may be used on pipe 2-1/2" and larger where branch is a minimum of two pipe sizes smaller than main. Pipe 2-1/2" and over to be made up with welded fittings. Pipe 2" and under to be made up with threaded fittings.

4. Grooved Pipe: Schedule 40 ASTM A120 or ASTM A53 grade. Standard cut or rolled groove to coupling manufacturer's specifications. Do not use in systems exceeding 200^{O} F. operating temperature.

a. Couplings: Standard weight with gasket selected by manufacturer for service intended.

b. Fittings: Full flow malleable iron, ductile iron or steel.

c. Submit calculations of expansion allowance of joints and obtain approval prior to eliminating any special expansion compensators, swing joints, flexible connections, or vibration isolators.

d. Manufacturers: Victaulic or Gruvlok.

B. Copper pipe:

1. Type "K" or "L" hard drawn copper with wrought copper fittings with openings machined to accurate capillary fit for the pipe. Pipe to conform to Standard Specifications for copper water tube. Type 'M' may only be used for A/C condensate drain lines.

2. Use "lead free" (0.00% lead content) solder for all domestic water piping. Submittal on the product to be used must include this information. Lead free solder to conform to ASTM B 32 and flux to conform to ASTM B 813. Soldered joints must be done in accordance with ASTM B 828. Lead free shall mean a chemical composition equal to or less than 0.2 percent lead.

3. Solder joints using 50/50 lead tin solder for systems operating below 180^{O} F.

4. Solder joints using 430 silver solder for systems operating at 180^{O} F. or above.

C. Domestic Copper Pipe (2" and larger): (Contractor Option)

1. Copper tubing systems from two inches (2") through six inches (6") shall be installed using mechanical pipe couplings of a bolted type with a central cavity design pressure-responsive gasket along with grooved end copper fittings.

2. All copper tubing shall be prepared in accordance with the manufacturer's published specifications.

3. Couplings - Coupling for copper shall consist of cast ductile iron housing, a synthetic rubber gasket of a central cavity pressure-responsive design, with nuts and bolts to secure unit together.

a. Housings - Shall be cast of ductile iron conforming to ASTM A-536 (Grade 65-45-12) with a copper alkyd enamel paint coating.

b. Gasket - Gaskets shall be molded of synthetic rubber in a central cavity, pressure-responsive configuration conforming to the copper tube size (CTS) outside diameter and coupling housing, of elastomers having properties as designated in ASTM D-2000.

c. Water Service - Gaskets supplied for water services from -30^{O} F to $+230^{O}$ F shall be a Grade "E" EPDM compound, with copper color code, molded of materials conforming to ASTM D-2000, designation 2CA615A15B44F17Z, recommended for hot water service within the specified temperature range.

4. Flanged Connections: Shall be, engaging directly into roll grooved copper tube and fittings and bolting directly to ANSI Class 125 cast iron and Class 150 steel flanged components; installer to supply standard flange bolts. Flange casting shall be as in 3, a. above with a corresponding gasket as in 3, b.

5. Fittings - Fittings shall be full flow copper fittings with grooves designed to accept grooved end couplings.

    a. Standard fittings shall be two inch (2") through four inch (4") copper per ASTM B-75 alloy C12200; five inch (5") through six inch (6") bronze sand castings per ASTM B-584-87 copper alloy CDA 844 (81-3-7-9).

6. Butterfly Valves – Lug style, grooved end butterfly valves are to be rated for bi-directional dead end service to the full working pressure of the valve with the down stream flange removed.

    a. 2 ½-6" valves shall have either lever lock handles or gear operators. Valves in 2 ½" or 3" sizes may have two-position handle as per service requirements and manufacturer's recommendations.

        1) Valve housing shall be bronze per CDA-836 (85-5-5-5).

        2) Disc shall be aluminum bronze or ductile iron.

        3) Operator bracket shall be steel-black enamel coated.

        4) Operator - Two (2) position detent or manual lever lock shall be steel-black enamel coated.

        5) Seat to be molded to the body of the valve for bi-directional dead end service

7. Tube Preparation: Copper tube shall be to ASTM B-88 (drawn tubing) and prepared in accordance with the latest published manufacturer's specifications, as applicable. Pressure ratings and end loads for roll grooved copper tubing are based upon test on copper tube prepared in accordance with manufacturer's specifications using manufacturer's approved rolled grooving tool for grooving copper tube.

8. Assembly: Couplings, fittings, adapters and tubing shall be assembled in accordance with the latest published instructions from the manufacturer for the particular product installed.

9. Reference hanger spacing in specification. In addition, use the following recommendations for support installation:

    a. Copper tubing joined with grooved type couplings requires support to carry the weight of tubing and equipment. The support or hanging method must be such as to eliminate undue stresses on joints, tubing and other components.

    b. The support system for mechanical grooved type tubing couplings must consider some of the special requirements of these couplings.

D. Compressed Air Piping:

1. Piping to be Schedule 40 black steel pipe. All piping 2" and smaller may be TYPE "K" hard drawn copper pipe, at contractors' option.

2. Use capped tees at each joint facing up to allow for future connections. All connections to be made with tees facing up.

3. Slope all piping to drain. Provide drain leg at each low point with ball valve at bottom of drain leg for draining system. Drain leg to be approximately 7'-6" A.F.F. (verify in field).

4. Install Metal-Flex flexible connector near compressor outlet equal to Amber/Booth type SS-PM.

2.04 VALVES

A. Select valves of the best quality and type suited for the specific service and piping system used. Minimum working pressure rating 125 psig steam or 150 psig W.O.G. All valves on insulated lines to have extended handles to allow operation without disturbing insulation seal.

B. Manufacturer: Nibco, KITZ, Jenkins, Milwaukee, Stockham, other recognized manufacturer of equal reliability.

C. Gate Valves, 2½" and Larger: Iron body, bronze trim, rising stem, flanged.

D. Globe Valve 2" and Smaller: Teflon disc, bronze body, bronze trim.

E. Ball Valves 3" and Smaller: Brass or bronze body, virgin TFE seat rings, blow-out proof stem, reinforced thrust washer, ¼ turn full open/full close, FULL PORT, CSA-ULFM approval.

F. Globe Valve 2½" and Larger: Iron body, bronze trim, Buna-N disc, flanged, bronze disc hot water, Buna-N disc cold water.

G. Swing Check Valves 2" and Smaller: Bronze body, horizontal swing, Y-pattern, renewable disc.

H. Swing Check Valves 2½" and Larger: Iron body, horizontal swing, bolted bonnet, renewable seat and disc, flanged, non-slam type.

I. **Butterfly Valves: Reference Section 2.03, C. above.**

J. Drain Valves: Hose end gate valve or gate valves with hose connection. Do not use sillcocks in lieu of drain valves.

K. Valves Specified Elsewhere: Provide special valves such as motor operated valves, relief valves, temperature regulating valves, etc., as specified under the individual system or as indicated on the drawings.

L. USE FULL PORT BALL VALVES RATED FOR SERVICE INTENDED FOR ALL ISOLATION VALVES THREE INCHES (3") AND SMALLER.

2.05 BALANCING VALVES

A. Provide balancing valves for all cooling and heating flows and at all pump discharge lines. Provide balancing valves for all potable hot/tempered water recirculation systems and at TMW’s as required by manufacturers written instructions.

B. Valves sized for maximum 1 pound pressure drop at design flow with valve wide open. Submit schedule of balancing valves indicating sizes, flow ranges and pressure drop curves.

C. Valves, rated at not less than 150 psi, furnished with three self-lubricating bronze or teflon-coated stainless steel bushings with shaft seals at each bushing; seals to be hard back resilient type and shall be field replaceable; discs shall be bronze, aluminum-bronze, or semi-steel with welded nickel edge.

D. Valves 4" and smaller insulated with removable foam polyurethane Dry Cap. Series 400.

E. Valve 2½" through 6" shall be lever operated. Butterfly valves, lug body indicating locking type with adjustable memory stop, may be used at Contractors option at each location where gate valves or globe valve is indicated on water line 2½" and larger.

F. On valves 2" and smaller, use Flow Set balancing valves system consisting of: 300 lb. rate flow measuring bronze body ball valve with integral venturi and temperature and pressure taps; flow setting 300 lb. butterfly valve assembly with stainless steel disc and Viton seats dual-core temperature/pressure test port and external lockable memory stop. Furnish valves with insulation sleeve for ease of access to temperature/pressure ports and to allow adjustments of valve handles without removing insulation. Manufacturer: FlowSet by Olympic Valve, Inc. At the Contractor's option, use Presso B-Plus balancing valves with extension handle and extension P/T plugs.

G. Manufacturers: DeZurik, Olympic Valve, Inc., Jenkins, Nibco, B & G, Hammond, Presso or approved equal.

2.06 UNIONS

A. Provide unions adjacent to all tanks and equipment and where required for disconnect and maintenance of equipment.

B. Union for Steel Pipe: Ground joint malleable iron.

C. Union for Copper Pipe: All brass.

D. Union Between Dissimilar Metals: Dielectric Union designed and advertised to be unaffected by heat, cold or fluid in pipe. EPCO or approved equal.

2.07 MISCELLANEOUS

A. Escutcheons: Nickel or chrome plate with screws or springs for holding plate in position.

B. Automatic Air Vents: Hoffman #79, Marsh or equal.

C. Gaskets: Gaskets 1/16 inch thick for all pipe sizes 10 inches and smaller and 1/8 inch thick for all pipe sizes 12 inches and larger. Gaskets to be ring type between raised face flanges and full face type between flat face flanges with punched bolt holes and pipe opening. Gasket material shall be suitable for the service intended and shall be installed as recommended by the manufacturer. Manufacturer: Crane, John-Manville, or equal.

D. Strainers: Cast iron or bronze body basket or wye type strainers provided with ½" valved drain and a ¼" air vent cock, unless the strainer design is devoid of air pockets. Strainers shall have removable cylindrical or conical screens of nickel, copper, or brass and suitable flanges or tappings to connect with the piping they serve. Strainers 2½" and larger shall be provided with flanged covers. The free area of each screen shall not be less than three (3) times the area of the strainer inlet and shall be suitable for the service intended. Manufacturers: Crane, McAlear, Sarco or Armstrong.

2.08 MECHANICAL SUPPORTING DEVICES

A. General:

1. Securely fasten all mechanical work to the structure to prevent hazard to human life and limb, and to prevent damage to products of construction under all conditions of operation.

B. Pipe Supports:

1. Single Pipes:

a. Support all horizontal runs of steel, copper pipe under 2" and all cast-iron soil pipe on suitable hangers spaced not more than 5 feet on centers. Support all steel, and copper piping 2" and larger not more than 10 feet on centers. Support all PVC piping not more than 4 feet on center. Support piping in a manner to prevent binding, undue swing, and the transmission of vibration to the structure.

b. Support single pipes from clevis hangers equal to Anvil fig. 260. Install hangers for insulated piping outside the insulation using high density section of insulation and sheet metal shield or saddle. Provide copper plated hangers in contact with copper pipe.

2. Trapeze Hangers: Where pipes are clustered, parallel, and in same plane, they may be supported by trapeze hangers. Provide rods and angle-irons sized to suit load imposed. Minimum channel length to be six inches (6"), maximum rod spacing to be twenty-four inches (24") on center. Piping to be securely attached to trapeze hangers. Provide sheetmetal shield or saddle for all insulated piping running horizontally.

3. Piping on Walls: Secure with hook-plates, clips or fabricated steel brackets.

4. Supports from Steel Beams and Similar Construction: Use appropriate beam clamps.

5. Provide inserts for poured concrete and expansion bolts for pre-cast slabs.

6. Guide and anchor piping where necessary to control expansion and contraction. Provide supports and hangers with non-corrosive and rust-resistant finish. Galvanize or plate hanger rods after threading. Hangers other than those specified not permitted. **USE ONLY GALVANIZED HANGERS AND HANGER RODS FOR ALL PIPING IN CRAWL SPACE.**

7. Provide inserts for poured concrete and expansion bolts for pre-cast slabs. Use HiltiDrop-in Anchor or Kwik Bolt II Stud Anchor System. Verify allowable place of anchors with Structural Engineer.

8. Provide pipe supports according to the following schedule:

PIPE SIZE - INCHES	ROD SIZE - INCHES
½" through 2"	3/8"
2½" through 3"	1/2"
4" through 6"	5/8"
8" through 12"	3/4"

9. Manufacturers: Anvil International, C&P, Fee and Mason, Elcen or SuperStrut.

C. Support all piping on roof with pipe stands/roller equal to MIRO Industries Model 4-RAH-PC or Portable Pipe Hangers, Inc., Type PP10 with roller for piping 2-1/2" and smaller. For piping over 2-1/2", up to and including 8" use MIRO Industries Model 6-RAH-PC or Portable Pipe Hangers, Inc. (PPH) Type PS-1-2. All pipe stands to sit on walk board (coordinate type and methods of support with Roofing Contractor). Walk board to be a minimum of 3" larger on each side than support. Provide minimum pipe height above roof deck as required by jurisdiction having authority (at least 6"). Provide supports for piping under 2" at six feet on center. Provide supports for piping 2" and over at eight feet on center. **PIPE PROP will not be acceptable.**

D. Ductwork Support: Refer to Section 23 30 00-Air Distribution.

E. Inserts: Provide all inserts required for installation of horizontal piping. In poured concrete provide wrought steel or malleable iron and adjustable type. Where expansion bolts are necessary to secure piping or equipment, use malleable iron type with expansion case, to be inserted by drilling concrete. Power driven inserts not permitted for supporting piping to ceiling.

F. Miscellaneous Iron and Steel:

1. Provide all steel supports and hangers to support all equipment or materials unless noted otherwise.

2. All work shall be cut, assembled, welded and finished by skilled mechanics. Welds shall be ground smooth. Stands, brackets and framework shall be properly sized and rigidly constructed in a manner to withstand anticipated loads.

3. Measurements shall be taken on the job and worked out to suit adjoining and connecting work. All work shall be performed by experienced metal-working mechanics. Members shall be straight and true and accurately fitted.

4. Welded joints shall be ground smooth where exposed. Drilling, cutting and fitting shall be done as required to properly install the work and accommodate the work of other Trades.

5. Members shall be generally welded except that bolting may be used for field assembly where welding would be impractical. Welders shall be skilled and certified.

6. All shop fabricated iron and steel work shall be cleaned and dried and given two (2) coats of weatherproof primer paint on all surfaces and in all openings and crevices.

2.09 ACCESS DOORS

A. Doors shall be Karp, Inland Steel Products, Milcor, Miami or Walsh-Hannon, constructed of steel with primer coat of rust inhibitive paint, and continuous piano hinge. Doors shall be key operated with flush operated cylinders, keyed alike. Key lock system shall be coordinated with the Owner and shall be approved by the Architect. Provide six (6) keys of type used for access panels for Owner's use. Obtain receipt of key delivery and submit to Architect for record.

1. Suspended Lath and Plaster Ceilings - Style: "M" with 16 gauge frame, 14 gauge panel.

2. Masonry Non-Rated Walls - Style: "M" with 16 gauge frame, 14 gauge panel.

3. Masonry Fire Rated Walls - Fire rated with UL, ½ hour "B" rating, 16 gauge frame, 20 gauge sandwich type insulated panel.

4. For access doors larger than 16" in either direction, provide two (2) locksets.

2.10 CHIMNEY SYSTEMS

A. Type B Vent:

1. Factory-built; labeled and tested for use with building heating equipment.

2. Double wall pipe; galvanized steel outer pipe, heavy gauge aluminum inner pipe.

3. Supply with support pieces, adapters, fittings, ventilating thimble and Type MC wind cap.

4. Provide vent and cap for all gas consuming equipment. Verify all sizes with actual equipment purchased. In no case shall the pipe be smaller than the equipment connection size.

B. Type “B” Vent Pipe Manufacturers: Metalfab, Metalabestos or equal.

C. PVC/CPVC Vent/inlet:

1. Provide minimum schedule 40 solid core PVC/CPVC combustion air intake and/or flue exhaust vent as required for all condensing type water heater(s)/furnace(s) installed and sized as required by manufacturers written instructions. Wrap all piping exposed to plenum spaces with products to meet 25/50 smoke/flame requirements. Terminate with products per manufacturers written instructions.

PART 3 - EXECUTION

3.01 EQUIPMENT MOUNTING

A. Provide equipment concrete pads, treated support runners, roof curb supports, mounting accessories, supports, hanger expansion joints, adapters and any other appurtenances to adapt fixtures and equipment supplied to the conditions of use.

B. Provide vibration eliminators as specified (if not specified elsewhere use vibration eliminators recommended by equipment manufacturer) at all pieces of equipment subject to vibration. (Exception; curb mounted equipment does not require vibration isolator rails except when specifically scheduled).

C. Independently support piping and ductwork at equipment so that no weight is supported by the equipment.

D. Securely fasten fixtures and equipment to the building structure in accordance with manufacturer's recommendation.

E. Provide steel base plates for floor mounted fixtures and equipment to distribute the weight so that the floor load is not more than 100 lbs. psf, unless special structural reinforcement is submitted for approval.

F. At wall attached fixtures and equipment weighing less than 50 pounds, provide backing plates of at least 1/8 x 10 inch sheet metal or 2 x 10 inch fire retardant treated wood securely built into the structural walls. Submit attachment details of heavier equipment for approval.

G. Electrical conduit shall not be hung from equipment or plumbing piping.

3.02 SLEEVES

A. Provide sleeves as required where pipes pass through walls, floors, or ceilings. Make sleeves as follows:

1. In non-fire rated bearing walls, foundations, masonry or concrete walls and floors, use schedule 40 black steel pipe.

2. In non-rated construction, use minimum 20 gauge galvanized sheetmetal.

3. In fire rated walls, floors and assemblies, install sleeves as required by UL System Number.

B. In non fire rated areas install sleeves flush with surfaces. In mechanical rooms or any wet floor where seepage may occur, install sleeve 1 inch above floor and caulk. Caulk both sides of penetration using UL listed one part firestop synthetic elastomer sealant, flexible at normal working temperatures, having smoke developed 50, fuel contributed 50, and flame spread 25 rating. Install thickness per manufacturer's recommendation. Manufacturer: Dow Corning FireStop 2000 Sealant, Flame Stop V, 3M: CP-25.

C. Waterproof all piping and sleeves through building exterior skin, including walls, roofs and interior floor penetrations to prevent leakage. Coordinate with the Architect on caulk material to use at exterior.

D. Size sleeves for cold piping to allow for continuous insulation through sleeve.

3.03 SEALING AND FIREPROOFING

A. SEALING OF PENETRATIONS THROUGH RATED WALLS, FLOORS, CEILING AND ROOF ASSEMBLIES SHALL BE INSTALLED PER UL "FIRE RESISTANCE DIRECTORY." UL SYSTEM NUMBERS INDICATED ARE FOR A PARTICULAR LISTED INSTALLATION AND ARE FOR GENERAL INFORMATION AND INTENT. OTHER LISTED UL SYSTEM DESIGNS MAY BE USED. IN ALL CASES, SUBMIT MATERIALS, UL SYSTEM DESIGN NUMBERS AND UL DETAILS TO BE USED THROUGHOUT THE

PROJECT AND IDENTIFY WHICH DETAIL IS TO BE USED FOR EACH SPECIFIC CONDITION. POST REVIEWED DETAIL AT JOB SITE FOR REFERENCE.

1. Only materials tested in the specific UL System Number may be used.

    a. Wrap Strip (UL System No. WL 5001): Nominal 1/4" thick by 2" wide intumescent elastomeric material. Manufacturer: 3M Type FS-195.

        1) Use one (1) wrap strip for up to one inch (1") thickness insulation.

        2) Use two (2) wrap strips for 1-1/2" inch and larger thickness insulation.

    b. Caulk Manufacturer:

        1) 3M Type CP-25 WB+ for all assemblies requiring 3M caulk.

        2) For WL3045 and 3046 use Hilti FS611A Sealant.

    c. Steel Sleeve (Stud Wall) (UL System 1003): Cylindrical sleeve shall be fabricated from minimum 0.019" thick (no. 28 gauge) galvanized sheet steel and having a minimum 2" lap along the longitudinal seam. Length of steel sleeve to be equal to thickness of wall plus 1" such that, when installed, the ends of the sleeve will project approximately ½" beyond the surface of the wall on both sides of the wall assembly. The diameter of the openings cut on each side of the wall assembly (concentric with pipe) to be 2 to 2-1/2" larger than the outside diameter of pipe such that, when the steel sleeve is installed, a 1 to 1-1/4" annular space will be present between the steel sleeve and the pipe around the entire circumference of the pipe. Install sleeve by coiling the sheet steel to a diameter smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers.

    d. Steel Sleeve (Concrete or Block Wall): For cables, provide sleeve cast in floor/wall or mortared into CMU wall; optional sleeve for UL System No. CAJ1175.

    e. Forming Material: Minimum one inch (1") thickness mineral-wool batt insulation material. Tightly pack into sleeve with minimum 1/2" recess on ends. Manufacturer: Thermafiber Safing Insulation.

2. Wire/Cables:

    a. For Gypsum Frame Wall (Single Cable): Fireproof per UL System No. WL3001. Opening for cable to be hole-sawed through gypsum wall board layers. Diameter of opening to be 3/8" to 5/8" inch larger than outside diameter of cable. Cable to be rigidly supported on both sides of wall assembly. Caulk to fill annular space throughout thickness of gypsum wall board layers and apply 1/4" bead of caulk to perimeter of cable at its egress from wall (both sides).

    b. For Gypsum Frame Wall (Multiple Cables): Use UL System No. WL3021, WL3045, WL3046 or equivalent to maintain rating of wall.

c. For Concrete Walls/Floors or CMU Walls (Single or Multiple Cables): Fireproof per UL System No. CAJ3030. Cables to be a minimum ten percent (10%), maximum thirty-three percent (33%) of cross-sectional area of opening. Recess minimum one inch (1") thickness of mineral wool material into opening around cables. Caulk openings around cable to minimum depth of one inch (1"). Optional sleeve may be used per UL detail requirements.

3. Firestop system shall be installed at top surface of floor and symmetrically on both sides of wall assemblies.

4. Materials used in firestop systems shall be installed in accordance with the manufacturer's instructions, provided with materials for specific UL System Number.

5. Reference Architectural for the exact location of all rated walls, floors, ceilings and ceiling/roof assemblies.

B. Manufacturers: 3M, Metacaulk, Hilti, BioFireshield, STI or equal.

C. In non-rated walls identified for sound insulation, provide 1/2" space between pipe and sleeve packed with multiple layers of forming material. Allow 5/8" minimum space on each side and caulk with acoustical sealant.

D. **Final condition to prevent passage of fire, smoke, noxious gas and water.**

E. For non-rated mechanical/electrical room walls: Seal all piping and ductwork passing through walls, floors and ceilings with 3M caulk, Type CP-25+.

F. Submit UL numbers and details for type of penetrations and materials to be used. All penetrations in fire rated walls, floors and ceilings must be installed per a UL listed detail specified for the application.

G. **Seal both sides of all floor penetrations into crawl space on both sides to prevent air and water migration.**

3.04 WATERPROOFING AND COUNTERFLASHING

A. Provide and install all counterflashing of all conduit, pipe or duct and equipment which penetrates roofs, walls and other weather barrier surfaces. Metal Roofing Contractor shall provide and install all curbs and counter flashing for all metal roof penetrations. Verify detail with Architect before installation.

B. All work shall be performed in a workmanlike manner to assure weatherproof installation. Any leaks developed shall be repaired at contractor’s expense, to Architect's satisfaction.

C. Conduits, pipes or ducts passing through slabs shall have the sleeve extended above floors to retain any water and the space between the conduit, pipe or duct and sleeve caulked with lead wool. The top shall be sealed with lead and the bottom shall be sealed with monolastic caulking compound.

D. All waterproofing, flashing and counterflashing shall be provided and installed by the Roofing Contractor and shall be compatible with roofing system so as not to void any roof warranties. Confirm installation with Architect.

E. Slope all ducts to wall louvers to drain toward louvers. Provide continuous sleeve thru wall and seal all joints.

F. All piping and conduit penetrations through exterior walls shall be sealed on both side of drain plane and at exterior finished wall surface to prevent moisture intrusion.

3.05 LABELING AND TAGGING

A. Tag all valves with minimum 1/16" thick heat resistant laminated dark plastic labels engraved with readily legible white lettering 1/4" high indicating fluid in pipe and a “V” (valve) number (e.g. V-22). Securely fasten to the valve stem or bonnet with beaded chain. Provide an aluminum valve chart and frame with glass cover for typewritten valve chart. Install where directed. Coordinate valve numbers with mechanical contractor to avoid duplication. Refer to Section 20 00 00, and Manuals.

B. Label all equipment with minimum 1/16" thick heat resistant laminated plastic labels having engraved lettering 1/2" high and fastened in place with rivets, screws or adhesive backing. Example "WH-1, AHU-1, etc." If items are not specifically listed on the schedules, consult the Architect concerning designation to use. Refer to Section 20 00 00. Label all equipment served by emergency electrical panels with red labels.

C. Label all thermostats/sensors with minimum 1/16" thick heat resistant laminated plastic labels having engraved lettering 1/4" high and fastened in place with rivets, screws or adhesive backing. Label is to correspond to rooftop and/or air-handling units.

D. Provide access panel markers (minimum 1/16" thick laminated plastic type with engraved lettering) to indicate ceiling tile to be used for access for all A/C equipment, terminal units and plumbing shut-off valves. Use light green for plumbing and light blue for A/C equipment. Label to be attached to ceiling grid with rivets, screws or adhesive backing. Example, “AHU-3A” access.

E. Manufacturer: Seton Pipe Marking Products, MSI (Marketing Services, Inc.) or equal.

3.06 TYPICAL PIPING

A. Provide insulating couplings or unions to prevent electrolysis between dissimilar metals when use of dissimilar metals cannot be avoided in one system.

B. Close all openings in pipes with appropriate caps, plugs, or covers during storage and progress of the work to preclude introduction of contaminants.

C. Arrange systems and locate valves so that either entire system or separate sections thereof may be drained for service. All service valves located no more than 24 inches above the ceiling and normally accessible from an 8 foot ladder.

D. Provide valves and unions adjacent to all tanks, batteries of plumbing fixtures and equipment, for disconnect purposes. Install all valves with stems vertical wherever possible, and in no case with stems below the horizontal.

E. Ream ends of all pipe to full diameter.

F. Provide pipe anchors, swing joints, and expansion compensators as required to control the expansion of pipelines.

G. Reduce pipe sizes using reducing tees or reducing fittings. Bushings not permitted except on tanks and similar equipment.

H. Provide escutcheons on all pipes passing through walls, floors, and ceilings in finished areas where piping is in counters, closets or cabinets, and subject to view when doors are open. Cover the pipe sleeve and secure plate in position.

I. Install hangers at each change in direction and within 2 feet at each elbow or tee. This requirement is mandatory.

J. Pipe hooks, wire, chains or perforated metal shall not be used for pipe supports.

K. Insulate hangers for copper pipe from piping with at least two layers of 12 mil Polyken 826 corrosion control tape.

L. Install piping not to interfere with removal of equipment, ducts, and devices or block access to door or access openings.

M. Piping serving plumbing fixtures and equipment shall be securely supported near the point where pipes penetrate the finished wall.

N. Test all piping in accordance with accepted trade standards if not specified elsewhere.

3.07 THREADED PIPE

A. Cut all threads true and of depth to make up properly without leaks.

B. Make connections to show at least two threads and not more than four threads when tight.

C. Make up joints with Teflon tape only as recommended by tape manufacturer, or as specified in specific piping sections.

3.08 AUTOMATIC (MANUAL) AIR VENTS

A. Install at highest point of chilled and hot water system, at chilled and hot water coils and at points necessary to relieve air in piping. Provide shut-off valve to facilitate maintenance of air vent.

B. Route 1/4" copper line from discharge of air vent to floor drain in mechanical room. Slope to drain.

3.09 PAINTING AND CODING

A. Ductwork and Piping: Prime and paint all exposed angle braces, hanger rods or straps, damper rods, and quadrants with one coat aluminum paint after removing scale and rust. Prime and paint ductwork and piping exposed in finished rooms to match room finish. Prime and paint all black iron piping located outdoors or otherwise exposed to weather. Coordinate painting and color with Architectural paint specified elsewhere. All painting done by persons regularly employed at and skilled in that trade.

B. Grilles, Registers, Etc.: Furnish all grilles, registers, etc., other than extruded aluminum or plastic with prime coat paint by manufacturer. Furnish all ceiling grilles, registers and diffusers with factory applied baked enamel to match ceiling tile. Paint all ductwork and/or conduit visible through registers, grilles and other openings with one coat of flat black paint to a point four feet (4') from opening on straight duct or around bend, whichever applies.

C. Pipe Coding:

1. Identify piping with pressure-sensitive coded pipe marker at piping adjacent to equipment, at intervals along all piping not to exceed 20' and at points where piping disappears into or emerges from floors, walls or ceiling. Secure both ends of marker with pressure sensitive tape with flow arrow on roll to indicate flow direction. Color code pipe markers and arrows indicating the liquid and/or use of the pipe.

2. Code piping to the following schedule: (SUBMIT ALTERNATE CODING)

Cold Water	CW
Hot Water	HW
Hot Water Circulating	HWC
Chilled Water Supply	CHS
Chilled Water Return	CWR
Hot Water Supply	HWS
Hot Water Return	HWR
Gas	FUEL GAS
Sprinkler	SPKR

3. Manufacturers: Seton Pipe Marking Products, MSI or equal.

END OF SECTION

SECTION 20 07 00 - INSULATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Description:

1. This section describes specific requirements, products and methods of execution which relate to the insulation of ducts, pipes and other surfaces of the mechanical installation.

2. Insulation is provided for the following purposes:

a. Energy conservation

b. Control of condensation

c. Safety of operating personnel

B. SPECIAL NOTE: All provisions and divisions of these specifications are a part of this section of these specifications. The Contractor shall consult these divisions and provisions in detail for instructions and include all items pertaining to this work. The Contractor shall consult all other divisions of these specifications, determine the extent of impact on the work required to complete the work required by this section of the specifications or portion thereof and related work shown on the drawings.

C. Acoustical Lining Insulation Summary

1. The work covered by this specification consists of furnishing all labor, equipment, materials and accessories, and performing all operations required, for correct fabrication and installation of air duct systems of sheet metal lined with fibrous glass duct liner, in accordance with applicable project drawings and specifications, subject to terms and conditions of the contract:

2. All air duct systems operating at internal air velocities not exceeding rated duct liner limitations as listed below and internal air temperature not exceeding 250°F (121°C).

3. Duct liner products shall conform to the requirements of ASTM C1071. **ALL INSULATION IS TO BE FREE OF UREA-FORMALDEHYDE AND/OR BE GREENGUARD CERTIFIED.**

4. The manufacturer’s product identification shall appear on the air stream surface.

5. Duct liner adhesive shall conform to the requirements of ASTM C 916. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113.**

6. The finished duct system shall meet the requirements of NFPA 90A and 90B.

7. Duct dimensions shown on the plans are finished inside dimensions.

8. Fabrication and installation shall conform to the requirements of the latest edition of the North American Insulation Manufacturers Association's *Fibrous Glass Duct Liner Standard* (hereinafter referred to as NAIMA FGDLS) or the Sheet Metal and Air Conditioning Contractors National Association *HVAC Duct Construction Standards - Metal and Flexible* (hereinafter referred to as SMACNA HVAC DCS) or the manufacturer's recommendations.

D. References

1. American Society of Testing and Materials(ASTM)
    a. ASTM C1071
    b. ASTM C916
    c. ASTM G21
    d. ASTM G22
    e. ASTM C423
    f. ASTM C518
2. National Fire Protection Association (NFPA)
    a. NFPA 90A
    b. NFPA 90B
    c. NFPA 259
3. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)
    a. HVAC Duct Construction Standards Metal and Flexible (HVAC DCS)
4. North American Insulation Manufacturers Association (NAIMA)
    a. Fibrous Glass Duct Liner Standard (FGDLS)
5. International Nonwovens & Disposables Association (INDA)
    a. IST 80.6

E. Delivery, Storage and Handling

1. Deliver all materials and/or fabricated, insulated duct sections and fittings to the job site and store in a safe, dry place.
2. Protect materials from dust, dirt, moisture, and physical abuse before and during installation, startup and commissioning. Wet or contaminated duct liner shall be replaced.

PART 2 - PRODUCTS

2.01 FIRE RATING OF MATERIALS

A. Provide all insulation products used above ground in buildings with burning characteristics not to exceed the following ratings according to NFPA 255-1972 “Method of Test of Surface Burning Characteristics of Building Materials”: Flame Spread 25, Fuel Contributed 50, Smoke Developed 50.

B. Insulation specified for use underground and above ground away from the building, might have other burning characteristics. Use such products only where specifically required.

2.02 INSULATION

A. TYPE "A": Pre-molded Fiberglass Piping Insulation:

1. Jacket Type:

a. Thermal conductivity K = 0.24 at 100^{O} F. mean temperature.

b. Factory applied kraft-reinforced vapor barrier flame retardant all service jacket and tape, with permeability rating - 0.02 perms.

c. Provide insulation sections with self-sealing pressure sensitive adhesive on both overlap seam and mating jacket surface.

d. Fitting insulated with pre-cut insulation inserts covered with PVC fitting cover.

e. Manufacturer: Owens-Corning Fiberglass, Certainteed, Knauf, Schuller/Manville AP-TPLUS.

2. PVC Jacketed Insulation (Mechanical Room Piping Only):

a. Shall be used in all mechanical/boiler rooms for all insulated piping to within two inches (2") of interior wall surface of mechanical/boiler rooms. This includes all satellite mechanical rooms containing air handlers.

b. Thermal conductivity K = .24 at 100^{O} F. mean temperature.

c. One (1) piece “hinged” construction.

d. **Entire piping system in mechanical rooms to be covered with high-impact, UV-resistant polyvinyl chloride jacketing with gloss white finish.**

e. Fitting insulated with pre-cut insulation inserts covered with PVC fitting cover.

B. TYPE "B": Cellular Piping Insulation:

1. Thermal conductivity K = .27 @ 75^{O} F. mean temperature.

2. Elastomeric thermal insulation with permeability rating of .17 perms.

3. Temperature range from -40^{O} F to 220^{O} F.

4. Insulation to meet 25/50 requirements for use in return air plenums

5. Wall thickness as listed in Part 3 of this Section for size and use of piping.

6. Install without slit when possible. All slits in insulation to be smooth. Insulation installed with jagged edges will be removed and replaced at no cost to Owner.

7. **ALL INSULATION IS TO BE FREE OF UREA-FORMALDEHYDE AND/OR BE GREENGUARD CERTIFIED.**

8. Manufacturers: Armacell Armaflex Type AP Pipe Insulation, Rubatex, Halstead, IMCOA.

C. TYPE “C”: Blanket Type Duct Wrap Fiberglass Insulation:

1. **The Contractor may use a 3/4, 1 or 1-1/2 pound density product with a minimum installed R-value of 6.0 if ductwork is within building insulation envelope or minimum R-value of 8.0 if installed outside of building insulation envelope.** Density, thickness and installed R-value to be clearly indicated on submittal.

2. Fiberglass duct wrap insulation is to have a factory FSK or FRK facing which acts as the vapor barrier. Maximum permeability rating is 0.02 perms.

3. Use only labeled Type UL181AP Aluminum Foil Tape a minimum of 3" wide and 7.4 mils thick “Venture Tape #1525CW” or “Shurtape #AF-982”). Maintain a complete vapor barrier throughout all ductwork insulation applications. Use spreader to completely seal tape to all joints or tears in vapor barrier, surface must be clean prior to installation.

4. Certainteed SoftTouch Duct Wrap with FSK facing or equal. **ALL INSULATION IS TO BE FREE OF UREA-FORMALDEHYDE AND/OR BE GREENGUARD CERTIFIED.**

5. Manufacturers: Knauf, Schuller/Manville, Certainteed or Owens-Corning.

D. TYPE “D”: Rigid Fiberglass Board Insulation (DUCTBOARD SYSTEM)

1. 1-1/2" thick, Type 475 with a minimum R-value of 6.0 when inside building insulation envelope.

2. 2” thick, Type 800 with a minimum R-value of 8.0 when outside building insulation envelope.

3. Rigid board composed of resin bonded glass fibers faced with reinforced foil vapor barrier with permeability rating of .02 perms.

4. Meet UL181 test and classified as Class I Air Duct. **ALL INSULATION IS TO BE FREE OF UREA-FORMALDEHYDE AND/OR BE GREENGUARD CERTIFIED.**

5. Maximum operating temperature of 250^{O} F.

6. Tape joints using heavy duty foil tape, UL181A labeled, 7.5 mils thick, 3 inches wide, FSK Facing Tape Venture or equal.

7. Manufacturers: Certainteed, Knauf, Schuller/Manville, Owens-Corning.

E. TYPE “E”: Semi-rigid Fiberglass Insulation Board.

1. Semi-rigid glass fiber bonded insulation not affected by moisture, resistant to fungi and bacteria. **ALL INSULATION IS TO BE FREE OF UREA-FORMALDEHYDE AND/OR BE GREENGUARD CERTIFIED.**

2. Permit expansion and contraction of metal without cracking or shrinking.

3. Maximum operation temperatures of 850^{O} F.

4. Manufacturers: Certainteed 850 Fiberglass Insulation, Knauf, Schuller/Manville, Owens-Corning.

F. TYPE "F": FIRE RESISTIVE DUCT WRAP

1. Work of this section includes labor, material and equipment to provide 2 hour fire resistive rated grease or air duct enclosure as a shaft alternative and a method for providing zero inch clearances around commercial kitchen grease duct exhaust systems to combustible materials.

2. Lightweight flexible refractory ceramic fiber blanket encapsulated with aluminum foil scrim. Nominal 1 ½" thick, 9 PCF.

3. UL Classified, single layer, fireproof, flexible, 2 hr. rated enclosed assembly.

4. Zero clearance to combustibles.

5. Use in combination with 3M Fire Barrier, 2000+ silicone sealant.

6. 3M, UL system V-17. Install as listed.

7. Manufacturer: 3M FireMaster Fast Wrap.

G. TYPE "G": Cellular Elastomeric Foam Duct Liner:

1. Thermal conductivity K = .27 @ 75^{O} F. mean temperature.

2. Elastomeric thermal insulation with permeability rating of .17 perms.

3. Temperature range from -40^{O} F to 220^{O} F.

4. Insulation to meet 25/50 requirements for use in return air plenums

5. Minimum R-value of 6.0 for one and one-half (1-1/2") thickness. Installed R-value to be a minimum of 6.0 inside building envelope. Minimum R-8 for ducts located outside the building insulation envelope.

6. **ALL INSULATION IS TO BE FREE OF UREA-FORMALDEHYDE AND/OR BE GREENGUARD CERTIFIED.**

7. Manufacturers: Armacell Armaflex AP or Armacell Coilflex elastomeric foam duct liner with Microban.

2.03 SOUND CONTROL

A. Lined Duct:

1. Provide acoustically lined duct to attenuate and control the transfer of airborne sound and as duct insulation only when specifically indicated.

2. Lining: Flexible fiberglass blanket type mat faced insulation with durable surface coating, bonded with thermosetting resin. Maximum flame spread index; 25. Maximum smoke developed index; 50. **Lining to have anti-microbial coating.** Minimum R-value of 6.0 for one and one-half (1-1/2") thickness. Installed R-value to be a minimum of 6.0. **1.5" thick, R-6 lining equal to CertainTeed ToughGard R-EP or ToughGard2 Textile Duct Liner.** R-8 for ducts located outside the building insulation envelope. **ALL INSULATION IS TO BE FREE OF UREA-FORMALDEHYDE AND/OR BE GREENGUARD CERTIFIED.**

3. Air Friction Correction Factor 1.12 at 500 fpm or less.

4. Minimum sound absorption co-efficients as follows:

Thickness	Frequency					
	125	250	500	1000	2000	4000
1-1/2"	.17	.53	.87	.99	1.00	.95

5. All duct dimensions shown on drawings are net clear inside dimensions with duct liner. Install liner in compliance with requirements of NFPA 90A.

6. Manufacturers: Shuller, CertainTeed, Knauf or Owens-Corning.

7. All duct liner to be provided with tough abrasion resistant interior air side finish and antimicrobial coating.

2.04 INSULATED FITTING COVERS AND JACKETING

A. High-impact, UV-resistant polyvinyl chloride jacketing with gloss white finish.

B. Pre-cut curled jacketing, 30 mil. thickness. Sized to snugly fit pipe diameter with thickness of insulation specified.

C. Joints and seams sealed with Perma-Weld Adhesive to form a complete vapor barrier for chilled water and domestic cold water systems. Use tack and tape for heating water and domestic hot water systems. Installation of adhesives, tacks and tape shall be per manufacturer's recommendations. Submit installation instructions with submittal of materials.

D. Fitting Covers: Covers shall be pre-formed for fitting shape.

E. Manufacturer: Schuller/Manville Zeston 2000, Owens-Corning Fiberglass, Certainteed, Knauf or Proto.

2.05 CANVAS JACKETING

A. Insulating Lagging Canvas: 8oz./sq. ft. minimum, 28 threads per inch minimum, Osnaberg or equal.

B. Lagging Adhesive: Plastic synthetic resin emulsion adhesive; watertight, mildew resistant, fire retardant; Miracle LA69, Borden Aerosol or equal. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113.**

2.06 METAL OR VINALUM JACKETING

A. Material shall be minimum .016" thick aluminum jacket or vinalum .020" thick aluminum faced PVC jacket with integral factory applied vapor barrier.

B. Elbows, fitting and valves shall be metal preformed fitting covers (no gores acceptable). Valves made from .020 metal. All valves ends and where insulation reduces shall have Pittsburgh seams.

1. All straight line metal to be Z-locked jacket held in place with 3/4" wide aluminum bands at nine inches (9") on center with wing seals.

C. All joints and seams shall be watertight with Childers CP-76 OR Foster 95-44.

D. Manufacturer: "Strap-On" Childer Cawed Systems or equal.

2.07 COATINGS

A. All coating to bear the UL label. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113.**

B. On cold or dual service lines, use vapor barrier type coatings.

2.08 METAL SHIELDS (SADDLES)

A. Metal Shields curved to fit up to midpoint of the insulated pipe.

B. Metal shields shall be 16 gauge, twelve inches (12") long for pipes up to two inches (2") and 14 gauge, sixteen inches (16") long for piping 2-1/2" and larger.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION AND WORKING CONDITIONS

A. Apply all insulation, fitting covers, mastics and sealants per manufacturer's recommendations.

B. Do not apply insulation materials until all surfaces to be covered are clean and dry and all foreign materials such as rust, dirt, etc., are removed.

C. Keep insulation clean and dry during installation and during the application of any finish.

D. Do not install the insulation on pipe fittings, and pipe joints until the piping is tested and approved.

E. Do not apply under conditions of excessive humidity or at temperatures below 50^{O} F or above 100^{O} F.

3.02 TECHNIQUE FOR APPLICATION TO PIPES

A. Close longitudinal joints of pipe insulation firmly and butt insulation sections firmly together.

B. Neatly and smoothly adhere all laps and butt strips. Adhere three inch (3") wide self-sealing butt joint strips over end joints.

C. Replace all insulation having loose joints or laps. Sloppy work will not be acceptable and such work shall be removed and re-applied.

D. Provide ½" over the thickness of insulation specified at all insulated piping in outside walls.

E. Where insulation with a vapor barrier terminates, it shall be sealed with “Ductmate Protack”. Ends shall not be left raw.

F. On water piping use sheet metal shields outside the insulation at hanger locations. In addition, provide:

1. A molded vegetable cork or foam glass insert not less than twelve inches (12") long of same thickness and contour as insulation between support shield and piping and under the finish jacket.

2. Heavy density insulation minimum six (6) pounds per cubic foot under entire length of metal shield.

G. Where piping and fittings are installed out of doors, provide [two-layer glass cloth and four-layer weatherproof vapor barrier adhesive coating, in addition to jacket specified] vapor barrier jacket, cover with metal or vinalum jacket with seams located on bottom side of horizontal piping.

3.03 TECHNIQUE FOR APPLICATION TO PIPE FITTINGS, UNIONS AND VALVES

A. On insulated piping with vapor barrier, insulate fittings, unions, valves and flanges including Victaulic and Gustin-Bacon to the same thickness as the pipe insulation.

B. Any of the following methods of insulation is acceptable:

1. PVC Snap Form Fitting Covers: Wrap all valves and fittings with precut fiberglass insulation wraparound inserts. Brush vapor barrier mastic on adjoining section of pipe insulation and on overlapping edges of jacket and throat seam before applying preformed fitting. Secure cover with stainless steel tacks. Tape joints with pressure sensitive vapor barrier tape.

3.04 TECHNIQUE FOR APPLICATION TO DUCTWORK

A. Impaling Over Pins: Install all insulation with edges tightly butted. Impale insulation on pins welded to the duct and secure with speed clips. Trim off pins close to speed clip. Space pins as required to hold insulation firmly against duct surface, but not less than one pin per square foot. Seal all joints and speed clips with glass fabric set in adhesive. Provide metal angle at corners to protect edges of insulation.

B. Other Method of Securement: If the welded pin method is impossible, secure the insulation to the duct with “Ductmate Protack” or Childers CP-127 or Foster 85-60 adhesive. Cover the entire surface of the metal with adhesive when applying to the underside of horizontal ducts. Application to top and sides may be in strips with a minimum of 50% coverage. Additionally, secure insulation with No. 16 galvanized wire on not more than twelve inch (12") centers. Provide metal angle at corners to protect edges of insulation. Seal joints as above. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113.**

C. Where external insulations terminate, seal insulation to ductwork with Childers CP-35 or Foster 30-65 with 3" glass fiber reinforcing mesh.

D. Impale rigid insulation board over pins. Provide two layers of glass cloth and four layers of weatherproof vapor barrier adhesive coating. Install .040 thick lock-formable aluminum jacket over sealed insulation. All joints are to be 1” standing seams. The top of the aluminum jacket is to slope a minimum of 1” in 12” to sides to prevent collection of water. Install tapered insulation under sloped top for support of aluminum jacket. Provide a minimum of 1” flange out at connection point to mechanical equipment and building to ensure that water does not get under jacket. Provide counterflashing that is appropriate for building material type. Coordinate with Architect to ensure a watertight connection to building.

3.05 EXAMINATION (LINED DUCTWORK)

A. Verify that the duct liner products is installed in accordance with project drawings, duct liner operating performance parameters and limitations, and provisions of NAIMA FGDLS or SMACNA HVAC DCS or manufactures recommendations.

3.06 INSTALLATION (LINED DUCTWORK)

A. All portions of duct designated to receive duct liner shall be completely covered with duct liner. All joints shall be neatly butted and there shall be no interruptions or gaps. Duct liner shall be installed with the Printed air stream surface treatment exposed to the air stream.

B. Duct liner shall be adhered to the sheet metal with 90% (minimum) coverage of adhesive complying with the requirements of ASTM C 916. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113.**

C. All transverse edges that are not to receive sheet metal nosing shall be coated. Longitudinal joints shall occur at the corners of ducts. If duct size and standard duct liner product dimensions make exposed longitudinal joints necessary, such joints shall be coated with adhesive designated for duct liner application and which meets the requirements of ASTM C 916. Such joints shall be additionally secured with mechanical fasteners in accordance with NAIMA FGDLS, or SMACNA HVAC DCS as if they were transverse joints.

D. Duct liner shall be additionally secured with mechanical fasteners complying with the requirements NAIMA FGDLS or SMACNA HVAC DCS and of the correct type for the duct liner being installed. Fasteners may be either weld-secured or impact-driven, and shall be installed perpendicular to the duct surface. Mechanical fasteners shall not compress the insulation more than 1/8" (3 mm) based on nominal insulation thickness. Fastener spacing with respect to interior duct dimensions shall be in accordance with NAIMA FGDLS or

SMACNA HVAC DCS. Fastener heads or washers shall have a minimum area of 0.75 in^2 (484 mm^2), with beveled or cupped edges to prevent their cutting into the duct liner.

E. Where air velocities exceed 4000 fpm (20.3 m/sec), metal nosing (either channel or "zee" profile) shall be installed on upstream edges of liner duct sections.

F. Metal nosing shall be securely installed over transverse liner edges facing the airstream at fan discharge and at any point where lined duct is preceded by unlined duct.

G. Duct liner in roll form shall be folded and compressed in the corners of rectangular duct sections, or shall be cut and fit to assure a lapped, compressed corner joint

H. Duct liner in sheet form shall be cut and fit to assure tight, over-lapped corner joints. Top pieces of liner shall be supported at the edges by the side pieces

I. Any damage to the air stream surface must be repaired by coating the damaged area with adhesive or coating designed for duct liner application. Adhesive or coating shall meet requirements of ASTMC916.

3.07 FIELD QUALITY CONTROL (LINED DUCTWORK)

A. Upon completion of installation of lined duct and before HVAC system start-up, visually inspect the ductwork and verify that duct liner has been correctly installed. Confirm that the duct system is free from construction debris.

B. After the lined duct system is completely installed and ready for service, conduct a final inspection of the entire system. This inspection should include, at minimum, the following steps:

1. Check all registers, grilles, and diffusers to ensure that they are clean and free from construction debris.

2. Check all filters in accordance with their manufacturer's instructions. Use specified grade of filters at all times that system is operating.

3. Cover supply openings with filter media prior to system start-up to catch any loose material that may remain inside the ductwork.

4. Turn the HVAC system on and allow it to run until steady state operation is reached.

5. Remove the temporary filter media from supply openings and, along with it, any loose material blown downstream and caught by the filter media.

6. Check to ensure that air delivery performance meets all requirements and complies with SMACNA leakage specifications.

3.08 PROTECTION (LINED DUCTWORK)

A. Contractor’s employees shall be properly protected during installation of all insulation. Protection shall include proper attire when handling and applying insulation materials, and shall include (but not be limited to) disposable dust respirators, gloves, hard hats and eye protection.

B. The contractor shall conduct all job site operations in compliance with applicable provisions of the Occupational Safety and Health Act, as well as with all state and/or local safety and health codes and regulations that may apply to the work.

3.09 COLD PIPING INSULATION

A. Insulate piping for domestic cold water, using one inch (1") Type "A" or Type “B” Insulation.

B. Provide a complete vapor barrier throughout the entire system. Use only vapor barrier adhesives and coatings. Stapling of jacket not permitted. Penetrations in vapor barrier jacket, joints, and seams sealed vapor proof with Childers CP-35 or Foster 30-65 (white) mastic. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113.**

C. Cover ends of insulation sections with an adhesive coating at intervals of not more than twenty feet (20'). Insulate accessories, valves, flanges, etc.

D. Cover insulation on fittings with spiral-wrapped glass mesh tape. Finish with a vapor barrier coating applied approximately 1/16" thick.

E. Insulate all horizontal runs at primary and overflow roof drain rain leader piping from bottom of roof deck to include roof drain body, to one foot (1') past turn down fitting in vertical direction. Vertical rain leaders need not be insulated when concealed, routed inside wall cavity.

F. Insulate all cold water piping above ceiling to point where piping turns down into chase. When piping turns down into exterior walls, piping in exterior walls must be insulated.

3.10 HOT & TEMPERED PIPING INSULATION

A. Insulate domestic hot and tempered water and circulating lines using one inch (1") Type "A" insulation one inch (1") thickness for ½" to one inch (1") piping, 1-1/2" thickness for 1-1/4" to two inch (2") piping and two inch (2") thickness for 2-1/2" to six inch (6") piping. Domestic hot water lines may be insulated with one inch (1”) Type “B” insulation.

B. Staples may be used to seal jacket.

C. Insulate unions, valves and flanges in boiler room only for piping over 140^{O} F. Insulate with same method used for cold pipe fittings, except vapor barrier mastic is not required.

D. Do not insulate valves, flanges, and unions for domestic hot water piping systems below 140^{O} F., but bevel and seal ends of insulation at such locations.

E. Insulate hot water expansion tank and air separators with one inch (1") sheet type “B” insulation.

3.11 SPECIAL PIPING INSULATION REQUIREMENTS

A. Insulate buried domestic hot and cold water lines under building with one inch (1”) Type "B" Insulation. Bond joints using an adhesive; apply surface treatment as recommended by insulation manufacturer, taping not permitted. Set in sand bed and cover with minimum five inches (5") sand. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113.**

B. **Insulate all refrigerant piping for heat pump systems and suction lines only for all other systems with Type "B" Insulation:** ½" thickness for piping up to 1" and 3/4" thickness for piping larger than one inch (1"), apply per manufacturer's recommendations. Glue all joints and seams with Armaflex 520 Adhesive BLV LOW VOC. Protect all insulation on piping outside with two (2) coats of "WH" Armaflex Finish Coating for weather protection. No tape is allowed. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113.**

C. Insulate all exposed p-traps and water connections for handicapped lavatories with White "Truebro Handi Lav-Guard" Insulation Kit Model #102W (Use Model #105W when 5" offset strainer is used). (Phone: 203-875-2868), or equal products as manufactured by Brocar Products Inc., (Phone: 512-847-1524).

D. Insulate p-trap of all floor drains above the first floor and deep seal traps that receive condensate. Insulate with 3/4" thick Type "B" Insulation.

3.12 DUCT INSULATION REQUIREMENTS

A. Insulate Ducts as Follows:

1. Thickness and Type:

a. Exhaust Air and Outside Air Exhaust Ducts: Externally wrap with Type "C" Insulation; insulate from roof deck/wall exterior back three feet (3') into space. (R-6)

b. Rooftop Units: Internally line rooftop unit supply and return air drops past first ninety degree elbow, reference Specification Section 20 07 00, 2.03, Sound Control for Liner. Provide access door in duct risers for access and cleaning. Minimum size 18 x 18. (Exception: Rooftop unit serving kitchen is to have the supply air drop internally lined and the return air drop externally wrapped with Type "C" Insulation.). R-8 for ductwork located outside or in attic spaces and R-6 for all other ducts inside the building insulation envelope.

c. Supply Air: Externally wrapped with Type "C" Insulation, unless specifically noted otherwise. R-8 for ductwork located outside or in attic spaces and R-6 for all other ducts inside the building insulation envelope.

d. Return Air: Externally wrapped with Type "C" Insulation, unless specifically noted otherwise. R-8 for ductwork located outside or in attic spaces and R-6 for all other ducts inside the building envelope.

e. Outside Air: Supply ducts externally wrapped with Type "C" Insulation. R-8 for ductwork located outside or in attic spaces and R-6 for all other ducts inside the building insulation envelope.

f. Relief Air: Externally wrap with Type "C" insulation when run through unconditioned spaced, unless specifically noted otherwise. R-8 for ductwork located outside or in attic spaces and R-6 for all other ducts inside the building insulation envelope.

g. Air Devices: Externally wrap backs of all supply, return and exhaust air devices including square to round adapters and boots with Type “C” Insulation. Properly seal all edges. Use R-8 insulation for air devices with backs outside of building insulation envelope and R-6 insulation when backs of air devices are located inside building insulation envelope.

h. Exterior Ductwork: R-8 Type “E” and/or duct liner insulation.

i. Special circumstance as noted: R-6 or R-8 Type “G” duct liner insulation.

3.13 CONDENSATE PIPING INSULATION

A. Condensate piping to be insulated with Type “B” Insulation 1/2" thick. Entire condensate system to be insulated when copper pipe is used.

1. Apply per manufacturer's recommendations. Glue all joints and seams with Armaflex 520 BLV LOW VOC Adhesive. No tape will be allowed. Auxiliary condensate not required to be insulated. Protect all insulation on piping outside with two (2) coats of “WH” Armaflex Finish Coating for weather protection. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113.**

3.14 CHILLED WATER PIPING INSULATION

A. Insulate chilled water piping using Type “A” Insulation. One inch (1") thickness up to two inch (2") piping and 1-1/2" insulation from 2-1/2" to ten inch (10") piping.

B. Chilled Water Piping Outdoors:

1. Piping to be pre-insulated type with two inch (2") foam-in-place polyurethane. Reference Section 2.07.

2. Install per manufacturer's recommendations.

C. All hangers to be installed on the outside of the insulation and shall not be in contact with the pipe. Use metal shields between the insulation jacket and the hanger. Provide heavy density insulation or cork inserts at shields.

D. Insulate all fittings with one (1) piece pre-molded PVC insulation fittings with insulation inserts to same thickness as adjoining pipe insulation.

E. Maintain complete vapor barrier throughout system. Seal all jacket penetrations, seams, edges and joints with vapor proof mastic. **ALL ADHESIVES, SEALANTS AND COATINGS MUST MEET OR EXCEED GREEN BUILDING PROGRAM SCAQMD RULE 1168 AND 1113.**

END OF SECTION

DIVISION 22 - PLUMBING

22 11 16 - WATER DISTRIBUTION SYSTEM
22 13 16 - LIQUID WASTE TRANSFER
22 30 00- PLUMBING FIXTURES AND TRIM

SECTION 22 11 16 - WATER DISTRIBUTION SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section describes specific requirements, products and methods of execution relating to the domestic water distribution system for the project.

B. The work of this section includes: All water distribution work inside the structure, and all outside distribution work up to and including connection to the water source, including provision of the outside water source, or water using apparatus, although the work of this section does include the interface connections at all of these related items.

C. SPECIAL NOTE: All provisions and divisions of these specifications are a part of this section of these specifications. The Contractor shall consult these divisions and provisions in detail for instructions and include all items pertaining to this work. The Contractor shall consult all other divisions of these specifications, determine the extent of impact on the work required to complete the work required by this section of the specifications or portion thereof and related work shown on the drawings.

1.02 CONNECTION TO UTILITY WATER SYSTEM

A. Coordinate with site utilities to properly locate and interface with the water supply. Stub water 5'-0" outside the building and make connection to water supply. See Civil Drawing for site utility locations.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS ABOVE GROUND (INSIDE STRUCTURE)

A. Type "K" or "L" hard drawn copper tubing, wrought solder type fittings, lead free (0.00% lead content) solder.

2.02 PIPING AND FITTINGS BELOW GROUND

A. 2" and Smaller:

1. Type “K” soft copper, wrought bronze solder type fittings, lead free (0.00% lead content) solder.

2. Use heavy duty Water-Tite-Sleeve as manufactured by IPS Corporation for all piping underslab. Sleeves for 1" and under shall be 32 mil., blue for cold water and red for hot water. Sleeves for 1 1/4" to 2" shall be 32 mil., black in color.

B. 2-1/2" and Larger:

1. Type “K” hard drawn copper, wrought bronze solder type fittings, lead free (0.00% lead content) solder.

C. No joint to be installed under building slab.

2.03 WATER METER

Reference Civil Drawings

PART 3 - EXECUTION

3.01 GENERAL METHODS

A. Make all joints in accordance with manufacturer's recommendations. The tools used shall be the tools adapted to that specific purpose.

B. At all fixtures, install and connect hot water on left and cold water on right, as viewed when facing the fixture.

C. Where required for connections to fixtures, equipment items, etc., employ lengths of red brass pipe with threaded ends of copper to IPS adapters, brass couplings, etc., to the end that there shall be no ferrous pipe in any water piping system.

D. Provide valves on each branch line at the point of connection into the supply and circulating mains serving all batteries of plumbing fixtures. Provide stop valves in each water supply for every plumbing fixture. Each hose bibb is to have an individual shut off valve, separate from valves that would shut down a battery of fixtures. Valves for piping two inches (2") and smaller shall be ball valves.

E. Provide water hammer arrestors with accessible isolation valve equal to Wade Shok-stops, JR Smith Hydrotrol 5000 Series, or Zurn Shocktrols A-1700 Series on cold water and hot water supplies to plumbing fixtures. Provide access door for all concealed arrestors. Shok-stops shall not be installed in the pendant position. **O-ring type arrestors are not considered equivalent. Arrestors are to be installed in locations and sized per Manufacturer's installation instructions.**

F. Install vacuum breakers on all plumbing lines where contamination of domestic water may occur and on boiler make-up lines and hose bibbs.

G. Insulate all exposed water connections for handicapped lavatories and sinks with "Handi Lav-Guard" Insulation Kit (Phone: 203-875-2868).

3.02 TESTING

A. Test all water piping hydrostatically at 150 psig or 150% of working pressure, whichever is greater, for a period of 24 hours. Observe piping during this period and repair all leaks. Test for lead, certify that lead residual in piping system does not exceed local code requirements.

3.03 STERILIZATION OF DOMESTIC WATER SYSTEMS

A. Sterilize each unit of completed supply line and distribution system with chlorine solution before acceptance for domestic operation.

B. Accomplish sterilization as described below or by the system prescribed by the American Water Works Association Standard C-601. Apply the amount of chlorine to provide a dosage of not less than 50 parts per million. Provide chlorine manufactured in conformance to the following standards:

1. Liquid Chlorine: Federal Specification BB-C-120.

2. Hypochlorite: Federal Specification 0-C-114a, Type 11, Grade B or Federal Specification 0-X-602.

C. Introduce the chlorinating material to the water lines and distribution system after piping system has been thoroughly flushed. After a contract period of not less than 24 hours, flush the system with clean water until the residual chlorine content is not greater than .2 parts per million.

D. Open and close all valves in the lines being sterilized several times during above chlorination.

E. The sterilization process shall be done by persons whose major business is water treatment and sterilization. The Plumbing Contractor shall pay all costs and charges associated to this test and certification.

F. Certify in writing that sterilization has been completed in accordance with these requirements.

END OF SECTION

SECTION 22 13 16 - LIQUID WASTE TRANSFER

PART 1 - GENERAL

1.01 DESCRIPTION

A. Description:

1. This section describes specific requirements, products, and methods of execution relating to the transfer of liquid waste for the project. The work of this section includes providing the following:

a. All liquid waste piping and fittings:

1) Soil

2) Rain leaders

3) Building sewer

b. All plumbing vents, including their termination.

c. All connections at points of collection of handling:

1) At plumbing fixtures and trims

2) At equipment by others.

B. SPECIAL NOTE: All provisions and divisions of these specifications are a part of this section of these specifications. The Contractor shall consult these divisions and provisions in detail for instructions and include all items pertaining to this work. The Contractor shall consult all other divisions of these specifications, determine the extent of impact on the work required to complete the work required by this section of the specifications or portion thereof and related work shown on the drawings.

C. All materials exposed within a plenum shall be noncombustible or shall have a flame spread index of not more than 25 and a smoke developed index of not more than 50 when tested in accordance with ASTM E 84.

IF PVC OR CPVC IS USED IN PLENUM SPACES IN LIEU OF CAST IRON, THEN PIPING MUST BE WRAPPED WITH CODE APPROVED INSULATION TO PROTECT PIPING AND MEET 25/50 REQUIREMENTS.

D. All waste, vent, sewer and storm lines shall be of cast iron soil pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute (CISPI) and be listed by NSF International as well as conform to the requirements of CISPI Standard 301, ASTM A-888 or ASTM A-74 for all pipe and fittings, and be manufactured by Charlotte, Tyler, or AB&I .

E. All pipe and fittings shall be manufactured in the United States.

1.02 CONNECTION TO UTILITY SEWER AND STORM DRAIN SYSTEMS (storm drain piping is considered to be piping beyond 5'-0" outside the building)

A. Final wastewater connection point to extend approximately five feet (5') outside the building, as indicated on the drawings. Coordinate with Civil Drawings for wastewater service point to within five feet (5') of the building. Coordinate with site utilities to insure proper inverts for all lines and connection point prior to installation. Contact Architect immediately if any conflict is discovered. Make final connection to service line. Obtain all permits, pay fees and provide all services incidental to this work.

PART 2 – PRODUCTS

2.01 SEWER PIPE UNDERGROUND INSIDE STRUCTURE (INCLUDES TO FIVE FEET FROM BUILDING PERIMETER)

A. Service weight cast iron soil pipe with Tyseal neoprene gaskets.

B. Schedule 40 PVC (SOLID WALL DWV pipe and fittings) as allowed by code. Material Data: Type 1, Grade 1 PVC 12454-B, ASTM D-1784.

C. Pipe 1-1/2" and Smaller: Schedule 40 galvanized steel pipe with cast iron drainage fittings.

D. Waste line serving commercial dishwasher in kitchen and associated main to be service weight cast iron soil pipe with Tyseal neoprene gaskets to a point twenty feet (20') downstream of dishwasher. Remainder of grease system in kitchen may be PVC as listed in 2 above.

2.02 RAINLEADERS BELOW SLAB AND ABOVE GROUND INSIDE STRUCTURE

A. Cast iron soil pipe with heavy weight no-hub fittings.

B. Underground RAINLEADER piping: Use stainless steel couplings (28-gauge, Type 304SS) with neoprene gasket meeting ASTM Standard C-564 meeting FM 1680, Class 1. Husky SD 4000, Clamp-All 80 lb. or equal.

2.03 SEWER ABOVE GROUND INSIDE STRUCTURE

A. Service weight cast iron soil pipe with tyseal neoprene gaskets or cast iron soil pipe with no-hub fittings. Reference 2.06 below.

B. Pipe 1-1/2" and Smaller: Schedule 40 galvanized steel pipe with cast iron drainage fittings.

2.04 VENTS

A. All vent piping above slab to be cast iron soil pipe with tyseal neoprene gaskets or no-hub fittings.

B. All vent piping under slab to be heavy weight no-hub fittings.

C. Vents 1-1/2" and Smaller: Schedule 40 galvanized steel pipe with cast iron fittings.

D. DWV copper with wrought or cast solder fittings.

2.05 CAST IRON PIPE/FITTINGS

A. Tyseal Gaskets or MG Couplings.

B. Hubless couplings shall be composed of a stainless steel shield, clamp assembly and an elastromeric sealing sleeve conforming to the most current edition of CISPI 310, listed by NSF International, manufactured in the United States of America, and manufactured by Anaco, Mission, Tyler or Ideal.

2.06 CONDENSATE PIPING

A. Type L or M: Hard drawn copper.

PART 3 – EXECUTION

3.01 INSTALLATION OF UNDERGROUND PIPING

A. Install pipe and fittings to required grade with hubs and bottom half section in undisturbed soil. Follow manufacturer’s installation requirements.

3.02 INSTALLATION OF ABOVE GROUND PIPING

A. Refer to Section 20 01 00.

3.03 GRADING

A. Grade all horizontal runs of pipe in building and under floor slab at 1/4" per foot downward in direction of flow. If it is absolutely impossible to maintain a grade of 1/4" per foot, piping four (4) inches in diameter and larger may slope to a minimum grade of not less than 1/8" per foot.

3.04 SUPPORTING

A. Support all horizontal runs of pipe in building at intervals not to exceed 5'-0" and at each change of direction. Provide a support at the base of vertical risers with intermediate supports as required. Brace all adequately to prevent motion, per manufacturer's recommendation. Reference Section 20 01 00, 2.08, B., Mechanical Support Devices and Pipe Supports for further requirements.

3.05 CLEANOUTS

A. Provide cleanouts as shown on plans and in an accessible location at base of all risers in soil, waste and drain piping and at each change in direction in horizontal runs of pipe. In long straight runs, provide a cleanout at every 75 feet (minimum) for piping four inches (4") and larger and at a minimum of every 50 feet for piping less than four inches (4").

B. Cleanouts shall be located no closer than 24” to a wall.

3.06 VENTING

A. Provide a vent for each trap or as shown on the drawings.

B. Extend each vent vertically to a point not less than six inches (6") above the extreme overflow level of the fixture served before offsetting horizontally. Whenever two or more vent pipes converge, extend each such pipe at least six inches (6") in height above the flood rim level of the plumbing fixture it serves before being connected to any other vent and utilize only approved drainage fittings and materials to connect piping.

C. Provide a building main relief vent for waste piping not provided venting by fixture branch connections. Vent size shall be per code requirement, based upon fixture unit loading in the pipe vented.

3.07 VENTS THROUGH ROOF

A. Extend vents through the roof a minimum distance of 6" and terminate at least 15 ft. horizontally from operable windows, doors, or air intakes, and at least 3 feet above such opening. Do not terminate vents through roof at edge or valley of roof.

B. Flash and counterflash vents through roof. Provide flashings not less than 18" square, with prefabricated 4-pound lead counterflashing. Extend vertical portion of flashing up entire length of pipe and turn down inside the pipe at least 1 inch with turned edge hammered against pipe. Coordinate with type roof and Architectural details and flash them into roof according to the roofing products manufacturer's recommendations.

C. Protect the roof from tools and equipment. Remove all scraps on roof to prevent damage to roof.

3.08 GENERAL

A. No piping shall be permanently concealed before the examination is completed by the authorities having jurisdiction.

B. All fixtures used in conjunction with the conveying of waste substance shall be connected by means of a trap.

C. All connections for floor mounted water closets and waste piping shall be made with appropriate closet flange and wax gaskets.

D. Insulate all exposed p-traps for handicapped lavatories and handicap sinks with "Handi Lav-Guard" Insulation Kit (Phone: 203-875-2868) as required.

E. Provide specialty shielded transition coupling as required at connections between PVC and cast iron fitting.

3.09 TESTING

A. Test all piping in accordance with the requirements of the local codes.

B. Repair leaks and retest system, repeating this process until piping system is free of leaks.

C. Test shall be conducted and completed before any joints are concealed or made inaccessible.

D. Maintain a log of tests indicating date, time, result of test and person doing test.

E. Under floor.

1. Test pipe under floors before connecting to sewers.

2. Maintain not less than 15 feet of hydrostatic head.

3. Repair all leaks and repeat until system holds for 2-hours without a drop in water level.

3.10 CONDENSATE PIPING

A. Route insulated copper condensate drain line from each unit to nearest floor drain, deep seal traps, sink p-traps, janitor sink, dry well (exterior units), or roof drain if piped to storm sewer (cannot use roof drain if day lites at surface) code approved or disposal point unless otherwise noted. Condensate shall not drain on to roof. Mechanical Contractor and Plumbing Contractor to coordinate locations. Slope all piping to drain at minimum 1/8" per foot. Drains shall be sized in accordance with equipment capacities as follows:

EQUIPMENT CAPACITY	*MINIMUM PIPE SIZE
Up to 3 tons of refrigeration	3/4"
3 to 20 tons of refrigeration	1"
21 to 90 tons of refrigeration	1-1/4"
91 to 125 tons of refrigeration	1-1/2"
126 to 250 tons of refrigeration	2"

*Minimum size of drain shall not be smaller than drain outlet size for unit.

B. Coordinate mounting heights of units to allow adequate slope for condensate piping to disposal point.

C. Provide cleanout plug at end of each main run.

D. Drywell (French Drain): The drywell shall consist of a pit not less than 24" in diameter (or 24" x 24") and 24" in depth. The pit shall be filled to within 3" of the finished grade with course gravel. Top 3 inches to be filled with topsoil and sodded. Gravel to be wrapped completely (top, sides and bottom) with heavy duty weed block fabric. Install a 3" perforated PVC drain pipe (centered in drywell) with cap at bottom extending to bottom of pit. 3" perforated pipe to extend 3" - 5" above finished grade. Provide appropriately sized bushing or fittings to rigidly tie to condensate drain line from unit. Perforated pipe above grade will act as air break connection. Twenty-four inch (24") diameter or 24" x 24" x 24" deep can be used for up to 5 ton capacity. Thirty-six inch (36") diameter or 36" x 36" x 24" deep can be used for up to 13 ton capacity. Forty-eight (48") inch diameter or 48" x 48" x 24" deep can be used for up to 30 ton capacity. Confirm final requirements with code authority having jurisdiction.

END OF SECTION

SECTION 22 30 00 - PLUMBING FIXTURES AND TRIM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included:

1. This section describes certain components of domestic plumbing systems, including related specific requirements, products and methods of execution. Plumbing water, waste, vent piping and other primary distribution components of the plumbing system are included with related work specified elsewhere.

B. SPECIAL NOTE: All provisions and divisions of these specifications are a part of this section of these specifications. The Contractor shall consult these divisions and provisions in detail for instructions and include all items pertaining to this work. The Contractor shall consult all other divisions of these specifications, determine the extent of impact on the work required to complete the work required by this section of the specifications or portion thereof and related work shown on the drawings.

PART 2 - PRODUCTS

2.01 FLOOR DRAINS

A. All floor drains, including floor sinks, are to be the same size as the waste line size indicated on plans. If size is not indicated, drain size shall be 3". Floor drains that tie in to acid waste piping are to have acid resistant coating or be stainless steel. Floor Drains and Floor Sinks in kitchen areas are to have Acid Resistant Enamel coating or be constructed from stainless steel.

B. **PROVIDE TRAP PRIMING APPARATUS FOR EACH FLOOR DRAIN AND FLOOR SINK UNLESS NOTED OTHERWISE.** Whenever possible, use an inverted tee connection from sink tailpiece or device similar to Jay R Smith Prime-EZE for trap priming with gray water. Second choice is to use flush valve trap primer connection. As last resort, provide mechanical trap primer (Manufacturer: Precision Plumbing Products, “Oregon #1 or equal as required) connected to supply lines as small as possible, but never over 1-1/2” diameter. Provide minimum 12 x 12 access door or larger as required. When local jurisdiction (such as the City of Pflugerville, Tx.) does not approve the use of a standard mechanical trap primer (similar to Oregon #1) that activates from pressure differential and other methods are not practical, provide an electronic trap primer as last resort. Coordinate electrical requirements with electrical contractor. Proset “TRAP GUARD” device may be used in lieu of trap primers when allowed by local code authority having jurisdiction and building Owner. Before using Proset “TRAP GUARD” contractor must obtain written approval from local code authority having jurisdiction and provide copies to Architect and Engineer.

C. Trap primers must conform to ASSE 1018 or ASSE 1044.

D. Trap Primer Manufacturers: MIFAB, Precision Plumbing Products, Jay R Smith, Sloan, Zurn, Wade or Watts.

E. Floor Drain/Floor Sink Manufacturers: StainlessDrains, Kessel, MIFAB, Josam, Wade, Zurn or Jay.R. Smith, Watts.

2.02 ROOF DRAINS

A. Provide 30" square four pound lead flashing for all roof drains, centered around drain. Coordinate with type roof and Architectural Roof Plan and Architectural details. Roof drains to be installed in low point of roof. Verify low point in roof before installation. Roof drains to be moved at no additional cost to owner if not coordinated and installed in low point of roof to allow for proper drainage.

B. Where horizontal offset is not possible directly below drain connection, install an expansion joint directly under the drain. MIFAB R1900 Series.

C. All roof drains shall be same size as the rainleader piping size serving roof drain as indicated on the drawings.

D. Roof Drains:

RD-1 Primary roof drain, cast iron body, flashing collar, gravel stop, ductile iron dome, under deck clamp, extension and sump receiver. MIFAB R1200-M-E-U Series.

RD-2 Overflow roof drain same as RD-1, set inlet 2 inches higher than inlet of RD-1. MIFAB R1200-M-E-U-W. Coordinate and confirm final location with roofing consultant prior to rough-in.

E. Manufacturers: StainlessDrains ,MIFAB, J.R. Smith, Zurn, Josam, Wade, Watts or approved equal.

2.03 CLEANOUTS

A. Cleanouts shall be same nominal size of pipe lines up to four inches (4") and not less than four inches (4") for larger lines.

B. Floor Cleanouts: Gas and watertight seal, internal taper ABS cleanout plug, stainless steel or nickel bronze finish scoriated round top with countersunk screw for installation flush with finish floor. MIFAB C1100R-3 Series. If floor has a waterproof membrane then add C clamp ring flange.

C. Wall Cleanouts: MIFAB C1400-RD Series. Countersunk plugs, with smooth round access cover and polished stainless steel or nickel bronze finish.

D. Manufacturers: StainlessDrains, MIFAB, Josam, Zurn, Wade, Watts or approved equal.

E. Cleanouts that tie in to acid waste piping to be acid resistant.

2.04 FIXTURES

A. Manufacturers:

1. The fixtures are chosen from standard manufacturers.

2. Provide all similar fixtures and trim from one (1) manufacturer, except where specified otherwise.

3. Equality: The following manufacturers are considered equal, specified item(s) sets minimum standard for acceptability.

   a. **Fixtures:** American Standard, Crane, Eljer, Kohler, Elkay, Fiat, Sloan, Toto, Zurn, Caroma.

      1) All water closet bowls shall have fully glazed trap.

      2) All water closet bowls must meet MAP Testing (Maxim Performance Testing) at 1000 grams.

   b. **Faucets:** American Standard, Bradley, Elkay, Chicago, Sloan, Zurn, T & S Brass, Moen Commercial.

   c. **Stainless Steel Sinks:** Elkay, Bradley, Moen or Just.

   d. **Carriers:** MIFAB, J.R. Smith, Josam, Watts or Zurn.

   e. **Flush Valves:** Sloan Royal or equal by Zurn

   f. **Point of Use ASSE 1070 Lead Free Mixing Valves:** Watts, Powers, Bradley, Leonard, Lawler, Symmons or Moen.

   g. **Drinking Fountains/Electric Water Coolers:** Elkay, Acorn Aqua Surf, Oasis or Halsey Taylor, must meet NSF Section 9 in its entirety and meet TCEQ Certification Requirements. Provide letter with submittal data.

   h. **Wash Fountains**: Bradley, Wiloughby or Sloan Stone.

   i. **Wall Pipe Supports**: HoldRite or Equal

   j. **Acrylic Showers**: Crane, Lasco, Aquabath

   k. **Circulating Pumps**: TACO, Grundfos, Armstrong, Wilo

   l. Stainless Steel Skullery Sinks: Elkay, Bradley, Just, Advance Tabco, Griffin.

   m. Provide wall carriers for ALL wall-mounted fixtures, including wash fountains.

B. Traps, Stops and Supplies:

1. Provide traps, stops and supplies for all fixtures.

2. P-Traps: 17 gauge chrome-plated cast brass.

3. Supplies: Flexible, chrome-plated, 7538 Series.

4. Stops: Removable key type, 2302 Series.

5. Supplies and stops are to meet current requirements of NSF61.

6. Manufacturers: American Standard, Brass Craft, McGuire or equal.

C. Fixtures Specified Elsewhere, or Otherwise Furnished. Provide appropriate strainer, tailpiece, trap, waste and supplies. Rough-in and connect only.

D. Faucets:

1. All faucets except commercial kitchen and bar sinks are to meet ANSI/NSF Standard 61 and be listed by NSF as residential drinking water faucets.

2. All faucets not NSF 61 listed, (as described in paragraph 1) must have tin lined waterways or other such material so water flowing through the faucet is not in contact with any material that could allow “Leaching” of lead into the waterway.

3. Commercial kitchen and bar sinks are to meet ANSI/NSF Standard 61 and be listed as commercial faucets. Faucets meeting the stricter residential standards can be used at contractor’s option.

4. Faucets are not allowed to have more than the maximum total lead content as listed by NSF, TCEQ (Health and Safety Code) and EPA.

5. Any faucets which exceed lead concentration “Leaching” into water stream after a minimum of 45 days usage and proper flushing prior to testing shall be replaced by the manufacturer with an acceptable product. All costs of change out incurred will be sole responsibility of the manufacturer.

6. Lavatory faucets to have .5 GPM vandal resistant aerator.

E. Waterways and tanks for all drinking fountains and water coolers shall be constructed of 3. lead-free (0.00% lead) materials. All waterways to be totally free of lead. No lead solder is permitted. All drinking fountains and water coolers to meet latest criteria of TCEQ, EPA and be listed by NSF.

F. All water line, fittings and fixtures in contact with potable water to be “lead free” AB1953 compliant. (.25% or less average lead content). All submittals to state items comply in submittal package.

2.05 FIXTURE FLOW RATES

A. The maximum flow rates for plumbing fixtures are to be no greater than quantities listed below:

1. Toilets – 1.28 gallons per flush GPF) on all projects .

2. Urinals – 0.125 gallons per flush (GPF) on all projects

3. Lavatory (hand sink) – 0.5 gallons per minute (GPM) on all projects

4. Shower – 2.0 gallons per minute (GPM) on all projects

PART 3 - EXECUTION

3.01 Store all fixtures and trim above ground in a covered location not subject to accidental damage by traffic or other construction activities. Handle fixtures and trim carefully to avoid chipping, denting, scratching, or other damage. Replace damaged items with same item in new condition.

3.02 Provide permanent metal and wire positioners, supports and fixture carriers to secure fixtures and piping rigidly in proper alignment without sway or side play.

3.03 Anchor all fixtures securely to withstand applied vertical load of not less than 250 pounds on the front of the fixture, without noticeable movement.

3.04 Install all fixtures plumb, level and flush to the finished Architectural surface, so that the maximum gap between the fixture and the surface does not exceed 3/16 inch. **Grout** under water closets to level fixtures. Caulk the edge of the joint between fixture and surface with silicone or butyl type waterproof caulking compound.

3.05 Adjust all functional components for proper operation in accordance with manufacturer's recommendations, or as otherwise directed.

3.06 Clean all fixtures and trim thoroughly to spotlessly clean condition. Obtain a written certification from the Architect that this has been accomplished.

3.07 Where floor drains or janitor sinks are located over any room, provide waterproof installation.

3.08 Ensure final location of cleanouts have access and ample clearance at cleanout for rodding of drainage system. Check locations before installation. Contact Architect for alternate location if maintenance clearance is a problem. Cleanouts to be moved at no additional cost to Owner for failure to coordinate locations.

3.09 Coordinate slope of floors to floor drains with Architect. Adjust height of floor drain for proper drainage.

3.10 Provide all adapters, flanges, gaskets, etc. as required for proper installation of fixtures. Coordinate fixture placement before core drilling of floor or sleeve installation.

3.11 Insulate all exposed p-traps and water connections for handicapped lavatories with White “Truebro Handi Lav-Guard” Insulation Kit Model #102W (Use Model #105W when 5" offset strainer is used). (Phone: 203-875-2868), or equal products as manufactured by Brocar Products Inc., (Phone: 512-847-1524).

3.12 **No offset flanges will be allowed for installation of water closets.**

3.13 Install all trap priming devices per manufacturer’s installation instructions. Provide shut-off valves at each mechanical or electronic trap primer for service. Install minimum 12” x 12” access doors as required for service of trap priming devices.

3.14 Provide a floor sink with trap priming device in each sprinkler riser room.

3.15 Cleanout locations:

A. On each horizontal drain line 5 feet or greater in length.

B. No more than 50 feet on center.

C. At changes in director of 90 degrees or more (line size).

D. At the end of each continuous waste line.

E. At the end of each battery of fixtures.

F. At each sink and urinal.

G. Additional areas required for service and by code.

END OF SECTION

DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING

23 05 93 – TEST AND BALANCE
23 30 00 - AIR DISTRIBUTION

SECTION 23 05 93 – TEST AND BALANCE

PART 1 - GENERAL

1.01 DESCRIPTION

A. The section describes general requirements and methods of execution relating to the testing and balancing of the mechanical systems provided on this project.

B. Scope:

1. Furnish the services of a qualified and approved Testing and Balancing Agency to perform the work of this specification.

2. The work of this section includes, but is not necessarily limited to:

a. Testing and balancing all fans, all air handling systems, all energy recovery ventilators and makeup air systems.

b. Providing a final report. Final report to be submitted for review only after all deficiencies have been corrected and design CFM's are achieved.

C. SPECIAL NOTE: All provisions and divisions of these specifications are a part of this section of these specifications. The Contractor shall consult these divisions and provisions in detail for instructions and include all items pertaining to this work. The Contractor shall consult all other divisions of these specifications, determine the extent of impact on the work required to complete the work required by this section of the specifications or portion thereof and related work shown on the drawings.

1.02 APPLICABLE STANDARDS

A. SMACNA Manual for the Balancing and Adjustment of Air Distribution Systems.

B. AMCA Publication 203, Field Performance Measurements.

C. AMCA Standard 300-67, Test Code for Sound Rating.

D. National Environmental Balancing Bureau (NEBB) Recommended Procedures.

1.03 PRE-QUALIFIED AGENCY

A. Subcontractor Minimum Qualifications Include:

1. Maintain a complete service organization that has operated within a one hundred (100) mile radius of the project for at least three years prior to bid date of this project.

2. Demonstrate satisfactory completion of three projects of similar size and scope. Provide references if requested.

3. Bids by suppliers, Contractors or any firm not listed in #5 below are not acceptable.

4. Independent, NEBB certified agency with no affiliation to mechanical contractor.

5. Pre-qualified T & B Agencies are as follows:

a. Air Technologies (512)280-3398.

b. PHI (512)339-4757.

1.04 TIMING OF WORK

A. Do not begin testing and balancing until the systems are completed and in full working order.

B. Schedule the testing and balancing work in cooperation with other trades.

C. Complete the testing and balancing before the date of final project completion.

1.05 MECHANICAL CONTRACTOR RESPONSIBILITY TO BALANCING AGENCY

A. Award the test and balance contract to the approved agency upon receipt of contract to allow the Balance and Testing Agency to schedule this work in cooperation with other trades involved and comply with completion date.

B. Put all heating, ventilating, and air conditioning systems, equipment and controls into full operation for the Balancing Agency and continue the operation of same during each working day of testing and balancing.

C. Provide scaffolding, ladders and access to each system for proper testing and balancing.

D. Provide and change pulleys, belts and dampers, add any dampers and correct any installation errors in a timely matter as required for correct balance as recommended by the Balance and Testing Agency or as directed by the Architect after review of Balancing Report, at no additional cost to the Owner.

PART 2 - PRODUCTS

THIS PART NOT USED.

PART 3 - EXECUTION

3.01 INSTRUMENTS

A. Maintain all instruments accurately calibrated and in good working order. Use instruments with the following minimum performance characteristics.

B. Air Velocity Instruments: Direct reading in feet per minute, 2% accuracy.

C. Static Pressure Instruments: Direct reading in inches water gauge, 2% accuracy.

D. RPM Instruments: Direct reading in revolutions per minute, 1/2% accuracy; or revolution counter accurate within 2 counts per 1000.

E. Temperature Readout: Direct reading in degrees F., plus minus 0.1 degrees F.

3.02 GENERAL PROCEDURES FOR ALL SYSTEMS

A. In cooperation with the Contractor's representative, coordinate adjustments of automatically operated dampers and valves, including the controlling thermostats, to operate as specified, indicated, and/or noted.

B. Use manufacturer's ratings on all equipment to make required calculations.

C. MAKE FINAL ADJUSTMENTS FOR EACH SPACE PER HEATING OR COOLING COMFORT REQUIREMENT. State reason for variance from design cfm, i.e., “too noisy”, “too drafty”, etc.

D. Balancing to occur with clean filters when applicable and wet coils when applicable.

3.03 REQUIREMENTS FOR ALL AIR HANDLING SYSTEMS

A. Identify each diffuser, grille, and register as to specific location and area.

B. Identify and list size, type and manufacturer of diffusers, grilles, registers and all equipment tested.

C. In readings and tests of diffusers, grilles and registers, include required fpm velocity and required cfm and test cfm after adjustments. If test apparatus is designed to read cfm directly, velocity readings may be omitted. Identify test apparatus used. Identify wide open (W.O.) runs.

D. Adjust all diffusers, grilles and registers to minimize drafts and excess noise in all areas.

3.04 BALANCING LOW VELOCITY CONSTANT VOLUME DUCTWORK

A. Adjust the branch dampers so that each stale air exhaust inlet or outside air supply outlet in the system is a minimum of design airflow on all makeup air units and energy recovery ventilators.

B. All other HVAC systems on the project are to be adjusted as per ‘A’ above except to + or -10% of design airflow. **However, comfort cooling units are to be balanced to never exceed 410 cfm/ton or be less than 300 cfm/ton. Notify engineer if plans deviate from this CFM range. 5 ton units must be balanced to provide under 2000 CFM.**

C. Adjust the fan for design airflow.

D. Read and record the airflow at each return or exhaust inlet and each supply outlet. Balance as required.

E. Secure each branch damper and mark the balanced position of the damper quadrant.

3.05 FAN ADJUSTMENT

A. Balance ductwork before making final fan adjustment.

B. Verify that system is free of debris, that inlets and discharges are not obstructed, and that filters are clean.

C. Make pitot traverse of main ductwork to determine total airflow and record.

D. Adjust fan rpm to obtain design airflow.

E. Test and record motor amperage and voltage on each phase leg. Reduce fan rpm if necessary, so that motor running amperage does not exceed motor nameplate amperage. Record final amperage and voltage.

F. Record fan rpm.

G. Test and record system (suction) return and (discharge) supply static pressures.

H. Record airflow.

I. Test and adjust system for minimum design cfm outside air (intake and exhaust), as shown, where applicable.

J. Test and record entering air temperatures across coils and fans.

K. Test and record leaving air temperatures (heating and cooling) across coils

L. Test and record static pressure drop across each filter and coil bank.

M. Provide test data for each AHU, FCU, RTU, MAU, ERV, EF, SF, ETC., used on project:

1. Test and document operation of each MAU, RTU, AHU, CU, HP and FAN to insure that all pieces of HVAC equipment are functioning properly and are properly connected to the control system. Check in cooling, heating and emergency heating modes, if unit is so equipped.

3.06 BALANCING REPORT

A. Compile the test data and submit 8 copies of the complete test data for forwarding to the Architect for acceptance and/or analysis and recommendations. Report must be complete and all deficiencies corrected prior to submittal to architect.

B. Include a complete list of all test equipment used, including apparatus manufacturer's name, model number, serial number and date last calibrated.

C. Include complete identification of all elements. Identify by unit number, room name and number, air outlet symbol, etc., to clearly and positively identify the location of each element.

D. Include all test data specified in addition to test data recommended in the applicable standards referenced in Part 1. Tabulate all nameplate data at all balanced equipment and at the associated motors.

E. Tabulate data separately for each system. Describe balancing method used for each system.

F. Include at the front of the report a summary of problems encountered, deviations from design, resolution of problems, recommendations and comments.

END OF SECTION

SECTION 23 30 00 - AIR DISTRIBUTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Description: This section describes specific requirements, products and methods of execution relating to the project air distribution systems.

B. Provide all air distribution systems as shown and specified, complete in every detail and in perfect operating order.

C. All equipment warranties to be per Specification Section 20 00 00, 1.17.

D. SPECIAL NOTE: All provisions and divisions of these specifications are a part of this section of these specifications. The Contractor shall consult these divisions and provisions in detail for instructions and include all items pertaining to this work. The Contractor shall consult all other divisions of these specifications, determine the extent of impact on the work required to complete the work required by this section of the specifications or portion thereof and related work shown on the drawings.

1.02 Provide all air distribution work in accordance with the minimum provisions of the latest approved editions of the following codes and standards.

A. NFPA 90 A - Air Conditioning and Ventilating Systems.

B. NFPA 90 B - Warm Air Heating and Air Conditioning.

C. SMACNA - Low Velocity Duct Construction Standards.

D. TIMA - Fibrous Glass Duct Construction Standards.

E. SMACNA - Duct Liner Application Standard.

F. SMACNA - Ducted Electric Heat Guide.

G. AMCA Standard 210-74 Laboratory Methods of Testing Fans for Rating Purposes.

H. AMCA Pub. 261 Directory or Products Licensed to Bear the AMCA Certified Rating Seal.

I. AMCA Standard 300-67 Test Code for Sound Rating.

J. AMCA Standard 301-65 Method of Publishing Sound Ratings for Air Moving Devices.

K. AMCA Publication 511-75 Certified Ratings Program for Louvers, Dampers and Shutters.

L. ASHRAE Standard 52-76 Method of Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter.

M. ASHRAE Standard 70-72 Method of Testing for Rating the Air Flow Performance of Outlets and Inlets.

1.03 Where any references to “sheetmetal work” or “ductwork” appears in this section of these specifications or on the drawings, it shall be construed to include outside air ducts, supply air ducts, return air ducts, exhaust ducts, relief ducts, plenums, duct taps, grille taps, diffuser connections and all other related pieces and parts of the air conveying systems.

1.04 Before starting shop drawings or fabrication of any duct work, the Contractor must have an approved reflected ceiling plan with which he can coordinate location of air outlets, lights, grille patterns, etc.

PART 2 - PRODUCTS

2.01 FANS

A. General Requirements for All Fans:

1. All fans constructed to AMCA Standards, AMCA listed and labeled.

2. Bearings:

a. At factory assembled package units 1HP and larger, provide 200,000 hour bearings (AFBMA L-50) selected at maximum fan rpm.

b. At packaged equipment 3/4HP and smaller, provide manufacturer's standard bearings.

c. Arrange equipment for easy access to lubrication fittings. Provide extended grease lines whenever easy access is not possible.

3. Balance fans statically and dynamically at factory.

4. Factory paint fan housing, fan wheel (except aluminum), frame and support brackets with prime coat and enamel finish coat at factory, after properly preparing surfaces.

5. Arrange fans to be cleanable and so that wheel, bearings, shaft, and drive are removable. Provide plug type cleanout doors or split fan housing. Gasket joints and bolt airtight.

6. Provide vibration isolation for all fans per manufacturer's recommendations.

7. Assemble fans at factory and test with permanent motor for proper operation, alignment and balance.

8. **All fans are to be of similar size and operational characteristics as fans scheduled. Smaller fans run at higher speeds will not be accepted.**

B. Belt Drives (All Belt Driven Fans):

1. Provide V-belt drive with sufficient belts to prevent slipping at start-up. Select drive for 1.5 service factor.

2. On each fan 10HP and smaller, provide variable pitch drive sheave with infinitely adjustable pitch diameter. Select drive sheave and fan pulley combination to provide fan rpm with drive adjusted to near mid-span.

3. On each fan 10HP and larger, provide a fixed speed drive sheave. Change fan and drive sheave in field to attain specified air delivery at completion of balancing.

4. Provide belt guard with hinged tachometer cap.

C. Roof Mounted Exhaust Fans:

1. Direct drive or have adjustable pitch v-belt AS SCHEDULED.

2. Wheels shall be backward curved and housing shall be removable or hinged aluminum.

3. Isolate motor with vibration dampeners.

4. Provide with motorized backdraft dampers unless gravity backdraft dampers are specifically listed on schedule. Damper actuator voltage to match fan voltage. Electrical Contractor to tie damper in to fan power.

5. Insulated, pre-fabricated metal roof curb shall be for flat or sloped roof as required for fan to be set level on roof.

6. Provide with galvanized bee screen.

7. Maximum motor rpm is not to exceed scheduled rpm by more than 50 rpm.

8. Provide with 12” high roof curb to match roof slope. Curb to minimum of 12” above finished roof.

9. Manufacturers: Greenheck, Acme, ILG, Penn, Briedert, Carnes and Twin City.

D. Ceiling Exhaust Fans:

1. Centrifugal wheel with inlet perpendicular to, or remote from, inlet grille. Acoustically insulated housing.

2. 85% free open area grille.

3. Electrical junction box on fan housing with cord, plug, and receptacle inside housing.

4. Fan, motor and wheel assembly removable through grille without disturbing housing.

5. Motor mounted on rubber-in-sheer isolators, grounded, maximum rpm shall not exceed scheduled rpm by more than 50 rpm.

6. Unit supplied with grille when indicated by model number scheduled.

7. Provide and install roof cap or wall cap as shown.

8. Unit UL labeled.

9. Integral backdraft damper, shatterproof, with no metal to metal contact.

10. Manufacturers: Greenheck, Acme, ILG, Penn, Briedert, Carnes and Twin City.

2.02 FAN ACCESSORIES

A. Flexible Fan Connectors:

1. Provide at inlet and discharge of each fan, ERV, MAU, air handling unit, etc.

a. For Standard Application:

1) Material suitable to withstand the pressure encountered. Constructed from coated heavy glass fabric, flameproof and ozone resistant. Joints to be sealed airtight. Minimum of 3" flex connection to be used.

2) Manufacturer: Duro-dyne Corporation "EXCELON" or equal.

b. For Outdoor Installations and Where Duct is Exposed to Toxic Fumes:

1) Material suitable to withstand the pressure encountered. Constructed from heavy glass fabric, double coated with "Neoprene", non-combustible and fire retardant. Fabric to be waterproof and airtight. Minimum of 4" flex connection to be used.

2) Manufacturer: Duro-dyne Corporation Duralon or equal.

2. Insulate over flex connection at inlet and discharge of all air handling units and rooftop units with minimum two inch (2") Type "C" insulation with minimum installed "R" value of 6.0. Seal termination of external insulation to ductwork with Childers CP-11 mastic with 3" glass fiber reinforcing mesh. Do not seal over any access panels.

2.03 DUCTWORK

A. Low Velocity Ductwork Systems:

1. Definition: Ductwork systems where duct pressures do not exceed 2" W.G. maximum static pressure and duct velocity does not exceed 2000 FPM. **Minimum duct gauge to be 26 gauge.**

2. All ductwork connected to louvers is to be sloped back to louver to insure that any water entering the duct drains back to the exterior of the building.

3. Ductwork Construction:

a. Ductwork, unless otherwise specified herein, shall be constructed of new, prime grade, continuous hot dip mill galvanized, lock forming quality steel sheets and shall have a galvanized coating of 1-1/4 ounces total for both sides per square foot. The gauges of metal to be used and the methods of duct construction shall conform to the requirements for the class of work involved as set forth in the latest edition of "Standard Practice in Mechanical Sheet Metal" as published by SMACNA. Each sheet shall be stenciled with the gauge and manufacturer's name. If coil steel is used, coils shall be stenciled throughout on ten foot (10') centers with the gauge and manufacturer's name. Insulate per Specification Section 20 07 00.

b. All dimensions are inside clear dimensions. Sheet metal size shall be increased to allow for duct liner where applicable.

c. Seal all transverse joints, seams and fitting connections with "Ductmate Proseal", Childers CP-146 or Foster 32-19, UL listed Mastic to prevent air leakage. Oil base caulking and glazing compounds are not acceptable. Duct sealant must meet VOC units per South Coast Air Quality Management District (SCAQMD) Rule #1168.

4. Rectangular Ducts:

   a. Where special rigidity or stiffness is required, construct ducts of metal two gauge numbers heavier.

   b. Ducts larger than 96” require special field study for gauging and supporting and supporting methods. (Furnish shop drawings for supporting and construction requirements.)

   c. Rectangular low pressure ducts shall be constructed, braced and reinforced in accordance with Sheet Metal and Air Conditioning Contractors National Association (SMACNA).

5. Round Ducts:

   a. Construct round ducts from steel sheets, U.S. Gauge thickness, per SMACNA standards.

   b. All exposed round ducts shall be double wall spiral duct per SMACNA standards with segmented fittings regardless of size.

   c. Supply, return and exhaust duct runouts to/from air device shall be gauges as follows:

      1) up to 12” diameter 30 gauge,

      2) 14” to 18” diameter 28 gauge, and

      3) 20” to 22” diameter 26 gauge.

      Provide minimum 26 gauge, 1” wide strap on heal and throat of adjustable fitting to provide additional rigidity.

6. Transitions:

   a. Provide tapered transitions at changes in duct size and at connections to fans and other equipment.

   b. Offset not more than 20^{o}, on diverging flow and 30^{o} on contracting flow, unless called for otherwise on drawing.

7. Elbows and Turning Vanes:

   a. Use long radius, 45^{o} and 90^{o} fittings for all elbows and at tees, unless otherwise shown or space restrictions dictate use of square elbows.

      1) Construct fittings with centerline radius equal to 1-1/2 times the duct width at the turn.

      2) Where square vaned elbows are used, provide access doors as detailed below.

   b. Turning Vanes: In all 90^{o} turns in supply air ducts where 1-1/2 radius elbows cannot be used, install double radius turning vanes in square elbows.

1) Ducts 19" and Smaller: Use small double vanes with an inner radius of two inches (2") and an outer radius of one inch (1") mounted on 3/4" center.

2) Duct 19" and Larger: Use large double vanes with an inner radius of four inches (4") and an outer radius of two inches (2"), mounted on three (3) 1/4" centers. Provide sound reduction type turning vanes: "Airsan" Acoustiturn, by Air Filter Corporation, "Sone-Turn" by Sound Control Products Company, per SMACNA Plat 22, or equal.

3) Provide 12" x 12" insulated access door into duct on both sides of each vaned fitting to facilitate duct cleaning.

8. Flexible Duct:

a. Do not use flexible duct except where specifically called for on the plans.

b. At diffuser connections:

1) Provide duct listed as UL-181 Class I air duct, and constructed in compliance with NFPA 90A.

2) Minimum length 4 feet, maximum length 5 feet for supply ducts. Minimum length 4 feet, maximum length 5 feet for return air ducts. Install with not more than one (1) 90 full radius degree bend. Minimum and maximum lengths are to be closely followed since the flex duct acts as the main source of sound attenuation in the air system. Install with some slack in runout.

3) Make joints with Nashua brand UL181A-P Duct Tape (Venture #1599B or Shurtape #PC857) and two (2) 1/2" wide positive locking straps, one on inner core and one on outer jacket. Use Panduit straps.

4) Minimum sound net insertion loss for duct as follows:

BAND, HZ	125	250	500	1000	2000
Loss dB/ft.	2.1	3.0	2.7	3.0	2.7

5) Submit sound and construction data for proposed alternates.

