



CHANDLER
arizona
Community of Innovation

City of Chandler, Arizona
Public Works & Utilities Department
Capital Projects Division

CONSTRUCTION BID

KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS

CITY PROJECT NO.: TP2202.401

FEDERAL NO.: CHN-0(252)D

ADOT NO.: T038701C

MAYOR

Kevin Hartke

VICE MAYOR

Angel Encinas

COUNCIL

OD Harris Matt Orlando

Christine Ellis Jane Poston Jennifer Hawkins

Daniel Haskins

Daniel Haskins, P.E.
CIP City Engineer

CITY OF CHANDLER, ARIZONA

CONSTRUCTION BID

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INVITATION TO BID

**KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS
CITY PROJECT NO.: TP2202.401, FEDERAL NO. CHN-0(252)D, ADOT NO. T038701C**

NOTICE IS HEREBY GIVEN that sealed bids will be received and date/time stamped by the City of Chandler Capital Projects Office, 215 East Buffalo Street, Chandler, Arizona 85225 until the bid submission date specified below.

Solicitation documents and addenda may be downloaded at the Arizona Procurement Portal - <https://app.az.gov/>. It is the contractor's sole responsibility to obtain all addenda from the Arizona Procurement Portal prior to submitting their bid proposal, and to acknowledge receipt and acceptance of the addenda in their bid proposal submittal. No separate notification of addenda will be issued. The City recommends Contractors regularly check Arizona Procurement Portal - <https://app.az.gov/> for updated information.

PRE-BID CONFERENCE:

May 5, 2026 3:00 p.m. Arizona time	THERE WILL BE A MANDATORY PRE-SUBMITTAL CONFERENCE. City of Chandler Council Chambers, 88 E. Chicago St, Chandler, AZ 85225
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SOLICITATION QUESTIONS DUE DATE:

May 8, 2026 5:00 p.m. Arizona time	All solicitation questions must be emailed to Bid.Questions@chandleraz.gov with the subject line of: "TP2202.401, FEDERAL NO. CHN-0(252)D, ADOT NO. T038701C KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS BID QUESTION" . Questions received after the due date and time will NOT be considered.
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BID SUBMISSION:

May 28, 2026 3:00 p.m. Arizona time	Sealed bids must be delivered to the City of Chandler Capital Projects Office located at 215 East Buffalo Street, Chandler, Arizona, 85225. Bids must be received on or before date and time specified. At that time, bids will be publicly opened and read aloud in the Saguaro Conference Room. Bids received after the due date and time will be returned unopened without consideration. All bids must be submitted in a sealed envelope plainly marked as follows: BID OF _____, CONTRACTOR FOR: "KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS" "TP2202.401, FEDERAL NO. CHN-0(252)D, ADOT NO. T038701C"
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FEDERERAL DOCUMENTS DUE DATE:

June 2, 2026 3:00 p.m. Arizona time	SEE FEDERAL DOCUMENTS SECTION.
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Work under this Agreement includes:

Work must be completed within 450 consecutive calendar days from the Notice to Proceed. The Engineer’s Estimate range is \$3,500,000 - \$4,500,000.

Bids must be submitted on the Proposal Form provided and be accompanied by the Bid Bond for not less than ten percent (10%) of the total bid, payable to the City of Chandler, Arizona, or a certified or cashier's check. PERSONAL OR INDIVIDUAL SURETY BONDS ARE NOT ACCEPTABLE.

The successful bidder will be required to execute the standard form of agreement for construction prior to Council award.

The successful bidder must furnish a Payment Bond and Performance Bond in the amount equal to one hundred percent (100%) of the Agreement Price.

The right is hereby reserved to accept or reject any or all bids or parts thereto, to waive any informalities in any proposal and reject the bids of any persons who have been delinquent or unfaithful to any agreement with the City of Chandler.

Bids will only be considered from contractors that attended and signed the sign-in sheet for the May 5, 2026, Mandatory Pre-Submittal Conference.

All Bids will remain open for 90 days after the Bid opening day, but the City may, in its sole discretion, release any Bid and return the bid security prior to that date. No Bidder may withdraw his Bid during this period without written permission from the City.

Find PRELIMINARY BID RESULTS at: <https://www.chandleraz.gov/business/vendor-services/capital-projects>

Protest Policy - A protest of a proposed award must be filed WITH THE PURCHASING OFFICE within 5 calendar days of the first posting of the award recommendation. Award recommendations are posted on the Capital Projects web site or the City Clerk web site. If the due date occurs on a weekend or holiday the protest must be filed the next business day.

A Protest must include:

- The name, address and telephone number of the protester;
- The signature of the protester or its representative;
- Identification of the project and the solicitation or agreement number;
- A detailed statement of the legal and factual grounds of the protest including copies of relevant documents; and
- The form of relief requested.

City will review the protest and issue a written response.

PUBLISHED DATE:	<u>4/23/2026</u> <u>4/30/2026</u> Arizona Republic AFFIDAVIT OF PUBLICATION
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BID SUBMITTAL LIST

This list may not include all required bid submission items. It is the Contractor’s responsibility to read the entire bid and determine all items required by the submission date and time.

DO NOT DOUBLE-SIDE ANY PART OF THE BID SUBMITTAL

PROJECT NAME: KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS
CITY PROJECT NO.: TP2202.401
FEDERAL PROJECT NO.: CHN-0(252) D
ADOT PROJECT NO.: T038701C

*****THIS IS A FEDERAL FUNDED PROJECT*****

PLEASE INCLUDE THE FOLLOWING ITEMS IN YOUR SUBMITTAL ACCORDING TO THE DATE AND TIME LISTED IN THE INVITATION TO BID ADVERTISEMENT:
A. Bid Bond (Original – with Seal) B. Signed Proposal Acknowledgement, and licenses C. Bid Schedule D. Subcontractor’s List Form E. Non-Collusion Bidding Certification F. Certificate of Insurability and Bonding G. Arizona Department of Revenue Privilege Tax License
FEDERAL DOCUMENTS REQUIRED (see Federal Document Section) 1. Federal Non-Collusion Bidding Certificate 2. Verification Statement 3. Forced Labor Ethnic Uyghurs Ban Certification Form 4. EEO Clause / Statement
FEDERAL DOCUMENTS REQUIRED TO BE SUBMITTED BY THE 5TH DAY POST BID OPENING DAY, BY 4PM IN ORDER FOR BID TO BE CONSIDERED, TO EMAIL ADDRESS: CP.FUND@CHANDLERAZ.GOV (see Federal Document Section). *Do not submit with bid* 1. On-Line DBE BECO Bidders/Proposers List Email Confirmation (do not forward email)

BID BOND

ARIZONA STATUTORY BID BOND PURSUANT TO
TITLES 28, 34 AND 41,
OF THE ARIZONA REVISED STATUTES
(Penalty of this bond must not be less than 10% of the bid amount)

KNOW ALL MEN BY THESE PRESENTS: That, KLASS Services Inc, (hereinafter "Principal"), as Principal, and Old Republic Surety Company, (hereinafter "Surety"), a corporation organized and existing under the laws of the State of Wisconsin, with its principal offices in 18500 W Corporate Drive, Suite 170, Brookfield, WI 53045, holding a certificate of authority to transact surety business in Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, held and firmly bound unto City of Chandler, Arizona, (hereinafter "Obligee"), as Obligee, in the amount of Ten Percent (10%) of the amount of the bid of Principal, submitted by Principal to the Obligee for the work described below, for the payment of which sum, the Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for construction of:

**KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS
CITY PROJECT NO.: TP2202.401, FEDERAL NO. CHN-0(252)D, ADOT NO. T038701C**

NOW, THEREFORE, if the Obligee shall accept the proposal of the Principal and the Principal shall enter into an agreement with the Obligee in accordance with the terms of the proposal and give the bonds and certificates of insurance as specified in the agreement document with good and sufficient surety for the faithful performance of the agreement and for the prompt payment of labor and materials furnished in the prosecution of the agreement, or in the event of the failure of the Principal to enter into the agreement and give the bonds and certificates of insurance, if the Principal pays to the Obligee the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by the proposal then this obligation is void. Otherwise it remains in full force and effect provided, however, that this bond is executed pursuant to the provisions of Section 34-201, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions of that section to the extent as if it were copied at length herein.

Witness our hands this 27th day of May, 20 26

KLASS Services, Inc

Principal

SEAL

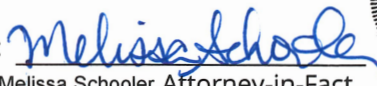
By: 

Adam Sheppard

Its: Principal

Old Republic Surety Company

SURETY

By: 

Melissa Schooler, Attorney-in-Fact



Southwest Bond Services, Inc.

AGENCY OF RECORD

7121 W Bell Rd Ste 230 Glendale AZ 85308

AGENCY ADDRESS

CITY OF CHANDLER
CHANDLER, ARIZONA

**KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS
CITY PROJECT NO.: TP2202.401, FEDERAL NO. CHN-0(252)D, ADOT NO.
T038701C**

PROPOSAL ACKNOWLEDGEMENT

PROPOSAL to the City Engineer of the City of Chandler,
In compliance with the Advertisement for Bids, the undersigned bidder:

Having examined the agreement documents, site of work, and being familiar with the conditions to be met, hereby submits the following Proposal for furnishing the material, equipment, labor and everything necessary for the completion of the work listed and agrees to execute the agreement documents and furnish the required bonds and certificates of insurance for the completion of said work, at the locations and for the prices set forth on the inside pages of this form.

Understands that construction of this project shall be in accordance with all applicable Uniform Standard Specifications and Standard Details except as otherwise required by the Project Plans and Project Specific Provisions.

Understands that the Proposal shall be submitted with a Proposal guarantee of cash, certified check, cashier's check, or surety bond for an amount of not less than ten percent (10%) of the amount bid.

Agrees that upon receipt of Notice of Award from the City of Chandler, the undersigned bidder will execute the agreement documents.

Work shall be completed within **300** consecutive calendar days, beginning with the day following the starting date specified in the Notice to Proceed. Said Notice will be issued in accordance with the Project Specific Provisions "NOTICE TO PROCEED," or, when, in the opinion of the Engineer, sufficient materials are, or will be available for the continuous prosecution of the work.

Acknowledges that bid prices submitted include all applicable sales and/or use taxes, and no further compensation will be approved for these items.

The Bidder hereby acknowledges receipt of and agrees that the submitter's Proposal is based on the following Addenda:

Addendum	Date Received	Addendum No.	Date Received
1	5/21/26		

PROPOSAL ACKNOWLEDGEMENT

THIS BID IS SUBMITTED BY: KLASS Services Inc,
a corporation organized under the laws of the State of Arizona; a
partnership consisting of Robert Kent Sheppard and Sally Ann Sheppard;
or individual trading as _____
and is the holder of an Arizona State Contractor's License: KA-174296

ATTACH PHOTOCOPY

Classification KA No. 174296

Failure to fill in the information above, regarding the bidder being a holder of Arizona State Contractor's License is grounds for rejection of the bid.

Joint venture bid proposals will not be accepted for projects bidding in the amount (for base bid) of less than \$5 million dollars.

Contractors are reminded it is a violation of State law to submit a bid if not properly licensed. Bids submitted without designating the Contractor's license classification and number, in the spaces provided above, shall be rejected. Bids submitted by Contractors without the required license shall be rejected.

Contractor acknowledges by signing below that bid prices submitted include all applicable sales and/or use taxes, and no further compensation shall be approved for these items. If there is a conflict between the unit bid price and the unit price extension for a particular pay item, the unit prices shall govern, per MAG 102.5. Also, per MAG 102.7, a proposal shall be considered irregular and may be rejected if there are unauthorized additions, statements, conditional or alternate bids, or irregularities of any kind.

Respectfully submitted,

KLASS Services Inc

Firm

86-1041043

Federal Tax ID Number

1300 S Litchfield Rd. #210F

Goodyear, AZ 85338

Address

City, State and Zip Code

623-932-0197

Phone

By (Signature Required)

Principal

Name and Title (Print)

adam@ksi-az.com

Email Address

NAME OF BIDDER: KLASS Services Inc

CITY OF CHANDLER

KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS

Project No. TP2202.401

Federal Project No.: CHN-0(252)D; ADOT Project No.: T0387-01C

BID SCHEDULE

NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	EXTENDED PRICE
CITY OF CHANDLER IMPROVEMENTS					
1	Construction Surveying and Layout	LS	1		16,500.00
2	GPS Data Collection (ESRI - ARCGIS Geodatabase Format)	LS	1		4,980.00
3	Contractor Quality Control	LS	1		31,000.00
4	Erosion Control (SWPPP Preparation, Installation, Maintenance, And Removal)	LS	1		10,500.00
5	Mobilization/Demobilization	LS	1		159,000.00
6	Clearing & Grubbing	LS	1		5,900.00
7	Remove Tree, Diameter > 12 IN	EA	4	987.50	3,950.00
8	Shared-Use Path Excavation (6 IN Path)	LS	1		29,800.00
9	Shared-Use Path Excavation (8 IN Path)	LS	1		79,900.00
10	Surface Seal	SY	11,210	6.23	69,850.00
11	Asphalt Pavement Replacement	SY	88	114.77	10,100.00
12	Concrete Sidewalk, MAG Det 230, 6 IN Thick With Reinforced Joints	SF	14,835	9.15	135,700.00
13	Concrete Sidewalk, MAG Det 230, 8 IN Thick With Reinforced Joints	SF	46,625	9.85	459,100.00
14	Concrete Sidewalk, MAG Det 230	SF	9,350	7.41	69,250.00
15	Vertical Curb & Gutter, MAG Det 220, Type A, H=6 IN	LF	320	45.88	14,680.00
16	Single Curb, MAG Det 222, Type A	LF	82	60.61	4,970.00
17	Mountable Curb & Gutter, MAG Det 220, Type E	LF	40	52.75	2,110.00
18	Concrete Header (6 IN)	LF	163	32.70	5,330.00
19	Concrete Curb Ramp With Detectable Warning, COC Det C-257	EA	2	2,940.00	5,880.00
20	Concrete Parallel Curb Ramp, MAG Det 238-3	EA	2	3,080.00	6,160.00
21	Driveway Entrance, MAG Det 250-2 (Commercial/Industrial)	SF	276	18.91	5,220.00
22	Concrete Driveway, MAG Dtl 250-2, Commercial, 10 FT Wide, Modified W/ Detectable Warning	SF	1,152	20.06	23,105.00
23	Concrete Driveway, MAG Dtl 260, Residential, 20 FT Wide. Modified W/ Type A Curb & Gutter	SF	310	26.71	8,280.00
24	Concrete Apron and Valley Gutter, MAG Det 240	SF	164	24.51	4,020.00
25	Adjust Valve Box & Cover, MAG Dtl 391, W/ ADA Compliant Lid	EA	1	1,340.00	1,340.00
26	Remove Asphaltic Concrete Pavement	SY	88	56.25	4,950.00
27	Remove Concrete Curb and Gutter	LF	356	19.63	6,990.00
28	Remove Concrete Single Curb	LF	67	27.99	1,875.00
29	Remove Concrete Sidewalks, Driveways, and Slabs	SF	8,512	5.63	47,890.00
30	Remove & Salvage Existing Gate To SRP	EA	3	996.67	2,990.00
31	Relocate Existing Bus Shelter	EA	1	2,105.00	2,105.00

BID SCHEDULE

NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	EXTENDED PRICE
32	Remove and Relocate Existing Fire Hydrant Per COC Dtl C-303	EA	2	3,142.50	6,285.00
33	Relocate Advertisement Sign	EA	1	595.00	595.00
34	Remove and Reinstall Sign	EA	5	375.00	1,875.00
35	Remove and Salvage Pedestrian Push Button w/ Sign	EA	4	585.00	2,340.00
36	New Access Gate Per Special Detail	EA	3	4,990.00	14,970.00
37	Traffic Control	LS	1		90,000.00
38	Uniformed Off-Duty Law Enforcement Officer	HR	500	100.00	50,000.00
39	Landscape Establishment - Ninety (90) Days	LS	1		6,500.00
40	Shrubs - 1 gal	EA	135	30.00	4,050.00
41	Shrubs - 5 gal	EA	201	34.73	6,980.00
42	Tree - 36 IN Box, 2 IN Cal Min.	EA	3	623.33	1,870.00
43	Decomposed Granite (1/2 IN Screened)(Madison Gold)	SY	4,454	8.35	37,200.00
44	Decomposed Granite (Match Existing)	SY	6,309	8.50	53,600.00
45	Rip Rap - Salvage and Reinstall - 6 IN Depth	CY	40	148.75	5,950.00
46	Trash Receptacle	EA	6	996.67	5,980.00
47	Pet Waste Station	EA	4	1,025.00	4,100.00
48	Multi-Use Path Rules Signage	EA	4	472.50	1,890.00
49	Bicycle Repair Station	EA	1	4,150.00	4,150.00
50	Bicycle Rack	EA	2	1,115.00	2,230.00
51	Bench	EA	3	1,846.67	5,540.00
52	Seat Divider	EA	5	581.00	2,905.00
53	Pet Waste Station, Salvage & Relocate	EA	4	497.50	1,990.00
54	Trailhead Sign (Highline Canal Shared Use Path)	EA	2	3,050.00	6,100.00
55	Sandblasted Pavement Marking	EA	6	998.33	5,990.00
56	Concrete Seat Wall	LF	22	329.55	7,250.00
57	Landscape, Aesthetics, & Irrigation Restoration	SY	4,990	2.57	12,800.00
58	SCH. 40 PVC Irrigation Pipe 1 IN	LF	1,327	2.25	2,990.00
59	Class 200 PVC Irrigation Pipe 1 IN	LF	176	5.40	950.00
60	Class 200 PVC Irrigation Pipe 3/4 IN	LF	4,157	1.73	7,210.00
61	SCH. 40 PVC Irrigation Pipe Sleeve 2 IN - Directional Bore	LF	198	83.33	16,500.00
62	SCH. 40 PVC Irrigation Pipe Sleeve 2 IN	LF	89	14.04	1,250.00
63	SCH. 40 PVC Irrigation Pipe Sleeve 4 IN	LF	121	13.88	1,680.00
64	Water Meter (1 IN Landscape Irrigation Service)	EA	1	3,270.00	3,270.00
65	1 IN Backflow Prevention Unit (Reduced Pressure)	EA	1	2,920.00	2,920.00
66	1 IN Master Valve	EA	1	472.00	472.00
67	1 IN Flow Sensor	EA	1	282.00	282.00
68	Controller, Automatic (Baseline BL-3200-CM with BL-CLOUD-LTE-ESIM)	EA	2	18,070.00	36,140.00
69	1 IN Remote Control Valve, Electric	EA	3	150.00	450.00
70	Flush End Assembly (Drip)	EA	8	218.00	1,744.00
71	Multi Outlet Emitter Assembly	EA	128	25.82	3,305.00
72	Gate Valve (1 IN)	EA	1	121.00	121.00

BID SCHEDULE

NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	EXTENDED PRICE
73	4 IN White Traffic Paint Stripe (COC)	LF	15,550	0.33	5,115.00
74	4 IN Yellow Traffic Paint Stripe (COC)	LF	4,800	0.33	1,584.00
75	Paint Symbol - Methyl Methacrylate (Bike Lane Marking Set) (COC)	EA	12	410.00	4,920.00
76	Green Bike Lane - Methyl Methacrylate (COC)	SF	3,960	6.95	27,522.00
77	4 IN White Thermoplastic Traffic Stripe (COC)	LF	1,500	0.90	1,350.00
78	Thermoplastic/Preformed Symbol, Handicap Parking (COC)	EA	2	395.00	790.00
79	Perforated Sign Post (COC)	EA	41	145.00	5,945.00
80	Perforated Sign Post Foundation (COC)	EA	41	180.00	7,380.00
81	Flat Sheet Aluminum Sign Panel, High Intensity Grade (COC)	EA	110	98.00	10,780.00
82	Wayfinding Sign Panel	EA	32	401.56	12,850.00
83	No. 5 Pull Box	EA	11	554.55	6,100.00
84	Sch. 40 PVC Electrical Conduit, 1 IN (COC)	LF	6,130	21.06	129,100.00
85	Sch. 40 PVC Electrical Conduit, 2 IN Directional Drill (COC)	LF	279	106.81	29,800.00
86	Sch. 40 PVC Elec Conduit, 2 IN w/ 1/4 IN Nyl PR #8 Bare Copper Wire (Trench) (COC)	LF	330	21.06	6,950.00
87	Sch. 40 PVC Electrical Conduit, 3 IN (Trench) (COC)	LF	20	60.00	1,200.00
88	#8 AWG Conductors	LF	22,900	1.48	33,850.00
89	#8 AWG Insulated Bond	LF	6,430	1.90	12,200.00
90	#12 AWG Conductors	LF	2,368	1.42	3,370.00
91	#12 AWG Insulated Bond	LF	1,184	2.66	3,155.00
92	Electrical Service Pedestal System, Det 4829 (COC)	EA	4	5,260.00	21,040.00
93	Electrical Conductors (Ray Road and McKemy Avenue) (COC)	LS	1		4,100.00
94	New 3000K Luminaire on Concrete Light Pole	EA	56	7,326.88	410,305.00
95	New 4000K Luminaire on Concrete Light Pole	EA	18	6,843.33	123,180.00
96	Pole Foundation, Type PB (Push Button) (COC)	EA	1	1,220.00	1,220.00
97	Audible Pedestrian Push Button w/ Sign (COC)	EA	8	963.75	7,710.00
98	Type PB, Push Button Pole (COC)	EA	1	995.00	995.00
CITY OF TEMPE IMPROVEMENTS					
7	Remove Tree, Diameter > 12 IN	EA	3	1,036.67	3,110.00
11	Asphalt Pavement Replacement	SY	43	117.93	5,071.00
14	Concrete Sidewalk, MAG Det 230	SF	6,541	7.92	51,824.00
15	Vertical Curb & Gutter, MAG Det 220, Type A, H=6 IN	LF	186	47.23	8,785.00
25	Adjust Valve Box & Cover, MAG Dtl 391, W/ ADA Compliant Lid	EA	2	993.50	1,987.00
26	Remove Asphaltic Concrete Pavement	SY	43	73.26	3,150.00
27	Remove Concrete Curb and Gutter	LF	186	21.45	3,990.00
29	Remove Concrete Sidewalks, Driveways, and Slabs	SF	3,678	5.73	21,065.00
34	Remove and Reinstall Sign	EA	2	520.00	1,040.00
39	Landscape Establishment - Ninety (90) Days	LS	1		5,130.00
40	Shrubs - 1 gal	EA	6	31.17	187.00
41	Shrubs - 5 gal	EA	10	49.90	499.00
43	Decomposed Granite (1/2 IN Screened)(Madison Gold)	SY	145	10.59	1,535.00
44	Decomposed Granite (Match Existing)	SY	432	7.35	3,176.00

BID SCHEDULE

NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	EXTENDED PRICE
57	Landscape / Irrigation Restoration	SY	184	5.65	1,040.00
71	Multi Outlet Emitter Assembly	EA	4	29.75	119.00
99	Single Curb, MAG Det 222, Type B	LF	83	53.13	4,410.00
100	Modified Mid-Block Ramp, Per Special Detail	EA	2	3,307.50	6,615.00
101	Concrete Driveway, MAG Dtl 250-1, Commercial, Width Per Plans	SF	1,218	18.17	22,133.00
102	Concrete Driveway, MAG Dtl 260, Residential, 16 FT Wide. Modified W/ Type A Curb & Gutter	SF	276	21.70	5,989.00
103	Concrete Driveway, MAG Dtl 262, 20 FT Wide	SF	304	23.75	7,220.00
104	City of Tempe Micro Shelter Pad	SF	98	12.76	1,250.00
105	City of Tempe Amenities Pad	SF	56	14.38	805.00
106	Adjust Electrical PullBox & Cover to Grade, W/ ADA Compliant Lid	EA	1	925.00	925.00
107	Remove Street Light	EA	1	1,100.00	1,100.00
108	Remove & Salvage Existing Bench, Trash Receptacle, & Bike Rack to the City of Tempe	EA	1	990.00	990.00
109	Remove Thermoplastic Stripe	LF	395	0.90	355.50
110	Remove Thermoplastic Bike Lane Marking Set	EA	1	79.00	79.00
111	Remove Fence	LF	12	42.50	510.00
112	Fence (Replace In Kind)	LF	9	150.00	1,350.00
113	Bus Stop (Microshelter, Bench, Trash Receptacle, Bike Rack)	LS	1		16,405.00
114	4 IN Yellow Thermoplastic Traffic Stripe (COT)	LF	460	1.15	529.00
115	4 IN White Thermoplastic Traffic Stripe (COT)	LF	1,550	1.15	1,782.50
116	Thermoplastic/Preformed Symbol (Bike Lane Marking Set)(COT)	EA	1	575.00	575.00
117	Perforated Sign Post (COT)	EA	3	145.00	435.00
118	Perforated Sign Post Foundation (COT)	EA	3	180.00	540.00
119	Flat Sheet Aluminum Sign Panel, High Intensity Grade (COT)	EA	6	99.00	594.00
120	No. 7 Pull Box (COT)	EA	1	1,210.00	1,210.00
121	No. 7 Pull Box w/ Extension (COT)	EA	1	2,105.00	2,105.00
122	Sch. 40 PVC Electrical Conduit, 2 IN (Trench) (COT)	LF	10	47.50	475.00
123	Sch. 40 PVC Electrical Conduit, 2 IN (Directional Drill) (COT)	LF	120	9.17	1,100.00
124	Sch. 40 PVC Electrical Conduit, 2 1/2 IN (Trench) (COT)	LF	10	59.50	595.00
125	Sch. 40 PVC Electrical Conduit, 2-3 IN (Directional Drill) (COT)	LF	110	121.82	13,400.00
126	Pole Foundation, Type J (2013 ADOT DTL. T.S. 4-10) (COT)	EA	1	1,950.00	1,950.00
127	Pole Foundation, Type Q (Modified 14 FT 2013 ADOT DTL. T.S. 4-10) (COT)	EA	1	2,105.00	2,105.00
128	Meter Pedestal Foundation (COT)	EA	1	1,009.00	1,009.00
129	Controller Cabinet Foundation (COT)	EA	1	1,110.00	1,110.00
130	Audible Pedestrian Push Button w/ Sign (COT)	EA	2	990.00	1,980.00
131	Type J Signal Pole (2013 ADOT DTL. T.S. 4-8) (COT)	EA	1	10,845.00	10,845.00
132	Type Q Signal Pole (2013 ADOT DTL. T.S. 4-10) (COT)	EA	1	11,770.00	11,770.00
133	30 FT Mast Arm (2013 ADOT DTL. T.S. 4-10) (COT)	EA	2	3,390.00	6,780.00
134	Controller Cabinet Assembly (COT)	EA	1	42,457.00	42,457.00
135	Traffic Signal Mounting Assembly (Type II) (COT)	EA	4	300.00	1,200.00
136	Traffic Signal Mounting Assembly (Type V) (COT)	EA	4	687.50	2,750.00
137	12 IN Signal Indication, Type F (COT)	EA	6	735.00	4,410.00

BID SCHEDULE

NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	EXTENDED PRICE
138	Pedestrian Signal Indication (Man/Hand) (Countdown) (COT)	EA	2	525.00	1,050.00
139	Luminaire, Mast Arm 10 FT (COT)	EA	1	750.00	750.00
140	LED Luminaire, Horizontal Mount (Traffic Signal) (COT)	EA	1	1,100.00	1,100.00
141	Illuminated Street Name Signs (COT)	EA	2	6,202.50	12,405.00
142	CCTV Camera	EA	1	6,250.00	6,250.00
143	Ethernet Switch	EA	1	4,150.00	4,150.00
144	Wireless Radio	EA	1	3,880.00	3,880.00
145	Meter Pedestal Cabinet (COT)	EA	1	4,110.00	4,110.00
146	Electrical Conductors (Kyrene Road and Knox Road) (COT)	LS	1		8,990.00
ALLOWANCES					
147	Allowance: Roadway And Concrete Flatwork	AL	1		150,000.00
148	Allowance: Landscaping	AL	1		35,000.00
149	Allowance: Traffic Signal And Communications Facilities	AL	1		35,000.00
150	Allowance: SRP Electrical	AL	1		35,000.00
151	Allowance: Removals	AL	1		35,000.00
152	Allowance: Trailhead Signage	AL	1		15,000.00
153	Allowance: Archaeological Coordination	AL	1		5,000.00
154	Allowance: Utility Locating & Potholing	AL	1		5,000.00
155	City of Chandler Owner's Allowance	AL	1		305,900.00
156	City of Tempe Owner's Allowance	AL	1		44,400.00

TOTAL BASE BID 3,529,896.00

Note 1: Bidders must fill in all blank spaces with an entry. Bids submitted with blank spaces will be considered "Non-Responsive".

Note 2: Bids will be opened and read aloud at an open public meeting at the time and place designed in the invitation for bids. Bids will not be modified after the bid opening. A bidder withdrawing a bid after the bid opening will be deemed non-responsible and the City may make a claim against the bidder's bid bond.

Note 3: The City reserves the right to determine the low bidder based on the Base Bid with or without any Bid Alternate(s).

SUBCONTRACTOR'S LIST FORM

**KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS
CITY PROJECT NO.: TP2202.401, FEDERAL NO. CHN-0(252)D, ADOT NO. T038701C**

If Bidder intends to subcontract any portion of this Agreement, the bidder must submit the name, address, and contractor's license number (if applicable) of each subcontractor, including the work component of such subcontracting. Include this form with the bid submittal documents. Prime Contractor must self-perform according to MAG Specification 108.2. Bidder may make multiple copies of this form as needed.

Company Name:	Roadway Electric	Company Name:	Via Sun
Contact Name:	Scott McCray	Contact Name:	Karla Valdez
Contact Email:	scottm@roadwayelectric.com	Contact Email:	karla@viasuncorp.com
Contact Phone:	602-943-8300	Contact Phone:	480-268-9669
Work Component:	street signal	Work Component:	seal coating
Percentage of Total Work Performed:	15%	Percentage of Total Work Performed:	2%

Company Name:	3D Contracting	Company Name:	Falcon Contracting
Contact Name:	Joe Guelke	Contact Name:	Devin Bailey
Contact Email:	joe@3dcontractingaz.com	Contact Email:	devin@falcon_contracting.com
Contact Phone:	602-881-3252	Contact Phone:	602-944-3614
Work Component:	Asphalt	Work Component:	striping/signage
Percentage of Total Work Performed:	1%	Percentage of Total Work Performed:	2%

Company Name:	Uranga Landscape Company, LLC	Company Name:	
Contact Name:	Ernie Uranga	Contact Name:	
Contact Email:	ernie@urangallc.com	Contact Email:	
Contact Phone:	602-628-8259	Contact Phone:	
Work Component:	Landscaping	Work Component:	
Percentage of Total Work Performed:	5%	Percentage of Total Work Performed:	
Subcontractor Total Work Performed: \$ 879,000		Overall Bid Total: \$ 3,529,896.00	
Overall Prime Contractor Self-performance %:		75%	

NON-COLLUSION BIDDING CERTIFICATION

(STATE OF)
SS.
(COUNTY OF)

I, Adam Sheppard of the City of Goodyear,
in the County of Maricopa and the State of Arizona, of full age,
being duly sworn according to the law of my oath depose and say that:

I am Adam Sheppard a, Principal
(Name) (Title, Position, etc.)

of the firm of KLASS Services Inc., the Bidder making
the Bid for City of Chandler, **KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS, City**
Project No. CITY PROJECT NO.: TP2202.401, FEDERAL NO. CHN-0(252)D, ADOT NO. T038701C and that
I executed the said Bid with full authority so to do; that said Bidder has not, directly or indirectly entered into
any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive
bidding in connection with the above named Project; and that all statements contained in said Bid and in this
affidavit are true and correct, and made with full knowledge that the City of Chandler relies upon the truth of
the statements contained in said Bid and in the statements contained in this affidavit in awarding the Contract
for the said Project.

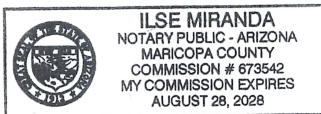
I further warrant that no person or selling agency has been employed or retained to solicit or secure such
Contract upon an agreement of understanding, for a commission, percentage, brokerage or contingent fee,
except bonafide employees or bonafide established commercial or selling agencies maintained by:


(Signature of Bidder)

(Printed or Typed Name of Bidder)

Sworn to before me this 28th day of May, 2026, in the County
of

Maricopa, State of AZ.




(Notary Public)

CERTIFICATE OF INSURABILITY AND BONDING

I hereby certify that as Bidder to **City of Chandler KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS CITY PROJECT NO.: TP2202.401, FEDERAL NO. CHN-0(252)D, ADOT NO. T038701C**, I am fully aware of the City of Chandler's Insurance and Bonding Requirements for Contractors and that by the submission of this Bid Proposal, assure the City of Chandler that I am able to produce the insurance and bonding coverage required should I be selected to be the successful bidder.

Should I be selected to be the successful bidder by the City of Chandler, and then become unable to produce the insurance and bonding coverage specified within ten working days I am fully aware and understand that my Bid Proposal will be rejected by the City of Chandler, and that I will forfeit my posted Bid Bond.



Signature of Bidder

Principal

Title

5/28/26

Date



OLD REPUBLIC SURETY COMPANY

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That OLD REPUBLIC SURETY COMPANY, a Wisconsin stock insurance corporation, does make, constitute and appoint:

Jenna Sparks, Melissa Schooler of Peoria, AZ

its true and lawful Attorney(s)-in-Fact, with full power and authority for and on behalf of the company as surety, to execute and deliver and affix the seal of the company thereto (if a seal is required), bonds, undertakings, recognizances or other written obligations in the nature thereof, **(other than bail bonds, bank depository bonds, mortgage deficiency bonds, mortgage guaranty bonds, guarantees of installment paper and note guaranty bonds, self-insurance workers compensation bonds guaranteeing payment of benefits, or black lung bonds)**, as follows:

ALL WRITTEN INSTRUMENTS

and to bind OLD REPUBLIC SURETY COMPANY thereby, and all of the acts of said Attorneys-in-Fact, pursuant to these presents, are ratified and confirmed. This appointment is made under and by authority of the board of directors at a special meeting held on February 18, 1982.

This Power of Attorney is signed and sealed by facsimile under and by the authority of the following resolutions adopted by the board of directors of the OLD REPUBLIC SURETY COMPANY on February 18, 1982.

RESOLVED that, the president, any vice-president or assistant vice president, in conjunction with the secretary or any assistant secretary, may appoint attorneys-in-fact or agents with authority as defined or limited in the instrument evidencing the appointment in each case, for and on behalf of the company to execute and deliver and affix the seal of the company to bonds, undertakings, recognizances, and suretyship obligations of all kinds; and said officers may remove any such attorney-in-fact or agent and revoke any Power of Attorney previously granted to such person.

RESOLVED FURTHER, that any bond, undertaking, recognizance, or suretyship obligation shall be valid and binding upon the Company

- (i) when signed by the president, any vice president or assistant vice president, and attested and sealed (if a seal be required) by any secretary or assistant secretary; or
- (ii) when signed by the president, any vice president or assistant vice president, secretary or assistant secretary, and countersigned and sealed (if a seal be required) by a duly authorized attorney-in-fact or agent; or
- (iii) when duly executed and sealed (if a seal be required) by one or more attorneys-in-fact or agents pursuant to and within the limits of the authority evidenced by the Power of Attorney issued by the company to such person or persons.

RESOLVED FURTHER that the signature of any authorized officer and the seal of the company may be affixed by facsimile to any Power of Attorney or certification thereof authorizing the execution and delivery of any bond, undertaking, recognizance, or other suretyship obligations of the company; and such signature and seal when so used shall have the same force and effect as though manually affixed.

IN WITNESS WHEREOF, OLD REPUBLIC SURETY COMPANY has caused these presents to be signed by its proper officer, and its corporate seal to be affixed this 25th day of September, 2023.

Karen J. Haffner
Assistant Secretary



OLD REPUBLIC SURETY COMPANY

Alan Pavlic
President

STATE OF WISCONSIN, COUNTY OF WAUKESHA - SS

On this 25th day of September, 2023, personally came before me, Alan Pavlic and Karen J. Haffner, to me known to be the individuals and officers of the OLD REPUBLIC SURETY COMPANY who executed the above instrument, and they each acknowledged the execution of the same, and being by me duly sworn, did severally depose and say: that they are the said officers of the corporation aforesaid, and that the seal affixed to the above instrument is the seal of the corporation, and that said corporate seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority of the board of directors of said corporation.



Kathryn R. Pearson
Notary Public

My Commission Expires: September 28, 2026

(Expiration of notary's commission does not invalidate this instrument)

CERTIFICATE

I, the undersigned, assistant secretary of the OLD REPUBLIC SURETY COMPANY, a Wisconsin corporation, CERTIFY that the foregoing and attached Power of Attorney remains in full force and has not been revoked; and furthermore, that the Resolutions of the board of directors set forth in the Power of Attorney, are now in force.



52 5901

Signed and sealed at the City of Brookfield, WI this 27th day of May, 2026.

Karen J. Haffner
Assistant Secretary

ARIZONA DEPARTMENT OF REVENUE
ATTN: Customer Care and Outreach
PO BOX 29032
Phoenix, AZ 85038-9032



ARIZONA DEPARTMENT OF REVENUE
TRANSACTION PRIVILEGE TAX LICENSE
NOT TRANSFERABLE

The licensee listed below is licensed to conduct business upon the condition that taxes are paid to Arizona Department of Revenue as required under provisions of A.R.S. Title 42, Chapter 5, Article 1.

2025

ISSUED TO: K L A S S SERVICES
12819 W MISSOURI AVE
LITCHFIELD PARK AZ 85340-4035

ALL communications and
reports MUST REFER to
this LICENSE NO.

LICENSE: 07657469
START DATE: 06/19/2002
ISSUED: 12/25/2024
EXPIRES: 12/31/2025

LOCATION: CODE 002
KLASS SERVICES INC
12819 W MISSOURI AVE
LITCHFIELD PARK, AZ 85340
2400069200196


BUSINESS CODE

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REGION

MAR - MARICOPA
PNL - PINAL
AJ - APACHE JUNCTION
AV - AVONDALE
BE - BUCKEYE
CA - CAREFREE
CG - CASA GRANDE
CH - CHANDLER
CK - CAVE CREEK
CL - COOLIDGE
DH - DEWEY-HUMBOLDT
EM - EL MIRAGE
FH - FOUNTAIN HILLS
GB - GILBERT
GE - GLENDALE
GY - GOODYEAR
LP - LITCHFIELD PARK
ME - MESA
MP - MARICOPA
PE - PEORIA
PV - PARADISE VALLEY
PX - PHOENIX

JURISDICTION

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This License is issued to the business named above for the address shown. Licenses, by law, cannot be transferred from one person to another, nor can they be transferred from one location to another. Arizona law requires licensees to notify the Department of Revenue if there is a change in business name, trade name, location, mailing address, or ownership. In addition, when the business ceases to operate or the business location changes and a new license is issued, this license must be returned to the Arizona Department of Revenue. According to R15-5-2201, license must be displayed in a conspicuous place.

LICENSE: 07657469

BUSINESS CODE

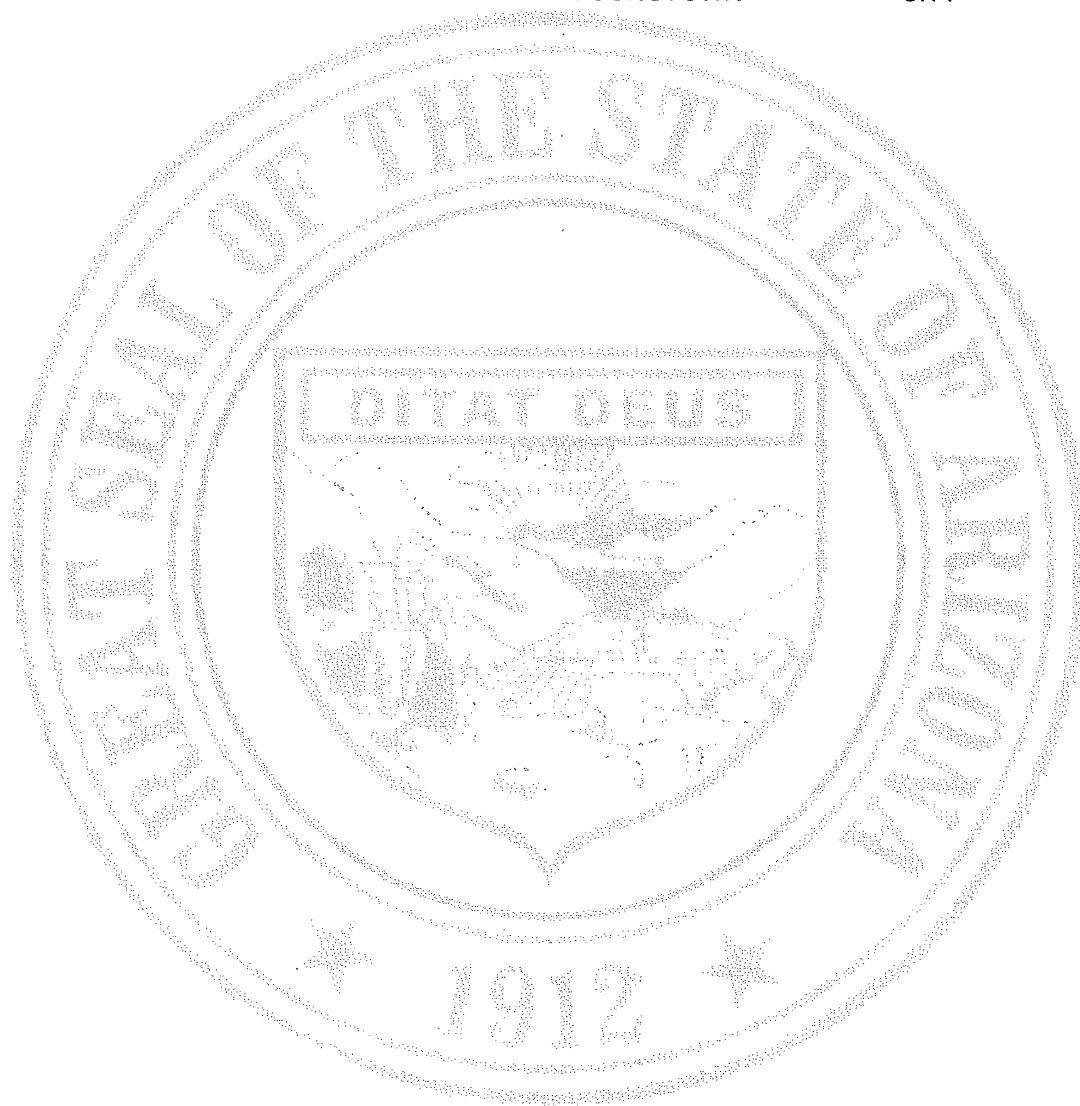
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REGION

QC - QUEEN CREEK
 SC - SCOTTSDALE
 SE - SEDONA
 SP - SURPRISE
 TE - TEMPE
 TN - TOLLESON
 WB - WICKENBURG
 YT - YOUNGTOWN

JURISDICTION

CITY
 CITY
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License Verification

Transaction Privilege Tax License Number: *

07657469

Verification Status

The number **07657469** is a valid Arizona transaction privilege tax license number. 5/28/2026 10:40:48 AM.



I'm not a robot

reCAPTCHA

----- IMPORTANT NOTICE -----
YOU MUST:

1. REPORT DISASSOCIATION OF QUALIFYING PARTY **IN WRITING** WITHIN 15 DAYS. [SEE A.R.S. § 32-1154(A)(18)]
2. REPORT A CHANGE OF ADDRESS **IN WRITING** WITHIN 30 DAYS. [SEE A.R.S § 32-1122(8)(1)]
3. REPORT ANY TRANSFER OF OWNERSHIP OF 25% OR MORE IMMEDIATELY [SEE A.R.S. § 32-1151.01]
4. REPORT ANY CHANGE IN LEGAL ENTITY, SUCH AS ANY CHANGE IN OWNERSHIP IN A SOLE PROPRIETORSHIP OR CHANGE OF A PARTNER IN A PARTNERSHIP OR THE CREATION OF A NEW CORPORATE ENTITY [SEE A.R.S § 32-1124(8)(F) § RULE R-4-9-110]

THIS IS YOUR IDENTIFICATION CARD



Licensee: **K L A S S Services Inc**

1300 S Litchfield Rd Suite 210F, Goodyear, AZ 85338

License No.: **ROC 174296**

Class: **KA Dual Engineering**

License Effective Through: **2028-04-30**



ROC 174296

TOM COLE, DIRECTOR

State of Arizona Registrar of Contractors

**Visit our license listing on the Registrar of
Contractors Contractor Search using the QR
Code to the right.**



ROC 174296



**CITY OF CHANDLER, ARIZONA
PUBLIC WORKS & UTILITIES DEPARTMENT
CAPITAL PROJECTS DIVISION**

CONSTRUCTION AGREEMENT

**KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS
CITY PROJECT NO.: TP2202.401
FEDERAL NO.: CHN-0(252)D
ADOT NO.: T038701C**

**MAYOR
KEVIN HARTKE**

**VICE MAYOR
ANGEL ENCINAS - VICE MAYOR**

**CITY COUNCIL
OD Harris Matt Orlando
Angel Encinas Jane Poston Jennifer Hawkins**



**Daniel Haskins, P.E.
CIP City Engineer**

CITY OF CHANDLER, ARIZONA

KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS
CITY PROJECT NO.: TP2202.401, Federal No. CHN-0(252)D, ADOT No. T038701C

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CONSTRUCTION SERVICES AGREEMENT
PROJECT NO.: TP2202.401, Federal No. CHN-0(252)D, ADOT No. T038701C

This Agreement (“Agreement”) is made and entered into on the ____ day of _____, 2026, by and between City of Chandler, an Arizona municipal corporation, hereinafter called “City” and KLASS Services Inc. the “Contractor” designated below (City and Contractor may individually be referred to as “Party” and collectively referred to as “Parties”).

City and Contractor agree as follows:

ARTICLE 1 - PARTICIPANTS AND PROJECT

CITY: CIP City Engineer: Daniel Haskins, P.E.
Public Works & Utilities Department
P.O. Box 4008, Mail Stop 407 Chandler, AZ 85244-4008
Phone: 480-782-3335 Email: Daniel.haskins@chandleraz.gov

CITY: Construction Project Manager: Jason Garcia
Public Works & Utilities Department
P.O. Box 4008, Mail Stop 407 Chandler, AZ 85244-4008
Phone: 480-782-3453 Email: Jason.Garcia@chandleraz.gov

Contractor: Legal Company Name:	KLASS Services Inc.
Mailing Address:	1300 South Litchfield Road, Suite 210-F Goodyear AZ 85338
Physical Address:	1300 South Litchfield Road, Suite 210-F Goodyear AZ 85338
Arizona Roc No.:	KA-174296
Federal Tax Id No.:	86-1041053
State Where Organized:	Arizona
Business Organization:	S Corporation
Statutory Agent Name:	Kent Sheppard
Statutory Agent Mailing Address:	12819 West Missouri Avenue Litchfield Park, AZ 85340
Statutory Agent Physical Address:	12819 West Missouri Avenue Litchfield Park, AZ 85340
Contractor’s Authorized Project Representative:	
Name:	Adam Sheppard
Title:	Principal
Phone:	623-764-4348
Email:	adam@ksi-az.com

PROJECT DESCRIPTION:

The Kyrene Branch and Highline Canal Shared Use Paths project is located along a portion of the Kyrene Branch Canal and Highline Canal. A 0.9-mile path along the Kyrene Branch Canal and a 0.25-mile path along the Highline Canal will connect to existing concrete paths in the City of Tempe. Bike lanes will also be added on Orchid Lane and 54th Street. The project improvements include concrete shared-use paths, lighting, landscaping and irrigation, wayfinding signage, signalized crossing, and pavement marking improvements.

PROJECT LOCATION:

Kyrene Branch Canal and Highline Canal Shared Use Paths.

ARTICLE 2 - AGREEMENT DOCUMENTS

2.1 AGREEMENT DOCUMENTS

The Agreement between City and Contractor will consist of the following Agreement Documents:

1. This Construction Services Agreement and all of its Exhibits, including Project Plans and Technical Specifications.
2. General Conditions and General Conditions Appendices, incorporated by reference.
3. Project Specific Special Provisions as set forth in Exhibit A, incorporated by reference.
4. Project Bid Proposal.

2.2 In the event of any inconsistency, conflict, or ambiguity between or among the Agreement Documents, the Agreement Documents will take precedence as described in Section 14.1.4 of the General Conditions.

2.3 DEFINITIONS

The definitions in Section 2 of the General Conditions apply to all the Agreement Documents, including this Agreement.

ARTICLE 3 - CONSTRUCTION SERVICES

3.1 GENERAL

- 3.1.1 Scope of Work. All terms and conditions are set forth in the Agreement. Any terms and conditions and exceptions noted in the Contractor's proposal or other documents do not apply unless agreed to in this Agreement or an approved addendum.
- 3.1.2 Contractor agrees this is a Unit Price Agreement. Contractor agrees at its own cost and expense, to do all Work necessary required to fully, timely and properly complete the construction of the Project in strict accordance with the Agreement Documents in a good and workmanlike manner, free and clear of all claims, liens, and charges whatsoever, in the manner and under the conditions specified, within the Agreement time.
- 3.1.3 Contractor must provide all of the labor and materials, and perform the Work in accordance with Section 4 of the General Conditions. Some, but not all, of the major components of the Construction Services and the corresponding subsections of Section 4 of the General Conditions are set forth below.

- 3.1.4 At all times relevant to this Agreement and performance of the Work, the Contactor must fully comply with all Laws, Regulations, or Legal Requirements applicable to City, the Project and the Agreement, including, without limitation, those set forth on attached Exhibit A.
- 3.1.5 Contractor must perform the Work under this Agreement using only those firms, team members and individuals designated by Contractor consistent with Contractor's accepted Bid, or otherwise, approved by City pursuant to the General Conditions. No other entities or individuals may be used without the prior written approval of the Project Manager.
- 3.1.6 Contractor must comply with all terms and conditions of the General Conditions.
- 3.1.7 In the event of a conflict between this Agreement and the General Conditions or an exhibit hereto or appendix thereto, the terms of this Agreement will control.
- 3.1.8 Ownership of Work Product. Notwithstanding anything to the contrary in this Agreement, all Work Product prepared or otherwise created in connection with the performance of this Agreement, including the Work, are to be and remain the property of City. For purposes of this provision, "Work Product" will include all designs, drawings, plans, specifications, ideas, renderings and other information or matter, in whatever form created (e.g., electronic or printed) and in all media now known or hereinafter created. All Work Product will be considered Work Made for Hire as defined in the United States Copyright Act 17 U.S.C. § 101 (Copyright Act). If for any reason, any such Work is found not to be a Work Made for Hire, Contractor hereby transfers and assigns ownership of the copyright in such Work to City. The rights in this Section are exclusive to City in perpetuity.

3.2 **CONTRACTOR'S PRE-AGREEMENT AND PRE-WORK DELIVERABLES**

- 3.2.1 The Contractor must provide the Deliverables in accordance with Section 4.2 of the General Conditions.

3.3 **PRE-CONSTRUCTION CONFERENCE**

Contractor must attend the Pre-Construction Conference in accordance with Section 4.3 of the General Conditions.

3.4 **PERFORMANCE OF THE WORK (INCLUDING FIELD MEASUREMENTS, SUBCONTRACTORS, AND SUPPLIERS)**

Contractor must perform the Work in accordance with Section 4.4 of the General Conditions.

3.5 CONTROL OF THE PROJECT SITE

Contractor must control and maintain the Project Site in accordance with Section 4.5 of the General Conditions.

3.6 PROJECT SAFETY

Contractor must implement and enforce Project safety in accordance with Section 4.6 of the General Conditions.

3.7 MATERIALS QUALITY, SUBSTITUTIONS AND SHOP DRAWINGS

Contractor must provide materials testing and submit substitute materials and Shop Drawings in accordance with Section 4.7 of the General Conditions.

3.8 PROJECT RECORD DOCUMENTS

Contractor must maintain and make available the Project Record Documents in accordance with Section 4.8 of the General Conditions.

3.9 WARRANTY AND CORRECTION OF DEFECTIVE WORK

Contractor must provide warranties and correct defective Work in accordance with Section 4.9 of the General Conditions.

ARTICLE 4 - CITY RESPONSIBILITIES

4.1 City will have the responsibilities, and provide the information specified in, and subject to the conditions set forth in, Section 5 of the General Conditions.

ARTICLE 5 - AGREEMENT TIME

5.1 GENERAL

5.1.1 The total Agreement Duration is 450 Calendar Days (including Substantial Completion by 390 Calendars Days and Final Acceptance by 450 Calendar Days).

5.1.2 The Agreement Time will start with the Notice to Proceed (NTP) and end with Final Acceptance, as set forth in Article 5.4 below.

5.1.3 The Agreement Time will be as set forth in the Project Schedule. Contractor agrees that it will commence performance of the Work and complete the Project through Final Acceptance within the Agreement Time.

5.1.4 Time is of the essence of this Agreement for the Project, and for each phase and designated Milestone thereof.

- 5.1.5 Failure on the part of Contractor to adhere to the approved Project Schedule will be deemed a material breach and sufficient grounds for termination of this Agreement by City.

5.2 **PROJECT SCHEDULE**

- 5.2.1 The Project Schedule will be updated and maintained throughout Contractor's performance under this Agreement in accordance with Section 6.2 of the General Conditions.

5.3 **SUBSTANTIAL COMPLETION**

Substantial Completion must be achieved no later than the Substantial Completion Date set forth in the Project Schedule. Substantial Completion will be determined in accordance with Section 6.3 of the General Conditions.

5.4 **FINAL ACCEPTANCE**

- 5.4.1 Final Acceptance will be obtained within the time period set forth in the Project Schedule.
- 5.4.2 Final Acceptance will be issued pursuant to Section 6.5 of the General Conditions.

5.5 **LIQUIDATED DAMAGES**

- 5.5.1 Substantial Completion Liquidated Damages. Contractor acknowledges and agrees that if Contractor fails to obtain Substantial Completion of the Work within the Agreement Time, City will sustain extensive damages and serious loss as a result of such failure. The exact amount of such damages will be extremely difficult to ascertain. Therefore, City and Contractor agree that if Contractor fails to achieve Substantial Completion of the Work within the Agreement Time, City will be entitled to retain or recover from Contractor, as liquidated damages and not as a penalty, the sum per calendar day as indicated in MAG § 108.9.
- 5.5.2 Final Acceptance Liquidated Damages. For the same reasons set forth in Article 5.5.1 above, City and Contractor further agree that if Contractor fails to achieve Final Acceptance of the Work within the Agreement Time, City will be entitled to retain or recover from Contractor, as liquidated damages and not as a penalty, the sum per calendar day as indicated in MAG § 108.9 commencing from the actual date of Substantial Completion or Final Acceptance as required under the Agreement.
- 5.5.3 MAG Liquidated Damages. Liquidated damages provisions in MAG § 108.9 will apply.

5.5.4 City may deduct liquidated damages described in this Article 5.5 from any unpaid amounts then or thereafter due Contractor under this Agreement. Any liquidated damages not so deducted from any unpaid amounts due Contractor will be payable to City at the demand of City, together with interest from the date of the demand at the highest lawful rate of interest payable by Contractor.

5.6 **MUTUAL WAIVER OF CONSEQUENTIAL DAMAGES ONLY**

5.6.1 Contractor and City waive claims against each other for consequential damages arising out of or relating to this Agreement. This mutual waiver includes.

1. Damages incurred by City for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
2. Damages incurred by Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

5.6.2 This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination of this Agreement. Nothing contained in this Article 5.6 will be deemed to preclude an award of liquidated damages, when applicable, in accordance with Article 5.5 above.

5.6.3 Nothing herein will be deemed to constitute a waiver of any other remedy available to City in the event of Contractor's default under this Agreement prior to full performance of the Work including, as applicable, specific performance or completion of the Work on behalf of Contractor, the cost and expense of which will be offset against any monies then or thereafter due to Contractor (if any) and otherwise immediately reimbursed to City by Contractor.

ARTICLE 6 - AGREEMENT PRICE

6.1 **AGREEMENT PRICE**

6.1.1 In exchange for Contractor's full, timely, and acceptable performances and construction of the Work under this Agreement, and subject to all of the terms of this Agreement, City will pay Contractor the "Agreement Price," which is \$3,530,218.

6.1.2 The Agreement Price is all-inclusive and specifically includes all fees, cost, insurance and bond premiums, and taxes of any type necessary to fully, properly and timely perform and construct Work.

6.2 CHANGES TO AGREEMENT PRICE

Shall be determined under Section 9 of the General Conditions.

ARTICLE 7 - PAYMENT

Payments will be made to Contractor in accordance with Section 8 of the General Conditions.

ARTICLE 8 - CHANGES TO THE AGREEMENT

Changes to the Agreement may be made in strict accordance with Section 9 of the General Conditions.

ARTICLE 9 - SUSPENSION AND TERMINATION

This Agreement may be suspended or terminated in accordance with Section 10 of the General Conditions.

ARTICLE 10 - INSURANCE AND BONDS

- 10.1 Contractor must provide insurance in accordance with Sections 11.1 through 11.3 of the General Conditions. Contractor must provide proof of such insurance and all required endorsements in forms acceptable to City prior to commencing any Work under this Agreement.
- 10.2 Contractor must provide performance and payment bonds to City in Accordance with Section 11.4 of the General Conditions and A.R.S. § 34-222.
- 10.3 Failure to provide proof of insurance and the required endorsements, or the required bonds, in forms acceptable to City, will be a material breach and grounds for termination for cause of this Agreement.

ARTICLE 11 - INDEMNIFICATION

Contractor must have and assume the indemnity obligations set forth in Section 12 of the General Conditions.

ARTICLE 12 - DISPUTE RESOLUTION

Any claims or disputes relating to this Agreement will be resolved according to the dispute resolution process set forth in Section 13 of, and Appendix 6 to, the General Conditions.

ARTICLE 13 - FORCED LABOR OF ETHNIC UYGHURS PROHIBITED By entering into this Agreement, Contractor certifies and agrees Contractor does not currently use and will not use for the term of this Agreement: (i) the forced labor of ethnic Uyghurs in the People's Republic of China; or (ii) any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China; or (iii) any contractors, subcontractors or suppliers

that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China.

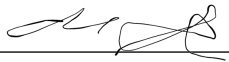
SIGNATURE PAGE TO FOLLOW

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement through their duly authorized representatives and bind their respective entities as of the effective date.

"CITY"
CITY OF CHANDLER

"CONTRACTOR"
KLASS SERVICES INC.

Mayor

_____
Signature Date

RECOMMENDED BY:

Adam Sheppard
Print Name

_____
Daniel Haskins, P.E.
CIP City Engineer

Adam Sheppard
Title

adam@ksi-az.com
Signer Email Address

APPROVED AS TO FORM:

City Attorney 

ATTEST:

City Clerk Seal

EXHIBIT A
PROJECT SPECIFIC
SPECIAL PROVISIONS

4.2.7 Aerial Construction Photography

General Conditions Section 4 Subsections 4.2.7.1 & 4.2.7.2 are not applicable to this project.

4.2.8 Government Approvals and Permits

General Conditions Section 4 Subsection 4.2.8.1, City permit fees will be paid internally by the City and all other fees will be the responsibility of the Contractor.

Subletting of Agreement

Contractor must perform, with his own organization, work amounting to not less than 50 percent of the total Agreement cost.

Failure to submit Subcontractor's List Form, demonstrating self-performance not less than 50 percent of the total Agreement cost, will cause the bid to be deemed non-responsive.

Bidders should contact the Arizona Registrar of Contractors for information on license requirements.

EXHIBIT B

GENERAL CONDITIONS



GENERAL CONDITIONS

Approved date: July 20, 2022

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Appendix 1 – Policy Statement for Calculating Delays and Damages

Appendix 2 – Cost Reduction Incentive Proposals for Design Bid Build Agreements

Appendix 3 – Contractor's Affidavit Regarding Settlement of Claims

Appendix 4 – Forms of Performance Bond

Appendix 5 – Forms of Payment Bond

Appendix 6 – Dispute Resolution

Appendix 7 – Certificate of Completion

Appendix 8 – Construction Sign Detail

Appendix 9 – Cost of the Work (Applicable solely to Construction Manager at Risk and Job Order Contracting)

Appendix 10 Landscape Establishment Period

SECTION 1 - SCOPE OF THESE GENERAL CONDITIONS

These General Conditions encompass provisions that apply, and are incorporated into all construction Agreements entered into by the City of Chandler, unless otherwise specifically excluded in the executed Agreement.

SECTION 2 - GENERAL DEFINITIONS

Allowance: A specific amount for a specific item of Work, if any, that City agrees has not been sufficiently designed, detailed, or selected (including design changes from 90% to 100% as authorized by and at the discretion of the City) at the time the Agreement Price is agreed to for Contractor to provide a definitive price.

Alternate Systems Evaluations or Alternative Analysis: Alternatives for design, means and methods or other scope considerations that are evaluated using value analysis principles and have the potential to reduce construction costs while still delivering a quality and functional Project that meets City requirements.

Change Order: A written instrument issued after execution of the Agreement Documents signed by City and Contractor, stating their agreement upon all of the following: the addition, deletion or revision in the scope of services or deliverables; the amount of the adjustment to the Agreement Price, the extent of the adjustment to the Agreement Time, or modifications of other agreement terms. The Agreement Price and the Agreement Time may be changed only by Change Order.

Consultant: Person or firm that provides professional services.

City (Owner or OWNER): City of Chandler, a municipal corporation, with whom Contractor has entered into the Agreement and for whom the Work or Services are to be provided pursuant to the Agreement(s).

Contingent Bid Items: This is a minor bid item which is likely, but not certain, to occur during the course of work. If the Engineer determines that this work is required, the Contractor will accomplish the work and payment will be made based on the contingent unit bid price included in the proposal. Since the quantity listed in the proposal is primarily for bid comparison, the amount of work required by the Engineer may vary materially from this.

Agreement: The written agreement executed between City and Contractor, including all of the Agreement Documents.

Agreement Documents: The documents which together form the Agreement between City and Contractor, as identified in Article 2 of the Agreement, or are otherwise incorporated into the Agreement, including the Agreement, the exhibits thereto, these General Conditions, any Notice to Proceed, and any Job Order (if applicable), the Plans and Specifications, Project Schedule, written and properly executed Change Orders, MAG Specifications and City's amendments thereto, and any other documents so designated in the Agreement.

Agreement Price: The agreed-upon price to be paid to Contractor for full, timely, and acceptable completion of the Work or Services under the terms of the Agreement.

Agreement Time(s): The number of calendar days or the dates related to the applicable phase, Substantial Completion, or Final Acceptance as stated in Agreement Documents. Agreement Time starts

General Conditions

with the Notice to Proceed (NTP) and ends with Final Acceptance. The Agreement Time is set forth in the Agreement and is based upon the Project Schedule agreed to by City in writing.

Contractor: The person or business association with whom City has entered into an agreement for construction related Work or Services in relation to the Project at issue.

Contractor Payment Request: The form that is accepted by City and used by Contractor in requesting progress payments or final payment and which must include such supporting documentation as is required by the Agreement Documents or City.

Construction Budget: The City's budget for construction of the Project.

Construction Documents: The Plans, Specifications, and Drawings prepared and issued by the Design Professional and approved by City for construction, meaning the documents are sealed by the Design Professional (as required), acceptable for permitting and incorporated into the Agreement by this reference. All amendments and modifications to the Construction Documents must be approved in writing by City prior to incorporation into the Agreement.

Cost of the Work: The term Cost of the Work will mean costs necessarily incurred by Contractor in the proper performance of the Work. Such costs will be at rates not higher than the standard paid at the place of the Project except with prior consent of City.

Critical Path Method (CPM): A scheduling technique which identifies the logical sequence of the activities occurring in a Construction Project, the anticipated time required to complete each activity in the Project, and the activities that must be completed on schedule to finish the Project within the anticipated time. Typically, activities are arranged in a network that shows both activities and their dependencies. CPM is also used as a management technique which enables contracting parties to predict when activities may occur so that resources can be effectively used and limitations can be identified.

Critical Path: Critical Path is the sequence of project network activities which add up to the longest overall duration. Once established in the Project Schedule, the Critical Path for the Project must not be changed without prior written approval of City.

Day: Calendar day(s) unless otherwise specifically stated in the Agreement Documents.

Design Professional: The qualified, licensed person, firm or corporation who furnishes design and construction administration services required under the Agreement Documents. These services may include, but are not limited to: development of Construction Drawings and Documents, review of Contractor Submittal(s), review of and response to Requests for Information, approval and certification of progress payment applications, construction administration, and construction agreement close out.

Differing Site Conditions: Concealed or latent physical conditions or subsurface conditions at the Site that, (i) materially differ from the conditions indicated in the Agreement Documents, or (ii) are of an unusual nature, differing materially from the conditions ordinarily encountered and generally recognized as inherent in the Work at the general area of the Site. Caliche, rock, hard-digging or sandy/silty soil encountered on a project is not considered a "Differing Site Condition."

Drawings (Plans): Documents, which visually represent the scope, extent and character of the Work to be furnished and performed by Contractor during the construction phase and which have been prepared

General Conditions

or approved by the Design Professional and City. These documents include Drawings that have reached a sufficient state of completion and released by Design Professional solely for the purposes of review and use in performing constructability or bid-ability reviews by Contractor and in preparing cost estimates (e.g. Master Planning and Programming, Schematic Design, Design Development, and Construction Drawings), but *"not for construction."* Shop Drawings are not Drawings as so defined.

Final Acceptance: The City's acceptance of the facility or project from the Contractor after all Work is completed, tested, and inspected in accordance with the Agreement requirements. Final Acceptance results in a Letter of Acceptance (LOA).

Fixed Price: A fixed price or amount for an Agreement Price, Scope of Work, materials, or other item under an Agreement, Change Order, or other agreement, which City agrees, in writing, to pay instead of the actual cost.

Float: The number of Days by which an activity can be delayed without lengthening the Critical Path and extending the Agreement Time. Unless otherwise expressly agreed in writing, all Float belongs to City.

Laws, Regulations, or Legal Requirements: Any and all applicable laws, rules, regulations, ordinances, codes and orders applicable to the Project of any and all governmental bodies, agencies, authorities and courts having jurisdiction and any applicable provisions of the Development Agreement for the Project (if any), including, without limitation, those provisions relating to the design and construction of the Project.

Line Item: The individual elements of Work identified on a bid or other schedule and associated with a price or a unit price and quantity particular to that individual element of the Work. Also refers to individual items of work within the Schedule of Values.

Liquidated Damages: Designated damages for the City to collect as compensation upon a specific breach (example: late delivery).

Long-Lead Item: Long-lead item refers to the equipment, product, or system that is identified at the earliest stage of a project to have a delivery time long enough to affect directly the Critical Path/the overall lead time of the project.

MAG: The Maricopa Association of Governments.

MAG Specifications: The most current version of the Uniform Standard Specifications for Public Works Construction published by MAG.

MAG Standard Details: The most current version of the Uniform Standard Details as published by MAG.

Minor change: A change in the Work having no impact on cost or time or the City-approved design intent, as determined by City.

Notice to Proceed (NTP): A written notice given by City to Contractor fixing the date on which Contractor will start to perform Contractor's obligations under the Agreement.

Project: The Project specified in the Agreement (including a Job Order).

Project Manager: The Project Manager designated in Article 1 of the Agreement, or any successor thereto

General Conditions

designated by City. The Project Manager has the authority to act on behalf of City, as delineated and limited by the Agreement Documents and applicable law. And City will communicate with Contractor through the Project Manager. However, the Project Manager has no authority to bind City or City Council in contravention of any City code, State or Federal statute or regulation, or these General Conditions.

Project Schedule: The schedule for the completion of the Project agreed to and required by City.

Project Specific Conditions: Additional conditions which apply to the specific Project and Scope of Work which are set forth in Exhibit D of the Agreement.

Project Team: The Project Team consisting of the Design Professional, Contractor, Project Manager, and such others as City may designate.

Punch List: The list initially prepared by Contractor pursuant to the Agreement Documents, reviewed and supplemented by the Project Manager (and at the sole option of the Project Manager, the Design Professional) and approved by City containing items of incomplete work not impacting Substantial Completion, if allowed for under the Agreement, and to be completed or corrected by Contractor after Substantial Completion and before Final Acceptance in accordance with the Agreement Documents.

Quality Assurance (QA) Testing: Testing performed to verify the accuracy and applicability of the QC testing results and to ascertain that the materials installed meet the specified levels of quality in accordance with the Agreement Documents.

Quality Control (QC) Testing: Testing performed to assure that the materials installed comply with the requirements in the Agreement Documents.

Requests for Information (RFIs): Formal written request from Contractor to City or Design Professional for the Project seeking clarification or additional information needed for Contractor to properly complete the Work or Services under the Agreement. City may require RFI's to be submitted on a specific form or in a specified format.

Schedule of Values (SOV): The specified document prepared by Contractor, and approved and accepted by City, which divides the Agreement Price into pay items, such that the sum of all pay items equals the Agreement Price for the construction phase Work, or for any portion of the Work having a separate specified Agreement Price.

Scope of Work: The scope of work agreed to or required by City and incorporated into the Agreement as Exhibit A.

Shop Drawings: All drawings, diagrams, schedules and other data specifically prepared for the Work by Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

Site: The land or premises on which the Project is located.

Specifications: The part(s) of the Agreement Documents for the construction phase consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto. Where specified, the Project must be constructed using the current Uniform Standard Specifications and Details for Public Works

Construction as furnished by the Maricopa Association of Governments, as amended by City.

Subconsultant: A person, firm or corporation having an Agreement with Consultant/Contractor to furnish services required as its independent professional associate or consultant with respect to the Project.

Subcontractor: An individual or firm having a direct Agreement with Contractor or any other individual or firm having an Agreement with the aforesaid contractors at any tier, who undertakes to perform a part of pre-construction services or construction phase Work at the Site for which Contractor is responsible. Subcontractors must be selected through the Subcontractor selection process described in the Agreement Documents, if any.

Substantial Completion: The date when the City determines that the Work (or separable units of Phases as provided in the Agreement Documents) is essentially and satisfactorily complete in accordance with the Agreement Documents such that the Project is ready for use by the City for its intended purpose, opening to the general public, full occupancy or use by City (including, without limitation, all separate units, or rooms, facilities, access, income-generating areas, and all areas serving the general public, as applicable, must be ready for full operation without material inconvenience or discomfort), including, to the extent applicable to the Work, the following: all materials, equipment, systems, controls, features, facilities, accessories, and similar elements are installed in the proper manner and in operating condition, inspected, and approved; surfaces have been painted; masonry and concrete cleaned with any sealer or other finish applied; utilities and systems connected and functioning; site work complete; permanent heating, ventilation, air conditioning, vertical transportation, and other systems properly operating with proper controls; lighting and electrical systems installed, operable and controlled; paving completed, signage installed, and other work as applicable, has been performed to a similar state of essential and satisfactory completion.

Supplier: A manufacturer, fabricator, distributor, or vendor having a direct Agreement with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the construction phase Work by Contractor or any Subcontractor.

Total Float: Number of Days by which pre-construction services or construction phase Work or any part of the same may be delayed without necessarily extending a pertinent Agreement Time or schedule milestone in the Project Schedule.

Work: The entire completion of construction or the various separately identifiable parts thereof, required to be furnished during the construction phase. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials, resources and equipment into the construction, and performing or furnishing services and documents as required by the Agreement Documents for the construction phase.

Writing: Typing, printing, photography and other modes of representing or reproducing words in a visible form, including email, and expressions.

SECTION 3 - STANDARD SPECIFICATIONS AND DETAILS

- 3.1 City operates under the latest revision of the MAG Specifications and MAG Standard Details as amended by City. City's current amendment to the MAG Specifications, part of the City's Unified Development Manual, may be found and downloaded from City's website at <http://www.chandleraz.gov>.

General Conditions

- 3.2 Copies of the MAG Specifications and MAG Standard Details are available at the Maricopa Association of Governments office, 302 N. 1st Avenue, Suite 300, Phoenix, Arizona. They may also be downloaded from their website at: <http://www.azmag.gov/Newsroom/Publications>
- 3.3 The MAG Specifications and Standard Details and City's amendments thereto are incorporated into the Agreement by this reference.

SECTION 4 - CONTRACTOR'S RESPONSIBILITIES FOR CONSTRUCTION SERVICES**4.1 GENERAL**

- 4.1.1 Contractor must construct the Work in accordance with the Agreement Documents and as outlined in Exhibit A of the Agreement to the satisfaction of City, exercising the degree of professional care, skill, diligence, quality and judgment that a professional construction manager engaged, experienced and specializing in the construction management of construction and facilities of similar scope, function, size, quality, complexity and detail in urban areas throughout the United States comparable to Chandler, Arizona would exercise at such time, under similar conditions. Contractor must, at all times, perform the Work in conformance with sound and generally accepted engineering principles and construction management and construction contracting practices.
- 4.1.2 If Contractor observes errors, discrepancies or omissions in the Agreement Documents, Contractor must promptly notify the Design Professional and City and request clarification. If Contractor, with the exercise of reasonable care, should have recognized such error, inconsistency, omission, or difference and fails to report it to City, and if Contractor proceeds with the Work affected by such observed errors, discrepancies or omissions, without receiving such clarifications, Contractor does so at its own risk and will be liable to City for damages resulting from proceeding without clarification.
- 4.1.3 Project Team and agents of each of them, testing agencies and governmental agencies with jurisdictional interests will be provided access to the Work at reasonable times for their observation, inspection, and testing. Contractor must provide proper and safe conditions for such access.
- 4.1.4 Contractor must comply with, and require all Subcontractors to comply with, the Arizona Contractors' license laws, including all requirements with respect to being duly registered and licensed.
- 4.1.5 Contractor must ensure that all employees performing any Work for which Contractor is responsible have a legal right to live and work in the United States. In addition, all compensation of any such employee must meet all applicable requirements of the Fair Labor Standards Act (FLSA) and Federal Minimum Wage laws.
- 4.1.6 Contractor must comply with the Immigration Reform and Control Act of 1986 (IRCA). Contractor understands and acknowledges the applicability of the IRCA activities. Contractor agrees to comply with the IRCA while performing their work and to permit City inspection of Contractor personnel records to verify such compliance.
- 4.1.7 Pursuant to MAG Specifications §§ 107.4, Contractor must report immediately any discovery of archeological ruins or artifacts. Excavation must stop immediately so that City can decide on the pertinent steps to follow such discovery.