6) Tough vapor barrier reinforced metalized polyester jacket, tear and puncture resistant.

7) Airtight inner core with no fiberglass erosion into airstream.

8) **R-Value: 6.0 @ 75ºF. mean temperature if within building insulation envelope, or R-value of 8.0 if outside building insulation envelope.**

c. Do not use flex duct on exhaust systems.

d. Manufacturers: **Atco 36 Series**, Certainteed, Thermoflex, Wiremold, Genflex, approved equal.

B. Entire interior of ducts shall be thoroughly cleaned of all oil residue and dust prior to installing.

2.04 DUCT ACCESSORIES

A. Air Volume Controls:

1. Provide air volume dampers, or other control devices, at each low pressure duct main and branch for a balancer to adjust the system to produce the air quantities shown.

a. Provide opposed blade damper for balancing in each zone duct for HETD. Locate downstream of first elbow in accessible location and indicate location on record drawings.

2. Volume Dampers:

a. Flat sheet, single leaf damper with a continuous rod; damper leaf two (2) gauges (minimum 16 gauge) heavier than the duct where installed. Provide locking quadrants with indicators located accessible without demolition.

1) Use for supply, return and exhaust ductwork 14” round or 14” x 14”.

b. The locking-type quadrant operators for dampers, when installed on ducts to be thermally insulated, shall be provided with **stand-off mounting brackets, bases or adapters to provide clearance, between the duct surface and the operator, not less than the thickness of the insulation.** Stand-off mounting items shall be integral with the operator or a standard accessory of the damper manufacturer. All volume dampers indicated shall be provided with stand-off mounting brackets as required.

c. All operators accessible and lockable. Do not insulate over top of volume damper operator handle.

d. Locate dampers a minimum of 4 feet from diffusers.

3. Extractors:

a. Combination air straightening vanes and volume control with locking quadrant on outside or accessible through face of register.

b. Manufacturer: Titus AG-45 or approved equal.

c. Provide extractors at supply grilles attached directly to any main or branch duct serving more than one (1) grille.

4. Splitter Dampers:

a. Construct damper using sheetmetal blade hinge mounted inside duct.

b. Dampers or splitters shall be constructed from the same gauge metal as the ducts which they serve with a minimum of 22 gauge. Splitter length shall be 1-1/2 times the duct width up to 24" in size and above 24" in size shall be 1-1/4 times the duct width.

c. Attach Duro-dyne SRP-40 series splitter damper bracket to blade.

d. Connect 1/4" steel rod to damper bracket and extend through Duro-dyne SRP-14 ball joint damper casting mounting on outside of duct. Use 3/8" steel rod for splitter in ducts above 24" in size.

e. Install assembly for full swing of damper blade. Lock damper in proper position.

5. Opposed Blade Dampers:

a. Provide opposed blade balancing dampers with multiple blades equal to Greenheck VCD-15, 20 gauge frame and 16 gauge blade construction with synthetic axle bearings and 1/2" diameter operator, complete with 1" stand-off and manual locking quadrant as follows:

1) Use for outside air ductwork. Minimum damper size is actual duct size or 10" x 10" whichever is larger. Provide transitions as required.

2) Use for supply, return and exhaust ductwork - 14" round or 14" x 14" and larger.

b. Damper material is to match ductwork material. (i.e., galvanized aluminum, stainless steel, etc.)

B. Gravity Backdraft Dampers:

1. Provide backdraft dampers counter balanced to desired static pressure setting. Wide open static pressure drop not to exceed 0.15" W.G.

2. Damper blades aluminum with felt applied to tops of blades. Where dampers are exposed to outside temperature, provide neoprene edged blades.

3. Damper frames extruded aluminum; nylon bearings.

4. Assembly designed for operation at 20^{o}F.

C. Access Panels and Doors:

1. Low Velocity System Access Panels:

a. Sheetmetal doors reinforced, cross-bracketed or otherwise stiffened to prevent rattle or vibration.

b. Seal doors airtight with felt edged gaskets.

c. Secure with hinges and sash locks.

d. Panels and doors for insulated duct systems are to be insulated.

2.05 GRILLES, REGISTERS AND DIFFUSERS

A. Provide grilles, registers, and diffusers of the types and sizes called for on plans and in schedule on drawings.

B. Finish with factory applied finish for extruded aluminum items, and with a prime coat for steel items. (Provide an additional factory baked enamel finish to match ceiling grid.) (Submit color sample for approval.)

C. Equip diffusers with panels of the proper size to match the suspended ceiling layout or with the proper frame for surface mounting. Fully correlate diffuser and grille style, dimension and fit with ceiling.

D. Manufacturers: Price, MetalAire, Titus, Tuttle & Bailey, Krueger, Anemostat, Carnes

E. All air devices located in damp areas are to be constructed from all aluminum components.

F. Provide minimum 12” deep externally insulated boot for sidewall type supply air devices.

G. Provide square to round transitions as required.

H. Provide minimum 12” deep (top duct tap) or 24” deep (side duct tap) externally insulated boot for return air and transfer air devices.

I. Provide minimum 12” deep boot for all exhaust devices.

2.06 LOUVERS AND HOODS

A. Provide air exhausts through building skin, as shown.

B. Louvers:

1. Size as shown; air pressure drop not to exceed 0.15” W.G. when handling 1150 FPM per square foot of free area.

2. Water penetration not to exceed .02 oz. per sq. ft. when handling 1150 FPM per square foot of free area.

3. 4” deep drainable louver constructed of .125” thick 6063-T52 extruded aluminum alloy with channel frame.

4. Provide with 1/8” X 1/8” galvanized hardware cloth bee screen.

5. Finish to be factory primed for field painting or applied .7 mil thick anodized dark bronze as directed by Architect.

6. Manufacturers: Greenheck ESD-403, Arrow, Carnes, Greenheck, Ruskin, Empco, Pottorff, or approved equal.

7. Any plenum or ductwork attached to louver is to slope to drain back through louver to exterior of building.

C. Hoods:

1. Construction of heavy duty aluminum sheets with rolled interlocking seams with galvanized hood support members, similar to Greenheck Fabrahood or equal.

2. Provide with bee screen on outside air intake hoods and 1/4" x 1/4" galvanized bird screen on relief hoods.

3. **Curbs are to be a minimum of fourteen inches (14") high above finished roof surface and match slope of roof.**

4. Manufacturers: Greenheck, Acme, Penn, Cook, Briedert and Carnes.

5. Provide 120 volt motorized damper.

2.07 AIR FILTERS

A. General:

1. All air filters to be listed as Class 2 by Underwriters Laboratory, Inc., Building Materials Directory.

2. All arrestance, efficiency (dust spot efficiency on atmospheric air) and dust holding capacities specified are to be in accordance with ASHRAE Standard 52-76.

3. Performance characteristics are to be verified by certified data published in manufacturer's literature or by copies of current test data from an independent authorized test laboratory. Test data, where required, shall be an integral component of the manufacturer's submittal data.

4. Provide and install one (1) clean set of filters in all air moving units that require filtration at completion of project.

B. Disposable Panel Filters (for return air filter grilles and/or unit filter racks):

1. Media: Non-woven, lofted cotton bonded to 96% free area welded wire support grid. Not less than 2.45 square feet media area per square foot of filter face area. Arranged in radially pleated configuration and bonded continuously to inside perimeter of high wet-strength beverage board cell sides.

2. Cell Design: Two inches (2") deep with beverage board diagonal supports at entering air and leaving air faces of each cell.

3. Air Cleaning Performance: Minimum 25-30% efficiency 90-92% arrestance, MERV-7.

4. Initial Resistance: 0.2" W.G. at 500 fpm face velocity.

5. Dust Holding Capacity: Not less than 200 grams when operated at 500 fpm face velocity to a final resistance of .9 W.G.

6. Manufacturers: Cam-Farr Company Aeropleat II; AAF or approved equal.

C. Temporary Filters:

1. Reference 20 00 00, 1.18 for temporary filter requirements.

2.08 FIRE DAMPERS

A. Provide and install all fire dampers in all ductwork which passes a fire wall or fire rated ceiling as required by local building and fire safety codes.

B. All dampers folding blade type with no part of blade in the air stream.

C. All fire dampers UL approved and of type required by NFPA 90A.

D. Install all fire dampers per manufacturer's instructions. Installation detail must be submitted with damper submittal. **Post detail at job site in area of building permit.**

E. Provide UL rated sleeves and manufacturer supplied wall angles with damper.

F. Provide four additional fire dampers to be sized and installed as directed by Architect.

G. Manufacturers: Ruskin, Air Balance, Arrow, Greenheck, Nailor or approved equal.

2.09 FIRE/SMOKE DAMPERS

A. Provide and install all fire/smoke dampers in all ductwork which passes through a smoke wall and/or any rated egress pathways, as required by local building and fire safety codes and as indicated on the drawings.

B. All dampers shall have qualified electric operators.

C. All dampers UL approved and of type required by NFPA 90A.

D. Install all dampers per manufacturer's instructions. Installation detail must be submitted with damper submittal. **Post detail at job site in area of building permit.**

E. All dampers shall have a UL555S leakage classification of II.

F. Provide UL rated sleeves and manufacturer supplied wall angles with damper.

G. Provide four additional fire/smoke dampers to be sized and installed as directed by Architect.

H. Manufacturers: Ruskin, Air Balance, Arrow, Nailor, Greenheck or approved equal.

2.10 CORRIDOR CEILING FIRE SMOKE DAMPER

A. Provide and install appropriate corridor ceiling fire smoke dampers in all air devices located in ceiling portion of fire rated floor/ceiling and/or roof ceiling assemblies.

B. Damper must be classified as a **Corridor Ceiling Fire Smoke Damper**.

C. All dampers must be UL approved and of the type required by NFPA 90A.

D. Provide two (2) additional corridor ceiling fire smoke dampers to be located and sized as directed by the Architect.

E. Install per manufacturer's recommendation, submit detail. **Post detail at job site in area of building permit.**

F. Manufacturers: Ruskin, Air Balance, Arrow, Nailor, Greenheck or approved equal.

2.11 CEILING FIRE DAMPER

A. Provide and install appropriate ceiling fire dampers in all air devices located in ceiling portion of fire rated floor/ceiling and/or roof ceiling assemblies.

B. Damper must be classified as a **Ceiling Fire Damper**.

C. All dampers must be UL approved and of the type required by NFPA 90A.

D. Provide ten (10) additional fire dampers to be located and sized as directed by the Architect.

E. Install per manufacturer's recommendation, submit detail. **Post detail at job site in area of building permit.**

F. Manufacturers: Ruskin, Air Balance, Arrow, Nailor, Greenheck or approved equal.

PART 3 - EXECUTION

3.01 LOW VELOCITY DUCTWORK

A. Provide ductwork in accordance with SMACNA low velocity standards.

B. Provide backdraft dampers for all exhaust fans if motor operated dampers are not called for. Provide one inch (1") mesh bird screen at all exhaust discharges.

C. Seal all transverse joints, seams and fitting connections with KINGCO 11-376 "Super Seal" or "Ductmate Proseal", U.L. listed.

D. Where ducts, exposed to view, pass through walls, floors or ceilings, furnish and install sheetmetal collars to cover the voids around the duct.

E. This work shall be guaranteed for a period of one (1) year from and after the date of acceptance of the job against noise, chatter, whistling or vibration and free from pulsation under all conditions of operation. After the system is in operation, should these defects occur, they shall either be removed and replaced or reinforced as directed by the Owner.

F. Duct shall be erected in the general locations shown on the drawings, but must conform to all structural and final conditions of the building. Before fabricating any ductwork, the Contractor shall check the physical conditions at the job site, and shall make all necessary changes in cross sections, transitions, offsets, etc., whether they are specifically indicated or not at no additional charge to the Owner.

G. Reinforce all ducts to prevent buckling, breathing, vibration or unnecessary noise, such reinforcing to be as recommended in the SMACNA manual plus any additional reinforcing as may be required to meet job conditions.

H. Provide manually operated volume control dampers (with stand-off mounting brackets for externally insulated ductwork) in all branches, splits and taps for proper balancing of air distribution, whether shown on drawings or not, dampers to be either single blade or multi blade as shown in the SMACNA manual as required. They shall incorporate an indication device with lock to hold damper in position for proper setting.

I. Damper operators in all unfinished areas shall be Young Series 400 of the exact style, type and size required. All other operators shall be Young #315 and/or #896 opposite end from the operator. Where dampers are installed in ducts located above accessible type ceilings, damper operators shall not be extended through the finished ceiling.

J. All square elbows shall have turning vanes per the SMACNA manual requirements.

K. Where ducts connect to fans, including roof exhausters, flexible connections shall be made using “Ventglas” fabric that is fire-resistant, waterproof, mildew-resistant and practically air tight, and shall weigh approximately thirty ounces per square yard. There shall be a minimum of two and one-half inches (2-1/2”) distance between the edges of the ducts. There shall be a minimum of one inch (1”) of slack for each full inch of static pressure on the fan system.

L. Furnish and install screens on all ducts, fans, etc. furnished by the Contractor which lead to, or are outdoors. Screens shall be 16 gauge, three-eighths inch (3/8”) mesh in removable galvanized steel frames.

M. All holes in ducts for damper rods and other necessary devices shall be either drilled or machine punches (not pin punches), and shall not be larger than necessary. All duct openings shall be provided with sheetmetal caps if the openings are to be left unconnected for any length of time. All panels of ducts twelve inches (12”) and larger shall be cross broken.

N. Furnish and install a minimum 16 x 16 x 2 internally insulated (foil facing to airstream) filter rack with a hinged type access door with cam or spring lock and filter in all unfiltered raw outside air ducts that connect directly to return air plenums.

O. **All ductwork that is connected to any exterior louver or wall cap, etc. shall be sloped to drain outside.**

3.02 DUCTWORK SUPPORTS

A. Support all ductwork to prevent sag, undue play, and swing. All horizontal ducts shall have a support within 2’ of each elbow and within 4’ of each branch intersection. Provide a hanger within twelve inches (12”) from unit supply and return. Return air plenums on back of air handling units must have a minimum of four (4) support straps.

B. Low Pressure Ductwork:

1. Duct 40” and Less: Provide with 1” x 18 gauge straps fastened to ductwork, and to building construction. Space not more than eight feet (8’) on center. Hanger straps shall lap under duct a minimum of one inch (1”) and have a minimum of one (1) fastening screw on the bottom and two (2) on the side.

2. Ducts Over 40”: Provide mild steel threaded rods fastened to angle iron supports under duct with nuts and to building construction with appropriate inserts, flanges or clamps. Space not more than four feet (4’) on center with rods and angle supports as follows:

Angle Length	Angle	Rod Dia.
4'-0"	1-1/2" x 1-1/2" x 1/8"	1/4"
6'-0"	2" x 2" x 1/8"	1/4"
8'-0"	2" x 2" x 1/8"	3/8"
10'-0"	3" x 3" x 1/8"	3/8"

C. Vertical ducts supported where they pass through the floor lines with 1-1/2" x 1-1/2" x 1/4" angles.

D. Recommend methods of fastening bracing to ductwork, including riveting, bolting and tack welding.

E. All flex duct runouts must be properly supported. Use minimum twelve (12) gauge wire with 8" long saddle that fits up to mid point of duct for support of flex duct. **Web Type fabric duct support is strictly prohibited**. Maximum permissible sag is 1/2" per foot of spacing between supports.

F. Provide 1" x 20 gauge straps, minimum 8' - 0" o.c. for all round sheetmetal runouts that are 18" in diameter or less (except Spiral Ducts).

G. Spiral ductwork is to be supported with 2" x 18 gauge strap bands around duct with a 3/8" bolt and nut connection at top. Connect to structure with minimum 3/8" all thread rods, minimum 8'-0" o.c.

3.03 ACCESS

A. Furnish all fans with consideration of location of motor and drive.

B. Furnish and install in the ductwork, hinged access doors to provide access to all manual and automatic dampers, fusible links, cleaning operations, etc. Where the ducts are insulated, the access doors shall be double skin doors with one inch (1") of insulation in the door. In rectangular ducts larger than twenty inches (20") in their smallest dimension, install access doors every twenty feet (20'). Where the size of the duct permits, the doors shall be eighteen inches (18") by sixteen inches (16"). Factory fabricated doors as manufactured by Milcor meeting these specifications will be acceptable. Access doors shall be submitted for approval.

C. Each fire damper door shall have a label with letters not less than 1/2" in height reading **"Fire Damper"**, **"Corridor Ceiling Fire Smoke Damper"** or "**Fire/Smoke Damper"** (as applicable).

D. Cycle damper after installation to insure free movement. Seal opening around fire damper with non-combustible material to maintain integrity of one (1) hour fire wall.

E. Provide access door in supply air and return air drops from rooftop units, Access door to be in accessible location directly above first elbow. Access doors to be 18" X 18" minimum where duct size allows. Access doors shall be shown on ductwork shop drawings.

F. Provide access doors for maintenance inspection and cleaning in each zone duct for HETD. Locate downstream of first elbow in accessible location and indicate location on record drawings.

3.04 Fully coordinate and work directly with the Balancing and Testing Agency to provide all systems in perfect operating order. Make corrections and adjustments as required by the Balancing and Testing Agency in a timely manner.

3.05 For Each Dryer: Provide 4" diameter or 5" x 3" rectangular flue pipe up through the wall and ceiling cavity and terminate into Briedert Cap. Provide transitions as required. Provide 4" diameter tie in point for residential type dryer or stacked washer dryer as required.

3.06 **CAP OPEN ENDS OF ALL DUCTS (INCLUDING SPIN-INS) AND EQUIPMENT WITH MINIMUM FOUR (4) MIL. PLASTIC TO PREVENT CONSTRUCTION DEBRIS AND DUST FROM ENTERING OPENINGS AT ALL TIMES DURING CONSTRUCTION.**

END OF SECTION

DIVISION 26 - ELECTRICAL

26 05 00 - GENERAL PROVISIONS
26 05 10 - SCHEDULE OF VALUES
26 05 19 - WIRE AND CABLE
26 05 26 - GROUNDING AND BONDING
26 05 29 - HANGER AND SUPPORTING DEVICES
26 05 33 - RACEWAYS
26 05 34 - OUTLET BOXES, PULL BOXES AND JUNCTION BOXES
26 05 80 - EMPTY RACEWAY ROUGH-IN
26 15 00 - ELECTRICAL DEMOLITION FOR REMODELING
26 24 16 - BRANCH CIRCUIT PANEL BOARDS
26 27 26 - DEVICES
26 51 00 - INTERIOR LIGHTING SYSTEM

DIVISION 26
WILLIAMSON COUNTY
JUSTICE CENTER - CSCD
ELECTRICAL SPECIFICATIONS

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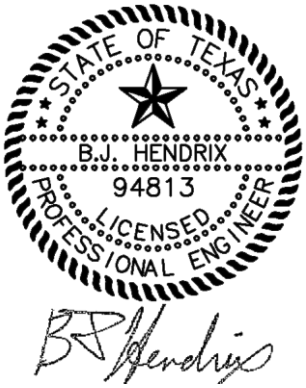
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F-4095

SECTION 26 05 00 - GENERAL

PART 1 - GENERAL

1.01 SCOPE OF WORK

Unless otherwise specified, provide all labor, equipment, supplies, materials, superintendence and testing necessary for the installation of complete electrical systems as required by these specifications and as shown on the Drawings, subject to the terms and conditions of the contract. Complete such details of electrical work not mentioned or shown which are necessary for the successful operation of all electrical systems described on the Drawings. Include empty conduits as required for all special systems and power for condensate pumps and HVAC control panels as required by the Mechanical Contractor. Field coordinate exact locations.

A. Submit a bid on the basis of a complete installation, including all labor, material, cartage, insurance, permits, associated fees and taxes.

B. Include temporary electrical power and lighting that will be required for the interior of the buildings. Provide lighting to satisfy OSHA requirements and the NEC.

C. All Agreement Forms, General Conditions, Supplementary Conditions, and Division 1 of the specifications shall apply to the work specified in Division 26-28.

D. Additional Site Visit Costs: The Contractor shall be charged with any cost resulting from uncompleted items that require additional site trips by the Architect/Engineer.

E. No attempt has been made to show complete design details of building construction on the Electrical plans. Refer to Architectural, Structural and Mechanical plans for additional details which will affect electrical work. No extra cost will be allowed for offsets in conduit and wiring to avoid other work or when minor changes are necessary to facilitate installation or maintenance.

F. Electrical Contractor is to provide all parts and labor to make final connections to all equipment shown in contract documents. Power may be shown in general location, it is expected that Electrical Contractor coordinate final locations for rough-in and connection requirements with exact equipment being installed. These items include but not limited to book security, exhaust fans, kilns, hand dryers, sensor operating plumbing devices, overhead doors, powered curtain, fire alarm door hold opens, etc.

G. NO TOXIC NOR HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO PRODUCTS OR MATERIALS CONTAINING ASBESTOS, PCB AND LEAD SHALL BE PROVIDED OR INSTALLED.

H. REMODEL WORK: COORDINATE ALL CONNECTIONS OF NEW EQUIPMENT WITH EXISTING SERVICES. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL EQUIPMENT, MATERIALS AND INCIDENTAL ITEMS REQUIRED TO MAKE SYSTEM COMPLETE AND OPERABLE.

I. AN EXTRA COPY OF ALL FIELD REPORTS SHALL BE KEPT IN A SEPARATE NOTEBOOK. CONTRACTOR TO SET UP IN THE CONSTRUCTION MANAGER'S TRAILER. THESE REPORTS SHALL BE USED FOR CONTRACTOR TO CHECK THAT EACH INDIVIDUAL ITEM NOTED HAS BEEN COMPLETED. ALSO KEEP LOG OF WHERE EXTRA RECEPTACLES AND OUTLET BOXES CALLED OUT IN 26 27 26, 3.01 AND 26 05 80, 2.01. ARE INSTALLED.

J. Electrical Contractor shall use Fire Alarm Contractor's Shop Drawings and Rough-In details on drawings for rough-in of all fire alarm devices. Any devices not roughed-in according to Fire Alarm Shop Drawings and drawing details shall be relocated at no cost to Owner.

K. Sensor Operated Plumbing Devices: Plumbing Contractor to provide transformers from manufacture. Electrical Contractor to provide all other electrical materials and labor to provide complete and workable device. This includes but is not limited to receptacles for plug in transformers, line voltage wire/conduit for direct connect low voltage transformers, all low voltage plenum rated 16 gauge wire.

L. **Cad Drawings:**
Architectural Background Files – **Architectural Files are background files, MEP drawings are not background files.** To insure the most current Architectural files are used for shop drawings backgrounds, they must be obtained from the architect and cannot be given from the engineer. Reference Architect for cost of Architectural Files.

MEP Drawings – These drawings cannot be used for shop drawings, as they are diagrammatic in nature only. Actual shop drawings prepared by sub-contractors must be used for coordination between all trades. If MEP floorplan files are requested they may be obtained with a signed confidentiality release form, only as outlined below. These files may be used in conjunction with this project only. There are no guarantees of compatibility or accuracy; all technical support will be billed hourly at current Engineer's Rates. Engineer does not charge for actual file, but does charge for time required to prepare the files in format as requested by the Contractor. Fees will be based on Engineer's current hourly rates. Deposit of $500 must be paid prior to beginning file preparation and balance must be paid prior to release of any files. Total fee based on actual time required by Contractor's request. See submittal and shop drawing section for additional information.

MEP CAD Files that will be released.
- If no Architectural RCP is available for light locations. Lighting Floorplans will be released.
- Mechanical Floorplan will be released to Mechanical Contractor for aid in production of his own shop drawings. HCE mechanical drawings may not be submitted as shop drawings.
- Fire Alarm/Fire Sprinkler/Intercom etc… Contractors must use Architectural Revit Models and CAD files for backgrounds and Architectural RCP's (when available or lighting floorplan) and **Mechanical Contractor Shop Drawings** for coordination purposes. This must be obtained from Architect. Engineer may not release architectural drawings.

M. The Contractor binds himself, his partners, successors, assigns and legal representatives to the Owner hereto in respect to all covenants, agreements and obligations contained in the Contract Documents. The Contractor shall not assign the Contract or sublet it as a whole without the written consent of the Architect/Owner, nor shall the Contractor assign any monies due or to become due to him hereunder, without the previous written consent of the Owner/Architect.

N. The Contractor shall supervise and direct the Work using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, safety, sequences and procedures and for coordinating all portions of the Work under his Contract.

O. The Contractor shall provide, without extra charge, all incidental items required as a part of the Work, even though not particularly specified or indicated, and if he has good reason for objecting to the use of a material, appliance, or type of construction shown or specified, he shall register his objections with the Architect/Engineer, in writing; otherwise, he shall proceed with the work under the stipulation that a satisfactory job is required.

P. Provide a completed Schedule of Values, see Specification Section 26 05 10. Preliminary schedule of values shall be submitted to Architect/Engineer for review.

1.02 SITE INSPECTION

A. Prior to Bidding, the Contractor shall visit and examine the site verifying all existing items and familiarize himself with existing work conditions and understand the conditions which affect performance of the work of this Division before submitting bids for this work. The submission of bids shall be deemed as evidence of such visits and examinations.

B. All bids shall take the existing conditions into consideration and the lack of specific information on the drawings shall not relieve the Contractor of any responsibility. No subsequent allowance for time or money will be allowed for work or change related to failure to examine site conditions.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. All work covered by this section of these specifications shall be accomplished in accordance with the respective drawings, information or instructions to bidders, and general provisions of these specifications. Any supplementary conditions, special conditions, addenda, or directives which may be issued by the Owner's representative herewith or otherwise shall be complied with in every respect.

B. Provide electrical connections and service to items described in all other sections of these specifications.

C. The Electrical Contractor shall provide all wiring and connections required to fire/smoke dampers. Coordinate exact locations of dampers with Mechanical Contractor and relay requirements with Fire Alarm Contractor.

D. The Electrical Contractor shall provide all wiring and connections required to backdraft dampers at exhaust fans. Coordinate exact locations of dampers with Mechanical Contractor.

E. Electrical Contractor to provide conduit and junction boxes for all sensors and exterior conduit for controls to mechanical equipment. Conduit for space sensor to extend from junction box to above accessible ceiling. Conduit for exterior equipment to extend from equipment through wall or roof to above an accessible ceiling. Any control wiring in exposed ceiling areas to be in conduit by Controls Contractor for protection. Controls Contractor to coordinate on all conduit requirements. Coordinate locations with Electrical Contractor.

1.04 WORK NOT INCLUDED

A. Certain labor, materials, or equipment may be provided under other sections of these specifications, by utility companies, or by the Owner. When such is the case, the extent, source and description of these items will be as indicated on the Drawings or described in the specifications, but the Contractor is responsible for verifying with all parties involved as to the extent of his requirements of work.

B. Unless otherwise indicated, motors shall be furnished by others, but connected by the Electrical Contractor as indicated on the Drawings.

C. Unless otherwise specified, Mechanical equipment control low voltage wiring (less than 50 VAC) shall be provided and installed by the Mechanical Contractor.

1.05 SPECIFICATION TERMINOLOGY (Definitions)

A. "Provide": Includes all material, installation, labor subcontracts, appurtenances and mark-up required for a complete operable system as shown and specified, set in place, connected and ready to use.

B. "Furnish": Purchase and deliver to job site, material as shown and specified.

C. "Install": Includes all installation, labor subcontracts, appurtenances and mark-up required for complete installation of equipment furnished by others.

D. "Record Drawings": Drawings that reflect the electrical systems as actually constructed by the Contractor including conduit routing.

E. "Accessible" means arranged so that an appropriately dressed maintenance man may approach the area in question with tools and products necessary for the work intended, and may then position himself to properly perform the task to be accomplished, without disassembly or damage to the surrounding installation. All clearances per NEC.

F. Wherever the term "shown on drawings" is used in the specifications, it shall mean "noted", "indicated", "scheduled", "detailed", or any other diagrammatic or written reference made on the drawings.

G. "Conduit" includes, in addition to conduit, all fittings, hangers and other accessories relative to such conduit system.

H. "Concealed" means hidden from sight in chases, furred spaces, shafts, hung ceilings, imbedded in construction, crawl spaces, etc.

1.06 DIAGRAMMATIC DRAWINGS:

A. The drawings are in general diagrammatic, and the location of outlets, switches, motors, etc., on the drawings does not necessarily mean that such units shall be placed at that exact spot, as scaled on the drawings, but shall be located to function best. Use the drawings, and these specifications for guidance and secure the Engineer's approval of all changes in location. Coordinate all dimensions for floor boxes with Architect. Contractor shall not scale from drawings.

B. Verify all measurements at the site. No extra compensation will be allowed because of differences between locations shown on the drawings and measurements at the building.

C. The Contractor is to draw electrical rooms and service to scale **(1/4" minimum)** with actual equipment to be used and submit to the Engineer prior to installation. The Contractor must insure that all minimum NEC working clearances are maintained. Coordinate with equipment of other trades.

D. Where lighting fixtures and other electrical items are shown in conflict with structural members and mechanical or other equipment, provide all required supports and wiring to clear the encroachment.

E. The branch circuits and arrangement of home runs have been designed to compensate for voltage drop and other considerations to accomplish maximum economy. Re-circuiting will not be permitted without specific approval. **Circuit numbers may change to achieve balanced loads on panels.**

F. In the event of discrepancy, immediately notify the Engineer. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

G. Drawings and specifications are complimentary each to the other. What is called for by one shall be as binding as if called for by both.

H. Should the drawings disagree in themselves, or with the specifications, the better quality or greater quantity of work or materials shall be used.

I. Outlets and switches obviously placed in a location not suitable to the finished room or area shall be removed and relocated when so directed by the Architect at no cost to the Owner. The Architect shall have the right to make any reasonable change in outlet locations before rough-in without additional cost to the Owner. The contractor shall contact engineer when switches are inadvertently shown on hinge side of door prior to rough-in.

J. Location of light fixtures shall be coordinated with reflected ceiling plans and/or room finish schedules.

1.07 MATERIAL AND EQUIPMENT SUBMITTALS

A. Submittals: Provide submittals for all products and systems described in Division 26-28 and shown on the drawings to demonstrate compliance with the requirements of the project. Furnish equipment submittals in the manner described elsewhere in these specifications.

B. Submit to the Engineer, after the award of the contract or as dictated by project schedule, a type written list of those items of equipment and appurtenances which will be furnished. Include the name or description of the item, name of manufacturer, model or type, catalog number and manufacturer's printed information. The information submitted shall include overall dimensions, weights, voltage rating, phase, wiring diagrams, etc., and nameplate data. Assemble cut sheets into separate submittals as defined in this section or by Specification Section. Submit priority items and long lead time first. Then follow with remaining items. This will allow for faster review and response to accommodate project schedule. **Any submittal with all sections under one (1) submittal number will be returned and required to be broken into unique separate submittal numbers.** The Engineer's check will be general and does not relieve the Contractor of final responsibility to comply with the Contract Documents in all respects.

C. Submittal review is for general design and arrangement only and does not relieve the Contractor from any of the requirements of the Contract Documents. Submittals will not be checked for quantity, dimension, fit or proper technical design of manufactured equipment. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provision of a complete and satisfactory working installation is the sole responsibility of the Contractor. **Warranties cannot be reduced through the submittal process.**

D. Contractor shall indicate items being used on cut sheets by highlighting or arrowing to actual part number. Submittals may be returned without checking if submittals not appropriately marked.

E. **'Individual submittals' means separate submittals with <u>unique submittal numbers for each specification section</u>. Separate PDFs for each Submittal number.**

F. <u>HARDCOPY SUBMITTAL REQUIREMENT</u>: Hardcopy submittals will not be required by Engineer.

G. **PDF SUBMITTAL REQUIREMENT:**
For submittal sections listed below as allowed pdf's the following requirements must be met or the submittal will not get through email security and will be auto-deleted and not checked. Each specifications section must be a separate pdf file, **one giant pdf for all sections will be rejected**.

PDF FILE: MUST BE NAMED AS FOLLOWS:
JOB NAME – SUBMITTAL No. XX – SUBMITTAL DESCRIPTION

EMAIL TITLE/SUBJECT: FOR SUBMITTALS MUST BE AS FOLLOWS:
JOB NAME – SUBMITTAL No. XX – SUBMITTAL DESCRIPTION

Failure to follow these instructions will result in the submittal never reaching the engineer and not being checked. Delays cause by not following these procedures are the sole responsibility of the contractor. Emailed submittals must come from the Architect and must not be emailed directly from the contractor. Do not Carbon Copy the Engineer on Emailed submittals.

H. **Multiple re-reviews required due to Contractor not following instructions, specifications, etc will be billed to Contractor at Engineer's current hourly rates. This shall be paid prior to submittal approval.**

I. **Submittals will be returned in order of construction of the project, not necessarily in order submitted.** If all sections are submitted under one binder/at one time and transmittal, each section will be returned at the appropriate time for construction phasing. Electrical Gear will not be reviewed until "Mechanical/Electrical Coordination Sheet" has been submitted. Electrical Gear and Light Fixtures may require extended review time**. If submittals are submitted early relative to construction phasing, submittals may be held, reviewed and returned at the appropriate time for construction phasing, not necessarily 2 weeks. In some cases, if submittals are received vastly out of order of construction, submittal may be rejected.**

J. **DO NOT SUBMIT THE FOLLOWING SECTIONS UNLESS DEVIATING FROM THE SCHEDULES/SPECIFICATIONS. Provide directly to General Contractor/CMR for inclusion into O & M Manuals. If deviating from the specifications submittal will be required. (Highlight items that are different to allow for proper review.):**

1. Devices
2. Safety Disconnect Switches
3. Wire and Cable
4. All Motor Starters
5. Contactors
6. Lamps
7. Photocells
8. Time Clocks/Lighting Contactors
9. Fuses

10. Cable Tray
11. Emergency Power (Inverter) System
12. Cabinets and Enclosures
13. Distribution and Fuse Blocks
14. Fire Rated Product Penetration Details.
15. Gear Coordination Study (include in O&M manual)

K. **PDF Submittals Allowed** for Product Cut-Sheets for are limited to the following items: **Separate PDF file for each Submittal number is required. Follow file format above.**

1. Fire Alarm System (Product Data and Shop Drawings)
2. Interior Lighting Fixtures
3. Exterior Lighting Fixtures
4. Transformers
5. Intercom and Sound System (Product Data and Shop Drawings)
6. Dimming Systems
7. Clock Systems
8. Motor Control Center
9. Bus Duct
10. Power Conditions
11. Surge Arrestors
12. Generator Set
13. Transfer Switch
14. Emergency Power (Inverter) System
15. Electric rooms (coordinate with mechanical). Also, indicate other equipment and/or systems on plan.
16. Switchboards
17. Panelboards

L. When requested, present samples of all materials proposed for use to the Engineer for his approval.

M. Certify Shop Drawings have been checked for compliance with Contract Documents. Certify that the materials submitted can be delivered and installed according to the construction schedule.

N. Select all other materials, not specifically described on the Drawings or in these specifications but required for a complete and operable facility, and submit to the Engineer for approval.

O. **Substitutions:** ("Substitution Request" form must be submitted)

1. Substitutions must be made and accepted PRIOR to Bid.

2. Unless otherwise indicated, base bid on the equipment shown on the Drawings and hereinafter specified.

3. Request for approval to substitute materials, methods, or processes shall be made to Architect and if found acceptable, will be confirmed by an addendum to the Construction Documents. Where proposed substitutions are not incorporated into the Construction Documents by addendum **PRIOR** to time of the General Contract bid opening, all bids shall be held to have been made on the basis of the materials, methods and processes required by the Construction Documents.

4. All substitutions shall be of equal or better quality to the equipment specified.

5. Acceptance of the substitution by the Engineer does not relieve the Contractor of responsibility for proper operation of the systems, compliance with specifications, necessary changes due to dimensional differences or space requirements, and completion of work on schedule.

6. It is not the intent of the Specifications to limit materials to the product of any particular manufacturer. Where definite materials, equipment and/or fixtures have been specified by name, manufacturer or catalog number, it has been done so as to set a definite standard and a reference for comparison as to quality, application, physical conformity and other characteristics unless no substitutions are noted.

7. **Submit fully completed "Substitution Request" form located at end of this section. If this form is not submitted, all substitution request will be automatically rejected.**

8. **For substitutions that require substantial review by engineer to ensure equality, the contractor requesting substitutions shall reimburse the engineer at current hourly rates for all review time. This shall be paid prior to submittal approval. This applies to all equipment not previously approved on construction documents.**

a. Light Fixtures Packages

b. Alternate Transformers

c. Alternate Surge Protective Devices

d. Alternate Equipment/Gear Packages

e. Contractor Cost Savings Packages Requiring Substantial Review Time

1.08 SHOP DRAWINGS REQUIRED

A. Prepare and submit working construction drawings as requested, specified, and otherwise necessary to demonstrate proper planning for installation and arrangement of all work. Layout drawings to scale and show dimensions where accuracy of location is necessary for coordination or communication purposes. Show work of all trades, including Architectural, Structural, Mechanical, and Electrical items which may be pertinent to proper and accurate coordination.

B. Architectural drawings must be used for backgrounds in preparation of shop drawings and shall be obtained from the Architect. Confirm requirements and stipulations for obtaining floor plan backgrounds with Architect and with other sections of specification. Engineer's drawings and CAD files **may not** be used for Shop Drawings. Reference 1.01-L.

C. Reference other specification for additional requirements.

1. Fire Alarm

2. PA System

3. Electrical Rooms

1.09 RECORD DRAWINGS

A. Reference requirements stated elsewhere in the specifications.

B. THE CONTRACTOR SHALL TAPE ALL ADDENDAS ISSUED DURING BIDDING TO HIS CONSTRUCTION AND RECORD DRAWING SET PRIOR TO COMMENCING CONSTRUCTION. PAY REQUESTS WILL NOT BE PROCESSED UNTIL THIS REQUIREMENT IS MET.

C. In addition to other requirements, a master Record Drawing print set (separate from field sets) shall be kept in the site construction office as the work progresses. Show routing and location of items cast in concrete or buried underground. Work located in spaces with access, or above suspended ceilings, is not considered permanently concealed. Show complete routing and sizing of any significant revisions to the systems shown. Indicate locations of all existing active and inactive conduit uncovered during construction**. Keep marked up set at site for review at site meetings**.

D. **Contractor to indicate conduit routing locations for all major runs and branch circuits under slab along with major junction locations.**

E. The Contractor shall be responsible for updating all items, including but not limited to floor plan changes, system changes, addendums, change orders, etc. on the prints to "As-Built" conditions. At the completion of the job the marked up As-Built Drawings shall be submitted to the Architect for final review and comment. These corrected prints together with all the revisions, additions and deletions of work, shall form the basis for preparing a set of record drawings.

F. Using the "Record Drawing Set", the Contractor shall print two (2) complete sets of prints one for submission to the Owner and one rolled in a 4" PVC pipe in main electric room mounted to wall and labeled. Tape all edges. The contactor shall provide pdf copies/scans for owner record purposes. Remove Engineer's seal from record drawings.

G. The Contractor shall bear all the costs of producing the "Record Drawing Set".

H. Electrical riser diagrams shall be laminated and mounted in the main electrical room or as directed by the Engineer.

1.10 CODES, REGULATIONS AND ORDINANCES

A. Comply with the requirements of the National Electrical Code, National Electrical Safety Code, Occupational Safety and Health Act (OSHA) and all other applicable Federal, State and local codes and ordinances. All codes and standards shall be per the latest adopted edition with all supplements and official interpretations included. Provide disconnecting means for all equipment per NEC. The Drawings and specifications take precedence when they are more stringent than codes, standards, ordinances, and statutes take precedence when they are more stringent or conflict with the Drawings and specifications.

B. Should the Contractor perform any work that does not comply with the requirements of the applicable Building Codes, State Laws, Local Ordinances and Industry Standards, he shall bear all costs arising in correcting the deficiencies, as approved by the Architect.

C. All work shall also satisfy applicable local codes, ordinances, and regulations of the governing bodies, and all authorities having jurisdiction over the work. Where alterations to, or deviations from, the drawings and specifications are required by the authority having jurisdiction, report the same in writing to the Owner's representative and secure his approval before proceeding.

1.11 DELIVERY AND STORAGE OF EQUIPMENT AND MATERIAL

A. Investigate each space in the building through which equipment must pass to reach its final location. If necessary, the manufacturer shall be required to ship his material in sections sized to permit passing through such restricted areas in the building.

B. Retain all portable and detachable parts or portions of installation such as fuses, key locks, adapters, blocking clips, and inserts until final completion of work. Deliver parts to the Owner or his authorized representative and attach an itemized receipt to obtain request for final payment.

C. Product Handling:

1. Use all means necessary to protect the work and materials of this section before, during, and after installation and to protect the work and materials of all other trades.

2. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

3. Store and protect materials and equipment in accordance with the manufacturer's recommendations.

4. Provide suitable box or crate electrical equipment and cover with waterproof covers to protect against dirt, moisture or accidental damage during shipment or outdoors at the job site.

5. Store all conduits on skids.

1.12 SERVICEABILITY OF PRODUCTS

A. Furnish all products to provide the proper orientation of serviceable components to access space provided.

B. Coordinate installation of piping, ductwork, equipment, conduits, junction boxes, panels and other products to allow proper service of all items requiring periodic maintenance or replacement.

C. Replace or relocate all products incorrectly ordered or installed to provide proper serviceability.

1.13 ACCESSIBILITY OF PRODUCTS

A. Arrange all work to provide permanent, convenient and safe access to all serviceable and/or operable products. Layout work to optimize net usable access space within confines of space available. Advise Architect, in a timely manner, of areas where proper access cannot be maintained. Furnish layout drawings to verify this claim, if requested.

B. Provide access doors in ceilings, walls, floors, etc. for access to automatic devices and all serviceable or operable equipment in concealed spaces. Location of panels shall be submitted for approval in sufficient time to be installed in the normal course of work.

1.14 UTILITY COSTS

A. Provide complete utility service connections. The locations and elevations of the various utilities included within the scope of this work have been obtained from city and/or other substantially reliable sources as a general guide only, without guarantee as to accuracy. Verify the locations, elevations, and availability of all utilities and services required, and be adequately informed as to their relation to the work.

B. Include all service charges required by the electric utility or telephone/data/cable utility. Reference General Conditions for further information. Keep all utility company charges as a separate line item in bid. If cost is not available from utility company, indicate utility contact person, telephone number and **date of contact**.

1.15 CLEAN-UP

A. Remove debris and waste materials from within the construction areas and transport off-site, daily.

B. Keep the construction area clean, free from hazard, and orderly arranged.

C. Pay all costs of waste removal and disposal. Reference General Conditions for further information.

D. Dispose of waste materials in accordance with all regulations which govern.

E. Take all precautions to protect persons who enter the construction area from hazardous conditions, hazardous waste, toxic waste, or other unsafe conditions.

F. Upon completion of construction, remove all debris, waste materials, unused materials, temporary constructions, vehicles, tools, fencing, etc. to Owner’s satisfaction.

G. All equipment and materials shall be protected from physical moisture absorption, metallic corrosion and weather damage from time of delivery to completion of project. Replace any damaged materials.

PART 2 - PRODUCTS

2.01 EQUIPMENT AND MATERIALS

A. Unless otherwise indicated, provide only new equipment and materials.

B. On all major equipment components, provide manufacturer's name, address, model number, and serial number permanently attached in a conspicuous location.

C. All materials furnished under these specifications shall be the standard product of manufacturer's regularly engaged in the production of such equipment and shall be the manufacturer's latest approved standard design.

D. Guarantees:

1. The Contractor and Manufacturers shall provide a ONE (1) YEAR guarantee for all work under the Electrical Trade. However, such guarantees shall be in addition to and not in lieu of all other liabilities which the manufacturer and the Contractor may have by law or by other provisions of the Contract Documents. In any case, such guarantees and warranties shall commence when the Owner accepts the mechanical/electrical system, as determined by the Architect and shall remain in effect for a period of ONE (1) YEAR thereafter.

2. All materials, items of equipment, all lighting, and workmanship furnished under each section shall carry a ONE (1) YEAR warranty against all defects in material and workmanship. Any fault under any contract, due to defective or improper material, equipment, workmanship or design which may develop shall be made good, forthwith, by and at the expense of the Contractor for the work under his Contract, including all other damage done to areas, materials and other systems resulting from this failure.

3. The Contractor shall guarantee that all elements of the system, which are to be provided under his Contract, are of sufficient capacity to meet the specified performance requirements as set forth herein or as indicated.

4. Upon receipt of notice from the Owner of failure of any part of any systems or equipment during the guarantee period, the affected part or parts shall be replaced by the Contractor for his respective work, as applicable.

5. Furnish, before the final payment is made, a written guarantee covering the above requirements.

6. Reference other guarantee information elsewhere in these specifications.

2.02 STANDARDS

A. Where the Underwriters' Laboratories (UL) have established standards and issued labels for a particular group, class or type of material, apparatus, appliance or device, provide the UL label on all such items in that category incorporated into the work.

B. Where such items are not covered by UL standards, they shall meet or exceed the requirements of the current National Electrical Code (NEC), or if not covered there, by the applicable, published, recognized standard of the American National Standards Institute (ANSI), or of the industry and of the related engineering society. Example: National Electrical Manufacturers Association (NEMA) and Institute of Electrical and Electronics Engineers (IEEE).

C. Contractor is to follow the most current version adopted for all codes and standards.

PART 3 - EXECUTION

3.01 CUTTING AND PATCHING

A. Carefully lay out all work in advance so as to minimize cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, etc. Perform all cutting, channeling, drilling, etc., as required for the proper support, concealment, installation, or anchorage of raceways, outlets, or electrical equipment in a careful manner. Any damage to the building, structure, piping, ducts, equipment, or defaced finish, tile, plaster, woodwork, or metal work shall be repaired by skilled mechanics of the trades involved at the Contractor's expense and to the satisfaction of the Engineer. All cutting, channeling, chasing, or drilling of unfinished masonry, tile, etc., or cutting, drilling, anchoring to or welding of structural members shall be performed in a manner having the Engineer's prior approval. All openings made in fire rated or smoke rated walls, floors, and ceilings shall be patched and made tight in a manner to conform to the fire rating or smoke rating for the enclosure.

B. Where conduits pass through exterior walls, thoroughly caulk with sealant the annular space around the conduit to provide a watertight closure at the interior wall cavity and exterior wall surface. Provide ¼" maximum annular space around the conduit. Provide and install all counterflashing of all conduit, pipe and supports which pierces roofs and other weather barrier surfaces. Verify detail with Architect before installation. All work shall be performed in a workmanlike manner to assure weatherproof installation. Any leaks developed shall be repaired at his expense, to Architect's satisfaction. All waterproofing, flashing and counterflashing shall be compatible with roofing system so as not to void any roof warranties. Confirm installation with Architect and Roofing Contractor.

3.02 SEALING AND FIREPROOFING

A. **SEALING OF PENETRATIONS THROUGH RATED WALLS, FLOORS, CEILING AND ROOF ASSEMBLIES SHALL BE INSTALLED PER UL "FIRE RESISTANCE DIRECTORY." UL SYSTEM NUMBERS INDICATED ARE FOR A PARTICULAR LISTED INSTALLATION AND ARE FOR GENERAL INFORMATION AND INTENT. OTHER LISTED UL SYSTEM DESIGNS MAY BE USED. IN ALL CASES, SUBMIT MATERIALS, UL SYSTEM DESIGN NUMBERS AND UL DETAILS TO BE USED THROUGHOUT THE PROJECT AND IDENTIFY WHICH DETAIL IS TO BE USED FOR EACH SPECIFIC CONDITION. POST REVIEWED DETAIL AT JOB SITE FOR REFERENCE.**

1. Only materials tested in the specific UL System No. may be used.

a. Caulk Manufacturer:

1) 3M Type CP-25 W/B + for all assemblies requiring 3M caulk.

2) For WL3045 and WL3046 use Hilti FS611A sealant.

b. Steel Sleeve (stud wall) (UL System No. WL1003): Cylindrical sleeve shall be fabricated from minimum 0.019" thick (no. 28 gauge) galvanized sheet steel and having a minimum two inch (2") lap along the longitudinal seam. Length of steel sleeve to be equal to thickness of wall plus one inch (1") such that, when installed, the ends of the sleeve will project approximately 1/2" beyond the surface of the wall on both sides of the wall assembly. The diameter of the openings cut on each side of the wall assembly (concentric

with conduit) to be 2 to 2-1/2" larger than the outside diameter of conduit such that, when the steel sleeve is installed, a 1 to 1-1/4" annular space will be present between the steel sleeve and the conduit around the entire circumference of the conduit. Install sleeve by coiling the sheet steel to a diameter smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers.

c. Optional Steel Sleeve (concrete or block wall): Except for single insulated cables, provide sleeve cast in floor/wall or mortared into CMU wall; Schedule 40 or heavier, length to extend a maximum one inch (1") from top surface of floor or a maximum of one inch (1") from both sides of wall.

d. Forming Material: Minimum one inch (1") thickness mineral-wool batt insulation material. Tightly pack into sleeve with minimum 1/2" recess on ends. Manufacturer: Thermafiber Safing Insulation.

2. Firestop system shall be installed at top surface of floor and symmetrically on both sides of wall assemblies and one (1) side of floor.

3. Alternate floor penetration system (with firestop mortar): UL System No. CAJ1032.

4. Wires and Cables:

a. For gypsum frame wall, single cable: Fireproof per UL System No. WL3001. Opening for cables to be hole-sawed through gypsum wall board layers. Diameter of opening to be 3/8" to 5/8" larger than outside diameter of cable. Cable to be rigidly supported on both sides of wall assembly. Caulk to fill annular space throughout thickness of gypsum wall board layers and apply 1/4" bead of caulk to perimeter of cable at its egress from wall (both sides).

b. For gypsum frame wall, multiple cables: Use UL system No. WL3021, WL3045, WL3046 or equivalent to maintain rating of wall.

c. For concrete walls/floors or CMU walls, single or multiple cables: Fireproof per UL System No. CAJ3030. Install sleeve in assembly flush with both sides. Cables to be a minimum of ten percent (10%) and a maximum of thirty-three percent (33%) of cross-sectional area of opening. Recess minimum one inch (1") thickness of mineral wool material into opening around cables. Caulk openings around cable to minimum depth of one inch (1"). Optional sleeve may be used per UL detail requirements.

5. Reference Architectural for the exact location of all rated walls, floors, ceilings and ceiling/roof assemblies.

6. Materials used in firestop systems shall be installed in accordance with the manufacturer's written instructions (shall be posted at job site, in General Contractors trailer), provided with materials for specific UL System No.

7. Manufacturers: 3M, Metacaulk, Hilti, BioFireshield or equal.

B. In non-rated walls identified for sound insulation, provide 1/2" space between conduit and sleeve packed with multiple layers of forming material. Allow 5/8" minimum space on each side and caulk with acoustical sealant.

C. **Final condition to prevent passage of fire, smoke, noxious gas and water.**

D. For non-rated electrical/mechanical rooms: Seal all conduit passing through room walls, floors and ceilings with 3M caulk, Type CP-25 WB+.

3.03 WORKMANSHIP AND COMPLETION OF INSTALLATION

A. For the actual fabrication, installation and testing, use only thoroughly trained and experienced workmen completely familiar with the items required and with the manufacturer's recommended methods of installation. In acceptance or rejection of the installed work, no allowance will be made for lack of skill on the part of workmen.

B. Install all specialties as detailed on plans. Where details or specific installation specifications are not included herein, follow approved manufacturer's recommendations.

C. Install complete, thoroughly check, correctly adjust, clean, and leave ready for operation all equipment and material connected with this project.

D. Ballasts, contactors, starters, transformers and like equipment which are found to be noticeably noisier than other similar equipment on the project will be deemed defective and shall be replaced.

E. Electrical service stub locations, sizes and quantities for equipment are approximate only. The Contractor must verify all service locations, sizes and quantities with the equipment supplier before rough-in.

F. The Electrical Contractor shall make all final connections to all electrical equipment furnished and set in place by others, including millwork with outlets. The Electrical Contractor shall provide and install all disconnect switches as required.

G. The Electrical Contractor shall provide/install all circuit breakers, power wiring, conduit systems and final connections required for operation of heating cable systems.

H. Provide and install all adjustable mounting brackets, steel bar hangers, T-bar mounting clips, support channels and universal support bridges as required for installation of recessed light fixtures, speakers, alarm devices and other ceiling mounted devices. Ceiling tile shall not be used to support ceiling mounted devices in lay-in ceilings.

I. Provide wood trim for any semi-recessed panels installed. Verify finishes with the Owner/Architect.

J. Provide Hoffman enclosure (#A-244208WFLP) wall mounted at location shown on plans. Provided in enclosure shall be spare fuses, three (3) of each amperage used in project up to 100 amp size and spare smoke detectors (see Section 28 31 00.)

K. Equipment and materials shall be listed by an organization that evaluates products and states that the equipment or material, either meets appropriate designated standards or has been tested and found suitable for a specified purpose or shall be labeled by the manufacturer to indicate compliance with appropriate standards or performance in the specified manner to be used.

1. Listed or labeled equipment and materials shall be applied, installed, connected, erected, used, cleaned, adjusted, and conditioned in accordance with any instructions included in the listing or labeling.

L. The installation shall be performed by licensed, competent workmen to provide a thorough and complete installation.

M. All work shall be accomplished in conjunction with other trades in a manner which will allow each trade adequate time at the proper stage of construction to fulfill his work.

N. Exact locations shall be determined by reference to the general plans and measurements at the building and shall be subject to reasonable change by the Owner's representative without additional cost.

O. Prior to and during construction, provide adequate storage facilities and properly protect items subject to any damage. Failure to comply with this provision will be sufficient cause for the rejection of the particular apparatus involved.

P. At completion, the installation shall be thoroughly cleaned. All tools, equipment, obstructions, temporary power, temporary lighting and debris shall be removed from the premises.

3.04 BALANCING SYSTEM

A. Balance the electrical system between the respective phases of the system. Balance individual circuits in each panel of the system. Where phase assignments or circuit numbers are indicated on the drawing, do not deviate without the Engineer's approval. All deviations shall be noted on panelboard submittals and on Record Drawings and schedules

3.05 COOPERATION WITH OTHER CONTRACTORS

A. Cooperate with other Contractors so that the installation of the electrical materials and equipment may be properly coordinated. Where a conflict occurs with piping, duct work, etc., it shall be resolved as directed by the Engineer.

B. Interferences between conduit and other trades shall be handled by giving precedence to pipe lines requiring grade for proper operation. Where space requirements conflict, the following order of precedence shall generally be observed:

1. Building Lines
2. Structural Members
3. Drainage Waste and Vent Piping
4. Refrigerant Piping
5. Ductwork
6. Water and Gas Piping
7. Electrical Conduit
8. Fire Protection Piping

3.06 COORDINATION OF WORK

A. Each Contractor shall compare his drawings and specifications with those of other Trades and report any discrepancies between them to the Architect and obtain from the Architect written instructions to make the necessary changes in any of the affected work. All work shall be installed in cooperation with other Trades installing inter-related work. Before installation,

all Trades shall make proper provisions to avoid interferences in a manner approved by the Architect.

B. Locations of conduit and equipment shall be adjusted to accommodate the work with interferences anticipated and encountered. Exact routing and location of systems shall be determined prior to fabrication or installation.

C. Offsets and changes of direction in all conduit systems shall be made as required to maintain proper headroom and pitch of sloping lines whether or not indicated on the drawings.

D. Where discrepancies in scope of work as to what Trade provides items such as starters, disconnects, flow switches and the like exist, such conflicts shall be reported to the Architect prior to signing of the Contract. If such action is not taken, the various Trades shall furnish such items as part of their work for complete and operable systems.

E. Verify voltage, phases, termination points, termination requirements and required disconnects for all equipment provided as part of this contract or equipment furnished by Owner prior to rough-in. Report any discrepancies to Architect/Engineer.

F. The Contractors are to avoid routing conduit through fire rated assemblies where practical. Each trade is responsible for proper coordination of required sleeves or block-outs with rated assembly installers. Each trade is responsible for providing sleeves, as required, for his work. Each trade shall verify acceptable tolerances around penetrating item in fire assembly before beginning fire sealing.

G. The Electrical Subcontractor shall verify with HVAC, Plumbing and Fire Protection Subcontractors the required electrical characteristics for all motors and equipment before ordering and submitting of electrical gear. Verify actual connection points prior to installation and roughing-in. Mechanical and Electrical Contractor are responsible for coordination of electrical requirements and final fuse sizes of all A/C equipment. When Mechanical Contractor substitutes equipment that requires additions or upgrades to electrical system, he shall bear all costs arising from such substitutions. Reference "Mechanical/Electrical Coordination Sheet" in specifications.

3.07 SAFETY PRECAUTIONS AND PROGRAMS

A. It shall be the duty and responsibility of the Contractor and all of its subcontractors to be familiar and comply with all requirements of Public Law 91-696, 29 U.S.C. Secs. 651 et. seq., the Occupational Safety and Health Act of 1970, (OSHA) and all amendments thereto, and to enforce and comply with all of the provisions of this Act. IN ADDITION, ON PROJECTS IN WHICH TRENCH EXCAVATION WILL EXCEED A DEPTH OF FIVE FEET, THE CONTRACTOR AND ALL OF ITS SUBCONTRACTORS SHALL COMPLY WITH ALL REQUIREMENTS OF 29 C.F.R. SECS. 1926.652 AND 1926.653, OSHA SAFETY AND HEALTH STANDARDS.

3.08 OPERATING AND MAINTENANCE MANUALS

A. Provide one (1) Operation and Maintenance manuals for training of Owner's personnel in operation and maintenance of systems and related equipment in the manner described elsewhere in these specifications. In addition, organize manuals and include data and narrative as noted below (bind each manual in a hard-backed loose-leaf binder. Use 8-1/2" x 11" white paper). Provide PDF copy of O&M for owner records

B. Operating Sequence and Procedures:

1. Contents: In each chapter, describe the procedures necessary for personnel to

operate the system and equipment covered in that chapter.

2. Typewritten Operating Procedures: Write procedures for start-up, operation and shutdown.

   a. Start-up: Give complete step-by-step instructions for energizing equipment, making initial setting and adjustments whenever applicable.

3. Shutdown Procedures: Include instructions for stopping and securing the equipment after operation. If a particular sequence is required, give step-by-step instructions in that order.

C. Maintenance Instructions:

1. Provide a schedule of preventive maintenance for each product. Recommend frequency of performance for each preventive maintenance task: i.e., cleaning, inspection, etc.

D. Manufacturer's Brochures: Include manufacturers' descriptive literature covering all appurtenances used in each system, together with illustrations, exploded views and renewal parts lists. Provide the nearest manufacturer's representatives name, address and phone number.

E. Shop Drawings: Provide two copies of all corrected, approved submittals and shop drawings covering equipment for the project either with the manufacturer's brochures or properly identified in a separate subsection.

F. Spare Parts Lists: Include a list of all equipment furnished for the project, with a tabulation of descriptive data of all the spare parts proposed for each type of equipment or systems. Properly identify each part by part number and manufacturer.

3.09 IDENTIFICATION

A. Equip the following items with nameplates:

1. Motor Starters
2. Main Switchboard and Overcurrent Devices and Spares
3. Panelboards and Branch Circuits
4. Safety Disconnect Switches
5. Contactors
6. Control/Power Equipment in Separate Enclosures Including Relays
7. Bypass Switches and Transfer Switches
8. Emergency Generator Sets
9. UPS System and Battery Racks
10. Motor Control Centers
11. Transformers

B. No dymo (stick on indented plastic) type label will be permitted.

C. Identify equipment listed above. COORDINATE EQUIPMENT NUMBERS WITH MECHANICAL AND/OR KITCHEN PLANS. Each piece of equipment shall be numbered consistently throughout.

D. Fabricate nameplates as follows:

1. Provide three (3) ply, 1/16" laminated plastic nameplate material with white core for lettering and black background. All nameplates, for equipment powered from emergency circuits, shall have white core for lettering and red background.

2. Use capital letters.

3. Unless otherwise indicated, provide minimum 3/4" high x 2" long nameplates with 1/4" letters.

4. All labels shall be permanently affixed to the front of all required equipment using two (2) round head self tapping screws. Self-adhesive labels are not acceptable. Align labels with equipment.

E. All junction boxes shall have the panel/circuit number(s) identified on the blank coverplate, handwritten with a permanent black marker. Disconnects, combination motor starter/disconnects and manual motor starter shall have the panel/circuit number(s) identified on the inside of the front cover, hand written with a permanent black marker.

F. Provide engraved coverplates for all switches and control devices which are not otherwise clearly related to the equipment they serve.

G. Label all receptacles and light switches with circuit number using electronic labeler (black on clear). Install label level on front of face plate for receptacles and back side of face plate for light switches.

H. Spray paint J-Boxes red for Fire Alarm System. All other special systems J-Boxes to be painted white.

I. Color code all 600 volt insulated conductors by installing conductors with factory colored insulation for conductors No. 10 AWG and smaller.

J. Install colored tape on all 600 volt conductors No. 8 AWG and larger. Apply tape 6 inches from terminal points. Do not cover factory applied cable identification markings with taping; tape locations may be adjusted slightly to prevent the covering of factory markings. Tape shall be Scotch No. 35 or approved equal, 7-mil thick by 3/4" wide vinyl adhesive tape.

K. Install engraved plastic laminate nameplates as listed below.

EQUIPMENT	LETTERING SIZE	INFORMATION
Switchboards, Panelboards, MCCs and other distribution system overcurrent devices	1/4" / 1/8"	Switchboard name designation, ampere rating of the supply conductors, voltage characteristics, power source and room number(s). EX: MDP, 1900A, 480Y/277V, Served from Utility EX: HVA, 175A, 480Y/277V, source DP-1,3,5. in Room 100.
Transformers	1/4" / 1/8"	Transformer name designation, load served, power source and room number(s). EX: Trans. TR-1, serves PANEL LV-1, source DP-7,9.11 in Room 203.
Remotely mounted Safety Switches and Starters	1/8"	Load served, power source and room number(s). EX: HWP-1, HVA 37,39,4 1 in Room 203. EX: PANEL LV-2 in Room 303, source TR-2.
Contactors	1/8"	Load served, power source and room nember(s). EX: Room 502, Science Lab, LVA 31,33 35, 37,39,4 1. EX: Building security lights, HVA 2, 4. EX: Parking lot lights, HVA 6, 8, 10.

L. Prepare a neatly typed panelboard circuit directory. Identify all circuits by the equipment served and by the room number, room numbers may be different from those shown on drawings. Verify room numbers prior to typing directories. Indicate spares and spaces with light, erasable pencil marking.

3.10 TESTING

A. Test and record results for all power feeders for Megger Readings, including phase to phase and phase to ground as recommended by the cable manufacturer.

B. Measure and record service ground resistance.

C. For equipment having ground-fault protection the ground-fault protection system shall be performance tested when first installed on site. The test shall be conducted in accordance with instructions which shall be provided with the equipment. A written record of this test shall be made and shall be submitted to the Engineer and a copy put in the Operation and Maintenance Manuals.

3.11 CERTIFICATE OF COMPLETION

A. Submit, at time of request for final inspection, a completed letter in the following format:

I, (Name) , of (Firm) , certify that the electrical work is complete in accordance with Contract Plans and Specifications, and authorized change orders (copies attached) and will be ready for final inspection as of (Date). I further certify that the following specification requirements have been fulfilled:

3.12 SITE OBSERVATION

A. Periodically, the Engineer will visit the site and review the construction progress. Field Reports will be issued noting any discrepancies or items that do not meet the intent of the contract documents found during said site visit. The contractor must answer each item listed on each field report, item by item.

B. It shall be the duty of the Contractor to personally make a careful inspection trip of the entire project, assuring himself that the work on the project is ready for final acceptance before calling upon the Owner, Architect or Engineer to make final acceptance of the work. Subsequent trips required because of Contractor's failure to do so, will be made at Contractor's expense, billed at current Engineer's hourly rates.

C. The final acceptance of the work will be made jointly by the Architect and the Owner.

D. Time spent for Investigation/Site Trips due to Contractor lack of installation capabilities/skills or knowledge is not part of Engineer's scope. Therefore time spent assisting contractor in these matters or problems that arise due to these matters will be billed to Contractor. Engineer will bill the contractor at the current hourly rates of the Engineer. These fees will be paid in full prior to release of contingency.

3.13 DURING FINAL INSPECTION

A. Demonstrate installation to operate satisfactorily in accordance with requirements of Contract Documents.

B. Should any portion of installation fail to meet requirements of Contract Documents, repair or replace items failing to meet requirements until items can be demonstrated to comply.

3.14 CLOSE-OUT DOCUMENTS:

A. Furnish three signed letters of guarantee.

1. Clearly and individually, document all material, equipment and service guarantees beyond a single year.

B. Furnish one original and two copies, of a statement from the inspecting authority stating that the installation has been accepted and approved.

C. Furnish one reproducible, two copies and an electronic "AutoCad" version, of complete, full-size sets of drawings showing conduit locations by accurate dimensions from permanent structures.

1. **"Record** Drawings" are to include:

a. A sheet legend shall be present on the 1st sheet of the required set which identifies each sheet making-up the set.

b. Site plan(s) with primary and secondary electric power and communication lines to the property line (may be a civil sheet).

c. Site plan(s) with all underground conduits to other buildings, structures, fixtures and equipment.

d. Marked-up electrical plans and schedules.

D. Furnish three complete sets of overload settings and motor data records.

E. Furnish three complete sets of the electrical testing results.

F. Furnish three complete sets of the power system study final report.

G. Furnish all manufacturer's software if required for start-up or modifying products furnished.

H. Furnish two complete sets of the AC Drive's comprehensive manual that includes operation, programming, diagnostics, applications, wiring diagrams, layout diagrams, and outline dimensions.

1. Identify each AC Drive's model number on a cover sheet.

I. All major Owner training sessions to be videotaped in non-pixelated video in Windows file format.

MEP/ENERGY CONSULTANTS
HCE HENDRIX CONSULTING ENGINEERS
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PRE-CONSTRUCTION INSTRUCTION SHEET

Submittal/RFI Requirements

A. **'Individual submittals' means separate submittals with unique submittal numbers. One single giant PDF will be rejected.**

B. **3 Submittal CATEGORIES (Reference Specifications)**

a. **Not required unless deviating from specification**

b. **PDF allowed.**

PDF SUBMITTAL/RFI FILE TITLE REQUIREMENT:
For submittal sections listed below as allowed pdf's the following requirements must be met or the submittal will not get through email security and will be auto-deleted and not checked. Each pdf submittal must be a separate pdf file.

PDF FILE: MUST BE NAMED AS FOLLOWS:
JOB NAME – SUBMITTAL No. XX – SUBMITTAL DESCRIPTION
JOB NAME – RFI No. XX – RFI DESCRIPTION

Example: Texas ISD ES No. 2 – Submittal 8 – Plumbing Fixtures
Example: Texas ISD ES No. 2 – RFI 3 – Library Light Fixture Mounting Height

EMAIL TITLE/SUBJECT REQUIREMENTS:
Emails without Job Name and proper format will not get through email security and will be auto-deleted and not checked.

JOB NAME – SUBMITTAL No. XX – SUBMITTAL DESCRIPTION
JOB NAME – RFI No. XX – RFI DESCRIPTION

C. **If submittals are submitted early relative to construction phasing, submittals may be held, reviewed and returned at the appropriate time for construction phasing, not necessarily 2 weeks. In some cases, if submittals are received vastly out of order of construction, submittal may be rejected.**

D. Time Critical Submittal Coordination Items

Mechanical to provide to General Contractor for Structural Roof Coordination

a. Mechanical to provide roof opening shop drawing as early as possible for structural coordination. Per specifications.

Mechanical to provide to General and Electrical Contractors for Gear Coordination

b. Mechanical to complete "MECHANICAL/ELECTRICAL COORDINATION SHEET" prior to electrical gear submittals for coordination with electrical contractor. Per specifications.

E. **Do not submit non pre-approved substitutions during submittal time. These submittals will be automatically REJECTED. Substitution Pre-approval was at bid time.**

F. **Review time for multiple resubmittals of non-approved equipment will result in Contractor being billed for review time that is not part of Engineer's Scope. Engineer will bill Contractor at Engineer's Current hourly rates.**

G. **Email of all Submittals/RFI's must go directly to Architect. Do not Copy Engineer.**

H. **Engineer is not the Contractors plan reference resource. Do not submit an RFI until drawings and specifications have been reviewed first. If the answer is clearly on the drawings the response will be "The answer is clearly on the drawings, Engineer is not the Contractors plan reference resource."**

I. **Call before submitting a written RFI.**

J. **All formal Job emails must come from Architect.**

K. **Do not email send recurring jobsite meeting requests to Engineer. Engineer does not attend all weekly meetings. Architect will coordinate when Engineer is to be required at job site for specific meetings.**

Shop Drawings and Cad Files

A. Contractor Shop Drawings must use Architectural Backgrounds and Architectural RCP's (when available or lighting floorplan) and **Mechanical Contractor Shop Drawings** for coordination purposes. Do not request MEP floorplans, this will be cut and paste into an email for you to read. Engineer cannot send architectural backgrounds.

B. If no Architectural RCP is available for light locations. Lighting Floorplans will be released.

C. Mechanical Floorplan will be released to Mechanical Contractor for aid in production of his own shop drawings. HCE mechanical drawings may not be submitted as shop drawings.

D. Fire Alarm, Sprinkler, Intercom etc. all to use Architectural Backgrounds, must be obtained from Architect.

E. Schedule and Details sheets will not be released.

JUSTICE CENTER - CSCD **SECTION 26 05 00**
WILLIAMSON COUNTY **GENERAL**

MEP/ENERGY CONSULTANTS
HCE HENDRIX CONSULTING ENGINEERS
COMMISSIONING • FIELD INVESTIGATIONS

SUBSTITUTION REQUEST

FROM: _____ DATE: _____

PROJECT: _____

RE: _____

The following has been submitted for consideration on the aforementioned project:

Specification Title, Section, Page and Article/Paragraph:
Drawings and Details Affected:
Proposed Substitution/Description:
Installer's Name:
Manufacturer's name:
☐ Point by Point Comparative Data attached - REQUIRED BY A/E (_____# of pages including cover)

Why is Substitution Being Submitted?

☐Pre-Bid Substitution (Prior Appoval): Include detailed analysis comparing proposed substitution against specified product, including redlined Specifications showing differences or deviations.
☐Specified product is not available. Explain in detail as attachment.
☐Cost Savings to Owner. Indicate comparative cost analysis as attachment.
☐Other. Explain.

Effects of Proposed Substitution?

(Attach complete explanations and technical data, including laboratory test, if applicable.) Include complete information changes to Drawings and/or Specification that proposed substitution would require for its proper installation. Fill in blanks below:

A. Does substitution affect dimensions shown on drawings? ☐No ☐Yes
B. Will undersigned pay for changes to building design, including engineering and detailing costs caused by requested substitution? ☐No ☐Yes
C. What affect does substitution have on other trades?

_____

D. Differences between proposed substitution and specified item?

_____

E. Indicate how proposed substitution meets LEED requirements. (if applicable)
F. Manufacturer's guarantees of proposed and specified items are:
☐Same ☐Different (explain on attachment)

The Contractor and Subcontractor certifies:
- Proposed substitution has been fully investigated and determined to be equal or superior in all respectes to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Similar maintenance service and source of replacement parts, as applicable is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted By: (name, address, telephone and contact person of manufacturer and installer of proposed substitution)

_____
_____
_____
_____
_____

For A/E Use: SR# _____

☐Accepted ☐Accepted as Noted
☐Not Accepted ☐Received Too Late
☐Incomplete Information
☐No Substitutions Accepted
Reviewed by/date: _____
Comments: _____

Subcontractor's signature and date: _____

Contractor's signature and date: _____

COPY TO:
☐FILE ☐OWNER ☐CONTRACTOR
☐ENGINEER ☐_____

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COMMISSIONING • FIELD INVESTIGATIONS

MECH / ELEC EQUIPMENT COORDINATION SHEET

MARK #	UNIT TYPE	MANUFACTURER'S RECOMMENDED MOCP	VOLTAGE	PHASE	MARK #	UNIT TYPE	MANUFACTURER'S RECOMMENDED MOCP	VOLTAGE	PHASE

END OF SECTION

SECTION 26 05 10 - SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall breakdown the final Schedule of Values to be used for pay application into the following minimum categories.

B. ALL CATEGORIES SHALL HAVE APPROPRIATE MATERIAL AND LABOR BREAKDOWN.

C. Definitions:

1. Service: Conduit for utility company and conduit and wire from utility transformer to main switchboard.

2. Feeders: Include all conduit and wire serving transformers and panelboards.

3. Branch Circuit: Any circuit from a panelboard to a utilization device.

4. Gear: Main switchboard, panelboards, transformers, disconnects, etc.

5. Site conduit voice/data.

1.02 SCHEDULE OF VALUES

A. Mobilization

B. Gear

C. Interior Lighting Fixtures

D. Branch Circuit - Wiring and Conduit

E. Feeders - Wiring and Conduit

F. Devices (switches and receptacles)

G. Fire Alarm System

H. Testing/Labeling of Equipment

I. Record Drawings and O&M Manuals ($1500 minimum)

END OF SECTION

SECTION 26 05 19 - WIRE AND CABLE

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide a complete system of conductors in raceway systems as shown on the drawings and hereinafter specified. Route all wire through an approved raceway unless otherwise indicated, regardless of voltage application.

B. Provide 200% neutral conductors to all panels with 200% neutral specified. Reference Panel Schedules.

C. Provide individual neutrals for each circuit, no shared neutrals allowed.

D. **No de-rating of neutrals allowed.**

1.02 STANDARDS

Provide conductors in accordance with the applicable sections of UL and IPCEA Standards.

1.03 SUBMITTALS

A. Furnish Engineer shop submittals for each type of wire and cable.

B. Provide shop submittals which includes the following information:

1. Insulation type.

2. Insulation temperature rating.

3. Manufacturer

PART 2 - PRODUCTS

2.01 MATERIALS

A. Wire and Cables: (600 Volts)

1. Provide copper wire and copper ground conductors **only**. Conductors shown on plans are thusly sized. **No aluminum conductors** will be allowed unless specifically noted.

a. Minimum wire size for branch circuits shall be #12, however, #14 may be used for motor control circuits where specified on the drawings.

b. All conductors #12 and smaller shall be solid and #10 and larger shall be stranded.

2. Provide copper conductors of annealed, 98 percent conductivity soft drawn copper. Provide stranded conductors for control circuits.

B. Metal clad cable shall not be acceptable except from junction box to light fixture, maximum 6 feet in length.

C. Flexible metal conduit or metal-clad cable for receptacles and branch circuits with the following limitations:

1. Dry interior locations;

2. Feeds one outlet only or first outlet.

3. 20 amp maximum;

4. Both segment ends are located within the same room.

a. One segment end at the outlet box and the other segment end at a ceiling junction box located, within 10 feet of the entrance into the wall cavity, vertically above the outlet served.

5. Where installed in an insulated wall, the cable must be on the conditioned side of the insulation and;

6. Each cable or conduit shall be supplied by only one (1) branch circuit breaker (one, two or three poles).

7. No MC to be horizontal in wall. All horizontal runs must be pipe and wire only.

D. Insulation: (600 Volts)

1. Provide all conductor insulation types rated for wet and dry locations and approved by the National Electrical Code for the particular application. Provide all wire and cable with the following (or better) insulation classes:

a. All feeders and branch circuits are to be dual-rated Type THHN/THWN **copper** conductors.

b. Insulation rated for operation at 600 volts.

c. In areas where the temperature will exceed 167^{O}F, provide wire rated 105^{O}C. minimum and a type approved by the local code. Include any wiring within three feet (3') horizontally or ten feet (10') above any heating appliance.

2. Color code in accordance with the wiring diagrams furnished with equipment. All wiring for control systems to be installed in conjunction with mechanical and/or miscellaneous equipment. Color code by line or phase all branch circuit wiring including circuits to motors and feeders as follows: Wire No. 10 and smaller shall be factory color coded. Wire No. 8 and larger may be color coded by color taping within six inches (6") of exposed ends. **Color coding for each nominal voltage shall be consistent throughout building from point of origination to the termination point including tap conductors to luminaire. Mixing of colors between voltages will not be allowed.**

120/208 Volt	120/240 Volts	277/480 Volts
Phase A - Black	Phase A - Red	Phase A - Brown
Phase B - Red	Phase B – Black	Phase B - Yellow
Phase C - Blue	Phase C - Orange	Phase C - Purple
Neutral - White	Neutral - White	Neutral - Gray
Ground - Green	Ground - Green (Orange is High Leg)	Ground - Green

E. Wire and Cable: (50 volts or less)

1. Provide copper wire, minimum size #18 AWG for controls, #18 AWG minimum for fire alarm and #20 AWG minimum for communications. All wire and cable shall be solid. Stranded conductors are not acceptable.

2. All conductors shall be routed in conduit or shall have an insulation approved for plenum installation, unless otherwise noted.

F. ROMEX not allowed.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Unless otherwise indicated wiring size noted on the drawings extend for the entire length of a circuit. Install wire in raceways in strict conformance with the manufacturer's recommendations. Use a UL approved wire-pulling lubricant. Strip insulation so as to avoid nicking of wire.

B. Wire Connections and Devices:

1. Provide all terminating fittings, connectors, etc., of a type suitable for the specific cable. Make all fittings up tight. Make up all terminations in strict conformance with manufacturer's recommendations using special washers, nuts, etc., as required.

2. Connect No. 8 and larger wire to panels and apparatus with properly sized, solderless, or compression lugs or connectors.

3. Join No. 10 and smaller wire by twisting tight and applying UL listed twist-on connectors.

4. Leave at least an eight inch (8") loop of wire for ends at each outlet box for the installation of fixtures or devices.

C. Flashover or insulation value of joints shall equal that of the conductor. Provide connectors rated at 600 volts for general use and 1000 volts for use within fixtures.

D. Grouping shall be 3 Hots and 3 Nuetrals or 6 Hots max. Derating shall be based on the 90 degree chart of NEC 310-16 and table 310.15 (B)(2)(2).

E. Where the distance between the supplying panel and the first branch circuit receptacle, light fixture or equipment is more than 100 feet, upsize wire to allow for maximum of 3% voltage drop for actual routing of conduit to device.

F. Wiring for emergency systems shall be kept entirely independent of all other wiring and equipment as required by Article 700 of the NEC.

G. Mechanically protect conductors by installing in raceways. Do not install the conductors until raceway system is complete and properly cleaned. Use an approved wire-pulling compound when pulling conductors. Wiring pulling compound shall be listed and as recommended by the conductor manufacturer. Do not bend any conductor either permanently or temporarily during installation to radii less than four times the outer diameter of the insulated conductors. Do not exceed manufacturer's recommended values for maximum pulling tension.

H. Pull conductors simultaneously where more than one conductor is being installed in the same raceway.

I. Use pulling means including fish tape, cable, rope and basket weave wire/cable grips which will not damage cables or raceway.

J. Tighten electrical connectors and terminals, including screws and bolts, in accordance with manufacturer's published torque tightening values. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standard 486A.

K. Neatly and securely bundle all conductors in enclosures using nylon straps with a locking hub.

L. At least 6 inches (measured from the finished surface) of each conductor shall extend outside a box's opening.

3.02 SPLICES AND TERMINATIONS

A. Splices shall be kept to a minimum.

B. Splices shall be made in junction and/or pull boxes.

1. Splices in conduit fittings (i.e., conduit bodies), and in panelboards are not acceptable.

C. All materials shall prevent corrosion or electrolysis between dissimilar metals.

D. Use terminal blocks within a junction box for all splices of No. 6 and larger conductors.

E. Use mechanical, crimp or compression type connectors for terminations of stranded conductors.

3.03 CONDUCTOR SIZING

A. Install conductor size required by the more stringent requirements of the drawings or specifications.

B. Install No. 10 AWG conductors the entire length of the circuit for single-phase, 120-volt, 20-ampere branch circuits for which the distance from panelboard to the first outlet is more than 100 feet.

C. Install No. 10 AWG conductors the entire length of the circuit for single-phase 277 volt, 20-ampere branch circuits for which the distance from panelboard to the first outlet is more than 200 feet.

D. General use circuit numbers may be changed. Equipment circuits have numbering to balance loads. This contractor is responsible for maintaining a balanced load and recording the actual circuit numbers.

E. Comply with ampacity adjustment factors as required by the NEC Article 310-16.

3.04 TESTING

A. Prior to energizing feeders, perform insulation resistance tests at 500 Volts D.C. for 30 seconds on each cable with respect to ground and adjacent cables. Maintain the following log for feeder tests:

FEEDER DESCRIPTION:_____

TESTER'S NAME:_____

TEST INSTRUMENT SERIAL #:_____

TEST DATE:_____

RESISTANCE:

A-B	A-C	A-G	B-C	B-G	C-G

B. Test all circuits for proper neutral connections.

C. Upon completion of all testing, prepare a detailed report of all voltage and insulation resistance measurements. Deliver report to Engineer with request for final inspection.

END OF SECTION

SECTION 26 05 26 – GROUNDING AND BONDING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide a complete grounding system in strict accordance with Article 250 of the National Electrical Code and as hereinafter specified and shown on the Drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide copper clad 5/8" x 8 ft. - 0" long ground rods, appurtenances, bonding plates, clamps, connectors and grounding conductors as required. Furnish rods to which the copper cladding is permanently and inseparably bonded to a high strength steel core.

2.02 CONNECTORS

A. Provide exothermic weld type ground connections for concealed, underground, and concrete encased ground connections.

B. Exposed connections may be made with copper or bronze bolted or compression lugs.

2.03 INTER-SYSTEM GROUNDING BUS-BAR (communications)

A. Provide surface mounted terminal blocks sufficient to except 20 individual conductors of sizes 14 AWG thru 4 AWG.

2.04 CONDUCTORS

A. Furnish copper conductors.

B. Furnish 600-volt, insulated conductors for equipment grounding.

C. Size the system grounding electrode conductors to comply with NEC section and table 250-66, unless shown larger.

D. Size the main and separately derived system bonding jumpers to comply with NEC section 250-28 (D).

E. Size equipment grounding conductors to comply with NEC section and table 250-122, unless shown larger.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Properly ground all service equipment conduit systems, supports, cabinets, equipment, motor frames, fixtures, etc., and the grounded circuit conductor in accordance with the latest issue of the National Electrical Code. Provide all bonding jumpers and wire, grounding bushings, clamps, etc., as required for complete grounding. Route ground conductors to provide the

shortest and most direct path to the ground electrode system. Bond conduit if made of current conducting material. All ground connections shall have clean contact surfaces. Bond the service equipment to a grounding electrode as shown on the Drawings.

B. Provide a grounding type bushing for all feeder and branch circuit conduits which do not have a grounding conductor and individually bond this raceway to the enclosure's ground bus or lug.

C. Provide a grounding type bushing on the end of each isolated section of metal conduit and bond the conduit to the equipment grounding conductor, or using a conductor of the same size, bond directly to the equipment ground buss of the equipment at the end of the run.

D. Make single or dual connections to ground rods, plates, and other buried connections by the exothermic process (Cadweld) or Burndy Hyground TM Compression Systems and "hammer tested" to insure that a good bond has been made. Alternatively, all below grade compression grounding systems must meet all UL467, CSA, IEEE837 test requirements and conform to the National Electrical Code Standards. The material at the connectors shall be pure wrought copper extrusions, rod and seamless tubing and be identical material to the conductor. Connectors must be of heavy duty design and be of range taking design to accept conductor ranges of #6 solid to 500 Kcmil plus 5/8" ground rods. Compression connectors need to be compressed with system engineered tooling which makes a circumferential or round crimp. Hex crimp is not acceptable due to sharp flashes and spurs that may occur. Each connector must be clearly marked with catalog number, conductor size and installation die information. Inspection ports must be provided on lug terminations and splices. The system must emboss all the appropriate die index numbers on all connectors after completion of the crimp. Connectors must be prefilled with penetrox copper type oxidation inhibitor and be individually sealed in clear polyethylene sheet to keep out dirt and contamination.

E. Drive grounding electrodes as required. Where rock is encountered, grounding plates of copper, 1/4-in. x 24-in. x 24-in may be used in lieu of grounding rods. Plates must be installed at 36" minimum below finished grade.

F. Connect grounding electrode conductor to building steel and metallic waterline per NEC 250-81. Allow a minimum of 25 feet of grounding conductor in foundation footing and make 3 connections to Rebar. Connections shall utilize an acceptable compression method with connectors listed for contact with respective metal types.

G. Provide a grounding terminal pad in all panelboards, switchboards, and other electrical equipment.

H. Directly ground to the work piece welding machines used in construction. The use of the building or equipment steel or conduits of any kind as a common ground point is not allowed under any conditions. Contractor is responsible for any electrical pieces of equipment damaged by not using the welder grounding method described above.

I. Provide a green insulated grounding conductor in all conduit serving receptacles and/or equipment. Refer to panelboard schedules for sizing.

J. Ground all receptacles to outlet box with a conductor.

K. Flexible conduit will not be allowed as a grounding means.

L. Install metallic fittings on clean contact surfaces to ensure electrical conductivity.

M. Tighten connectors, terminals, screws and bolts, in accordance with manufacturer's published torque tightening values or comply with torque tightening values specified in UL 486A to assure permanent and effective grounding.

N. Apply a corrosion-resistant finish to places where factory applied protective coatings have been damaged.

O. Protect all exposed, grounding electrode conductors with Schedule 40 PVC nonmetallic conduit.

1. Grounding electrode conductors shall not be protected with metallic materials.

3.02 GROUNDING ELECTRODE SYSTEM

A. At each building's service or disconnecting means install a grounding electrode system which includes;

1. A concrete encased electrode connected to the concrete reinforcing bars and;

2. The building structural steel and;

3. The building's metal underground (10 ft.) water pipe.

a. This connection must be within the first 5 ft. of the water pipe's entrance into the building. Water piping cannot be the sole ground and must be supplemented.

4. Other electrodes such as a rod, plate or ring may be used to supplement but cannot be used as a substitute.

B. At each grounded separately derived system install a grounding electrode conductor to connect the grounded (XO-neutral) conductor to;

1. The nearest one of the following electrodes:

a. An effectively grounded structural steel member or;

b. An effectively grounded metal underground (10 ft.) water pipe.

1) This connection must be within the first 5 ft. of the water pipe's entrance into the building.

2. If neither of these is available, install a 3/0, copper, common grounding electrode conductor from the building's service or disconnecting means. Connect taps from this common grounding electrode conductor to the separately derived system's grounded (XO-neutral) conductor.

3.03 SYSTEM BONDING

A. SERVICES

1. Install a main bonding conductor between the service ground bus and the grounded (neutral) bus-bar.

B. SEPARATELY DERIVED SYSTEMS

1. Install a bonding jumper between the equipment ground bus and the separately derived electrical system's (transformer, UPS, central battery/inverter or generator) grounded (XO-neutral) bus.

3.04 ADDITIONAL BONDING

A. Install 3/0 AWG bonding jumpers around all structural metal expansion joints.

B. Each building's interior metal water piping system which does not qualify to be used as a grounding electrode shall be bonded to the building's service or disconnecting means.

C. Bond the grounded (XO-neutral) conductor of each separately derived system to the nearest available point of the interior metal water piping system(s).

1. When the structural steel is being used as the grounding electrode for the separately derived system the interior metal water piping system(s) may be bonded to the structural steel.

D. Install bonding jumpers around raceway expansion joints.

E. Install bonding jumpers around insulated water pipe joints.

F. Install a bonding jumper between all grounding electrodes used for communications, radio and television or antenna systems and the building's grounding electrode system.

3.05 COMMUNICATION GROUNDING

A. Provide a surface mounted, inter-system grounding bus-bar at the service equipment or a separate building's disconnecting equipment and in each communications room.

B. At the service or separate building's disconnecting means, provide an insulated 6 AWG, stranded conductor to connect the inter-system grounding bus-bar to the equipment ground bus.

C. At communications rooms, provide an insulated 6 AWG, stranded conductor to connect the inter-system grounding bus-bar to the building's structural steel.

3.06 EQUIPMENT GROUND

A. Raceways shall not be used as the sole equipment ground.

B. Bond the equipment grounding conductors to all boxes and enclosures.

C. Each receptacle shall be bonded to its respective device box. The connection shall be made by means of a bonding jumper between the device and the box. Where the receptacle mounting yoke is designed and listed for the purpose of grounding; the bonding jumper may be omitted. This does not substitute for the need of grounding the outlet box.

D. Each isolated ground receptacle shall have an isolated ground conductor installed complete from receptacle to the isolated ground bus in the panelboard. No other grounding connections shall be made to these receptacles, specifically connections to the device box or raceway system.

3.07 TESTING

A. Following completion of installation, test system ground for continuity and test resistance to ground by “fall of potential” method and all feeders or sub-feeders with appropriate meggers, or other approved instruments and methods, to determine ground and insulation resistance values.

B. Submit logs of values obtained, nameplate data of instruments used and instrument calibration data prior to final inspection. Instruments used are subject to acceptance.

END OF SECTION

SECTION 26 05 29 – HANGER & SUPPORTING DEVICES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide all required supporting devices, including but not limited to channels hangers, brackets, fittings, clamps, hardware, anchor bolts, rods, electrical accessories, etc., for conduit and equipment.

1.02 STANDARDS

A. Conform with the latest requirements of the NEMA and The National Electric Code.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Support Channel: Hot-dipped galvanized steel, sized for load, minimum size 12 gauge, 1-5/8 wide by 13/16 deep. Furnish fasteners sufficiently sized to carry load imposed.

B. Hardware: Corrosion Resistant (Hot-dipped galvanized all steel components)

C. Support Wires (16 Ga. Minimum) and Tie Wires (22 Ga. Minimum) or as required by UL listed assemblies: Galvanized Steel

D. Coatings: All steel components shall be hot-dipped galvanized.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Perforated iron straps are not permitted for supporting conduits. Conduits run between the webs of bar joists may use galvanized tie wire for securing the conduits. Cut excess wire and bend ends to prevent sharp ends.

B. Support horizontal and vertical conduit runs by one-hole straps, clamp-backs or other acceptable devices and suitable bolts. All conduits shall be secured to structure with supporting devices dedicated for the electrical system and/or conduits for systems furnished under the Electrical Contractor responsibilities. When two (2) or more conduits are run parallel, they may be supported on trapeze hangers, equal to the Modern Co. Other hangers shall be constructed with rods and hanger adjusters of adequate size to carry the loads imposed.

C. All conduits shall be supported a maximum of ten feet (10') on center. Also, support conduits within twelve inches (12") of any bends, outlet boxes, wall penetrations or joints in pipe. All conduits shall be secured to structure. Lighting fixture whips may not be secured to ceiling tie wires. Vertical risers shall be supported by approved riser clamps or supports installed at the respective floor lines

D. Conduits routed below bar joists shall utilize acceptable clamps.

E. Fasten hanger rods, conduit clamps and outlet and junction boxes to building structure using precast insert system, expansion anchors, preset inserts, or beam clamps. Do not use spring steel clips and clamps. Submit method of attachment for review prior to commencing work.

F. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheetmetal screws in sheetmetal studs; and wood screws in wood construction.

G. Do not fasten support wires to piping, ductwork, mechanical equipment or conduit.

H. Do not fasten conduit or junction boxes to ceiling grid wire. All conduit must be independently supported.

I. Support recessed fluorescent light fixtures with support wire at all four corners as required by roof/ceiling assembly. If roof/ceiling assembly does not require supports at each corner, support fixtures with minimum of two support wires at diagonally opposite corners. Spray paint ends of fixture support wires orange.

J. Conduits, except as approved by NEC, shall not be used to support low voltage cables.

K. Support all piping on roof with pipe stands/roller equal to MIRO Industries Model 4-RAH-PC or Portable Pipe Hangers, Inc., Type PP10 with roller for conduit 2-1/2" and smaller. For conduit over 2-1/2", up to and including 4" use MIRO Industries Model 6-RAH-PC or Portable Pipe Hangers, Inc. (PPH) Type PS-1-2. All conduit stands to sit on walk board (coordinate type and methods of support with Roofing Contractor). Provide minimum pipe height above roof deck as required by jurisdiction having authority (at least 3-1/2"). Provide supports for piping under 2" at six feet on center. Provide supports for conduit 2" and over at eight feet on center.

L. Provide all angles, unistrut supports and threaded rods under any structural elements or mechanical equipment where required for proper placement and support of light fixtures and/or conduits.

M. Supports and hangers shall be installed to permit free expansion and contraction in the raceway systems. Where necessary to control expansion and contraction, the raceways shall be guided and firmly anchored. Anchors shall be approved by the Engineer and shall be designed for equal effectiveness for both longitudinal and transverse thrust. No conduit shall be self-supporting, nor shall it be supported from equipment connections. Transmission of vibrations, noise, etc., shall be considered and any special suspension with vibration dampers to minimize transmission shall be used where necessary.

N. Where ducts interfere with the proper location of hangers, furnish and install trapeze hangers. Trapeze hangers may be used to support groups of conduit run in parallel.

O. Install metal framing to support wall mounted equipment and wall or ceiling mounted raceways.

P. Install expansion bolts to attach framing to concrete. Space bolts a maximum of 24 inches on center, with not less than two bolts per piece of framing.

Q. Touch up all scratches or cuts on steel components with an approved zinc chromate or a 90 percent zinc paint.

END OF SECTION

SECTION 26 05 33 - RACEWAYS

PART 1 - GENERAL

1.01 SCOPE OF WORK

Provide a complete conduit system as shown on the drawings and as hereinafter specified.

1.02 STANDARDS

Conform with the latest requirements of the NEMA, the National Electrical Code, and be UL listed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Rigid Metal Conduit (RMC): Hot-dip galvanized, threadable steel raceway, galvanized after fabrication. Fittings shall be malleable iron, either cadmium plated or hot-dip galvanized.

B. Intermediate Metal Conduit (IMC): Conduit shall be similar to rigid steel conduit except thinner wall. Fittings shall be malleable iron, either cadmium plated or hot-dip galvanized.

C. Electrical Metallic Tubing (EMT): EMT shall be made of hot-dip galvanized strip steel. Fittings shall be die cast compression or set screw type.

D. PVC - Schedule 40 and Schedule 80 polyvinyl chloride conduit (PVC Duct) shall be UL rated. Conduit fittings and cement shall be produced by the same manufacturer and approved for such use.

E. Flexible Metal Conduit (FMC): Spirally wound continuously interlocked zinc coated strip steel. Fittings shall be die cast zinc, either screw-in or squeeze type.

F. Flexible Conduit (LFMC): Liquid-tight (vibration and/or wet areas) fabricate from continuous lengths of spirally wound galvanized steel strip interlocked with a gray polyvinyl chloride cover extruded over the core to make the conduit liquid tight, oil proof and bendable to a small radius. Fittings shall be compression type, die cast zinc, with insulated throat.

G. Metal-Clad Cable (MC): Galvanized interlocking steel armor. 600 volt, type THHN/THWN, integrally colored insulation. Size #12 AWG or #10 AWG, copper conductors. Fittings shall be listed for MC usage and include anti-short bushings. Reference Section 3.03 for acceptable uses.

H. Metal Wire-ways.

1. Furnish with wire retainers on not less than 12 inch centers. All screws installed towards the inside shall be protected to prevent possible wire insulation damage.

2. The finish shall be the manufacturers' standard color and shall consist of not less than two coats of enamel over a rust-inhibiting prime coat.

I. Surface Metal Raceway (2000 series).

1. Surface metal raceway shall consist of a single compartment base, blank cover, and appropriate fittings to complete the installation per the electrical drawings.

2. The base and cover shall be manufactured of steel and finished with an white color.

3. Approximately ¾" deep, 1 ¼" high and 5' sections.

J. Non-Metallic Multi-outlet Assemblies (5400 series).

1. Surface raceway system shall consist of a dual compartment raceway base, twin cover, appropriate fittings, outlets and device mounting plates necessary for a complete installation.

2. Duplex receptacles and data outlets ("activate connectivity inserts") mounted at 24" centers or as noted on plans. Connect adjacent receptacles on alternate circuits.

3. Approximately 1 ¾" deep, 5 ¼" high and 8' sections with equal compartments.

4. The finish shall be white color and shall consist of not less than one coat of enamel over a prime coat.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. Raceway and cable usage and installation shall conform to the appropriate article of the National Electrical Code (NEC), as a minimum.

B. Do not install conduit that is crushed or deformed in any way.

C. Provide a nonmetallic (nylon, polypropylene, or approved equal) drag line of suitable strength in spare conduits and telephone conduits. Tightly plug spare conduits at both ends.

D. Do not pull wire into conduit system until the conduit system is complete in all details; in the case of concealed work, until all rough plastering or masonry has been completed.

E. No wiring systems of any type shall be installed in ducts used to transport dust, loose stock, or flammable vapors.

F. No wiring system of any type shall be installed in any shaft containing ducts used for vapor removal or for ventilation of commercial-type cooking equipment.

G. Fasten and support the wiring method employed to the permanent structure using listed straps with corrosion resistant hangers and fasteners.

H. Ceiling system wires or lay-in type ceiling grid components shall not be used as a means of support.

1. Independent support wires and associated fittings which are installed in addition to the ceiling system support wires, shall be permitted: (300.11.A)

2. Independent wires within the cavity of a fire-rated floor–ceiling or roof–ceiling assembly shall be distinguishable by color. (300.11.A.1)

3. Independent support wires that provide support for device boxes shall be secured at both ends. (300.11.A).

I. Bends shall be made with factory elbows or field bent. Field bends shall be made using equipment designed for the particular raceway material and size. Bends shall be free from dents or flattening.

J. Conduit bodies may be used in lieu of conduit elbows where covers will be accessible and ease of installation and appearance warrants their use.

K. Install expansion-deflection fittings where raceways cross structural expansion joints or where required to compensate for thermal expansion and contraction. Install bonding jumpers across expansion-deflection fittings in metal raceway systems.

L. Openings through fire-resistant-rated or sound-resistant-rated walls, partitions, floors or ceilings shall be fire-stopped by installing raceways or cables through sleeves set through the walls, partitions, floors or ceilings and fire-sealing all openings and voids around the sleeves, raceways and cables.

M. Do not drill or pierce structural steel members under any circumstances without the Engineer's specific approval.

N. Minimize roof penetrations by routing conduit through the equipment roof opening. If roof penetration is necessary, coordinate with the Architectural Specifications and penetrate as directly below the equipment disconnect or wiring connection point as possible. Do not use flexible conduit in a pitch pan.

O. Arrange all conduits to drain away from the building.

P. Perform all necessary excavation and backfilling. Tamp backfill in six inch (6") layers to original grade, moistening as required for proper compaction. All backfilling shall be free from harmful materials. Provide shoring, bracing, and de-watering as necessary. Remove all excess and materials not suitable for backfill from the site. Provide barricades to prevent endangering the public. Provide warning beacon lighting at night to adequately mark all excavations.

Q. A #10 AWG tracer wire shall be installed in all trenches which do not contain conductive conductors within them. This will include future use raceways, optical fiber, etc.

R. Raceway systems shall be complete before installing conductors.

S. The interior of all raceways shall be cleaned before installing conductors.

T. Terminate future use raceways with a capped coupling within an accessible area.

U. Workmanlike manner: Type MC cable shall be installed in a neat and workmanlike manner. Cable shall not cross other cable or have excess slack. Cable that is installed vertically, must be plumb with the vertical framing of the structure.

V. Bundling of cable is limited to three cables for each support ring.

W. Type MC cable may be only supported by fasteners or clamps that are approved and UL tested for cable support.

3.02 INSTALLATION BELOW GRADE

A. Minimum size raceway is 3/4 inch.

B. Provide rigid galvanized steel conduit or PVC where conduits are installed in concrete floor slab ¾" maximum. Maintain proper concrete coverage as directed by structural engineer. PVC conduit shall not penetrate slab above finished grade.

C. Provide rigid galvanized steel or PVC conduit where conduits are installed below grade.

D. Swab clean all conduits before cable installation. Waterproof all conduit joints after cable installation.

E. Provide conduit wall sleeves for all conduits penetrating walls, grade beams, etc. and other locations shown on the Drawings.

F. Where required to bend PVC ducts to satisfy indicated routing, preform ducts to allow ends of duct sections to be in a straight alignment. Accomplish preforming of ducts by utilizing proper duct heater units.

G. Perform all necessary excavation and backfilling for proper installation of work. Take precautions not to excavate below depth required. Backfill trenches with sand, 3" below conduits and 3" above. Tamp remainder of backfill in six inch (6") layers to original grade, moistening as required for proper compaction. All backfilling shall be free from harmful materials. In areas to be paved, compact to density to receive pavement. Where pavement is broken for the installation of conduit, repair to original condition. Provide shoring, bracing, and de-watering if necessary for installation of work. Remove from site all materials encountered which are not suitable for backfill.

H. When and if damage is caused to underground utility lines or structures, above ground utility lines or structures, or other purposeful surface conditions, either on or off the right-of-way, make immediate temporary repairs. At the first opportunity, make permanent repairs which are acceptable to the Owner. All such repairs shall be made at the Contractor's expense.

I. Where necessary, provide barricades around open excavations to prevent endangering the public. Provide warning beacon lighting at night to adequately mark all excavations.

J. Where conduits embedded in concrete floor or roof deck cross expansion joints, they shall be joined together using O.Z. Gedney type DX expansion fittings and bonding jumpers. Straight runs of conduit over 150' long shall have O.Z. Gedney Type AX expansion fittings installed to minimize movement. Fittings shall be installed at a maximum of 150' on center.

K. Where horizontal runs of conduit transition to vertical and continue above finished grade or finished floor; the transition shall be made with a 90 degree long radius sweep. The sweep may be PVC (2" and smaller) and shall be RGS (2-1/2" and larger). No PVC conduit will be allowed above finished grade or finished floor.

L. CONDUITS RUN BELOW FINISHED FLOOR SHALL NOT PENETRATE GRADE BEAMS. UNLESS APPROVED BY STRUCTURAL ENGINEER.

3.03 PERMITTED RACEWAY USAGE:

A. Raceway transitions at all locations;

1. Rigid nonmetallic conduit runs from below grade level shall transition to galvanized rigid steel or intermediate steel conduit, wrapped with corrosion protection tape, prior to exiting at grade level and continue thereafter in accordance with their usage requirements.

a. Caulk concrete-to-conduit joints with a silicone rubber compound.

2. Continue the more protective conduit type into an area where a less protective conduit type is permitted for a distance of not less than 1 foot.

B. Electrical metallic tubing at;

1. Interior locations when;

a. Concealed within walls and ceilings or; **do not use in the mortar filled cells of concrete masonry units.**

b. Exposed and more than 8 feet above finished floor or;

c. Exposed and more than 3 feet above finished floor in electrical or mechanical rooms or;

d. Exposed and more than 1 foot above a finished attic or mezzanine floor.

e. Do not use where exposed to standing water or other continuously damp or wet areas.

2. Exterior locations when;

a. More than 10 feet above the finished ground surface or;

b. More than 1 foot above the finished ground surface within a lockable equipment yard or;

c. In the crawl space below a building with the 1st level elevated.

C. Rigid or intermediate metal conduit at;

1. Interior locations when;

a. Exposed, in other than electrical or mechanical rooms, and installed less than 8 feet above finished floor or;

b. Exposed in electrical or mechanical rooms and installed less than 3 feet above finished floor or;

c. Exposed and less than 1 foot above a finished attic floor or mezzanine floor.

2. Exterior locations when;

a. Less than 10 feet above the finished ground surface or;

b. Less than 1 foot above the finished ground surface within a lockable equipment yard.

1) Malleable iron straps will be required at these locations.

D. Rigid metal and intermediate metal conduit wrapped with corrosion protection tape or rigid nonmetallic conduit at;

1. Underground locations with a ¾" minimum size when;

a. Located outside of the building line or;

b. Located below a concrete slab on grade or;

c. Located below a beam of a slab on grade or.

d. Located within a concrete slab on grade where the outside diameter is equal to or less than 20 percent of the slab thickness.

1) Seal conduit ends at each building entry.

2. Below grade;

a. The minimum size shall be 3/4 inch.

b. Seal conduit ends at each building entry.

c. Coordinate covering with Structural Engineer.

E. Rigid nonmetallic conduit for;

1. An exposed grounding electrode or bonding conductor below 10 ft. to guard from physical damage.

F. Flexible metal conduit in;

1. Dry interior locations with a minimum length of 2 feet and maximum length of 6 feet to;

a. The final connection of transformers, motors and vibrating equipment.

G. Flexible metal conduit or metal-clad cable for light fixtures or ceiling mounted devices.

1. Dry or damp interior locations with a maximum length of 6 feet to;

a. The final connection of light fixtures; or

b. The final connection of ceiling mounted outlet boxes or.

H. Flexible metal conduit is not allowed for any technology rough-in, must be EMT.

I. Flexible metal conduit or metal-clad cable with the following limitations for receptacles and branch circuit.

1. Dry interior locations;

2. Feeds one outlet only;

3. 20 amp maximum;

4. Both segment ends are located within the same room.

   a. One segment end at the outlet box and the other segment end at a ceiling junction box located, within 10 feet of the entrance into the wall cavity, vertically above the outlet served.

5. Where installed in an insulated wall, the cable must be on the conditioned side of the insulation and;

6. Each cable or conduit shall be supplied by only one (1) branch circuit breaker (one, two or three poles).

7. No MC to be horizontal in wall. All horizontal runs must be pipe and wire only.

J. Liquid-tight flexible metal conduit in;

1. All locations with a minimum length of 2 feet and maximum length of 6 feet for;

   a. The final connection of all liquid pump motors and associated control connections or;

2. Damp or wet interior and all exterior locations with a minimum length of 2 feet and maximum length of 6 feet to;

   a. The final connection of transformers, motors, and vibrating equipment.

END OF SECTION

SECTION 26 05 34 - OUTLET BOXES, PULL BOXES AND JUNCTION BOXES

PART 1 - GENERAL

1.01 SCOPE OF WORK

Provide outlet boxes in accordance with the National Electrical Code at locations shown on the Drawings and hereinafter specified.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide standard hot-dipped galvanized pressed steel boxes, minimum 4"x4" by 1-1/2" deep. Use 4 11/16" by 2 1/8" deep box when using 1" conduit.

B. Cabinets with screw covers or as specifically noted for junction or pull boxes larger than 150 cubic inches.

C. All junction, pull and splice boxes to conform to NEC Article 370.

D. All metallic boxes are to have an internal means of grounding.

E. Flush mounted wall and finished ceiling boxes.

1. Within framed, drywall, plastered or tile covered walls, with ¾" max. raceway, furnish galvanized steel, 4" square, minimum 1 1/2 inch deep boxes with a raised tile cover and a far-side support.

2. Within drywall or plaster covered or suspended ceilings, with ¾" max. raceway, furnish galvanized steel, 4" square, minimum 1 1/2 inch deep boxes with a raised tile cover.

3. Within masonry walls, with ¾" max. raceway, furnish galvanized steel boxes, minimum 2-1/2-inch deep.

F. Surface mounted boxes.

1. Mounted at or below 10' above the finished surface, ¾" max. raceway size, furnish cast aluminum boxes with a surface mounted cover.

G. Junction and pullboxes.

1. Furnish, minimum 4" square, 1 – ½" deep, galvanized steel junction and pullboxes where installation conditions warrants their use. Boxes shall be furnished with screw-on covers or hinged covers. Covers shall be such that it can easily be handled by one person. All hardware and fasteners shall be galvanized steel.

H. Flush mounted floor boxes.

1. Furnish adjustable, concrete tight, corrosion resistant, duplex type. Compartmental type for combination receptacle and communication. The coverplate shall be brass with hinged flap and carpet flanges. The minimum below ground/slab conduit size shall be ¾".

I. Underground boxes.

1. U. L. listed.

2. Pre-cast, polymer concrete.

3. Minimum size of 10” W X 10” L X 10” H.

4. Bolt down cover.

5. Stainless steel hex-bolts and replaceable nuts.

6. Minimum load rating of 5,000 lbs. (select by location)

PART 3 - EXECUTION

3.01 INSTALLATION

A. Through wall boxes and boxes mounted back-to-back are not permitted. Provide 8 inch minimum separation in order to minimize sound transmission.

B. Set flush with wall or ceiling finish in accordance with N.E.C., Article 370. Extension sleeves are not permitted for boxes improperly set.

C. Verify location of outlets prior to rough-in. When necessary, relocate outlets to avoid interference with other work or equipment. Where fixtures are mounted on or in an accessible type ceiling, provide a junction box and extend flexible conduit to each fixture. Fit outlet boxes in finished ceilings or walls with appropriate covers.

D. Where more than one (1) switch or device is located at one (1) point, unless otherwise indicated, provide gang boxes and covers. When the voltage between switches exceeds 300 volts, provide barrier partitions between adjacent switches located in the same box. Sectional switch boxes or utility boxes not permitted.

E. Provide pressed steel boxes for all interior work. Provide square boxes with plaster rings. Provide appropriate size multi gang box for group devices. Single gang boxes screwed together is not acceptable.

F. Where boxes are installed in masonry walls, use only approved masonry type boxes for single gang and multi-ganged applications. Standard 4” square boxes with plaster rings are not allowed. Caulk around joint between receptacle box and masonry. Verify color with architect.

G. Do not drill and pierce structural concrete members and structural steel without prior approval of the Engineer.

H. Mount all boxes plumb.

I. Mount boxes completely rigid without conduit or finished wall support.

J. Where outlets are installed in steel stud type systems, provide additional cross bracing, bridging, and/or straps as required to make the outlet completely rigid. Support boxes with “caddy screw gun brackets”, “caddy box mounting bracket”, “caddy quick mount box brackets” or acceptable alternates.

K. **Dimensions are from finished floor to centerline of outlets.** Adjust heights of outlets in masonry walls from that indicated so that receptacles are not lower than 16” A.F.F. and switches are not higher than 48” A.F.F. Outlet height so adjusted shall be consistent. Unless otherwise indicated, mount outlets at the following heights:

Wall switches/Wall Phone	4 ft. - 0 in.
General Duplex receptacles	1 ft. - 6 in.
Receptacles at Millwork	verify with millwork
Receptacle for Refrigerators	2’ – 6”
Weatherproof duplex receptacles	1 ft. - 6 in.
Telephone/Data outlets/Teacher Station	1 ft. - 6 in.
Telephone/Data at millwork	verify with millwork
Garages/Apparatus Bay receptacles	2 ft. - 0 in.
Clocks	8 ft – 0 in
Access Point Data Drops (wall mounted)	10 ft – 0 in

L. For boxes installed above ceilings, label the box cover with the circuit numbers installed. Labeling shall be with a permanent, black maker with broad tip.

M. Boxes installed in rated walls shall have a minimum horizontal separation of 24”. Maximum surface area of boxes shall not exceed 16 square inches.

N. Completely envelope floor boxes in concrete except at the top. Increase slab thickness at boxes if required for bottom covering. Adjust covers flush with finished floor.

O. Where outlets are indicated adjacent to each other, mount these outlets in a symmetrical pattern with all tops at the same elevation. Where outlets are indicated adjacent, but with different mounting heights, line up outlets to form a symmetrical vertical pattern on the wall.

P. Install recessed boxes flush to the finished wall or ceiling line by the use of manufactured tile rings to extend the box forward.

Q. Boxes to which light fixtures or pendants are mounted shall NOT contain any conductors foreign to the operation of such light or pendant application. Removal of lights, pendants and cord drops to access other branch circuits is NOT acceptable.

R. Where fixtures are mounted on or in an accessible type ceiling, provide a junction box and extend flexible conduit to each fixture.

S. Install knockout closures to cap all unused openings.

T. All boxes shall be installed with coverplates.

U. Install boxes as required to facilitate conductor installation in raceway systems. Junction and pull boxes shall be sized to accommodate conductors, splices, devices and fittings.

V. Raceways are NOT allowed to terminate to extension rings.

W. Install boxes so that covers are accessible and easily removable after completion of the installation. The minimum clear space in the direction of the box opening shall be 36”.

X. Include suitable access doors, with the proper fire rating, for boxes above inaccessible ceilings. Boxes shall be located within reach of the access.

Y. Install underground boxes with cover slightly above finished grade.

Z. Spray paint J-Boxes red for Fire Alarm Systems. All other special system J-Boxes to be painted white.

END OF SECTION

SECTION 26 05 80 - EMPTY RACEWAY ROUGH-IN

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish and install all equipment, accessories and material required for the rough-in of empty raceway systems in accordance with the specifications and drawings.

B. Rough-in raceway sections for indicated devices and outlets in all walls, floors and underground sufficient to facilitate installation of the following systems without cutting or otherwise damaging walls, ceilings or floors installed in this contract:

1. Communications
2. Fire Alarm
3. Television
4. Data
5. Security
6. Controls

C. **ALL** CONDUITS SHALL HAVE A PULL CORD INSTALLED. INSTALL BLANK COVERS ON ALL UNUSED JUNCTION BOXES.

D. 3/4” CONDUIT MINIMUM.

E. Electrical Contractor shall provide all conduit, junction boxes and outlet boxes for HVAC controls as specified in Section 26 05 00, 1.03, D. Coordinate locations and requirements with Mechanical Contractor and Controls Contractor prior to rough-in. Provide outlet box for sensor and conduit to above accessible ceiling. Provide conduit for all wiring in areas with no ceiling. Provide conduit from outdoor units to above accessible ceilings. Provide conduit between make-up air units and associated condensing units.

F. REFERENCE TECHNOLOGY DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS CONCERNING CONDUIT ROUGH-IN FOR VOICE/DATA SYSTEMS.

G. Floor mounted devices: Provide pathway to nearest accessible ceiling for all floor mounted devices called for in this specification.

1.02 QUALITY ASSURANCE

A. Construct each item of equipment, including parts and accessories, in a workmanlike manner, using new materials or the best quality obtainable for the purpose intended. Design and build materials in accordance with the best practices of the electrical industry.

B. Comply with all requirements of serving utility.

PART 2 - EXECUTION

2.01 INSTALLATION

A. Interior conduit systems shall have runs less than 100 feet from point to point.

B. Provide accessible pull boxes when necessary. Provide blank covers for all outlet boxes, unless otherwise noted.

C. All bends for telephone and cable television service shall be 36 inch radius, minimum.

D. Provide outlet box in wall at 18" A.F.F. (UON) and conduit with string to above accessible ceiling location. Provide insulated bushing on end of conduits.

E. Provide one (1) additional outlet boxes and conduit with pull cord to above the ceiling. Final location shall be as directed by the Architect. Outlets can be added at any phase of construction with the exception of finished CMU walls.

END OF SECTION

SECTION 26 15 00 - ELECTRICAL DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Electrical demolition.

PART 2 - EXECUTION

2.01 EXAMINATION

A. Demolition Drawings are based on field observations and existing Record Documents. Report discrepancies to Architect/Engineer before disturbing existing installations.

B. Verify field measurements and circuitry arrangements prior to starting demolition.

C. Verify that wiring and equipment to be abandoned serve only abandoned facilities.

D. Beginning of demolition means the Contractor accepts existing conditions.

2.02 PREPARATION

A. Disconnect electrical systems in walls, floors, ceilings, etc. scheduled for removal. Reference Architectural drawings and specifications for limits of demolition.

B. Coordinate utility service outage with Utility company and the Owner, prior to starting demolition.

C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

2.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Remove abandoned wiring, conduit and appurtenances to source of power (panelboard) or previous device, including conduits, wiring and appurtenances above accessible ceilings.

B. Remove, relocate and extend existing installations to accommodate new construction.

C. Cut conduit flush with walls and floors, and patch surfaces. Reference Architectural Specifications for repairing and painting requirements.

D. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

E. Maintain access to existing electrical installations which remain active. Modify installation or provide access panels, as required.

F. Extend existing installations, as required, using materials and methods as specified or that is compatible with existing electrical installation.

2.04 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment which are to be reused.

1. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuitry arrangements.

2. Luminaires: Remove designated existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace all ballasts, lamps and broken electrical parts and/or lenses, as required.

END OF SECTION

SECTION 26 24 16 - BRANCH CIRCUIT PANELBOARDS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide branch circuit panelboards as shown on the Drawings and as herein specified.

B. Panelboard feeders are sized from the “Panelboard Connection Schedule”. When a panel is fed from a transformer use the “Transformer Connection Schedule” for feeder size. When there is a conflict between the sizes, use the largest of the two.

C. This section specifies the furnishing and installation of molded case, thermal-magnetic circuit breakers. Electronic, solid-state trip circuit breakers are NOT allowed.

D. Maximum circuits per panelboard section shall be 42 circuits.

1.02 STANDARDS

A. Provide U.L. label.

B. Comply with applicable standards of NEMA and the NEC.

1.03 ACCEPTABLE MANUFACTURERS

A. Square D/Schneider Electric

B. ITE Siemens

C. Cutler Hammer/Westinghouse/Eaton

D. General Electric

1.04 SUBMITTALS

A. Furnish Engineer shop submittal for each branch circuit panelboard.

B. Submit shop drawings for each panelboard which include outline and support points, dimensions, voltage, main bus ampacity, short circuit ampere interrupting rating, circuit breaker arrangement, sizes and number of poles. Shop drawing shall list all spaces and circuit breakers to be installed in each panelboard.

C. Provide shop submittal which includes the following:

1. Cabinet:

a. Housing

b. Trim

c. Outline dimensions

d. Available spaces

e. Panelboard mounting

2. Circuit breakers:

a. Frame size

b. Trip setting

c. Class

d. Interrupting rating in RMS Symmetrical amperes

e. Mounting

f. Voltage rating

3. Busing:

a. Ampere rating

b. Material

c. Incoming cable lug size

d. Bus bracing

4. Manufacturer's catalog numbers.

5. Other descriptive data as may be required.

D. Circuit breaker arrangement must be identical to the schedules or one line diagram unless there is a technical reason for deviation. All reasons for deviation must be stated on the shop drawings.

E. Unless specifically noted, only Max 42 circuits per section will be allowed.

PART 2 - PRODUCTS

2.01 GENERAL.

A. All new panelboards and switchboards on this project shall be by the same manufacture. The manufacture shall be the same as the manufacturer of the circuit breakers.

B. Interior trim shall be of dead-front construction to shield user from energized parts. Dead-front trims shall have pre-formed covers for unused mounting space.

C. Interior leveling provisions shall be provided for flush mounted applications.

D. Panelboards shall be designed such that switching and protective devices can be replaced without disturbing adjacent units and without removing the main bus connectors.

F. Furnish suitable lugs for each conductor requiring a connection.

2.02 BUS CONSTRUCTION

A. Fabricate all buses of 98 percent IACS conductivity, copper. Size buses to limit their temperature rise within the panelboard to 65°C based on a 40°C ambient temperature.

B. Provide one continuous, un-reduced in size, bus bar per phase with “distributed phase” or “phase sequence” type connections to the branch circuit breakers. Extend the buses the height of the panelboard.

C. Provide circuit breaker connections to the bus by means of a bolt. Square D “I-Line” may be provided.

D. Insulate each individual phase bus to withstand 2000 volts a-c for 1 minute.

E. Support the bus systems using non-carbonizing, non-tracking insulators.

F. Furnish fully equipped spaces, include all appropriate connectors or mounting hardware.

G. Furnish an insulated neutral bus which is the same size as the phase buses. Larger sizes may be required by the schedules or one line diagram.

H. Furnish a solidly bonded equipment ground bus. Include terminals for feeder and branch circuit grounding conductors.

I. Furnish an isolated ground bus, with terminals, where scheduled or noted on the drawings.

J. Provide full size or larger insulated neutral bus bar. Where specified on the panel schedule, provide 200% rated neutral bus bar. Coordinate with plans.

2.03 RATINGS

A. Panelboards and circuit breakers shall be rated for 60 hertz and have a voltage and current rating as indicated on the drawings or schedules.

B. The finished panelboard assembly shall be fully rated to withstand mechanical forces exerted during short-circuit conditions when connected directly to a power source having available fault currents indicated on the drawings or schedules. The minimum rating for a 240 volt a-c panelboard shall be rated 10,000 AIC RMS symmetrical and a 480 volt a-c panelboard shall be rated 14,000 AIC RMS symmetrical minimum. Series ratings are not permitted.

C. Final AIC ratings for all panels shall be determined and provided by the gear manufacturer to meet minimum allowable fault current from utility company transformer. Provide coordination study and fault current analysis as required for justification of sizes. Make all changes required by coordination study and include in bid price. Coordination study must be completed prior to submitting gear.

2.04 ENCLOSURES

A. Enclosures shall be at least 20 inches wide and made from galvanized steel with welded interior mounting studs. Provide gutter space in accordance with the National Electrical Code. Where conductors are carried through a box, the box shall be sized to include the additional space. Enclosures shall be fully enclosed.

B. **ALL MULTI-SECTION PANEL ENCLOSURES SHALL BE THE SAME HEIGHT.**

2.05 HINGED FRONT COVER

A. Mounting shall be flush or surface as indicated on associated schedules or drawings. Surface trims shall be the same height and width as the box. Flush trims shall overlap the box by 3/4 of an inch on all sides.

B. Fronts shall be of the concealed hinged type. Front shall not be removable with the door closed.

C. Doors on front shall have rounded corners; edges shall be free of burrs. Doors shall have a flat latch type lock with a catch and spring loaded stainless steel door pull. All lock assemblies shall be keyed alike. One key shall be provided with each lock.

D. Furnish a nameplate, circuit directory frame, card and a clear plastic covering on the inside of the door. All loads shall be identified as specified in Section 16075.

2.06 FINISH

A. Surfaces of the trim assembly shall be properly cleaned, primed, and a finish coat of gray paint applied.

B. Nema 3R enclosures shall be properly cleaned, primed, and a finish coat of gray paint applied.

C. Supply one quart of finish paint for each project. Touch-up after installation.

2.07 MOLDED CASE THERMAL-MAGNETIC CIRCUIT BREAKERS

A. Furnish molded case, thermal-magnetic circuit breakers in lighting / appliance and power distribution panelboards for the specified service with the number of poles and ampere ratings indicated on the schedule or drawings. Incorporate inverse time characteristic by bi-metallic overload elements and an instantaneous characteristic by magnetic trip.

B. Current carrying components shall be completely isolated from the handle and the accessory mounting area.

C. Circuit breakers shall have a trip free, toggle operating mechanism which will provide quick-make, quick-break contact action. The circuit breaker shall have common tripping of all poles.

D. The circuit breaker handle shall reside in a tripped position between ON and OFF to provide local trip indication. Circuit breakers shall be clearly marked ON and OFF.

E. Circuit breakers shall be factory sealed.

F. All circuit breakers shall be suitable for mounting in any position.

G. Circuit breakers shall be equipped with factory installed mechanical lugs.

H. Circuit breakers shall have a permanent trip unit containing individual thermal and magnetic trip elements in each pole.

I. Thermal trip elements shall be factory preset and sealed. Circuit breakers shall be true rms sensing and thermally responsive to protect circuit conductor(s) in a 40° C ambient temperature.

J. For 2-pole and 3-pole breakers, use the common-trip type so that an overload or fault on one pole will trip all poles simultaneously. Handle ties are not acceptable except where multiple single breakers are used to serve modular furniture.

K. Where indicated, provide ground fault (GFCB) or shunt trip breakers.

2.08 LISTING

A. The completed panelboard shall be UL listed.

B. Certification standards, with applicable voltage systems and corresponding interrupting ratings, shall be clearly marked on the face of each circuit breaker.

C. Circuit breakers shall be equipped with listed electrical accessories as noted on the schedules or drawing.

D. When required, circuit breakers shall be listed as HACR type.

E. When required, circuit breakers shall be listed as Switch Duty type.

F. When required or indicated on the drawings or schedules, equipment shall be listed for the environment in which it is installed.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install box, trim and interior rigid and plumb. Center interior with opening.

B. Install panelboards in accordance with the instructions of the manufacturer and as shown on the Drawing. Install complete with all required electrical connections.

C. Unless otherwise noted, install panelboards with the top of the trim 6 ft. 0 in. above finished floor.

D. Field check panelboard loading and reconnect circuits as required to provide balanced phase and line loads.

E. Neatly bundle, route and support cables installed in wiring gutters of panelboards. Minimum bending radii as recommended by the wire and cable manufacturer.

F. Install five (5) 3/4” conduits from top of flush mounted panelboards to accessible void above ceiling. Cap end of conduits above ceiling.

G. All recessed panels are to be installed in 6” minimum wall thickness. Coordinate clear dimensions with Architect and General Contractor prior to rough-in.

H. Provide wood trim for any semi-recessed panels, including panelboards. Coordinate with General Contractor and verify finishes with the Owner/Architect.

I. Install filler blanks for any unused breaker space.

J. All panel interior to be free of debris and dirt prior to installing panel covers.

K. Check bolted and circuit breaker connections using a torque wrench.

L. The faces of all circuit breakers shall be flush with each other.

M. Affix permanent and individual circuit numbers to each circuit breaker in a uniform position.

END OF SECTION

SECTION 26 27 26 - DEVICES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide switches and receptacles as shown on the drawings and as hereinafter specified.

1.02 STANDARDS

A. Provide all receptacles which conform with NEMA standards for amperage and voltage classification.

B. Provide devices U.L. listed for the application and for the type of wire used.

1.03 ACCEPTABLE MANUFACTURERS

A. Leviton, or approved equal

1.04 SUBMITTALS

A. Furnish Engineer shop submittal for each device.

B. Provide shop submittals which include the following information:

1. Manufacturer and catalog number.

2. NEMA configuration.

3. Voltage and amperage ratings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Straight Blade Receptacles: Furnish Leviton receptacles or approved equal, color shall be White. (Devices and coverplates connected to emergency circuits shall be red).

1. Single receptacle, 20 amp, 125-volt, 2-pole, 3-wire, grounding, NEMA 5-20R.

2. Single receptacle, 20 amp, 250-volt, 2-pole, 3-wire, grounding, NEMA 6-20R.

3. Duplex receptacle, 20 amp, 125-volt, 2-pole, 3-wire, grounding, NEMA 5-20R.

4. Tamper resistant, duplex receptacle, 20 amp, 125-volt, 2-pole, 3-wire, grounding, NEMA 5-20R.

B. Toggle Switches: Furnish Leviton switches or approved equal, color shall be White. (Devices and coverplates connected to emergency circuits shall be red).

1. Single pole, single throw, 20 amp, 120/277 volt.

2. Single pole, double throw, momentary, 20 amp, 120/277 volt.

3. Single pole, double throw, maintained, 20 amp, 120/277 volt.

4. Double pole, single throw, 20 amp, 120/277 volt.

5. Three way, single throw, 20 amp, 120/277 volt.

6. Four way, single throw, 20 amp, 120/277 volt.

C. Locking Switches: Furnish Leviton switches with #55500 key, color shall be White. (Devices and coverplates connected to emergency circuits shall be red).

1. Single pole, single throw, 20 amp, 120/277 volt.

2. Single pole, double throw, momentary, 20 amp, 120/277 volt.

3. Single pole, double throw, maintained, 20 amp, 120/277 volt.

4. Double pole, single throw, 20 amp, 120/277 volt.

5. Three way, single throw, 20 amp, 120/277 volt.

6. Four way, single throw, 20 amp, 120/277 volt.

D. Dimmer Switches: Furnish Lutron NT series, or equivalent, continuously adjustable slide dimmer with preset on/off switch. Dimmer shall be solid-state type for use with 120-volt incandescent lamps and shall have electromagnetic filters to eliminate noise, RF and TV interference. Dimmer wattage is indicated on the drawings or 1000 watt minimum.

E. Ground Fault Devices: Color shall be White. (Devices and coverplates connected to emergency circuits shall be red).

1. Ground fault circuit interrupter (GFCI), 20 amp, 125-volt, 2-pole, 3-wire, grounding, NEMA 5-20R.

2. Ground fault feed through switch, 20 amp, 125-volt.

F. Device Plates:

1. Unless otherwise indicated, provide smooth metal device plates of Type 430 stainless steel for all indoor devices. Verify color with architect prior to ordering. Cover plates for devices served by emergency circuits shall be red.

2. Provide telephone and data outlets with blank metal type 430 stainless steel covers.

3. Provide properly gasketed vertical single lift device plate of aluminum die cast for weatherproof receptacles and/or switches.

G. Floor Outlets:

1. Provide where shown on the drawings, PVC rectangular floor boxes. Coordinate all dimensions for floor boxes with Architect. Contractor shall not scale from drawings.

2. Receptacle floor outlets specified as duplex shall have duplex screw cap coverplates. Telephone and/or data floor outlet boxes to have combination screw cap coverplate.

3. Provide brass carpet flanges for each floor box installed in carpeted areas.

4. Multiple device locations shall incorporate two (2) or three (3) gang outlet box.

H. Provide GFI receptacles within 6 feet of any sink, lavatory, wet area and outdoors. All GFI resets to be located in the same room protected.

I. Provide GFI protection for all receptacles in areas where power hand tools or portable lights are used (shop areas, garages, etc.).

J. Provide GFI protection for all circuits used for heat tracing.

K. Provide a receptacle in all mechanical/electrical rooms.

L. Surge Arresting Receptacles: Where surge arresting receptacles are indicated, provide receptacles meeting Federal Specification WC-596F which are UL listed (UL 1449 and UL 498) with integral surge suppression. Provide with audible surge protection failure alarm and replaceable surge arrester module. Eagle Electric “Super Spec SurgeBloc” or acceptable equal.

M. All 120volt/20amp receptacles in kitchen area to be GFCI protected.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install wiring devices of the type as indicated on drawings. Make up all connections tight and set device plumb. Use care in installing device in order to prevent damage to the device and the wire in the outlet box.

B. Device Plates: Provide a device plate for each outlet to suit the device installed and install blank plates or covers for junction boxes and empty outlets, including telephone, computer, etc.

C. Mount duplex receptacles vertically with grounding opening **up** unless otherwise noted.

D. Prior to installation of outlets other than 20A, 120 Volts, verify receptacle type with Owner through Architect. Receptacles not verified shall be changed at Electrical Contractor’s expense if necessary to operate equipment.

E. Install all switches that are required to be handicap accessible at proper height per latest ADA Standards.

F. Install wall switches vertically in an outlet box on the strike side of the door as finally hung.

G. Install single throw switches so up is the ON position.

H. Locking switches shall be furnished in corridors, common areas and any area with HID lighting. Contractor shall confirm exact location of all locking switches with the Architect/Engineer prior to rough-in.

I. Provide “Caddy Screw Gun Bracket” between wall studs, as required to install switches, thermostats, intercom devices, etc. Verify exact location of devices prior to rough-in. Device boxes shall be aligned on center line of each box.

J. Receptacles installed for electric water coolers shall be mounted at a height so as not to be visible after installation of EWC. Coordinate with equipment being provided.

K Provide one (1) duplex GFI/weatherproof receptacle within 25 feet of all mechanical equipment, located on the roof, on mezzanines, or on the ground. Connect receptacles to nearest available circuit with not more than 6 receptacles or home run to the nearest available panelboard and provide breaker as required.

L. Engrave coverplates, designated for engraving, with 1/8 inch-high contrasting lettering.

M. Engrave the coverplates of wall switches that control equipment which is not in sight of the switch with the designation of the equipment being controlled. Lettering shall be 1/8 inch high and of a contrasting color.

N. All receptacles located above counter tops with sinks and receptacles in kitchens shall be GFI Type.

O. Provide one (1) additional receptacles in base bid including wire, conduit, breakers and appurtenances. Each receptacle represents a dedicated circuit. Estimate length of circuit is 150 feet. Final location as directed by Architect.

END OF SECTION

SECTION 26 51 00 - INTERIOR LIGHTING SYSTEM

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide all lighting fixtures and equipment as specified in the fixture schedule. Include all necessary accessories and appurtenances required for a complete and operating system whether or not specifically shown.

1.02 STANDARD

A. Provide all materials and accessories, whether specifically described or not, of the best grade of the commercial manufacturer. Provide first class workmanship in every respect.

B. Provide all lighting fixtures with Underwriters' label and manufacturer's label. Attachment of U.L. labels after delivery of fixtures is not acceptable.

C. Manufacture all lighting fixtures in accordance with the National Electrical Code.

D. Ballasts:

1. Provide ballasts for fluorescent lamps which meet U.L. specifications for Class P listing, applicable ANSI Standard Ballast Specifications, and certified by C.B.M. **Maximum - 2 lamps per ballast.**

2. Provide ballasts for HID lamps which comply with the UL Standard for High-Intensity Discharge Lamp Ballasts.

E. Provide lamps manufactured by North American Phillips or Sylvania. Unless otherwise indicated, lamp designations shown on the fixture schedule are Sylvania. (3500K)

1.03 ACCEPTABLE LIGHTING PACKAGES:

A. Lithonia

B. Thomas Daybrite

C. Hubbell

D. Others Fixtures as Scheduled or Noted

1.04 SUBMITTALS

A. Furnish Engineer shop drawings for each fixture.

B. Provide shop drawing which includes the following information:

1. Fixture type per the fixture schedule.

2. Manufacturer of the fixture.

3. Physical dimensions of the fixture.

4. Manufacturer's standard finish.

5. Fixture output distribution curves with utilization parameters.

6. Ballast temperature rating, voltage, wattage, and manufacturer.

7. Material type and thickness of lens.

8. Accessories for installation such as swivel hangers.

9. Number and type of lamps.

C. Submit point-by-point lighting calculations for areas as required by the specifications or noted on the drawings. The calculations shall include lamp lumen depreciation, luminaire dirt depreciation, ballast factor, lamp tilt factors, and initial lamp lumens. The calculations shall indicate maintained horizontal footcandle levels at a height of thirty inches above the floor. In interior spaces the maximum point spacing shall be five feet on center; for outdoor applications the maximum point spacing shall be 30 feet on center unless otherwise noted on the drawings.

D. Lighting Control Submittal
- Shop Drawing Floorplan drawings at 1/8" scale showing
    - motion sensor layout as directed on plans
    - daylight sensor layout as directed on plans
    - identify enabled fixtures
    - identify power packs
    - identify power pack location for open ceiling areas (above panel in electrical room)
- symbol legend identifying symbols
- control sequences
- riser diagrams showing low voltage cabling requirements
- cutsheets all parts

1.05 PRODUCTS STORAGE AND HANDLING

Protect fixtures delivered to the job site from the entrance of water and dust at all times. Replace fixtures damaged by improper handling or storage.

1.06 COORDINATION

A. Catalog numbers shown on the light fixture schedule may not include or adequately represent all the options and accessories required herein, this contractor shall conform to these specifications in there entirety.

B. The various ceiling types are indicated on the architectural plans and in the room finish schedules. All lighting fixtures shall be coordinated with the architectural requirements to insure that the proper trim kit, and/or mounting accessory is provided with each fixture for the intended application. All trim kits and accessories shall be provided by Contractor whether or not they are specifically indicated by the manufacturer's catalog numbers on the lighting fixture schedule.

C. The locations of all lighting fixtures are approximate. Locations are subject to modifications at the time of installation in order to meet field conditions. Make such changes without extra charge; however, obtain approval from Engineer before any work is started which involves such modifications.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide all fixtures as called for in the schedules complete with lamps.

B. Provide manufacturer's standard finish unless otherwise noted.

C. Design all recessed or semi-recessed fixtures compatible with ceilings as installed. Provide frames where required for proper installation.

D. Furnish complete, all fixtures requiring end caps, mounting spacers or other necessary items whether the catalog number shown includes such items or not.

E. Conceal all fixture parts within the fixture construction.

F. Self locking lenses/latches are not acceptable.

G. Lighting fixture construction shall effectively eliminate light leaks between the frame, lens, housing and the interior finish surface. Furnish one lens hold-down clip at two foot centers.

H. Linear fluorescent lampholders shall be turn type, medium base, bi-pin, 660 watt, 600 volt.

I. Conceal all fixture parts, including emergency components, within the fixture construction.

J. Fixture construction shall allow parts and lens to be replaced without special tooling.

K. Fixture shall be provided with disconnecting means per NEC 2008.

2.02 FLUORESCENT LIGHTING FIXTURES

A. Grid troffers (lay-ins) must conform to the following:

1. Steel housing with T-bar clips.

2. Flush steel door frame with metal rotary action latches. Door latches or hinges from either side.

3. Diffusers (lens) shall be flat, UV stabilized, acrylic, # 12 pattern a with minimum thickness of 0.095 inches.

B. Wet location troffers must conform to the following:

1. Steel housing.

2. Flush aluminum door frame with metal rotary action latches.

a. Door latches or hinges from either side.

b. Neoprene gasketing between the lens, doorframe, housing and mounting surface.

3. Diffusers (lens) shall be flat, UV stabilized, acrylic, # 12 pattern with internal prisms and a minimum thickness of 0.125 inches.

C. Surface or stem mounted fixtures with a lens must conform to the following:

1. Steel housing.

2. Flush steel door frame with metal rotary action latches.

3. Diffusers (lens) shall be flat, UV stabilized, acrylic, # 12 pattern with a minimum thickness of 0.095 inches.

D. Strip lights must conform to the following:

1. Steel, heavy duty construction.

2. 4 foot lamp lengths. Tandem, double length units are acceptable.

3. Lampholder are secured by a screwed-on end plate.

4. 4 foot wireguards. Tandem units require 2.

2.03 COMPACT FLUORESCENT LIGHTING FIXTURES

A. Compact fluorescent downlights must conform to the following:

1. Galvanized steel frame with adjustable hangers.

2. Outdoor and wet area fixtures shall be lensed, gasketed and listed for wet locations. Only lenses which are flat shall be provided.

3. Electronic ballast if available.

2.04 FLUORESCENT BALLAST

A. Ballast which are located outdoors and in un-heated indoor areas shall be rated for reliable starting to 0 degree F.

B. All fluorescent ballasts must conform to the following:

1. Thermally protected Class P with auto restart circuitry.

2. Class “A” sound rating.

3. Power factor equal to or greater than 90.

4. Contain no PCBs or asbestos.

5. Certification Ballast Manufacturers (CBM) approved.

6. Provide Quick Disconnect (QD) option for quick disconnecting of all ballasts.

C. Linear fluorescent ballast must conform to the following:

1. Fixtures with three or more lamps shall have two ballast to accommodate dual level switching. Provide 1 or 2 lamp ballasts. Do not use 3 and 4 lamp ballasts. All ballast are to be installed within the fixture of the lamps served.

2. Electronic, instant-start and parallel-connected.

3. Enclosed in a metal enclosure.

4. Provided with integral, color coded leads.

5. Operate at a frequency of 20kHZ or greater with less than 3 % visible lamp flicker.

6. Input current total harmonic distortion (THD) shall not exceed 10%.

7. Lamp current crest factor (ratio of peak to RMS current) shall be 1.7 or less.

8. Operate from a 60 Hz input source of 120 or 277 volts and sustain variations of ± 10% (Voltage & Frequency) with no damage to the ballasts.

9. Provide transient immunity.

10. Allow remaining lamp(s) to maintain full light output if one or more lamps fail.

11. Tolerate sustained open circuit and short circuit output conditions without damage.

12. Tolerate operation of up to 65 deg. C. case temperature without damage.

13. Comply with the Federal Communication Commission Rules and Regulations for electromagnetic/radio frequency interference (EMI/RFI), for non-consumer equipment (class A).

D. Compact fluorescent ballast must conform to the following:

1. Operate at a frequency of 20kHZ or greater with less than 3 % visible lamp flicker.

2. Input current total harmonic distortion (THD) shall not exceed 20%.

3. Lamp current crest factor (ratio of peak to RMS current) shall be 1.7 or less.

4. Operate from a 60 Hz input source of 120 or 277 volts and sustain variations of ± 10% (Voltage & Frequency) with no damage to the ballasts.

5. Provide transient immunity.

6. Tolerate sustained open circuit and short circuit output conditions without damage.

7. Comply with the Federal Communication Commission Rules and Regulations for electromagnetic/radio frequency interference (EMI/RFI), for non-consumer equipment (class A).

2.05 FLUORESCENT POWER PACKS

A. Where indicated, furnish a system consisting of a sealed rechargeable maintenance-free nickel cadmium battery, battery charger, solid state inverter, test switch, and pilot light.

B. Fluorescent power packs must conform to the following:

1. Suitable for use in both normal and emergency operational modes.

2. Compatible with magnetic and electronic, instant start, 4 foot T8 lamps.

3. Produce 1000 to 1400 lumens initial emergency light output.

4. Operate one lamp in each fixture for a minimum of 90 minutes.

5. Steel housing, approx. 9 3/8” long, mounted concealed within the ballast channel.

6. Test switch and pilot light mounted on the ballast channel cover.

C. Label emergency lighting power packs, using a black marking pen, with the identity of the un-switched circuit.

2.06 EMERGENCY EXIT LIGHTS

A. Exit lights must conform to the following:

1. Furnish a system consisting of a sealed rechargeable maintenance-free nickel cadmium battery, battery charger, solid state inverter, test switch, and pilot light.

2. Meet or exceed the current NFPA requirements.

3. Light emitting diode (LED) type.

4. Die-cast aluminum.

5. Concealed and removable directional chevron knock-outs.

6. Stencil face.

7. Red letter color.

B. Label power packs, using a black marking pen, with the identity of the un-switched circuit.

2.07 METAL HALIDE FIXTURES

A. Metal halide downlights must conform to the following:

1. Galvanized steel frame with adjustable hangers.

2. Outdoor and wet area fixtures shall have flat tempered glass lens with gaskets.

3. Porcelain lamp socket of copper alloy with nickel plated screws, shell and center contact.

B. High and low bay light fixtures must conform to the following:

1. Die-cast aluminum housing.

2. Pendant splice box which allows the fixture housing to slide on.

3. Enclosed glass reflector for high bay

4. Enclosed acrylic reflector for low bay.

5. Porcelain, mogul lamp socket of copper alloy with nickel plated screws, shell and center contact.

6. Full wire-guard, 2 piece, to protect the lens and the reflector.

7. Safety chain.

8. Outdoor and wet area fixtures shall have gaskets.

C. Recessed squares (2 X 2, T-bar and non-T-bar mounted) must conform to the following:

1. Steel housing.

2. Earthquake clips.

3. Flush steel door frame with metal rotary action latches.

4. Flat tempered prismatic glass lens.

5. Porcelain lamp socket of copper alloy with nickel plated screws, shell and center contact.

2.08 HIGH INTENSITY DISCHARGE BALLAST

A. All metal halide ballasts must conform to the following:

1. Field replaceable without the need of special tools.

2. Core and coil, lag type, high reactance, autotransformer, high power factor ballasts for 50-150 watt ballast.

3. Core and coil, constant wattage, autotransformer, high power factor ballasts for 175-1500 watt ballast.

4. All ballast must conform with ‘ Energy Independence and Security Act 2007’.

B. Library ballast shall achieve an “A” sound rating.

2.09 LAMPS

A. Incandescent lamps shall be rated at 130 volt and have medium, screw, brass bases.

B. Linear and compact fluorescent lamps shall have a color rendering index (CRI) of 80 or greater and a color temperature of 3500 Kelvins.

C. Mogul base HID lamps are preferred over medium bases.

2.09 LED LIGHT FIXTURE

A. Power supplies must use Constant Current Reduction (CCR) for dimming.

B. LED lamps shall have a color rendering index (CRI) of 80 or greater and a color temperature of 3500 Kelvins for interior fixtures and 4100 Kelvins for exterior fixtures or as specified on drawings.

C. Lamp life of minimum of 60,000 hours or as specified.

D. Fixtures must be supplied with multiple power supplies for multi-level switching when specified.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Set luminaries true, free of light leaks, warps, dents or other irregularities. Provide the length of stems as required to hang all luminaries level and in the same plane. **VERIFY THE TYPE OF ALL CEILINGS BEFORE ORDERING FIXTURES, AND PROVIDE FIXTURES AND MOUNTINGS TO SUIT.** Mount all fixtures at a position and height to clear equipment, ductwork, piping, etc., in mechanical rooms, storage rooms, etc. Provide appurtenances for all light fixtures, which include stud supports, stems, mounting brackets, frames and plaster rings.

B. Support luminaries only from structural elements which are capable of carrying the total weight. Mount all lighting fixtures rigid with no rocking action. Provide 13/16" channels as needed.

C. The locations of all lighting fixtures as shown are approximate. It is understood that they are subject to such modifications as may be found necessary or desirable at the time of installation in order to meet field conditions. Make such changes without extra charge; however, obtain approval from Engineer before any work is started which involves such modifications.

D. Install ballasts and fixtures in accordance with the NEC and ANSI Standards.

E. Adjust all floodlights and spotlights to the satisfaction of the Engineer.

F. Connect all exit lighting fixtures to the nearest unswitched circuit or the nearest emergency circuit. Connect all emergency lighting fixtures to same circuit as normal area lighting in same area per NEC Article 700

G. Provide and install necessary hardware and accessories to maintain 1.5 inches clearance from combustible material on all light fixtures with ballast.

H. Provide all exit signs with required directional arrows, to indicate direction of egress travel.

I. Fixtures shall <u>NOT</u> be daisy chained together.

J. Troffer (lay-in) lighting fixtures shall be supported from the building structure by a minimum 12 gage galvanized carbon steel soft temper hanger wires. Install two hangers at diagonally opposite corners of each lay-in light fixture 2'x4' or smaller and one hanger at each corner of each lay-in light fixture larger than 2'x4'. Supporting of light fixtures from ceiling system is not acceptable.

K. Each recessed lighting fixture shall be separately connected to a junction box with a flexible wiring method (i.e. daisy chaining from fixture to fixture is not allowed). The flexible conduit from the junction box to the fixture shall not lay on the ceiling as finally installed and shall not exceed 6 feet in length.

L. Boxes to which light fixtures or pendants are mounted shall NOT contain any conductors foreign to the operation of such light or pendant application. Removal of lights, pendants and cord drops to access other branch circuits is NOT acceptable.

M. Pendant mounted light fixtures shall be provided with ¾", threaded, rigid metal conduit, painted to match the fixture color.

N. Install flush mounted fixtures properly to eliminate light leakage between fixture frame and finished surface, provide gaskets as needed.

O. Install high or low bay light fixtures between the joist with the bottom of the reflector flush with the bottom cord of the joist. Engineer will direct if obstructions such as ducts, beams, etc. are permanently installed below the joist.

P. Locate mechanical, electrical, equipment, etc. room light fixtures to provide the best coverage and clear all obstructions such as ducts, piping, bracing and supports.

Q. Fluorescent High Bay are to be rigidly mounted with all thread, ¾" threaded rigid metal conduit and unistrut as required.

3.02 CLEAN UP

A. Leave all fixtures in clean condition, free of dirt and defects.

END OF SECTION

DIVISION 27 - COMMUNICATIONS

27 00 00 - GENERAL TECHNOLOGY REQUIREMENTS
27 10 00 - COMMUNICATIONS CABLING GENERAL REQUIREMENTS
27 11 00 - COMMUNICATIONS EQUIPMENT ROOMS
27 12 00 - GROUNDING BONDING FOR TECHNOLOGY SYSTEMS
27 13 00 - COMMUNICATIONS BACKBONE CABLING
27 15 00 - COMMUNICATIONS HORIZONTAL CABLING
27 16 00 - COMMUNICATIONS CONNECTING CORDS
27 17 00 - CATV RF DISTRIBUTION SYSTEMS
27 18 00 - COMMUNICATIONS LABELING AND IDENTIFICATION
27 60 00 - PHYSICAL SECURITY GENERAL REQUIREMENTS
27 64 00- ELECTRONIC ACCESS CONTROL SYSTEM

TABLE OF CONTENTS - TECHNOLOGY

The following Specification Sections have been prepared by or under the direct supervision of the Technology Designer:

TECHNOLOGY DESIGNER

Steve Bridges
True North Consulting Group
13284 Pond Springs Rd, Suite 304
Austin, Texas 78729

DIVISION 27 – COMMUNICATIONS

27 00 00 General Technology Requirements
27 10 00 Communications Cabling General Requirements
27 11 00 Communications Equipment Rooms
27 12 00 Grounding Bonding for Technology Systems
27 13 00 Communications Backbone Cabling
27 15 00 Communications Horizontal Cabling
27 16 00 Communications Connecting Cords
27 17 00 CATV RF Distribution Systems
27 18 00 Communications Labeling and Identification
27 60 00 Physical Security General Requirements
27 64 00 Electronic Access Control System

END OF TECHNOLOGY SECTIONS

JUSTICE CENTER - CSCD **SECTION 27 00 00**
WILLIAMSON COUNTY **GENERAL TECHNOLOGY REQUIREMENTS**

PART 1 - GENERAL

1.1 PROJECT SUMMARY

A. Scope: Successful Contractor shall provide, install, configure, and provide warranty service for technology systems described herein.

1.2 RELATED DOCUMENTS

A. Documents: Provisions of General Conditions, Supplementary Conditions, and the sections included under Procurement & Contract Requirements are included as part of this section as though bound herein.

1.3 RELATED WORK

A. Section 27 10 00 – Communications General Requirements

B. Section 27 11 00 – Communications Equipment Rooms

C. Section 27 12 00 – Grounding and Bonding for Communications

D. Section 27 13 00 – Communications Backbone Cabling

E. Section 27 15 00 – Communications Horizontal Cabling

F. Section 27 16 00 – Communications Connecting Cords

G. Section 27 17 00 – CATV RF Distribution Systems

H. Section 27 18 00 – Communications Labeling and Identification

I. Section 27 40 00 – AV/Multimedia General Requirements

J. Section 27 64 00 – Electronic Access Control System

1.4 DEFINITIONS

A. As Required: Contractor shall provide the quantity of said item that is necessary. Owner and Consultant reserve the right to make the final determination of necessary quantities to provide for a complete system.

B. Basis of Design: The documentation of the concepts, calculations, decisions, and product selections used to meet the Owner's project requirements. These Consultant produced documents are not shop drawings. Product selections depict minimum functionality and overall quality and are open to substitution requests.

C. Consultant: True North Consulting Group.

D. Contractor: The qualified party responsible to provide all items and perform services as described within these documents. The Contractor referred to within a specific specification section shall be the successful qualified party contracted to perform and complete that work.

E. Documents: The complete package of Bid and Contract Requirements, General Technology Requirements, related Division 27 sections, drawings, schedules, and addenda that make up this Request for Bid.

F. End-User: Individual(s) who will ultimately operate the completed system.

G. ETR: Existing to Remain. Item is to remain in current location and maintain current functionality.

H. Furnish: To supply, deliver to project site, and complete installation.

I. Install: To place in a position of service or use.

J. NIC: Not in Contract. Item will be the responsibility of others.

K. Notice to Proceed: Formal communication from Owner to Contractor stating the date the Contractor can begin work subject to the conditions of the contract. The performance time of the contract starts from the Notice to Proceed date.

L. OFCI: Owner Furnished Contractor Installed. Item will be provided by Owner and shall be installed by Contractor. Contractor is responsible for

M. OFE: Owner Furnished Equipment. Item will be provided and integrated by Owner.

N. OFOI: Owner Furnished Owner Installed. Item will be provided and installed by Owner.

O. Owner: The party named in the Procurement and Contract Requirements as the advertising party.

P. Provide: To furnish and install, complete and ready for intended use.

Q. Turnkey: Of or involving the provision of a complete product or service that is ready for immediate use.

R. Work: The provision of products and/or services to meet the requirements specified in these documents.

1.5 REFERENCE STANDARDS AND CODES

A. Standards and other procedures referenced by this bid package are as follows:

1. ADA – Americans with Disabilities Act of 2010
   www.ada.gov/2010ADAstandards_index.htm

2. AIA – American Institute of Architects
   www.aia.org

3. ANSI – American National Standards Institute
   www.ansi.org
4. ASHE – American Society of Healthcare Engineering
   www.ashe.org
5. ASTM – American Society of Testing and Materials
   www.astm.org
6. BICSI – Building Industry Consulting Service International, Inc.
   (RCDD Standards)
   www.bicsi.org
7. CFR – Code of Federal Regulations
   www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR
   (Available from the Government Printing Office)
   (Material is usually first published in the Federal Register)
8. U.S. Copyright Law, December 2011
   www.copyright.gov/title17
9. ECIA – Electronic Components Industry Association
   ESC – EIA Standards Council
   www.eciaonline.org
10. IACS – International Annealed Copper Standard
    www.ndt-ed.org/GeneralResources/IACS/IACS.htm
11. IEC – International Electrotechnical Commission
    www.iec.ch
12. IEEE – Institute of Electrical and Electronics Engineers
    standards.ieee.org
13. ISO – International Organization for Standardization
    www.iso.org
14. ITU-T – International Telecommunication Union – Telecommunication
    www.itu.int
15. NEC – National Electrical Code (NFPA 70)
    maintained by NFPA – National Fire Protection Association
    www.nfpa.org
16. NECA – National Electrical Contractors Association
    www.necanet.org
17. NEMA – National Electrical Manufactures' Association
    www.nema.org
18. OSHA – Occupational Safety and Health Administration
    (U.S. Department of Labor, OSHA)
    www.osha.gov

19. TIA – Telecommunications Industry Association
    www.tiaonline.org/standards

20. UL – Underwriters' Laboratories
    www.ul.com

B. Standards: Referenced standards and/or procedures shall be binding on the Contractor and work shall be judged against such standards and procedures unless otherwise stated in writing.

C. Local/State Codes: Contractor shall comply with all local and state code requirements as determined by the authority having jurisdiction (AHJ).

D. Owner Standards: Contractor shall obtain and abide by all published Owner standards as they pertain to the work described herein.

E. Contractor shall use the latest versions of all standards and codes unless otherwise directed by the authority having jurisdiction.

1.6 QUALIFICATIONS

A. Refer to related sections for specific requirements.

1.7 PERMITS AND INSPECTIONS

A. Responsibility: Obtain permits and inspections required for the work. Contractor is responsible for all permit and inspection costs.

B. Performance: Perform tests required herein, or as may be reasonably required to demonstrate conformance with the specifications or with the requirements of any legal authority having jurisdiction.

C. Review: Obtain approvals from authorities responsible for enforcement of applicable codes and regulations to establish that the work is in compliance with all requirements of reference codes indicated herein and required by the appropriate jurisdiction. Make corrections, changes or additions as required and deliver certificates of acceptance, operation, and/or compliance with the Operation and Maintenance Manuals described herein.

1.8 DRAWINGS AND BASIS OF DESIGN

A. General: Work, equipment, or material delineated on any drawing in this package is expected to be provided by Contractor unless noted otherwise.

B. Interpretation: Work shall be installed in accordance with the basis of design diagrammatically expressed on the drawings and described in the written specifications and equipment schedule(s). Contractor shall not make limiting interpretation that provides for incomplete work or a non-functioning system.

1.9 PRODUCT SUBSTITUTION PROCEDURES

A. Requests for Substitutions: Should the Contractor request a change in the material that is to be supplied, from that which was specified in the contract, the Contractor shall provide the Owner and the Consultant with a written request for said change.

B. Substitutions for Non-specified Products: Where no product specification is provided, Contractor may use manufacturer's specification for the identified product as a guide for suggesting appropriate substitutions.

C. Requirements: The Request for Substitution shall include:

1. Reason for substitution.
2. Material data sheets for both the proposed item(s) and the item(s) to be replaced.
3. Any cost impact to the Owner.

D. Changes: Proposed changes to Contract Documents shall be clearly identified in the pre-construction submittals.

E. Approval: The Owner may approve or deny any Requests for Substitution. The Owner reserves the right to govern over and proclaim whether proposed products are equal to the specifications. The Contractor shall not procure any substitute materials until the Owner has approved and signed the Request for Substitution and passed copies to the Contractor and the Consultant. Any procurement or work performed prior to this approval is at the Contractor's own risk.

F. Deviation: Products provided or installed that deviate from the products specified in make, model, color, or other significant characteristic (i.e., non-approved substitutions) shall be removed and replaced with specified products at no additional expense to Owner.

1.10 PRODUCT SUBSTITUTION PROCEDURES

A. Versions: Consultant used the following software versions for this project:

1. Autodesk Revit MEP 2016 (floor plans)
2. Autodesk AutoCAD MEP 2016 (detail sheets)

1.11 SUBMITTAL CONDITIONS

A. The Contractor shall not consider the Consultant or Owner's review of submittals to be exhaustive or complete in every detail. Approval of shop drawings or submittals including substitutions indicates only the acceptance of the Contractor's apparent intent to comply with general design or method of construction and quality as specified. The finished product shall meet functional requirements, operations, arrangements, and quantities and comply with the contract documents unless specifically approved otherwise.

B. The Contractor shall be held responsible for delivery of systems as specified. Any errors or omissions in the submittals shall not relieve Contractor of responsibility to deliver complete systems as specified.

1.12 PRE-CONSTRUCTION PROCEDURES

A. Pre-Construction Submittal Meeting: Contractor shall schedule web conference (WebEx or similar) with Consultant to review basis of design and submittal expectations.

B. Prior to Work: Pre-construction submittals shall be provided to Consultant with appropriate promptness as to cause no delay to the work.

C. Project Timeline: Project timeline will not be altered due to lateness of submittals. Contractor is bound to deliver a timely, complete, and finished project as stipulated in their contract and specified herein.

D. Format and Distribution: Contractor shall provide one (1) electronic copy in PDF format to Consultant of all pre-construction submittals. The Contractor shall provide hard copies sets as required up to five (5) sets.

E. Provision: Contractor shall submit pre-construction submittals including any corrections or additions to Consultant prior to the procurement of equipment or commencement of work.

F. Review: Pre-construction submittals shall be received and formally approved by Consultant prior to the procurement of material or the commencement of work. Any procurement or work performed prior to this approval is at Contractor's own risk.

G. Failure to Provide: The failure of Contractor to provide pre-construction submittals as required herein may result in the withholding of payment for work and/or the cancellation of the contract.

1.13 PRE-CONSTRUCTION SUBMITTALS

A. Pre-construction submittals are intended to document the details of installation. Exact copies of original drawings and specifications are not acceptable as pre-construction submittal drawings. Consultant schematic diagrams describe the basis of design as defined herein.

B. Contractor shall provide to Consultant the following pre-construction submittals for approval in addition to specific requirements identified in subsequent sections.

1. Qualifications: Shall include documentation of all required qualifications.

2. Shop Drawings:

a. Title: Each drawing shall have a descriptive title and all subparts of each drawing shall have unique identifiers.

b. Floor Plans: Shall include device locations, Contractor provided furniture and installation notes.

c. System Drawings: Shall include functional diagrams for each system detailing system flow including all equipment, routing, inputs/outputs, wiring signal type, cable identification detail, connectors, adapters, intra/inter-rack power distribution, installation notes and any other information required to convey the complete turnkey system design.

d. Equipment Rack and Cabinet Elevations: Shall include placement of all mounted equipment.

e. Structurally Mounted Elements: Shall include both plan view of placement as well as a detail of structural mounting techniques to be used.

f. Furniture: Shall include all Contractor provided furniture showing dimensional drawings, cable management and finishes with samples for Owner approval.

3. Product Data:

a. Equipment Schedules: Shall include manufacturers, part numbers, quantities and unit pricing.

b. Product Cut Sheets: Shall identify (highlight, arrow, etc.) actual part numbers to be utilized including but not limited to equipment, mounting hardware, cabling, connectors, software and power distribution equipment.

4. Manufacturer's Recommendations:

a. Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, copies of these recommendations shall be provided prior to installation. Installation of the

items will not be allowed to proceed until the recommendations are received and approved.

1.14 CONSTRUCTION PROGRESS PROCEDURES

A. Meeting Attendance: Contractor is required to attend job progress meetings in accordance with requirements set by Owner or Consultant.

B. Additional Coordination: Contractor shall request additional job construction coordination meetings it deems to be necessary to ensure coordination of their responsibilities with other parties.

C. Progress Inspection: Consultant may perform periodic progress inspections. At Consultant's request, Contractor shall make Project Manager and/or Lead Technician available.

D. Test Plan: At least Ten (10) business days prior to the proposed Contractor test date, Contractor shall provide a test plan defining the tests required.

1. The test plan shall be approved by Consultant prior to any testing.

1.15 CONSTRUCTION PROGRESS SUBMITTALS

A. Completion: Contractor shall complete and submit via email all construction progress documentation in PDF format as requested by Owner and Consultant.

B. Contractor shall provide to Consultant the following construction progress submittals in addition to specific requirements identified in subsequent sections.

1. Weekly Report: Weekly written report to be submitted to Consultant through appropriate project channels in PDF format outlining progress from previous week, plans for progress in the current week, and any coordination issues that may require Consultant or Owner attention.

2. Test Plan: Shall ensure the system meets Owner operational and performance specifications and include the following:

a. Identification of the capabilities and functions to be tested.

b. Detailed instructions for the setup and execution of each test.

c. Procedures for evaluation and documentation of the results.

C. Failure to Complete: Failure to complete requested construction progress documentation may result in the withholding of payment by Owner.

1.16 CLOSEOUT PROCEDURES

A. Notification: Contractor shall provide written notification to Consultant and Owner when Contractor is satisfied that the work has reached Substantial Completion and is ready for inspection.

B. Pre-Inspection Submittals: Contractor shall submit an electronic copy of all closeout submittals to Consultant in accordance with the requirements found in these documents no less than ten (10) business days prior to the scheduled Final Inspection.

1. Test Results
2. As-built drawings (full-size sheets)
3. Operation and Maintenance Manuals
4. End User Software

C. Punch List: Work or materials found to be incomplete, of unsatisfactory quality, failing to meet the specifications in these documents, and/or unacceptable to Consultant or Owner shall be documented by Consultant and provided to Contractor to rectify at no additional cost. Contractor shall provide written notification to Consultant and Owner when all punch list items have been completed.

D. Final Inspection: At Consultant's request, Contractor shall make Project Manager and/or Lead Technician available.

E. Re-Inspection: If more than one (1) re-inspection is necessary, the costs of the additional travel, time, and expenses of Owner and Consultant may be deducted by Owner from the contract amount due to the Contractor.

F. Punch List Approval: Once all punch list items are complete, the Contractor shall return an initialed punch list to the Consultant and Owner for verification. Punch list shall be considered complete only after having been signed by Owner and Consultant.

G. Closeout Submittals: Upon approval of closeout submittals and prior to final acceptance, Contractor shall provide three (3) electronic copies to Owner and Consultant in format(s) noted below.

1. Record Drawings – AutoCAD 2013 editable .dwg format AND PDF.
2. Operation and Maintenance Manuals – USB Flash Drive, CD, OR DVD.
3. End User Software – USB Flash Drive, CD, OR DVD.
4. Documentation of testing and system certification.

H. Closeout Submittal Format and Distribution: Upon approval of closeout submittals and prior to final acceptance, Contractor shall provide a total of three (3) bound hard copies with labeled dividers of all record drawings (full-size sheets) and operation and maintenance manuals, two (2) copies to Owner and one (1) copy to Consultant. Title on front and spine of binder shall be "Operation and Maintenance Manual – [Project Name]". The following additional items shall be identified on the binder cover:

1. Client Name
2. Contractor Name and Contact Information
3. Consultant Name and Contact Information

4. Date

I. All documentation prepared by the Contractor, including hard copy and electronic forms, shall become the property of the Owner.

J. Payment Authorization: Final payment will be authorized only after all closeout procedures and requirements have been followed and fulfilled by Contractor and approved in writing by Owner and Consultant, including punch list(s) and/or re-inspection(s) and delivery of closeout deliverables.

1.17 CLOSEOUT SUBMITTALS

A. Closeout submittals are intended to document the details of the final installation that substantially conforms to the construction documents and functions as intended to meet the Owner's needs.

B. Contractor shall provide to Consultant the following closeout submittals for approval in addition to specific requirements identified in subsequent sections.

1. As-built drawings: As-built drawings are prepared by the Contractor. They show, in red ink, on-site changes to the Consultant-approved pre-construction submittal documents. As-built drawings shall be submitted to Consultant for approval prior to submitting record drawings and include:

   a. Changes made by Addenda, Change Orders, Requests for Information (RFIs), Architect's Supplemental Instruction (ASIs), or Requests for Proposal (RFPs) in addition to any other changes to the original documents.

   b. Actual device locations, conduit routing, wiring and relationships as they were constructed.

   c. Nomenclature showing as-built wire designations and colors.

   d. Room numbers coinciding with Owner space planning numbering.

2. Record drawings: Record drawings are the final drawings prepared by the Contractor and incorporate all as-built drawing changes previously approved by Consultant. Record drawings should be electronically produced without any handwritten, red ink, or clouded changes.

3. Operation and Maintenance Manuals: Notwithstanding requirements specified elsewhere, submit one (1) copy of each of the following per binder:

   a. A final Bill of Materials for each system.

   b. IP and MAC Addresses for any device that resides on the network.

   c. Usernames and passwords by device for all applicable products.

   d. Manufacturers Instruction Manuals: Specification sheets, operation manuals and service sheets published by the manufacturers of the components, devices and equipment provided.

   e. Information for testing, repair, troubleshooting, assembly, disassembly and recommended maintenance intervals.

f. Replacement parts list with current prices. Include list of recommended spare parts, tools, and instruments for testing and maintenance purpose.

g. Performance, Test and Adjustment Data: Comprehensive documentation of performance verification according to parameters specified herein.

h. Warranties: Provide an executed copy of the Warranty Agreement and copies of all manufacturers' Warranty Registration papers as described herein.

i. Sufficient information, (detailed schematics of subsystems, assemblies and subassemblies to component level) clearly presented, shall be included to determine compliance with drawings and specifications.

j. Any other items defined herein.

4. Local Reference Diagrams: Within each equipment rack, enclosure, or cabinet, the Contractor shall place a functional diagram of the system(s) in a clear plastic sleeve secured to the equipment rack, cabinet, or enclosure.

5. Intellectual Property: Provide all required items and written release as described herein.

6. Training Program: Proposed training materials and program outline.

7. Spare Parts and Remote Controls: Contractor shall submit record of Owner sign-off of turnover of spare parts and remote controls.

1.18 PROJECT MANAGEMENT

A. Project Manager: Contractor shall appoint a Project Manager who will be the main point of contact for Owner and Consultant regarding the project.

B. Responsibility: Project Manager is responsible for the following:

1. Successfully completing the contract in a timely manner.

2. Overseeing work and performance of all employees and Subcontractors who have been hired by Contractor and ensuring compliance with specification.

3. Completing and submitting required documentation.

4. Attending project coordination meetings as required by Owner, Consultant, and Contractor. Contractor is responsible for taking minutes of these meetings and distributing copies to all participants.

5. Coordinating with Owner, Consultant, Architect, General Contractor, and other Contractors involved in the project to ensure smooth flow of work and on-time project completion.

6. Providing a written weekly progress update to the Owner and Consultant in a PDF format emailed to the project team.

7. Reporting all unexpected conditions and problems that may result in delay or expense to Owner and Consultant immediately upon discovery.

C. Change of Project Manager: If Contractor seeks to change Project Manager during the course of the Project, such change is subject to prior written approval from Owner.

D. The Owner reserves the right to request a change of project manager at any time for any reason.

1.19 EXAMINATION OF EXISTING CONDITIONS

A. Examination: Contractor shall examine the facility and construction documents to the extent necessary to plan for efficient installation strategies prior to the delivery of materials to the site or the commencement of work. Other documents (Architectural Drawings, hardware schedules…) may be made available upon request. Failure to adequately complete the examination shall not result in change order requests.

B. Acceptance of Conditions: Commencement of work by Contractor shall indicate acceptance of existing conditions, unless a written notice of exceptions has been provided to Owner prior to commencement.

C. Observation: If Contractor observes—during preliminary examinations or subsequent work—existing violations of fire stopping, electrical wiring, grounding, or other safety- or code-related issues, Contractor shall report these to Owner in a timely manner.

D. Pre-Existing Damage: If Contractor observes damage to finished surfaces before they begin installation in any area, Contractor shall document by taking digital photos of the damaged area(s) and immediately notifying Construction Manager and Consultant via email, with attached photos.

E. Damage during Installation: Any damage caused by, or reasonably believed by the Construction Manager to be caused by the Contractor shall result in back-charges for said damages. Repairs shall match preexisting color and finish of walls, floors, and ceilings. Any Contractor damaged ceiling tiles, floor, and carpet shall be replaced to match color, size, style, and texture.

1.20 CONTRACT MODIFICATION PROCEDURES

A. Changes: Changes to the contract may be initiated by Owner, Consultant or Contractor.

B. Request for Information (RFI): If a change originates with Contractor, the Contractor shall submit an RFI for Consultant review. If it is deemed a change is necessary, the Consultant shall issue a PR to address the change.

C. Proposal Request (PR): If a change originates with Owner or Consultant, Consultant shall issue a Proposal Request to Contractor.

D. Change Proposal (CP): If a change originates with Contractor, or if Contractor receives a Proposal Request from Consultant, Contractor shall submit a Change Proposal to Consultant to review.

1. References: A Change Proposal shall reference the work to be performed, and shall include the cost change to the Project (if any) and the time change to the scheduled completion (if any)

E. Cost/Time Changes: A Change Proposal shall reference the work to be performed, and shall include the cost change to the project (if any) and the time change to the scheduled completion (if any).

F. Additional Information: Consultant may request additional information to be supplied with the Change Proposal for consideration.

G. Acceptance: Owner reserves the right to accept or reject Change Proposals.

H. Change Order: A Change Order is a modification of the contract:

1. If a Change Order is approved, Owner will issue a Change Order that references PR and/or CP. Change Order is not valid until it has been signed by Owner.
2. Work performed or equipment supplied outside of contract without a valid Change Order is done at Contractor's own risk.

1.21 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Storage: Storage of materials shall remain the full responsibility of Contractor until Acceptance.

B. Protection: Contractor shall take all necessary precautions to protect materials from the following:

1. Theft
2. Vandalism/Tampering
3. Dents
4. Scratches
5. Dust
6. Temperature
7. Weather
8. Cutting
9. Paint
10. Other hazardous conditions

C. Replacement: Contractor shall replace any damaged or lost material as required by Owner or Consultant.

D. Installed Materials: Installed materials remain the responsibility of the Contractor until Acceptance. Contractor shall take necessary precautions to ensure the safety and security of installed materials.

1.22 INTERFERENCE WITH THE FACILITY

A. Transportation and storage of materials at the facility, work involving the facility, and other matters affecting the habitual use by the Owner of the Owner's buildings, shall be conducted to minimize interference, and at times and in a manner acceptable to the Owner.

1.23 ON-SITE CONDUCT

A. Conduct: Any demonstration of rudeness, use of profanity, or lack of respect by Contractor Personnel to a building tenant will be cause for immediate removal from the premises, and such Personnel will not be allowed to return. Contractor and Contractor's Personnel are to remain in project area.

B. Vandalism: Graffiti or vandalism will not be tolerated. Any Contractor/Personnel caught in the act shall be immediately removed from the premises and will not be allowed to return.

C. Hazardous Conditions: No one shall be allowed to endanger the building, its premises, and its occupants in any manner whatsoever. In the event that a situation occurs which threatens the building or its occupants in any manner, Contractor, Contractor Personnel, Subcontractor, etc. shall take steps to correct hazardous condition. In the event that Contractor's Personnel fail to correct hazardous condition, Owner reserves the right to immediately take steps to correct the situation at Contractor's expense.

1.24 SAFEGUARDS AND PROTECTION

A. Barriers: Provide and maintain suitable barriers, guards, fences and signs where necessary to accommodate the safety of others relative to and/or for the protection of this work.

B. Regulations: Comply with OSHA, Federal, State, Local, and Owner regulations and standards pursuant to this work.

C. Protection: Protect all materials and equipment to prevent the entry or adhesion of any and all foreign material. If necessary, cover equipment with temporary protective material suitable for this purpose.

D. Finishing: Check, clean and remove defects, scratches, fingerprints and smudges if necessary from all equipment and devices immediately prior to Acceptance of the Installation.

E. Damage: Replace all damaged or defective material or work at no additional cost prior to Final Acceptance.

F. Documentation: Provide written description of accidents by workers, staff, and general public of any incident occurring on the project. Report incident in writing to Owner's representative immediately and to the Project Manager for follow up.

1.25 OWNER FURNISHED PRODUCTS

A. Delivery: Owner is responsible for delivery of Owner-furnished products to the project site, unless otherwise specified in this document.

B. Placement: Contractor is responsible for locating, inspecting, and moving Owner-furnished products to their final installation position.

C. Inspection: Contractor shall report any damage, discrepancies in quantity, type, or function to Owner and Consultant immediately upon discovery.

D. Warranty: Contractor assumes no responsibility for any material warranty for Owner-furnished products. Contractor shall be responsible for integrating, cabling, and installing Owner-furnished products under the same warranty conditions as other products furnished by Contractor.

1.26 QUALITY ASSURANCE

A. Assurance: It is the intent of these specifications to describe and provide for a complete, professional, and reliable installation.

B. Qualifications: Contractor employees who are engaged in installation shall be properly trained in the tasks they are expected to perform.

C. Acceptability: Owner shall determine the acceptability of work.

D. Regulatory Requirements: Contractor shall comply with code requirements that apply to the work being performed.

E. Certifications: Where manufacturer certifications are required for warranty or for authorized resale, installation personnel shall have received such certification prior to the start of installation of those manufacturers' materials.

1.27 QUALITY CONTROL

A. Installation: During installation period, when connections are made to the Owner's existing infrastructure, Contractor shall use care to ensure that no negative results occur that could reduce or hamper existing systems.

1.28 OWNER'S RIGHT TO USE EQUIPMENT

A. The Owner reserves the right to use equipment, material and services provided as part of this work prior to Acceptance of the Work, without incurring additional charges and without commencement of the Warranty period.

1.29 INTELLECTUAL PROPERTY OWNERSHIP

A. All intellectual property shall remain in escrow for an unlimited period of time. All supporting documentation including but not limited to: software, firmware, programming, uncompiled source code, graphic files, diagrams, written and electronic files, including all latest versions of the documentation and software necessary to edit and adapt the system(s), shall be provided to the Owner on a USB flash drive, CD or DVD for all spaces and all systems. The integrator and/or programmer shall also maintain a current live copy incorporating all system modifications to be provided at the Owner's request and for system restoration upon a failure.

B. A written release shall be given by the Contractor and all other required parties for all programming and configuration done by the Contractor and/or Subcontractors. This release will acknowledge the Owner's ownership and right to modify the intellectual property directly, or to have the intellectual property modified by any party of the Owner's choosing.

PART 2 PRODUCTS

2.1 BASIC EQUIPMENT AND MATERIALS

A. Standards: Equipment and materials used to accomplish the goals of this project shall meet standards for good engineering practice as defined within this document.

B. Quality: Products specified in these documents are intended to establish a baseline or operational, functional, and performance-based standards that all proposed products shall meet or exceed by functionality and quality.

2.2 FACTORY-ASSEMBLED PRODUCTS

A. Manufacturer: Reference to specific equipment manufacturers does not imply that all products produced by that manufacturer meet the specification requirements.

B. Age of Equipment: Equipment shall be new and unused with full manufacturer's warranties. Contractor shall supplement such warranties as required by the specification. Contractor shall immediately notify Consultant of any product that will be or is expected to be discontinued by the end of the project for resolution.

C. No Modification: Where a product is available from a factory/manufacturer to meet the needs as outlined, that product shall be used without modification to ensure the full factory warranty is maintained.

D. Like Materials: Like materials used shall be of the same manufacturer, model, and quality unless otherwise specified.

E. Software/Firmware: No software or firmware is to be used unless specifically authorized by Owner or its appointed representative.

2.3 RACKS, CABINETS, HARDWARE

A. Equipment Racks and Cabinets: Provide racks and cabinets as specified herein and/or described in accompanying documents, appendices, or drawings. Verify that any existing racks and/or cabinets provided by others are complete, bringing any discrepancies to the attention of Owner and Consultant prior to beginning the installation.

B. Shelves and Mounts: Contractor shall supply necessary mounting hardware to install rack-mounted equipment. Mounting hardware shall be a product of the manufacturer of the equipment to be mounted, or manufacturer of the rack system, or approved by either for use with their product. Provide supporting channels, shelves, rack mounts, and/or rack ears as recommended by equipment manufacturers.

C. Screws and Washers: Contractor shall provide screw head types appropriate to the level of security required for the equipment and racking. Screws shall include polyethylene or nylon washer.

1. Public Access Areas: Star post or square post security screws shall be used for hardware and equipment mounted in equipment racks and consoles in areas that are accessible to the public.

2. Restricted Access Areas: Philips head screws may be used where a secure room entrance or locked rack/console door prevents public access.

2.4 POWER DEVICES

A. Power Strips: Unless otherwise specified, power strips shall be UL listed, surface mounted, rated for 20 amp continuous electronic loads. Outlets shall be 125 volt, 20 amp, three-wire, grounded, NEMA 5-20R. Cords shall be 12/3 SJT with molded plug.

B. Power Distribution Panels: Unless otherwise specified, power distribution panels shall be UL listed, rack mounted, rated for 20 amp continuous electronic loads with switch and pilot light. Up to eight outlets shall be mounted to the back, each rated 125 volt, 20 amp, three-wire, grounded, NEMA 5-20R. Switch and pilot shall be mounted to the front. Cords shall be 12/3 SJT with molded plug.

C. Contractor shall provide acceptable power distribution units as required in order to provide sufficient outlet connectivity for Contractor-furnished and Owner-furnished equipment indicated on drawings and equipment schedules, plus up to 15% additional capacity for future growth. This may be in addition to any power distribution equipment indicated on equipment schedules.

2.5 CABLE AND CONNECTORS

A. Cable: Cable shall be selected and applied in a manner defined by signal type, consistent with best industry practices. Highest quality products shall be used with attention given to transmission characteristics, termination methods, resistive and complex impedance at operating frequencies, and insulating material characteristics. Where required by the NEC, substitutions of air handing plenum cable shall exactly match the normally applied product and shall meet the standards of UL Standard #900 and the NEC Articles 800 and 820.

B. Connectors: Highest quality products shall be used with attention given to transmission characteristics, termination methods, resistive and complex impedance at operating frequencies, and insulating material characteristics. Strain reliefs and cable clamps shall be sized for the connector and the cable.

C. Color: Cable and connector color shall be coordinated with Consultant to maintain consistency with cable and connector color schemes used by other trades.

2.6 CABLE MANAGEMENT

A. Plastic Cable Ties: Single use white nylon plastic cable ties, appropriate screw fittings, or mounting clips may be used for AC power cable management within racks and enclosures. Plastic/nylon cable ties shall not be used for data, signal or DC cables.

B. Velcro Cable Ties: Velcro straps shall be used for all signal and DC cables. Velcro straps shall be black, with no logo or decoration, except as authorized by Consultant and Owner.

2.7 ANCILLARY HARDWARE

A. General: Contractor shall provide ancillary and required accessory items necessary to provide a complete and fully functional system to Owner.

B. Interpretation: Exclusion of or limitation in the language used in the drawings or specifications shall not be interpreted as meaning that ancillary or accessory items of work or equipment necessary to complete or make the installed system fully functional can be omitted.

2.8 GROUNDING HARDWARE

A. Refer to Section 27 05 26 for specific Grounding and Bonding requirements.

B. Provide data/telecommunication grounding systems indicated in the project drawings and specifications. Products shall include, but are not limited to, cables/wires, connectors, terminals, compression lugs, grounding rods/electrodes and plate electrodes, bonding jumper braid, surge arresters, and additional accessories needed for a complete installation. Where materials or components are not indicated, provide products complying with NEC, UL, IEEE, ANSI/TIA and established industry standards for applications indicated.

2.9 FIRE STOPPING MATERIALS

A. All penetrations of walls shall be approved by the General Contractor before any penetrations are made. Should the Contractor find it necessary to penetrate any walls extending to the slab, it will be the responsibility of that Contractor to provide satisfactory sleeving and fire caulking both inside and outside of that sleeving. If existing sleeving is to be utilized, it will be the responsibility of the Contractor to fire caulk inside the sleeving.

B. The Contractor is responsible for adhering to the following standards:

1. Conduit penetrations through fire-rated or smoke walls: Completely seal around the conduit penetration with Hilti FS 601 fire-rated sealant Tremco or 3M or equal.

2. Conduit sleeves through fire-rated or smoke wall: Completely seal around the conduit penetration with Hilti FS 601 fire-rated sealant Tremco or 3M or equal. Completely seal inner opening of the conduit sleeve with fire wool packing and Hilti FS 611A intumescent firestop sealant.

3. Cable bundles through fire-rated or smoke walls (without sleeves): Completely seal openings with Hilti FS 611A intumescent firestop sealant, Tremco or 3M or equal.

4. Cable tray penetrations through fire-rated or smoke walls: Completely seal openings with Hilti FS 635 (trowelable type) Tremco or 3M or equal.

C. A submitted response to this specification assumes that all firestopping will be provided as specified. The firestop manufacturer’s specifications and instructions shall be submitted with the final documentation.

2.10 CAMPATABILITY OF RELATED EQUIPMENT

A. Existing Equipment: Equipment and systems specified in these documents shall be assumed to be compatible with the systems already installed at Owner site(s) and as identified in this document as related to this project.

B. Installed Equipment: Specified equipment and systems shall be compatible with all other equipment and systems as offered by Contractor, thus placing the responsibility on Contractor to ensure proper interaction.

2.11 LICENSES

A. Any and all licenses required for system functionality shall be provided.

2.12 SPARE PARTS

A. Suggested List: Contractor is requested to submit a list of suggested spare parts with an offered price, allowing Owner to select appropriate parts.

B. Means of Obtainment: Contractor shall state where spare parts can be obtained after the installation.

2.13 MAINTENANCE MANUALS

A. Contractor shall produce a maintenance manual showing interconnection of equipment and any special procedures necessary for proper operation and maintenance of the systems.

PART 3 – EXECUTION

3.1 GENERAL

A. Contractor shall provide, furnish, deliver, transport, erect, install, connect and configure all of the material and equipment described herein or depicted on any bid package document or drawing, as required for a turnkey solution.

3.2 COORDINATION

A. General: Contractor shall cooperate with other Contractors for proper provisioning, anchorage, placement, and execution of all work. Interference between the work of various Contractors shall be resolved before installation. In the event of conflict on space requirements or location of devices, refer the matter to Owner and Consultant for decision.

B. Related Work: References to the following related work do not limit or release Contractor from the responsibility of coordination with other trades or from having the necessary knowledge of other non-referenced work.

1. Work by General Contractor.
2. Work by other Technology Contractors.
3. Work by Electrical Contractor, including electrical rough-ins and surface-mounted raceway.

C. Delays: Contractor shall coordinate with all other trades to avoid causing delays in the installation schedule.

D. AC Power: Contractor shall coordinate with General Contractor its requirements for proper AC power to service all equipment installed by Contractor.

E. Low Voltage Sleeving: Contractor shall provide openings through walls as necessary, with sleeving and fire-stopping materials installed in a professional manner to meet local and national codes.

F. Grounding and Bonding: Contractor shall coordinate with General Contractor its requirements for proper grounding and bonding to their equipment.

G. Surface-Mounted Raceway Coordination

1. General and Electrical Contractors: Contractor shall coordinate with General Contractor and Electrical Contractor the installation of surface-mounted-raceway where not provided but made necessary by non-penetrable wall.

2. Verification: Contractor shall field verify and coordinate the proposed use of surface-mounted raceway at any location with Consultant and Owner.

3.3 BASIC EXECUTION REQUIREMENTS

A. General: Contractor is responsible for following industry standards of good practice for telecommunications and networking equipment.

B. Aesthetic Factors: With the installation of equipment and cables, consideration shall be given not only to operation efficiency but also to overall aesthetic factors. Contractor shall redo, at no cost to Owner, any work deemed by Owner to appear sloppy, hastily done, or unprofessional. Owner shall make final decision over whether work shall be redone.

C. Manufacturers' Recommendations: Manufactured items, materials, and equipment shall be applied, installed, connected, erected, used, and adjusted as recommended by the manufacturers or as indicated in their published literature unless otherwise noted herein.

D. Protection of Work Area: Work shall be properly protected during construction, including the shielding of soft or fragile materials, protecting against dust and dirt, protecting and supporting cable ends off of the floor and from other traffic, protecting floor box lids, and temporarily plugging open conduits during construction. Upon completion, installation shall be thoroughly cleaned and all tools, equipment, obstructions, or debris present as a result of work shall be removed from the premises.

E. Protection of Cable and Equipment: Contractor shall make appropriate preparations to protect all cabling and equipment from foreign material. Foreign material is defined as any substance or material that would void the manufacturer's performance warranty, impact ratings (UL, Plenum, etc.), or cover up markings needed for inspection. Foreign material includes, but is not limited to, paint overspray (intentional or not), fire-stopping material, drywall compound, or any other chemical, liquid, or compound that could come in contact with cables, cable jackets, cable termination points, or other equipment.

1. Cleaning of cables or equipment with harsh chemicals from a failure to comply with Protection of Cable and Equipment clause is unacceptable. Contractor shall replace any affected cable, cable components, or equipment in their entirety at no additional cost to the project.

F. Waste Materials: Contractor shall keep work area neat, orderly, and free from accumulation of waste materials. Remove trash and debris from the building and job site as required to maintain a clean work environment at all times. Rubbish shall be moved to a common trash point or receptacle on the job site as determined and directed by General Contractor or Owner.

G. Ceiling Grid: Contractor shall not hang cable supports from ceiling grid wire.

H. Roof Deck: Contractor shall not shoot into the roof deck for mounting cable hangers.

I. Mounting: Equipment and enclosures shall be mounted plumb and square in relation to the structure.

J. Raised Floor: All cabling installed below the raised floor shall be placed in the provided cable trays with appropriate means to hold cable in place. If no cable tray exists, Contractor shall provide J-hooks to hold cables in place. Sleeves shall be utilized for cable egress.

K. Motorized Furniture: Care shall be taken to properly dress all cables placed within motorized furniture and provide sufficient cable length to allow motorized elements to operate within their full range of travel.

3.4 PREPARATION

A. Existing Equipment: Prior to any installation, the Contractor shall prepare the site by removing any remaining debris, leveling equipment racks (where appropriate), and verifying information and systems stated to be in-place are ready for use.

B. Equipment for Installation: Prior to installation, Contractor shall ensure that required major equipment has been secured and is ready for installation.

3.5 CLEANING

A. Tool Clean-up: Contractor is not permitted to use restrooms for tool clean-up. A slop-sink may be provided in janitorial closet on each floor for cleaning of tools and equipment and as a source of water. Janitorial closet or maintenance area or shop shall be kept clean at all times. Contractor or Contractor's Personnel found using restrooms for clean-up or other similar purposes shall be subject to removal from building.

B. Daily: At the end of each work period or day, Contractor shall remove excess packing, drilling remnants, and other non-equipment related parts, materials, or debris to ensure a clean, safe, and professional working environment.

C. Carpet: Contractor shall ensure that no damage to carpeting occurs as a result of their work. Contractor shall cover carpets in areas of work to prevent wire debris from entering the carpet.

3.6 FIRE STOPPING

A. Contractor is responsible for applying fire-stopping material in and around all openings that it creates or are created for it, whether or not specifically indicated in specifications or project drawings, where code requires the use of fire stopping material.

B. Contractor shall ensure that all fire-stopping materials meet appropriate codes and are installed in a neat and workman like manner.

3.7 WATERPROOFING

A. Contractor is responsible for creating a waterproof seal in and around any openings to the outside environment that are created by Contractor or for systems being installed.

B. Contractor shall ensure that all waterproof materials meet appropriate codes and are applied according to good engineering practice.

3.8 RACKS, CABINETS, AND HARDWARE

A. Racks and Cabinets: Contractor shall assemble and install racks and cabinets.

B. Installation Hardware: Install hardware in a secure manner. Screws shall be tightened to a torque just sufficient to secure equipment without deforming washers beyond their original diameter.

C. Considerations: Rack mount equipment shall be secured as recommended by the manufacturer with consideration to airflow, power, and in/out connections.

D. Cross Connections: Where cross connections are required between equipment, interconnections shall be installed using cable management devices to secure cables in a neat and workmanlike manner, applying best industry practices.

3.9 INSTALLATION REQUIREMENTS

A. All cable shall be pulled by hand unless installation conditions require mechanical assistance. Where mechanical assistance is used, care shall be taken to ensure that the maximum tensile load for the cable as defined by the manufacturer is not exceeded. This may be in the form of continuous monitoring of pulling tension, use of a “break-away”, or other approved method.

B. Qualified personnel utilizing state-of-the-art equipment and techniques shall complete all installation work. During pulling operation, an adequate number of workers shall be present to allow cable observation at all points of pathway entry and exit.

C. Cable pulling shall be done in accordance with cable manufacturer’s recommendations and ANSI/IEEE C2 standards. Recommended pulling tensions and pulling bending radius shall not be exceeded. Any cable bent or kinked to radius less than recommended dimension shall not be installed.

D. All cable shall be free of tension at both ends.

E. PLENUM rated cable shall be used in all areas unless specifically noted otherwise.

F. Contractor shall replace any cables that have been damaged or abraded during installation.

G. Pulling lubricant may be used to ease pulling tensions. Lubricant shall be of a type that is non-injurious to the cable jacket and other materials used. Lubricant shall not harden or become adhesive with age.

H. A pull cord (nylon; 1/8” minimum) shall be co-installed with all cable installed in any conduit or surface mount raceway.

3.10 CABLE

A. Cable treatment: Cable shall be stored and handled to assure that it is not stretched, kinked, crushed, or abraded in any way. Bend radiuses shall meet manufacturer specifications and/or recommendations. Cable shall not be installed in ambient temperatures or moisture conditions above or below the rating of the manufacturer.

B. Splicing

1. Voice, data, and other twisted pair cables: No splices shall be installed in any voice, data or twisted pair cables.
2. Technology systems: No splices shall be installed in any cable less than five hundred (500) feet in length.
3. Digital multimedia/video cables: No splices are allowed in any digital multimedia/video cable.

C. Lengths

1. Variations: Where cables are to be of the same length, variations in the length shall be less than plus or minus ½ inch. Lengths of cables are based on the length of the unterminated signal conductors.
2. Labeling: Cables, regardless of length, shall be marked with a labeling scheme approved by Consultant.
3. Grouping: Cables shall be separated into like groups according to signal or power levels.
4. Power cables: Power cables shall be grouped to one side of the equipment rack while low-level cables to the other side.
5. Equipment Racks: Equipment rack wiring and cabling shall be neatly dressed.
6. Fastening: Rack cabling shall be adequately supported with Velcro wire wraps and horizontal support cable managers fastened to rack frame.
7. Wire Support outside MER/TR Spaces: Wire and cables shall be supported at least every 5 feet from the structure or as required to maintain not more than a 12 inch cable sag between supports and without over tensioning the cables.
8. Support Hardware: Cables shall be supported by J-hooks, cable tray, or ladder rack. Hardware shall be secured to building structure using 3/8” threaded rod supports.
9. Right Angles: Cables are to run at right angles to the structure, placed above ceiling in halls or corridors.
10. Height: Cables shall not run above red iron joist.

D. Concealment: Contractor shall make every effort to conceal wiring and other apparatus into walls, floors, and ceilings, assuming code and good engineering practice allows and suggests. Cabling systems installed in public areas shall be installed within walls, ceiling, or floors or within surface wiring pathways, as dictated by codes and good engineering practice.

E. Velcro Straps for Horizontal Cabling: Straps shall be installed snugly without deforming cable insulation. Straps shall be spaced at uneven intervals not to exceed 4 feet.

F. Cable Ties and Velcro Straps within Equipment Racks and Cabinets: Ties and straps shall be installed snugly without deforming cable insulation at uneven intervals not to exceed 8 inches. Cable ties shall only be used for non-signal carrying cables. No sharp burrs shall remain where excess length of the cable tie has been cut.

G. Obstruction: Contractor shall notify Owner immediately if any obstruction or hazard is discovered in a pathway provided by others.

3.11 CONNECTORS

A. Preparation: Cables shall be carefully prepared and connectors installed as directed by the manufacturer. Proper stripping devices and crimping tools shall be used.

B. Terminations: Connectors shall be carefully fitted to mating devices on equipment to avoid damage to mating contacts, inserts, or bodies. Specialized terminations shall be made in a neat and secure manner suited to the service of the wire and as directed by the manufacturer. Contractor shall use manufacturer specified terminations when those specifications exist.

C. Soldering: A person skilled in that practice shall execute soldered terminations. Any excessive insulation displacement resulting from soldering shall be grounds to require the Contractor to re-terminate the connector.

D. Adapters: Adapters shall be used only where the identity of the necessary type of connector is unknown at the time of installation, such as for Owner-provided equipment or in anticipation of future equipment upgrades, with Consultant's approval.

3.12 SPARE PARTS AND REMOTE CONTROLS

A. Keys: Contractor shall turnover all keys, tagged and organized by type on individual key rings, to Owner upon project completion.

B. Refer to individual sections for spare parts and remote control requirements.

3.13 EQUIPMENT INSTALLATION

A. General: Contractor shall make system properly operational and physically secure by mounting equipment and related accessories into furniture, consoles, and racks as required. Manufacturer's guidelines for installation shall be followed. Discrepancies in installation procedure or inability to complete a given task due to a shortage of materials or malfunctioning equipment shall be reported to Consultant immediately upon discovery.

B. Equipment Placement: Contractor shall locate equipment as indicated on drawings and as specified herein. Where such information is not provided, follow industry best practices and locate operable devices at convenient positions; heat generating devices at the top and seldom-accessed equipment below.

1. Unless otherwise specified, end user-operable devices shall be positioned within the range of front wheelchair access per ADA standards.

C. Equipment Installation: Equipment shall be installed as directed by the manufacturer using equipment manufacturer's desktop mounting frames, equipment tubs, installation hardware, and techniques. Contractor shall be responsible for moving equipment from storage and for providing necessary personnel or devices to carry and lift equipment around obstacles and into operating position.

3.14 FIRMWARE

A. Firmware shall be latest version supported by software and/or equipment as of Date of Acceptance.

3.15 ROUGH-IN

A. Scheduling: Contractor shall make every effort to install systems per this specification in a timely manner including rough-in of cabling and other apparatus where appropriate to stay on schedule.

B. Protection of Environment: Where cabling and/or equipment is installed prior to other trades completing their work in an area, Contractor shall take necessary precautions to cover, wrap, or otherwise protect to reduce possible damage due to plastering, painting, cleaning, or other such work.

3.16 CUTTING, DRILLING, PATCHING, AND PAINTING

A. Coordination: Contractor is responsible for coordinating the work when any cutting or drilling is required in the performance of installing the specified systems.

B. Restoration: Contractor is responsible for returning all surfaces (including walls, floors, and ceilings) to their previous condition after any cutting.

3.17 LABELING

A. General: Rack-mounted equipment and hardware shall be labeled as required herein. Connectors, jacks, receptacles, outlets, cables, cable terminations, terminal blocks, rack mounted equipment, active slots of card frame systems, etc. shall be clearly, logically, and permanently labeled in a manner acceptable to Consultant.

B. Approval: Proposed wording and/or numbering schemes for labeling shall be provided to Consultant for review and written approval prior to procurement or installation.

C. Labels used shall be permanent and secure. Provide labeling as follows unless otherwise noted in a specific section:

1. Like Size: Labels shall be sized to match other labels used for same purpose. Similarly, provide engraved labels of like size in other locations.

2. Equipment Racks: For enclosed racks containing equipment, provide labels on each equipment rack rear door or console rear panel reading “No user serviceable parts. Refer service to qualified technician.”

3. Installer and Consultant Identification: Position at the front top center section of each equipment rack a label that states the names of system Installer and Consultant.

4. Custom Panels: Custom panel nomenclature shall be engraved, etched, or screened. Markings are to be designed to ensure consistency and clarity within and without of system. Verify markings and placements by submitting label sample layouts to Consultant for approval prior to procurement.

5. Documentation: Labeling information shall appear on the as-built drawings.

3.18 FIRE-STOPPING

A. For all wall penetrations, Contractor shall restore the fire-rating condition of the wall to the same condition as before Contractor started its work. Depending on the size of the opening, this may involve sheetrock patching, in addition to use of other appropriate fire-stopping materials

3.19 ADDITIONAL ENGINEERING SERVICES

A. General: Contractor is responsible for securing necessary engineering services where needed to meet the needs of the installation.

B. Change Orders: Only when Contractor can show that additional engineering services are needed as a result of changes to the scope of the services being requested will Owner entertain a Change Order for these services.

3.20 GENERAL TESTING

A. See more specific/detailed testing requirements listed in each system subsection.

B. Supplies: Contractor shall supply testing equipment needed to verify compliance with specifications found in these documents.

C. Program: Contractor shall complete required testing prior to the inspection by Owner and Consultant.

D. Data: Test data shall be properly documented and recorded so that it is available for final inspection.

E. Quality Control: Testing may be repeated during the inspection process at the request of Owner or Consultant.

F. Prior to energizing or testing any active systems, ensure the following:

1. Installation: Products are installed in a proper and safe manner per the manufacturer's instructions.
2. Cleanliness: Products are neat, clean, and unmarred and parts securely attached. Dust, debris, solder, splatter, etc., is removed.
3. Cables and Connections: Cable is dressed, routed, and labeled; connections are consistent with regard to polarity.
4. Grounding: Electronic devices are properly grounded.
5. AC Power: Each AC power receptacle is tested with a circuit checker for proper hot, neutral, and ground connections prior to plugging in equipment.

3.21 GROUNDING

A. All systems shall be grounded per manufacturer recommendations.

B. Refer to Section 27 05 26 for specific Telecom Grounding and Bonding installation requirements.

3.22 TRAINING PROGRAM

A. Contractor shall provide the following training in addition to specific requirements identified in subsequent sections.

B. Provide audio-video recording of each training session to Owner.

C. Prior to scheduling or delivering End-User training, confirm:

1. Closeout submittals have been accepted by Owner and Consultant.
2. Final closeout inspection has been completed and punch list items corrected.
3. Training schedule dates must be coordinated and approved with the Owner and Consultant.

D. Training shall include:

1. Approved handouts.
2. Practical and comprehensive operation of systems.
3. Basic system troubleshooting techniques.
4. Basic system maintenance.

E. Training Blocks

1. Training time is defined as those hours specifically set-aside for the sole purpose of training End-Users. Credited time will not be given for time spent providing instructions to the Owner's staff for a system not completed or that has not passed final acceptance by the Owner and Consultant, or training performed outside of the approved training plan.
2. This training will be divided into training session "Blocks" as coordinated with the Owner.

a. The first training session block shall consist of training intended for the common system operators. The training, at a minimum, shall include the day to day use of the system.

b. The second training session block shall consist of training administrators of the day to day administration of the system. The training, at a minimum, shall include use of the administration control functions of the systems, user setup and filtering and pulling reports.

c. The third training session block shall consist of training administrators on system troubleshooting, maintenance and updates. The training, at a minimum, shall include using the system tools to diagnose issues, diagnosing common physical equipment issues, performing simple maintenance and performing system updates.

d. The forth training session block shall consist of a training session structured for high-level users, for example staff trainers that will provide instruction to other users and will include Advance System Configuration and Operational Knowledge needed to maintain and manage all technology systems. The Contractor may elect to engage the Manufacturer(s) in certifying the high-level end users in the systems at no cost to the Owner.

F. The Contractor shall issue a certificate of training completion to the trainees, upon completion of their training. Both the trainer and trainee(s) must sign the certificate before Contractor will receive training credit.

3.23 WARRANTY AND MAINTENANCE PROGRAM

A. Contractor shall provide the following warranty in addition to specific requirements identified in subsequent sections.

B. Specific technology sections may require more stringent/longer warranty periods. Those sections supersede these general requirements.

C. As part of the base proposal cost, the Proposer shall include a 3-year, turnkey warranty period with full support costs.

D. The Warranty period shall begin once the system is complete and all punch list items are confirmed as being complete per the construction documents. The Contractor shall receive a letter of completion from the Consultant and Owner once the project is complete starting the warranty period.

E. The warranty and support work included in this contract shall cover the following materials, software and services, without additional cost to the Owner:

1. Inspections, preventative maintenance and testing of equipment and components. The Contractor shall schedule a 10-month on-site preventative system review 10-months into each year of warranty and support including system inspections, preventive maintenance, software upgrades/patches and testing of equipment and components.

2. Regular Service, Emergency Service, and Normal Service.

3. Labor, travel, equipment, materials and transportation cost.

F. Response Time: Response time for service calls.

1. The Owner reserves the right to make the final determination of emergency or normal service calls and the right to coordinate the best times for service of any system failure.

2. Emergency service calls are defined as failures that prohibit the use of a typical system function(s) that pose a life safety concern or such failures that create a major impact to the Owner's daily operations.

a. The Contractor shall provide remote service diagnosing the impact within two (2) hours after notification by the Owner.

b. If remote service does not correct the reported issue, the Contractor shall provide on-site service correcting the impact within four (4) hours after notification by the Owner.

3. Normal service calls are defined as failures that prohibit the use of typical system function(s) that do not inhibit critical system usage, do not pose life safety concerns and do not create a major impact to Owner's daily operations.

a. The Contractor shall provide remote service correcting the impact within twenty-four (24) hours after notification by the Owner.

b. If remote service does not correct the reported issue, the Contractor shall provide on-site service correcting the impact within forty-eight (48) hours after notification by the Owner.

4. The Contractor shall supply Service Request forms and or proper contact procedure to the Owner with instructions for proper notification of the Contractor for warranty service. By following said instructions, the Owner shall constitute proper notification for any need warranty service

G. Repair Time: Contractor shall locally stock critical parts in sufficient quantities such that emergency repair or replacement shall be guaranteed within 12-hours. Temporary replacements within this time period shall be acceptable, provided temporary replacements do not compromise system functionality, and provided permanent replacement is achieved within 96 hours. Contractor may contact the Owner for use of Owner supplied spare parts where delay of system repair will have negative impact on system performance.