General Conditions

- 4.1.8 All property owners that may be affected by the proposed construction activities must be notified of the scope, duration of the construction activities and possible interference with their day-to-day activities by Contractor prior to start of construction. In addition, individual residential or commercial interferences, such as driveway restrictions, water outages, and all other Work adjacent to residence/business, require 48-hour notification in advance of specific adjoining Work. Notification may be through door hangers or other procedures approved by the City.
- 4.1.9 Access must be maintained to adjacent properties at all times during construction. Where property has more than one point of access, no more than one access will be restricted or closed at any one time. Access to adjacent private driveways will be maintained during all non-working hours.
- 4.1.10 Contractor must furnish and erect construction signs in accordance with Project Specifications. The signs must be professionally prepared and subject to approval by City, must be maintained by Contractor for the duration of the project, and must be removed by Contractor during the final project clean up.
- 4.1.11 The number of signs required, the size, shape, installation requirements and information to be included for construction signs is established on the detail sheet, provided, however, signs must be a minimum of 4 foot by 8 foot and must be installed so that the bottom of the sign is at least 4 foot above grade. No direct payment will be made for furnishing and erecting construction signs. The cost thereof must be included in other items for which direct payment is made. Sign locations will be determined by City.
- 4.1.12 All required construction signs must be installed by Contractor within 7 Days of Notice to Proceed.
- 4.1.13 The Work to be accomplished under these Agreement Documents has been designed for City by a Design Professional retained by City for this purpose. It is understood that normal construction Administration for the purpose of interpretation of the Agreement Documents is provided by City. Should any services of the Design Professional be required to assist in the corrections of errors or omissions by Contractor, or services of the Design Professional be required because of changes in structure or equipment where Contractor has requested approval of substitute methods or material, or any other items detailed herein below, those services will be provided by the Design Professional at the standard hourly rates previously negotiated with City and must be paid for by the Contractor.
- 4.1.14 Contractor must reimburse City for costs incurred by the Design Professional for additional services to the Project through no fault of City or the Design Professional including, but not limited to, the following conditions:
- a. Additional Site visits, investigations, inspections, design work or reports by the Design Professional which are required due to damages to existing facilities or completed Work caused by the Contractor in his performance, Contractor's negligence, or Contractor's Work which is rejected as defective or as failing to conform to the Agreement Documents;
 - b. Design Professional construction phase services rendered on the project during the time the project remains incomplete after the Agreement date of final completion will be charged to Contractor at a rate previously negotiated City; and

- c. All retesting required due to the failure of Contractor's Work to meet the requirements of the Agreement Documents will be at Contractor's expense. All standby and travel time by the City's testing lab, the Design Professional or City due to Contractor's inability to be prepared for testing at the agreed upon time will be at the Contractor's expense.

4.1.15 City may withhold from any payment otherwise due to Contractor any amounts necessary to pay the Design Professional for such additional services as provided herein above.

4.1.16 Contractor will not be required to bear additional costs incurred by City due to errors by the Design Professional.

4.2 **CONTRACTOR'S PRE-AGREEMENT AND PRE-WORK DELIVERABLES**

4.2.1 Prior to award of the Agreement, Contractor must execute Agreement and deliver to City. Failure to do so may delay Agreement award. Contractor must also provide to City its Contractor's License classification and number and its Federal Tax I.D. number.

4.2.2 Before beginning any Work under the Agreement, Agreement must be fully executed by City.

4.2.3 After Agreement award, City will issue to Contractor an award letter. At that time Contractor must deliver to City such bonds and certificates of insurance with endorsements in such amounts (and other evidence of insurance requested by City) required under Section 11 of these General Conditions, and as the Agreement requires.

4.2.4 As evidence of Workmen's Compensation Insurance, Contractor must, upon request, provide a letter of certification from the Industrial Commission of Arizona that Contractor is insured by the State Compensation Fund or is an authorized self-insurer or a certificate of insurance issued by an insurance company authorized by the Insurance Department of Arizona to write Workmen's Compensation and Occupational Disease Insurance in the State of Arizona.

4.2.5 Within 10 Days of the date of the executed Agreement letter issued by City, Contractor must submit to City for review and acceptance the following items:

4.2.5.1 Comprehensive construction Project Schedule including a Critical Path Method (CPM) diagram schedule as described in Section 6.2. Project Schedule must be in Microsoft Project standard file format. Within 10 Days of receipt of City's comments, Contractor must make all required corrections, adjustments, and additions to complete the Project Schedule and resubmit to City for review.

4.2.5.2 Preliminary schedule of submittals and Shop Drawings. Within 10 Days of receipt of City's comments, Contractor must submit the corrected and completed schedule of Shop Drawings submissions for approval. Contractor's schedule of Shop Drawings and sample submittals will be acceptable to City if it provides a workable arrangement for reviewing and processing the required submittals.

4.2.5.3 Schedule of Values in a form specified by City reflecting the subcontracts and other categories that will be used to submit Pay Applications for the Work. The total amount of the Schedule of Values must not be greater than the Agreement Price. The Schedule of Values will be reviewed at the Pre-Construction Conference and revised by Contractor within 10 Days after Pre-Construction Conference in response to comments and questions from

City. Once accepted by City in writing, the Schedule of Values for the Project must not be changed without the prior written approval of City.

4.2.6 Video Recording Requirement. Prior to performing any Work, Contractor must document the existing conditions of the Site, all other areas where Work will occur and all adjacent areas that may be impacted by the Work via digital video format. Contractor must video record and index all areas, features, buildings and other public and private improvements that could potentially be impacted by the Work. Video recording must be coordinated with City. When video recording private property, Contractor must also coordinate the video recording with the private property owner, if possible. Contractor must provide City with a copy of said digital video format prior to performing any Work.

4.2.7 Aerial Drone Construction Photography.

4.2.7.1 If Agreement duration is greater than 90 calendar days, Contractor must engage a professional unmanned aerial vehicle (UAV) aerial pilot to photograph the Site prior to construction mobilization, at three-month intervals during construction, and following final inspection. Drone camera specifications must meet the following minimum requirements:

- a. 1-inch CMOS
- b. Pixels: 20M
- c. FOV 84 8.8 mm/24 mm (35 mm format equivalent) f/2.8-f/11 auto focus at 1 m-
- d. For photographing: 16.9 Aspect Ratio: 5472x3078
- e. For video shooting: MP4/MOV/H.264
- f. FHD: 1920x1080 120p @100Mbps
- g. File format: High Definition (HD) JPEG for digital photos and HD MPEG 4 for digital video.
- h. All metadata to be recorded including GPS data and preserved with photographs provided.

Interval	JPEG
3 month intervals	At an altitude (AGL) between 70-90 ft.
3 month intervals	Images to be taken every 50-100 ft. to be determined based on project scope.

4.2.7.2 Drone photos to be taken in sequential geographical order and then organized and provided in the same manner unless otherwise specified.

4.2.7.3 Photos to be provided digitally via an online file share service and/or by a USB drive to contractor.

4.2.7.4 Drone pilots to obey ALL local (city, county, state) UAV regulations as well as FAA UAV guidelines including, but not limited to, conducting all flights during daylight hours, not exceeding maximum altitude ceilings (depending on area), not flying over people, yielding to other aircraft.

4.2.7.5 Drone pilots must fly drone within visual line of sight (VSOL) and have visual spotter when needed. Drone pilots only to operate in favorable weather conditions when minimum visibility is 3 miles or greater.

4.2.7.6 Drone pilots to conduct a preflight checklist and visually inspect the entire flight path prior to flying to ensure a safe flight.

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- 4.2.7.7 **Airspace Authorizations.** Operations in Class G airspace are allowed without air traffic control (ATC) permission. Operations in Class B, C, D and E airspace need ATC authorization. Drone pilots to schedule each flight in advance and based on airspace if required will notify nearby airports/control towers, etc.
- 4.2.8 **Government Approvals and Permits.**
- 4.2.8.1 Contractor must obtain all necessary permits for the Work and pay all applicable fees, unless otherwise noted on the Plans and in the Specifications. City permit fees will be paid internally by City. For bidding purposes, an allowance for all permit fees is included in the bid schedule under the item "allowance for permit fees." The Contractor will be paid for the actual cost of the permit fees upon submitting a receipt showing the fee Contractor has paid. Excluded from the above allowance are items such as all costs incurred by the Contractor in securing the permit except for the actual permit fee established by the agency, cost for all shutdowns or outages, cost for pole bracing, cost of permits for construction water, cost of construction water, cost for any additional insurance requirements, cost for any licenses, and other similar type costs. Contractor is specifically notified of the need to obtain the necessary environmental permits or file the necessary environmental and regulatory permit notices.
- 4.2.8.2 Copies of all permits and the associated notices must be provided to City prior to starting the permitted activity.
- 4.3 **PRE-CONSTRUCTION CONFERENCE**
- 4.3.1 Prior to the commencement of any Work, City will schedule a Pre-Construction Conference.
- 4.3.2 The purpose of this Conference is to establish a working relationship between Contractor, the utility firms, and various City agencies. The agenda will include critical elements of the Work schedule, submittal schedule, cost breakdown of major lump sum items, Payment Requests and processing, coordination with the involved utility firms, and emergency telephone numbers for all representatives involved in the course of construction.
- 4.3.3 Minimum attendance by Contractor at any mandatory meeting with City must be (1) Contractor's Representative, who is authorized to execute and sign documents on behalf of the firm, (2) Contractor's on-site Superintendent, and (3) Contractor's Safety Office, or other employee responsible for safety.
- 4.4 **PERFORMANCE OF THE WORK (INCLUDING FIELD MEASUREMENTS, SUBCONTRACTORS, AND SUPPLIERS)**
- 4.4.1 Unless otherwise provided in the Agreement Documents to be the responsibility of City or a separate Contractor, Contractor must provide through itself or Subcontractors the necessary supervision, labor, inspection, testing, start-up, material, equipment, machinery, temporary utilities and other temporary facilities to permit Contractor to complete the Work consistent with the Agreement Documents.
- 4.4.2 Contractor must perform all construction activities efficiently and with the requisite expertise, skill and competence to satisfy the requirements of the Agreement Documents. Contractor must at all times exercise complete and exclusive control over the means, methods, safety, sequences and techniques of construction.
- 4.4.3 Contractor's Superintendent must be present at the Site at all times that material Work

under this Agreement is taking place. Contractor's Superintendent or designee must be present at the Site at all times any other Work under this Agreement is taking place. Superintendent must not be replaced without written notice to City. Whenever the Superintendent is not present at a particular part of the Work where the City or Design Professional may desire to inform the Contractor relative to interpretation of the Drawings and Specifications or to disapproval or rejection of materials or Work performed, the City or Design Professional may provide such information in writing to the foreman or other worker in charge of the particular part of the Work in reference to which the information is given. Information so given will be as binding as if given to the Superintendent.

- 4.4.4 All elements of the Work must be under the direct supervision of a foreman or his designated representative on the Site who must have the authority to take actions required to properly carry out that particular element of the Work.
- 4.4.5 Working Hours. Except in connection with the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise indicated, all Work at the Site must be performed during regular working hours, and Contractor will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without City's written consent given after prior written notice to City. If it will become absolutely necessary to perform Work at night or on Saturdays, Sundays or legal holidays, the City must be informed at least 24 hours in advance of the beginning of performance of such Work. Only such Work will be done at night as can be done satisfactorily as determined by the City. Good lighting and all other necessary facilities for carrying out and inspecting the Work must be provided and maintained at all points where such Work is being done. Further, unless such non-normal work hours are performed at City's request or required by the Agreement Documents, Contractor must pay to City all additional costs incurred by City by reason of such non-normal working hours. Expenses incurred by City for overtime compensation must be reimbursed by Contractor as follows: (i) City staff at the rate set forth in current City Fee Schedule as published on City website, (ii) Design Professional and staff at the standard hourly rates previously negotiated with City, and (iii) all others at actual cost plus ten percent administrative overhead. Such costs may be deducted by City from any payments due to Contractor. Provided, however, if overtime work or work during other than normal hours is at the request of City and not due to Contractor delay, City will pay the cost of City overtime expenses.
- 4.4.6 Where the Agreement Documents require that a particular product be installed or applied by an applicator approved by the manufacturer, it is Contractor's responsibility to ensure the Subcontractor employed for such work is approved by the manufacturer. All materials and equipment must be stored, applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Agreement Documents; but no provisions of any such instructions will be effective to impose on City or Design Professional responsibility for the means, methods, techniques, sequences or procedures of construction or for safety precautions incident thereto.
- 4.4.7 Before starting the Work, Contractor must carefully study and compare the various Plans, Drawings, other Agreement Documents, and Specifications relative to that portion of the Work, as well as the information furnished by City, must take field measurements of any existing conditions related to that portion of the Work and must observe any conditions at the Site affecting it. The exactness of grades, elevations, dimensions, or locations given on any Drawings, or the Work installed by other contractors, is not guaranteed by City.

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- 4.4.8 Before ordering materials or doing Work, Contractor and each Subcontractor must verify measurements at the Site and will be responsible for the correctness of such measurements. No extra charge or compensation will be allowed because of differences between actual dimensions and the dimensions indicated on the Agreement Documents, including the Drawings.
- 4.4.9 Ground Level Construction Photography.
- 4.4.9.1 The Contractor must furnish progress photographs of the project. The photographer selected by the Contractor must be approved by the City and must be either a commercial photographer or an individual experienced and equipped for such photography.
- 4.4.9.2 The Contractor must deliver to City all photographs taken during that period with each application for payment. If the current photographs do not accompany the application, the application will not be reviewed and will be returned to the Contractor as incomplete.
- 4.4.9.3 Photographs must be identified by use of typewritten labels affixed to the back of the photograph. The label must provide a description of the view, the direction from which the photograph was taken, the name of the project, City's project number, the name of Contractor and the date of the photography. The stationing must also be included for all pipeline installations.
- 4.4.9.4 Photographs must be taken during the construction period and must be of aesthetic composition and depict the progress of the Work from the beginning of construction through and including the finished product. City may vary the specified frequency so that significant progress or changes can be recorded on the photographs.
- 4.4.10 Underground Facilities.
- 4.4.10.1 The existence and number of facilities as shown on the Plans are estimated from information furnished by the particular utility. Contractor is responsible for field verification and location of all utilities prior to the start of construction. No field work will be allowed to start until Contractor has contacted Arizona 811 and all affected utilities have been located. In addition, Contractor must expose and physically locate all potentially conflicting utilities prior to construction. The actual locations of the utilities must be compared to locations shown on the Plans and any required changes in alignment and grade must be made at the time of construction in consultation with Project Manager. It is generally recognized and Contractor should anticipate that information from Arizona 811 or information from utility companies during project design, frequently fails to disclose all underground facilities. The fact that more utility lines or other underground facilities are located in the Project Site than shown on the Project Plans does not constitute an "unforeseen Condition" and such undisclosed underground facilities do not differ materially from the conditions which Contractor should expect. The provisions of Sections 105.4, 105.6, 107.11 and 109.8.1 of the MAG Uniform Standard Specifications for Public Works Construction apply and are incorporated herein by this reference.
- 4.4.10.2 Contractor is responsible for all coordination with utility companies. The provisions of Sections 105.4, 105.6, 107.11 and 109.8.1 of the MAG Uniform Standard Specifications for Public Works Construction strictly apply and no additional compensation will be paid to Contractor for delays due to utility work on the project.
- 4.4.11 Relocation of Existing Water Meters. When a service line has been extended and a line

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setter installed in a meter box, City forces will re-install meter. No compression fittings will be utilized.

4.4.12 Water Turn-On or Turn-Off.

4.4.12.1 Contractor must coordinate all water line turn-ons and turn-offs through the City. Application must be made to the Municipal Utility Division and Contractor must pay the established charges. The City will close existing valves, but will not guarantee a bone-dry Shutdown.

4.4.12.2 Contractor must notify all customers affected by the turn-off not less than 48 hours in advance. Notification must be in writing, must give the reason for the turn-off and must give the estimated time and duration that water service will be interrupted. Contractor is also notified that water turn-off will not be permitted on the Day before and after Thanksgiving Day and Christmas Day.

4.4.12.3 No direct payment will be made to Contractor for turn-ons or turn-offs. Costs associated therewith will be included in other items for which direct payment is made.

4.4.13 Tests and Inspections.

4.4.13.1 Contractor must give City timely (at a minimum, twenty-four hours) notice of readiness of the Work for all required inspections, tests or approvals. Contractor must give timely notice to City in advance of backfilling or otherwise covering any part of the Work so that city representative may, if desired, observe such part of the Work before it is concealed. Whenever Contractor varies the normal period during which Work or any portion of it is carried on each Day, Contractor must give timely notice to City so that city representative may, if desired, be present to observe the Work in progress. If Contractor fails to give such timely notice, any Work done in the absence of city representative will be subject to rejection. If Contractor gives such notice to City, but then is not ready for such inspections, tests, approvals or observations at the time so noticed, Contractor must reimburse City for all costs incurred by the attendance of city representatives.

4.4.13.2 If any law, ordinance, rule, regulation, code, or orders of any public body having jurisdiction requires any Work (or part thereof) to be inspected, tested or approved, Contractor (unless another party is specified in the Agreement Documents) must assume full responsibility therefor, pay all costs in connection therewith and furnish City the required certificates of inspection, testing, or approval. Contractor must also be responsible for and must pay all costs in connection with any inspection or testing required by the Specifications in connection with City's acceptance of a manufacturer, fabricator, supplier or distributor of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. The cost of all other inspections, tests and approvals required by the Agreement Documents will be paid by City (unless otherwise specified).

4.4.13.3 All inspections, tests or approvals other than those required by law, ordinance, rule, regulation, code or order of any public body having jurisdiction must be performed by organizations acceptable to City and by the Design Professional if so specified.

4.4.13.4 Neither observations by City, the Design Professional nor inspections, tests or approvals by others will relieve Contractor from their obligations to perform the Work in accordance with the Agreement Documents.

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- 4.4.14 Uncovering Work. If any Work that is to be observed, inspected, tested or approved is covered without written concurrence of City, it must, if requested by City be uncovered for observation. Unless Contractor has given City timely notice of Contractor's intention to cover such Work and City has not acted with reasonable promptness in response to such notice, Contractor must furnish all necessary labor, material and bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order will be issued.
- 4.4.15 In all cases of interconnection of its Work with existing or other Work, Contractor must verify at the Site all dimensions relating to such existing or other Work. Any errors due to Contractor's failure to so verify all such grades, elevations, locations or dimensions must be promptly rectified by Contractor without any increase in the Agreement Price. Any design errors or omissions noted by Contractor during this review must be reported promptly to City.
- 4.4.16 Contractor must establish and maintain all construction grades, lines, levels, and benchmarks, and will be responsible for accuracy and protection of same. This Work must be performed or supervised by a licensed civil engineer or surveyor in the State of Arizona.
- 4.4.17 Contractor must photograph all buried piping of greater than four (4) inches in diameter prior to backfill.
- 4.4.18 Contractor is responsible for the proper performance of the work of Subcontractors and any acts and omissions in connection with such performance. Nothing in the Agreement Documents is intended or deemed to create any legal or contractual relationship between City and any Subcontractor or Sub-Subcontractor, including but not limited to any third-party beneficiary rights.
- 4.4.19 Contractor must coordinate the activities of all Subcontractors. Contractor must coordinate performance of the Work with City's Public Works & Utilities Department and other departments or agencies within City. The Design Professional and other contractors or parties involved in the Project. If City performs other work on the Project or at the Site with separate contractors under City's control, Contractor agrees to cooperate and coordinate its activities with those of such separate contractors so that the Project can be completed in an orderly and coordinated manner without unreasonable disruption.
- 4.4.20 Contractor will not substitute or change any Subcontractor or Supplier without the prior written approval of City. Any substitute or replacement Subcontractor or Supplier must be required to meet the same qualifications and selection criteria and process as the original Subcontractor or Supplier. If a Subcontract/Supplier selection plan has been approved by City, Contractor will follow that plan unless otherwise approved by City in writing.
- 4.4.21 Contractor must not change or replace any members of its Project team, including Contractor's Representative, Project Manager, or Superintendent, without an explanation for the change being given to City, and receiving prior written approval of the change from City, which approval will not be unreasonably withheld.
- 4.4.22 Subcontractors whose scope of work has a value greater than 15% of the total Agreement Price are required to furnish performance and payment bonds to Contractor, unless

otherwise approved in writing by City.

- 4.4.23 Contractor must comply with MAG Specification § 108.2 (E) unless otherwise specified in Agreement Documents.

4.5 **CONTROL OF THE PROJECT SITE**

- 4.5.1 Throughout all phases of construction, including suspension of Work, Contractor must keep the Site reasonably free from debris, trash and construction wastes to permit Contractor to perform its construction services efficiently, safely and without interfering with the use of adjacent land areas. Prior to Final Acceptance of the Work, or a portion of the Work, Contractor must remove all debris, trash, construction wastes, materials, equipment, machinery and tools arising from the Work or applicable portions thereof to permit City to occupy the Project or a portion of the Project for its intended use.
- 4.5.2 Contractor must take whatever steps, procedures or means necessary to prevent dust nuisance due to construction operations. The dust control measures must be maintained at all times to the satisfaction of City and in accordance with the requirements of the Maricopa County Bureau of Air Pollution Control Rules and Regulations.
- 4.5.3 Contractor must maintain Americans with Disabilities Act (ADA) and American National Standards Institute (ANSI) accessibility requirements during construction activities, including without limitation compliance with the 2010 regulations governing implementation of the ADA to the extent applicable. ADA and ANSI accessibility requirements must include, but not be limited to, parking, building access, areas of refuge, and emergency exit paths of travel. Contractor is responsible for the coordination of all Work to minimize disruption to residents and the public.
- 4.5.4 Only materials and equipment used directly in the Work will be brought to and stored on the Site by Contractor. When equipment is no longer required for Work, it must be removed promptly from the Site. Protection of construction materials and equipment stored at the Site from weather, theft, damage and all other adversity is solely the responsibility of the Contractor.
- 4.5.5 Contractor agrees all persons working on the Site must act at all times in the best interest of the Project and will comply with all applicable rules and regulations reasonably set forth by City related to the Site. Notwithstanding the foregoing or anything in this Agreement to the contrary, City may remove from the Site any individual who City deems in their reasonable discretion to be creating a disturbance or causing any problem on the Site.
- 4.5.6 Contractor will be responsible to City for the acts and omissions of Contractor's employees, Subcontractors and their agents and employees, and any other person performing any of the Work under an Agreement with Contractor, or claiming by, through or under Contractor, for all damages, losses, costs and expenses resulting from such acts or omissions.
- 4.5.7 City may conduct criminal, drive history, and all other requested background checks of Contractor and Subcontractor personnel performing Work or who have access to City's information, data, or facilities in accordance with City's current background check policies, or the provisions of the Project Specific Conditions. Any officer, employee or agent that fails to background check must be replaced immediately.
- 4.5.8 City will have a final authority, based upon security reasons: (i) to determine when

security clearance of Contractor's and Subcontractor's personnel is required; (ii) to determine the nature of the security clearance, up to and including fingerprinting personnel; and (iii) to determine whether or not any individual or entity may provide Services or perform Work under the Agreement.

- 4.5.9 If City objects to any personnel for any reasonable cause, then Contractor must, upon notice from City, remove such individual from the Project.

4.6 **PROJECT SAFETY**

- 4.6.1 The Project and all Work performed in relation thereto is governed by applicable provisions of the federal laws, including but not limited to, the latest amendments of the following:

- a. Williams-Steiger Occupational Safety & Health Act of 1970, Public Law, 91-596.
- b. Part 1910 and Part 1926 – Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations.
- c. Part 1518 – Safety and Health Regulations for Construction, Chapter XIII of Title 29, Code of Federal Regulations.

- 4.6.2 Contractor is responsible for safety of the job Site for employees of Contractor as well as for members of the general public and others who may drive or walk through or be at the Site.

- 4.6.3 Contractor recognizes the importance of performing the Work in a safe manner so as to prevent damage, injury or loss to: (i) all individuals at the Site, whether working or visiting; (ii) the Work, including materials and equipment incorporated into the Work and stored On-Site or Off-Site; and (iii) all other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction; and (iv) the owners or tenants of adjacent property and their patrons, employees and invitees.

- 4.6.4 Contractor assumes responsibility for implementing and monitoring all safety precautions and programs related to the performance of the Work.

- 4.6.5 Contractor must provide a "competent person" as required by O.S.H.A regulations. The "competent person" must be identified at the Pre-Construction Conference with City advised in writing of any changes.

- 4.6.6 The "competent person" must make routine daily inspections of the Site and must hold weekly safety meetings with Contractor's personnel, Subcontractors and others as applicable.

- 4.6.7 Contractor and Subcontractors must comply with all legal and regulatory requirements relating to safety, as well as any City specific safety requirements set forth in the Agreement Documents, provided that such City-specific requirements do not violate any applicable legal and regulatory requirements.

- 4.6.8 Contractor will immediately report in writing any safety-related injury, loss, damage or accident arising from the Work to Project Manager and, to the extent mandated by Legal Requirements, to all government or quasi-government authorities having jurisdiction over safety-related matters involving the Project or the Work.

- 4.6.9 Contractor's responsibility for safety under this Section is not intended in any way to relieve Subcontractors and Sub-Subcontractors of their own contractual and legal obligations and responsibility for (i) complying with all Legal Requirements, including those related to health and safety matters, and (ii) taking all necessary measures to implement and monitor all safety precautions and programs to guard against injury, losses, damages or accidents resulting from their performance of the Work.
- 4.6.10 As between City and Contractor, Contractor is responsible to City for any and all the safety issues relating to the Work on the Project. Contractor must administer and manage the safety program. This will include, but not necessarily be limited to review of the safety programs of each Subcontractor. Contractor must monitor the establishment and execution of compliance with all applicable regulatory and advisory agency construction safety standards. Contractor's responsibility for review, monitoring, and coordination of the Subcontractor's safety programs will not extend to direct control over execution of the Subcontractors' safety programs. Notwithstanding Contractor's safety obligations to City, it is agreed and understood that each individual Subcontractor will remain controlling employer responsible for the safety programs and precautions applicable to its own work and the activities of other's work in areas designated to be controlled by such Subcontractor for purposes of workers compensation insurance coverage.
- 4.6.11 Nothing in this agreement will relieve Contractor of his responsibility to maintain traffic, structures, etc., as noted on the Plans, Specifications, and Project Specific Conditions. Contractor is responsible to provide all necessary shoring, bracing and trench support as is necessary to maintain traffic structures, etc., as stipulated in the Plans, Specifications, and Special Provisions. If the stability of adjoining building, walls, roadways, etc., is endangered by Contractor's excavation, shoring, bracing, or under pinning must be provided as necessary to ensure project safety. Cost for shoring, bracing, underpinning, and trench support will be included in the appropriate items listed in the Agreement Price, and no additional payment will be made for this work.
- 4.7 **MATERIALS QUALITY, SUBSTITUTIONS, AND SHOP DRAWINGS**
- 4.7.1 **Quality Control and Quality Assurance Testing.**
- 4.7.1.1 All construction materials to be used or incorporated in the Project are subject to inspection, Quality Control & Quality Assurance Testing, and approval or rejection by City. Any material rejected by City must be removed immediately and replaced in an acceptable manner to City at no additional cost to City. When QC/QA tests indicate noncompliance with the Agreement Documents, retesting must be performed by the same testing laboratory that performed the tests that indicated noncompliance.
- 4.7.1.2 The Contractor must establish, provide, and maintain an effective Quality Control Testing Program (QCTP). The Contractor must develop his own program or procure the services of a consultant. In either case, the party performing the tests must be currently certified by the National Bureau of Standards in the National Voluntary Laboratory Accreditation Program (NVLAP) for construction services or the AASHTO Accreditation Plan (AAP) for Soils, Asphalt and Concrete. The Contractor must provide all support necessary to perform QC and QA testing and sampling (i.e. shoring for testing trench backfill, backhoes, motor graders, loaders, etc. to facilitate testing and sampling). The City will perform the QA testing.
- 4.7.1.3 The Contractor must submit a written QCTP to the City as a required submittal. The Contractor must not begin Work until the Quality Control Program has been reviewed and

- accepted by the City. Resumes of all personnel that will be associated directly or indirectly with the QCTP must be included.
- 4.7.1.4 The QCTP must include, but not be limited to, on-site/field and laboratory testing of all material delivered to the Site and any existing materials or conditions pertinent to the project.
- 4.7.1.5 All testing must be under the direction of a Professional Engineer registered in the State of Arizona, knowledgeable in Materials Testing. All "Test Report" forms must be stamped by said Engineer.
- 4.7.1.6 The written QCTP will set forth the responsibilities of the engineer, project manager, supervisory personnel and each technician assigned to this project. Substitutions or replacement of personnel must require prior written approval by the City. All personnel must be proficient within their assigned duties and possess certification(s) commensurate with their position and responsibilities. The minimum certification(s) for each technician must be NICET Level II, Arizona Technical Testing Institute, American Concrete Institute, or other nationally recognized program applicable to the project and approved by the City of Chandler. The written QCTP must include a description of the required field and construction materials laboratory tests, including required frequencies that meet the minimums established herein.
- 4.7.1.7 The Contractor must establish a system to record and report all material test results. The daily test reports must include, but not be limited to:
- a. Test designation;
 - b. Date of test;
 - c. Name of tester;
 - d. Location of test/sample (station and offset);
 - e. Product suppliers and product codes (as applicable);
 - f. Depth/elevation of test/sample;
 - g. Test result;
 - h. Control requirement(s);
 - i. Cause of rejection (if applicable);
 - j. Results of retests (if applicable); and
 - k. Remedial action (if applicable).
- 4.7.1.8 The Contractor must submit test results to the designated City representative.
- 4.7.1.9 The Contractor must also submit a weekly report to the City summarizing the testing and construction activities completed by emailing the report to the email addresses noted above. All weekly reports must be submitted simultaneously to the Contractor and the City of Chandler. The report must include individual summary sheets for each utility line, structure, and portion of the pavement section. Cores must be numbered sequentially throughout the Project. Re-cores must reference the original core by number and must contain the averaged values for thickness and density. Total pavement thickness must be reported. Vertical location of tests for underground utilities must indicate the depth of the

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excavation at the location of the test (i.e., cut to flow line [if applicable], depth to bottom or top of pipe, etc.). Density tests must be numbered sequentially. If the minimum number of tests has not been performed per the written QCTP, this must be stated in the weekly summary report with an explanation of the circumstances.

4.7.1.10 The City will maintain a copy of the Project test results and weekly reports in the Project file. In cases where quality control activities do not comply with the Agreement provisions, the City may:

- a. Order the Contractor to replace ineffective or unqualified quality control personnel.
- b. Order the Contractor to stop operations until appropriate corrective action is taken.

4.7.1.11 Although minimum testing requirements are specified herein, the Contractor bears full responsibility for the quality of the materials and their installation and may elect to perform additional testing beyond the requirements set forth herein to ensure compliance.

4.7.1.12 The Quality Control requirements contained in this Section are in addition to and separate from Quality Assurance Testing, which will be performed by the City of Chandler or its representative. If the Quality Assurance test results are not in agreement with the Quality Control test results, the Contractor will have the option to retain a third party consultant for referee tests. The third party consultant must meet the same requirements as the consultant performing the Quality Control Testing. The results of the third party will be binding. All cost incurred by the referee testing will be the Contractor's expense. If the Contractor elects not to retain a third party for referee testing, the City of Chandler test results will prevail.

4.7.1.13 Except as otherwise noted within this Section, Work or materials required by this Section are non-pay items. Per MAG Section 101, a non-pay item is an item of Work for which no separate payment will be made, the cost of which is to be included as an incidental cost for associated item(s) included on the Bid Schedule or Schedule of Values.

4.7.2 Trade Names and Substitutions.

4.7.2.1 Substitutions prior to bid will only be considered if in compliance with Arizona Revised Statute § 34-104.

4.7.2.2 Contractor, if requested by City, must submit Samples or any additional information that may be necessary to evaluate the acceptability of the substitution.

4.7.2.3 City will make the final decision and will notify Contractor in writing as to whether the substitution has been accepted or rejected.

4.7.2.4 If City does not respond within 15 working days, Contractor must continue to perform the Work in accordance with the Agreement Documents and the substitution will be considered rejected.

4.7.3 Shop Drawings.

4.7.3.1 Contractor must prepare and submit Shop Drawings which show details of all Work to insure proper installation of the Work using those materials and equipment specified under the approved Plans and Specifications.

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- 4.7.3.2 Contractor must submit a schedule of Shop Drawing submissions, which avoids bulk submissions to the extent reasonably possible, with the Project Schedule for City approval. The schedule of Shop Drawing submissions must include all of the items for which Shop Drawings are required by the Agreement Documents, including the Specifications. Unless otherwise noted, Shop Drawings will not be required for items specified or detailed in the Uniform Standard Specifications and Details or the Technical Specifications.
- 4.7.3.3 Shop Drawings must be numbered consecutively for each Specification section and must accurately and distinctly present the following:
- a. All working and erection dimensions.
 - b. Arrangements and sectional views.
 - c. Necessary details, including complete information for making connections between work under this Agreement and work under other Agreements.
 - d. Kinds of materials and finishes.
 - e. Parts list and description thereof.
- 4.7.3.4 Each Drawing or page must include:
- a. Project Name, City of Chandler Project Number and descriptions.
 - b. Submittal date and space for revision dates.
 - c. Identification of equipment, product or material.
 - d. Name of Contractor and Subcontractor.
 - e. Name of Supplier and Manufacturer.
 - f. Relation to adjacent structure of material.
 - g. Physical dimensions clearly identified.
 - h. ASTM and Federal Specifications references.
 - i. Identification of and justification for deviations from the Agreement Documents.
 - j. Contractor's stamp, initialed or signed, dated and certifying the review of submittal, certification of field measurements and compliance with Agreement.
 - k. Location at which the equipment or materials are to be installed.
- 4.7.3.5 Location will mean both physical location and location relative to other connected or attached material. City will return unchecked any submittal, which does not contain complete data on the Work and full information on related matters.
- 4.7.3.6 Stock or standard drawings will not be accepted for review unless full identification and supplementary information is shown thereon in ink or typewritten form.
- 4.7.3.7 Contractor must schedule, prepare and submit all Shop Drawings in accordance with a timetable that will allow its suppliers and manufacturers sufficient time to fabricate, manufacture, inspect, test and deliver their respective products to the project Site in a timely manner so as to not delay the complete performance of the Work.

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- 4.7.3.8 If the Shop Drawings show departures from the Agreement requirements, Contractor must make specific mention thereof in the Letter of Transmittal; otherwise review of such submittals by City will not constitute review of the departure. Review of the Drawings will constitute review of the specific subject matter for which the Drawings were submitted and not of any other structure, material, equipment, or apparatus shown on the Drawings.
- 4.7.3.9 The review of Shop Drawings will be general and will not relieve Contractor of responsibility for the accuracy of such Drawings, nor for the proper fitting and construction of the Work, nor for the furnishing of materials or Work required by the Agreement. No construction called for by Shop Drawings will be initiated until such Drawings have been reviewed and approved by City.
- 4.7.3.10 The procedure in seeking review of the Shop Drawings will be as follows:
- a. Contractor must submit complete sets of Shop Drawings and other descriptive data as specified in this Section.
 - b. After Contractor's submittal or resubmittal of Shop Drawings, if Contractor has submitted Shop Drawings in accordance with the City-approved submittal schedule, or upon resubmission, City will be provided with three (3) calendar weeks for review. Should City require additional review time above and beyond the three (3) calendar weeks, Contractor may ask for a time extension or monetary compensation, if they can present valid, factual evidence that actual damages were incurred by Contractor. City will determine the amount of the time extension or the monetary compensation to be awarded Contractor, if any, in accordance with City's Policy Statement for Calculating Delays and Damages, Appendix 1.
- 4.7.3.11 Contractor will be responsible for all extra costs incurred by City caused by Contractor's failure to comply with the procedure outline above.
- 4.7.4 Long Lead Time Items. Contractor must submit Shop Drawings, as required by the Engineer, on all long lead items to be furnished and installed as part of the project within 10 Days after the date of the executed Agreement letter issued by City. In addition, Contractor must order all long lead items to be furnished and installed as part of this Project within 3 Days after receiving approved Shop Drawings. For all long lead times for which Shop Drawings are not required, Contractor must order said long lead items within 15 Days after the date of the executed Agreement letter issued by City. Within 2 Days after ordering long lead items, Contractor must supply copies of all purchase orders, along with an accurate delivery schedule from the supplier.
- 4.7.5 Construction Water. If Contractor uses water from City's water system for construction water, Contractor must obtain a fire hydrant meter from City of Chandler Utility Services (480-782-2280) and all construction water must be obtained through the hydrant meter. Contractor must pay all fees related to the hydrant meter and all water bills for construction water. All cost for meters and construction water will be included in the Agreement Price.
- 4.8 **PROJECT RECORD DOCUMENTS**
- 4.8.1 During the construction period, Contractor must maintain at the jobsite a full-size set of prints of the Construction Document Drawings and Shop Drawings for Project Record Document purposes.

- 4.8.2 Contractor must mark these Drawings to indicate the actual installation where the installation varies from the original Construction Documents. Contractor must give particular attention to information on elements that will be concealed, which would be difficult to identify or measure and record later. Items required to be marked include but are not limited to:
- a. Dimensional changes to the Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Locations and depths of underground utilities.
 - d. Revisions to routing of piping and conduits.
 - e. Actual equipment locations.
 - f. Changes made by Change Order or Addendum.
 - g. Details not on original Agreement Drawings.
- 4.8.3 Contractor must mark completely and accurately Project Record Drawing sets of Construction Documents.
- 4.8.4 Contractor must mark Project Record Drawings sets with red erasable colored pencil.
- 4.8.5 Contractor must note Request for Information (RFI) Numbers and Change Order numbers, etc., as required to identify the source of the change to the Construction Documents.
- 4.8.6 Contractor must submit Project Record Drawing sets and Shop Drawings to City or its representative for review and comment.
- 4.8.7 Upon receipt of the reviewed Project Record Drawings from City, Contractor must correct any deficiencies and omissions to the Drawings and submit the final original of the Project Record Drawings to City prior to Final Payment.
- 4.8.8 Project Manager will review the Project Record Drawings monthly prior to the date established for the Payment Request and will be the sole judge of acceptance of these Drawings.
- 4.9 **WARRANTY AND CORRECTION OF DEFECTIVE WORK**
- 4.9.1 Contractor warrants to City that the construction, including all materials and equipment furnished as part of the Work, will be new unless otherwise specified in the Agreement Documents, of good quality, and free of defects in materials and workmanship. Contractor's warranty obligation excludes defects caused by abuse, alterations, or unreasonable failure to maintain the construction by persons other than Contractor, subcontractors, or others under Contractor's control. Nothing in this warranty will limit any manufacturer's warranty which provides City with greater warranty rights than set forth herein or in the Agreement. Contractor will provide City with all manufacturers' warranties and operation and maintenance manuals upon substantial completion of the Work. Contractor's warranty must be for one (1) year, in accordance with MAG Specification § 108.8, and will commence for all portions of the Work upon Final Acceptance of the entire Work as determined by City under the Agreement. All statutory or other warranties, express or implied, related to latent defects will remain in force and are not limited by this provision.
- 4.9.2 City May Stop the Work. If the Work is defective, or Contractor fails to supply sufficient skilled workmen or suitable materials or equipment, City may order Contractor to stop the

Work without cost to City, or any portion thereof, until the cause for such order has been eliminated; however, this right of City to stop the Work will not give rise to any duty on the part of City to exercise this right for the benefit of Contractor or any other party.

4.9.3 Correction or Removal of Defective Work.

4.9.3.1 If required by City, Contractor must promptly, without cost to City and as specified by City, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by City, remove it from the Site and replace it with non-defective Work. Contractor must correct any Work which may be displaced in correcting, removing or replacing defective Work. No compensation will be allowed Contractor for such removal, replacement or remedial Work. Contractor must reimburse City for costs incurred by City due to such correction or removal including but not limited to additional expenses for inspection, testing or observation and for repeated reviews by the City or Design Professional.

4.9.3.2 Upon failure on the part of the Contractor to comply within a reasonably prompt time with any written order of City to correct or remove defective Work, City has authority to cause nonconforming materials or rejected Work to be remedied, removed, or replaced at the Contractor's expense and to deduct the costs from any moneys due or to become due the Contractor.

4.9.4 City May Correct Defective Work. If Contractor fails within a reasonable time after written notice of City to proceed to correct defective Work or to remove and replace rejected Work as required by City or if Contractor fails to perform the Work in accordance with the Agreement Documents (including any requirements of the progress schedule), City may, after 7 Days' written notice to Contractor, correct and remedy any such deficiency. To the extent necessary to complete corrective and remedial action, City may exclude Contractor from all or part of the Work, and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site and incorporate in the Work all materials and equipment stored at the Site or for which City has paid Contractor, but which are stored elsewhere. Contractor must allow City, city representatives, agents and employees such access to the Site as may be necessary to enable City to exercise City's rights under this Section. All direct and indirect costs of City in exercising such rights will be charged against Contractor in an amount verified by City representative, and a Change Order will be issued incorporating the necessary revisions in the Agreement Documents and a reduction in the Agreement Price. Such direct and indirect costs will include, in particular but without limitation, compensation for additional professional services required and all costs of repair and replacement of Work or others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor will not be allowed an extension of the Agreement Time because of any delay in Contractor's performance of the Work attributable to the exercise by City or City's rights hereunder.

4.9.5 Correction or Removal of Unauthorized Work.

4.9.5.1 Any Work done beyond the lines and grades shown on the Drawings or established by the Design Professional or any changes in, additions to, or deductions from the Work done without written authority will be considered as unauthorized and will not be paid for. Work so done may be ordered remedied, removed, or replaced at the Contractor's expense.

4.9.5.2 Upon failure on the part of the Contractor to comply promptly with any order of the City,

City will have authority to cause unauthorized Work to be remedied, removed, or replaced at the Contractor's expense and to deduct the costs from any moneys due or to become due the Contractor.

4.9.6 Correction Period - One Year Guarantee.

4.9.6.1 If, within one year after the date of Final Acceptance, or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Agreement Documents, or by any specific provision of the Agreement Documents, any Work is found to be defective, Contractor must promptly, without cost to City and in accordance with City's written instructions, either correct such defective Work, or, if it has been rejected by City, remove it from the Site and replace it with non-defective Work. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, City may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, must be paid by Contractor. Such action by the City will not relieve the Contractor of the guarantees required by this Section or elsewhere in the Agreement Documents.

4.9.6.2 If, in the opinion of the City, defective Work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the City or to prevent interruption of operation of the City, the City will attempt to give the notice required by this Section. If the Contractor cannot be contacted or does not comply with the City's request for correction within a reasonable time as determined by the City, the City may, notwithstanding the provisions of this Section, proceed to make such correction or provide such attention; and the costs of such correction or attention will be charged against the Contractor. Such action by the City will not relieve the Contractor of the guarantees required by this Section or elsewhere in the Agreement Documents.

4.9.6.3 This Section does not in any way limit the guarantee on any items for which a longer guarantee is specified or on any items for which a manufacturer or supplier gives a guarantee for a longer period. The Contractor agrees to act as co-guarantor with such manufacturer or supplier and must furnish the City all appropriate guarantee or warranty certificates upon completion of the Project. No guarantee period, whether provided for in this Section or elsewhere, will in any way limit the liability of Contractor or their sureties or insurers under the indemnity or insurance provisions of these General Conditions and the Project Specific Special Conditions.

4.9.7 Acceptance of Defective Work.

4.9.7.1 If, instead of requiring correction or removal and replacement of defective Work, City may accept Work when in the best interest of the City to do so with appropriate monetary credit from Contractor. If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Agreement Documents, including appropriate reduction in the Agreement Price; or, if the acceptance occurs after final payment, an appropriate amount must be paid by Contractor to City.

4.9.7.2 Alternatively, City may require Contractor to furnish at Contractor's expense, a special performance guarantee or other surety prior to acceptance of defective work.

4.9.8 The Warranty period begins on the Final Acceptance date noted in the Certificate of Completion, irrespective of early completion by some Subcontractors of their work.

General Conditions

- 4.9.9 Contractor's warranty obligation must be in accordance with MAG Specifications.
- 4.9.10 Nothing in the warranties contained in the Agreement Documents are intended to limit any manufacturer's warranty which provides City with greater warranty rights than set forth in this Section or the Agreement Documents. Contractor must provide City with all manufacturers' warranties prior to Substantial Completion, if applicable, or Final Acceptance.
- 4.9.11 Contractor agrees that it will be responsible to manage and administer the correction of any Work that is not in conformance with the Agreement Documents during the warranty periods set forth in this Section, or during any longer periods to the extent required by the Agreement Documents. A progress payment, or partial or entire use or occupancy of the Project by City, will not constitute acceptance of Work not in accordance with the Agreement Documents.
- 4.9.12 When notified of a warranty issue, Contractor must respond in writing within 48-hours and must perform warranty Work as soon as material for said repairs are available (as judged solely by City), and in any event Contractor must, take immediate steps to commence and complete correction of nonconforming Work no later than the time period set forth in City's written notification in accordance with the Agreement Documents. This includes the correction, removal or replacement of the nonconforming Work and any damage caused to other parts of the Work affected by the nonconforming Work. If defects develop which are determined by City to be an emergency, City will notify Contractor, via the most expeditious means regarding the nature and condition of the defects. In turn, Contractor must immediately dispatch necessary forces to correct the defect or the emergency condition in accordance with Agreement Documents.
- 4.9.13 The time periods referenced in this Section apply only to Contractor's obligation to correct nonconforming Work and is not intended to constitute a period of limitations for any other rights or remedies that City may have regarding Contractor's other obligations under the Agreement Documents.
- 4.9.14 Without limiting the foregoing or anything in these General Conditions or the Agreement to the contrary, Contractor must obtain and provide to City all warranties for any portion of the Project offered by the manufacturer, installer or provider thereof. City and the user of the facility will have the right to the full value and benefit of all such warranties. Contractor must ensure all such warranties are fully transferrable to facilitate the full value of this Section.
- 4.9.15 Contractor's warranty excludes damages or defects caused by abuse, alterations to the Work not executed by or through Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage.
- 4.9.16 In the event of any noncompliance with this entire Section 4, City may require Contractor to stop or suspend the Work in whole or in part.

SECTION 5 - CITY RESPONSIBILITIES**5.1 CITY PROJECT MANAGER AND INSPECTORS**

- 5.1.1 Project Manager is responsible for providing City-supplied information and approvals in a timely manner to assist Contractor to fulfill its obligations under the Agreement Documents.

General Conditions

- 5.1.2 Project Manager will also provide Contractor with prompt notice when it observes any failure on the part of Contractor to fulfill its contractual obligations, including any default or defect in the Project or non-conformance with the Drawings and Specifications.
- 5.1.3 City may utilize Field Inspectors to assist Project Manager during construction in observing performance of Contractor. City's use of Inspectors is for the purpose of assisting Project Manager.
- 5.1.4 The Inspectors are authorized to inspect all Work and materials furnished. Such inspections may extend to all or part of the Work and to preparation, fabrication or manufacture of the materials to be used. The Inspectors have the authority to issue instructions contrary to the Construction Documents if approved and coordinated with the directions of Project Manager.
- 5.1.5 The Inspectors have the authority to reject work or materials until any questions at issue can be decided by Project Manager.
- 5.1.6 The use of Inspectors by City will not make City responsible for or give City control over construction means, methods, techniques, sequences or procedures or for safety precautions or programs or responsibility for Contractor's failure to perform the Work in accordance with Agreement Documents. The Inspectors are not authorized to direct any of Contractor's activities, employees or Subcontractors.
- 5.2 **DESIGN PROFESSIONAL SERVICES**
City may contract separately with one or more Design Professionals to provide construction administration of the Project. The Design Professional's Agreement, as well as other firms hired by City may be furnished to Contractor. Contractor does not have the right to limit or restrict or reject any Agreement modifications that are mutually acceptable to City and Design Professional.
- 5.3 **CITY'S SEPARATE CONTRACTORS**
City is responsible for all work performed on the Project or at the Site by separate contractors retained by City. City will contractually require its separate contractors to reasonably cooperate with, and reasonably coordinate their activities so as not to interfere with Contractor in order to enable Contractor to timely complete the Work consistent with the Agreement Documents. Contractor must immediately notify the Project manager, and address the matter in the next monthly status report, if any activities of such separate contractors are expected to interfere, or are interfering, with Contractor and such interference will or could result in any delay in Contractor's performance of the Work.
- 5.4 **PERMIT REVIEW AND INSPECTIONS**
- 5.4.1 If requested by Contractor, Project Manager will provide assistance and guidance in obtaining necessary reviews, permits and inspections.
- 5.4.2 The regulating agencies of City, such as Development and Sustainability, Fire and Planning Departments, enforce legal requirements. The enforcement activities of City are independent and separate from this Agreement.
- 5.5 **PLANS AND SPECIFICATIONS TO THE CONTRACTOR**
Contractor will be provided up to five copies of the Agreement Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished,

upon request, at the cost of reproduction.

SECTION 6 - AGREEMENT TIME

6.1 AGREEMENT TIME

- 6.1.1 The Agreement Time will start with the Notice to Proceed ("NTP") and end with Final Acceptance.
- 6.1.2 Beginning on the date of the NTP, Contractor must begin to fulfill Contractor's obligations under the Agreement. Contractor's obligations include providing City and other agencies with any submittals required by the Project Specific Special Provisions, including but not limited to, an approved Project Schedule, Traffic Control Plans, and a Stormwater Pollution Prevention Plan. Contractor must submit all such required submittals before any physical construction work commences on the Site. NTP does not authorize construction work until all agreement insurance, bonds, and schedules are submitted to and accepted by the City.
- 6.1.3 The Agreement Time will be as set forth in the Project Schedule. Contractor agrees that it will commence performance of the Work and complete the Project through both Substantial Completion and Final Acceptance within the Agreement Time.
- 6.1.4 Time is of the essence of this Agreement, for the Project, for the Work, and for each phase and designated Milestone thereof.
- 6.1.5 Failure of Contractor to perform any covenant or condition contained in the Agreement Documents within the time periods specified herein, will constitute a material breach of this Agreement entitling City to terminate the Agreement unless Contractor applies for and receives an extension of time, in accordance with the procedures set forth in the Agreement Documents.
- 6.1.6 Failure of City to insist upon the performance of any covenant or condition within the time periods specified herein, will not constitute a waiver of Contractor's duty to perform every other covenant or condition within the designated periods, unless a specific waiver is granted in writing for each such covenant or condition.
- 6.1.7 City's agreement to waive a specific time provision or to extend the time for performance will not constitute a waiver of any other time provisions contained in the Agreement Documents. Failure of Contractor to complete performance promptly within the additional time authorized in the waiver or extension of time agreement constitutes a material breach of this Agreement entitling City to all the remedies set forth herein or provided by law.

6.2 PROJECT SCHEDULE

- 6.2.1 The Project Schedule must be in Microsoft Project standard file format, must be updated and maintained throughout the Agreement Time, and must contain the following:
 - 6.2.1.1 Detailed representation of all activities for the project, both on-site construction and major procurement. All significant activities together with the resource loading requirements for each and all items appearing on the schedule of values or bid schedule for progress payments must be shown on the Project Schedule or in attached transmittal letter as described in Section 6.2.8.

General Conditions

- 6.2.1.2 Dependencies between activities must be indicated so that it may establish as to the effect the progress of any one activity would have on other activities and on the Schedule.
- 6.2.1.3 Activities for submission, review, and approval of all required submittals.
- 6.2.1.4 An amount of time will be established prior to the final completion date for “punch list and cleanup”. No other activities will be scheduled during this period. Punch list and cleanup must be shown on the Project Schedule and must be entirely completed prior to the expiration of the Agreement Time.
- 6.2.2 Within 10 Days of receipt of City’s comments, Contractor must make all required corrections, adjustments, and additions to complete the Project Schedule and resubmit to City for review. City’s review of and response to the Project Schedule is for the purpose of: (1) City planning and staffing for the Project as may be required from time to time; (2) ensuring Contractor’s general conformance with the scheduling requirements of the Agreement Documents and completion of the Project within the Agreement Time; and (3) monitoring and evaluating the construction status for purposes of approving monthly progress payments. Acceptance of a submitted schedule by City should in no way be construed as an affirmation or admission that the schedule is reasonable or workable by Contractor. The responsibility for completing the Work on the Project within the Agreement Time remains the obligation of Contractor. City’s review does not relieve Contractor from compliance with the requirements of the Agreement Documents or be construed as relieving Contractor of its complete and exclusive control over the means, methods, sequences and techniques for executing the work.
- 6.2.3 The Project Schedule must show milestones, including milestones for City-furnished information, and must include activities for City-furnished material and construction by other contractors when those activities are interrelated with Contractor activities.
- 6.2.4 The Project Schedule must be revised as required by conditions and progress of the Work, but such revisions do not relieve Contractor of its obligations to complete the Work within the Agreement Time, as adjusted in accordance with the Agreement Documents. No modification to the Agreement Documents or the Agreement Time will be effective unless approved in advance by City.
- 6.2.5 For all items of materials and equipment that are critical or may require long lead times to acquire, the Project Schedule must show dates for submission, review and approval of submittals, ordering, and delivery.
- 6.2.6 An updated Project Schedule must be submitted monthly to City as part of the Payment Request. The monthly submittal must include one full size plot of the entire schedule and one electronic copy containing the schedule in Microsoft Project standard file format. In addition, Contractor must, upon request by City, provide a copy of all submitted schedule data in electronic format which must be clearly labeled with the Project description, scheduling program name and version number, and schedule print/data date.
- 6.2.7 Contractor must provide City with a monthly status report with each Project Schedule detailing the progress of the Work, including: (i) if the Work is proceeding according to schedule, (ii) any discrepancies, conflicts, or ambiguities found to exist in the Agreement Documents that require resolution, and (iii) other information detailing items that require resolution so as not to jeopardize the ability to complete the Work in the Agreement Time.

- 6.2.8 With each Project Schedule submittal, Contractor must include a transmittal letter including the following:
- a. Description of problem tasks, referenced to field instructions or requests for information (RFI's), as appropriate.
 - b. Current and anticipated delays including:
 - (i) Cause of the delay.
 - (ii) Corrective action and schedule adjustments to correct the delay.
 - (iii) Known or potential impacts and their delay on other activities, milestones, and their impact on the Substantial Completion and Final Acceptance dates.
 - (iv) Changes in construction sequence.
 - c. Pending items and status thereof including but not limited to:
 - (i) Time Extension requests;
 - (ii) Substantial Completion date status;
 - (iii) Final Acceptance date status.
 - d. If ahead of schedule, the number of calendar Days ahead.
 - e. If behind schedule, the number of calendar Days behind.
 - f. Other Project or scheduling concerns.
- 6.2.9 Critical Path Method (CPM).
- 6.2.9.1 Unless otherwise specified in the Agreement, the Project Schedule must include a Critical Path Method (CPM) diagram schedule showing the sequence of activities, the interdependence of each activity and identifies the Critical Path.
- 6.2.9.2 The CPM diagram schedule must be in calendar Days and indicate duration, earliest and latest start and finish dates for all activities, and total Float Times for all activities except critical activities. The CPM diagram must be presented in a time scaled graphical format for the Project as a whole.
- 6.2.9.3 The CPM diagram schedule must indicate all relationships between activities.
- 6.2.9.4 The activities making the Project Schedule must contain sufficient detail to assure that adequate planning has been done for proper execution of the Work and such that it provides an appropriate basis for monitoring and evaluation the progress of the Work. Individual activities must not exceed 30 Days in length, in most cases.
- 6.2.9.5 The CPM diagram schedule must be based upon activities, which coincide with the Schedule of Values.
- 6.2.9.6 The CPM diagram schedule must show all submittals associated with each work activity and the review time for each submittal.
- 6.2.10 Float Time.
- 6.2.10.1 The total Float Time within the overall schedule is for the exclusive use of City, but City may approve Contractor's use of Float as needed to meet Agreement Milestones and

the Project completion date.

- 6.2.10.2 Contractor will not be allowed to sequence, hide, or reallocate Float Time through such strategies, as extending activity duration estimates to consume available Float, using preferential logic, or using extensive crew/resource sequencing, etc. No time extensions will be granted nor delay damages paid until a delay occurs which extends the Work beyond the Agreement Time.
- 6.2.11 City-Caused Delays. City-caused delays on the Project, if any, may be offset by City-caused time savings (i.e., Critical Path submittals returned in less time than allowed by the Agreement, approval of substitution requests and credit changes which result in savings of time to Contractor, etc.) In such an event, Contractor will not be entitled to receive a time extension or delay damages until all City-caused time savings are exceeded and the Agreement Time is also exceeded.
- 6.2.12 Rain-Related Delays. Contractor is required, in preparing the Project Schedule to take into account all relevant weather conditions, including normal rainfall and distribution. No additional compensation will be given for any rain-related delays or impacts on the Work or the Project Schedule. No time extension will be granted in the Project Schedule unless the rainfall during the construction of Work is unusually severe, was not reasonably anticipated, and the total rainfall was significantly in excess of the normal rainfall for the Project Site location. Normal rainfall for the Project will be determined from the 10-year average rainfall for the Site as measured by the National Oceanic and Atmospheric Administration or comparable source of reliable information for rainfall in Chandler, Arizona. In addition, the excessive rainfall must have actually impacted Work activities on the Critical Path and caused delay beyond any remaining Float at the time of the rain-caused delay. The burden of documenting normal rainfall, the excessive rainfall and the impact on Critical Path activities is on Contractor. All other provisions in the Agreement Documents relating to claims, including without limitation notice requirements, apply to any claim by Contractor for a rain delay.
- 6.2.13 City's "Policy Statement for Calculating Delays and Damages," Appendix 1 to these General Conditions, will apply to all claims of delay and delay damages.
- 6.2.14 Force Majeure. If Contractor is delayed or prevented from the performance of any Work required under this Agreement by reason of acts of God or other causes beyond the control and without fault of Contractor (financial inability excepted), performance of that Work will be excused, but only for the period of the delay. The time for performance of the Work will be extended for a period equivalent to the period of delay. In addition, the parties agree if Contractor's delayed or suspended performance directly arises out of or directly results from the COVID-19 pandemic, Contractor's delayed or suspended performance may be excused as set forth in this clause. Provided, however; Contractor must give the City written notice within 30 days of the occurrence of the event giving rise to COVID-19 pandemic related delayed or suspended performance. For COVID-19 pandemic related delay or suspended performance, the parties must agree in writing to the length of the excused delay or suspended performance. Further, Contractor must obtain the City's written approval to use any allowance established as part of the project for delays and costs related to the COVID-19 pandemic.

6.3 **SUBSTANTIAL COMPLETION**

- 6.3.1 When Contractor considers that the Work, phase or a portion thereof, which City agrees in

writing to accept separately, is substantially complete, City will prepare and submit to Contractor a comprehensive Punch List of items to be completed or corrected prior to Final Acceptance and Final Payment. Failure to include an item on such Punch List does not alter the responsibility of Contractor to complete all Work in accordance with the Agreement Documents.

6.3.2 Upon receipt of Contractor's Punch List, Project Manager will make an inspection to determine whether the Work or designated portion thereof is substantially complete. Project Manager may, at Project Manager's sole option, be assisted in such inspection by the Design Professional for the Project. If the inspection by the Project Manager discloses any item, whether or not included on Contractor's Punch List, which is not sufficiently completed in accordance with the Agreement Documents so that City can occupy or utilize the Work, phase or designated portion thereof for its intended use, Contractor must, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by Project Manager. In such case, Contractor must then submit a request for another inspection by Project Manager to determine Substantial Completion.

6.3.3 Certificate of Substantial Completion.

6.3.3.1 The Project Manager will not issue a Certificate of Substantial Completion unless and until the Work (or separable units or Phases as provided in the Agreement Documents) is essentially and satisfactorily complete in accordance with the Agreement Documents, such that the Project is ready for use by City for its intended purpose, opening to the general public, full occupancy or use by City (including, without limitation, all separate units, or rooms, facilities, access, income-generating areas, and all areas serving the general public, as applicable, must be ready for full-operation without material inconvenience or discomfort), including, to the extent applicable to the Work, the following: all materials, equipment, systems, controls, features, facilities, accessories and similar elements are installed in the proper manner and in operating condition, inspected and approved; surfaces have been painted; masonry and concrete cleaned with any sealer or other finish applied; utilities and systems connected and functioning; site work complete; permanent heating, ventilation, air condition, vertical transportation and other systems properly operating with proper controls; lighting and electrical systems installed, operable and controlled; paving completed, signage installed, and other Work as applicable, has been performed to a similar state of essential and satisfactory completion. A minor amount of Work, as determined by and at the discretion of the Project Manager, such as installation of minor accessories or items, a minor amount of painting, minor replacement of defective work, minor adjustment of controls or sound systems, or completion or correction of minor exterior work that cannot be completed as a result of weather conditions, will not delay determination of Substantial Completion. If prior written approval is obtained from City for purposes of Substantial Completion, specified areas of the entire Work or Project may be individually certified as Substantially Complete. In no event will Substantial Completion be deemed to have occurred unless and until: (i) a temporary certificate of occupancy has been issued by the appropriate Governmental Authorities (as applicable) and (ii) all terms and Work required under this Agreement have been fulfilled by Contractor and same will have also been approved and accepted by City, subject only to the Punch List items.

6.3.3.2 If requested by City, Contractor must complete and turn-over to City the Project on a phased basis. Each phase will have a separate inspection by the Project Manager, a Punch List generated, and then an inspection by City with final approval and acceptance only after the

Project Manager's Punch List.

6.4 **PARTIAL UTILIZATION**

6.4.1 City at City's option may use and occupy any substantially completed parts of the Work which has specifically been identified in the Agreement Documents, or which City, the Design Professional and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by City for its intended purpose, without significant interference with Contractor's performance of the remainder of the Work, provided, however, if the portion of the Work to be used or occupied has not been found to be substantially complete, City must do so in accordance with Section 6.3 prior to such occupancy.

6.4.2 In lieu of the issuance of a Certificate of Substantial Completion as to part of the Work, City may take over operation of a facility constituting part of the Work whether or not it is substantially complete if such facility is functionally and separately usable; provided that prior to any such takeover, City and Contractor agree in writing as to the division of responsibilities between City and Contractor for security, operation, safety, maintenance, correction period, heat, utilities and insurance with respect to such facility.

6.4.3 Substantial Completion of or City's beneficial occupancy of a part of the Project will not alter the fact that the one-year warranty for the whole Project starts at the date of Final Completion of the whole Project.

6.5 **FINAL ACCEPTANCE**

6.5.1 Unless otherwise expressly agreed to in writing by City, Final Acceptance must be obtained by no later than 30 Days (60 Days for federally funded agreements) after the date of Substantial Completion. Failure to timely obtain Final Acceptance will be a material breach of the Agreement.

6.5.2 Upon receipt of written notice that the Work is ready for final inspection and acceptance, City and Contractor will jointly inspect to verify that the remaining items of Work have been completed. There will be no partial acceptance. Final Acceptance will not occur until all items of Work, including Punch List Items, have been completed to City's satisfaction as reflected in the written Final Acceptance.

6.5.3 Final Payment will not be due, owing, or paid by City until Final Acceptance is issued.

6.5.4 Landscape Establishment Period. Unless otherwise expressly agreed to in writing by City, the Landscape Establishment Period will begin on the date of Final Acceptance of the Project and will run 90 Calendar Days thereafter. Landscape Establishment Period requirements are detailed in General Conditions Appendices, attached herein.

6.6 **CONTINUATION OF WORK**

6.6.1 Permitting Contractor to continue and finish the Work or any part of it after the time fixed for its completion (whether milestone, phase, Substantial Completion or Final Acceptance) or after the date to which the time fixed for any completion may have been extended, does not operate as a waiver by City of any rights under the Agreement Documents, law or equity.

6.6.2 Furthermore, the timely completion of the Work being of the utmost importance under this Agreement, notwithstanding the existence of one or more disputes between the parties

concerning the scope of the Work, the Project Schedule, Agreement Time, payments or any other matter, and further notwithstanding a party's invocation of the Dispute Resolution provisions specified in Appendix 6 of these General Conditions, unless City suspends the Agreement or Contractor's performance pursuant to Section 10 of these General Conditions, Contractor will continue to prosecute the Work, including any Change Order work or Extra Work Orders, in a diligent and timely manner and not stop, slow down or impede by action or inaction the progress of the Work, including commencing performance of and thereafter completing any additional work called out in any Change Order or Extra Work Order issued by Project Manager with the approval of City, so long as City makes payment to Contractor in accordance with Section 8 of these General Conditions.

SECTION 7 - AGREEMENT PRICE

7.1 UNIT PRICE AGREEMENTS

- 7.1.1 The Agreement Price for all Unit Price Agreements will be the amount set forth in the Agreement or Change Order multiplied by the verified quantity provided.
- 7.1.2 Measurements of quantities to determine the total Agreement Price must be in accordance with MAG Specification §§ 109.1 and 109.2.
- 7.1.3 The Unit Price may only be changed as set forth in Section 9 below.

7.2 CHANGE ORDERS

- 7.2.1 Unit Price Change Orders. The Change Order Price for all Unit Price Change Orders will be the amount set forth in the Change Order multiplied by the verified quantity provided.
- 7.2.2 Measurements of quantities to determine the total Change Order Price must be in accordance with MAG Specifications §§ 109.1 and 109.2.
- 7.2.3 The Unit Price may only be changed as set forth in Section 9 below.
- 7.2.4 MAG Specification § 109.4.1 is modified as follows: Before § 109.4.1, the following is added: Any deduction or increase in the Agreement Price must be supported by a signed, written Change Order fully executed by City, and supported by such backup as the Project Manager may require.

7.3 SALES TAX

Contractor is required to pay all applicable sales tax in accordance with the law of the state of Arizona and this cost must be included in all Agreement Prices. When equipment, materials or supplies generally taxable to Contractor are eligible for a tax exemption due to the nature of the Project, Contractor must assist City in applying for and obtaining such tax credits and exemptions which will be paid or credited to City.

SECTION 8 - PAYMENT

8.1 PAYMENT FOR CONSTRUCTION SERVICES

- 8.1.1 Payment for the Work will be made in accordance with MAG Standard Specification § 109 as amended below.
- 8.1.2 Contractor must submit to City for review a completed Contractor Payment Request signed

by Contractor, covering the Work completed as of the date of the Request and accompanied by such supporting documentation as is required by the Agreement Documents and also as City may reasonably require. A Contractor Payment Request will not be considered complete unless it is accompanied by an updated Project Schedule and a certification that the on-site, red lined, as built Drawings are up to date. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably, securely stored at the Site or at another location (such as a bonded warehouse) agreed to in writing, the Contractor Payment Request must also be accompanied by such data, satisfactory to City, as will establish City's title to the material and equipment and protect City's interest therein, including applicable insurance. Each subsequent Contractor Payment Request must include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied to discharge in full all of Contractor's obligations reflected in prior Contractor Payment Requests.

- 8.1.3 Except for Work performed under a JOC Agreement, the Contracting Agency will retain 10 percent of all estimates as a guarantee for complete performance of the Agreement in accordance with Arizona Revised Statutes Section 34-221 or 34-607. The Contractor may elect to deposit securities in lieu of retention in accordance with Arizona Revised Statutes Section 34-221, Paragraph C.5. or 34-607, Paragraph B.5.
- 8.1.4 The payment process functions as follows: Prior to the payment cycle date, Contractor must send a draft Contractor Payment Request to Project Manager. The Project Team will review the Request and agree upon any necessary adjustments. Contractor must certify the final Request by signing and returning to Project Manager.
- 8.1.5 When construction of the Project is fifty percent (50%) completed, Contractor may request payment of one-half of the retention pursuant to A.R.S. § 34-609(B)(3), subject to all of City's rights to withhold or offset payments, and other rights of City, under the Agreement.
- 8.1.6 City reserves the right under A.R.S. § 34-609(B)(3) to reinstate the ten percent (10%) retention if City determines that satisfactory progress is not being made.
- 8.1.7 Contractor's Warranty of Title.
 - 8.1.7.1 Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Contractor Payment Request, whether incorporated in the Project or not, will pass to City at the time of payment, free and clear of all liens, claims, security interests, and encumbrances, provided that this will not preclude the Contractor from installing metering devices or other equipment of utility companies or municipalities, the title of which is commonly retained by the utility company or municipality.
 - 8.1.7.2 No materials, supplies, or equipment for the Work under this Agreement will be purchased subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest therein, or any part thereof, is retained by the seller or supplier.
 - 8.1.7.3 Nothing contained in this Section will defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection, or any right under any law permitting such persons to look to funds due the Contractor in the hands of the City. The provisions of this Section must be inserted in all subcontracts and material agreements, and notices of its provision must be given to all persons furnishing materials for the Work when no formal agreement is entered into for such materials.

8.2 PAYMENT UPON SUBSTANTIAL COMPLETION

8.2.1 No payment will be made upon Substantial Completion, except for a regularly-scheduled monthly progress payment, as allowed by Section 8.2.2.

8.2.2 No further payments will be made to Contractor until Final Acceptance.

8.3 FINAL PAYMENT

8.3.1 Subject to all of City's rights to withhold or offset payment, and other rights under the Agreement, Final Payment including remaining retainage will be paid only after:

- a. Work has been fully completed (including completion of all incorrect or incomplete work items) and the written Final Acceptance has been issued by City;
- b. Necessary operating manuals, any excess materials and supplies necessary for matching materials and supplies incorporated into the Work, acceptable sewer video results (if applicable), and complete "as-built" Drawings (including the Building Information Model, if required by the Agreement Documents) have been delivered to City, as specified in this Section 8.3;
- c. Full and unconditional lien waivers and releases by Contractor and any person performing labor or supplying material, machinery, fixtures, or tools for the Work have been delivered to Contractor;
- d. All conditions and requirements imposed by City or any financing entity for the corresponding disbursement have been met; and
- e. Contractor delivers to City a Contractor Payment Request requesting Final Payment.

8.3.2 Contractor must also submit a signed copy of Contractor's Affidavit Regarding Settlement of Claims, Appendix 3 to these General Conditions, and Certificate of Completion, Appendix 7 to these General Conditions, prior to Final Payment.

8.3.3 In addition, if required under the Project Specific Special Provisions, Contractor must compile a complete equipment list and maintenance manual to be submitted to City as a precondition to Final Payment. The list must include the following items for all equipment supplied under the Plumbing, Electrical, Air Conditioning, Elevator, and other Special Equipment Specifications:

- a. Name, Model and Manufacturer.
- b. Complete parts lists and Drawings.
- c. Local source of supply for replacement parts along with suppliers' telephone numbers.
- d. Local service organizations serving the equipment and their telephone numbers.
- e. All tags, inspection slips, instruction packages, etc., removed from equipment must be properly identified as to pieces of equipment from which they were taken.

8.3.4 Contractor must also deliver to City, prior to Final Payment, one (1) digital (in the format specified by City), and if requested by City, one (1) hard copy, of any applicable Maintenance manuals. Each manual must include all manufacturer's operation and maintenance instructions and "as-built" Drawings with the list herein specified. It must also include all other diagrams and instructions necessary to properly operate and maintain the equipment, the name, address and telephone number of Contractor and all Subcontractors involved.

8.4 **CITY'S RIGHT TO WITHHOLD PAYMENT**

City may withhold payment to such extent as may be necessary in City's opinion to protect City from loss for which Contractor is responsible, including, without limitation, if any of the following conditions exist:

- a. Defective Work not remedied;
- b. Third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to City is provided by Contractor;
- c. Failure of Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- d. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Agreement Price;
- e. Damage to City or another Contractor;
- f. Reasonable evidence that the Work will not be completed within the Agreement Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- g. Failure to carry out the Work in accordance with the Agreement Documents; or
- h. Contractor is in default of any of its other obligations under the Agreement Documents.

8.5 **JOINT/DIRECT CHECKS**

To promote the timely completion and progress of the Work or when appropriate and necessary, payments to Contractor may be made jointly to Contractor and its employees, agents, Subcontractors and suppliers, or any of them. For federally funded agreements, see federal provisions for additional requirements for the joint check process.

8.6 **PAYMENT NOT A WAIVER**

No payment (nor use or occupancy of the Project by City) will be deemed acceptance or approval of the Work or as a waiver of any claims, rights, or remedies of City.

8.7 **LIENS AND BOND CLAIMS**

Contractor must make all payments, in the time required, of all labor and materials furnished to Contractor in the course of the Work and must promptly furnish evidence of such payments as City may require. Contractor must pay when due all claims arising out of performance of the Work covered by this Agreement for which a lien may be filed either against the real estate or leasehold interest of City, or against payments due from City to Contractor, or for which a claim may be made against any payment or performance bond or both. To the fullest extent permitted by law, Contractor agrees that no liens or other claims in the nature of a lien against the real estate, leasehold, or other interest of City,

against payment due from City to Contractor, or against any payment or performance bond, must be filed or made in connection with the Work by any party who has supplied professional services, labor, materials, machinery, fixtures, tools, or equipment used in or in connection with the performance of this Agreement, and Contractor agrees to remove or to cause to be removed any such liens or claims in the nature of a lien or bond claim within 10 Days upon receiving notice or obtaining actual knowledge of the existence of such liens or claim. In addition, Contractor agrees to defend, indemnify, and hold harmless City from and against any and all such liens and claims. This paragraph does not apply to claims and liens of Contractor due to non-payment for work performed.

8.8 FINANCIAL RECORDKEEPING AND CITY'S AUDIT RIGHT

8.8.1 Records for all Agreements between City and Contractor must, upon reasonable notice, be open to inspection and subject to audit, scanning, and reproduction during normal business working hours. Such audits may be performed by any City's representative or any outside representative engaged by City for the purpose of examining such records. City or its designee may conduct such audits or inspections throughout the term of this Agreement and for a period of five years after Final Payment or longer if required by law. City's representatives may (without limitation) conduct verifications such as counting employees at the Site, witnessing the distribution of payroll, verifying information and amounts through interviews and written confirmations with Contractor employees, field and agency labor, Subcontractors, and vendors.

8.8.2 Contractor's "records" must include any and all information, materials and data of every kind and character, including without limitation, records, books, papers, documents, subscriptions, recordings, agreements, purchase orders, leases, contracts, commitments, arrangements, notes daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may in City's judgment have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any Agreement Document. Such records must include (hard copy, as well as computer readable data if it can be made available), written policies and procedures; time sheets; payroll registers; payroll records; cancelled payroll checks; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, negotiation notes, etc.); original bid estimates; estimating work sheets; correspondence; Change Order files (including documentation covering negotiated settlements); back-charge logs and supporting documentation; invoices and related payment documentation; general ledger, information detailing cash and trade discounts earned, insurance rebates and dividends; and any other Contractor records which may have a bearing on matters of interest to City or the Project in connection with Contractor's dealings with City or the Project (all foregoing hereinafter referred to as "records") to the extent necessary to adequately permit evaluation and verification of any or all of the following:

- a. Compliance with Agreement requirements for deliverables;
- b. Compliance with approved Plans and Specifications;
- c. Compliance with § 14.9 below;
- d. Compliance with Agreement provisions regarding the pricing of Change Orders;
- e. Accuracy of Contractor representations regarding the pricing of invoices; or
- f. Accuracy of Contractor representations related to claims submitted by

Contractor or any of their employees.

- 8.8.3 Contractor must require all payees (examples of payees include Subcontractors, Suppliers, Insurance Carriers, etc.) to comply with the provisions of this Section by including the requirements hereof in a written agreement between Contractor and payee. Contractor will ensure that all payees (including those entering into lump sum agreements) have the same right to audit provisions contained in this Agreement included in their agreements with Contractor.
- 8.8.4 City's authorized representative(s) (including, without limitation, Project Manager) must have reasonable access to Contractor's facilities, must be allowed to interview all current or former employees to discuss matters pertinent to the performance of this Agreement and must be provided adequate and appropriate work space, in order to conduct audits in compliance with this Section.
- 8.8.5 If an audit inspection or examination in accordance with this Section, discloses overpricing or overcharges to City (of any nature) by Contractor or Contractor's Subcontractors in excess of \$100,000 in addition to making adjustments for the overcharges, the reasonable actual cost of City's audit must be reimbursed to City by Contractor. Any adjustments or payments which must be made as a result of any such audit or inspection of Contractor's invoices or records must be made within a reasonable amount of time (not to exceed 90 Days) from presentation of City's findings to Contractor.
- 8.8.6 In addition to the normal paperwork documentation Contractor typically furnishes to City, Contractor agrees to furnish, upon written request from City, any of the documentation necessary for City to exercise its audit rights under this Section 8.8 in computer readable file formats (Word, Excel, or .pdf), as City may designate.
- 8.8.7 City, its authorized representative, and the appropriate agency, reserve the right to audit Contractor's records in compliance with local, state or federal policies, statutes or at City's discretion, within three (3) years of Final Acceptance of the Work.

SECTION 9 - CHANGES TO THE AGREEMENT

9.1 FIELD ORDERS

City may authorize minor changes in the Work not involving an adjustment in the Agreement Price or the Agreement Times, which are consistent with the overall intent of the Agreement Documents. These may be accomplished by a written Field Order on the standard form approved and executed by City. Such Field Orders must be binding and Contractor must perform the change promptly. If Contractor believes that a Field Order justifies an increase in the Agreement Price or Agreement Time, Contractor may make a claim therefor as provided in Section 7.2.

9.2 EXTRA WORK/CHANGES IN THE WORK

- 9.2.1 City reserves the right to make such changes in the Plans and Specifications for the Work, as it may deem appropriate and any such change as set forth in a written Change Order must be deemed a part of this Agreement as if originally incorporated herein.
- 9.2.2 In the event City and Contractor cannot agree on the terms of a Change Order, or when circumstances otherwise require, the Project Manager has the authority to direct the Contractor to perform extra work, if the work in question is an item not provided for in the

Agreement as awarded. The Project Manager will have the authority to determine, based upon factual evidence presented by the Contractor, whether the work in question is an item not provided for in the Agreement as awarded. If the Project Manager directs the Contractor to perform extra work, the Project Manager's instructions will include a price that the Contractor cannot exceed in charging the City for the extra work. Upon receipt of the Project Manager's directions to perform extra work, the Contractor must promptly proceed with the extra work and document the actual cost thereof. Contractor's right to payment for extra work will be determined under Subsection 9.2.4 below. The Contractor is responsible to manage the extra work to ensure that the price limits set by the Project Manager are not exceeded. Contractor must perform the extra work and submit documentation for the actual cost of the extra work to the City. A Change Order will be issued to cover this work.

9.2.3 Contractor will not be entitled to payment for extra work unless a written Change Order, in form and content prescribed by City, has been executed by City. On all requests for Change Orders, Contractor must specify the increased or decreased costs and whether it believes any extensions of time will be necessary to complete its Work as modified by the Change Order. If extra work is performed under Subsection 9.2.2 above, a corresponding Change Order will be prepared, approved and processed by City before payment can be made to Contractor.

9.2.4 In general, pricing for Change Orders will include the same mark-up percentages that were in effect when the Agreement was awarded. The cost or credit to the City resulting from a change in the Work is subject to Appendix 1 (Policy Statement for Calculating Delays and Damages) and will be determined, based on the type of pricing for the Agreement involved, as follows:

- a. By mutual acceptance of a lump sum properly itemized in a form acceptable to City;
- b. By unit prices stated in the Agreement Documents;
- c. When the City determines that a Unit Price Book Job Order associated with a Job Order Agreement requires a Change Order, by using the same Total Cost Data and CCI that are in effect when the Change Order is anticipated to be issued; or
- d. By actual cost and a percentage fee covering overhead and profit, as follows:
 - (i) Contractor will perform the extra work and be compensated for actual cost of labor, materials and equipment.
 - (ii) Contractor will have the right to add the fee percentage applicable to the Work under the Agreement, or if no such fee has been agreed to by the parties, not more than five percent (5%) to the Subcontractor's prices for authorized extra work performed solely by Subcontractors. Such percentage will include all of Contractor's charges for overhead, profit, administration and supervision.
 - (iii) Contractor or Subcontractor will have the right to add the fee percentage applicable to Work under the Agreement for self-performed extra work, or if no such fee has been agreed to by the parties, Contractor's or Subcontractor's maximum total allowable additions for overhead, profit, administration and supervision will

not exceed ten percent (10%) of actual verifiable labor, materials and equipment for such self- performed extra work.

- 9.2.5 Any agreement which modifies the terms of the Agreement (including Change Orders) will be approved in writing by the Project Manager. Once properly executed by both parties, these modifications to the Agreement will have the same effect as if they had been included in the original Agreement.

9.3 **ACCURACY OF CHANGE ORDER PRICING INFORMATION**

- 9.3.1 Subject to Sections 9.3.2 through 9.3.4, signature by the contracting parties constitutes full accord and satisfaction between City and Contractor for all costs, damages, and expenses of whatever kind of nature, including delay, impact or acceleration damages, which may be occasioned by a Change Order of other modification of the Agreement agreed to in writing.

- 9.3.2 Accurate Change Order Pricing Information: Contractor agrees that it is responsible for submitting accurate cost and pricing data to City to support its Fixed Price, Unit Price, or Cost Plus Change Order Proposals or other Agreement Price adjustments under the Agreement. Contractor further agrees to submit Change Order proposals with cost and pricing data which is accurate, complete, current, and in accordance with the terms of the Agreement with respect to pricing of change orders. Contractor agrees that any “buy-out savings” on Change Orders will accrue 100% to Owner. “Buy-out savings” are defined as any savings negotiated by the Contractor with a Subcontractor or a Material Supplier after receiving approval of a Change Order amount that was designated to be paid to a specific Subcontractor or Supplier for the Approved Change Order work.

- 9.3.3 Right to Verify Change Order Pricing Information: Contractor agrees that City, through its designated representative, will have the right to examine, copy, and scan the records of the Contractor, Subcontractor or Sub-Subcontractor’s records (during the Agreement period and up to three years after final payment is made on the Agreement) to verify the accuracy and appropriateness of the pricing data used to price all Change Order proposals or claims. Contractor agrees that if City determines the cost and pricing data submitted (whether approved or not) was inaccurate, incomplete, not current, or not in compliance with the terms of the Agreement regarding pricing of Change Orders, an appropriate Agreement Price adjustment will be made. Such post-approval Contact Price adjustments will apply to all levels of contractors and Subcontractors and to all types of Change Order proposals, specifically including Fixed Price, Unit Price, and Cost Plus Change Orders.

- 9.3.4 Requirements for Detailed Change Order Pricing Information: Contractor agrees to provide a detailed breakdown of allowable labor and labor burden cost (i.e., base wage rate of applicable classifications of workers, payroll taxes, and insurance and benefits costs). This information will be used to evaluate the potential cost of labor and labor burden related to Change Order work. It is intended that this information represent an accurate estimate of the Contractor’s actual labor and labor burden cost components. Information is not intended to establish fixed billing or Change Order pricing labor rates. However, at the time Change Orders are priced, the submitted cost data for labor rates may be used to price Change Order work. The accuracy of any such agreed upon labor rate cost components used to price Change Orders will be subject to later audit. Approved Change Order amounts may be adjusted later to correct the impact of inaccurate labor cost components if the agreed upon labor cost components are determined to be inaccurate.

9.4 EMERGENCIES

In any emergency affecting the safety of persons or property, Contractor will act, at its discretion, to prevent threatened damage, injury or loss. Any change in the Agreement Price or Agreement Time resulting from emergency work will be determined as provided in this Section.

9.5 DIFFERING SITE CONDITIONS

- 9.5.1 If Differing Site Conditions are encountered at the Project Site, then notice by the observing party must be given to the other party promptly before conditions are disturbed (to the extent practicable) and in no event later than 14 Days after first observance of the conditions. City will promptly investigate such conditions and, if City determines that Differing Site Conditions exist and they materially cause an increase in the cost of, or time required for, performance of any part of the Work, Contractor will be entitled to equitable adjustment in the Agreement Price or Construction Schedule (and other time requirements), or both. If it is determined by City that the conditions at the Project Site are not Differing Site Conditions and no change is justified, then City will so notify Contractor in writing, stating the reasons. Claims in opposition to such determination must be made within 14 Days after City has given notice of its decision. If City and Contractor cannot agree on an adjustment in the Agreement Price or Construction Schedule (and other time requirements), the adjustment may be submitted to dispute resolution as provided these General Conditions.

9.6 CHANGES IN LAWS, REGULATIONS, OR LEGAL REQUIREMENTS OR TAXES

In the event of a material change in applicable Laws, Regulations, or Legal Requirements, or taxes subsequent to the date of the Agreement by the parties, Contractor may be entitled to a Change Order, in City's discretion, to the extent Contractor can document to the satisfaction of City that such change significantly increases Contractor's actual cost of performance of the Work.

SECTION 10 -SUSPENSION AND TERMINATION**10.1 SUSPENSION**

City may suspend the Agreement and Contractor's performance in accordance with MAG Specifications § 105.1 and 108.7.

10.2 TERMINATION BY THE CITY FOR CAUSE

- 10.2.1 MAG Specifications § 108.11 applies to the Agreement.

- 10.2.2 City may also terminate the Agreement if City determines, in its sole discretion that Contractor has:

- a. After prior written notice, refused or failed to supply enough properly skilled workers or proper materials;
- b. After prior written notice, failed to make payment to Subcontractors for materials or labor in accordance with the respective agreements between Contractor and the Subcontractors;
- c. After prior written notice, disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction;
- d. After prior written notice, repeatedly failed to comply with written directives from City;

- e. Is adjudged as bankrupt or insolvent;
- f. Made a general assignment for the benefit of creditors;
- g. Appointed a trustee or receiver for itself or any of its property;
- h. Filed a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws; or
- i. Otherwise breached a provision of the Agreement Documents or any other Agreement between City and Contractor.

10.2.3 When any of the above reasons exist, City may terminate the Agreement, without prejudice to any other rights or remedies of City, after giving Contractor and Contractors' surety, if any, 7 Days written notice of City's intent to terminate the Agreement and Contractor's failure to cure any such reasons. Upon such termination, City may: (1) take possession of the Site and of all materials thereon owned by Contractor; or (2) finish the Work by whatever reasonable method City may deem expedient. When City terminates the Agreement for one of the reasons state above, Contractor will not be entitled to receive further payment until the Work is finished. If the unpaid balance of the Agreement Price existing at the time of such termination exceeds the costs and expenses of finishing the Work and any other damages incurred by City, such excess will be paid to Contractor. If such costs, expenses and damages exceed such unpaid balance, Contractor must pay the difference to City. This obligation for payment will survive termination of the Agreement.

10.3 **TERMINATION BY CITY FOR CONVENIENCE**

City may also terminate the Agreement at any time for its convenience upon 7 Days written notice to Contractor specifying the termination date. In the event of termination which is not the fault, in whole or in part, of Contractor, City will pay to Contractor only such compensation, including reimbursable expenses, due for Work properly performed on the Project prior to the termination date. Upon any termination of the Agreement, no further payments will be due from City to Contractor.

10.4 **A.R.S. § 38-511**

The Agreement is subject to, and may be terminated by City in accordance with, the provisions of A.R.S. § 38-511.

SECTION 11 -INSURANCE AND BONDS

11.1 **INSURANCE REQUIREMENTS**

11.1.1 After Agreement award, the Contractor must furnish the City a certificate of insurance on a standard insurance industry ACORD form. The ACORD form must be issued by an insurance company authorized to transact business in the State of Arizona possessing a current A.M. Best, Inc. rating of A-7, or better and legally authorized to do business in the State of Arizona with policies and forms satisfactory to City. Provided, however, the A.M. Best rating requirement may not be deemed to apply to required Worker's Compensation coverage.

11.1.2 The Contractor and any of its Subcontractors must procure and maintain, until all of their obligations have been discharged, including any warranty periods under this Agreement are satisfied, the insurances set forth below.

11.1.3 The insurance requirements set forth below are minimum requirements for this Agreement and in no way limit the indemnity covenants contained in this Agreement.

- 11.1.4 The City in no way warrants that the minimum insurance limits contained in this Agreement are sufficient to protect Contractor from liabilities that might arise out of the performance of the Agreement services under this Agreement by Contractor, its agents, representatives, employees, or Subcontractors and the Contractor is free to purchase any additional insurance as may be determined necessary.
- 11.1.5 Failure to demand evidence of full compliance with the insurance requirements in this Agreement or failure to identify any insurance deficiency will not relieve the Contractor from, nor will it be considered a waiver of its obligation to maintain the required insurance at all times during the performance of this Agreement.
- 11.1.6 Use of Subcontractors: If any Work is subcontracted in any way, the Contractor must execute a written agreement with Subcontractor containing the same Indemnification Clause and Insurance Requirements as the City requires of the Contractor in this Agreement. The Contractor is responsible for executing the Agreement with the Subcontractor and obtaining Certificates of Insurance and verifying the insurance requirements.
- 11.2 **MINIMUM SCOPE AND LIMITS OF INSURANCE**
- 11.2.1 The Contractor must provide coverage with limits of liability not less than those stated below.
- 11.2.1.1 Commercial General Liability-Occurrence Form. Contractor must maintain "occurrence" form Commercial General Liability insurance with a limit of not less than \$2,000,000 for each occurrence, \$4,000,000 aggregate. Said insurance must also include coverage for products and completed operations, independent contractors, personal injury and advertising injury. If any Excess insurance is utilized to fulfill the requirements of this paragraph, the Excess insurance must be "follow form" equal or broader in coverage scope than underlying insurance.
- 11.2.1.2 Automobile Liability-Any Automobile or Owned, Hired and Non-Owned Vehicles. Contractor must maintain Business/Automobile Liability insurance with a limit of \$1,000,000 each accident on Contractor owned, hired, and non-owned vehicles assigned to or used in the performance under this Agreement. If any Excess or Umbrella insurance is utilized to fulfill the requirements of this paragraph, the Excess or Umbrella insurance must be "follow form" equal or broader in coverage scope than underlying insurance.
- 11.2.1.3 Workers Compensation and Employers Liability Insurance. Contractor must maintain Workers Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction of Contractor employees engaged in the performance of Work under this Agreement and must also maintain Employers' Liability insurance of not less than \$1,000,000 for each accident and \$1,000,000 disease for each employee.
- 11.2.1.4 Builders' Risk/Installation Floater Insurance. The Contractor bears all responsibility for loss to all equipment or Work under construction. Unless waived in writing by the City the Contractor will purchase and maintain in force Builders' Risk/Installation Floater insurance on the entire Work until completed and accepted by the City. This insurance will be Special Causes of Loss policy form, (minimally including perils of fire, flood, lightning, explosion, windstorm and hail, smoke, aircraft and vehicles, riot and civil commotion, theft, vandalism, malicious mischief, and collapse), completed value, replacement cost policy form equal to the Agreement Price and all subsequent modifications. The Contractor's Builders'

Risk/Installation Floater insurance must be primary and not contributory.

- a. Builders' Risk/Installation Floater insurance must cover the entire Work including reasonable compensation for architects and engineers' services and expenses and other "soft costs" made necessary by an insured loss. Builders' Risk/Installation Floater insurance must provide coverage from the time any covered property comes under the Contractor's control and or responsibility, and continue without interruption during course of construction, renovation and or installation, including any time during which any Project property or equipment is in transit, off Site, or while on Site for future use or installation. Insured property must include, but not be limited to, scaffolding, false work, and temporary buildings at the Site. This insurance must also cover the cost of removing debris, including demolition as may be legally required by operation of any law, ordinance, regulation or code.
- b. The Contractor must also purchase and maintain Boiler and Machinery insurance with the same requirements as Builders' Risk/Installation Floater insurance cited above if the Work to be performed involves any exposures or insurable property normally covered under a Boiler and Machinery insurance policy or made necessary as required by law or testing requirements in the performance of this Agreement. The Contractor will be responsible for any and all deductibles under these policies and the Contractor waives all rights of recovery and subrogation against the City under the Contractor- Builders' Risk/Installation Floater insurance described herein.
- c. Builders' Risk/Installation Floater Insurance must be maintained until whichever of the following first occurs: (i) final payment has been made; or, (ii) until no person or entity, other than the City, has an insurable interest in the property required to be covered.
- d. The Builders' Risk/Installation Floater insurance must be endorsed so that the insurance will not be canceled or lapse because of any partial use or occupancy by the City.
- e. The Builders Risk/Installation Floater insurance must include as named insureds, the City, the Contractor, and all tiers of Subcontractors and others with an insurable interest in the Work who will be named as additional insureds unless they are able to provide the same level of coverage with the City and Contractor named as additional insureds. Certificates must contain a provision that the insurance will not be canceled or materially altered without at least 30 Days advance notice to the City. The City must also be named as a Loss Payee under the Builders' Risk/Installation Floater coverage.
- f. The Builders Risk/Installation Floater insurance must be written using the Special Causes of Loss policy form, replacement cost basis.
- g. All rights of subrogation under the Builders Risk/Installation Floater insurance are, by this Agreement, waived against the City, its officers, officials, agents and employees.
- h. The Contractor is responsible for payment of all deductibles under the Builders' Risk/Installation Floater insurance policy.

11.2.1.5 Pollution Liability Insurance (Including Errors and Omissions). For Job Orders, Pollution Liability Insurance is only required if applicable and determined on a project specific basis. Contractor must maintain Pollution Liability Insurance with a limit of not less than \$5,000,000 per loss, \$5,000,000 aggregate for losses caused by pollution conditions including coverage for bodily injury, property damage, defense costs, clean-up costs, and completed operations that arise from the operations of Contractor as described in this Agreement.

- a. The policy must provide for complete professional service coverage, including coverage for pollution liability that is a result of a breach of professional duties.
- b. The policy must provide for protection again claims for third-party bodily injury, property damage, or environmental damage caused for pollution conditions resulting from general contracting activities for which Contractor is legally liable.
- c. The policy must provide for cleanup costs when mandated by governmental entities, when required by law, or as a result of third-party claims.
- d. Completed Operations Coverage must be kept in place for up to the statute of repose.
- e. The policy must be endorsed to include the following additional insured language: "City, its elected officials, trustees, employees, agents, and volunteers must be named as additional insureds with respect to liability arising out of the activities performed by, or on behalf of Contractor".
- f. If Work under this Agreement requires the transportation of any hazardous material or regulated substances, Contractor must carry Auto Liability with a CA 9948 endorsement or equivalent.
- g. If Work under this Agreement requires the disposal of any hazardous materials from the job site, Contractor must obtain a certificate of insurance for Pollution Legal Liability from the disposal site operator with a limit of not less than \$5,000,000 per loss, \$5,000,000 aggregate.

11.3 **ADDITIONAL POLICY PROVISIONS REQUIRED**

11.3.1 Self-Insured Retentions or Deductibles. Any self-insured retentions and deductibles must be declared and approved by the City. If not approved, the City may require that the insurer reduce or eliminate any deductible or self-insured retentions with respect to the City, its officers, officials, agents, employees, and volunteers.

11.3.2 The Contractor's insurance must contain broad form contractual liability coverage.

11.3.3 The Contractor's insurance coverage must be primary insurance with respect to the City, its officers, officials, agents, and employees. Any insurance or self-insurance maintained by the City, its officers, officials, agents, and employees will be in excess of the coverage provided by the Contractor and must not contribute to it.

11.3.4 The Contractor's insurance must apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

11.3.5 Coverage provided by the Contractor must not be limited to the liability assumed under the

indemnification provisions of this Agreement.

- 11.3.6 The policies must contain a severability of interest clause and waiver of subrogation against the City, its officers, officials, agents, and employees, for losses arising from Work performed by the Contractor for the City.
- 11.3.7 The Contractor, its successors and or assigns, are required to maintain Commercial General Liability insurance as specified in this Agreement for a minimum period of 3 years following completion and acceptance of the Work. The Contractor must submit a Certificate of Insurance evidencing Commercial General Liability insurance during this 3 year period containing all the Agreement insurance requirements, including naming the required Additional Insureds set forth herein.
- 11.3.8 If a Certificate of Insurance is submitted as verification of coverage, the City will reasonably rely upon the Certificate of Insurance as evidence of coverage but this acceptance and reliance will not waive or alter in any way the insurance requirements or obligations of this Agreement.
- 11.3.9 Insurance Cancellation During Agreement Term.
- 11.3.9.1 If any of the required policies expire during the life of this Agreement, the Contractor must forward renewal or replacement Certificates to the City within 10 Days after the renewal date containing all the required insurance provisions.
- 11.3.9.2 Each insurance policy required by the insurance provisions of this Agreement must provide the required coverage and must not be suspended, voided or canceled except after 30 Days prior written notice has been given to the City, except when cancellation is for non-payment of premium, then 10 Days prior notice may be given. Such notice must be sent directly to Chandler Law-Risk Management Department, Post Office Box 4008, Mailstop 628, Chandler, Arizona 85225. If any insurance company refuses to provide the require notice, the Contractor or its insurance broker must notify the City of any cancellation, suspension, non-renewal of any insurance within 7 Days of receipt of insurers' notification to that effect.
- 11.3.10 City as Additional Insured. The above-referenced policies are to contain, or be endorsed to contain, the following provisions:
- 11.3.10.1 The Commercial General Liability and Automobile Liability policies are to contain, or be endorsed to contain, the following provisions: The City, its officers, officials, agents, and employees are additional insureds with respect to liability arising out of activities performed by, or on behalf of, the Contractor including the City's general supervision of the Contractor; Products and Completed Operations of the Contractor; and automobiles owned, leased, hired, or borrowed by the Contractor.
- 11.3.10.2 The City, its officers, officials, agents, and employees must be additional insureds to the full limits of liability purchased by the Contractor even if those limits of liability are in excess of those required by this Agreement.
- 11.4 **BONDS AND OTHER PERFORMANCE SECURITY**
- 11.4.1 After Agreement award, Contractor must provide a Performance Bond and a Payment Bond, each in an amount equal to the full amount of the Agreement Price.
- 11.4.2 Each such bond must be executed by a surety company or companies holding a Certificate

General Conditions

of Authority to transact surety business in the State of Arizona, issued by the Director of the Arizona Department of Insurance and must be named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. A copy of the Certificate of Authority must accompany the bonds. The Certificate must have been issued or updated within two (2) years prior to the execution of this Agreement. The bonds must be written or countersigned by an authorized representative of the surety who is either a resident of the state of Arizona or whose principal office is maintained in this state, as by law required.

- 11.4.3 The bonds must be made payable and be acceptable to City. The bond forms for the performance and payment bonds must be in the forms required under A.R.S. § 34-221, *et. Seq.*, as in Appendices 4 and 5 of these General Conditions.
- 11.4.4 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Agreement Documents, Contractor must promptly furnish a copy of the bonds or must permit a copy to be made.
- 11.4.5 All bonds submitted for this Project must be provided by a company which has been rated AM Best rating of A- or better for the prior four quarters by the latest edition of the 'Results Best's Key Rating Guide (Property/Casualty)' published by the A.M. Best Company.
- 11.4.6 Personal or individual bonds are not acceptable.
- 11.4.7 If the surety on any Bond furnished by Contractor is declared a bankrupt or becomes insolvent, or Contractor's right to do business is terminated in any state where any part of the Project is located, or it ceases to meet the requirements of this Section 11.4, Contractor must within 5 Days thereafter substitute another Bond and surety, both of which must be acceptable to City.

SECTION 12 - INDEMNIFICATION

- 12.1 To the extent permitted by law, the Contractor and its owners, officers, directors, agents, employees, and subconsultants (collectively "Indemnitor") must indemnify, save, and hold harmless the City and its officers, officials, agents, and employees (collectively "Indemnatee") from any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and costs of claim processing, investigation, and litigation) (collectively "Claims") caused or alleged to be caused, in whole or in part, by the negligent, reckless, wrongful, or willful acts, errors, or omissions of Indemnitor in connection with this Agreement. This indemnity includes any Claim or amount arising out of or recovered under workers' compensation laws or on account of Indemnitor's failure to conform to any federal, state, or local law, statute, ordinance, rule, regulation, or court decree. Indemnitor must indemnify Indemnatee from and against any and all Claims, except those arising solely from Indemnatee's own negligent, reckless, wrongful, or willful acts, errors, or omissions. Indemnitor is responsible for primary loss investigation, defense, and judgment costs where this indemnification applies. In consideration of the award of this Agreement, Indemnitor agrees to waive all rights of subrogation against Indemnatee for losses arising from or related to this Agreement. Indemnitor's obligations under this provision survive the termination or expiration of this Agreement.

SECTION 13 -DISPUTE RESOLUTION

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- 13.1 All disputes arising out of or relating to the Agreement, the Work or the Project, other than termination under Section 10, will be resolved pursuant to the Dispute Resolution process set forth in Appendix 6 of these General Conditions, and not pursuant to MAG Specifications § 110.
- 13.2 Contractor agrees that during any dispute between the parties, Contractor will continue to perform its obligations under the Agreement until such dispute is resolved.
- 13.3 Notwithstanding any other provision in this Agreement, City has the right to immediately file in court and pursue an action for a temporary restraining order and injunctive relief against Contractor if City determines that such action is necessary to protect its interests under the Agreement, to obtain specific performance of any provision of the Agreement, to advance the completion of the Project, or to protect health, welfare and safety.

SECTION 14 - MISCELLANEOUS PROVISIONS**14.1 AGREEMENT DOCUMENTS**

- 14.1.1 The Agreement Documents are intended to permit the parties to complete the Work and all obligations required by the Agreement Documents within the Agreement Times for the Agreement Price. The Agreement Documents are intended to be complementary and interpreted in harmony so as to avoid conflict, with words and phrases interpreted in a manner consistent with construction and design industry standards.
- 14.1.2 It is the intent of the Agreement Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Agreement Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Agreement Documents or from prevailing custom or trade usage as being required to produce the intended result must be provided by Contractor whether or not specifically called for at no additional cost to City.
- 14.1.3 The Agreement Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Agreement Documents), Contractor's Bid or Proposal (including documentation accompanying the Bid and any post-Bid documentation submitted prior to Agreement award) when attached as an exhibit to the Agreement, the accepted Project Schedule, the Notice to Proceed, the Performance Bond, the Payment Bond, Project Design, Engineering and Specifications, these General Conditions, the Project Specific Special Provisions, Technical Specifications, Agreement Drawings, as the same may be more specifically identified in the Agreement, Change Orders, Work Change Directives, Field Orders and the written interpretations and clarifications of the Design Professional or City representative and Modifications issued after execution of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Agreement Documents.
- 14.1.4 In the event of any inconsistency, conflict, or ambiguity between or among the Agreement Documents, the Agreement Documents will take precedence as follows from highest to lowest: Change Orders, Addenda, Agreement, Project Specific Special Provisions, General Conditions, Technical Specifications, Drawings/Plans, Chandler Amendments to MAG Standard Specifications and Chandler Standard Details, and MAG Uniform Standard Specifications and Details for Public Works Construction. If applicable to this Agreement, Federal Provisions prevail.

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- 14.1.5 On the Drawings, given dimensions will take precedence over scaled measurements and large scale drawings over small-scale drawings.
- 14.1.6 Clarifications and interpretations of the Agreement Documents will be issued by the Design Professional through the City.
- 14.1.7 The headings used in this Agreement or any other Agreement Documents, are for ease of reference only and must not in any way be construed to limit or alter the meaning of any provision.
- 14.1.8 The Agreement Documents form the entire agreement between City and Contractor. No oral representations or other agreements have been made by the parties except as specifically stated in the Agreement Documents.
- 14.1.9 The Agreement Documents may not be changed, altered, or amended in any way except in writing signed by a duly authorized representative of each party in the form of a Change Order.
- 14.1.10 Re-Use of Documents. Neither Contractor nor any Subcontractor, manufacturer, fabricator, supplier or distributor will have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of the Design Professional; and they must not re-use any of them on extensions of the Project or any other project without written consent of City and the Design Professional and specific written verification or adaptation by the Design Professional.
- 14.2 **REFERENCE STANDARDS**
- 14.2.1 Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, will mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Agreement Documents.
- 14.2.2 The provisions of any such standard, specification, manual or code, or any instruction of a Supplier will not change the duties or responsibilities of City, Contractor, Design Professional or Project Manager, or any of their Subcontractors, consultants, agents, or employees from those set forth in the Agreement Documents, nor will any such provision or instruction assign to City, Contractor, Design Professional, or any of their agents, or employees any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Agreement Documents.
- 14.3 **COMPLIANCE WITH ARIZONA LAW AND FEDERAL LAW**
- 14.3.1 Compliance with A.R.S. § 41-4401. Pursuant to the provisions of A.R.S. § 41-4401, the Contractor hereby warrants to the City that the Contractor and each of its subcontractors ("Subcontractors") must comply with all Federal Immigration laws and regulations that relate to the immigration status of their employees and the requirement to use E-Verify set forth in A.R.S. §23-214(A).
- 14.3.2 A breach of the Contractor Immigration Warranty constitutes a material breach of this Agreement and subject to penalties up to and including termination of this Agreement.

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14.3.3 The City retains the legal right to inspect the papers of any Contractor or Subcontractor employee who works on this Agreement to ensure that the Contractor or Subcontractor is complying with the Contractor Immigration Warranty. The Contractor agrees to assist the City in the conduct of any such inspections.

14.3.4 The City may, at its sole discretion, conduct random verifications of the employment records of the Contractor and any Subcontractors to ensure compliance with Contractors Immigration Warranty. The Contractor agrees to assist the City in performing any such random verifications.

14.3.5 The provisions of this Article must be included in any agreement the Contractor enters into with any and all of its subcontractors who provide services under this Agreement or any subcontract. "Services" are defined as furnishing labor, time or effort in the State of Arizona by a contractor or subcontractor. Services include construction or maintenance of any structure, building or transportation facility or improvement to real property.

14.4 **HAZARDOUS ENVIRONMENTAL CONDITIONS**

14.4.1 Contractor will not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Agreement Document to be within the scope of the Work. Contractor will be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

14.4.2 If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition. Contractor must immediately:

- a. Secure or otherwise isolate such condition;
- b. Stop all Work in connection with such condition and in any area affected thereby; and
- c. Notify City and promptly thereafter confirm such notice in writing.

14.4.3 City will promptly retain a qualified expert to evaluate such condition or take corrective action, if any.

14.4.4 Contractor will be responsible for any and all civil or criminal penalties, fines, damages, or other charges imposed by any regulatory agency or court for sewage discharges that are in violation of applicable statutes and laws and that are a result, direct or indirect, of work performed under this Agreement. Contractor will also be responsible for reimbursement to City for administration, reporting, and tracking expenses required as a result of any spill event. In the event the regulatory agency or court imposes a probationary period, Contractor must post bond for the probationary period to ensure that all such costs are reimbursed to City. This responsibility will apply whether penalties are imposed directly on Contractor or any of its Subcontractors, or the City of Chandler. Contractor must defend and indemnify City against such penalties. Regulatory agencies may include, but are not limited to, the Arizona Department of Environmental Quality (ADEQ) and the United States Environmental Protection Agency (USEPA).

14.5 **COOPERATION AND FURTHER DOCUMENTATION**

Contractor agrees to provide City such other duly executed documents as may be reasonably requested by City to implement the intent of the Agreement Documents.

14.6 **ASSIGNMENT**

Neither Contractor nor City will, without the written consent of the other assign, transfer or sublet any portion of this Agreement or part of the Work or the obligations required by the Agreement Documents, any such assignment will be void, will transfer no rights to the purported assignee, and would be a material breach of the Agreement.

14.7 **SUCCESSORS**

Contractor and City intend that the provisions of the Agreement Documents are binding upon the parties, their employees, agents, heirs, successors and assigns.

14.8 **LAWFUL PRESENCE**

Pursuant to A.R.S. §§ 1-501 and 1-502, City is prohibited from awarding an agreement to any natural person who cannot establish that such person is lawfully present in the United States. To establish lawful presence, a person must produce qualifying identification and sign a City-provided affidavit affirming the identification provided is genuine. This requirement will be imposed at the time of agreement award. This requirement does not apply to business organizations such as corporations, partnerships, or limited liability companies.

14.9 **NO BOYCOTT OF ISRAEL CERTIFICATION**

By Contractor's signature on this Agreement, Contractor certifies under A.R.S. § 35-393.01 that Contractor is not currently engaged in and for the duration of this Agreement will not engage in a boycott of Israel.

14.10 **NO THIRD PARTY BENEFICIARY**

Nothing under the Agreement Documents will be construed to give any rights or benefits in the Agreement Documents to anyone other than City and Contractor, and all duties and responsibilities undertaken pursuant to the Agreement Documents will be for the sole and exclusive benefit of City and Contractor and not for the benefit of any other party, unless otherwise expressly set forth in the Agreement Documents.

14.11 **GOVERNING LAW AND VENUE**

The Agreement and all Agreement Documents will be deemed to be made under, and will be construed in accordance with and governed by the laws of the State of Arizona without regard to the conflicts or choice of law provisions thereof. Any court action to enforce any provision of the Agreement or to obtain any remedy with respect hereto must be brought in the Superior Court, Maricopa County, Arizona, and for this purpose, each party hereby expressly and irrevocably consents to the jurisdiction and venue of such Court.

14.12 **SEVERABILITY**

If any provision of the Agreement Documents or the application thereof to any person or circumstance will be invalid, illegal or unenforceable to any extent, the remainder of the affected provision, the remainder of the Agreement Documents, and the application thereof will not be affected and will be enforceable to the fullest extent permitted by law.

14.13 **LEGAL REQUIREMENTS**

At all times relevant to its entry into this Agreement and performance of the Services and the Work, Contractor must fully comply with all Laws, Regulations, or Legal Requirements applicable to City, the Project, and the Agreement, including, without limitation, those set

forth on Exhibit C of the Agreement.

14.14 **PARTIAL INVALIDITY**

If any provision of the Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way.

14.15 **ATTORNEYS' FEES**

Should either party to the Agreement bring an action to enforce any provision of the Agreement, the prevailing party will be entitled to recover reasonable attorneys' fees and costs in connection therewith.

14.16 **CONFLICT OF INTEREST**

14.16.1 Contractor agrees to disclose any financial or economic interest with the Project property, or any property affected by the Project, existing prior to the execution of the Agreement. Further, Contractor agrees to disclose any financial or economic interest with the Project property, or any property affected by the Project, if Contractor gains such interest during the course of this Agreement. If Contractor gains financial or economic interest in the Project during the course of this Agreement, this may be grounds for terminating this Agreement. Any decision to terminate the Agreement must be at the sole discretion of City.

14.16.2 Contractor will not engage the services on this Agreement of any present City employee who was involved as a decision maker in the selection or approval processes, or who negotiated or approved billings or Agreement Modifications for this Agreement.

14.16.3 Contractor agrees that it will not perform services on this Project for a contractor, subcontractor, or any supplier, not covered under this Agreement.

14.17 **INDEPENDENT CONTRACTOR**

Contractor is and must be an independent contractor. Any provisions in the Agreement Documents that may appear to give City the right to direct Contractor as to the details of accomplishing the Work or to exercise a measure of control over the Work means that Contractor must follow the wishes of City as the results of the Work only. These results must comply with all applicable laws and ordinances.

14.18 **NOTICE OF INJURY**

Should City or Contractor suffer injury or damage to their person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim must be made in writing to the other party within 7 Days of the first observance of such injury or damage.

14.19 **CONFIDENTIALITY**

Contractor, for the benefit of City, hereby agrees it will not release or cause or permit to be released to the public any press notices, publicity (oral or written) or advertising promotion relating to, any statement regarding, or any other public announcement or disclosure or cause or permit to be publicly announced or disclosed, in any manner whatsoever, the specific terms and conditions of this Agreement or any comment relating to the Project or the Site. Notwithstanding the foregoing, Contractor will be entitled to disclose the terms of the Agreement to the extent required by law or in the course of enforcing or defending a claim or action hereunder. Contractor must give City reasonably prompt notice of any disclosure or statement made pursuant to this provision.

14.20 DATA CONFIDENTIALITY

- 14.20.1 As used in the Agreement, "data" means all information, whether written or verbal, including plans, specifications, renderings, photographs, studies, investigations, audits, analyses, samples, reports, calculations, internal memos, meeting minutes, data field notes, work product, proposals, correspondence and any other similar documents or information prepared by, obtained by, or transmitted to the City in the performance of this Agreement.
- 14.20.2 Contractor agrees that all data, regardless of form, including originals, images, and reproductions, prepared by, obtained by, or transmitted to City in connection with the Contractor's performance of this Agreement is confidential and proprietary information belonging to City.
- 14.20.3 Except as specifically provided in this Agreement, Contractor or its Subcontractors must not divulge data to any third party without prior written consent of City. Contractor or its Subcontractors must not use data for any purposes except to perform Work required under this Agreement. These prohibitions will not apply to the following data provided Contractor has first given the required notice to City:
- a. Data which was known to Contractor or its Subcontractors prior to its performance under this Agreement unless such data was acquired in connection with Work performed for City;
 - b. Data which was acquired by Contractor or its Subcontractors in its performance under this Agreement and which was disclosed to Contractor or its Subcontractors by a third party, who to the best of Contractor's or its Subcontractor's knowledge and belief, had the legal right to make such disclosure and Contractor or its Subcontractors are not otherwise required to hold such data in confidence; or
 - c. Data which is required to be disclosed by virtue of law, regulation, or court order, to which the Contractor or its Subcontractors are subject.
- 14.20.4 In the event the Contractor or its Subcontractors are required or requested to disclose data to a third party, or any other information to which the Contractor or its Subcontractors became privy as a result of any other agreement with City, the Contractor must first notify City as set forth in this Section of the request or demand for the data. The Contractor or its Subcontractors must give City sufficient facts so that City can be given an opportunity to first give its consent or take such action that City may deem appropriate to protect such data or other information from disclosure.
- 14.20.5 Unless prohibited by law, within 10 Days after completion of services for a third party on real or personal property owned or leased by City, the Contractor must promptly deliver, as set forth in this Section, a copy of all data to City. All data will continue to be subject to the confidentiality agreements of this Agreement.
- 14.20.6 Contractor or its Subcontractors assume all liability for maintaining the confidentiality of the data in its possession and agree to compensate City if any of the provisions of this Section are violated by Contractor, its employees, agents, or Subcontractors. Solely for the purposes of seeking injunctive relief, it is agreed that a breach of this Section will be deemed to cause irreparable harm that justified injunctive relief in court. Contractor agrees that the requirements of this Section will be incorporated into all subcontracts entered into by Contractor. A violation of this Section may result in immediate termination of this

Agreement without notice.

14.21 **SURVIVAL**

All warranties, representations and indemnifications by Contractor must survive the completion or termination of this Agreement.

14.22 **COVENANTS AGAINST CONTINGENT FEES**

Contractor warrants that no person has been employed or retained to solicit or secure this Agreement upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, and that no member of City Council, or any employee of City has any interest, financially, or otherwise, in the firm. For breach or violation of this warrant, City will have the right to annul the Agreement without liability or at its discretion to deduct from the Agreement Price or consideration, the full amount of such commission, percentage, brokerage, or contingent fee.

14.23 **NO WAIVER**

The failure of either party to enforce any of the provisions of the Agreement Documents or to require performance of the other party of any of the provisions hereof must not be construed to be a waiver of such provisions, nor will it affect the validity of the Agreement Documents or any part thereof, or the right of either party to thereafter enforce each and every provision.

14.24 **NONEXCLUSIVE REMEDIES**

The remedies set forth in this Agreement are cumulative and not exclusive, and failure to exercise any remedy (including, without limitation, any right to terminate) will not preclude any party from exercising any other right in seeking any other remedy available to it at law or in equity.

14.25 **PROJECT COMMUNICATIONS**

14.25.1 All communications concerning the performance of the Work or the Project will be provided to the designated Project Manager and Contractor's Representative set forth in Article 1 of the Agreement. City may change the designated Project Manager and, subject to Section 4.4.20 of these General Conditions, Contractor may change Contractor Representative, by written notice to the other.

14.25.2 Project communications may be exchanged by e-mail, but email communications cannot change the terms of the Agreement or the Scope of Work, or effectuate any change that requires a written Change Order.

14.25.3 When any provisions of the Agreement Documents requires Contractor or the Design Professional to give written notice to City, it will be deemed to have been validly given if delivered in person or if delivered at or sent by registered or certified mail, postage prepaid, to the Parties indicated in Agreement Article 1, incorporated by reference.

14.25.4 When any provisions of the Agreement Documents requires City, Project Manager, or the Design Professional to give written notice to Contractor, it will be deemed to have been validly given if delivered in person to the person designated in the Agreement Documents as Contractor's Resident Superintendent, or if delivered at or sent by registered or certified mail, postage prepaid, to Contractor at the last address in the Agreement Documents or such substitute address which Contractor designates in writing, or to the business address known to the giver of notice.

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14.26 DRUG FREE WORKPLACE PROGRAM

- 14.26.1 City has adopted a policy establishing a drug free workplace for itself and as a requirement for Contractors doing business with City, to ensure the safety and health of employees working on City projects.
- 14.26.2 Contractor must require a drug free workplace for all employees working under the Agreement. Specifically, all employees of Contractor who are working under an agreement with City must be notified, in writing, by Contractor that they are prohibited from the manufacture, distribution, dispensation, possession or unlawful use of a controlled substance in the workplace.
- 14.27 Failure to require a drug free workplace in accordance with the City's policy may result in termination of the Agreement and possible debarment from bidding on future City projects.

SECTION 15 - PROVISIONS APPLICABLE SOLELY TO GMP AND COST-BASED AGREEMENTS, CHANGE ORDERS, AND JOB ORDERS**15.1 ADDITIONAL DEFINITIONS**

The definitions set forth in Section 2 apply to GMP and Cost-Based Agreements, Change Orders, and Job Orders, together with the additional definitions set forth below.

Baseline Cost Model –

A breakdown and estimate of the scope of the Project developed by CM@Risk pursuant to Section 17.5 of these General Conditions.

CM@Risk or Construction Manager at Risk –

The person or firm selected by City to provide pre-construction and/or construction services as detailed in a Construction Manager at Risk Agreement with City. In these General Conditions, the term "Contractor" includes CM@Risk under both Pre-Construction and Construction Services Agreements.

CM@Risk Fee or Contractor's Fee –

An agreed to percentage in an accepted GMP that represents the Contractor's fee for performance of the Work.

Agreement Documents –

Where compensation under the Agreement is based upon a GMP accepted by City, the term "Agreement Documents" also includes the accepted GMP Proposal.

Agreement Price –

Where compensation under the Agreement based upon a GMP accepted by City, the term "Agreement Price" refers to the GMP.

Cost-Based Agreement, Change Order, or Job Order –

A Agreement, Change Order, or Job Order where the Agreement Price is based upon the actual cost of performing the Work, subject to the terms of the Agreement Documents, including this Section 15. These would include those generally referred to as "Cost of the Work plus a Fee with a GMP," "Time and Materials," or "Cost Plus a Fee."

Cost of the Work –

The direct costs necessarily incurred by Contractor in the proper, timely, and complete performance on the Work. The Cost of the Work will include only those costs set forth in Section 15.2 of these

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General Conditions.Deliverables –

The work products prepared by Contractor in performing the scope of work described in the Agreement. Some of the major deliverables to be prepared and provided by Contractor during pre-construction may include but are not limited to: the Baseline Cost Model and Schedule that validate City's plan and budget, Construction Management Plan, Detailed Project Schedule, Schedule of Values, alternative system evaluations, procurement strategies and plans, Detailed Cost Estimates, construction market surveys, cash flow projections, GMP Proposals, Subcontractor procurement plan, Subcontractor agreements, Subcontractor bid packages, Supplier agreements, Constructability Review, Cost Control Log, Traffic control and phasing plans and others as indicated in this Agreement or required by the Project Team.

Pre-Construction Services Agreement –

The Agreement entered into between City and the CM@Risk for Pre-Construction Services to be provided by the CM@Risk, including, without limitation, the generation of a GMP Proposal. If the GMP Proposal is accepted by City and a Construction Agreement is entered into between City and CM@Risk, the duties, obligations and warranties of the CM@Risk under the Pre-Construction Services Agreement survive and are incorporated into the resulting Construction Agreement.

Pre-Construction Services –

The services to be provided under the Pre-Construction Services Agreement, including Section 17 of these General Conditions.

Detailed Project Schedule –

The Detailed Project Schedule developed by the CM@Risk for the review and approval of the Project Manager in accordance with Section 17.3 of these General Conditions, if applicable.

General Conditions Costs –

Those costs set forth in Section 4 of Appendix 9 to these General Conditions.

GMP Plans and Specifications –

The plan and specifications upon which the Guaranteed Maximum price Proposal is based.

GMP Proposal –

The proposal of Contractor submitted pursuant to Section 17.7 of these General Conditions for the entire Work and/or portion (phases) of the Work.

Guaranteed Maximum Price or GMP –

The Guaranteed Maximum Price set forth in the Agreement, Change Order, or Job Order if applicable.

15.2 AGREEMENT PRICE

15.2.1 The Agreement Price for all Agreements, Change Orders, and Job Orders based upon payment of the Cost of the Work plus a Fee with a GMP, time and materials, or cost-plus a fee will be the Cost of the Work incurred plus the Fee agreed to in writing by City, limited to the amount of the GMP, if agreed to. Unless otherwise expressly provided in the Agreement, Change Order, or Job Order, all Cost Based pricing will be subject to and limited to GMP.

15.2.2 The Agreement Price may only be changed as set forth in Section 9 above.

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15.2.3 Only costs specifically designated as reimbursable costs are eligible for payment by City or may be charged against the Agreement Price. All other costs will not be paid by City and will not be chargeable against the Agreement Price.

15.2.4 Cost-Based Agreements. For Agreements, Change Orders, or Job Orders, reimbursable costs must be determined pursuant to Appendix 9 to these General Conditions, Cost of the Work, and not by MAG Specifications §109.5.

15.3 **ALLOWANCES**

15.3.1 Contractor must include in the Agreement Price all Allowances stated in the Agreement Documents and agreed to in writing by City. Items covered by these Allowances must be supplied for such amounts and by such persons as City may direct, provided Contractor will not be required to employ persons against whom Contractor makes a reasonable objection. Materials, labor, and equipment under an Allowance will be selected by City in accordance with a schedule to be mutually agreed upon by City, Design Professional and Contractor or otherwise in reasonably sufficient time to avoid delay in the Work.

15.3.2 Unless otherwise provided in the Agreement Documents:

15.3.2.1 These Allowances must cover the cost to Contractor, less any applicable trade discount, of the materials, labor, and equipment required by the Allowances, delivered at the Site, and all applicable taxes;

15.3.2.2 Contractor's costs for unloading and handling on the Site, labor, installation costs, overhead, profit and other expenses relating to materials, labor, and equipment required by the Allowance must be included in the Agreement Sum and not in the Allowance; and

15.3.2.3 Whenever the cost is more or less than the Allowance, the Agreement Sum must be adjusted accordingly by Change Order, the amount of which will recognize the difference between actual costs for an Allowance item and the amount of the Allowance item and changes, if any, in handling costs on the Site, labor, installation costs, overhead, profit and other expenses.

15.4 **CONTINGENCY**

An agreed to amount in the GMP that may only be used in accordance with the terms set forth in these General Conditions and with prior written approval by the City.

15.4.1 Construction Contingency. This GMP includes a dollar amount listed as a Construction Contingency which will be readily available for increased costs for subcontractors, material, and equipment subject to prior approval of City, which approval will not be withheld unreasonably. The Construction Contingency may also be used, at the discretion of City, to reimburse CM@Risk for unexpected costs due to (a) scope gaps between trade subcontractors; (b) agreement default by trade subcontractors; (c) unforeseen field conditions, but only as defined in Section 9.5 above; (d) work completed to meet the intent of the design, but which was not indicated on the plans; (e) costs overruns not covered by allowances; (f) costs of corrective work not provided for elsewhere; and (g) implementation of any Recovery Plan. Cost for which CM@Risk desires to be paid from the Construction Contingency must be documented by CM@Risk on a time and materials basis and are subject to verification by City. If agreed to by City, a "Use of Contingency" form will be executed by both parties authorizing the actual cost of the work to be paid and included in the Work Item Direct Costs. The Construction Contingency is not allocated to any particular

item of the Project but may be used for any portion of the work as determined above. Any amount not used in the Construction Contingency will belong to City and will reduce the GMP.

- 15.4.2 **Owner's Contingency.** This GMP also includes a dollar amount listed as an Owner's Contingency which may be used only by the City (owner department) for upgrades and changes in scope or other changes not already included within the intent of the Project Program. City will provide CM@Risk with a Work Change Directive authorizing CM@Risk to perform the additional work and to transfer funds from the Owner's Contingency to the Work Item Direct Costs category to be paid with such direct costs. These additional costs will be in an amount mutually agreed upon by CM@Risk and City or will be documented by CM@Risk on a time and materials basis and are subject to verification by City. Any amount not used in the Owner's Contingency will belong to the City and will reduce the GMP.

15.5 **REDUCTION IN RETENTION**

If the Agreement Price is based upon a GMP, in order to receive payment of one-half of the retention as set forth in Section 8.1.5 above, Contractor must also submit to the Project Manager a complete accounting of the Actual Reimbursable Cost of the Work to date, including all such documentation (including, without limitation, invoices, subcontract, subcontractor change orders, purchase orders, records of payment, etc.) as City may require, to establish whether the payments made to Contractor equal, exceed, or are less than the actual reimbursable Cost of the Work to date. Any excess payments by City, as determined by the Project Manager, will be deducted from the one-half retention payment to be made to Contractor, and any additional excess amounts paid to Contractor will be refunded by Contractor to City. The Project Manager's determinations as to Actual Reimbursable Cost of the Work will be the basis of payment until final Project Closeout and Final Payment under the Agreement.

15.6 **FINAL PAYMENT**

If the Agreement Price is based upon a GMP, as a further condition precedent to Final Payment by City, Contractor must submit to the Project Manager a complete final accounting of the Actual Reimbursable Cost of the Work, including all such documentation (including, without limitation, invoices, subcontracts, subcontractor change orders, purchase orders, records of payment, etc.) as City may require, to establish whether the payments made to Contractor equal, exceed, or are less than the Actual Reimbursable Cost of the Work to date. Any excess payments by City, as determined by the Project Manager, will be deducted from the one-half retention payment to be made to Contractor, and any additional excess amounts paid to Contractor will be refunded by Contractor to City. Disputes relating to the Final Cost of the Work will be subject to City's audit rights under Sections 8.8 above and 15.7 below, and the dispute resolution process under Section 13 above.

15.7 **OPEN BOOK**

On any GMP-based or Cost-Based Agreement, Job Order, or Change Order, City may attend any and all meetings or discussions pertaining to the Project, including bid openings, and must have access to all books, invoices, accounts, memoranda, correspondence, and written communications or records of any kind pertaining to the Project, including without limitation, those stored in electronic format.

15.8 **DIFFERING SITE CONDITIONS AND/OR CHANGE IN LAWS**

A Change Order for increased costs under Section 9.5 or 9.6 above will only be considered

or granted by City to the extent such actual, documented costs are justified.

SECTION 16 - PROVISIONS APPLICABLE SOLELY TO JOB ORDER AGREEMENTS (JOC)

16.1 ADDITIONAL DEFINITIONS

The definitions set forth in Sections 2 and below will apply to all Job Order Agreements and Job Orders. In addition, the definitions set forth in Section 15.1 above will apply to all Cost-Based Job Orders.

Agreement –

Includes the Job Order Master Agreement and Job Order Project Agreements issued and agreed to by City and JOC Contractor.

JOC Contractor's Coefficient –

A numerical factor that represents JOC Contractor total costs (indirect and direct costs, sales tax, profit, etc.) and other adjustments for market conditions.

Job Order Request for Proposal (RFP) –

The Request for Proposals issued by City for each Job Order Project Agreement relating to a specific Project.

Job Order Cost Proposal –

The Proposal submitted by JOC Contractor in response to a Job Order Request for Proposal (RFP) issued by City to develop a Job Order Project Agreement for a specific Project.

Guaranteed Maximum Price (GMP) Job Order –

Job Order under which JOC Contractor is compensated for actual costs incurred.

Job Order Project Agreement (Job Order) –

The agreement for a specific project, as it may be modified by all Change Orders, executed by the Parties, which incorporates the terms and conditions of the Job Order Master Agreement.

16.2 ORDERING AND PROCESSING PROCEDURES FOR JOB ORDERS

16.2.1 The process for developing and issuing a Job Order for a particular Project consists of three (3) procedures: (1) issuance of a RFP by City; (2) JOC Contractor's response to the RFP in the form of JOC Contractor's Job Order Cost Proposal; and (3) Issuance of a Job Order by City, as set for below.

16.2.2 RFP's For Job Orders

16.2.2.1 City will provide to JOC Contractor RFP with a Scope of Work (SOW) describing the Work to be performed, which may include special instructions and conditions, material submittal requirements, and, if applicable, a complete set of sketches, construction drawings and specifications for the Job Order.

16.2.2.2 Some Job Order RFP's will be issued by City without detailed sketches, drawing and specifications and will rely on JOC Contractor to produce them for City review and approval and is considered to be Pre-Construction and incidental design services included in JOC Contractor's overhead for GMP Job Orders. In addition JOC Contractor will not be reimbursed for any Pre-Job Order costs, including proposal preparation, attendance during negotiations, or site visits.

General Conditions

16.2.3 JOC Contractor's Job Order Cost Proposal

16.2.3.1 JOC Contractor must respond within ten (10) calendar days of the RFP date or site visit, whichever is later or as otherwise indicated on a case-by-case basis, by submitting JOC Contractor's Job Order Cost Proposal to the City representative.

16.2.3.2 Unless otherwise required under the terms of the RFP, JOC Contractor's Job Order Cost Proposal must include the following.

- a. JOC Contractor's Job Order Cost Proposal in PDF and electronic format;
- b. A Project Schedule and schedule of values that reflects the costs of each work element on the schedule. The schedule must show all milestones (e.g., permits, submittals, ordering materials, demolition, work phases, closeout and completion date); and
- c. Necessary documentation will be required to indicate that adequate scoping, layout, setup and planning to accomplish the Work has been done. Examples of documentation that might reasonably be expected include sketches, drawings, calculations, catalog cuts and specifications produced to a level of detail and skill that could be expected of experienced, competent Project Managers with five or more periods experience in their respective trade.

16.2.3.3 JOC Contractor must select Subcontractors based on qualifications alone or on a combination of qualifications and price and must not select Subcontractors based on price alone. A qualifications and price selection may be a one-step selection based on a combination of qualifications and price or two-step selection. In a two-step selection, the first step must be based on qualifications alone and the second step may be based on a combination of qualifications and price or on price alone.

16.2.3.4 Upon request, JOC Contractor must provide City with copies of Subcontractor quotes and the basis for selection of each Subcontractor.

16.2.3.5 If City objects to a selected Subcontractor, City will make the objection and the reasons for the objection known to the JOC Contractor. JOC Contractor must then present an acceptable Subcontractor for the applicable discipline. City will not unreasonably object to or withhold approval of a Subcontractor.

16.2.3.6 For self-performed work, the City retains the right to have the JOC Contractor establish JOC Contractor's costs by bidding their costs against at least three (3) other interested trade Contractors. No self-performed work will be allowed to be performed on a lump sum basis.

16.2.4 Issuance of Job Order

16.2.4.1 City Representative will compare the JOC Contractor's Job Order Cost Proposal with the City's estimate, schedules and other requirements, and then, if the City Representative determines it is in the best interest of City, arrange a meeting with JOC Contractor, at which time the JOC Contractor's Job Order Cost Proposal will be discussed and negotiated.

16.2.4.2 If the City Representative determines that it is in the best interest of the City, City will then issue a Job Order to JOC Contractor for execution.

16.2.4.3 Specific Job Orders may vary, but unless agreed to by City in writing otherwise, the content

of Job Orders under the Agreement will generally be as follow, all of which will be signed and/or initialed by JOC Contractor's designated representative:

- a. The description of the Scope of the Work and Project Schedule (attached as Exhibit A to the Job Order);
- b. The address or location of the Work;
- c. The Agreement Price for Work (Construction) included in the Project (attached as Exhibit B to the Job Order);
- d. The name of the JOC Contractor representative for the Project;
- e. The Drawings and Specifications for the Project;
- f. If any shop drawings, project date and/or samples are required for the Job Order, the date for delivery of each required item (included in the Project Schedule, Exhibit A to the Job order); and
- g. Project Specific Provisions, if any, in Exhibit A to the Job Order, including, without limitation, whether any of the following are required: Pre-Construction Conference, weekly progress meetings, field office, storage enclosure, materials and equipment handling facility, submittals, shop drawings, product data, equipment list, samples, project manual, schedule of values, Construction progress schedule, narrative reports, progress report, progress charts, progress photographs, materials status report, Construction diagram, Construction status report, operation and maintenance data, operating maintenance instructions and parts list, and as-build drawings.

16.2.5 Job Order Intent. Each Job Order will be interpreted to include all items reasonably necessary to complete the Project under that Job Order as described in the scope of the Work in that Job Order. All Work must be performed in a professional manner and all materials used must be new and of the highest quality and of the type best adapted to their purpose, unless otherwise specified. The Notice to Proceed date, and the award date established therein, will be deemed an integral part of the Job Order the same as if set forth therein.

16.3 **INCIDENTAL DESIGN SERVICES**

16.3.1 This effort includes all "extensions of design" for systems that are typically specified in a performance oriented manner by consultants and designers. Examples include: fire sprinkler systems, fire alarm and sprinkler systems, DDC controls, control systems, prefabricated metal building and similar situations. These designs are normally provided under submittals as a shop drawing with engineering backup and as appropriate, seals of registered engineers specializing in the particular system.

16.3.2 Incidental design includes all documents, sketches, schematic diagrams, floor plan layouts, equipment schedules and other documents produced by the JOC Contractor to define the work required for projects that the City does not develop formal or abbreviated designs requiring a seal by a registered engineer. Incidental design does not include preparation of designs requiring an architect or engineer seal.

16.3.3 JOC Contractor represents, covenants, and agrees, and contractually assumes the obligation to furnish, all of the required Design Services through properly licensed and

experienced Design Professionals in complete accordance with all of the duties imposed on a Design Professional under the Agreement Documents, Laws, Regulations, or Legal Requirements, and the common law.

- 16.3.4 All Design Documents (and all other Project-related documents, models, computer drawings and other electronic expression, photographs and other expressions CADD, and BIM files and images included) that JOC Contractor and/or JOC Contractor's Design Professional(s) prepare in connection with a Job Order and the copyrights therein (collectively, the "Instruments of Service") will be the property of City. JOC Contractor covenants and agrees to execute any additional document reasonably requested by City to confirm such assignment without any additional compensation.

16.4 **CONSTRUCTION SERVICES**

- 16.4.1 The following subsections of this Section 16.4 set forth requirements beyond those set forth in Section 4 above which apply to Construction Services performed under a Job Order.

- 16.4.2 JOC Contractor must perform the Work using only those firms, team members and individuals designated by JOC Contractor consistent with each Job Order or otherwise approved by City pursuant to the General Conditions. No other entities or individuals may be used without the prior written approval of the Project Manager.

16.4.3 Construction Phasing

- 16.4.3.1 City use of the facilities is anticipated while the Work is being performed. The Work must be planned and accomplished so that there will be a minimum of interference and inconvenience to occupants in the building and agencies in the vicinity and to other craftsmen who may have to do work in the affected facilities. Any blockage of building exits or driveways must be coordinated in advance.

- 16.4.3.2 If applicable, furniture, portable office equipment and wall appurtenances not rigidly fastened to the walls must be moved by JOC Contractor, protected from damage and replaced to the original position upon completion of the work. If the work required by the Job Order will not allow furniture and portable office equipment to be replaced to its original position, new locations will be designated by City. Incidental costs associated with moving one-piece furnishings up to approximately 150 pounds to perform such tasks as painting, carpet or tile replacement, etc., are considered a general cost of building renovation and must be included in the JOC Contractor's Coefficient. Costs for large scale or wholesale removal and replacement of large quantities of desks or modular workstations, copiers, multiple full file cabinets, etc. to another location or storage outside the work space, or disassembly and reassembly of modular furniture is not considered part of the JOC Contractor's Coefficient and will be priced separately.

- 16.4.3.3 The work must, so far as practicable, be done in definite sections or divisions and confined to limited areas which must be completed before work in other sections or divisions are begun.

- 16.4.4 Work Site Conflicts. In the event of a conflict between JOC Contractor and others in an occupied facility or where other Contractors are performing work on the same facility under other Agreements, City will decide to dispute and that decision will be final.

- 16.4.5 Ownership of Work Product. Work Product prepared or otherwise created in connection

with the performance of this Agreement, including the Work, are to be and remain the property of City. For purposes of this provision, "Work Product" will include all designs, drawings, plans, specifications, ideas, renderings and other information or matter, in whatever form created (e.g., electronic or printed) and in all media now known or hereinafter created. All Work Product will be considered Work Made for Hire as defined in the United States Copyright Act 17 U.S.C. §101 (Copyright Act). If for any reason any such Work is found not to be a work for hire, JOC Contractor hereby transfers and assigns ownership of the copyright in such Work to City. The rights in this Section are exclusive to City in perpetuity.

16.5 **OPTIONAL LIQUIDATED DAMAGES**

16.5.1 Specific Job Orders. City will have the right to assess liquidated damages in relation to any specific JOC Project Agreement as set forth below.

16.5.2 Substantial Completion Liquidated Damages. JOC Contractor acknowledges and agrees that if JOC Contractor fails to obtain Substantial Completion of the Work within the Agreement Time, City will sustain extensive damages and serious loss as a result of such failure. The exact amount of such damages will be extremely difficult to ascertain. Therefore, City and JOC Contractor agree that if JOC Contractor fails to achieve Substantial Completion of the Work within the Agreement Time, City will be entitled to retain or recover from JOC Contractor, as liquidated damages and not as a penalty, the sum per calendar day as indicated in MAG § 108.9.

16.5.3 Final Acceptance Liquidated Damages. For the same reasons set forth in Section 16.5.2 above, City and JOC Contractor further agree that if JOC Contractor fails to achieve Final Acceptance of the Work within the Agreement Time, City will be entitled to retain or recover from JOC Contractor, as liquidated damages and not as a penalty, the sum per calendar day as indicated in MAG § 108.9 commencing from the actual date of Substantial Completion or Final Acceptance as required under any specific JOC Project Agreement.

16.5.4 MAG Liquidated Damages. Liquidated damages provisions in MAG § 108.9 may apply to any specific JOC Project Agreement.

16.5.5 City may deduct liquidated damages assessed pursuant to this Section 16.5 from any unpaid amounts then or thereafter due JOC Contractor under the Agreement or any specific JOC Project Agreement between JOC Contractor and City. Any liquidated damages not so deducted from any unpaid amounts due JOC Contractor must be payable to City at the demand of City, together with interest from the date of the demand at the highest lawful rate of interest payable to JOC Contractor.

16.6 **PERFORMANCE MEASUREMENT**

16.6.1 Performance Assessment. After the Final Acceptance of Work under each Job Order, City will complete a written evaluation of the performance of JOC Contractor on the Job Order.

16.6.2 Consideration in Assignment of Work. JOC Contractor's record of cost, schedule and quality performance and comparative assessments will be significant considerations in City's determination whether to award future Job Orders. JOC Contractor agrees that any determination by City not to award future Job Orders or Option periods based on performance will be at the sole discretion of City.

**SECTION 17 - PROVISIONS APPLICABLE SOLELY TO PRE-CONSTRUCTION SERVICES FOR
CONSTRUCTION MANAGER AT RISK****17.1 ADDITIONAL DEFINITIONS**

The definitions set forth in Section 2 and 15.1 above will apply to all Pre-Construction Services Agreements.

17.2 GENERAL

17.2.1 CM@Risk must perform the Services required by, and in accordance with the Agreement Documents and as outlined in Exhibit A of the Agreement to the satisfaction of the Project Manager, exercising the degree of care, skill, diligence and judgment a professional construction manager experienced in the performance of such services for construction and/or facilities of similar scope, function, size, quality, complexity and detail to the Project in urban areas throughout the United States, would exercise at such time, under similar conditions. CM@Risk must, at all times, perform the required services consistent with sound and generally accepted engineering principles and construction management and construction contracting practices.

17.2.2 As a participating member of the Project Team, CM@Risk must provide to City and Design Professional a written evaluation of City's Project Program and budget, each in terms of the other, with recommendations as to the appropriateness of each. CM@Risk must prepare a Baseline Cost Model that validates City's budget. The Baseline Cost Model must include all assumptions and basis of estimates in enough detail so that the Project Team can compare future detail estimates to the Baseline Cost model for variances. City and Design Professional will provide all the reasonably required data that is available in order to reach agreement between the team members that the Baseline Cost Model is an accurate projection of the costs of the Project.

17.2.3 CM@Risk must attend Project Team meetings, which may include, but are not limited to, bi-weekly Project management meetings, Project workshops, special Project meetings, construction document rolling reviews, public meetings and partnering sessions. CM@Risk attendance at design or other meetings in which CM@Risk is provided the opportunity but does not actively participate and/or is not properly prepared is not acceptable. Repeated instances of non-participation and/or lack of preparedness will be grounds for termination of CM@Risk Agreement for default.

17.2.4 CM@Risk must provide Pre-Construction Services, described herein, in a timely manner and consistent with the intent of the most current Drawings and Specifications. CM@Risk must promptly notify City in writing whenever CM@Risk determines any Drawings or Specifications are inappropriate for the Project and/or cause changes in the scope of Work that deviates more than the allowed contingencies within the Baseline Cost Model or requires an adjustment in the Baseline Cost Model, Detailed Cost Estimate, Detailed Project Schedule, GMP Proposals and/or in the Agreement Time for the Work, to the extent such as established.

17.2.5 CM@Risk when requested by City, must attend, make presentations and participate as may be appropriate in public agency and or community meetings, relevant to the Project. CM@Risk must provide drawings, schedule diagrams, budget charges and other materials describing the Project when their use is required or appropriate in any such public agency meetings.

- 17.2.6 **Ownership of Work Product.** All Work Product prepared or otherwise created in connection with the performance of this Agreement, including the Work, are to be and remain the property of City. For purposes of this provision, "Work Product" will include all designs, drawings, plans, specifications, ideas, renderings and other information or material, in whatever form created (e.g., electronic or printed) and in all media now know or hereinafter created. All Work Product will be considered Work Made for Hire as defined in the United States Copyright Act 17 U.S.C.

§101 (Copyright Act). If for any reason any such Work is found not to be a work for hire, Contractor hereby transfers and assigns ownership of the copyright in such Work to City. The rights in this Section are exclusive to City in perpetuity.

- 17.2.7 CM@Risk represents to City in completing Pre-Construction Services and providing the reports and analysis required thereunder, that Work can be properly and timely constructed within the GMP Proposal, if accepted. CM@Risk does not assume any design responsibilities unless specifically called for in the scope of work, but CM@Risk will be responsible for their errors, omissions or inconsistencies included in the Work.

17.3 **DETAILED PROJECT SCHEDULE**

- 17.3.1 The fundamental purpose of the Detailed Project Schedule is to identify, coordinate and record the tasks and activities to be performed by all of the Project Team members and then for the Project Team to utilize that Deliverable as a basis for managing and monitoring all member's compliance with the schedule requirements of the Project. Each Project Team member is responsible for its compliance with the Detailed Project Schedule requirements. CM@Risk must, however, develop and maintain the Detailed Project Schedule on behalf of and to be used by the Project Team based on input from the other Project Team members. The Baseline Project Schedule must be developed as part of the Baseline Cost Model. The Detailed Project Schedule must use the Critical Path method ("CPM") technique, unless required otherwise, in writing by City. CM@Risk must use scheduling software acceptable to City to develop the Detailed Project Schedule. The Detailed Project Schedule must be presented in graphical and tabular reports as agreed upon by the Project Team. If Project phasing as described below is required, the Detailed Project Schedule must indicate milestone dates for the phases once determined. As part of construction phase, City may require CM@Risk to prepare a "resource loaded" schedule for all work, including work performed by Subcontractors, detailing each of the project tasks and the required/anticipated number of personnel per day for each task. CM@Risk must also indicate on the schedule its ability to meet said required/anticipated personnel requirements.

- 17.3.2 CM@Risk must include and integrate in the Detailed Project Schedule the services and activities required of City, Design Professional and CM@Risk including all construction phase activities based on the input received from City and the Design Professional. The Detailed Project Schedule must define activities as determined by City to the extent required to show: (a) the coordination between preliminary design and various pre-construction documents, (b) any separate long-lead procurements, (c) any permitting issues, (d) any land, right-of-way, or easement acquisition, (e) bid packaging strategy and awards to Subcontractors and Suppliers, (f) major stages of construction, (g) start-up and commissioning, and (h) occupancy of the completed Work by City. The Detailed Project Schedule must include by example and not limitation, proposed activity sequences and durations for design, procurement, construction and testing activities, milestone dates for actions and decisions by the Project Team, preparation and processing of shop drawings

and samples, delivery of materials or equipment requiring long-lead time procurement (if any), milestone dates for various construction phases, Total Float for all activities to the extent authorized by City, relationships between the activities, City's occupancy requirements showing portions of the Project having occupancy priority, and proposed dates for Final Acceptance.

- 17.3.3 A Baseline Project Schedule must be initiated with the project Baseline Cost Model and agreed to by the project team at the same time. CM@Risk must update and maintain a detailed Project Schedule throughout pre-construction such that it will not require major changes at the start of the construction phase to incorporate CM@Risk's plan for the performance of the construction phase Work. CM@Risk must provide updates and/or revisions to the Detailed Project Schedule for use by the Project Team, whenever required, but no less often than at the Project Team meetings. CM@Risk must include with such submittals a narrative describing its analysis of the progress achieved to-date vs. the Baseline Project Schedule, including any concerns regarding delays or potential delays, and any recommendations regarding mitigating actions.
- 17.3.4 If phased construction is deemed appropriate at the time of developing the Baseline Cost Model or during the development of the Detailed Project Schedule, and City approves, CM@Risk must review the design and make recommendations regarding the phased issuance of Construction Documents to facilitate phased construction of the Work, with the objective of reducing the Project Schedule and/or Cost of the Work. CM@Risk must take into consideration such factors as natural and practical lines of work severability, sequencing effectiveness, access and availability constraints, total time for completion, construction market conditions, labor and materials availability, and any other factors pertinent to saving time and cost.
- 17.3.5 Long Lead Time Items. As part of developing the Detailed Project Schedule, CM@Risk must identify all long lead time materials, fabrications, equipment, or other items which may impact the Project Schedule and may require early action on the part of the Project Team. Dates for selecting and ordering long lead time items will be included and highlighted in the Detailed Project Schedule
- 17.3.6 Equipment Plan. Contractor must develop an Equipment Plan that addresses all rental and owned equipment, regardless of whether such equipment will be provided by CM@Risk or subcontractor(s), that will be necessary to construct the Project and the cost of which will be included as a Cost of the Work in the GMP Proposal. The Equipment Plan will seek to minimize the cost of the equipment to City and maximize the efficient and coordinated use of the equipment for completion of the Project. The Equipment Plan will not only include the costs and allowable lease rates for the equipment, but will also include an equipment schedule that will be incorporated into the Detailed Project Schedule and the Schedule of Values submitted with the GMP Proposal.
- 17.4 **DESIGN DOCUMENT REVIEWS**
- 17.4.1 CM@Risk must evaluate periodically the availability of labor, materials/equipment, cost-sensitive aspects of the design; and other factors that may create an unacceptable variance to the Baseline Cost Model and/or Baseline Project Schedule.
- 17.4.2 CM@Risk must recommend, in conjunction with the Project Team, those additional surface and subsurface investigations that, in its professional opinion, are required to provide the necessary information for CM@Risk to construct the Project. These additional

- investigations, if agreed to be necessary by the Project Manager and the Design Professional, will be acquired by City and copies of the reports will be provided to CM@Risk.
- 17.4.3 CM@Risk must meet with the Project Team as required to review designs during their development. CM@Risk must familiarize itself with the evolving documents through pre-construction. CM@Risk must proactively advise the Project Team and make recommendations on factors related to construction costs, and concerns pertaining to the feasibility and practicality of any proposed means and methods, selected materials, equipment and building systems, and, labor and material availability. CM@Risk must furthermore advise the Project Team on proposed site improvements, excavation and foundation considerations, as well as, concerns that exist with respect to coordination of the Drawings and Specifications. CM@Risk must use established value analysis principles in recommending cost effective alternatives.
- 17.4.4 CM@Risk must routinely conduct constructability and bid-ability reviews of the Drawings and Specifications as necessary to satisfy the needs of the Project Team. The reviews must attempt to identify all discrepancies and inconsistencies in the Construction Documents especially those related to clarity, consistency, completeness and coordination of Work of Subcontractors and Suppliers.
- 17.4.4.1 CM@Risk must evaluate whether: (a) the Drawings and Specifications are configured to enable efficient construction; (b) design elements are standardized; (c) construction efficiency is properly considered in the Drawings and Specifications; (d) module/preassembly design is prepared to facilitate fabrication, transport and installation; (e) sequences of Work required by or inferable from the Drawings and Specifications are practicable; (f) the design has taken into consideration efficiency issues concerning access and entrance to the site, laydown and storage of materials, staging of site facilities, construction parking, and other similar pertinent issues; and (g) the design maintains continued operation of the existing City systems and maintains traffic on adjacent roadways. CM@Risk must also review the Drawings and Specifications to ensure that what is depicted therein can be constructed as designed and must promptly inform the Project Team of any issues.
- 17.4.4.2 CM@Risk must check cross-reference and complementary Drawings and sections within the Specifications and in general evaluate whether: (a) the Drawings and Specifications are sufficiently clear and detailed to minimize ambiguity and to reduce scope interpretation discrepancies; (b) named materials and equipment are commercially available and are performing well, or otherwise, in similar installations; (c) Specifications include alternatives in the event a requirement cannot be met in the field; and (d) in its professional opinion, the Project is likely to be subject to Differing Site Conditions.
- 17.4.4.3 The results of the reviews must be provided to Project Team in formal, written reports clearly identifying all reviewed documents and the discovered discrepancies and inconsistencies in the Drawings and Specifications with notations and recommendations made on the Drawings, Specifications and other documents. CM@Risk must meet with Project Team to discuss any findings and review reports.
- 17.4.4.4 CM@Risk's reviews must be from a Contractor's perspective, and though it will serve to eliminate/reduce the number of RFIs) and changes during the construction phase, responsibility for the Drawings and Specifications will remain with the Design Professional and not CM@Risk.