H. Transmittal: A copy of this Warranty shall be delivered to, and signed for by the Owner's representative whose primary responsibility is the operation and care of these systems. A copy of the signed Warranty document shall be delivered for review as part of the Final Submittals.

I. Registration: Register Warranty papers for all equipment and software in the name of the Owner. Furnish reproductions of all equipment Warranty papers to the Owner with the Final Submittals.

J. Subcontracting: Warranty service work may not be subcontracted except with specific permission and approval by the Owner.

1. Service/Warranty Procedures: With project close-out submittals, the Contractor shall submit a warranty service plan with all contact information and Owner service call directions for Owner review.

K. Resolution of Conflicts

1. The Owner retains the right to resolve unsatisfactory warranty service performance at any time by declaring the work unsatisfactory, stating specific areas of dissatisfaction in writing.

L. If the Contractor or his approved Subcontractor does not resolve such stated areas of dissatisfaction within ninety-six (96) hours, the Owner may appoint an alternative service agency or person to fulfill the terms of the Warranty at the expense of the Contractor. This action may be taken repeatedly until the Owner is satisfied that Warranty service performance is satisfactory. Satisfactory resolution of a malfunction shall be considered adequate when the device, equipment, system or component which is chronically malfunctioning is brought into compliance with the standards of performance as contained herein and published by the manufacturers of the equipment installed

END OF SECTION 27 00 00

PART 1 - GENERAL

1.1 SCOPE

A. Refer to Section 27 00 00 for additional project scope information.

B. This section describes the products and execution requirements related to furnishing and installing Category 6 Cabling and Termination Components and related subsystems as part of a Structured Cabling System.

C. Backbone system comprising copper, coaxial, and fiber optic cabling and horizontal (station) cabling is covered under this document.

D. Others will provide the network electronics for the LAN within the Telecom Rooms (TRs) and will be responsible for connecting the new cabling infrastructure to the LAN. This Contractor, however, shall supply the Category 6 patch cords. The Contractor shall be available on site during the crossover to assist with any cabling issues that may occur during the connection.

E. The Electrical Contractor shall install conduits and surface raceway for new technology outlet locations as noted on project drawings.

F. The Structured Cabling Contractor shall provide and install all sleeves through the wall penetrations as required whether or not specifically marked on Project Drawings, unless otherwise noted.

G. All cables and related terminations support, and grounding hardware shall be furnished, installed, wired, tested, labeled, and documented by the Contractor, as detailed in the following section(s).

H. All work and materials shall conform in every detail to the rules and requirements of the National Fire Protection Association, the TX Electrical Code, and present manufacturing standards.

I. All materials shall be listed by UL and shall bear the UL label. If UL has no published standards for a particular item, then other national independent testing standards shall apply and such items shall bear those labels. Where UL has an applicable system listing and label, the entire system shall be so labeled.

1.2 RELATED WORK

A. Section 27 00 00 – General Technology Requirements

B. Section 27 11 00 – Communications Equipment Rooms

C. Section 27 12 00 – Grounding and Bonding for Technology Systems

D. Section 27 13 00 – Communications Backbone Cabling

E. Section 27 15 00 – Communications Horizontal Cabling

F. Section 27 16 00 – Communications Connecting Cords

G. Section 27 17 00 – CATV RF Distribution System

H. Section 27 18 00 – Communications Labeling and Identification

1.3 DEFINITIONS

A. Refer to Section 27 00 00 for additional definitions.

1.4 REFERENCE STANDARDS AND CODES

A. Refer to Section 27 00 00 for additional requirements.

B. All references relate to the current version adopted by the city/county according to the authority having jurisdiction (AHJ). If the city/county has not adopted a version the latest version shall be utilized.

C. ASTM B633: Specification for Electrodeposited Coatings of Zinc on Iron and Steel

D. ASTM A653: Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process

E. ASTM A123: Specification for Zinc (Hot Galvanized) Coatings on Iron and Steel

F. ASTM A510: Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel

G. ANSI/TIA 569-C: Telecommunications Pathways and Spaces

H. ANSI/TIA 568-C.0, 1, 2, 3, 4: Commercial Building Telecommunications Standard

I. ANSI/TIA-598-C-2005 – Optical Fiber Cable Color Coding

J. ANSI/TIA 606-B: Administration Standard for Telecommunications Infrastructure

K. ANSI/TIA 942-A: Telecommunications Infrastructure Standard for Data Centers

L. ANSI/TIA 607-B: Generic Telecommunications Grounding (Earthing) and Bonding for Customer Premises

M. IEEE: National Electrical Safety Code® (NESC®)
standards.ieee.org/about/nesc

N. Premises Distribution System: Written certification that the premises distribution system complies with the EIA ANSI/TIA/EIA-568-C.0,1, 2, 3, EIA ANSI/TIA/EIA-569-B, and ANSI/TIA/EIA-606-A.

O. Materials and Equipment: Where materials or equipment are specified to conform, be constructed, or be tested to meet specific requirements, certification that the items provided conforms to such requirements. Certification by a nationally recognized testing laboratory that a representative sample has been tested to meet the requirements, or a published catalog specification statement to the effect that the item meets the referenced standard, will be acceptable as evidence that the item conforms. Compliance with these

requirements does not relieve the Contractor from compliance with other requirements of the specifications.

P. Installers

1. The Contractor shall have an RCDD (Registered Communication Distribution Designer) on staff assigned to manage this Project; documented proof shall accompany the proposal response.
2. All installing personnel shall have completed and be certified in manufacturer training or BICSI (Building Industry Consulting Service International) installation training for UTP infrastructure systems, or the Contractor shall contract with manufacturer for installation of all proposed components. Company Certifications shall accompany the proposal response.
3. The Contractor's technicians shall be certified and trained in the connectivity hardware that is being installed.
4. The Contractor shall submit certification that installers are factory certified to install and test the provided products. No less than half of the crew to be used for the telecommunications installation shall be trained by that manufacturer for the work.

1.5 PRE-CONSTRUCTION SUBMITTALS

A. Shop Drawings in addition to requirements in Section 27 00 00:

1. Equipment rack elevation details
2. Elevations of telecommunication room walls mounted equipment
3. Outlet faceplate details for all outlet configurations, sizes, and cable types
4. Overhead telecommunication room enlargements, provide dimensions of room and clearance for maintenance and operation

1.6 CLOSEOUT SUBMITTALS

A. Refer to Section 27 00 00 for requirements. In addition, provide three (3) sets of the following:

1. Data cable test results
2. USB drive containing:
   a. As-built drawings (CAD format)
   b. As-built drawings (PDF format)
   c. Detailed test results in original tester format (Fluke Linkware)
   d. Detailed cable test results in PDF format
3. Warranty certification from connectivity manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Vendor shall be responsible for all materials until completion of Project.

B. Cable shall be stored according to manufacturer's recommendations at minimum. In addition, cable shall be stored in a location protected from vandalism and weather.

C. If cable is stored outside, it shall be covered with opaque plastic or canvas with provision for ventilation to prevent condensation and for protection from weather. If air temperature at cable storage location will be below 40 degrees Fahrenheit, the cable shall be moved to a heated (minimum 50 degrees Fahrenheit) location. If necessary, cable shall be stored off site at the Contractor's expense.

D. If the Contractor wishes to have a trailer on site for storage of materials, arrangements shall be made with the Owner.

E. Commercial off-the-shelf manuals shall be furnished for operation, installation, configuration, and maintenance for all products provided as a part of the premises distribution system. Specification sheets for all cable, connectors, and other equipment shall be provided.

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 27 00 00.

PART 3 – EXECUTION

3.1 WARRANTY

A. The Contractor shall provide to the Owner a manufacturer's (Panduit) 20 year minimum warranty certificate for all materials, equipment, etc. Upon successful completion of the installation and subsequent inspection, the Owner shall receive a numbered certificate, from the manufacturing connectivity hardware (patch panels, jacks, parch cords 110 blocks, etc.) company, registering the installation. This warranty shall include all labor, materials, and travel time.

B. The warranty shall ensure against product defects and guarantee that all approved cabling components exceed the specifications of TIA/EIA-568-C, and ISO/IEC IS 11801 for cabling links/channels, and that the installation will exceed the loss and bandwidth requirements of TIA/EIA 568-C ISO/IEC IS 11801 for fiber links/channels, for a twenty-five (25) year period. The warranty shall apply to all passive structure cabling system components.

C. The warranty shall cover the failure of the wiring system to support the application that it was designed to support, as well as additional application(s) introduced in the future by recognized standards or user forums that use the TIA/EIA 568-C or ISO/IEC IS 11801 component and link/channel specifications for cabling, for a minimum of a twenty-five (25) year period.

D. The warranty shall cover the replacement or repair of defective product(s) and labor for the replacement or repair of such defective products(s), labeling of the new components, and testing of the circuit(s) at no cost to the Owner.

3.2 EXAMINATION

A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper and timely completion.

B. Verify cable lengths comply with published standards.

C. Notify Owner of installation that would exceed maximum lengths prior to installation of cable.

D. Contactor shall consult with Owner regarding alternative routing or location of cable.

E. Do not proceed until unsatisfactory conditions have been corrected.

3.3 SPARE PARTS

A. At the completion of the project, the Contractor shall provide the following equipment/parts. They shall be stored in the building MDF room for future use.

1. Cable Boxes: 2,000 of Category 6 data cable
2. Cable Jacks: Ten (10) data Jacks
3. Faceplates: Five (5) faceplates
4. Patch panels: Two (2) Category 6 patch panels

3.4 INSTALLATION REQUIREMENTS

A. Contractor shall furnish all required installation tools to facilitate cable pulling without damage to the cable jacket. Such equipment shall include, but not be limited to, sheaves, winches, cable reels, cable reel jacks, duct entrance tunnels, pulling tension gauge, and similar devices. All equipment shall be of substantial construction to allow steady progress once pulling has begun. Makeshift devices that may move or wear in a manner to pose a hazard to the cable shall not be used.

B. Service Loops: A surplus of cable, typically located at or near the point of termination to facilitate potential future changes. Cables shall have a minimum cable slack of 10ft (3m) at the telecommunication room(s) and 3.28ft (1m) at each telecommunications outlet in the suspended ceiling unless noted otherwise. Service loops shall be stored in an extended loop or in a figure-eight configuration, not in bundled loops.

C. Cable Support (TIA 569-C.9.7):

1. Non-continuous supports shall be located at intervals not to exceed 1.5 m (5 ft). Non-continuous supports shall be selected to accommodate the immediate and anticipated quantity, weight, and performance requirements of cables.
2. It is recommended not to make long runs exactly 5 ft apart due to “harmonics” issues per cable manufacturers. Cable supports shall be staggered at 4’ and 5’ intervals.
3. Non-continuous pathways do not need to be bonded together or grounded (see 2011 NEC 250.92.A.1

D. Maximum pulling tension (TIA 568-C.5.3.1):

1. The pulling tension for a 4-pair balanced twisted pair cable shall not exceed 110 N (25 lbf) during installation. For multipair cable (12-pair and above), manufacturer’s pulling tension guidelines shall be followed.
2. Sags between supports shall be a maximum of 300 mm (12 inches).

3.5 COOPERATION

A. The Contractor shall cooperate with other trades and General Contractor’s personnel in locating work in a proper manner.

B. Should it be necessary to raise, lower, or move longitudinally any part of the work to better fit the general installation, such work shall be done at no extra cost to the Owner, provided such decision is reached prior to actual installation. The Contractor shall check location of electrical outlets with respect to other installations before installing.

3.6 TESTING AND ACCEPTANCE

A. The Contractor shall perform acceptance tests as indicated below for each subsystem (backbone, station, etc.) as it is completed.

B. The Contractor shall supply all equipment and personnel necessary to conduct the acceptance tests. Prior to testing, the Contractor shall provide a summary of the proposed test plan for each cable type, including equipment to use, setup, test frequencies or wavelengths, results format, etc. The Consultant will approve the method of testing.

C. The Contractor shall visually inspect all cabling and termination points to ensure that they are complete and conform to the wiring pattern defined herein. The Contractor shall provide the Consultant with a written certification that this inspection has been made.

D. The Contractor shall conduct acceptance testing according to a schedule coordinated with the Consultant. Representatives of the Owner may be in attendance to witness the test procedures. The Contractor shall provide a minimum of one (1) week advance notice to the Consultant and Owner to allow for such participation. The notification shall include a written description of the proposed conduct of the tests, including copies of blank test result sheets to be used.

E. Tests related to connected equipment of others shall be done only with the permission and presence of Contractor involved. The Contractor shall ascertain that testing only as required to prove the wiring connections are correct.

F. The Contractor shall provide test results and describe the conduct of the tests, including the date of the tests, the equipment used, and the procedures followed. At the request of the Consultant, the Contractor shall provide copies of the original test results.

G. All cabling shall be 100% fault free unless noted otherwise. If any cable is found to be outside the specification defined herein, that cable and the associated termination(s) shall be replaced at the Contractor's expense. The applicable tests shall then be repeated.

H. Backbone voice cables shall be free of shorts within the pairs and be verified for continuity, pair validity and polarity, and conductor position on the termination blocks (e.g., 110). Any mispositioned pairs shall be identified and corrected. The percentage of "bad" pairs shall not exceed 1% in any backbone (riser or tie) cable based on total pair count. All bad pairs shall be identified and documented.

I. The Consultant or Owner may request that a 10% random field re-test be conducted on the cable system to verify documented findings.

1. If requested, the Contractor shall test up to 10% of cable links at no cost to the Owner.

2. Tests shall be a repeat of those defined above and under Testing and Acceptance. If findings contradict the documentation submitted by the Contractor, additional testing shall be performed to the extent determined necessary by the Consultant, including a 100% re-test. This re-test shall be at no additional cost to the Owner.

3.7 FIRE STOPPING

A. Contractor shall seal any openings created for cable pass-through between floors or through fire rated walls. Sealing material and application of this material shall be accomplished in such a manner that is acceptable to the local fire and building authorities having jurisdiction over this work.

B. Creation of such openings as are necessary for cable passage between locations as shown on the Drawings shall be the responsibility of the Contractor. Any openings created by or for the Contractor and left unused shall also be sealed as part of this work.

END OF SECTION 27 10 00

JUSTICE CENTER - CSCD **SECTION 27 11 00**
WILLIAMSON COUNTY **COMMUNICATION EQUIPMENT ROOMS**

PART 1 - GENERAL

1.1 SCOPE

A. Refer to Section 27 00 00 for additional project scope information.

B. This section describes the products and execution requirements relating to telecommunications cabling, termination components, racks, pathways, telecommunication rooms and related subsystems. Covered systems include the following:

1. Equipment room cable management system and equipment racks
2. Horizontal and backbone cable terminating equipment
3. Telecommunications grounds and related components

1.2 RELATED WORK

A. Section 27 00 00 – General Technology Requirements

B. Section 27 10 00 – Communications Cabling General Requirements

C. Section 27 12 00 – Grounding and Bonding for Technology Systems

D. Section 27 13 00 – Communications Backbone Cabling

E. Section 27 15 00 – Communications Horizontal Cabling

F. Section 27 16 00 – Communications Connecting Cords

G. Section 27 17 00 – CATV RF Distribution System

H. Section 27 18 00 – Communications Labeling and Identification

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 27 00 00.

2.2 CATEGORY 6 PATCH CABLES

A. Cables shall be terminated at the telecommunication closets on high-density integrated patch panels incorporating Category 6 jacks (non-keyed 8-pin), meeting the specifications for the telecommunications outlet detailed in the section above.

B. Patch panel configuration shall be 24 for small density areas and 48 ports for high density areas.

C. The patch panel shall exceed ANSI/TIA/EIA 568-C.2-1 Category 6 component compliance standard. All pair combinations shall be considered, with the worst-case measurement being the basis for compliance.

D. The patch panels shall be interoperable and backwards compatible to lower performing cabling systems.

E. Panels shall incorporate cable support and/or strain relief mechanisms to secure the horizontal cables at the termination block and to ensure that all manufacturers' minimum bend radius specifications are adhered to.

F. The patch panel shall have color-coded designation strips to identify cable count.

G. Manufacturers:

1. Panduit
    a. Netkey NK6PPG24Y – 24 Port 1RU
    b. NetKey NK6PPG48Y – 48 Port 2RU

2.3 VOICE BACKBONE TERMINATION FIELD

A. Wall Mounted 110 Blocks

1. At the MDF room, voice "backbone" cables shall be terminated on high-density wall mounted 110 blocks.
2. The Proposer shall provide 100 pairs rack mounted 110 panels. The panel shall allow voice backbone cables to be terminated directly on the wall.
3. The panels shall incorporate the openings between rows to allow cables to be routed from behind the panel directly to the point of termination.
4. The panels shall be with cable managers and covers. Termination strips on the base shall be notched and divided into 5-pair increments.
5. The mechanical termination shall:
    a. Have the ability of terminating 22-26 AWG plastic insulated, solid, and stranded copper conductors.
    b. Provide a direct connection between the cable and jumper wires.
    c. Have less than 0.2-dB of attenuation from 1 - 100 MHz.
    d. Have less than 100 mw of DC resistance.
    e. Have less than 5 mw of resistance imbalance.
    f. Have minimal signal impairments at all frequencies up to 100 MHz.
6. Blocks shall identify pair position by a color designation: blue, orange, green, brown, and slate (backbone only).

2.4 FIBER OPTIC PATCH PANELS

A. The Contractor shall provide a fiber optic patch panel at each location where a fiber optic cable terminates.

B. All terminated fibers shall be mated to duplex LC couplings mounted on enclosed patch panels. Couplers shall be mounted on a panel that, in turn, snaps into the enclosure. The proposed enclosure shall be designed to accommodate a changing variety of connector types, including SC, ST, Fixed Shroud Duplex (e.g., “FDDI Connector”), Biconic, and FC by changing panels on which connector couplings are mounted.

C. The patch panel enclosure shall be sized to accommodate the total fiber count to be installed at each location as defined in the specifications and Drawings, including those not terminated (if applicable), PLUS 50% future growth.

D. The Contractor shall provide all required connector panels and connector couplings (sleeves, bulkheads, etc.) adequate to accommodate the number of fibers to be terminated.

E. Patch panels shall be designed for easy installation, front removal, and expansion of snap-in adapter panels.

F. Patch panels shall be enclosed assemblies affording protection to the cable subassemblies and to the terminated ends. The enclosures shall incorporate a hinged or retractable front cover designed to protect the connector couplings and fiber optic jumpers.

G. The patch panel’s enclosure shall provide for strain relief of incoming cables and shall incorporate radius control mechanisms to limit bending of the fiber to the manufacturer’s recommended minimums or 1.2”, whichever is larger.

H. Access to the inside of the patch panel enclosure during installation shall be from the front and rear. Panels that require any disassembly of the cabinet to gain entry will not be accepted.

I. All patch panels shall provide protection to both the “facilities” and “user” side of the coupling. The patch panel enclosure shall be configured to require front access only when patching. The incoming cables (backbone, riser, etc.) shall not be accessible from the patching area of the panel. The enclosure shall provide a physical barrier to access of such cables.

J. Where singlemode fibers are installed, the fibers contained in these cables may be terminated either by (1) splicing of factory-terminated cable assemblies (“pigtails”) or (2) use of a “fan-out” kit. In the latter approach, individual fibers are to be secured in a protective covering (such as an Aramid reinforced tube, for example) with connectors mated to the resulting assembly. In both instances, the proposed termination hardware shall incorporate a mechanism by which cable and subassemblies are secured to prevent damage. Splicing shall be by the “fusion” method. Individual splice loss shall not exceed 0.2 dB.

K. Fiber optic patch panels shall be Panduit Opticom® QuickNet Rack Mount Fiber Enclosures.

L. 50-micron LC adaptor panels shall be Panduit FAP12WBLDLC.

M. Singlemode LC adaptor panels shall be Corning FAP12WBUDLCZ

2.5 CABLE MANAGEMENT

A. The cable management system shall be used to provide a neat and efficient means for routing and protecting fiber and copper cables and patch cords on telecommunication racks and enclosures. The system shall be a complete cable management system comprising 4-post and 2-post floor mount racks, wall mount racks, equipment cabinets and vertical and horizontal cable managers to manage cables on both the front and rear of the rack. The system shall protect network investment by maintaining system performance, controlling cable bend radius, and providing cable strain relief.

1. 2-Post Equipment Racks

a. The Contractor shall provide and install 2-post adjustable equipment racks to house cable termination components (e.g., copper data and fiber optic) and network electronics (by others) as shown on the drawings. Prior to installation, the Contractor shall coordinate exact placement with Owner.

b. Rack shall be 84" in height and shall be self-supporting.

c. Channel uprights shall be spaced to accommodate industry standard 19" mounting and have pass-through holes with smooth edges to protect cables.

d. Rack shall be constructed of aluminum.

e. Rack shall be double side drilled and tapped to accept 12-24 screws. Uprights shall also be drilled on back to accept cable brackets, clamps, power strip(s), etc. Hole pattern on rack front shall be per EIA/TIA specifications (5/8"-5/8"-1/2"). Hole pattern on the rear shall be at 3" intervals to accept cable brackets.

f. Rack shall be supplied with at least 24 spare screws.

g. Rack shall be supplied with a ground bar and #6 AWG ground lug.

h. Manufacturers:

i. Panduit R2P

ii. Or approved equal.

2.6 VERTICAL CABLE MANAGEMENT

A. At the telecommunication rooms, vertical cable management shall be furnished and installed to adjacent racks to organize cables on front and rear of telecommunication racks.

B. Vertical cable managers shall include components that aid in routing, managing, and organizing cable to and from equipment. Panels shall protect network equipment by controlling cable bend radius and providing cable strain relief. Panels shall be a universal design mounting to EIA 19" or 23" racks.

C. Vertical cable management system shall feature the following:

a. Open cabling section on the rear that provides easy access and routes cable bundles feeding into the back of patch panels and 1 RMU cable guide on the front designed for fanning and managing patch cords.

b. Edge-protected pass-through ports designed for easy routing of cable from front channel to back.

c. Vertical slots along the center separator to allow securing cable bundles neatly with management straps.

d. Door/cover (front only) that is easily opened from the right or left and still easily removed to allow for quick moves, adds, and changes.

e. Movable wire retainers to retain the cables during cover removal.

f. Contractor will use double sided (front and back) vertical managers on 2-post racks.

g. All vertical cable managers shall have dual hinged doors.

h. Contractor shall choose vertical cable manager width according to manufacturer's fill tables to not represent more than a 35% fill at installation based on projected worst-case density when racks are fully populated.

i. Contractor shall bring to the attention of WILCO any case where the populated rack will exceed 35% upon installation for resolution from the Department of Information Technologies.

j. Vertical cable managers shall have the following features:

k. Large finger openings accommodate up to 24 Category 6 cables

l. Integral cable retainers on the end of each finger to help contain cables within each rack unit

m. Bend radius fingers align with rack spaces to support cables as they transition to the vertical pathway

n. Dual hinged covers can be opened 110° to the left or right to provide complete access to the cables inside the vertical pathway

o. Snap-on cable retainers can be placed on to fingers to help retain cables in channel during installation and maintenance

p. Vertical managers include hinged covers, cable retainers, mounting brackets and #12-24 screws

q. Vertical cable managers shall be NetRunner™ Vertical Cable Management System in sizes 4.9" wide, 6.7" wide, or WILCO Williamson County approved equivalent.

r. Manufacturers:

   i. Panduit WMPV45E

   ii. Panduit WMPVHC45E

iii. Or approved equal.

2.7 POWER DEVICES

A. Refer to Section 27 00 00 for additional requirements.

B. Power strip shall provide surge protection and power conditioning.

C. Contractor shall provide one (1) power strip per rack/cabinet.

D. Manufacturers:

1. Tripp-Lite IBAR12-20ULTRA
2. Or approved equal

2.8 HORIZONTAL CABLE MANAGEMENT

A. Horizontal cable managers shall include components that aid in routing, managing, and organizing cable to and from equipment. Panels shall protect network equipment by controlling cable bend radius and providing cable strain relief. Panels shall be a universal design mounting to EIA 19" racks and constructed of steel bases with PVC duct attached. The duct fingers shall include retaining tabs to retain the cables in place during cover removal. The covers shall be able to hinge from either side yet still be easily removed to allow for quick moves, adds, and changes.

B. The cable managers shall be provided with movable wire retainers to retain the cables during cover removal and #12-24 mounting screws. An integral strain relief bracket shall be provided on either end of the duct to allow for easy cover placement.

C. Double-Sided horizontal cable managers shall be placed above and below each patch panel.

D. The Contractor shall also supply additional managers for network electronics (electronics provided by others).

E. Contractor shall user double-sided PatchLink ™ Horizontal Cable Managers (or WILCO approved equal) in sizes 1 RU and 2 RU:

F. Manufacturers:

1. Panduit WMP1E
2. Panduit WMPSE
3. Or approved equal.

2.9 TELECOMMUNICATION GROUND

A. The Telecommunication Contractor is responsible for providing an appropriate ground for all racks, trays, and telecommunications equipment installed by this Contractor.

2.10 WIRE BASKET RUNWAY TRAY

A. Within each Telecommunications Room, the Contractor shall provide and install sufficient wire basket tray to support cable bundles from corridor to equipment racks or as shown on the Project Drawings, this Contractor shall provide and install sufficient basket tray to support cable bundles from corridor to equipment racks or cabinets.

B. The Contractor shall provide all necessary labor, supervision, materials, equipment, tests, and services to install complete wire basket runway systems in the telecommunication closet.

C. Wire basket runway systems shall include, but are not limited to, straight sections of continuous wire mesh, field formed horizontal and vertical bends, tees, drop outs, supports, and accessories.

D. Specifications and Drawings are for assistance and guidance, but exact routing, locations, distances, and levels will be governed by actual field conditions.

E. All straight section longitudinal wires shall be straight (with no bends).

F. Wire basket runway shall be made of high strength steel wires and formed into a standard 2-inch by 4-inch wire mesh pattern with intersecting wires welded together. All wire ends along runway sides (flanges) shall be rounded during manufacturing for safety of cables and installers.

G. All fittings shall be field formed as needed.

H. All splicing assemblies shall be the bolted type using serrated flange locknuts. Hardware shall be either yellow zinc dichromate in accordance with ASTM B633 SC2 or AISI Type 304 stainless steel. Splicing assemblies shall provide a continuous ground connection.

I. Wire Basket Tray shall be grounded to the Telecommunications Room ground bus bar.

J. Cable Drop Out/Waterfall

    1. Where cables bundles transition from tray and drop to the rack, cabinets or ladder rack, the Contractor shall provide and install a radius control device. This device shall be a waterfall or drop out device and shall be properly sized to accommodate cable bundle plus 20% future growth.

K. T-sections of tray shall be made using T-section fittings.

L. Straight section splices shall be made using splice plates.

M. Wire basket runway supports shall be wall mounted brackets and trapeze hangers when spanning the room.

N. Trapeze hangers shall be supported by 3/8 inch diameter rods.

O. Provide size as indicated on the drawings.

P. Tray shall have flat Black finish.

Q. Accessories (connectors, splice plates…) shall be painted to match tray finish.

R. Cable delivery over racking systems in telecommunications rooms shall be done with Wyr-Grid® overhead cable tray routing system (or WILCO approved equal).

S. Manufacturer:

1. Panduit WG12BL10
2. Panduit WG18BL10
3. Or approved equal

2.11 LADDER RACK

A. Within each Telecommunications Room, the Contractor shall provide and install ladder rack as shown on the Project Drawings.

B. Within each Telecommunications Room with a vertical conduit riser the Contractor shall provide and install vertical ladder rack connecting the ground conduit sleeve penetrations with the ceiling conduit sleeve penetrations.

C. The Contractor shall provide all necessary labor, supervision, materials, equipment, tests, and services to install a complete ladder rack system in the telecommunications room as shown on the Drawings.

D. Specifications and Drawings are for assistance and guidance, but exact routing, locations, distances, and levels will be governed by actual field conditions.

E. All splicing assemblies shall be the bolted type using serrated flange locknuts. Hardware shall be either yellow zinc dichromate in accordance with ASTM B633 SC2 or AISI Type 304 stainless steel.

F. Cable Drop Out/Waterfall

1. Where cables bundles transition from tray and drop into the racks/cabinets, the Contractor shall provide and install a radius control device. This device shall be a waterfall or drop out device and shall be properly sized to accommodate cable bundle plus 20% future growth.

G. Size ladder rack as indicated on the Contract Documents.

H. Accessories (connectors, splice plates…) shall be painted to match tray finish.

I. Manufacturers:

1. Chatsworth
2. Cooper
3. Legrand
4. Pentair Hoffman
5. Or approved equal

PART 3 – EXECUTION

3.1 EQUIPMENT RACK AND CABINET

A. Prior to permanently securing racks or cabinets, the Contractor shall coordinate a walk through with the Owner to determine exact placement of racks.

B. The Contractor shall bolt the rack to the floor as recommended by the manufacturer. Multiple racks shall be joined and the ground made common on each. Rack shall also be stabilized by extending a brace extending to the wall. Alternately, overhead cable tray over which the cabling accesses the equipment rack(s) shall provide this function.

C. A space between the rack upright and the wall (~6") shall be planned to allow for cabling in that area. The rear of the rack shall be ~40" from the wall to allow for access by maintenance personnel. In all cases, a minimum of 40" workspace in front of the rack is also required. Locations where these guidelines cannot be followed shall be brought to the attention of the Consultant for resolution prior to installation.

D. All hardware and equipment is to be mounted at least 18" above floor level. This is to afford easy access and, in the case of the lower limit, prevent damage to the components. Positioning of hardware shall be reviewed and approved by the Consultant and Site Coordinator(s) prior to installation.

E. Equipment rack shall be equipped with cable management hardware to allow an orderly and secure routing of twisted pair cabling to the data patch panels. At minimum, one such horizontal jumper management panel shall be placed below each fiber optic patch panel installed by the Contractor. Additional jumper management panels may be required pending installation of other cable types on the rack. The rack shall be grounded to the telecommunications ground (TGB) using a #6 AWG (or larger) insulated stranded copper conductor (GREEN jacket).

3.2 WIRE BASKET TRAY AND LADDER RACK RUNWAY

A. Runway shall be installed in accordance with recognized industry practices, to ensure that the cable tray equipment complies with requirements of NEC, applicable portions of NFPA 70B and NECA's "Standards of Installation" pertaining to general electrical installation practices.

B. Coordinate installation of runway with other electrical work as necessary to properly interface installation of wire basket runway with other work.

C. Provide sufficient space encompassing runways to permit access for installing and maintaining cables.

D. Test runways to ensure electrical continuity of bonding and grounding connections and to demonstrate compliance with specified maximum grounding resistance.

END OF SECTION 27 11 00

JUSTICE CENTER - CSCD **SECTION 27 12 00**
WILLIAMSON COUNTY **GROUNDING & BONDING FOR TECHNOLOGY SYSTEMS**

PART 1 - GENERAL

1.1 SCOPE

A. Refer to Section 27 00 00 for additional project scope information.

1.2 RELATED WORK

A. Section 27 00 00 – General Technology Requirements

B. Section 27 10 00 – Communications Cabling General Requirements

C. Section 27 11 00 – Communications Equipment Rooms

D. Section 27 13 00 – Communications Backbone Cabling

E. Section 27 15 00 – Communications Horizontal Cabling

F. Section 27 16 00 – Communications Connecting Cords

G. Section 27 17 00 – CATV RF Distribution System

H. Section 27 18 00 – Communications Labeling and Identification

I. Section 27 40 00 – AV/Multimedia General Requirements

J. Section 27 41 00 – Audio Visual Systems

K. Section 27 62 00 – Video Surveillance System

L. Section 27 64 00 – Electronic Access Control System

1.3 REFERENCE STANDARDS AND CODES

A. IEEE C2-2007 - National Electrical Safely Code

B. IEEE Std. 837-2002, or latest version – Standard for Qualifying Permanent Connections Used in Substation Grounding

C. ANSI/TIA-607-B-2011 - Commercial Building Grounding and Bonding Requirements for Telecommunications

D. NFPA 70E - Standard for Electrical Safely in the Workplace

E. ANSI/NECA/BICSI-607 - Telecommunications Bonding and Grounding Planning and Installation methods for Commercial Buildings

F. UL 467 - Standard for Grounding and Bonding Equipment

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 27 00 00.

2.2 GROUNDING AND BONDING CABLE

A. The grounding and bonding cable shall be solid stranded copper conductors. AWG #3, AWG #4, and AWG #6 as specified on project drawings or specifications.

B. The grounding and bonding cables shall have a green jacket color and riser or plenum rated as required.

C. Feeder and Branch Circuit Equipment Ground: Size as shown on drawings, specifications, or as required by NFPA 70, whichever is larger. Differentiate between normal ground and isolated ground when both are used on the same facility.

2.3 GROUNDING AND BONDING BUSBARS

A. Telecommunications Main Grounding Busbar (TMGB)

1. Factory-drilled solid copper with holes to accommodate lugs. Field manufactured busbars are not acceptable.
2. 0.25” thick x 4” wide
3. Sized for current applications and future growth
4. Insulated from its support
5. Shall be an electro-tin plated busbar
6. Maintain a minimum of 2” of clearance from wall
7. UL listed and BICSI certified
8. Manufacturers:
   a. Panduit
   b. Or approved equal

B. Telecommunications Grounding Busbar (TGB)

1. Factory-drilled solid copper with holes to accommodate lugs. Field manufactured busbars are not acceptable.
2. 0.25” thick x 2” wide
3. Sized for current applications and future growth
4. Insulated from its support

5. Shall be an electro-tin plated busbar
6. Maintain a minimum of 2” of clearance from wall
7. UL listed and BICSI certified
8. Manufacturers:
   a. Panduit
   b. Or approved equal

C. Horizontal Equipment Rack or Cabinet Busbar

1. Mounts to standard 19” Rack or Frame
2. Capacity: 6 Double hole lugs
3. Shall be an electro-tin plated busbar
4. UL listed and BICSI certified
5. Manufacturers:
   a. Panduit
   b. Or approved equal

D. Vertical Equipment Rack or Cabinet Busbar

1. Mounts to vertical rail or inside of cabinet in 19” or 23” equipment rack or frame.
2. Capacity: 9 Double hole lugs
3. Shall be an electro-tin plated busbar
4. UL listed and BICSI certified
5. Manufacturers:
   a. Panduit
   b. Or approved equal

2.4 MECHANICAL CONNECTORS

A. Mechanical connector bodies shall be manufactured from high strength, high conductivity cast copper alloy material. Bolts, nuts, washers, and lock washers shall be made of Silicon Bronze and supplied as a part of the connector body and shall be of the two bolt type.

B. Split bolt connector types are not allowed.

C. Connectors shall meet or exceed UL 467.

1. Manufacturers:
   a. Panduit

b. Or approved equal

2.5 COMPRESSION LUGS

A. Shall be UL & CSA listed

B. Shall meet or exceed the performance requirements of IEEE 837, latest revision

C. Compression type

D. Shall be manufactured from pure wrought copper. Conductivity of this material shall be no less than 99% by IACS standards.

E. Lugs shall be 2-hole. Single hole lugs are not allowed

F. Long barrel that will allow a minimum of two crimps with standard industry colors

G. Each connector shall be filled with an oxide-inhibiting compound

H. Crimped with a compression, tool and die system, according to manufacturer's recommendation.

1. Manufacturers:

a. Panduit

b. Or approved equal

2.6 TAPS

A. Connections to the Conductor shall be made with irreversible compression connectors

B. Shall be UL & CSA listed

C. Requires a minimum of (2) crimps for C Tap or H Tap, 1 crimp for I-Beam and busbar Tap

D. Crimp according to manufacturer's recommendation

1. Manufacturers:

a. Panduit

b. Or approved equal

PART 3 – EXECUTION

3.1 GENERAL

A. Install products in accordance with manufacturer's instructions.

B. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

C. Mechanical connections shall be accessible for inspection and maintenance.

D. No insulation shall be installed over mechanical ground connections.

E. Ground connection surfaces shall be cleaned and all connections shall be made so that disconnection or removal is impossible.

3.2 RESISTANCE MEASUREMENT

A. Measure ground resistance from system neutral connection at service entrance to convenient ground reference point using suitable ground testing equipment. Resistance shall not exceed 2 ohms.

3.3 TELECOMMUNICATIONS BONDING BACKBONE (TBB)

A. The intended function of a TBB is to reduce or equalize potential differences between telecommunications systems. While the TBB will carry some current under ac power ground fault conditions, it is not intended to provide the only ground fault return path.

B. The TBB shall:

1. Be connected to the TMGB & TGB.

2. Be a continuous copper conductor that shall be sized no less than 6 AWG to a maximum of 3/0 AWG. The TBB shall be sized in accordance to the following table:

Linear Length – ft.	Size (AWG)
Less than 13	6
14 - 20	4
21 - 26	3
27 - 33	2
34 - 41	1
42 - 52	1/0
53 - 66	2/0
Greater than 67’	3/0

3. The TBB conductors shall be installed and protected from physical and mechanical damage.

4. The TBB conductors should be installed without splices.

a. Where splices are necessary, the number of splices should be kept to a minimum and they shall be accessible and located within telecommunications spaces or j-box labeled as a telecommunications bonding backbone splice.

b. Joined segments of a TBB shall be connected using exothermic welding, irreversible compression-type connectors or equal.

C. A metallic cable shield shall not be used as a TBB.

3.4 GROUNDING EQUALIZER (GE)

A. The GE shall be a continuous copper conductor that shall be sized no less than 6 AWG to a maximum of 3/0 AWG. The GE shall match the size of the TBB.

B. The GE shall connect to the telecommunications grounding busbar(s) in the same-floor telecommunications rooms on the first, top, and every third floor in a building greater than 4 floors.

C. A metallic cable shield shall not be used as a GE.

3.5 TELECOMMUNICATIONS EQUIPMENT BONDING CONDUCTOR (TEBC)

A. Connects the TMGB/TGB to equipment racks and cabinets.

B. Shall be a continuous copper conductor that shall be sized per the length of cable.

C. Shall be separated from ferrous materials by 2” or be bonded to the ferrous metal.

D. May be routed within cable trays or suspended 2” under or off the side of the cable tray or ladder rack.

E. Shall be supported every 3ft.

F. 8” minimum bend radius.

G. May come cross other cable groups at a 90 degree angle only.

H. A metallic cable shield shall not be used as a TEBC.

3.6 RACK OR CABINET BONDING CONDUCTOR

A. A bonding conductor shall be used to connect the equipment racks and cabinets directly to the TMGB, TGB or underfloor ground mesh network.

B. All metallic enclosures, including remote mounted equipment cabinets and racks for telecommunications, security or audio/visual shall be bonded to the nearest TMGB or TGB using a minimum sized conductor of 6 AWG. Remote bonds shall be labeled on both ends stating the destination of the bond.

3.7 ELECTRICAL DISTRIBUTION PANEL (EDP)

A. The AC EDP serving the Telecommunications Room shall be bonded to the TMGB or TGB using a minimum of a 6 AWG cable.

B. A qualified electrician shall make all connections within an AC electrical distribution panel.

3.8 OPTICAL FIBER CONDUCTIVE CABLES

A. Conductive fiber-optic cables should be bonded and grounded as specified in the NEC.

3.9 CONDUIT BONDING

A. Separate ground wires shall be enclosed in rigid galvanized steel conduit and bonded at both ends to the rigid galvanized steel conduit with an approved fitting.

B. Install conductor in separate rigid conduit.

3.10 LADDER RACK/AND OR CABLE TRAY

A. All low voltage cable runway sections shall be bonded together and bonded back to the nearest Telecommunications Room the runway is serving as close TMGB or TGB as practical.

B. Maintain an 8” minimum bend radius on the TEBC.

C. Keep a 2” separation from other cables both power and telecommunications.

D. Remove any paint, oxidation, etc. from the runway surfaces that are being bonded.

E. Drill two holes as required to accommodate the 2-hole compression lug.

F. Apply a thin coat of antioxidant around the holes and on the surface where the lug will be in contact.

G. Attach straps to the runway using stainless steel hardware sized for the lug holes.

H. Wipe off any excess antioxidant after installation of the lug.

3.11 LABELING

A. Each grounding/bonding cable shall be labeled at the TMGB or TGB.

B. All taps to the TBB shall be within an enclosure and labeled as to its purpose.

C. Mechanical connectors shall be clearly marked with the catalog number, conductor size, and manufacturer.

D. Compression lugs shall be clearly marked with manufacturer, catalog number, conductor size, and required compression tool settings.

3.12 TESTING

A. Perform testing in accordance with test instrument manufacturer’s recommendations using the fall-of potential method.

END OF SECTION 27 12 00

PART 1 - GENERAL

1.1 SCOPE

A. Refer to Section 27 00 00 for additional project scope information. (Note to specifier: Add specific scope requirements by section on project by project basis.)

B. This section describes the products and execution requirements relating to telecommunications voice, data and video backbone cabling and termination components.

C. Backbone Cabling is the cable and hardware interconnecting telecommunication rooms (TRs), building demarcation rooms, equipment rooms and server rooms. The backbone cabling shall consist of the following cable types:

1. 50-micron Multimode Fiber Optic Cable
2. Singlemode Fiber Optic Cable
3. Multi-Pair Copper Voice Backbone Cable
4. Coaxial CATV Backbone Cable

1.2 RELATED WORK

A. Section 27 00 00 – General Technology Requirements

B. Section 27 10 00 – Communications Cabling General Requirements

C. Section 27 11 00 – Communications Equipment Rooms

D. Section 27 12 00 – Grounding and Bonding for Technology Systems

E. Section 27 15 00 – Communications Horizontal Cabling

F. Section 27 16 00 – Communications Connecting Cords

G. Section 27 17 00 – CATV RF Distribution System

H. Section 27 18 00 – Communications Labeling and Identification

1.3 OSP –- OUTSIDE PLANT

A. The Contractor shall be responsible for the acquisition of the appropriate permits, licenses and/or franchises required to occupy the public rights of way of the various organizations (PECI, the City, the County and the State) involved. The Contractor will be authorized by Owner to act as its agent for this purpose. There may be several jurisdictions within the District area that may have different permit processes. It will be the Contractor’s responsibility to secure and pay for these permits

B. When joint occupancy of aerial electric and telecommunications cables is considered, the design, construction and make ready of the joint occupancy facilities shall be performed by Proposer in accordance with the latest requirements of the local power company and the latest editions of the NEC, NESC, local, State and Federal regulations.

When the local, State, or Federal regulations are more stringent than the NEC or NESC codes, the more stringent requirements shall be observed.

C. All of the excavation work shall be performed during normal working hours.

D. The fiber optic cable shall be terminated in appropriate-sized fiber patch panels at each site. The size of the fiber optic patch panels shall be based on the required amount of fiber terminated and or fiber fusion spliced at each building location. Fiber strands shall be terminated on Ultra PC Polished SC connectors. All fiber strands shall be arranged with connector panels in the appropriate termination boxes.

E. The fiber optic cables shall be tested and labeled per these specifications using an OTDR, equipped with signature traces and a power meter. All results shall be documented, arranged, and provided to the District in a hard copy and soft form. The contractor shall place marker poles that identify the conduit and the cables along the route and at all splice points within the route.

F. All the work shall comply with the requirements of the City's Code of Ordinance, and the City's Right-of-Way Management Standards and Directives

G. All the work at the Williamson County facility shall comply with the requirements of the County's Code of Ordinance, and the County's Right-of-Way Management Standards and Directives.

H. All the work within the State of Texas right-of way shall comply with the requirements of the State of Texas Code of Ordinance, and the State of Texas Right-of-Way Management Standards and Directives.

I. Owner understands that it owns and will be responsible for the cable upon acceptance of installation. Once the installation has been accepted, Owner will be responsible for any repairs to the cable necessitated by accidents, fires, or other natural disasters. Owner may request the services of the successful Contractor to accomplish repairs at the hourly cost to be quoted hereinafter.

J. Proposer shall survey the proposed cable route and coordinate the route with the representatives from each agency having jurisdiction over items such as the City of Georgetown, Williamson County, the State of Texas, highways, traffic lights, overpasses, etc. prior to submitting a proposal. All potential problems with cable placement shall be brought up to the consultant's attention a minimum of ten (10) calendar days prior to the proposal due day.

K. When placing fiber cable on poles, the Proposer shall determine the ability of existing pole lines and guys to support the new cable plant, as well as any restrictions imposed by the pole owner. The Proposer shall ensure proper clearance from electric power lines and other cables that may sag near the fiber optic cable at the entire length of proposed aerial route as well as determine the clearances between the proposed fiber optic cable plant and existing facilities on a case-by-case basis by referring to the National Electrical Safety Code (NESC) and appropriate local safety codes. The Proposer shall obtain the required right-of-way clearances and insure that this right-of-way is free of obstacles such as guy wires, trees, etc.

L. The Contractor shall be responsible for establishing grades and elevations, checking of all interference, and shall verify all dimensions and locations in the field.

M. When placing buried cable on public right-of-way, permits and state licenses will be generally required for the following:

1. Boring, plowing, trenching, or excavating on public right-of-way.
2. Closing or limiting traffic on a thoroughfare.
3. Attaching conduit or cables to bridges, culverts, or public structures.
4. Storing materials or machinery on public property.
5. Crossing streets and railroads by direct burial or by pipe pushing/road bores.
6. Crossing streams, navigable waters, drainage ditches, etc.

N. The Contractor must re-verify building entrance and telecommunication room locations prior to installation. Prior to the furnishing or installing of any equipment, approval of equipment, locations, layout, and installation shall be obtained from Owner and True North Consulting Group.

O. The Contractor shall specifically note that the drawings are intended to only indicate in diagram format the extent, general character, and locations of work included. The exact routing of duct shall be determined by the existing structural conditions and other obstructions.

P. The locations of equipment, conduits, etc., as shown on the drawings, are correct to the extent permitted by the scale of the drawings, but are subject to such modifications as may be found necessary or desirable at the time of installation in order to meet any structural conditions. Such changes shall be made by the Contractor without extra charge, subject to approval of the Owner.

Q. The Contractor shall be responsible for fully coordinating all of the various parts of the work included under this document, and such other work of this contract as it may affect the installation, throughout the various phases of construction and before the ordering or fabrication of the various parts of the work, so as to ensure compliance with the drawings and specifications, and as necessary to provide the installations complete and in satisfactory operating condition.

R. Shipping delays are the sole responsibility of the Contractor.

S. It shall be the responsibility of the Contractor to verify the locations of all equipment such as manholes, handholes, pull boxes, and such other apparatus.

T. The Contractor shall be responsible to provide locating services for outside plant fiber optic cable to others, until Final Acceptance of the project.

U. The Contractor will be required to provide notification and receive approval to all occupancies on selected route as to project purpose, scope, start and end dates, and contact for further information or problems.

1.4 TEST DATA –- FIBER OPTIC MEDIA

A. The test result information for each link shall be recorded in the memory of the field tester upon completion of the test.

B. The test result records saved by the tester shall be transferred into a Windows-based database utility that allows for the maintenance, inspection, and archiving of these test records. A guarantee shall be made that these results are transferred to the PC unaltered, i.e., “as saved in the tester” at the end of each test.

C. The database for the completed job shall be stored and delivered on CD-ROM. This CD-ROM shall include the software tools required to view, inspect, and print any selection of test reports.

D. A paper copy of the test results shall be provided that lists all the links that have been tested with the following summary information:

1. The identification of the link in accordance with the naming convention defined in the overall system documentation.
2. The overall Pass/Fail evaluation of the link-under-test including the Attenuation worst-case margin (margin is defined as the difference between the measured value and the test limit value as defined in this document).
3. The date and time the test results were saved in the memory of the tester.

E. The following general information is to be provided in the electronic database containing the test result information for each link:

1. The identification of the customer site as specified by the end user.
2. The overall Pass/Fail evaluation of the link-under-test.
3. The name of the standard selected to execute the stored test results.
4. The cable type and the value of the ‘index of refraction’ used for length calculations.
5. The date and time the test results were saved in the memory of the tester.
6. The brand name, model, and serial number of the tester.
7. The revision of the tester software and the revision of the test standards database in the tester.

F. The detailed test results data to be provided in the electronic database for each tested optical fiber shall contain the following information:

1. The identification of the link/fiber in accordance with the naming convention defined in the overall system documentation.
2. The insertion loss (attenuation) measured at each wavelength, the test limit calculated for the corresponding wavelength, and the margin (difference between the measured attenuation and the test limit value).

G. The link length shall be reported for each optical fiber for which the test limit was calculated.

H. Contractor shall provide accurate as-built Construction Drawings at the site during construction.

I. The Drawings are to include cable routes and outlet locations. Outlet locations shall be identified by their sequential number as defined elsewhere in this document. Numbering, icons, and drawing conventions used shall be consistent throughout all documentation provided. The Owner will provide floor plans in paper and electronic (".dwg", AutoCAD rel. 2004 and ".dxf") formats on which as-built construction information can be added. These documents will be modified accordingly by the Contractor to denote as-built information as defined above and returned to the Owner.

J. The Contractors shall annotate the base Drawings and return to the Consultant in hard copy (same plot size as originals) and electronic (AutoCAD rel. 2004 and ".dxf") form.

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 27 00 00.

ARMORED FIBER OPTIC CABLE

A. For underground installation, Contractor shall use Armored Fiber Optic Cable shall incorporate a corrugated Steel Armor Tape to provide for resistance to rodent attack and all other cable materials shall be all dielectric (no conductive materials).

B. Armored Fiber Optic Cable shall be filled with a water-blocking compound.

C. The outer sheath shall be marked with the manufacturer's name, words identifying the cable type (e.g. "Optical Cable" or "Fiber Optic Cable"), year of manufacture, and sequential length markings. The actual length of the cable shall be within -0/+1% of the length markings. The marking shall be in a contrasting color to the cable jacket.

D. Temperature Range:

1. Storage: -40 to +70C (no irreversible change in attenuation)
2. Operating: -40 to +70C
3. Humidity Range: 0 to 100%

E. Maximum Tensile Strength:

1. During Installation: 2700 Newton (600 lb. force) (no irreversible change in attenuation)
2. Long Term: 890 N (200 lb. force)

F. Bending Radius:

1. During Installation: 20 times cable diameter

2. No Load: 10 times cable diameter

G. The maximum pulling tension shall be 2700 N (608 lbf) during installation (short term) and 890 N (200 lbf) long term installed.

H. The armored fiber optic cable shall be manufactured by Corning or other mfr that meets these specifications.

ALL-DIELECTRIC, SELF-SUPPORTING OPTICAL CABLE (ADSS)

A. For Aerial installations, the contractor shall use all-dielectric, self-supporting optical cable designed for the high speed transmission of voice, data, and video communications. The cable shall combine a loose buffer fiber with a UV rated outer jacket and be designed for aerial installations or high strength duct installations. The following are the owner's minimum requirements and features for the fiber cable:

1. Optical Fiber:

a. Each cable shall have traceability of each fiber back to the original fiber manufacturer's fiber number and parameters of the fiber. Each optical fiber shall be a low water peak, single mode, glass fiber with a protective outer coating. No fiber splices are to be allowed in a continuous length of cable.

2. Buffer Requirements:

b. The cable provided shall incorporate a filled loose buffer tube. The loose buffer tubes shall be filled with a soft moisture resistant compound to prevent the ingress of moisture to the fibers. The filling compound shall be non-toxic, non-hygroscopic, non-nutrient to fungus and electrically non-conducting. These buffer tubes shall be stranded around a dielectric anti-buckling element. The fibers shall be spiraled loosely inside each buffer tube. The cable core shall also have a water-blocking technology to prevent moisture entry and mitigation in the cable. Buffer tubes must contain up to 12 fibers.

3. Core Tape:

a. A layer of non-hygroscopic tape shall be wrapped around the stranded buffer tubes, making a complete core unit. The tape shall act as a heat barrier to prevent deformation and adhesion between the buffer tubes and the inner polyethylene jacket.

4. Inner Jacket:

a. A medium density polyethylene (MDPE) inner jacket shall be extruded over the core tape. This jacket shall provide added protection against the ingress of moisture and enclose the core tape, buffer tubes and the central anti-buckling member. The inner jacket shall have a red or orange ripcord for ease of entry.

5. Aramid Strength Members:

a. The strength of the cable shall be obtained by layers of aramid yarn surrounding the inner jacket. The aramid yarn shall be torque balanced, counter-helically applied, in two layers over the core for a torsion free cable design. The aramid

layer shall be protected by a non-hygroscopic tape to insure no adhesion to the outer jacket. The strength elements shall provide the mechanical strength required to support the cable and provide cushioning against crushing. The aramid yarn must be decoupled from the inner and outer jackets.

6. Outer Covering:

   a. The cable outer jacket shall be composed of high modulus, medium density polyethylene (MDPE) suitable for installation in induced electrical fields up to 12 kV potential to ground. If the cable is installed in an induced electrical field greater than 12kV, the outer jacket must be comprised of a cross-linked tracking resistant material. The outer covering provided shall be a non-corrosive, UV-resistant, non-nutrient to fungus and electrically non-conducting jacket. The cable jacket shall be free from holes, cracks, blisters or other imperfections. The cable jacket shall be marked with the cable manufacturer's name, the year of manufacture, length markers each sequential meter. The outer covering shall contain a red or orange functioning ripcord for ease of entry into the cable.

7. Fiber Identification:

   a. Each fiber, in a tube shall be distinguishable from the other by means of color coding. Each buffer tube shall be distinguishable from the others by means of color coding. Color coding means that each fiber or tube shall be of a totally different color from the others.

B. Cable Mechanical Parameters:

1. Span Length:

   a. The cable provided shall be designed for aerial installations on <115 kV transmission structures, with span lengths of 1000 feet under NESC Medium loading and a maximum sag of 1.0 % upon installation.

2. Tensile Strength:

   a. The cable provided shall be designed such that the fibers do not experience any degradation during a sustained NESC Medium loading.

3. Crush Resistance:

   a. The cable provided shall withstand the compressive load of 125 lbf per inch at 20°C with no detectable damage to the fibers. This test shall be conducted in accordance with TIA-455-41 and TR-TSY 000020.

4. Impact Resistance:

   a. The cable provided shall withstand the impact test described in TIA-455-25A and in accordance with TR-TSY 000020.

5. Minimum Bend Radius of Cable:

   a. Minimum Bend Radius at No Load is 10 x Cable dia.

   b. Minimum Bend Radius at Maximum Stringing Tension is 20 x Cable dia.

6. Sag and Tension Tables:

a. The manufacturer shall provide detailed sag, tension and blowout charts for span lengths of 100 feet to 1600 feet in 100 foot increments for both installation and NESC Medium environmental conditions. Values to be clearly documented are maximum span length, nominal sag at installation, nominal axial load, maximum vertical sag at stated environmental conditions, and maximum tension under stated environmental conditions. In addition, the manufacturer must provide an industry-accepted sag and tension software program, with capability of running sag and tension for ADSS cable and power conductors. The ADSS cable manufacturer must provide the appropriate parameters to input into the sag and tension program.

7. Temperature Requirements:

   a. Storage temperature: -50°C to +70°C

   b. Installation temperature: -40°C to +70°C

   c. Operating temperature: -30°C to +50°C

8. Cable Details:

   a. Each proposer with his proposal shall furnish the documentation showing compliance to all the specifications listed above on a similar cable type. The following is a list of other parameters required:

   b. Nominal cable diameter

   c. Nominal cable weight

   d. Cable modulus

   e. Maximum rated cable load (MRCL)

   f. Cable breaking strength

C. The ADSS optical cable shall be products manufactured by Corning. Or other equivalent products, which meet these specifications.

SINGLE MODE OPTICAL FIBERS

A. The single mode fiber shall be dispersion-unshifted, fiber which meets the ITU-T G.652c requirements.

B. The fiber cable shall be fully capable of handling existing and legacy single mode applications which traditionally operate in the 1310nm and 1550nm regions.

C. The fiber cable shall be designed to handle applications that utilize the "Extended" E-band, 1360-nm to 1460 nm.

D. The fiber cable shall also be designed to provide optimum performance from 1265nm to 1625nm making it suitable for 16-channel Course Wavelength Division Multiplexing applications.

E. The fiber shall meet the following specifications:

1. Fiber Type Single mode; doped silica core surrounded by a concentric glass cladding.
2. Core Diameter: 8-9 um. All fibers shall be of the same nominal core diameter and profile.
3. Cladding Diameter: 125 + 0.7 um.
4. Core-to-Cladding Offset: < 0.5 um.
5. Cladding Non-Circularity: < 1.0%.
6. Coating Diameter: 245 + 10 um.
7. The coating shall be mechanically strippable without damaging the optical fiber.
8. Mode field diameter: 9.2+0.4 um at 1300-nm; 10.4+0.5 nm at 1550 –nm.
9. Zero Dispersion Wavelength 1302< um < 1322nm.
10. Zero Dispersion Slope : <0.092 ps/um2*km.
11. Fiber Attenuation:
    a. @ 1383-nm ≤0.4 dB/km
    b. @ 1550-nm ≤0.3 dB/km
    c. The average change in attenuation at extreme operational temperature (-40 C to +70 C) shall not exceed 0.05 dB/km at 1550 nm. The magnitude of the maximum attenuation change of each individual fiber shall not be greater than 0.05 dB/km at 1550 nm.
12. Fiber Dispersion (maximum):
    a. 1285-1330-nm < 3.2-ps/nm*km
    b. @ 1625-nm < 22-ps/nm*km
13. No single mode optical fiber shall show a point discontinuity greater than 0.05 dB at the specified wavelengths. Such a discontinuity or any discontinuity showing a reflection at that point shall be cause for rejection of that fiber by the Owner.

HIGH-DENSITY POLYETHYLENE DUCT

A. All underground segments of cable shall be installed in HDPE Duct.

B. The duct shall be High-Density Polyethylene (HDPE) and rated at SDR 11. This duct shall be manufactured to ASTM D2447, ASTM D3350 AND NEMA TC7 Specifications. The duct shall be 1.5”.

C. The duct shall be listed per UL 651-B (Continuous length coiled HDPE conduit).

D. The duct shall meet NEC 347 and 710 requirements for installation of nonmetallic conduit direct buried or concrete encased.

E. A AWG #14 trace wire shall be installed in each duct

F. The Duct walls shall be pre-lubricated with silicone to reduce the frictional forces applied during cable installation.

G. The duct shall contain a measured pull tape. The pull tape shall be a minimum of 1200lbs in tensile strength.

H. The duct shall be supplied with certified test reports.

I. The Duct shall be Arnco, Carlon Dura-Line or other approved products, which meet these specifications.

FIBER OPTIC SPLICE CLOSURE

A. A fiber optic splice closure and associated hardware shall be used to restore the mechanical and environmental integrity of an optical fiber cable following a splicing operation. In addition, a splice closure shall provide the necessary facilities for organizing and storing optical fiber and splices.

B. The splice closures shall feature gel sealing technology for cable terminations.

C. The splice closures shall be re-usable and enable easy cables removal.

D. The fiber optic splice closures shall meet the following requirements:

1. Single-ended design.
2. Equipped for 144 splices.
3. Base and dome shall be sealed with a clamp and O-ring system.
4. Six round cable ports shall be available in a wrap-around block with pre-installed gel profile for cable sealing.
5. The block shall be designed as to allow multiple entrances into splice enclosure without the need to remove or replace the gel.
6. Splice trays shall be hinged for access to any splice without disturbing other trays.
7. Enable uncut or expressed fibers be stored in storage baskets.
8. No stress shall be placed on finish splices within trays.
9. Accommodate fiber bend radii □1.5 inch.
10. Accommodate bonding/grounding.

E. The fiber optic splice enclosure shall be Tyco FOSC 450, or other approved products which meet these specifications.

FIBER OPTIC PATCH PANEL

A. The fiber optic patch panel shall be available in 24-fiber, 72-fiber, 96 fiber, and 144-fiber size, and must include vertical cable guide management.

B. The fiber optic patch panel components shall include front and rear covers, radius limiters, vertical cable guide, and designation labels.

C. The fiber optic patch panel shall be able to be deployed in new frames or retrofitted into available chassis positions in existing frames. A key lock shall be installed on the front cover.

D. Designation label areas shall be inside the front cover to record cable fiber and patch cord identification. Labels shall identify rows of 6paks that are provided for the bulkhead panel.

E. A cable clamp kit shall be provided for outside plant (OSP) fiber cable that enters the connector panel.

F. Removable covers shall be mounted at the front of the connector panel. Radius limiters shall enable to maintain a minimum fiber bend radius of 1.5 inches and permit coiling excess lengths of cable fibers or pigtails.

G. A fiber optic patch panel shall accommodate several different adapters or receptacles using optional 6pak plates.

H. The patch panels shall be Panduit or other pre- approved products which meet these specifications.

FIBER OPTIC WALL MOUNTED PATCH PANELS

A. The wall mounted fiber optic patch panels shall protect the connectorized fiber from mechanical stress, macro-bending loss at the connection point, tampering with the circuits.

B. The wall mounted patch panel construction shall offer chemical and temperature resistance and excellent weatherability.

C. Cover shall be secured with corrosion-resistant, captive screws or quick-release latches that shall also accept a user-supplied padlock if additional security is required.

D. The wall mounted fiber optic patch panels shall provide cross-connect, inter connect, splicing capabilities and include support hardware to properly terminate and ground the cables, routing the fibers and jumpers and mount splices in a wall field.

E. The wall mounted fiber optic patch panels shall have connector panels that snap into the side of the module and accommodate ST, FDDI, SMA, FC, D4 or SC connectors.

F. The wall mounted fiber optic patch panels shall provide terminating, cross connecting or interconnecting capability of 12 fibers.

G. The wall mounted fiber optic patch panels shall be Panduit or pre-approved equivalent. The wall mounted fiber patch panels shall be supplied with a connector panels, splice trays and mounting accessories.

6PAK PLATES

A. 6pak plates shall be simplex style. The plate shall be used for mounting six adapter assemblies. The adapters/receptacles shall be installed in unique angled retainers for installation in the 6pak plate. The individual angled retainer and the fiber connector and fiber, or the entire 6pak plate shall be removable from the connector modules without tools. Blank plates shall occupy open positions within the panel.

B. The plates shall be Panduit or other equivalent products, which meet these specifications.

FIBER OPTIC CONNECTOR

A. The Fiber Optical Connector shall be LC-type.

B. The Fiber Optical Connector ferrule shall be ceramic or glass-in-ceramic. The optical fiber within the connector ferrule shall be secured with an adhesive.

C. The attenuation per mated fiber optic connector pair shall not exceed 0.35 dB. Fiber optic connector shall sustain a minimum of 200 mating cycles per EIA/TIA-455-21 without violating specifications.

D. The fiber optic connectors for single mode fiber strands shall be ultra PC polished. Guaranteed Return Loss for singlemode connectors shall be 55dB.

E. The fiber optic connector shall meet the following performance criteria:

1. Test Procedure Max. Attenuation Change
   a. Cable Retention (FOTP-6) 0.2-dB
   b. Durability (FOTP-21) 0.2-dB
   c. Impact (FOTP-2) 0.2-dB
   d. Thermal Shock (FOTP-3) 0.2-dB
   e. Humidity (FOTP-5) 0.2-dB

UNDERGROUND ENCLOSURES

A. Underground enclosures shall be constructed of a fiberglass-reinforced polymer material and have the same strength rating as concrete handholes of the same proportions.

B. Underground enclosures shall be available in two sizes: 24"W x 36"L x 36"D and 30"W x 48"L x 48"D.

C. Underground enclosures shall be rated for use at sidewalk, driveway and parking lot areas.

D. Underground enclosures shall:

1. Be flush-mounted to the existing grade and constructed with a load rating of AASHTO H-20.
2. Be equipped with a locking keyed mechanism.
3. Be equipped with cable racks, conduit entrances and strut inserts.
4. Be designed for a long life over a wide range of temperature extremes.
5. Feature interlock for concrete sidewalk retention.
6. Not be equipped with a solid bottom.

E. The Underground enclosures shall be Hubbell, Oldcastle, or other equivalent products which meet these specifications.

ADSS CABLE SUPPORT SYSTEM (TRUNION ASSEMBLIES)

A. Any ADSS cable support system shall offer trunion with various mounting capabilities. It shall be utilized for tangent support installations on lines that feature relatively low voltages, short spans and modest mechanical loads

B. The ADSS cable support system shall feature a cushioned inserts, designed to gently grip the cable while providing significant slip strength without causing cable jacket damage. The assemblies shall support cable gently, but firmly.

C. ADSS Cable Support System intended for application on relatively short spans where vertical cable loading does not exceed approximately 1,000# (worst case). In general, the approximate maximum span lengths for the system are:

1. 600' for < 1.00" OD cable (NESC - heavy).
2. 400' for > 1.00" OD cable (NESC - heavy).

D. The body and top of the assembly shall be made from a high-strength, engineered dielectric material or from lightweight aluminum.

E. The cushioned inserts shall be made from a soft, pliable dielectric material that gently grips the ADSS cable

F. The mounting method for the assembly shall be either horizontally or vertically.

G. If the assembly is horizontal mounted to a wood pole (or other structures with thru-holes) a double arming bolt (completely threaded-no head) shall be used instead of a fixed length machine bolt.

H. For mounting to concrete or steel structures without thru-holes, a 5/8" threaded stud shall be used of appropriate length or banding system with a mounting bracket and a 5/8" bolt (3" length).

I. LINE ANGLES: For most applications, the maximum line angle recommended is 10°-20°. When angles exceed 20° a double dead-end arrangement shall be used.

J. ADSS cable support system shall be AFL, PLP or other equivalent products, which meet these specifications.

STORAGE SYSTEM FOR ADSS CABLE

K. In Span Storage Systems shall be complete systems for storing slack ADSS cable and a butt splice closure in the span.

L. The system shall feature:

1. 18" Non-Metallic ("NM") storage racks
2. Neatly organizes storage of cable and splice closures in the span instead of on the structure
3. Maximum cable loop support with 18" storage racks
4. No limit to the amount of cable that can stored.
5. Non-metallic cable protection bracket to minimizes cable abrasion and organizes cable against pole
6. Peel-away grommet to allow full range taking from .400" - 1.00" diameter cable

M. Storage system for ADSS cable shall be AFL, PLP or other equivalent products, which meet these specifications.

FIBER OPTIC FIBERGLASS BRACKET

A. Brackets shall be high performance armless and shall be utilized for the fiber cable support.

B. Brackets shall be available in a variety of custom end fittings for, ADSS fiber optic usage.

C. End fitting components shall be constructed of aluminum alloy A356-T6 or ductile iron.

D. Medium duty components shall be constructed of 1-1/2" rod; heavy duty from 2" rod; dead-ends and cross arms from 3" rod.

E. Fiberglass Bracket shall be AFL, PLP or other equivalent products, which meet these specifications.

SPIRAL VIBRATION DAMPER

A. Spiral dampers shall be used for the ADSS cable when the combination of span length and tension indicate by vibration review that external vibration protection is required.

B. Spiral Vibration Dampers shall have a helically formed damping section sized for interplay of damper and cable to provide the action/reaction motion that opposed the natural vibration wave.

C. A smaller gripping section shall gently grip the cable so that cable and fiber are not damaged or distorted and there is no optical signal loss.

D. Spiral Vibration Damper shall be AFL, PLP or other equivalent products, which meet these specifications.

UNSPECIFIED EQUIPMENT AND MATERIAL

A. Any item of equipment or material not specifically addressed on the drawings or in this document and required to provide a complete and functional structure cabling system installation shall be provided in a level of quality consistent with other specified items.

BACKBONE VOICE CABLING

A. The voice backbone cable shall link the Main Closet and Telecommunications Rooms serving the building. The cables shall be CMP rated. These cables shall be terminated on rack mounted 110 type blocks at MER and TR.

B. Voice backbone cable shall incorporate 24 AWG solid annealed copper conductors insulated with a polyvinyl chloride skin over expanded polyethylene. Conductors shall be twisted to form pairs and fully color-coded.

C. The voice backbone cable shall be sized as detailed on the Drawings.

D. Conductors shall be identified by the insulation color of each conductor. The color code shall follow the industry standard composed of ten (10) distinctive colors to identify 25 pairs in accordance with ICEA publication S-80-576-1988. Marking of each mate of the primary conductor in a pair with the color of that primary conductor is optional.

E. The voice backbone cable shall meet or exceed the EIA/TIA Category 3 performance requirements.

F. When cables of larger than 25 pairs are required, the core shall be assembled into 25-pair subunits, each color-coded in accordance with ICEA publication S-80-576-1988. Cables with over 600 pairs shall have 25-pair binder groups combined into super units. These super units shall be wrapped with a solid color thread that follows the primary color scheme of white, red, black, yellow, and violet. Binder color code integrity shall be maintained wherever cables are spliced.

G. All cables and equipment shall be furnished, installed, wired, and tested by the Contractor.

H. The cable shall be plenum PanGen 6 manufactured by General Cable.

1. MFG: General Cable

a. Part Number: PanGen 6 CMP 7131800

Standard blue version.

2.2 TIGHT – BUFFERED OPTICAL FIBER CABLES FOR INDOOR DISTRIBUTION APPLICATIONS

A. General Considerations

1. The cable shall meet the requirements of the National Electrical Code (NEC) Section 770.
2. For plenum applications, the cable shall meet applicable flame tests: ANSI/UL 910 (NFPA 262-1994).
3. Cables shall be listed OFNP (OFCP).
4. Finished cables shall conform to the applicable performance requirements of Tables 8-6 and 8-7 of the Insulated Cable Consultants Association, Inc. (ICEA) Standard for Fiber Optic Premises *Distribution Cable* (ICEA S-83-596).

B. Cable Construction

1. The coated fiber shall have a layer of Teflon placed between the acrylate coating of the optical fiber and the thermoplastic buffer. The diameter of the thermoplastic buffer coating shall be 900 ±50µm. The fiber coating and buffer shall be removable with commercially available stripping tools in a single pass for connectorization or splicing.
2. Cables with 2 to 24 fibers layered aramid yarns shall serve as the tensile strength member of the cable.
3. A ripcord shall be applied between the aramid yarns and the outer jacket to facilitate jacket removal.
4. The outer jacket shall be extruded over the aramid yarns for physical and environmental protection. The jacket shall be continuous, free from pinholes, splits, blisters, or other imperfections. The jacket shall have a consistent, uniform thickness. The jacket shall be smooth, as is consistent with the best commercial practice.
5. The fibers shall be stranded around a dielectric central member.
6. For cables containing 12-24 fibers, the fibers shall be arranged in two layers.
7. The central member shall be over coated with a thermoplastic, when required, to achieve dimensional sizing to accommodate and support the 900 µm buffered fibers.
8. Cables with 24 to 60 fibers shall have unitized riser and plenum constructions.
9. The buffered fibers shall be grouped in six-fiber subunits.
10. The fibers shall be stranded around a dielectric central member in the subunit.
11. Layered aramid yarns shall serve as the tensile strength member of the subunit.
12. A ripcord may be applied between the aramid yarns and the subunit jacket to facilitate jacket removal.
13. The subunit jacket shall be extruded over the aramid yarns for physical and environmental protection. The jacket shall be continuous, free from pinholes, splits, blisters, or other imperfections. The jacket shall have a consistent, uniform

thickness. The jacket shall be smooth, as is consistent with the best commercial practice.

14. The subunits shall be stranded around a dielectric central member. A ripcord shall be inserted beneath the outer jacket to facilitate jacket removal. The outer jacket shall be extruded around the subunits. The strength members shall be of a high modulus aramid yarn. The aramid yarns shall be helically stranded around the buffered fibers. Non-toxic, non-irritant talc shall be applied to the yarns to allow them to be easily separated from the fibers and the subunit jacket,

C. Outer Cable Jacket

1. The jacket shall be continuous, free from pinholes, splits, blisters, or other imperfections. The jacket shall have a consistent, uniform thickness; jackets extruded under high pressure are not acceptable. The jacket shall be smooth, as is consistent with the best commercial practice. The jacket shall provide the cable with a tough, flexible, protective coating, able to withstand stresses. The nominal thickness of the cable outer jacket shall be sufficient to provide adequate cable protection while meeting the mechanical, flammability, and environmental test requirements of this document over the life of the cable.

2. The indoor distribution cable specified herein shall have an interlocking armor made of steel or aluminum. The interlocking armor for plenum cables shall have a PVC jacket.

3. The color of the armor jacket shall match the jacket color of the optical fiber cable located inside of the armor. The armor for these cables shall be comparable to liquid tight flexible metal conduit if jacketed, or flexible metal conduit.

D. Fiber Identification

4. The individual fibers shall be color-coded for identification. The optical fiber color-coding shall be in accordance with ANSITIA/EIA-598-B “Optical Fiber Cable Color Coding.” The coloring material shall be stable over the temperature range of the cable, shall not be susceptible to migration, and shall not affect the transmission characteristics of the optical fibers. Color-coded buffered fibers shall not adhere to one another.

5. When buffered fibers are grouped into individual subunits, each subunit jacket shall be numbered for identification, with the exception of filler subunits where used. The number shall be repeated at regular intervals. The subunit jacket color shall be orange for subunits containing multimode fibers, yellow for subunits containing singlemode fibers, and white for filler subunits.

6. The outer jacket for all dielectric cable shall be marked with the manufacturer name or UL file number, date of manufacture, fiber type, flame rating, listing symbol, and sequential length markings every two feet. The marking shall be in contrasting color to the cable jacket. The cable jacket color shall be orange for cables containing multimode fibers and yellow for cables containing singlemode fibers.

7. Cables with a PVC jacket over interlocking armor shall be marked with the manufacturer name, date of manufacture, fiber type, flame rating, listing symbol, and sequential length markings every two feet. The marking shall be in contrasting color

to the cable jacket. The cable jacket color shall match the color of the core optical fiber cable.

E. Cable Specifications

8. Temperature Range

   a. Non-Plenum Applications: The storage temperature range for the cable on the original shipping reel shall be -40 to +70ºC. The installation/operating temperature range for riser cables shall be -20 to +70 ºC. Testing shall be in accordance with FOTP-3.

   b. Plenum Applications: The storage temperature range for the cable on the original shipping reel shall be -40 to +70ºC.The installation/operating temperature range for plenum cables shall be 0 to +70ºC.Testing shall be in accordance with FOTP-3.

9. Compressive Load Resistance

   a. When tested in accordance with FOTP-41, Compressive Loading Resistance of Fiber Optic Cables, the cable shall withstand a minimum compressive load of 89 N/cm (50 lbf/in) applied uniformly over the length of the compression plate. While under compressive load, the fiber shall not experience an attenuation change greater than 0.4 dB at 1550 nm (singlemode) or greater than 0.6 dB at 1300 nm (multimode). After the compressive load is removed, the fibers shall not experience an attenuation change greater than 0.2 dB at 1550 nm (singlemode) or greater than 0.4 dB at 1300 nm (multimode).

10. Cyclic Flexing

   a. When tested in accordance with FOTP-104, Fiber Optic Cable Cyclic Flexing Test, the cable shall withstand 25 mechanical flexing cycles at a rate of 30 ± 1 cycle per minute. The fiber shall not experience an attenuation change greater than 0.2 dB at 1550 nm (singlemode) or greater than 0.4 dB at 1300 nm (multimode).

11. High and Low Temperature Bend

   a. When tested in accordance with FOTP-37, Fiber Optic Cable Bend Test, Low and High Temperature, the cable shall withstand four full turns around a mandrel at test temperatures of 0 ºC and +50 ºC. The fibers shall not experience an attenuation change greater than 0.2 dB at 1550 nm (singlemode) or greater than 0.5 dB at 1300 nm (multimode).

12. Impact Resistance

   a. When tested in accordance with FOTP-25, Repeated Impact Testing of Fiber Optic Cables and Cable Assemblies, the cable shall withstand a minimum of 20 impact cycles for riser cables and 10 impact cycles for plenum cables. The fibers shall not experience an attenuation change greater than 0.2 dB at 1550 nm (singlemode) or greater than 0.4 dB at 1300 nm (multimode).

13. Temperature Cycling

a. When tested in accordance with FOTP-3, Procedure to Measure Temperature Cycling Effects on Optical Fiber, Optical Cable, and Other Passive Fiber Optic Components, the change in attenuation at extreme operational temperatures (0 to +50 ºC) shall not exceed 0.3 dB/km at 1550 nm (singlemode) or 0.6 dB/km at 1300 nm (multimode). The change in attenuation is measured with respect to the baseline values measured at room temperature before temperature cycling.

14. Twist-Bend

a. When tested in accordance with FOTP-91, Fiber Optic Cable Twist-Bend Test, a length of cable no greater than 2 meters shall withstand 10 cycles of mechanical twisting and bending around a mandrel 20 times the cable outer diameter. The fibers shall not experience an attenuation change greater than 0.2 dB at 1550 nm (singlemode) or 0.4 dB at 1300 nm (multimode).

F. Multimode (50/125 µm)

1. The multimode fiber utilized in the optical fiber cable shall meet EIA/TIA-492AAAA-A-1997, Detail Specification for 50µm Core Diameter/125µm Cladding Diameter Class Ia Graded-Index Multimode Optical Fibers (OM3 type). Cable shall have the following specifications:

a. Core Diameter: 50 ± 3 µm

b. Core Non-Circularity: ≤5%

c. Cladding Diameter: 125± 2 µm

d. Cladding Non-Circularity: <2.0%

e. Core-to-Cladding Concentricity: ≤ 3 µm

f. Coating Diameter: 245 ± 2 mm

g. Refractive Index Profile: Graded index

h. Numerical Aperture: 0.275 ± 0.015

i. Maximum Attenuation: less than 3.0 dB/km at 850 nm and 1.0 dB/km at 1300 nm.

2. IEEE 802.3z Performance: The fiber shall support laser-based 10 Gigabit Ethernet (10GbE) operation for up to 300 meters.

3. Attenuation at the Water Peak: The attenuation coefficient at 1380 nm shall not exceed the attenuation coefficient at 1300 nm by more than 1.0 dB/km.

4. Macrobend Attenuation: The attenuation due to 100 turns of fiber around a 75-± 2 mm diameter mandrel shall not exceed 0.5 dB at 850 nm or1300 nm.

G. Singlemode

1. The singlemode fiber utilized in the optical fiber cable shall meet EIA/TIA-492CAAA, Detail Specification for Class IVa Dispersion-Unshifted Singlemode Optical Fibers, and ITU recommendation G.652, Characteristics of Singlemode Optical Fiber Cable. The cable shall meet the following specifications:

a. Core Diameter (Characterized): 8.3 µm

b. Cladding Diameter: 125. ±1.0µm

c. Core-to-Cladding Concentricity: ≤ 0.8 µm

d. Cladding Non-Circularity: ≤1.0 %

e. Coating Diameter: 245 ±10µm

2. Attenuation: The maximum attenuation shall be 0.5 dB/km at 1310 nm and 0.4 dB/km at 1550 nm.

3. Attenuation Uniformity: There shall be no point discontinuity greater than 0.10 dB at either 1310 nm or 1550 nm.

4. Attenuation at the Water Peak: The attenuation at 1383 ± 3 nm shall not exceed 2.1dB/km.

5. Cutoff Wavelength: The cabled fiber cutoff wavelength shall be ≤1260 nm.

6. IEEE 802.3z Performance: The fiber shall support laser-based Gigabit Ethernet (GbE) operation in the 1000BASE-LX (1300 nm) operating window at 5000 m.

7. Mode Field Diameter: The mode field diameter of the fiber shall be 9.30 ±0.50µm at 1310 nm 10.50 ±1.0µm at 1550 nm.

8. 12 Macrobend Attenuation: The attenuation due to 100 turns of fiber around a 75-± 2mm diameter mandrel shall not exceed 0.05 dB at 1310 nm and 0.10 dB at 1550 nm.

9. Zero Dispersion Wavelength (∂o): The zero dispersion wavelength of the fiber shall be 1301.5 nm ≤ ∂o ≤ 1321.5 nm.

10. Zero Dispersion Slope (So): The zero dispersion slope of the fiber shall be ≤0.092 ps/(nm•km).

11. Maximum Dispersion: The maximum dispersion shall be ≤ 3.2 ps/(nm•km) from 1285 nm through 1330 nm and shall be ≤18 ps/(nm•km) at 1550 nm.

H. The cable shall be singlemode 24 strand Opti-Core® Fiber Optic Indoor Interlocking Armored Cable Armored plenum-rated tight-buffered.

2.3 MECHANICAL CONNECTORS

A. The optical connector shall be LC-type.

B. The connector ferrule shall be ceramic or glass-in-ceramic. The optical fiber within the connector ferrule shall be secured with an adhesive.

C. The attenuation per mated pair shall not exceed 0.35 dB (individual) and 0.2 dB (average). Connectors shall sustain a minimum of 200 mating cycles per EIA/TIA-455-21 without violating specifications.

D. The connector shall meet the following performance criteria:

1. Cable Retention (FOTP-6) 0.2 dB
2. Durability (FOTP-21) 0.2 dB
3. Impact (FOTP-2) 0.2 dB
4. Thermal Shock (FOTP-3) 0.2 dB
5. Humidity (FOTP-5) 0.2 Db

E. Connectors shall be Panduit Opti-cam LC fiber connectors

1. MFG: Panduit
   a. Part Number: FLCDSCBUY

PART 3 – EXECUTION

3.1 INSPECTION

A. Examine areas and conditions under which the new exterior telecommunication pathways are to be installed.

B. Verify field measurement and pathway routing conditions.

C. Beginning of exterior telecommunication pathway installation indicates Contractor acceptance of existing conditions.

DIRECTIONAL BORING OPERATIONS

A. All directional boring operations are subject to the following conditions:

1. The machine operator shall follow all current OSHA regulations, including the use of grounding mats and other safety measures.
2. The machine operator shall have control over the direction of the boring tool.
3. The bore crew must have, in their possession, a copy of the permit authorizing the company to perform work and a copy of the approved drawing and specifications for the bore work location.
4. When possible, the Contractor shall mark the proposed running line and bore head location. Mark the proposed running line every 5’ to 10’, using a longitudinal line; mark the actual location with a white paint spot at the end of each stem push. Only white paint is approved for this use.
5. The bore is not allowed to deviate more than six (6) inches from the proposed marked running line, and the ends of the bore must be at the designated depth.
6. Slurry use shall be kept at a minimum and only used for head lubrication and/or spoils return. The Contractor shall calculate anticipated slurry use and monitor slurry use during the bore operation to determine slurry loss into the surrounding soil.

7. Slurry must be contained during the bore operation and must be removed prior to backfilling, with dry dirt.
8. During pull back the mandrels shall be not more than two inches larger than the diameter of the duct or casing.
9. Shallow bores or other unsuccessful bores shall be abandoned and filled.
10. The bore operation shall be stopped if any damage occurs to a road surface and it shall remain inactive until corrective measures are taken. The Contractor is liable for any damage done to the right-of-way or structures.
11. Auger heads are not allowed more than six inches ahead of the casing being inserted.
12. Bore stems and cutting heads may have to be left in the ground if they cannot be retrieved through the bore hole. Open excavation to retrieve the parts is not allowed.
13. When boring near creeks and streams, silt fences shall be properly installed to prevent disturbed soil from flowing into the waterways and remain in place after the bore has been completed.

EXCAVATION AND TRENCHING REQUIREMENTS

A. Make trench sides as nearly vertical (max depth is 48") as practical except where sloping of sides is allowed.

B. Remove all rock, boulders, hard material, unstable material, and yielding and unsatisfactory materials within the limits indicated for trench excavation and dispose of off the site. Notify the Owner's Representative immediately in writing if it becomes necessary to remove such materials beyond the trench limits. Where excavations are deeper or wider than the trench limits in order to remove unsuitable materials, they shall be refilled with approved borrowed material.

C. Existing concrete or granite curb encountered in excavation shall be temporarily supported or replaced in kind. Bituminous lip curb shall be disposed and replaced in kind.

D. Excavation operations adjacent to and below existing structures and utilities shall be done manually. Start hand excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until approval for backfill is granted by the Owner's Representative. Report damage to utility lines or subsurface construction immediately to the Consultant.

E. Place "Road Closed" signs on temporary barricades at approaches to work or uncovered trenches.

F. Keep excavated materials and construction equipment and materials a safe distance back from the edge of excavations to avoid overloading the sides of the trench and to prevent slides or cave-ins.

G. Grade areas around trench as necessary to prevent surface water from flowing into excavations.

H. Walkway and grassed areas left unbackfilled at the end of the workday shall be enclosed with snow fence until restored to grade. Roadway trenches shall not be re-opened to traffic unless either a road plate capable of sustaining HS-20 loading is in place or temporary gravel is placed to bring the trench area to finish grade.

3.2 CUTTING PAVEMENT

A. Where trench excavation occurs in paved areas, saw cut existing pavement to obtain sound, vertical edges one foot wider than the indicated trench width on each side of the trench. When the saw cut is within two feet of an existing joint or curb, remove pavement to the existing joint or curb or as required by the District or other jurisdictional authority as appropriate.

B. Existing pavements and base course beyond the indicated lines for trench excavation which have been disturbed, damaged or undermined shall be restored or replaced by the Contractor to match existing pavements and base course or as requested by the District or other jurisdictional authority as appropriate.

3.3 BACK FILLING

A. Construct backfill in two operations (initial and final) as indicated and specified in this section. Initial backfill shall be select backfill material placed in 6-inch maximum loose lifts to one foot above conduit or duct unless otherwise specified. Bring up evenly on each side and along the full length of the conduit or duct structure. Ensure that no damage is done to the conduit or duct structure, or its protective coating or as required by the District or other jurisdictional authority as appropriate.

B. Place the remainder of the backfill (final backfill) in 9-inch maximum loose lifts to the bottom of the sub-grade, unless otherwise specified. Compact each loose lift before placing the next lift. Do not backfill where the material in the trench is muddy, except as authorized or as required by the District or other jurisdictional authority as appropriate.

C. Provide a minimum cover from final grade of 2-1/2 feet for fiber ducts unless otherwise indicated on the Drawings or as required by the District or other jurisdictional authority as appropriate.

D. Where settlement occurs in trenches and pits due to improper compaction, excavate to the depth necessary to rectify the problem, then backfill and compact the excavation as specified herein and restore the surface to the required elevation or as required by the District or other jurisdictional authority as appropriate.

E. The Contractor shall coordinate back filling with testing of utilities. Testing for the following shall be complete before final back filling: water distribution, sanitary sewer, steam compressed air, fuel oil, and refrigeration systems.

3.4 COMPACTION

A. Use hand-operated, plate-type, vibratory or other suitable hand tampers in areas not accessible to larger rollers or compactors. Avoid damaging pipes and protective pipe

coatings. Compact material in accordance with local code unless otherwise specified. If necessary, alter, change, or modify selected equipment or compaction methods to meet compaction requirement and meet requirements of the District or other jurisdictional authority as appropriate.

PROTECTION OF EXISTING UTILITIES, STRUCTURES AND NEW WORK

A. Excavation, backfill and compaction operations shall be done in such a manner to prevent cave-ins of excavations or the undermining, damage or disturbing of existing utilities and structures or of new work. Backfill shall be placed and compacted to prevent future settlement or damage to existing utilities and structures and new work and meet requirements of the District or other jurisdictional authority as appropriate.

B. Any damage due to excavation, back filling or settlement of the backfill, or injury to persons or damage to property occurring as a result of such damage shall be the responsibility of the Contractor. All costs to repair such damage, in a manner satisfactory to the Owner's Representative, shall be borne by the Contractor at no additional expense to the Owner and meet requirements of the District or other jurisdictional authority as appropriate.

C. Protect newly back filled areas and adjacent structures, slopes, or grades from traffic, erosion settlement, or any other damage. Repair and re-establish damaged or eroded grades and slopes and restore surface construction prior to acceptance. Protect existing storm drain inlets from water-borne soil and meet requirements of the District or other jurisdictional authority as appropriate.

3.5 RESTORATION

A. The Contractor is responsible for repairs to any streets, sidewalks, grass areas, etc., which must be trenched or otherwise disturbed in the process of installation. In areas owned by the District, CISD has final determination whether such repairs are acceptable.

B. In areas owned by Tarrant County, the County has final determination whether such repairs are acceptable.

C. All sidewalks, streets, alleyways and landscaping shall be replaced to its original condition or better.

D. NOTE: All existing conditions shall be videotaped prior to construction activities to provide information of pre-existing conditions.

E. Grassed Areas

1. After completion and acceptance of all conduit, excavation, and backfilling work in a given area, the Contractor shall place an appropriate amount of turf sod to cover all disturbed areas. The Contractor may choose to cut and remove turf prior to the area being disturbed. This would be used to place back over the disturbed area and meet requirements of the District or other jurisdictional authority as appropriate.

F. Sidewalks

1. All sidewalks shall be constructed using the same backfill and compaction procedures used for street opening.
2. Unless unusual conditions exist, sidewalk panels, which are cut into for construction, shall be replaced with full panels. New or prior construction saw cuts are not considered as panel ends. Sidewalk panels end at score lines, curbs, boulevards or property lines. If curb is part of the sidewalk panel, the curb shall also be replaced.
3. Contractor shall take care in removing sidewalk panels. If adjacent panels are chipped, the contractor will be required to replace them.

G. Road Restoration

1. After completion and acceptance of conduit excavation, and back filling of road trench areas, 12 inches of compacted Gravel Borrow Subbase course shall be placed to a level three inches below the finish road grade. A temporary surface of Bituminous Surface Course Type I-1 shall be placed.
2. After allowing 6 months for settlement of the road subbase, the Contractor shall place a saw cut of the pavement 12 inches beyond the limits of the temporary patch. Bituminous binder course shall be placed to within 1-1/2 inches of the finish road grade and a final course of bituminous Surface Course Type I-1 shall complete the roadwork. Reflectorized pigment pavement markings specially manufactured for roadway use shall be placed to restore any pavement striping that had been in place prior to this contract.

SELF-SUPPORTING, FILLED, FIBER OPTIC CABLE INSTALLATION

A. Installation of self-supporting, filled, fiber optic cables shall begin only after the guying of utility poles has been inspected.

B. The cable manufacturer is required to provide and warrant the hardware with the cable as a system. All hardware shall be matched to the cable design. Dead ends must be capable of holding the cable without slippage or cable damage.

C. Self-supporting, filled, fiber optic cables should be installed using the moving reel method whenever possible. The cable shall be placed in stringing rollers on the poles where it should remain during the remainder of the placing and tensioning operations. When using this installation method, the maximum pulling tension and minimum bend radius of the self-supporting, filled, fiber optic cable shall not exceed the manufacturer's recommendations.

D. Self-supporting, filled, fiber optic cables shall be tensioned with the aid of series dynamometers. The cable shall be temporarily supported at each pole in rollers until after the cable has been tensioned and the tensioned equalized in all spans of the section being tensioned. Tension shall be applied slowly while the entire length of cable being installed is observed for evidence of snagging or failure to move freely through its temporary supports at the poles.

E. The initial stringing tension for self-supporting, filled, fiber optic cables shall depend on the size of its support strand, the size of cable core, the NESC storm loading for the

construction project, the maximum permissible span length, temperature at the time of tensioning, and the cable manufacturer's recommendations.

F. When tensioning self-supporting, filled, fiber optic cables, the insulation over the support strand must not be damaged. Tensioning by means of grips placed over the insulated support strand is the preferred method, provided that the tensioning can be accomplished without rupturing the insulation.

G. The initial sags and tensions for self-supporting, filled, fiber optic cables installed at various span lengths and temperatures shall be obtained from the fiber optic cable manufacturer.

ARIAL INSTALLATION SAFETY PRECAUTIONS

A. All personnel involved in the aerial placement must:

1. Be thoroughly familiar with the operation of the equipment and construction apparatus being used.
2. Inspect all equipment (ladders, bucket trucks, reel trailers, etc.) for defects and replace if found in unsound condition.
3. Use only OSHA-approved equipment.
4. Arrange or secure any material in a bucket truck or on a ladder so that it cannot fall. Materials and equipment should not unnecessarily impede pedestrian or vehicular traffic.
5. Allocate the appropriate number and type of safety personnel and equipment called for in OSHA safety procedures. Such personnel and equipment may include:
    a. Flagmen
    b. Pilot vehicles
    c. Roadside barricades, warning signs, traffic cones, beacon lights, etc.
    d. ABC-rated fire extinguishers on board all Proposer's vehicles.

B. Before starting any aerial cable placing operation, all Proposers' personnel must be familiar with their company's safety practices concerning working near power lines, pole climbing, eye protection, safety headgear, and clothing.

3.6 ARIAL CABLE HANDLING PROCEDURES

A. The Proposer shall take all necessary precautions to avoid cable damage during placement and handling. The Proposer is responsible to ensure that manufacturer recommended installation procedures are met.

B. Before the installation begins, the Proposer shall inspect the cable reels for imperfections such as nails and broken flanges that might cause damage to the cable as it is unreeled.

C. The Proposer shall exercise care to prevent damage to cables while setting up equipment or while using tools of any kind.

D. All pulling equipment and hardware that will contact the cable during installation must maintain the minimum bend radius of 20 times fiber cable diameter.

E. The Proposer shall avoid surges and jerks of the reel at all times. Properly adjusted reel brakes should be used.

F. Cable reels shall be constantly attended by the Proposer while the cable is being pulled to prevent damage of the cable and ensure lowest possible tensile load.

G. If the cable has to be unreeled during installation, the Proposer shall use the “figure-eight” configuration to prevent kinking or twisting. Fiber optic cable shall not be coiled in a continuous direction except for lengths of 100 ft. or less.

H. If the cable is laid on the pavement/ground during installation, the Proposer shall provide barricades or other means of preventing vehicular or pedestrian traffic in the area.

I. DO NOT CUT THE CABLE under any circumstances without prior approval of the True North Consulting Group. Changes to the total number of splice points can potentially degrade duality of transmission of the system.

J. At the completion of a day’s installation, the Proposer shall protect bare cable ends by placing a cable cap on the end of the cable, followed by several wraps of tape around each cap. If the cable ends are not capped while exposed to the environment for a period of one day, the Proposer will be required to cut off four feet of each cable end before splicing.

K. Any unbalanced loading of PECI's Distribution Poles caused by the placement of The Contractor's facilities shall be properly guyed and anchored by the Contractor with a guy and anchor provided by the Contractor, at no expense to PECI. The Contractor may not place new guy attachments on PECI's anchors without PECI's prior consent.

L. A preliminary “ride through” of the proposed route of PECI’s facility shall be made by representatives of the Contractor and PECI upon request by PECI and at the Contractor’s expense.

M. The Contractor shall check and verify the condition of any pole prior to climbing or performing work on it. If a pole is deemed unsafe, The Contractor must immediately notify PECI by telephone and in writing.

N. All Attachments shall be located on the same side of each pole as any existing telephone or communications cable, or as otherwise designated by PECI.

O. On Attached Poles where PECI has secondary conductors, all attachments shall be located on the same side of the pole as the secondary conductors, or as otherwise designated by PECI.

P. The Contractor shall cause all cabinets, enclosures, and messengers to be grounded by bonding to the existing pole ground with #6 solid, bare, soft drawn copper wire.

Q. No bolt used by The Contractor to attach its facilities shall extend or project more than one (1) inch beyond its nut.

R. All Attachments of the Contractor shall have at least two inches clearance from un-bonded hardware such as pedestals and any other enclosures containing equipment.

S. All of The Contractor's Attachments shall comply with NESC clearance requirements and shall be located a minimum of forty (40) inches below PECI's lowest attached facilities. All mid-span clearances between The Contractor's facilities and PECI's lowest conductors shall comply with NESC clearance requirements.

T. The Contractor may, with prior approval of PECI, install cross arms, alley arms, or cable extension arms for the support of any of its facilities. However, The Contractor shall not use any cross arm or alley arm brace above the arm that it supports.

U. The Contractor shall install any and all of its facilities in a neat and workmanlike manner consistent with the maintenance of the overall appearance of the jointly used pole, subject to the approval of PECI in its sole discretion.

V. In the event that any of the Contractor's proposed attachments are to be installed upon poles already jointly used by PECI and another party (ies), The Contractor shall negotiate with such other party (ies) to determine clearances between its facilities and those of PECI and such other party (ies), except that The Contractor may not in any way modify the clearance requirements set forth in this Agreement.

ADSS CABLES GROUNDING METHODS

A. ADSS cable is all-dielectric by definition. However, due to the effects of field coupling it can pose a potential hazard in extreme conditions the variables that determine the severity of the hazard are; moisture and pollutants on the ADSS cable jacket, separation distance from the phase conductors, and relative voltage level of the supply.

B. Because of this potential hazard, True North Consulting Group requires the following:

1. The cable shall be grounded 3 to 5 feet on both sides of the area to be touched when working in wet environments and under active phase conductors.
2. The metallic cable support hardware shall always be grounded to the structure ground prior to touching the hardware under active phase conductors.
3. The cable shall be grounded to the nearest structure ground between the structure and the splicing area when splicing the cable under active phase conductors and wet environmental conditions.
4. The cable shall be grounded with a running ground and grounded sheaves are recommended when installing under active phase conductors.

CLEARANCES BETWEEN UTILITIES

A. Proposer shall follow the basic clearance rules between supply and communications facilities as define by the latest NESC and related to ADSS fiber optic cable.

B. ADSS fiber cable when defined as a communications conductor, located in the supply space, the clearance rules are as follows:

1. ADSS from effectively grounded neutrals = 16 in. (See Note I and 2)
2. ADSS from Supply conductors 9 to 8,7kv = 16 in. (Sec Note 2 and 3).
3. ADSS from Supply conductors 8.7 to 50kv = 40 in. plus .4 in. Per kV above 8.7kv (See Note 2)

Note I: No clearance is specified between neutral conductors meeting Rule 230E I and insulated communications cables located in the supply space and supported by an effectively grounded messenger.

Note 2: No clearance is specified between fiber optic supply cable meeting rule 230Flb and supply cables and conductors.

Note 3: Must be increased to 40 in. when communication cable is caned above supply conductors unless the communications-line-conductor size is that required for grade C supply lines.

SPLICING AND SLACK STORAGE

A. When selecting slice point locations, the Proposer shall consider the accessibility of these splicing locations by splicing vehicles. These locations should not fall in sites where access is inconvenient or hazardous.

B. At the splice points, the Proposer shall leave enough cable slack on each cable end to reach the ground and into a splice vehicle, plus 16 feet.

C. A splice enclosure shall use a “butt type” configuration; i.e., both cables enter the same end of a closure.

D. The Proposer shall perform all splicing on the ground, not in an aerial bucket.

E. The Proposer shall provide thirty-five feet (35’) of cable slack for each 2,000 feet of the aerial cable route. Cable slack loops shall be secured into “snow shoes” Cable slack of fifty feet (50’) shall be provided on one side of all creeks or rivers, major intersections or highway crossings, railroad crossings and bridge attachments.

F. The Proposer shall place a slack-cable loop at least 4 feet from poles unless they are protected by a cable enclosure.

CABLE SAG AND STRAIN

A. The Proposer shall calculate the cable’s sag and strain for the aerial installations.

B. When selecting the fiber optic cable, the Proposer shall base it on not exceeding 60 percent of the rated breaking strength suspension strand when the cable and strand are loaded according to assumptions of wind, ice, and temperature and in accordance with the storm specified in Rule 250 of the latest edition of the NESC.

C. For the general application, High Strength Grade (HSG) is recommended.

WORK WITHIN THE COUNTY'S BUILDINGS

A. If cable taken into a building is not in a metal conduit, it shall be terminated within fifty (50') of the point of entry into the structure. If the termination point (telecommunications room) is located further than 50' from the point of entry into the structure metal ridged conduit shall be installed form the building penetration point all the way to a telecommunication room.

B. All conduits shall be properly sealed at building entrance points.

C. At each building entrance, a maintenance loop of fiber 4 feet in diameter and 10 to 15 feet in length must be installed.

CUTTING AND PATCHING

A. Where it is necessary to do any cutting and patching, no cutting of beading walls, beams, etc., shall be done without the approval of the Owner's Representative. All patching, finishing, etc., shall match the surroundings. All cutting and patching shall be done by workmen skilled in the trades.

B. Holes through concrete and masonry in new and existing structures shall be cut with a diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills shall not be allowed, except where permitted as required by limited working space.

C. Holes shall be located so as not to affect structural sections such as beams.

D. Holes shall be laid out in advance. The Owner's Representative shall be advised, prior to drilling through structural sections, for determination of proper layout.

E. Floor, exterior wall and roof seals shall be watertight. Walls and floors that are cored for installation of conduit shall be sleeved with steel tubing, grouted, and the space between the conduit and sleeve filled as specified herein.

F. Conduits shall extend one-inch minimum above finished floor.

FIRE STOPPING

A. Structural Penetrations: Where conduits, wireways, busduct, and other electrical raceways pass through fire partitions, fire walls or walls and floors; install a firestop that provides an effective barrier against the spread of fire, smoke and cases. Firestop material shall be packed tight, and completely fill clearances between raceways and openings.

B. All penetrations of firewalls must be approved by the Owner before any penetrations are made. The Contractor shall provide satisfactory sleeving and fire caulking both inside and outside of that sleeving. If existing sleeving is to be utilized, it will be the responsibility of the Contractor to fire caulk inside the sleeving.