- 17.4.5 It is CM@Risk's responsibility to assist the Design Professional in ascertaining that, in CM@Risk's professional opinion, the Construction Documents are in accordance with applicable Laws, Regulations, or Legal Requirements, building codes, sound engineering principle's rules and regulations. If CM@Risk recognizes that portions of the Construction Documents are at variance with applicable laws, statutes, ordinances, building codes, sound engineering principle's rules and regulations, it must promptly notify the Project Team in writing, describing the apparent variance of deficiency. However, the Design Professional is ultimately responsible for the compliance of the Drawings and Specifications with those laws, statutes, ordinances, building codes, rules and regulations.
- 17.4.6 The Project Team will routinely identify and evaluate using value analysis principles and alternate systems, approaches, design changes that have the potential to reduce Project costs while still delivering a high quality and fully functional Project consistent with the Project Program. If the Project Team agrees, CM@Risk in cooperation with the Design Professional, will perform a cost/benefit analysis of the alternatives and submit such in writing to the Project Team. City, through the Project Manager, will direct which alternatives will be incorporated into the Project. The Design Professional will have full design responsibility for the review and incorporation of CM@Risk suggested alternatives into the Drawings and Specifications. CM@Risk must analyze the costs and schedule impacts of the alternatives against the Baseline Cost Model and Schedule and provide a recommendation for the Project Team's consideration and City's approval prior to the establishment of the GMP.
- 17.5 **BASELINE COSTS MODEL, DETAILED COST ESTIMATES, AND SCHEDULE OF VALUES**
- 17.5.1 At the conclusion of the Master Planning and Programming, if required, CM@Risk will review all available information regarding the design and scope of the Project using CM@Risk's experience in performing similar work, knowledge of similar projects and current and projected construction costs and, based upon that review, must develop a Baseline Cost Model for review by the Project Team and approval by City. Once approved by City, the Baseline Cost Model will be continually referenced as detailed estimates are created as the design progresses throughout Pre-Construction until the final GMP for the entire Project is established. A final GMP for the entire Project must be established and approved by City prior to the start of construction. It is the responsibility of CM@Risk to ensure City has sufficient information to evaluate and approve a final GMP prior to the time necessary to start construction so construction can be completed within the Agreement Time. The Project Detailed Cost Estimate will be the best representation from CM@Risk of what the complete functional Project's construction costs will be as indicated by the most current available documents and will be constantly checked against the Baseline Cost Model. CM@Risk must communicate to the Project Team and assumptions made in preparing the Baseline Cost Model. The Baseline Cost Model must support CM@Risk's Detailed Cost Estimates and may be broken down initially as dictated by the available information, as required by City.
- 17.5.2 After receipt of the Design Professional's most current documents from certain specified pre- construction milestones, CM@Risk must provide a draft Detailed Cost Estimate including a detailed written report detailing any variances to the Baseline Cost Model and Baseline Project Schedule. The Design Professional and CM@Risk will reconcile any disagreements on the estimate to arrive at an agreed upon Detailed Cost Estimate for the construction costs based on the scope of the Project through that specified pre-construction milestone. Pre-Construction milestones applicable to this paragraph are:

Master Planning and Programming, Schematic Design, 50% Design Development, 100% Design Development, and 50% Construction Drawings, If no consensus is reached, City will make the final determination. If the Project Team requires additional updates of the Detailed Cost Estimate beyond that specified in this paragraph, CM@Risk must provide the requested information in a timely manner.

17.5.3 If at any point the Detailed Cost Estimate submitted to City exceeds the previously accepted Baseline Cost Model or previously approved Detailed Cost Estimate agreed to as set forth in Section 17.5.2 above, CM@Risk must make appropriate recommendations to project Team on means/methods, materials, and or other design elements that it believes will reduce the estimated construction costs, such that it is equal to or less than the established Project Team's Baseline Cost Model.

17.5.4 Unless other levels of completion are agreed to in writing in the Construction Documents, at 50% Construction Drawings and included with the associated report, CM@Risk must also submit to the Project Team for review and approval a Schedule of Values that complies with the following requirements. The Schedule of Values must be based on City standard bid schedule and highlight significant variances from any previously submitted Schedule of Values. The Schedule of Values must be directly related to the breakdowns reflected in the Detailed Project Schedule and CM@Risk's Detailed Cost Estimate. In addition, the Schedule of Values must: (a) detail unit prices and quantity take-offs, (b) detail all other contingencies and unit price Work shown and specified in the detailed design documents.

17.5.5 CM@Risk is to track, estimate/price and address the Project Team's overall project cost issues that arise outside of the Baseline Cost Model and the latest approved Detailed Cost Estimate such as: City generated changes, Project Team proposed changes, alternate system analysis, constructability items and value engineering analysis. The system used to implement this process will be referred to as the Design Evolution Log. This is to be addressed between the Baseline Cost Model and the Master Planning and Programming Detailed Cost Estimate, and then (unless other levels of completion are agreed to in writing in the Construction Documents) between the Detailed Cost Estimates for each of the pre-construction milestones thereafter, Schematic Design, 50% Design Development, 100% Design Development, and 50% Construction Documents, and the bid packages for all Phases.

17.5.6 Upon request by City, CM@Risk must submit to City a cash flow projection for the Project based on the current updated/revised Detailed Project Schedule and the anticipated level of payments for CM@Risk during the design and construction phases. In addition, if requested by City and based on information provided by City, CM@Risk must prepare a cash flow projection for the entire Project based on historical records for similar types of projects to assist City in the financing process.

17.5.7 Construction Water. CM@Risk must estimate the quantity of water to be used and include the cost thereof in each Detailed Cost Estimate and GMP Proposal provided by City.

17.6 **SUBCONTRACTOR AND MAJOR SUPPLIER SELECTIONS**

17.6.1 There are two ways to select Subcontractors and major Suppliers prior to submission of a GMP Proposal: (1) qualifications-based selection; or (2) a combination of qualifications and price. Except as noted below, the selection of Subcontractors/Suppliers is the sole responsibility of CM@Risk. In any case, CM@Risk is solely responsible for the performance of the selected Subcontractors/Suppliers, and for compliance with the requirements of

- Title 34 of the Arizona Revised Statutes in the selection of a Subcontractors/Suppliers, to the extent applicable. CM@Risk must comply with its Subcontractor Selection Plan submitted with its Statement of Qualifications.
- 17.6.2 City may approve the selection of a Subcontractor(s) or Suppliers(s) based only on their qualifications when CM@Risk can demonstrate it is in the best interest of the Project. All Work that is performed, after such a qualifications-based selection, for a price that is negotiated by CM@Risk will be billed in accordance with the GMP for actual costs and may be subject to audit by City.
- 17.6.2.1 Qualifications based selection of a Subcontractor(s)/Supplier(s) should only occur prior to the submittal of the GMP Proposal.
- 17.6.2.2 If a Subcontractor/Supplier selection plan was submitted and agreed to by City, CM@Risk must apply the plan in the evaluation of the qualifications of a Subcontractor(s) or Supplier(s) and provide City with its review and recommendations.
- 17.6.2.3 CM@Risk must receive written City approval for each selected Subcontractor(s) and Supplier(s).
- 17.6.2.4 CM@Risk must negotiate costs for services/supplies from each Subcontractor/Supplier selected under this method.
- 17.6.3 All Work must be competitively bid unless a Subcontractor or Supplier was selected pursuant to Section 17.6.2 above.
- 17.6.3.1 CM@Risk must develop Subcontractor and Supplier interest, submit the names of a minimum of three qualified Subcontractors or Suppliers for each trade in the Project for approval by City and solicit bids for the various Work categories. If there are not three qualified Subcontractors/Suppliers available for a specific trade or there are extenuating circumstances warranting such, CM@Risk may request approval by City to submit less than three names. Without prior written notice to City, no change in the recommended Subcontractors/Supplies will be allowed.
- 17.6.3.2 If City objects to any nominated Subcontractor/Supplier or to any self-performed Work for good reason, CM@Risk must nominate a substitute Subcontractor/Supplier that is acceptable to City.
- 17.6.3.3 CM@Risk must distribute Drawings and Specifications, and when appropriate, conduct a Pre- Bid Conference with prospective Subcontractors and Suppliers.
- 17.6.3.4 If CM@Risk desires to self-perform certain portions of the Work, it must request to be one of the approved Subcontractor bidders for those specific bid packages. CM@Risk's bid will be evaluated in accordance with the process identified below. If events warrant and City concurs that it is necessary in order to ensure compliance with the Project Schedule and/or the most recent Detailed Cost Estimate, CM@Risk may be authorized to self-perform Work without bidding or rebidding the Work. When CM@Risk self-performs work without bidding, only the actual costs associated with performing the Work in accordance with the approved GMP will be billed and may be subject to audit by City.
- 17.6.3.5 CM@Risk must receive, open, record and evaluate the bids; provided, however, that if CM@Risk or one of its affiliates is bidding to self-perform the Work that is the subject of the bid, then the bids must be received, opened, recorded and evaluated by Project Manager

instead of CM@Risk. Bids for each category of Work must be opened and recorded at a pre-determined time. The apparent low bidders must be interviewed to determine the responsiveness of their proposals. In evaluating the responsiveness of bid proposals CM@Risk, in addition to bid price, may consider the following factors: past performance on similar projects, qualifications and experience of personnel assigned, quality management plan, approach or understanding of the Work to be performed, and performance schedule to complete the Work. The final evaluation of Subcontractor/Supplier bids must be done with Project Manager in attendance to observe and witness the process. CM@Risk must resolve any Subcontractor/Supplier bid withdrawal, protest or disqualification in connection with the award at no increase in the Cost of Work.

17.6.4 CM@Risk will be required to prepare two different reports on the subcontracting process.

17.6.4.1 Within fifteen days after each major Subcontractor/Supplier bid opening process; CM@Risk must prepare a report for City's review and approval identifying the recommended Subcontractors/Supplier for each category of Work. The report must detail: (a) the name of the recommended Subcontractor/Supplier and the amount of the Subcontractor/Supplier bid for each sub-agreement; (b) the sum of all recommended Subcontractor/Supplier bids received; (c) and trade work and its cost that CM@Risk intends to self-perform, if any.

17.6.4.2 Upon completion of the Subcontractor/Supplier bidding process, CM@Risk must submit a summary report to City of the entire Subcontractor/Supplier selection process. The report must indicate, by bid process, all Subcontractors/Suppliers contacted to determine interest, the Subcontractors/Suppliers solicited, the bids received and costs negotiated, and the recommended Subcontractors/Suppliers for each category of Work.

17.6.5 The approved Subcontractors/Suppliers will provide a Schedule of Values with their bid proposals, which will be used to create the overall Project Schedule of Values.

17.6.6 If after receipt of sub-bids or after award to Subcontractors and Suppliers, City objects to any nominated Subcontractor/Supplier or to any self-performed Work without any reasonable basis, CM@Risk must nominate a substitute Subcontractor or Supplier, preferably if such option is still available, from those who submitted Subcontractor bids for the Work affected. Once such substitute Subcontractors and Suppliers are consented to by City, CM@Risk's proposed GMP for the Work or portion thereof must be correspondingly adjusted to reflect any higher or lower costs from any such substitution.

17.7 **GMP PROPOSAL**

17.7.1 When a GMP Proposal is submitted for a phase of the Work, the GMP will have a Detailed Cost Estimate of the Costs of the Work (as set forth in Section 15.2) in each phase of the Work that is being proposed plus the current estimate for all other Work. City will not approve the GMP for the phase of work without a total estimate for the complete Project. City may request a GMP Proposal for all or any portion of the Project and at any time during pre-construction. Any GMP Proposals submitted by CM@Risk must be based on and consistent with Baseline Cost Model and the current update/revised Detailed Cost Estimate at the time of the request and include any clarifications or assumptions upon which the GMP Proposal(s) are based.

17.7.2 A GMP Proposal for the entire Project will be the sum of the Cost of the Work, CM@Risk Fee, and General Conditions Cost. CM@Risk guarantees to complete the Project at or less than

the final GMP Proposal amount plus approved Change Orders. CM@Risk will be responsible for any costs for expenses that would cause the Cost of the Work actually incurred, including the Construction Fee and General Conditions Costs, to exceed the GMP.

17.7.3 CM@Risk must prepare its GMP Proposal in accordance with City's request for GMP Proposal requirements based on the most current completed Drawings and Specifications at that time, which unless otherwise directed by City in writing, will be at 100% Construction Drawings. CM@Risk must mark the face of each document of each set upon which its GMP Proposal is based. These documents must be identified as the GMP Plans and Specifications. CM@Risk must send one set of those documents to the Project Manager, keep one set and return the third set to the Design Professional.

17.7.4 An updated/revised Detailed Project Schedule, Equipment Plan, and Schedule of Values must be included in any GMP Proposal(s), all of which must reflect the GMP Plans and Specifications the Detailed Project Schedule must be shown in relationship to the Project Schedule and identify any variance to the Baseline Project Schedule. Any such Detailed Project Schedule updates/revisions must continue to comply with the requirements of Section 17.3.1 through 17.3.5.

17.7.5 **GMP Proposals(s) Review and Approval**

17.7.5.1 CM@Risk must meet with the Project Team to review the GMP Proposal(s) and the written statement of its basis. In the event the Project Team discovers inconsistencies or inaccuracies in the information presented, CM@Risk must make adjustments as necessary to the GMP Proposal.

17.7.5.2 If during the review and negotiation of GMP Proposals design changes are required, City may authorize and cause the Design Professional to revise the GMP Plans and Specifications to the extent necessary to reflect the agreed-upon assumptions and clarifications contained in the final approved GMP Proposal. Such revised GMP Plans and Specification will be furnished to CM@Risk. CM@Risk must promptly notify the Project Team in writing if any such revised GMP Plans and Specifications are inconsistent with the agreed upon assumptions and clarifications.

17.7.6 All portions of or items comprising the GMP Proposal are subject to audit by City, as deemed appropriate by City, including, without limitation, any based upon unit prices or Work to be self-performed by CM@Risk, or its affiliates.

17.8 **PAYMENT PROCEDURE FOR PRE-CONSTRUCTION SERVICES**

17.8.1 Requests for monthly payments by CM@Risk for Pre-Construction Services must be submitted monthly and must be accompanied by a progress report, detailed invoices and receipts, if applicable. Any requests for payment must include, as a minimum, a narrative description of the tasks accomplished during the billing period, a listing of any Deliverables submitted, and copies of any Subconsultants' requests for payment, plus similar narrative and listings of Deliverables associated with their Work. Payment for services negotiated as a lump sum will be made in accordance with the percentage of work completed during the preceding month.

17.8.2 In no event will City pay more than seventy-five (75%) of the Agreement Price until acceptance of ALL Pre-Construction Services and award of the final approved Construction Services Agreement for the entire Project by City Council. If CM@Risk does not prepare a

GMP Proposal that is acceptable to City, or the GMP Proposal exceeds the City's Construction Budget, then CM@Risk understands and acknowledges that it will forfeit any right to receive the 25% of the Agreement Price being retained by City.

17.8.3 CM@Risk agrees that no charges or claims for costs or damages of any type will be made by it for any delays or hindrances beyond the reasonable control of City during the progress of any portion of Pre-Construction Services specified in this Agreement. Such delays or hindrances, if any, will be solely compensated for by an extension of time for such reasonable period and may be mutually agreed between the parties. It is understood and agreed, however, that permitting CM@Risk to proceed to complete any such Services, in whole or in part after the date to which the time of completion may have been extended, will in no way act as a waiver on the part of City of any of their respective legal rights herein.

17.8.4 No compensation to CM@Risk will be allowed contrary to Article I, Chapter I, Title 34 of the Arizona Revised Statutes.

17.8.5 If any service(s) executed by CM@Risk is abandoned or suspended in whole or in part, for a period of more than 180 days through no fault of CM@Risk, CM@Risk is to be paid for the services performed prior to the abandonment or suspension.

17.9 **SURVIVAL OF THE DESIGN SERVICES AGREEMENT, DUTIES, OBLIGATIONS AND WARRANTIES**

If the GMP Proposal is accepted by City and a Construction Agreement is entered into between City and CM@Risk, the duties, obligations and warranties of CM@Risk under the Pre- Construction Services Agreement survive and are incorporated into the resulting Construction Agreement.

General Conditions Appendices

SECTION 15 – APPENDICES

The following Appendices attached hereto are referenced in the General Conditions and are incorporated herein.

- Appendix 1 – Policy Statement for Calculating Delays and Damages
- Appendix 2 – Cost Reduction Incentive Proposals for Design Bid Build Agreements
- Appendix 3 – Contractor's Affidavit Regarding Settlement of Claims
- Appendix 4 – Forms of Performance Bond
- Appendix 5 – Forms of Payment Bond
- Appendix 6 – Dispute Resolution
- Appendix 7 – Certificate of Completion
- Appendix 8 – Construction Sign Detail
- Appendix 9 – Cost of the Work (Applicable solely to Construction Manager at Risk and Job Order Contracting)
- Appendix 10 – Landscape Establishment Period

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CALCULATING DELAYS AND DAMAGES

The purpose of this policy statement is to establish guidelines and procedures for negotiation between the Contractor and City of Chandler relating to compensation for delays pursuant to Arizona Revised Statutes (A.R.S.) 34-221(F). This policy statement contains notice requirements in addition to those set forth in the Agreement Documents, and will be the Agreement Provision contemplated by that statute.

NOTE: As used herein, the term "Engineer" will refer to the City of Chandler City Engineer or his/her designated representative. Nothing in this Policy Statement will be construed to void any provision in the Agreement which requires timely notice of delays or provides for arbitration or any other procedure for settlement or provides for liquidated damages.

I. TYPES OF DELAYS:

For the purposes of this document, there are essentially four types of delays encountered by City of Chandler Construction Contractors; excusable/compensable, excusable/non-compensable, non-excusable, and concurrent. Only delays that extend Agreement Completion Time set forth in the Agreement Document will be considered for issues relating to Agreement extensions or additional compensation. All other delays are considered to be activity delays and do not entitle the Contractor to either time extensions or additional compensation. Agreement Completion Time will be defined as the date set forth in Maricopa Association of Governments (MAG) Uniform Standard Specification Section 101 and as may be modified by the Agreement Documents.

A. Excusable/Compensable:

These are delays caused solely by the City's actions or inactions, are unreasonable under the circumstances, and which were not within the contemplation of the parties to the Agreement at or prior to the time of execution of the Agreement. Since the Contractor presumably has no control over the events causing the delay, he may be entitled to both Agreement time extensions and additional compensation for delay damages. Further, he/she may be entitled to additional compensation from the impact of that delay on other work. Examples of excusable/compensable (E/C) delays include: failure to properly locate an underground City-owned utility within 2 feet of the actual location; failure to relocate City-owned utilities far enough in advance of construction in an area where the Contractor is scheduled to work that it delays start or completion of the Contractor's regularly scheduled work; failure to provide City-furnished equipment or materials in a timely manner if required by the Agreement; failure to acquire necessary Right-of-Way or Public Utility Easements prior to the Contractor beginning Work in the area; failure to timely return Shop Drawings or other Agreement Submittals in accordance with the Agreement; unreasonable delay by the City in making decisions which affect critical activities; surveying errors when the City is contractually responsible for providing Project Surveying. This list is not meant to be all inclusive, but is intended merely as examples of the type of City action or inaction which can result in a Contractor's claim for additional time and compensation.

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B. Excusable/Non-compensable:

These are delays over which neither the City nor the Contractor had control. Since both parties to the Agreement have been potentially damaged by the delay, but neither have caused it, only Time Extensions are warranted. Examples of excusable, non-compensable (E/N) delays include: unusually severe weather; fire; acts of God; failure of non-City owned utilities (SRP, CenturyLink, Cable TV, Southern Pacific Railroad, and Southwest Gas, etc.) to properly or timely locate accurately; failure of non-City owned utilities to relocate in advance of construction; the voluntary or involuntary filing for Bankruptcy protection by a Supplier or Subcontractor which causes the Supplier/Subcontractor to fail to meet a contractual deadline provided the Contractor can provide documentation that he/she executed the required Purchase Orders/Subcontract Agreements and received delivery schedules which, if met, would have eliminated the delay; delays as a result of an incomplete shutdown of a City or non-City owned utility main (the City does not guarantee a complete shutdown). This list also is not necessarily all inclusive but merely indicative of type and class of E/N delays.

C. Non-excusable/Non-compensable:

These are delays caused by the actions or inactions of Contractor or an officer, employee, agent, Subcontractor, Supplier or any other party for whom the Contractor is responsible. Since the Contractor has assumed responsibility for the risks associated with the events that caused the delay, he/she are not entitled to either time extensions or monetary delay damages. All non-excusable delays are also non-compensable. Examples of non-excusable, non-compensable (N/N) delays include: failure to perform by the Contractor, its Subcontractors and/or Suppliers (except as noted in section I.B above); failure to provide adequate labor, materials, and/or equipment on the Project; failure to perform contractually-required coordination with utilities, agencies and other Contractors; failure to notify the Engineer, in writing, of delay impacts within two working days, as required by MAG 104.2.3, or the next work day, as required by MAG 109.8.2; failure to timely submit Shop Drawings; failure to pothole or otherwise visually locate utilities sufficiently ahead of the Work to allow the Engineer to direct corrective action when necessary; delays due to retesting of previously failed work, re-inspection, and/or restaking resulting from faulty workmanship, poor quality control, or lack of compliance with Agreement Specifications. Again, this list is not necessarily all inclusive.

D. Concurrent:

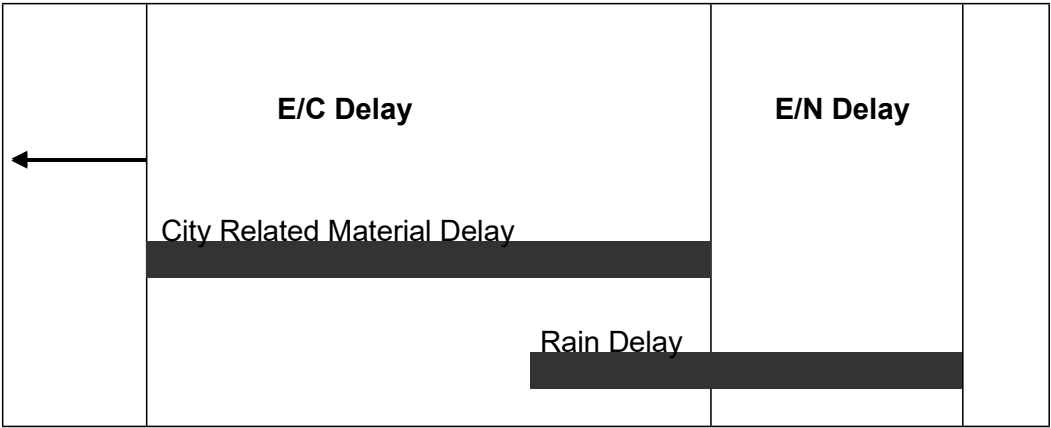
When two or more delays occur simultaneously or overlap, each delay is analyzed separately to determine its impact on the overall project completion date based on when that delay started. Once again, only those delays which actually extend the Agreement completion time are considered as delays. The concurrent delay is considered an additional delay only to the extent it prolongs the delay to the Agreement Completion Time beyond the date that the one it is concurrent with had already delayed that date. For example, if two delays are concurrent, and one is five days long and the second is seven days long, the second concurrent delay will only extend the Agreement Completion Time by two days. The same method of analysis is

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used when there are multiple concurrent delays. Only those extending the Project Completion Date are considered to be delays for the purposes of this policy. The portion of each concurrent delay that delays the completion of the work is classified in the same manner as described previously for individual delays and being either E/C, E/N or N/N.

An example of a concurrent delay is where the City delays furnishing material, but the Contractor could not have installed it anyway due to unusually severe weather. The effect of the first delaying activity will extend for the full duration and will be considered controlling on the Contractor’s schedule. A subsequent, concurrent delay will thereafter only be considered to effect the project completion (if at all) once the first delaying activity has ceased to impact the project completion. In this case, if the unusually severe weather continued and delayed the work after the material was delivered, the first portion of the delay would be classified E/C (delay for material) and the second as E/N (delay due to unusually severe weather). Using the procedure set forth above, the entire concurrent portion would be considered E/C as shown in the chart which follows.

Example of a Concurrent Delay:



II. ANALYZING THE DELAY:

The Contractor must provide all documents required or requested by the Engineer to analyze the delay(s). It is important to understand that, prior to the delay analysis, delays and their impacts are alleged issues. The information the Contractor provides will be compared with the Inspector’s Daily Log, Schedules and other available Project information and together they will support or refute that delays occurred and, if so, how they impact other work and the overall project completion. The Contractor’s delay in providing these documents will be considered prima facie evidence that either the delay did not occur or it did not impact the Project Completion Date and any claim for time extension or damages will be denied.

The Engineer will accept delay analyses in CPM format, as these may demonstrate to his/her satisfaction whether or not Project Completion has been impacted by a specific event. If the Contractor chooses not to use CPM scheduling procedures, then the burden will be on the Contractor to prove to the Engineer’s satisfaction that the Project Completion has been impacted. The procedures

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below assume that the Contractor is using CPM scheduling methods. As a minimum the Contractor must provide the following materials to the Engineer:

- A. As-Planned Schedule. The initial construction schedule, required by the Agreement Documents, will be considered the baseline schedule. It is to the Contractor's advantage that the As-Planned (baseline) Schedule be as detailed as possible in order for delays, as they occur, to be incorporated into the schedule in representative locations. It is also to the Contractor's advantage to use a computer software program to generate the schedule since updated schedules are required monthly by the Agreement Documents and since updated schedules are required to support delays and requests for additional compensation for delays. The As-Planned (baseline) Schedule must be presented in network format which clearly shows the interrelationships of the activities. The Contractor must also provide a printout of the activities showing early start, early finish, late start, late finish, duration and float. The activity list printout must also indicate predecessor and successor activities.
- B. As-Built Schedules. The as planned (baseline) schedule must be updated with complete progress-to-date information (actualized) up to the date of the start of the alleged delay. Each updated schedule will serve as the as-built schedule for analyzing the alleged delay and provide a new baseline as-planned schedule for the next delay. This process must be repeated for each alleged delay as it occurs. In updating the baseline schedule, the alleged delay must be treated as an activity and inserted into the schedule as a predecessor to the impacted activity (ies). When an activity that has already started is impacted, it is preferable to divide this activity into two parts and show the impact affecting the second part. For schedules which incorporate a time line (or data date), the delay activity must be inserted at the time it actually occurred. Some software scheduling programs have a PAUSE-RESUME feature that can be used to facilitate the requirements. The updated schedule must also be accompanied by a listing of activities as with the baseline schedule. This activities list must contain the alleged delay as an activity showing the duration and the activities which are predecessors and successors to it. When computer generated schedules are used, the Contractor must provide, in electronic media format, the complete data files for the updated schedule that included the delay activity, preferably either in Suretrak or in Microsoft Project. Each electronic media must contain a label identifying the Project name, Contractor's name, program name and version number, data date and project finish date.
- C. Other Documents: In order to determine the amount of the alleged delay and if it is compensable, the Contractor must provide all backup documentation relevant to the issue and as required by the Engineer. This documentation must include copies of such items as: purchase orders; delivery schedules; correspondence; memoranda of telephone calls; force account daily worksheets (initialed by the Inspector); payroll data; estimating (bid) worksheets; and any other materials which may be requested by the Engineer.
- D. Procedure: Only after receipt of sufficient documentation will the Engineer analyze each alleged delay and determine if it is supported or refuted. If supported, the Engineer will determine if it is excusable or non-excusable, compensable or non-

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compensable. If the Engineer determines that the delay did not affect the Project Completion, the as-planned schedule, which has been updated to the date of the alleged delay, must be revised to indicate this. If the Engineer determines the delay did occur but was N/N, then no time extension will be granted. It is imperative that an actualized schedule be submitted as soon as the occurrence of the alleged delay is known. In no event will the Contractor submit an actualized updated schedule later than 60 days after the occurrence of the alleged delay becomes known.

If the Engineer determines the delay did occur and was excusable but, due to a reason listed in section I.B. is non-compensable, he/she will determine the length of the E/N delay and prepare a Change Order to add that time to the Agreement. The Engineer's decision will be final.

If the Engineer determines the delay was excusable and compensable, he/she will determine the length of the E/C delay and proceed to review the Contractor's damage calculations in accordance with Section III. The Engineer will check the Contractor's calculations, review the backup documentation provided, and prepare a Change Order to cover both the additional compensation and the time extension. The Engineer's decision on both the time extension and additional compensation for the delay will be final.

If the issue involves a concurrent delay, the Engineer will analyze available data to determine the portions which are E/C, E/N, and/or N/N as described above. The Engineer will proceed to determine the length of E/C delay and verify the Contractor's delay damage calculations, if any are provided. Upon completion of this review, the Engineer will prepare a Change Order for the Contractor's review and signature. The Engineer's decision regarding excusable delay and additional compensation for the delay is final.

The amount of time the Engineer will require to analyze the alleged delay(s) will depend upon the Engineer's workload, the complexity of the delay analysis, availability of supporting data, extent of cooperation by the Contractor, and other factors beyond the Engineer's control. It is entirely possible other delay(s) may occur while the Engineer is analyzing particular claim for delay(s). The Engineer's failure to respond to the Contractor in a set period of time will not be used as the basis for a further delay claim or as justification for extending and existing delay claim. The time required for delay analysis by the Engineer will not be counted against the time allotted for processing Final Payment as required by (MAG Section 109.7(B)) or the release of retention and Final Payment as prescribed by A.R.S. Arizona Revised Statutes §34-221.

III. CALCULATING MONETARY DELAY DAMAGES:

Additional compensation for delay, when authorized by the Engineer, will be calculated in accordance with MAG Section 109.5 ACTUAL COST WORK with the following exceptions:

- A. No additional compensation or other monetary damages will be awarded or paid for any loss of anticipated profits by the Contractor, Subcontractors or Suppliers.

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- B. No additional compensation or other monetary damages will be awarded for home office overhead or non-project general conditions of the Contractor, Subcontractors or Suppliers.
- C. Equipment:
 - 1. Contractor-owned equipment rate calculations must be computed in accordance with Section 109.04(D)(3), Arizona Department of Transportation "Standard Specifications for Road and Bridge Construction," 2008 or latest edition and as modified herein. Year and regional adjustment factors must be based on the most recent publications of the Rental Rate Blue Book for Construction Equipment, published by the Equipment Guide-Book Company, San Jose, CA, same as provided by ADOT and in print as of the date of alleged delay. In no event will the compensation for Contractor-owned equipment exceed the purchase price, including tax, paid by the Contractor for the equipment. Compensation will not be allowed for small tools or equipment that show a daily equipment rental rate of less than \$5.00 per day or for unlisted equipment that has a value of less than for hundred dollars (\$400.00).
 - 2. For leased and rented equipment or equipment not otherwise listed in the Blue Book, rental contracts, or other supporting data will be used to establish the hourly rate. No hourly operating expense will be allowed for delay on standby equipment. In no case will equipment be considered for rental which exceeds the hourly rate for the first eight hours and the daily rate divided by eight for all additional hours as compared with similar equipment listed in the Blue Book. The hourly standby rate must be computed as the lesser of:
 - a. Dividing the monthly invoice or rental value by 176 hours per month when the equipment is utilized by the Contractor for more than three weeks;
 - b. Dividing the monthly invoice or rental value by 40 hours per week when the equipment is utilized by the Contractor for more than three days.

In no event will compensation be paid for delay at more than 8 hours per day or 40 hours per week.
 - 3. Except for vehicles used by supervisory personnel, all equipment will be paid at the "standby" rate during the delay period.
 - 4. Equipment brought solely to mitigate the delay (such as pumps, light plants, etc.) may be paid in accordance with ADOT section 109.04(D) (3).
 - 5. The Blue Book regional adjustment will apply in determining rental rates.
- D. Material:

Allowable material charges may include, in addition to material incorporated in the

General Conditions Appendix 1

work material used to mitigate the delay such as barricades, plates, shoring, cold mix, etc. Except in emergencies the Contractor will not employ such material without the prior written approval of the Engineer.

E. Labor:

1. Except for Supervisory Personnel (Superintendent, Project Engineer, and Foremen), labor wages will not be paid after the first one-half day of claimed delay or impact. It is expected the Contractor will reassign or layoff unneeded employees.
2. For Foreman wages to be included, that Foreman must have been actively employed on the project prior to the commencement of the delay and be directly responsible for the activity being delayed.
3. Labor burden must be actual amounts incurred but must not exceed the ADOT approved rate.

F. All costs (equipment, material, and labor) must be substantiated by the City of Chandler's Daily Work Reports.

IV. DOCUMENT REQUIRED FOR CLAIM ANALYSIS:

For purposes of reviewing the Contractor's request for additional compensation, it will be required that the Contractor submit the following listed information. Information requested must be prepared on forms which are substantially similar to the City of Chandler's Daily Work Report form, a copy of which is attached as an exhibit.

A. Labor:

For each employee, laborer, and foreman, for which compensation is requested: Name, classification, dates of work performed, daily hours worked, total hours worked, labor rates, labor burden rates, overtime or premium time charges. Further, the Contractor must make available for inspection and copying to the Engineer the following listed documentation.

1. Certified payroll reports for the period of work claimed.
2. Accounting of Fringe Benefits – certified by a CPA.
3. Contractor's and Subcontractor's daily field reports and daily diaries.

B. Materials:

For all materials for which compensation is requested, if any, total quantities of materials, prices, extensions and transportation costs must be provided on a daily basis. Further, the Contractor must make available for inspection and copying to the Engineer the following listed documentation.

1. Invoices for all materials incorporated.
2. Weigh tickets.
3. Purchase orders.

General Conditions Appendix 1

4. Delivery schedules.
5. Quotes or proposals from manufacturers or supplier.
6. Freight bills, Bills of Lading, or other documentation to show transportation costs.
7. Restocking charges-invoices from vendor.

C. Equipment:

For all equipment, the Contractor must provide the Engineer with the designation, dates and hours of usage, dates and hours of standby, if any, daily hours, total hours, rental rates and extension for each unit of equipment and machinery. Rental rates will be as established in Section III. Further, the Contractor must make available for inspection and copying to the Engineer the following listed documentation.

1. Owned:
 - a. Purchase contracts(s).
 - b. Depreciation schedule(s).
 - c. Invoices for fuel, lube, repairs and other operating costs.
2. Leased:
 - a. Lease agreement with hourly rate, overtime rate, double shift rate, etc.
 - b. Invoices or other documentation showing hours worked on a daily basis.

D. Subcontractors/Owner-Operators:

In the event the Contractor submits a claim which includes requests for compensation for Subcontractors of Owner-Operators, the same information requested of the Contractor must be provided by the Subcontractor/Owner-Operator. Further, the Contractor must make available for inspection and copying to the Engineer the following listed documentation.

1. Bid/Estimate work sheets and/or spreadsheets.
2. Subcontract Agreements or Agreements with Owner-Operator.
3. All invoices and billing statements received from the Subcontractor/Owner-Operator which relates to the amount requested.

E. Miscellaneous:

Further, the Contractor must make available for inspection and copying to the Engineer the following listed documentation.

1. Evidence of payment for bonds and insurance premiums (MAG 109.5.6).
2. Taxes – unless the Contractor can show otherwise, taxes are reimbursable at 65% of the total cost (less bonds and insurance).

V. TIME LIMIT ON SUBMISSIONS OF CLAIM FOR DELAY OR IMPACT DAMAGES:

No claims for delay or impact damages will be considered or allowed more than 45 days after the event or occurrence which the Contractor claims gives rise to the delay or impact. In no event will a

General Conditions Appendix 1

claim for delay or impact damages be considered after submission by the Contractor of the Final Payment Request.

General Conditions Appendix 2

COST REDUCTION INCENTIVE PROPOSALS FOR DESIGN BID BUILD AGREEMENTS

The Contractor may submit to the Engineer proposals for modifying the Plans, Specifications, or other requirements of the Agreement for the sole purpose of reducing the total cost of Project construction. The proposals must not impair in any manner the essential functions or characteristics of the project; including but not limited to service life, economy of operations, ease of maintenance, desired appearance, compatibility with existing or planned equipment, standardization of systems, or design and safety standards.

It must not be inferred from this Policy that the Engineer is required to consider any proposal submitted.

Submissions that propose changes in the basic design of a bridge, propose changes in pipe line size, materials, bedding conditions, pipe specifications; or that propose any change in pavement design will not be considered.

Proposals submitted pursuant to this Policy will be identified as Cost Reduction Incentive Proposals. They must be submitted in writing and, at a minimum, contain the following.

1. Complete the attached or similar cost reduction incentive proposal form.
2. A description of both the existing Agreement Requirements for performing the work and the proposed changes.
3. All Engineering Drawings and computations necessary for the thorough and expeditious evaluation.
4. An itemization of the existing Agreement Requirements that must be changed if the Proposal is adopted and a recommendation as to the manner in which the change should be made.
5. A detailed estimate of the cost of performing the Work under the existing Agreement and under the proposed changes, including the cost of developing and implementing the changes.
6. The Agreement items affected by the proposed changes and any variations in quantities resulting from the changes.
7. An objective estimate of any effects the proposal will have on collateral cost to the City, costs of related items, and cost of maintenance and operation.
8. A statement as to the effect that the Proposal will have on the time for the completion of the Project.
9. A statement as to the time by which a Change Order adopting the Proposal must be executed or when the Engineer must have given verbal approval.

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Proposals will be processed expeditiously; however, the City will not be liable for any delay in acting upon any Proposal nor for any failure to accept any Proposal pursuant to this Special Provision.

The Engineer will be the sole judge of the acceptability of a Proposal and of the estimated net savings in construction costs from the adoption of all or any part of the Proposal. The Contractor will be notified in writing by the Engineer as to whether his/her Proposal has been accepted. The decision by the Engineer is final.

When the City deems such action to be appropriate, it reserves the right to require the Contractor to share equally in the cost to the City of investigating, evaluating, and processing the proposal as a condition for the consideration of such Proposal. Such cost must be shared whether the Proposal is accepted or rejected. When such a condition is imposed, the City will estimate these costs and the Contractor must indicate his acceptance thereof in writing. Such acceptance will authorize the City to deduct the Contractor's share of the costs from any monies due or that may become due to the Contractor under the Agreement.

If the Contractor's Proposal is accepted in whole or in part, the necessary Agreement Modifications and Agreement Price Adjustments will be affected by the execution of a Change Order which will specifically state that it is executed pursuant to this Special Provision.

The Contractor must continue to perform the work in accordance with the requirements of the Agreement until a Change Order incorporating the Proposal has been executed or until he/she has been given verbal approval by the Engineer that his/her Proposal has been accepted. If the Change Order has not been executed or he/she has not been given verbal approval on or before the date specified on the attached cost reduction incentive proposal form or on or before such other date as the Contractor may have subsequently specified in writing, the Proposal may be deemed to be rejected.

The executed Change Order will incorporate the changes in the Plans, Specifications, or other requirements of the Agreement which are necessary to permit the Proposal, or such part of it which has been accepted, to be put into effect, and will include any condition – upon which the City's approval thereof is based, if such approval is conditional. The executed Change Order may also extend the time for the completion of the Agreement if such an extension has been deemed to be warranted by the Engineer as a result of his evaluation of the Proposal.

The executed Change Order will also establish the estimated net savings in the cost of performing the Work attributable to the Proposal effectuated by the Change Order. In determining the net savings, the right is reserved to the Engineer to disregard the Agreement bid prices if, in his/her judgment, such prices do not represent a fair measure of the value of the Work to be performed or to be deleted. The net savings will be established by determining the Contractor's cost of performing the Work, taking into account his/her cost of developing the Proposal and implementing the change, and reducing this amount by any ascertainable collateral costs to the City. The executed Change Order may provide that the Contractor be paid 50 percent of the estimated net savings amount.

The executed Change Order may also provide for the adjustment in Agreement prices. Agreement prices may be adjusted by subtracting the City's share of the accrued net savings.

The amount specified to be paid to the Contractor in the executed Change Order which effectuates a Cost Reduction Proposal will constitute full compensation to the Contractor for the Cost Reduction

General Conditions Appendix 2

Proposal and the performance of the work thereof pursuant to the said Change Order.

Upon acceptance of a Cost Reduction Incentive Proposal, any restrictions imposed by the Contractor on its use or on disclosure of the information will become void, and the City thereafter will have the right to use all or any part of the Proposal without obligation or compensation of any kind to the Contractor.

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Appendix 2

COST REDUCTION INCENTIVE PROPOSAL FORM

TO: CIP City Engineer

FROM:

PROJECT NAME: KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS

CITY PROJECT NUMBER: TP2202.401, Federal No. CHN-0(252)D, ADOT No. T038701C

DATE:

Summary of Change (Brief description of proposed change including advantages and disadvantages):

ESTIMATED COST SUMMARY (Attached detailed estimate):

A.	Original Cost:	\$
B.	Proposed Cost:	\$
C.	Construction Savings (A-B):	\$
D.	Gross Savings (Included OH %, Bond %)	\$
E.	Contractor Implementing	\$
F.	City Implementing Cost:	\$
	Reduction in Agreement Price (C+D-E-F) x 50%:	\$

Date by which a Change Order must be issued so as to obtain maximum cost reduction:

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Appendix 3

**CITY OF CHANDLER, ARIZONA
PUBLIC WORKS & UTILITIES DEPARTMENT**

CONTRACTOR'S AFFIDAVIT REGARDING SETTLEMENT OF CLAIMS

_____, Arizona
Date _____

Project Name: Kyrene Branch and Highline Canal Shared Use Paths
City Project No.: TP2202.401, Federal No. CHN-0(252)D, ADOT No. T038701C

To the City of Chandler, Arizona

Gentlemen:

This is to certify that all lawful claims for materials, rental of equipment and labor used in connection with the construction of the above project, whether by subcontractor or claimant in person, have been duly discharged.

The undersigned, for the total compensation of \$_____, as set out in the final pay application, as full and complete payment under the terms of the Agreement, hereby waives and relinquishes any and all further claims or right of lien under, in connection with, or as a result of the above described project. The undersigned further agrees to indemnify and save harmless the City of Chandler against any and all liens, claims or liens, suits, actions, damages, charges and expenses whatsoever, which said City may suffer arising out of the failure of the undersigned to pay for all labor performances and materials furnished for the performance of said installation.

Signed and dated at _____, this _____ day of _____ 20____.

CONTRACTOR

By _____

STATE OF ARIZONA)
) SS
COUNTY OF MARICOPA)

The foregoing instrument was subscribed and sworn to before me this _____ day of _____ 20____.

Notary Public

My Commission Expires

General Conditions
Appendix 4

PERFORMANCE BOND

ARIZONA STATUTORY PERFORMANCE BOND
PURSUANT TO TITLES 28, 34, AND 41, ARIZONA REVISED STATUTES
(Penalty of this bond must be 100% of the Agreement amount)

KNOW ALL MEN BY THESE PRESENTS THAT:_____

(hereinafter "Principal"), and _____ (hereinafter "Surety"), a corporation organized and existing under the laws of the State of _____ with its principal office in the City of _____, holding a certificate of authority to transact surety business in Arizona issued by the Director of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and firmly bound unto _____(hereinafter "Obligee") in the amount of _____ (Dollars) (\$_____), for the payment whereof, Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Agreement with the Obligee, dated the _____ day of _____, 20__ for construction of **TP2202.401, Federal No. CHN-0(252)D, ADOT No. T038701C, Kyrene Branch and Highline Canal Shared Use Paths** which Agreement is hereby referred to and made a part hereof as fully and to the same extent as if copies at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal faithfully performs and fulfills all the undertakings, covenants, terms, and conditions of the Agreement during the original term of the Agreement and any extension of the Agreement, with or without notice of the Surety, and during the life of any guaranty required under the Agreement, and also performs and fulfills all the undertakings, covenants, terms, conditions, and agreements of all duly authorized modifications of the Agreement that may hereafter be made, notice of which modifications to the Surety being hereby waived, the above obligation is void. Otherwise it remains in full force and effect.

PROVIDED, HOWEVER that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, and all liabilities on this bond will be determined in accordance with the provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, to the same extent as if it were copied at length in this Agreement.

The prevailing party in a suit on this bond may recover as part of the judgment reasonable attorney fees that may be fixed by a judge of the court.

Witness our hands this _____ day of _____, 20__.

AGENT OF RECORD

By _____

PRINCIPAL SEAL

AGENT ADDRESS

SURETY SEAL

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PAYMENT BOND

ARIZONA STATUTORY PAYMENT BOND
PURSUANT TO TITLES 28, 34, AND 41, OF THE ARIZONA REVISED STATUTES
(Penalty of this Bond must be 100% of the Agreement amount)

KNOW ALL MEN BY THESE PRESENTS THAT:_____

(hereinafter "Principal"), as Principal, and _____(hereinafter "Surety"), a corporation organized and existing under the laws of the State of _____ with its principal office in the City of _____, holding a certificate of authority to transact surety business in Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and firmly bound unto _____ (hereinafter "Obligee") in the amount of _____ (Dollars) (\$_____), for the payment whereof, the Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Agreement with the Obligee, dated the _____ day of _____, 20__ for construction of **TP2202.401, Federal No. CHN-0(252)D, ADOT No. T038701C, Kyrene Branch and Highline Canal Shared Use Paths** which Agreement is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal promptly pays all moneys due to all persons supplying labor or materials to the Principal or the Principal's subcontractors in the prosecution of the work provided for in said Agreement, this obligation is void. Otherwise it remains in full force and effect.

PROVIDED, HOWEVER that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2 Arizona Revised Statutes, and all liabilities on this bond will be determined in accordance with the provisions, conditions and limitations of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, to the same extent as if it were copied at length in this Agreement.

The prevailing party in a suit on this bond may recover as part of the judgment reasonable attorney fees that may be fixed by a judge of the court.

Witness our hands this _____ day of _____, 20__.

AGENT OF RECORD

PRINCIPAL

SEAL

By _____

SURETY

SEAL

AGENT ADDRESS

DISPUTE RESOLUTION**A. INFORMAL DISPUTE RESOLUTION**

The parties to the Agreement agree that time is of the essence in relation to performance of the Agreement and completion of the Project, therefore any and all disputes in relation to the Agreement will initially be referred to the Project Manager, the Design Professional Representative and/or the Contractor Representative as applicable to the dispute, for immediate resolution. If, after good faith efforts to reach a resolution, none is reached, any party to the dispute may submit the dispute to the Dispute Resolution Representative ("DRR") process set forth below, which is intended to be an expedited process.

B. DISPUTE RESOLUTION REPRESENTATIVE ("DRR") PROCESS

1. The Parties under the Agreement agree that all claims and disputes in relation to the Project which are not resolved in the ordinary course of the Project ("Claim" or "Claims") will, as a prerequisite to any mediation, or litigation of the Claim, first be submitted for resolution between the designated Dispute Resolution Representatives of the Parties as set forth herein (the "DRR Process").
2. The DRR Process will be initiated through service of a DRR Notice as set forth below:
 - a. For claims by the Contractor or the Design Professional, the DRR Process will be initiated by the party asserting the claim serving written notice on the City setting forth in detail: (i) the basis for the claim; (ii) the effect of the Claim upon the construction of, and/or Project Schedule for, the Project; (iii) the specific relief requested, the amount thereof, and how such was calculated; (iv) the parties involved in the Claim, and how they are involved; (v) the specific Agreement provisions in the Agreement Documents (including, if applicable, drawings and specifications) which apply; and (vi) efforts made to date to resolve the Claim.
 - b. For claims by the City, the DRR process will be initiated by the City providing written notice to the other parties of the basis and amount of its claim, the parties involved in the Claim, and how they are involved, the provisions in the Agreement Documents that apply, and the relief requested.
 - c. The DRR Notice will be hand-delivered and e-mailed to the other parties' designated Dispute Resolution Representatives.
3. The other parties will respond in writing to the DRR Notice ("DRR Response") within ten (10) calendar days of receipt of the DRR Notice, setting forth those items set forth in the DRR Notice that they agree with, dispute, and/or have questions concerning. The DRR Response will be hand-delivered and e-mailed to the other parties' Dispute Resolution Representatives.

General Conditions Appendix 6

4. The designated Dispute Resolution Representatives for the Parties to the claim will then meet as soon as possible and in any event within twenty (20) calendar days of submission of the DRR Notice (regardless of whether a DRR Response has been submitted by all parties involved in the dispute), at a mutually agreed upon time and place, to attempt to resolve the Claim based upon the DRR Notice and DRR Response.
5. At any time after the first meeting required above, either party may terminate the DRR Process by written notice to the other party.
6. The parties may agree, in writing, to extend or modify the time limits or other provisions of the DRR process in relation to a specific pending Claim.
7. Unless otherwise designated in a written notice to the other parties, the City and the representatives of the Contractor and of the Design Professional will act as the parties' designated Dispute Resolution Representatives.
8. If a resolution of the Claim is reached, that resolution must be set forth in writing and must be signed by the Parties' designated Dispute Resolution Representative. If the resolution involves a change in any Agreement Documents, the Agreement Price, the Project Schedule, or any other change requiring a written Change Order or Amendment, the parties must execute an appropriate written Change Order or Amendment pursuant to the terms of the Agreement Documents.

C. MEDIATION

1. Unless extended by written agreement of the parties involved in the dispute, any Claim not resolved through the DRR process set forth above within five (5) calendar days after the meeting required under B (4) above, or after the DRR is terminated pursuant to B (5) above, whichever is earlier, will be submitted to mediation as a condition precedent to litigation by either party.
2. The mediation will be commenced by written demand upon the other party for mediation. If the parties cannot agree upon a mediator within ten (10) calendar days of the written demand, either party may make a request to the Civil Presiding Judge of the Maricopa County Superior Court to appoint a mediator. The mediation will occur within forth (40) calendar days of the written demand for mediation, unless the parties agree, in writing, to a longer period of time.
3. The qualifications for the mediator will be that he/she be: (a) an experienced mediator, arbitrator or litigator of construction disputes; and (b) having engaged a significant portion of his/her time involving and/or resolving construction disputes for at least the past five (5) years.
4. Each party will provide to the other party and the mediator all of the information and documentation required under B(1) and (2) above, together with any additional information and documentation which the party believes relevant. In addition, the parties will exchange, and provide to the mediator such additional memoranda, information and/or documentation, as the

General Conditions
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mediator may request, and in the form and at such times, as the mediator may direct.

5. The parties will share the mediator's fee and any filing fees equally. The mediation will be held in Chandler, Arizona, unless another location is mutually agreed upon. Agreements reached in mediation will be specifically enforceable in any court having jurisdiction thereof.

D. LITIGATION

Any claim arising out of or related to the Agreement, except Claims relating to aesthetic effect and except those claims waived as provided for in the Agreement Documents, must be resolved through litigation in the Maricopa County, Arizona Superior Court.

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**CITY OF CHANDLER, ARIZONA
PUBLIC WORKS & UTILITIES DEPARTMENT**

CERTIFICATE OF COMPLETION

PROJECT NAME:	KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATHS		
CITY PROJECT NO.:	TP2202.401, Federal No. CHN-0(252)D, ADOT No. T038701C		
If Federally Funded:			
FEDERAL NO.:	CHN-0(252) D	ADOT NO:	T038701C

(This section to be completed by Prime)

I HEREBY CERTIFY THAT ALL GOODS AND/OR SERVICES REQUIRED BY CITY OF CHANDLER FOR THIS PROJECT HAVE BEEN DELIVERED IN ACCORDANCE WITH THE AGREEMENT DOCUMENTS AND BID SPECIFICATIONS AND ALL ACTIVITIES REQUIRED BY THE AGREEMENTOR UNDER THE AGREEMENT HAVE BEEN COMPLETED AS OF THE COMPLETION DATE LISTED HERE:

<u>FINAL ACCEPTANCE DATE:</u>	
--------------------------------------	--

PRIME CONTRACTOR:

FIRM NAME:			
PRINCIPAL:			
TITLE:			
SIGNATURE:		DATE:	

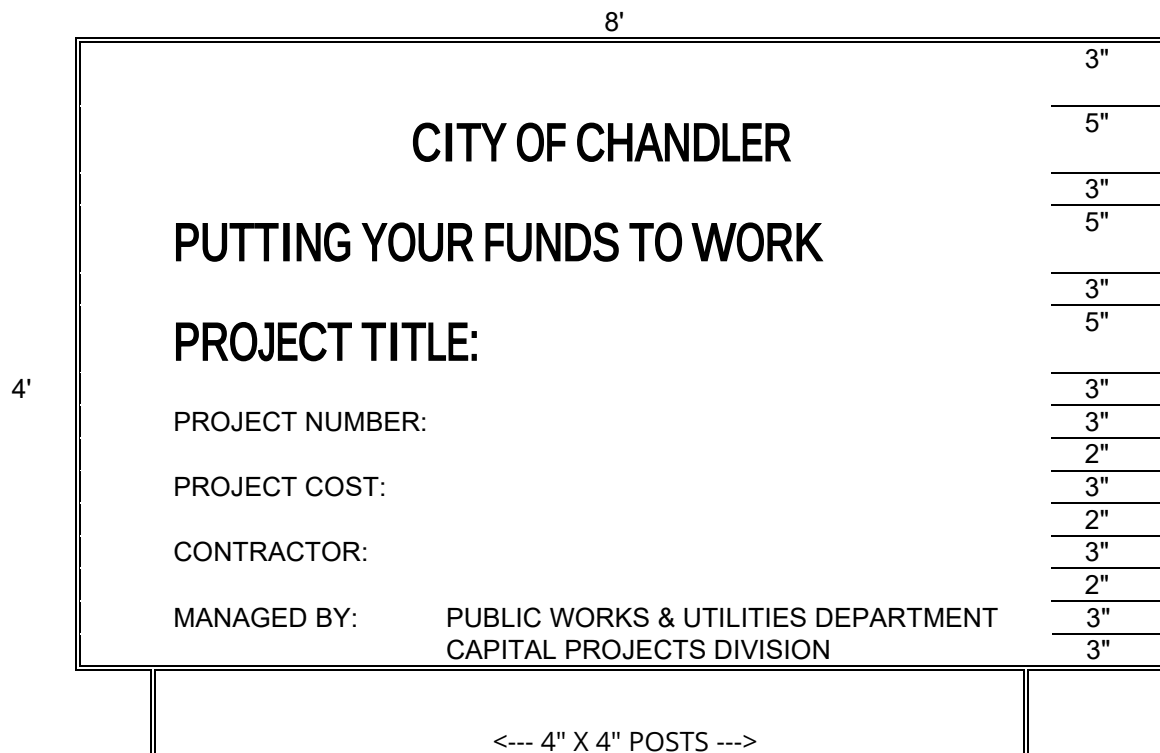
CERTIFIED BY [INSERT NAME AND TITLE OF PARTY THAT OVERSEES CONSTRUCTION]:

FIRM NAME:			
SIGNATURE:		DATE:	

PROJECT ACCEPTED BY CITY OF CHANDLER:

NAME:			
SIGNATURE:		DATE:	

CONSTRUCTION SIGN DETAIL



NOTES:

SIGN(S) MUST BE FURNISHED AND ERECTED PRIOR TO COMMENCEMENT OF CONSTRUCTION. POSTS MUST BE ANCHORED A MINIMUM OF TWO FEET INTO THE GROUND. BOTTOM OF SIGN MUST BE A MINIMUM OF FOUR FEET ABOVE THE GROUND.

TYPICAL PROJECT IDENTIFICATION SIGN FOR GENERAL PROJECTS MUST BE NON-REFLECTORIZED GREEN BACKGROUND, AND NON-REFLECTORIZED WHITE LETTERS AND NUMERALS.

ONE SIGN MUST BE ERECTED FOR BUILDINGS AND OTHER LIMITED AREA SINGLE SITES. FOR MULTIPLE SITES, ONE SIGN MUST BE ERECTED AT EACH SITE.

FOR LINEAR PROJECTS ONE HALF MILE OR LONGER, PLACE ONE SIGN AT EACH END OF THE PROJECT.

COST OF THE WORK

(APPLICABLE SOLELY TO CONSTRUCTION MANAGER AT RISK AND JOB ORDER CONTRACTING)

SECTION 1 – COSTS TO BE REIMBURSED

1.1 Cost of the Work

The term Cost of the Work will mean costs necessarily incurred by Contractor in the proper performance of the Work. Such costs must be at rates not higher than the standard paid at the place of the Project except with prior consent of City. The Cost of the Work will include only the items set forth in this Section 1.

1.2 Labor Costs

- 1.2.1 Wages of construction workers directly employed by the Contractor to perform the construction of the Work at the site or, with City's approval, at off-site workshops. Cost to be reimbursed will be the actual wages paid to the individuals performing the work.
- 1.2.2 Wages or salaries of the Contractor's supervisory and administrative personnel when stationed at the site with City's approval. No Contractor personnel stationed at the Contractor's home or branch offices will be charged to the Cost of the Work. Non-field office based Contractor management and support personnel are expected to provide service and advice from time to time throughout the job and his/her time devoted to Project matters is considered to be covered by the Contractor's Fee.
- 1.2.3 Wages and salaries of Contractor's supervisory or administrative personnel who would normally be stationed at the field office in accordance with Section 1.2.2 but who become engaged, at factories, workshops or on the road, in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of his/her time required for the Work. Employee bonuses and/or costs associated with Employee Stock Ownership Plans ("ESOP") will not be considered reimbursable labor or labor burden costs and will be considered non-reimbursable costs considered to be covered by the Contractor's Fee.
- 1.2.4 Costs paid or incurred by Contractor for taxes, insurance, contributions, assessments and benefits required by law or collective bargaining agreements and, for personnel not covered by such agreements, customary benefits such as sick leave, medical and health benefits, holiday, vacations and pensions, provided such costs are based on wages and salaries included in the Cost of the Work under Subparagraphs 1.2.1 through 1.2.3.
 - 1.2.4.1 Cost of the Work will include the actual net cost to Contractor for worker's compensation insurance attributable to the wages chargeable to the Cost of Work per this Agreement. The actual net cost of worker's compensation must take into consideration all cost adjustments due to experience modifiers, premium discounts, policy dividends, retrospective rating plan premium adjustments, assigned risk pool rebates, any applicable weekly maximums, etc. Contractor may charge an estimated amount for worker's compensation insurance costs, but will make appropriate cost adjustments to actual costs within 45 days of receipt of actual cost adjustments from the insurance carrier.

General Conditions

Appendix 9 – CM@Risk & JOC

- 1.2.4.3 Overtime wages paid to salaried personnel (if approved in advance in writing by City) will be reimbursed at the actual rate of overtime pay paid to the individual. No time charges for overtime hours worked on the Project will be allowed if the individual is not paid for the overtime worked.
- 1.2.4.4 Any overtime premium or shift differential expense to be incurred by Contractor for hourly workers will require City's advance written approval before the incremental cost of the overtime premium or shift differential will be considered a reimbursable cost. If the Contractor is required to work overtime as a result of an inexcusable delay or other coordination problems caused by the Contractor or anyone he/she is responsible for, the overtime premium and/or shift differential expense portion of the payroll expense and related labor burden costs will be considered as cost not to be reimbursed.
- 1.2.4.5 Reimbursable labor burden costs will be limited to payroll taxes, worker's compensation insurance, the employer's portion of union benefit costs for union employees working on the Project, and the actual verifiable fringe benefit costs incurred by Contractor for non-union individuals working on the Project subject to the following maximum percentages for the following reimbursable non-union fringe benefit costs. The following maximums (as a percentage of reimbursable actual wages by individual) will apply for each of the following types of fringe benefit costs specifically attributable to each of the non-union personnel working on the Project:

- Medical Insurance, Dental, Life & AD&D Insurance: 12.00%
- Holiday, vacation and other paid time not worked: 10.00%
- Pension Plan Contributions to Vested Employee Account, Simplified Employee Pension Plans, or 401K matching plans (Note: ESOP related costs are covered by the Contractor Fee) 10.00%

For non-union personnel, no other fringe benefit costs (other than the three specific categories listed immediately above, will be considered reimbursable Cost of Work. Any labor burden costs that are in excess of the amounts considered reimbursable or are otherwise not considered reimbursable under the terms of this agreement are intended to be covered by the Contractor Fee.

1.3 Subcontract Costs

- 1.3.1 Payments made by Contractor to Subcontractors in accordance with the requirements of the subcontracts.
- 1.3.2 For Scope of Work Bid Packages typically performed by Subcontractors, Contractor may "self- perform" such work on an actual cost basis subject to an agreed upon Guaranteed Maximum Price for the "self-performed work". The Contractor must, unless agreed to by City in writing, bid his/her proposed guaranteed Maximum Price for the work to be "self-performed" against at least three other interested trade Contractors. All savings under any such Subcontract for "self-performed work" must be applied to reduce the Cost of Work under the Agreement and the Guaranteed Maximum Price. For purposes of defining "self-performed work" subject to this provision, any division of Contractor, or any separate Contractor or Subcontractor that is partially owned or wholly owned by the Contractor or any of his/her employees or employee's relatives will be considered a related party entity and will be subject to this provision regarding "self-performed work". No self-performed work will

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be allowed to be performed on a Fixed Price basis.

- 1.3.3 Contractor (with respect to its Suppliers, Subcontractors and all lower tier Subcontractors) must provide City advance written notice and must obtain City's approval for any proposed Subcontract Change Order, Material Purchase Order, or other financial commitment in an amount in excess of \$5,000 prior to placing such order or entering into such agreement (regardless of whether or not any such commitment will affect the prime Agreement Guaranteed Maximum Cost). It is agreed that sums applicable to any Subcontract Change Order, Purchase Order or other financial commitment entered into in violation of the above notice and approval requirement will not be included in the amounts owing to Contractor, Subcontractors or Suppliers whether as Costs of the Work or as reasonable termination costs in the event of termination.

1.4 Costs of Material and Equipment Incorporated in the Completed Construction

- 1.4.1 Costs, including transportation and storage, of materials and equipment incorporated or to be incorporated in the completed construction.
- 1.4.2 Costs of materials described in the preceding Subparagraph 1.4.1 in excess of those actually installed to allow for reasonable waste and spoilage. Unused excess materials, in any, will become City's property at the completion of the Work or, at City's option, may be sold by the Contractor. Any amounts realized from such sales must be credited to City as a deduction from the Cost of Work.
- 1.4.3 Proceeds from the sale of recyclable materials, scrap, waste, etc. will be credited to job cost.

1.5 Costs of Other materials and Equipment, Temporary Facilities and Related Items

- 1.5.1 Costs, including transportation and storage, installation, maintenance, dismantling and removal of materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by construction workers, that are provided by the Contractor at the site and fully consumed in the performance of the Work; and cost (less salvage value) of such items if not fully consumed, whether sold to others or retained by Contractor. Cost for items previously used by Contractor will mean fair market value.
- 1.5.2 Rental charges for temporary facilities, machinery, equipment, and hand tools not customarily owned by construction workers that are provided by Contractor at the site, whether rented from Contractor or others, and costs of transportation, installation, minor repairs and replacements, dismantling and removal thereof. Rates and quantities of equipment rented will be subject to City's prior written approval.
- 1.5.2.1 The Projected usage for each piece of equipment to be rented for use on the Project and the estimated total rentals must be considered by Contractor before the piece of equipment is rented so that an appropriate rent versus buy decision can be made. Purchased equipment must be considered "job owned". At the completion of the Project, Contractor must transfer title and possession of all remaining job-owned equipment to City, or Contractor may keep any such equipment for an appropriate fair market value credit to job cost, which will be mutually agreed to by City and Contractor.
- 1.5.2.2 Each piece of equipment to be rented must have hourly, daily, weekly and monthly rates and

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the most economical rate available will be reimbursed based on the circumstances of actual need and usage of the piece of equipment while it is stationed at the jobsite. When the piece of equipment is no longer needed for the work, no rental charges will be reimbursed if the piece of equipment remains at the jobsite for the convenience of Contractor.

1.5.2.3 Equipment Rental Rates

1.5.2.3.1 Compensation for equipment used on the Project will be paid in accordance with the Equipment Plan submitted by Contractor in the accepted GMP Proposal and no payments will be made in excess of the rates set forth in the Equipment Plan, or actual documented costs, whichever is less.

1.5.2.3.2 All equipment rental rates and costs are subject to City's right to audit when submitted as part of Equipment Plan and/or at any time during the Project.

1.5.2.4 The aggregate rentals chargeable for each piece of Contractor owned tools or equipment must not exceed 50% of the fair market value of such equipment at the time of its commitment to the Work. The original purchase price and date of purchase of the equipment will be documented with a copy of the purchase invoice for the piece of equipment. Such aggregate limitations will apply and no further rentals will be charged even if a piece of equipment is taken off the job and is later replaced by a similar piece of equipment. For purposes of computing the aggregate rentals applicable to aggregate rental limitations, rental charges for similar pieces of equipment will be combined if the pieces of equipment were not used at the same time.

1.5.2.5 Fair market value for used material and equipment as referred to in the Agreement Documents will mean the estimated price a reasonable purchaser would pay to purchase the used material or equipment at the time it was initially needed for the job. Note: This is usually lower than the price a reasonable purchaser would pay for similar new construction material or construction equipment.

1.5.2.6 All losses resulting from lost, damaged or stolen tools and equipment will be the sole responsibility of Contractor, and not City, and the cost of such losses will not be reimbursable under the Agreement.

1.5.2.7 Contractor will be required to maintain a detailed equipment inventory of all job-owned equipment (either purchased and charged to job cost or job-owned through aggregate rentals) and such inventory must be submitted to City each month. For each piece of equipment, such inventory should contain at a minimum (1) original purchase price or acquisition cost (2) acquisition date (3) approved Fair Market Value at the time the piece of equipment was first used on the job and (4) final disposition.

1.5.2.8 All costs incurred for minor maintenance and repairs will be reimbursed at actual cost. Such costs include routine and preventative maintenance, minor repairs and other incidental costs. Repairs and/or replacement of a capital nature are considered to be covered by the rental rates. Major repairs and overhauls are not considered routine and ordinary; consequently such costs are not reimbursable and are intended to be covered by the rental rates.

1.5.3 Costs of removal of debris from the Site.

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- 1.5.4 Costs of document reproductions, facsimile transmissions and long-distance telephone calls, postage and parcel delivery charges, telephone service at the site and reasonable petty cash expenses of the site office.
- 1.5.5 That portion of the reasonable expenses of Contractor's personnel incurred while traveling in discharge of duties connected with the Work.
 - 1.5.5.1 No travel expenses will be reimbursed to Contractor's representatives unless Project related travel required them to travel to a destination more than 100 miles from the Project location. Any travel involving airfare will require advance written approval by an authorized City's representative.
- 1.5.6 Costs of materials and equipment suitably stored off the site at a mutually acceptable location, if approved in advance by the City.
- 1.5.7 Reproduction costs will be the actual costs of reproduction subject to a maximum of five cents (\$.05) per square foot for prints and a maximum of five cents (\$.05) per 8 ½ by 11-inch page for offset print or photo copied agreement documents, specifications, etc. Telephone costs will be the actual costs paid to the third party telephone company for the field office telephone.

1.6 Miscellaneous Costs

- 1.6.1 That portion of insurance and bond premiums that can be directly attributed to the Agreement. The City will reimburse Contractor for contractually required bond at time of first pay application for GMP and Cost-Based Agreements upon receipt of proof of payment from the Contractor. If the Contractor completes Work for less than the Agreement Price, Contractor must credit the City a pro-rated amount for the unused portion of the bond payment
 - 1.6.1.1 Contractor's actual cost for insurance will be considered to be included within the Maximum limit for General Conditions Costs. All premiums for any insurance and bonds required for the Project must reflect the net actual costs to Contractor after taking into consideration cost adjustments due to experience modifiers, premium discounts, policy dividends, retrospective rating plan premium adjustments, assigned risk pool rebates, refunds, etc.
 - 1.6.1.2 The amount to be reimbursed to Contractor for all contractually required insurance will be actual costs not to exceed a total of 2% of the Agreement Value, unless Contractor establishes to City's satisfaction that the actual cost is higher and City agrees to such actual higher cost in writing. If Contractor's cost of contractually required insurance is greater than the amount agreed to be reimbursed per this Agreement Provision, the difference will be considered to be covered by the Contractor's Fee. The City will reimburse Contractor for contractually required insurance on a monthly basis for GMP and Cost-Based Agreements. If Contractor can demonstrate substantial savings by paying for all insurance in advance, the City may agree to reimburse all insurance costs at time of first pay application for GMP and Cost-Based Agreements with proof of payment from Contractor.
- 1.6.2 Sales, use or similar taxes imposed by a governmental authority that are related to the Work.

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- 1.6.3 Fees and assessments for the building permit and for other permits, licenses and inspections for which Contractor is required by the Agreement Documents to pay.
- 1.6.4 Fees of laboratories for tests required by the Agreement Documents, except those related to defective or nonconforming Work and which do not fall within the scope of ¶ 1.7.3 below.
- 1.6.5 Royalties and license fees paid for the use of a particular design, process or product required by the Agreement Documents; the cost of defending suites or claims for infringement of patent rights arising from such requirement of the Agreement Documents; and payments made in accordance with legal judgments against Contractor resulting from such suites or claims and payments of settlements made with City's consent. However, such costs of legal defenses, judgments and settlements must not be included in the calculation of the Contractor's Fee or subject to the Guaranteed Maximum Price.
- 1.6.6 Data processing costs related to the Work. However, any such data processing costs will be limited to the cost of personal computer hardware used at the field office in the normal day to day administration, management and control of the Project. The aggregate charges for any such hardware must not exceed the Fair Market Value of the hardware at the time it was brought to the field office. If the total charges for any particular piece of hardware reach an amount equal to the Fair Market Value, that particular piece of hardware must be turned over to City whenever it is no longer needed for the Project. If Contractor elects to keep the particular piece of hardware, the job costs must be credited with a mutually agreeable amount which will represent the Fair Market Value of the particular piece of hardware at the time it was no longer needed for the job. Software or other costs associated with the use of computer programs will not be considered to be a reimbursable cost and will be considered to be covered by the Contractor's Fee.
- 1.6.7 Deposits lost for causes other than Contractor's negligence or failure to fulfill a specific responsibility to City as set forth in the Agreement Documents.
- 1.6.8 Legal, mediation and arbitration costs, including attorneys' fees, other than those arising from disputes between City and Contractor, reasonably incurred by Contractor in the performance of the Work and with City's prior written approval; which approval will not be unreasonably withheld.
- 1.6.9 Expenses incurred in accordance with Contractor's standard personnel policy for relocation and temporary living allowances of personnel required for the Work, if pre-approved by City in writing. If City authorizes the reimbursement of relocation costs, the reimbursable relocation expenses will be limited to a maximum of \$50,000 per person. Any relocation cost incurred by Contractor in excess of the amount reimbursed by City will be considered to be covered by the Contractor's Fee.

1.7 Other Costs and Emergencies

- 1.7.1 Other costs incurred in the performance of the Work if and to the extent approved in advance in writing by City.
- 1.7.2 Costs due to emergencies incurred in taking action to prevent threatened damage, injury or

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loss in case of an emergency affecting the safety of persons and property.

- 1.7.3 Costs of repairing or correcting damaged or nonconforming Work executed by Contractor, Subcontractors or Suppliers, provided that such damaged or nonconforming Work was not caused by negligence or failure to fulfill a specific responsibility of Contractor and only to the extent that the cost of repair or correction is not recoverable by Contractor from insurance, sureties, Subcontractors or Suppliers.

1.8 Related Party Transactions

- 1.8.1 The term “related party” will mean a parent, subsidiary, affiliate or other entity having common ownership or management with Contractor; any entity in which any stockholder in, or management employee of, Contractor owns any interest in excess of ten percent in the aggregate; or any person or entity which has the right to control the business or affairs of Contractor. The term “related party” includes any member of the immediate family of any person identified above.
- 1.8.2 If any of the costs to be reimbursed arise from a transaction between Contractor and a related party, Contractor must notify City in writing of the specific nature of the contemplated transaction, including the identity of the related party and the anticipated cost to be incurred, before any such transaction is consummated or cost incurred. If City, after such notification, authorizes in writing the proposed transaction, then the cost incurred will be included as a cost to be reimbursed, and Contractor must procure the Work, equipment, goods or service from the related party, as a Subcontractor. If City fails to authorize the transaction, Contractor must procure the Work, equipment, goods or service from some person or entity other than a related party.

SECTION 2 – COSTS NOT TO BE REIMBURSED

- 2.1 The Cost of Work must not include:
- 2.1.1 Salaries and other compensation of Contractor’s personnel stationed at Contractor’s principal office or offices other than the site office, except as specifically provided in Subparagraphs 1.2.2 and 1.2.3.
- 2.1.2 Expenses of Contractors’ principal office and offices other than the site office.
- 2.1.3 Overhead and general expenses, except as may be expressly included in Section 1.
- 2.1.3.1 Costs of Contractor’s home office computer services or other outside computer processing services will be considered overhead and general expense. Accordingly, Contractor should not plan to perform any such computer related services or alternatives at the field office when such services or functions can be performed at Contractor’s home or branch offices, or other outside service locations.
- 2.1.4 Contractor’s capital expenses, including interest on Contractor’s capital employed for the Work.
- 2.1.5 Rental costs of machinery and equipment, except as specifically provided in subparagraph 1.5.2.

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- 2.1.6 Except as provided in Subparagraph 1.7.3 of the Agreement, costs due to the negligence or failure to fulfill a specific responsibility of Contractor, Subcontractors and Suppliers or anyone directly or indirectly employed by any of them or for whose acts of them may be liable.
- 2.1.7 Any cost not specifically and expressly described in Section 1.
- 2.1.8 Costs, other than costs included in Change Orders approved by City that would cause the GMP to be exceeded.

SECTION 3 – DISCOUNTS, REBATES, REFUNDS AND SAVINGS

- 3.1 Cash discounts obtained on payments made by Contractor will accrue to City if (1) before making the payment, Contractor included them in an Application for Payment and received payment therefore from City, or (2) City has deposited funds with Contractor with which to make payments; otherwise, cash discounts will accrue to Contractor. Trade discounts, rebates, refunds and amounts received from sales or surplus materials and equipment will accrue to City, and Contractor must make provisions so that they can be secured.
- 3.1.1 Cost of the Work will be credited with all insurance policy discounts, performance and payment bond rebates or refunds, refunds or return premiums from any Subcontractor default insurance, refunds or rebates from any Contractor controlled insurance programs applicable to the Project, merchandise rebates of any nature, refunds of any nature, insurance dividends; and a portion of any volume rebates or free material credits earned with purchase of material or other goods and services charged to the job.
- 3.1.2 “Cash” discounts which may accrue to Contractor will be limited to a maximum of 1.5% of invoice cost. Any portion of “Cash” discounts greater than 1.5% will automatically accrue to City if Contractor is eligible to take advantage of the discounts.
- 3.2 Amounts that accrue to City in accordance with the provisions of Paragraph 3.1 will be credited to City as a deduction from the Cost of the Work.
- 3.3 Any and all savings on the GMP, or any separately guaranteed items comprising the GMP, will belong to City, subject to any express right in the Agreement for Contractor to share in savings. Savings are subject to City’s right to audit, and may be audited separately.