C. The Contractor is responsible for adhering to the following standards:

1. Conduit penetrations through fire-rated or smoke walls: Completely seal around the conduit penetration with Hilti FS 601 fire-rated sealant or equal Tremco or 3M.
2. Conduit sleeves through fire-rated or smoke wall: Completely seal around the conduit penetration with Hilti FS 601 fire-rated sealant or equal Tremco or 3M. Completely seal inner opening of the conduit sleeve with fire wool packing and Hilti FS 611A intumescent firestop sealant.
3. Cable bundles through fire-rated or smoke walls (without sleeves): Completely seal openings with Hilti FS 611A intumescent firestop sealant, or equal Tremco or 3M.
4. Cable tray penetrations through fire-rated or smoke walls: Completely seal openings with Hilti FS 635 (trowelable type) or equal Tremco or 3M.
5. A submitted response to these specifications assumes that all firestopping will be provided as specified. The firestop manufacturer's specifications and instructions shall be submitted with the final documentation.

SUPPORT AND ANCHORS

A. The Contractor shall exercise judgment when supporting equipment. If support methods are questionable or not available, the Contractor shall call it to the attention of the Engineer prior to installation.

B. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors, beam clamps, spring steel clips.

C. Install hangers and supports, sleeves and fasteners in accordance with approved printed manufacturers' installation procedures, and as specified.

D. Coordinate all affected trades and all aspects of the electrical work, including installation of raceways and wiring as necessary to interface installation of supporting devices with other work.

E. Install hangers and supports, and attachments to properly support raceways, equipment and accessories from building structure.

DUCT INSTALLATION

A. The primary method of installation of the High-Density PolyEthylene is directional boring. The duct shall be joined at the "tie-in" locations using metal couplers designed to thread the two ends of HDPE conduits together. These couplers shall provide a pull-proof connection of the duct.

B. The depth at which buried duct shall be placed will vary with local conditions. HDPC duct should be buried a minimum depth of:

Location	Depth
Minimum cover in soil	42 in.
Minimum cover under draining ditches	42 in.
Minimum cover under railroads	60 in. below top of rail
Minimum cover at roadway crossing	60 in.

Minimum cover in rock	36 in.

C. When crossing unimproved roads, streets and alleys that may later be paved or hard surfaced, the cable should be placed at a depth that retains sufficient cover following permanent grading of the road.

D. When crossing major highways and railroads, the duct shall be placed into 4” schedule 40 casing.

E. During construction, the end of the ducts shall be plugged to prevent water washing mud into the duct.

F. The Contractor shall seal watertight ends of all ducts at each handhole.

G. The Contractor shall seal openings around ducts that pass through handhole walls with a silicone sealer for a waterproof seal.

H. The Contractor shall proof all conduit sections prior to installation of the fiber cable to ensure conduit integrity. After proofing of the duct, measurements will be taken to verify the length of the installed conduit.

I. The Contractor shall leave a pull tape in the conduit with the cable after installation.

J. The Contractor shall leave a pull rope in all empty conduits after installation.

K. Install a trace wire in all empty conduits consisting of one #14 steel or copper wire.

SPLICE POINTS

A. All splicing shall be made using fusion-splicing technology. All splices shall be single strand fusion splices. All splices shall be placed in trays.

CABLE SLACK

A. The Contractor shall provide seventy-five feet (75') of cable slack at all splice locations for the purpose of removing the splice case from the handhole and placing it inside a controlled environment for accessing the interior of the case and exposing the splice. All other handholes, used for installation assistance shall contain fifty feet (50') of cable slack. Cable slack of one hundred feet (100'), shall be provided on one side of all creeks or rivers, major intersections or highway crossings, railroad crossings and bridge attachments.

B. At handholes, cable slack should be placed vertically in a hole. In the case of a buried splice point, the slack should be coiled and buried vertically (in line with the cable route).

C. This excess slack shall provide added cable for restorations or reconfigurations without digging up large parts of the cable system.

UNDERGROUND ENCLOSURES (HANDHOLES)

A. Handholes shall be placed at strategic splice and installation assistance locations or as required by environmental and/or existing topographical conditions. The handholes shall be placed when the bends exceed 90 degrees, within or the section length of conduit

exceeds 1200 feet, within 50 feet of the penetration point to The District site. The two sizes of boxes to be used are: 24"W x 36"L x 36"D and 30"W x 48"L x 36"D.

B. All conduits entering or exiting the handholes will be scaled to prevent the movement of water through the duct.

BURIED WARNING TAPE

A. When trenching is involved or required by certain conditions, i.e., customer or citizen request, topographical reasons, or as directed by the District, the use of a warning tape is required. A bright orange (preferably "ULCC" orange) warning tape with a minimum width of three inches shall be buried approximately one foot below the existing grade. As a minimum, the tape should be marked "WARNING-OPTICAL CABLE". The tape shall be placed directly above the conduit to alert any excavator of the presence of an underground facility.

TRACE WIRE

A. 1.5” HDPE conduit containing no fiber cable shall have one AWG #14 copper wire located in the conduit

B. The trace wire shall be extended 4 feet into each test station.

BONDING AND GROUNDING

A. All metallic cable elements at splice points and building entrance must be bonded and grounded to the building metal structure.

B. Copper wire AWG #6 should be used, as a minimum.

INSTALLATION PRACTICES FOR FIBER OPTIC CABLE

A. Fiber optic cable is a high-capacity transmission medium with qualities and characteristics which can be degraded when it is subjected to excessive pulling tension, sharp bends, and crushing forces.

B. The maximum pulling tension for armored cable is 2,700 Newtons (600 lbs).

C. Maximum long-term crush forces for armored cable are 100N/cm (57.1 lb. /in).

D. The minimum bend radius for an armored cable during installation and following installation over the life span of the cable must be 20 times (20 x) the cable diameter.

E. The minimum diameter required for pull wheels or rollers should be double the minimum bend radius. The contractor will be responsible to check manufacturer’s specifications for the cable feed-chute, to make sure that the chute’s critical dimensions and clearances are compatible with the placing cable. The chute must have a 31-inch minimum radius.

CABLE TERMINATION - FIBER OPTIC

A. ALL fibers shall be terminated using the specified connector type. No mechanical splice is allowed.

B. All terminated fibers at the Telecommunications Closets shall be mated to couplings mounted on patch panels. Couplings shall be mounted on a panel that, in turn, snaps into the housing assembly. Any unused panel positions shall be fitted with a blank panel inhibiting access to the fiber optic cable from the front of the housing.

C. All couplings shall be fitted with a dust cap.

D. Fibers from multiple locations may share a common enclosure; however, they must be segregated on the connector panels and clearly identified. Fibers from multiple destinations may be secured in a common enclosure provided that they are clearly identified as such. Fibers from different locations shall not share a common connector panel (e.g. “insert”).

E. Slack of 15 feet in each fiber cable shall be provided as to allow for future re-termination in the event of connector or fiber end-face damage. Adequate slack shall be retained to allow termination at a 30” high workbench positioned adjacent to the termination enclosure(s). A minimum of 1-meter (~39”) of slack shall be retained regardless of panel position relative to the potential work area.

3.7 FIBER OPTIC CABLE INSTALLATION REQUIREMENTS

A. Cable slack shall be provided in each backbone fiber optic cable. This slack is exclusive of the length of fiber that is required to accommodate termination requirements and is intended to provide for cable repair and/or equipment relocation. The cable slack shall be stored in a fashion as to protect it from damage and be secured in the termination enclosure or a separate enclosure designed for this purpose. Multiple cables may share a common enclosure.

B. A minimum of 15 feet of slack cable (each cable) shall be coiled and secured at each end.

C. Exact cable termination locations shall be field verified with Owner.

3.8 TESTING

A. Refer to Section 27 00 00 for additional requirements.

B. Field Test Requirements for Fiber Optic Cabling System

1. The fibers utilized in the installed cable shall be traceable to the manufacturer. Upon request by the Owner, the Contractor shall provide cable manufacturer’s test report for each reel of cable provided. These test reports shall include the manufacturer’s on reel attenuation test results at 850-nm and 1300-nm for each optical fiber of each reel prior to shipment from the manufacturer.

2. Factory data shall be provided upon request, showing on-the-reel bandwidth performance results as tested at the factory.

3. Every fiber optic backbone link in the installation shall be tested in accordance with the field test specifications defined by the Telecommunications Industry Association (TIA) standard ANSI/TIA/EIA-568-C or by the appropriate network application standard(s), whichever is more demanding.
4. The test shall include the representative connector performance at the connecting hardware associated with the mating of patch cords. The test does not, however, include the performance of the connector at the interface with the test equipment.
5. 100% of the installed cabling links shall be tested and shall pass the requirements of the standards mentioned above and as further detailed in this document. Any failing link shall be diagnosed and corrected at no additional cost to the Owner. The corrective action shall be followed with a new test to prove that the corrected link meets the performance requirements. The final and passing result of the tests for all links shall be provided in the test results documentation in accordance with RFP.
6. Trained technicians who have successfully attended an appropriate training program and have obtained a certificate as proof thereof shall execute the tests. These certificates may have been issued by any of the following organizations or an equivalent organization:
    a. The manufacturer of the fiber optic cable and/or the fiber optic connectors
    b. The manufacturer of the test equipment used for the field certification
    c. Training organizations authorized by BICSI
7. Field test instruments for multimode fiber cabling shall meet the requirements of ANSI/TIA/EIA-526-14-A. The light source shall meet the launch requirements of ANSI/EIA/TIA-455-50B, Method A. This launch condition can be achieved either within the field test equipment or by use of an external mandrel wrap (as described in clause 11 of ANSI/TIA/EIA-568-C.1) with a Category 1 light source.
8. Field test instruments for singlemode fiber cabling shall meet the requirements of ANSI/EIA/TIA-526-7.
9. The tester shall be within the calibration period recommended by the vendor in order to achieve the vendor-specified measurement accuracy.
10. The fiber optic launch cables and adapters shall be of high quality and the cables shall not show excessive wear resulting from repetitive coiling and storing of the tester interface adapters.
11. The Pass or Fail condition for the link-under-test is determined by the results of the required individual tests.
12. Pass or Fail result for each parameter is determined by comparing the measured values with the specified test limits for that parameter.
13. A representative of the Owner shall be invited to witness field testing. The representative shall be notified of the start date of the testing phase five business days before testing begins.
14. A representative of the Owner will select a random sample of 5% of the installed links. The results obtained shall be compared to the data provided by the installation

Contractor. If more than 2% of the sample results differ in terms of the Pass/Fail determination, the installation Contractor, under supervision of the Owner representative, shall repeat 100% of the testing. The cost of retesting shall be borne by the installation Contractor.

C. Fiber Performance Test Parameters

1. The link attenuation shall be calculated by the following formulas specified in ANSI/TIA/EIA standard 568-B.
   a. Link Attenuation = Cable_Attn + Connector_Attn + Splice_Attn
   b. Cable_Attn (dB) = Attenuation_Coefficient (dB/km) * Length (Km)
   c. The values for the Attenuation_Coefficient are listed in the table below:

Type of Optical Fiber	Wavelength (nm)	Attenuation Coefficient (dB/km)
Multimode 62.5/125 µm	850	3.5
	1300	1.5
Multimode 50/125 µm	850	3.5
	1300	1.5
Singlemode (Inside plant)	1310	0.5
	1550	0.4
Singlemode (Outside plant)	1310	0.4
	1550	0.5

   d. Connector_Attn (dB) = number_of_connector_pairs * connector_loss (dB)
   e. Maximum allowable mated connectors_loss = 0.50 dB
   f. Splice_Attn (dB) = number of splices (S) * splice_loss (dB)
   g. Maximum allowable splice_loss = 0.1 dB (when tested bidirectionally)
2. Link attenuation does not include any active devices or passive devices other than cable, connectors, and splices—i.e., it does not include such devices as optical bypass switches, couplers, repeaters, or optical amplifiers.
3. Test equipment that measures the link length and automatically calculates the link loss based on the above formulas is preferred.
4. The above link test limits attenuation are based on the use of the One Reference Jumper Method specified by ANSI/TIA/EIA-526-14A, Method B and ANSI/TIA/EIA-526-7, Method A.1. The user shall follow the procedures established by these standards or application notes to accurately conduct performance testing.
5. The backbone link (multimode/singlemode) shall be tested in two directions at both operating wavelengths to account for attenuation deltas associated with wavelength.
6. Multimode backbone links shall be tested at 850 nm and 1300 nm in accordance with ANSI/EIA/TIA-526-14A.

7. Because backbone length and the potential number of splices vary depending upon site conditions, the link attenuation equation shall be used to determine limit (acceptance) values.
8. Multimode backbone links are designed to be used with network applications that use laser light sources (underfilled launch conditions). However, the link attenuation equation has been based upon the use of a light source categorized as Category 1, Overfilled.
9. Singlemode backbone links shall be tested at 1310 nm and 1550 nm in accordance with ANSI/TIA/EIA-526-7, Method A.1. All singlemode links shall be certified with test tools using laser light sources at 1310 nm and 1550 nm

3.9 FIBER OPTIC CABLE INSTALLATION REQUIREMENTS

A. The fiber optic outside plant system will be accepted by Owner when:

1. All of the work has been completed in accordance with the contract and specifications.
2. The system operates in conformance with manufacturer's published specifications.
3. The system has completed a successful performance period. The performance period will begin on the day following the cutover and must continue for 30 consecutive days during which time the system will operate at an average effectiveness level of 99 percent or more. If for any reason this level cannot be maintained, a new 30-day performance period will be initiated. It is not necessary that one 30 day period expire before another performance period begins.
4. The Contractor has certified in writing to True North Consulting Group when the cable is installed, operational in accordance with these specifications, and ready for use.
5. The final step in accepting buried cable installation will be a thorough inspection of the entire route from start to finish. The "as-built" drawings must be submitted to the Owner one week prior to final inspection. The drawings will be examined by True North Consulting Group personnel and involved parties for conformance to True North Consulting Group' plans, codes, regulations, and general accuracy.
6. The construction area above ground will be inspected to ensure the following:
    a. Restoration has been accomplished.
    b. Permanent markers have been installed immediately beside the cables.
    c. Road bores, if used, are properly completed and will not collapse a portion of the road.
    d. Debris and trash have been removed from the site.
    e. Other instructions specific to the installation have been completed to the project manager's specifications.
7. All test results should be submitted in hard copy and in usable (MS Word) electronic format and meet specifications.

8. At this time upon Owner's written acceptance, operations control becomes the responsibility.

END OF SECTION 27 13 00

PART 1 - GENERAL

1.1 SCOPE

A. This section describes the products and execution requirements relating to telecommunications voice, data and video horizontal (station) cabling and termination components.

B. Horizontal cabling is the cabling between the work area telecommunications outlet and the telecommunications room (TR). Horizontal cabling is often referred to as “station cabling”.

C. The horizontal cabling system will consist of the following:

1. Unshielded Twisted Pair (UTP) Cable
2. Outlet Termination Modules (jacks)
3. Outlet Termination Plates
4. Horizontal Fiber Optic/Copper Composite Cabling
5. Above Ceiling Cable Support Systems
6. Horizontal Cable Testing Requirements
7. Cable Pathway/Sleeve Requirements

1.2 RELATED WORK

A. Section 27 00 00 – General Technology Requirements

B. Section 27 10 00 – Communications Cabling General Requirements

C. Section 27 11 00 – Communications Equipment Rooms

D. Section 27 12 00 – Grounding and Bonding for Technology Systems

E. Section 27 15 00 – Communications Horizontal Cabling

F. Section 27 16 00 – Communications Connecting Cords

G. Section 27 17 00 – CATV RF Distribution System

H. Section 27 18 00 – Communications Labeling and Identification

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 27 00 00.

2.2 CATEGORY 6 HORIZONTAL COPPER CABLES

A. All cables and equipment shall be furnished, tested, installed and wired by the Contractor.

B. All horizontal data cables shall terminate on modular patch panels in the telecommunications closet as specified on the Drawings.

C. This specification defines the requirements for commercially available high performance Category 6 cable.

D. This cable shall be suitable for installation free-air, in building risers, in conduit, and/or in cable tray and shall carry CMP rating.

E. The cable design described herein shall exceed transmission performance of Category 6 cables.

F. Cables shall be Underwriters Laboratory (UL) listed, comply with Article 800 (Communications Circuits) of the National Electrical Code, and meet the specifications of NEMA (low loss), UL 444, and ICEA. Conductor shall also conform to the requirements for solid annealed copper wire in accordance with ASTM B 3.

G. All cables, termination components, and support hardware shall be furnished, tested, installed, and wired by the Contractor.

H. The jacket color for data cables shall be BLUE.

I. IMPORTANT: Cable and termination components (jack, patch panel, wiring blocks) are specified to function as a system. The compatibility of the cable to be installed with the proposed termination components shall be recognized and documented by the termination component manufacturer.

J. Approved Manufacturers: General Cable

1. PanGen 6 CMP 7131800

2.3 INFORMATION OUTLET

A. General

1. Station cables shall each be terminated at their designated workstation location in the connector types described in the subsections below. Included are modular jacks, faceplates, and surface mount raceway. The combined assembly is referred to as the Standard Information Outlet (SIO). These connector assemblies shall snap into a mounting frame.

2. SIOs shall be mounted (1) where existing boxes are in place, (2) on surface mount raceway typically in surface raceway with barrier, (3) on floor mount interface boxes, or (4) on power poles either currently owned or new.

3. The telecommunications outlet frame shall accommodate or incorporate the following:

a. A minimum of four (4) modular jacks, when installed on a wall-mounted assembly.

b. A mechanism for adjusting the surface plate to a plumb position.

4. Multiple jacks are identified in close proximity on the Drawings. The Contractor shall determine the optimum compliant configuration based on the products proposed.

5. The same orientation and positioning of jacks and connectors shall be utilized throughout the installation. Prior to installation, the Contractor shall submit the proposed configuration for each SIO type for review by the Consultant.

B. Modular Jack

1. Data jacks shall be non-keyed 8-pin modular jacks.

2. Termination components shall be designed to maintain the cable's pair twists as closely as possible to the point of mechanical termination.

3. Jacks shall utilize a four-layer printed circuit board to control NEXT.

4. Jack housings shall fully encase and protect printed circuit boards and IDC fields.

5. Modular jack contacts shall accept 2500 plug insertions.

6. Modular jack contacts shall be formed flat for increased surface contact with mated plugs. These contacts shall be arranged on the PC board in two staggered arrays of four to maximize contact spacing and minimize crosstalk.

7. Modular jack contacts shall be constructed of Beryllium copper for maximum spring force and resilience.

8. Contact Plating shall be a minimum of 50 micro inches of gold in the contact area over 50 micro-inch of nickel, compliant with FCC part 68.5.

9. Jack termination shall be110 IDC, integral to the jack housing, laid out in two arrays of four contacts.

10. Jacks shall utilize a paired punch down sequence. Cable pairs shall be maintained up to the IDC, terminating all conductors adjacent to its pair mate to better maintain pair characteristics designed by the cable manufacturer.

11. Jacks shall utilize tin lead plated (60% tin/40%lead) phosphor bronze 110 insulation displacement contacts.

12. Jacks shall terminate 22-26 AWG stranded or solid conductors.

13. Jacks shall terminate insulated conductors with outside diameters up to .050".

14. Jacks shall be compatible with single conductor 110 impact termination tools or other manufacturer approved method.

15. Jacks shall be compatible with EIA/TIA 606 color code labeling and accept snap on icons for identification or designation of applications.

16. Jacks shall be BLUE in color.

17. Jacks shall be marked as either T568A or T568B wiring.
18. Category 6 jacks shall be manufactured by Panduit.
    a. Panduit Category 6 NetKey ® Jack Modules
    b. NK688M(xx) Where(xx) is the appropriate color indicator

C. Outer Faceplates

1. Faceplates shall be stainless steel and incorporate recessed designation strips at the top and bottom of the frame for identifying labels. Designation strips shall be fitted with clear plastic covers.
2. Any unused jack positions shall be fitted with a removable blank inserted into the opening.
3. Modular jacks shall have capability to incorporate a dust cover that fits over and/or into the jack opening. The dust cover shall be designed to remain with the jack assembly when the jack is in use. No damage to the jack pinning shall result from insertion or removal of these covers. Dust covers that result in deformation of the jack pinning shall not be accepted.
4. Wall-mounted “voice only” outlets shall be installed where identified on the floor plan Drawings to accommodate wall-mounted telephone sets. The wall plate shall be of stainless steel construction, accommodate one (1) voice jack as defined below, mount on a standard single gang outlet box or bracket, and include mating lugs for wall phone mounting.
5. All standard information outlets and the associated jacks shall be of the same manufacturer throughout each/the building. An allowable exception, however, is the wall-mounted “voice only” outlet described above.
6. Faceplates shall be manufactured by modular jack manufacturer.

D. Surface Mount Interface Box

1. Low profile, surface mount boxes shall incorporate recessed designation strips at the top for identifying labels. Designation strips shall be fitted with clear plastic covers.
2. The box shall feature built-in cable management for both fiber and copper applications.
3. Any unused jack positions shall be fitted with a removable blank inserted into the opening.
4. Modular jacks shall have capability to incorporate spring-loaded shutter door for added protection from dust and other airborne contaminants. The dust cover shall be designed to remain with the jack assembly when the jack is in use.
5. The box shall have the capability to incorporate optional magnets that can be internally mounted.
6. Surface mount box shall be manufactured by modular jack manufacturer.

2.4 ADDITIONAL MODULES FOR COPPER CABLING

A. Additional modules for copper shall include the following:
   1. 50 and 75 Ohm BNC coax coupler modules, male-male
   2. F-type coax coupler module, male-male threaded
   3. RCA connector modules with black, red, yellow, and white inserts
   4. Solder, pass-through and punch-down termination types
   5. S-Video connectors modules - coupler and punch-down termination types
   6. Blank module to reserve space for future additions

B. The connectors shall be designed to allow snap-in installation into the outlet faceplates.

2.5 CABLE HOOK SYSTEM

A. In the areas where the cables are required to be run in a “free-air” plenum, a cable hook system shall be used.

B. Cable hooks shall be capable of supporting a minimum of 30 lbs with a safety factor of 3.

C. Spring steel cable hooks shall be capable of supporting a minimum of 100 lbs with a safety factor of 3 where extra strength is required.

D. Follow manufacturer’s recommendations for allowable fill capacity for each size of cable hook.

E. Installation and configuration shall conform to the requirements of the ANSI/ EIA/TIA Standards 568A & 569, NFPA 70 (National Electrical Code), and applicable local codes.

F. Cable hooks shall:
   1. Have a flat bottom and provide a minimum of 1 5/8" cable bearing surface.
   2. Have 90-degree radiused edges to prevent damage while installing cables.
   3. Be designed so the mounting hardware is recessed to prevent cable damage.
   4. Have a stainless steel cable latch retainer to provide containment of cables within the hook.
   5. Have a retainer that shall be removable and reusable.
   6. Be factory assembled for direct attachment to walls, hanger rods, beam flanges, purlins, strut, and floor posts, to meet job conditions.

G. Factory assembled multi-tiered cable hooks shall be used where required to provide separate cabling compartments, or where additional capacity is needed.

H. Cable hooks for non-corrosive areas shall be pre-galvanized steel, ASTM A653 G90. Where additional strength is required, cable hooks shall be spring steel with a zinc-plated finish, ASTM B633, SC3.

I. Cable hooks for corrosive areas shall be stainless steel, AISI type 304.

J. Cable hooks shall be Panduit “J-Pro” series, or Williamson County approved equivalent.

2.6 CABLE PATHWAY SLEEVES

A. The Contractor shall provide all necessary wall penetration for cable pathways whether or not specifically shown on Project Drawings.

B. All wall penetrations shall have a metallic sleeve(s) as required to maintain a maximum 40% fill ration.

C. All sleeves shall be properly firestopped by this Contractor.

D. Provide all core holes, pathways and sleeves (minimum 1.25" c).

E. Install non-metallic threadless insulating bushings on end of all conduits.

F. Conduit Core Holes and Sleeves thru Floor: For all floor penetrations, provide IMC conduits with threaded steel couplings set flush with finish floor. Extend 6-feet above finish floor with IMC before any termination.

PART 3 – EXECUTION

3.1 TWISTED PAIR TEST EQUIPMENT

A. Test equipment used under this contract shall be from a manufacturer who has a minimum of five years’ experience in producing field test equipment. Manufacturers shall be ISO 9001 certified.

B. All test tools of a given type shall be from the same manufacturer and have compatible electronic results output. Test adapter cable shall be approved by the manufacturer of the test equipment. Baseline accuracy of the test equipment shall exceed TIA Level III, as indicated by independent laboratory testing.

C. Test equipment shall:

1. Be capable of certifying Category 5E, 6 and 6A permanent links.
2. Have a dynamic range of at least 100dB to minimized measurement uncertainty.
3. Be capable of storing full frequency sweep data for all tests and printing color graphical reports for all swept measurements.
4. Include S-band time domain diagnostics for NEXT and return loss.
5. Be capable of running individual NEXT, return loss, etc., measurements in addition to AutoText.
6. Include a library of cable types, stored by major manufacturer.
7. Store at least 1000 Category 5e, 6 or 6A auto-tests in internal memory.

D. The measurement reference plane of the test equipment shall start immediately at the output of the test equipment interface connector. There shall not be a time domain dead zone of any distance that excludes any part of the link from the measurements.

E. The approved manufacturer of the test equipment is Fluke.

3.2 CABLE SUPPORT

A. J-hooks fabricated to contain data/voice and video cables may be used to support 25 or fewer cables in each hook. J-hooks are to be fastened to building steel with beam clamps, suspended from ceiling slab with threaded rod, or anchored to the wall. All J-hooks shall be hung straight and level. No other installation technique will be authorized unless pre-approved.

B. Three tiered double-sided J-hook configurations shall contain a maximum of 25 cables per hook or 150 cables. Smaller configurations may be used as bundles decrease in size, maintaining no more than 25 cables per hook.

C. Bundles surpassing 150 cables shall be supported by hangers, fabricated of 3/8” threaded rod and 24” Unistrut. Hangers shall also be installed where the installation of a three-tiered J-hook system is not appropriate for the ceiling space, or where blocked by other trades’ work.

D. Cable bundles consisting of fewer than 10 cables may be supported by single J hooks.

E. All cable support in the main cable path shall be installed every four feet. Small cable bundles (under 25) not in the main path may be supported every five feet.

F. A sag shall be maintained between supports of 6”, to reduce cable strain. Velcro is an appropriate method of securing cables, when properly used and not over tightened.

G. Proper cable support is extremely important to the Owner, and care shall be taken by the Contractor to provide and install the appropriate supports. Supports found to be inadequate will be replaced.

H. Cable bundles including voice/data cabling shall not have plastic cable ties.

I. All cable trunks shall have radius controlled cable waterfalls where trunk drops from conduit, sleeve or tray from horizontal path to vertical path.

3.3 STATION CABLING

A. Information outlet cables with copper media (voice & data UTP and “TV” coax) shall be located as detailed on the Project Drawings.

B. The Contractor shall utilize these documents in determining materials quantities and routing.

C. Station cables shall be run to the information outlet from the MER/TR serving each area in conduit, free-air above drop ceiling, in cable tray, and/or in modular furniture.

D. The maximum station cable drop length for UTP cables shall not exceed 295 feet (90 meters) in order to meet data communications performance specifications. This length is measured from the termination panel in the wiring closet to the outlet and shall include any slack required for the installation and termination. The Contractor shall install station cabling in a fashion to avoid unnecessarily long runs.

E. Contractor shall verify cable lengths comply with published standards; prior to installation of any horizontal cabling, this Contractor shall verify cable paths and confirm no horizontal cable will exceed 295 total feet. If it is determined that the cable will exceed 295', this Contractor shall route the cabling to another MER/TR or determine shorter path so cables are under 295'. If this is not possible, the Contractor shall notify the Consultant prior to installation. Failure to do this step will not result in a change order from the Contractor.

F. The minimum station cable drop length for UTP cables shall be no less than 60 feet. The Contractor shall install station cabling in a fashion to avoid runs less then 60 feet. If cable slack is required to accommodate the minimum length requirements, the Contractor is responsible for storing the slack in a fashion as to protect the cable from damage. The cable slack shall be secure above the ceiling tiles in a figure 8 form by means of J-hooks or D-rings anchored to the building structure. The cable slack shall be coiled to maintain from 100% to 200% of the cable recommended minimum bend radius. Multiple cables may share a common support.

G. All cables shall be installed splice-free unless otherwise specified.

H. During pulling operation, an adequate number of workers shall be present to allow cable observation at all points of duct entry and exit as well as the feed cable and operate pulling machinery.

I. Avoid abrasion and other damage to cables during installation.

J. All cable shall be free of tension at both ends. In cases where the cable shall bear some stress, Kellom grips may be used to spread the strain over a longer length of cable.

K. Where installed free-air, installation shall consider the following:

8. Cable shall run at right angles and be kept clear of other trades' work.

9. Cables shall be supported according to code, using "J-hooks" anchored to ceiling concrete, walls, piping supports, or structural steel beams.

10. Hooks shall be designed to maintain cable bend to larger than the minimum bend radius (typically 4 x cable diameter).

11. Supports shall be spaced at a maximum 4-foot interval unless limited by building construction. If cable "sag" at mid-span exceeds 6 inches, another support shall be used.

L. Cable shall never be laid directly on the ceiling grid.

M. Cables shall not be attached to existing cabling, plumbing, or steam piping, ductwork, ceiling supports, or electrical or communications conduit.

N. Manufacturers' minimum bend radius specifications shall be observed in all instances. Use of plastic cable ties is not acceptable. Cable bundles shall be neatly dressed with use of Velcro type straps.

O. Cable sheaths shall be protected from damage from sharp edges. Where a cable passes over a sharp edge, a bushing or grommet shall be used to protect the cable.

P. A coil of one foot in each cable shall be placed in the ceiling at the last support (e.g., J-hook) before the cables enter a fishable wall, conduit, surface raceway, or box. At any location where cables are installed into movable partition walls or modular furniture via a service pole, approximately 15 feet of slack shall be left in each station cable under 250 feet in length to allow for change in the office layout without re-cabling. These "service loops" shall be secured at the last cable support before the cable leaves the ceiling and shall be coiled from 100% to 200% of the cable recommended minimum bend radius.

Q. To reduce or eliminate EMI, the following minimum separation distances from ≤480V power lines shall be adhered to:

1. Twelve (12) inches from power lines of <5-kVa
2. Eighteen (18) inches from high voltage lighting (including fluorescent)
3. Thirty-nine (39) inches from power lines of 5-kVa or greater
4. Thirty-nine (39) inches from transformers and motors

A. All openings shall be sleeved and firestopped per prevailing code requirements upon completion of cable installation.

3.4 INFORMATION OUTLET

A. Information outlets shall be flush mounted on wall-mounted boxes, in floor-mounted boxes, on surface raceway, or on modular furniture.

B. Any outlets to be added where these conditions are not met shall be positioned at a height matching that of existing services or as directed otherwise by the Site Coordinator and the Consultant. Nominal height (from finished floor to center line of outlet) in new installation shall be as follows:

1. Standard Voice & Data Outlet (SIO) shall match adjacent electrical outlets.
2. Wall-Mounted Telephone Outlet (Standard Voice only) shall meet ADA requirements.

C. The Contractor shall coordinate the style of the telecommunication outlets to be installed in the floor mount boxes and surface mount raceways with the Owner.

3.5 CABLE TERMINATION

A. At the telecommunication closet, all data and voice cables shall be positioned on termination hardware in sequence of the outlet ID, starting with the lowest number.

B. Termination hardware (blocks and patch panels) positioning and layout will be reviewed and approved by the Consultant prior to construction. The review does not exempt the Contractor from meeting any of the requirements stated in this document.

C. Cable Termination – Data/Voice UTP

1. Data/voice patch panels shall be designed and installed in a fashion as to allow future station cabling to be terminated on the panel without disruption to existing connections.

2. Data patch panels shall be sized to accommodate a minimum of 20% growth in the quantity of stations relative to the initial installation.

3. At information outlets and data/voice patch panels, the installer shall ensure that the twists in each cable pair are preserved to within 0.5 inch of the termination for data/voice cables. The cable jacket shall be removed only to the extent required to make the termination.

D. Cable Termination – Fiber Optic

1. All fibers shall be terminated using the specified connector type.

2. All terminated fibers at the telecommunications closets shall be mated to couplings mounted on patch panels. Couplings shall be mounted on a panel that, in turn, snaps into the housing assembly. Any unused panel positions shall be fitted with a blank panel inhibiting access to the fiber optic cable from the front of the housing.

3. All couplings shall be fitted with a dust cap.

4. Fibers from multiple locations may share a common enclosure, but they shall be segregated on the connector panels and clearly identified. Fibers from multiple destinations may be secured in a common enclosure, provided they are clearly identified as such. Fibers from different locations shall not share a common connector panel (e.g., “insert”).

5. Slack in each fiber shall be provided as to allow for future re-termination in the event of connector or fiber end-face damage. Adequate slack shall be retained to allow termination at a 30” high workbench positioned adjacent to the termination enclosure(s). A minimum of one meter (~39”) of slack shall be retained regardless of panel position relative to the potential work area.

6. Contractor shall install a plastic twist-on bushing on each end of interlocking armored fiber to protect cable from sharp edges of the armor.

3.6 TEST DATA – COPPER MEDIA

A. The test result records saved by the tester shall be transferred into a Windows-based database utility that allows for the maintenance, inspection, and archiving of these test records. A guarantee shall be made that these results are transferred to the PC unaltered, i.e., “as saved in the tester” at the end of each test. Comma separated value (CSV) format is not acceptable.

B. The database for the completed job – including twisted-pair copper cabling links, if applicable –shall be stored and delivered on CD-ROM. This CD-ROM shall include the software tools required to view, inspect, and print any selection of test reports.

C. A paper copy of the test results shall be provided that lists all the links that have been tested with the following summary information:

1. The identification of the link in accordance with the naming convention defined in the overall system documentation.
2. The overall Pass/Fail evaluation of the copper channel-under-test, including the NEXT worst-case margin (margin is defined as the difference between the measured value and the test limit value).
3. The overall Pass/Fail evaluation of the fiber link-under-test, including the Attenuation worst-case margin (margin is defined as the difference between the measured value and the test limit value).
4. The date and time the test results were saved in the memory of the tester.

3.7 COPPER STATION CABLES

A. Station cabling testing shall be from the jack at the outlet in the work area to the termination block on which the cables are terminated at the MDF or IDF.

B. Testing shall be of the permanent link. Contractor shall warrant performance, however, based on channel performance and provide patch cords that meet channel performance criteria. All cabling not tested strictly in accordance with these procedures shall be retested at no cost to the Owner.

C. Testing shall be from the jack at the SIO to the patch panel on which the cables are terminated at the wiring hub.

D. Horizontal “station” cables shall be free of shorts within the pairs and shall be verified for continuity, pair validity and polarity, and wire map (conductor position on the modular jack). Any defective, split, or mispositioned pairs shall be identified and corrected.

E. Testing of the cabling systems rated at TIA Category 5e/6/6a and above shall be performed to confirm proper functioning and performance.

F. Testing of the transmission performance of station cables (Category 5e/6/6a) shall include the following:

1. Length

2. Attenuation
3. Pair to Pair NEXT
4. ACR
5. PSNEXT Loss
6. Return Loss
7. Pair to Pair ELFEXT Loss or ACRF
8. PSEFEXT Loss or PS-ACRF
9. Propagation Delay
10. Delay Skew
11. Return Loss

G. The maximum length of station cable shall not exceed 90 meters, which allows 10 meters for equipment and patch cables.

H. Worst case performance at 20°C, based on a horizontal cable length of 90 meters and equipment cord length of 4 meters, shall be as follows:

CATEGORY 6 (Permanent LINK)

Frequency (MHz)	Insertion Loss (Maximum dB)	NEXT Loss Pair to Pair (dB)	PS-NEXT Loss (dB; Worst Case)	ELFEXT Loss Pair to Pair (dB)	PSELFEXT loss (dB)
1.0	1.9	65.0	62.0	64.2	61.2
4.0	3.5	64.1	61.8	52.1	49.1
8.0	5.0	59.4	57.0	46.1	43.1
10.0	5.5	57.8	55.5	44.2	41.2
16.0	7.0	54.6	52.2	40.1	37.1
20.0	7.8	53.1	50.7	38.2	35.2
25.0	8.8	51.5	49.1	36.2	33.2
31.25	9.8	50.0	47.5	34.3	31.3
62.5	14.1	45.1	42.7	28.3	25.3
100.0	18.0	41.8	39.3	24.2	21.2
200.0	26.1	36.9	34.3	18.2	15.2
250.0	29.5	35.3	32.7	16.2	13.2

I. In the event results of the tests are not satisfactory, the Contractor shall make adjustments, replacements, and changes as necessary and shall then repeat the test or tests that disclosed faulty or defective material, equipment, or installation method. The Contractor shall make additional tests as the Consultant deems necessary at no additional expense to the Owner or Consultant.

J. All data shall indicate the worst-case result, the frequency at which it occurs, the limit at that point, and the margin. These tests shall be performed in a swept frequency manner from 1 MHz to highest relevant frequency, using a swept frequency interval that is

consistent with TIA and ISO requirements. Information shall be provided for all pairs or pair combination and in both directions when required by the appropriate standards.

K. Cables shall be tested to the maximum frequency defined by the standards covering that performance category. Transmission Performance Testing shall be performed using a test instrument designed for testing to the specified frequencies. Test records shall verify “PASS” on each cable and display the specified parameters—comparing test values with standards-based “templates” integral to the unit.

END OF SECTION 27 15 00

JUSTICE CENTER - CSCD **SECTION 27 16 00**
WILLIAMSON COUNTY **COMMUNICATIONS CONNECTING CORDS**

PART 1 - GENERAL

1.1 SCOPE

A. This section describes the products relating to high quality Category 6 voice and data patch cords.

B. In this section the term patch cords refer to the cords that connect Owner provided data network electronics to the horizontal cable infrastructure.

C. It is important that the horizontal cable system and the provided patch cords work as one complete system for guaranteed channel performance. Patch cords shall be manufactured by the same manufacturer as the jack and patch panels.

D. The Contractor shall provide and deliver all cords as listed in this section. The Owner will be responsible for installation of cords.

1.2 RELATED WORK

A. Section 27 00 00 – General Technology Requirements

B. Section 27 10 00 – Communications Cabling General Requirements

C. Section 27 11 00 – Communications Equipment Rooms

D. Section 27 12 00 – Grounding and Bonding for Technology Systems

E. Section 27 13 00 – Communications Backbone Cabling

F. Section 27 15 00 – Communications Horizontal Cabling

G. Section 27 17 00 – CATV RF Distribution System

H. Section 27 18 00 – Communications Labeling and Identification

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 27 00 00.

2.2 CATEGORY 6 HORIZONTAL COPPER CABLES

A. The Owner has the right to determine the final length of the patch cords after the contract is awarded.

B. All Category 6 UTP patch cords shall be round and consist of eight insulated 23 AWG, stranded copper conductors, arranged in four color-coded twisted pairs within a flame retardant jacket and be backwards compatible with lower performing categories. Modular patch cords shall utilize ISO termination method that is designed to reduce and control

near-end cross talk (NEXT) and far end cross talk (FEXT) without compromising signal impedance.

C. Both ends of the cord shall be equipped with modular 8-position (RJ45 style) plugs wired straight through with standards compliant wiring. All modular plugs shall exceed FCC CFR 47 part 68 subpart F and IEC 603.7 specifications, and have 50 micro inches of gold plating over nickel contacts. Cable shall be label-verifiable. Cable jacket shall be factory marked at regular intervals indicating verifying organization and performance level. Category 6 cords shall have color-coded insert molded strain relief boot with a latch guard to protect against snagging. Additional color-coding shall be available by the use of snap-in icons.

D. Patch cords shall be wired straight through. Pin numbers shall be identical at each end and shall be paired to match T568B patch panel jack wiring per ANSI/TIA/EIA-568-B. Patch cords shall be unkeyed.

E. The manufacturer of the cords shall be the same as the manufacturer for UTP termination hardware (jacks & patch panels). Cords shall be highest quality Category 6 cords available by connectivity manufacturer (Panduit) UTP28SPxxx.

F. This Contractor shall provide the following patch cords (for pricing purposes only; see section 3.01 below):

Qty	Length	Color
200	3 feet	Black
500	5 feet	Black
500	7 feet	Black
500	10 feet	Black
500	14 feet	Black

2.3 FIBER OPTIC PATCH CORDS

A. The Owner has the right to determine the final length of the patch cords after the contract is awarded.

B. All fiber optic patch cords shall:

1. Be duplex 2-3mm tight buffer design with Aqua jacket.
2. Have LC-LC connectors with straight thru connectors (A-A Polarity).
3. Have 50-micron OM3 core.

C. This Contractor shall provide the following patch cords (for pricing purposes only; see section 3.01 below):

Qty	Length	Color
20	3 meter	Aqua

PART 3 – EXECUTION

3.1 ORDERING AND DELIVERY

A. Prior to ordering patch cords the Contractor shall schedule meeting with Owner and Consultant to verify patch cord lengths, colors and quantities.

B. Contractor shall coordinate delivery of patch cords with Owner. Contractor shall have list of delivered cords and shall have Owner sign delivery sheet at time of delivery.

END OF SECTION 27 16 00

JUSTICE CENTER -CSCD **SECTION 27 17 00**
WILLIAMSON COUNTY **CATV RF DISTRIBUTION SYSTEM**

PART 1 - GENERAL

1.1 SCOPE

A. This section describes the products and execution requirements relating to a coaxial based CATV distribution system.

B. The Coaxial CATV distribution system shall consist of the following:

- High Quality RG-6 Horizontal (Drop) Cables
- High Quality RG-11 Horizontal (Drop) Cables
- Outlet Termination Plates (F-Type Connectors)
- Amplifiers
- Taps
- Splitters
- CATV Signal Testing Requirements

1.2 RELATED WORK

A. Section 27 00 00 – General Technology Requirements

B. Section 27 10 00 – Communications Cabling General Requirements

C. Section 27 11 00 – Communications Equipment Rooms

D. Section 27 12 00 – Grounding and Bonding for Technology Systems

E. Section 27 13 00 – Communications Backbone Cabling

F. Section 27 15 00 – Communications Horizontal Cabling

G. Section 27 16 00 – Communications Connecting Cords

H. Section 27 18 00 – Communications Labeling and Identification

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 27 00 00.

2.2 “TV” COAX (RG-6)

A. This cable shall be suitable for installation free-air, in building risers, in conduit, and/or in cable tray. It shall carry CMP rating.

B. The basic construction shall be as follows:

- Center conductor: 18 AWG copper covered steel; 0.170" O.D. (nominal); foamed FEP dielectric
- Inner shield: Aluminum-polypropylene-aluminum laminated tape with overlap bonded to dielectric
- Second shield: 60% 34 AWG bare aluminum braid wire
- Third shield: Non-bonded aluminum foil tape
- Outer shield: 60% 34 AWG bare aluminum braid wire
- Outer jacket: Plenum
- Impedance: 75 Ohms
- Velocity of propagation: 84%
- Maximum attenuation (per 100-feet):
- At 50-MHz: 1.46 dB
- At 900-MHz: 7.47 dB

C. The cable shall be manufactured by CommScope or Belden.

2.3 VIDEO TRUNK CABLE (RG-11)

A. The Contractor shall install one (1) RG-11 video trunk cable between the MER and each TR that feeds video outlets.

B. This cable shall be suitable for installation free-air, in building risers, in conduit, and/or in cable tray. It shall carry CMP rating.

C. Basic construction shall be as follows:

- Center conductor: Solid 14AWG CCS
- Dielectric: Foam FEP
- Diameter over Dielectric: 0.280”
- Shield: Swaged aluminum tube
- Coverage: 100%
- Jacket: Kynar Flex
- Jacket thickness: 0.020”

- Impedance: 75 Ohms
- Velocity of propagation: 86%
- Maximum attenuation (per 100-feet):
  a. At 50 MHz: .95 dB
  b. At 900 MHz: 5.20 dB

D. The cable shall be manufactured by CommScope or Belden.

2.4 F-CONNECTOR (RG-6 COAX)

A. RG-6 coax cable shall be terminated at each video outlet, as indicated on Project Drawings, and shall be home run to the MDF on the second level of BLDG H.

B. The male F-connector shall:

- Be matched to the RG-6 cable type proposed by the Contractor.
- Be a single piece connector with a full metal exterior.
- Be a 360 degree circular compression connector.

C. When preparing the RG-6 cable for termination, manufacturer installation procedures shall be adhered to. Special care shall be taken to ensure the proper center conductor length as specified by the manufacturer.

D. The male F-connectors shall be mated to female/female feed-through couplings at both the outlet and patch panel locations. These couplings shall be matched to the male F-connector type. Couplings shall be of sufficient length as to allow for the male F-connector to fully seat (both sides).

E. Gilbert or LRC shall manufacture the connector.

2.5 CONNECTORS FOR RG-11 CABLE

A. The connectors shall be designed for use with the specified video cable. All connectors shall be tightened and secured to minimized RF leakage. Leakage shall meet or be below FCC standard maximums.

B. RG-11 video trunk cable shall be terminated at the video headend (MDF) BLDG H.

C. When preparing the RG-11 cable for termination, manufacturer installation procedures shall be adhered to. Special care shall be taken to ensure the proper center conductor length as specified by the manufacturer.

D. Gielbert or LRC shall manufacture the connector.

2.6 AMPLIFIERS

A. Amplifiers that are used to return a signal to the Headend shall include a 5-30 MHz return filter with reverse pads and equalizers as required to maintain specified signal values.

B. Input level of the amplifier shall be a minimum of 12 dBmV on a high end (CH 115).

C. Acceptable manufacturers and product are as follows:

Blonder Tongue Indoor Distribution Hybrid, Two-Way Amplifier 750 MHz Indoor Amplifier Model #BIDA 75A-30P or BIDA 75A-43P as required, with pads and equalizers as required to maintain signal levels at the specified values.

Comparable products of other manufacturers.

2.7 SPLITTERS AND DIRECTIONAL COUPLERS

A. Splitters and directional couplers used to divide trunk runs shall be Viewsonics Platinum Plus 5 MHz to 1 GHz, 130 dB RFI shielding, or comparable products of other manufacturers.

2.8 CONNECTORS

A. Connectors shall be designed to use with installed cables.

B. Connectors shall be tightened and secured to minimized RF leakage.

C. RF type connectors used for connections at TV tap locations shall be F-type connectors.

D. Furnish quantities as required for a complete and operational system.

E. Connectors used in outlet locations in metal raceway shall be 90 degree F-type connectors.

PART 3 – EXECUTION

3.1 VIDEO SYSTEM REQUIREMENTS

A. Unless otherwise noted, the Contractor shall provide all cabling, amplifiers, accessories, and materials in accordance with these specifications to provide a complete and operating 750 MHz broadband video distribution system for the building, including all balancing of lines, adjustments, and final system engineering to provide a turnkey video distribution system.

B. Video distribution system shall be a 750 MHz, cable system capable of providing the following channels:

Television channels 2 through 13

Midband channels A through I

- Midband channels A1 through A5
- Superband channels J through W
- Hyperband channels AA through YY
- Hyperband channels AAA through ZZZ
- Ultraband channels 87 through 94 and 100 through 115

C. The cable system shall be a two-way system capable of providing sub-band channels T7-T11.

D. The Headend shall be located in the MER.

E. Video distribution system shall begin in the Headend room and shall terminate at specified wall outlets.

F. Equipment and Cables: The intent of the video system is to establish a standard of quality, function, and features. It is the responsibility of the Contractor to ensure that the proposed products meet or exceed every standard set forth in these specifications.

G. Amplifiers: Contractor shall provide amplifiers (quantity and type) as required for a complete turnkey solution. For bidding purposes, this Contractor shall anticipate a 10dB signal level from the service provider in the building demarcation point. This Contractor is required to evenly distribute the video signal to all outlets as shown on the Project Drawings.

H. Splitters and Directional Couplers: provide and install splitters and couplers as required for a complete turnkey solution.

I. Connectors

- Connectors shall be designed to use with installed cables.
- Connectors shall be tightened and secured to minimized RF leakage.
- RF type connectors used for connections at TV tap locations shall be F-type connectors.
- Furnish quantities as required for a complete and operational system.
- Connectors used in outlet locations in metal raceway shall be 90 degree F-type connectors.

J. Terminating Resistors: Unused ports of splitters, directional couplers, and taps shall be terminated with 75-ohm line terminators. Furnish quantities as required.

K. Specifications: The cable video signal input level provided by the Headend equipment to this video cabling system at Headend room shall be +15 dBmV with 0-dB slope. Signal level at wall outlet connectors shall be 6.0 +/-3.5 dBmV. Forward signal band shall be 50 MHz to 750 MHz with tilt not to exceed 8 dB. Upstream signal band shall be 5 MHz to 30 MHz with tilt not to exceed 3 dB. S/N shall be 42 dB or greater. C/N shall be 46 dB or greater. Cross modulation shall be 57 dB or greater. All coaxial cables and passive

equipment provided shall be capable of transmitting the frequency range of 5 MHz to 1 GHz.

L. Installation Requirements for Video System

- Comply with manufacturer's instructions.
- System wiring and equipment installation shall be in accordance with good engineering practices as established by the EIA and the NEC.
- Wiring shall meet all state and local electrical codes.
- Provide a complete system.
- Contractor is responsible for installing the correct tap value to meet signal level requirements at the wall plates.
- In line pads or attenuation devices will not be acceptable to lower signal levels.
- Each TV outlet shall be directly connected to a separate tap port.
- Splitters or other devices shall not be used to connect two or more outlets to a tap port.
- Equalizers shall be used for correction of non-linear losses encountered in coaxial cable and devices.
- Signal level at wall outlet connectors shall be 3.0 –8.0 dBmV.
- Provide balancing as needed to maintain system specifications for slope and tilt of system signal levels. At no point is the system slope to exceed 8 dB.
- Upstream signal band shall be 5 MHz to 30 MHz with tilt not to exceed 3 dB.
- S/N shall be 42 dB or greater. C/N shall be 46 dB or greater. Cross modulation shall be 57 dB or greater. All coaxial cables and passive equipment provided shall be capable of transmitting the frequency range of 5 MHz to 1 GHz.
- Coaxial cables shall be secured between passive devices in such a manner as to prevent the pinching and kinking of the coaxial cables and to prevent coaxial cable from resting on ceiling panels.
- Four to six inch loops shall be installed within 12 inches of any connection to prevent premature deterioration of cable system components and to assist in the maintenance and servicing of the cable and/or other building systems.
- Fittings or connections are allowed only at the inputs and outputs of devices.
- Barrel, straight, F-81, or any other type of splicing device or techniques will not be accepted without prior written approval.
- Excess cable behind wall plate connections shall be pulled back into ceiling spaces and secured in such a manner as to prevent kinking or pinching of coaxial cable.
- F connectors shall be crimped to meet manufacturer specifications.

- Tag each audio, video, RF, and any other communications cable to be neatly bundled, tied, and secured in such a manner as to make inspection and servicing of equipment as accessible as possible.

M. RG-6 – Testing

- A Time Domain Reflectometer (TDR) shall be used to verify cable length and to test for cable faults and breaks. A step-function high resolution Time Domain Reflectometer shall be employed for this test, such as the Tektronix 1502C or the Hewlett-Packard 1415A. The results shall be automatically plotted on an X-Y plotter with a Y axis voltage reflection coefficient resolution of .001 per division. The X-axis will resolve down to 1" of cable. The TDR will sweep the cable at a rate no greater than 50' per second, or such lower rate as necessary to resolve cable faults to the 1" and .001 VRC level.
- The cable shall be terminated with its characteristic impedance, and in the case of 70-75 ohm cable, an appropriate matching pad shall be used to match the analyzer to the cable. Cable shall be rejected if any single fault is observed of amplitude greater than .003-voltage reflection coefficient. Characteristic impedance shall also be measured at 5% of nominal value.
- Cyclic faults (such as cable reel stress and die drawdown) shall be limited to a voltage reflection coefficient of .005.

N. Video System Testing

- A standard television receiver shall be connected to random outlet and tuned to a channel of known quality to observe picture quality. No visible components of cross modulation (windshield wiper effect), ghosting, noise, or beat interference shall be accepted.
- Carrier to noise and cross modulation tests have to be employed on an approved field strength meter. Measurements shall be made at the end of line of each distribution leg. C/N shall be 46 dB or greater. Cross modulation shall be 57 dB or greater.
- With the normal operating levels, the field strength meter shall be tuned to the picture carrier of each channel in turn and the meter readings recorded. The signal shall then be removed and the input to the head end shall be terminated. With the field strength meter, read the level of remaining noise in the absence of signal and add the meter correction bandwidth factor. The difference between the two-meter readings will be the carrier to noise of the system.
- Signal level at wall outlet connectors shall be 6.0 +/-3.5 dBmV.
- Each video outlet shall be tested for the signal level at channels 2, 31, and 64.
- All printed test results from an approved meter such as the Trillithic or Wavetek shall be included in the operator's manual.

END OF SECTION 27 17 00

JUSTICE CENTER - CSCD **SECTION 27 18 00**
WILLIAMSON COUNTY **COMMUNICATIONS LABELING AND IDENTIFICATION**

PART 1 - GENERAL

1.1 SCOPE

A. This section describes the products and execution requirements relating to labeling of telecommunications cabling, termination components, and related subsystems. Covered systems include the following:

1. Equipment room backboards and equipment racks
2. Station cable and terminating equipment
3. Telecommunications grounds and related components

1.2 RELATED WORK

A. Section 27 00 00 – General Technology Requirements

B. Section 27 10 00 – Communications Cabling General Requirements

C. Section 27 11 00 – Communications Equipment Rooms

D. Section 27 12 00 – Grounding and Bonding for Technology Systems

E. Section 27 13 00 – Communications Backbone Cabling

F. Section 27 15 00 – Communications Horizontal Cabling

G. Section 27 16 00 – Communications Connecting Cords

H. Section 27 17 00 – CATV RF Distribution System

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 27 00 00

2.2 LABELS

A. All labels shall be permanent and be machine generated (e.g., Brady or Panduit). No handwritten or non-permanent labels shall be allowed. Labels shall be Brady “I.D. Pro” or XC-Plus or equivalent. Labeling on backboards and/or equipment racks may be pre-cut adhesive type.

B. Characters on all labels shall be black printed on a white background.

C. Label size shall be appropriate to the cable size(s), outlet faceplate layout, patch panel design, or other related equipment sizes and layouts.

D. All labels to be used on cables shall be self-laminating, white/transparent vinyl, and be wrapped around the cable sheath. The labels shall be of adequate size to accommodate the circumference

of the cable being labeled and properly self-laminated over the full extent of the printed area of the label.

E. Labels used to identify innerduct carrying fiber optic cable shall be labeled with a durable yellow polyethylene tag that reads “CAUTION Fiber Optic Cable” and includes blank spaces for adding (1) fiber count and (2) destination information. An example of a compliant product is VIP Products’ “Caution Write-On Coverall Tag.”

PART 3 – EXECUTION

3.1 GENERAL

A. Clean surfaces before attaching labels.

B. All cabling added to existing “legacy” installations shall follow the labeling convention in place at that location.

C. Install all labels firmly. Labels attached to terminating equipment such as backboards, faceplates, 110 blocks, and patch panels shall be installed plumb and neatly on all equipment.

3.2 LABELING OF CABLING AND TERMINATION COMPONENTS

A. Backboard and Equipment Racks

B. Backboards and equipment racks shall be labeled by the Contractor identifying the telecommunication room. Additionally, equipment racks shall have an alpha character after the room number unique to that particular communications closet. For example, TR1-A would be the first rack in TR1.

1. Character height shall be 1-inch (minimum).

C. Cabling

1. Horizontal cables shall have a machine generated wrap around cable label within 4” of each end of the cable. Label shall be clearly legible and meet TIA-EIA 606 standards. Character height shall be .25” (minimum).

2. Voice/data/video backbone cables shall have a machine generated wrap around cable label within 12” of each end of the cable. Label shall be clearly legible and meet TIA-EIA 606 standard. Character height shall be .5” (minimum).

3.3 FIBEROPTIC BACKBONE, RISE CABLES, AND TERMINATION COMPONENTS

A. All fiber optic backbone and copper (inter-building, riser, and tie) cables shall be identified AT BOTH ENDS with a designation that identifies where the opposite end of the same cable terminates (e.g., equipment room or telecommunications room I.D.). In addition, labeling of all fiber optic cables shall include the number of fibers in the cable.

B. Each fiber optic termination panel shall be clearly labeled indicating the destination of the cable(s) and the fiber number of each fiber position. The cable identifiers are to be secured to (1) the side and (2) the front cover of the panel enclosure

3.4 STANDARD INFORMATION OUTLET (SIO) FACEPLATES

A. All faceplates shall be clearly labeled indicating the destination of the cable(s) (telecommunication room number), the data patch panel(s) letter designation, the data port number(s) on the data patch panel(s), and the voice cable number(s).

B. Telecommunications outlets are to be labeled (1) on the cover of the assembly and (2) on each cable terminated at that location.

C. Station cables shall be labeled within two inches of the cable end.

3.5 DATA PATCH PANELS

A. All data patch panels shall be clearly labeled indicating the telecommunication room number, the data patch panel letter designation, and the data port number on the data patch panel (ports 1 through 48). Each telecommunication room shall start with data patch panel 'A' and continue through the alphabet.

B. A data port schedule for each telecommunication room shall be created in spreadsheet format (Excel) with the telecommunication room number, data patch panel letter designations, data port numbers, and room numbers identified in the spreadsheet. In addition, for each data patch panel port, a field shall be provided in the spreadsheet for the Owner to manage the cabling infrastructure by recording the device and any special notes pertaining to the room utilizing the data cable terminated to the port.

C. Refer to Telecommunication "T" Series Project Drawings for standard information outlet faceplate and data & voice patch panel labeling scheme requirements. A sample of the data and voice port schedules is to be provided to the Owner, in the cable record book and in electronic format (Excel spreadsheet), with final documents provided on the Project Drawings.

3.6 FIBER OPTIC CABLES AND TERMINATION COMPONENTS

A. All fiber optic cables, termination enclosures and connector panels, and splice closures shall be clearly labeled.

B. In addition, labeling of all fiber optic cables shall include the number of fibers in the cable.

C. Each fiber optic termination panel shall be clearly labeled indicating (1) the destination(s) of the cable(s) and (2) fiber number of each fiber position. The cable identifiers are to be secured to (1) the side and (2) the front cover of the panel enclosure.

3.7 GROUNDING SYSTEM LABELING

A. All grounds shall be labeled as close as practical to the point of termination (for ease of access to read the label). Labels shall be nonmetallic and include the following statement: "WARNING: If this connector or cable is loose or must be removed, please call the building telecommunications manger." Refer to ANSI/TIA/EIA 606 for additional labeling requirements.

END OF SECTION 27 18 00

PART 1 - GENERAL

1.1 SCOPE

A. Refer to Section 27 00 00 for additional project scope information. (Note to specifier: Add specific scope requirements by section on project by project basis.)

B. This section describes the general product and execution requirements related to furnishing and installing Physical Security Systems. Physical Security Systems includes Video Surveillance, Electronic Access Control, Intrusion Detection, PLC/HMI systems and their sub systems.

C. Contractor shall be responsible for providing complete and functional systems as described in this specification and project drawings.

D. Contractor shall provide low voltage power and control lines to and from power supplies, remotely controlled equipment, and other devices, even though not explicitly indicated on drawings or listed in equipment tables.

E. Contractor shall be, or Contractor shall provide, an Electrical Contractor for provision of high voltage power and conduits/raceway, where necessary.

F. Contractor shall be responsible for any and all related programming and end-user training unless noted otherwise.

1.2 RELATED WORK

A. Section 27 00 00 – General Technology Requirements

B. Section 27 10 00 – Communications General Requirements

C. Section 27 11 00 – Communications Equipment Rooms

D. Section 27 12 00 – Grounding and Bonding for Technology Systems

E. Section 27 13 00 – Communications Backbone Cabling

F. Section 27 15 00 – Communications Horizontal Cabling

G. Section 27 16 00 – Communications Connecting Cords

H. Section 27 18 00 – Communications Labeling and Identification

I. Section 27 64 00 – Electronic Access Control System

1.3 GENERAL

A. Refer to Section 27 00 00 for additional definitions.

1.4 QUALIFIICATIONS

A. Training: Programmer shall have received manufacturer-provided and/or manufacturer approved training in the configuration of the physical security system(s) being provided.

B. Certification: Programmer shall hold the highest applicable manufacturer programming certification(s) offered by the manufacturer(s) of the physical security system(s).

C. Submittal: Certification certificate shall be submitted with physical security system(s) submittals.

1.5 PRE-CONSTRUCTION SUBMITTALS

A. Hardware, Application Software, and Network Requirements: A system description including analysis and calculations used in sizing equipment required by the Physical Security Systems. The description shall show how the equipment will operate as a system to meet the performance requirements of the systems. The following information shall be supplied as a minimum:

1. Server(s) processor(s), disk space and memory size
2. Workstation(s) processor(s), disk space and memory size
3. Description of site (field) control equipment (Controllers/Field Panels) and their configuration
4. Operating System(s) Software, where software is provided or upgraded
5. Application Software, with Optional and Custom Software Modules supplied in this project
6. Integration Schemes: Proposed connectivity, software, development requirements, and SDK information, for inter-system communication.
7. Network reliability requirements
8. Number and location of LAN ports required
9. Number of IP addresses required.
10. Other specific network requirements, preferences, and constraints
11. Backup/archive system size and configuration
12. Start-up operations
13. Battery backup requirements

1.6 CLOSEOUT SUBMITTALS

A. Quick-Reference Guides: Contractor shall create a concise quick-reference guide covering normal system operation and basic troubleshooting procedures for each room/system type. Length of each quick-reference guide shall be commensurate with the information needed for successful operation, subject to Owner approval.

14. Upon Owner approval, Contractor shall provide two (2) laminated copies and one (1) digital copy for each room/system type.

B. Serial Numbers: Contractor shall provide a list of serial numbers for all supplied components with serial numbers and with a unit price greater than $99. Organize list by room/system type.

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 27 00 00. *Refer to individual sections*

PART 3 – EXECUTION

3.1 GENERAL

A. Refer to Section 27 00 00 for additional requirements.

3.2 TRAINING

A. On-Site Training

1. General: Present, review and describe equipment and materials to the Owner and Owner's operating personnel and fully demonstrate the operation and maintenance of the systems, equipment and devices specified herein.
2. Include with new systems, Contractor to arrange and provide for video recording of each onsite training session.
    a. Provide professional video and audio recording of each software screen option with Owner approval of content.
    b. Provide end user video recording for Department of Safety & Security approved processes.
    c. Provide Security Systems Specialists approved recording of maintenance and troubleshooting process.
3. Training shall comprise two separate levels of training;
    a. User Group upon substantial completion of the project.
        i. User group training shall include a site/building walk through indicating locations of equipment and their usage.
        ii. User group training shall include the operation of workstation capability of system monitoring, command override and report generation.
    b. Maintenance Group upon completion of the project prior to close out.

i. Maintenance group training shall include a site/building walk through indicating locations of equipment and their usage at up to six representative sites.

ii. Review of a-build documentation at each controller location.

iii. Troubleshooting techniques in hardware and software.

4. The training shall cover the overall system, each individual system, each subsystem, and each component. The training shall also cover procedures for database management, normal operations, and failure modes with response procedures for each failure. Each procedural item shall be applied to each equipment level.

B. Duration: Refer to the individual sections for the minimum time requirements.

3.3 WARRANTY

A. Furnish and guarantee maintenance, repair and inspection service for the system using factory trained authorized representatives of the manufacturer of the equipment for a period of one year after final acceptance of the installation.

B. Third Party Device warranties are transferred from the manufacturer to the Contractor, which may then transfer third party warranties to the Owner. Specific third party warranty details, terms and conditions, remedies and procedures, are either expressly stated on, or packaged with, or accompany such products. The warranty period may vary from product to product. These products include but are not limited to devices that are directly interconnected to the field hardware or computers and are purchased directly from the manufacturer.

C. Purpose

1. The Contractor shall repair any system malfunction or installation deficiency discovered by the Owner or their representatives during the burn in and warranty period.

2. The Contractor shall correct any installation deficiencies found against the contract drawings and specifications discovered by the Owner or their representatives during the warranty period.

3.4 EXAMINATION OF SITE AND DOCUMENTS

A. Bidder shall examine all documents, shall visit the site(s) prior to submitting proposal, record their own investigations, and shall inform themselves of all conditions under which the Work is to be performed at the site(s) of the Work, including the structure of the ground, the obstacles that may be encountered, and all of the conditions of the documents, including superintendence of the Work, requirements of temporary environmental controls, the time of completion, list of Subcontractors, and all other relevant matters that may affect the Work or the proposal process.

B. Verify cable lengths comply with published standards.

C. Notify Owner/Consultant of installation that would exceed maximum lengths prior to installation of cable.

D. Contactor shall consult with Owner/Consultant regarding alternative routing or location of cable.

E. Do not proceed until unsatisfactory conditions have been corrected.

F. Failure to make the examination shall not result in any Change Order requests.

G. The Bidder shall base the proposal on the site(s) examination, materials complying with the plans and specifications and shall list all materials where the proposal form requires.

H. The commencement of work by the Contractor shall indicate acceptance of existing conditions, unless a written notice of exceptions has been provided to the Owner/Consultant prior to commencement.

I. If the Contractor observes, during preliminary examinations or subsequent work, existing violations of fire stopping, electrical wiring, grounding, or other safety- or code-related issues, the Contractor shall report these to the Owner/Consultant in a timely manner.

3.5 SPARE PARTS

A. Licenses

B. Cameras

C. Card Readers

3.6 INSTALLATION REQUIREMENTS

A. Contractor shall furnish and install all cables, connectors, and equipment as shown on Drawings and as specified herein.

B. It is the Contractor’s responsibility to survey the site and include all necessary costs to perform the installation as specified. This includes any modifications required to route and conceal horizontal distribution wiring.

C. Beginning installation means Contractor accepts existing conditions.

D. Contractor shall furnish all required installation tools to facilitate cable pulling without damage to the cable jacket. Such equipment shall include, but not be limited to, sheaves, winches, cable reels, cable reel jacks, duct entrance tunnels, pulling tension gauge, and similar devices. All equipment shall be of substantial construction to allow steady progress once pulling has begun. Makeshift devices that may move or wear in a manner to pose a hazard to the cable shall not be used.

E. All cable shall be pulled by hand unless installation conditions require mechanical assistance. Where mechanical assistance is used, care shall be taken to ensure that the maximum tensile load for the cable as defined by the manufacturer is not exceeded. This may be in the form of continuous monitoring of pulling tension, use of a “break-away,” or other approved method.

F. The Contractor shall be responsible for identifying and reporting to the General Contractor any existing damage to walls, flooring, tiles, and furnishings in the work area

prior to start of work. All damage to interior spaces caused by the installation of cable, raceway, or other hardware shall be repaired by the Contractor.

G. Repairs shall match preexisting color and finish of walls, floors, and ceilings. Any Contractor-damaged ceiling tiles, floor, and carpet shall to be replaced to match color, size, style, and texture.

H. Where unacceptable conditions are found, the Contractor shall bring this to the attention of the construction supervisor immediately. A written resolution will follow to determine the appropriate action to be taken.

I. Qualified personnel utilizing state-of-the-art equipment and techniques shall complete all installation work. During pulling operation, an adequate number of workers shall be present to allow cable observation at all points of duct entry and exit as well as to feed cable and operate pulling machinery.

J. Cable pulling shall be done in accordance with cable manufacturer's recommendations and ANSI/IEEE C2 standards. Manufacturer's recommendations shall be a part of the cable submittal. Recommended pulling tensions and pulling bending radius shall not be exceeded. Any cable bent or kinked to radius less than recommended dimension shall not be installed.

K. All wiring shall be run "free-air," in conduit, in a secured plastic raceway or in modular furniture as designated on the Drawings. All cable shall be free of tension at both ends. PLENUM rated cable shall be used in areas used for air handling.

L. Avoid abrasion and other damage to cables during installation.

M. Pulling lubricant may be used to ease pulling tensions. Lubricant shall be of a type that is non-injurious to the cable jacket and other materials used. Lubricant shall not harden or become adhesive with age.

N. The cable system will be tested and documented upon completion of the installation as defined in the section below.

O. A pull cord (nylon; 1/8" minimum) shall be co-installed with all cable installed in any conduit or surface mount raceway. Should it be found by the Consultant that the materials or any portion thereof furnished and installed under this contract fail to comply with the specifications and Drawings with the respect or regard to the quality, amount of value of materials, appliances, or labor used in the work, it shall be rejected, removed, and replaced by the Contractor and all work distributed by changes necessitated in consequence of said defects or imperfections shall be corrected at the Contractor's expense.

P. All manufactured items, materials, and equipment shall be applied, installed, connected, erected, used, and adjusted as recommended by manufacturers or as indicated in their published literature, unless specifically noted herein to the contrary.

3.7 COOPERATION

A. The Contractor shall cooperate with Consultant's and Owner's personnel in locating work in a proper manner.

1. Should it be necessary to raise, lower, or move longitudinally any part of the work to better fit the general installation, such work shall be done at no extra cost to the Owner, provided such decision is reached prior to actual installation. The Contractor shall check location of electrical outlets with respect to other installations before installing.

3.8 COMMISSIONING SUBMITTALS

A. Provide the following to the Owner no later than 30 days prior to system commissioning/programming.

1. Commissioning Test Plan and Check-Off List: Specified elsewhere in this document.
2. Software: One set of fully functional software in manufacturer's original media packaging, temporarily licensed for a 30-day evaluation period.
3. Web-based Training: Access to web-based training modules.

3.9 COMMISSIONING

A. Provide programming and commissioning for each system as described in individual sections below.

B. This Contractor shall develop and submit a plan for coordination of settings and programming issues with the Consultant and Owner no later than 30 days prior to performing programming and commissioning.

C. The security Contractor is required to place entire system into full and proper operation as designed and specified.

D. Verify that all hardware components are properly installed, connected, communicating, and operating correctly.

E. Verify that all system software is installed, configured, and complies with specified functional requirements.

F. Perform final acceptance testing in the presence of Owner's representative, executing a point-by-point inspection against a documented test plan that demonstrates compliance with system requirements as designed and specified.

1. Submit documented test plan to Owner at least 14 days in advance of acceptance test, inspection, and check-off.
2. Conduct final acceptance tests in presence of Owner's representative, verifying that each device point and sequence is operating correctly and properly reporting back to control panel and control center.
3. Acceptance by Owner is contingent on successful completion of check-off; if check-off is not completed due to additional work required, re-schedule and perform complete check-off until complete in one pass, unless portions of system can be verified as not adversely affected by additional work.

4. The system shall not be considered accepted until all acceptance test items have been successfully checked-off. Beneficial use of part or all of the system shall not be considered as acceptance

3.10 OPERATION AND MAINTENANCE MANUALS

A. Part One: Notwithstanding requirements specified elsewhere, submit the following labeled as the "Operating and Maintenance Manual" within thirty (30) days after Final Acceptance of the Installation:

1. Record Drawings: Submit two (2) copies of revised versions of drawings as submitted in the "Shop and Field" and "Equipment Wiring Diagrams" Submittals showing actual device locations, conduit routing, wiring and relationships as they were constructed. Include nomenclature showing as-built wire designations and colors. Drawings shall include room numbers coinciding with Owner space planning numbering. Drawings shall be submitted in electronic editable AutoCAD 2010 files, in ".dwg" format, on CD or DVD disks.

2. Manuals: Submit two (2) copies of each of the following materials in bound manuals, or electronic PDF copies, with labeled dividers:

a. A final Bill of Material for each system

b. Equipment Instruction Manuals: Complete, project specific comprehensive instructions for the operation of devices and equipment provided as part of this work.

c. Manufacturers Instruction Manuals: Specification sheets, brochures, Operation Manuals and service sheets published by the manufacturers of the components, devices and equipment provided.

d. Include information for testing, repair, troubleshooting, assembly, disassembly and recommended maintenance intervals.

e. Provide a replacement parts list with current prices. Include list of recommended spare parts, tools, and instruments for testing and maintenance purpose.

f. Performance, Test and Adjustment Data: Comprehensive documentation of performance verification according to parameters specified herein.

g. Warranties: Provide an executed copy of the Warranty Agreement and copies of all manufacturer's Warranty Registration papers as described herein.

B. Part Two: Within fourteen (14) days of receipt of Consultant reviewed Operating and Maintenance Manual (Phase One), submit three (3) electronic copies in AutoCAD 2010 editable .dwg format of the reviewed Record Drawings and three (3) copies of the reviewed Operating and Maintenance Manuals to the Owner, on CD or DVD disks.

1. Within each equipment enclosure and/or terminal cabinet, the Contractor shall place a Single Line drawing of the system(s) and the respective Terminal Cabinet Wiring Diagram in a clear plastic sleeve permanently attached to the inside cover of the terminal cabinet.

2. In each equipment enclosure the Contractor shall place a drawing providing device locations served by the equipment within the enclosure with identification that is identical to the wiring tags and with the software description of each point.
3. The Contractor shall provide to the Owner one (1) copy of new administration and user software, including required graphical maps, on CD or DVD disks.

C. Sufficient information, (detailed schematics of subsystems, assemblies and subassemblies to component level) clearly presented, shall be included to determine compliance with drawings and specifications.

3.11 CLOSEOUT PROCEDURE

A. Contractor shall coordinate with project representative for inspection after Contractor has completed testing of entire system.

B. Contractor shall have trained Contractor representative and testing equipment on site during inspection to assist with spot verification of tests.

C. Contactor shall verify with Project Representative the precise positioning of camera aim and shall make fine adjustments as requested.

3.12 FIRE STOPPING

A. Fire stopping of openings between floors, fire-rated walls, and smoke-rated walls, created by others for This Contractor to pass cable through, shall be the responsibility of the This Contractor. Sealing material and application of this material shall be accomplished in such a manner that is acceptable to the local fire and building authorities having jurisdiction over this work.

B. Any openings created by or for This Contractor and left unused shall be sealed up by This Contractor.

C. This Contractor shall be responsible for creating a waterproof seal in and around any openings that This Contractor creates from the structure to the outside environment.

3.13 CLOSEOUT PROCEDURE

A. Contractor shall coordinate with project representative for inspection after Contractor has completed testing of entire system.

B. Contractor shall have trained Contractor representative and testing equipment on site during inspection to assist with spot verification of tests.

C. Contactor shall verify with Project Representative the precise positioning of camera aim and shall make fine adjustments as requested.

3.14 SERVICE CONTRACT

A. The service contract shall cover equipment and software related to this contract, and shall provide for the following parts and services, without additional cost to the Owner:

1. Bi-yearly inspections, preventative maintenance and testing of equipment and components in Year One of the warranty period.
2. Annual inspections, preventive maintenance, and testing of equipment and components in Years Two and above of the warranty period.
3. Regular Service, Emergency Service, and Call-Back Service
4. Labor and Repairs
5. Equipment, and Materials and transportation cost.

B. Response Time: Response time for service calls.

1. Emergency service calls where system is not responding to staff directed commands through the computer systems shall be within 2 hours to the project site.
2. Emergency service calls where controllers are not reporting shall be within 2 hours to the project site.
3. Normal service calls for device malfunctions shall be within 24 hours during normal working hours to the site.

C. Repair Time: Contractor shall stock parts in sufficient quantities such that repair or replacement shall be guaranteed within 12-hours. Temporary replacements within this time period shall be acceptable, provided temporary replacements do not compromise system functionality, and provided permanent replacement is achieved within 72 hours. Contractor may contact Owner representative for use of Owner supplied spare parts where delay of system repair will have negative impact on system performance.

D. Commencement: The warranty begins at the time of issuance of the statement of "Final Acceptance of the Installation" by the Owner.

E. Transferability: The warranty shall be transferable to any person or persons at the discretion of the Owner.

F. Transmittal: A copy of this Warranty shall be delivered to, and signed for by the Owner's representative whose primary responsibility is the operation and care of these systems. A copy of the signed Warranty document shall be delivered for review as part of the Final Submittals.

G. Registration: Register Warranty papers for all equipment and software in the name of the Owner. Furnish reproductions of all equipment Warranty papers to the Owner with the Final Submittals.

H. Subcontracting: Warranty service work may not be subcontracted except with specific permission and approval by the Owner.

I. Resolution of Conflicts

1. The Owner retains the right to resolve unsatisfactory warranty service performance at any time by declaring the work unsatisfactory, stating specific areas of dissatisfaction in writing.

2. If the Contractor or his approved Subcontractor does not resolve such stated areas of dissatisfaction within thirty (30) days, the Owner may appoint any alternative service agency or person to fulfill the terms of the Warranty; the cost of which shall be borne by the Contractor. This action may be taken repeatedly until the Owner is satisfied that Warranty service performance is satisfactory. Satisfactory resolution of a malfunction shall be considered adequate when the device, equipment, system or component which is chronically malfunctioning is brought into compliance with the standards of performance as contained herein and published by the manufacturers of the equipment installed.

END OF SECTION 27 60 00

JUSTICE CENTER - CSCD **SECTION 27 64 00**
WILLIAMSON COUNTRY **ELECTRONIC ACCESS CONTROL SYSTEM**

PART 1 - GENERAL

1.1 SCOPE

A. Refer to Section 27 00 00 for additional project scope information. (Note to specifier: Add specific scope requirements by section on project by project basis.)

B. This specification section covers the furnishing and installation of a new and complete enterprise-wide, low-voltage, Electronic Access Control System (EACS). The existing campus-wide Access Control System is Blackboard Transact.

C. Contractor shall furnish and install access control hardware devices, mounting brackets, power supplies, switches, controls, consoles and other components of the system as shown and specified.

D. Contractor shall furnish and install access control related software to allow this system expansion. Software includes required license addition for access control readers and electrified portals, workstations and Video Management System (VMS) Integration.

E. Furnish and install outlets, junction boxes, conduit, connectors, wiring, and other accessories necessary to complete the system installation. Requirements shall be in accordance with Division 26 00 00, Electrical.

1.2 RELATED WORK

A. Division 08 - Door Hardware

B. Division 14 - General Elevator Requirements

C. Section 27 00 00 – General Technology Requirements

D. Section 27 10 00 – Communications Cabling General Requirements

E. Section 27 11 00 – Communications Equipment Rooms

F. Section 27 12 00 – Grounding and Bonding for Technology Systems

G. Section 27 13 00 – Communications Backbone Cabling

H. Section 27 15 00 – Communications Horizontal Cabling

I. Section 27 16 00 – Communications Connecting Cords

J. Section 27 18 00 – Communications Labeling and Identification

K. Section 27 60 00 – Physical Security General Requirements

L. Section 27 62 00 – Video Surveillance System

PART 2 PRODUCTS

2.1 ELECTRONIC ACCESS CONTROL HARDWARE

A. Provide an access control system that shall interface with the Owner's Access Control System based off of the Stanley B.A.S.I.S ET693 Software and Lenel M series controllers and compatible hardware.

1. The Access Control Panel (ACP) is used as the subcomponent to the security management system for the purpose of initiating all decision-making criteria as it relates to the cardholders, readers, and associated hardware connected. Decisions are made by the ACP and uploaded to the host computer as historical events.
2. The ACP shall be listed for Underwriters Laboratory (UL):
    a. UL294 (Access Control System)
3. The panels shall:
    a. Operate without the need for the host to be on-line. No decisions shall be dependent on the host.
    b. Support on-board 10/100 Ethernet communications to the host as primary communication.
    c. Include a request-to-exit and door status contact input for each reader without the need for additional modules for future use.
    d. Detect "forced entry" and "door left open." A separate action is required for each.
    e. Allow mapping of readers to any output address within the same controller.
    f. Support at least 50 user-selected holidays.
    g. Allow all unused door logic, such as door strike relays, request-to-exit inputs, and door status inputs to be assigned as general-purpose points.
    h. Support optional modules for additional customization of inputs and outputs. The following modules shall be available:
        i. Output Point Module: A minimum of 6 additional output points shall be provided.
        ii. Combination Module: Where inputs and outputs are necessary within the same enclosure, a combination of at least 6 inputs and 6 outputs shall be provided.
        iii. Wireless reader module or external module.
    i. Support a minimum of 5,060 alarm input points.
    j. Support a minimum of 5,060 relay output points.
    k. Maintain historical information for a minimum of three (3) months without AC power.

l. Automatically adjust for daylight savings time and leap year.

m. Be supplied with battery backup and charger for a period for a minimum of four (4) hours.

n. Support a variety of reader technologies.

o. Support the following card/reader technologies as a minimum:

i. Magnetic Stripe

ii. Proximity

iii. Biometrics

iv. Wiegand

v. Vehicle Identification

p. Support multiple technologies simultaneously.

q. Maintain the expiration date for each cardholder. Once the date is reached, the card will automatically be disabled. No access shall be authorized.

r. Maintain three (3) access times for each door location: Standard, Long, and Egress.

s. Have the ability to maintain an automatic door unlock during specific hours and days.

t. Support a minimum of (2) “levels” of Anti-Passback: Global and Area.

4. Panels shall have additional input modules as necessary to accommodate devices as shown on project drawings.

2.2 CONTACTLESS SMART CARD READERS

A. Utilize Wiegand communication.

B. Credentials:

C. Prox II:

1. Operating Frequency: 125 kHz

2. Secure Identity Object on HID iCLASS SE

D. Operating voltage range: 5-16 VDC

E. Current draw: 65mA average and 200mA peak @ 12VDC.

F. Color: Appropriate color matching to location finish

G. IP 55 exterior rated.

H. With attached pigtail

I. Typical read range of 4" for door locations.

J. Typical read range of 18 inches for gate locations.

K. Door locations shall be mounted in weatherproof housing and be vandal proof.

L. Gate locations shall be mounted in weather proof housing and be vandal proof.

M. Installation shall include any faceplates or trim that may be required. Provide standoff non-metalic (1/2 inch lexan with rounded edges) plates to prevent interference and degradation of read range when mounted on metal walls, pedestals, or building components.

N. Provide grounding or insulating mounts as required.

O. Firmware upgradable via pre-programmed cards.

P. Provide the ability to transmit an alarm signal via an integrated optical tamper switch if an attempt is made to remove the reader.

Q. An audio beeper and RGB light bar shall provide various tone and light sequences to signify: access granted, access denied, power up, and diagnostics.

R. Card readers shall be HID R40 iClass and capable of reading the Owner's existing access cards.

2.3 POWER SUPPLIES

A. Provide an 8 output, fused power supply located next to the access control panels with the minimum following features:

1. 115 VAC input rated at 1.9 amps
2. 12 or 24 VDC fail-safe and/or fail-secure outputs at 6 total continuous amps.
3. UL 294 listed sub-assembly for access control.
4. Grey wall mountable enclosure with ground stud.
5. Eight (8), fuse protected, fail-safe and/or fail-secure access control outputs.
6. Eight (8) normally open and/or open collector access control trigger inputs.
7. Form "C" supervision contacts for AC fail, battery presence and battery fail.
8. Fire Alarm Disconnect:
    a. Fire Alarm Disconnect (latching or non-latching) is individually selectable for any or all of the eight (8) outputs.
    b. Normally open (NO) or normally closed (NC) dry contact input.
    c. Polarity reversal input FACP signaling circuit.
    d. LED indicates that the Fire Alarm Disconnect has been activated.
    e. Fire Alarm output relay for triggering auxiliary reporting devices.
9. Provide batteries and charger to provide a minimum of four (4) hours of backup time.

10. Power supply shall be Altronix AL600ULACM.
    a. Or approved equal

2.4 CABLES

A. Provide cabling per manufacturer's recommendations and code requirements for riser rated, plenum, and non-plenum cable types.

B. UTP data cabling required will be provided, installed, terminated and tested by the Division 27 structured cabling Contractor.

C. UTP patch cables will be provided and installed by the Owner in the IDF and provided by Owner and installed by Contractor at the door. The EACS Contractor shall provide the Owner a list of patch cable lengths at the door side.

D. Cables for electronic access controlled doors shall be bundled and include the followings conductor counts:

1. Card reader – 6 conductor, 22 awg shielded.
2. Lock power – 4 conductor, 18 awg unshielded.
3. Door contact – 2 conductor, 22 awg unshielded
4. Request to exit/spare – 4 conductor, 22 awg unshielded

E. Manufacturer:

1. Belden #658AFS
2. Convergent #725116
3. General Cable #4EPL1S
4. Or approved equal

2.5 DOOR CONTACTS/DOOR POSITION SWITCHES

A. Sealed and potted magnetic reed switch in contact housing

B. Provide SPDT for applications with multiple security systems (Access Control/Intrusion Detection) utilizing a single door contact.

C. Provide color that matches door as close as possible.

D. Provide recessed switch whenever possible.

E. Armored whip for surface mount contacts.

F. Provide GE Interlogix 1078 Series for recessed applications.

1. Or approved equal.

G. Provide GE Interlogix 2500 Series for surface mount applications.

1. Or approved equal.

H. Provide GE Interlogix 2200 Series for overhead door applications.

1. Or approved equal.

I. Provide GE Interlogix 3010 Series with clip mount configuration for enclosure monitoring applications.

2. Or approved equal.

2.6 REQUEST TO EXIT (REX) DEVICES

A. Request to Exit devices shall be integrated into the door locking mechanism or motion based

B. The motion based REX shall be a dual technology device with Passive Infrared (PIR) and Range-Controlled Radar (RCR) motion detector.

C. Reduces false alarms by sensing both heat and physical motion.

D. Independent adjustable beam pattern and radar depth.

E. Provide with mounting plate or wall mounting plate to mount over a single-gang backbox when required.

F. Provide color that matches door as close as possible.

G. DPDT output.

H. DC Power draw: 28mA max @ 12 VDC, 17mA max @ 24 VDC.

I. AC Power draw: 38mA max @ 12 VAC, 29mA max @ 24 VAC.

J. Dimensions: 1.76”H x 7.395”W x 1.85”D.

K. Utilize contact closure REX hardware built into the handle or crash-bar whenever possible.

L. Provide GE RCR-REX.

3. Or approved dual technology equal.

PART 3 – EXECUTION

3.1 GENERAL

A. Refer to Section 27 00 00 for additional requirements.

3.2 TESTING

A. Prior to energizing or testing the system, ensure the following:

1. All products are installed in a proper and safe manner per the manufacturer’s instructions.

2. Dust, debris, solder, splatter, etc., is removed.
3. Cable is dressed, routed, and labeled; connections are consistent with regard to polarity.
4. All products are neat, clean, and unmarred, and parts are securely attached.

B. Contractor shall ensure that each device in the security system is functioning normally and in such a manner as to meet the functional and performance requirements in this specification.

3.3 TRAINING

A. Refer to Section 27 00 00 for additional requirements.

B. Provide system operations, administration, and maintenance training by factory-trained personnel qualified to instruct.

5. Contractor shall provide up to 6 hours of scheduled and dedicated training time in three (3) two (2) hour sessions for administration and investigation.
6. Contractor shall provide up to 2 hours of scheduled and dedicated training time for badge creation, printing and printer maintenance.
7. Provide printed training materials for each trainee, including product manuals, course outline, workbook or student guides, and written examinations for certification.
8. Provide hands-on training with operational equipment.
9. Training shall be oriented to the specific system being installed under this contract as designed and specified.
10. Contractor shall provide all necessary documentation of system operating parameters prior to scheduled training sessions.

3.4 WARRANTY

A. Refer to Section 27 00 00 for additional requirements.

3.5 INSTALLATION PRACTISES

A. All services provided shall be professional and conform to the highest standards for industry practices. The Owner reserves the right to halt any installation due to poor workmanship. All work shall be defect free, and the installer shall replace, at their expense, any work found to be defective.

B. The Owner reserves the right to halt any installation due to failure of Contractor to observe installation-free periods due to instructional or administrative requirements. To the maximum extent possible, the Owner will provide advance notice of such periods.

C. Contractor is responsible for providing a complete and functional video surveillance system.

D. All manufactured items, materials, and equipment shall be applied, installed, connected, erected, used, and adjusted as recommended by the manufacturers, or as indicated in their published literature, unless specifically noted herein to the contrary.

E. Contractor shall follow these standards and approved submittals for locations of power supplies. The Owner intends to limit the number and location of power supplies to facilitate more effective long-term support and maintenance of the system.

3.6 COORDINATION

A. Contractor shall provide up to 8 hours (up to four, 2-hour sessions) of scheduled and dedicated coordination time to assist Owner with camera positioning and coordination as requested by Owner or Consultant.

3.7 AESTHETICS

A. All cables and equipment terminating at panels frames shall be vertically straight, with no cables crossing each other, from twelve inches inside the ceiling area to the termination block.

B. All cable bundles shall be combed and bundled to accommodate individual termination block rows and panels.

C. For any given telecom room, a horizontal and vertical alignment for all mounting hardware will be maintained to provide a symmetrical and uniform appearance to the distribution frame.

D. All surface-mounted devices shall be firmly secured level and plumb

E. All rack mount equipment shall be securely installed.

3.8 HARDWARE LAYOUT

A. Hardware positioning and layout shall be reviewed and approved by the Owner prior to construction. The review does not exempt Contractor from meeting any of the requirements stated in this document.

3.9 DEVICE CABLING/WIRING INSTALLATION PRACTICES

A. All external wire and cables shall be supported at least every five feet from the structure or as required to maintain not more than 12" cable sag between supports and without over tensioning the cables. Provide j-hooks as needed where cable tray or raceway is not available.

B. This Contractor shall coordinate installation with Division 27 05 00 cabling Contractor to ensure there is at least 2-inches of physical separation between security cabling and voice/data cabling throughout cable path. Voice/data cabling Contractor has first claim to cable tray.

C. All cables, regardless of length, shall be labeled within 18" of both ends with an identifier that is keyed to the door, room, or corridor number as identified.

D. All cables shall have 6-foot service loops neatly coiled in the equipment room. During initial cable rough-in, this Contractor shall have sufficient slack to route anywhere within the equipment room.

E. Cabling shall be adequately supported with Velcro wire wraps and horizontal support cable managers fastened to rack frame. Cables shall be dressed in a neat and orderly fashion. Any cabling or equipment installation that is deemed unacceptable by the Owner or Consultant shall be replaced or corrected by the Contractor at no additional cost. Plastic zip ties are not allowed.

F. All cables are to run at right angles to the structure, placed above the ceiling in halls or corridors.

G. Cables shall not run above red iron joist.

H. Contractor shall make every effort to conceal wiring and other apparatus into walls, floors, and ceilings, assuming code and good engineering practice allows and suggests.

I. Ties and straps shall be installed snugly without deforming cable insulation. Ties shall be spaced at uneven intervals not to exceed four feet. No sharp burrs shall remain where excess length of the cable tie has been cut.

J. Contractor shall notify Owner immediately if obstruction or hazard is discovered in a pathway provided by others.

K. Cable shall be stored and handled to assure that it is not stretched, kinked, crushed, or abraded in any way. Bend radiuses shall meet manufacturer specifications and/or recommendations. Cable shall not be installed in ambient temperatures or moisture conditions above or below the manufacturer's rating.

L. No splices shall be installed in any cable.

3.10 CABLE TERMINATION

A. Termination hardware (blocks and patch panels) positioning and layout shall be reviewed and approved by the Owner prior to construction. The review does not exempt Contractor from meeting any of the requirements stated in this document.

3.11 FIRE STOPPING

A. Fire stopping of openings between floors, fire-rated walls, and smoke-rated walls, created by others for This Contractor to pass cable through, shall be the responsibility of the This Contractor. Sealing material and application of this material shall be accomplished in such a manner that is acceptable to the local fire and building authorities having jurisdiction over this work.

B. Any openings created by or for This Contractor and left unused shall be sealed up by This Contractor.

C. This Contractor shall be responsible for creating a waterproof seal in and around any openings that This Contractor creates from the structure to the outside environment.

3.12 SYSTEM INSPECTION

A. Contractor shall coordinate with project representative for inspection after Contractor has completed testing of entire system.

B. Contractor shall have trained Contractor representative and testing equipment on site during inspection to assist with spot verification of tests.

C. Contactor shall verify with Project Representative the precise positioning of camera aim and shall make fine adjustments as requested.

3.13 LABELING

A. Contractor shall neatly label all security devices and cabling at both ends. All labels shall be on Project as-built drawings.

3.14 DOCUMENTATION

A. Upon completion of the installation, Contractor shall provide full documentation sets to the Consultant for approval as described in section 27 60 00. All documentation shall become the property of the Owner.

B. Documentation shall include the additional specific items detailed in the subsections below:

11. Contractor shall provide hard copy and electronic forms of the final test results.

12. Contractor shall provide a document including the following:

    a. Door label/identifier

    b. Location of each drop by orientation/permanent landmark in the room

    c. Contractor shall provide accurate as-built Construction Drawings. The drawings are to include cable routes and device locations.

3.15 PRE-CHECKOUT

A. The Contractor shall demonstrate the following to Owner during system demonstration.

1. The card readers are fully installed and functional.

3.16 FINAL ACCEPTANCE

A. In addition to closeout requirements in section 27 60 00, This Contractor shall demonstrate the following before final approval.

1. Owner training is complete.

2. Punch list items are complete.

3. As-built documentation is complete and submitted to Owner/Consultant.

3.17 ANNUAL SUPPORT AGREEMENT

A. An annual support agreement (after the 1st year full of support/warranty) shall not be part of the bid. The Contractor shall work directly with the Owner at the end of the project to determine the ongoing hardware/software support. The Contractor shall send the Consultant a copy of the support agreement for review prior to finalization.

3.18 FINAL PROCEDURES

A. Perform final procedures in accordance with section 27 60 00.

END OF SECTION 27 64 00

Evaluation Criteria for small RFP Projects
Williamson County

Project Name and description

RFP#

A. In order to qualify for this project the respondent must fully satisfy the following criteria:

1. Respondent shall have a physical office located within a reasonable proximity of the project location. Respondent must provide physical business address and how long at that location, as well as the extent of the business completed from this location;
2. Respondent shall provide a list of the proposed management team for the project, to include at least the Company owner, Project Manager, Superintendent, and other support team members;
3. Respondent shall provide documentation verifying, they have been conducting business as a General Contractor in Texas for a minimum of 5 (five) years.
4. Respondent shall supply a list of 3 (three) verifiable references from projects completed of similar or larger size, scope and dollar amount performed in Texas, within the last 5 years. The list must include at a minimum the project name, contact information (name, telephone and email), brief project description, size /square footage, project location, and project dollar amount. Respondent to provide the timeframe for completion, and if project was completed ahead of or on schedule, and if not explain why.
5. Respondent shall submit a statement that it can and will commence work on the project within five days of receipt of the Notice to Proceed. Respondent shall also provide assurance that it can and will continue daily performance of the work until fully completed.
6. Respondent shall submit with its proposal a letter from Respondent's bond company, registered to issue bonds in the state of Texas, stating the ability of the respondent to obtain a Performance and Payment Bond for the project.

Respondents that fully comply with all the above requirements will then be considered and evaluated as follow:

1. An evaluation committee of at least three County representatives will evaluate the qualified respondents and make the determination regarding the successful company to proceed with negotiations and award.
2. The evaluation committee will review qualifications, pricing, location of office, and best overall value to Williamson County.
3. Contract negotiations and reference verification may also be a part of the selection process.

Agreement for Construction Services

This Agreement ("Agreement") between Williamson County, Texas, a political subdivision of the State of Texas ("Owner") and _____("Contractor") is entered into in accordance with the following terms and conditions:

ARTICLE 1 SCOPE OF WORK: The Owner desires to retain Contractor to provide construction of approximately 2,600 gross square feet of shell build out in the Williamson County Justice Center. Work includes all general building construction, mechanical, plumbing, and electrical work. The general description of the project includes, but is not limited to, the following:

1. Suite build out, per specifications,
2. Interior finishes as per finish schedule,
3. All work to be performance must comply fully with the specifications and drawings provided by BLGY Architecture [attached], dated 12/22/2016 defined and incorporated by reference herein. The Contractor shall have the overall responsibility for and shall provide complete construction services and furnish all materials, equipment, tools and labor as necessary or reasonably inferable to complete the following described construction services, or any phase of such services, in accordance with the Owner's requirements, all specifications, and the terms of this Agreement (hereinafter collectively referred to as the "Work"):

Scope of Work as described in the Response for Proposals Solicitation, RFP 1701-136, including the specifications set forth therein, are incorporated herein as if copied in full.

ARTICLE 2 CONTRACT PRICE: Owner agrees to pay to the Contractor, for the satisfactory performance of the Work, the not-to-exceed amount of _____ ($_____) in accordance with the terms and conditions of this Agreement.

ARTICLE 3 PLANS AND SPECIFICATIONS: The Work shall be performed pursuant to and in accordance with the following described plans and specifications, as well as any revisions made thereto:

As described in the Response for Proposals Solicitation, RFP 1701-136, including the specifications set forth therein, which is incorporated herein as if copied in full.

Additional Work: Should Owner choose to add additional work, such additional work shall be described in a separate written amendment to this Agreement wherein the additional work shall be described and the parties shall set forth the amount of compensation to be paid by Owner for the additional work. Contractor shall not begin any additional work and Owner shall not be obligated to pay for any additional work unless a written amendment to this Agreement has been signed by both parties.

ARTICLE 4 SUBSTANTIAL AND FINAL COMPLETION:

4.1 Commencement of Work. Contractor shall commence the Work upon instruction to do so from the Owner and Construction shall be deemed to have commenced on the date of such instruction.

4.2 Substantial Completion. "Substantial Completion" means the stage in the progress of the Work when the Work, or designated portions thereof, may still require minor modifications or adjustments but, in the Owner's opinion, the Work has progressed to the point such that all parts of the Work under consideration are fully operational and usable for intended purposes, as evidenced by a Certificate of Substantial Completion approved by the Owner. If a Certificate of Occupancy is required by public authorities having jurisdiction over the Work, said certificate shall be issued before the Work or anyportion thereof is considered substantially complete. When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify Owner's Designated Representative (sometimes referred to as the "ODR") and request a determination as to whether the Work or designated portion thereof is substantially complete. If the ODR does not consider the Work substantially complete, the ODR will notify the Contractor giving reasons therefore. Failure on the Owner's part to list a reason does not alter the responsibility of the Contractor to complete all Work in accordance with the terms of this Agreement. After satisfactorily completing items identified by Owner's Designated Representative, the Contractor shall then submit another request for the ODR to determine Substantial Completion. If The ODR considers the Work substantially complete, The ODR will prepare and deliver a certificate of Substantial Completion which shall establish the date of Substantial Completion, shall include a punch list of items to be completed or corrected before final completion and final payment, shall establish the time within which the Contractor shall finish the punch list, and shall establish responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work, warranty and insurance. Failure to include an item on the punch list does not alter the responsibility of the Contractor to complete all Work in accordance with the terms and conditions of this Agreement. The certificate of Substantial Completion shall be signed by the Owner and the Contractor to evidence acceptance of the responsibilities assigned to them in such certificate.

Substantial Completion (as defined in this agreement) for all stages of the Work shall be achieved on or before the following Substantial Completion date:

DATE FOR SUBSTANTIAL COMPLETION: TBD, with 90 days for the kitchen facility remodel.

Under no circumstances will the time for Substantial Completion exceed this date without a written amendment to this Agreement. **THE TIMES SET FORTH IN THE CONSTRUCTION DOCUMENTS ARE AN ESSENTIAL ELEMENT OF THE AGREEMENT. TIME LIMITS STATED IN THE CONTRACT DOCUMENTS ARE OF THE ESSENCE OF THIS AGREEMENT.**

4.3 Final Completion. The Work shall be fully and finally completed **on or before TBD**; provided, however, Owner may extend said time period in the event bad weather affects the progress of the Work. Owner shall, at its sole discretion, determine when the Work has been fully and finally completed to its satisfaction.

4.4 Liquidated Damages. For each consecutive calendar day after the date of Substantial Completion that the Work is not Substantially Complete, the Owner may deduct the amount of **Two Hundred Dollars per day ($200/day)** from any money due or that becomes due the Contractor, not as a penalty but as liquidated damages representing the parties' estimate at the time of contract execution of the damages that the Owner will sustain for late completion. The parties stipulate and agree that calculating Owner's actual damages for late completion of the Work would be impractical, unduly burdensome, and cause unnecessary delay and that the amount of daily liquidated damages set forth is reasonable.