SECTION 4 – GENERAL CONDITIONS COSTS

- 4.1 General Conditions Costs may include, but are not limited to, the following types of costs incurred by Contractor during construction of the Work to the extent they are reimbursable Costs of the Work as delineated above: payroll costs for Work conducted at the site, payroll costs for the superintendent and full-time general foremen, payroll costs for management personnel resident and working on the site workers not included as direct labor costs engaged in support (e.g. loading/unloading, clean-up, etc.), administrative office personnel, costs of offices and temporary facilities including office materials, office supplies, office equipment, minor expenses, utilities, fuel, sanitary facilities and telephone services at the site, costs of liability insurance premiums not included in labor burdens for direct labor

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costs, costs of bond premiums, costs of consultants not in the direct employ of Contractor or Subcontractors, fees for permits and licenses.

- 4.2 General Conditions Costs may be paid on a percentage of the Agreement Price or on a lump/stipulate sum basis as set forth in the Agreement. All costs included in the General Conditions Costs will not be separately invoiced to or paid by City.
- 4.3 The total amount of General Conditions Costs for the Work may be divided by the number of days allowed for performance of the Work, to determine a fixed daily rate for General Conditions Costs that may be used in computing the General Conditions Costs allocated to any period of time, or for any adjustments in the General Conditions Costs agreed to in writing by City.

LANDSCAPE ESTABLISHMENT PERIOD

Section 1 – Description and General

Contractor is in direct control of work performed under the Landscape Establishment Period. If work is subcontracted, a representative of the Contractor will be present at the site of the work for all hours that the subcontractor works. Subcontracting of Landscape Establishment work will be permitted for weed eradication with herbicides, because of special licensing. A licensed temporary service may be used to supply labor to Contractor if Contractor has received approval from City Representatives. Contractor will submit the required subcontract documentation.

Contractor must provide adequate personnel to accomplish the required maintenance of the plant materials at intervals acceptable to City Representatives.

If not healthy at the end of the maintenance period, the maintenance must be continued until the plant material is approved by City.

1.1 Time and Schedule

Unless otherwise expressly agreed to in writing by City, the Landscape Establishment Period will be per General Conditions Section 6.5.4.

1.2 Planted Stock and Seeding Establishment

- 1.2.1 Tree planting and staking must be per City of Chandler Standard Detail C-801.
- 1.2.2 All trees will stand erect on their own without stakes when brought to this site. If the tree cannot stand on its own when nursery stakes are removed, the tree will be removed and replaced.

1.3 Pre-Emergent Herbicide and Weed Control

- 1.3.1 Contractor will provide three applications of an approved pre-emergent herbicide on all unpaved areas of the project, as directed by City Representatives, to control weed growth in all areas of the project. The number of applications may be increased as directed by the City Representative, and at no additional cost to City, if the City Representative deems additional applications are required to control weed growth.
- 1.3.2 Application sequence will be approved in advance by City. The first application of pre-emergent will be completed prior to the application of Decomposed Granite and will be included with the cost of the Decomposed Granite as specified and part of the Construction Phase portion of work. The second application of pre-emergent will be completed after installation of the Decomposed Granite and no later than half-way through the Landscape Establishment Period. The third and final application of pre-emergent will be applied 15 days prior to completion of the Landscape Establishment portion of the project. The second and third pre-emergent applications will be included with the cost of Landscape Establishment. Watering will be completed in accordance with the manufacturer's recommendations, as included and as related to each application.
- 1.3.3 The pre-emergent herbicide will be applied in accordance with the Technical Specifications and the recommendations of the pre-emergent herbicide manufacturer, as approved by City Representatives.

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- 1.3.4 The control of weeds will be accomplished by the use of herbicides. Manual removal of weeds will be required, after herbicides have taken affect.
- 1.3.5 Contractor is responsible for the removal and disposal of all trash and debris that during the Landscape Establishment Period. Contractor will keep the project in a neat and orderly manner during the duration of the Landscape Establishment Period.

1.4 Water

The water used during Landscape Establishment to properly maintain the plant material will be furnished by City, at designated sources from within the project limits, at no charge to Contractor. Contractor will be responsible for all equipment, materials and labor necessary to load, transport and unload water for watering purposes.

1.5 Plant Material Replacements

The plant material replacement will be considered as included in the work for Landscape Establishment, and will be made at no charge to the City.

- 1.5.1 Shrub and Plant Replacement - During the second half of the Landscaping Establishment period, Contractor will provide, where required, plant replacements as follows:

<u>Original Size</u>	<u>Replacement Size</u>
1 gallon	5 gallon
5 gallon	15 gallon
15 gallon	24-inch box
36-inch box	48-inch box

- 1.5.2 Tree Replacement – During the second half of the Landscape Establishment Period, Contractor will provide plant material replacements for existing plants that die as follows:

<u>Existing Plant Material Sizes</u>	<u>Replacement Size</u>
Trees:	
2-inch Caliper	24-inch box
4-inch Caliper	36-inch box
6-inch Caliper and greater	54-inch box
Shrubs:	
All Existing Shrubs	15 gallon

1.6 Measurement and Payment

See Technical Specifications for Measurement Payment provisions.

EXHIBIT C

TECHNICAL SPECIFICATIONS



KYRENE BRANCH AND HIGHLINE CANAL SHARED USE PATH

CITY OF CHANDLER PROJECT NO. TP2202.401

FEDERAL PROJECT NO. CHN-0(252)D

ADOT PROJECT NO. T0387 01C

TECHNICAL SPECIFICATIONS

PREPARED FOR:

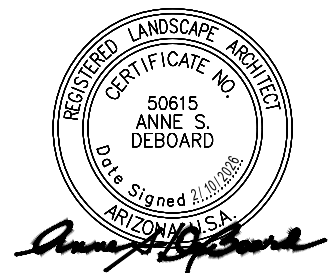
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PUBLIC WORKS & UTILITIES
CAPITAL PROJECTS

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DATE: FEBRUARY 2026



City of Chandler
Project No. TP2202.401
Technical Specifications

Kyrene Branch and Highline Canal Shared Use Path
ADOT Project No. T0387 01C
Federal Project No. CHN-0(252)D

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PART A: BID ITEMS

The following items, though not a comprehensive list, are non-payment items being considered incidental to the project, the costs of which are to be included within other bid items:

- Saw cutting
- Locating (or pothole) of new or existing utilities
- Concrete curb and gutter transition, MAG Std. Det. 221
- Curb transition, MAG Det. 220-2 and 221
- SWPPP preparation and document maintenance
- Contractor's site office or yard.
- Roadway sweeping
- Any and all permits - preparation costs and permit fees
- Protective fencing or plating for open trenches
- Photographing and videotaping of the project
- Preparation of record drawings
- Crown line
- Temporary pavement as required for all pipeline and underground work
- Removal of existing landscape irrigation pipe, tubing, and equipment

ITEM NO. 1 CONSTRUCTION SURVEYING AND LAYOUT

Description:

The Contractor will furnish all labor, materials, and equipment necessary to perform all surveying, staking, laying out of control lines, and verifications of the accuracy of all existing control points that are delineated in the Contract Documents. The work will be done under the direction of a Registered Land Surveyor (RLS) licensed to practice in the State of Arizona.

Construction Requirements:

Staking Outline: Prior to beginning any survey operations, the Contractor will furnish to the Engineer, for approval, a written outline detailing the method of staking, interval of stakes, marking of stakes, grade control for various courses of materials, referencing, structure control, and any other procedures and controls necessary for survey completion. A part of this outline will also be a schedule that will show the sequencing of the survey and layout work, throughout the course of the contract, listing a percentage of completion for each month.

Field Books: The Contractor will furnish field books to be used for recording survey data and field notes. These books will be available for inspection by the City at any time and will become the property of the City upon completion of the work.

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Survey Control Verification: Control Points (horizontal and vertical) -The existence and location of all survey monuments, bench marks, and control points will be verified prior to demolition or construction activity. Immediately notify the City of Chandler Project Manager when location discrepancies greater than 0.02 foot horizontal or 0.01 foot vertical are found. All datum will be based upon the City of Chandler datum.

Control Lines: Construction control lines with grade breaks, transition points, horizontal and vertical curves, etc., will be established and referenced prior to construction.

Temporary Bench Marks: Temporary bench marks will be established prior to construction, maintained and periodically verified for accuracy throughout the construction phase.

Pre-Construction Location Survey: All existing features will be located prior to construction, referenced to survey monuments along control lines by stationing in accordance with the construction documents and by offset distance from the control lines. All features will be re-locatable after construction. Distances measured will be within 0.01 foot.

Survey monuments: The land surveyor will follow the requirements of A.R.S. § 33-103 when establishing, replacing or setting Public Land System Survey monuments at Section or Quarter Section corners and will follow the requirement in Section 9(C) of the Arizona Boundary Survey Minimum Standards when establishing new or replacement boundary monuments and witness corner monuments. Finally, land surveyors will also comply with the requirements of A.R.S. § 104 through 106 when establishing, replacing or setting any type of boundary monument. Whenever any monuments are established, including those set to replace missing or damaged monuments of a previous survey, those actions require the surveyor to create and record a survey drawing documenting the new monumentation as established.

Water and Sewer Line Appurtenances: Water and sewer line surface appurtenances such as manholes, valves, and cleanouts that lie within the construction area will be located and noted on the Contractor's approved construction documents prior to any demolition or excavation.

Match Points and Removals: Verify the location (horizontal and vertical) of existing facilities to which the project connects. Immediately notify City Representatives when location discrepancies of connecting facilities greater than 0.10 foot horizontal or 0.02 foot vertical are found.

Construction Stakes: The Contractor will set construction stakes and marks establishing lines and grades for road work, curbs, gutters, sidewalks, structures, buildings, centerlines for utilities and necessary appurtenances, and other work as indicated in the Contract Documents and will be responsible for their conformance with the Project Plans and Technical Specifications.

The stakes will be established in accordance with the following guidelines which represent the minimum standard and the Contractor will provide additional stakes and controls

necessary to perform the work. The Contractor will be held responsible for the preservation of all stakes and marks and will replace, at no additional cost to the City, any construction stakes or marks which have been carelessly or willfully destroyed by any party.

(a) Roadway: Subgrade stakes will be set to subgrade elevation at 50 foot intervals on straight sections, 25 foot intervals through vertical curves, on horizontal curves with radius of 600 feet or less, and/or slopes of less than 0.4%, and the beginning and end of horizontal and vertical curves and grade breaks. Stakes will be set at crown lines, at grade break lines, and at edges of pavement which do not abut concrete curb and gutter or at the edge of pavement abutting vertical curbs or other structures whose surface grade will not be flush with the finished pavement grade. Quarter lines will be staked where the distance between the crown line stakes and the curb and gutter face exceeds 20 feet. ABC stakes will be set to ABC elevation at 33 foot intervals on straight sections, 25 foot intervals through vertical curves, on horizontal curves with radius of 600 feet or less, and/or slopes of less than 0.4%, and the beginning and end of horizontal and vertical curves, and grade breaks. Stakes will be set at crown lines, at grade breaks, and at edges of pavement which do not abut concrete curb and gutter or at the edge of pavement abutting vertical curbs or other structures whose surface grade will not be flush with the finished pavement grade. Quarter lines will be staked where the distance between the crown line stakes and the curb and gutter face exceeds 20 feet.

- (1) Where the existing pavement will be milled and inlaid, the Contractor will provide 10-foot grid interval surface control horizontally and vertically.
- (2) Pavement edges will be controlled by utilizing a wire control mechanism or screeding along a concrete gutter or other structure whose surface grade is flush with the finished pavement grade. Stakes will be set to finished elevation at 33 foot intervals on straight sections, 25 foot intervals on curves with radius of 600 feet or less, and/or slopes of less than 0.4%, and the beginning and end of horizontal and vertical curves, and grade breaks.

(b) Sidewalk and Bike Paths: Stakes are not required for sidewalks five feet or less in width which are adjoining existing curb and gutter.

- (1) Sidewalk stakes will be set to grade on an offset and tacked for line at 25 foot intervals at the beginning and end of horizontal and vertical curves and grade breaks.

(c) Storm Sewer and Drainage: All cuts will be to the invert of the pipe, given to the nearest 0.01 of a foot.

- (1) Stakes for storm sewer will be driven flush with the existing ground, set on an offset at 50 foot intervals. Stakes will be marked with the offset and indicated cut.
- (2) Wyes for laterals will be marked with a line only stake.

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- (3) Manholes will be marked with the offset and indicated cut to top of manhole grade and inverts.
 - (4) Stakes for storm water inlets, two per inlet, will be set on a line normal to the roadway at the center line of the inlet five and ten feet from the face of curb. The stakes will be marked with the offset to the face of curb and the cut or fill to the top of curb and inverts.
 - (5) Cut sheets will be supplied to the Contractor and City of Chandler Inspector.
- (d) Water:** All cuts will be to the invert of the pipe, given to the nearest 0.10 of a foot.
- (1) Stakes for water will be driven flush with the existing ground, set on an offset at 50 foot intervals and specified grade breaks. Stakes will be marked with the offset and indicated cut.
 - (2) Fittings or other critical points such as tees will be marked with a line only stake.
 - (3) Fire hydrants will be located with two stakes per hydrant set parallel with the roadway five feet from the centerline of the hydrant. The stakes will be marked with the offset to the hydrant and indicated cut to the top of curb at the centerline of the hydrant.
 - (4) Water meters will be located with two stakes per meter set parallel with the roadway five feet from the centerline of the meter. The stakes will be marked with the offset to the meter and indicated cut to the top of curb at the centerline of the meter.
 - (5) Cut sheets will be supplied to the Contractor and City of Chandler Inspector.
- (e) Traffic Signing, Striping and Detector Loops:** The Contractor will delineate the procedures and controls to be utilized in the Staking Outline.
- (f) Inspection and Acceptance of Work:** The City reserves the right to make inspections and random checks of any portion of the staking and layout work. If, in the City's opinion, the work is not being performed in a manner that will assure proper control and accuracy of the work, the City may order any or all of the staking and layout work redone at no additional cost.

Measurement and Payment:

Construction Surveying and Layout will be measured as a single complete unit of work and paid at the contract lump sum price, which price will be full compensation for the work as described herein and required to provide all necessary survey stakes and control. The approved schedule showing the sequencing and percentage of the survey and layout work will be the basis on which monthly progress payments will be made. This schedule will be subject to periodic review, at the request of either party, if the survey and layout work lags or accelerates. If necessary, the schedule will be revised to reflect changes in

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survey and layout progress. When approved, the revised schedule will become the basis for payment.

ITEM NO. 2 GPS DATA COLLECTION (ESRI – ARCGIS GEODATABASE FORMAT)

Description:

Refer to Exhibit D in the Construction Agreement for description and construction requirements.

Measurement and Payment:

GPS Data Collection (ESRI – ArcGIS Geodatabase Format) will be measured as a single complete unit of work and paid at the contract lump sum price, which price will be full compensation for the work as described herein, including submittal and acceptance by City of Chandler.

No payment will be made for rejected GPS Point Data.

ITEM NO. 3 CONTRACTOR QUALITY CONTROL

Description:

See City of Chandler General Conditions.

Measurement and Payment:

Contractor Quality Control will be measured as a single complete unit of work and paid at the contract lump sum price, which price will be full compensation for the work, complete in place.

ITEM NO. 4 EROSION CONTROL (SWPPP PREPARATION, INSTALLATION, MAINTENANCE, AND REMOVAL)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to prepare the SWPPP plan, furnish, install, maintain and remove (if applicable) erosion control best management practices as specified in the Project Plans and directed by City Representatives.

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Materials:

All materials will conform to the requirements of ADOT Standard Specifications. Section 810-2.

Construction Requirements:

All work under this item will be completed in conformance with the Project Plans and all applicable City, County, State, and Federal regulations.

Measurement and Payment:

Erosion Control (SWPPP Preparation, Installation, Maintenance, and Removal) will be measured as a single complete unit of work and paid at the contract lump sum price, which price will be full compensation for the work described herein and complete in place.

No payment will be made for rejected best management practices, for maintenance after a storm event, or for damage by the Contractor. No allowance will be made for extra material used in overlapping at splice joints.

ITEM NO. 5 MOBILIZATION/DEMOBILIZATION

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to conform to MAG Uniform Standard Specifications Section 109.10.

Measurement and Payment:

Mobilization/Demobilization will be measured as a single complete unit of work and paid at the contract lump sum price, which price will be full compensation for the work, complete in place.

ITEM NO. 6 CLEARING AND GRUBBING

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to conform to MAG Uniform Standard Specifications Section 201. The Contractor should review the landscape plans to identify trees to be protected in place. The Contractor will clear and grub only the areas required to construct the project improvements.

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Construction Requirements:

All work under this item will be completed in conformance with MAG Uniform Standard Specifications Section 201 in its entirety except as modified herein.

Burning of trash, debris, plant material, wood, or any other waste material will not be allowed.

Measurement and Payment:

Clearing and Grubbing will be measured as a single complete unit of work and paid at the contact lump sum price, which price will be full compensation for the work, complete in place. No separate measurement will be made for trees 12 inches or less in diameter at 1-foot above the original ground surface.

ITEM NO. 7 REMOVE TREE, DIAMETER > 12 IN

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to remove and dispose of existing trees more than 12 inches in diameter, including roots and stumps from the project area, as shown on the Project Plans, in accordance with the requirements of MAG Uniform Standard Specifications Section 201 in its entirety except as modified herein.

Construction Requirements:

All tree removal personnel will have a minimum of one-year experience in large tree removal and be supervised at all times by a foreman with a minimum of two years' experience. Background information on all personnel associated with this task, along with references that will verify experience, will be submitted to City Representatives at the pre-construction meeting.

Remove trees in sections by performing cutting operations from the top down, utilizing cranes or boom trucks to control the fall of large pieces of trunk, branches and any tree debris.

Cut trees flush with existing grades. All stumps will be ground to a minimum of three feet below existing grade including the removal of all roots that are at that same elevation below existing grade with the cost for these removals included under this bid item.

Cavities resulting from the removal of stumps and roots will be backfilled with material approved by City Representatives. The material will be compacted to a density of not less than 95 percent of the maximum density as determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual and as directed and approved by City Representatives.

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Contractor will coordinate with City Representatives no less than two weeks prior to this work to tag all trees designated for removal.

Upon removal, trees will become property of the Contractor.

Burning of the removed trees will not be permitted. All tree materials resulting from removal will be removed from the jobsite during the same workday period. No debris larger than one square inch will remain after the removal process is completed.

Measurement and Payment:

Remove Tree, Diameter > 12 In will be measured as a unit each for each tree removed and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place, including excavation and subsequent backfill, compaction, hauling, obtaining permits, and disposing of the trees.

ITEM NO. 8 SHARED-USE PATH EXCAVATION (6" PATH)
ITEM NO. 9 SHARED-USE PATH EXCAVATION (8" PATH)

Description:

The work under this item will consist of clearing, stripping, excavation, fill, backfill, grading and disposal of excavated and removed materials.

Measurement and Payment:

Shared-Use Path Excavation will be measured as a single complete unit of work and paid at the contract lump sum price, which price shall include excavating, sloping, rounding tops and ends of excavations, loading, depositing, conditioning, spreading, and compacting the material complete in place and disposal of surplus material.

Excavation in excess of the planned or authorized cross-section will not be paid for. The Contractor shall backfill and compact unauthorized excavated areas to the original ground elevation of authorized section at no additional cost to the Contracting Agency.

Care shall be exercised to prevent excavating below the grade for the bottom of the shared-use path and areas excavated below grade shall be filled with suitable material and compacted by the Contractor at no additional cost to the Contracting Agency.

ITEM NO. 10 SURFACE SEAL

Description:

The work under this item will consist of furnishing of all materials, labor, and equipment necessary to complete surface seal of all areas identified on the Project Plans and as

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directed by City Representatives. The work will include cleaning and routing out appropriate cracks, cleaning and sweeping, and applying crack seal to appropriate cracks.

Materials:

Mineral aggregate gradation will conform to MAG Standard Specifications Section 715, Table 715-1, Type II.

Crack seal will be Deery-Crafco 220 or approved equal.

Surface seal shall be Polymer Modified Rejuvenating Emulsion Fog Coat (PMRE) from EGRON or approved equal.

Construction Requirements:

The work under this item will comply with MAG Standard Specifications Section 331 in its entirety.

Prior to surface seal, pavement is to be cleaned and routed for appropriate cracks, cleaned and swept, and crack sealed with Deery-Crafco 220 or approved equal.

Contractor shall seal all cracks having an average clear opening $\frac{1}{4}$ " or greater. All cracks with an average clear opening of less than $\frac{1}{4}$ inch shall not be sealed unless directed to do so by City Representatives. All cracks between asphalt and curb or gutter shall be sealed regardless of clear opening size unless directed by City Representatives. Contractor shall contact City Representatives for filling of cracks 2" or wider.

Immediately prior to applying the sealant, Contractor shall thoroughly clean cracks and remove any loose particles, grass, grass roots, weeds, dust and other deleterious substances by means of high velocity compressed air or other methods prior approved by City Representatives. The compressor used shall be capable of sustaining a minimum pressure of 90 psi. The crack cleaning equipment shall be capable of cleaning cracks to a minimum depth of $\frac{1}{2}$ " and shall be capable of dust containment (typically by a vacuum apparatus) by filtering particulate matter 10 micrometers or less in diameter with no dust clouds visible to the naked eye as determined by the City Representative. The conventional method of openly blowing out cracks with compressed air with no dust containment shall not be an acceptable crack cleaning method.

Crack cleaning shall be inspected and approved by the City Representative prior to the application of crack sealant.

Contractor shall place sealant so as to completely fill the crack and form a lap of greater than 1" on each side. Immediately after the application, a rubber squeegee or other acceptable means shall be used to level the sealant flush with the existing pavement surface. After cooling, the sealant shall not shrink more than $\frac{1}{4}$ " below the pavement surface.

Sealant shall be heated to between 325°F and 400°F (163°C and 204°C) for at least $\frac{1}{2}$

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hour prior to application. Sealant shall only be applied to clean, dry cracks that have been approved by the City Representative from the bottom up to the surface level. Contractor shall provide certificates on all temperature gauges. The dates of the certificates shall be within the previous three (3) month period.

The sealant shall be intended to be placed entirely within the crack. Blotter material may be required to prevent asphalt rubber bleed and/or pickup of sealant by vehicular traffic. Contractor shall install blotter material of a type acceptable to the City and at the direction of the City Representative at no additional cost to the City. Typical blotter material shall be made up of sand/silica sand and cannot include powdered cement. Any blotter material must be pre-approved by the City Representative.

Measurement and Payment:

Surface Seal will be measured by the square yard and will be paid for at the contract unit price per square yard, which price will be full compensation for the item, complete in place.

No additional measurement or payment will be made for crack sealing, asphalt emulsion, blotter, and aggregate, the cost being considered incidental to this item.

ITEM NO. 11 ASPHALT PAVEMENT REPLACEMENT

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to remove, dispose, and replace existing asphaltic concrete pavement, including asphaltic surface and base course, aggregate base course, and tack coat at locations as specified on the project plans.

Materials and Construction Requirements:

All Materials and construction methods used in the removal, disposal, and replacement of asphaltic concrete pavement, including asphaltic surface and base course, aggregate base course, and tack coat, shall conform to the requirements of City of Chandler applicable design, standard details, specifications, and supplements, and MAG Standard Specifications Section 205, 310, 336, 350, 601, and 702 except as modified herein.

Asphaltic Concrete Pavement mix design will conform to current East Valley Asphalt Committee (EVAC) Hot Mix Approved Asphalt Mixes. For current EVAC specifications see City of Mesa website located here:

<http://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gasline-contractors>.

The work under this item shall match gradation and thickness of existing asphaltic pavement structural section. Contractor shall remove existing asphaltic concrete

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surfacing and base course, and aggregate base, regardless of thickness. Butt joints on previously placed cooled pavement shall be tack coated prior to continuing the paving operation. The Contractor shall replace traffic marking markings, in kind, per City of Chandler design, standards, and details.

Measurement:

Remove and Replace Asphaltic Concrete Pavement will be measured per square yard, based on actual field measurement of area, including asphaltic surface and base course, aggregate base course, and tack coat.

Payment:

Remove and Replace Asphaltic Concrete Pavement, measured as provided above, will be paid for at the contract unit price per square yard, which price will be full compensation for the work, complete in place, including asphaltic surface and base course, aggregate base course, and tack coat.

- | | |
|--------------------|--|
| ITEM NO. 12 | CONCRETE SIDEWALK, MAG DET 230, 6" THICK WITH REINFORCED JOINTS |
| ITEM NO. 13 | CONCRETE SIDEWALK, MAG DET 230, 8" THICK WITH REINFORCED JOINTS |
| ITEM NO. 14 | CONCRETE SIDEWALK, MAG DET 230 |

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to construct new concrete sidewalk per MAG Detail 230 at all locations as specified in the Project Plans, located within the City of Chandler.

The work under this item will also consist of furnishing all materials, labor, and equipment necessary to construct new concrete sidewalk per COT Standard Detail T-345 at locations specified in the Project Plans, located within the City of Tempe.

Materials:

All materials will conform to MAG Standard Specifications Section 340 in their entirety, except as modified herein.

Construction Requirements:

New sidewalk located within the City of Chandler shall comply with Section 4.72 of City of Chandler Engineering & Design Standards Manual and MAG Detail 230 in their entirety and all City of Chandler supplements, except as modified herein.

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New sidewalk located within the City of Tempe shall comply with COT Standard Detail T-345, MAG Standard Specifications Section 340, and all applicable City of Tempe supplements.

Measurement and Payment:

Concrete Sidewalk will be measured per square foot and will be paid for at the contract unit price per square foot, which price will be full compensation for the work, complete in place.

ITEM NO. 15	VERTICAL CURB & GUTTER, MAG DET 220, TYPE A, H=6"
ITEM NO. 16	SINGLE CURB, MAG DET 222, TYPE A
ITEM NO. 17	MOUNTABLE CURB & GUTTER, MAG DET 220, TYPE E

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary to construct new curb and gutter, mountable curb, and single curb at locations as specified in the Project Plans.

Materials:

Curb & Gutter and transitions will comply with MAG Details 220-1, 220-2, 221, and 222.

Construction Requirements:

The work under these items will comply with MAG Standard Specifications Section 340 in its entirety, MAG Details 220-1, 220-2, and 222. Concrete curb/curb and gutter transitions will be constructed in accordance with MAG Detail 221.

Measurement:

Vertical Curb & Gutter, Mountable Curb & Gutter, and Single Curb will be measured per linear foot, including curb and gutter transitions.

Payment:

Vertical Curb & Gutter, Mountable Curb & Gutter, and Single Curb, measured as provided above, will be paid for at the contract unit price per linear foot, which price will be full compensation for the work, complete in place.

No additional payment will be paid for curb/curb and gutter transitions, the cost being considered incidental to this item.

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ITEM NO. 18 CONCRETE HEADER (6 IN)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to construct concrete header with a medium broom finish at the locations as specified in the Project Plans and in accordance with the details shown on the Project Plans, these Technical Specifications, and the requirements of the MAG Standard Specifications.

Materials:

All materials will conform to MAG Standard Specifications Sections 342 in its entirety.

Construction Requirements:

The Contractor will be responsible for forming the concrete headers per the detail shown on the Project Plans. Prior to placing the concrete header, the Contractor will obtain approval from City Representatives for the finish and forming to ensure it is consistent with the layout as specified in the Project Plans and that the finish is acceptable prior to proceeding with the work.

All exposed edges will have a 1/4-inch radius.

Measurement and Payment:

Concrete Header will be measured by the linear foot and will be paid for at the contract unit price per linear foot, which price will be full compensation for the work, complete in place.

ITEM NO. 19 CONCRETE CURB RAMP WITH DETECTABLE WARNING, COC DET C-257

ITEM NO. 20 CONCRETE PARALLEL CURB RAMP, MAG DET 238-3

Description:

The work under this item will consist of furnishing of all materials, labor, and equipment necessary to construct concrete curb ramps at locations as specified in the Project Plans.

Materials and Construction Requirements:

All materials and work will conform to City of Chandler (COC) Details C-249, C-257, and MAG 238-3, including all COC supplements, Section 4.7 of the COC Engineering and Design Standards Manual, and MAG Standard Specifications.

Detectable Warning will be per COC approved products list, Section 4.7.2 of the COC

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Engineering and Design Standards Manual, and Details C-249, C-257, and MAG Detail 238-3.

The work under this item includes construction of the adjacent concrete sidewalk areas, concrete curb, and detectable warnings as shown per City Details C-249, C-257, and MAG Detail 238-3, and as specified in the Project Plans, all City of Chandler supplements and City of Tempe supplement.

Measurement and Payment:

Concrete Curb Ramps and Concrete Parallel Curb Ramps, will be measured as a unit for each, including detectable warnings, additional sidewalk area, and concrete curb as specified in the Project Plans.

The accepted quantities of Concrete Curb Ramps and Concrete Parallel Curb Ramps, measured as provided above, will be paid for at the contract unit price each, which price will be full compensation for the item, complete in place.

No additional payment will be made for detectable warnings, additional sidewalk area or concrete curb, the cost being considered incidental to this item.

- ITEM NO. 21 DRIVEWAY ENTRANCE, MAG DET 250-2 (COMMERCIAL/ INDUSTRIAL)**
- ITEM NO. 22 CONCRETE DRIVEWAY, MAG DTL 250-2, COMMERCIAL, 10' WIDE, MODIFIED W/ DETECTABLE WARNING**
- ITEM NO. 23 CONCRETE DRIVEWAY, MAG DTL 260, RESIDENTIAL, 20' WIDE, MODIFIED W/ TYPE A CURB & GUTTER**

Description:

The work under these items will consist of furnishing all materials, labor and equipment necessary to construct new concrete driveway entrances at all locations as specified in the Project Plans.

Materials and Construction Requirements:

All materials will conform to MAG Details 250-1, 250-2, 260, and 262 in their entirety, including all City of Chandler supplements, Section 4.7 of the City of Chandler Engineering and Design Standards Manual and City of Tempe supplements.

Measurement and Payment:

Driveway Entrances and Concrete Driveways will be measured per square foot and will be paid for at the contract unit price per square foot, which price will be full compensation for the work, complete in place.

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ITEM NO. 24 CONCRETE APRON AND VALLEY GUTTER, MAG DET 240

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to construct new concrete aprons and valley gutters at all locations as specified in the Project Plans.

Materials and Construction Requirements:

All materials and work will conform to MAG Detail 240 in its entirety, including all City of Chandler supplements except as modified herein.

Measurement and Payment:

Concrete Apron and Valley Gutter will be measured per square foot and will be paid for at the contract unit price per square foot, which price will be full compensation for the work, complete in place.

ITEM NO. 25 ADJUST VALVE BOX & COVER, MAG DET 391, W/ ADA COMPLIANT LID

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary to reset frames and covers for existing water and reclaimed water valve boxes and covers at all locations as specified in the Project Plans.

Materials and Construction Requirements:

All materials and work for valve adjustments located within the city of Tempe shall conform to the requirements of MAG Standard Details 270, 391-1, and all applicable City of Tempe supplements.

All materials and work for valve adjustments located within the City of Chandler shall conform to the requirements of MAG Standard Details 270, 391-1, and COC Standard Details C-307 and C-317, in their entirety, including all City of Chandler supplements except as modified herein.

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Measurement and Payment:

Adjust Valve Box & Cover will be measured as a unit for each and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place.

ITEM NO. 26 REMOVE ASPHALTIC CONCRETE PAVEMENT

Description:

The work under these items will consist of furnishing all materials, labor, and equipment for the removal and disposal of existing asphaltic concrete pavement and at locations as specified in the Project Plans.

Construction Requirements:

The work under these items will comply with MAG Standard Specifications Section 350 in its entirety.

Measurement and Payment:

Remove Asphaltic Concrete Pavement will be measured per square yard and will be paid for at the contract unit price per square yard, which price will be full compensation for the work, complete in place.

ITEM NO. 27 REMOVE CONCRETE CURB AND GUTTER ITEM NO. 28 REMOVE CONCRETE SINGLE CURB

Description:

The work under these items will consist of furnishing all materials, labor, and equipment for the removal and disposal of existing concrete curb & gutter and concrete single curb at locations as specified in the Project Plans.

Construction Requirements:

Removal and disposal of existing concrete curb & gutter and concrete single curb will comply with MAG Standard Specifications Section 350 in its entirety, except as modified herein.

The Contractor will be responsible for removing the identified concrete improvements in their entirety. The Contractor will backfill the excavated area per the City's requirements for backfilling and compaction.

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Measurement and Payment:

Remove Concrete Curb & Gutter and Concrete Single Curb will be measured per linear foot and will be paid for at the contract unit price per linear foot, which price will be full compensation for the work, including all removals, disposals, backfilling, and compaction, complete in place.

ITEM NO. 29 REMOVE CONCRETE SIDEWALKS, DRIVEWAYS, AND SLABS

Description:

The work under these items will consist of furnishing all materials, labor, and equipment for the removal and disposal of existing concrete sidewalks, driveways and slabs at locations as specified in the Project Plans.

Construction Requirements:

The work under these items will comply with MAG Standard Specifications Section 350 in its entirety, except as modified herein.

The Contractor will be responsible for removing and disposal of the identified concrete improvements in their entirety. The Contractor will backfill the excavated area per the City's requirements for backfilling and compaction.

Measurement and Payment:

Remove Concrete Sidewalk, Driveways and Slabs, will be measured per square foot and will be paid for at the contract unit price per square foot, which price will be full compensation for the work, including all removals, disposals, backfilling, and compaction, complete in place.

ITEM NO. 30 REMOVE AND SALVAGE EXISTING GATE TO SRP

Description:

The work under these items will consist of furnishing all materials, labor, and equipment for the removal and salvage of existing access gates at locations within SRP canal right-of-way as specified in the Project Plans, including all appurtenance, such as, but not limited to foundations and hardware.

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Construction Requirements:

The work under these items will comply with MAG Standard Specifications Section 350 in its entirety, including all except as modified herein.

The Contractor will remove the access gates, including foundations, hardware, posts, and backfill, compaction, and disposal. Access gates shall be returned to SRP.

The Contractor will not remove access gates until new access gates have been fully erected at locations shown on the Project Plans or as directed by City Representatives.

Measurement:

Remove and Salvage Existing Gate will be measured as a unit for each item removed and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place, including hardware, posts, foundations, backfill, compaction, and delivery.

Payment:

The accepted quantity of Remove and Salvage Existing Gate, measured as provided above, will be paid at the contract unit price each, which price will be full compensation for the work, complete in place.

No separate payment will be made for the removal and salvage of hardware, posts, and disposal of foundations, backfill and compaction, the cost being considered incidental to this item.

ITEM NO. 31 RELOCATE EXISTING BUS SHELTER

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary to remove and reinstall existing bus shelter as specified in the Project Plans.

Construction Requirements:

The Contractor will be responsible for removing, storing, and reinstalling the identified existing bus shelter, and if necessary, removing the existing hardware and appurtenances and reinstalling with new hardware and appurtenances.

Prior to the removal of the bus shelter, the Contractor will make arrangements for the City representative to inspect the shelter to be removed. Any damage occurred during removal or storage will be replaced at no cost to the City.

Measurement and Payment:

Relocate Existing Bus Shelter will be measured as a unit for each and will be paid for at

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the contract unit price each, which price will be full compensation for the work, including all removals, disposals, backfilling, and compaction, complete in place.

No additional payment will be made for new hardware or appurtenances, the cost being considered incidental to this item.

**ITEM NO. 32 REMOVE AND RELOCATE EXISTING FIRE HYDRANT PER COC
DTL C-303**

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary for installing thrust blocks for waterlines at locations specified in the Project Plans in addition to those required by City of Chandler Requirements.

Construction Requirements:

Work for fire hydrants shall conform to City of Chandler Standards and the details in the Project Plans.

All work and materials and work shall comply with the appropriate MAG and City Specification Sections.

Measurement:

Remove and Relocate Existing Fire Hydrant will be measured by each.

Payment:

The accepted quantities of the above items measured as provided above will be paid for at the contract unit price per each which price shall be full compensation for the work, complete in place.

ITEM NO. 33 RELOCATE ADVERTISEMENT SIGN

Description:

The work under this item shall include the furnishing of all materials, equipment and labor for relocating the existing advertisement sign and associated hardware within the project limits.

Materials:

Any hardware or ancillary materials required to reinstall the advertisement sign shall be of like-kind to existing and suitable for use with the advertisement sign.

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Construction Requirements:

The Contractor shall be responsible for removing and relocating the existing advertisement sign within the project limits.

Measurement:

Relocate Advertisement Sign shall be measured as a unit for each advertisement sign relocated.

Payment:

The accepted quantities of Relocate Advertisement Sign, measured as provided above, will be paid for at the contract unit price per each, which price shall be full compensation for the item, complete in place.

ITEM NO. 34 REMOVE AND REINSTALL SIGN

Description:

The work under this item consists of furnishing all equipment, labor, and materials necessary to remove and reinstall existing signs at locations within City of Chandler and City of Tempe right-of-way as specified in the Project Plans or directed by City Representatives.

Construction Requirements:

The Contractor will be responsible for removing, storing, and reinstalling the identified existing signs, and if necessary, removing the existing sign foundation, signpost, hardware and appurtenances and reinstalling sign to a new signpost and foundation or light pole with new hardware and appurtenances. The cavity left by the removed post shall be backfilled and compacted as directed by the Engineer. The signposts which are removed and salvaged shall be returned to the appropriate City Representative.

The work under this item will comply with MAG Standard Specifications Section 350.

Removed and reinstalled signs located within the City of Chandler shall comply with City of Chandler Standard Detail C-613.

Prior to the removal of signs, the Contractor will make arrangements for City Representatives to inspect all signs to be removed. Any signs deemed not salvageable, as determined by the City Representative, will be disposed of by the Contractor at his expense. Any signs damaged during removal or storage will be replaced at no cost to the City.

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Measurement and Payment:

Remove and Reinstall Sign will be measured as a unit for each sign panel group to be relocated and will be paid for at the contract unit price per each, which price will be full compensation for the work, complete in place.

No additional payment will be made for new hardware, appurtenances, backfill, compaction or disposal, the cost being considered incidental to this item. If needed, new signposts and sign foundations will be provided by the Contractor under separate bid items.

ITEM NO. 35 REMOVE AND SALVAGE PEDESTRIAN PUSH BUTTON W/ SIGN

Description:

The work under this item consists of furnishing all equipment, labor, and materials necessary to remove and salvage existing pedestrian push buttons and associated signs at locations within City of Chandler right-of-way as specified in the Project Plans or directed by City of Chandler Representatives.

Construction Requirements:

At least two weeks prior to removals, the Contractor and City of Chandler Representative will inspect all pedestrian push buttons and associated signs to determine which items are salvageable.

Prior to the delivery of any salvaged material or equipment, the Contractor will make arrangements for the City of Chandler to inspect all items. Any material or equipment not salvageable, as determined by the City of Chandler, will be disposed of by the Contractor at his expense. Any items determined to be salvageable prior to removal and then damaged during the removal will be replaced at no cost to the City of Chandler.

The Contractor will be responsible for removing all existing pedestrian push buttons and associated signs at locations as specified in the Project Plans. All salvaged pedestrian push buttons and associated signs components are to be salvaged and delivered to the Operations Yard at 249 E. Chicago Street, Chandler, Arizona.

Measurement and Payment:

Remove and Salvage Pedestrian Push Button w/ Sign will be measured as a unit per each and will be paid for at the contract unit price per each, which price will be full compensation for the work, complete in place.

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ITEM NO. 36 NEW ACCESS GATE PER SPECIAL DETAIL

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to construct new access gates within SRP canal right-of-way in accordance with the details shown and at locations designated in the Project Plans and as directed by City of Chandler Representatives.

Materials and Construction Requirements:

Materials and construction shall be in accordance with the details shown in the Project Plans and applicable MAG Uniform Standard Specification sections.

Measurement:

New Access Gate will be measured as a unit for each, complete in place.

Payment:

The accepted quantities of New Access Gate, measured as provided above, will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place.

No additional payment will be made for excavation, backfill, compaction, foundations, posts, rails, hardware, paint, and appurtenances, the cost be considered incidental to this item.

ITEM NO. 37 TRAFFIC CONTROL

Description:

Traffic Control is per City's General Conditions and MAG Uniform Standard Details for Public Works Construction, Section 401 "TRAFFIC CONTROL".

Construction Requirements:

Traffic Control is per City's General Conditions and MAG Uniform Standard Details for Public Works Construction, Section 401 "TRAFFIC CONTROL".

Measurement:

Traffic Control is per City's General Conditions and MAG Uniform Standard Details for Public Works Construction, Section 401 "TRAFFIC CONTROL" and will be measured as a lump sum.

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Payment:

Traffic Control is per City's General Conditions and MAG Uniform Standard Details for Public Works Construction, Section 401 "TRAFFIC CONTROL" and will be paid for at the contract lump sum price, which price will be full compensation for the work complete in place.

ITEM NO. 38 UNIFORMED OFF-DUTY LAW ENFORCEMENT OFFICER**Description:**

The work under this item will consist of coordinating, scheduling, and utilizing Local Law Enforcement Officers for traffic control purposes, as required by the City. The Contractor is encouraged to first utilize City of Chandler officers for off-duty law enforcement officer services. Should City of Chandler officers not be available for the time(s) requested by the Contractor, the Contractor may utilize officers from other jurisdictions with prior approval by City Representatives. In all cases, the Contractor will be responsible for obtaining, coordinating, and paying all costs for local enforcement officers and their vehicles.

Construction Requirements:

A uniformed off-duty law enforcement officer shall not be scheduled to work more than 12 consecutive hours unless an emergency exists. In an emergency situation, the Contractor shall coordinate with the officer to remain in their current capacity until another officer can take over.

Measurement:

Off-duty officer services will be measured for each hour a uniformed off-duty law enforcement officer and authorized vehicle is employed directly by the Contractor and authorized in advance by the City Representative. Off-duty officer services will be rounded to the nearest hour.

Uniformed off-duty law enforcement officer services used outside the project limits will not be reimbursed under this item. The project limits are defined as the construction work zone as shown on the approved traffic control plan for the specific area under construction.

Payment:

The accepted quantities of Uniformed Off-Duty Law Enforcement Officer, measured as provided above, will be paid for at the contract unit price per hour, which price will be full compensation for the work, complete in place, including vehicle and workman's compensation.

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ITEM NO. 39 LANDSCAPE ESTABLISHMENT – NINETY (90) DAYS

Description:

Refer to General Conditions Landscape Establishment Period for details.

General:

See General Conditions for requirements.

Measurement and Payment:

Landscape Establishment will be measured as a single complete unit of work and paid for at the contract unit lump sum price, which price will be full compensation for the work, complete in place.

Partial payments may be made for Landscape Establishment. Payment will be based upon the length of the Landscape Establishment Period and the contract lump sum price for this item.

- ITEM NO. 40 SHRUB – 1 GAL**
- ITEM NO. 41 SHRUB – 5 GAL**
- ITEM NO. 42 TREE – 36 IN BOX, 2 IN CAL MIN**

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary to plant shrubs and trees, of the size and type indicated, at all locations as specified in the Project Plans.

Control stationing, application of rodent repellent by mechanical or chemical means, removal of excess material(s), and general plant care and maintenance will also be completed in accordance with the requirements of Section 430 of MAG Standard Specifications, these Technical Specifications, and as required and approved by City Representatives.

Materials:

Amendments with each cubic yard of soil conditioner will consist of 25 pounds of agricultural gypsum, 1 pound of water soluble or powdered soil sulfur and 9 pounds of slow release Isobutylidene diurea fertilizer 25-4-8. Soil sulfur will be 85-95 percent pure soil sulfur.

Amendments will be inspected separately before adding to soil conditioner to ensure quality control. Pre-packaging of amendments is prohibited.

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Within 60 calendar days of the Notice of Award, the Contractor will furnish a complete Plant Availability List of all the plantings needed for this project. The list will include the confirmed nursery source for the planting stock, assuring the availability of each plant material and the size specified herein.

The list will include the species name (botanical, common, and varietal), size and quantity of the plant material, the confirmed source for the plant material as evidenced by an invoice or contract with the confirmed source and the approximate date the plant material will be delivered to the jobsite. This Plant Availability List will be submitted in triplicate to City Representatives.

Approval of the Plant Availability List by City Representatives does not relieve the Contractor of responsibility for providing plantings that will pass the inspection required elsewhere in these Technical Specifications.

Prior to planting, the selection of trees will be approved by the City Representatives. The Contractor will meet with the project Landscape Architect at up to three (3) local nurseries or wholesale plant providers to select and tag trees for use in the project. Local nurseries will be defined as those located within the Phoenix Metro Area. Nursery visits will occur a minimum of three (3) months prior to planting. The selected trees may be purchased and stored at the nursery, under continued care of the nursery, until time of planting. No planting will occur during the months of June through September.

To properly plant, maintain, and care for the plant material, water used during landscape construction will be furnished by the Contractor at the designated water meter sources from within the project limits, at no cost to the City. The contractor may elect to hand water, with approval from the City Representative, at an approved watering schedule.

Trees will be maintained in a straight vertical position during both the Construction Phase and the Landscape Establishment Phase of the project.

The Contractor will be responsible for the care of the trees and damage caused by improper support of the trees or due to construction activities. If necessary, or if required by City Representatives, all staking and bracing of trees will be completed as detailed on the Project Plans.

Construction Requirements:

Immediately after planting, all plants will be irrigated with the irrigation system until the backfill soil around and below the roots and the root ball itself is brought to 100 percent water holding capacity.

Plant pits and root balls will not be allowed to be flooded and totally saturated. Water will not be used to accomplish soil compaction around the root ball.

The soil for backfilling the planting pits will confirm to Section 430 of MAG Standard Specifications.

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All trees will be staked per details provided in the Project Plans and are considered incidental to the tree planting.

The Contractor will layout the planting pits in accordance with the Project Plans and control stationing along the curb edge using a starting location, methods, and markings approved by City Representatives. The planting layout will be according to the Project Plans. Triangular spacing shown are minimums only; actual spacing may vary.

The flagging will remain in the center of the planting pit until planting starts.

The Contractor will pay special attention to the infestation of weeds and grasses. If either of these items are found in the planting pits, it could result in immediate removal and disposal of the plant. The planting pit will be excavated and inspected to assure complete eradication of roots or rhizomes which may have grown into the area. This work and associated materials will be the responsibility of the Contractor and will be completed at no additional cost to the City.

All water used during the planting operation phase of the project will be the responsibility of the Contractor and will be provided at no additional cost to the City.

Measurement and Payment:

Shrubs and trees will be measured as a unit for each item planted and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place.

No payment will be made for shrubs and trees selected for inspection and not planted or for the care and protection of trees and shrubs prior to the beginning of the landscaping establishment period, the costs being considered as included in the prices paid for trees accepted and paid for under this bid item.

ITEM NO. 43	DECOMPOSED GRANITE (1/2" SCREENED)(MADISON GOLD)
ITEM NO. 44	DECOMPOSED GRANITE (MATCH EXISTING)

Description:

The work under these items consists of the following:

- Eradicating existing grasses and weeds with an approved herbicide and by mechanical methods. Also included will be furnishing and applying herbicide mixed in water.
- Grading surfaces upon which and decomposed granite will be placed to ensure proper drainage.
- Furnishing, placing, and compacting and decomposed granite, which will include all excavation and back filling.

- Included in the granite work is maintaining these areas free of weeds and trash/debris during the construction and landscape establishment phases of the project.

All work under this section will be completed in accordance with the details shown on the Project Plans, MAG Standard Specifications Section 430 and 795, and the requirements of these Technical Specifications.

Materials:

Decomposed Granite to be placed at the specified in locations shown on the Project Plans will be approved for color and gradation requirements prior to placement. The color to be used on the project will have the same color range as those listed below and will be approved by the City of Chandler representative prior to processing or placement.

Madison Gold Color Table

<u>COLOR</u>	<u>GRANITE NAME</u>	<u>SOURCE</u>
Gold	Madison Gold	Madison
Gold	Arizona Gold	Rock Pros
Gold	Belmont Gold	Custom Landscape Materials

Granite color will be no lighter in coloration than the lightness of the specified colors above.

Granite will have no more than 10 percent of the lighter color pigments (white and cream color pigmentations) in the decomposed granite mix.

For color verification of the specified color and/or for approval of an alternate color, the Contractor will provide a 10-ton material sample for each color required on the project for review.

Criteria to be used for approval for project granite color will be based on the following:

- Similarity to the granite color sample designated as the desired granite control color of the project
- Conformance to the material samples maintained by the City of Chandler
- If referenced similar color decomposed granite was used on previous Chandler projects
- The material's appearance after being wet and then dried

Each decomposed granite color approved for construction will be acquired from a single source.

Contractor to submit a decomposed granite sample for approval prior to ordering and

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installation. Decomposed Granite may vary in size, gradation, and color by location. Each type, regardless of size, gradation, and color, will be included under this item, and each type will be submitted and approved prior to ordering and installation.

Gradation requirements for Decomposed Granite (1/2" Screened)(Madison Gold) are as follows:

Decomposed Granite 1/2 Inch Screened, Madison Gold	
<u>Sieve Size</u>	<u>Percent Passing</u>
1/2 Inch	95-100
3/8 Inch	20-30
1/4 Inch	0-5

The salvage and reuse of existing granite material from the project area will not be allowed. All decomposed granite will be new. Each decomposed granite material will come from a single source to ensure uniformity of color.

All samples of decomposed granite will be supplied by the Contractor for approval prior to ordering and installation. The Contractor will receive approval from the City of Chandler for alternate granite color and/or color changes for decomposed granite prior to installation.

Construction Requirements:

Decomposed Granite to be used on the project and all granite samples prior to placement on the job site must meet the following requirements:

- Copy of the environmental permit for each granite source pit.
- Written acknowledgement from each supplier that they can provide the quantity of Granite Material required to complete the project.
- Written acknowledgement that granite supplier material will be provided within the contract time frame.
- The cost for any approved alternate decomposed granite color will be paid for at the contract bid price.
- The Contractor will provide a 5-gallon bucket sample for each color required on the project and each proposed alternate color
- All samples provided will be cleaned and washed, and will be leveled and cover an area of about 10 feet by 10 feet, and will be identified at the jobsite with a sign measuring 1-foot x 1-1/2 feet, with double staking behind the sign, and placed securely into the ground adjacent to the granite mulch color(s) samples(s).
- Labeling of decomposed granite signs will first list on line one the name of the product, and on the second line will list the name of the supplier. Text for labeling

will be waterproof, clearly legible, printed, and 1-inch capitalized text.

- Contractor will utilize one of each of the pre-bid opening colors at the same contract bid price if an alternate color is not approved.
- All granite samples provided after bidding acceptance are to be clean and washed, leveled covering an approximate spread area of 10 feet x 20 feet, and signed identifying the product and source.
- Alternate granite samples will have been cleared by City Representatives prior to color(s) submittal and on-site placement for review and approval.
- Alternate granite samples submitted after award of contract will be submitted a minimum of 30 days prior to granite installation for review and approval.

The granite color review and approval process will be coordinated by the Contractor with City Representatives and requires a 1-week minimum advance notice by the Contractor through the City Representatives. All granite colors and color alternates are as approved by City of Chandler. Granite colors are evaluated by comparison to approved color samples and existing decomposed granite.

The Contractor will remove all non-planted vegetation from all areas designated to receive decomposed granite (by chemical or mechanical means) and maintain the designated areas "vegetation-free" for a minimum period of 40 working days prior to placement of the granite mulch and decomposed granite, or as specified by the City Representative.

Prior to placement of the decomposed granite, designated areas to receive granite mulch and decomposed granite will be completely free of all grass, weeds, or other miscellaneous vegetation growth.

When using herbicides, a pre-emergent herbicide (Gallery, Surflan, Barricade or equivalent) will be applied to all granite material areas in the manner recommended by the manufacturer to prevent germination of noxious weeds. The Contractor will comply with all applicable portions of Subsection 803-3.02 of the ADOT Standard Specifications.

The subgrade upon which the decomposed granite is placed will be graded and compacted to promote proper drainage, as approved by the City Representative.

The subgrade will be compacted to between 85 to 90 percent of the maximum proctor density, as determined in accordance with the requirements of Arizona Test Methods 230 or 235, depending on the test method used to determine the compaction density (Sand Cone or Nuclear Method).

All vehicles used for spreading, grading and raking the decomposed granite will have one set of wheels with floatation tires having a minimum width of 18 inches to allow equal compaction of the granite mulch decomposed granite will be placed to a depth as indicated on the Project Plans and details. After rough spreading and rough grading of the granite mulch within the designated areas, the granite mulch and decomposed granite will be raked evenly and thoroughly to blend the different gradation sizes.

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The use of conveyor belt type of equipment for placing granite mulch and decomposed granite will not relieve the Contractor from the requirements of compacting the granite mulch and decomposed granite with equipment as described herein.

Placement of decomposed granite shall be per locations and depths per Project Plans.

After placement, the granite mulch and decomposed granite will be saturated with water to an optimum moisture level as recommended by the supplier. The City Representatives will approve the amount of water necessary to aid in the compaction of the granite mulch, prior to application.

During the final spreading and final grading operations, all surfaces within the granite mulch and decomposed granite areas will be passed over by the spreading and grading equipment a minimum of two-times.

Equipment operations for spreading, grading, raking, chemical application, water settling, and other operations will be done in a manner that uniformly maximizes the vehicle's wheel compaction over the surface area.

The pre-emergent herbicide will be applied in the manner recommended by the manufacturer to prevent germination of noxious weeds.

Pre-emergent herbicide will be applied to the designated granite mulch and decomposed granite areas as specified in MAG Uniform Standard Specifications. Three (3) applications of pre-emergent are required.

After placing, spreading and grading the granite mulch and decomposed granite, the Contractor will water settle the total thickness of the granite mulch and decomposed granite, to remove the fine material from the surface. The water settling operation, noted above, will be completed by applying water at minimum depth of 1/2 inch over the decomposed granite placed or as approved by the City Representative.

Measurement and Payment:

Decomposed Granite (1/2" Screened)(Madison Gold) and Decomposed Granite (To Match Existing) will be measured by the square yard and will be paid for at the contract unit price per square yard, which price will be full compensation for the item, complete in place. Payment will include all required or requested samples, grading, compaction, pre-emergent herbicide, all erosion repair work and other related activities as described and specified herein, and as specified in the Project Plans or as required by City Representatives.

No additional payment will be made for all erosion repair work or compaction of soil, as specified herein, the cost being considered incidental to this item.

Contractor will be responsible for all erosion repairs on project site that may occur during decomposed granite mulch color review and approval process at no additional payment to the Contractor.

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ITEM NO. 45 RIP RAP – SALVAGE AND REINSTALL – 6” DEPTH

Description:

The work under these items consists of furnishing all materials, labor, and equipment necessary to salvage, stockpile, and reinstall existing rip rap, and furnishing and applying pre-emergent herbicide and water, at locations shown on the Project Plans and as directed by the Engineer.

Construction Requirements:

All rip rap shall be placed to a minimum depth of 6 inches, and the grade shall be excavated to allow the top of the rip rap to be placed a minimum of 1 inch lower than the adjacent concrete path. Locations requiring depths greater than 6 inches will be determined in the field by the Engineer.

Should new rip rap be required to supplement beyond the quantity that has been salvaged and replaced, the contractor shall submit a rip rap sample for approval of size and color match prior to ordering and installation. The quantity of supplemental rip rap shall be approved by the City Representative prior to ordering and installation.

During the final spreading and final grading operations, all surfaces within the rip rap areas shall be compacted to at least 85 percent of the maximum Proctor dry density, as determined in accordance with the requirements of Arizona Test Methods 230 or 235, depending on the test method used, to determine the compaction density. Care shall be taken to avoid damage to adjacent features.

The pre-emergent herbicide will be applied as specified in MAG Standard Specifications and in the manner recommended by the manufacturer to prevent germination of noxious weeds. Three (3) applications of pre-emergent are required.

After final spreading and final grading, the contractor shall water settle the total thickness of the rock mulch to remove fines from the surface. The water settling operation shall be completed by applying water over the entire rock mulch surface area by the use of a water truck or other means as approved by the Engineer. Water for water settling shall be applied in the amounts required by the Engineer.

Measurement:

Rip Rap – Salvage and Reinstall will be measured by the cubic yard of material in place at the specified thickness.

Payment:

The accepted quantities of Rip Rap – Salvage and Reinstall, measured as provided above, complete in place, will be paid for at the contract unit price per cubic yard.

New rip rap material, if required, will be paid for at the contract unit price per cubic yard.

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No measurement or additional payment will be made for erosion repair work, grading and compaction of the rock mulch to achieve final finished grades, pre-emergent herbicide, water, or the removal of trash, filter fabric, and debris, the cost being considered as included in the price of this contract item.

ITEM NO. 46	TRASH RECEPTACLE
ITEM NO. 47	PET WASTE STATION
ITEM NO. 48	MULTI-USE PATH RULES SIGNAGE
ITEM NO. 49	BICYCLE REPAIR STATION
ITEM NO. 50	BICYCLE RACK
ITEM NO. 51	BENCH
ITEM NO. 52	SEAT DIVIDER

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS
CONSTRUCTION AND CITY OF CHANDLER ENGINEERING DESIGN AND
CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO
INCLUDE THE FOLLOWING:

PART 1 - GENERAL

1.01 SCOPE OF WORK

The work under this Section shall consist of furnishing all labor, materials and incidentals to install the following equipment complete in place and ready for intended use in accordance with the manufacturer's specifications, these specifications and at locations shown on the project plans and approved by City of Chandler Representatives.

Base Bid

- A. Trash Receptacle
- B. Pet Waste Station
- C. Multi-Use Path Rules Signage
- D. Bicycle Repair Station
- E. Bicycle Rack
- F. Bench
- G. Seat Divider

1.02 SUBMITTALS

- A. Submit full product data and technical information on all furnishings to be installed.
- B. Submit full range of available color selections on all furnishings to be installed.

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- C. All site furnishings are to be the manufacturer and model number specified or a substitute as specified and approved in writing by the owner prior to contract award.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Trash Receptacles:
 - 1. Manufacturer: Webcoat
 - 2. Model: TR 32 Classic w/Dome 32
 - 3. Color: VIP Brown
 - 4. Mounting: In-Ground Post Mount
- B. Pet Waste Station:
 - 1. Manufacturer: Mutt Mitt
 - 2. Model: UPC 840431501017
 - 3. Color: Dark Green
- C. Park Rules Signage
 - 1. Per Plan
- D. Bicycle Repair Station
 - 1. Manufacturer: Dero
 - 2. Model: Fixit W/ AirKit 2
 - 3. Color: Bronze Power Coat
 - 4. Mounting: Surface Mount
- E. Bicycle Rack
 - 1. Manufacturer: Webcoat
 - 2. Model: Ring Bike Bollard
 - 3. Color: VIP Brown
 - 4. Mounting: In-Ground Post Mount
- F. Bench
 - 1. Manufacturer: Webcoat
 - 2. Model: B6WBCCLASSICWINGLINE
 - 3. Color: VIP Brown
 - 4. Mounting: In-Ground Post Mount
- G. Seat Divider
 - 1. Manufacturer: Forms+Surfaces (Or Approved Equal)
 - 2. Model: Vector Seating System Intermediate Divider
 - 3. Color: Brown

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PART 3- EXECUTION

1. INSTALLATION

- A. Install all components at locations shown on Drawings properly aligned and spaced, plumbed vertically, complete and ready for use.
- B. Install all components in accordance with manufacturer's instructions.
- C. If the manufacturer recommends anchoring or footing details, submit copies of the details to the Engineer for review and approval prior to construction.

Measurement and Payment:

Trash Receptacle, Pet Waste Station, Multi-Use Path Rules Signage, Bicycle Repair Station, Bicycle Rack, and Bench will be measured as a unit for each item installed and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place. Payment will be made in accordance with the unit prices bid per each. Such price shall include full compensation for furnishing all labor, materials, tools, equipment, footings, and incidentals required to accomplish the work per the plans, manufacturers' recommendations, and approved by the City of Chandler Representative.

ITEM NO. 53 PET WASTE STATION, SALVAGE AND RELOCATE

Description:

The work under this item will consist of furnishing all materials, labor, and equipment for removing salvaging and relocating existing pet waste stations at locations as specified in the Project Plans and approved by City of Chandler Representative.

Construction Requirements:

At least two weeks prior to removals, the Contractor and City Representative will inspect the existing pet waste stations to determine which items are salvageable.

Pet waste stations shall be installed per manufacturer's recommendations and per the Project Plans.

The Contractor will backfill the excavated area per the City's requirements for backfilling and compaction.

Measurement and Payment:

Pet Waste Station, Salvage and Relocate will be measured as a unit for each item installed and will be paid for at the contract unit price each, which price will be full

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compensation for the work, complete in place.

Payment will be made in accordance with the unit prices bid per each. Such price shall include full compensation for furnishing all labor, materials, tools, equipment, footings, and incidentals required to accomplish the work per the plans, manufacturers' recommendations, and approved by the City of Chandler Representative.

ITEM NO. 54 TRAILHEAD SIGN (HIGHLINE CANAL SHARED USE PATH)

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION and CITY OF CHANDLER SUPPLEMENTS TO DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:

This work under this Section shall consist of furnishing all materials, labor, fabrication, transportation, and equipment necessary to manufacture and install Trailhead Signs in accordance with the details shown on the plans, these specifications and at locations shown on the project plans and approved by City of Chandler Representatives.

1. Concrete: shall conform to the requirements of Section 505 of the MAG Specifications.
2. Structural Steel Framing:
 - A. General
 1. Section Includes:
 - (i) Structural steel.
 - (ii) Grout.
 - B. Related Requirements:
 1. Refer to "Architecturally Exposed Structural Steel Framing" for additional requirements for architecturally exposed structural steel.
 - C. Definitions
 1. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
 - D. Submittals
 1. Product Data: For each type of product provided on the construction plans and listed in these special provisions.
 2. Shop Drawings: Show fabrication of structural-steel components provided on the construction plans.
 3. Qualification Data: For Installer and Fabricator.
 - (i) Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

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4. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.
5. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
6. Welding certificates.
7. Mill test reports for structural steel, including chemical and physical properties.
8. Source quality-control reports.
9. Field quality-control and inspection reports.
 - (i) Coatings – General: Furnish complete-coat system formulated and recommended by manufacturer for applications indicated, in thicknesses indicated; number of coats specified does not include primer or filler coat.
 1. Colors: provide colors as shown on the construction plans and these special provisions.

E. Products

1. Structural Steel Materials
 - (i) Channels & Angles: ASTM A 36/A 36M.
 - (ii) Plate and Bar: ASTM A 36/A 36M
 - (iii) Cold-Formed Hollow Structural Sections: ASTM A 500/A 500M, Grade C, structural tubing.
 - (iv) Steel Pipe: ASTM A 53/A 53M, Grade B.
 - (v) Welding Electrodes: Comply with AWS requirements.
2. Bolts, Connections, And Anchors
 - (i) High-Strength Bolts, Nuts, and Washers: ASTM A 325 Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436 Type 1, hardened carbon-steel washers; all with plain finish.
 - (ii) Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy hex head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.
 - (iii) Finish: Galvanized.
 - (iv) Unheaded Anchor Rods: ASTM F 1554, Grade 55, weldable.
 - (v) Configuration: Straight.
 - (vi) Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.
 - (vii) Headed Anchor Rods: ASTM F 1554, Grade 55, weldable, straight.
 - (viii) Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.
 - (ix) Threaded Rods: ASTM A 36/A 36M.
 - (x) Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.
 - (xi) Tamper Resistant Screws: Type 304 Stainless Steel.
3. Primer

- (i) Primer: Comply with Manufacturers recommendations and AAMA 2605 Standards.
- 4. Grout
 - (i) Metallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.
 - (ii) Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and non-staining, mixed with water to consistency suitable for application and a 30-minute working time.
- 5. Fabrications
 - (i) Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.
 - (ii) Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.
- 6. Shop Connections
 - (i) High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened.
 - (ii) Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
- 7. Shop Priming
 - (i) Shop prime steel surfaces except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - 2. Surfaces to be field welded.
 - 3. Surfaces of high-strength bolted, slip-critical connections.
 - 4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
 - 5. Galvanized surfaces.
 - 6. Surfaces enclosed in interior construction.
 - (ii) Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
 - 2. SSPC-SP 3, "Power Tool Cleaning."
 - 3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
 - (iii) Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of

1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

8. Shop Finish:

- (i) PVDF (Polyvinylidene Fluoride) coating High Performance Organic Finish AAMA 2605, applied with the KYNAR supplier's specifications for a total dry film thickness of 1.0 mil (nominal).
- (ii) Provide strippable coating for protection during fabrication, shipping, field handling and erection.
- (iii) The color of the powder coat finish shall match the type, texture, color, hue, shade and properties of Cardinal Powder Coat Silver Metallic 30 Gloss No. T353-GR06, Blue Hammer NO. T013-BL468, Rust Texture No. T091-BR47, Oil Bronze 20 Gloss T022-BR189 and International Orange 90 Gloss No. T009-OG26. Powder coat manufacturer may be TIGER, Nortek Powder Coating or approved equal. The Cardinal Powder Coat number is included for control reference only. Any powder coat provider shall match this color.

9. Source Quality Control

- (i) Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.
 - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- (ii) Bolted Connections: Inspect shop-bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- (iii) Welded Connections: Visually inspect shop-welded connections according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - 1. Liquid Penetrant Inspection: ASTM E 165.
 - 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - 3. Ultrasonic Inspection: ASTM E 164.
 - 4. Radiographic Inspection: ASTM E 94.
- (iv) Prepare test and inspection reports.

F. Execution

1. Examination

- (i) Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
- (ii) Proceed with installation only after unsatisfactory conditions have been corrected.

2. Erection

- (i) Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

- (ii) Baseplates: Clean concrete surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Weld plate washers to top of baseplate.
 - 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
 - (iii) Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
- 3. Field Connections
 - (i) High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug Tightened.
 - (ii) Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
 - 2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
 - 3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.
- 4. Field Quality Control
 - (i) Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
 - 1. Verify structural-steel materials and inspect steel frame joint details.
 - 2. Verify weld materials and inspect welds.
 - 3. Verify connection materials and inspect high-strength bolted connections.
 - (ii) Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

- (iii) Bolted Connections: Inspect bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
 - (iv) Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.
 - 1. In addition to visual inspection, test and inspect field welds according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
- 3. Architecturally Exposed Structural Steel:
 - A. General
 - 1. Summary
 - (i) Section includes architecturally exposed structural-steel (AESS).
 - (ii) Requirements in Section "Structural Steel Framing" also apply to AESS.
 - B. Definitions
 - (i) AESS: Structural steel designated as "architecturally exposed structural steel" or "AESS" in the Contract Documents.
 - C. Submittals
 - (i) Shop Drawings: Show fabrication of AESS components. Shop Drawings for structural steel may be used for AESS provided items of AESS are specifically identified and requirements below are met for AESS.
 - 1. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain. Indicate grinding, finish, and profile of welds.
 - 2. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
 - (ii) Samples: Submit Samples of AESS to set quality standards for exposed welds.
 - 1. Two steel plates, 3/8 by 8 by 4 inches with long edges joined by a groove weld and with weld ground smooth.
 - 2. Steel plate, 3/8 by 8 by 8 inches with one end of a short length of rectangular steel tube, 4 by 6 by 3/8 inches welded to plate with a continuous fillet weld and with weld ground smooth and blended.
 - (iii) Coatings – General: Furnish complete-coat system formulated and recommended by manufacturer for applications indicated, in

thicknesses indicated; number of coats specified does not include primer or filler coat.

1. Colors: provide colors as shown on the construction plans or approved equal.

D. Quality Assurance

1. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD, or is accredited by the IAS Fabricator Inspection Program for Structural Steel (AC 172).
2. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector.
3. Shop-Painting Applicators: Qualified according to AISC's Sophisticated Paint or SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."
4. Delivery, Storage, and Handling
 - (i) Use special care in handling to prevent twisting, warping, nicking, and other damage. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
5. Field Conditions
 - (i) Field Measurements: Where AESS is indicated to fit against other construction, verify actual dimensions by field measurements before fabrication.

E. Products

1. Bolts, Connectors, and Anchors – Refer to Section "Structural Steel Framing".
2. Filler
3. Filler: Polyester filler intended for use in repairing dents in automobile bodies.
4. Primer – Refer to Section "Structural Steel Framing".
5. Fabrication
 - (i) In addition to special care used to handle and fabricate AESS, comply with the following:
 1. Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale, and roughness.
 2. Grind sheared, punched, and flame-cut edges of AESS to provide smooth surfaces and edges.
 3. Fabricate AESS with exposed surfaces free of mill marks.

4. Fabricate AESS with exposed surfaces free of seams to maximum extent possible.
 5. Remove blemishes by filling or grinding or by welding and grinding, before cleaning, treating, and shop priming.
 6. Fabricate with piece marks fully hidden in the completed structure or made with media that permits full removal after erection.
 7. Fabricate AESS to the tolerances specified in AISC 303 for steel that is designated AESS.
 8. Seal-weld open ends of hollow structural sections with 1/8-inch closure plates.
- (ii) Coping, Blocking, and Joint Gaps: Maintain uniform gaps of 1/8 inch with a tolerance of 1/32 inch.
- (iii) Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- (iv) Cleaning Corrosion-Resisting Structural Steel: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- (v) Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.
1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.
- (vi) Shop Connections
1. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - a. Joint Type: Snug Tightened.
 2. Weld Connections: Comply with AWS D1.1/D1.1M tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work, and comply with the following:
 - a. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding specified tolerances.
 - b. Use weld sizes, fabrication sequence, and equipment for AESS that limit distortions to allowable tolerances.
 - c. Provide continuous, sealed welds at angle to gusset-plate connections and similar locations where AESS is exposed to weather.
 - d. Provide continuous welds of uniform size and profile where AESS is welded.

- e. Grind butt and groove welds flush to adjacent surfaces within tolerance of plus 1/16 inch, minus zero inch.
 - f. Make butt and groove welds flush to adjacent surfaces within tolerance of plus 1/16 inch, minus zero inch. Do not grind unless required for clearances or for fitting other components, or unless directed to correct unacceptable work.
 - g. Remove backing bars or runoff tabs; back-gouge and grind steel smooth.
 - h. At locations where welding on the far side of an exposed connection of AESS occurs, grind distortions and marking of the steel to a smooth profile aligned with adjacent material.
 - i. Make fillet welds oversize and grind to uniform profile with smooth face and transition.
 - j. Make fillet welds of uniform size and profile with exposed face smooth and slightly concave. Do not grind unless directed to correct unacceptable work.
3. Galvanizing
- a. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.
 - i. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
 - ii. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
4. Shop Priming
- a. Shop prime steel surfaces except the following:
 - i. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - ii. Surfaces to be field welded.
 - iii. Surfaces to be high-strength bolted with slip-critical connections.
 - iv. Surfaces to receive sprayed fire-resistive materials.
 - v. Galvanized surfaces.
5. Surface Preparation:
- a. SSPC-SP 3, "Power Tool Cleaning."
 - b. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
 - c. SSPC-SP 14/NACE No. 8, "Industrial Blast Cleaning."
 - d. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
 - e. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - f. SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."
6. Preparing Galvanized Steel for Shop Priming: After galvanizing, thoroughly clean steel of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
7. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate

recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

8. Shop Finish:

- a. PVDF (Polyvinylidene Fluoride) coating High Performance Organic Finish AAMA 2605, applied with the KYNAR supplier's specifications for a total dry film thickness of 1.0 mil (nominal).
- b. Provide strippable coating for protection during fabrication, shipping, field handling and erection.
- c. The color of the powder coat finish shall match the type, texture, color, hue, shade, and properties of Cardinal Powder Coat Silver Metallic 30 Gloss No. T353-GR06, Blue Hammer NO. T013-BL468, Rust Texture No. T091-BR47, Oil Bronze 20 Gloss T022-BR189 and International Orange 90 Gloss No. T009-OG26. Powder coat manufacturer may be TIGER, Nortek Powder Coating or approved equal. The Cardinal Powder Coat number is included for control reference only. Any powder coat provider shall match this color.

F. Execution

1. Examination

- (i) Verify, with steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

- (ii) Proceed with installation only after unsatisfactory conditions have been corrected.

2. Preparation

- (i) Provide temporary shores, guys, braces, and other supports during erection to keep AECS secure, plumb, and in alignment.

1. If possible, locate welded tabs for attaching temporary bracing and safety cabling where they will be concealed from view in the completed Work.

3. Erection

- (i) Set AECS accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

1. Erect AECS to the tolerances specified in AISC 303 for steel that is designated AECS.

- (ii) Do not use thermal cutting during erection unless approved by Engineer. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

4. Field Connections

- (i) High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened.
 - 2. Orient bolt heads in same direction for each connection and to maximum extent possible in same direction for similar connections.
 - (ii) Weld Connections: Comply with requirements in "Weld Connections" Paragraph in "Shop Connections" Article.
 - 1. Remove backing bars or runoff tabs; back-gouge and grind steel smooth.
 - 2. Remove erection bolts, fill holes, and grind smooth.
 - 3. Fill weld access holes and grind smooth.
 - 5. Field Quality Control
 - (i) Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect AECS as specified in Section 051200 "Structural Steel Framing." The testing agency is not responsible for enforcing requirements relating to aesthetic effect.
 - (ii) Architect will observe AECS in place to determine acceptability relating to aesthetic effect.
 - 6. Repairs and Protection
 - (i) Remove welded tabs that were used for attaching temporary bracing and safety cabling and that are exposed to view in the completed Work. Grind steel smooth.
 - (ii) Galvanized Surfaces: Clean field welds, bolted connections, abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.
- 4. Decorative Formed Metal
 - A. General
 - 1. Summary
 - (i) Section Includes:
 - 1. Closures and trim.
 - B. Action Submittals
 - 1. Product Data: For each type of product, including finishing materials.
 - 2. Shop Drawings: Show fabrication and installation details for decorative formed metal.
 - (i) Include plans, elevations, component details, and attachment details.
 - (ii) Indicate materials and profiles of each decorative formed metal member, fittings, joinery, finishes, fasteners, anchorages, and accessory items.
 - 3. Samples: For each type of exposed finish required, prepared on 6-inch-square samples of metal of same thickness and material indicated for the Work.
 - C. Informational Submittals

1. Coordination Drawings: For decorative formed metal elements for the Portico roof. Show dimensions of roof/steel deck items, including locations of steel deck penetrations and attachments, and necessary clearances.
 2. Evaluation Reports: For post-installed anchors, from ICC-ES.
- D. Products
1. Sheet Metal
 - (i) General: Fabricate products from sheet metal without pitting, seam marks, roller marks, stains, discolorations, or other imperfections where exposed to view on finished units.
 - (ii) Galvanized-Steel Sheet: ASTM A 653/A 653M, coating, either commercial steel or forming steel.
 - (iii) Steel Sheet: Uncoated, cold-rolled, ASTM A 1008/A 1008M, commercial steel, exposed or electrolytic zinc-coated, ASTM A 879/A 879M, with steel sheet substrate complying with ASTM A 1008/A 1008M, commercial steel, exposed.
 2. Miscellaneous Materials
 - (i) Gaskets: As required to seal joints in decorative formed metal and remain weathertight as recommended in writing by decorative formed metal manufacturer.
 1. ASTM D 1056, Type 1, Class A, grade as recommended by gasket manufacturer to obtain seal for application indicated.
 2. Closed-cell polyurethane foam, adhesive on two sides, release paper protected.
 - (ii) Sealants, Exterior: Elastomeric sealant complying with Section 079200 "Joint Sealants" and as recommended in writing by decorative formed metal manufacturer.
 - (iii) Sealants, Interior: Nonsag, paintable sealant complying with "Joint Sealants" and as recommended in writing by decorative formed metal manufacturer.
 - (iv) Filler Metal and Electrodes: Provide type and alloy of filler metal and electrodes as necessary for strength, corrosion resistance, and compatibility in fabricated items.
 1. Use filler metals that will match the color of metal being joined.
 - (v) Fasteners: Fabricated from same basic metal and alloy as fastened metal unless otherwise indicated.
 1. Provide tamper-resistant flat-head, machine screws for exposed fasteners unless otherwise indicated.
 - (vi) Anchors: Provide fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193.
 - (vii) Anchor Materials:
 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or Class Fe/Zn 5, unless otherwise indicated.