ARTICLE 5 PAYMENT:

Contractor shall have a duty to submit to the ODR by the end of each month a statement showing the total value of the Work performed during such month. The statement shall also include the value of all sound materials delivered on the Work site and to be included in the Work and all partially completed Work, whether bid as a lump sum or a unit item, which in the opinion of the ODR is acceptable. The ODR shall examine and approve or modify and approve such statement. The Owner shall then pay the Contractor pursuant to Chapter 2251 of the Texas Government Code ("Texas Prompt Payment Act"), as set forth in Article 11.1 of this Agreement, the total amount of the approved statement less all previous payments and all further sums that may by retained by the Owner under the terms of this Agreement or under the law. **Statements are not considered "received" until reviewed by the ODR and an approved statement is submitted to the Williamson County Auditor's Office; therefore, Contractor must ensure timely delivery of statements for review and processing.**

At any time following the completion of all Work, including all punch list items, cleanup, and the delivery of record documents, the Contractor shall submit a certified application for final payment, including all sums held as retainage if any, to the ODR for its review and approval. Contractor shall submit, prior to or with the application for final payment, final copies of all close out documents, including maintenance and operating instructions, guarantees and warranties, certificates, and all other items required by this Agreement. Contractor shall also submit consent of surety to final payment, an affidavit that all payrolls, bills for materials and equipment, subcontracted work and other indebtedness connected with the Work, except as specifically noted, have been paid or will be paid or otherwise satisfied within the period of time required by Chapter 2251, Texas Government Code. Contractor shall furnish documentation establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of claims arising out of the Agreement. Owner is entitled to rely upon this affidavit and the Contractor may not submit a claim on behalf of a subcontractor or vendor if that claim has not been noted as an exception in the affidavit.

Owner may deduct from the final payment all sums due from Contractor for any reason, Liquidated Damages and all other deductions authorized by this Agreement.

Final payment shall constitute a waiver of all claims by the Contractor except those specifically identified in writing and submitted to the ODR prior to the application for final payment. Provided, however, that the Work shall not be deemed fully performed by the Contractor and closed until the expiration of all warranty periods.

ARTICLE 6 CONTRACTOR'S GENERAL RESPONSIBILITIES AND COVENANTS:

6.1 Contractor shall perform all services specifically allocated to it hereunder, as well as those services reasonably inferable and necessary for completion of the Work. The Contractor shall keep the Owner informed of the progress and quality of the Work. Contractor agrees and acknowledges that Owner is entering into this Agreement in reliance on Contractor's represented expertise and ability to provide the Work described in this Agreement. Contractor agrees to use its best efforts, skill, judgment, and abilities to perform its obligations in accordance with the highest standards used in the profession and to further the interests of Owner in accordance with Owner's requirements and

procedures. Contractor's duties as set forth herein shall at no time be in any way diminished by reason of any approval by the Owner nor shall the Contractor be released from any liability by reason of such approval by the Owner, it being understood that the Owner at all times is ultimately relying upon the Contractor's skill and knowledge in performing the services required hereunder.

6.2 Contractor is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. The safety program shall comply with all applicable requirements of the current federal Occupational Safety and Health Act and all other applicable federal, state and local laws and regulations

6.3 Contractor shall be an independent contractor under this Agreement and shall assume all of the rights, obligations, liabilities, applicable to it as such independent contractor hereunder and any provisions in this agreement which may appear to give Owner the right to direct Contractor as to details of doing the Work herein covered or to exercise a measure of control over the Work shall be deemed to mean that Contractor shall follow the desires of Owner in the results of the Work only. Owner shall not retain or have the right to control the Contractor's means, methods or details pertaining to the Contractor's performance of the Work described herein, nor shall Owner have the power to direct the order in which Contractor's Work is performed under this agreement. Owner and Contractor hereby agree and declare that Contractor is an Independent Contractor and as such meets the qualifications of an Independent Contractor under Texas Worker's Compensation Act, Texas Labor Code, Section 406.141, that the Contractor is not an employee of Owner for purposes of this Agreement, and that the Contractor and its employees, agents and sub-subcontractors shall not be entitled to worker's compensation coverage or any other type of insurance coverage held by Owner.

6.4 As part of Contractor obligation to coordinate the Work, Contract shall:

a. cooperate with the ODR and endeavor to further the interests of the Owner and the Work;
b. provide an on-site, full-time superintendent for the duration of the Work;
c. visit the Work site and inspect the existing facilities, systems and conditions to insure an accurate understanding of the existing conditions as required;
d. at Owner's request, attend public meetings and hearings concerning the development of the Work;
e. review all drawings, specifications, and other plans as they are developed by the Owner and/or its architect and advise Owner of any error, inconsistency or omission discovered in the drawings, specifications, and other plans;
f. review the drawings, specifications, and other plans for compliance with all applicable laws and code requirements;
g. advise Owner of any tests that should be performed;
h. organize and maintain a competent, full-time staff at the Work site with clearly defined lines of authority and communication as necessary to coordinate construction activities, monitor and direct progress of the Work;
i. attend Owner's regularly scheduled Work progress meetings and fully advise the ODR of the Work status including schedule, costs, quality and changes;
j. assist Owner in obtaining building permits and obtain special permits for permanent improvements as required by law; and
k. shall coordinate, monitor and inspect the Work of subcontractors to ensure conformance with the drawings, specifications, other plans and with the terms of this Agreement.

6.5 Contractor shall identify every subcontractor it intends to use for the Work to the Owner in writing at least ten (10) days before entering into any subcontract. Contractor shall not use any subcontractor to which Owner has a reasonable objection. If Owner does not object to a particular subcontractor with said ten (10) days, such subcontract may be considered acceptable to Owner. Following Owner's acceptance of a subcontractor, that subcontractor shall not be changed without

Owner's written consent, which shall not be unreasonably withheld.

6.6 Contractor shall secure the services of surveyors, soils engineers, existing facility surveys; testing and balancing, environmental surveys or other special consultants where needed to ensure proper design and construction of the Work;

6.7 Contractor's designated representative, which is set forth below Contractor's signature herein below, shall be responsible for the day-to-day management of the Work on behalf of Contractor. The designated representative shall be the Owner's primary contact during the Work and shall be available as required for the benefit of the Work and the Owner. The contractor's designated representative shall be authorized to act on behalf of and bind the Contractor in all matters related to the Work including, but not limited to, execution of Change Orders. NO ALTERATIONS OR CHANGES SHALL BE MADE, HOWEVER, EXCEPT UPON THE WRITTEN ORDER OF THE OWNER, OR THE ODR.

6.8 Contractor shall promptly correct any defective Work at Contractor's sole expense, unless the Owner specifically agrees, in writing, to accept the Work.

6.9 Contractor shall maintain and deliver the close out documents that describe changes or deviations from the original drawings, specifications and plans that occurred during construction and that reflect the actual "As Built" conditions of the completed Work.

COMMISSIONING AND WARRANTY RESPONSIBILITIES

6.10 Contractor shall provide commissioning, starting and check-out services for the systems installed as a part of the Work prior to completion and acceptance. Operation manuals and instructions will be provided to the Owner, the systems will be demonstrated and training provided to Williamson County's operators upon completion and prior to acceptance.

6.11 Contractor hereby warrants that the materials and equipment provided for the Work will be of good quality and new unless otherwise required or permitted by the Owner; that the construction will be free from faults and defects; and that the construction will conform with the requirements of the plans, specifications, drawings and the terms of this Agreement.

6.12 Contractor shall provide warranty services for the Work for a full **18 months** (30 months for Work involving mechanical services, if any) following Final Completion and final payment. Just before the warranty period expires, Contractor shall attend an on-site meeting with the Owner to ensure that all warranty issues have been identified and properly remedied.

ARTICLE 7 OWNER'S RESPONSIBILITIES

7.1 The Owner shall:

a. provide the general schedule for the Work provided Owner is of the opinion such schedule is necessary. The general schedule will set forth the Owner's plan for milestone dates and completion of the Work;
b. identify a person as its ODR who is authorized to act in the Owner's behalf with respect to the Work. The ODR shall examine the documents submitted by the Contractor and shall render decisions on behalf of the Owner to the extent permitted by Texas law.
c. furnish required information and services and shall render approvals and decisions as expeditiously as is consistent with reasonable skill and care and the orderly progress of the Contractor's services and of the Work;
d. shall have the right to reject any defective Work. Should Contractor refuse or neglect to

correct any such Work within a reasonable time after notice, Owner may have the Work corrected and recover all expenses incurred from Contractor on demand; and

e. Owner shall furnish to the Contractor a sufficient number of plans, drawings and specifications sets.

ARTICLE 8 INSURANCE AND INDEMNITY

8.1 Insurance. The Contractor shall carry insurance in the types and amounts indicated below for the duration of the Agreement, which shall include items owned by Owner in the care, custody and control of Contractor prior to and during construction. Contractor must also complete and file the declaration pages from the insurance policies with Owner whenever a previously identified policy period expires during the term of the Agreement, as proof of continuing coverage. Contractor shall update all expired policies prior to submission of any payment requests hereunder. Failure to update policies shall be reason for payment to be withheld until evidence for renewal is provided to the Owner.

8.1.1 The Contractor shall provide and maintain, until the Work covered in this Agreement is completed and accepted by the Owner, the minimum insurance coverage in the minimum amounts as described below. Coverage shall be written on an occurrence basis by companies authorized and admitted to do business in the State of Texas and rated A- or better by A.M. Best Company or otherwise acceptable to Owner.

Type of Coverage	Limits of Liability
a. Worker's Compensation	Statutory
b. Employer's Liability	
Bodily Injury by Accident	$500,000 Ea. Accident
Bodily Injury by Disease	$500,000 Ea. Employee
Bodily Injury by Disease	$500,000 Policy Limit

c. Comprehensive general liability including completed operations and contractual liability insurance for bodily injury, death, or property damages in the following amounts:

COVERAGE	PER PERSON	PER OCCURRENCE
Comprehensive General Liability (*including premises, completed operations and contractual*)	$1,000,000	$1,000,000
Aggregate policy limits:		$1,000,000

d. Comprehensive automobile and auto liability insurance (covering owned, hired, leased and non-owned vehicles):

COVERAGE	PER PERSON	PER OCCURRENCE
Bodily injury (including death)	$1,000,000	$1,000,000

Property damage	$1,000,000	$1,000,000
Aggregate policy limits	No aggregate limit	

e. Builder's Risk Insurance (*all risks*)

An all risks policy shall be in the amount equal at all times to 100% of the Contract Sum. The policy shall include coverage for loss or damage caused by certified acts of terrorism as defined in the Terrorism Risk Insurance Act. The policy shall be issued in the name of the Contractor and shall name his Subcontractors as additional insureds. The Owner shall be named as a loss payee on the policy. The builders risk policy shall have endorsements as follow:

1. This insurance shall be specific as to coverage and not considered as contributing insurance with any permanent insurance maintained on the present premises. If off-site storage is permitted, coverage shall include transit and storage in an amount sufficient to protect property being transported or stored.

2. For renovation projects and or portions of work contained within an existing structure, the Owner waives subrogation for damage by fire to existing building structure(s), if the Builder's Risk Policy has been endorsed to include coverage for existing building structure(s) in the amount described in the Special Conditions. However, Contractor shall not be required to obtain such an endorsement unless specifically required by the Special Conditions., in this Agreement. The aforementioned waiver of subrogation shall not be effective unless such endorsement is obtained.

f. Umbrella coverage in the amount of not less than $1,000,000.

8.1.2 The above insurance requirements are not intended to be compounded with the Contractor's standing insurance policies. If the Contractor already has in force insurance policies which provide the required coverage, there is no need to purchase duplicate coverage for this Work.

8.1.3 Policies must include the following clauses, as applicable.

a. "This insurance shall not be canceled, limited in scope or coverage, or non-renewed until after thirty (30) days prior written notice, or ten (10) days for non-payment of premium, has been given to Williamson County."
b. "It is agreed that the Contractor's insurance shall be deemed primary with respect to any insurance or self-insurance carried by Williamson County for liability arising out of operations under the Agreement with Williamson County."
c. "Williamson County, it officials, directors, employees, representatives, and volunteers are added as additional insured as respects operations and activities of, or on behalf of the named insured performed under Agreement with the Owner." This is not applicable to the workers' compensation policy.
d. "The workers' compensation and employers' liability policy will provide a waiver of subrogation in favor of Williamson County."

8.1.4 Workers' Compensation Insurance Coverage: In the event that Contractor employs any individual to perform any portion of the Work, Contractor shall comply with Texas Labor Code, §406.096, which requires workers' compensation insurance coverage for all employees providing services on a building or construction project for a governmental entity.

a. Definitions:

(1) Certificate of Coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the Texas Workers' Compensation Commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the Duration of the Work.

(2) Duration of the Work - includes the time from the beginning of the Work until the Work has been completed and accepted by the Owner.

(3) Coverage – Workers' compensation insurance meeting the statutory requirements of the Texas Labor Code, §401.011(44).

(4) Persons providing services relating to the Work ("subcontractor") - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform the Work, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services in relation to the Work. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the Work, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

b. The Contractor shall provide Coverage, based on proper reporting of classification codes and payroll amounts and filing of any Coverage agreements, which meets the statutory requirements of Texas labor Code, §401.011(44) for all employees of the Contractor providing services in relation to the Work, for the Duration of the Work.

c. The Contractor must provide a Certificate of Coverage to the Owner prior to or contemporaneously with the execution of this Agreement.

d. If the Coverage period shown on the Contractor's current Certificate of Coverage ends during the Duration of the Work, the Contractor must, prior to the end of the Coverage period, file a new Certificate of Coverage with the Owner showing that Coverage has been extended.

e. The Contractor shall obtain from each person providing services in relation to the Work, and provide to the Owner:

(1) a Certificate of Coverage, prior to that person beginning any of the Work, so the Owner will have on file Certificates of Coverage showing Coverage for all persons providing services in relation to the Work; and

(2) no later than seven days after receipt by the Contractor, a new Certificate of Coverage showing extension of Coverage, if the Coverage period shown on the current Certificate of Coverage ends during the Duration of the Work.

f. The Contractor shall retain all required Certificates of Coverage for the Duration of the Work and for one year thereafter.

g. The Contractor shall notify the Owner in writing by certified mail or personal delivery, within 10 days after the Contractor knew or should have known, of any change that materially affects the provision of Coverage of any person providing services in relation to the Work.

h. The Contractor shall post on the Work site a notice, in the text, form and manner prescribed

by the Texas Workers' Compensation Commission, informing all persons providing services in relation to the Work that they are required to be covered, and stating how a person may verify Coverage and report lack of Coverage.

i. By signing this Agreement or providing or causing to be provided a Certificate of Coverage, the Contractor is representing to the Owner that all employees of the Contractor who will provide services in relation to the Work and all persons providing services in relation to the Work will be covered by workers' compensation coverage for the Duration of the Work, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self- insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

j. The Contractor's failure to comply with any of these provisions is a breach of Agreement by the Contractor which entitles the Owner to declare the Agreement void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the Owner.

8.1.5 The furnishing of the above listed insurance coverage must be tendered prior to execution of the Agreement, and in no event later than ten (10) calendar days from Notice of Award. Failure to provide the insurance in a timely fashion may result in loss of Contractor's bid bond.

8.1.6 The Contractor shall not cause or allow any of its required insurance to be canceled, nor permit any insurance to lapse during the term of the Agreement or as required in the Agreement. If the Contractor fails to obtain, maintain or renew any insurance required by this Agreement, the Owner may, among other remedies available hereunder or at law, obtain insurance coverage directly and recover the cost of that insurance from the Contractor or declare this Agreement void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the Owner.

8.1.7 The Owner reserves the right to review the insurance requirements set forth in this Article during the effective period of the Agreement and to make reasonable adjustments to the insurance coverage and their limits when deemed necessary and prudent by the Owner based upon changes in statutory law, court decisions, or the claims history of the industry as well as the Contractor.

8.1.8 The Owner shall be entitled, upon request, and without expense, to receive complete copies of the policies with all endorsements and may make any reasonable requests for deletion, or revision or modification of particular policy terms, conditions, limitations, or exclusions, except where policy provisions are established by law or regulation binding upon the Parties or the underwriter of any of such polices. Damages caused by the Contractor and not covered by insurance shall be paid by the Contractor.

8.1.9 Contractor shall be responsible for payment of premiums for all of the insurance coverages required under this Agreement. Contractor further agrees that for each claim, suit or action made against insurance provided hereunder, with respect to all matters for which the Contractor is responsible hereunder, Contractor shall be solely responsible for all deductibles and self-insured retentions. **Any deductibles or self-insured retentions over $50,000 in the Contractor's insurance must be declared and approved in writing by Owner in advance.**

8.1.10 The Contractor shall contractually require each person or entity with whom it contracts to provide services in relation to the Work, to comply with each and every insurancerequirement that Contractor must comply with hereunder. More specifically, each person or entity with whom Contractor contracts to provide services on the in relation to the Work must comply with each insurance requirement under this Article 8 just as if such person or entity was the Contractor. Thus, every reference to Contractor under each insurance requirement of this Article 8 shall mean and include each person or entity with whom Contractor contracts to provide services in relation to the Work. If any such person or entity with whom Contractor contracts to provide services in relation to the Work fails to obtain, maintain or renew any insurance required by this Agreement, the Owner may, among other remedies available hereunder or at law, obtain insurance coverage directly and recover the cost of that insurance from the Contractor or declare this Agreement void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the Owner.

8.2 INDEMNITY.

8.2.1 INDEMNIFICATION - EMPLOYEE PERSONAL INJURY CLAIMS. TO THE FULLEST EXTENT PERMITTED BY LAW, THE CONTRACTOR SHALL INDEMNIFY, DEFEND (WITH COUNSEL OF OWNER'S CHOOSING), AND HOLD HARMLESS OWNER, AND OWNER'S EMPLOYEES, AGENTS, REPRESENTATIVES, PARTNERS, OFFICERS, AND DIRECTORS (COLLECTIVELY, THE "INDEMNITEES") AND SHALL ASSUME ENTIRE RESPONSIBILITY AND LIABILITY (OTHER THAN AS A RESULT OF INDEMNITEES' GROSS NEGLIGENCE) FOR ANY CLAIM OR ACTION BASED ON OR ARISING OUT OF THE PERSONAL INJURY, OR DEATH, OF ANY EMPLOYEE OF THE CONTRACTOR, OR OF ANY SUBCONTRACTOR, OR OF ANY OTHER ENTITY FOR WHOSE ACTS THEY MAY BE LIABLE, WHICH OCCURRED OR WAS ALLEGED TO HAVE OCCURRED ON THE WORK SITE OR IN CONNECTION WITH THE PERFORMANCE OF THE WORK. CONTRACTOR HEREBY INDEMNIFIES THE INDEMNITEES EVEN TO THE EXTENT THAT SUCH PERSONAL INJURY WAS CAUSED OR ALLEGED TO HAVE BEEN CAUSED BY THE SOLE, COMPARATIVE OR CONCURRENT NEGLIGENCE OF THE STRICT LIABILITY OF ANY INDEMNIFIED PARTY. THIS INDEMNIFICATION SHALL NOT BE LIMITED TO DAMAGES, COMPENSATION, OR BENEFITS PAYABLE UNDER INSURANCE POLICIES, WORKERS COMPENSATION ACTS, DISABILITY BENEFITS ACTS, OR OTHER EMPLOYEES BENEFIT ACTS.

8.2.2 INDEMNIFICATION - OTHER THAN EMPLOYEE PERSONAL INJURY CLAIMS. TO THE FULLEST EXTENT PERMITTED BY LAW, CONTRACTOR SHALL INDEMNIFY, DEFEND (WITH COUNSEL OF OWNER'S CHOOSING), AND HOLD HARMLESS OWNER, AND OWNER'S EMPLOYEES, AGENTS, REPRESENTATIVES, PARTNERS, OFFICERS, AND DIRECTORS (COLLECTIVELY, THE "INDEMNITEES") FROM AND AGAINST CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, ARISING OUT OF OR ALLEGED TO BE RESULTING FROM THE PERFORMANCE OF THIS AGREEMENT OR THE WORK DESCRIBED HEREIN, TO THE EXTENT CAUSED BY THE NEGLIGENCE, ACTS, ERRORS, OR OMISSIONS OF CONTRACTOR OR ITS SUBCONTRACTORS, ANYONE EMPLOYED BY THEM OR ANYONE FOR WHOSE ACTS THEY MAY BE LIABLE, REGARDLESS OF WHETHER OR NOT SUCH CLAIM, DAMAGE, LOSS OR EXPENSE IS CAUSED IN WHOLE OR IN PART BY A PARTY INDEMNIFIED HEREUNDER.

8.3 Except for the obligation of Owner to pay Contractor the Contract Price pursuant to the terms of this Agreement, and to perform certain other obligations pursuant to the terms and conditions explicitly set forth herein, Owner shall have no liability to Contractor or to anyone claiming through

or under Contractor by reason of the execution or performance of this Agreement. Notwithstanding any obligation or liability of Owner to Contractor, no present or future partner or affiliate of Owner or any agent, officer, director, or employee of Owner, Williamson County, or of the various departments comprising Williamson County, or anyone claiming under Owner has or shall have any personal liability to Contractor or to anyone claiming through or under Contractor by reason of the execution or performance of this Agreement.

ARTICLE 9 BONDS

9.1 Performance Bond. Upon execution of this Agreement, Contractor shall provide a Performance Bond in the amount of 100% of the Contract Price. The surety for a Performance Bond shall meet the requirements of Texas law.

9.2 Payment Bond. Upon execution of this Agreement, Contractor shall provide a Payment Bond in the amount of 100% of the Contract Price, as security for the true and faithful payment in full of all subcontractors and persons performing labor, services, materials, machinery, and fixtures in connection with the Work. The surety for a Payment Bond shall meet the requirements of Texas law.

9.3 Warranty Bond. Upon execution of this Agreement, Contractor shall provide a Warranty Bond in the amount of 20% of the Contract Price, as security for the true and faithful performance of all warranties set forth in Bid Documents and this Agreement.

ARTICLE 10 TERMINATION

10.1 Termination for Cause. If either party commits an Event of Breach (a breach of any of the covenants, terms and/or conditions of this Agreement), the non-breaching party shall deliver written notice of such Event of Breach to the breaching party. Such notice must specify the nature of the Event of Breach and inform the breaching party that unless the Event of Breach is cured within three (3) business days of receipt of the notice, additional steps may be taken to terminate this Agreement. If the breaching party begins a good faith attempt to cure the Event of Breach within three (3) business days, then and in that instance, the three (3) business day period may be extended by the non-breaching party, so long as the breaching party continues to prosecute a cure diligently to completion and continues to make a good faith attempt to cure the Event of Breach. If, in the opinion of the non-breaching party, the breaching party does not cure the breach within three (3) business days or otherwise fails to make any diligent attempt to correct the Event of Breach, the breaching party shall be deemed to be in breach and the non-breaching party may, in addition to seeking the remedies available hereunder and under the law, terminate this Agreement.

10.2 Termination for Convenience. The Owner may terminate this Agreement for convenience and without cause or further liability upon thirty (30) days written notice to Contractor. In the event of such termination, it is understood and agreed that only the amounts due to Contractor for goods, commodities and/or services provided and expenses incurred to and including the date of termination, will be due and payable. No penalty will be assessed for Owner's termination of this Agreement for convenience.

ARTICLE 11 ADDITIONAL GENERAL PROVISIONS

11.1 Interest and Late Payments. Except as otherwise specifically set forth herein, Owner's payment for goods and services shall be governed by Chapter 2251 of the Texas Government Code. Interest charges for any overdue payments shall be paid by Owner in accordance with Texas Government Code Section 2251.025. More specifically, the rate of interest that shall accrue on a late payment is the rate in effect on September 1 of Owner's fiscal year in which the payment becomes due. The said rate in

effect on September 1 shall be equal to the sum of one percent (1%); and (2) the prime rate published in the Wall Street Journal on the first day of July of the preceding fiscal year that does not fall on a Saturday or Sunday

In the event that an error appears in an invoice/application for payment submitted by Contractor, Owner shall notify Contractor of the error not later than the twenty first (21st) day after the date Owner receives the invoice/application for payment. If the error is resolved in favor of Contractor, Contractor shall be entitled to receive interest on the unpaid balance of the invoice/application for payment submitted by Contractor beginning on the date that the payment for the invoice/application for payment became overdue. If the error is resolved in favor of the Owner, Contractor shall submit a corrected invoice/application for payment that must be paid in accordance within the time set forth above. The unpaid balance accrues interest as provided by Chapter 2251 of the Texas Government Code if the corrected invoice/application for payment is not paid by the appropriate date.

11.2 Assignment; Successors and Assigns. This Agreement is a personal service contract for the services of Contractor, and Contractor's interest in this Agreement, duties hereunder and/or fees due hereunder may not be assigned or delegated to a third party. This Agreement shall be binding upon and inure to the benefit of parties hereto and their respective successors and assigns.

11.3 Captions. The captions of paragraphs in this Agreement are for convenience only and shall not be considered or referred to in resolving questions of interpretation or construction.

11.4 Governing Law and Venue. This Agreement and all of the rights and obligations of the parties and all of the terms and conditions shall be construed, interpreted and applied in accordance with and governed by and enforced under the laws of the State of Texas without reference to its conflicts of law provisions. Williamson County where the Work site is located shall be the sole place of venue for any legal action arising from or related to this Agreement or the project in which the Owner is a party.

11.5 Waivers. No delay or omission by either party in exercising any right or power arising from non-compliance or failure of performance by the other party with any of the provisions of this Agreement shall impair or constitute a waiver of any such right or power. A waiver by either party of any covenant or condition of this Agreement shall not be construed as a waiver of any subsequent breach of that or of any other covenant or condition of the Agreement.

11.6 Interpretation. In the event of any dispute over the meaning or application of any provision of the Contract Documents, the Contract Documents shall be interpreted fairly and reasonably, and neither more strongly for or against any party, regardless of the actual drafter of the Contract Documents.

11.7 Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties and their respective permitted assigns and successors.

11.8 Appointment. Owner hereby expressly reserves the right from time to time to designate by notice to Contractor a representative(s) to act partially or wholly for Owner in connection with the performance of Owner's obligations. Contractor shall act only upon instructions from the designated representative(s) unless otherwise specifically notified to the contrary.

11.9 Audits. Contractor agrees that Owner or its duly authorized representatives shall, until the expiration of three (3) years after final payment under this Agreement, have access to and the right to examine and photocopy any and all books, documents, papers and records of Contractor which are directly pertinent to the services to be performed under this Agreement for the purposes of making audits, examinations, excerpts, and transcriptions. Contractor agrees that Owner shall have access during

normal working hours to all necessary Contractor facilities and shall be provided adequate and appropriate work space in order to conduct audits in compliance with the provisions of this section. Owner shall give Contractor reasonable advance notice of intended audits.

11.10 Severability. Should any term or provision of this Agreement be held invalid or unenforceable in any respect, the remaining terms and provisions shall not be affected and this Agreement shall be construed as if the invalid or unenforceable term or provision had never been included.

11.11 No Waiver of Immunities. Nothing in this Agreement shall be deemed to waive, modify or amend any legal defense available at law or in equity to Owner, its past or present officers, employees, or agents, nor to create any legal rights or claim on behalf of any third party. Owner does not waive, modify, or alter to any extent whatsoever the availability of the defense of governmental immunity under the laws of the State of Texas and of the United States.

11.12 Current Revenues. Under Texas law, a contract with a governmental entity that contains a claim against future revenues is void; therefore, each party paying for the performance of governmental functions or services must make those payments from current revenues available to the paying party.

11.13 Compliance with Laws. Contractor shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any matter affecting the performance of this Agreement, including, without limitation, Worker's Compensation laws, minimum and maximum salary and wage statutes and regulations, licensing laws and regulations. When required, Contractor shall furnish the County with certification of compliance with said laws, statutes, ordinances, rules, regulations, orders, and decrees above specified.

11.14 Sales and Use Tax Exemption. Owner is a body corporate and politic under the laws of the State of Texas and claims exemption from sales and use taxes under Texas Tax Code Ann. § 151.309, as amended.

11.15 Texas Public Information Act. To the extent, if any, that any provision in this Agreement is in conflict with Tex. Gov't Code 552.001 *et seq.*, as amended (the "Public Information Act"), the same shall be of no force or effect. Furthermore, it is expressly understood and agreed that Owner, its officers and employees may request advice, decisions and opinions of the Attorney General of the State of Texas in regard to the application of the Public Information Act to any information or data furnished to Owner whether or not the same are available to the public. It is further understood that Owner, its officers and employees shall have the right to rely on the advice, decisions and opinions of the Attorney General, and that Owner, its officers and employees shall have no liability or obligation to Contractor for the disclosure to the public, or to any person or persons, of any software or a part thereof, or other items or data furnished to Owner by Contractor in reliance of any advice, decision or opinion of the Attorney General of the State of Texas.

11.16 Force Majeure. If the party obligated to perform is prevented from performance by an act of war, order of legal authority, act of God, or other unavoidable cause not attributable to the fault or negligence of said party, the other party shall grant such party relief from the performance of this Agreement. The burden of proof for the need of such relief shall rest upon the party obligated to perform. To obtain release based on force majeure, the party obligated to perform shall file a written request with the other party.

11.17 Equal Opportunity in Employment. The parties to this Agreement agree that during the performance of the services under this Agreement they will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The parties to this Agreement will take affirmative action to ensure that applicants are employed, and that employees

are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; termination; rates of pay or other forms of compensation, and selection for training, including apprenticeship.

11.18 Reports of Accidents. Within 24 hours after Contractor becomes aware of the occurrence of any accident or other event which results in, or might result in, injury to the person or property of any third person (other than an employee of the Contractor), whether or not it results from or involves any action or failure to act by the Contractor or any employee or agent of the Contractor and which arises in any manner from the performance of this Agreement, the Contractor shall send a written report of such accident or other event to the County, setting forth a full and concise statement of the facts pertaining thereto. The Contractor shall also immediately send the County a copy of any summons, subpoena, notice, or other documents served upon the Contractor, its agents, employees, or representatives, or received by it or them, in connection with any matter before any court arising in any manner from the Contractor's performance of work under this Agreement.

11.19 Relationship of the Parties. Each party to this Agreement, in the performance of this Agreement, shall act in an individual capacity and not as agents, employees, partners, joint ventures or associates of one another. The employees or agents of one party shall not be deemed or construed to be the employees or agents of the other party for any purposes whatsoever.

11.20 Appropriation of Funds by Owner. Owner believes it has sufficient funds currently available and authorized for expenditure to finance the costs of this Agreement. Contractor understands and agrees that the Owner's payment of amounts under this Agreement is contingent on the Owner receiving appropriations or other expenditure authority sufficient to allow the Owner, in the exercise of reasonable administrative discretion, to continue to make payments under this Agreement.

11.21 Execution in Counterparts. This Agreement may be executed in counterparts, each of which, when executed and delivered, shall be deemed to be an original and all of which together shall constitute one and the same document.

11.22 Entire Agreement. This Agreement represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either oral or written. This Agreement may be amended only by written instrument signed by each party to this Agreement. NO OFFICIAL, EMPLOYEE, AGENT, OR REPRESENTATIVE OF THE OWNER HAS ANY AUTHORITY, EITHER EXPRESS OR IMPLIED, TO AMEND THIS AGREEMENT, EXCEPT PURSUANT TO SUCH EXPRESS AUTHORITY AS MAY BE GRANTED BY THE WILLIAMSON COUNTY COMMISSIONERS COURT.

BY SIGNING BELOW, the Parties have executed and bound themselves to this Agreement to be effective as of the date of the last party's execution hereof (Effective Date).

OWNER: Williamson County, Texas a political subdivision of the State of Texas	**CONTRACTOR**: _____
By:_____	By:_____
Printed Name:_____	Printed Name:_____
Title: _____	Title:_____
Date:_____	Date:_____

Proposal References

List the last three (3) companies or governmental agencies, where the same or similar goods and/or services as contained in this RFP package, were recently provided by Respondent.

Reference 1

Client Name: Location:

Contact Name: Title:

Phone: E-mail

Contract Date To: Contract Date From: Contract Value: $

Scope of Work:

Reference 2

Client Name: Location:

Contact Name: Title:

Phone: E-mail

Contract Date To: Contract Date From: Contract Value: $

Scope of Work:

Reference 3

Client Name:

Location:

Contact Name:

Title:

Phone:

E-mail

Contract Date To:

Contract Date From:

Contract Value: $

Scope of Work:

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor or other person doing business with local governmental entity

Form CIQ

This questionnaire is being filed in accordance with chapter 176 of the Local Government Code by a person doing business with the governmental entity.

By law this questionnaire must be filed with the records administrator of the local government not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

OFFICE USE ONLY

Date Received

1 **Name of person doing business with local governmental entity.**

2 ☐ **Check this box if you are filing an update to a previously filed questionnaire.**

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than September 1 of the year for which an activity described in Section 176.006(a), Local Government Code, is pending and not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 **Describe each affiliation or business relationship with an employee or contractor of the local governmental entity who makes recommendations to a local government officer of the local governmental entity with respect to expenditure of money.**

4 **Describe each affiliation or business relationship with a person who is a local government officer and who appoints or employs a local government officer of the local governmental entity that is the subject of this questionnaire.**

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor or other person doing business with local governmental entity

Form CIQ
Page 2

5 **Name of local government officer with whom filer has affiliation or business relationship.**
(Complete this section only if the answer to A, B, or C is YES.)

This section, item 5 including subparts A, B, C & D, must be completed for each officer with whom the filer has affiliation or other relationship. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income from the filer of the questionnaire?

☐ Yes ☐ No

B. Is the filer of the questionnaire receiving or likely to receive taxable income from or at the direction of the local government officer named in this section AND the taxable income is not from the local governmental entity?

☐ Yes ☐ No

C. Is the filer of this questionnaire affiliated with a corporation or other business entity that the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

☐ Yes ☐ No

D. Describe each affiliation or business relationship.

6. Describe any other affiliation or business relationship that might cause conflict of interest:

7

Signature of person doing business with the governmental entity	Date

Signature not required if completing in BIDSYNC electronically.

DEBARMENT AND LICENSING CERTIFICATION

STATE OF TEXAS §
§
COUNTY OF WILLIAMSON §

I, the undersigned, being duly sworn or under penalty of perjury under the laws of the United States and the State of Texas, certifies that Firm named herein below and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from covered transactions by any federal department or agency:
(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
(c) Are not presently indicted for or otherwise criminally or civilly charged by a federal, state or local governmental entity with commission of any of the offenses enumerated in paragraph (1)(b) of this certification;
(d) Have not within a three-year period preceding this application/proposal had one or more public (federal, state or local) transactions terminated for cause or default;
(e) Are registered and licensed in the State of Texas to perform the professional services which are necessary for the project; and
(f) Have not been disciplined or issued a formal reprimand by any State agency for professional accreditation within the past three years.

Name of Firm

Signature of Certifying Official | Title of Certifying Official

Printed Name of Certifying Official | Date

Where the Firm is unable to certify to any of the statements in this certification, such Firm shall attach an explanation to this certification.

SUBSCRIBED and sworn to before me the undersigned authority by

on this the day of , 20 , on behalf of said Firm.

Notary Public in and for the State of Texas

My commission expires:

SIGNATURE AND NOTARY NOT REQUIRED IF COMPLETING IN BIDSYNC ELECTRONICALLY.

Question and Answers for Bid #1701-136 - Justice Center -CSCD Remodel

Overall Bid Questions
There are no questions associated with this bid.

Commissioners Court - Regular Session **28.**

Meeting Date: 02/14/2017

Request to advertise for road and traffic signs

Submitted By: Teri Jeffries, Purchasing

Department: Purchasing

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on authorizing the Purchasing Agent to advertise and receive bids for the purchase of road sign materials, delineators, object markers and traffic control devices under IFB 1702-140.

Background

Bid Packet information is attached for your review.

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Bid Packet

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/06/2017 10:52 AM
Form Started By: Teri Jeffries		Started On: 02/06/2017 07:35 AM
Final Approval Date: 02/06/2017		

PUBLIC ANNOUNCEMENT AND GENERAL INFORMATION

WILLIAMSON COUNTY PURCHASING DEPARTMENT
SOLICIATION 1702-140

Road Signs, Delineators and Object Markers and Traffic control devises

BIDS MUST BE RECEIVED ON OR BEFORE:
Mar 13, 2017 10:00:00 AM CDT

BIDS WILL BE PUBLICLY OPENED:
Mar 13, 2017 10:00:00 AM CDT

Notice is hereby given that sealed Bids for the above-mentioned goods and/or services will be accepted by the Williamson County Purchasing Department. Williamson County uses BidSync to distribute and receive bids. Specifications for this IFB may be obtained by registering at www.bidsync.com.

Williamson County prefers and requests electronic submittal of this Bid.

All electronic bids must be submitted via: www.bidsync.com

Electronic bids are requested, however paper bids will currently still be received, until further notice and may be mailed or delivered to the address listed below.

Bidders are strongly encouraged to carefully read this entire IFB.

All interested Bidders are invited to submit a Bid in accordance with the Instructions and General Requirements, Bid Format, Bid Specifications, and Definitions, Terms and Conditions stated in this IFB.

Please note that a complete package must be submitted choosing one of the above two methods. Split packages submitted will be considered "unresponsive" and will not be accepted or evaluated.

Williamson County will not accept any Bids received after the submittal deadline, and shall return such Bids unopened to the Bidder.

General Information:

- If mailed or delivered in person, Bids and Bid addenda are to be delivered in sealed envelope on or before the submittal deadline, as noted in the Public Announcement and General Information listed above for this IFB, to:

  Williamson County Purchasing Department
  Attn: **BID NAME AND NUMBER**
  901 South Austin Avenue
  Georgetown, Texas 78626

  - Bidders should list the Bid Number, Bid Name, Name and Address of Bidder, and the Date of the Bid opening on the outside of the box or envelope and note "Sealed Bid Enclosed."
  - Bidder should submit one (1) original.
  - Williamson County will NOT be responsible for unmarked or improperly marked envelopes.
  - Williamson County will not accept any responsibility for Bids being delivered by third party carriers.
  - Facsimile transmittals will NOT be accepted.

- Bids will be opened publicly in a manner; however, to avoid public disclosure of contents only the names and of Bidders and prices will be read aloud.

- All submitted questions with their answers will be posted and updated on www.bidsync.com.

- It is the Bidder's responsibility to review all documents in BidSync, including any Addenda that may have been added after the document packet was originally released and posted.

  - Any Addenda and/or other information relevant to the IFB will be posted on www.bidsync.com.

  - The Williamson County Purchasing Department takes no responsibility to ensure any interested Bidder has obtained any outstanding addenda or additional information.

Bid 1702-140
Road Signs, Delineators and Object Markers and Traffic control devises

Bid Number	1702-140
Bid Title	Road Signs, Delineators and Object Markers and Traffic control devises
Bid Start Date	In Held
Bid End Date	Mar 13, 2017 10:00:00 AM CDT
Question & Answer End Date	Mar 8, 2017 12:00:00 PM CST
Bid Contact	Teri Jeffries Senior Purchasing Specialist 512-**943**-1553 Teri.jeffries@wilco.org
Contract Duration	**1 year**
Contract Renewal	Not Applicable
Prices Good for	**180 days**
Pre-Bid Conference	**Feb 23, 2017 10:00:00 AM CST** **Attendance is optional** **Location: 3151 S.E. Inner Loop, Georgetown, TX 78262**
Bid Comments	**Williamson County is seeking qualified companies to provide for the purchase and delivery of road signage materials, delineators, object markers and traffic control devices, per applicable Texas Department of Transportation, Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014, Texas Department of Transportation Departmental Materials Specifications, Texas Manual on Uniform Traffic Control Devices (TMUTCD) 2011, Compliant Work Zone Traffic Control Device List (CWZTCDL), and Standard Sheets included in this IFB. All items must be bid to include delivery. Installation is not to be included.** **Vendor is presumed to have fully read and will respond per all applicable included guidelines, specifications, terms and conditions, and requirements of this IFB 1702-140..** **An Excel spreadsheet has been attached and can be download to insert your costs, and then uploaded as completed for your convenience.**

Item Response Form

Item	**1702-140--01-01 -** Add all documents to this line item.
Quantity	**1 each**
Unit Price	
Delivery Location	**Williamson County, Texas** Road and Bridge 3151 S. E. Inner Loop Suite B Georgetown TX 78626 **Qty** 1

Description

Please add all items to this line item.

GENERAL NOTES AND TECHNICAL SPECIFICATIONS

General Information

Williamson County is seeking qualified companies to provide for the purchase and delivery of road sign materials, delineators, object markers and traffic control devices per applicable Texas Department of Transportation, Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014, Texas Department of Transportation Departmental Materials Specifications, Texas Manual on Uniform Traffic Control Devices (TMUTCD) 2011, Compliant Work Zone Traffic Control Device List (CWZTCDL), and Standard Sheets included in this IFB. County is seeking to purchase materials. All items must be bid per item delivered. Installation is not included.

Williamson County reserves the right to award the bid in whole to one vendor or to award a contract on each separate item or combination of items as may be most advantageous to the County. A primary, secondary, tertiary, and/or subsequent award may be made for this bid by the County.

The County is not obligated to purchase any minimum amount and the County may purchase any reasonable amount for the same unit price. Items will be ordered on an “As Needed” basis.

It is expressly understood and agreed that in case Williamson County should need any item(s) not available within the time frame needed from the successful vendor(s) during the term of this contract, the County reserves the right to purchase the item(s) from vendors other than the successful vendor(s) and shall not be in violation of any terms or conditions of said contract.

Provide three (3) references where like services have been performed by your firm. Include name of firm, address, telephone number and name of representative.

Definition of Terms

County: Williamson County Road and Bridge Division

Vendor: Successful bidder of the attached invitation to bid

Engineer: Director of Road and Bridge Division

Inspector: Employee of Williamson County supplied full time to the vendor’s crew for the selection, prosecution, and quality control of the materials.

Specifications: Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014.

CST/M&P: The Texas Department of Transportation Construction Division, Materials and Pavement Section

DMS – 4400: The Texas Department of Transportation Departmental Materials Specification for Flexible Delineator and Object Marker Posts (Embedded and Surface-Mount Types)

DMS – 7110: The Texas Department of Transportation Departmental Materials Specification for Aluminum Sign Blanks.

DMS – 7120: The Texas Department of Transportation Departmental Materials Specification for Sign Hardware

DMS – 8242: The Texas Department of Transportation Departmental Materials Specification for Temporary Flexible, Reflective Roadway Marker Tabs

DMS - 8300: The Texas Department of Transportation Departmental Materials Specification for Sign Face Materials

DMS - 8310: The Texas Department of Transportation Departmental Materials Specification for Flexible Roll-up Reflective Signs

DMS - 8315: The Texas Department of Transportation Departmental Materials Specification for Sign Identification Decals

DMS - 8600: The Texas Department of Transportation Departmental Materials Specification for Delineators and Object Markers.

DMS - 8620: The Texas Department of Transportation Departmental Materials Specification for Flagger Stop/Slow Paddles

Department: Road and Bridge Division of Williamson County

TMUTCD: Texas Manual on Uniform Traffic Control Devices

CWZTCDL: Compliant Work Zone Traffic Control Device List

Control of Materials

Source Control. Use only materials that meet Contract requirements. Unless otherwise specified or approved, use new materials for the items. Secure the Engineer's approval of the proposed source of materials to be used before their delivery. Materials can be approved at a supply source or staging area but may be re-inspected.

Material Quality. Correct or remove materials that fail to meet the contract requirements, for cost incurred if additional sampling and testing is required by a change of source.
Materials not meeting Contract requirements will be rejected, unless the Engineer approves corrective actions. Upon rejection, immediately remove and replace rejected materials.
If the Vendor does not comply with this Article, the County may remove and replace defective material. The cost of testing, removal, and replacement will be deducted from invoice.

Manufacturer Warranties. Transfer to the County warranties and guarantees required by the Vendor or received as part of normal trade practice.

General Notes

All materials furnished under the provision of the Contract shall comply with the latest edition of the Texas Manual on Uniform Traffic Control Devices (TMUTCD), Compliant Work Zone Traffic Control Device List (CWZTCDL), and requirements which pertain to the various items included herein as *Standard Specifications for Construction of Highways, Streets and Bridges* of the Texas Department of Transportation, adopted November, 2014, and as amended and/or updated, which is incorporated herein by reference for all purposes. In the event that any specification set out herein conflicts with the said TxDOT specifications, the specification set out herein shall control and govern.

Unless otherwise noted, successful bidder shall bid sign items as complete with full legends; however, the Department may request blank or incomplete legends on signs.

Successful bidder shall comply with insurance requirements dictated within this contract.

Road Sign Materials

Regulatory Signs
All Regulatory Signs shall be:

- High Intensity Prismatic Sheeting (H.I.P.) unless otherwise specified
- 0.080 aluminum for all material unless otherwise specified

Warning Signs
All Warning Signs shall be:

- High Intensity Prismatic Sheeting (H.I.P.) unless otherwise specified
- 0.080 aluminum for all material unless otherwise specified

School Signs
All School Signs shall be:

- Diamond Grade (D.G.) unless otherwise specified
- 0.080 aluminum for all material unless otherwise specified
- Florescent Yellow/Green

Street Signs
All Street Signs shall be:

- Double-sided
- High Intensity Prismatic Sheeting (H.I.P.) unless otherwise specified
- 0.080 aluminum for all material unless otherwise specified

Unusual Signs
All Unusual Signs shall be:

- High Intensity Prismatic Sheeting (H.I.P.) unless otherwise specified
- 0.080 aluminum for all material unless otherwise specified

Refer to DMS-7110, DMS-7120, DMS-8300, DMS-8310, DMS-8315, and TxDOT Specifications Items 636, 643, and 644 for contract requirements.

Materials provided must also meet with the requirements and intended use as shown on attached standard sheets: BC (1)-14, BC (4)-14, BC (5)-14, SMD (GEN)-08, SMD (TWT)-08, SMD (SLIP-1)-08, SMD (SLIP-2)-08 and SMD (SLIP-3)-08.

Delineators and Object Markers

Refer to DMS-4400, DMS 8242, DMS-8600 and TxDOT Specifications Items 658 for contract requirements.

Materials provided must also meet with the requirements and intended use as shown on attached standard sheets: BC (9)-14 and D&OM (1)-15.

Traffic Control Devices

Refer to DMS-8620 for contract requirements.

Materials provided must also meet with the requirements and intended use as shown on attached standard sheets: BC (8)-14, BC (10)-14 and BC (11)-14.

DMS - 4400

FLEXIBLE DELINEATOR AND OBJECT MARKER POSTS (EMBEDDED AND SURFACE-MOUNT TYPES)

EFFECTIVE DATE: AUGUST 2014

4400.1. Description. This Specification governs for the material, composition, quality, sampling, and testing of flexible delineator and object marker posts, both embedded and surface-mount types, and describes the qualification procedures and the Material Producer List (MPL).

4400.2. Units of Measurements. The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

4400.3. Material Producer List. The Materials and Pavements Section of the Construction Division (CST/M&P) maintains the Material Producer List (MPL) of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, entitled "Flexible Delineator and Object Marker Posts," require no further testing unless deemed necessary by the Project Engineer or CST/M&P. Before any material is considered for use on Department projects, it must be of manufacture and product code or designation shown on the MPL.

4400.4. Pre-Qualification Procedure.

A. Pre-Qualification Request. Prospective producers interested in submitting their product for evaluation must submit a written request to the Texas Department of Transportation, Construction Division, Materials and Pavements Section (CP51), 125 East 11th Street, Austin, Texas 78701-2483.

The manufacturer, supplier, or their representative must conduct impact tests. Submit a test report that includes a certification by a licensed, professional engineer that the posts have been impact tested, with the following requirements:

- Test a minimum of eight posts.
- The posts must survive ten hits (hit from the same direction each time) by a passenger car, at a speed between 50 and 55 mph. ("Survive" is defined as remaining in place and not having a list in any direction from vertical of more than 20°.) For this test, install and orient the posts as recommended by the manufacturer for typical roadway applications.
- In addition, after five hits, the delineator or object marker must be certified to meet minimum reflectivity requirements specified in accordance with DMS-8600.
- Submit photographs showing both the posts impacted and the impact vehicle after five and ten hits.
- National Transportation Product Evaluation Program test results will also be accepted.

Before materials are placed on the MPL, producers or suppliers must submit certifications and photographs to CST/M&P for approval.

A demonstration of the manual installation of a post 6-1/2 ft. in length, using the recommended manual driver, may be required. The supplier or their designated representative will perform the demonstration at a location specified by the Department. Any problems noted during installation must be addressed before qualified status is granted.

B. Pre-Qualification Sample. Submit a minimum of ten flexible posts, including anchors and special mounting hardware for ground or surface mount, for testing.

Identify the post as being one of the following categories and types:

- Embedded—the post is designed to be either driven into the ground or affixed to a foundation set in concrete.
- Surface Mount—the post is designed to be attached to a base that is mounted to the roadway surface.

Submit all materials for pre-qualification tests at no cost to the Department.

The Department reserves the right to perform any or all tests specified as a check on the tests reported by the manufacturer. In the case of any variance, Department tests will govern.

C. Sampling and Testing. Sampling will be in accordance with Tex-737-I.

Testing will be in accordance with Article 4400.5.

D. Evaluation. CST/M&P will notify prospective bidders and suppliers after completion of material evaluation.

1. **Qualification.** If approved for use by the Department, the material will be added to the MPL. If material is listed on the MPL, no additional submittals are required for that product.

   Report changes in the composition or in the manufacturing process of any material to CST/M&P. Significant changes reported by the manufacturer, as determined by the Director of CST/M&P, may require a re-evaluation of performance.

   When in the opinion of the Director of CST/M&P changes have been made in the composition, manufacturing process, or design of a pre-qualified product, a re-evaluation may be required. The Department may conduct additional tests to identify changes in the material. Detected changes in the composition or in the manufacturing process not reported by the manufacturer may be cause for removal of that material from the MPL.

2. **Failure.** Producers not qualified under this Specification may not furnish materials for Department projects and must show evidence of correction of all deficiencies before reconsideration for qualification.

The Department normally bears the costs of sampling and testing; however, the Contractor or supplier will bear the costs for sampling and testing of failing materials. The Director of MST/M&P will assess this cost at the time of testing.

Amounts due the Department will be deducted from monthly or final estimates on contracts or from partial or final payments on direct purchases by the Department. Products will not be retested until costs for previously failed tests have been paid.

E. Periodic Evaluation. The Department reserves the right to conduct random sampling of pre-qualified, certified materials for testing and to perform random audits of test reports.

The Department may select random samples for periodic evaluation of performance from materials submitted to the Department on contracts or direct State purchase orders. Department representatives may sample material from the manufacturing plant, the project site, and the warehouse. CST/M&P reserves the right to test samples to verify compliance with this Specification.

Failure of materials to comply with the requirements specified may be cause for removal of those materials from the MPL.

F. Disqualification. Disqualification and removal from the MPL may occur if one of the following infractions occurs:

- material fails to meet the requirements stated in this Specification,
- the producer fails to report to CST/M&P changes in the composition or in the manufacturing process of any material, or
- the producer has unpaid charges for failing samples.

G. Requalification. A manufacturer or supplier may submit material for re-evaluation after documenting the problem and its resolution. Submit documentation identifying the cause and corrective action taken.

4400.5. Material Requirements.

A. General Requirements. All posts must meet all requirements specified except where specific requirements are shown for a specific type.

Manufacture posts from any flexible material of a high-impact resistance quality and resistant to ultraviolet light, ozone, and hydrocarbons.

B. Design and Test Requirements. The top of hollow or tubular posts must be permanently capped to prevent excessive amounts of rain or debris from entering. CST/M&P may allow small holes in the cap when justified by the manufacturer.

The surface texture to which the delineator is to be attached must be clean, smooth, and suitable for the adhesion of reflective sheeting without preparation.

The length of the post must be as specified on the plans or on the purchase order.

The infrared and x-ray spectra of material from posts furnished must match the spectra for the pre-qualified posts in accordance with Tex-888-B and Tex-896-B.

The specific gravity of material from posts furnished must not vary more than 0.12 from the specific gravity of the pre-qualified posts. The specific gravity of post material will be measured in a gas pycnometer using helium as the pressure gas. The pycnometer will be operated according to the pycnometer manufacturer's recommended procedures.

The posts must show no significant change in color, flexibility, or integrity after 1,000-hr. exposure in accordance with ASTM G 155 using Exposure Cycle 1 with a quartz inner filter glass and Type “S” Borosilicate outer filter glass.

Unless otherwise specified, the color of the posts must be opaque white meeting all Federal Highway Administration color requirements.

The posts must show no significant change in color, flexibility, or integrity after coating with herbicides, currently used by the Department, for 48 hr. then rinsed.

C. Surface-Mount Post Base Requirements. In addition to the above requirements, the base of surface-mount posts must meet the following requirements:

Manufacture the base from a rigid, high-impact, resistant material and be resistant to ultraviolet light, ozone, and hydrocarbons.

CST/M&P must review and approve the dimensions of the base.

Use adhesives or the attachment method recommended by the manufacturer to adhere the base to asphalt and concrete flat surfaces.

Allow for replacement of the post in 4 min. or less.

4400.6. Payment.

A. Procurement by the State. Payment for all materials will be in accordance with the conditions prescribed in the contract awarded by the State.

B. Contracts. Payment for all materials will be in accordance with the Department's Standard Specification Item 658.

4400.7. Archived Versions. Archived versions are available.

DMS - 7110
ALUMINUM SIGN BLANKS

EFFECTIVE DATE: MARCH 2005

7110.1. Description. This Specification governs the furnishing of aluminum substrates for signs, including aluminum sheet or coil and extruded sign panels.

7110.2. Sampling and Testing. Aluminum sheet or coil, and extrusions will conform to this Specification unless otherwise specified by the plans. Sample the material in accordance with Tex-721-I.

7110.3. Periodic Evaluation. The Department reserves the right to conduct sampling of materials for testing. Department representatives may sample material from the sign fabricator's plant.

7110.4. Material Requirements.

A. Aluminum Sheet or Coil.

- Aluminum sheet or coil will conform to the requirements of ASTM B 209, Alloys 6061-T-6, or 5052-H38.
- Sign blanks made from sheet or coil will be free of buckles, warps, dents, cockles, burrs, and other defects and must be a plane surface.
- Treat all sign blanks fabricated from sheet and coil with a chromate chemical process resulting in a coating meeting the requirements of ASTM B 449, Class 2. The coating will be light-colored, tight, and free from powdery residues.

B. Aluminum Extrusions.

- Aluminum signs (Types G and O) will conform to ASTM B 221, Alloys 6061 or 6063, T4 or T6 temper.
- Railroad crossbuck sign panels will conform to ASTM B 221, Alloys 6061 or 6063, T6 temper.

C. Documentation. Furnish mill test reports, obtained from the manufacturer, for aluminum sheet or coil and for extrusions that reflect the chemical and physical properties of the aluminum.

7110.5. Archived Versions. Archived versions are available.

DMS - 7120
SIGN HARDWARE

EFFECTIVE DATE: AUGUST 2004

7120.1. Description. This Specification governs the furnishing of hardware for signs, including frames, wind beams, stiffeners, exit number panel supports, splice bars, pipe and post clamp castings, and fasteners.

7120.2. Material Requirements.

A. General Requirements. Unless otherwise shown on the plans, all frames, wind beams, stiffeners, exit number panel supports, splice bars, pipe and post clamp castings, and fasteners will be stainless steel, galvanized steel, or aluminum. Dissimilar metals will be selected or insulated to prevent corrosion. The following specifications will apply.

B. Frames and Wind Beams (Tees, Zees).

- Aluminum—ASTM B 221, Alloy 6061-T6

C. Stiffeners (S-Shapes).

- Steel—ASTM A 36, Galvanized to ASTM A 123

D. Exit Number Panel Supports (Angles, Tees).

- Aluminum—ASTM B 221, Alloys 6061-T6
- Steel—ASTM A 36, Galvanized to ASTM A 123

E. Splice Bars.

- Aluminum—ASTM B 209, Alloys 6061-T6, or 5052-H38

F. Aluminum Castings.

- Pipe Clamps:
  - ASTM B 26, Alloy 356.0-F
  - ASTM B 85, Alloy 360.0 or A360.0 or
  - ASTM B 108, Alloy 356.0-F or A444.0-T-4
- Post Clamps:
  - ASTM B 26, Alloy 356.0-T6, or
  - ASTM B 108, Alloy 356.0-T6

G. Screws, Bolts, Nuts, and Washers.

- Aluminum—Alloy 2024-T4
- Stainless Steel—ASTM A 320, Grade B8F Annealed
- Galvanized Steel:
  - ASTM A 307
  - galvanized to ASTM A 153, Class C or D, or
  - galvanized to ASTM B 695, Class 50

H. High-Strength Bolts, Nuts, and Washers.

- ASTM A 325, or
- ASTM A 449
- galvanized to ASTM A 153, Class C or D, or
- galvanized to ASTM B 695, Class 50

I. Dichromate Sealed Finish for Aluminum Hardware.

- Mil-A-8625A Type II

J. Documentation. Provide Mill Test Reports from the producing mill for all structural components—frames, wind beams, stiffeners, exit number panel supports, splice bars, and high strength fasteners. Mill test reports must reflect the chemical analysis of the base metal and the physical test results (i.e., yield and tensile strength and elongation) obtained on the finished product.

Provide a manufacturer's certification for pipe and post clamp castings, and miscellaneous fasteners (screws, bolts, nuts, and washers) stating that the material meets all applicable requirements.

7120.3. Archived Versions. Archived versions are available.

DMS - 8242

TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS

EFFECTIVE DATE: AUGUST 2004

8242.1. Description. This Specification governs for the materials, composition, quality, sampling, and testing of temporary, flexible-reflective roadway marker tabs.

8242.2. Units of Measurements. The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

8242.3. Material Producer List. The Materials and Pavements Section of the Construction Division (CST/M&P) maintains the Material Producer List (MPL) of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, entitled "Temporary Flexible, Reflective Roadway Marker Tabs," require no further testing, unless deemed necessary by the Project Engineer or CST/M&P.

8242.4. Bidders' and Suppliers' Requirements. Before any material is considered, it must be of manufacture and product code or designation shown on the MPL.

8242.5. Pre-Qualification Procedure.

A. Pre-Qualification Request. Submit a written request for evaluation to the Texas Department of Transportation, Construction Division, Materials and Pavements Section (CP51), 125 East 11th Street, Austin, Texas, 78701-2483.

Include the following information with the request:

- Company name,
- Physical and mailing addresses,
- Type of material, and
- Contact person and telephone number.

B. Pre-Qualification Samples. Submit 50 samples of each color and type for laboratory testing and evaluation to the Department at no cost.

The Department reserves the right to perform any or all of the tests specified to confirm the tests reported by the manufacturer. In the case of any variance, the Department's tests will govern.

Some of the required tests extend over a prolonged period. Therefore, testing for acceptance of materials supplied on any Contract or State purchase order will only be considered on those materials that are determined by the Director of CST/M&P as having an established performance history of compliance with the criteria established by this Specification.

C. Evaluation. CST/M&P will contact the manufacturer after material evaluation is complete.

1. Qualification. If approved for use by the Department, the material will be added to the MPL.

Report changes in the composition or in the manufacturing process of any material to CST/M&P. Significant changes reported by the manufacturer, as determined by the Director of CST/M&P, may require a re-evaluation of performance.

2. Failure. Producers not qualified under this Specification may not furnish materials for Department projects and must show evidence of correction of all deficiencies before reconsideration for qualification.

Costs of sampling and testing are normally borne by the Department; however, the costs to sample and test materials failing to conform to the requirements of this Specification are borne by the Contractor or supplier. The Director of CST/M&P will assess this cost at the time of testing.

Amounts due the Department will be deducted from monthly or final estimates on Contracts or from partial or final payments on direct purchases by the State.

D. Periodic Evaluation. The Department reserves the right to periodically evaluate the performance of materials, to randomly select samples from materials submitted on State purchase orders, and to perform random audits of test reports. Department representatives may sample material from the manufacturing plant, the project site, and the warehouse. CST/M&P reserves the right to test samples to verify compliance with this Specification. Failure of materials to comply with the requirements of this Specification as a result of periodic evaluation may be cause for removal of those materials from the MPL.

The Department will sample in accordance with Tex-729-I and will test in accordance with the methods listed in Article 8240.9.

E. Disqualification. The Department reserves the right to conduct whatever tests are considered necessary to identify a pre-approved material and to determine if a change has been made in composition, manufacturing process, or quality, which may affect its durability or performance.

Changes detected in the composition or in the manufacturing process, not reported by the manufacturer, may be cause for removal of that material from the MPL.

Failure of materials to comply with the requirements of this Specification as a result of periodic evaluation may be cause for removal of those materials from the MPL.

8242.6. Material Requirements. This Specification covers the general and specific requirements for three types of temporary, flexible-reflective tabs:

- Type Y—yellow marker with amber reflective area on one side
- Type Y-2—yellow marker with amber reflective area on both side
- Type W—white marker with white or silver reflective area on one side

A. Body Requirements. The body of the marker must consist of a base and vertical wall made of polyurethane, polyester elastomer, or other approved material.

The base should be 100 ± 3 mm (4 ± 1/8 in.) in length and from 25 to 64 mm (1 to 2-1/2 in.) in width.

- A butyl rubber or other approved adhesive pad with an easily removed protective covering must be affixed to the bottom of the base.
- The adhesive pad must be approximately 3 mm (1/8 in.) thick, 19 mm (3/4 in.) wide, and 100 mm (4 in.) long.

The vertical wall must be 100 ± 3 mm (4 ± 1/8 in.) long with a minimum height of 51 mm (2 in.) and a maximum height of 76 mm (3 in.)

- A reflective material must be affixed o the upper portion of the vertical wall
- The reflective material must not exceed 25 mm (1 in.) in width and be the approximate length of the vertical wall.
- The reflective material must be protected with an easily removable cover of heat resistant material capable of withstanding and protecting the reflective material from the application of 204°C (400°F) asphalt.
- Stapling or clipping devices used to retain the protective cover must not protrude through the reflective material.

B. Color Requirements. The color of the body of the temporary, flexible-reflective tabs and the reflected light must be either white or yellow as specified.

C. Flexibility and Deformation Resistance. The vertical wall of the tabs must be sufficiently flexible to bend under normal traffic and sufficiently resistant to permanent deformation to pass the following road test, to be conducted when air temperature is above 10°C (50°F).

1. Affix five tabs at 610 mm (2 ft.) intervals on an asphaltic pavement in a straight line.
2. Using a medium size sedan, run over the tabs with front and rear wheels at a speed of 56 to 64 km per hour (kmph) (35 to 40 miles per hour [mph]), four times in each direction.
3. Remove the reflective surface protective cover and run over the tabs again at 56 to 64 kmph (35 to 40 mph) four times in each direction.

The tabs will be considered sufficiently flexible and resistant to deformation if after the road test all tabs are intact, the reflective material is still adhered to the vertical wall and

exhibits no apparent visual damage, and the top of the vertical wall is within 30° of the vertical line through the base of the vertical wall.

D. Adhesion. The tabs must adhere to the pavement such that no tab dislodges in the road test detailed in Sub Article 8242.9.D. Affix the tab to the pavement before the road test by positioning by hand, stepping on it with one foot, and placing all the body weight on the one foot. The individual placing the marker will weigh a minimum of 61 kg (135 lb.)

E. Reflectivity. When tested in accordance with Tex-842-B, at an angle of incidence of 4° and an observation angle of 0.2° the specific intensity of each tab expressed in the units of (lumens [lux] square meters) per unit must equal or exceed the values shown for each color in Table 1 before and after the road test.

Table 1

Specific Intensity Minimums for Tabs Before and After Road Test

Color	Before	After
White	3.0	2.0
Yellow	2.0	1.5

When tested for reflectivity before the road test, place the tab in the holder such that the vertical wall will freely stand. When tested for reflectivity after the road test, place the tab in the holder and support such that a line through the center of the top of the vertical wall and the bottom of the vertical wall is within 10° of the vertical line through the base of the vertical wall.

F. Packaging. Package tabs such that the vertical wall will not take a permanent set in excess of 15° from true vertical with respect to the base plane.

8242.7. Archived Versions. Archived versions are available.

DMS - 8300
SIGN FACE MATERIALS

EFFECTIVE DATE: NOVEMBER 2013

8300.1. Description. This Specification governs the quality monitoring program (QMP) for sign face materials and describes the Material Producer List (MPL), pre-qualification procedures, quality monitoring (QM) requirements, warranty, and material and testing requirements for the following sign face materials:

- reflective sheeting,
- conformable reflective sheeting,
- screen inks, and
- colored transparent and black non-reflective electronically cuttable (EC) films.

8300.2. Units of Measurements. The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

8300.3. Definitions. The following definitions apply to this Specification.

- Rotational Sensitive Sheeting—reflective sheeting not meeting the 20% maximum rotational sensitivity requirement when measured as outlined in AASHTO M 268.

8300.4. Material Producer List. The Materials and Pavements Section of the Construction Division (CST/M&P) maintains the Material Producer List (MPL) of all materials that have been approved under this Specification. Materials appearing on the MPL, entitled "Sign Face Materials," do not require sampling and testing before use, but the Department may periodically sample materials to ensure conformance with this Specification and may also sample if material quality is suspect.

8300.5. National Transportation Product Evaluation Program (NTPEP) Requirement. Some of these sign face materials are evaluated by the American Association of State Highway and Transportation Officials (AASHTO) NTPEP program. For these sign face materials, the NTPEP evaluation is required prior to submital for pre-qualification. If NTPEP has designated a re-evaluation schedule, the sign face materials must be resubmitted to NTPEP for evaluation when designated by that schedule.

8300.6. Bidders' and Suppliers' Requirements. The Department will only purchase or allow on projects those products listed by producer and product code or designation shown on the MPL. To obtain a place on the MPL, the producer must be accepted into the Quality Monitoring Program (QMP).

Use of pre-qualified materials does not relieve the Contractor of the responsibility to provide materials that meet the specifications.

8300.7. Pre-Qualification Procedure.

A. Pre-Qualification Request. Submit a written request for pre-qualification evaluation to the Texas Department of Transportation, Construction Division, Materials and Pavements Section (CP-51), 125 East 11th Street, Austin, Texas 78701-2483.

Include the following information in the request:

- company name;
- physical and mailing addresses;
- type of material,
- company material designation (product name, code number, etc.);
- contact person, telephone number, and email address;
- NTPEP test data, if applicable;
- AASTHO M 268 sheeting type and a test report with actual test data showing the material complies with the requirements of AASHTO M 268, as modified by this Specification, if applicable;
- fabrication guidelines outlining optimum rotation for rotational sensitive white reflective sheeting; and
- warranty statement required by this Specification.

B. Pre-Qualification Sample. For all proposed products, provide pre-qualification sample quantities in accordance with Tex-720-I at no cost to the Department.

The Department reserves the right to perform any or all tests in this Specification as a check on the tests reported by the producer. In the case of any variance, the Department's tests will govern.

The Department will charge suppliers for the cost of sampling and testing of materials that do not meet the requirements of this Specification.

C. Evaluation.

1. Qualification. The Department will accept materials meeting the requirements of this Specification to the QMP and will list them on the MPL.

The Department may grant provisional pre-qualification approval for materials that have undergone a full evaluation by NTPEP and whose test results meet the minimum durability values required by this Specification.

The Department will grant full pre-qualification approval after successful completion of the accelerated weathering requirements. Failure to complete all exterior exposure requirements successfully is grounds for cancellation of pre-qualification.

Report changes in the composition or in the manufacturing process of any material to CST/M&P at the address used for pre-qualification. The Department will review significant changes reported, and the material may require a re-evaluation. The Department reserves the right to conduct whatever tests deemed necessary to identify

a pre-qualified material and determine if there is a change in the composition, manufacturing process, or quality that may affect its durability or performance.

2. **Failure.** Producers not qualified under this Specification may not furnish materials for Department projects and must show evidence of correction of all deficiencies before reconsideration for qualification.

   Costs of sampling and testing are normally borne by the Department; however, the producer will bear the costs of sampling and testing materials failing to conform to the requirements of this Specification. The Director of CST/M&P will assess this cost at the time of testing.

8300.8. QM Requirements.

A. QM Sample. To maintain QMP approval status, provide an annual QM sample in accordance with Tex-720-I for each product listed on the MPL. The annual QM cycle begins upon initial acceptance and approval and ends on the anniversary of that date. Submit samples at least 1 month before approval status expires to allow sufficient time for testing. Not submitting material on time may cause a delay in posting on the MPL. Provide QM sample quantities at no cost to the Department.

QM samples must meet all the minimum requirements of this Specification; however, the coefficient of retroreflection will be based on the process average of all samples tested within a minimum 1-year timeframe. Maintain the running process average of all samples for the coefficient of retroreflection above the minimums specified for each sheeting type.

B. Periodic Evaluation. The Department reserves the right to randomly sample and evaluate pre-qualified materials for conformance with this Specification and to perform random audits of documentation. Department representatives may sample material from the manufacturing plant, the sign fabrication plant, the project site, and the warehouse.

Periodic samples must meet all the minimum requirements of this Specification; however, the Department will determine conformance for coefficient of retroreflection based on the process average of all samples tested within a minimum 1-year timeframe. Maintain the process average above the minimums specified for each sheeting type.

C. Disqualification. The Department may disqualify and remove material from the QMP and MPL if any of the following infractions occurs:

- the material fails to meet or maintain the requirements stated in this Specification,
- the producer fails to report changes in the formulation or production process of the material to CST/M&P,
- the producer fails to properly submit annual QM samples to CST/M&P,
- the producer has unpaid charges for failing samples, or
- the producer has unresolved warranty issues.

Disqualified producers will not be allowed to supply the material to the Department for 1 year, or as determined by the Director of CST/M&P. After this period has expired, the

producer must re-qualify to regain QMP status. Disqualification will only apply to the material type corresponding to the infraction.

D. Re-Qualification. Producers may submit material for re-evaluation after 1 year has elapsed from the date of removal from the MPL or after documenting the problem and its resolution to the satisfaction of the Department. Submit documentation identifying the cause and corrective action taken.

8300.9. Comprehensive Producer's Warranty Requirements. Sign face material producers must comply with all requirements of the following warranty. Failure to comply with the requirements of this warranty is cause for removal from the QMP and MPL.

Submit a statement to the address used for pre-qualification indicating understanding and compliance with the provisions of the warranty and willingness to abide by the provisions. Include the name, address, telephone number, and email address of the person to contact regarding potential claims under the warranty provisions.

For producers of sign face materials, the warranty must include the use of one producer's sign face material directly applied to a different producer's sign face material. Screen inks must be recommended and warranted by the producer of the base sheeting. If a failure occurs, assignment of warranty responsibility is to the producer of the sign face material that fails. (For example, if the base sheeting, defined as the sheeting attached to the substrate, separates from the sign substrate, the producer of the base sheeting will be responsible. If the sheeting used for legend detaches from the base sheeting, the producer of the legend material will be responsible for the failure.)

A. Certification. Submit a certification with each lot or shipment that states that the material supplied meets the requirements listed. Show individual lot numbers on the certification.

B. Field Performance. Sign face materials processed, applied, stored, and handled according to the producer's recommendations (or as required in this Specification when there is an exception to the producer's recommendations) must perform satisfactorily for the number of years specified for that sign face material. The performance period begins at the time a sign is fabricated, as indicated by the "Fabrication Date" on the sign identification decal. The warranty requirements go into effect upon final acceptance by the Department. The Department will adjust the performance period to deduct the time between the sign fabrication date and Department acceptance.

The sign face material is unsatisfactory if:

- it deteriorates due to natural causes to the extent that the sign is ineffective for its intended purpose (e.g., being viewed from a moving vehicle under normal day and night driving conditions), or
- shows any of the following defects:
  - cracks discernible with the unaided eye from the driver's position while in an outside lane at a distance of 50 ft. (15 m) or greater from the sign;
  - peeling in excess of 1/4 in. (6.4 mm);
  - shrinkage in excess of 1/8 in. (3.2 mm) total per 48 in. (1.2 m) of sheeting width; or

- fading, loss of color, or loss of reflectivity to the extent that color or reflectivity fails to meet the requirements of AASHTO M 268, as modified by this Specification.

Provide the applicators with manuals, training videos, or both describing the proper application method. Submit, to the address used for pre-qualification, a copy of the current training materials provided with any updates as they occur. Include recommended procedures for the storage and handling of materials after application to the sign face until final installation.

The sign face material producer's warranty does not relieve the Contractor for unacceptable work or improper handling, storage, or installation. The Contractor is fully responsible for all materials and work until final acceptance by the Department.

C. Minimum Performance Period. All signs made with the type of sheeting indicated below and any other sign face materials used on each type of sheeting, except construction and maintenance work signs and barricades, must meet the minimum performance periods and replacement actions in Table 1.

Table 1

Warranty Period (yr.)

Sheeting Type	Period for Complete Sign Replacement and Installation	Additional Period for Sheeting Material Replacement Only
A, B, C	7	3
D	8	4
B_{FL}, C_{FL}, D_{FL}[1]	5	2

1. B_{FL}, C_{FL}, and D_{FL} indicate fluorescent sheeting products in the Type B, C, and D categories.

D. Producer's Replacement Obligation. Where and when shown that retroreflective traffic signs processed in conformance with the sign face material producer's recommendations (or as required in this Specification when there is an exception to the producer's recommendations) have not met the field performance requirements above, a producer's replacement obligation exists. The producer must cover the costs of replacement of the sign on the roadway or of restoring the sign surface to its original effectiveness as determined by and at no cost to the Department for materials or labor.

Replacement sign face materials must:

- be the same type originally specified unless otherwise approved or directed,
- meet all the requirements of this Specification, and
- be listed on the MPL.

Schedule with designated Department personnel, within 30 days of notification of potential replacement obligation, an on-site investigation to determine if the sign face material producer's obligation exists.

Fulfill all obligations within 120 days after determination of obligations. The Department may replace signs where uncompleted obligations occur and may bill the producer for all Department costs in performing the producer's replacement obligation.

When in the judgment of the Department deteriorated signs present a traffic hazard, the Department reserves the right to remove the signs from the roadway and place them in storage for the producer's inspection. Reimburse the Department for all costs, including labor for removal and replacement, when inspection reveals that a material producer's obligation exists.

The material producer may use an independent Contractor to fulfill obligations to replace or refurbish signs on the roadway.

Terms of the Contract must be in conformance with the provisions of Contracts used by the Department for this type work, be approved by the Department, and save harmless the Department from any liability that may arise out of the Contractor's operations.

The Department can provide a sample Contract to the producer upon the producer's request.

The Department reserves the right to place a representative on the job to ensure that the signs are replaced or refurbished in conformance with Department standards. The Department will test all sign face materials used to fulfill the producer's obligations to ensure compliance with this Specification.

Replacement material assumes the remaining warranty period of the material it replaces.

E. Sign Processors' Obligations. Submit the following with each shipment of signs or sign faces:

- Department Contract or purchase order number and
- a copy of the certification, as required in Section 8300.9.A, showing the lot number of all sign face materials from which the completed signs or sign faces were processed.

8300.10. Material Requirements for Reflective Sheeting. This Specification covers the general and specific requirements for the four types of reflective sheeting materials listed in AASHTO M 268—Types A, B, C, and D. The sheeting producer must furnish identification codes to the Department. Construction work zone grade sheeting used for temporary construction work zone applications must meet all requirements for the type specified except for the weathering requirements, for which it must meet a minimum of 60% of the minimum specified initial retroreflectivity values specified for that type after accelerated weathering of 500 hours and after 12 months of exterior exposure.

The Department conducts outdoor weathering at the Department's test site in Austin, Texas or at other locations as deemed necessary by the Director of CST/M&P.

Meet all requirements of AASHTO M 268, as modified by the following.

A. Coefficient of Retroreflection. For rotational sensitive white sheeting, the coefficient of retroreflection will be measured at the orientation identified by the producer as the optimum rotation.

B. Chemical Resistance. The surface of the sheeting or the face of a completed sign must be chemically resistant to the extent that there will be no surface change when wiped with a soft, clean cloth dampened with mild detergents or cleaners supplied by or recommended by the sheeting producer.

C. Adhesive. Pre-coat the backside of the reflective sheeting with either a heat-activated or a pressure-sensitive adhesive. No additional coats of adhesive must be required to affix the reflective sheeting to the sign blank. The adhesive and liner, when used, must meet the requirements of AASHTO M 268.

Suppliers of reflective sheeting using a porous, textured-backing paper to protect the adhesive layer that is not suitable for use as a slip-sheet for packaging of completed signs, sign panels, or both must supply rolls of slip-sheet paper in the various widths of reflective sheeting supplied. The area of slip-sheet paper, supplied in the various widths, must be the same as the area of reflective sheeting supplied in the various widths. Supplied slip-sheet paper is subsidiary to the reflective sheeting and any costs, direct or indirect, must be included in the bid price for reflective sheeting on State purchases.

The adhesive must have no staining effect on the reflective sheeting.

D. Color. Meet all the color requirements of AASTHO M 268 except the Delta E requirements. Additionally, the reflected night color must be

- identifiable as the same color as the day color when observed at 50 ft. (15 m) and
- uniform and free of streaks, mars, and other imperfections.

E. Material Identification. Mark each container, carton, or box containing reflective sheeting with the information listed in AASHTO M 268. The identification numbers must also appear on the inside of the sheeting roll core. The identification number on the outside of the box and on the inside of the core must match. The mismatch of these numbers may be cause for rejection.

F. Sign Fabrication. Follow the sign fabrication requirements of AASHTO M 268, as modified by this Specification. When using white sheeting identified as rotational sensitive on the MPL, fabricate signs as specified by AASHTO M 268 and follow the sheeting produer's guidelines. Use screen inks as recommended and warranted by the base sheeting producer. Signs fabricated using any other sign face material may be fabricated using products from different producers.

8300.11. Material Requirements for Conformable Reflective Sheeting.

A. General Requirements. Conformable reflective sheeting is intended for use on both flat surfaces and round plastic or metal posts. Conformable reflective sheeting must meet all requirements of AASHTO M 268, as modified by this Specification, and the requirements of Tex-843-B.

8300.12. Material Requirements for Screen Inks.

A. General Requirements. Meet the requirements of AASHTO M 268, as modified by this Specification.

B. Color. Screen inks, when screened onto any pre-qualified white reflective sheeting, must produce a color meeting the color requirements specified for the various colors of reflective sheeting in AASHTO M 268.

Use the type of screen recommended by the producer.

Use screen inks as supplied or thinned according to the producer's recommendations. Color will be determined using ink from sealed, unopened containers as received from the producer and according to producer's recommendations for thinning.

C. Durability. Screen inks recommended by the ink producer for use on any of the types of reflective sheeting must exhibit the same durability as specified for that type of reflective sheeting.

When tested in accordance with Federal Test Method 6301, "Adhesion (Wet) Tape Test," the results must show no process inks removed after processing a minimum of 96 hr. or after exposure of the sheeting types to the durability and weathering tests specified.

D. Screened Sheeting Optical Performance. Before exterior exposure or weatherometer (WOM) exposure, sheeting reverse screened with transparent ink must have the minimum coefficient of retroreflectivity values specified in AASHTO M 268 for the same color of sheeting as the ink.

Retroreflectivity will be determined in accordance with Tex-842-B.

8300.13. Material Requirements for Colored Transparent Films and Non-Reflective Black Films.

A. General. Meet all the requirements of AASHTO M 268, as modified by this Specification. Colored, transparent films and non-reflective black films must consist of durable, EC films coated with a transparent, pressure-sensitive adhesive protected by a removable liner.

The films must be:

- available in standard traffic colors;
- dimensionally stable; and
- designed to cut, weed, lift, and transfer.

The films must not release any volatile organic compounds.

B. Color. Non-reflective black film must be acrylic and have a reflectance (Y) no greater than 4.0 as determined by Tex-839-B.

C. Coefficient of Retroreflection. Retroreflectivity will be determined in accordance with Tex-842-B.

D. Durability. All films, when applied to the various types of reflective sheeting, must meet the same durability requirements as specified for that type of reflective sheeting.

8300.14. Contrast Ratio of Sign Faces and Completed Signs. For all sign faces and completed signs using transparent screen inks or transparent films, the "Contrast Ratio" is the quotient obtained when the coefficient of retroreflection of the white is divided by the coefficient of retroreflection of the other color.

The contrast ratio will be determined at an observation angle of 0.2° and an entrance angle of -4°.

For all red and white signs, the contrast ratio must not be less than 4.0 or greater than 15.0. For all other signs, sign panels, sign faces, and traffic control devices, the contrast ratio must not be less than 4.0.

8300.15. Packaging. Package the materials in containers that will permit normal shipping and storage without the material sustaining damage or becoming difficult to apply.

Roll material must contain no more than three splices per 50 yd. (46 m). The length of the roll core must not be less than the width of the material.

A. Pressure-Sensitive Material. The ends of the material must be cut square with either a butt-splice or an overlap splice of 3/8 ± 1/8 in. in width (9.5 ± 3.2 mm). Edges of the overlap splice are to be straight and square.

B. Heat-Activated Material. Cut the ends of the material square, but jointed closely together and held securely in place with a removable tape.

8300.16. Archived Versions. Archived versions are available.

DMS - 8310

FLEXIBLE ROLL-UP REFLECTIVE SIGNS

EFFECTIVE DATE: SEPTEMBER 2007

8310.1. Description. This Specification governs for the materials, composition, quality, services, sampling, and testing of flexible roll-up reflective signs.

8310.2. Units of Measurements. The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

8310.3. Pre-Qualified Product List. The Support Services Division maintains the pre-qualified product list (QPL) of all materials conforming to the requirements of this Specification. Materials appearing on the QPL, entitled "Flexible Roll-Up Reflective Signs," require no further testing, unless deemed necessary by the Project Engineer or CST/M&P.

8310.4. Bidders' and Suppliers' Requirements. Before any bid is considered, the materials must be shown on the MPL.

8310.5. Pre-Qualification Procedure.

A. Pre-Qualification Request. Submit a written request for evaluation to the Texas Department of Transportation, Support Services Division (SSD), 125 East 11th Street, Austin, Texas 78701-2483.

B. Pre-Qualification Sample. Submit the following materials with the request:

- two 610 × 610-mm (24 × 24-in.) samples of the reflective material, white and orange, to be used as the reflective face of completed signs;
- two 610 × 610-mm (24 × 24-in.) samples of the backing material, white and orange, to be used as the backing of the completed signs; and
- one each, white and orange, completed 1.22 × 1.22-m (48 × 48-in.) "Construction Ahead" signs conforming to the details of the *Texas Manual on Uniform Traffic Control Devices.*

Signs must be complete, with cross braces ready to attach to a fold-up, spring-loaded type sign support

Some of the tests required by this Specification extend over a prolonged period, and some tests cannot be made after the backing material is applied. Therefore, testing for acceptance of materials supplied on any contract or State purchase order will only be considered on those materials that, in the opinion of the Director of the Construction Division's Materials and Pavements Section (CST/M&P), have an established performance history of compliance with this Specification.

C. Evaluation. CST/M&P will notify prospective bidders and suppliers after completion of material evaluation.

1. Qualification. If approved for Department use, the material will be added to the QPL.

Report changes in the composition or in the manufacturing process of any material to CST/M&P. Significant changes reported by the manufacturer, as determined by the Director of CST/M&P, may require a re-evaluation of performance.

2. Failure. Producers not qualified under this Specification may not furnish materials for Department projects and must show evidence of correction of all deficiencies before reconsideration for qualification.

The Department normally bears the costs of sampling and testing; however, the producer will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of CST/M&P will assess this cost at the time of testing, and amounts due will be billed to the producer.

D. Periodic Evaluation. The Department reserves the right to periodically evaluate the performance of materials, to randomly select samples from materials submitted on State purchase orders, and to perform random audits of test reports. Department representatives may sample material from the manufacturing plant, the project site, and the warehouse. Failure of materials to comply with the requirements of this Specification as a result of periodic evaluation may be cause for removal of those materials from the QPL.

Sampling and testing will be in accordance withTex-720-I. Unless otherwise noted, the Department will sample at the district warehouse or regional service centers.

E. Disqualification. The Department reserves the right to conduct any tests considered necessary to identify a pre-qualified material and to determine if a change has been made in composition, manufacturing process, or quality, which may affect its durability or performance.

Changes detected in the composition or in the manufacturing process, not reported by the manufacturer, may be cause for removal of that material from the QPL.

8310.6. Material Requirements.

A. General Requirements. Flexible roll-up reflective signs should consist of a vinyl microprism retroreflective sheeting heat sealed in a pattern not to exceed 32 × 32 mm (1-1/4 × 1-1/4 in.) to a vinyl-coated fabric backing or other approved sheeting and backing materials.

The reflective face and backing must both be UV light stabilized and of the same color.

B. Sign Face Characteristics. The reflective sheeting and other materials used to produce the face of flexible roll-up reflective signs must meet the following requirements.

1. Flexibility. There must be no signs of cracking or crazing when flexed repeatedly over a 1.6-mm (1/16-in.) mandrel to 180° at 25°C (77°F).

2. **Chemical Resistance.** The surface of the sheeting or the face of a completed sign must be chemical resistant to the extent that there will be no surface change when wiped with a soft, clean cloth dampened with VM&P naphtha, mineral spirits, turpentine, mild soaps, or mild detergents.

3. **Gloss.** The sheeting's face and screened areas must have an 85° gloss meter rating of not less than 35 when tested in accordance with ASTM D 523.

4. **Diffuse Day Color.** The CIE chromaticity coordinates of reflective sheeting must fall within the areas having the corner points and reflectance requirements for the various colors shown in Table 1 before and after weatherometer exposure as described in Section 8310.6.B.6.

Table 1

Chromaticity Coordinates

Color	Chromaticity		Reflectance
	X	y	Y
White	0.310	0.300	
	0.290	0.320	
	0.360	0.360	40 Minimum
	0.340	0.380	
Orange	0.530	0.360	
	0.530	0.400	
	0.590	0.410	12–30
	0.640	0.360	

Color will be determined in accordance with Tex-839-B.

5. **Reflected Night Color.** The reflected night color must appear to be essentially the same as the day color when observed at 15.2 m (50 ft.)

6. **Durability.** Sheeting or sign faces must show no cracking, crazing, blistering, chalking, or dimensional change after 250 hr. of exposure in an Atlas Weather-Ometer utilizing an 18-102 cam, in accordance with ASTM G 155 using exposure Cycle 1 with a quartz inner filter glass and Type "S" Borosilicate outer filter glass.

7. **Mildew Resistance.** The sheeting must evidence no fungus growth when tested by Federal Test Method 6271.1 under the conditions listed in Table 2.

Table 2

Mildew Resistance Test Requirements

Conditions
Test specimens will be leached with water before inoculation.
The test organism will be pullularia pullulans.
The length of the incubation period will be 21 days.

8. Specific Intensity. Reflective sheeting must have the minimum brightness values, before exposure shown in Table 3.

Brightness values will be determined at the divergence and entrance angles shown and will be expressed in units of lumens per lux per square meter (candlepower per foot-candle per square foot).

Table 3

Specific Intensity (SI) Minimum Brightness Values

Brightness Values							
Color-	**Divergence Angle**	**Angle of Incidence – SI - lm/lx/m^2 (cp/ftc/ft^2)**					
		2°		**10°**		**20°**	
White	0.2°	942	(75)	628	(50)	314	(25)
-	0.33°	753	(60)	439	(35)	151	(12)
Orange	0.2°	226	(18)	176	(14)	75	(6)
-	0.33°	151	(12)	100	(8)	75	(4)

SI will be determined in accordance with Tex-842-B.

The reflective sheeting must retain a minimum of 50% of the above shown SI values after weatherometer exposure as described in Section 8310.6.B.6.

No process ink used to produce messages on the sign face must be removed when tested in accordance with Federal Test Method 6301, after a minimum of 96 hours after processing, or after weatherometer exposure as described in Section 8310.6.B.6.

C. Sign Face Backing Fabric. The backing fabric used to produce flexible roll-up reflective signs must be coated on both sides with polyvinyl chloride or other approved material of the same color as the sign face.

1. Base Fabric.

Table 4

Minimum Requirements for Base Fabric

Item	Requirement
Fiber	1000 Dernier polyester
Weight	100 g/m^2 (3 oz./yd^2)
Fabric Count	10 warp, 10 fill

2. Coated Fabric.

Table 5

Minimum Requirements for Coated Fabric

Item	Requirement
Total Weight	490 g/m^2 (14.5 oz./yd^2)
Distribution	60 face, 40 back

D. Completed Flexible Roll-Up Reflective Sign. The completed flexible roll-up reflective sign must exhibit a minimum tensile strength of 3.4 N per 25.4 mm width (15 lb. per in. of width) and a minimum elongation of 90%.

Test tensile strength in accordance with ASTM D 828. Test elongation in accordance with ASTM D 987, (Discontinued 1969). Condition the sign face at room temperature 22–27°C (72–80°F) for a minimum of 24 hr. before testing.

1. Additions to Sign Blank.

- Four reinforced vinyl tie straps or hook and loop fasteners must be attached to the backside of the sign. Attachment must be on the sign diagonals and 300–355 mm (12–14 in.) from the sign center.
- Tie straps must be 13 mm (1/2 in.) minimum in width and 355 mm (14 in.) minimum in length. Attachment to the sign must be by sewing with a non-wicking, high tensile strength, and mildew-resistant thread. Attachment must be within 13 mm (1/2 in.) of the center of the tie strap. Attachment must be rectangular approximately 25 × 10 mm (1 in. × 3/8 in.) with diagonal stitching.
- Hook side and loop side of the fastener shall be a minimum of 140 × 25 mm (5-1/2 × 1 in.) each. Attachment shall be approximately 25 × 25 mm (1 × 1 in.) with diagonal stitching using a non-wicking, high tensile strength, mildew-resistant thread. Hook side of fastener must face away from the back of the sign. A tie strap or hook and loop fastener must be attached approximately 20 mm (3/4 in.) from a horizontal corner of the sign to secure sign when in the rolled up position for transporting or storing. The tie strap or hook and loop fastener must meet the requirements and be attached as specified. Corner reinforcement must be attached to the backside of the sign at each corner.
- Reinforcements must be made of three triangular 200 × 200 × 280-mm (8 × 8 × 11-in.) pieces of 510-g (18-oz.) nylon-reinforced vinyl double stitched

with stitching approximately 6 mm (1/4 in.) from edges. A pocket for cross braces should be formed in the corner reinforcing by double stitching 25–28 mm (1–1-1/8 in.) along each side of and parallel to the sign diagonals and cutting a slot 45 mm (1-3/4 in.) long into the two outer layers of reinforcing perpendicular to the diagonals and 6 mm (1/4 in.) from the inner double stitch in the corner reinforcing.

2. **Sign Support Cross Brace Material.** Cross braces must be constructed of glass reinforced resin or other suitable material to provide enough strength for the sign to withstand 65 kmph (40 mph) winds without causing sign material to distort enough to affect legibility of sign. Cross-brace material must be UV stabilized if necessary.

3. **Sign Support Cross Brace Fabrication.** Cross-brace ends must be rounded to prevent splintering, sharp edges and damage to sign faces. Cross braces must be fastened at centers with a pop rivet. The pop rivet must have rounded heads on both sides a minimum of 13 mm (1/2 in.) in diameter. An aluminum washer must be placed between the two cross braces.

E. Overlay Panels. Overlay panels must be constructed of the same materials as the signs.

Attachment to the face of the sign must be accomplished by means of hook and loop fastener system.

- Hook fastener components must be attached to the signs.
- Loop fastener components must be attached to the back of the overlay panel.

Attachment of fastener components must be by means of sewing. A non-wicking, high-tensile strength, mildew-resistant thread must be used.

When overlay panels are required, they must conform to details of drawings attached to the invitation to bid.

8310.7. Payment. Payment for all materials and services under this specification will be in conformance with the conditions prescribed in the Contract awarded by the State.

8310.8. Archived Versions. Archived versions are available.

DMS-8315

Sign Identification Decals

Effective Date: December 2014

1. DESCRIPTION

This Specification governs the materials, composition, quality, sampling, and testing of sign identification decals.

2. UNITS OF MEASUREMENTS

The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

3. SAMPLING AND TESTING

The Department will sample in accordance with Tex-720-I and will test in accordance with the methods listed in Article 5 of this Specification.

4. PERIODIC EVALUATION

The Department reserves the right to conduct random sampling and testing of pre-qualified materials to verify performance and Specification compliance and to perform random audits of documentation. Department representatives may sample material from the manufacturing plant, the project site, and the warehouse.

5. MATERIAL REQUIREMENTS

5.1. Film Characteristics. Measure the film thickness to a minimum of 0.003 in. and a maximum of 0.0045 in.

The film must:

- be flexible,
- conform to contoured surfaces,
- have a minimum 60° gloss value of 35, when tested in accordance with ASTM D 523, and
- not support fungus growth.

For oven and weathering tests, apply film and completed decals to clean, degreased aluminum test panels. After application of the film or decal, but before testing, age and condition test panels for 48 hr. at 70–90°F.

The material must not exhibit more than 1/64-in. shrinkage in any direction from the edge of the test panel when subjected to 140°F for 48 hr. After 1 week at that temperature, material must retain adhesion to the panel.

5.2. Adhesive. The film contains a pre-coat of a pressure-sensitive adhesive, which allows decal positioning, without bonding, to clean surfaces at temperatures up to 100°F. Bonding is to occur only after pressure is applied.

The adhesive must:

- form a durable bond to surfaces that are smooth, clean, corrosion-free, and weather-resistant;
- be of uniform thickness;
- be non-corrosive to metal surfaces;
- have no staining effect on the film; and
- adhere securely at temperatures from -30–200°F, such that the decal cannot be removed in one piece.

Cover the adhesive side of the film with a pre-scored, treated paper liner. Score the liner approximately in the center. At application time, the liner must be removable without soaking in water or other solvents.

5.3. Finished Decals. Completed decals must not discolor, crack, craze, blister, delaminate, peel, chalk, or lose adhesion after 1,200 hr. exposure in accordance with ASTM G 155 using Exposure Cycle 1 with a quartz inner filter glass and Type “S” Borosilicate outer filter glass.

After exposure, the ink must not be faded or discolored.

5.4. Decal Design. The minimum permissible size is 3 in. wide by 4 in. high. The maximum permissible size is 3.75 in. wide by 5 in. high. Mark the decal to display the face design as shown in Table 1. Face marking must not show any deterioration before the design life of the film material. The decal must be free from ragged edges, streaks, blisters, foreign matter, or other surface imperfections.

Table 1
Decal Design

Texas Department of Transportation											
C	Fabrication Date										T
J	F	M	A	M	J	J	A	S	O	N	D
	201		202		203		204		205		
	0	1	2	3	4	5	6	7	8	9	
Sheeting MFR - Substrate											
A	B	C	D	E	F	G	H	J	K	L	M
Film MFR											
A	B	C	D	E	F	G	H	J	K	L	M
Sheeting MFR - Legend											
A	B	C	D	E	F	G	H	J	K	L	M
Installation Date											
				0	1	2	3				
	0	1	2	3	4	5	6	7	8	9	
J	F	M	A	M	J	J	A	S	O	N	D
	201		202		203		204		205		
	0	1	2	3	4	5	6	7	8	9	

6. PAYMENT

6.1. Procurement by the State. Payment for all materials under this Specification will be in conformance with the conditions prescribed in the Contract awarded by the Department.

6.2. **Contracts.** All materials covered by this Specification utilized in the performance of the specified work are subsidiary to the bid item or are paid for in conformance with the bid item in the Contract.

7. ARCHIVED VERSIONS

7.1. Archived versions are available.

DMS-8600

Delineators, Object Markers, and Barrier Reflectors

Effective Date: July 2016

1. DESCRIPTION

This Specification governs the materials, sampling, and testing of delineators, object markers, and barrier reflectors used on concrete traffic barrier, railing, metal beam guard fence (MBGF), or other locations as shown on the plans.

DMS-8300, "Sign Face Materials," governs the pre-qualification procedure and material requirements for reflective sheeting used on reflector units.

2. MATERIAL PRODUCER LIST

The Materials and Pavements Section of the Construction Division (CST/M&P) maintains the Material Producer List (MPL) of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, entitled "Barrier Reflectors," require no further sampling and testing before use unless deemed necessary by the Project Engineer or CST/M&P.

3. BIDDERS' AND SUPPLIERS' REQUIREMENTS

The Department will only purchase or allow on projects those products listed by producer and product code or designation shown on the MPL.

Use of pre-qualified product does not relieve the Contractor of the responsibility to provide product that meets this Specification. The Department may inspect or test material at any time and reject any material that does not meet the specifications.

4. PRE-QUALIFICATION PROCEDURE

4.1. **Pre-Qualification Request.** Submit on company letterhead a request for evaluation under DMS-8600 to DMS_Prequal@txdot.gov.

Include the following information in the request:

- company name;
- physical and mailing addresses;
- complete description of the product(s), to include the producer and type of sheeting used;
- contact person, phone number, and email address; and
- test report from an independent laboratory containing test results and certifying compliance of the material with this Specification.

4.2. **Pre-Qualification Sample.** Ship 10 units of each product to the Texas Department of Transportation, CST/M&P (CP51), 9500 North Lake Creek Parkway, Austin, TX 78717.

Submit all materials for pre-qualification at no cost to the Department.

4.3. **Evaluation.** CST/M&P will notify prospective bidders and suppliers after completion of material evaluation.

4.3.1. **Qualification.** If approved for Department use, CST/M&P will accept materials meeting the requirements of this Specification to the Quality Monitoring Program (QMP) and will add them to the MPL.

Report changes in the composition or in the manufacturing process of any material to CST/M&P. Significant changes reported by the producer, as determined by the Director of CST/M&P, may require a re-evaluation of performance.

The Department reserves the right to conduct whatever tests it deems necessary to identify a pre-qualified material and determine if there is a change in the composition, manufacturing process, or quality that may affect its durability or performance. In case of variance, the Department's tests will govern

4.3.2. **Failure.** Producers not qualified under this Specification may not furnish materials for Department projects and must show evidence of correction of all deficiencies before reconsideration for qualification.

The Department normally bears the costs of sampling and testing; however, the producer will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of CST/M&P will assess this cost at the time of testing, and amounts due will be billed to the producer.

5. QUALITY MONITORING (QM) REQUIREMENTS

5.1. **QM Sample**. To maintain QMP approval status, provide an annual QM sample in accordance with Tex-725-I for each product listed on the MPL. Submit samples at least 1 month before approval status expires to allow sufficient time for testing. Not submitting material on time may cause a delay in posting on the MPL. Provide QM sample quantities at no cost to the Department.

5.2. **Periodic Evaluation.** The Department reserves the right to conduct random sampling and testing of pre-qualified materials to verify performance and Specification compliance and to perform random audits of documentation. Department representatives may sample material from the manufacturing plant, the project site, and the warehouse. Sampling will be in accordance with Tex-725-I.

Failure of materials to comply with the requirements of this Specification as a result of periodic evaluation may be cause for removal of those materials from the MPL. In case of variance, the Department's tests will govern.

The Department normally bears the costs of sampling and testing; however, the producer will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of CST/M&P will assess this cost at the time of testing, and amounts due will be billed to the producer.

5.3. **Disqualification.** Causes for disqualification and removal from the QMP may include, but are not limited to:

- falsification of documentation,
- material fails to meet or maintain the requirements stated in this Specification,
- producer fails to report any change in material composition or manufacturing process to CST/M&P,
- producer fails to properly submit annual QM samples to CST/M&P, or
- producer has unpaid charges for failing samples.

Disqualification will only apply to the material type corresponding to the infraction.

CST/M&P will remove disqualified producers from the MPL and will not allow submission of material for re-qualification for1 year, at the discretion of the Department.

5.4. **Re-Qualification.** Once the disqualification period established by CST/M&P has elapsed, producers disqualified and removed from the QMP and MPL may begin the re-qualification process by submitting a request in accordance with Section 4.1, including additional documentation identifying the cause of the

problem and corrective action taken. The re-qualification process will then follow all subsequent Sections of Article 4.

The Department normally bears the costs of sampling and testing; however, the disqualified producer will bear the costs associated with re-qualification. The Director of CST/M&P will assess this cost at the time of re-evaluation, and amounts due will be billed to the producer.

6. MATERIAL REQUIREMENTS

6.1. **General Requirements.**

6.1.1. **Delineators.** Reflector units for delineators must be of the color and size specified in the Delineator and Object Marker (D&OM) Standard Sheets. The reflective sheeting must meet the requirements for Type B or Type C reflective sheeting as specified in DMS-8300 and must be listed on the MPL entitled "Sign Face Materials."

6.1.2. **Object Markers.** Reflector units for object markers must be of the color and type specified in the D&OM Standard Sheets. The reflective sheeting used must meet the requirements for Type B or Type C reflective sheeting as specified in DMS-8300 and must be listed on the MPL entitled "Sign Face Materials."

6.1.3. **Barrier Reflectors.** Reflector units for barrier reflectors must use reflective sheeting meeting the requirements for Type B or Type C reflective sheeting as specified in DMS-8300 and must be listed on the MPL entitled "Sign Face Materials."

6.2. **Construction Requirements.**

6.2.1. **Delineators.** Reflector units for delineators consist of one or more individual reflectorized units of reflective sheeting. Directly apply reflector units either to the delineator post or to an aluminum backplate conforming to the requirements of ASTM B 209, alloy 6061-T-6, with a minimum thickness of 0.08 in.

6.2.2. **Object Markers.**

6.2.2.1. **Types 1, 3, and 4.** Reflector units for Type 1, 3, and 4 object markers consist of one individual reflectorized unit directly applied to an aluminum backplate conforming to the requirements of ASTM B 209, alloy 6061-T-6, with a minimum thickness of 0.08 in.

6.2.2.2. **Type 2.** Reflector units for Type 2 object markers consist of one or more individual reflectorized panels of reflective sheeting. Directly apply reflector units either to the object marker post or to an aluminum backplate conforming to the requirements of ASTM B 209, alloy 6061-T-6, with a minimum thickness of 0.08 in.

6.2.3. **Barrier Reflectors.** Reflector units for barrier reflectors consist of one or more reflectorized panels of conformable reflective sheeting attached to a bracket or approved post to facilitate the mounting of the reflector on concrete traffic barriers, railings, MBGF, or other locations as shown on the plans. Provide barrier reflectors of the type specified in the D&OM Standard Sheets. Barrier reflectors must also meet the following requirements.

6.2.3.1. **Durability.** Weatherometer exposure will be in accordance with ASTM G 155 using Exposure Cycle 1 with a quartz inner filter glass and Type "S" Borosilicate outer filter glass.

Color must show no appreciable change and specific intensity must be a minimum of 80% of the beginning value after 2,000 hours weatherometer exposure.

The sheeting and bracket must show no cracking, crazing, blistering, chalking, or dimensional change after 2,000 hours weatherometer exposure.

6.2.3.2. **Adhesion.** The adhesive must adhere so that the sheeting cannot be peeled or pulled from the surface in pieces greater than 2 sq. in. when applied to clean aluminum panels at 50°F, aged for 36 hours at 140°F, and allowed to cool to room temperature for 12 hours.

6.2.3.3. **Stability.** The barrier reflector must pass thermal cyclic testing in accordance with Tex-882-B.

7. ARCHIVED VERSIONS

Archived versions are available.

DMS - 8620
FLAGGER STOP/SLOW PADDLES

EFFECTIVE DATE: AUGUST 2004

8620.1. Description. This Specification governs the materials, composition, quality, sampling, and testing of flagger stop/slow paddles.

8620.2. Units of Measurements. The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

8620.3. Bidders' and Supplier's Requirements. Before any material is considered, it must be of design and shape that is approved by the Materials and Pavements Section of the Construction Division (CST/M&P).

8620.4. Sampling and Testing. A minimum of one unit per lot may be sampled for testing. Unless otherwise noted, the Department will sample at the district warehouse or regional service centers.

The Department normally bears the costs of sampling and testing; however, the producer will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of CST/M&P will assess this cost at the time of testing.

Amounts due the Department will be deducted from monthly or final estimates on contracts, from partial or final payments on direct purchases by the State, or directly billed to the producer.

8620.5. Material Requirements.

A. General Requirements. Provide paddles meeting all the requirements listed in the *Texas Manual on Uniform Traffic Control Devices* for stop/slow double-sided signs.

B. Sign Face Size. Sign face must be a minimum of 610 × 610 mm (24 × 24 in.)

C. Sign Face Shape. Sign face must be Federal Highway Administration (FHWA) standard octagonal shape used for stop signs.

D. Sign Face Color.

- "Stop" sign—red field, white letters and border
- "Slow" sign—orange field, black letters and border
- All colors must meet color requirement listed in DMS-8300 for Type C sheeting (high-specific intensity).

E. Sheeting Type. Sign sheeting must be Type C (high-specific intensity) in accordance with DMS-8300.

F. Letters.

- "Stop" sign—203 mm (8 in.) series C
- "Slow" sign—203 mm (8 in.) series B

G. Staff. Staff must:

- be designed to telescope from 1372–2388 mm (54–94 in.)
- must include an easy to use, screw-type compression coupling for staff adjustment
- be designed for the bottom or base of the staff to not slip from the pavement and include a short rubber boot attached to the shaft, and
- be designed for easy re-assembly using simple hand tools.

H. Weight. Complete unit weight must not exceed 4.5 kg (10 lb.)

I. Sign Faces. Sign faces must:

- be fabricated from a light, rigid, durable material,
- not warp due to use or outdoor exposure,
- maintain sufficient rigidity during use to be functional, and
- be provided with a durable storage bag designed to protect sign faces when not in use.

8620.6. Payment.

A. Procurement by the State. Payment for all materials governed by this Specification will be in conformance with provisions of the purchase order awarded by the State.

B. Contracts. All materials governed by this Specification utilized by the Contractors must be paid for in conformance with the applicable Contract item.

8620.7. Archived Versions. Archived versions are available.

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

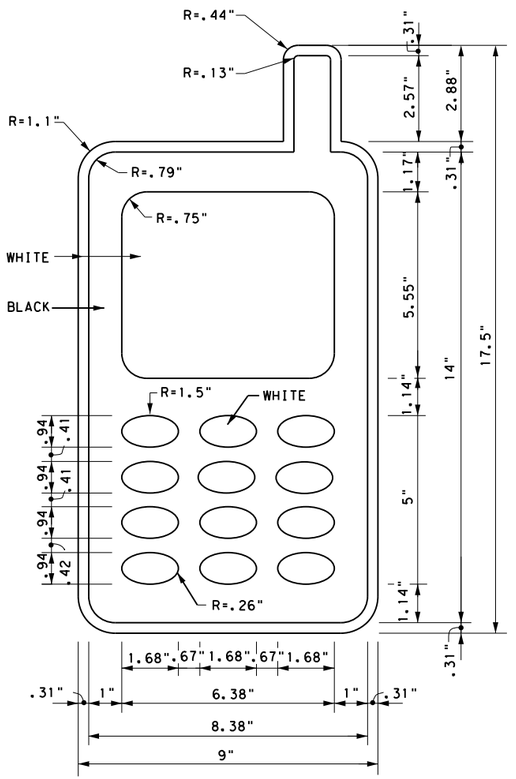
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY APPAREL NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.





3.0" Radius, 1.25" Border, 0.75" Indent, Black on Yellow;
[STAY ALERT] Font: D
3.0" Radius, 1.25" Border, 0.75" Indent, Black on Orange;
[TALK OR TEXT LATER] Font: C specified length;

SIGN DETAIL (G20-10T)

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

Texas Department of Transportation — Traffic Operations Division Standard

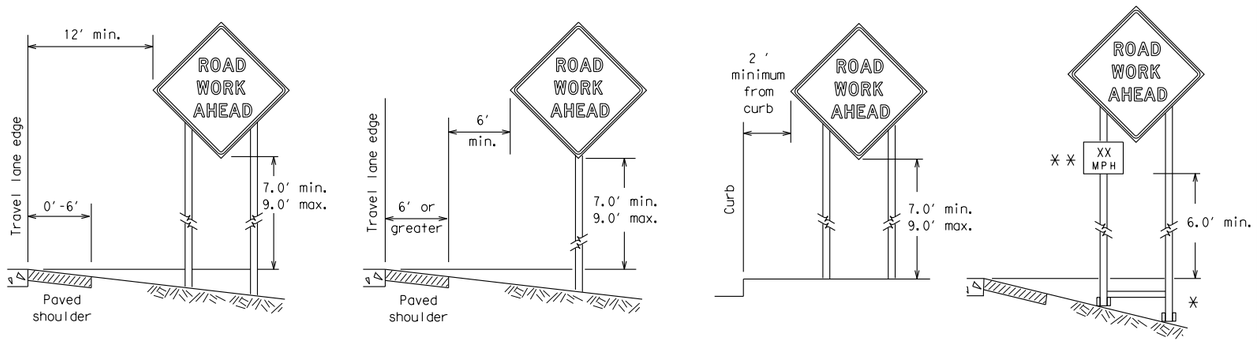
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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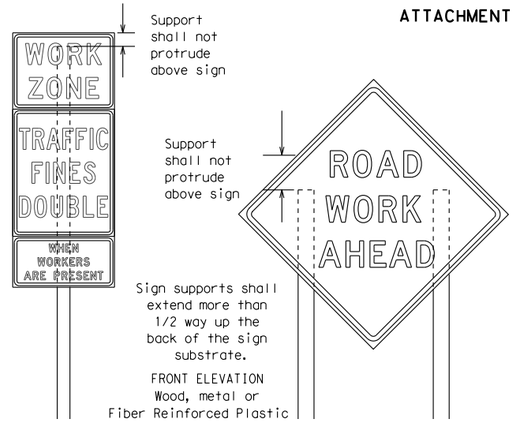
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

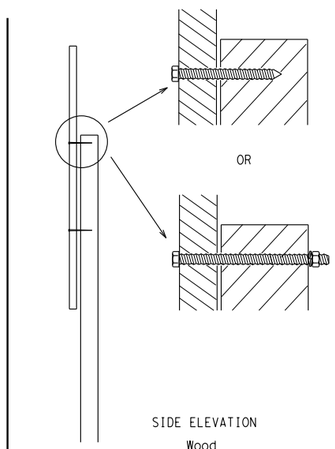


⚹ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⚹⚹ When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS





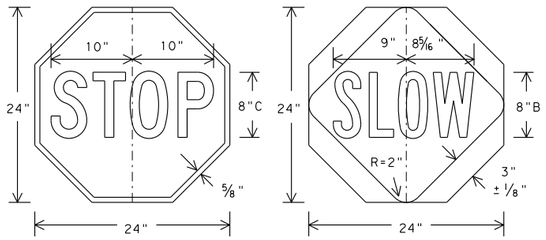
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the spice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectorized.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6′ to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

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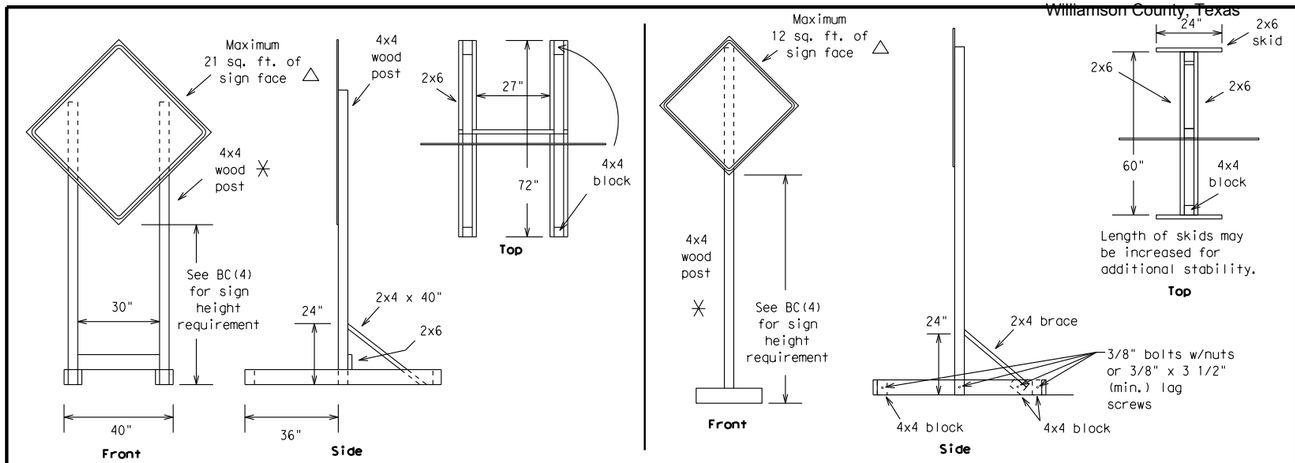
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

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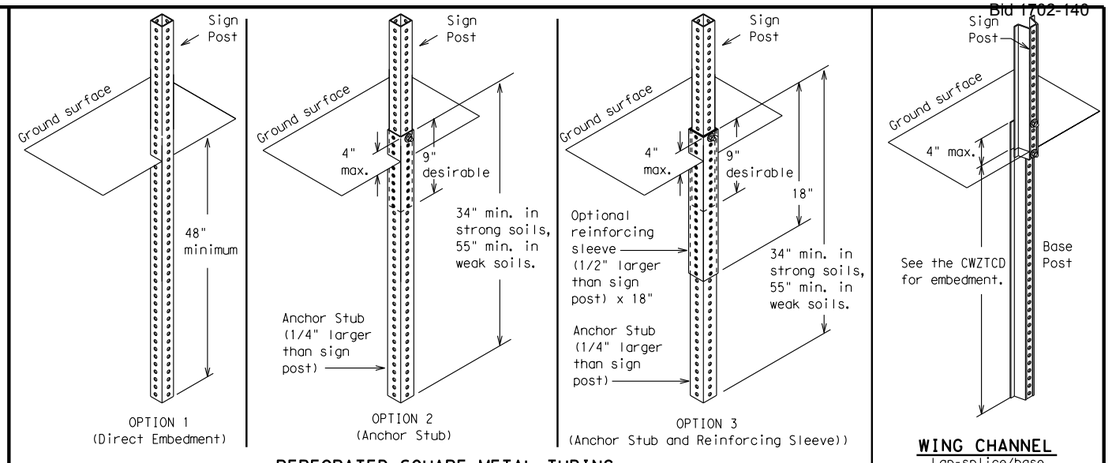
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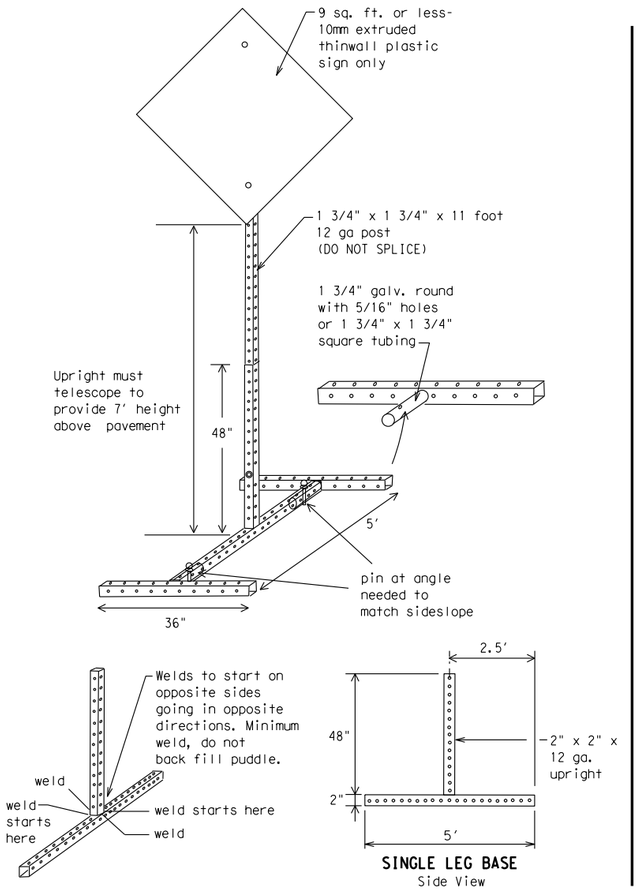
SKID MOUNTED WOOD SIGN SUPPORTS

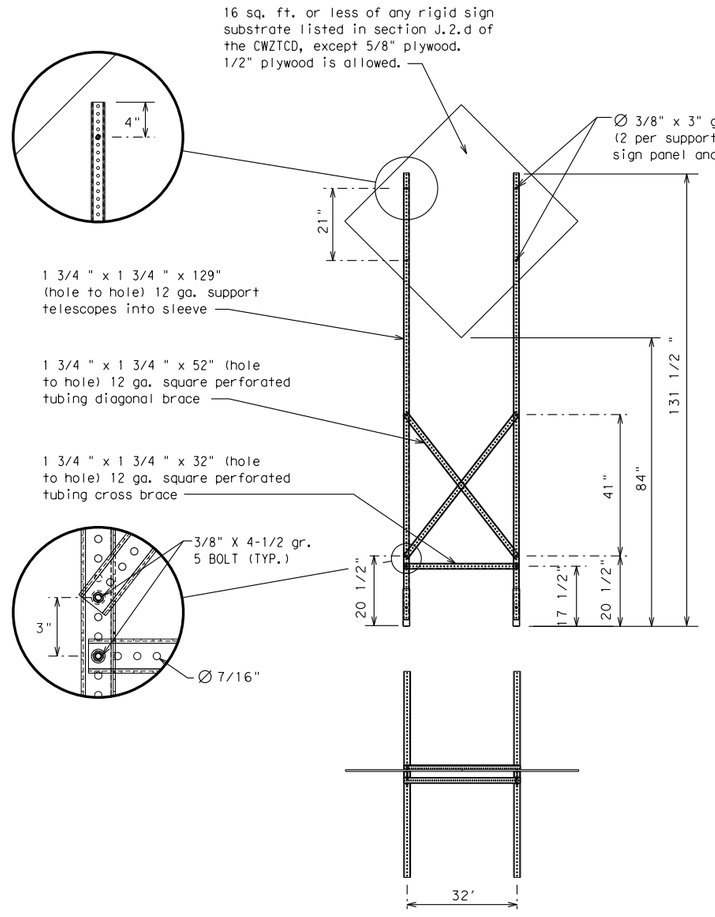
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

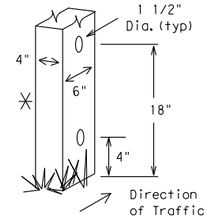


GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support.
The maximum sign square footage shall adhere to the manufacturer's recommendation.
Two post installations can be used for larger signs.

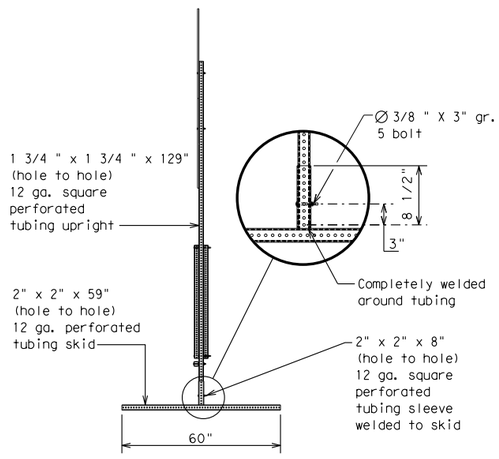






Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS



WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

□ See BC(4) for definition of "Work Duration."

✳ Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

△ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

Texas Department of Transportation — Traffic Operations Division Standard

SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

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GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

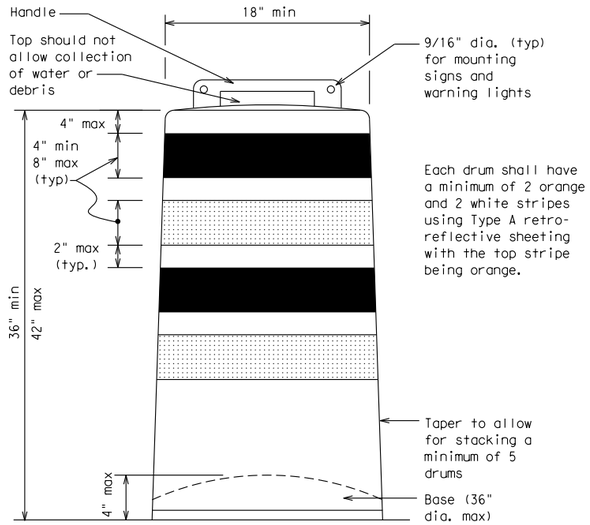
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

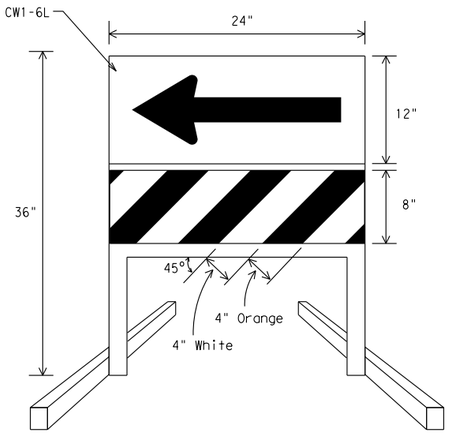
RETROREFLECTIVE SHEETING

1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.

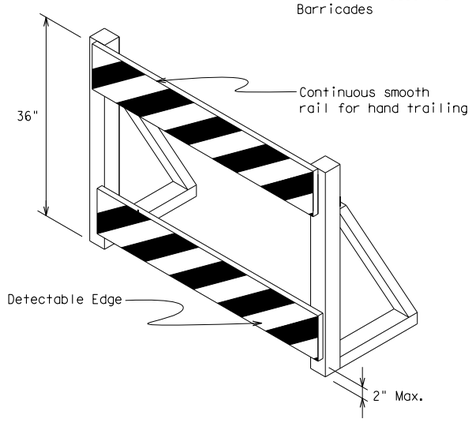




DIRECTION INDICATOR BARRICADE

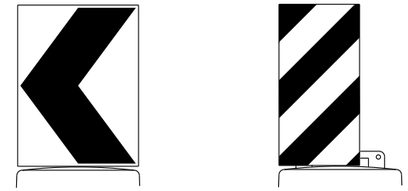
1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type B_{FL} or Type C_{FL} Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades



DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades may use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

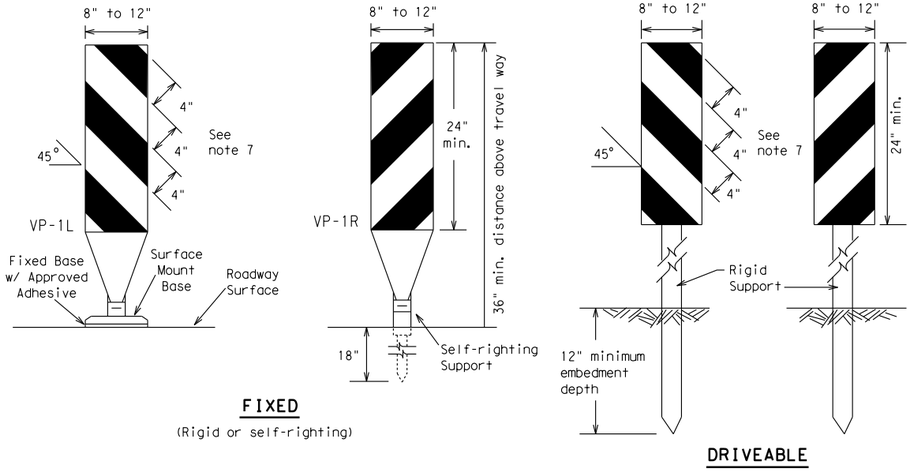
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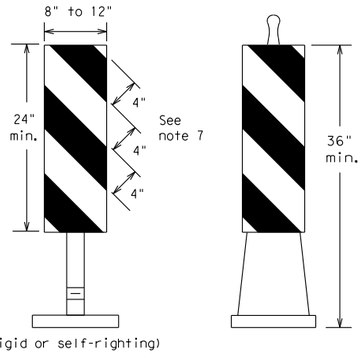
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FIXED
(Rigid or self-righting)

DRIVEABLE

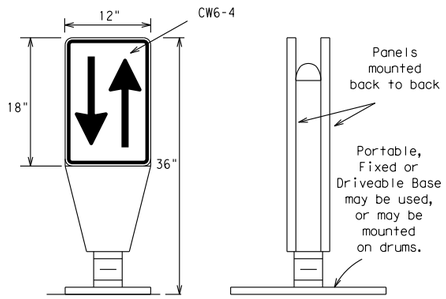


(Rigid or self-righting)

PORTABLE

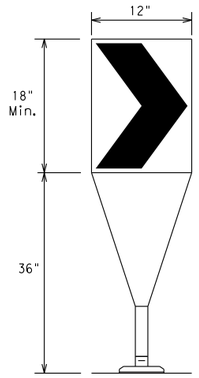
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



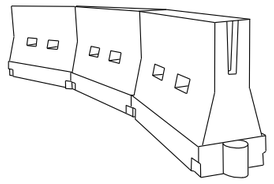
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10) placed near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

Posted Speed *	Formula	Minimum Desirable Taper Lengths * * 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150′	165′	180′	30′	60′
35		205′	225′	245′	35′	70′
40		265′	295′	320′	40′	80′
45	L = WS	450′	495′	540′	45′	90′
50		500′	550′	600′	50′	100′
55		550′	605′	660′	55′	110′
60		600′	660′	720′	60′	120′
65		650′	715′	780′	65′	130′
70		700′	770′	840′	70′	140′
75		750′	825′	900′	75′	150′
80		800′	880′	960′	80′	160′

* * Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

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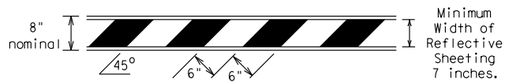
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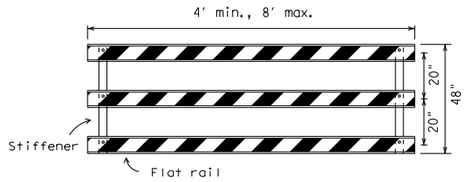
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



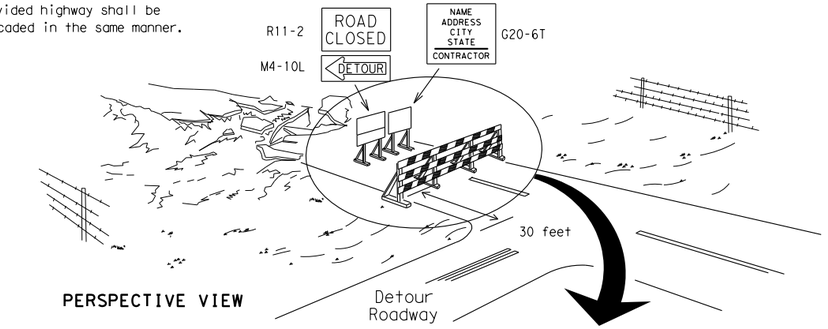
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

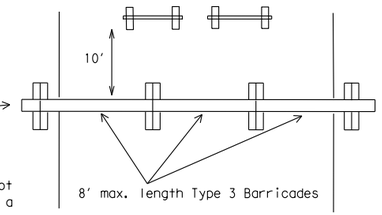
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

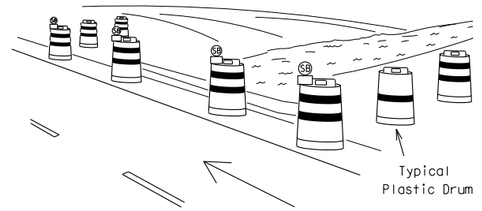
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

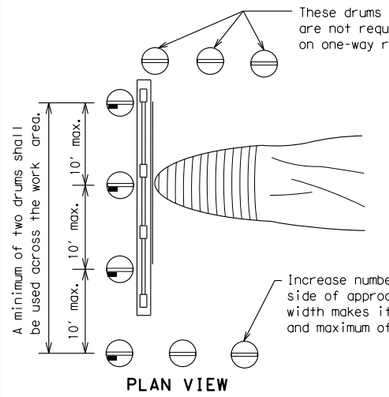
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

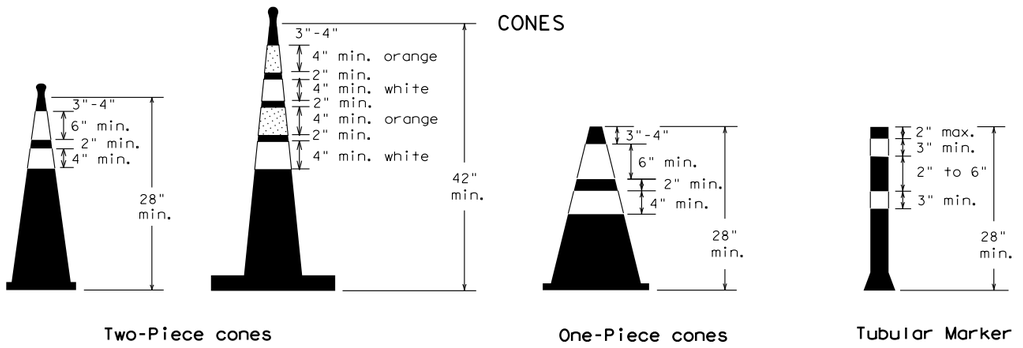
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.



PLAN VIEW

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

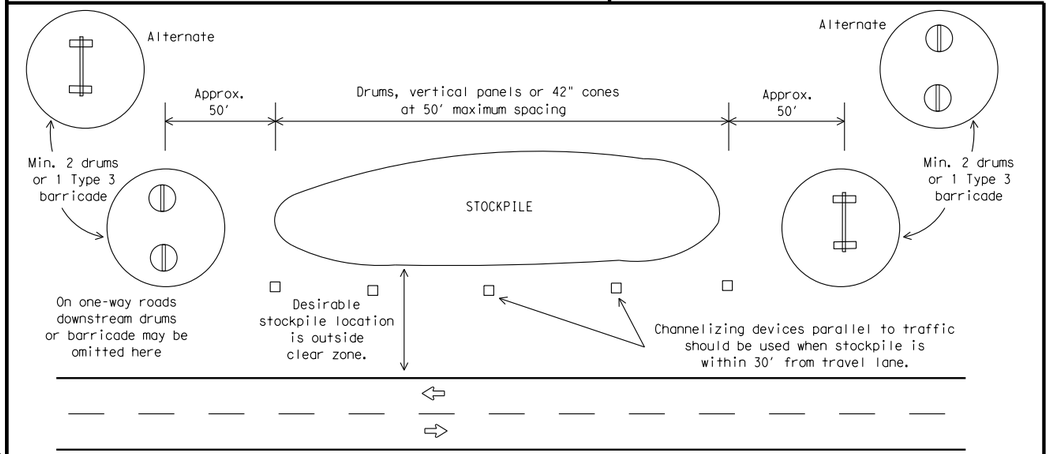
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



28" Cones shall have a minimum weight of 9 1/2 lbs.

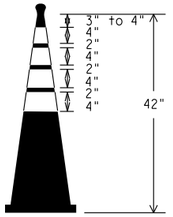
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers used at night shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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WORK ZONE PAVEMENT MARKINGS

GENERAL

1. The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
2. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

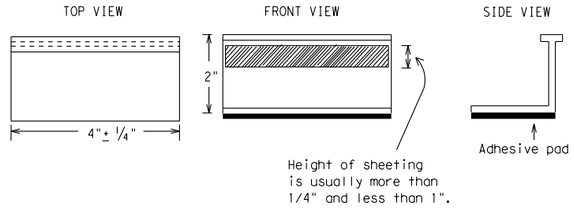
MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - (two amber reflective surfaces with yellow body).
WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
2-98 9-07	DIST	COUNTY		SHEET NO.
1-02 7-13				
11-02 8-14				
105				

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

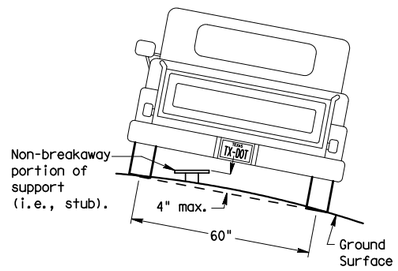
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

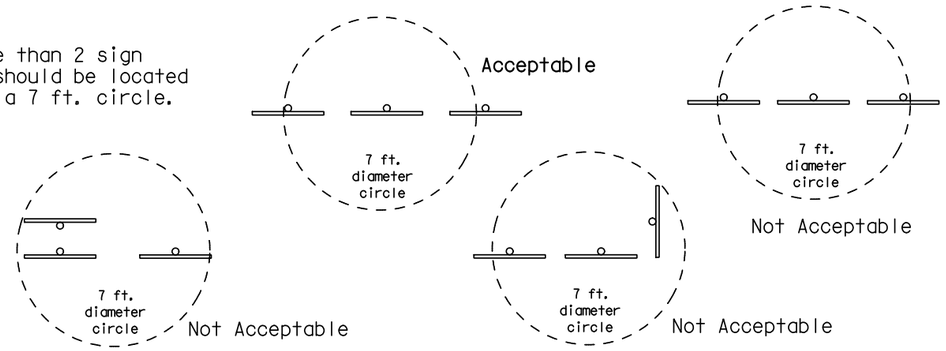
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



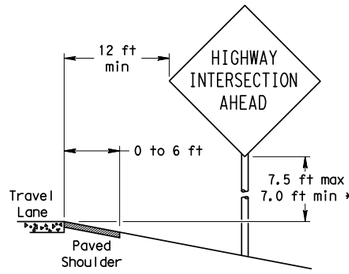
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

No more than 2 sign posts should be located within a 7 ft. circle.



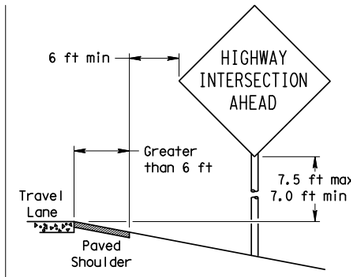
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

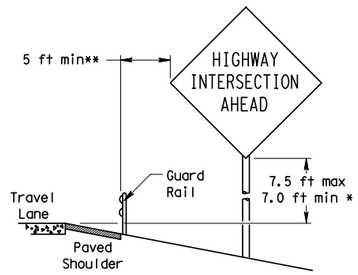
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



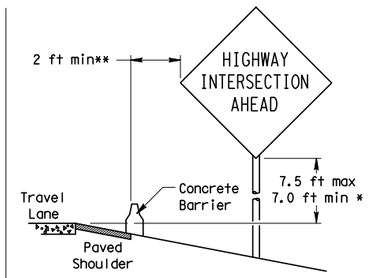
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

BEHIND BARRIER



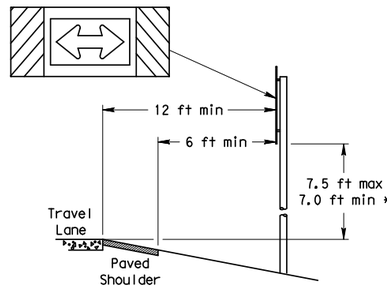
BEHIND GUARDRAIL



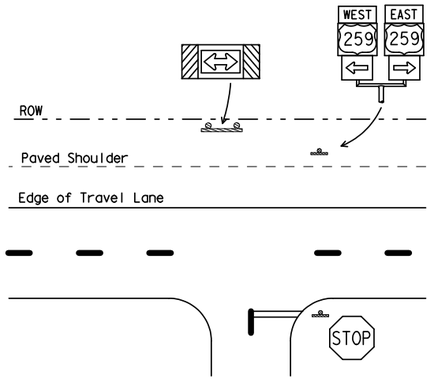
BEHIND CONCRETE BARRIER

**BEHIND GUARDRAIL and BEHIND CONCRETE BARRIER

T-INTERSECTION



When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

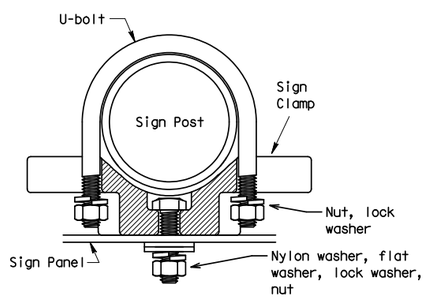
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

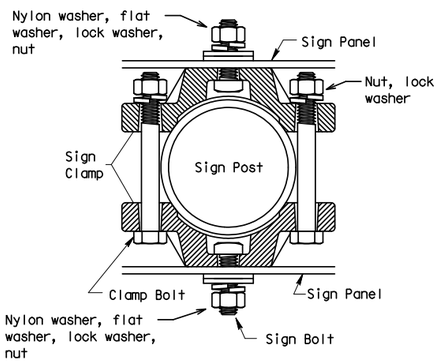


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

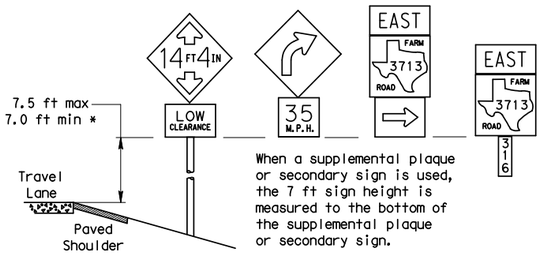
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



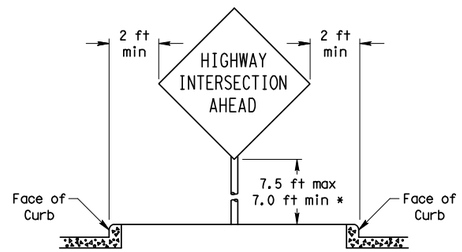
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



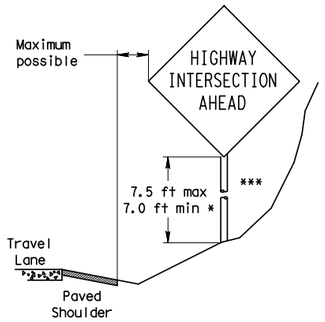
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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DIST	COUNTY		SHEET NO.

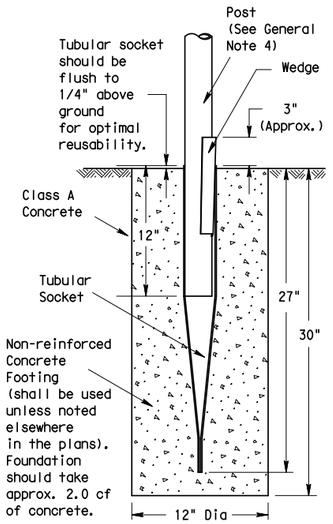
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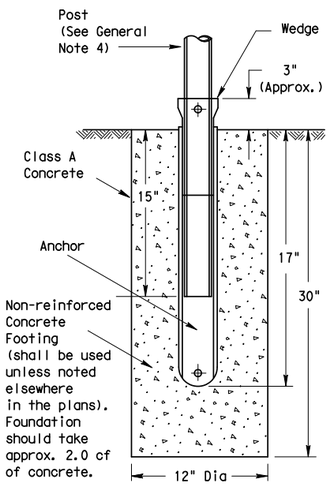
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Wedge Anchor Steel System



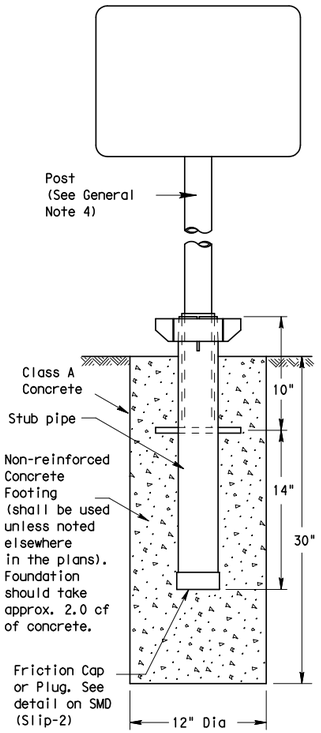
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

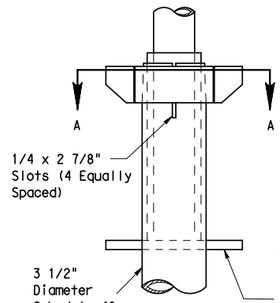


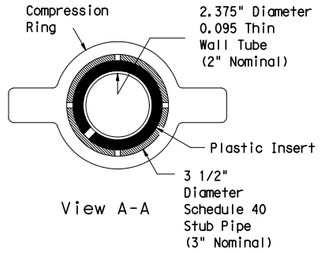
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



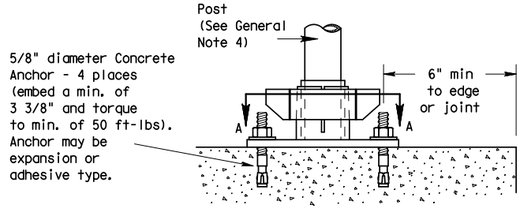
SM RD SGN ASSM TY TWT(X)UA(P)



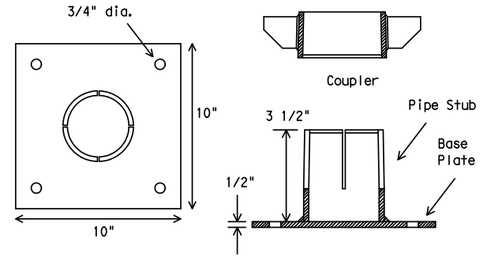


View A-A

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

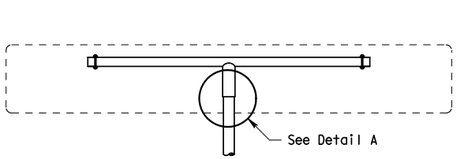


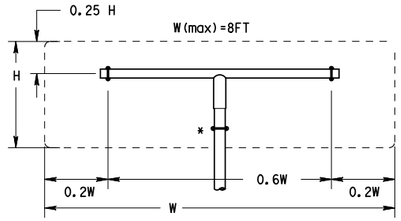
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



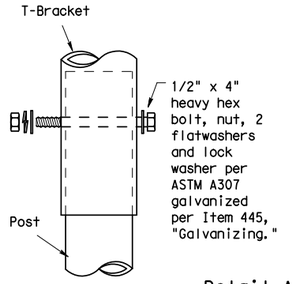
SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





SM RD SGN ASSM TY TWT(X)XX(T)
(* - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

The devices shall be installed per manufacturer's recommendations.
Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

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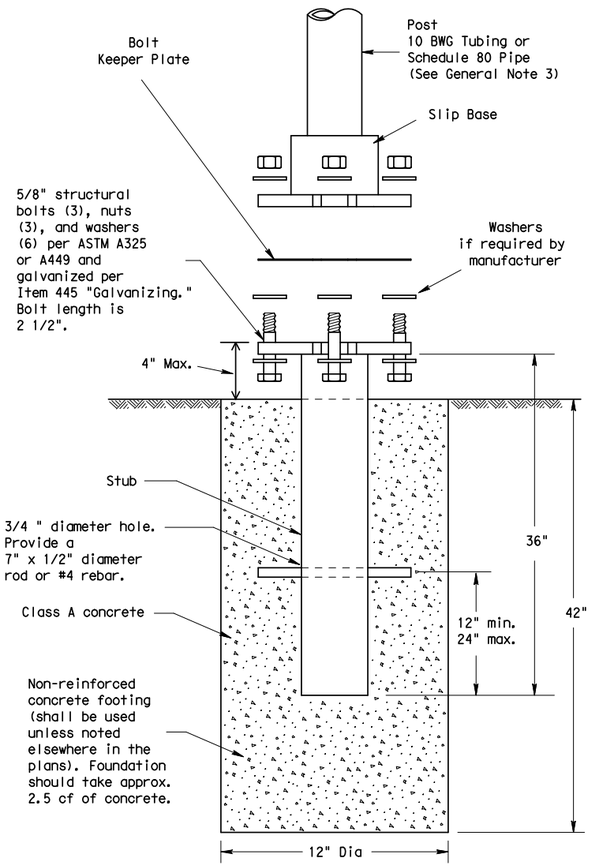
9-08 REVISIONS

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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

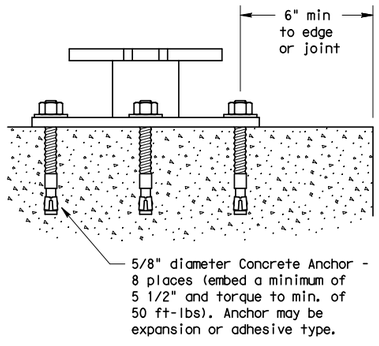
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

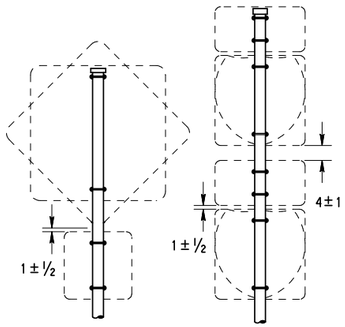
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

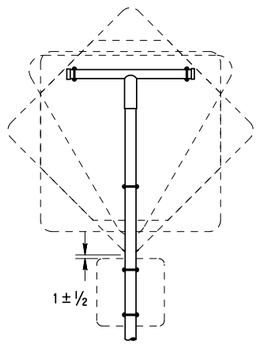
© TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08 REVISIONS	COUNT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

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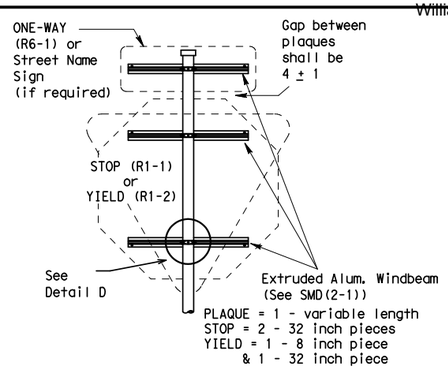
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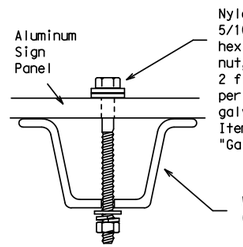
SM RD SGN ASSM TY XXXXX(1)XX(P)



SM RD SGN ASSM TY XXXXX(1)XX(T)

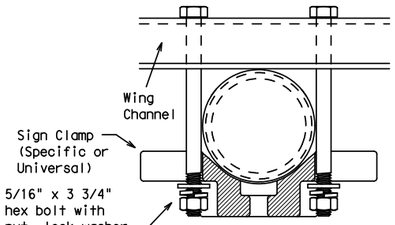


SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



Top View

Detail A



Top View

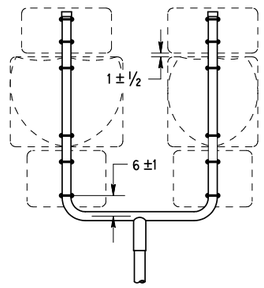
Detail B

GENERAL NOTES:

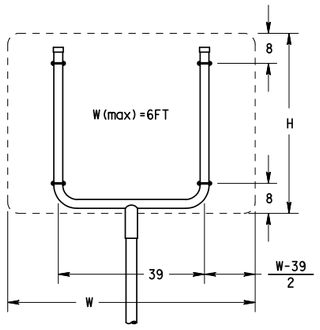
1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

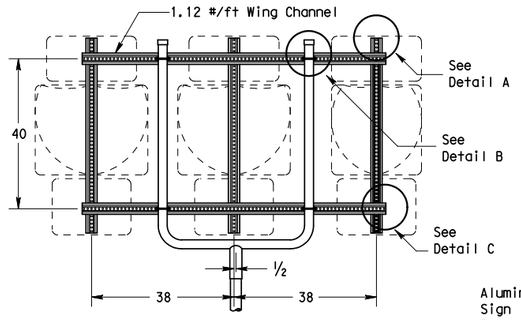
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.



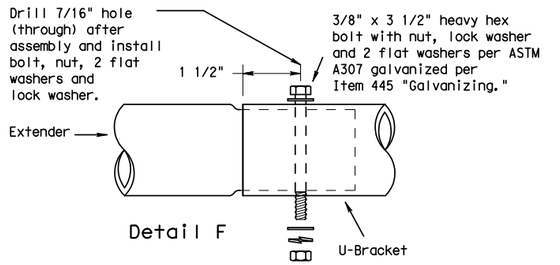
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

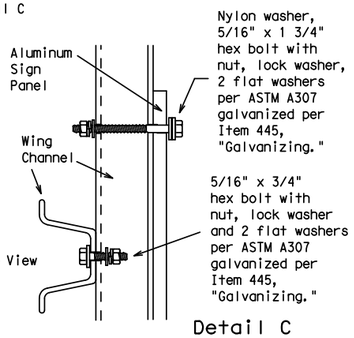


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

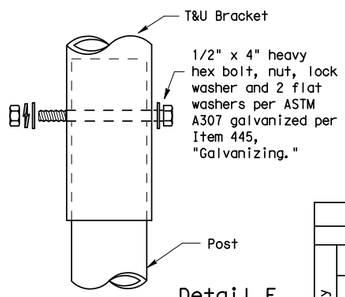


Detail F

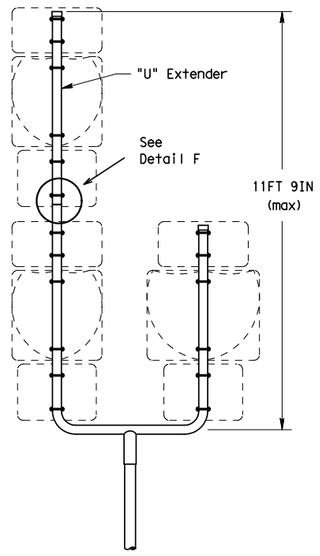
Splices shall only be allowed behind the sign substrate.



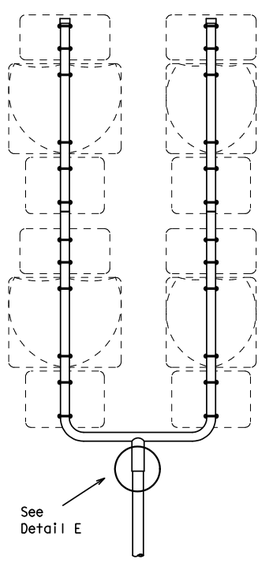
Detail C



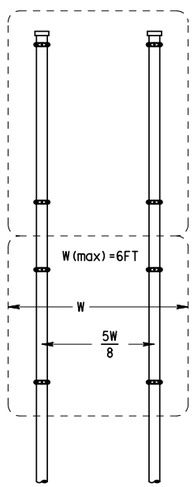
Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

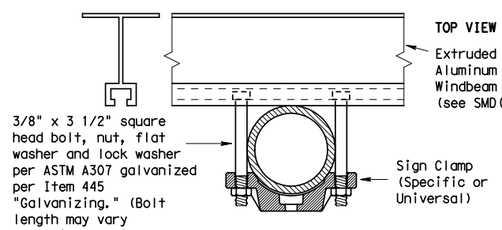


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

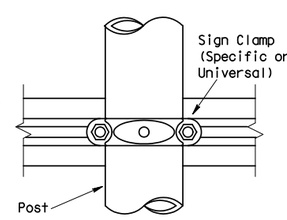


SM RD SGN ASSYM TY XXXXX(2)XX(P)

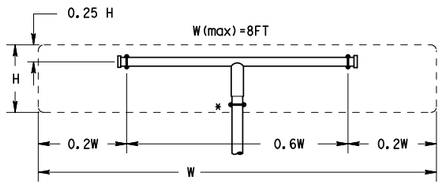
SIDE VIEW



Detail D



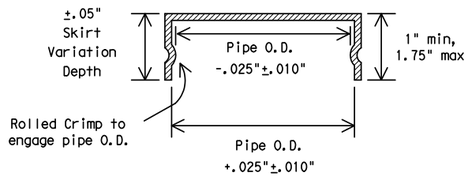
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)



All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

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SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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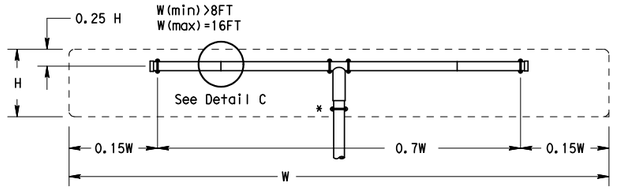
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DIST	COUNTY		SHEET NO.

9-08 REVISIONS

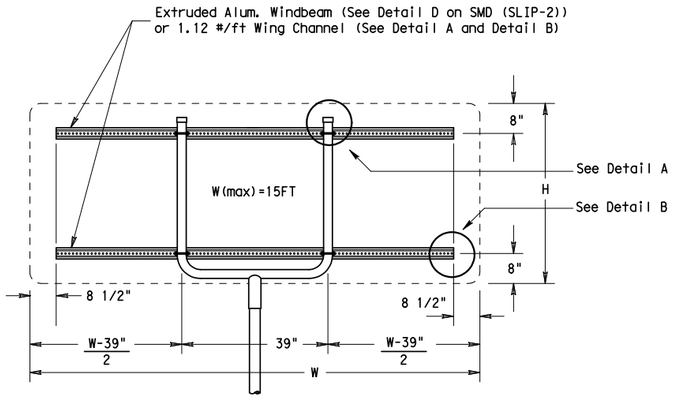
26C

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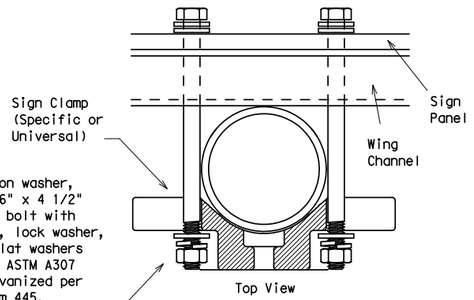
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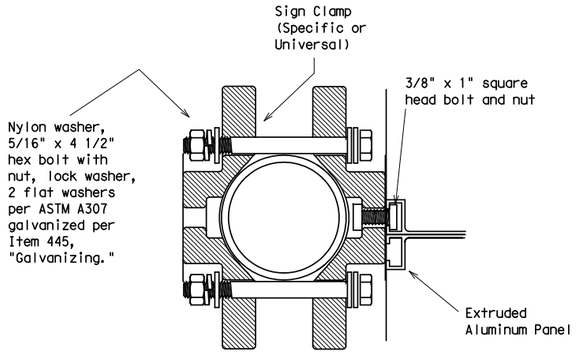
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(* - See Note 12)



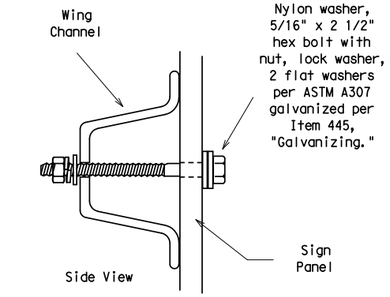
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



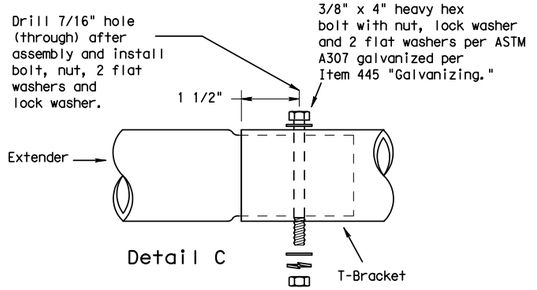
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

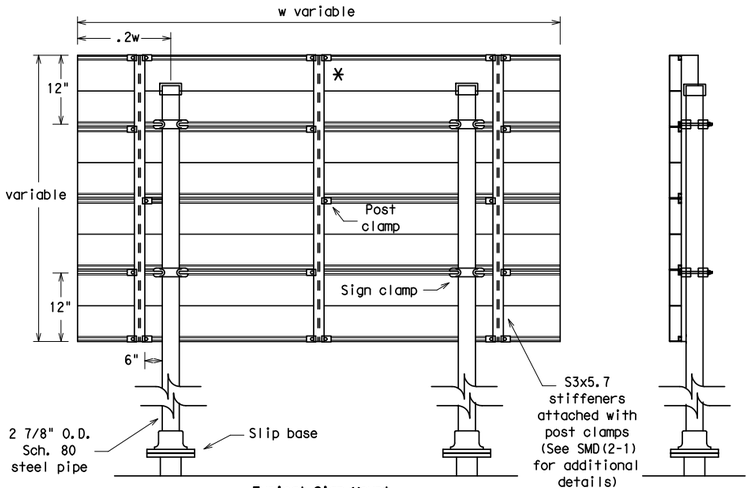


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

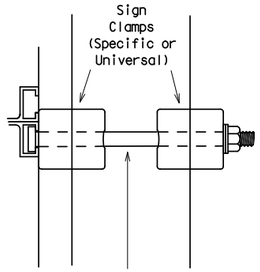


Typical Sign Mount

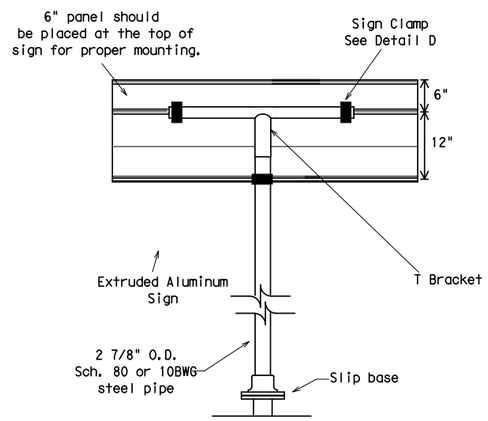
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

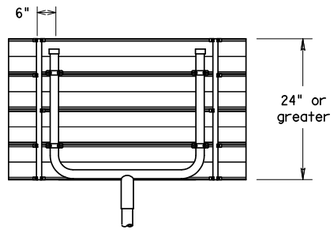
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
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	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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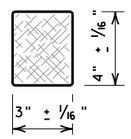
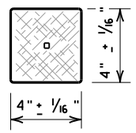
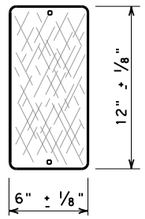
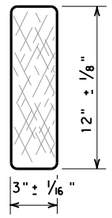
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.

9-08 REVISIONS

26D

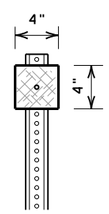
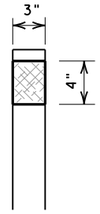
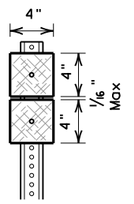
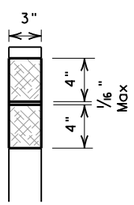
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			

NOTE
1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx).
2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	FLX	WC	FLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
FLX = Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

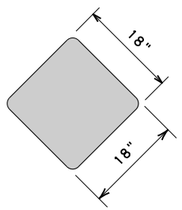
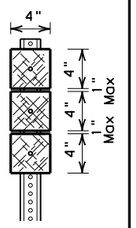
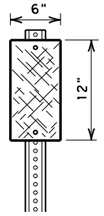
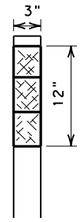
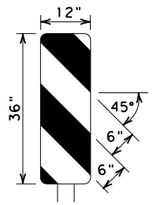
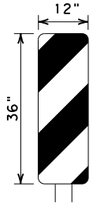
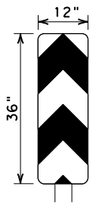
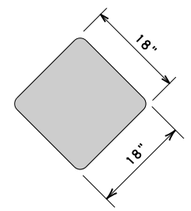
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
FLX = Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

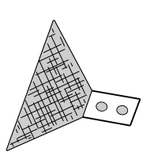
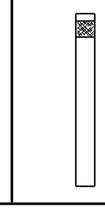
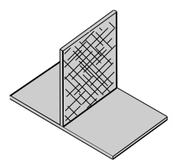
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	FLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

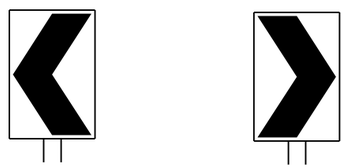
	GF1	GF2	CTB
DEVICE			

1. Barrier reflectors shall meet the requirements of DMS 8600.
2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.

SHEETING: Yellow, White, Red

NOTE: 1. Minimum 9 square inches of reflective sheeting surface area.

CHEVRONS

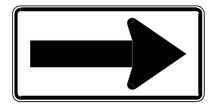
DEVICE: 

W1-8

SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. The Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTIONAL LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE: 

W1-6

SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE:
Delineator and object marker backplates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation

Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION D & OM(1)-15

FILE: dom1-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10				

Signs and Markers BID SHEET

TMUTCD SIGNS - REGULATORY			
ITEM	**DESCRIPTION**	**UNIT**	**UNIT PRICE**
1.01	24" Stop/Slow Paddles and 6' Wooden Staff	EACH	
1.02	24" Octagon (H.I.P.)	EACH	
1.03	30" Octagon (H.I.P.)	EACH	
1.04	36" Octagon (H.I.P.)	EACH	
1.05	48" Octagon (H.I.P.)	EACH	
1.06	30" Triangle (H.I.P.)	EACH	
1.07	36" Triangle (H.I.P.)	EACH	
1.08	12"x 6" (H.I.P.)	EACH	
1.09	12"x 9" (H.I.P.)	EACH	
1.10	15"x 30" (H.I.P.)	EACH	
1.11	18"x 6" (H.I.P.)	EACH	
1.12	18"x 12" (H.I.P.)	EACH	
1.13	18"x 18" (H.I.P.)	EACH	
1.14	18"x 24" (H.I.P.)	EACH	
1.15	21"x 15" (H.I.P.)	EACH	
1.16	24"x 24" (H.I.P.)	EACH	
1.17	24"x 30" (H.I.P.)	EACH	
1.18	24"x 36" (H.I.P.)	EACH	
1.19	24"x 42" (H.I.P.)	EACH	
1.20	24"x 48" (H.I.P.)	EACH	
1.21	30"x 18" (H.I.P.)	EACH	
1.22	30"x 24" (H.I.P.)	EACH	
1.23	30"x 30" (H.I.P.)	EACH	
1.24	30"x 36" (H.I.P.)	EACH	
1.25	30"x 42" (H.I.P.)	EACH	
1.26	36"x 12" (H.I.P.)	EACH	
1.27	36"x 18" (H.I.P.)	EACH	
1.28	36"x 24" (H.I.P.)	EACH	
1.29	36"x 36" (H.I.P.)	EACH	
1.30	48"x 9" (H.I.P.)	EACH	
1.31	48"x 24" (H.I.P.)	EACH	
1.32	48"x 30" (H.I.P.)	EACH	
1.33	60"x 30" (H.I.P.)	EACH	
TMUTCD SIGNS - WARNING			
ITEM	**DESCRIPTION**	**UNIT**	**UNIT PRICE**
2.01	30" Circle (H.I.P.)	EACH	
2.02	36" Circle (H.I.P.)	EACH	
2.03	12"x 18" (H.I.P.)	EACH	
2.04	18"x 18" (H.I.P.)	EACH	
2.05	18"x 24" (H.I.P.)	EACH	
2.06	24"x 12" (H.I.P.)	EACH	
2.07	24"x 24" (H.I.P.)	EACH	
2.08	24"x 30" (H.I.P.)	EACH	
2.09	30"x 15" (H.I.P.)	EACH	
2.10	30"x 30" (H.I.P.)	EACH	
2.11	30"x 36" (H.I.P.)	EACH	
2.12	36"x 12" (H.I.P.)	EACH	
2.13	36"x 18" (H.I.P.)	EACH	
2.14	36"x 24" (H.I.P.)	EACH	

2.15	36"x 36" (H.I.P.)	EACH	
2.16	36"x 48" (H.I.P.)	EACH	
2.17	48"x 24" (H.I.P.)	EACH	
2.18	48"x 48" (H.I.P.)	EACH	
2.19	48"x 60" (H.I.P.)	EACH	
2.20	60"x 30" (H.I.P.)	EACH	
2.21	66"x 12" (H.I.P.)	EACH	
2.22	84"x 24" (H.I.P.)	EACH	

TMUTCD SIGNS - SCHOOL			
ITEM	**DESCRIPTION**	**UNIT**	**UNIT PRICE**
3.01	30" Pentagon (D.G. - Florescent Yellow/Green)	EACH	
3.02	36" Pentagon (D.G. - Florescent Yellow/Green)	EACH	
3.03	24"x 8" (D.G. - Florescent Yellow/Green)	EACH	
3.04	24"x 10" (H.I.P. - White)	EACH	
3.05	24"x 12" (D.G. - Florescent Yellow/Green)	EACH	
3.06	24"x 48" (D.G. - Florescent Yellow/Green and H.I.P. - White)*	EACH	
3.07	30"x 30" (D.G. - Florescent Yellow/Green)	EACH	
3.08	36"x 12" (D.G. - Florescent Yellow/Green)	EACH	
3.09	36"x 36" (D.G. - Florescent Yellow/Green)	EACH	
	*per TMUTCD S5-1		
BRACKET/POST AND HARDWARE			
ITEM	**DESCRIPTION**	**UNIT**	**UNIT PRICE**
4.01	2 3/8" Post Bracket	EACH	
4.02	3" Post Bracket	EACH	
4.03	2 3/8" Back to Back Post Brackets	EACH	
4.04	Wedge Steel System Anchor (socket and wedge)	EACH	
4.05	Triangular Slipbase System (complete assembly with tri-base ground stub)	EACH	
4.06	Triangular Slipbase System (anchor, collar, fasteners – excluding ground stub anchor)	EACH	
STREET SIGNS BLANKS AND HARDWARE			
ITEM	**DESCRIPTION**	**UNIT**	**UNIT PRICE**
5.01	6"x 18" Flat (H.I.P. - White)	EACH	
5.02	6"x 24" Flat (H.I.P. - White)	EACH	
5.03	6"x 30" Flat (H.I.P. - White)	EACH	
5.04	6"x 36" Flat (H.I.P. - White)	EACH	
5.05	9"x 24" Flat (H.I.P. - White)	EACH	
5.06	9"x 30" Flat (H.I.P. - White)	EACH	
5.07	9"x 36" Flat (H.I.P. - White)	EACH	
5.08	Cap Round - 2 3/8" x 5 1/2" Flat Blade Holder	EACH	
5.09	Cap Round - 2 3/8" x 12" Flat Blade Holder	EACH	
5.10	Cap Round - 3" x 5 1/2" Flat Blade Holder	EACH	
5.11	Cap Round - 3" x 12" Flat Blade Holder	EACH	
5.12	90° Tee - 5 1/2" Flat Blade	EACH	
5.13	90° Tee - 12" Flat Blade Holder	EACH	
POSTS			
ITEM	**DESCRIPTION**	**UNIT**	**UNIT PRICE**
6.01	10' x 2 3/8" O.D. Round Post	EACH	
6.02	12'x 2 3/8" O.D. Round Post	EACH	
6.03	6' Green U-Channel Post	EACH	
6.04	6' Galvanized U-Channel Post	EACH	
6.05	12' Green U-Channel Post	EACH	
6.06	12' x 2-7/8" O.D. 10 BWG Post complete assembly with Pins	EACH	

6.07	11' x 1-3/4" Perforated Square Metal Tubing	EACH	
6.08	10’ Steel T-leg Assembly* – Single complete assembly with 36” x 36” FL DG Coroplast sign, 5’ x 2” square leg base, and two 3’ base ends (feet) 1 3/4” square with 5/16” holes.	EACH	
6.09	4’ x 1 3/4” square T-leg with 5’ x 2” square base*		
6.10	3’ x 1 3/4" Perforated Square Metal Tubing - Base End (Foot)* with pins	EACH	
6.11	5’ x 2" Perforated Square Metal Tubing - Single Leg Base* with stub out and pins	EACH	
	*see assembly for single leg base (skid mounted) on lower left corner of sheet BC (5)-14		
ROLL GOODS			
ITEM	**DESCRIPTION**	**UNIT**	**UNIT PRICE**
7.01	7"x 50 Yards - Barricade Tape (H.I.P.) Red	EACH	
7.02	7"x 50 Yards - Barricade Tape (H.I.P.) Orange	EACH	
7.03	30" x 50 Yards - Reflective Sheeting (E.G.)	EACH	
7.04	30" x 50 Yards - Reflective Sheeting (H.I.P.)	EACH	
7.05	30" x 50 Yards - Reflective Sheeting (D.G.)	EACH	
7.06	30" x 50 Yards - Non Reflective Sheeting (Black Vinyl)	EACH	
7.07	30" x 50 Yards - Non Reflective Sheeting (Orange Vinyl)	EACH	
7.08	30" x 50 Yards - E.C. Film	EACH	
7.09	48" x 50 Yards - Reflective Sheeting (E.G.)	EACH	
7.10	48" x 50 Yards - Reflective Sheeting (H.I.P.)	EACH	
7.11	48" x 50 Yards - Non Reflective Sheeting (Black Vinyl)	EACH	
7.12	48" x 50 Yards - Non Reflective Sheeting (Orange Vinyl)	EACH	
7.13	48" x 50 Yards - E.C. Film	EACH	
BARRICADE MATERIAL			
ITEM	**DESCRIPTION**	**UNIT**	**UNIT PRICE**
8.01	1"x 8"x 8' Barricade Rail (plank)	EACH	
8.02	Type l 24" Barricade with Sheeting	EACH	
8.03	Type ll 24" Barricade with Sheeting	EACH	
8.04	Type lll 4' Barricade with Sheeting	EACH	
8.05	Type lll 8' Barricade with Sheeting	EACH	
8.06	Barricade base/skid (5’- 2” square steel tubing with 6” stub out)	EACH	
8.07	1 3/4” x 1 3/4” x 5’ X-tube barricade stiffener with standard holes	EACH	
FLEXIBLE ROLL UP SIGNS			
ITEM	**DESCRIPTION**	**UNIT**	**UNIT PRICE**
9.01	36" Non Reflective Sign	EACH	
9.02	36" Reflective Sign	EACH	
9.03	48" Non Reflective Sign	EACH	
9.04	48" Reflective Sign	EACH	
9.05	Rubber Sign Stand (min. 38 lbs)	EACH	
DELINEATOR AND OBJECT MARKERS			
ITEM	**DESCRIPTION**	**UNIT**	**UNIT PRICE**

10.01	62" Flexible Posts w/stub w/ 3"x 12" Yellow H.I.P. Sheeting	EACH	
10.02	28" Cones w/ Reflective Bands - 9.5 lbs. min (two-piece cone with separate weighted base)	EACH	
10.03	36"- 42" Drums w/ Reflective Bands with Tire Ring Base	EACH	
10.04	Barrier reflector - GF-1	EACH	
10.05	Barrier reflector - GF-2	EACH	
10.06	Barrier reflector - CTB	EACH	
10.07	Temporary Flexible-Reflective Roadway Marker Tabs	EACH	
10.08	Reflector 6" x 12" (Size 3)	EACH	
10.09	12” x 36” Object Marker - OM -3L (H.I.P.)	EACH	
10.10	12” x 36” Object Marker - OM -3R (H.I.P.)	EACH	
10.11	12” x 36” Object Marker - OM -3C (H.I.P.)	EACH	
10.12	18” x 18” Object Marker - OM -4 (H.I.P.)	EACH	

CWZTCDL SUBSTRATES FOR SIGNS BLANKS FOR SHORT-TERM/SHORT DURATION

ITEM	DESCRIPTION	UNIT	UNIT PRICE
11.01	24" x 30" 10 MM Coroplast	EACH	
11.02	36” x 36” 10 MM Coroplast	EACH	
11.03	48" x 96" 10 MM Coroplast	EACH	
11.04	60" x 30" 10 MM Coroplast	EACH	

1.0 BID FORMAT AND SUBMISSION

1.1 Organization of Bid Contents for Submittal

Each Bid should be organized and items submitted in the order described in of this IFB.

1.2 Conflict of Interest

No public official shall have interest in a contract, in accordance with Vernon's Texas Codes Annotated, Local Government Code Title 5, Subtitle C, Chapter 171, as amended.

As of January 1, 2006, Bidders are responsible for complying with Local Government Code Title 5, Subtitle C, Chapter 176. Additional information may be obtained from the Williamson County website at the following link:

http://www.wilco.org/CountyDepartments/Purchasing/ConflictofInterestDisclosure/tabid/689/language/en-US/Default.aspx

Each Bidder must disclose any existing or potential conflict of interest relative to the performance of the requirements of this IFB. **Examples of potential conflicts may include an existing business or personal relationship between the Bidder, its principal, or any affiliate or subcontractor, with Williamson County or any other entity or person involved in any way in the project that is the subject of this IFB.** Similarly, any personal or business relationship between the Bidder, the principals, or any affiliate or subcontractor, with any employee or official of Williamson County or its suppliers must be disclosed. Any such relationship that might be perceived or represented as a conflict must be disclosed. Failure to disclose any such relationship or reveal personal relationships with Williamson County employees or officials may be cause for termination. Williamson County will decide if an actual or perceived conflict should result in Bid disqualification.

By submitting a Bid in response to this IFB, all Bidders affirm that they have not given, nor intend to give, at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a Williamson County public servant or any employee, official or representative of same, in connection with this procurement.

Each Bidder must provide a Conflict of Interest Statement in accordance with this IFB.

1.3 Certificate of Interested Parties

As of January 1, 2016, Bidders are responsible for complying with the Texas Government Code Section 2252.908. The law states that Williamson County may not enter into certain contracts with a Bidder unless the Bidder submits a disclosure of interested parties to Williamson County at the time the Bidder submits the signed contract to Williamson County. The law applies only to a contract of Williamson County that either (1) requires an action or vote by the Commissioners Court before the contract may be signed or (2) has a value of at least $1 million. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

By January 1, 2016, the Texas Ethics Commission will make available on its website a new filing application that must be used to file Form 1295. A Bidder must use the application to enter the required information on Form 1295 and print a copy of the form and a separate certification of filing that will contain a unique certification number. An authorized agent of the Bidder must sign the printed copy of the form and have the form notarized. The completed Form 1295 and certification of filing must be filed with Williamson County.

Williamson County must notify the commission, using the commission's filing application, of the receipt of the filed Form 1295 and certification of filing not later than the 30th day after the date the contract binds all parties to the contract. The commission will post the completed Form 1295 to its website within seven business days after receiving notice from Williamson County.

Information regarding how to use the filing application will be available on the Texas Ethics Commission website by January 1, 2016.

1.4 Ethics

The Bidder shall not accept or offer gifts or anything of value nor enter into any business arrangement with any employee, official or agent of Williamson County.

1.5 Bid Submittal Deadline

The Bid is due no later than the submittal date and time set forth in the 'Public Announcement and General Information' listed above for this IFB. Contents of each Bid shall be submitted in accordance with this IFB.

1.6 Delivery of Bids

Williamson County uses BidSync to distribute and receive bids and proposals Bids can be submitted electronically through BidSync or by hard copy. Refer to www.bidsync.com for further information.

If mailed or delivered in person, Bids and Bid addenda are to be delivered in sealed envelope on or before the submittal deadline, as noted in the 'Public Announcement and General Information' listed above for this IFB, to:

Williamson County Purchasing Department
Attn: **BID NAME AND NUMBER**
901 South Austin Avenue Georgetown, Texas 78626

Williamson County will not accept any Bids received after the submittal deadline, and shall return such Bids unopened to the Bidder. Williamson County will not accept any responsibility for Bids being delivered by third party carriers. Bidder should submit one (1) original, and one (1) copy of their Bid on CD (or other portable storage device). Bids will be opened publicly and read aloud. In the case of an RFP (Request for Proposal) submissions may be recognized in a manner to avoid public disclosure of contents; however, names of Bidders will then be read aloud.

Bidders should list the Bid Number, Bid Name, Name and Address of Bidder, and the Date of the Bid opening on the outside of the box or envelope and note "Sealed Bid Enclosed."

2.1 INSTRUCTIONS AND GENERAL REQUIREMENTS RELATED TO THIS BID

Read this document carefully. Follow all instructions and requirements. You are responsible for fulfilling all requirements and specifications. Be sure you have a clear understanding of this IFB.
General requirements apply to all advertised IFBs; however, these may be superseded, in whole or in part, by the Bid Specifications, Addenda issued as a part of this IFB and Modifications issued as a part of this IFB. Be sure your Bid package is complete.

2.2 Ambiguity, Conflict, or other Errors in the IFB

If Bidder discovers any ambiguity, conflict, discrepancy, omission or other error in this IFB, Bidder shall immediately notify Williamson County Purchasing Department of such error in writing and request modification or clarification of the document. Modifications will be made by issuing Addenda. If the Bidder fails to notify Williamson County prior to the date and time fixed for submission of Bids of an error or ambiguity in the IFB known to Bidder, or an error or ambiguity that reasonably should have been known to Bidder, then Bidder shall be deemed to have waived the error or ambiguity or its later resolution.
Williamson County may also modify the IFB, no later than 48 hours prior to the date and time fixed for submission of Bids, by issuance of an Addendum. All addenda will be numbered consecutively, beginning with 1.

2.3 Notification of Most Current Address

Bidders in receipt of this IFB shall notify the Williamson County Purchasing Department of any address changes, contact person changes, and/or telephone number changes no later than 48 hours prior to the date and time fixed for submission of Bids.

2.4 Bid Preparation Cost

Cost of developing Bids is entirely the responsibility of Bidders and shall not be charged to Williamson County.

2.5 Signature of Bidder

If the Bidder is a Corporation or Limited Liability Company, the legal name of the Corporation or Limited Liability Company shall be provided together with the signature of the officer or officers authorized to sign on behalf of such entity.
If the Bidder is a General Partnership, the true name of the firm shall be provided with the signature of each partner authorized to sign.
If the Bidder is a Limited Partnership, the name of the Limited Partner's General Partner shall be provided with the signature of the officer authorized to sign on behalf of the General Partner.
If the Bidder is a Sole Proprietor(s) (individual), each Sole Proprietor(s) shall sign.

If signature is by an agent, other than the Sole Proprietor(s) or an officer of a Corporation, Limited Liability Company, General Partner or a member of a General Partnership, a power of attorney or equivalent document must be submitted to the Williamson County Purchasing Department.

2.6 Assumed Business Name

If the Bidder operates business under an Assumed Business Name, the Bidder must have on file with the Williamson County Clerk a current Assumed Name Certificate and provide a file marked copy of same.

2.7 Bid Obligation

The contents of the IFB, Bid, and any clarification thereof submitted by the Successful Bidder shall become part of the contractual obligation and incorporated by reference into the Contract and any ensuing Agreement.

2.8 Compliance with IFB Specifications

It is intended that this IFB describe the requirements and the Bid format in sufficient detail to secure comparable Bids. Failure to comply with all provisions of the IFB may, at the sole discretion of Williamson County, result in disqualification.

2.9 Withdrawal of Bid

The Bidder may withdraw its Bid by submitting a written request over the signature of an authorized individual, as described herein above, to the Williamson County Purchasing Department any time prior to the submission deadline. The Bidder may thereafter submit a new Bid prior to the deadline. Modification of the Bid in any manner will not be considered if submitted after the deadline. Withdrawal of a Bid after the deadline will be subject to written approval of the Williamson County Purchasing Agent.

2.10 Evaluation/Award

Williamson County reserves the right to use all pertinent information (also learned from sources other than disclosed in the BID process) that might affect Williamson County's judgment as to the appropriateness of an award to the lowest and best evaluated Bid. This information may be appended to the Bid evaluation process results. Information on a Bidder from reliable sources, and not within the Bidder's Bid, may also be noted and made part of the evaluation file. Williamson County shall have sole discretion for determining the reliability of the source.
To ensure the proper and fair evaluation of a solicitation, Williamson County prohibits unsolicited communication initiated by the Bidder to the County Official or Employee evaluating or considering the Bids prior to the time an award has been made. Unsolicited communication may be ground for disqualifying the offending Bidder from consideration or award of the solicitation then in evaluation, or any future solicitation.

Communication between Bidder and the County will be initiated by the appropriate County Official or Employee in order to obtain information or clarification needed to develop a proper and accurate evaluation of the solicitation.

To award the lowest responsible bidder in accordance with Texas Government Code and Local Government Code, the County may consider, to the extent allowed by law, the following:

- Price
- Bidder's experience and reputation
- Quality of the Bidder's goods and/or services
- Bidder's safety record
- Bidder's proposed personnel
- Bidder's financial capabilities
- Any other relevant factors specifically listed in the IFB

Consideration of Location of Principal Office

Pursuant to Texas Local Government Code Section 271.905, in purchasing under this title any real property or personal property that is not affixed to real property, if Williamson County receives one or more Bids from a Bidder whose principal place of business is in Williamson County and whose Bid is within three percent (3%) of the lowest bid price received by Williamson County from a Bidder who is not a resident of Williamson County, Williamson County may enter into a contract with:
the lowest Bidder; or the Bidder whose principal place of business is in Williamson County if the Williamson County Commissioners Court determines, in writing, that the local Bidder offers Williamson County the best combination of contract price and additional economic development opportunities for Williamson County created by the contract award, including the employment of residents of Williamson County and increased tax revenues to Williamson County.

This consideration does not prohibit Williamson County from rejecting all Bids. It is understood that the Commissioners Court of Williamson County, Texas, reserves the right to accept or reject any and/or all Bids for any or all goods and/or services covered in this IFB, and to waive informalities or defects in the Bid or to accept such Bid it shall deem to be in the best interest of Williamson County.

Awards should be made approximately sixty (60) business days after the Bid opening date Results may be obtained by viewing the Williamson County vendor portal at the following link:

http://www.wilco.org/CountyDepartments/Purchasing/SearchforaPastBid/tabid/5213/language/en-US/Default.aspx

2.11 Responsibility

It is expected that a prospective Bidder will be able to affirmatively demonstrate Bidder's responsibility. A prospective Bidder should be able to meet the following requirements:

a) have adequate financial resources, or the ability to obtain such resources as required;
b) be able to comply with the required or proposed delivery schedule;
c) have a satisfactory record of performance that can be determined thru references provided
d) have a satisfactory record of performance with Williamson County; and e) be otherwise qualified and eligible to receive an award.

Williamson County may request representation and other information sufficient to determine Bidder's ability to meet these minimum standards listed above.

2.12 Firm Pricing

For unit price items, all of the items listed are to be on a "per unit" basis, stating a firm price per unit or unit quantity of each item. Bidder must submit a firm price that must be good from the date of Bid opening for the fixed period of time set out in this IFB. Unless the IFB expressly states otherwise, this period shall be until the end of the Initial Contract Period. Bids which do not state a fixed price, or which are subject to change without notice, will not be considered. The Court may award a contract for the period implied or expressly stated in the lowest and best Bid.

2.13 Purchase Orders

If required by the Williamson County Purchasing Department, a purchase order(s) may be generated to the Successful Bidder for goods and/or services. If a purchase order is issued, the purchase order number must appear on all itemized invoices and/or requests for payment.

2.14 Silence of Specifications

The apparent silence of these specifications as to any detail or to the apparent omission from it of a detailed description concerning any point, shall be regarded as meaning that only the best practices are to prevail. All interpretations of these specifications shall be made on the basis of this statement.

2.15 References

Williamson County may require Bidder to supply a list of at least three (3) references where like services and/or goods have been supplied by their firm within the past five (5) years. References should be provided in accordance with this IFB.

3.1 DEFINITIONS, TERMS AND CONDITIONS

3.2 Definitions

a) "Addenda" – Means any written or graphic instruments issued by Williamson County prior to the consideration of Bids which modify or interpret the Bid Documents by additions, deletions, clarifications, or corrections.
b) "Agreement" – The Successful Bidder may be required by Williamson County to sign an additional Agreement containing terms necessary to ensure compliance with the IFB and Bidder's Bid. Such ensuing Agreement(s) shall contain the Bid Specifications, Terms and Conditions that are derived from the IFB.
c) "Contract" – This IFB and the Bid of the Successful Bidder shall become a contract between the Successful Bidder and
d) Williamson County once the Successful Bidder's Bid is properly accepted by the Williamson County Commissioners Court.
e) "Bid Documents" – The Legal Notice, IFB including attachments, and any Addenda issued by Williamson County prior to the consideration of any Bids.
f) "Bid" – The completed and signed bid form referred to as the Price Sheet and ALL required forms and documentation listed in the bid package which have been submitted in accordance with the terms and conditions described in the IFB package. A Bid submitted in accordance with this IFB is irrevocable during the specified period for evaluation and acceptance of Bids unless a waiver is obtained from the Williamson County Purchasing Agent.
g) "Bidder" – A person or entity who submits a Bid in response to this IFB.
h) "IFB" – Refers to this document, together with the attachments thereto and any future addenda issued by Williamson County.
i) "Successful Bidder"– The liable Bidder to whom Williamson County intends to award the Contract.

3.2.1 Venue and Governing Law

Bidder hereby agrees and acknowledges that venue and jurisdiction of any suit, right, or cause of action arising out of or in connection with this IFB, the Contract and any ensuing Agreement shall lie exclusively in either Williamson County, Texas or in the Austin Division of the Western Federal District of Texas, and the parties hereto expressly consent and submit to such jurisdiction. Furthermore, except to the extent that this IFB, the Contract and any ensuing Agreement is governed by the laws of the United States, this IFB, the Contract and any ensuing Agreement shall be governed by and construed in accordance with the laws of the State of Texas, excluding, however, its choice of law rules.

3.2.2 Incorporation by Reference and Precedence

The Contract shall be derived from (1) the IFB and its Schedules; and (2) the Bidder's Bid. In the event of a dispute under the Contract, applicable documents will be referred to for the purpose of clarification or for additional detail in the following order of precedence: (1) the IFB and its Schedules; and (2) the Bidder's Bid.

In the event Williamson County requires that an ensuing Agreement be executed following award and a dispute arises between the terms and conditions of the ensuing Agreement, (2) the IFB, and its Schedules; and (3) the Bidder's Bid, applicable documents will be referred to for the purpose of clarification or for additional detail in the following order of precedence: (1) terms and conditions of the ensuing Agreement, (2) the IFB; and (3) the Bidder's Bid.

3.2.3 Ownership of Bid

Each Bid shall become the property of Williamson County upon submittal and will not be returned to Bidders unless received after the submittal deadline.

3.2.4 Disqualification of Bidder

Upon signing and submittal of the Bid, a Bidder offering to sell supplies, materials, services, or equipment to Williamson County certifies that the Bidder has not violated the antitrust laws of this state codified in Section 15.01, et seq, Business & Commerce Code, or the Federal Antitrust Laws, and has not communicated directly or indirectly the offer made to any competitor or any other person engaged in such line of business. Any or all Bids may be rejected if Williamson County believes that collusion exists among the Bidders.

3.2.5 Funding

Williamson County intends to budget and make sufficient funds available and authorize funds for expenditure to finance the costs of the Contract. Bidders understand and agree that the County's payment of amounts under the Contract shall be contingent on Williamson County receiving appropriations or other expenditure authority sufficient to allow the County, in the exercise of reasonable administrative discretion, to make payments under this Contract.

3.2.6 Assignment, Successors and Assigns

The Successful Bidder may not assign, sell, or otherwise transfer the Contract or any other rights or interests obtained under the Contract without written permission of the Williamson County Commissioners Court. The Contract and any ensuing Agreement shall be binding upon and inure to the benefit of the contracting parties hereto and their respective successors and permitted assigns.

3.2.7 Implied Requirements

Products or services not specifically described or required in the IFB, but are necessary to provide the functional capabilities described by the Bidder, shall be implied and deemed to be included in the Bid.

3.2.8 Termination

a) **Termination for Cause:** Williamson County reserves the right to terminate the Contract and/or any ensuing Agreement for default if the Successful Bidder breaches any of the IFB Specifications, Terms and Conditions, including warranties of Bidder, if any, or if the Successful Bidder becomes insolvent or commits acts of bankruptcy. Such right of termination is in addition to and not in lieu of any other remedies Williamson County may have at law or in equity or as may otherwise be provided hereunder. Default may be construed as, but not limited to, failure to deliver the proper goods and/or services within the proper amount of time, and/or to properly perform any and all other requirements to Williamson County's satisfaction, and/or to meet all other obligations and requirements.

b) **Termination for Convenience:** Williamson County may terminate the Contract and/or any ensuing Agreement for convenience and without cause or further liability, upon no less than thirty (30) calendar day's written notice to Successful Bidder. Williamson County reserves the right to extend this period if it is in the best interest of the County. In the event Williamson County exercises its right to terminate without cause, it is understood and agreed that only the amounts due to the Successful Bidder for goods, commodities and/or services provided and expenses incurred to and including the date of termination, will be due and payable. No penalty will be assessed for Williamson County's termination for convenience.

3.2.9 Non-Performance

It is the objective of Williamson County to obtain complete and satisfactory performance of the requirements set forth herein. In addition to any other remedies available at law, in equity or that may be set out herein, failure to perform may result in a deduction of payment equal to the amount of the goods and/or services that were not provided and/or performed to Williamson County's satisfaction. In the event of such non-performance, Williamson County shall have the right, but shall not be obligated, to complete the services itself or by others and/or purchase the goods from other sources. If Williamson County elects to acquire the goods or perform the services itself or by others, pursuant to the foregoing, the Successful Bidder shall reimburse Williamson County, within ten (10) calendar days of demand, for all costs incurred by Williamson County (including, without limitation, applicable, general, and administrative expenses, and field overhead, and the cost of necessary equipment, materials, and field labor) in correcting the nonperformance which the Successful Bidder fails to meet pursuant to the requirements set out herein. In the event the Successful Bidder refuses to reimburse Williamson County as set out in this provision, Williamson County shall have the right to deduct such reimbursement amounts from any amounts that may be then owing or that may become owing in the future to the Successful Bidder.

3.2.10 Proprietary Information and Texas Public Information Act

All material submitted to Williamson County shall become public property and subject to the Texas Public Information Act upon receipt. If a Bidder does not desire proprietary information in the Bid to be disclosed, each page must be clearly identified and marked proprietary at time of submittal or, more preferably, all proprietary information may be placed in a folder or appendix and be clearly identified and marked as being proprietary. Williamson County will, to the extent allowed by law, endeavor to protect from public disclosure the information that has been identified and marked as proprietary. The final decision as to what information must be disclosed, however, lies with the Texas Attorney General. Failure to clearly identify and mark information as being proprietary as set forth under this provision will result in all unmarked information being deemed non-proprietary and available to the public. For all information that has not been clearly identified and marked as proprietary by the Bidder, Williamson County may choose to place such information on the County's website and/or a similar public database without obtaining any type of prior consent from the Bidder.

To the extent, if any, that any provision in this IFB or in the Bidder's Bid is in conflict with Tex. Gov't Code 552.001 et seq., as amended (the "Public Information Act"), the same shall be of no force or effect. Furthermore, it is expressly understood and agreed that Williamson County, its officers and employees may request advice, decisions and opinions of the Attorney General of the State of Texas in regard to the application of the Public Information Act to any items or data furnished to Williamson County as to whether or not the same are available to the public. It is further understood that Williamson County's officers and employees shall have the right to rely on the advice, decisions and opinions of the Attorney General, and that Williamson County, its officers and employees shall have no liability or obligation to any party hereto for the disclosure to the public, or to any person or persons, of any items or data furnished to Williamson County by a party hereto, in reliance of any advice, decision or opinion of the
Attorney General of the State of Texas.

3.2.11 Right to Audit

Successful Bidder agrees that Williamson County or its duly authorized representatives shall, until the expiration of three (3) years after termination or expiration of the services to be performed, have access to and the right to examine and photocopy any and all books, documents, papers and records of Successful Bidder, which are directly pertinent to the services to be performed or goods to be delivered for the purposes of making audits, examinations, excerpts and transcriptions. Successful Bidder agrees that Williamson County shall have access during normal working hours to all necessary facilities and shall be provided adequate and appropriate work space in order to conduct audits in compliance with the provisions of this section. Williamson County shall give Successful Bidder reasonable advance notice of intended audits.

3.2.12 Testing and Inspections

Williamson County reserves the right to inspect and test equipment, supplies, materials and goods for quality and compliance with this IFB, and ability to meet the needs of the user. Demonstration units must be available for review. Should the goods or services fail to meet requirements and/or be unavailable for evaluation, Williamson County can deem the Bidder to be in breach and terminate the Contract and/or any ensuing Agreement(s).

3.2.13 Bid Preparation Cost

Cost of developing Bids is the sole responsibility of Bidders and shall not be charged to Williamson County. There is no expressed or implied obligation for Williamson County to reimburse Bidders for any expense incurred in preparing a Bid in response to this IFB and Williamson County will not reimburse Bidders for such expenses.

3.2.14 INDEMNIFICATION

SUCCESSFUL BIDDER SHALL INDEMNIFY, DEFEND AND SAVE HARMLESS WILLIAMSON COUNTY, ITS OFFICIALS, EMPLOYEES, AGENTS AND AGENTS' EMPLOYEES FROM AND AGAINST ALL CLAIMS, LIABILITY, AND EXPENSES, INCLUDING REASONABLE ATTORNEYS' FEES, ARISING FROM ACTIVITIES OF BIDDER, ITS AGENTS, SERVANTS OR EMPLOYEES, PERFORMED HEREUNDER THAT RESULT FROM THE NEGLIGENT ACT, ERROR, OR OMISSION OF BIDDER OR ANY OF BIDDER'S AGENTS, SERVANTS OR EMPLOYEES, AS WELL AS ALL CLAIMS OF LOSS OR DAMAGE TO THE BIDDER'S AND WILLIAMSON COUNTY'S PROPERTY, EQUIPMENT, AND/OR SUPPLIES.

FURTHERMORE, WILLIAMSON COUNTY, ITS OFFICIALS, EMPLOYEES, AGENTS AND AGENTS' EMPLOYEES SHALL NOT BE LIABLE FOR DAMAGES TO THE SUCCESSFUL BIDDER ARISING FROM ANY ACT OF ANY THIRD PARTY, INCLUDING, BUT NOT BEING LIMITED TO THEFT. SUCCESSFUL BIDDER FURTHER AGREES TO INDEMNIFY, DEFEND AND SAVE HARMLESS WILLIAMSON COUNTY FROM, ITS OFFICIALS, EMPLOYEES, AGENTS AND AGENTS' EMPLOYEES AGAINST ALL CLAIMS OF WHATEVER NATURE ARISING FROM ANY ACCIDENT, INJURY, OR DAMAGE WHATSOEVER CAUSED TO ANY PERSON OR TO THE PROPERTY OF ANY PERSON OCCURRING IN RELATION TO SUCCESSFUL BIDDER'S PERFORMANCE OF ANY SERVICES REQUESTED HEREUNDER DURING THE TERM OF THE CONTRACT AND/OR ANY ENSUING AGREEMENT(S).

SUCCESSFUL BIDDER SHALL TIMELY REPORT ALL CLAIMS, DEMANDS, SUITS, ACTIONS, PROCEEDINGS, LIENS OR JUDGMENTS TO WILLIAMSON COUNTY AND SHALL, UPON THE RECEIPT OF ANY CLAIM, DEMAND, SUIT, ACTION, PROCEEDING, LIEN OR JUDGMENT, NOT LATER THAN THE FIFTEENTH (15TH) DAY OF EACH MONTH; PROVIDE WILLIAMSON COUNTY WITH A WRITTEN REPORT ON EACH SUCH MATTER, SETTING FORTH THE STATUS OF EACH MATTER, THE SCHEDULE OR PLANNED PROCEEDINGS WITH RESPECT TO EACH MATTER AND THE COOPERATION OR ASSISTANCE, IF ANY, OF WILLIAMSON COUNTY REQUIRED BY SUCCESSFUL BIDDER IN THE DEFENSE OF EACH MATTER. SUCCESSFUL BIDDER'S DUTY TO DEFEND, INDEMNIFY AND HOLD WILLIAMSON COUNTY HARMLESS SHALL BE ABSOLUTE. IT SHALL NOT ABATE OR END BY REASON OF THE EXPIRATION OR TERMINATION OF THE CONTRACT AND/OR ANY ENSUING AGREEMENT(S) UNLESS OTHERWISE AGREED BY WILLIAMSON COUNTY IN WRITING. THE PROVISIONS OF THIS SECTION SHALL SURVIVE THE TERMINATION OF THE CONTRACT AND SHALL REMAIN IN FULL FORCE AND EFFECT WITH RESPECT TO ALL SUCH MATTERS NO MATTER WHEN THEY ARISE.

IN THE EVENT OF ANY DISPUTE BETWEEN THE PARTIES AS TO WHETHER A CLAIM, DEMAND, SUIT, ACTION, PROCEEDING, LIEN OR JUDGMENT APPEARS TO HAVE BEEN CAUSED BY OR APPEARS TO HAVE ARISEN OUT OF OR IN CONNECTION WITH ACTS OR OMISSIONS OF WILLIAMSON COUNTY, BIDDER SHALL NEVER-THE- LESS FULLY DEFEND SUCH CLAIM, DEMAND, SUIT, ACTION, PROCEEDING, LIEN OR JUDGMENT UNTIL AND UNLESS THERE IS A DETERMINATION BY A COURT OF COMPETENT JURISDICTION THAT THE ACTS AND OMISSIONS OF BIDDER ARE NOT AT ISSUE IN THE MATTER.

SUCCESSFUL BIDDER'S INDEMNIFICATION SHALL COVER, AND SUCCESSFUL BIDDER AGREES TO INDEMNIFY WILLIAMSON COUNTY, IN THE EVENT WILLIAMSON COUNTY IS FOUND TO HAVE BEEN NEGLIGENT FOR HAVING

SELECTED SUCCESSFUL BIDDER TO PER THE WORK DESCRIBED IN THIS REQUEST. THE PROVISION BY SUCCESSFUL BIDDER OF INSURANCE SHALL NOT LIMIT THE LIABILITY OF SUCCESSFUL BIDDER UNDER THE CONTRACT AND/OR ANY ENSUING AGREEMENT.

3.2.15 Waiver of Subrogation

Successful Bidder and Successful Bidder's insurance carrier waive any and all rights whatsoever with regard to subrogation against Williamson County as an indirect party to any suit arising out of personal or property damages resulting from the Bidder's performance under this Contract and any ensuing Agreement.

3.2.16 Relationship of the Parties

The Successful Bidder shall be an independent contractor and shall assume all of the rights, obligations, liabilities, applicable to it as such independent contractor hereunder and any provisions herein which may appear to give Williamson County the right to direct the Successful Bidder as to details of doing work herein covered or to exercise a measure of control over the work shall be deemed to mean that the Successful Bidder shall follow the desires of Williamson County in the results of the work only. Williamson County shall not retain or have the right to control the Successful Bidder's means, methods or details pertaining to the Successful Bidder's performance of the work. Williamson County and the Successful Bidder hereby agree and declare that the Successful Bidder is an independent contractor and as such meets the qualifications of an "Independent Contractor" under Texas Workers Compensation Act, Texas Labor Code, Section 406.141, that the Successful Bidder is not an employee of Williamson County, and that the Successful Bidder and its employees, agents and sub- contractors shall not be entitled to workers compensation coverage or any other type of insurance coverage held by Williamson County.

3.2.17 Sole Provider

The Successful Bidder agrees and acknowledges that it shall not be considered a sole provider of the goods and/or services described herein and that Williamson County may contract with other providers of such goods and/or services if Williamson County deems, at its sole discretion, that multiple providers of the same goods and/or services will serve the best interest of Williamson County.

3.2.18 Force Majeure

If the party obligated to perform is prevented from performance by an act of war, order of legal authority, act of God, or other unavoidable cause not attributable to the fault or negligence of said party, the other party shall grant such party relief from the performance. The burden of proof for the need of such relief shall rest upon the party obligated to perform. To obtain release based on force majeure, the party obligated to perform shall file a written request with the other party.

3.2.19 Severability

If any provision of this IFB, the Contract or any ensuing Agreement shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision thereof, but rather the entire IFB, Contract or any ensuing Agreement will be construed as if not containing the particular invalid or unenforceable provision or provisions, and the rights and obligation of the parties shall be construed and enforced in accordance therewith. The parties acknowledge that if any provision of this IFB, the Contract or any ensuing Agreement is determined to be invalid or unenforceable, it is the desire and intention of each that such provision be reformed and construed in such a manner that it will, to the maximum extent practicable, give effect to the intent of this IFB, the Contract or any ensuing Agreement and be deemed to be validated and enforceable.

3.2.20 Equal Opportunity

Neither party shall discriminate against any employee or applicant for employment because of race, color, sex, religion or national origin.

3.2.21 Notice

Any notice to be given shall be in writing and may be affected by personal delivery, or by registered or certified mail, return receipt requested, addressed to the proper party, at the following address:

Williamson County Purchasing Department Purchasing Agent 901 South Austin Avenue Georgetown, Texas 78626

Bidder: Address set out in IFB referred to as the Bid Affidavit.

Notices given in accordance with this provision shall be effective upon (i) receipt by the party to which notice is given, or (ii) on the third

3.2.22 Sales and Use Tax Exemption

Williamson County is a body corporate and politic under the laws of the State of Texas and claims exemption from sales and use taxes under Texas Tax Code Ann. § 151.309, as amended, and the services and/or goods subject hereof are being secured for use by Williamson County.

3.2.23 Compliance with Laws

Williamson County and Successful Bidder shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any matter affecting the performance of the Contract and any ensuing Agreement, including, without limitation, Workers' Compensation laws, salary and wage statutes and regulations, licensing laws and regulations. When required, the Successful Bidder shall furnish Williamson County with certification of compliance with said laws, statues, ordinances, rules, regulations, orders, and decrees above specified.

3.2.24 Incorporation of Schedules, Exhibits, Appendices & Attachments

All of the Schedules, Exhibits, Appendices and Attachments referred to herein are incorporated by reference as if set forth verbatim herein. All of the Schedules, Exhibits, Appendices and Attachments referred to herein are incorporated by reference as if set forth verbatim herein. Any conflicting terms in the contract documents will be resolved at the sole discretion of the Williamson County Commissioners Court.

3.2.25 No Waiver of Immunities

Nothing herein shall be deemed to waive, modify or amend any legal defense available at law or in equity to Williamson County, its past or present officers, employees, or agents, nor to create any legal rights or claim on behalf of any third party. Williamson County does not waive, modify, or alter to any extent whatsoever the availability of the defense of governmental immunity under the laws of the State of Texas and of the United States.