- (viii) Laminating Adhesive: Adhesive recommended by metal fabricator that will fully bond metal to metal and is noncombustible after curing.
- 3. Coatings
 - (i) Etching Cleaner for Galvanized Metal: Complying with MPI#25.
 - (ii) Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
 - (iii) Shop Primers: Comply with Powder Coat Manufacturers' recommendations.
 - (iv) Universal Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
 - (v) Shop Finish:
 - 1. PVDF (Polyvinylidene Fluoride) coating High Performance Organic Finish AAMA 2605, applied with the KYNAR supplier's specifications for a total dry film thickness of 1.0 mil (nominal).
 - 2. Provide strippable coating for protection during fabrication, shipping, field handling and erection.
 - 3. The color of the powder coat finish shall match the type, texture, color, hue, shade, and properties of Cardinal Powder Coat Silver Metallic 30 Gloss No. T353-GR06, Blue Hammer NO. T013-BL468, Rust Texture No. T091-BR47, Oil Bronze 20 Gloss T022-BR189 and International Orange 90 Gloss No. T009-OG26. Powder coat manufacturer may be TIGER, Nortek Powder Coating or approved equal. The Cardinal Powder Coat number is included for control reference only. Any powder coat provider shall match this color.
- E. Fabrication, General
 - 1. Shop Assembly: Preassemble decorative formed metal 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.
 - 2. Fold back exposed edges of unsupported sheet metal to form a 1/2-inch-wide hem on the concealed side, or ease edges to a radius of approximately 1/32 inch and support with concealed stiffeners.
 - 3. Increase metal thickness or reinforce with concealed stiffeners, backing materials, or both, as needed to provide surface flatness and sufficient strength for indicated use.
 - (i) Support joints with concealed stiffeners as needed to hold exposed faces of adjoining sheets in flush alignment.
 - 1. Where welding or brazing is indicated, weld or braze joints and seams continuously. Grind, fill, and dress to produce smooth,

- flush, exposed surfaces in which joints are not visible after finishing is completed.
4. Flashing, Closures and Trim
 - (i) Form flashing, closures and trim from metal of type and thickness indicated below. Fabricate to fit tightly to adjoining construction, with weathertight joints at exterior installations.
 1. Steel Sheet: 0.048 inches.
 - a. Finish: Powder Coat to match exterior finishes of structure.
 5. Galvanized Steel Sheet Finishes
 - (i) Preparing Galvanized Items for Factory Priming: Thoroughly clean galvanized decorative formed metal of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
 - (ii) Preparing Galvanized Items for Factory Finishing: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it.
 - (iii) Repairing Galvanized Surfaces: Clean welds and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.
 - (iv) Powder-Coat Finish: Immediately after cleaning and pretreating, apply manufacturer's standard thermosetting polyester or acrylic urethane powder coating with cured-film thickness not less than 1.0 mils. Prepare, treat, and coat metal to comply with resin manufacturer's written instructions.
 1. Color and Gloss: As indicated by manufacturer's designations and as shown on the construction plans.
 6. Steel Sheet Finishes
 - (i) Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or with SSPC-SP 8, "Pickling."
 - (ii) Pretreatment: Immediately after cleaning, apply a conversion coating of type suited to organic coating.
 - (iii) Powder-Coat Finish: Immediately after cleaning and pretreating, apply manufacturer's standard thermosetting polyester or acrylic urethane powder coating with cured-film thickness not less than 1.0 mils. Prepare, treat, and coat metal to comply with resin manufacturer's written instructions.
 1. Color and Gloss: As indicated by manufacturer's designations and these specifications.

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F. Execution

1. Installation

- (i) Locate and place decorative formed metal items level and plumb and in alignment with adjacent construction. Perform cutting, drilling, and fitting required to install decorative formed metal.
- (ii) Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where needed to protect metal surfaces and to make a weathertight connection.
- (iii) Form tight joints with exposed connections accurately fitted together. Provide reveals and openings for sealants and joint fillers as indicated.
- (iv) Corrosion Protection: Apply bituminous paint or other permanent separation materials on concealed surfaces where metals would otherwise be in direct contact with substrate materials that are incompatible or could result in corrosion or deterioration of either material or finish.
- (v) Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit or provide new units.

5. Plastic Sheet Paneling

A. General

1. Summary

- (i) Section includes plastic sheet paneling for Path Map and Path sign.

B. Action Submittals

- 1. Product Data: For each type of product.
- 2. Samples: For plastic paneling.

C. Products

1. Plastic Sheet Paneling

- (i) Translucent Polycarbonate Panel.

- 1. Nominal Thickness: As shown on the construction plans.
- 2. Surface Finish: As indicated by manufacturer's designations.
- 3. The color of plastic sheet paneling shall match the type, texture, color, hue, shade, and properties of KODA XT BY 3FORM CASSIDY B26. Plastic sheet paneling manufacturer may be Professional Plastics Inc., Curbell Plastics or approved equal. The KODA XT BY 3FORM CASSIDY B26 type is included for control reference only. Any plastic sheet paneling provider shall match this color.

2. Accessories

- 3. Sealant: Mildew-resistant, single-component, neutral-curing silicone or sealant recommended by plastic paneling manufacturer.

D. Preparation

- 1. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.

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2. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.
3. Lay out paneling before installing. Locate panel joints where indicated.
- E. Installation
 1. Install plastic paneling according to manufacturer's written instructions.
 2. Install panels in a full spread of adhesive.
 3. Install trim accessories with adhesive.
 4. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.
 5. Maintain uniform space between panels and wall fixtures. Fill space with sealant.
 6. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.
6. Joint Sealants
 - A. General
 1. Summary
 - (i) Section Includes:
 1. Silicone joint sealants.
 2. Nonstaining silicone joint sealants.
 3. Urethane joint sealants.
 4. Immersible joint sealants.
 5. Mildew-resistant joint sealants.
 6. Latex joint sealants.
 - B. Action Submittals
 1. Product Data: For each type of product.
 - C. Samples: For each kind and color of joint sealant required
 - D. Joint-Sealant Schedule: Include the following information:
 1. Joint-sealant application, joint location, and designation.
 2. Joint-sealant manufacturer and product name.
 3. Joint-sealant formulation.
 4. Joint-sealant color.
 - E. Information Submittals
 1. Product test reports.
 2. Preconstruction laboratory test reports.
 3. Preconstruction field-adhesion-test reports
 4. Field-adhesion-test reports.
 5. Sample warranties.
 - F. Warranty
 1. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other

- requirements specified in this Section within specified warranty period.
- (i) Warranty Period: two years from date of Substantial Completion
 - 2. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period
 - (i) Warranty Period: Five years from date of Substantial Completion.
- G. Products
- 1. Joint Sealants-General
 - (i) Nonstaining Silicone Joint Sealants
 - 1. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.
 - 2. Silicone, Nonstaining, S, NS, 100/50, NT: Nonstaining, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
 - 3. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 4. Silicone, Nonstaining, S, NS, 100/50, T, NT: Nonstaining, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Uses T and NT.
 - 5. Silicone, Nonstaining, M, NS, 50, NT: Nonstaining, multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type M, Grade NS, Class 50, Use NT.
- H. Execution
- 1. Preparation
 - (i) Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove laitance and form-release agents from concrete.
 - 2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
 - (ii) Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.

(iii) Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

I. Installation

1. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
2. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
3. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
4. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - (i) Place sealants so they directly contact and fully wet joint substrates.
 - (ii) Completely fill recesses in each joint configuration.
 - (iii) Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
5. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - (i) Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

7. Electrical Fixtures

A. General

1. Summary
 - (i) Section Includes:
 1. Luminaire/Light Fixture for Path Sign Structure.

B. Action Submittals

1. Product Data: For each type of product.
2. Samples: For each type of electrical light/luminaire fixture required

C. Products

1. Path Sign Structure:
 - (i) The type of electrical fixture shall match the type and specifications of FX Luminaire UP Light. Electrical Fixture manufacturer may be VISTA, RAB or approved equal. The FX Luminaire type is included for control reference only. Any electrical fixture provider shall match this type.

D. Installation

1. General: Installation shall comply with Manufacturers recommendations, instructions, and details provided on the construction plans.

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Measurement and payment will be made at the contract unit price bid per each and shall be full compensation for the item complete in place. Lighting fixtures, electrical conduit, conductors, and miscellaneous electrical equipment is considered incidental to the cost of the bid item.

ITEM NO. 55 SANDBLASTED PAVEMENT MARKING

Description:

The work under this section shall consist of furnishing all labor, materials, and equipment to apply sandblasted finishes on the concrete multi-use path as shown on the Project Plans entitled Sandblasted Pavement Markings. The work under this section shall also consist of cleaning and preparing the pavement surface and furnishing all labor, materials and equipment to apply lead-free, rapid-dry exterior paint in the colors and locations as shown on the project plans and as approved by City of Chandler Representatives.

Materials:

Metal templates for sandblasted patterns shall be clean, carbon steel and be plasma cut. No water jet cutting allowed.

The color of the exterior paint shall match the type, texture, color, hue, shade and properties of Sherwin Williams 'Black of Night' SW6993 and Sherwin Williams 'Extra White' SW7006. Paint manufacturer may be Dunn Edwards, Pittsburgh Paints, or approved equal. The Sherwin Williams number is included for control reference only. Any paint provider may be used and shall match this color, with approval from the Engineer.

Submittals:

The contractor shall provide manufacturer and product items information for metal sandblasting templates and sandblasting equipment data.

The contractor shall provide three (3) separate 8" x 10" cardboard stock (draw-down) samples for each color selected to the Engineer for approval. The contractor shall make provisions to provide for up to six (6) additional draw-down paint samples as directed by the Engineer.

Prior to the application of the acrylic emulsion paint, the contractor shall provide three original copies of Certificate of Compliance for each lot or batch of paint supplied. The Certificate of Compliance shall certify compliance of the paint with each of the specified physical, chemical, and performance requirements for acrylic emulsion paint listed herein. In addition, product data sheets listing the paint constituents and their proportions as well as materials safety data sheets are required for any paint material supplied which is not on the Materials Section's approved list of acrylic emulsion paints for concrete surfaces.

Acrylic emulsion paint will be sampled and tested on a lot basis. At least one sample, not less than one quart in size, will be taken and tested. Random samples may be taken at

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the discretion of the Engineer.

The acrylic emulsion paint shall be ready-mixed at the manufacturer's plant.

Acrylic emulsion paint shall be furnished in new, unopened, air-tight containers which are clearly labeled with the exact title of the paint material, Federal Specification number (when applicable), name and address of manufacturer, date of paint manufacturer and the lot or batch number. The containers shall conform to U.S. Department of Transportation Hazardous Material Shipping Regulations.

Precautions concerning the handling and the application of the paint shall be shown on the label of paint containers.

Physical and Chemical Requirements:

The water-borne acrylic emulsion paint shall conform to the requirements of Federal Specifications TT-P-19D for paint, Acrylic Emulsion, Exterior. The Engineer may allow deviations from the physical and chemical requirements of TT-P-19D if the paint is an acrylic emulsion, applicable air pollution standards are met, and all performance requirements of TT-P-19D or as specified herein are met. The following are physical and chemical requirements for TT-P-19D paint, which shall be adhered to unless otherwise approved by the Engineer.

Material Property	Requirement	Test Method
Resin	100% Acrylic	ASTM 2621
Volatile Organic Content (LB/gal)	2.1 max.	ASTM 3960
Total Solids by Weight (percent)	50 min.	ASTM 2369
Total Solids by Volume (percent)	40 min.	ASTM 2697
Nonvolatile Organic Content by Weight (percent)	19 min.	ASTM 3723
Consistency (KU)	80 – 100	ASTM D562
Fineness of Dispersion	4 min.	ASTM 1210
Dry Time, Set-to-Touch	10 minutes min.	ASTM 1640
Dry Time, Thorough	2 hours max.	ASTM 1644

Mock-ups:

At locations within the project area selected by the Engineer, the contractor shall provide and finish a minimum of a 3' x 3' concrete mock-up demonstrating materials, pattern, and workmanship for the sandblasting method to be used within the project for each special concrete pattern.

The contractor shall also provide and finish a minimum of a 3' x 3' concrete mock-up

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demonstrating materials, pattern, and workmanship for the sandblasting method paint application to be used within the project area for the special concrete paint that specified paint applications. The colors to be used for this mock-up will be selected from the draw-downs submittals.

The contractor shall make provisions to provide for up to two (2) additional mockups of each pattern as directed by the Engineer, including up to two (2) additional paint color selections.

Accepted mock-ups shall provide a visual standard for work.

Paint Performance Requirements:

(A) Resistance to Accelerated Weathering:

The paint shall be applied to concrete mortar panels and tested in a Q-U-V accelerated weathering tester according to ASTM G53, for 300 hours, utilizing UVB-313 lamps and the exposure cycle as specified in 4.3.5.2 of Federal Specification TT-P-19D. The paint weatherized in this manner shall show no appreciable change in color or appearance due to fading, chalking, or material reaction.

(B) TT-P-19D Requirements:

All Performance requirements listed in Section 3 of Federal Specification TT-P-19D will be met as specified, when tested according to the applicable test methods as set forth in Section 4.

(C) Resistance to Peeling and Flaking:

The acrylic emulsion paint shall be applied to a concrete test specimen or to the final concrete surface and subjected to two methods of adhesion tape tests a minimum of 7 days of sunlight after application.

Adhesion shall be measured in accordance with the requirements of ASTM D3359.

Test Apparatus and Materials:

1. Sharp razor blade, Xacto knife, scalpel, knife or other cutting device with a sharp cutting edge.
2. Cutting guide made of steel or other hard metal straightedge to ensure straight cuts.
3. Tape, approximately one inch wide, semitransparent, pressure-sensitive, with an adhesion strength of 38 + 5 oz/in. when tested in accordance with ASTM D3330.
4. Rubber eraser on the end of a pencil.
5. Illuminated magnifying glass to determine depth of cuts and evaluate adhesion.

X-Cut Test, Method A:

An X-cut is made in the file to the substrate, pressure-sensitive tape is applied over the

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cut and then removed, and adhesion is assessed qualitatively on a scale of 0 to 5. A rating of 3A is required in accordance with Section 6.7 of ASTM D3359.

Lattice Pattern Test, Method B:

A lattice pattern with six to eleven cuts in each direction is made in the paint film to the substrate, pressure-sensitive tape is applied over the lattice and then removed, and adhesion is evaluated by comparisons with Figure 1, ASTM D3359. By this method, adhesion is assessed qualitatively on a scale of 0 to 5. A rating of 2B is required in accordance with Section 11.9 of ASTM D3359.

Construction Methods:

Sandblasting:

The contractor shall allow the concrete to cure to sufficient strength that it will not be damaged by blasting, but not less than seven days.

Use a medium sandblasting technique to remove a maximum of 1/16" of the cement mortar from the surface and expose aggregate. The contractor shall utilize a sandblasting machine capable of fine, precision control and compatible with custom metal templates. Metal templates shall be used for the sandblasting technique. Make sure that the metal template is free of oils and other contaminants that might inadvertently stain the concrete.

The contractor shall maintain concrete pavement free of stains, discoloration, dirt and other foreign materials. Concrete work shall be protected from construction activities and use until sandblasted and/or painted finishes have been completed.

The contractor shall clean pavement and adjacent areas from dirt, sand and other deleterious materials.

Paint:

Acrylic Emulsion paint shall be applied by an Arizona Licensed painting contractor that is acceptable to the manufacturer and the Engineer.

The method of application, the rate of application, the number of coats of application (minimum of two normally) and the surface temperature range of application shall be in accordance with the manufacturer's written recommendations. A copy of these recommendations shall be furnished to the Engineer prior to application of the paint.

No paint shall be applied on the project until the Engineer has approved the mock-up.

Before the paint is applied, the concrete surfaces to be painted shall be pressure washed in accordance with paint manufacture's written recommendations to remove all dirt, dust, curing agents, form release agents, efflorescence, scale or other foreign substances which could be detrimental to the paint application or color. All pressure washing shall be performed in strict compliance with regulations of local and governing authorities. All concrete surfaces to be painted shall be clean, completely dry, unless otherwise recommended by the paint manufacturer, and free of frost or other foreign substances at

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the time of the application of paint.

The contractor shall provide such protection as is necessary to prevent damage to the work, or to property or persons, because of cleaning or painting operations.

After the surface has been prepared for the application of paint and prior to application, the contractor and a representative from the manufacturer of the paint shall inspect the surfaces to be painted. If both parties agree, they shall notify the Engineer in writing that the surfaces are satisfactory for the paint to be applied. The contractor shall not commence application of the paint without specific direction from the Engineer.

Painting shall be accomplished in a neat and professional manner.

Measurement and Payment:

Measurement and payment will be at the contract unit price bid per each and shall be full compensation for the item complete in place.

ITEM NO. 56 CONCRETE SEAT WALL

Description:

The work under this item will consist of furnishing all materials, equipment, and labor to construct concrete seat walls per the details and locations provided in the project plans or as directed by City Representatives. Concrete seat walls shall conform to the requirements of Section 505 of the MAG Standard Specifications.

Materials:

River rock shall be natural river rock, warm earth tones, color to be approved by the City Representative.

Measurement and Payment:

Measurement and payment shall be made at the contract unit price bid per linear foot and shall be full compensation for the item complete.

Concrete seat wall will be measured on a per linear foot basis and will be paid for by the linear foot, which price will be full compensation for the work, complete in place, as specified herein and on the Project Plans.

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ITEM NO. 57 LANDSCAPE, AESTHETICS, & IRRIGATION RESTORATION

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to restore the existing landscape, aesthetic features, and irrigation in areas that are disturbed by construction. The decomposed granite installation for these areas is included in this bid item. Contractor will renew and replace the existing decomposed granite to match replaced decomposed granite within these restoration areas. Work in this bid item includes any turf grass restoration and sprinkler irrigation restoration associated with the disturbed areas.

Materials:

Any disturbed existing irrigation system will require that the Contractor re-construct the irrigation system using the emitters, sprinklers, valves, piping, fittings, controllers, wiring, and other components, of sizes and types to match existing equipment and as called for in the contract documents.

All replacement or repair materials will match the existing materials that have been damaged. Irrigation materials and components will be from the same manufacturer as originally installed. Emitters and sprinklers will have the same volume output as original. PVC pipe may be from a different manufacturer, but the grade will be as originally installed. All mainline fittings will be Schedule 80; all lateral fittings will be Schedule 40.

Turf Restoration area will receive 'Midiron Hybrid Bermuda' sod or approved equal and will be inspected and approved by City Representatives at the site upon delivery to conformity to specifications. If installation occurs between October 15th to April 15th, turf restoration areas will receive 'Premium Rye Grass' seed. Sod will be nursery grown, strongly rotted, 2 years old, and free of weeds, undesirable plants and other material which will be detrimental or will hinder the proper development of the sod.

Landscape materials and decomposed granite will be replaced to match existing conditions. Contractor will walk the site with City Representatives to inspect Landscape and Irrigation Restoration areas prior to construction activities.

Construction Requirements:

Contractor will verify exact limits of disturbance with City Representatives in areas specified in on the Project Plans as Landscape and Irrigation Restoration Areas. All work will be in accordance with these Technical Specifications and MAG Standard Specifications.

Contractor will identify and coordinate limits of disturbance areas where appropriate with City Representatives prior to beginning of construction activities. Contractor will contact City Representatives for review and approval of all Landscape and Irrigation Restoration materials prior to installation.

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The work will also consist of reconstructing, rerouting, modifying, or repairing the existing irrigation system in areas specified in on the Project Plans. The Contractor will be required to repair and/or replace all disturbed or damaged irrigation components, returning their operation to 100 percent within 24 hours following initial disturbance of the irrigation components. The existing irrigation that will be impacted includes the drip irrigation system for the trees, shrubs and ground covers, as well as the sprinkler irrigation system for the turf areas. The work will include furnishing and installing the various irrigation sleeves, piping, drip emitters, gate valves, electric control valves, wiring, and valve boxes, including required excavation and backfill at the specified in locations shown on the Project Plans or as directed by the City Representatives.

All work will be in accordance with the details shown on the Project Plans, or as directed by the City Representatives and the requirements of these Technical Specifications. The existing irrigation components will be protected and maintained in their current condition where feasible or repaired, replaced, extended and reconnected in areas including, but not limited to, those areas that are disturbed during the construction, areas shown on the Project Plans or as directed by City Representatives. The Contractor will be required to maintain water to all existing plant materials throughout the duration of the contract using repairs, reconnections, replacements or rerouting of the system as approved by City Representatives. The Contractor will ensure that the entire existing and new irrigation systems within the project limits are operational and functional and will test and receive approval from City Representatives prior to proceeding with other related work. The City Representatives will inspect and give approval prior to backfilling.

The system will be constructed to grades and conform to areas and locations as shown on the drawings.

Protection of Existing Vegetation: The work will include the protection of all existing plant material. Contractor will take great care to protect in place all existing plant material. Contractor will replace in like kind and size existing plant material removed, damaged, or destroyed at no cost to the City and to the satisfaction of City Representatives. The Contractor will identify and the City Representatives will review existing plant materials within the disturbance areas. Salvage and relocate or replace all plant material in conflict with the construction as designated in Landscape and Irrigation Restoration Areas in like kind and size per the direction of City Representatives.

Identify, protect, and maintain existing vegetation within the protected areas indicated on the Contract Drawings during the Contract from the Notice-To-Proceed to Final Acceptance. Perform the Work of this Section in accordance with the standards of the Tree Care Industry Association (TCIA). Do not perform work within the protected areas unless approved by City Representatives. Do not store materials within the protected areas. Do not permit vehicle parking, foot traffic, or other activity not approved in writing by City Representatives within the protected areas. Provide labor and new and undamaged materials that constitute "Best Practice" to meet the letter and intent of this Contract. Follow the safety requirements of ANSI Z133.1.

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Verification of Conditions: Prior to the start of construction, Contractor will conduct onsite inspections of plants and vegetation with the City of Chandler Representative and will identify and inventory the plants and vegetation that are to remain in place during this area tour. Field measure and stake Project improvements as needed for establishing the location and limits of disturbance.

Construction within Protected Areas:

Demolition and Construction Activities: Contractor will perform demolition and construction activities within protected areas in a manner that minimizes damage to tree roots and branches. Use hand tools where necessary. Make minimal use of construction equipment within the protected areas. Use such equipment within the protected area only when approved by City Representatives. Tree pruning will be performed by a Certified Arborist. Notify the City Representatives 72 hours prior to the use of the equipment within the protected areas.

Provide bridging materials, such as protective planking, in protected areas where construction equipment operates. When utilities must be installed within protected areas, bore under the protected areas whenever possible instead of digging open trenches through them.

Excavating around Trees and Shrubs: Contractor will excavate around trees and shrubs within protected areas only where indicated on the Project Plans. When work that may impact protected plants occurs, plan the work to assure minimal disturbance to the plants, follow good horticultural practices, and direct pruning and wound treatment in accordance with this Section.

Protecting Root Systems: Contractor will protect root systems from damage due to runoff or spillage of noxious materials in solution during storage or construction activities. Protect root systems from flooding or soil erosion. Provide a minimum of two layers of untreated burlap as a covering over exposed root face areas. Do not disturb or excavate protected root zone areas unless specifically authorized to do so by City Representatives. Where trenching for utilities is required within protected areas, excavate under or over roots by hand digging under the authority of City Representatives. If large roots are encountered, or if a condition potentially fatal to the plant is observed, notify City Representatives prior to continuing or commencing work. Do not cut main lateral roots or taproots, those 2-1/2 inches in diameter or greater; however, smaller roots that interfere with the installation of new work may be cut. Cut smaller roots with sharp pruning instruments, but do not break or chop roots. Excavate root systems by hand in areas where new construction is required within protected areas. Use a narrow-tine spading fork to expose roots. Cut exposed roots back from the new construction. Do not permit exposed roots to dry out before permanent backfills is placed. Provide temporary earth cover, or pack the roots with peat moss, and wrap the roots with burlap. Water and maintain the roots in a moist condition and temporarily support and protect them from damage until they are permanently relocated and covered with backfill. Provide imported topsoil backfill to cover exposed roots in soil cuts. Do not overload root zones by placing

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backfill above the existing grade.

Protecting, Restoring, or Modifying Irrigation System: The work under this item will consist of testing, reconstructing, or modifying the existing irrigation systems that are damaged by the construction or as specified in on the Project Plans for modification. Prior to construction activities, the Contractor will stake areas that are designated to be disturbed. The Contractor, along with City Representatives, will meet with the maintenance representative, owner, owner representative, for each area within the project that is designated to be disturbed to determine where the existing and functioning irrigation system is located and how it is operated. The Contractor will be required to repair and or replace all disturbed or damaged irrigation components to 100 percent operational. Contractor will ensure that all reconnections (water and power) have been tested and approved by City Representatives prior to back filling. Prior to final acceptance and during the maintenance period specified, the contractor and the City Representatives will meet again with the designated representative to engage each and every irrigation system that has been disturbed or that is adjacent to this project. The Contractor will ensure that each system has been returned to a fully operational and functional system and that all deficiencies have been corrected. All work will comply with these plans and Technical Specifications.

The underground location of the irrigation facilities is unknown. The Contractor will take care to minimize disturbance to these areas.

All construction will be coordinated to ensure that the existing irrigation system and its associated electrical controls are fully functional within 24 hours of modifications. Work activities that require more than 24 hours of outage will be coordinated with City Representatives for approval and alternate irrigation methods such as truck watering or temporary "rain or rent" systems will be required as directed by City Representatives. The cost of alternate irrigation methods necessary due to extended irrigation system outages will be at the Contractor's expense, at no cost to the Department.

All work will be in accordance with the details shown on the Project Plans, or as directed by City Representatives and the requirements of these Specifications. All work will be inspected and approved by City Representatives prior to backfilling and will comply with all the requirements of Section 808 Water Distribution as specified in the most recent edition of the ADOT Standard Specifications for Road and Bridge Construction.

Repair/Restoration: Contractor will restore all landscape areas and other surface improvements that were to remain in place, but that have been damaged by the Contractor's actions or omissions. Restore landscape areas as nearly as possible to the original condition.

Repairing Damaged Plants: Where damage to vegetation has occurred, Contractor will prune plants in accordance with Tree Care Industry Association (TCIA) standards to remove branches from the work area and where needed to maintain the health of the plant. Remove material in a manner that yields minimal impact and is approved by City Representatives.

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Replacing Damaged Plants: Contractor will remove plants that were identified by City Representatives to remain in place, but that are damaged during the course of the work to an extent that they cannot be repaired; and replace the damaged plants with new plants of the same type and value. Remove and replace damaged plants as directed by the City Representatives. Base the value of plants that are to be replaced on the criteria found in the Council of Tree and Landscape Appraisers’ “Guide for Plant Appraisal”, as evaluated by City Representatives. Contractor will remove and replace damaged plants at no additional cost to the City. Plants will be replaced at the following sizes or as directed by City Representatives:

<u>Existing Plant Material Size</u>	<u>Replacement Size</u>
Trees:	
2” Caliper	24” Box
4” Caliper	36” Box
6” Caliper	54” Box
All Existing Shrubs	5 Gallon

Clean up the ground areas under plants remaining in place as directed by City Representatives. Wash off foliage that becomes soiled, or when directed to do so by City Representatives. Remove materials that fall or flow into protected areas. Provide protective barriers as needed or as directed by City Representatives to prevent materials from falling or flowing into protected areas.

Waste Management: Contractor will gather and dispose of spoils and vegetative waste, including dead and damaged plants and the trimmings accumulated from the operations to clear and remove existing vegetation. Dispose of spoils and vegetative waste off-site in conformance with the regulations imposed by the local authorities, and in an area approved for such disposal by the local authorities.

Maintenance of Vegetation: Contractor will care for and maintain existing vegetation within protected areas as indicated on the Project Plans. Provide water and labor as needed for plant health, growth, and for washing down soiled foliage. Provide fertilizer, deep root fertilization, pesticides, anti-desiccants, and other materials and labor as needed to maintain the existing plants in a healthy and growing condition. Provide plant maintenance for the duration of the Contract, until Final Acceptance.

Record Drawings: The Contractor will keep and maintain separate record drawings (“field redlined record drawings”), corrected shop drawings, or other drawings necessary for the Engineer to show the landscape and irrigation work as constructed. These field redlined record drawings will be kept on the worksite and they will be maintained clear, accurate and current as changes occur that may differ with the bid set construction documents and addenda. All landscape and irrigation related elements buried or backfilled will be recorded in the “field redlined record drawings” prior to burial and backfilling occurs. The Contractor will submit the updated field redlined record drawings with monthly pay estimates to City Representatives. Complete field redlined record drawings that the Contractor maintains will be submitted to City Representatives in a format that will allow City Representatives to create formal record drawings. The

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Contractor will submit the field redlined record drawings to City Representatives prior to the end of each construction phase. No extra measurement or direct payment will be made for this work; the cost being considered included in the price of the contract items.

Preservation and Restoration of Property: When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the nonexecution thereof by the Contractor, he shall restore, at no cost to the Contracting Agency, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner per MAG Standard Specifications Section 107.9. Such damage will include but not be limited to aesthetic structures or aesthetic features. The contractor shall regrade the disturbed area as directed and restore the surface material to match existing in type and quality.

Measurement and Payment:

Landscape and Irrigation Restoration Areas will be measured per square yard and will be paid for at the contract unit price per square yard, which will be full compensation for the work, complete in place, including all costs, materials, equipment, labor, and operations necessary for the furnishing and full restoration of all plant materials, decomposed granite, turf grass, drip and sprinkler irrigation, and other miscellaneous items to the satisfaction of City Representatives. No additional measurement or payment will be made for the restoration of property due to any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the nonexecution thereof by the Contractor, as noted above.

ITEM NO. 58	SCH. 40 PVC IRRIGATION PIPE 1 IN
ITEM NO. 59	CLASS 200 PVC IRRIGATION PIPE 1 IN
ITEM NO. 60	CLASS 200 PVC IRRIGATION PIPE $\frac{3}{4}$ IN

Description:

The work under these items consists of furnishing all materials, labor, and equipment necessary to install polyvinyl chloride (PVC) pipe and fittings of the various sizes complete, including excavation and backfilling at the locations as specified in on the Project Plans and these Technical Specifications.

Materials:

Pipe and fittings will be polyvinyl chloride, hereinafter PVC, conforming to the requirements of Subsection 808-2.01 (I) (1) of the Chandler TDM8.

All materials and fittings will be new and of the manufacturer's most current design. Plastic pipe and fittings will be installed in accordance with the requirements specified

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herein and the manufacturer's recommendations.

Bedding and Cover Material:

Bedding and cover material for PVC piping, flexible emitter hose and 24-volt wiring will conform to the following gradation requirements when tested in accordance with Arizona Test Method 201:

Sieve Size	Percent Passing
No. 4	100
No. 16	30 - 80
No. 50	0 - 30
No. 100	0 - 25
No. 200	0 - 20.0

Construction Requirements:

Installation of PVC pipe and fittings will conform to the requirements of Subsection 808-3.03 of the Chandler TDM8.

All piping will be installed as detailed on the Project Plans and will have a minimum cover as shown.

The Contractor will furnish to City Representatives, prior to pipe installation, all installation instructions as published by the plastic pipe and fitting manufacturers. Installation of PVC piping and fittings will be in accordance with the published instructions, the project documents and as directed by City Representatives.

Sub-main and lateral pipe sections downstream of control valves with hydraulic flows of less than 0.5 gallons per minute as shown on the Project Plans will be thoroughly flushed and have the remote control valve's flow control stem properly adjusted, all to the satisfaction and approval of City Representatives. The cost for this work will be included in the cost of contract items.

No emitter laterals or piping will be installed through or beneath plant pits. Minimum distance between plant pit perimeter and piping will be 18 inches. The maximum distance between the plant pit and piping will be governed by maximum emitter supply tubing lengths as specified on the Project Plans.

All trenches excavated for the irrigation systems will be backfilled within five working days from the day they are excavated. Barricades will be placed by excavated ditches located within 30 feet of the traveled way in a manner acceptable to the Project Manager. Open ditches beyond 30 feet from the traveled way will be delineated in a manner acceptable to City Representatives.

Flush end caps will be installed as shown on the Project Plans or as directed by City Representatives to promote good flushing of the entire irrigation system.

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The emitter lateral end cap assembly will be installed at the locations indicated on the Project Plans and in accordance with the requirements of the Technical Specifications.

The end plug unit with resilient sealed, unscrewing cap will be of the socket, solvent-weld type, constructed of glass-filled polypropylene. The PVC lateral-to-riser fitting will be a socket, solvent-weld, Schedule 40, 90-degree elbow fitting. The flexible PVC hose will be manufactured from 100 percent virgin polyvinyl chloride resin and will have the following physical characteristics:

O.D.	0.840 inch
I.D.	0.546 inch (min.)
Wall	0.147 inch (min.)

Measurement and Payment:

Irrigation Pipe will be measured on a per linear foot basis and will be paid for by the linear foot, which price will be full compensation for the work, complete in place, as specified herein and on the Project Plans.

ITEM NO. 61 SCH. 40 PVC IRRIGATION PIPE SLEEVE 2 IN - DIRECTIONAL BORE

Description:

The work under this item consists of furnishing and installing irrigation pipe sleeves including jacking or direct drilling, excavating, shoring, utility potholing, and backfilling at the location designated on the project plans and in accordance with these special provisions.

Materials:

Irrigation pipe sleeves will be PVC Schedule 40, belled ends, solvent weld. Pipe and fittings will conform to the requirements of Subsection 808-2.01 (I) (1) of the ADOT Standard Specifications.

The contractor shall determine and furnish any additional strength pipe required to withstand jacking pressure; however, in no case shall the strength of the pipe be less than the strength specified.

Construction Requirements:

The pipe sleeve lengths shown on the project plans are approximate. The contractor shall verify the actual lengths as required by field conditions and specified herein.

All sleeve installation will conform to the details in the Project Plans when crossing paved roadways.

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Prior to beginning the work, the contractor shall submit to the City Representative a plan showing the contractor's proposed method of installing sleeves for irrigation system component encasement. The contractor shall obtain the City Representative's approval of the boring method and plan prior to the start of work under these items. The City Representative's approval of this plan submittal will not relieve the contractor of responsibility to obtain the specified results.

The directional boring equipment shall have a minimum capacity of 30,000 PSI thrust and pullback.

Where direct drilling is used, the contractor shall utilize the "walkover" locating system or other City approved equivalent for determining the location of the bore head. A sonde, behind the bore head, shall register the depth, angle, rotation and directional data. At the surface, a receiver compatible with the sonde shall be used to gather the data and relay the information to the DD equipment operator.

Excavation of pits for sleeve placement shall be as required to accommodate the sleeve size and placement depth. Placement depth shall consider adjacent irrigation system piping connections to be accomplished by the contractor, or 24 inches below the roadway surface, whichever is greater.

Once boring operations have begun, the contractor shall maintain a continuous operation, without interruption, insofar as practical, to prevent the pipe from becoming firmly set in the embankment. A proper sized stem approved by the City Representative shall be used. A mixture of water, Bentonite, and/or polymer in a pasty form shall be used in the drill hole.

Any pipe damage or mis-aligned in boring operations shall be removed and replaced by the contractor at no additional cost to the City.

Compaction of the jacked pit backfill, after placement of the pipe sleeve, shall be to 95 percent of maximum dry density, as determined in accordance with the requirements of Arizona Test Method 235.

Measurement:

Sch. 40 PVC Irrigation Pipe Sleeve 2 IN – Directional Bore will be measured per linear foot of pipe furnished and installed as specified herein.

Basis of Payment:

Sch. 40 PVC Irrigation Pipe Sleeve 2 IN – Directional Bore, measured as above, will be paid for at the contract unit price per linear foot, which price shall be in full compensation for the work, complete in place, including excavation, backfill, shoring, utility potholing and as described and specified herein and shown on the project plans.

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ITEM NO. 62 SCH. 40 PVC IRRIGATION PIPE SLEEVE 2 IN
ITEM NO. 63 SCH. 40 PVC IRRIGATION PIPE SLEEVE 4 IN

Description:

The work under these items will consist of furnishing all materials, labor and equipment necessary to install pipe sleeves as specified in the Project Plans, or at locations determined on site at the time of installation in accordance with the requirements of ADOT Standard Specifications, these Technical Specifications, and approved by the City Representative.

Materials:

Irrigation pipe sleeves will be PVC Schedule 40, belled ends, solvent weld. Pipe and fittings will conform to the requirements of Subsection 808-2.01 (I) (1) of the ADOT Standard Specifications.

Construction Requirements:

All sleeve installations will conform to the details in the Project Plans when crossing paved roadways and 18 inches minimum when placed beneath a sidewalk.

Sleeves will be installed through the use of open trench.

The Contractor will locate all existing utilities prior to the installation of the sleeves.

The Contractor will repair any existing utilities damaged during the sleeve installation at no cost to the City.

Measurement and Payment:

Irrigation Pipe Sleeves will be measured per linear foot of pipe furnished and installed and will be paid for at the contract unit price per linear foot, which price will be full compensation for the item, complete in place, as described herein and/or on the Project Plans including pipe, and all trenching, bedding, backfill, compaction, trench shoring, potholing, utility locating and incidentals as specified herein and as shown on the Project Plans.

No additional payment will be made for trench shoring, supplying the sand bedding material or in coordinating the efforts with City Representatives in verifying all sleeve locations, the cost being considered incidental to this item.

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ITEM NO. 64 WATER METER (1 IN LANDSCAPE IRRIGATION SERVICE)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to install new potable water service with meter, connections, corporation stop, curb stop, appurtenant fittings, water meter box and cover, copper service pipe (type K) and pavement replacement as required at the location shown on the Project Plans or as directed by City Representatives. The Contractor will perform all required operations to install the new water service, including coordination, inspections, permitting, account establishment, and any fees, with the City of Chandler.

Materials:

All materials will conform to City of Chandler Standards unless otherwise as specified in the Project Plans or in these Technical Specifications.

Construction Requirements:

Potable water service construction will conform to City of Chandler Standards and the details in the Project Plans.

The Contractor will measure the static water pressure on site at each point of connection as soon as practical and report the results in writing to City Representatives.

The Contractor will coordinate the installation of the water service, including completing any applications and obtaining any necessary permits for the water service installations. The accounts for the new meters to serve medians will be established in the name of:

City of Chandler
Right-of-Way
Landscaping Division

The Contractor will be responsible to secure from the City of Chandler all permits, pay all fees and deposits. The City will directly pay for all development and impact fees normally associated with the meter installation in medians. Once installed, the City will pay for all water delivered.

Measurement:

Water Meter (1 In Landscape Irrigation Service) will be measured as a unit for each. No separate measurement will be made for copper service line.

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Payment:

The Contractor will be reimbursed for the exact amounts paid to the City of Chandler for each water service with meter installed. The Contractor will provide the City of Chandler receipts for each meter installed.

Water meters, where indicated, will be installed by the City of Chandler. The City of Chandler has agreed to waive water system and resource development fees. Contractor will pay City of Chandler for required meter installation cost and required permits.

ITEM NO. 65 1 IN BACKFLOW PREVENTION UNIT (REDUCED PRESSURE)**Description:**

The work under this item consists of furnishing and installing the backflow prevention unit assembly, to include all grading, excavation and backfill, the backflow preventer unit, required pipe and fittings, concrete slab, an enclosure, and the removal and disposal of all excess materials off-site. Separate enclosures as described in these Technical Specifications are required at all locations.

The work will also include the provision and installation of pipe and fittings from the two-inch water meter to the backflow prevention unit, and all other miscellaneous labor, equipment and materials required to construct the backflow prevention assembly as detailed in the plans, and according to the requirements of these COC Detail C-311.

Materials:

The backflow preventer will conform to the requirements of COC Detail C-311.

The copper pipe and fittings in the bid items will be as detailed and in accordance with the following:

1. The copper pipe will be Type "K" conforming to the requirements of ASTM B-88 for backflow prevention assemblies.
2. The copper or cast bronze fittings will conform to the requirements of ANSI STD B 16.22 and ANSI STD B 16.18.

The concrete pad will be as shown on the plans and concrete will be 2,500-psi at 28 days and will conform to the requirements of Section 922, Utility Concrete for Miscellaneous Construction, of the Standard Specifications. Reinforcing steel will conform to the requirements of Section 1003, Reinforcing Steel of the Standard Specifications.

The steel enclosure for the backflow prevention unit will be pre-manufactured. A commercial grade lock with two keys, compatible with the City of Chandler Maintenance Department locking system and approved by City Representatives, will be provided for each enclosure. The pre-manufactured enclosure will meet the following material requirements:

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- The enclosure will be welded to the pipe and angle frame at 4-inch-on center and will be coated with heat applied powder-coated finish color, Desert Tan.
- The enclosure will be hinged on one end in order to allow access. The enclosure will be secured to the concrete slab with eyebolts, brackets and lock hasps provided by the manufacturer.
- The enclosure will be secured to the concrete slab on the other end by an eyebolt staple and a steel strap designed to fit over the eyebolt.
- The enclosure will be constructed of bent 1-¼ inch Schedule 40 pipe, 1 x 1 x 1/8 inch angle steel bottom rail and ½ -inch-13 gauge rolled, expanded steel.
- The enclosure will be the size recommended by the enclosure manufacturer for the City of Chandler model of backflow preventer used and will be a minimum of 10 inches wide, 24 inches high and 20 inches long and large enough to accommodate the controller and backflow preventer as detailed.
- A lock shield will be provided to protect the lock from vandalism. The lock shield will be constructed of 3/16-inch-thick steel and will measure approximately 2 inches by 4 inches. The lock shield will be an integral part of the enclosure.

Construction Requirements:

All backflow prevention reinforcing, anchor bolts and other embedded items will be in place and inspected by City Representatives prior to placing the concrete slab.

The concrete slab will be constructed at the locations and in accordance with the details shown on the project plans, these Technical Specifications, and will be approved by City Representatives.

The contractor will excavate and grade the area of the enclosure as shown on project plans and as directed by City Representatives.

The surfaces upon which the enclosure slab is to be placed will be fine graded and compacted to a density of not less than 95 percent of the maximum density in accordance with the requirements of the Material Testing Manual of the Materials Section.

Concrete work will conform to the applicable requirements of Section 601 of the Standard Specifications. Unless otherwise detailed or specified all exposed concrete slabs will have a light, broom finish.

The enclosure will be installed according to the manufacturer's installation recommendations which describe how to set the enclosure on a partially hardened slab, while still embedding the eyebolt in the slab using slab pour voids and a wetter, more plastic concrete. Eyebolts, with nuts attached near the end of the threads will be wrapped in multiple layers using electrician's vinyl tape. Tamper-proof bolts provided by the manufacturer will be used to prohibit removal of brackets.

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No penetrations will be located within eight inches of the edge of the concrete slab.

The Contractor will provide the conduit and stub-ups through the enclosure concrete slab at the locations shown for in coming and out-going supply lines.

Maximum length of copper pipe run from the water meter to the backflow preventer will not exceed 36 inches, or as approved by the water provider and City Representatives.

The Contractor is responsible for obtaining all permits necessary for the backflow preventer installation and the performance of all required testing and certification. The tester will be State Certified to perform the required tests.

The Contractor will measure the incoming water pressure at each new backflow prevention unit and report the results in writing to City Representatives, within (5) five working days from activation of the backflow preventer.

Measurement and Payment:

The 1 In Backflow Prevention Unit (Reduced Pressure) will be measured as a unit for each and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place, as specified herein and in the project plans, including any coordination required with City and furnishing and placing steel enclosure and concrete pad.

No additional payment will be made for backflow prevention testing, the cost being considered incidental to this item.

ITEM NO. 66 1 IN MASTER VALVE

Description:

The work under this item consists of furnishing and installing master valves complete, including all necessary pipe and fittings, decoder, wire splices, union, ID tag, valve box and appurtenances, excavation, and backfilling as required at the locations as specified in the Project Plans and these Technical Specifications.

Materials:

The valve will be a normally closed, electronically-actuated, diaphragm-operated, remote-control valve. The valve will be capable of operating between 20 and 150 PSI with a flow range of between 0.5 and 25 GPM.

The valve will be available in either a globe or angle configuration in the 1-inch models with the 1-1/2- and 2-inch models having combination globe/angle body styles. All valve models will have Female National Pipe Thread (FNPT) inlets and outlets. When specified, the valve will be configured with British Standard Pipe threads. An optional Male National Pipe Thread (MNPT) inlet and outlet model and a MNPT inlet by Poly

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Barb outlet model will be available in the 1" globe style body. Both the 1-inch globe and angle valve models will be available with an optional, non-rising stem-type, flow control mechanism. This mechanism will be operable with a slotted screwdriver or with a removable flow control handle.

The body and bonnet will be molded of non-corrodible PVC, rated to 150 PSI. The bonnet bolts will be serviceable with a slotted screwdriver, Phillips screwdriver, or a hex wrench, and will be held captive in the bonnet when the bonnet is removed from the valve body. The diaphragm assembly will be of molded construction and will have a Santoprene seating material. The valve will be equipped with an internal filter as well as a self-cleaning metering rod, so only clean water can enter the solenoid chamber.

The valve will be available with an optional adjustable pressure-regulating device with a calibrated dial for setting of the outlet pressure. (The regulator will be capable of adjusting the outlet pressure from between 20 and 100 PSI when inlet pressure is 15 PSI or greater than regulated outlet pressure.) The regulated downstream pressure will remain constant regardless of variations in upstream pressure. The regulation will be maintained when valve is manually operated with use of internal bleed valve.

When specified, the unit will be equipped with a two-wire decoder, compatible with the specified irrigation controller. The standard solenoid will be a 24 VAC unit with a 350 mA inrush current and 190 mA holding current at 60 cycles and a 370 mA inrush current and 210 mA holding current at 50 cycles. The solenoid will be an encapsulated, one-piece unit with captive plunger. It will be equipped with manual internal bleed capability to release the upper chamber water to the downstream piping, allowing the valve to open. The valve will have a manual bleed screw that provides an additional method for manual operation of the valve.

Construction Requirements:

The Contractor will install the master valve at the locations as specified in the Project Plans Details.

Construction requirements will conform to the requirements of Section 808 Water Distribution of the ADOT Standard Specifications.

The Contractor will install the required conduit and conductors between the master valve and the automatic controller as detailed on the Project Plans and make necessary wire connections as required and directed by the manufacturer.

The master valve will serve as a shut-off safety valve when the pressure drops below a set pressure sensed by a pressure transducer.

Each master valve will be installed as detailed on the plans and per manufacturer's recommendations.

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Measurement and Payment:

1 IN Master Valve will be measured as a unit for each and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place, including master valve and all necessary items as specified herein and in the Project Plans.

ITEM NO. 67 1 IN FLOW SENSOR

Description:

The work under this item consists of furnishing and installing flow sensors complete, including all necessary pipe and fittings, decoder, wire splices, valve box and appurtenances, excavation, and backfilling as required at the locations as specified in the Project Plans and these Technical Specifications.

Materials:

The flow sensor shall be of the inline, non-magnetic, impeller (paddle wheel) type capable of transmitting an electronic pulse through conductors to the back indicator function of the field satellite for subsequent transmission to the central computer.

Each flow sensor shall consist of a bronze meter body with threaded end connections, an impeller, and electronic sensor assembly containing a pulse generator and shall be specifically designed for installation in underground vaults. The sensor and impeller assembly shall be contained within the meter body.

The flow meters shall conform to the following physical characteristics:

Size	1 inch
Flow Range (Velocity)	0.3 - 15 feet/sec.
Body	Cast 85-5-5-5 Bronze
Connections	Female pipe thread
Sensor	Pulse generated by digital integrated solid-state rotation sensor housed in PVDF housing
Impeller	Glass reinforced nylon
Bearing Assembly	Pennlor (UHMWPE)
Shaft	Tungsten Carbide
Rating	400 PSI to 100 deg. F
Performance	+/- 1 percent accuracy +/- 0.7 percent linearity +/- 0.7 percent repeatability

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Each flow sensor shall be equipped with a conduit cap for installation of flexible liquid-lite conduit as detailed.

Construction Requirements:

The Contractor will install the flow sensor at the locations as specified in the Project Plans Details.

Construction requirements will conform to the requirements of Section 808 Water Distribution of the ADOT Standard Specifications.

The Contractor will install the required conduit, conductors, and decoder between the flow sensor and the automatic controller as detailed on the Project Plans and make necessary wire connections as required and directed by the manufacturer.

Each flow sensor will be installed as detailed on the plans and per manufacturer's recommendations.

Measurement and Payment:

1 IN Flow Sensor will be measured as a unit for each and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place, including all necessary items as specified herein and in the Project Plans.

ITEM NO. 68 CONTROLLER, AUTOMATIC (BASELINE BL-3200P-CM WITH BL-CLOUD-LTE-ESIM)

Description:

The work under this item consists of furnishing all labor, materials, equipment for installing an irrigation controller, complete in place, including steel enclosure, conduit, two-wire decoder control, pull boxes, excavation and backfilling at the locations specified in on the Project Plans, Details, and in accordance with these Technical Specifications.

Materials:

The irrigation system controllers (two-wire) will be pre-assembled commercial grade controllers with knockouts for two-wire cable and power supply. The enclosure shall be stainless steel for outdoor use, as specified and detailed on the Project Plans.

Controller display shall be high resolution digital LCD. The control panel shall have buttons to select values, a dial to selection functions, a hard-reset feature returning existing settings to factory conditions, a removable panel to shield and allow access to the wiring terminals, and a sensor switch to bypass or activate a wired sensor.

The controller shall be powered by a 120 VAC service and a minimum of 5-amp breaker. Current to each decoder is 100 to 250 milliamps. Any valves attached to the controller

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shall have only 24 VAC solenoids of matching manufacturer.

The controller shall be able to manage up to 8 flow sensors/meters, 8 master valves/pumps, and 8 pressure sensors.

The controller shall have 99 independent programs with unique day schedules, start times, and station run times. The controller shall have 8 start times per program per day. The controller shall be able to operate multiple valves and programs at a time.

The controller shall have a weekly 7-day schedule that allows user to choose day(s) of week for desired watering. Interval watering shall be between 1 and 31 days. It shall also have a 365-day calendar clock to accommodate true odd and even watering. Operation shall be available in automatic and manual modes. All programming shall be accomplished by use of a programming dial and selection buttons with user feedback provided by a LCD display. Watering times shall be available from 1 minute to 23 hours 59 minutes in 1-minute increments per station. The controller shall provide the option to turn off specific watering days Monday through Sunday to comply with any state and local regulations. The controller shall have a programmable rain delay. Controller shall be equipped with a sensor bypass switch that allows the user to override a wired sensor that has suspended watering. The controller shall store and restore program data for easy retrieval

The controller shall have seasonal adjust allowing for station run time adjustment from 25% to 200% to compensate for weather changes. The controller shall provide total irrigation run times for each station. The controller shall have test programming to verify each station running successfully.

The two-wire, decoder operation of remote control valves will conform to the requirements of Subsection 808-2.01 (F) of the ADOT Standard Specifications. Each two-wire path leaving the controller will be of different color to assist in electrical troubleshooting. Wire color will be as approved by City Representatives.

Pull boxes will match the valve box as specified under the 1" Remote Control Valve, Electric item.

Two-wire path cable sizes will be of sizes indicated on the Project Plans. 12 and 14 AWG gauge wire are the most common sizes for two-wire applications.

Construction Requirements:

The controller enclosure will be installed per manufacturer's recommendations.

Wire connections at remote control valves and at field splices will be made with epoxy resin filled type wire connectors installed as recommended by the manufacturer. Necessary splices will be made at remote control valve boxes, or separate splice boxes. Valve or junction boxes will be of type specified in the 1" Remote Control Valve, Electric item.

Wire placed through pipe sleeves will be encased in 1-inch (minimum) schedule 40 PVC

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electrical sleeves for full length of the pipe sleeves. Conduit will be increased in size as may be necessary for additional wires or required by the NEC.

All wire will be installed as detailed on the Project Plans and will have a minimum cover as shown.

The two-wire cable will be neatly bundled and taped with plastic electrical tape at 10-foot intervals between splices or connections and as directed by City Representatives.

The contractor will prepare and implement a 12-month irrigation schedule, based on seasonal changes, with a minimum of three adjustments to the system within the year. The City Representatives will approve the schedule prior to implementation. The controller will be programmed based on time and flow. The monthly projected hours of irrigation as well as gallons to be delivered, by valve group, according to the 12-month irrigation schedule will be provided to City Representatives within 30 days following the start of the Phase II establishment period.

A wiring schematic will be placed in each controller cabinet. The schematic will show all wire connections including the wire connections at the controllers and field splices in pull or junction boxes, such as those not occurring in scheduled and planned valve boxes.

The work will also include that the Contractor supply a copy of the controller program for approval by City Representatives.

No separate payment will be made for wire, installation, splice boxes, and conduit.

A test of the irrigation system in whole will be accomplished prior to landscape installation, at close of the landscaping construction phase, and monthly during Landscape Establishment.

Testing of the system mainline, sub-mains, and remote control valves will be performed at a hydrostatic pressure of 150-pounds per square inch (psi) for a minimum of 2- hours.

City Representatives will advise the Contractor when additional flushing of the irrigation system is required in addition to those specified, in order to ensure proper operation of system components.

At the completion of the landscaping construction period, the Contractor will deliver the following to City Representatives: two copies of the Operations & Maintenance manual, and one copy of the controller irrigation schedule.

Measurement and Payment:

The Automatic Controller (two-wire) will be measured as a unit for each and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place, as described and specified herein and in the Project Plans.

No additional payment will be made for automatic controller and enclosure installation, the cost being considered incidental to this item.

ITEM NO. 69 1 IN REMOTE CONTROL VALVE, ELECTRIC

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary for installing the remote control valves complete, including all necessary pipe and fittings, decoder, wire splices, pressure regulator riser, wye filter, union, ball valve, ID tag, valve box and appurtenances, excavation, and backfilling as required at the locations specified in the Project Plans, Details, and these Technical Specifications.

Materials:

Each remote control valve will conform to the requirements of Subsection 808-2.01 (D) (1) of the ADOT Standard Specifications with the following exceptions:

The remote control valve will have a self-cleaning stainless steel screen that cleans itself continuously during flow/operation, as provided by ordering the optional automatic filter system. The remote control valve body will be constructed of glass filled nylon and will have a working pressure rating of 220 PSI and an operational flow range of 0.1 to 25 gallons per minute.

When specified, the unit will be equipped with a two-wire decoder, compatible with the specified irrigation controller. The standard solenoid will be a 24 VAC unit with a 350 mA inrush current and 190 mA holding current at 60 cycles and a 370 mA inrush current and 210 mA holding current at 50 cycles. The solenoid will be an encapsulated, one-piece unit with captive plunger. It will be equipped with manual internal bleed capability to release the upper chamber water to the downstream piping, allowing the valve to open. The valve will have a manual bleed screw that provides an additional method for manual operation of the valve.

All remote control valves and automatic controllers will be compatible and fully functional in all modes.

All valves will include a plastic scrubber to clean the stainless steel screen of grit and other debris.

Valve ID tag will be made of Polyurethane Behr Desopan material, tan color, and 3" x 4" size will be installed on valve control wires with permanent printed black color 'controller letter – valve (station) number' on one side and bilingual "Warning Recycled Water Do Not Drink" message on other side.

Each regulator will meet the following minimum requirements:

Each regulator will have a flow range from 0.1 GPM to 8 GPM with a regulated nominal outlet pressure of 30 PSI with an inlet pressure range of 0 to 150 PSI.

Inlet fittings will be ¾ inch Female Pipe Threaded (FPT) inlet and outlet for installation, as detailed on the Project Plans.

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The pressure regulator will be of the non-adjustable pre-set type consisting of a two-piece, sonic welded body molded from acrylonitrile butadiene styrene containing a valve housing of acetyl plastic and a rolling diaphragm of ethylene propylene (EPDM) material. The internal spring will be stainless steel.

The wye filter will be 3/4" inch brass body with 3/4" Male Pipe Thread (MPT) inlet and outlet. The filter will be accessed by unscrewing the cap from the body. The cap to body seal will be made with an "O" ring. The filter screen will be 100 mesh stainless steel. The pressure rating of the filter will be a minimum of 150 PSI.

A schedule 80 PVC union with minimum rating of 150 PSI will be installed after pressure regulator and filter to facilitate removal of all items within valve box if necessary.

The Contractor will provide an in-line, full port, single union, brass ball valve type shutoff valve with the following characteristics:

Pressure rating	220 PSI
O-rings	EPDM
Seat	EPDM or PTFE
Connections	FIPT threaded socket

The valve box, cover and necessary extensions will be as shown on the Project Plans and will be manufactured of molded, virgin plastic materials conforming to the following physical characteristics:

<u>PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>REQUIREMENT</u>
Tensile Strength	D-638	3400 PSI (minimum)
Deflection Temp @ 66 PSI Stress	D-648	170 degrees Fahrenheit

The valve box will be rectangular in configuration, measuring approximately 25 1/4 inches x 15 3/4 inches on the bottom by 15 inches in height and will be integrally colored tan. Box extensions will be of the top extension type with integral locking clips, and when installed they will provide minimum 6-inch height extension. Valve box lids will be integrally colored tan.

Valve boxes will receive 1" height heat branding labeling of the box indicating the 'controller letter – valve (station) number'.

Geotextile fabric will be as indicated on the Project Plans details and conform to the following minimum material requirements:

Manufacturing process:	Spunbound
Material:	Polypropylene
Bonding process:	Thermal
Weight:	3.0 ounce minimum
Puncture resistance:	30 lbs. minimum

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Mullen burst:	140 pounds per square inch
Trapezoidal tear	40 pounds minimum
Permeability-vertical water flow	85 feet per minute per square foot

Gravel for sumps will be rounded washed pea gravel conforming to AASHTO M-43 #8.

The control valve, pressure regulator, decoder, wire splices, wye filter, ball valve, union, and ID tag will be completely exposed and accessible within the valve box. Box extensions will be installed as necessary to expose valves and appurtenances as required.

Measurement and Payment:

1 Inch Remote Control Valve, Electric will be measured as unit per each and will be paid for at the contract unit price, per each, which price will be full compensation for the work, complete in place, including all necessary pipe and fittings, decoder, wire splices, pressure regulator, wye filter, union, ball valve, ID tag, valve box, and appurtenances, excavation, and backfilling as described and specified herein and as shown on the Project Plans.

No additional payment will be made for the gravel sump or geotextile fabric, the cost being considered incidental to this item.

ITEM NO. 70 FLUSH END ASSEMBLY (DRIP)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary for installing lateral flush valve assemblies at all locations as specified in Project Plans, Details, and these Technical Specifications.

The required Flush Device Assembly (Drip) components include ball valve, necessary pipe, fittings, valve box, and all excavation and backfilling. Any removal and salvage after testing will be incidental to this item with no additional cost to the City.

Materials:

The lateral flush valve assembly ball valve will be constructed of PVC with $\frac{3}{4}$ " female hose thread swivel inlet and $\frac{3}{4}$ " male hose thread outlet.

Flex pipe will be $\frac{3}{4}$ " schedule 40 I.P.S.

The valve boxes for lateral flush valves will be a round, one-piece 7" inch diameter at the top with a depth of 10 $\frac{1}{4}$ inches and with bolt down T-style cover.

Valve boxes will receive 1" height heat branding labeling of the box indicating "FC" for Flush Cap. Gravel sump and filter fabric will conform to Item 8080168 above. Valve box

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will be tan in decomposed granite areas if using potable water, and green in turf if using potable water.

Install the Valve Flush Device Assembly (Drip) with female hose swivel as inlet connected to Schedule 40 male adaptor and Schedule 40 flex pipe per the plan details.

Measurement Payment:

Flush Device Assembly (Drip) will be measured as a unit for each and will be paid for at the contract unit price per each, which price will be full compensation for the work, complete in place, as specified herein and on the Project Plans.

ITEM NO. 71 MULTI OUTLET EMITTER ASSEMBLY

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary for installing the emitter assemblies, multi-outlet, including excavating and backfilling, at the locations specified in the Project Plans, Details, and these Technical Specifications.

Materials:

The emitter case will be made of durable black, heat resistant acetyl plastic material. It will be resistant to temperature variation, ultraviolet radiation, smog, (ozone), and common liquid fertilizer and weed spray. The case will completely encompass the silicone diaphragm, protecting it from potentially harmful environmental factors.

The emitters will be of the non-compensating, continuous flushing type, based on the pressure cascade principal using a series of flexible orifices.

The emitter will be capable of continuous, clog free operation with 30 mesh (minimum) filtration. The emitter will be capable of being installed in all positions and maintain its given flow characteristics. The emitter will be non-adjustable and the flow regime will be maintained by flexible orifice silicone diaphragms.

The emitter will function with a system pressure range of 15 PSI minimum to 30 PSI maximum. The emitter flow variation of the 1 GPH emitter will not exceed 1.06 GPH at 120 degrees F. or 1.07 GPH at 150 degrees F. Emitter manufacturing variability will not exceed 0.05 GPH.

The multi-outlet emitter will be capable of delivering one of the following quantities from each of the six outlets of the emitter regardless of the number of outlets open:

G.P.H.	at	P.S.I.
0.60		20
0.71		25

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0.80		30
	or	
1.00		20
1.15		25
1.34		30
	or	
2.00		20
2.30		25
2.68		30

The flexible polyethylene supply tubing will be for pressure application, manufactured from 100 percent Union Carbide G-Resin 7510 Natural 7 virgin resin with minimum two percent carbon black content and with the following physical characteristics:

I.D. 0.250-inches
O.D. 0.350-inches
Wall Thickness 0.050-inches

The flexible distribution tube for use with multi-outlet emitter will be a black vinyl blend suitable for use as emitter outlet tubing with the following physical characteristics:

I.D. 0.160-inches
O.D. 0.220-inches
Wall Thickness 0.030-inches

The distribution tube will be capable of being bent around a 7/8 inch mandrel without kinking.

The tube stake required to position the distribution tube will be manufactured of 20 percent glass-filled polypropylene, minimum 6-inch overall length with slotted top to retain the distribution tube as detailed at the location(s) shown on the Project Plans.

Multi-outlet emitters will consist of the emitter unit, the 1/2" PVC lateral pipe, the 1/2" flex PVC nipple riser, flexible vinyl distribution tubing, emitter valve box, geotextile filter fabric, pea gravel sump and PVC fittings necessary to connect the emitter to the 3/4" PVC supply lateral pipe.

The emitter valve box will be constructed of tan colored HDPE (high-density polyethylene) in a round conical shape with a 6 1/8" top diameter, 8" bottom diameter and an overall height of 8 3/4". The cover will be T-style fastened to box by twist and lock method.

The geotextile fabric for use beneath the pea gravel sump will conform to ADOT Standard Specification section 1014-4.02 Moderate Survivability Fabric (B) Woven.

The supply pipe from the 3/4" PVC lateral to multi-outlet emitters will be 1/2 inch Class 315 PVC with Schedule 40 PVC 90-degree elbows.

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Construction Requirements:

The multi-outlet emitter will be placed in an emitter valve box below grade with the distribution tube extending to the plants as detailed on the Project Plans.

The supply tubing for City of Chandler emitters will extend from the ¾" PVC lateral to the emitter and enable the emitter to be located so that the distribution tubing from the emitter to the plant does not exceed 15-foot in length.

The supply pipe for emitters will be ½" Class 315 PVC. The ½" PVC will enable placement of the emitter so that the distribution tubing can be placed per the Irrigation Emitter Layout detail included in the Project Plans. The supply pipe will be placed at 12" depth.

The number of emitters per riser circuit, as shown on the Project Plans, is approximate. The Contractor will add no more than two multi-outlet emitters per circuit, as detailed. Any additional emitters required and exceeding the above indicated amount must be approved by City Representatives prior to installation.

The Contractor will maintain a set of record data for all irrigation lines and equipment coordinating with the City of Chandler's GIS requirements. All GIS data collection of irrigation equipment to complete the record drawings that are tied to City coordinates will remain the responsibility of the Contractor at no cost to the City.

Measurement and Payment:

Multi Outlet Emitter Assembly will be measured as unit for each and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place, as specified herein and on the Project Plans.

No additional payment will be made for supply tubing, ½" PVC supply pipe, emitter valve box, geotextile fabric, pea gravel sump, distribution tube, or hose stake the cost being considered incidental to this item.

No additional payment will be made for deep water drip stakes, the cost being considered incidental to this item.

No additional payment will be made for GIS data collection and for producing the required record drawings, the cost being considered incidental to this item.

ITEM NO. 72 GATE VALVE (1 IN)

Description:

The work under this item consists of installing gate valves, including valve box, gravel, geotextile fabric, concrete support block, excavation and backfilling at the locations designated and in accordance with the details shown on the Project Plans and in accordance with the requirements of these Technical Specifications.

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Materials:

Gate valves shall be in accordance with Subsection 808-2.01(B)(1) of the Specifications, with the exception that gate valves 2 inches and larger shall have a resilient wedge, square operating nut, and shall meet the requirements of AWWA C-509-80. Body shall be epoxy-coated, conforming to AWWA C-550).

The valve box for mainline valves shall be manufactured of rugged UV-resistant thermoplastic construction. The gate valve box body shall be black in color. One slot in the bottom of the box shall be provided to allow for installation of PVC pipe onto the assembly box. Box lids shall be boltable. The assembly box shall be constructed of HDPE with a static vertical load rating of 350 PSF. The dimensions of the unit shall be as follows: Height - 10.25 inches, Top Diameter - 10.0 inches, Base Diameter - 13.0 inches. A six-inch Sch. 40 PVC sleeve shall be installed that is notched for the pipe and extends to within 2 - 4 inches from the bottom of the valve box lid.

End connections for all gate valves connected to PVC piping shall be restrained mechanical connection.

Valve boxes and lids shall be integrally colored tan. Top and bottom sections shall be threaded to facilitate field adjustment as required. Sump rock shall be placed below the gate valve as detailed in the Project Plans.

Geotextile fabric and gravel shall be as specified in the 1" Remote Control Valve, Electric item.

Construction Requirements:

Gate valves shall be line sized as indicated by the mainline on the Project Plans.

Concrete support blocks for mainline gate valves shall be of type and size indicated on the Project Plans. Concrete supports shall be utility concrete and shall be in accordance with the requirements of Section 922 of the ADOT Standard Specifications. Support blocks shall be installed under the gate valve body and shall not contact or support the adjacent pipe and fittings.

Support blocks shall be placed on undisturbed soil or soil that has been compacted as specified in Subsection 203-5.03B(4) of the Specifications. No separate payment will be made for the support block.

The Contractor shall provide two 5-foot-long operating handles to City Representatives, the cost is considered included in the cost of contract items.

Sump rock shall be placed below the gate valve as detailed in the Project Plans.

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Valve boxes shall receive 1 ½ inch high heat branding labeling of the box indicating the valve number.

Measurement:

Gate Valve (1 IN) will be measured on a per each basis.

Payment:

The accepted quantities of Gate Valve (1 IN), measured as provided above, will be paid for at the contract unit price each, which price shall be full compensation for the work complete in place, as described and specified herein and on the Project Plans.

No payment or direct payment will be made for the gravel sump or 5-foot-long operating handles, the cost considered included in the item.

ITEM NO. 73 4" WHITE TRAFFIC PAINT STRIPE (COC)
ITEM NO. 74 4" YELLOW TRAFFIC PAINT STRIPE (COC)

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary to install traffic paint striping at the locations as specified in the Project Plans within City of Chandler right-of-way.

Materials:

The materials under this item will conform to the current editions of the City of Chandler Standard Details C-614, C-620, C-622, and C-623 and Section 708-2 of the ADOT Standard Specifications for Road and Bridge Construction.

Construction Requirements:

The work under this item will conform to the layouts in the Project Plans, City of Chandler Standard Details C-614, C-620, C-622, and C-623 and Section 708-3 of the ADOT Standard Specifications for Road and Bridge Construction, unless otherwise revised by the City of Chandler Representative.

Measurement:

4 Inch White Traffic Paint Stripe and 4 Inch Yellow Traffic Paint Stripe will be measured per linear foot. No measurement will be made for the number of linear feet of gaps in dashed lines.

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Payment:

The accepted quantity of 4 Inch White Traffic Paint Stripe and 4 Inch Yellow Traffic Paint Stripe, measured as provided above, will be paid for at the contract unit price per linear foot, which price will be full compensation for the items, complete in place.

- ITEM NO. 75 PAINT SYMBOL – METHYL METHACRYLATE (BIKE LANE MARKING SET) (COC)**
- ITEM NO. 76 GREEN BIKE LANE – METHYL METHACRYLATE (COC)**

Description:

The work under this section consists of the contractor furnishing all labor, materials, tools, and equipment required to prepare the pavement surface and install the methyl methacrylate pavement markings shown on the project limits.

Materials:

Methyl Methacrylate shall be 90-mil thickness. Green Methyl Methacrylate will be used for high-visibility bike lane markings. White Methyl Methacrylate shall be used for bike lane marking set which includes rider and arrow combination. Methyl Methacrylate material shall be Extended Season MMAX Colored Lane Treatment with Corundum, or approved equal, and shall meet the following requirements:

ASTM Testing	Results	Test Method
Hardness	50-60 Shore D	D2240
	Corundum only: 9	Mohs Scale
Elongation	> 30%	D638 Type I
No Pick-Up Time at 77°F	< 30 minutes	D711
Density	18.5 +/- 0.5 lbs/gallon	D1475
Viscosity	85-105 Krebs	2195-99
Total Solids	> 99%	D2369
Pot Life	< 15 minutes	AASHTO T-237
VOC	< 100 grams/liter	D3960-05
Skid	> 60 BPN	E303
Water Absorption	< 0.25%	D570

Construction Requirements:

The work under this item will conform to the layouts in the Project Plans and City of Chandler Standard Details C-614, C-620, C-622, and C-623, unless otherwise revised by the City of Chandler Representative. The Contractor shall prepare and clean the surface

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before application and shall remove all existing pavement marking and curing compounds completely from the surface prior to installation.

Measurement:

Paint Symbol – Methyl Methacrylate (Bike Lane Marking Set) (COC) shall be measured by each symbol installed.

Green Bike Lane – Methyl Methacrylate (COC) shall be measured per square foot of marking installed.

Payment:

The accepted quantities of Paint Symbol – Methyl Methacrylate (Bike Lane Marking Set) (COC), measured as provided above, will be paid for at the contract unit price per each symbol, which price shall be full compensation for the item, complete in place.

The accepted quantities of Green Bike Lane – Methyl Methacrylate (COC), measured as provided above, will be paid for at the contract unit price per square foot which price shall be full compensation for the item, complete in place.

ITEM NO. 77	4" WHITE THERMOPLASTIC TRAFFIC STRIPE (COC)
ITEM NO. 78	THERMOPLASTIC/PREFORMED SYMBOL, HANDICAP PARKING (COC)

Description:

The work under this item consists of furnishing all labor, equipment and materials, and equipment necessary for the installation of thermoplastic striping and symbols at the locations as specified in the Project Plans within City of Chandler right-of-way.

Materials:

The work under this item will conform to the current editions of the City of Chandler Details C-614, C-618, C-619, C-620, C-622, and C-623, and Section 704 of the ADOT Standard Specifications for Road and Bridge Construction.

Construction Requirements:

The work under this item will conform to the layouts in the Project Plans, City of Chandler Standard Details C-614, C-618, C-619, C-620, C-622 and C-623 and 704 of the ADOT Standard Specifications for Road and Bridge Construction, unless otherwise revised by the City of Chandler Representative.

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Measurement and Payment:

4 Inch White Thermoplastic Traffic Stripe (COC) will be measured per linear foot. No measurement will be made for the number of linear feet for gaps in dashed lines.

Thermoplastic/Preformed Symbol, Handicap Parking (COC) will be measured as a unit for each pavement symbol installed.

The accepted quantities of these items, measured as provided above, will be paid for at the contract unit price per linear foot or per each, which price will be full compensation for the item, complete in place.

ITEM NO. 79 PERFORATED SIGN POST (COC)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to install perforated sign posts at the locations as specified in the Project Plans within City of Chandler right-of-way.

Materials:

The Perforated Sign Post (COC) materials will conform to City of Chandler Standard Detail C-613 and C-618.

Construction Requirements:

The work under this item will conform to City of Chandler Standard Detail C-613 and C-618.

Measurement and Payment:

Perforated Sign Post (COC) will be measured as a unit for each sign post installed and will be paid for at the contract unit price per each, which price will be full compensation for the item, complete in place.

ITEM NO. 80 PERFORATED SIGN POST FOUNDATION (COC)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to install concrete perforated sign foundations, including anchor, sleeve, and associated hardware to attach post to foundation at the locations as specified in the Project Plans within City of Chandler right-of-way or as directed by City of Chandler Representatives.

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Materials:

All materials required to install concrete perforated sign foundations and attachment of post will conform to the City of Chandler Detail C-613 and Sections 705 and 725 of the MAG Standard Specifications.

Construction Requirements:

The work under this item will conform to City of Chandler Standard Detail C-613, Sections 705 and 725 of the MAG Standard Specifications and as specified in the Project Plans.

Measurement and Payment:

Perforated Sign Post Foundation (COC) will be measured as a unit for each foundation installed and will be paid for at the contract unit price per each, which price will be full compensation for the item, complete in place. No additional payment will be made for anchor, sign post sleeves, and associated hardware to attach post to foundation, the cost being considered incidental to this item.

ITEM NO. 81 FLAT SHEET ALUMINUM SIGN PANEL, HIGH INTENSITY GRADE (COC)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to install the sign panels at locations as specified in the Project Plans within City of Chandler right-of-way or as directed by City of Chandler Representatives.

Materials:

Sign Panel materials will meet the requirements of Section 608-2 of the ADOT Standard Specifications for Road and Bridge Construction and will conform to all applicable current editions of the City of Chandler Details.

Construction Requirements:

The Sign Panels will be installed per Section 608-3 of the ADOT Standard Specifications for Road and Bridge Construction and will conform to all applicable current editions of the City of Chandler Details.

Measurement:

Flat Sheet Aluminum Sign Panel, High Intensity Grade (COC) will be measured as a unit for each sign panel furnished and installed.

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Payment:

The accepted quantities of Flat Sheet Aluminum Sign Panel, High Intensity Grade (COC), measured as provided above, will be paid for at the contract unit price per each, which price will be full compensation for the item, complete in place, including hardware and appurtenances required to install sign panels.

ITEM NO. 82 WAYFINDING SIGN PANEL

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to install the wayfinding sign panels at locations as specified in the Project Plans within City of Chandler right-of-way or as directed by City of Chandler Representatives.

Materials and Construction Requirements:

Sign panels shall be aluminum breakformed panel, mechanically attached to side of aluminum post and cross-support (if required for flat, even application of panel). Panel thickness shall be as required, but 10 GA. Minimum.

Aluminum uprights shall be tapped to accept stainless steel button-head tamper-resistant pin-in torx drive machine screws, sized as required, 3 minimum per panel, and evenly spaced along panel length.

Matthews paint finish as outlined in plans – all sides – with applied white reflective copy and arrow field – P4, front side only. Arrows to be reversed from the arrow field to reveal the panel color behind.

Font shall be Highway Gothic Narrow.

Measurement:

Wayfinding Sign Panel will be measured as a unit for each sign panel furnished and installed.

Payment:

The accepted quantities of Wayfinding Sign Panel, measured as provided above, will be paid for at the contract unit price per each, which price will be full compensation for the item, complete in place, including hardware and appurtenances required to install sign panels.

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ITEM NO. 83 NO. 5 PULL BOX

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary for the installation of new pull boxes, including excavation, backfill, compaction, and appurtenances at locations as specified in the Project Plans.

Materials:

All Pull Boxes, extensions and lids will be polymer concrete material and conform to the details in the Project Plans. If pull boxes details are not contained in the Project Plans, the Contractor will conform to the applicable COC Details and ADOT Specifications Section 732. Contractor to coordinate with City Representatives for markings on pull box. Markings will be clearly defined and uniform in depth and will be placed parallel to the long side of the lid. Letters will be nominally one inch high.

Pull boxes lids will be rated for traffic loads in locations where subject to vehicular traffic. Each lid will be furnished with two lock-down bolts.

Concrete Pull Boxes and lids will not be used.

Construction Requirements:

All construction will be performed in accordance with the details in the Project Plans and ADOT Specifications Section 732-3.

New Pull Boxes will be located out of sidewalks, approximately as shown on the plans.

Adjustments in pull box locations are allowed but are subject to Inspector approval.

Pull Boxes will be installed at finished grade. The pull box will be backfilled with select excavated material and thoroughly compacted to within two inches of original grade. The compaction around the box will not cause the sides to deflect or any part of the box or lid to crack. The Contractor will replace any cracked, broken, chipped, or damaged pull boxes or lids at no additional cost to the City.

All pull boxes will be left in clean conditions, free of dirt and debris upon completion of work.

Measurement:

No. 5 Pull Box will be measured as unit for each pull box installed including pick up, excavation, installation backfill, extension, lid, fittings, elbows, caps, solvent, and all applicable appurtenances.

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Payment:

Accepted quantities of No. 5 Pull Boxes, measured as provided above, will be paid for at the contract unit price each, which price will be full compensation for the item, complete in place, including pick up, excavation, installation backfill, extension, lid, fittings, elbows, caps, solvent, all applicable appurtenances, and disposing of surplus or unsuitable material.

ITEM NO. 84	SCH. 40 PVC ELECTRICAL CONDUIT, 1" (COC)
ITEM NO. 85	SCH. 40 PVC ELECTRICAL CONDUIT, 2" DIRECTIONAL DRILL (COC)
ITEM NO. 86	SCH. 40 PVC ELECTRICAL CONDUIT, 2" W/ 1/4" NYL PR 38 BARE COPPER WIRE (TRENCH)(COC)
ITEM NO. 87	SCH. 40 PVC ELECTRICAL CONDUIT, 3" (TRENCH) (COC)

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary for the installation of PVC conduit with pull rope installed in accordance with the details shown on the utility company plans.

Materials:

All conduits will meet the requirements of Section 732-2 of the ADOT Standard Specifications for Schedule 40 PVC.

The materials for the Sch. 40 PVC Electrical Conduit, 2" item will include 2-inch diameter schedule 40 PVC, 2500lb pull tape, trench, and all other materials incidental to this item of work, conforming to SRP specifications.

HDPE conduit will have a minimum rating of SDR 11. It will have a cell classification of PE334470C (for black conduit) and PE334470E (for colored conduit) per ASTM 3350: Standard Specification for Polyethylene Pipe and Fittings Materials.

The polyethylene base resin will meet the density requirement and melt index properties described herein. The density will not be less than 0.940 and not more than 0.955 g/CM³ in accordance with ASTM D 1505: Standard Test Method for Density of Plastics by the Density-Gradient Technique. The range for the melt index will be between 0.05 to 0.5g/10 minutes in accordance with ASTM D 1238: Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer. The HDPE conduit will have a minimum Flexural Modulus, of 80,000 psi, per ASTM D 790 and a minimum tensile strength at yield of 3,000 psi, per ASTM D-638.

Additives to the base resin will be included to provide heat stabilization, oxidation prevention and ultraviolet (UV) protection. It will utilize carbon black in the range of 2 to 3 percent for long term protection against UV degradation. The minimum protection period

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will be one year from date of manufacture in unprotected, outdoor storage in accordance with ASTM D 1603: Standard Test Method for Carbon Black in Olefin Plastics.

HDPE conduit and fittings will comply with ASTM D 2241 and ASTM-F2160-01.

The Contractor will provide City Representatives with manufacturer's certification of analysis and compliance showing that HDPE conduit meets these specifications.

Should the Contractor choose to substitute HDPE conduit in place of the installation of direct buried PVC conduit, direct buried HDPE conduit will be paid at the unit bid price of direct buried PVC conduit.

Unless otherwise shown on the Plans; bends, conduit fittings, expansion joints, 36-inch sweeps and other conduit accessories not specifically mentioned will be manufactured from a material similar to the connecting conduit.

Conduit elbows used for fiber optic cable installations (including future installations) will be a minimum of 36-inches and for bends of 90 degrees or greater will be encased in 1-sack slurry or concrete for at least 12" beyond each bend or coupling joint, whichever is greater. All other conduit elbows will be a minimum of 24-inches.

Construction Requirements:

All construction will be performed in accordance with the Project Plans. Where not included in these Technical Specifications or other referenced specifications, the work under this item will be installed per Section 732-3 of the ADOT Standard Specifications.

The Contractor will trench and install the 2-inch diameter conduit at the approximate locations indicated on the Project Plans. The conduit will be installed at a depth as shown on the Project Plans from finished grade to the top of conduit. Each conduit will terminate in a pull box. Elbows will be the same size as the conduit with minimum 18-inch radius at the junction box and 24 inches at all other locations.

Interconnect conduit will be comprised of four 2-inch conduits, one conduit black in color and the three other conduits gray in color. All unused conduits will have 2500-pound detectable mule tape installed, with detectable members spliced across junction boxes to form a continuously detectable conduit run. All conduits will enter junction boxes using 45-degree sweeps with no less than a 36-inch radius. (unless otherwise specified).

All conduit will have a continuous 2500 lb pull tape installed within and the ends sealed in a NEC approved manner to keep all moisture and foreign matter out of the conduit. Tying two sections of pull tape together is not allowed and will result in replacement by the contractor. A #12 AWG copper conductor tracer wire will be installed within each conduit or one tracer wire will be installed externally of the conduits, but alongside the conduits within the same bore or trench. Tracer wire must be electrically continuous. Any direct buried copper splice of the tracer wire must meet NEC requirements for direct buried electrical splices.

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Measurement and Payment:

Sch. 40 PVC Electrical Conduit will be measured by the linear foot and will be paid for at the contract unit price per linear foot, which price will be full compensation for the work complete in place. No additional payment will be made for conduit bends or rigid non-metallic conduit bends at pull boxes, expansion fittings coupling fittings, the cost being considered incidental to this item.

No additional payment will be made for saw cutting, boring, trenching, pavement removal, disposal and pavement replacement done as part of conduit installation, the cost being considered incidental to this item.

ITEM NO. 88	#8 AWG CONDUCTORS
ITEM NO. 89	#8 AWG INSULATED BOND
ITEM NO. 90	#12 AWG CONDUCTORS
ITEM NO. 91	#12 AWG INSULATED BOND
ITEM NO. 92	ELECTRICAL SERVICE PEDESTAL SYSTEM, DET 4829 (COC)
ITEM NO. 93	ELECTRICAL CONDUCTORS (RAY ROAD AND MCKEMY AVENUE) (COC)
ITEM NO. 94	NEW 3000K LUMINAIRE ON CONCRETE LIGHT POLE
ITEM NO. 95	NEW 4000K LUMINAIRE ON CONCRETE LIGHT POLE
ITEM NO. 145	METER PEDESTAL CABINET (COT)
ITEM NO. 146	ELECTRICAL CONDUCTORS (KYRENE ROAD & KNOX ROAD) (COT)

SECTION 16050 BASIC ELECTRICAL MATERIALS AND METHODS

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION and CITY OF CHANDLER SUPPLEMENTS TO DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 1. Electrical equipment coordination and installation.
 2. Sleeves for raceways and cables.
 3. Sleeve seals.

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4. Common electrical installation requirements.

1.3 DEFINITIONS

- A. ATS: Acceptance Testing Specifications.
- B. EPDM: Ethylene-propylene-diene terpolymer rubber.
- C. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.5 QUALITY ASSURANCE

- A. Test Equipment Suitability and Calibration: Comply with NETA ATS-2003, "Suitability of Test Equipment" and "Test Instrument Calibration."

1.6 COORDINATION

- A. Coordinate arrangement, mounting, and support of electrical equipment:
 - 1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
 - 2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
 - 3. To allow right of way for piping and conduit installed at required slope.
 - 4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.
- B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.
- C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed.
- D. Coordinate electrical testing of electrical, mechanical, and architectural items, so equipment and systems that are functionally interdependent are tested to demonstrate successful interoperability.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 SLEEVES FOR RACEWAYS AND CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

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- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch (1.3- or 3.5-mm) thickness as indicated and of length to suit application.

2.3 SLEEVE SEALS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
 - 1. Manufacturers:
 - a. Advance Products & Systems, Inc.
 - b. Calpico, Inc.
 - c. Metraflex Co.
 - d. Pipeline Seal and Insulator, Inc.
 - 2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
 - 3. Pressure Plates: Glass reinforced nylon polymer or carbon steel. Include two for each sealing element.
 - 4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

- A. Comply with NECA 1.
- B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
- C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- E. Right of Way: Give to raceways and piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Rectangular Sleeve Minimum Metal Thickness:
 - 1. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and no side greater than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
 - 2. For sleeve cross-section rectangle perimeter equal to, or greater than, 50 inches (1270 mm) and 1 or more sides equal to, or greater than, 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry.
- I. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- J. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- K. Underground, Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

- A. Install to seal underground, exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIELD QUALITY CONTROL

- A. Inspect installed sleeve and sleeve-seal installations and associated firestopping for damage and faulty work.

SECTION 16060 GROUNDING AND BONDING

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS
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1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes methods and materials for grounding systems and equipment.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Other Informational Submittals: Plans showing dimensioned as-built locations of grounding features specified in Part 3 "Field Quality Control" Article, including the following:
 - 1. Test wells.
 - 2. Ground rods.
 - 3. Ground rings.
 - 4. Grounding arrangements and connections for separately derived systems.
 - 5. Grounding for sensitive electronic equipment.

C. Field quality-control test reports.

- D. Operation and Maintenance Data: For grounding to include the following in emergency, operation, and maintenance manuals:
 - 1. Instructions for periodic testing and inspection of grounding features based on NETA ATS-2003.
 - a. Tests shall be to determine if ground resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if they do not.
 - b. Include recommended testing intervals.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
 - 4. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 5. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

6. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
- C. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 2 inches (6 by 50 mm) in cross section, unless otherwise indicated; with insulators.

2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure type, with at least two bolts.
 1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel, sectional type; 3/4 inch by 10 feet (19 mm by 3 m) in diameter.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare copper conductor, No. 6 AWG minimum or as indicated on plans.
 1. Bury at least 24 inches (600 mm) below grade.
 2. Duct-Bank Grounding Conductor: Bury 12 inches (300 mm) above duct bank when indicated as part of duct-bank installation.
- C. Conductor Terminations and Connections:
 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 4. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 1. Feeders and branch circuits.
 2. Lighting circuits.

3. Receptacle circuits.
4. Single-phase motor and appliance branch circuits.
5. Three-phase motor and appliance branch circuits.
6. Flexible raceway runs.
- C. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
 1. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch (6-by-50-by-300-mm) grounding bus.
 2. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.
- D. Metal Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade, unless otherwise indicated.
 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
 2. For grounding electrode system, install at least three rods spaced at least one rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.
- C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports:

Install so vibration is not transmitted to rigidly mounted equipment.

3. Use exothermic-welded connectors for outdoor locations.
- D. Ufer Ground (Concrete-Encased Grounding Electrode): Fabricate according to NFPA 70, using a minimum of 20 feet (6 m) of bare copper conductor not smaller than No. 4 AWG.
 1. If concrete foundation is less than 20 feet (6 m) long, coil excess conductor within base of foundation.

2. Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts. Extend grounding conductor below grade and connect to building grounding grid or to grounding electrode external to concrete.

3.4 FIELD QUALITY CONTROL

- A. Contractor will perform field tests and inspections and prepare test reports. Field tests shall be performed with the Engineer present.
- B. Perform the following tests and inspections and prepare test reports:
 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 2. Test completed grounding system at each location where a maximum ground resistance level is specified, at service disconnect enclosure grounding terminal. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
- C. Excessive Ground Resistance: If resistance to ground exceeds specified values as noted in the NETA ATS-2003, notify Engineer promptly and include recommendations to reduce ground resistance. See section 1.3 (D)-Submittals this section.

SECTION 16073 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND CITY OF CHANDLER ENGINEERING DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 1. Hangers and supports for electrical equipment and systems.
 2. Construction requirements for concrete bases.

1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

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- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- D. Rated Strength: Adequate tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.3 SUBMITTALS

- A. Product Data: For steel slotted support systems.
- B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
 - 1. Trapeze hangers. Include Product Data for components.
 - 2. Steel slotted channel systems. Include Product Data for components.
 - 3. Equipment supports. C. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel." B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. GS Metals Corp.
 - d. Thomas & Betts Corporation.
 - e. Unistrut; Tyco International, Ltd.
 - 2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 - 4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 - 5. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size,

and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
 - 2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc. 5) MKT Fastening, LLC.
 - 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
 - 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
 - 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
 - 6. Toggle Bolts: All-steel springhead type.
 - 7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 5 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with single-bolt conduit clamps.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to light weight aggregate concrete or for slabs less than 4 inches (100 mm) thick.
 - 6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 - 7. To Light Steel: Sheet metal screws.
 - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

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- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- B. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi (20.7-MPa, 28-day compressive-strength concrete.
- C. Anchor equipment to concrete base.
 - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 3. Install anchor bolts according to anchor-bolt manufacturers written instructions.

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

SECTION 16075 ELECTRICAL IDENTIFICATION

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS
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CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO
INCLUDE THE FOLLOWING:

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Identification for conductors and communication and control cable.
 - 2. Warning labels and signs.

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3. Equipment identification labels.

1.2 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.

1.3 QUALITY ASSURANCE

- A. Comply with ANSI A13.1.

1.4 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual, and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

PART 2 - PRODUCTS

2.1 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS

- A. Marker Tape: Vinyl or vinyl -cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.2 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
- C. Baked-Enamel Warning Signs: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application. 1/4-inch (6.4-mm) grommets in corners for mounting. Nominal size, 7 by 10 inches (180 by 250 mm).
- D. Metal-Backed, Butyrate Warning Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch (1-mm) galvanized-steel backing; and with colors, legend, and size required for application. 1/4-inch (6.4-mm) grommets in corners for mounting. Nominal size, 10 by 14 inches (250 by 360 mm).
- E. Fasteners for Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

2.3 EQUIPMENT IDENTIFICATION LABELS

- A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

PART 3 - EXECUTION

3.1 APPLICATION

- A. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

- a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where 2 lines of text are required, use labels 2 inches (50 mm) high.
- b. Outdoor Equipment: Engraved, laminated acrylic or melamine label, drilled for screw attachment.
- c. Elevated Components: Increase sizes of labels and legend to those appropriate for viewing from the floor.

2. Equipment to Be Labeled:

- a. Panelboards, electrical cabinets, and enclosures.
- b. Electrical switchgear and switchboards.
- c. Transformers.
- d. Motor-control centers.
- e. Disconnect switches.
- f. Enclosed circuit breakers.
- g. Motor starters.
- h. Push-button stations.
- i. Contactors.

3.2 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach non-adhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.
- F. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.

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1. Color shall be factory applied.
2. Colors for 208/120-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
3. Colors for 480/277-V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.

SECTION 16120 CONDUCTORS AND CABLES

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS
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CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO
INCLUDE THE FOLLOWING:

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Sleeves and sleeve seals for cables.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use. B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

- A. Copper Conductors: Comply with NEMA WC 70.
- B. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN and XHHW.

2.2 CONNECTORS AND SPLICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. AFC Cable Systems, Inc.

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2. Hubbell Power Systems, Inc.
 3. O-Z/Gedney; EGS Electrical Group LLC.
 4. 3M; Electrical Products Division.
 5. Tyco Electronics Corp.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. SLEEVE SEALS
- D. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Advance Products & Systems, Inc.
 2. Calpico, Inc.
 3. Metraflex Co.
 4. Pipeline Seal and Insulator, Inc.
- E. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.
 1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
 2. Pressure Plates: Glass reinforced nylon or Carbon steel. Include two for each sealing element.
 3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger. Minimum conductor size to be used is #12.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger. Minimum conductor size to be used is #12.
- C. Aluminum Circuits are shown on the plans at the direction of the City of Chandler. These circuits will be installed in accordance with the guidelines specific to use of aluminum conductors including oxide protection compounds, cold flow and fatigue.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: By Utility.

- B. Exposed Feeders: Type THHN-2-THWN-2, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-2, THWN-2, single conductors in raceway.
- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-2-THWN-2, single conductors in raceway.
- E. Exposed Branch Circuits, Including in Crawlspace: Type THHN-2-THWN-2, single conductors in raceway.
- F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-2-THWN-2, single conductors in raceway.
- G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-2-THWN-2, single conductors in raceway.
- H. Class 1 Control Circuits: Type THHN-2-THWN-2, in raceway.
- I. Class 2 Control Circuits: Type THHN-2-THWN-2, in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members and follow surface contours where possible.
- E. Identify and color-code conductors and cables according to Division 16 Section "Electrical Identification."
- F. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- G. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than un-spliced conductors.
- H. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- B. Cut sleeves to length for mounting flush with both wall surfaces.
- C. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.
- D. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and cable unless sleeve seal is to be installed.
- E. Seal space outside of sleeves with grout for penetrations of concrete and masonry.

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- F. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.
- G. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- H. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between cable and sleeve for installing mechanical sleeve seals.

3.5 SLEEVE-SEAL INSTALLATION

- A. Install to seal underground exterior-wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

SECTION 16130 RACEWAYS AND BOXES

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS
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CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO
INCLUDE THE FOLLOWING:

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.2 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, details, and attachments to other work.

1.3 QUALITY ASSURANCE

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use. B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

- A. Rigid Steel Conduit: ANSI C80.1.
- B. IMC: ANSI C80.6.
- C. EMT: ANSI C80.3.
- D. FMC: Zinc-coated steel.

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- E. LFMC: Flexible steel conduit with PVC jacket.
- F. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
 - 1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
 - 2. Fittings for EMT: Steel compression type.

2.2 NONMETALLIC CONDUIT AND TUBING

- A. ENT: NEMA TC 13.
- B. RNC: NEMA TC 2, Type EPC-40-PVC, unless otherwise indicated.
- C. LFNC: UL 1660.
- D. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.
- E. Fittings for LFNC: UL 514B.

2.3 METAL WIREWAYS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cooper B-Line, Inc.
 - 2. Hoffman.
 - 3. Square D; Schneider Electric.
- B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1, unless otherwise indicated.
- C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- D. Wireway Covers: Hinged type.
- E. Finish: Manufacturer's standard enamel finish.

2.4 BOXES, ENCLOSURES, AND CABINETS

- A. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- B. Cast-Metal Outlet and Device Boxes: NEMA FB 1, aluminum, Type FD, with gasketed cover.
- C. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
- D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- E. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.
- F. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
- G. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
- H. Cabinets:

1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
 1. Exposed Conduit: IMC.
 2. Concealed Conduit, Aboveground: EMT.
 3. Underground Conduit: RNC, Type EPC-40-PVC, direct buried.
 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
- B. Comply with the following indoor applications, unless otherwise indicated:
 1. Exposed, Not Subject to Physical Damage: EMT.
 2. Exposed, Not Subject to Severe Physical Damage: EMT.
 3. Exposed and Subject to Severe Physical Damage: IMC. Includes raceways in the following locations:
 - a. Loading dock.
 - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - c. Mechanical rooms.
 4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
 6. Damp or Wet Locations: IMC.
 7. Raceways for Optical Fiber or Communications Cable: EMT.
 8. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.
- C. Minimum Raceway Size: 1/2-inch (16-mm) trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.2 INSTALLATION

- A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

- B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
- E. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.
- F. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
- G. Raceways Embedded in Slabs:
 - 1. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
 - 2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
 - 3. Change from ENT to IMC, rigid steel conduit, or IMC before rising above the floor.
- H. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.
- I. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.
- J. Raceways for Optical Fiber and Communications Cable: Install as follows:
 - 1. 3/4-Inch (19-mm) Trade Size and Smaller: Install raceways in maximum lengths of 50 feet (15 m).
 - 2. 1-Inch (25-mm) Trade Size and Larger: Install raceways in maximum lengths of 75 feet (23 m).
 - 3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.
- K. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
 - 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2. Where otherwise required by NFPA 70.
- L. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F (17 deg C), and that has straight-run length that exceeds 25 feet (7.6 m).
 - 1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:

- a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
- b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C) temperature change.
- c. Indoor Spaces: Connected with the Outdoors without Physical Separation:
125 deg F (70 deg C) temperature change.
- d. Attics: 135 deg F (75 deg C) temperature change.
- 2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F (0.06 mm per meter of length of straight run per deg C) of temperature change.
- 3. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.
- M. Flexible Conduit Connections: Use maximum of 72 inches (1830 mm) of flexible conduit for recessed and semirecessed lighting fixtures, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
 - 1. Use LFMC in damp or wet locations subject to severe physical damage.
 - 2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.
- N. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

- 1. Excavate trench bottom to provide firm and uniform support for conduit.
- 2. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction.
- 3. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.
- 4. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
 - a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches (75 mm) of concrete.
 - b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.

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5. Warning Tape: Bury warning tape approximately 12 inches (300 mm) above direct-buried conduits. Align tape along the width and along the centerline of conduit.

SECTION 16140 WIRING DEVICES

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND CITY OF CHANDLER ENGINEERING DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.
2. Snap switches and wall-box dimmers.
3. Communications outlets.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

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2.2 STRAIGHT BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 5351 (single), 5352 (duplex).
 - b. Hubbell; HBL5351 (single), CR5352 (duplex).
 - c. Leviton; 5891 (single), 5352 (duplex).
 - d. Pass & Seymour; 5381 (single), 5352 (duplex).

2.3 GFCI RECEPTACLES

A. General Description: Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; GF20.
 - b. Pass & Seymour; 2084.

2.4 SNAP SWITCHES

A. Comply with NEMA WD 1 and UL 20.

B. Switches, 120/277 V, 20 A:

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).
 - b. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).
 - c. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 12242 (four way).
 - d. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).

2.5 WALL PLATES

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: 0.035-inch- (1-mm-) thick, satin-finished stainless steel.
3. Material for Unfinished Spaces: Galvanized steel.
4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover.

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2.6 FINISHES

- A. Color: Wiring device catalog numbers in Section Text do not designate device color.
 - 1. Wiring Devices Connected to Normal Power System: Gray, unless otherwise indicated or required by NFPA 70 or device listing.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
- B. Coordination with Other Trades:
 - 1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
 - 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 - 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 - 4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
 - 1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
 - 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
 - 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
- D. Device Installation:
 - 1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
 - 2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
 - 3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
 - 4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
 - 5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
 - 6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.

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7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multi-gang wall plates.

3.2 IDENTIFICATION

A. Comply with Division 16 Section "Electrical Identification."

1. Receptacles: Identify panelboard and circuit number from which served with the wire markers or tags inside outlet boxes.

SECTION 16145 LIGHTING CONTROL DEVICES

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following lighting control devices:
1. Lighting contactors.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show installation details for occupancy and light-level sensors.
 1. Interconnection diagrams showing field-installed wiring.
- C. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals.

1.4 QUALITY ASSURANCE

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- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.5 COORDINATION

- A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 LIGHTING CONTACTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Allen-Bradley/Rockwell Automation.
 - 2. ASCO Power Technologies, LP; a division of Emerson Electric Co.
 - 3. Eaton Electrical Inc.; Cutler-Hammer Products.
 - 4. Square D; Schneider Electric.
- B. Description: Electrically operated and electrically held, complying with NEMA ICS 2 and UL 508.
 - 1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
 - 2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation (25,000 AIC).
 - 3. Enclosure: Comply with NEMA 250.

PART 3 - EXECUTION

3.1 CONTACTOR INSTALLATION

- A. Mount electrically held lighting contactors with elastomeric isolator pads, to eliminate structure-borne vibration, unless contactors are installed in an enclosure with factory-installed vibration isolators.

3.2 WIRING INSTALLATION

- A. Wiring Method: Comply with Division 16 Section "Conductors and Cables." Minimum conduit size shall be 1/2 inch (13 mm).
- B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
- D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

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3.3 IDENTIFICATION

- A. Identify components and power and control wiring according to Division 16 Section "Electrical Identification."
 - 1. Identify controlled circuits in lighting contactors.
 - 2. Label time switches and contactors with a unique designation.

3.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. Operational Test: Verify operation of each lighting control device, and adjust time delays.
- B. Lighting control devices that fail tests and inspections are defective work.

SECTION 16442 PANELBOARDS

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND CITY OF CHANDLER ENGINEERING DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Distribution panelboards.
 - 2. Lighting and appliance branch-circuit panelboards.

1.3 DEFINITIONS

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.
- C. RFI: Radio-frequency interference.
- D. RMS: Root means square.
- E. SPDT: Single pole, double throw.

1.4 SUBMITTALS

- A. Product Data: For each type of panelboard, overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For each panelboard and related equipment.

1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings. Include the following:
 - a. Enclosure types and details for types other than NEMA 250, Type 1.
 - b. Bus configuration, current, and voltage ratings.
 - c. Short-circuit current rating of panelboards and overcurrent protective devices.
 - d. UL listing for series rating of installed devices.
 - e. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
2. Wiring Diagrams: Power, signal, and control wiring.
- C. Field quality-control test reports including the following:
 1. Test procedures used.
 2. Test results that comply with requirements.
 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- D. Panelboard Schedules: For installation in panelboards. Submit final versions after load balancing.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories through one source from a single manufacturer.
- B. Product Options: Drawings indicate size, profiles, and dimensional requirements of panelboards and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use. D. Comply with NEMA PB 1.
- D. Comply with NFPA 70.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions, unless otherwise indicated:
 1. Ambient Temperature: Not exceeding 104 deg F (40 deg C).
 2. Altitude: Not exceeding 6600 feet (2000 m).
- B. Service Conditions: NEMA PB 1, usual service conditions, as follows:
 1. Ambient temperatures within limits specified.
 2. Altitude not exceeding 6600 feet (2000 m).

1.7 COORDINATION

- A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, and encumbrances to workspace clearance requirements.

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- B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- 1. Panelboards, Overcurrent Protective Devices, Controllers, Contactors, and Accessories:
 - a. Square D

2.2 MANUFACTURED UNITS

- A. Enclosures: Surface-mounted cabinets. NEMA PB 1, Type 1.
 - 1. Rated for environmental conditions at installed location.
 - 2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
 - 3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
 - 4. Skirt for Surface-Mounted Panelboards: Same gage and finish as panelboard front with flanges for attachment to panelboard, wall, and ceiling or floor.
 - 5. Gutter Extension and Barrier: Same gage and finish as panelboard enclosure; integral with enclosure body. Arrange to isolate individual panel sections.
 - 6. Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.
 - 7. Directory Card: With transparent protective cover, mounted in metal frame, inside panelboard door.
- B. Phase and Ground Buses:
 - 1. Material: Tin-plated aluminum.
 - 2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment ground conductors; bonded to box.
- C. Conductor Connectors: Suitable for use with conductor material.
 - 1. Main and Neutral Lugs: Mechanical type.
 - 2. Ground Lugs and Bus Configured Terminators: Compression type.
- D. Service Equipment Label: UL labeled for use as service equipment for panelboards with main service disconnect switches.
- E. Future Devices: Mounting brackets, bus connections, and necessary appurtenances required for future installation of devices.

2.3 PANELBOARD SHORT-CIRCUIT RATING

- A. Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.4 DISTRIBUTION PANELBOARDS

- A. Doors: Secured with vault-type latch with tumbler lock; keyed alike. Omit for fused switch panelboards.

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- B. Main Overcurrent Protective Devices: Circuit breaker.
- C. Branch Overcurrent Protective Devices:
 - 1. For Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.
 - 2. For Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

2.5 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- B. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

2.6 OVERCURRENT PROTECTIVE DEVICES

- A. Molded-Case Circuit Breaker: UL 489, with interrupting capacity to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
 - 2. GFCI Circuit Breakers: Single- and two-pole configurations with [5] [30]-mA trip sensitivity.
- B. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.
 - 1. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
 - 2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install panelboards and accessories according to NEMA PB 1.1.
- B. Mount top of trim 74 inches (1880 mm) above finished floor, unless otherwise indicated.
- C. Mount plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish.
- D. Install overcurrent protective devices and controllers.
 - 1. Set field-adjustable switches and circuit-breaker trip ranges.
- E. Install filler plates in unused spaces.
- F. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.

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3.2 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section "Electrical Identification."
- B. Create a directory to indicate installed circuit loads after balancing panelboard loads. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with engraved metal or laminated plastic nameplate mounted with corrosion-resistant screws.

3.3 CONNECTIONS

- A. Ground equipment according to Division 16 Section "Grounding and Bonding."
- B. Connect wiring according to Division 16 Section "Conductors and Cables."

3.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. Perform each electrical test and visual and mechanical inspection stated in NETA ATS-2003, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- B. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.
 - 1. Measure as directed during period of normal system loading.
 - 2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
 - 3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
 - 4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

3.5 CLEANING

- A. On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

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SECTION 16521 EXTERIOR LIGHTING

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND CITY OF CHANDLER ENGINEERING DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Exterior luminaires with lamps and ballasts.
2. LED Fixtures
3. Poles and accessories.

1.2 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

- A. Dead Load: Weight of luminaire and its horizontal and vertical supports and supporting structure, applied as stated in AASHTO LTS-4.
- B. Ice Load: Load of 3 lbf/sq. ft. (143.6 Pa) applied as stated in AASHTO LTS-4.
- C. Wind Load: Pressure of wind on pole and luminaire, calculated and applied as stated in AASHTO LTS-4.

1.3 SUBMITTALS

- A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, and finishes.
- B. Shop Drawings: Include anchor-bolt templates keyed to specific poles and certified by manufacturer.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with IEEE C2, "National Electrical Safety Code."
- C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In Exterior Lighting Device Schedule where titles below are column or row headings that introduce lists, the following requirements apply to product selection:
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 LUMINAIRES, GENERAL REQUIREMENTS

- A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
- B. Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Corrosion-resistant aluminum, unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit re-lamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during re-lamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.
- G. Exposed Hardware Material: Stainless steel.
- H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- I. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.
- J. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:
 - 1. White Surfaces: 85 percent.
 - 2. Specular Surfaces: 83 percent.
 - 3. Diffusing Specular Surfaces: 75 percent.
- K. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- L. Luminaire Finish: Color by Engineer. Paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.
- M. Factory-Applied Finish for Steel Luminaires: Color as selected by Engineer. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- N. Factory-Applied Finish for Aluminum Luminaires: Color as selected by Engineer. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

2.5 LED LUMINAIRES

- A. Initial delivered lumens: Thermal losses should be less than 10% when operated at a steady state at an average ambient operating temperature of 25 deg C. Optical losses should be less than 15%
- B. Average delivered lumens: Over 50,000 hours should be a minimum of 85% of initial delivered lumens.
- C. Warranty: 5 years on the LEDs, 5 years on the driver, 10 years on the paint finish.

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2.6 POLES AND SUPPORT COMPONENTS, GENERAL REQUIREMENTS

- A. Structural Characteristics: Comply with AASHTO LTS-4.
 - 1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in Part 1 "Structural Analysis Criteria for Pole Selection" Article, with a gust factor of 1.3.
 - 2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.
- B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts, unless otherwise indicated.
- C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
 - 1. Materials: Shall not cause galvanic action at contact points.
 - 2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication, unless stainless-steel items are indicated.
 - 3. Anchor-Bolt Template: Plywood or steel.

2.7 CONCRETE POLES (SEE FIXTURE SCHEDULE)

PART 3 - EXECUTION

3.1 LUMINAIRE INSTALLATION

- A. Install lamps in each luminaire.
- B. Fasten luminaire to indicated structural supports.
 - 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
- C. Adjust luminaires that require field adjustment or aiming.

3.2 POLE INSTALLATION

- A. Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.
- B. Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features, unless otherwise indicated on Drawings:
 - 1. Fire Hydrants and Storm Drainage Piping: 60 inches (1520 mm).
 - 2. Water, Gas, Electric, Communication, and Sewer Lines: 10 feet (3 m).
 - 3. Trees: 15 feet (5 m).
- C. Raise and set poles using web fabric slings (not chain or cable).

3.3 CORROSION PREVENTION

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

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- B. Steel Conduits: Comply with Division 16 Section "Raceways and Boxes." In concrete foundations, wrap conduit with 0.010-inch- (0.254-mm-) thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.4 GROUNDING

- A. Ground metal poles and support structures according to Division 16 Section "Grounding and Bonding."
1. Install grounding electrode for each pole, unless otherwise indicated.
 2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.
- B. Ground nonmetallic poles and support structures according to Division 16 Section "Grounding and Bonding."
1. Install grounding electrode for each pole.
 2. Install grounding conductor and conductor protector.
 3. Ground metallic components of pole accessories and foundations.

Measurement and Payment:

Electrical Service Pedestal System, Det 4829, Meter Pedestal Cabinet (COT), Pathway Lights and Poles, Street Light LED Luminaire, Street Light Poles and Arms, and Street Lights Foundation will be measured as a unit for each item installed and will be paid for at the contract unit price each, which price will be full compensation for the work, complete in place. No.12 AWG THWN-2 electrical conductors will be incidental to each pathway light pole and street light pole installed.

No 8 AWG THWN-2 Wire and No 12 AWG THWN-2 Wire for pathway lighting will be measured by the linear foot and will be paid for at the contract unit price per linear foot, which price will be full compensation for the work complete in place.

Electrical Conductors (Ray Road and McKemy Avenue) and Electrical Conductors (Kyrene Road and Knox Road) will be measured as lump sum and will be paid for at the contract lump sum, which price will be full compensation for the work completed in place. Contractor to submit schedule of values for the following items.

Item	Measurement	Price
#14 AWG	L.F.	\$
#12 AWG	L.F.	\$
#10 AWG	L.F.	\$
#8 AWG	L.F.	\$

No additional payment will be made for all work, as specified herein, the cost being considered incidental to this item.

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ITEM NO. 96 POLE FOUNDATION, TYPE PB (PUSH BUTTON) (COC)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to install traffic signal pole foundations at the locations and elevations as specified in the Project Plans.

Materials:

The work under these items will conform to the current editions of the ADOT "Traffic Signals & Lighting" Standard Drawings T-SL4.27 and T-SL4.28, Subsection 731 of the ADOT Standard Specifications and City of Chandler's Approved Product List.

Construction Requirements:

The work under this item will conform to the current editions of the ADOT Standard Drawings T-SL 4.27 and T-SL 4.28, and Subsection 731 of the ADOT Standard Specifications. Contractor shall refer to the ADOT Standard Drawing T-SL 4.28 for further information regarding anchor bolt details, the bolt projection above foundation and the spacing between the top of foundation and the bottom of the pole base plate. Contractor shall ensure that the top of pole foundation is flush with the proposed sidewalk. Top of foundation elevations are provided on the traffic signal plans for information only. Contractor shall field verify elevations, construct per plan, and gain approval from City prior to construction. If field conditions change, the Contractor shall define updated elevations for approval prior to construction. If foundations are constructed and do not satisfy the plans and specifications, the contractor will be responsible for replacement at their own cost.

Measurement:

The pole foundations will be measured as a unit for each foundation furnished and installed, including excavation and backfill.

Payment:

The accepted quantities of pole foundations, measured as provided above, will be paid for at the contract unit price each, for the type of foundation designated in the bidding schedule, which price will be full compensation for the work, complete in place. No additional payment will be made for all hardware, reinforcement, anchor bolts, wire, excavation, backfill and incidentals, the cost being considered incidental to this item.

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ITEM NO. 97 AUDIBLE PEDESTRIAN PUSH BUTTON W/ SIGN (COC)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary for installing audible pedestrian push buttons with signs at the locations as specified in the Project Plans within City of Chandler right-of-way.

Materials:

The work under this item will conform to the current editions of the ADOT “Traffic Signals & Lighting” Standard Drawing T-SL 11-1 and Subsection 735-2.02 of the ADOT Standard Specifications for Road and Bridge Construction and City of Chandler Approved Products List.

The pedestrian push buttons shall include speech walk message that complies with Section R308.3.2 of the Public Right-of-Way Accessibility Guidelines (PROWAG).

Construction Requirements:

The work under this item will conform to Subsection 735-2.02 of the ADOT Standard Specifications for Road and Bridge Construction.

Measurement:

The Audible Pedestrian Push Button will be measured as a unit for each audible pedestrian push button furnished and installed.

Payment:

The Audible Pedestrian Push Button, measured as provided above, will be paid for at the contract unit price each, which price will be full compensation for the work complete in place, as specified herein and on the Project Plans.

ITEM NO. 98 TYPE PB, PUSH BUTTON POLE (COC)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to install traffic signal poles at the locations as specified in the Project Plans.

Materials:

The work under this item will conform to the current edition of the ADOT “Traffic Signals & Lighting” Standard Drawing T-SL4.27, and Subsection 731-2.02 of the ADOT Standard Specifications for Road and Bridge Construction.

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Construction Requirements:

The work under this item will conform to Subsection 731-3.03 of the ADOT Standard Specifications for Road and Bridge Construction.

Measurement:

The traffic signal poles will be measured as a unit for each type of pole furnished and installed.

Payment:

The accepted quantities of traffic signal poles, measured as provided above, will be paid for at the contract unit price each, for the type of pole designated in the bidding schedule, which price will be full compensation for the work complete in place as described and specified herein and on the Project Plans, including all hardware, wire, and incidentals necessary to complete the work.

ITEM NO. 99 SINGLE CURB, MAG DET 222, TYPE B

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary to construct new curb at locations as specified in the Project Plans.

Materials:

Concrete shall be Class B per MAG Standard Specifications Section 725.

Construction Requirements:

The work under this item will comply with MAG Standard Specifications Section 340 in its entirety and MAG Standard Detail 222.

Measurement:

Single Curb will be measured per linear foot.

Payment:

Single Curb, measured as provided above, will be paid for at the contract unit price per linear foot, which price will be full compensation for the work, complete in place.

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ITEM NO. 100 MODIFIED MID-BLOCK RAMP, PER SPECIAL DETAIL

Description:

The work under this item will consist of furnishing of all materials, labor, and equipment necessary to construct modified mid-block ramps at locations as specified in the Project Plans.

Materials and Construction Requirements:

All materials and work shall conform with MAG Standard Specification 340, applicable City of Tempe supplements, and the geometric details provided in the Project Plans.

Detectable Warning will be per COT Standard Detail T-329. Detectable warning shall be wet set installation. The Contractor shall submit shop drawings of the detectable warning system, including materials and color, to the Engineer for approval prior to construction.

Measurement and Payment:

Modified Mid-Block Ramps will be measured as a unit for each, including detectable warnings, and concrete curb as specified in the Project Plans.

The accepted quantities of Modified Mid-Block Ramps, measured as provided above, will be paid for at the contract unit price per each, which price will be full compensation for the item, complete in place.

No additional payment will be made for detectable warnings, additional sidewalk area or concrete curb, the cost being considered incidental to this item.

ITEM NO. 101 CONCRETE DRIVEWAY, MAG DTL 250-1, COMMERCIAL, WIDTH PER PLANS

ITEM NO. 102 CONCRETE DRIVEWAY, MAG DTL 260, RESIDENTIAL, 16' WIDE, MODIFIED W/ TYPE A CURB & GUTTER

ITEM NO. 103 CONCRETE DRIVEWAY, MAG DTL 262, 20' WIDE

Description:

The work under these items will consist of furnishing all materials, labor and equipment necessary to construct new concrete driveway entrances at all locations as specified in the Project Plans.

Materials and Construction Requirements:

All materials will conform to MAG Details 250-1, 250-2, 260, and 262 in their entirety, MAG Standard Specifications Section 340, and applicable City of Tempe supplements.

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Measurement and Payment:

Concrete Driveways will be measured per square foot and will be paid for at the contract unit price per square foot, which price will be full compensation for the work, complete in place.

ITEM NO. 104 CITY OF TEMPE MICRO SHELTER PAD ITEM NO. 105 CITY OF TEMPE AMENITIES PAD

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary construct new concrete pads for the City of Tempe Micro Shelter and Amenities Pads per MAG Detail 230 and City of Tempe Details at all locations as specified in the Project Plans and as approved by City Representatives.

Materials:

All materials will conform to MAG Detail 230 and City of Tempe Details in their entirety, except as modified herein.

Construction Requirements:

Comply with Section 4.72 of City of Chandler Engineering & Design Standards Manual and MAG Detail 230 in their entirety, all City of Chandler supplements, and City of Tempe Supplement, except as modified herein.

Measurement and Payment:

Concrete Sidewalk and City of Tempe Micro Shelter Pad and Amenities Pad will be measured per square foot and will be paid for at the contract unit price per square foot, which price will be full compensation for the work, complete in place.

ITEM NO. 106 ADJUST ELECTRICAL PULLBOX & COVER TO GRADE, W/ ADA COMPLIANT LID

Description:

The work under this item will consist of furnishing of all materials, labor, and equipment necessary to adjust existing electrical pull boxes to grade at locations as specified in the Project Plans.

Materials and Construction Requirements:

All materials and work shall comply with MAG Standard Detail 391 and City of Tempe

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Standard Detail T-441.

Existing pull boxes shall be reset to grade level. Excavate, adjust subsurface components as required, and backfill per MAG 391 and COT T-441 details. Contractor shall dispose of surplus or unsuitable material at own expense.

Measurement and Payment:

Adjust Electrical Pull Box to Grade will be measured as a unit for each, will be paid for at the contract unit price, which price will be full compensation for the item, complete in place.

No additional payment will be made for required materials for excavating and backfill, the cost being considered incidental to this item.

ITEM NO. 107 REMOVE STREET LIGHT

Description:

The work under this item will consist of furnishing all materials, labor, and equipment for the removal and disposal of existing an street light at the location as specified in the Project Plans.

Construction Requirements:

Removal and disposal will comply with MAG Standard Specifications Section 350 in its entirety, except as modified herein.

The Contractor will coordinate all work associated with the streetlight systems (i.e. de-energizing the system, etc.) with SRP Power.

The Contractor will be responsible for removing and disposing of all existing streetlight poles, luminaires, mast arms, bases, and foundations at locations as specified in the Project Plans. The Contractor will backfill the excavated area per the City's requirements for backfilling and compaction.

Measurement and Payment:

Remove Street Light will be measured as a unit each and will be paid for at the contract unit price each, which price will be full compensation for the item, including all removals, disposals, backfilling, and compaction, complete in place.

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ITEM NO. 108 REMOVE & SALVAGE EXISTING BENCH, TRASH RECEPTACLE, & BIKE RACK TO CITY OF TEMPE

Description:

The work under these items will consist of furnishing all materials, labor, and equipment for the removal and salvage of existing site furnishings at locations within the City of Tempe as specified in the Project Plans, including all appurtenances and hardware.

Construction Requirements:

The work under these items will comply with MAG Standard Specifications Section 350 in its entirety, including all except as modified herein.

All salvaged site furnishings will be returned to the City of Tempe respective storage yards. Contractor shall coordinate with the City of Tempe representative identified below.

*City of Tempe
East Valley Bus Operations and Maintenance (EVBOM)
2050 W. Rio Salado Parkway
Tempe, AZ 85281
Contact: Seth Cleveland (480-350-8295)*

Measurement:

Remove & Salvage Existing Bench, Trash Receptacle, & Bike Rack will be measured collectively as a unit of each.

Payment:

The accepted quantities of Remove & Salvage Existing Bench, Trash Receptacle, & Bike Rack, measured as provided above, will be paid at the contract unit price each, which price will be full compensation for the work, complete in place. No additional payment will be paid for the delivery of salvaged materials to the City of Tempe storage yards, the cost considered being included in this bid item.

ITEM NO. 109 REMOVE THERMOPLASTIC STRIPE

ITEM NO. 110 REMOVE THERMOPLASTIC BIKE LANE MARKING SET

Description:

The work under this item consists of obliterating existing longitudinal and transverse pavement markings and symbols within City of Tempe right-of-way as specified in the Project Plans or directed by City of Tempe Representatives.

Construction Requirements:

The Contractor will be responsible for obliterating existing longitudinal and transverse

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pavement markings and symbols per Section 460 of the Maricopa County Department of Transportation Supplement to the Maricopa Association of Governments Uniform Standard Specifications and Details for Public Works Construction.

Measurement and Payment:

Remove Thermoplastic Stripe will be measured per linear foot along the center line of the pavement stripe and will be based on a 4 inch wide stripe. Measurement of removal of striping with a plan width greater or less than the basic 4 inches will be made by the following method:

$$\frac{\text{Plan Width of Striping (inches)} \times \text{Linear Feet}}{4 \text{ (inches)}}$$

No measurement will be made for the number of linear feet for gaps in dashed lines.

Remove Thermoplastic Bike Lane Marking Set will be measured as a unit for each symbol to be removed.

The accepted quantity of Remove Thermoplastic Stripe, measured as provided above, will be paid for at the contract unit price bid per linear foot, which price will be full compensation for the item, complete in place. No additional payment will be made for the removal of raised pavement markers, the cost being considered incidental to this item.

The accepted quantity of Remove Thermoplastic Bike Lane Marking Set, measured as provided above, will be paid for at the contract unit price bid per each, which price will be full compensation for the item, complete in place.

ITEM NO. 111 REMOVE FENCE

Description:

The work under these items will consist of furnishing all materials, labor, and equipment for the removal and disposal of existing fences at locations specified in the Project Plans, including all appurtenances, such as, but not limited to, foundations and hardware.

Construction Requirements:

The work under these items will comply with MAG Standard Specifications Section 350 in its entirety, including all except as modified herein.

The Contractor will remove the fences, including foundations, hardware, posts, and backfill, compaction, and disposal.

The Contractor will be required to notify property owners 30 days prior to fence removal and coordinate any materials to be salvaged to the property owner.

The Contractor will not remove existing fences until new or temporary fences have been

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fully erected, except as needed to construct new fence and connections to existing fence.

Measurement:

Remove Fence will be measured per linear foot along the center of the fence.

Payment:

The accepted quantity of Remove Fence, measured as provided above, will be paid for at the contract unit price per linear foot, which price will be full compensation for the work, complete in place.

No separate payment will be made for the removal, disposal, or salvage of hardware, posts, and foundations, backfill and compaction, the cost being considered incidental to this item.

ITEM NO. 112 FENCE (REPLACE IN KIND)

Description:

This work shall consist of furnishing all labor, materials, and equipment necessary to construct new chain-link fence at all locations indicated on the Project Plans.

Materials:

All materials shall conform to MAG Uniform Standard Specifications Sections 772 and 725.

Construction Requirements:

Comply with MAG Uniform Standard Specifications Section 420 in its entirety.

Barbed wire shall not be installed.

Measurement:

Fence (Replace in Kind) will be measured per linear foot, including excavation, foundations, posts, post caps, hardware, and paint.

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Payment:

The accepted quantities of Fence (Replace in Kind), measured as provided above, will be paid for at the contract unit price per linear foot which price shall be full compensation for the work, complete in place.

ITEM NO. 113 BUS STOP (MICROSHELTER, BENCH, TRASH RECEPTACLE, BIKE RACK)

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION and CITY OF CHANDLER SUPPLEMENTS TO DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:

This work shall include furnishing all materials, labor, fabrication, transportation, and equipment necessary to manufacture and install the City of Tempe Bus Stop Passenger Shelter in accordance with the details shown on the plans, the City of Tempe Standard Details, these specifications and at the locations shown on the project plans and approved by City Representatives.

1. Structural Steel Framing:
 - A. General
 1. Section Includes:
 - (i) Structural steel.
 - B. Related Requirements:
 1. Refer to "Architecturally Exposed Structural Steel Framing" for additional requirements for architecturally exposed structural steel.
 - C. Definitions
 1. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
 - D. Submittals
 1. Product Data: For each type of product provided on the construction plans and listed in these special provisions.
 2. Shop Drawings: Show fabrication of structural-steel components provided on the construction plans.
 3. Qualification Data: For Installer and Fabricator.
 - (i) Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.
 4. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.

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5. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
6. Welding certificates.
7. Mill test reports for structural steel, including chemical and physical properties.
8. Source quality-control reports.
9. Field quality-control and inspection reports.
 - (i) Coatings – General: Furnish complete-coat system formulated and recommended by manufacturer for applications indicated, in thicknesses indicated; number of coats specified does not include primer or filler coat.
 1. Colors: provide colors as shown on the City of Tempe Standard Details, construction plans, and these special provisions.

E. Products

1. Structural Steel Materials
 - (i) Channels & Angles: ASTM A 36/A 36M.
 - (ii) Plate and Bar: ASTM A 36/A 36M
 - (iii) Cold-Formed Hollow Structural Sections: ASTM A 500/A 500M, Grade B, structural tubing.
 - (iv) Welding Electrodes: Comply with AWS requirements.
2. Bolts, Connections, And Anchors
 - (i) High-Strength Bolts, Nuts, and Washers: ASTM A 325 Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436 Type 1, hardened carbon-steel washers; all with plain finish.
 - (ii) Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy hex head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.
 - (iii) Finish: Galvanized.
 - (iv) Unheaded Anchor Rods: ASTM F 1554, Grade 55, weldable.
 - (v) Configuration: Straight.
 - (vi) Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.
 - (vii) Headed Anchor Rods: ASTM F 1554, Grade 55, weldable, straight.
 - (viii) Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.
 - (ix) Threaded Rods: ASTM A 36/A 36M.
 - (x) Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.
3. Primer
 - (i) Primer: Comply with Manufacturers recommendations and AAMA 2605 Standards.
4. Fabrications
 - (i) Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.

- (ii) Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.
- 5. Shop Connections
 - (i) High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened.
 - (ii) Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
- 6. Shop Priming
 - (i) Shop prime steel surfaces except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - 2. Surfaces to be field welded.
 - 3. Surfaces of high-strength bolted, slip-critical connections.
 - 4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
 - 5. Galvanized surfaces.
 - 6. Surfaces enclosed in interior construction.
 - (ii) Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
 - 2. SSPC-SP 3, "Power Tool Cleaning."
 - 3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
 - (iii) Priming: Prime per City of Tempe Standard Details.
- 7. Shop Finish:
 - (i) Provide shop finish and color per City of Tempe Standard Details.
- 8. Source Quality Control
 - (i) Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.
 - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
 - (ii) Bolted Connections: Inspect shop-bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
 - (iii) Welded Connections: Visually inspect shop-welded connections according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - 1. Liquid Penetrant Inspection: ASTM E 165.

2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 3. Ultrasonic Inspection: ASTM E 164.
 4. Radiographic Inspection: ASTM E 94.
- (iv) Prepare test and inspection reports.
- F. Execution
1. Examination
 - (i) Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
 - (ii) Proceed with installation only after unsatisfactory conditions have been corrected.
 2. Erection
 - (i) Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
 - (ii) Baseplates: Clean concrete surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 2. Weld plate washers to top of baseplate.
 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
 - (iii) Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
 3. Field Connections
 - (i) High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 1. Joint Type: Snug Tightened.
 - (ii) Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.
4. Field Quality Control
 - (i) Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
 1. Verify structural-steel materials and inspect steel frame joint details.
 2. Verify weld materials and inspect welds.
 3. Verify connection materials and inspect high-strength bolted connections.
 - (ii) Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
 - (iii) Bolted Connections: Inspect bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
 - (iv) Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.
 1. In addition to visual inspection, test and inspect field welds according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
2. Architecturally Exposed Structural Steel:
 - A. General
 1. Summary
 - (i) Section includes architecturally exposed structural-steel (AESS).
 - (ii) Requirements in Section "Structural Steel Framing" also apply to AESS.
 - B. Definitions
 - (i) AESS: Structural steel designated as "architecturally exposed structural steel" or "AESS" in the Contract Documents.
 - C. Submittals
 - (i) Shop Drawings: Show fabrication of AESS components. Shop Drawings for structural steel may be used for AESS provided items of AESS are specifically identified and requirements below are met for AESS.

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1. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain. Indicate grinding, finish, and profile of welds.
2. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
- (ii) Samples: Submit Samples of AESS to set quality standards for exposed welds.
 1. Two steel plates, 3/8 by 8 by 4 inches with long edges joined by a groove weld and with weld ground smooth.
 2. Steel plate, 3/8 by 8 by 8 inches with one end of a short length of rectangular steel tube, 4 by 6 by 3/8 inches welded to plate with a continuous fillet weld and with weld ground smooth and blended.
- (iii) Coatings – General: Furnish complete-coat system formulated and recommended by manufacturer for applications indicated, in thicknesses indicated; number of coats specified does not include primer or filler coat.
 1. Colors: provide colors as shown on the City of Tempe Standard Details or approved equal.

D. Quality Assurance

1. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD, or is accredited by the IAS Fabricator Inspection Program for Structural Steel (AC 172).
2. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector.
3. Shop-Painting Applicators: Qualified according to AISC's Sophisticated Paint or SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."
4. Delivery, Storage, and Handling
 - (i) Use special care in handling to prevent twisting, warping, nicking, and other damage. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

5. Field Conditions
 - (i) Field Measurements: Where AESS is indicated to fit against other construction, verify actual dimensions by field measurements before fabrication.
- E. Products
 1. Bolts, Connectors, and Anchors – Refer to Section “Structural Steel Framing”.
 2. Filler
 3. Filler: Polyester filler intended for use in repairing dents in automobile bodies.
 4. Primer – Refer to Section “Structural Steel Framing”.
 5. Fabrication
 - (i) In addition to special care used to handle and fabricate AESS, comply with the following:
 1. Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale, and roughness.
 2. Grind sheared, punched, and flame-cut edges of AESS to provide smooth surfaces and edges.
 3. Fabricate AESS with exposed surfaces free of mill marks.
 4. Fabricate AESS with exposed surfaces free of seams to maximum extent possible.
 5. Remove blemishes by filling or grinding or by welding and grinding, before cleaning, treating, and shop priming.
 6. Fabricate with piece marks fully hidden in the completed structure or made with media that permits full removal after erection.
 7. Fabricate AESS to the tolerances specified in AISC 303 for steel that is designated AESS.
 8. Seal-weld open ends of hollow structural sections with 1/8-inch closure plates.
 - (ii) Coping, Blocking, and Joint Gaps: Maintain uniform gaps of 1/8 inch with a tolerance of 1/32 inch.
 - (iii) Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
 - (iv) Cleaning Corrosion-Resisting Structural Steel: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - (v) Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.
 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

(vi) Shop Connections

1. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - a. Joint Type: Snug Tightened.
2. Weld Connections: Comply with AWS D1.1/D1.1M tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work, and comply with the following:
 - a. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding specified tolerances.
 - b. Use weld sizes, fabrication sequence, and equipment for AESS that limit distortions to allowable tolerances.
 - c. Provide continuous, sealed welds at angle to gusset-plate connections and similar locations where AESS is exposed to weather.
 - d. Provide continuous welds of uniform size and profile where AESS is welded.
 - e. Grind butt and groove welds flush to adjacent surfaces within tolerance of plus 1/16 inch, minus zero inch.
 - f. Make butt and groove welds flush to adjacent surfaces within tolerance of plus 1/16 inch, minus zero inch. Do not grind unless required for clearances or for fitting other components, or unless directed to correct unacceptable work.
 - g. Remove backing bars or runoff tabs; back-gouge and grind steel smooth.
 - h. At locations where welding on the far side of an exposed connection of AESS occurs, grind distortions and marking of the steel to a smooth profile aligned with adjacent material.
 - i. Make fillet welds oversize and grind to uniform profile with smooth face and transition.
 - j. Make fillet welds of uniform size and profile with exposed face smooth and slightly concave. Do not grind unless directed to correct unacceptable work.
3. Shop Priming
 - a. Shop prime steel surfaces except the following:
 - i. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - ii. Surfaces to be field welded.
 - iii. Surfaces to be high-strength bolted with slip-critical connections.
 - iv. Surfaces to receive sprayed fire-resistive materials.

v. Galvanized surfaces.

4. Surface Preparation:

- a. SSPC-SP 3, "Power Tool Cleaning."
- b. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
- c. SSPC-SP 14/NACE No. 8, "Industrial Blast Cleaning."
- d. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- e. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- f. SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."

5. Priming: Prime per City of Tempe Standard Details.

6. Shop Finish:

- a. Provide shop finish and color per City of Tempe Standard Details.

F. Execution

1. Examination

- (i) Verify, with steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

- 1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

- (ii) Proceed with installation only after unsatisfactory conditions have been corrected.

2. Preparation

- (i) Provide temporary shores, guys, braces, and other supports during erection to keep AESS secure, plumb, and in alignment.

- 1. If possible, locate welded tabs for attaching temporary bracing and safety cabling where they will be concealed from view in the completed Work.

3. Erection

- (i) Set AESS accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

- 1. Erect AESS to the tolerances specified in AISC 303 for steel that is designated AESS.

- (ii) Do not use thermal cutting during erection unless approved by Engineer. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

4. Field Connections

- (i) High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

- 1. Joint Type: Snug tightened.

- 2. Orient bolt heads in same direction for each connection and to maximum extent possible in same direction for similar connections.

- (ii) Weld Connections: Comply with requirements in "Weld Connections" Paragraph in "Shop Connections" Article.
 - 1. Remove backing bars or runoff tabs; back-gouge and grind steel smooth.
 - 2. Remove erection bolts, fill holes, and grind smooth.
 - 3. Fill weld access holes and grind smooth.
 - 5. Field Quality Control
 - (i) Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect AECS as specified in Section 051200 "Structural Steel Framing." The testing agency is not responsible for enforcing requirements relating to aesthetic effect.
 - (ii) Architect will observe AECS in place to determine acceptability relating to aesthetic effect.
 - 6. Repairs and Protection
 - (i) Remove welded tabs that were used for attaching temporary bracing and safety cabling and that are exposed to view in the completed Work. Grind steel smooth.
 - (ii) Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.
- 3. Decorative Formed Metal
 - A. General
 - 1. Summary
 - (i) Section Includes:
 - 1. Closures and trim.
 - B. Action Submittals
 - 1. Product Data: For each type of product, including finishing materials.
 - 2. Shop Drawings: Show fabrication and installation details for decorative formed metal.
 - (i) Include plans, elevations, component details, and attachment details.
 - (ii) Indicate materials and profiles of each decorative formed metal member, fittings, joinery, finishes, fasteners, anchorages, and accessory items.
 - 3. Samples: For each type of exposed finish required, prepared on 6-inch-square samples of metal of same thickness and material indicated for the Work.
 - C. Informational Submittals
 - 1. Coordination Drawings: For decorative formed metal elements for the roof. Show dimensions of roof/steel deck items, including locations of steel deck penetrations and attachments, and necessary clearances.
 - 2. Evaluation Reports: For post-installed anchors, from ICC-ES.

D. Products

1. Sheet Metal
 - (i) General: Fabricate products from sheet metal without pitting, seam marks, roller marks, stains, discolorations, or other imperfections where exposed to view on finished units.
 - (ii) Steel Sheet: Uncoated, cold-rolled, ASTM A 1008/A 1008M, commercial steel, exposed or electrolytic zinc-coated, ASTM A 879/A 879M, with steel sheet substrate complying with ASTM A 1008/A 1008M, commercial steel, exposed.
2. Miscellaneous Materials
 - (i) Gaskets: As required to seal joints in decorative formed metal and remain weathertight; as recommended in writing by decorative formed metal manufacturer.
 1. ASTM D 1056, Type 1, Class A, grade as recommended by gasket manufacturer to obtain seal for application indicated.
 2. Closed-cell polyurethane foam, adhesive on two sides, release paper protected.
 - (ii) Sealants, Exterior: Elastomeric sealant complying with Section 079200 "Joint Sealants" and as recommended in writing by decorative formed metal manufacturer.
 - (iii) Sealants, Interior: Nonsag, paintable sealant complying with "Joint Sealants" and as recommended in writing by decorative formed metal manufacturer.
 - (iv) Filler Metal and Electrodes: Provide type and alloy of filler metal and electrodes as necessary for strength, corrosion resistance, and compatibility in fabricated items.
 1. Use filler metals that will match the color of metal being joined.
 - (v) Fasteners: Fabricated from same basic metal and alloy as fastened metal unless otherwise indicated.
 1. Provide tamper-resistant flat-head, machine screws for exposed fasteners unless otherwise indicated.
 - (vi) Anchors: Provide fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193.
 - (vii) Anchor Materials:
 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or Class Fe/Zn 5, unless otherwise indicated.
 - (viii) Laminating Adhesive: Adhesive recommended by metal fabricator that will fully bond metal to metal and is noncombustible after curing.
3. Coatings
 1. Provide shop finish and color per City of Tempe Standard Details.

E. Fabrication, General

1. Shop Assembly: Preassemble decorative formed metal 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.
2. Fold back exposed edges of unsupported sheet metal to form a 1/2-inch-wide hem on the concealed side, or ease edges to a radius of approximately 1/32 inch and support with concealed stiffeners.
3. Increase metal thickness or reinforce with concealed stiffeners, backing materials, or both, as needed to provide surface flatness and sufficient strength for indicated use.
 - (i) Support joints with concealed stiffeners as needed to hold exposed faces of adjoining sheets in flush alignment.
 1. Where welding or brazing is indicated, weld or braze joints and seams continuously. Grind, fill, and dress to produce smooth, flush, exposed surfaces in which joints are not visible after finishing is completed.
4. Steel Sheet Finishes
 - (i) Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or with SSPC-SP 8, "Pickling."
 - (ii) Powder-Coat Finish: Provide shop finish and color per City of Tempe Standard Details.

F. Execution

1. Installation
 - (i) Locate and place decorative formed metal items level and plumb and in alignment with adjacent construction. Perform cutting, drilling, and fitting required to install decorative formed metal.
 - (ii) Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where needed to protect metal surfaces and to make a weathertight connection.
 - (iii) Form tight joints with exposed connections accurately fitted together. Provide reveals and openings for sealants and joint fillers as indicated.
 - (iv) Corrosion Protection: Apply bituminous paint or other permanent separation materials on concealed surfaces where metals would otherwise be in direct contact with substrate materials that are incompatible or could result in corrosion or deterioration of either material or finish.

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- (v) Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit or provide new units.

- 4. Electrical
 - A. General
 - 1. Summary
 - (i) Section Includes:
 - 1. Solar Panel
 - 2. LED Lighting
 - B. Submittals
 - 1. Product Data: For each type of product specified in the City of Tempe standard details.
 - 2. Shop Drawings: Show installation of solar panel and all electrical requirements for providing solar power to lighting fixtures
 - C. Installation
 - 1. General: Installation shall comply with Manufacturers recommendations and City of Tempe standard details.
- 5. Site Furnishings
 - A. General
 - 1. Summary
 - (i) Section Includes:
 - 1. Site Furnishings
 - B. Submittals
 - 1. Product Data: For each type of product specified in the City of Tempe standard details.
 - C. Installation:
 - 1. General: Installation shall comply with Manufacturer's recommendations and City of Tempe standard details.

Measurement and Payment:

Measurement and payment will be measured as lump sum and will be paid for at the contract lump sum, which price will be full compensation for the work completed in place. Site furnishings, solar panel system, lighting, electrical conduit, conductors, and miscellaneous electrical equipment is considered incidental to the cost of the bid item.

No additional payment will be made for all work, as specified herein, the cost being considered incidental to this item.

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ITEM NO. 114 4" WHITE THERMOPLASTIC TRAFFIC STRIPE (COT)
ITEM NO. 115 4" YELLOW THERMOPLASTIC TRAFFIC STRIPE (COT)

Description:

The work under this item consists of furnishing all materials, equipment, and labor to install thermoplastic striping at the locations as specified in the Project Plans within City of Tempe right-of-way.

Materials:

The materials under this item shall conform to Sections 460-463 of the Maricopa County Department of Transportation Supplement to the MAG Standard Specifications.

Construction Requirements:

The contractor shall provide all materials, equipment and labor to stripe the roadway with thermoplastic. Existing pavement markings will be surveyed by the contractor prior to start of construction. Areas to be marked will be free of debris and swept prior to marking installation. The construction under these bid items shall conform to Sections 460-463 of the Maricopa County Department of Transportation Supplement to the MAG. The Contractor shall survey the entire project before striping. The Contractor shall call the City of Tempe project inspector to make arrangements for inspection prior to applying any paint. The permanent pavement marking plans may be modified as directed by the City of Tempe Engineer. Any striping applied before inspection shall be removed and re-striped at the Contractor's expense. All striping will be done in thermoplastic paint, if applies. All longitudinal lines, such as lane lines, edge lines, center lines, bike lane lines, and taper lines shall be installed with a thickness of sixty (60) mils. Crosswalks, stop bars, and yield bars shall be installed with a thickness of ninety (90) mils.

Measurement and Payment:

4 Inch White Thermoplastic Traffic Stripe (COT) and 4 Inch Yellow Thermoplastic Traffic Stripe (COT) will be measured per linear foot along the center line of the pavement stripe and will be based on a 4 inch wide stripe. Measurement of striping with a plan width greater or less than the basic 4 inches as shown on the plans or requested by the Engineer will be made by the following method:

$$\frac{\text{Plan Width of Striping (inches)} \times \text{Linear Feet}}{4 \text{ (inches)}}$$

No measurement will be made for the number of linear feet for gaps in dashed lines.

The accepted quantity of 4 Inch White Thermoplastic Traffic Stripe (COT) and 4 Inch Yellow Thermoplastic Traffic Stripe (COT), measured as provided above, will be paid for at the contract unit price bid per linear foot, which price will be full compensation for the item, complete in place.

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No additional payment will be made for pavement surface preparation, removal of curing on PCCP, primer-sealer on PCCP, or glass beads, the cost being considered incidental to this item.

ITEM NO. 116 THERMOPLASTIC/PREFORMED SYMBOL (BIKE LANE MARKING SET) (COT)

Description:

The work under this item consists of furnishing all materials, equipment, and labor to install thermoplastic reflectorized pavement symbols at the locations as specified in the Project Plans within City of Tempe right-of-way.

Materials:

The materials under this item shall conform to Section 462 of the Maricopa County Department of Transportation supplement to the MAG Standard Specifications.

- a. The material shall be a resilient preformed thermoplastic product containing a minimum thirty percent (30%) intermix of anti-skid/anti-slip elements and where the top surface contains anti-skid/anti-slip elements. These anti-skid/anti-slip elements must have a minimum hardness of 8 (Mohs scale).
- b. The material shall be resistant to the detrimental effects of motor fuels, antifreeze, lubricants, hydraulic fluids, etc.
- c. The material shall be capable of being applied on bituminous and/or Portland cement concrete pavements by the use of a handheld heat torch, infrared heater, or a blue-flame radiant heater.
- d. The material shall be capable of being applied to asphalt and Portland cement concrete surfaces without preheating the application surface to a specific temperature. The material shall be capable of being affixed to green concrete (concrete that has set but not appreciably hardened). The material shall not require the Portland cement concrete application areas to be cured or dried out.
- e. The material shall be capable of conforming to pavement contours, breaks and faults through the action of traffic at normal pavement temperatures.
- f. The material is typically supplied in segments measuring 2 ft. x 3 ft. (.61 m x .915 m). The material shall be capable of being applied in temperatures down to 45°F without any special storage, preheating or treatment of the material before application.
- g. Manufacturing Control and ISO Certification: The manufacturer shall be ISO 9001:2008 certified for design, development, and manufacturing. The manufacturer shall provide proof of current certification. The scope of the certification shall include the design, development, and manufacture of preformed thermoplastic marking material.
- h. Material shall be composed of an ester-modified rosin impervious to degradation by motor fuels, lubricants, etc., in conjunction with aggregates, pigments, binders,

and anti-skid/anti-slip elements uniformly distributed throughout the material. The thermoplastic material shall conform to AASHTO designation M249, with the exception of the relevant differences due to the material being supplied in a preformed state, being non-reflective, and being of a color different from white or yellow.

- a. Pigment: The color of the pavement marking material shall be accordance with FHWA Memorandum dated April 15, 2011: Interim Approval for Optional Use of Green Colored Pavement for Bike Lanes (IA-14), accessible at http://mutcd.fhwa.dot.gov/resources/interim_approval/ia14/.

- i. 3.1.1. Daytime chromaticity coordinates for the color used for green colored pavement shall be as follows:

1			2			3			4	
X	y		X	y		x	y		x	y
0.230	0.751		0.266	0.55		0.367	0.500		0.444	0.555

- ii. 3.1.2. Nighttime chromaticity coordinates for the color used for green colored pavement shall be as follows:

1			2			3			4	
X	y		X	y		x	y		x	y
0.230	0.754		0.336	0.540		0.450	0.500		0.479	0.520

- iii. 3.1.3. The pigment system shall not contain heavy metals or any carcinogen, as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant Federal Regulations.

- i. Skid Resistance: The surface of the preformed thermoplastic material shall contain factory applied anti-skid elements with a minimum hardness of 8 (Mohs scale). Upon application, the material shall provide a minimum skid resistance value of 60 BPN when tested according to ASTM E 303.
- j. Slip Resistance: The surface of the preformed thermoplastic material shall contain factory applied anti-skid elements with a minimum hardness of 8 (Mohs scale). Upon application, the material shall provide a minimum static coefficient of friction of 0.6 when tested according to ASTM C 1028 (wet and dry), and a minimum static coefficient of friction of 0.6 when tested according to ASTM D 2047.
- k. Thickness: The material shall be supplied at a minimum thickness of 90 mils (2.29 mm).
- l. Environmental Resistance: The material shall be resistant to deterioration due to exposure to sunlight, water, salt, or adverse weather conditions and impervious to oil and gasoline.
- m. Application:
 - a. Asphalt: The material shall be capable of being applied using the propane torch method, and/or infrared or blue flame heater recommended by the manufacturer. The material shall be capable of being applied at ambient

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and road temperatures down to 45°F without any preheating of the pavement to a specific temperature. A sealer specified by the manufacturer shall be applied to the pavement surface prior to material application to ensure proper adhesion. A thermometer shall not be required during the application process. The pavement shall be clean, dry and free of debris. Supplier shall enclose application instructions with each box/package.

- b. Portland Cement Concrete: The same application procedure shall be used as described under Section 4.1.
- n. Packaging: The preformed thermoplastic material shall be packaged in cardboard cartons. The cartons in which packed shall be non-returnable and shall not exceed 40 in. (1.02 m) in length and 25 in. (.64 m) in width. The cartons shall be labeled for ease of identification. The weight of the individual carton must not exceed fifty (50) pounds (23 kg). A protective film around the carton must be applied to protect the material from rain or premature aging.
- o. Technical Services: The successful bidder shall provide technical services as required.
- p. Performance: The preformed thermoplastic markings shall meet state specifications and be approved for use by the appropriate state agency.

Construction Requirements:

The work under this item shall conform to Section 462 of the Maricopa County Department of Transportation supplement to the MAG Standard Specifications.

Measurement and Payment:

Measurement and payment for Thermoplastic/Preformed Symbol (Bike Lane Marking Set) (COT) will be made at the contract unit price for each unit applied and shall be full compensation for the item, complete in place. Each pavement symbol, as shown on the Project Plans, will be considered a unit. The accepted quantities of thermoplastic pavement markings of the type specified, measured as provided above, will be paid for at the contract unit price bid, complete in place. No additional payment will be made for pavement surface preparation or glass beads, the cost being considered incidental to this item.

- ITEM NO. 117 PERFORATED SIGN POST (COT)**
- ITEM NO. 118 PERFORATED SIGN POST FOUNDATION (COT)**

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary to install perforated sign posts and foundations, including anchor, sleeve, and associated hardware to attach post to foundation at the locations as specified in the Project Plans within City of Tempe right-of-way.

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Materials:

The materials under these items will conform to Section 464.2 of the Maricopa County Department of Transportation Supplement to the Maricopa Association of Governments Uniform Standard Specifications and Details for Public Works Construction.

Sign post shall be single 2-inch perforated sign posts. Foundations shall be per ADOT Standard Drawing No. S-1.

Construction Requirements:

The work under these items will conform to Section 464.3 of the Maricopa County Department of Transportation Supplement to the Maricopa Association of Governments Uniform Standard Specifications and Details for Public Works Construction.

Measurement and Payment:

Perforated Sign Post (COT) will be measured as a unit for each sign post installed and will be paid for at the contract unit price per each, which price will be full compensation for the item, complete in place.

Perforated Sign Post Foundation (COT) will be measured as a unit for each foundation installed and will be paid for at the contract unit price per each, which price will be full compensation for the item, complete in place. No additional payment will be made for anchor, sign post sleeves, and associated hardware to attach post to foundation, the cost being considered incidental to this item.

ITEM NO. 119 FLAT SHEET ALUMINUM SIGN PANEL, HIGH INTENSITY GRADE (COT)

Description:

The work under this item will consist of furnishing all materials, labor, and equipment necessary to install the sign panels at locations as specified in the Project Plans within City of Tempe right-of-way.

Materials:

The materials under this item will conform to Section 465.2 of the Maricopa County Department of Transportation Supplement to the Maricopa Association of Governments Uniform Standard Specifications and Details for Public Works Construction.

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Construction Requirements:

The work under this item will conform to Section 465.3 of the Maricopa County Department of Transportation Supplement to the Maricopa Association of Governments Uniform Standard Specifications and Details for Public Works Construction.

Measurement:

Flat Sheet Aluminum Sign Panel, High Intensity Grade (COT) will be measured as a unit for each sign panel furnished and installed .

Payment:

The accepted quantities of Flat Sheet Aluminum Sign Panel, High Intensity Grade (COT), measured as provided above, will be paid for at the contract unit price per each, which price will be full compensation for the item, complete in place, including hardware and appurtenances required to install sign panels.