3.2.26 No Waiver

The failure or delay of any party to enforce at any time or any period of time any of the provisions of this IFB, the Contract or any ensuing Agreement shall not constitute a present or future waiver of such provisions nor the right of either party to enforce each and every provision. Furthermore, no term or provision hereof shall be deemed waived and no breach excused unless such waiver or consent shall be in writing and signed by the party claimed to have waived or consented. Any consent by any party to, or waiver of, a breach by the other, whether expressed or implied, shall not constitute a consent to, waiver of or excuse for any other, different or subsequent breach.

3.2.27 Current Revenues

The obligations of the parties under the Contract and any ensuing Agreement do not constitute a general obligation or indebtedness of Williamson County for which Williamson County is obligated to levy, pledge, or collect any of taxation. It is understood and agreed that Williamson County shall have the right to terminate the Contract and any ensuing Agreement at the end of any Williamson County fiscal year if the governing body of Williamson County does not appropriate sufficient funds as determined by Williamson County's budget for the fiscal year in question. Williamson County may effect such termination by giving written notice of termination to the Successful Bidder at the end of its then-current fiscal year.

3.2.28 FOB – Destination

To the extent applicable to this IFB, all of the items listed are to be Free On Board to final destination (FOB Destination) with all transportation charges if applicable to be included in the Bid, unless otherwise specified in the Invitation for Bids. The title and risk of loss of the goods shall not pass to Williamson County until receipt and acceptance takes place at the FOB Destination point.

3.2.29 Binding Effect

This Contract and any ensuing Agreement shall be binding upon and inure to the benefit of the parties and their respective permitted assigns and successors.

3.2.30 Assignment

The Successful Bidder's interest and duties hereunder may not be assigned or delegated to a third party without the express written consent of Williamson County.

3.2.31 Safety

Successful Bidder is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with any services to be provided hereunder. The safety program shall comply with all applicable requirements of the current federal Occupational Safety and Health Act and all other applicable federal, state and local laws and regulations.

3.2.32 General Obligations and Reliance

Successful Bidder shall perform all services and/or provide all goods, as well as those reasonably inferable and necessary for completion and provision of services and/or goods required hereunder. The Successful Bidder shall keep Williamson County informed of the progress and quality of the services. Successful Bidder agrees and acknowledges that Williamson County is relying on Successful Bidder's represented expertise and ability to provide the goods and/or services described herein. Successful Bidder agrees to use its best efforts, skill, judgment, and abilities to perform its obligations in accordance with the highest standards used in the profession and to further the interests of Williamson County in accordance with Williamson County's requirements and procedures. Successful Bidder's duties as set forth herein shall at no time be in any way diminished by reason of any approval by the Williamson County nor shall the Successful Bidder be released from any liability by reason of such approval by Williamson County, it being understood that Williamson County at all times is ultimately relying upon the Successful Bidder's skill and knowledge in performing the services and providing any goods required hereunder.

3.2.33 Estimated Quantities

To the extent applicable to this IFB, the estimated quantity of each item listed in this IFB is only an estimate -- the actual quantity to be purchased may be more or less. Williamson County is not obligated to purchase any minimum amount, and Williamson County may purchase any reasonable amount greater than the estimate for the same unit price. Any limit on quantities available must be stated expressly in the Bid.

3.2.34 Contractual Development

The contents of the IFB and the selected Bid will become an integral part of the Contract, but may be modified, at Williamson County's sole discretion, by provisions of an ensuing Agreement. Therefore, the Bidder must agree to inclusion in an ensuing Agreement of the Bid Specifications, Terms and Conditions of this IFB. If an ensuing Agreement is required under this IFB, information relative to the Agreement will be located in the Special Provisions Section of this IFB.

3.2.35 Survivability

All applicable agreements that were entered into between Successful Bidder and Williamson County under the terms and conditions of the Contract and/or any ensuing Agreement shall survive the expiration or termination thereof for ninety (90) days unless a new contract has been awarded.

3.2.36 Air Quality

In determining the overall best Bid, Williamson County may, to the extent applicable, exercise the following option granted to local governments under the Texas Local Government Code.

Option – TLGC § 271.907. This option allows Williamson County to evaluate Bids and give preference to goods and/or services of a Bidder that demonstrates that the Bidder meets or exceeds any and all state or federal environmental standards, including voluntary standards, relating to air quality. If the Bid being submitted will have an effect on air quality for Williamson County (as it relates to any state, federal, or voluntary air quality standard), then the Bidder is encouraged to provide information in narrative indicating the anticipated air quality impact. Bidders are expected to meet all mandated state and federal air quality standards.

3.2.37 Entire Agreement

The Contract and any ensuing Agreement shall supersede all prior Agreements, written or oral between the Successful Bidder and Williamson County and shall constitute the entire Agreement and understanding between the parties with respect to the services and/or

goods to be provided. Each of the provisions herein shall be binding upon the parties and may not be waived, modified amended or altered except by writing signed by the Successful Bidder and Williamson County.

3.2.38 Payment

Williamson County's payment for goods and services shall be governed by Chapter 2251 of the Texas Government Code. An invoice shall be deemed overdue the 31st day after the later of (1) the date Williamson County receives the goods under the Contract; (2) the date the performance of the service under the Contract is completed; or (3) the date the Williamson County Auditor receives an invoice for the goods or services. Interest charges for any overdue payments shall be paid by Williamson County in accordance with Texas Government Code Section 2251.025. More specifically, the rate of interest that shall accrue on a late payment is the rate in effect on September 1 of Williamson County's fiscal year in which the payment becomes due. The said rate in effect on September 1 shall be equal to the sum of one percent (1%); and (2) the prime rate published in the Wall Street Journal on the first day of July of the preceding fiscal year that does not fall on a Saturday or Sunday.

In the event that an error appears in an invoice submitted by Successful Bidder, Williamson County shall notify Successful Bidder of the error not later than the twenty first (21st) day after the date Williamson County receives the invoice. If the error is resolved in favor of Successful Bidder, Successful Bidder shall be entitled to receive interest on the unpaid balance of the invoice submitted by Successful Bidder beginning on the date that the payment for the invoice became overdue. If the error is resolved in favor of Williamson County, Successful Bidder shall submit a corrected invoice that must be paid in accordance within the time set forth above. The unpaid balance accrues interest as provided by Chapter 2251 of the Texas Government Code if the corrected invoice is not paid by the appropriate date.
As a minimum, invoices shall include:

a) Name, address, and telephone number of Successful Bidder and similar information in the event the payment is to be made to a different address
b) Williamson County contract, Purchase Order, and/or delivery order number
c) Identification of items or service as outlined in the Contract
d) Quantity or quantities, applicable unit prices, total prices, and total amount
e) Any additional payment information which may be called for by the Contract

Payment inquiries should be directed to the Williamson County Auditor's Office, Accounts Payable Department: accountspayable@wilco.org , 512-943-1500.

3.2.39 Contractual Formation and Ensuing Agreement

The IFB and the Bidder's Bid, when properly accepted by the Williamson County Commissioners Court, shall constitute a contract equally binding between the Successful Bidder and Williamson County.
If an ensuing Agreement is required by this IFB, that information will be provided in Special Provisions section of this IFB. The Successful Bidder shall be required to execute the Agreement at the Williamson County Purchasing Department approximately ten (10) calendar days after the Successful Bidder is notified of award. The ensuing Agreement shall be in the same form as the Agreement which is attached to the end of this IFB. The only anticipated changes in the ensuing Agreement will be to include additional exhibits, to fill in blanks to identify the Successful Bidder, and terms relating to the compensation, or to revise the Agreement to accommodate corrections, changes in the scope of services, or changes pursuant to Addenda issued. **Bidders should raise any questions regarding the terms of the Agreement in the of written questions or submittals as described in the Public Announcement and General Information portion of this IFB.** Because the signed ensuing Agreement will be substantively and substantially derived from the attached Agreement, each Bidder is urged to seek independent legal counsel as to any questions about the terms, conditions or provisions contained in the Agreement ***before*** submitting a Bid. Again, the attached Agreement contains important legal provisions and is considered part and parcel of this IFB. Failure or refusal to sign aforesaid Agreement shall be grounds for Williamson County to revoke any award which has been issued, forfeit Bid security, if applicable, and select another Bidder.

3.2.40 Cooperative Purchasing Program

During the term of the Contract resulting from this IFB, Williamson County would like to afford the same prices, terms and conditions to other political subdivisions or public entities. Another entity's participation in the Contract resulting from this Invitation to Bid is subject to a properly authorized Purchasing Cooperative Inter-local Agreement with Williamson County. Any liability created by Purchase Orders issued against the Contract shall be the sole responsibility of the governmental agency placing the order.

3.2.41 Insurance Requirements

To the extent applicable Insurance information will appear in the Special Provisions section of this IFB.

3.2.42 Bidders Bond, Warranty Bond, Performance and Payment Bonds

To the extent applicable Bond information will appear in the Special Provisions section of this IFB.

3.2.43 Legal Liability Information

The Successful Bidder shall disclose all legal liability information by listing any pending litigation or anticipated litigation that your firm is involved in, including but not limited to, potential or actual legal matters with private parties and any local, State, Federal or international governmental entities. Williamson County reserves the right to consider legal liability information in the recommendation of any proposed contract to the Williamson County Commissioners Court.

3.2.44 Inclement Weather

In case of inclement weather or any other unforeseen event causing the County to close for business on the date of a bid/proposal submission deadline, the bid closing will automatically be postponed until the next business day the County is open. If inclement weather conditions or any other unforeseen event causes delays in carrier service operations, the County may issue an addendum to all known vendors interested in the project to extend the deadline. It will be the responsibility of the vendor to notify the County of their interest in the project if these conditions are impacting their ability to turn in a submission within the stated deadline. The County reserves the right to make the final judgment call to extend any deadline.

Proposal References

List the last three (3) companies or governmental agencies, where the same or similar goods and/or services as contained in this RFP package, were recently provided by Respondent.

Reference 1

Client Name: Location:

Contact Name: Title:

Phone: E-mail

Contract Date To: Contract Date From: Contract Value: $

Scope of Work:

Reference 2

Client Name: Location:

Contact Name: Title:

Phone: E-mail

Contract Date To: Contract Date From: Contract Value: $

Scope of Work:

Reference 3

Client Name:

Location:

Contact Name:

Title:

Phone:

E-mail

Contract Date To:

Contract Date From:

Contract Value: $

Scope of Work:

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor or other person doing business with local governmental entity

Form CIQ

This questionnaire is being filed in accordance with chapter 176 of the Local Government Code by a person doing business with the governmental entity.

By law this questionnaire must be filed with the records administrator of the local government not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

OFFICE USE ONLY

Date Received

1 **Name of person doing business with local governmental entity.**

2 ☐ **Check this box if you are filing an update to a previously filed questionnaire.**

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than September 1 of the year for which an activity described in Section 176.006(a), Local Government Code, is pending and not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 **Describe each affiliation or business relationship with an employee or contractor of the local governmental entity who makes recommendations to a local government officer of the local governmental entity with respect to expenditure of money.**

4 **Describe each affiliation or business relationship with a person who is a local government officer and who appoints or employs a local government officer of the local governmental entity that is the subject of this questionnaire.**

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor or other person doing business with local governmental entity

Form CIQ
Page 2

5 **Name of local government officer with whom filer has affiliation or business relationship.**
(Complete this section only if the answer to A, B, or C is YES.)

This section, item 5 including subparts A, B, C & D, must be completed for each officer with whom the filer has affiliation or other relationship. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income from the filer of the questionnaire?

☐ Yes ☐ No

B. Is the filer of the questionnaire receiving or likely to receive taxable income from or at the direction of the local government officer named in this section AND the taxable income is not from the local governmental entity?

☐ Yes ☐ No

C. Is the filer of this questionnaire affiliated with a corporation or other business entity that the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

☐ Yes ☐ No

D. Describe each affiliation or business relationship.

6. Describe any other affiliation or business relationship that might cause conflict of interest:

7

Signature of person doing business with the governmental entity	Date

Signature not required if completing in BIDSYNC electronically.

BID AFFIDAVIT

This form must be completed, signed, notarized and returned with Bid package

The undersigned certifies that the IFB and the Bidder's Bid have been carefully reviewed and are submitted as correct and final. Bidder further certifies and agrees to furnish any and/or all goods and/or services upon which prices are extended at the price Bid, and upon the conditions contained in the IFB.

I hereby certify that the foregoing Bid has not been prepared in collusion with any other Bidder or other person or persons engaged in the same line of business prior to the official opening of this Bid. Further, I certify that the Bidder is not now, nor has been for the past six (6) months, directly or indirectly concerned in any pool or agreement or combination, to control the price of services/commodities Bid on, or to influence any person or persons to submit a Bid or not to submit a Bid thereon."

Name of Bidder:	
Address of Bidder:	
Email:	
Telephone:	
Printed Name of Person Submitting Affidavit:	
Signature of Person Submitting Affidavit:	

Cooperative Purchasing Program

Check one of the following options below. A non-affirmative Bid will in no way have a negative impact on the County's evaluation of the Bid.

☐	I will offer the quoted prices to all authorized entities during the term of the County's Contract.
☐	I will not offer the quoted prices to all authorized entities.

If no box is checked, the Bidder agrees to make best efforts in good faith to offer the quoted prices to all authorized entities.

BEFORE ME, the undersigned authority, a Notary Public, personally appeared _____ (*Name of Signer*), who after being by me duly sworn, did depose and say: "I, _____ (*Name of Signer*) am a duly authorized officer of/agent for _____ (*Name of Bidder*) and have been duly authorized to execute the foregoing on behalf of the said _____ (*Name of Bidder*).

SUBSCRIBED AND SWORN to before me by the above-named _____

on this the _____ day of _____, 20_____.

_____

Notary Public in and for

The State of _____

The County of _____

SIGNATURE AND NOTARY NOT REQUIRED IF COMPLETING IN BIDSYNC ELECTRONICALLY.

Question and Answers for Bid #1702-140 - Road Signs, Delineators and Object Markers and Traffic control devises

Overall Bid Questions
There are no questions associated with this bid.

Commissioners Court - Regular Session **29.**

Meeting Date: 02/14/2017

Advertise IFB 1702 141 WCRAS Clinic Supplies

Submitted By: Thomas Skiles, Purchasing

Department: Purchasing

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider, and take appropriate action on authorizing Purchasing Agent to advertise and receive bids for IFB # 1702-141 Clinic Supplies for Williamson County Animal Shelter.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Bid Packet

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 04:51 PM
Form Started By: Thomas Skiles		Started On: 02/08/2017 01:32 PM
Final Approval Date: 02/08/2017		

PUBLIC ANNOUNCEMENT AND GENERAL INFORMATION

WILLIAMSON COUNTY PURCHASING DEPARTMENT
SOLICIATION 1702-141
Clinic Supplies for Williamson County Animal Shelter

BIDS MUST BE RECEIVED ON OR BEFORE:
Mar 8, 2017 2:00:00 PM CST

BIDS WILL BE PUBLICLY OPENED:
Mar 8, 2017 2:00:00 PM CST

Notice is hereby given that sealed Bids for the above-mentioned goods and/or services will be accepted by the Williamson County Purchasing Department. Williamson County uses BidSync to distribute and receive bids. Specifications for this IFB may be obtained by registering at www.bidsync.com.

Williamson County prefers and requests electronic submittal of this Bid.

All electronic bids must be submitted via: www.bidsync.com

Electronic bids are requested, however paper bids will currently still be received, until further notice and may be mailed or delivered to the address listed below.

Bidders are strongly encouraged to carefully read this entire IFB.

All interested Bidders are invited to submit a Bid in accordance with the Instructions and General Requirements, Bid Format, Bid Specifications, and Definitions, Terms and Conditions stated in this IFB.

Please note that a complete package must be submitted choosing one of the above two methods. Split packages submitted will be considered "unresponsive" and will not be accepted or evaluated.

Williamson County will not accept any Bids received after the submittal deadline, and shall return such Bids unopened to the Bidder.

General Information:

- If mailed or delivered in person, Bids and Bid addenda are to be delivered in sealed envelope on or before the submittal deadline, as noted in the Public Announcement and General Information listed above for this IFB, to:

  Williamson County Purchasing Department
  Attn: **BID NAME AND NUMBER**
  901 South Austin Avenue
  Georgetown, Texas 78626

  - Bidders should list the Bid Number, Bid Name, Name and Address of Bidder, and the Date of the Bid opening on the outside of the box or envelope and note "Sealed Bid Enclosed."
  - Bidder should submit one (1) original.
  - Williamson County will NOT be responsible for unmarked or improperly marked envelopes.
  - Williamson County will not accept any responsibility for Bids being delivered by third party carriers.
  - Facsimile transmittals will NOT be accepted.

- Bids will be opened publicly in a manner; however, to avoid public disclosure of contents only the names and of Bidders and prices will be read aloud.

- All submitted questions with their answers will be posted and updated on www.bidsync.com.

- It is the Bidder's responsibility to review all documents in BidSync, including any Addenda that may have been added after the document packet was originally released and posted.

  - Any Addenda and/or other information relevant to the IFB will be posted on www.bidsync.com.

  - The Williamson County Purchasing Department takes no responsibility to ensure any interested Bidder has obtained any outstanding addenda or additional information.

Bid 1702-141
Clinic Supplies for Williamson County Animal Shelter

Bid Number	1702-141
Bid Title	Clinic Supplies for Williamson County Animal Shelter
Bid Start Date	In Held
Bid End Date	Mar 8, 2017 2:00:00 PM CST
Question & Answer End Date	Feb 3, 2017 5:00:00 PM CST
Bid Contact	Brenda Fuller 512-**943**-1607 brendafuller@wilco.org
Contract Duration	**12 months**
Contract Renewal	2 annual renewals
Prices Good for	**90 days**
Pre-Bid Conference	**Feb 23, 2017 10:00:00 AM CST** **Attendance is optional** **Location: 901 S Austin Ave.** **Georgetown, TX 78626**

Item Response Form

Item	**1702-141--01-01 -** Clinic Supplies for WCRAS
Quantity	**1 each**

Prices are not requested for this item.

Delivery Location **Williamson County, Texas**

No Location Specified

Qty 1

Description
Please attach all documents to this line.



CHECK LIST FOR REQURIED DOCUMENTS

Clinic Supplies for Williamson County Regional Animal Shelter
IFB #1702-141

Bid may not be deemed complete without the inclusion of requested material below. These required forms should be attached to the line item. Please use this document as a check list for you to make sure you have completed this Bid Package.

☐	Pricing – Bid Response
☐	References
☐	Conflict of Interest Form (completed and signed)
☐	Bid Affidavit
☐	1295 Form

PRODUCT DESCRIPTION	SIZE	UOM	BRAND OR GENERIC W/PROD #	QTY 12 mo est	UNIT PRICE	EXT COST/ ea/box/case
Syringe, 3cc w/needle LL 22X1	3cc	100/box	Nipro or equi	155		
Syringe, 1cc w/needle LL 25X5/8	1cc	100/box	Nipro or equi	205		
Syringe, 1cc w/o needle	1cc	100/box	Nipro or equi	25		
Syringe, 6cc no needle LL	6cc	50/box	Nipro or equivalent	10		
Syringe, 10cc no needle LL	10cc	100/box	Nipro or equi	20		
Syringe, U-40 .5 cc, 29X.5"	.5cc	100/box		12		
Syringe, U-100, .3cc, 29X.5"	.3cc	100/box		4		
Syringe, 60cc,	60cc	25/box		6		
Needles 20 GA 1.5"	20GA	100/box		4		
Needles 22GA 1.5"	22GA	100/box		4		
Needles 18GA 1.0”	18GA	100/box		10		
Needles 25GA 1.0"	25GA	100/box		1		
Cotton Balls		bulk box		6		
Cotton Swabs with Wooden Handles 6"	6 inch	500/box				
Exam Gloves-latex w/o powder Large	large	100/box		175		
Exam Gloves-latex w/o powder Med	medium	100/box		110		
Exam Gloves-latex w/o powder Small	small	100/box		45		
Microscope Slides Plain		100 box		2		
Microscope Cover Slips		100 box		2		
surgical blade #10	#10	100/box		2		
surgical blade #15	#15	100/box		35		
Thermometer Digital		ea		4		
Tongue Depressors		500/box		25		
Kwik stop	1.5 oz	ea		4		
Elasticon Tape 2 inch	2 inch	12/box	Johnson & Johnson or equiv	2		
Elasticon Tape 1 inch	1 inch	12/bx	Johnson & Jo	2		
Feeding Tube, Red, 12FR, 16”	size 12	ea		6		
Bottle, plastic w Yorker, tapered tip 16oz	16 oz	box		6		
Bottle, plastic w Yorker, tapered tip 4oz	4 oz	box		12		
Pill Crusher		ea		4		
Pill Cutter		ea		4		
Pet Nurser 2oz	2 oz	6/box		24		
Per Nurser 4oz	4 oz	6/box		12		

PRODUCT DESCRIPTION	SIZE	UOM	BRAND OR GENERIC W/PROD #	QTY 12 mo est	UNIT PRICE	EXT COST/ ea/box/case
Needle, Suture,3/8 Circle Cut, Size 8, 12/pk	size 8	box		6		
Needle, Suture, 3/8 Circle Cut, Size 10, 12/pk	size 10	box		6		
Needle, Suture, 3/8, Circle Cut,Size 12, 12/pk	size 12	box		6		
Needle, Suture,3/8 Circle Cut, Size 14, 12/pk	size 14	box		12		
IV Drip Lines 10 drip 1 inj PVL	103"	ea		60		
Suture Cassette 0 absorb, monofilament	0	cassette/25M		12		
Suture Cassette 2-0 absorb, monofilament	2-0	cassette/25M		12		
Suture Cassette 3-0 absorb, monofilament	3-0	cassette/25M		20		
Vet Wrap 2”	2 inch	box		6		
Vet Wrap 4”	4 inch	box		2		
Gauze Wrap	2 inch	box		4		
Porous Tape 2”	2 inch	box	Zonas Brand	2		
Porous Tape 1”	1 inch	box	Zonas Brand	2		
Telfa Pads	3X4 inch	100/box	Kendall Bran	6		
Sterile Vials, INJ, Clear	30ml	25/box		4		
Cast Padding, cotton and rayon blend, 6"	6 inch	4 yards/bo	BSN Medical	4		
Carpal Splint, Spoon Type 15 inch	15 inch	ea		2		
Carpal Splint, Spoon Type 18 inch	18 inch	ea		4		
E Collar 10in	10 inch	ea		6		
E Collar 15in	15 inch	ea		6		
E Collar 25in	25 inch	ea		12		
Autoclave Indicator Tape ½ “	1/2 inch	box		6		
Surgery Gloves Triflex Size 6.0	6	box		2		
Surgery Gloves Triflex Size 6.5	6.5	box		2		
Surgery Gloves Triflex Size 7.0	7	box		10		
Surgery Gloves Triflex Size 7.5	7.5	box		50		
Surgery Gloves Triflex Size 8.0	8	box		2		
Drapes, Surgery, Disposable	38	100yards/box		10		
Gauze pads 3X3	3inch X 3inch	200/pckg		210		
Instrument Lube Milk	gallon	bottle		10		
Huck Towels	18" X 18"	ea		50		
Tatoo Ink Green Paste	oz	ea		4		

PRODUCT DESCRIPTION	SIZE	UOM	BRAND OR GENERIC W/PROD #	QTY 12 mo est	UNIT PRICE	EXT COST/ ea/box/case
Skin Stapler		ea		6		
Skin Staple Remover		ea		6		
Surgical Glue	2ml	bottle		110		
Anesthesia Mask Feline Large		ea		2		
Anesthesia Mask Canine Large		ea		2		
Anesthesia Mask Canine Small		ea		2		
Endotracheal Tubes #3	#3	ea		1		
Endotracheal Tubes #4	#4	ea		1		
Endotracheal Tubes #5	#5	ea		1		
Endotracheal Tubes #6	#6	ea		1		
Endotracheal Tubes #7	#7	ea		1		
Endotracheal Tubes #8	#8	ea				
Catheter, Insyte	18 GA	ea	Becton Dicke	6		
Catheter, Insyte	22 GA	ea	Becton Dicke	6		
Catheter, Insyte	24 GA	ea	Becton Dicke	6		
Adaptor Plug, Male		ea	Abbott 32086	6		
T-Connector		ea	Abbott 32018	6		

Williamson County – Invitation for Bid (IFB)

SECTION 1 - DEFINITIONS

Addendum/Addenda – means any written or graphic instruments issued by the County prior to the consideration of Bids which modify or interpret the Bid Documents by additions, deletions, clarifications, or corrections.

Agreement/Ensuing Agreement(s) – means the Successful Bidder may be required by the County to sign an additional Agreement containing terms necessary to ensure compliance with the IFB and the Bidder's Bid. Such Ensuing Agreement(s) shall contain the Bid specifications, terms and conditions that are derived from the IFB.

Bid Documents – means the Legal Notice, IFB including attachments, and any Addenda issued by the County prior to the consideration of any Bids.

Bid – means the completed and signed bid form, (sometimes referred to as the Price Sheet), and ALL required forms and documentation listed in the IFB package which have been submitted in accordance with the terms and conditions described in the IFB package. A Bid submitted in accordance with this IFB is irrevocable during the specified period for evaluation and acceptance of Bids unless a waiver is obtained from the Williamson County Purchasing Agent.

Bidder – means a person or entity who submits a Bid in response to this IFB.

Contract – means this IFB and the Bid of the Successful Bidder shall become a Contract between the Successful Bidder and the County once the Successful Bidder's Bid is properly accepted by the Williamson County Commissioners Court.

Commissioner's Court – means the Williamson County Commissioners Court.

County – means Williamson County, a political subdivision of the State of Texas.

Invitation for Bid (IFB) – means this document, together with the attachments thereto and any future Addenda issued by the County.

Successful Bidder – means the liable Bidder to whom the County intends to award the Contract.

SECTION 2 - BID FORMAT AND SUBMISSION

2.1 ORGANIZATION OF BID CONTENTS FOR SUBMITTAL

Each Bid should be organized and items submitted in the order described below:

A. Transmittal Letter. Please see Section 2.3, Transmittal Letter, for more information.

B. Price Sheet.

C. Conflict of Interest Questionnaire. Please see Section 2.2, Conflict of Interest, for more information in regards to this. Please note that even if you deem there to be no Conflict of Interest, this signed questionnaire must be included in your package.

D. References. Please see Section 3.15, References, for more information.

E. Bid Affidavit.

F. Form 1295. Please see Section 2.4, Certificate of Interested Parties – Form 1295.

2.2 CONFLICT OF INTEREST

No public official shall have interest in a Contract, in accordance with Vernon's Texas Codes Annotated, Local Government Code, Title 5, Subtitle C, Chapter 171, as amended.

As of January 1, 2006, all Bidders are responsible for complying with Local Government Code, Title 5, Subtitle C, Chapter 176. Additional information may be obtained from the County's website at the following link:

http://www.wilco.org/CountyDepartments/Purchasing/ConflictofInterestDisclosure/tabid/689/language/en US/Default.aspx

Each Bidder must disclose any existing or potential conflict of interest relative to the performance of the requirements of this IFB. **Examples of potential conflicts of interest may include an existing business or personal relationship between the Bidder, its principal, or any affiliate or subcontractor with the County or any other entity or person involved in any way with the project that is subject to this IFB**. Similarly, any personal or business relationship between the Bidder, the principals, or any affiliate or subcontractor with any employee, or official of the County or its suppliers must be disclosed. Any such relationship that might be perceived or represented as a conflict must be disclosed. Failure to disclose any such relationship or reveal personal relationships with the County employees or officials may be cause for termination.

The County will decide if an actual or perceived conflict should result in Bid disqualification.

By submitting a Bid in response to this IFB, all Bidders affirm they have not given, nor intend to give, at any time hereafter, any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a the County public servant or any employee, official or representative of same, in connection with this procurement.

Each Bidder must provide a Conflict of Interest Statement with their Bid Package. Package may be deemed incomplete without this form.

2.3 TRANSMITTAL LETTER

The Bidder should submit a Transmittal Letter that provides the following information:

A. Name and address of individual or business entity submitting the Bid.

B. Name, physical address, email address, business and fax number of the Bidder's principal contact person regarding all contractual matters relating to this IFB.

C. The Bid's Federal Employer Identification Number.

D. If the Proposal being submitted will have an effect on air quality for the County (as it relates to any state, federal, or voluntary air quality standard), then the Respondent is encouraged to provide information in narrative indicating the anticipated air quality impact. See Section 4.36, Air Quality for more information.

2.4 CERTIFICATE OF INTERESTED PARTIES – FORM 1295

As of January 1, 2016, all Successful Bidders are responsible for complying with the Texas Government Code, Section 2252.908. The law states that the County may not enter into certain contracts with a Bidder unless the Bidder submits a disclosure of interested parties to the County at the time the Bidder submits the signed Contract. The law applies only to a Contract of the County on or after January 1, 2016 that either:

A. Requires an action or vote by the Commissioners Court before the Contract may be signed (all contracts that fall under the jurisdiction of the Commissioners Court approval, such as contracts resulting from an Initiation for Bid (IFB), RFP, Request for Qualifications (RFQ), etc., excluding, but not limited to, certain Juvenile Service contracts, contracts funded with Sheriff's seized fun monies, etc.); or
B. Has a value of at least $1,000,000.

By January 1, 2016, the Texas Ethics Commission will make available on its website, a new filing application that must be used to file Form 1295. Information regarding how to use the filing application is available on the Texas Ethics Commission website at the following link:

https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

A Respondent must:

A. Use the online application to process the required information on Form 1295.

B. Print a copy of the form which will contain a unique certification number.

C. An authorized agent of the Bidder must sign the printed copy of the form.

D. Have the form notarized.

E. File the completed Form 1295 and certification of filing (scanning and emailing form is sufficient) with Williamson County Purchasing Agent at the time the signed Contract is submitted for approval.

After the Commissioners Court award of the Contract, the County shall notify the Texas Ethics Commission, using the Texas Ethics Commission's filing application, of the receipt of the filed Form 1295 and certification of filing not later than the 30th day after the date the Contract binds all parties to the Contract. The Texas Ethics Commission will post the completed Form 1295 to its website within seven business days after receiving notice from the County.

2.5 ETHICS

The Bidder shall not accept or offer gifts or anything of value nor enter into any business arrangement with any employee, official or agent of the County.

2.6 BID SUBMITTAL DEADLINE

The Bid is due no later than the submittal date and time set forth in the Public Announcement and General Information listed in this IFB package. Contents of each Bid shall be submitted in accordance with this IFB.

2.7 DELIVERY OF BIDS

The County uses BidSync to distribute and receive Bids and proposals. It is preferred that Bids submitted electronically through BidSync; however, Bidders can submit a hard copy.

Refer to www.bidsync.com for further information on how to submit electronically.

If mailed or delivered in person, Bids and Bid Addenda are to be delivered in sealed envelope on or before the submittal deadline, as noted in the Public Announcement and General Information listed in this IFB package, to:

Williamson County Purchasing Department
Attn: **Bid Name and Number**
901 South Austin Avenue
Georgetown, Texas 78626

Also, all Bidders should list their Name and Address, and the Date of the Bid opening on the outside the box or envelope and note "Sealed Bid Enclosed." The County will not accept any Bids received after the submittal deadline, and shall return such Bids unopened to the Bidder. The County will not accept any responsibility for Bids being delivered by third party carriers.

Bids will be opened publically and the names of Bidders and pricing will be read aloud.

SECTION 3 - INSTRUCTIONS AND GENERAL REQUIREMENTS

3.1 INSTRUCTIONS

Read this document carefully, and follow all instructions and requirements. All Bidders are responsible for fulfilling all requirements and specifications. Be sure to have a clear understanding of this IFB.

General requirements apply to all advertised IFBs; however, these may be superseded, in whole or in part, by the bid specifications, Addenda and modifications issued as a part of this IFB. Be sure your Bid package is complete.

3.2 AMBIGUITY, CONFLICT, OR OTHER ERRORS IN THIS IFB

If a Bidder discovers any ambiguity, conflict, discrepancy, omission or other error in this IFB, the Bidder shall immediately notify the County Purchasing Department of such error in writing and request modification or clarification of the document.

Modifications will be made by issuing Addenda. If the Bidder fails to notify the County prior to the date and time fixed for submission of Bids of an error or ambiguity in the IFB known to the Bidder, or an error or ambiguity that reasonably should have been known to the Bidder, then the Bidder shall be deemed to have waived the error or ambiguity or its later resolution.

The County may also modify the IFB, no later than forty-eight (48) hours prior to the date and time fixed for submission of Bids, by issuance of an Addendum. All Addenda will be numbered consecutively, beginning with one (1).

3.3 NOTIFICATION OF MOST CURRENT ADDRESS

All Bidders in receipt of this IFB shall notify the Williamson County Purchasing Department of any address changes, contact person changes, and/or telephone number changes no later than forty-eight (48) hours prior to the date and time fixed for submission of Bids.

3.4 SIGNATURE OF BIDDER

A. If the Bidder is a Corporation or Limited Liability Company, the legal name of the Corporation Limited Liability Company shall be provided together with the signature of the officer or officers authorized to sign on behalf of such entity.

B. If the Bidder is a General Partnership, the true name of the firm shall be provided with the signature of each partner authorized to sign.

C. If the Bidder is a Limited Partnership, the name of the Limited Partner's General Partner shall provided with the signature of the officer authorized to sign on behalf of the General Partner.

D. If the Bidder is a Sole Proprietor(s) (individual), each Sole Proprietor(s) shall sign.

E. If signature is by an agent, other than the Sole Proprietor(s) or an officer of a Corporation, Limited Liability Company, General Partner or a member of a General Partnership, a power of attorney equivalent document must be submitted to the Williamson County Purchasing Department.

3.5 ASSUMED BUSINESS NAME

If the Bidder operates business under an Assumed Business Name, the Bidder must have on file with the

Williamson County Clerk a current Assumed Name Certificate and provide a file marked copy of same.

3.6 BID OBLIGATION

The contents of the IFB, Bid, and any clarification thereof submitted by the Successful Bidder shall become part of the contractual obligation and incorporated by reference into the Contract and any Ensuing Agreement(s).

3.7 COMPLIANCE WITH IFB SPECIFICATIONS

It is intended that this IFB describe the requirements and the Bid format in sufficient detail to secure comparable Bids. Failure to comply with all provisions of the IFB may, at the sole discretion of the County, result in disqualification.

3.8 WITHDRAWAL OF BID

The Bidder may withdraw its Bid by submitting a written request with the company letterhead and the signature of an authorized individual, as described in Section 3.4, Signature of Bidder, to the Williamson County Purchasing Department any time prior to the submission deadline.

The Bidder may submit a new Bid prior to the deadline. Alterations of the Bid in any manner will not be considered if submitted after the deadline. Withdrawal of a Bid after the deadline will be subject to written approval of the Williamson County Purchasing Agent.

3.9 EVALUATION AND AWARD

The County reserves the right to use all pertinent information (also learned from sources other than disclosed in the Bid process) that might affect the County's judgment as to the appropriateness of award to the lowest and best evaluated Bid. This information may be appended to the Bid evaluation process results. Information on a Bidder from reliable sources, and not within the Bidder's Bid, may also be noted and made part of the evaluation file. The County shall have sole discretion for determining the reliability of the source.

To ensure the proper and fair evaluation of a solicitation, the County prohibits unsolicited communication initiated by the Bidder to the County Official or Employee evaluating or considering the Bids prior to the time an award has been made. Unsolicited communication may be ground for disqualifying the offending Bidder from consideration or award of the solicitation, or any future solicitation.

Communication between the Bidder and the County will be initiated by the appropriate County Official Employee in order to obtain information or clarification needed to develop a proper and accurate evaluation of the solicitation.

The County intends to award a Contract to the most responsible and responsive Bidder whose Bid will be most advantageous to the County. In accordance with Texas Government Code and Local Government Code, the County may consider, to the extent allowed by law, the following:

A. Price;
B. The Bidder's experience and reputation;
C. Quality of the Bidder's goods and/or services;
D. The Bidder's safety record;
E. The Bidder's proposed personnel;
F. The Bidder's financial capabilities; and
G. Any other relevant factors specifically listed in this IFB or authorized by law.

3.10 CONDISERATION OF LOCATION OF PRINCIPAL OFFICE

Pursuant to Texas Local Government Code, Section 271.905, in purchasing any real property or personal property that is not affixed to real property, if the County receives one or more Bids from a Bidder whose principal place of business is in Williamson County and whose Bid is within three (3) percent of the lowest Bid price received by the County from a Bidder who is not a resident of Williamson County, the County may enter into a contract with:

A. The lowest Bidder; or the Bidder whose principal place of business is in Williamson County if the Commissioners Court determines, in writing, that the local Bidder offers the County the best combination of contract price and additional economic development opportunities Williamson County created by the contract award, including the employment of residents Williamson County and increased tax revenues to Williamson County.

It is understood that the Commissioners Court of Williamson County, Texas, reserves the right to accept or reject any and/or all Bids for any or all goods and/or services covered in this IFB, and to waive informalities or defects in the Bid or to accept such Bid, if it shall deem to be in the best interest of the County.

Awards should be made approximately sixty (60) business days after the Bid opening date. Results may be obtained by viewing the Williamson County vendor portal at the following link:

http://www.wilco.org/CountyDepartments/Purchasing/SearchforaPastBid/tabid/5213/language/en-US/Default.aspx

3.11 RESPONSIBILITY

It is expected that a prospective Bidder will be able to affirmatively demonstrate responsibility. A prospective Bidder should be able to meet the following requirements:

A. Have adequate financial resources, or the ability to obtain such resources as required;
B. Be able to comply with the required or proposed delivery schedule;
C. Have a satisfactory record of performance that can be determined thru references provided; and
D. Be otherwise qualified and eligible to receive an award.

The County may request representation and other information sufficient to determine the Bidder's ability to meet these minimum standards listed above.

3.12 FIRM PRICING

For unit price items, all of the items listed are to be on a "per unit" basis, stating a firm price per unit or unit quantity of each item. The Bidder must submit a firm price that must be good from the date of Bid opening for the fixed period of time set out in this IFB. Unless the IFB expressly states otherwise, this period shall be until the end of the Initial Contract Period.

Bids which do not state a fixed price, or which are subject to change without notice, will not be considered. The Court may award a Contract for the period implied or expressly stated in the lowest and best Bid.

3.13 PURCHASE ORDERS

If required by the Williamson County Purchasing Department, a purchase order(s) may be generated to the Successful Bidder for goods and/or services. If a purchase order is issued, the purchase order number must appear on all itemized invoices and/or requests for payment.

3.14 SILENCE OF SPECIFICATIONS

The apparent silence of these specifications as to any detail or to the apparent omission from it of a

detailed description concerning any point, shall be regarded as meaning that only the best practices are to prevail. All interpretations of these specifications shall be made on the basis of this statement.

3.15 REFERENCES

The County may require the Bidder to supply a list of at least three (3) references where like services and/or goods have been supplied by their firm within the past five (5) years, to include names, titles, phone numbers and email addresses of key personnel, and dates of performance.

The County may contact some or all of the references in order to determine the Respondent performance record on work similar to that described in this RFP. The County reserves the right to contact references other than those provided in the response and to use the information gained from them in the evaluation process.

References, if requested, should be provided in accordance with this IFB. Bid may not be deemed complete without the inclusion of requested references.

SECTION 4 - TERMS AND CONDITIONS

4.1 VENUE AND GOVERNING LAW

The Bidder hereby agrees and acknowledges that venue and jurisdiction of any suit, right, or cause of action arising out of or in connection with this IFB, the Contract and any Ensuing Agreement(s), shall lie exclusively in either Williamson County, Texas or in the Austin Division of the Western Federal District of Texas, and the parties hereto expressly consent and submit to such jurisdiction. Furthermore, except to the extent that this IFB, the Contract and any Ensuing Agreement(s) is governed by the laws of the United States, this IFB, the Contract and any Ensuing Agreement(s) shall be governed by and construed in accordance with the laws of the State of Texas, excluding, however, its choice of law rules.

4.2 INCORPORATION BY REFERENCE AND PRECEDENCE

A. The Contract shall be derived from the IFB and its Addenda (if applicable), and the Bidder's Bid. In the event of a dispute under the Contract, applicable documents will be referred to for the purpose of clarification or for additional detail in the following order of precedence:

   1. The IFB and its Addenda (if applicable); and

   2. The Bidder's Bid.

B. In the event the County requires that an Ensuing Agreement be executed following award and a dispute arises between the terms and conditions of the Ensuing Agreement, the IFB and its Addenda (if applicable), and the Bidder's Bid, applicable documents will be referred to for the purpose of clarification or for additional detail in the following order of precedence:

   1. Terms and conditions of the Ensuing Agreement;

   2. The IFB its Addenda; and

   3. The Bidder's Bid.

4.3 OWNERSHIP OF BID

Each Bid shall become the property of the County upon submittal and will not be returned to Bidders unless received after the submittal deadline.

4.4 DISQUALIFICATION OF BIDDER

Upon signing and submittal of the Bid, a Bidder offering to sell supplies, materials, services, or equipment to the County, certifies that the Bidder has not violated the antitrust laws of the State of Texas codified in Business & Commerce Code, Section 15.01, or the Federal Antitrust Laws, and has not communicated directly or indirectly the offer made to any competitor or any other person engaged in such line of business. Any or all Bids may be rejected if the County believes that collusion exists among the Bidders.

4.5 FUNDING

The County intends to budget and make sufficient funds available and authorize funds for expenditure to finance the costs of the Contract. All Bidders understand and agree that the County's payment of amounts under the Contract shall be contingent on the County receiving appropriations or other expenditure authority sufficient to allow the County, in the exercise of reasonable administrative discretion, to make payments under this Contract.

4.6 ASSIGNMENT, SUCCESSORS AND ASSIGNS

The Successful Bidder may not assign, sell, or otherwise transfer the Contract or any other rights or interests obtained under the Contract without written permission of the Commissioners Court. The Contract and any Ensuing Agreement(s) shall be binding upon and inure to the benefit of the contracting parties hereto and their respective successors and permitted assigns.

4.7 IMPLIED REQUIREMENTS

Products or services not specifically described or required in the IFB, but are necessary to provide the functional capabilities described by the Bidder, shall be implied and deemed to be included in the Bid.

4.8 TERMINATION

A. **Termination for Cause:** The County reserves the right to terminate the Contract and/or any Ensuing Agreement(s) for default if the Successful Bidder breaches any of the Bid specifications, terms and conditions, including warranties of the Bidder, if any, or if the Successful Bidder becomes insolvent or commits acts of bankruptcy. Such right of termination is in addition to and not in lieu of any other remedies the County may have at law or in equity or as may otherwise provided hereunder. Default may be construed as, but not limited to, failure to deliver the proper goods and/or services within the proper amount of time, and/or to properly perform any and all other requirements to the County's satisfaction, and/or to meet all other obligations and requirements.

B. **Termination for Convenience:** The County may terminate the Contract and/or any Ensuing Agreement(s) for convenience and without cause or further liability, upon no less than thirty (30) calendar days written notice to the Successful Bidder. The County reserves the right to extend this period if it is in the best interest of the County. In the event the County exercises its right to terminate without cause, it is understood and agreed that only the amounts due to the Successful Bidder for goods, commodities and/or services provided and expenses incurred to and including the date of termination, will be due and payable. No penalty will be assessed for the County termination for convenience.

4.9 NON-PERFORMANCE

It is the objective of the County to obtain complete and satisfactory performance of the requirements set forth herein. In addition to any other remedies available at law, in equity or that may be set out herein, failure to perform may result in a deduction of payment equal to the amount of the goods and/or services that were not provided and/or performed to the County's satisfaction.

In the event of such non-performance, the County shall have the right, but shall not be obligated, to complete the services itself or by others and/or purchase the goods from other sources. If the County elects to acquire the goods or perform the services itself or by others, pursuant to the foregoing, the Successful Bidder shall reimburse the County, within ten (10) calendar days of demand, for all costs incurred by the County (including, without limitation, applicable, general, and administrative expenses, and field overhead, and the cost of necessary equipment, materials, and field labor) in correcting the nonperformance which the Successful Bidder fails to meet pursuant to the requirements set out herein. In the event the Successful Bidder refuses to reimburse the County as set out in this provision, the County shall have the right to deduct such reimbursement amounts from any amounts that may be then owing or that may become owing in the future to the Successful Bidder.

4.10 PROPRIETARY INFORMATION AND THE TEXAS PUBLIC INFORMATION ACT

All material submitted to the County shall become public property and subject to the Texas Public Information Act upon receipt. If a Bidder does not desire proprietary information in the Bid to be

disclosed, each page must be clearly identified and marked proprietary at time of submittal or, more preferably, all proprietary information may be placed in a folder or appendix and be clearly identified and marked as being proprietary. Failure to clearly identify and mark information as being proprietary as set forth under this provision will result in all unmarked information being deemed non-proprietary and available to the public. For all information that has not been clearly identified and marked as proprietary by the Bidder, the County may choose to place such information on the County's website and/or a similar public database without obtaining any type of prior consent from the Bidder.

The County will, to the extent allowed by law, endeavor to protect from public disclosure the information that has been identified and marked as proprietary. The final decision as to what information must be disclosed, however, lies with the Texas Attorney General.

To the extent, if any, that any provision in this IFB or in the Bidder's Bid is in conflict with Texas Government Code, Chapter 552, as amended (the "Public Information Act"), the same shall be of no force or effect. Furthermore, it is expressly understood, and agreed, that the County, and its officers and employees, may request advice, decisions and opinions of the Attorney General of the State of Texas in regard to the application of the Public Information Act to any items or data furnished to the County as to whether or not the same are available to the public. It is further understood that the County, and its officers and employees, shall have the right to rely on the advice, decisions and opinions of the Attorney General, and that the County, its officers and employees shall have no liability or obligation to any party hereto for the disclosure to the public, or to any person or persons, of any items or data furnished to the County by a party hereto, in reliance of any advice, decision or opinion of the Attorney General of the State of Texas.

4.11 RIGHT TO AUDIT

The Successful Bidder agrees that the County or its duly authorized representatives shall, until the expiration of three (3) years after termination or expiration of the services to be performed, have access to and the right to examine and photocopy any and all books, documents, papers and records of the Successful Bidder, which are directly pertinent to the services to be performed or goods to be delivered for the purposes of making audits, examinations, excerpts and transcriptions. The Successful Bidder agrees that the County shall have access during normal working hours to all necessary facilities and shall be provided adequate and appropriate work space in order to conduct audits in compliance with the provisions of this section. The County shall give the Successful Bidder reasonable advance notice of intended audits.

4.12 TESTING AND INSPECTIONS

The County reserves the right to inspect and test equipment, supplies, materials and goods for quality and compliance with this IFB, and ability to meet the needs of the user. Demonstration units must be available for review. Should the goods or services fail to meet requirements and/or be unavailable for evaluation, the County can deem the Bidder to be in breach and terminate the Contract and/or any Ensuing Agreement(s).

4.13 BID PREPARATION COSTS

The cost of developing Bids is the sole responsibility of the Bidders and shall not be charged to the County. There is no expressed or implied obligation for the County to reimburse the Bidders for any expense incurred in preparing a Bid in response to this IFB and the County will not reimburse the Bidders for such expenses.

4.14 INDEMNIFICATION

The Successful Bidder shall indemnify, defend and save harmless, the County, its officials, employees, agents and agent's employees from, and against, all claims, liability, and expenses including reasonable attorneys' fees, arising from activities of the Bidder, its agents, servants or employees, performed

hereunder that result from the negligent act, error, or omission of the Bidder or any of the Bidder agents, servants or employees, as well as all claims of loss or damage to the Bidder's and the County property, equipment, and/or supplies.

Furthermore, the County, its officials, employees, agents and agents' employees shall not be liable for damages to the Successful Bidder arising from any act of any third party, including, but not limited to, theft. The Successful Bidder further agrees to indemnify, defend and save harmless, the County from its officials, employee, agents and agents' employees against all claims of whatever nature arising from any accident, injury, or damage whatsoever, caused to any person, or the property of any person, occurring in relation to the Successful Bidder's performance of any services requested hereunder during the term of the Contract and/or any Ensuing Agreement(s).

The Successful Bidder shall timely report all claims, demands, suits, actions, proceedings, liens or judgements to the County and shall, upon the receipt of any claim, demand, suit, action, proceeding, lien or judgement, not later than the fifteenth (15^{th}) day of each month; provide the County with a written report on each such matter, setting forth the status of each matter, the schedule or planned proceedings with respect to each matter and the cooperation or assistance, if any, of the County required by the Successful Bidder in the defense of each matter. The Successful Bidder's duty to defend, indemnify and hold the County harmless shall be absolute. It shall not abate or end by reason of the expiration or termination of the Contract and/or any Ensuing Agreement(s), unless otherwise agreed by the County in writing. The provisions of this section shall survive the termination of the Contract and shall remain in full force and effect with respect to all such matters no matter when they arise.

In the event of any dispute between the parties, as to whether a claim, demand, suit, action, proceeding, lien or judgement, that appears to have been caused by or appears to have arisen out of or in connection with acts or omissions of the County, the Bidder shall nevertheless fully defend such claim, demand, suit or action, proceeding, lien or judgement, until and unless there is a determination by a court of competent jurisdiction that the acts and omissions of the Bidder are not an issue in the matter.

The Successful Bidder's indemnification shall cover, and the Successful Bidder agrees to, indemnify the County, in the event the County is found to have been negligent for having selected the Successful Bidder to perform the work described in this request. The provision by the Successful Bidder of insurance shall not limit the liability of the Successful Bidder under the Contract and/or any Ensuing Agreement(s).

4.15 WAIVER OF SUBROGATION

The Successful Bidder and the Successful Bidder's insurance carrier waive any and all rights whatsoever with regard to subrogation against the County as an indirect party to any suit arising out of personal or property damages resulting from the Bidder's performance under this Contract and any Ensuing Agreement(s).

4.16 RELATIONSHIP OF THE PARTIES

The Successful Bidder shall be an independent contractor and shall assume all of the rights, obligations, liabilities, applicable to it as such independent contractor hereunder and any provisions herein which may appear to give the County the right to direct the Successful Bidder as to details of doing work herein covered, or to exercise a measure of control over the work, shall be deemed to mean that the Successful Bidder shall follow the desires of the County in the results of the work only. The County shall not retain or have the right to control the Successful Bidder's means, methods or details pertaining to the Successful Bidder's performance of the work. The County and the Successful Bidder hereby agree and declare that the Successful Bidder is an independent contractor and as such meets the qualifications of an "Independent Contractor" under Texas Workers Compensation Act, Texas Labor Code, Section 406.141, that the Successful Bidder is not an employee of the County, and that the Successful Bidder and its employees, agents and subcontractors shall not be entitled to workers compensation coverage or any other type of insurance coverage held by the County.

4.17 SOLE PROVIDER

The Successful Bidder agrees and acknowledges that it shall not be considered a sole provider of the goods and/or services described herein and that the County may contract with other providers of such goods and/or services if the County deems, at its sole discretion, that multiple providers of the same goods and/or services will serve the best interest of the County.

4.18 FORCE MAJEURE

If the party obligated to perform is prevented from performance by an act of war, order of legal authority, act of God, or other unavoidable cause not attributable to the fault or negligence of said party, the other party shall grant such party relief from the performance. The burden of proof for the need of such relief shall rest upon the party obligated to perform. To obtain release based on force majeure, the party obligated to perform shall file a written request with the other party.

4.19 SEVERABILITY

If any provision of this IFB, the Contract or any Ensuing Agreement(s) shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision thereof, but rather the entire IFB, Contract or any Ensuing Agreement (s) will be construed as if not containing the particular invalid or unenforceable provision or provisions, and the rights and obligation of the parties shall be construed and enforced in accordance therewith. The parties acknowledge that if any provision of this IFB, the Contract or any Ensuing Agreement(s) is determined to be invalid or unenforceable, it is the desire and intention of each that such provision be reformed and construed in such a manner that it will, to the maximum extent practicable, give effect to the intent of this IFB, the Contract or any Ensuing Agreement(s) and be deemed to be validated and enforceable.

4.20 EQUAL OPPORTUNITY

Neither party shall discriminate against any employee or applicant for employment because of race, color, sex, religion or national origin.

4.21 NOTICE

Any notice to be given shall be in writing and may be distributed by personal delivery, or by registered or certified mail, return receipt requested, addressed to the proper party, at the following address:

The County: Williamson County Purchasing Department
Attn: Purchasing Agent
901 South Austin Avenue
Georgetown, Texas 78626

The Bidder: Address set out in Bidder's Transmittal Letter.

Notices given in accordance with this provision shall be effective upon (1) receipt by the party to which notice is given, or (2) on the third (3rd) calendar day following mailing, whichever occurs first.

4.22 SALES AND USE TAX EXEMPTION

The County is a body, corporate and politic, under the laws of the State of Texas and claims exemption from sales and use taxes under Texas Tax Code, Section 151.309, as amended, and the services and/or goods subject hereof are being secured for use by the County.

4.23 COMPLIANCE WITH LAWS

The County and the Successful Bidder shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any matter affecting the performance of the Contract and any Ensuing Agreement(s), including, without limitation, Workers' Compensation laws, salary and wage statutes and regulations, licensing laws and regulations. When required, the Successful Bidder shall furnish the County with certification of compliance with said laws, statues, ordinances, rules, regulations, orders, and decrees above specified.

4.24 INCORPORATION OF EXHIBITS, APPENDICES AND ATTACHMENTS

All of the Exhibits, Appendices and Attachments referred to herein are incorporated by reference as if set forth verbatim herein. Any conflicting terms in the Contract documents will be resolved at the sole discretion of the Commissioners Court.

4.25 NO WAIVER OF IMMUNITIES

Nothing herein shall be deemed to waive, modify or amend any legal defense available at law or in equity to the County, its past or present officers, employees, or agents, nor to create any legal rights or claim on behalf of any third party. The County does not waive, modify, or alter to any extent whatsoever the availability of the defense of governmental immunity under the laws of the State of Texas and of the United States.

4.26 NO WAIVER

The failure or delay of any party to enforce at any time or any period of time any of the provisions of this IFB, the Contract or any Ensuing Agreement(s) shall not constitute a present or future waiver of such provisions nor the right of either party to enforce each and every provision. Furthermore, no term or provision hereof shall be deemed waived and no breach excused unless such waiver or consent shall be in writing and signed by the party claimed to have waived or consented. Any consent by any party to, or waiver of, a breach by the other, whether expressed or implied, shall not constitute a consent to, waiver of or excuse for any other, different or subsequent breach.

4.27 CURRENT REVENUES

The obligations of the parties under the Contract and any Ensuing Agreement(s) do not constitute a general obligation or indebtedness of the County for which the County is obligated to levy, pledge, or collect any of taxation. It is understood and agreed that the County shall have the right to terminate the Contract and any Ensuing Agreement(s) at the end of any the County fiscal year if the governing body of the County does not appropriate sufficient funds as determined by the County's budget for the fiscal year in question. The County may effect such termination by giving written notice of termination to the Successful Bidder at the end of its then-current fiscal year.

4.28 FOB DESTINATION

To the extent applicable to this IFB, all of the items listed are to be Free On Board to final destination (FOB Destination) with all transportation charges if applicable to be included in the Bid, unless otherwise specified in the Invitation for Bids. The title and risk of loss of the goods shall not pass to the County until receipt and acceptance takes place at the FOB Destination point.

4.29 BINDING EFFECT

This Contract and any Ensuing Agreement(s) shall be binding upon and inure to the benefit of the parties

and their respective permitted assigns and successors.

4.30 ASSIGNMENT

The Successful Bidder's interest and duties hereunder may not be assigned or delegated to a third party without the express written consent of the County.

4.31 SAFETY

The Successful Bidder is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with any services to be provided hereunder. The safety program shall comply with all applicable requirements of the current federal Occupational Safety and Health Act and all other applicable federal, state and local laws and regulations.

4.32 GENERAL OBLIGATIONS AND RELIANCE

The Successful Bidder shall perform all services and/or provide all goods, as well as those reasonably inferable and necessary for completion and provision of services and/or goods required hereunder. The Successful Bidder shall keep the County informed of the progress and quality of the services. The Successful Bidder agrees and acknowledges that the County is relying on the Successful Bidder's represented expertise and ability to provide the goods and/or services described herein. The Successful Bidder agrees to use its best efforts, skill, judgment, and abilities to perform its obligations in accordance with the highest standards used in the profession and to further the interests of the County accordance with the County's requirements and procedures. The Successful Bidder's duties, set forth herein, shall at no time be in any way diminished by reason of any approval by the County, n shall the Successful Bidder be released from any liability by reason of such approval by the County, it being understood that the County at all times is ultimately relying upon the Successful Bidder's skill and knowledge in performing the services and providing any goods required hereunder.

4.33 ESTIMATED QUANTITIES

To the extent applicable to this IFB, the estimated quantity of each item listed in this IFB is only estimate; the actual quantity to be purchased may be more or less. The County is not obligated purchase any minimum amount, and the County may purchase any reasonable amount greater than t estimate for the same unit price. Any limit on quantities available must be stated expressly in the Bid.

4.34 CONTRACTUAL DEVELOPMENT

The contents of the IFB and the Successful Bidder's Bid will become an integral part of the Contract, but may be modified, at the County's sole discretion, by provisions of an Ensuing Agreement. Therefore, the Bidder must agree to an inclusion of an Ensuing Agreement of the Bid specifications, terms and conditions of this IFB. If an Ensuing Agreement is required under this IFB, information relative to t Agreement will be located in the Special Provisions Section of this IFB.

4.35 SURVIVABILITY

All applicable agreements that were entered into between the Successful Bidder and the County, under the terms and conditions of the Contract and/or any Ensuing Agreement(s), shall survive the expiration or termination thereof for ninety (90) days unless a new contract has been awarded.

The County may exercise, by written notice to the Successful Bidder no later than ten (10) calendar days of the Contract expiration, this clause for emergencies only.

4.36 AIR QUALITY

In determining the overall best Bid, the County may, to the extent applicable, exercise the option granted to local governments under the Texas Local Government Code, Section 271.907.

This option allows the County to evaluate Bids and give preference to goods and/or services of a Bidder that demonstrates that the Bidder meets or exceeds any and all state or federal environmental standards, including voluntary standards, relating to air quality. If the Bid being submitted will have an effect on air quality for the County (as it relates to any state, federal, or voluntary air quality standard), then the Bidder is encouraged to provide information in narrative indicating the anticipated air quality impact. All Bidders are expected to meet all mandated state and federal air quality standards.

4.37 ENTIRE AGREEMENT

The Contract and any Ensuing Agreement(s) shall supersede all prior Agreements, written or oral between the Successful Bidder and the County and shall constitute the entire Agreement and understanding between the parties with respect to the services and/or goods to be provided. Each of the provisions herein shall be binding upon the parties and may not be waived, modified, amended or altered, except by writing signed by the Successful Bidder and the County.

4.38 PAYMENT

The County's payment for goods and services shall be governed by the Texas Government Code, Chapter 2251. An invoice shall be deemed overdue the thirty-first (31st) day after the later of the following:

A. The date the County receives the goods under the Contract;
B. The date the performance of the service under the Contract is completed; or
C. The date the Williamson County Auditor receives an invoice for the goods or services.

Interest charges for any overdue payments shall be paid by the County in accordance with Texas Government Code, Section 2251.025. More specifically, the rate of interest that shall accrue on a late payment is the rate in effect on September 1 of the County's fiscal year in which the payment becomes due. The said rate in effect on September 1 shall be equal to the sum of one (1) percent, and the prime rate published in the Wall Street Journal on the first (1st) day of July of the preceding fiscal year that does not fall on a Saturday or Sunday.

In the event that an error appears in an invoice submitted by the Successful Bidder, the County shall notify the Successful Bidder of the error not later than the twenty-first (21st) day after the date the County receives the invoice. If the error is resolved in favor of the Successful Bidder, the Successful Bidder shall be entitled to receive interest on the unpaid balance of the invoice submitted by the Successful Bidder beginning on the date that the payment for the invoice became overdue. If the error is resolved in favor of the County, the Successful Bidder shall submit a corrected invoice that must be paid in accordance within the time set forth above. The unpaid balance accrues interest as provided by the Texas Government Code, Chapter 2251, if the corrected invoice is not paid by the appropriate date.

As a minimum, invoices shall include:

A. Name, address, and telephone number of the Successful Bidder and similar information in the event the payment is to be made to a different address.

B. The County Contract, Purchase Order.

C. Identification of items or service as outlined in the Contract.

D. Quantity or quantities, applicable unit prices, total prices and total amount.

E. Any additional payment information which may be called for by the Contract.

Payment inquiries should be directed to the following address:

Williamson County Auditor's Office, Accounts Payable Department
Email: accountspayable@wilco.org
Phone: 512-943-1500

4.39 CONTRACTUAL FORMATION AND ENSUING AGREEMENT

The IFB and the Bidder's Bid, when properly accepted by the Commissioners Court, shall constitute a Contract equally binding between the Successful Bidder and the County.

If an Ensuing Agreement is required by this IFB, that information will be provided in Special Provisions section of this IFB. The Successful Bidder shall be required to execute the Agreement at the Williamson County Purchasing Department approximately ten (10) calendar days after the Successful Bidder is notified of award. The Ensuing Agreement shall be in the same form as the Agreement which is attached to the end of this IFB. The only anticipated changes in the Ensuing Agreement will be to include additional exhibits, to fill in blanks to identify the Successful Bidder, and terms relating to the compensation, or to revise the Agreement to accommodate corrections, changes in the scope of services, or changes pursuant to Addenda issued. **Bidders should raise any questions regarding the terms of the Agreement in the form of written questions or submittals as described in the Public Announcement and General Information portion of this IFB.** Because the signed Ensuing Agreement will be substantively and substantially derived from the attached Agreement, each Bidder is urged to seek independent legal counsel as to any questions about the terms, conditions or provisions contained in the Agreement *before* submitting a Bid. Again, the attached Agreement, if applicable, contains important legal provisions and is considered part and parcel of this IFB. Failure or refusal to sign aforesaid Agreement shall be grounds for the County to revoke any award which has been issued, forfeit Bid security, if applicable, and select another Bidder.

4.40 COOPERATIVE PURCHASING PROGRAM

During the term of the Contract resulting from this IFB, the County would like to afford the same prices, terms and conditions to other political subdivisions or public entities. Another entity's participation in the Contract resulting from this IFB is subject to a properly authorized Purchasing Cooperative Inter-local Agreement with the County. Any liability created by purchase orders issued against the Contract shall be the sole responsibility of the governmental agency placing the order.

4.41 INSURANCE REQUIREMENTS

To the extent applicable Insurance information will appear in the Additional Stipulations section that is in this IFB Package.

4.42 BIDDERS BOND, WARRANTY BOND, PERFORMANCE AND PAYMENT BONDS

To the extent applicable Bond information will appear in the Additional Stipulations section that is in this IFB Package.

4.43 LEGAL LIABILITY INFORMATION

The Successful Bidder shall disclose all legal liability information by listing any pending litigation anticipated litigation that your firm is involved in including, but not limited to, potential or actual legal matters with private parties and any local, state, federal or international governmental entities. The County reserves the right to consider legal liability information in the recommendation of any proposed

contract to the Commissioners Court.

4.44 INCLEMENT WEATHER

In case of inclement weather or any other unforeseen event causing the County to close for business on the date of a Bid submission deadline, the Bid closing will automatically be postponed until the next business day the County is open. If inclement weather conditions or any other unforeseen event causes delays in carrier service operations, the County may issue an Addendum to all known Bidders interested in the project to extend the deadline. It will be the responsibility of the Bidder to notify the County of their interest in the project if these conditions are impacting their ability to turn in a submission within the stated deadline. The County reserves the right to make the final judgement call to extend any deadline.

4.45 CONFIDENTIALITY

The Bidder expressly agrees that it will not use any direct or incidental confidential information that may be obtained while working in a governmental setting for its own benefit, and agrees that it will not access unauthorized areas or confidential information and it will not disclose any information to unauthorized third parties, and will take care to guard the security of the information at all times.

Bidder References

List the last (3) companies or governmental agencies, where the same or similar goods and/or services as contained in this IFB package, were recently provided by Bidder.

Reference 1

Client Name: Location:

Contact Name: Title:

Phone: E-mail

Contract Date To: Contract Date From: Contract Value: $

Scope of Work:

Reference 2

Client Name: Location:

Contact Name: Title:

Phone: E-mail

Contract Date To: Contract Date From: Contract Value: $

Scope of Work:

Reference 3

Client Name: Location:

Contact Name: Title:

Phone: E-mail

Contract Date To: Contract Date From: Contract Value: $

Scope of Work:

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor or other person doing business with local governmental entity

Form CIQ

This questionnaire is being filed in accordance with chapter 176 of the Local Government Code by a person doing business with the governmental entity.

By law this questionnaire must be filed with the records administrator of the local government not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

OFFICE USE ONLY

Date Received

1 **Name of person doing business with local governmental entity.**

2 ☐ **Check this box if you are filing an update to a previously filed questionnaire.**

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than September 1 of the year for which an activity described in Section 176.006(a), Local Government Code, is pending and not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 **Describe each affiliation or business relationship with an employee or contractor of the local governmental entity who makes recommendations to a local government officer of the local governmental entity with respect to expenditure of money.**

4 **Describe each affiliation or business relationship with a person who is a local government officer and who appoints or employs a local government officer of the local governmental entity that is the subject of this questionnaire.**

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor or other person doing business with local governmental entity

Form CIQ
Page 2

5 **Name of local government officer with whom filer has affiliation or business relationship.**
(Complete this section only if the answer to A, B, or C is YES.)

This section, item 5 including subparts A, B, C & D, must be completed for each officer with whom the filer has affiliation or other relationship. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income from the filer of the questionnaire?

☐ Yes ☐ No

B. Is the filer of the questionnaire receiving or likely to receive taxable income from or at the direction of the local government officer named in this section AND the taxable income is not from the local governmental entity?

☐ Yes ☐ No

C. Is the filer of this questionnaire affiliated with a corporation or other business entity that the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

☐ Yes ☐ No

D. Describe each affiliation or business relationship.

6. Describe any other affiliation or business relationship that might cause conflict of interest:

7

Signature of person doing business with the governmental entity	Date

Signature not required if completing in BIDSYNC electronically.

BID AFFIDAVIT

This form must be completed, signed, notarized and returned with Bid package

The undersigned certifies that the IFB and the Bidder's Bid have been carefully reviewed and are submitted as correct and final. Bidder further certifies and agrees to furnish any and/or all goods and/or services upon which prices are extended at the price Bid, and upon the conditions contained in the IFB.

I hereby certify that the foregoing Bid has not been prepared in collusion with any other Bidder or other person or persons engaged in the same line of business prior to the official opening of this Bid. Further, I certify that the Bidder is not now, nor has been for the past six (6) months, directly or indirectly concerned in any pool or agreement or combination, to control the price of services/commodities Bid on, or to influence any person or persons to submit a Bid or not to submit a Bid thereon."

Name of Bidder:	
Address of Bidder:	
Email:	
Telephone:	
Printed Name of Person Submitting Affidavit:	
Signature of Person Submitting Affidavit:	

Cooperative Purchasing Program

Check one of the following options below. A non-affirmative Bid will in no way have a negative impact on the County's evaluation of the Bid.

☐	I will offer the quoted prices to all authorized entities during the term of the County's Contract.
☐	I will not offer the quoted prices to all authorized entities.

If no box is checked, the Bidder agrees to make best efforts in good faith to offer the quoted prices to all authorized entities.

BEFORE ME, the undersigned authority, a Notary Public, personally appeared _____ (*Name of Signer*), who after being by me duly sworn, did depose and say: "I, _____, (*Name of Signer*) am a duly authorized officer of/agent for _____ (*Name of Bidder*) and have been duly authorized to execute the foregoing on behalf of the said _____ (*Name of Bidder*).

SUBSCRIBED AND SWORN to before me by the above-named _____

on this the _____ day of _____, 20_____.

_____

Notary Public in and for

The State of _____

The County of _____

SIGNATURE AND NOTARY NOT REQUIRED IF COMPLETING IN BIDSYNC ELECTRONICALLY.

Certificate of Interested Parties Texas Ethics Commission (Form 1295)

(Revised 1/21/2016)

IFB# 1702-141

Clinic Supplies for Williamson County Regional Animal Shelter

Your contract is being recommended to the Williamson County Commissioners Court for approval as a future agenda item.

As you may, or may not be aware, the Texas Legislature passed HB1295 in their last legislative session which added section 2252.908 to the Texas Government Code that now requires that a governmental entity receive a **Certificate of Interested Parties Texas Ethics Commission (Form 1295)** before entering into a contract (new, amended, extended or renewed) that

(1) requires an action or vote by the Commissioners Court (all contracts that fall under the jurisdiction of Commissioners Court approval such as contracts resulting from an IFB, RFP, RFQ etc. excluding but not limited to certain Juvenile Services contracts, contracts funded with Sheriff's seized funds monies etc.) before the contract may be signed. **A new filing must be completed for each awarded contract (new, amended, extended or renewed) requiring Commissioners' Court approval.**

(2) has a value of at least $1 million.

Accordingly, we are needing your assistance in complying with the new Form 1295 requirements.

Note: Since the majority of contracts with Williamson County require approval by the Commissioners Court, this form will most likely be required in order to approve and execute your contract.

WILLIAMSON COUNTY
512.943.3553 Fax 512.943.1575
purchase@wilco.org www.wilco.org
901 S. Austin Ave.
Georgetown, Texas 78626

As of January 1, 2016, Respondents are responsible for complying with this law.

Per the direction of the Texas Legislature, the Texas Ethics Commission made available on its website a new filing process that must be used to file Form 1295.

Information regarding how to use the filing process is available on the Texas Ethics Commission website at the following link:

https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

A Respondent must:

(1) use the online application to process the required information on Form 1295
(2) print a copy of the form which will contain a unique certification number
(3) an authorized agent of the Respondent must sign the printed copy of the form
(4) and have the form **notarized**
(5) the completed Form 1295 and certification of filing must be filed (scanning and emailing form is sufficient) with Williamson County at the time the signed contract is submitted for Commissioners Court approval.

If you haven't already done so, your first step in completing Form 1295 will be to create an account. For assistance on how to register and how to complete Form 1295, we would highly encourage you to watch the short "Logging In the First Time– Business User" and "How to Create a Certificate" videos that are posted on the website noted above. In additional there are several other links on the website posted above that may be helpful to you in understanding and completing Form 1295.

Williamson County's guidance in completing Form 1295 is as follows (Please note this is not legal advice):

(1) Who is the contract with – click "Other Governmental Entity"
(2) Agency/Entity Name – Williamson County, Texas
(3) Contract ID Number - enter the Contract# specified at the top of this email
(4) Who is the Signature of officer administering oath (the entire bottom line of the form)– the Notary

With regards to listing your entity's Interested Parties, the Ethics Commission defines the terms controlling interest and intermediary interest is as follows:

"Controlling interest" means: (1) an ownership interest or participating interest in a business entity by virtue of units, percentage, shares, stock, or otherwise that exceeds 10 percent; (2) membership on the board of directors or other governing body of a business entity of which the board or other governing body is composed of not more than 10 members; or (3) service as an officer of a business entity that has four or fewer officers, or service as one of the four officers most highly compensated by a business entity that has more than four officers. . . .

"**Intermediary interest**" means, a person who actively participates in the facilitation of the contract or negotiating the contract, including a broker, adviser, attorney, or representative of or agent for the business entity who:
(1) receives compensation from the business entity for the person's participation;
(2) communicates directly with the governmental entity or state agency on behalf of the business entity regarding the contract; and
(3) is not an employee of the business entity.

Your help is appreciated in completing and returning Form 1295 at your earliest convenience. Any delay in returning this form will result in delay of approval and/or award of the contract. If this form is not returned, Williamson County will not proceed with the approval and/or award of the contract.

WILLIAMSON COUNTY
512.943.3553 Fax 512.943.1575
purchase@wilco.org www.wilco.org
901 S. Austin Ave.
Georgetown, Texas 78626

Question and Answers for Bid #1702-141 - Clinic Supplies for Williamson County Animal Shelter

Overall Bid Questions
There are no questions associated with this bid.

Commissioners Court - Regular Session **30.**

Meeting Date: 02/14/2017

Approval of Change Order for Network Switches

Submitted By: Sydney Richardson, Purchasing

Department: Purchasing

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on the approval of Change Order on the Network Switches Quote on CO-OP DIR-TSO-2542, with Presidio Networked Solutions Group, LLC, for $122,028.80 - $752.80 less than the original quote due to incorrect items being shipped.

Background

This was requested by Richard Semple, Operations Director of Williamson County Technology Services. Upon delivery of the original order, it came to the County's attention, that incorrect parts were ordered and received. The Vendor has agreed to allow the return of these items, and to issue a credit of the payment. A new quote was provided which is $752.80 less than the original quote, allowing for a higher quantity order. The extended warranty has been removed. These network switches provide connectivity from the County computers to the County Network. Audit and Legal have approved this Change Order.

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

1 - New Quote

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 04:51 PM
Form Started By: Sydney Richardson		Started On: 02/08/2017 01:36 PM
Final Approval Date: 02/08/2017		

PRESIDIO
Go DIRect

QUOTE: 2003117700723-04

DATE: 01/24/2017

TO:

Williamson County
Richard Semple
301 SE Inner Loop
Suite 106
Georgetown, TX 78626

rsemple@wilco.org
(p) 512-943-1489

FROM:

Presidio Networked Solutions Group, LLC
Brett Marlier
10415 Morado Circle
The Campus Building 1
Suite 320
Austin, TX 78759

bmarlier@presidio.com
(p) 512.961.3958

BILL TO:

Williamson County
Accounts Payable
301 SE Inner Loop- Suite 105
Info Technology Srvs
Georgetown, TX 78626

accountspayable@wilco.org
(p) 512-943-1500

SHIP TO:

Williamson County
Richard Semple
301 SE Inner Loop- Suite 105
Info Technology Srvs
Georgetown, TX 78626

rsemple@wilco.org
(p) 512-943-1489

Customer#: WILLI035

Contract Vehicle: Texas DIR-TSO-2542 CISCO Branded Product and Related Services

Account Manager: Brett Marlier

Inside Sales Rep: Greg Hubbard

Title: 2960X-10G with Stacking No Maint

#	Part #	Description	Unit Price	Qty	Ext Price
WS-C2960X-48LPD-L					
1	WS-C2960X-48LPD-L	Catalyst 2960-X 48 GigE PoE 370W, 2 x 10G SFP+ LAN Base	$1,608.85	64	$102,966.40
2	CAB-16AWG-AC	AC Power cord, 16AWG	$0.00	64	$0.00
3	PWR-CLP	Power Retainer Clip For 3560-C, 2960-C and 2960-L Switches	$0.00	64	$0.00
4	C2960X-STACK	Catalyst 2960-X FlexStack Plus Stacking Module	$274.85	64	$17,590.40
5	CAB-STK-E-1M	Cisco FlexStack 1m stacking cable	$23.00	64	$1,472.00
				Total:	**$122,028.80**

Sub Total:	**$122,028.80**
Grand Total:	**$122,028.80**

PRESIDIO
Go DIRect

QUOTE: 2003117700723-04
DATE: 01/24/2017

This quote is governed by Terms and Conditions of Texas DIR-TSO-2542 Contract.
State of Texas Vendor ID 17605152499
Standard-Terms-for-Purchase-of-Services or Goods
Quote valid for 30 days from date shown above.
Prices may NOT include all applicable taxes and shipping charges
All prices subject to change without notice. Supply subject to availability.

Purchase Order should be issued to:
Presidio Networked Solutions Group, LLC
1955 Lakeway Drive, Suite 220
Lewisville, TX 75057

Pursuant to this contract your PO must reflect the following contract:
Texas DIR-TSO-2542
Tax ID# 58-1667655; Size Business: Large; CAGE Code: OKDO5; DUNS#15-405-0959; CEC 15-506005G
Credit: Net 30 days (all credit terms subject to prior Presidio credit department approval)
Delivery: FOB Terms Dictated by individual PO details

Customer hereby authorizes and agrees to make timely payment for products delivered and services rendered, including payments for partial shipments

Customer Signature _____ Date _____

Commissioners Court - Regular Session **31.**

Meeting Date: 02/14/2017

Authorizing Public Involvement Renewal

Submitted By: Sydney Richardson, Purchasing

Department: Purchasing

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on authorizing the renewal of Public Involvement, Contract #1602-055, for the same pricing, terms and conditions as the existing Contract for the term of May 27, 2017 – May 26, 2018, with Buie & Co.

Background

This is the first extension of two (2) possible, one (1) year renewal options.

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

1 - Renewal

2 - Form 1295

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 04:51 PM
Form Started By: Sydney Richardson		Started On: 02/08/2017 01:42 PM
Final Approval Date: 02/08/2017		

WILLIAMSON COUNTY
1848

Summary Agreement for Renewal of Williamson County Contract

Purchase/Contract Type:	Services	**Department:**	Public Information Office
Vendor Name:	Buie & Co.		
Vendor Address:	2901 Bee Cave Rd., Ste. D, Austin, TX 78746		
Purpose/Intended Use of Product or Service (summary):			
Public Involvement			
P.O./Contract Number:	1602-055	**Effective Date:**	05/27/2017
Purchaser/Contract Specialist:	Sydney Richardson	**Expiration Date:**	05/26/2018
Requested By:	Connie Watson, Public Affairs Manager		

Detailed description of renewal of product and/or service.

- **Williamson County wishes to extend this bid/proposal for the same pricing, terms and conditions as the existing contract.**
- PLEASE INCLUDE THE FOLLOWING:
  - COMPLETED 1295 FORM; AND
  - RENEWED INSURANCE CERTIFICATE IF IT WAS REQUIRED IN BID/PROPOSAL.
- **Extend Contract for the 1st of two (2) one (1) year renewal option periods:**

Renewal Option Period 1	May 27, 2017 – May 26, 2018
Initial Contract Period	May 16, 2016 – May 26, 2017

BY SIGNING BELOW, THE PARTIES AGREE TO THE TERMS OF EXTENSION SET OUT HEREIN

Vendor Buie & Co. Public Relations

Name Jed Buie

Title President

Signature Jed Buie

Date 2/6/17

Williamson County, 710 Main St., Georgetown, TX 78626

Dan A. Gattis

Williamson County Judge

Signature _____

Date _____

Two (2) Signed Originals & One (1) photocopy must be submitted

WILLIAMSON COUNTY
1848

WILLIAMSON COUNTY AFFIDAVIT AUTHORIZED VENDOR REPRESENTATIVE

I hereby swear, affirm and represent to Williamson County that my signature below represents that I am authorized to bind the bidder/proposer to fully comply with the pricing, terms and conditions for the Contract listed below and any extension thereof, if applicable.

Note: If Signature is by an agent, other than the Sole Proprietor(s) or an officer of a Corporation, Limited Liability Company, General Partner or a member of a Genera Partnership, a Power of Attorney or equivalent document must be submitted to the Williamson County Purchasing Department prior to being recommended for award of the contract or renewal.

Contract Number:	1602-055
Contract Name:	Public Involvement
Name of Company:	Buie & Co.
Contact Person:	Jed Buie
Phone:	(512) 589-2384
Email:	jed@buie.co.com
Date:	February 6, 2017
Printed Name of Person Submitting Affidavit:	Jed Buie
Signature of Person Submitting Affidavit:	J Buie

On this, the 6 day of Feb, 2017, before me a notary public, the undersigned officer, personally appeared JED Buie, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that she/he executed the same for the purposes therein contained.

In witness hereof, I hereunto set my hand and official seal.

Notary Public

PETER HALL
Notary Public, State of Texas
Comm. Expires 09-16-2020
Notary ID 130825650

Two (2) Signed Originals & One (1) photocopy must be submitted

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY
CERTIFICATION OF FILING

Certificate Number:
2017-153313

Date Filed:
01/11/2017

Date Acknowledged:

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

Buie & Co. Public Relations
Austin, TX United States

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

Williamson County

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

1602-055
Road Bond Public Involvement Services

4 Name of Interested Party	City, State, Country (place of business)	Nature of interest (check applicable)	
		Controlling	Intermediary

5 Check only if there is NO Interested Party. [X]

6 AFFIDAVIT

I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.

JR Buie
Signature of authorized agent of contracting business entity

AFFIX NOTARY STAMP / SEAL ABOVE

Sworn to and subscribed before me, by the said JED BUIE, this the 6 day of Feb, 20 17, to certify which, witness my hand and seal of office.

PETER HALL
Notary Public, State of Texas
Comm. Expires 09-16-2020
Notary ID 130825650

P Hall
Signature of officer administering oath

PETER HALL
Printed name of officer administering oath

Notary
Title of officer administering oath

Commissioners Court - Regular Session **32.**

Meeting Date: 02/14/2017

Iplow Contract Approval JP 1

Submitted By: Thomas Skiles, Purchasing

Department: Purchasing

Agenda Category: Regular Agenda Items

Information

Agenda Item

Discuss, consider and take appropriate action on approving Agreement between Williamson County and I-Plow.Com, LLC for Government Collections and Compliance Professional Services for Williamson County Justice Of The Peace, Precinct One in the amount of $5,650 annually.

Background

I-Plow will provide comprehensive collections and compliance professional services including, but not limited to: best practices, business process assessment, consulting, software, software configuration, unlimited (standard and ad hoc/custom) reports, legacy system data conversion, perpetual data imports, perpetual data exports, user training, and user support to ensure that all reasonable efforts are exhausted to collect fees, fines, court costs, restitution, and other monies assessed by Williamson County Justice of the Peace Precinct #1 and owed to Williamson County. The purpose of this contract is to improve internal government collection efforts and increase defendant and/or other debtor compliance, as these pertain to the Williamson County Justice of the Peace, Precinct #1.

Purchasing obtained quotes for this service using the BidSync quick quote process. Two quotes were received in addition to the initial quote from IPlow. JP 1 has recommended IPlow as the preferred provider.

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

Agreement

Recommendation

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/08/2017 08:02 AM
Form Started By: Thomas Skiles		Started On: 02/07/2017 12:14 PM
Final Approval Date: 02/08/2017		

AGREEMENT FOR GOVERNMENT COLLECTIONS AND COMPLIANCE SERVICES INCLUDING THE PROVISION OF PROPRIETARY SOFTWARE

FOR

WILLIAMSON COUNTY JUSTICE OF THE PEACE, PRECINCT ONE

This Agreement ("Agreement") is executed by and between Williamson County, a political subdivision of the State of Texas (the "County"), and I-PLOW.COM, LLC, a company organized and existing under the laws of the State of Texas ("Company").

RECITALS:

A. Company is in the business of providing local, state and federal governmental entities with comprehensive government collections and compliance services which includes, but is not limited to: best practices, business process assessment, consulting, software, software configuration, unlimited (standard and ad hoc/custom) reports, legacy system data conversion, perpetual data imports, perpetual data exports, user training, and user support to ensure that all reasonable efforts are exhausted to collect fees, fines, court costs, restitution, and other owed monies.

B. County desires to engage Company for the purpose of improving internal government collection efforts and increasing defendant and/or other debtor compliance, as these pertain to the Williamson County Justice of the Peace, Precinct One ("JP#1").

NOW, THEREFORE, for and in consideration of the mutual covenants, obligation, benefits, and agreements herein contained, the County and Company do hereby agree as follows:

I. TERM

a. This Agreement shall commence effective as of the date of the last party's execution below and shall continue thereafter for one (1) year unless terminated sooner by either party pursuant to section II.

b. Following the initial term above, this Agreement shall automatically renew for one (1) year terms until terminated by either party pursuant to section II.

c. This Agreement shall not be extended if Company is in default of any term or condition of this Agreement.

II. TERMINATION

a. The County or Company may terminate this Agreement at any time, with or without cause by providing the other party with written notice ninety (90) days prior.

b. Upon termination of this Agreement, Company shall provide County data in a tab-delimited format to facilitate system conversion or process abandonment.

c. Upon termination of this Agreement, County shall return or destroy all Company assets per Company's written direction.

III. COMPENSATION

a. County agrees to pay Company the total sum of Five Thousand Six Hundred Fifty Dollars ($5,650) per year for Company's provision of government collections and compliance services including proprietary software. County shall pay Company for its services in two separate installments of Two Thousand Eight Hundred Twenty Five Dollars ($2,825.00) each, with the first installment being due within thirty (30) days of the effective date of this Agreement and the second installment being due one hundred eighty (180) days following the effective date of this Agreement. Company further offers County its services for a sum not greater than Five Thousand Six Hundred Fifty Dollars ($5,650) on an annual basis for each additional term. For each additional term, County shall also pay Company for its services in two separate installments of Two Thousand Eight Hundred Twenty Five Dollars ($2,825.00) each, with the first installment being due on each anniversary of this Agreement and the second installment being due one hundred eighty (180) days thereafter.

b. County acknowledges that Company will provide ten (10) concurrent user licenses for accessing Company's proprietary government collections and compliance software.

c. County acknowledges that Company offers additional concurrent user

licenses at a prorated additional annual expense of Three Hundred dollars ($300.00) per license per year and prorated against the remaining term of this Agreement.

d. County acknowledges that Company may offer supplemental, direct services a la carte from Company for additional fees and/or expenses per the terms and conditions of Section VIII.

e. County acknowledges that Company may offer supplemental, indirect services a la carte from Company and/or Company's strategic partners for additional fees and/or expenses per the terms and conditions of Section VIII.

f. County acknowledges that Company shall not increase expected compensation for prior government collections and compliance services and proprietary software for the life of this Agreement.

g. County acknowledges that Company offers significant compensation discounts for multiple implementations within the same government entity but not under the authority of the County.

IV. DUTIES OF COMPANY

Throughout the term of this Agreement, Company shall:

a. Acknowledge that all County data residing within Company's technical environment is always under the explicit care, control, custody and direction of the County; and
b. Acknowledge that Company does not have any authority to incur any additional expense on behalf of County without prior written authorization; and
c. Identify a single point of contact for pre-implementation project management; and
d. Provide JP#1 with perpetual government collections and compliance business process assessments; and
e. Provide JP#1 with perpetual government collections and compliance consulting; and
f. Provide JP#1 with government collections and compliance software; and
g. Provide JP#1 with perpetual government collections and compliance software configuration; and

h. Provide JP#1 with standard collections and compliance reports; and
i. Provide JP#1 with unlimited ad hoc/custom collection and compliance reports; and
j. Provide JP#1 with legacy system data conversion; and

k. ProvideJP#1 with perpetual data imports; and
l. Provide JP#1 with perpetual data exports; and
m. Provide JP#1 with unlimited user training; and
n. Provide JP#1 with unlimited user support; and
o. Provide JP#1 with a fully functional test environment.

V. DUTIES OF COUNTY

Throughout the term of this Agreement, County shall:

a. Acknowledge that provision of Company's government collections and compliance services, including proprietary software, is exclusively for County benefit; and
b. Acknowledge that County does not have any authority to incur any expense on behalf of Company without prior written authorization; and
c. Acknowledge the business process risk associated with Company's unique rapid application development (RAD) philosophy facilitating the provision of daily and real-time software updates to resolve misbehavior and/or expose new features and functionality; and
d. Identify a single point-of-contact for pre/post-implementation project management; and
e. Provide a stable desktop and/or mobile technical environment, including reliable Internet connectivity, enabling authorized users to access County's data managed within Company's technical environment.

VI. INDEMNIFICATION

COMPANY COVENANTS AND WARRANTS THAT IT WILL PROTECT, DEFEND, AND HOLD HARMLESS THE COUNTY, THE COURTS, JUDICIAL OFFICERS, ITS EMPLOYEES, OFFICERS, ELECTED OFFICIALS, AND LEGAL REPRESENTATIVES FROM ANY AND ALL CLAIMS, SUITS, DEMANDS, AND LIABILITY OF EVERY KIND, INCLUDING ALL EXPENSES OF LITIGATION, COURT COSTS, AND ATTORNEYS FEES RELATING IN ANY WAY TO

DAMAGES, CLAIMS, OR FINES ARISING BY REASON OF OR IN CONNECTION WITH COMPANY'S ACTUAL OR ALLEGED NEGLIGENCE OR OTHER ACTIONABLE PERFORMANCE OR OMISSION OF COMPANY IN CONNECTION WITH OR DURING THE PERFORMANCE OF THE DUTIES UNDER THIS AGREEMENT.

VII. GOVERNING LAW AND FORUM

This Agreement and its interpretation and any disputes relating thereto, arising out of or connected with this Agreement, shall be governed by the laws of the State of Texas, without regard to its conflicts of law provisions. Any dispute relating to, arising out of, or connected with this Agreement shall be filed and maintained in Williamson County, Texas. For purposes of this Agreement, venue shall be in Williamson County, Texas.

VIII. AMENDMENTS

This Agreement may be amended only in writing, with such written instrument being approved and executed by County and Company. NO OFFICIAL, EMPLOYEE, AGENT, OR REPRESENTATIVE OF THE COUNTY HAS ANY AUTHORITY, EITHER EXPRESS OR IMPLIED, TO AMEND THIS AGREEMENT, EXCEPT PURSUANT TO SUCH EXPRESS AUTHORITY AS MAY BE GRANTED BY THE WILLIAMSON COUNTY COMMISSIONERS COURT.

IX. NOTICES

Any notice, demand, or request required by or made pursuant to this Agreement shall be deemed properly made if made in writing to the responsible party identified below and delivered by either by mail or electronically. If delivery method is by mail, delivery confirmation is required to ensure receipt.

Regardless of the delivery method, the notice shall be effective on the date of receipt, unless notice is received on a Saturday, Sunday or legal holiday, it shall be deemed received on the next business day.

To County:

Name: Dan A. Gattis (or successor)

Title: Williamson County Judge

Address: 710 S. Main St., Ste. 101, Georgetown, Texas 78626

Telephone: (512) 943-1550

Copy to:

Name: Honorable Dain Johnson

Title: Justice of the Peace, Precinct One

Address: 1801 E. Old Settlers Blvd., Ste. 100, Round Rock, Texas 78664

Telephone: (512) 244-8618

To Company:

Name: Mark W. Odom

Title: Co-CEO and Chief Operating Officer

Address: 3463 Magic Dr., Suite T-7, San Antonio, Texas 78229

Telephone: (210) 582-5803

The parties may change the address where or the individual to whom notice is to be given by providing written notice of such change pursuant to this section. Nothing contained in this section shall be construed to restrict the transmission of routine communications between representatives of the County and Company.

X. SEVERABILITY

The invalidity, illegality, or unenforceability of any provision of this Agreement, or the occurrence of any event rendering any portion of provision of this Agreement void, shall in no way affect the validity or enforceability of any other portion or provision of this Agreement. Any void provision shall be deemed severed from this Agreement and the balance of this Agreement shall be construed and enforced as if this Agreement did not contain the particular portion or provision held to be void. The parties further agree to in good faith attempt to reform this Agreement to replace any stricken provision with a valid provision.

XI. HEADINGS

Headings and titles of sections of this Agreement are included herein for convenience of reference only and shall not constitute a part of the Agreement for any other purpose and will not affect in any way the meaning or interpretation of this Agreement.

XII. SURVIVAL

The provisions of this Agreement which expressly or impliedly contemplate or require performance after the termination or expiration of operations hereunder

shall survive such expiration or termination.

XIII. REPRESENTATIONS

Company represents that it and its employees, agents, representatives and subcontractors are fully competent and qualified to perform all services required to be performed under this Agreement. Company further represents that it is experienced in this type of service and that all services to be performed hereunder shall be of the highest quality.

XIV. ASSIGNMENT OF RIGHTS AND DELEGATION OF DUTIES

Due to the unique nature of the program, the parties agree that Company may not assign its rights or delegate it duties hereunder to any third party without the prior written consent and approval of the County, which consent shall not be unreasonably withheld. Any purported assignment, transfer or conveyance without such consent shall be null and void. Notwithstanding the foregoing, a merger, recapitalization, consolidation, acquisition, reorganization, or similar action by Company shall not be considered an assignment of rights or delegation of duties.

XV. SUCCESSORS AND ASSIGNS

This Agreement shall be binding upon and shall inure to the benefit of and be binding upon the permitted successors and assigns of the parties hereto. The enforcement of the terms and conditions of this Agreement and all rights of action relating to such enforcement shall be strictly reserved to the County and Company. The parties do not intend to confer any benefit hereunder on any person, firm or corporation other than the parties hereto. Nothing contained in this Agreement shall give rise to or allow any claim or right of action whatsoever by any person or entity, other than the County or Company, and any such person or entity receiving any benefit from this Agreement shall be deemed an incidental beneficiary only.

XVI. FORCE MAJEURE

If the party obligated to perform is prevented from performance by an act of war, order of legal authority, act of God, or other unavoidable cause not attributable to the fault or negligence of said party, the other party shall grant such party relief from the performance of this Agreement. The burden of proof for the need of such relief shall rest upon the party obligated to perform. To obtain release based on

force majeure, the party obligated to perform shall file a written request with the other party.

XVII. EQUAL OPPORTUNITY IN EMPLOYMENT

The parties to this Agreement agree that during the performance of the services under this Agreement they will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The parties to this Agreement will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; termination; rates of pay or other forms of compensation, and selection for training, including apprenticeship.

XVIII. COMPLIANCE WITH LAWS

Each party to this Agreement shall comply with all federal, state, and local laws, statutes, ordinances, rules and regulations, and the orders and decrees of any courts or administrative bodies or tribunals in any matter affecting the performance of this Agreement, including, without limitation salary and wage statutes and regulations, licensing laws and regulations.

XIX. RELATIONSHIP OF THE PARTIES

Each party to this Agreement, in the performance of this Agreement, shall act in an individual capacity and not as agents, employees, partners, joint ventures or associates of one another. The employees or agents of one party shall not be deemed or construed to be the employees or agents of the other party for any purposes whatsoever.

XX. NO WAIVER OF IMMUNITIES

Nothing in this Agreement shall be deemed to waive, modify or amend any legal defense available at law or in equity to County, its past or present officers, employees, or agents, nor to create any legal rights or claim on behalf of any third party. County does not waive, modify, or alter to any extent whatsoever the availability of the defense of governmental immunity under the laws of the State of Texas and of the United States.

XXI. COUNTY'S RIGHT TO AUDIT

Company agrees that County or its duly authorized representatives shall, until the expiration of three (3) years after final payment under this Agreement, have access to and the right to examine and photocopy any and all books, documents, papers and records of Company which are directly pertinent to the services to be performed under this Agreement for the purposes of making audits, examinations, excerpts, and transcriptions. Company agrees that County shall have access during normal working hours to all necessary Company facilities and shall be provided adequate and appropriate work space in order to conduct audits in compliance with the provisions of this section. County shall give Company reasonable advance notice of intended audits.

XXII. APPROPRIATION OF FUNDS BY COUNTY

County believes it has sufficient funds currently available and authorized for expenditure to finance the costs of this Agreement. Company understands and agrees that the County's payment of amounts under this Agreement is contingent on the County receiving appropriations or other expenditure authority sufficient to allow the County, in the exercise of reasonable administrative discretion, to continue to make payments under this Agreement.

XXIII. SOLE SOURCE

Company acknowledges and agrees that this Agreement will not prohibit or preclude the County and/or any of its related offices from obtaining the same type of services described hereunder from a separate source while this Agreement is in effect.

XXIV. Approval, Authority and Certification

The parties represent that they have the legal power and have taken the requisite action to enter into this Agreement. The parties executing this Agreement certify by their signatures that they have the legal power, right and actual authority to bind their respective organizations to the terms and conditions of this Agreement and all related instruments and that any resolutions necessary to create such authority have Williamson duly passed and are now in full force and effect.

XXV. EXTENT OF AGREEMENT

This Agreement represents the entire Agreement between County and Company and supersedes all prior negotiations, representations or agreements, whether written or oral.

EXECUTED to be effective as of the date of the last party's execution below.

WILLIAMSON COUNTY, TEXAS

By: _____
Dan A. Gattis
County Judge

Date: _____

I-PLOW

By: _____, Member

Date: 1/25/17

Justice Court

WILLIAMSON COUNTY, TEXAS
PRECINCT ONE

DAIN JOHNSON
JUSTICE OF THE PEACE

January 25, 2017

Williamson County Purchasing Dept.
901 S Austin Ave.
Georgetown, Texas 78626

Ref: I-Plow Contract and Services

I am recommending the services of I-Plow who will provide software to help our office be compliant with the OCA collections process. I-Plow will provide my office with software to help staff with meeting the mandates set out by the OCA. I-Plow is on the State DIR contract.
The other vendors MSB and Linebarger whom placed bids are companies that do collections for local governments.

Sincerely,

Dain Johnson
Justice of the Peace Pct. One
Williamson County

1801 E. Old Settlers Blvd, Ste 100 * ROUND ROCK * TEXAS 78664
Tel: 512.244.8622 * Fax: 512.244.8602

Commissioners Court - Regular Session **33.**

Meeting Date: 02/14/2017

Legislative Update and Discussion

Submitted For: Cynthia Long **Submitted By:** Kathy Pierce, Commissioner Pct. #2

Department: Commissioner Pct. #2

Agenda Category: Regular Agenda Items

Information

Agenda Item

Hear update and discuss bills filed during the 85th Texas Legislative Session.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

No file(s) attached.

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	01/19/2017 08:40 AM
Form Started By: Kathy Pierce		Started On: 01/18/2017 05:53 PM
Final Approval Date: 01/19/2017		

Commissioners Court - Regular Session **34.**

Meeting Date: 02/14/2017

Economic Development

Submitted For: Charlie Crossfield **Submitted By:** Charlie Crossfield, Road Bond

Department: Road Bond

Agenda Category: Executive Session

Information

Agenda Item

Discussion regarding economic development negotiations pursuant to Texas Government Code, Section 551.087:
a) Business prospect(s) that may locate or expand within Williamson County.
b) Discuss Pearson Road District.
c) Discuss North Woods Road District.
d) Project Columbus Balbo

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

No file(s) attached.

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/09/2017 11:06 AM
Form Started By: Charlie Crossfield		Started On: 02/09/2017 10:22 AM
Final Approval Date: 02/09/2017		

Commissioners Court - Regular Session **35.**

Meeting Date: 02/14/2017

Executive Session

Submitted For: Charlie Crossfield **Submitted By:** Charlie Crossfield, Road Bond

Department: Road Bond

Agenda Category: Executive Session

Information

Agenda Item

Discuss real estate matters (EXECUTIVE SESSION as per VTCA Govt. Code sec. 551.072 Deliberation Regarding Real Estate Property if deliberation in an open meeting would have a detrimental effect on the position of the governmental body in negotiations with third person.)

A. Real Estate Owned by Third Parties

1. Preliminary discussions relating to proposed or potential purchase or lease of property owned by third parties

a) Discuss the acquisition of real property for right-of-way for Mays St. Extension

b) Discuss the acquisition of real property for SW 183 and SH 29 Loop.

c) Discuss the acquisition of real property for CR 176 at RM 2243

d) Discuss the acquisition of real property with endangered species for mitigation purposes.

e) Discuss the acquisition of real property: CR 101

f) Discuss the acquisition of real property: CR 111

g) Discuss the acquisition of real property for CR 278 at Bagdad Rd.

h) Discuss the acquisition of real property for proposed CR 110 project. (All sections)

i) Discuss the acquisition of real property for County Facilities.

j) Discuss the acquisition of real property on CR 305.

k) Discuss the acquisition of Easement interests for the Brushy Creek Trail Project.

l) Discuss acquisition of property located at NEC of Toll 130 and Gattis School Rd.

m) Discuss the acquisition of a drainage easement for CR 108.

n) Discuss easement acquisitions from San Gabriel River Ranch Subdivision.

o) Discuss the acquisition of real property for CR 258.

p) Discuss the acquisition of real property for Lakeline Blvd.

q) Discuss the acquisition of real property for US 183.

r) Discuss options for ingress and egress regarding access to Cedar Hollow Subdivision.

s) Discuss the acquisition of drainage easements for the Forest North Drainage Improvement Project.

t) Discuss the Real Estate Contract with Wilson Family Communities, Inc and Green Builders, Inc.

B. Property or Real Estate owned by Williamson County

1). Preliminary discussions relating to proposed or potential sale or lease of property owned by the County

a) Discuss County owned real estate containing underground water rights and interests.

b) Discuss possible sale of 183 A excess right of way

c) Discuss proposed sale of real estate of Blue Springs Blvd

d) Discuss transfer of right of way for Westinghouse Rd. to the City of Georgetown.

e) Discuss wastewater easements in Berry Springs Park

f) Discuss Development Agreement with Ashby Capital Investments, LLC

g) Discuss sale of County property on Ronald Reagan Blvd.

h) Discuss abandonment of County property on CR 123.

C. Consider intervention in lawsuit regarding de-listing of Bone Cave harvestman.

Background

Fiscal Impact

From/To	Acct No.	Description	Amount

Attachments

No file(s) attached.

Form Review

Inbox	Reviewed By	Date
County Judge Exec Asst.	Wendy Coco	02/09/2017 12:10 PM
Form Started By: Charlie Crossfield		Started On: 02/09/2017 10:19 AM
Final Approval Date: 02/09/2017		