ITEM NO. 120 NO. 7 PULL BOX (COT)
ITEM NO. 121 NO. 7 PULL BOX W/ EXTENSION (COT)

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary for the installation of new pull boxes, including excavation, backfill, compaction, and appurtenances at locations as specified in the Project Plans.

Materials:

All Pull Boxes, extensions and lids will be polymer concrete material and conform to the details in the Project Plans. If pull boxes details are not contained in the Project Plans, the contractor shall conform to ADOT Detail T.S. 1-2 and T.S. 1-4. Contractor to coordinate with City Representatives for markings on pull box. Markings will be clearly defined and uniform in depth and will be placed parallel to the long side of the lid. Letters will be nominally one inch high.

Pull box lids will be rated for traffic loads in locations where subject to vehicular traffic. Each lid will be furnished with two lock-down bolts.

Concrete Pull Boxes and lids will not be used.

Construction Requirements:

All construction will be performed in accordance with the details in the Project Plans and ADOT Specifications Section 732-3.

New Pull Boxes will be located out of sidewalks, approximately as shown on the plans.

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Adjustments in pull box locations are allowed but are subject to Inspector approval.

Pull Boxes will be installed at finished grade. The pull box will be backfilled with select excavated material and thoroughly compacted to within two inches of original grade. The compaction around the box will not cause the sides to deflect or any part of the box or lid to crack. The Contractor will replace any cracked, broken, chipped, or damaged pull boxes or lids at no additional cost to the City.

All pull boxes will be left in clean conditions, free of dirt and debris upon completion of work.

Measurement:

No. 7 Pull Box (COT) and No. 7 Pull Box w/ Extension (COT) will be measured as unit for each pull box installed including pick up, excavation, installation backfill, extension, lid, fittings, elbows, caps, solvent, and all applicable appurtenances.

Payment:

Accepted quantities of Pull Boxes, measured as provided above, will be paid for at the contract unit price each, which price will be full compensation for the item, complete in place, including pick up, excavation, installation backfill, extension, lid, fittings, elbows, caps, solvent, all applicable appurtenances, and disposing of surplus or unsuitable material.

ITEM NO. 122	SCH. 40 PVC ELECTRICAL CONDUIT, 2" (TRENCH) (COT)
ITEM NO. 123	SCH. 40 PVC ELECTRICAL CONDUIT, 2" (DIRECTIONAL DRILL) (COT)
ITEM NO. 124	SCH. 40 PVC ELECTRICAL CONDUIT, 2 1/2" (TRENCH) (COT)
ITEM NO. 125	SCH. 40 PVC ELECTRICAL CONDUIT, 2-3" (DIRECTIONAL DRILL) (COT)

Description:

The work under these items will consist of furnishing all materials, labor, and equipment necessary for the installation of PVC conduit with pull rope installed in accordance with the details shown on the utility company plans.

Materials:

All conduits will meet the requirements of Section 732-2 of the ADOT Standard Specifications for Schedule 40 PVC.

The materials for the Sch. 40 PVC Electrical Conduit, 2" item will include 2-inch diameter schedule 40 PVC, 2500lb pull tape, trench, and all other materials incidental to this item of work, conforming to SRP specifications.

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HDPE conduit will have a minimum rating of SDR 11. It will have a cell classification of PE334470C (for black conduit) and PE334470E (for colored conduit) per ASTM 3350: Standard Specification for Polyethylene Pipe and Fittings Materials.

The polyethylene base resin will meet the density requirement and melt index properties described herein. The density will not be less than 0.940 and not more than 0.955 g/CM³ in accordance with ASTM D 1505: Standard Test Method for Density of Plastics by the Density-Gradient Technique. The range for the melt index will be between 0.05 to 0.5g/10 minutes in accordance with ASTM D 1238: Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer. The HDPE conduit will have a minimum Flexural Modulus, of 80,000 psi, per ASTM D 790 and a minimum tensile strength at yield of 3,000 psi, per ASTM D-638.

Additives to the base resin will be included to provide heat stabilization, oxidation prevention and ultraviolet (UV) protection. It will utilize carbon black in the range of 2 to 3 percent for long term protection against UV degradation. The minimum protection period will be one year from date of manufacture in unprotected, outdoor storage in accordance with ASTM D 1603: Standard Test Method for Carbon Black in Olefin Plastics.

HDPE conduit and fittings will comply with ASTM D 2241 and ASTM-F2160-01.

The Contractor will provide City Representatives with manufacturer's certification of analysis and compliance showing that HDPE conduit meets these specifications.

Should the Contractor choose to substitute HDPE conduit in place of the installation of direct buried PVC conduit, direct buried HDPE conduit will be paid at the unit bid price of direct buried PVC conduit.

Unless otherwise shown on the Plans; bends, conduit fittings, expansion joints, 36-inch sweeps and other conduit accessories not specifically mentioned will be manufactured from a material similar to the connecting conduit.

Conduit elbows used for fiber optic cable installations (including future installations) will be a minimum of 36-inches and for bends of 90 degrees or greater will be encased in 1-sack slurry or concrete for at least 12" beyond each bend or coupling joint, whichever is greater. All other conduit elbows will be a minimum of 24-inches.

Construction Requirements:

All construction will be performed in accordance with the Project Plans. Where not included in these Technical Specifications or other referenced specifications, the work under this item will be installed per Section 732-3 of the ADOT Standard Specifications.

The Contractor will trench and install the 2-inch diameter conduit at the approximate locations indicated on the Project Plans. The conduit will be installed at a depth as shown on the Project Plans from finished grade to the top of conduit. Each conduit will terminate in a pull box. Elbows will be the same size as the conduit with minimum 18-inch radius at the junction box and 24 inches at all other locations.

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Interconnect conduit will be comprised of four 2-inch conduits, one conduit black in color and the three other conduits gray in color. All unused conduits will have 2500-pound detectable mule tape installed, with detectable members spliced across junction boxes to form a continuously detectable conduit run. All conduits will enter junction boxes using 45-degree sweeps with no less than a 36-inch radius. (unless otherwise specified).

All conduit will have a continuous 2500 lb pull tape installed within and the ends sealed in a NEC approved manner to keep all moisture and foreign matter out of the conduit. Tying two sections of pull tape together is not allowed and will result in replacement by the contractor. A #12 AWG copper conductor tracer wire will be installed within each conduit or one tracer wire will be installed externally of the conduits, but alongside the conduits within the same bore or trench. Tracer wire must be electrically continuous. Any direct buried copper splice of the tracer wire must meet NEC requirements for direct buried electrical splices.

Measurement and Payment:

Sch. 40 PVC Electrical Conduit will be measured by the linear foot and will be paid for at the contract unit price per linear foot, which price will be full compensation for the work complete in place. No additional payment will be made for conduit bends or rigid non-metallic conduit bends at pull boxes, expansion fittings coupling fittings, the cost being considered incidental to this item.

No additional payment will be made for saw cutting, boring, trenching, pavement removal, disposal and pavement replacement done as part of conduit installation, the cost being considered incidental to this item.

ITEM NO. 126	POLE FOUNDATION, TYPE J (2013 ADOT DTL. T.S. 4-8) (COT)
ITEM NO. 127	POLE FOUNDATION, TYPE Q (MODIFIED 14' 2013 ADOT DTL. T.S. 4-10)
ITEM NO. 128	METER PEDESTAL FOUNDATION (COT)
ITEM NO. 129	CONTROLLER CABINET FOUNDATION (COT)
ITEM NO. 130	AUDIBLE PEDESTRIAN PUSH BUTTON W/ SIGN (COT)
ITEM NO. 131	TYPE J SIGNAL POLE (2013 ADOT DTL. T.S. 4-8) (COT)
ITEM NO. 132	TYPE Q SIGNAL POLE (2013 ADOT DTL. T.S. 4-10) (COT)
ITEM NO. 133	30' MAST ARM (2013 ADOT DTL. T.S. 4-10) (COT)
ITEM NO. 134	CONTROLLER CABINET ASSEMBLY (COT)
ITEM NO. 135	TRAFFIC SIGNAL MOUNTING ASSEMBLY (TYPE II) (COT)
ITEM NO. 136	TRAFFIC SIGNAL MOUNTING ASSEMBLY (TYPE V) (COT)
ITEM NO. 137	12" SIGNAL INDICATION, TYPE F (COT)
ITEM NO. 138	PEDESTRIAN SIGNAL INDICATION (MAN/HAND) (COUNTDOWN) (COT)
ITEM NO. 139	LUMINAIRE, MAST ARM 10' (COT)
ITEM NO. 140	LED LUMINAIRE, HORIZONTAL MOUNT (TRAFFIC SIGNAL)

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	(COT)
ITEM NO. 141	ILLUMINATED STREET NAME SIGNS (COT)
ITEM NO. 142	CCTV CAMERA (COT)
ITEM NO. 143	ETHERNET SWITCH (COT)
ITEM NO. 144	WIRELESS RADIO (COT)

Traffic signal and other traffic control equipment shall be furnished and installed by the contractor in accordance with the Plans and requirements of the Specifications.

The work done under this section includes furnishing and installing the materials shown on the Plans and included in the Specifications. This work includes all labor, incidental materials, transportation and storage associated with the completion of the installation as shown on the Plans and meeting the requirements of these specifications.

Applicability of these specifications is by pay item.

Submittals

Submit the following information (where applicable).

1. Shop Drawings
2. Product Data
3. Welder Certifications

Submit all warranties to the City of Tempe.

Delivery, Storage and Handling

The contractor is responsible for inspecting, accepting, loading, and transporting all equipment to the Work Site.

Warranty

The warranty period will begin the day the Work of this Section is accepted by the City of Tempe.

Provide a two-year warranty on all contractor-supplied equipment except as herein noted.

Warrant all LED indication modules furnished by the contractor for five years following commencement of the warranty period.

Provide LED assemblies in pedestrian signal heads with a five-year warranty against manufacturing and installation defects from the date of acceptance by the City of Tempe.

Provide LED assemblies in traffic signal heads and modules with a five-year warranty against manufacturing and installation defects from the date of date of acceptance by the City of Tempe.

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Warrant the entire pedestrian signal head assemblies, including the housing, doorframe and visor for two years from the date of acceptance by the City of Tempe against defects in workmanship and/or Material.

Warrant the entire traffic signal head assembly, including the housing, doorframe and visor for two years from the date of acceptance by the City of Tempe against defects in workmanship and/or Material.

Submit all warranties to the City of Tempe.

System Startup

Final acceptance of traffic signal system will be determined by the City of Tempe after all discrepancies and/or modifications are completed.

Final acceptance will consist of a written document issued by the City of Tempe. This document will include the final acceptance date on which all warranties will begin.

Contractor-Furnished Manufactured Units

The following manufactured units will be supplied by the contractor for use on this Project:

1. Traffic Signal Controller Equipment
 - a. The traffic controller assembly shall conform to Section 734 of the ADOT Standard Specifications for Road and Bridge Construction.
 - b. The traffic signal controller shall be an Econolite ASC/3 Cobalt C Traffic Controller.
 - c. The malfunction management unit shall be an Eberle 16 EIP with Ethernet Port.
2. Signal Poles
 - a. The signal structures are to be constructed to the 2013 ADOT Traffic Signal Standard Details as specified in the plans. The contractor shall arrange to have all materials inspected by the City of Tempe Traffic Operations Group and the engineer a minimum of three days prior to the installation.
 - b. Structures shall be shipped to the job site fully finished and factory assembled to the extent that the vertical portion of any structure shall be ready for installation. Panels, add-on units, sign braces, traffic equipment (payment of traffic signal heads and pedestrian signal heads shall be covered under separate pay items), etc., shall be field installed by the contractor.
 - c. The contractor shall install all equipment in accordance with the associated 2013 ADOT Standard Details as specified in the plans and ADOT Standard Specifications Section 731.
 - d. The foundation for Pole D at the intersection of Kyrene Road and Knox Road shall be modified from 2013 ADOT Detail T.S. 4-10 to be 14' deep. Shop drawings shall be submitted to the City of Tempe for all pole foundations.
3. Luminaires
 - a. The Luminaire shall be an LED unit with a PEC.
 - b. The luminaires shall be GE Evolve ERL2018C540AGRAYIL. Input voltage shall be 240 Volts and shall be furnished and installed by the contractor. The

contractor shall coordinate with the City of Tempe to confirm that model number prior to ordering the luminaires. LED Streetlight Luminaires and PEC will be compatible with and meet mounting requirements per ADOT "Traffic Signals and Lighting" Standard Drawings and Section 731-2.02 of the ADOT Standard Specifications.

4. Illuminated Street Name Signs

- a. Internally Illuminated Street Name Signs shall be furnished by the contractor as shown on the drawings and shall conform to the ADOT "Traffic Signal and Lighting" Standard Drawings.
- b. They shall be manufactured by Fluoresco or approved equal. Contractor shall confirm model number and design with the City of Tempe prior to ordering the signs.
- c. The contractor shall provide shop drawings for review and approval by the City.

5. Signal Heads

- a. Vehicular Type F traffic signal modules shall meet the specifications as listed below as well as Section 733 of the ADOT Standard Specifications for Road and Bridge Construction. All signal heads shall be 12 inches.
- b. Pedestrian Count Down signal modules must meet the specifications as listed below as well as Section 733 of the ADOT Standard Specifications for Road and Bridge Construction.
- c. The purpose of this specification is to provide the minimum performance requirements for LED traffic signal modules. This specification refers to definitions and practices described in "Vehicle Traffic Control Signal Heads" published in the Equipment and Materials Standards of the Institute of Transportation Engineers, referred to in this document as "VTC SH."

d. Definitions:

- e. The following definitions are in addition to the definitions in the VTC SH.
 - i. Nominal Operating Voltage - The AC RMS voltage, 117VAC, at which photometric performance and power consumption are specified.
 - ii. Chromaticity - The color of the light emitted by an LED signal module, specified as x-y chromaticity coordinates on the chromaticity diagram according to the 1931 Commission Internationale d'Eclairage (CIE) standard observer and coordinate system.
 - iii. Power Factor (PF) - PF equals Watts divided by volt- ampere (VA) or the ratio of power consumption in Watts to volt-amperes.
 - iv. Total Harmonic Distortion (THD) - THD is the ratio of the rootmean-square (RMS) value of the harmonics, to the amplitude of the fundamental component of the AC waveform.

f. General Description:

- i. Referenced vehicle type LED modules shall fit in all standard, incandescent vehicle traffic signal housings. These modules are to be used for the replacement of the reflector, socket, gasket, and lens assembly of an incandescent vehicle signal indication. Each retrofit

- module shall be complete, consisting of:
- ii. A lens
 - iii. LED circuit board inclusive of all of the LEDs and required circuit components
 - iv. 36-inch 16 AWG wire leads with strain relief and quick connect terminals
 - v. A rigid housing for protection in shipping, handling and installation
 - vi. A one-piece neoprene gasket.
- g. The LED signal module shall be rated for use in the ambient operating temperature range, measured at the exposed rear of the module, of -40°C to +74°C (-40°F to +165°F).
 - h. The LED signal module shall be protected against dust and moisture intrusion per the requirements of NEMA Standard 250-1991, Section 4.7.2.1 and 4.7.3.2, for Type 4 enclosures to protect all internal LED, electronic, and electronic components.
 - i. The LED signal module lens shall be UV stabilized and scratch resistant.
 - j. The external lens surface for all vehicle signals shall be smooth, with no raised features, to minimize the collection of dirt, diesel smoke, and other particulate contaminants, and to facilitate periodic cleaning. External lens facets are not allowed. The LED signal module lens shall be UV stabilized and scratch resistant.
 - k. The LEDs shall be mounted and soldered to a printed circuit board. The LED signal module shall be watertight when properly mounted in an installed traffic signal housing. The LED signal module shall utilize the same mounting hardware used to secure the incandescent lens and gasket assembly and only require a screwdriver or standard installation tool to complete the mounting into an existing traffic signal housing built to the VTC SH Standard. Unit shall connect to existing electrical wiring utilizing quick connect terminals.
 - l. The LED signal module shall be a single, self-contained device, not requiring on-site assembly for installation into an existing traffic signal housing. The power supply for the LED signal module shall be an integral part of the module. The LED signal module assembly shall weigh less than 5 pounds.
 - m. The assembly and manufacturing process for the LED signal module shall be designed to assure all internal LED and electronic components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.
 - n. When necessary, modules shall have a prominent and permanent vertical indexing indicator, i.e., UP ARROW or the word UP or TOP, for correct indexing and orientation inside signal housing.
 - o. Each individual LED signal module shall be identified for Warranty purposes and clearly marked with:
 - i. Manufacturer's name
 - ii. Date of manufacture.
 - iii. Unit serial number.
 - iv. Nominal operating voltage
 - v. Power consumption in Watts

p. Environmental:

- i. The LED signal module shall operate over the temperature range of -40°C to +74°C (-40°F to +165°F). The LED signal module shall be protected against dust and moisture intrusion per the requirements of NEMA Standard 250-1991, Section 4.7.2.1 and 4.7.3.2, for Type 4 enclosures to protect all internal LED, electronic, and electronic components.

q. Electrical – Input:

- i. LED signal modules shall operate from a 60 +/-3 cycle AC line power over a voltage range from 80 VAC RMS to 135 VAC RMS. The control circuitry shall prevent current flow through the LEDs in the off state to avoid any false indication as may be perceived by the human eye. The LED traffic signal module shall be operationally compatible with NEMA TS - 1 and NEMA TS - 2 conflict monitoring parameters.
- ii. Green LED signals shall not illuminate for input voltages below 35 VAC RMS and shall illuminate for all input voltages higher than 45 VAC RMS (voltage shall be regulated above 80 VAC RMS). This requirement is so that a green indication will not illuminate due to a “floating” or high impedance neutral connection.
- iii. All wiring and terminal blocks shall meet the requirements of Section 13.02 of the VTCSH standard. Two secured, color coded, 914 mm (36 in) long 600 V, 20 AWG minimum, jacketed wires, conforming to the National Electrical Code, rated for service at +105°C (+221°F), are to be provided for electrical connection.
- iv. The signal module on-board circuitry shall include voltage surge protection to withstand high-repetition noise transients and low repetition high-energy transients as stated in Section 2.1.6, NEMA Standard TS-2, 1992.
- v. The individual LED light sources shall be wired so that a catastrophic failure of one LED light source will result in the loss of not more than 5 percent of the signal module light output. One LED failure in an LED Signal Module will not affect any other LEDs. In case of a failure of one LED, only one LED will be lost and not an entire string or module.
- vi. Power factor shall be 90% or greater, at nominal rated voltage, at 25°C (77°F), after 60 minutes of operation.
- vii. Total harmonic distortion induced into an AC power line by an LED signal module, operated at nominal operating voltage, with a power consumption equal to or greater than 15 watts at 250C (770F) shall not exceed 20 percent. Total harmonic distortion induced into an AC power line by an LED signal module, operated at nominal operating voltage, with a power consumption less than 15 watts at 259C (77°F) shall not exceed 40 percent.
- viii. The LED signal and associated on-board circuitry must meet Federal Communications Commission (FCC) Title 47, subpart B, Section 15 regulations concerning the emission of electronic noise.

r. Optical – Output:

- i. The light intensity and distribution from LED signal modules shall as a minimum, meet the current ITE and CAL TRANS standards and warm up of continuous operation. Test data to verify the performance as meeting the ITE intensity requirements at +74°C (+165°F) shall be supplied from either of the following (or another certified independent test lab):
 1. Lighting Science, 7630 East Evans Road, Scottsdale, AZ 85260
 2. ETL Testing Laboratories, 3933 US Route 11, Cortland, NY 13045-0950
- ii. The light output of all LED vehicle signal modules shall also meet ITE specifications for chromaticity.
- iii. Fluctuations in line voltage over the range of 80 VAC to 135 VAC shall not affect luminous intensity by more than +/- 10 percent.
- iv. LED traffic signals shall be temperature compensated to maintain intensity at elevated temperatures. LED traffic signal shall be tested and documented by CAL TRANS as being in compliance with CAL TRANS intensity standards at elevated temperatures.
- v. The LEDs shall not exhibit degradation of more than 30% of their initial light intensity following accelerated life testing (operating at +85°C (+185°F) and 85% humidity, for 1000 hours). AlGaAs technology is not acceptable.
- vi. Warranty:
 1. All LED traffic signal modules supplied shall be warranted for 5 years against manufacturing defects.
 2. LED traffic signal modules shall be performance warranted to be in compliance with ITE and CAL TRANS minimum intensity standards, at +74°C (+165°F), after a period of three (3) years, measured at 117 volts AC.
 3. Failures due to acts of God, abuse, and accidents are excluded from warranty coverage.
 4. Vendor expressly warrants that all goods furnished shall conform to all specifications and appropriate standards, will be new, and will be free from defects in material or workmanship. Vendor warrants that all such goods will conform to any statements made on the containers or labels or advertisements for such goods and that any goods will be adequately contained, packaged, marked and labeled. Vendor warrants that all goods furnished will be merchantable and will be safe and appropriate for the purpose for which goods of that kind are normally used. If City intends to use the goods, Vendor warrants that such goods will be fit for such particular purpose. Vendor's warranty shall run to City, its successors, and assigns. Vendor agrees to replace or correct defects of any goods not conforming to the foregoing warranty promptly, without expense to City, when notified of such

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nonconformity by City, provided City elects to provide Vendor with the opportunity to do so. In the event of failure of Vendor to correct defects in or replace nonconforming goods promptly, City, after reasonable notice to Vendor, may make such corrections or replace such goods and charge Vendor for the cost incurred by City in doing so.

6. Wireless Radio:

- a. Wireless radio equipment shall be SIMREX 5.8 GHZ Wireless Radio.
- b. Wireless radio equipment shall include built in directional antennas, software, power supply, power injector, A/C power receptacle, grounding block, and interconnect cables. Surge protection shall be provided on the cable running from the radio to the power injector.

7. Ethernet Switch:

- a. Ethernet switch equipment shall be a Ruggedcom RS 900 switch.
- b. General Requirements:
 - i. Documentation:
 - ii. The contractor shall provide certification that the Ethernet Switches furnished and installed is in conformance with the manufacturer's standard and these specifications.
 - iii. Warranty:
 - 1. The Ethernet Switch shall be warranted by the contractor against all defects in material and workmanship in accordance with Subsection 106.13 of the ADOT Standard Specifications as amended by these Technical Specifications with the following additional requirements:
 - a. The warranty for the Ethernet Switch shall provide that in the event of a malfunction during the warranty period, the defective unit, card, module, subassembly, or auxiliary device shall be replaced with a working unit within three (3) working days for use while the warranted unit is being repaired.

8. CCTV Camera:

- a. CCTV Camera shall be Axis Q-6075-E(PTZ).

Contractor-Furnished Materials

- 1. Materials to be provided by the contractor for use on this Contract include, but are not limited to, the following:
 - a. Silicone seal:
 - i. Provide silicone sealant for use in controller cabinet assembly.

Execution

Installers

- 1. For installation of traffic signal and other traffic control systems within the City of Tempe the following requirement applies:

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- a. A Level II IMSA certified Technician/Electrician must be on the Work Site at all times during construction of traffic signal and other traffic control systems installed within the City of Tempe.

Examination

1. Schedule intersection inspections for each signalized intersection with the City of Tempe.
 - a. Within two weeks of receipt of the Notice to Proceed, schedule and inspect all of the intersections.
 - b. Submit documentation for acceptance by the City of Tempe of the condition of any equipment at the time of inspection that shows damage.

Construction

Construction Requirements:

1. Traffic Signal Controller Equipment
 - a. A completely wired controller assembly with wiring diagrams and instruction books shall be delivered for inspection and testing unless otherwise specified. The contractor shall contact Ignacio Robles with Transportation Maintenance at 480-316-3977 to schedule delivery date and location.
 - b. It shall be the contractor's responsibility to correct or replace any equipment that fails testing. Such corrections or replacements shall be as directed by the Engineer.
2. Signal Poles
 - a. Structures shall be shipped to the job site fully finished and factory assembled to the extent that the vertical portion of any structure shall be ready for installation. Panels, add-on structure units, sign braces, traffic equipment (payment of traffic signal heads and pedestrian signal heads shall be covered under separate pay items), etc., shall be field installed by the contractor.
 - b. The contractor shall install pedestrian buttons and signs as noted on the plans. The contractor shall touch up any deficiencies in the finish after installation.
 - c. The contractor shall install all equipment in accordance with the associated 2013 ADOT Standard Details as specified in the plans and ADOT Standard Specifications Section 731.
 - d. Where panels are cut out to accommodate traffic or pedestrian signals, the edge of the cut out shall be no further than one-half (1/2) inch from the signal edge. This provision shall apply to hinges, locking devices and all other signal appurtenances. It is intended that there shall be a minimum separation between the signal and its surrounding panel. All panel edges and cut outs shall be clean and straight and shall have no burrs, irregularities or visible defects.
 - e. Any paint touch-ups shall be accomplished with sprayed or roller techniques. The finished paint surface shall be smooth and consistent throughout the entire structure and shall be approved prior to final acceptance by the City.
 - f. The foundation for Pole D at the intersection of Kyrene Road and Knox Road shall be modified from 2013 ADOT Detail T.S. 4-10 to be 14' deep. Shop drawings shall be submitted to the City of Tempe for all pole foundations.

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3. Luminaires

- a. Locations where luminaries are designated on signal structures in the plans the contractor shall install and fully wire for operation.
- b. The contractor shall connect the luminaires to the lighting contactor panel in the traffic signal cabinet. Each luminaire shall be furnished with an instruction sheet which clearly shows installation and maintenance procedures. This instruction sheet shall include complete information on LED light sources used, LED drivers and surge protection. If dimmable LED driver is specified, provide diagrams illustrating light output and input power as a function of control signal.
- c. The luminaire housing should allow for toolless entry and should have a built-in heat sink. The luminaire housing color shall be as approved by the Engineer.
- d. Each lamp shall be clearly and permanently marked, giving the wattage and the American Standards Association Number or the Manufacturer's Reference Number. The correlated color temperature shall be 4000K to 5700K or as approved by the Engineer.

4. Illuminated Street Name Sign

- a. Illuminated street name signs shall be installed by the contractor per the manufacturer's requirements. The street name signs shall be compatible with ADOT "Traffic Signals and Lighting" Standard Drawings.
- b. IISNS cabling will run unspliced from the traffic signal control cabinet to the IISNS.
- c. Panels shall be installed as designated in the plans.

5. Signal Heads

- a. Signal heads shall be 12" in diameter and will be installed as shown on the plans on new poles.

6. Wireless Radio

- a. Wireless links shall be installed at the Kyrene Road Pedestrian Signal.
- b. The radio shall be mounted as high on the supporting structure as practical.
- c. The power injector, power supply, A/C power receptacle, and grounding block shall be mounted in the controller cabinet at the site. The A/C power receptacle shall be either 2 duplex non-GFI protected electrical outlets or 1 quad non-GFI protected electrical outlets.
- d. The interconnecting cables shall connect the radio to the power injector.
- e. The power injector shall be connected to the Ethernet switch at the site.
- f. The antennas at each end of each link will be adjusted to face each other making data transmission possible.
- g. Prior to installation, the Contractor shall perform a wireless radio path site survey and frequency plan encompassing the wireless links to and from the Kyrene Road Pedestrian Signal to determine the specific radio installations sites, mounts, antennas, frequencies, channel widths, polarization and power setting that will provide the best band width and communication reliability.
- h. The wireless radio path site survey shall report:
 - i. Recommended antenna sites, including specifics about mounting location, orientation and height, as well as justification for each site versus alternatives.

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- ii. Signal strength (dBm), both theoretical free space and measured
 - iii. Fade margin (dB)
 - iv. Signal-to-Noise Ratio
 - v. Tested bandwidth (Mbps) in each direction
 - vi. Frequency spectrum analysis (complete scan)
 - i. The test shall be performed using the brand and model of radio equipment to be installed.
 - j. Test Requirements
 - i. The Contractor shall develop a test plan showing that each wireless link is capable of a continuous data rate of 54 Mbps. The test plan shall include:
 - 1. Stand Alone Test shall report:
 - 2. Signal Strength (dBm)
 - 3. Fade Margin (dB)
 - 4. Signal-to-Noise Ratio
 - 5. Tested bandwidth (Mbps) in each direction
 - 6. The test results shall be consistent with the results previously reported during the wireless radio path survey and frequency plan with documentation of the final test results documented as a system benchmark.
 - ii. System Test shall verify the following:
 - 1. All items in the stand-alone test
 - 2. Consistent network connectivity, measured as 5% or less packet loss per day, over a one-week period, once all project elements are online.
 - 3. Demonstration that the Graphical User Interface to ensure the functioning of remote programming, radio configuration, remote maintenance, diagnostic and spectrum analyzer features
 - iii. This plan shall be submitted to the City of Tempe for approval.
 - iv. City of Tempe changes will be incorporated, and each link will be tested.
 - v. The Contractor shall document all test results and submit these to the City of Tempe.
7. Ethernet Switch
- a. Minimum requirements for the contractor or designated subcontractor involved in the installation and testing of the Ethernet equipment are:
 - i. Three years' experience in the installation, testing and maintenance of Ethernet equipment.
 - ii. Two installations where Ethernet switches were deployed and the network has remained in continuously satisfactory operation for at least 2 years. The contractor shall submit as proof, photographs or other support documents, and the names and contact information of the operating personnel who can be contacted regarding the network's operation.
 - b. Necessary documentation of subcontractor qualifications must be approved by Engineer prior to purchasing the Ethernet switch.

- c. Installations of equipment shall be for ease of maintenance, with all component parts being readily accessible for inspection and maintenance.
- d. Ensure that all external screws, nuts and locking washers are stainless steel. Self-tapping screws shall not be used without written approval of the Engineer.
- e. The contractor shall comply with the applicable codes and standard requirements for external wiring to Ethernet Switches. All wires and cables shall be neatly installed and secured per common practices and standards. The contractor shall provide service loop at all connection points.
- f. The contractor shall provide and install one duplex single mode SC to ST Fiber patch cable for each Ethernet port installed in the Ethernet Switch.
- g. The contractor shall provide and install one duplex single mode ST to ST Fiber patch cable for each Ethernet port installed in the Ethernet Switch.
- h. The contractor shall provide and install one Category-5E patch cord for each Copper Fast Ethernet port install in the Ethernet Switch.
- i. Contractor shall provide and install a 120 Volt power cable with a grounding type plug.
- j. The contractor shall coordinate with the Engineer on switch configuration information, (i.e. IP addresses, VLANs etc.) 45 days prior to installing Ethernet Switches.
- k. Testing Requirements:
 - i. The Ethernet Switch shall meet the following tests:
 - 1. Stand-Alone Testing (Pre-Installation):
 - a. The contractor shall inspect the Ethernet Switch upon delivery for visual damage, inventory contents, and ensure proper functionality.
 - 2. Subsystem Testing:
 - a. The contractor shall ensure the Ethernet Node, Backbone, and Distribution Switches, are correctly installed, configured, and are properly functioning as networked subsystem.
 - 3. System Acceptance Testing (SAT):
 - a. As part of the SAT the contractor shall demonstrate that all Field Hardened Ethernet Switches function and are operational for the duration of the SAT.

Measurement and Payment

Measurement

1. Signal Poles and Mast Arms will be measured by the unit for each Signal Pole and Mast Arm, complete in place, in accordance with these specifications and the plans.
2. Signal Heads and Pedestrian Signal Faces will be measured by the unit for each head furnished and installed in accordance with the plans and these technical specifications.
3. Pedestrian Push Buttons will be measured by the unit for each push button furnished and installed in accordance with the plans and these technical specifications.

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4. Traffic signal controller equipment will be measured by unit for each controller cabinet furnished and installed in accordance with the plans. Controller cabinet foundation will be measured by unit for each controller cabinet foundation furnished and installed in accordance with the plans.
5. Electrical Cabinet Foundation will be measured by unit for each electrical cabinet foundation furnished and installed in accordance with the plans.
6. Luminares will be measured by unit for each Luminaire furnished and installed in accordance with the plans.
7. Illuminated Street Name Sign will be measured by the unit for each sign furnished and installed, complete in place, in accordance with these specifications and the plans.
8. Wireless radios shall be measured by each radio (access point or client) installed, complete in place, as specified herein and as shown on the project plans. No additional measurement or payment shall be made for the mast arm radio mount. Cost considered included with the price of the bid item.
9. Ethernet switches shall be measured by each switch installed, complete in place, as specified herein and as shown on the project plans.

Payment

1. Signal Poles and Mast Arms. The accepted quantities of Signal Poles and Mast Arms, measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the project plans.
2. Signal Heads. The accepted quantities of Signal Heads measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the project plans.
3. Pedestrian Push Buttons. The accepted quantity of Pedestrian Push Button measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the project plans.
4. Controller Cabinets and Foundations. The accepted quantities of Controller Cabinets and Foundations, measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the project plans.
5. Electrical Service Pedestal Foundation. The accepted quantity of Electrical Service Pedestal Foundation, measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the project plans.
6. Luminares. The accepted quantities of Luminares measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the project plans.
7. Illuminated Street Name Sign. The accepted quantities of illuminated street name signs, measured as provided above, will be paid for at the contract unit price, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the project plans.
8. Wireless Radio. The accepted quantities of wireless radio equipment, measured as

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provided above, will be paid for at the contract unit price bid, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the project plans.

Ethernet Switch. The accepted quantities of ethernet switches, measured as provided above, will be paid for at the contract unit price bid, which price shall be full compensation for the work, complete in place, as specified herein and as shown on the project plans.

ITEM NO. 147 ALLOWANCE: ROADWAY AND CONCRETE FLATWORK

Description:

The purpose of this allowance is to provide a funding source for any additional roadway and concrete flatwork work as approved by City Representatives. The Contractor will be reimbursed for the associated costs of additional roadway work and concrete flatwork.

Any costs, fees, or charges necessary to open asphalt batch plant during off hours (i.e. weekend or weeknight) will be reimbursed from this allowance.

Contract reimbursement from this allowance (in whole or in part) is not ensured. Contractor will not anticipate, nor plan, for the amount from this allowance to be included in the total contract amount as part of this project.

Construction Requirements:

Additional roadway and concrete flatwork work will be completed as approved and directed by City Representatives.

Measurement and Payment:

Payment for Allowance: Roadway and Concrete Flatwork will be made on an incremental basis in accordance with the requirements of City of Chandler General Conditions Section 9.

No payment in excess of 100% of the contract lump sum price will be made, unless authorized by City Representatives as a result of extra work authorized in accordance with City of Chandler General Conditions Section 9.

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ITEM NO. 148 ALLOWANCE: LANDSCAPING

Description:

The purpose of the allowance is to create a funding source for any additional landscaping work as approved by City Representatives. The Contractor will be reimbursed for the associated costs of additional landscaping work.

Contract reimbursement from this allowance (in whole or in part) is not ensured.

Contractor will not anticipate, nor plan, for the amount from this allowance to be included in the total contract amount as part of this project.

Construction Requirements:

Additional landscaping work will be completed as approved and directed by City Representatives.

Measurement and Payment:

Payment for Allowance: Landscaping will be made on an incremental basis in accordance with the requirements of City of Chandler General Conditions Section 9.

No payment in excess of 100% of the contract lump sum price will be made, unless authorized by City Representatives as a result of extra work authorized in accordance with City of Chandler General Conditions Section 9.

ITEM NO. 149 ALLOWANCE: TRAFFIC SIGNAL AND COMMUNICATIONS FACILITIES

Description:

The purpose of this allowance is to provide a funding source for any additional traffic signal and communication facilities work as approved by City Representatives. The Contractor will be reimbursed for the associated costs of additional traffic signal and communications facilities work.

Contract reimbursement from this allowance (in whole or in part) is not ensured. Contractor will not anticipate, nor plan, for the amount from this allowance to be included in the total contract amount as part of this project.

Construction Requirements:

Additional traffic signal and communications facilities work will be completed as approved and directed by City Representatives.

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Measurement and Payment:

Payment for Allowance: Traffic Signal and Communications Facilities will be made on an incremental basis from allowance in accordance with the requirements of City of Chandler General Conditions Section 9.

No payment in excess of 100% of the contract lump sum price will be made, unless authorized by City Representatives as a result of extra work authorized in accordance with City of Chandler General Conditions Section 9.

ITEM NO. 150 ALLOWANCE: SRP ELECTRICAL

Description:

The purpose of this allowance is to provide a funding source for coordination and paying all necessary fees for permit and hook up to SRP to install a complete functioning electrical service to power the irrigation controllers and streetlighting. This item will include providing all permits, connection fees, foundations, junction boxes, conduit risers, conduit sweeps, coordination, and required protection when working near overhead lines required by SRP to provide the electrical connection from the SRP transformer to the proposed service meter pedestal.

Construction Requirements:

All work will conform to the requirements of SRP. The Contractor will contact the SRP to coordinate power service and construction requirements.

The Contractor will secure the necessary utility company permits, pay the related fee(s) for said permit including utility company connection fees, and coordinate the installation of the required power services.

The meter will be energized and have the account established in the name of the City of Chandler.

Measurement and Payment:

Payment for Allowance: SRP Electrical will be made on an incremental basis in accordance with the requirements of City of Chandler General Conditions Section 9.

No payment in excess of 100% of the contract lump sum price will be made, unless authorized by City Representatives as a result of extra work authorized in accordance with City of Chandler General Conditions Section 9.

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ITEM NO. 151 ALLOWANCE: REMOVALS

Description:

The purpose of the allowance is to create a funding source for any additional removal work as approved by City Representatives. The Contractor will be reimbursed for the associated costs of additional roadway work.

Contract reimbursement from this allowance (in whole or in part) is not ensured.

Contractor will not anticipate, nor plan, for the amount from this allowance to be included in the total contract amount as part of this project.

Construction Requirements:

Additional removal work will be completed as approved and directed by City Representatives.

Measurement and Payment:

Payment for Allowance: Removals will be made on an incremental basis from allowance in accordance with the requirements of City of Chandler General Conditions Section 9.

No payment in excess of 100% of the contract lump sum price will be made, unless authorized by City Representatives as a result of extra work authorized in accordance with City of Chandler General Conditions Section 9.

ITEM NO. 152 ALLOWANCE: TRAILHEAD SIGNAGE

Description:

The purpose of the allowance is to create a funding source for any additional trailhead signage work as approved by City Representatives. The Contractor will be reimbursed for the associated costs of additional roadway work.

Contract reimbursement from this allowance (in whole or in part) is not ensured.

Contractor will not anticipate, nor plan, for the amount from this allowance to be included in the total contract amount as part of this project.

Construction Requirements:

Additional removal work will be completed as approved and directed by City Representatives.

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Measurement and Payment:

Payment for Allowance: Removals will be made on an incremental basis from allowance in accordance with the requirements of City of Chandler General Conditions Section 9.

No payment in excess of 100% of the contract lump sum price will be made, unless authorized by City Representatives as a result of extra work authorized in accordance with City of Chandler General Conditions Section 9.

ITEM NO. 153 ALLOWANCE: ARCHEOLOGICAL COORDINATION

Description:

The purpose of the allowance is to create a funding source for coordination with the Archeologist during the required archeological monitoring. Archeological monitoring is required as shown in the Project Plans for ground disturbing activities deeper than 18-inches. The Contractor will be reimbursed for the associated costs of coordination.

Contract reimbursement from this allowance (in whole or in part) is not ensured.

Contractor will not anticipate, nor plan, for the amount from this allowance to be included in the total contract amount as part of this project.

Construction Requirements:

Additional removal work will be completed as approved and directed by City Representatives.

Measurement and Payment:

Payment for Allowance: Removals will be made on an incremental basis from allowance in accordance with the requirements of City of Chandler General Conditions Section 9.

No payment in excess of 100% of the contract lump sum price will be made, unless authorized by City Representatives as a result of extra work authorized in accordance with City of Chandler General Conditions Section 9.

ITEM NO. 154 ALLOWANCE: UTILITY LOCATING & POTHOLING

Description:

The purpose of the allowance is to create a funding source for any utility locating and potholing as approved by City Representatives. The Contractor will be reimbursed for the associated costs of additional roadway work.

Contract reimbursement from this allowance (in whole or in part) is not ensured.

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Contractor will not anticipate, nor plan, for the amount from this allowance to be included in the total contract amount as part of this project.

Construction Requirements:

Additional removal work will be completed as approved and directed by City Representatives.

Measurement and Payment:

Payment for Allowance: Removals will be made on an incremental basis from allowance in accordance with the requirements of City of Chandler General Conditions Section 9.

No payment in excess of 100% of the contract lump sum price will be made, unless authorized by City Representatives as a result of extra work authorized in accordance with City of Chandler General Conditions Section 9.

SOILS INFORMATION

The material boring logs shown in the Geotechnical Report are provided in Appendix D. It is not intended to imply that the character of materials shown in the logs is representative throughout the project. The soil borings are indicative of the soil characteristics only at the locations and to the depths of each of the borings.

Even if not specifically shown on the boring logs, the Contractor may encounter large cobbles, boulders, caliche, conglomerate, hard rock, sand, perched groundwater, historic or prehistoric cultural resources, or other differing site conditions on this project. There will be no additional compensation made for any differing site condition that may be encountered. It is the Contractor's responsibility to include the cost of any additional work items, such as trench boxes, laying back trenches, soil pumping mitigation, etc., associated with unforeseen soil conditions in all contract bid items requiring earthwork and will be considered incidental.

ENVIRONMENTAL MITIGATION MEASURES

Full Environmental Report available upon request.

The Contractor will comply with the following environmental mitigation measures. The cost of complying with the environmental mitigation measures will be considered incidental to other project bid, including, but not limited to burrowing owls and other migratory birds. Note that references to Engineer in the below mitigation measures implies City Representatives.

The project mitigation measures are not subject to change without written approval from ADOT Environmental Planning. The Contractor shall follow all the requirements of the permits specified herein and comply with the project special

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provisions as well as the MAG Uniform Standard Specifications for Public Works, as well as all applicable local environmental requirements.

City of Chandler Responsibilities:

- If active bird nests are identified within the project limits, construction activities will avoid disturbing any active nest. Avoidance areas, if necessary, will be marked in the field with temporary fencing or t-posts with flagging by the approved biologist. The engineer will confer with the approved biologist to determine the appropriate avoidance strategies until the nestlings have fledged from the nest and the nest is no longer active.
- If any active bird nests cannot be avoided by vegetation clearing or construction activities, the Engineer will contact the Environmental Planning Biologist (928.304.0487) to evaluate the situation.

Contractor Responsibilities:

- If clearing, grubbing, or tree/limb removal will occur between March 1 and August 31, the contractor shall employ a qualified biologist to conduct a migratory bird nest search of all vegetation within the 10 (ten) days prior to removal. Vegetation may be removed if it has been surveyed and no active bird nests are present. If active bird nests cannot be avoided, the contractor shall notify the Engineer to evaluate the situation. During the non-breeding season (September 1 – February 28), vegetation removal is not subject to this restriction.
- For milling activities, the roadway surface preceding the milling machine shall be kept sufficiently wet so as to prevent the generation of any visible fugitive dust particles, but not so wet as to cause excess runoff from the roadway surface onto the roadway shoulder.
- The Contractor shall contact the ADOT Environmental Planning Historic Preservation Team lead, (480.679.4473) or the environmental commitments coordinator (520.449.1985) at least 14 (fourteen) business days prior to the start of ground- disturbing activities to arrange for qualified personnel to monitor and be present during construction. ADOT's Environmental Planning – Historic Preservation Team will provide contact information on the qualified archaeological consultant to the Contractor for their records. ADOT's Environmental Planning – Historic Preservation Team will contact the qualified archaeological consultant regarding the project start date and provide Contractor information.
- The Contractor shall coordinate via email or phone with the qualified archaeological consultant and communicate the construction schedule for the duration of ground disturbing work in those areas where monitoring is needed.

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Permits:

- AZPDES 402 – ADEQ Construction General Permit (SP 104.09 SWDEQ)

PERMITS

The Contractor will comply with the requirements of MAG Standard Specifications Sections 107.2 except as modified herein.

The Contractor will obtain all permit(s) required to construct the project, including but not limited to:

City Water Meter Permit

The Contractor will obtain City permit(s) required for fire hydrant water trucks (Contractor submits and pays for this permit, no separate payment will be made for this permit; the cost being considered as included in the price of other contract items) and new landscape water meters (City pays for the permit but Contractor must sign and pick up the permit).

City Encroachment, Civil and Building Permits

The Contractor will obtain City permit(s) required for encroachment, civil and structures. The City pays for the permits but Contractor must sign and pick up the permit.

City Administrative Use Permits

The Contractor will pay and obtain City permit(s) required for construction trailer and temporary facilities. No separate payment will be made for this permit, the cost being considered as included in the price of other contract items.

Maricopa County Permits

The Contractor will pay and obtain Maricopa County permit(s) required for traffic control within their jurisdiction. No separate payment will be made for this permit, the cost being considered as included in the price of other contract items.

Air Quality Permit

The Contractor will obtain a Maricopa County Air Quality Permit for this project. The Contractor will be required to prepare a comprehensive fugitive dust control plan, in accordance with the guidelines established in Rule 310 of Maricopa County Regulation III, Control of Air Contaminants. The Contractor will complete and submit the control plan with the permit application and obtain approval from the County prior to any activities which may produce dust pollutants.

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No separate payment will be made for the preparation, implementation of the fugitive dust control plan, or permit fees, the costs being considered as included in the price of contract items.

Erosion Control Permit

The Contractor will submit the Arizona Pollutant Discharge Elimination System Notice of Intent (NOI) and the Notice of Termination (NOT) to the Arizona Department of Environmental Quality. The Contractor and the City Representatives will jointly review the Stormwater Pollution Prevention Plan (SWPPP) prior to submission of the NOI and prior to the start of work. The SWPPP will be maintained throughout the duration of the project in accordance with the APDES requirements and a current version will be available at all times at the project site.

No separate payment will be made for the preparation, implementation of the SWPPP, or permit fees, the costs being considered as included in the price of contract items.

Salt River Project (SRP) Construction License

This project requires the Contractor to remove existing SRP facilities in some locations and install new SRP facilities in other locations. As such, SRP requires the Contractor obtain a Construction License for a nominal fee. No separate payment will be made for the preparation of the construction license or license fees, the costs being considered as included in the price of contract items.

COOPERATION WITH UTILITIES

The Contractor shall comply with the requirements of MAG Standard Specifications Sections 105.6 and ADOT Standard Specifications Section 107.15 except as modified herein.

The locations of existing underground utilities have been shown on the Project Plans to the best of the Design Engineer's knowledge and information provided by each utility company; however, it shall be the Contractor's responsibility to notify Blue Stake at 602-263-1100 (1-800-STAKE-IT), field verify all utility locations and to coordinate in a timely manner with pertinent utility companies so that any obstructing utility installation may be adjusted without delay to the Contractor's project schedule.

For new utilities (water, sanitary sewer, power, signal, fiber optic, electrical, drainage, etc.) that are installed as part of this contract, the Contractor shall act as the interim locator of the new utility until As-Builts are completed by the Contractor and Final Acceptance for the project is granted by the City of Chandler. The Contractor shall be responsible for locating all underground existing facilities by vacuum exploration (potholing) to determine depth, alignment, and clearance in a timely manner; the cost for potholing new or existing

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utilities shall be included in the cost for other items of work.

Coordination with the pertinent utility companies has been a part of the development of this project. Construction activities shall be coordinated and scheduled to incorporate the following applicable utility construction activities:

- *Cox Facility Relocations*
- *SRP Electrical service*

The following telephone numbers should put the Contractor in contact with the proper personnel for coordination:

UTILITY COMPANY	CONTACT	PHONE
ADOT	Jose J. Royas	602-712-6771
City of Phoenix Water	Mario Murillo	602-262-4276
City of Tempe	Erich Bonz	480-350-5827
Cox	Marcelo Certoma	602-309-7084
El Paso Natural Gas	Cory Talmage-Gray	602-438-4249
Lumen	Martin Samaniego	602-325-0630
MCI/Verizon	Ryan Kann	480-382-5844
Southwest Gas	Gene Florez	480-730-3841
Sprint	David Jeter	213-789-5354
SRP	Heather Legg	602-236-0841
Zayo Group	Matt Burke	480-257-7714

Regardless of the means and methods utilized during the construction of the work, the Contractor shall protect all existing utilities during construction. Any damages to the existing utilities resulting from the scope of work, shall be the repaired and paid for by the Contractor. The Contractor shall follow all Blue stake and state laws regarding the protection of utilities during construction.

It shall be the Contractor's responsibility to determine the exact location of the utilities prior to any construction operations and to notify the above-mentioned utility companies at least two working days prior to commencing any work on the project.

The following utility companies have facilities needing adjustment prior to construction:

Cox

Cox has multiple facilities throughout the project limits. It is anticipated that pedestal and vault relocations will be necessary on the west side of Kyrene Rd at approximately STA 452+00.

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The following utility companies have facilities needing adjustment and/or coordination during construction:

City of Tempe

The City of Tempe has existing waterlines along Kyrene Rd and will be protected in place, except for the following improvements:

- Adjustment of existing waterline valves will be completed by the Contractor at the locations shown on the Project Plans.

City of Chandler

The City of Chandler has existing waterlines throughout the project limits and will be protected in place, except for the following improvements:

- Adjustment of existing waterline valves will be completed by the Contractor at the locations shown on the Project Plans.
- Removal and re-installation of fire hydrants will be completed by the Contractor at the locations shown on the Project Plans.

Salt River Project – Land

- CMU Field Consulting Services – Prior to installation of signs, site furnishings, and access gates within SRP canal right-of-way, coordinate locations with CMU Field Consulting Services through and with approval of City Representative.

Salt River Project - Power

SRP job number T3613432

This job will install a new meter pedestal (see item ELECTRICAL SERVICE PEDESTAL SYSTEM, DET 4829) at the intersection of Orchid Lane and the Highline Canal to power new path lighting and new irrigation controller. The Contractor will be responsible for all trenching, conduit, sweeps, grading, etc. as part of this project. The Contractor will also be responsible for setting the new meter pedestal as shown on the Project Plans. The Contractor will be required to set up a pre-construction meeting with SRP prior to installing the new meter pedestal and the new trenching, conduit, sweeps, and grading. Once the Contractor has installed the trenching, conduit, sweeps, grading, and set the new meter pedestal, the Contractor will call SRP for inspection. SRP will install the new conductor wire within the conduits, abandon the existing conduit/conductors, and connect the new conductor to the existing transformer.

SRP job number T3613461 (Traffic Signal) and T3685816 (Path Lighting)

This job will install a new meter pedestal (see item METER PEDESTAL CABINET (COT) AND ELECTRICAL SERVICE PEDESTAL SYSTEM, DET 4829, respectively) at the intersection of Kyrene Road and the Kyrene Branch Canal to power the new traffic signal and new path lighting. The Contractor will be responsible for all trenching, conduit, sweeps, grading, etc. as part of this project. The Contractor will also be responsible for setting the new meter pedestal as shown on the Project Plans. The Contractor will be

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required to set up a pre-construction meeting with SRP prior to installing the new meter pedestal and the new trenching, conduit, sweeps, and grading. Once the Contractor has installed the trenching, conduit, sweeps, grading, and set the new meter pedestal, the Contractor will call SRP for inspection. SRP will install the new conductor wire within the conduits, abandon the existing conduit/conductors, and connect the new conductor to the existing transformer. The Contractor must coordinate with SRP and City staff to schedule the signal cutover and ensure the traffic signal is always operational.

SRP job number T3613466

This job will install a new meter pedestal (see item ELECTRICAL SERVICE PEDESTAL SYSTEM, DET 4829) at the intersection of McKemy Avenue and the Kyrene Branch Canal to power the new path lighting and irrigation controller. The Contractor will be responsible for all trenching, conduit, sweeps, grading, etc. as part of this project. The Contractor will also be responsible for setting the new meter pedestal as shown on the Project Plans. The Contractor will be required to set up a pre-construction meeting with SRP prior to installing the new meter pedestal and the new trenching, conduit, sweeps, and grading. Once the Contractor has installed the trenching, conduit, sweeps, grading, and set the new meter pedestal, the Contractor will call SRP for inspection. SRP will install the new conductor wire within the conduits, abandon the existing conduit/conductors, and connect the new conductor to the existing transformer. The Contractor must coordinate with SRP and City staff to schedule the signal cutover and ensure the traffic signal is always operational.

SRP job number T3691205

This job will install a new meter pedestal (see item ELECTRICAL SERVICE PEDESTAL SYSTEM, DET 4829) at the intersection of Ray Road and the Kyrene Branch Canal to power the new path lighting. The Contractor will be responsible for all trenching, conduit, sweeps, grading, etc. as part of this project. The Contractor will also be responsible for setting the new meter pedestal as shown on the Project Plans. The Contractor will be required to set up a pre-construction meeting with SRP prior to installing the new meter pedestal and the new trenching, conduit, sweeps, and grading. Once the Contractor has installed the trenching, conduit, sweeps, grading, and set the new meter pedestal, the Contractor will call SRP for inspection. SRP will install the new conductor wire within the conduits, abandon the existing conduit/conductors, and connect the new conductor to the existing transformer. The Contractor must coordinate with SRP and City staff to schedule the signal cutover and ensure the traffic signal is always operational.

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The following utility companies have facilities in the area, but are not anticipated to be in conflict:

El Paso Natural Gas

El Paso has existing facilities along Priest Dr. and along the Union Pacific Railroad. There are no conflicts anticipated with the El Paso Natural Gas facilities.

Lumen

Lumen has existing facilities throughout the project limits. There are no conflicts anticipated with the Lumen facilities.

Verizon

Verizon has existing underground facilities near the project limits. There are no conflicts anticipated with the Verizon facilities.

Sprint

Sprint has existing underground facilities along Priest Dr. and Ray Rd. There are no conflicts anticipated with the Sprint facilities.

Southwest Gas (SWG)

SWG has utilities throughout the project limits. There are no conflicts anticipated with the SWG facilities.

Zayo

Zayo has existing underground facilities on the south side of Orchid Lane. There are no conflicts anticipated with the Zayo facilities.

COOPERATION BETWEEN CONTRACTORS AND OTHER AGENCY PROJECTS

Contractor will conform to the requirements of MAG Section 105.7 except as modified herein.

The Contractor is advised that there may be construction activity by others adjacent to the project site. The Contractor will coordinate the work to accommodate the construction activities.

The Contractor will contact the City of Chandler, City of Tempe, City of Phoenix, SRP, Chandler Public School District, , ADOT, Maricopa County Department of Transportation (MCDOT) Flood Control District of Maricopa County (FCDMC), and adjacent private development contractors to verify other nearby projects in the vicinity of this project.

The Contractor is advised to schedule and coordinate all work activities and regional transit so as not to adversely conflict with this work. This includes coordinating with

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schools regarding the relocation of school bus stops during construction. The Contractor will be expected to attend any monthly coordination meetings set up by other agencies or other prime contractors working on adjacent projects to discuss coordination.

NOTIFICATION TO PROPERTY OWNERS

The Contractor will provide advance notice (at least 30 days) to residential and local business property owners along Orchid Lane, 54th Street, Ray Road, Kyrene Road when constructing improvements adjacent to their property that may require action by a property owner to remove, relocate, etc. existing features that impede construction by the Contractor.

No separate payment will be made for providing advance notice, the costs being considered as included in the price of other contract items. Any claims resulting due to delay in providing sufficient notice by the Contractor will not be approved.

TRAFFIC CONTROL

Access Requirements for Pedestrians:

The Contractor will maintain ADA accessible passable walkway along Orchid Lane, 54th Street, Ray Road, and Kyrene Road at all times during construction.

Traffic-Related Work Restrictions:

No lane restrictions or intersection closures will be allowed during special events or holiday times as determined by the City.

No trenches will be left open overnight in areas that are not fenced in to prohibit access to vehicles and pedestrians. All trenches within the roadway will be plated or backfilled and paved prior to allowing vehicles to travel on the section of roadway.

Traffic Signal Requirements:

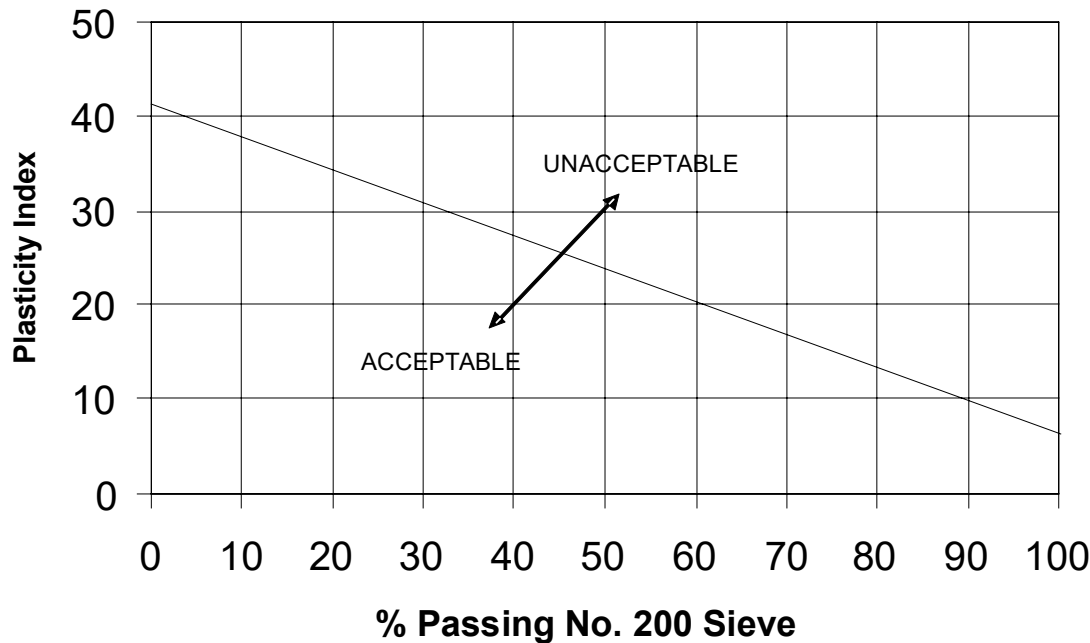
The existing traffic signal at the intersection of Ray Road and McKemy Avenue will remain operational until the new traffic signal improvements has been constructed and ready for switch over. The traffic signal switch over does not have to be completed at one time and can be completed in phases as the new traffic signal construction is completed.

Portable temporary signal equipment will not be used under any circumstances.

APPENDIX A

Subgrade Acceptance Chart

SUBGRADE ACCEPTANCE CHART



Design R-Value = 20

Construction Control R-Value = 20

APPENDIX B

City of Chandler Request for Public Records



Chandler • Arizona
Where Values Make The Difference

Request for Public Records

Name	E-mail	Date
Agency/Company Name	Telephone No.	Fax No.
Street Address	City, State	Zip Code

Describe the record(s) you are requesting. Please include all pertinent information such as address, permit number, zoning case number, date, etc

☐ Permit ☐ View ☐ Copy	
☐ Certificate of Occupancy ☐ View ☐ Copy	
☐ Residential Plot Plan ☐ View ☐ Copy	
☐ Building Plans ☐ View ☐ Copy	
☐ Other ☐ View ☐ Copy	

Please indicate whether you will use the records for a non-commercial or a commercial purpose.

☐ **Non-Commercial**

I declare that I have read and understood the Public Records Request Policy and General Information sheet regarding requests for public records from the Planning and Development Department. The records that I am requesting are **not** for a commercial purpose as defined by Arizona Revised Statutes §39-121.03(D). These records are for my use; I will not sell them to another person. I understand the City of Chandler does not guarantee the accuracy or completeness of these records and declare the City of Chandler, its officers and employees free from any and all damages, lawsuits, causes of action and liabilities that may result from my reliance upon and use of the above described information.

Print Name: _____ **Signature:** _____ **Date:** _____

☐ **Commercial – please complete the form for commercial use of public records.**

For Records Office Use

Cost of Reproduction:	copies @ \$	per copy. Postage charge (if any): \$	Total: \$
Completed by:			Date:
Comments:			

Mailing Address:
P.O. Box 4008, MS 401
Chandler, Arizona 85244-4008

Transportation and Development Department
Records Management Section
215 E. Buffalo St., Chandler Arizona

Telephone: (480) 782-3000
Fax: (480) 782-3055
www.chandleraz.gov
Form No: UDM-39/Planning
Rev: 7-30-14



Public Records Request Policy and General Information

Policy

It is the policy of the Planning and Development Department to comply with all City, State of Arizona, and Federal laws and regulations regarding the release of public records. Public records in the custody of the Planning and Development Department are open to inspection by any person at all times during regular office hours (8:00 a.m. to 5:00 p.m. Monday-Friday). However, please be aware that the City may deny inspection of certain records if they are made confidential by State or Federal law, or involve the privacy interests of persons, or if disclosure would be detrimental to the best interests of the City

Requests for Public Records for a Non-Commercial Purpose

Please submit requests for inspection or copies of public records in writing, with adequate and detailed information. The City is not responsible for creating new documents or generating reports in response to non-specific requests.

Requests for copies of public records for a non-commercial purpose will be processed within 10 working days, unless the request is for an unusually large number of records. The City will charge a reasonable fee to cover reproduction expenses. Checks should be made payable to the City of Chandler.

Requests for Public Records for a Commercial Purpose

Requests for public records to be used for commercial purpose must be accompanied by a statement of that purpose, with a notary affidavit. These requests will be sent to the appropriate Division Manager's office for verification and authorization; please allow extra time for processing. The Arizona Revised Statutes §39-121.03(D) defines a commercial purpose as:

- Sale or resale.
- Producing a document containing all or part of the copy, printout or photograph for sale.
- Obtaining names and addresses from public records for the purpose of solicitation or the sale of names and addresses to another for the purpose of solicitation.
- Any purpose in which the purchaser can reasonably anticipate the receipt of monetary gain from the direct or indirect use of the public record.

It is a violation of the public record law to:

- Obtain a public record for a non-commercial purpose and use it for a commercial purpose.
- Obtain a public record for a commercial purpose and use it for a different commercial purpose.

APPENDIX C

Geotechnical Report

GEOTECHNICAL EXPLORATION REPORT
KYRENE BRANCH AND HIGHLINE
CANAL SUP
CHANDLER, ARIZONA

Prepared for:
Kimley-Horn
7740 North 16th Street, Suite 300
Phoenix, Arizona



Prepared by:
ATEK Engineering Consultants, LLC
111 South Weber Drive, Suite 1
Chandler, Arizona 85226



ATEK Project # 230056

March 7, 2025



March 7, 2025
ATEK Project #230056

Anne S. DeBoard, PLA, ASLA
Kimley-Horn
7740 North 16th Street, Suite 300
Phoenix, Arizona

Regarding: Geotechnical Exploration Report

Project: Kyrene Branch and Highline Canal SUP
Chandler, Arizona

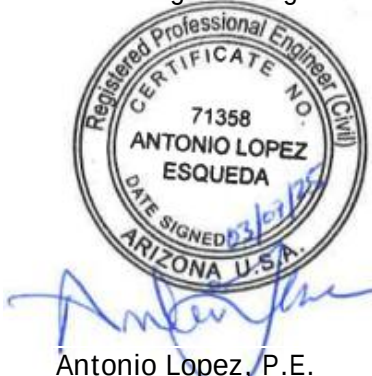
Dear Ms. DeBoard:

ATEK Engineering Consultants, LLC is pleased to present the attached Geotechnical Exploration Report for the Kyrene Branch and Highline Canal Shared Use Path located in Chandler, Arizona. The purpose of our study was to explore and evaluate the subsurface conditions at the proposed site to develop geotechnical engineering recommendations for project design and construction.

Based on our findings, the site is considered suitable for the proposed construction, provided geotechnical recommendations presented in the attached report are followed. Specific recommendations regarding the geotechnical aspects of the project design and construction are presented in the attached report. The recommendations contained within this report are dependent on the provisions provided in the Limitations and Recommended Additional Services sections of this report.

We appreciate the opportunity of providing our services for this project. If you have questions regarding this report or if we may be of further assistance, please contact the undersigned.

Sincerely,
ATEK Engineering Consultants, LLC



Antonio Lopez, P.E.
Geotechnical Group Manager



Armando Ortega, P.E.
Principal Geotechnical Engineer

Distribution: (1) Addresses (Electronic Copy)

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1. INTRODUCTION

This report presents the results of our geotechnical exploration for the Kyrene Branch and Highline Canal Shared Use Path (SUP) located in Chandler, Arizona. A Site Location Map is presented in Appendix A of this report. The following sections of this report describe our understanding of the project and our scope of services.

1.1. Project Description

The project consists of improvements to the Kyrene Branch and Highline Canal SUP in Chandler, Arizona. The improvements to Kyrene Branch Canal SUP extend from approximately Linda Lane to Kyrene Road. The improvements to Highline Canal SUP start at Orchid Lane and extend approximately 1,500 feet northeast. The improvements include a 10 feet wide concrete path, pathway lighting and concrete flatwork (curb, gutter, ramps, etc.).

1.2. Purpose

The purpose of this geotechnical study was to evaluate the general surface and subsurface conditions at the site, and to present recommendations related to geotechnical aspects of design and construction of the proposed project.

1.3. Scope of Services

Our study included a site reconnaissance, subsurface exploration, soil sampling, field and laboratory testing, engineering analyses, and preparation of this report. This report presents geotechnical recommendations for design and construction of proposed structures. The recommendations contained in this report are subject to the limitations presented herein. Attention is directed to the “Limitations” section of this report.

2. FIELD EXPLORATION

2.1. General

Prior to the start of drilling, the AZ 811 was contacted to locate existing utilities at the boring locations. The field exploration was performed on February 12, 2025, and February 19, 2025. Six soil borings were drilled to a depth of thirty (30) feet below existing grade. The soil test borings were drilled using a truck mounted Diedrich Drill 50 power drill rig equipped with 7 and 1/4-inch outside diameter hollow stem augers. The borings were located in the field at the approximate locations shown on the Sample Location Plan included in Appendix B of this report. Upon completion of the borings, the boreholes were backfilled with excavated materials.

2.2. Soil Test Borings

Disturbed and relatively undisturbed samples were taken at the direction of the field engineer during drilling operations. Relatively undisturbed samples of the subsurface materials were obtained using a California sampler with a 2.5-inch inside diameter and a 3.0-inch outside diameter. Disturbed samples were obtained using a Standard Penetration/Split Spoon Sampler (SPT) with a 1.5-inch inside diameter and 2.0-inch outside diameter. The California and the SPT samplers were driven 12 and 18 inches, respectively, using a 140-pound hammer falling 30 inches, and blow counts for successive 6-inch penetration intervals were recorded. After the sampler was withdrawn from the borehole, the samples were removed, sealed to minimize moisture loss, and submitted to the laboratory.

Soil classifications made in the field from auger cuttings and samples were re-evaluated in the laboratory after further examination and testing. The soils were classified in accordance with the Unified Soil Classification System presented in Appendix C.

Sample classifications, blow counts recorded during sampling, and other related information, were recorded on the soil boring logs. The boring logs are presented in Appendix C. The information presented on the logs are a combination of factual and interpretive information. Lines delineating subsurface strata and group symbols are based on field observations made at the time of the field study. Actual subsurface lines delineating subsurface strata may be gradual and vary.

3. LABORATORY TESTING

Selected soil samples from the borings were tested in the laboratory for classification purposes and to evaluate their engineering properties. The laboratory tests included:

- Gradation;
- Atterberg limits;
- Moisture content;
- One-dimensional consolidation;
- Undisturbed ring density;
- Standard Proctor;
- Swell potential of soil;
- pH tests;
- Resistivity tests;
- Sulfate content;
- Chloride content;
- And direct shear.

A brief description of each test performed on the soil samples and the results are presented in Appendix D of this report.

4. GENERAL SITE CONDITIONS

4.1. Surface Conditions

The proposed project is located along the Highline Canal north of Orchid Lande and the Kyrene Branch Canal between Linda Lane and Kyrene Road in Chandler Arizona. Both paths are currently rough graded with coarse grained aggregate at the surface. The Highline Canal path is approximately 1,500 liner feet and is located between

various auto shops. The Kyrene Branch Canal path is approximately 4,800 linear feet and is located within residential communities.

4.2. Subsurface Conditions

As indicated by the exploratory borings, in general the surface soils consist of Sandy Lean Clay (CL) Clayey Sand (SC), and Silty, Clayey Sand (SC-SM) with low plasticity. These soils were found to have a relative firmness ranging from moderately firm to firm. The underlying subsurface soils encountered during our field exploration consisted of cohesive and cohesionless soils. Cohesive soils consisted of Clayey Sand (SC), Clayey Sand with Gravel (SC), Sandy Lean Clay (CL), Lean Clay with Sand (CL), and Silty, Clayey Sand (SC-SM) with low to medium plasticity. These soils were found to have a relative firmness of moderately firm to hard. Cohesionless soils consisted of Sandy Silt (ML) and Silty Sand (SM). These soils were found to have a relative density of medium dense to very dense. For additional information see Boring Logs presented in Appendix C.

4.3. Groundwater Conditions

Groundwater was not encountered within the soil test borings. Based on a review of published groundwater data maintained by Arizona Department of Water Resources anticipated depth to groundwater is approximately 88.9 feet below the existing ground surface elevation (Site ID 331941111563801). It is anticipated that groundwater will not be a factor in design or construction of the planned improvements. It should be noted that soil moisture conditions within the area may vary depending on rainfall and/or runoff conditions not apparent at the time of our field study.

4.4. Geologic Hazards

4.4.1. Liquefaction Potential

Based on the site soils and groundwater conditions encountered at the project site during this study, the preliminary potential for soil liquefaction is considered to be negligible.

4.4.2. Collapsible Soils

Collapsible soils are soils with the potential for a decrease in volume with an increase in external load or moisture content. These soils are typically found in areas of alluvial deposits with semi-arid to arid climates. Based on the information collected during our field study and subsequent laboratory testing, we anticipate collapse-susceptible soils will be encountered during construction. Based on ASTM D 5333, a calculated collapse potential, I_c , of the tested undisturbed ring samples collected during our field study resulted in 4.47 percent indicating a moderate collapse potential.

4.4.3. Expansive Soils

Expansive soils are soils with the potential for an increase in volume with an increase in moisture content. Based on the information collected during our field study and subsequent laboratory testing, we anticipate expansive-susceptible soils will be encountered during construction. Based on ASTM 4546, the expansive potential of the remolded sample collected during our field study, in the upper 5 feet, indicated an expansive potential.

4.5. Seismic Considerations

The project site is located in central Arizona which is an area of low seismic activity. The following values were developed using the Seismic Design Maps by Structural

Engineers Association by Location, the ASCE 7-16 Reference and are based on knowledge of local geologic conditions, and subsurface soils encountered during our study. A 100-foot soil test boring was not advanced during our field study. The geographic coordinates listed below were used in developing the seismic design factors.

Central Latitude.....33.32337828°

Central Longitude.....-111.9490979°

Seismic Design Factors	Value
Site Class	D
F_a , Site Coefficient	1.6
F_v , Site Coefficient	2.4
S_s , Mapped Spectral Acceleration at 0.2-second Period	0.174 g
S_1 , Mapped Spectral Acceleration at 1.0-second Period	0.064 g
S_{MS} , Spectral Acceleration at 0.2-second Period Adjusted for Site Class	0.279 g
S_{M1} , Spectral Acceleration at 1.0-second Period Adjusted for Site Class	0.153 g
S_{DS} , Design Spectral Response Acceleration at 0.2-second Period	0.186 g
S_{D1} , Design Spectral Response Acceleration at 1.0-second Period	0.102 g

4.6. Earth Fissures and Land Subsidence

There are no documented earthen fissures near the project site, the closest documented earthen fissure is located approximately 14.4 miles southeast of the site (Earth Fissure Map of the Chandler Heights Study Area: Pinal and Maricopa County, Arizona by Arizona Geological Survey dated June 2019). Additionally, the site is in an area with no measured land subsidence (Total Land Subsidence in Eastern Metropolitan Phoenix, Maricopa County between March 30, 2022, and April 12, 2024, prepared by Arizona Department of Water Resources).

5. ENGINEERING ANALYSES AND RECOMMENDATIONS

5.1. Earthwork

All existing structural remnants, fill, pavement, topsoil, vegetation and organic soils should be removed from below structural areas. The following sections present earthwork recommendations based on our understanding of the project, the finding of our field exploration, results of the laboratory tests and engineering analysis. Based on the finding of our field exploration, laboratory test results and engineering analysis, it is our opinion that the proposed construction can be supported on a spread footing system as presented in the following sections.

5.1.1. Concrete Shared Use Path

ATEK understands that the concrete shared use path will be per Maricopa Association of Governments (MAG) standard detail 230. Subgrade preparation should be in conformance with MAG section 340.3.1. The site soils tested as part of this project are considered marginal expansive per MAG section 340 Table 340-1. The existing surface soils should be scarified to a minimum depth of 6 inches below bottom of proposed concrete shared used path. The scarified soils should be moisture conditioned between optimum and three (3) percent above optimum moisture content and compacted to a minimum of 90 to 95 percent of maximum dry density. Optimum moisture content and maximum dry density should be determined by ASTM D 698.

5.1.2. Pole Foundations (Drilled Cast-in-Place)

It is anticipated that pole foundations will be used to support SUP lighting and Signal poles. The pole foundation excavations should be advanced with single-flight auger, rock auger, or bucket auger bits to the design tip elevation. The depth of excavation should be verified by measurement and inspection. The bottom of the hole should be cleaned such that no more than three inches of loose material remains. Depending on

the type of auger used and the depth of the shaft excavation, alternative cleaning techniques, including hand cleaning or vacuuming, may be required.

A minimum shaft diameter of 24-inches should be drilled to allow for proper cleaning, bottom preparation and inspection. Provisions should be made for the removal of groundwater from the drilled shafts excavations. While groundwater is not anticipated, the drilled pier contractor should have pumps on hand to remove water in the event seepage into the drilled pier is encountered. Concrete slumps ranging between 4 and 7 inches should be specified to fill irregularities along the sides and bottom of the drilled hole, displace water as it is placed (if encountered), and permit placement of reinforcing cages into the fluid concrete. Temporary protective steel casing may be used to prevent side wall collapse and water intrusion (if encountered). The protective casing may be extracted as the concrete is placed in the drill shaft, providing that a sufficient head of concrete is maintained inside the steel casing to prevent soil or water intrusion in the shaft. The concrete should be placed into the drilled shaft through a chute to reduce side flow or segregation.

5.1.3. Aggregate Base Course

Aggregate base used in support of Portland cement concrete and asphaltic concrete pavements should conform to the local governing agency and/or Maricopa Association of Governments (MAG) Section 702 Specifications. The plasticity index of the fraction of material passing the No. 40 sieve should not exceed five when tested in accordance with ASTM Test Method D 4318. Coarse aggregate should have a percent of wear, when subjected to the Los Angeles abrasion test (ASTM Test Method C 131), of no greater than 40 when exposed to a maximum of 500 revolutions.

All aggregate base material should be placed in lifts not greater than eight (8) inches and compacted to a minimum of 95 percent of maximum dry density below Portland cement concrete and one hundred percent of maximum dry density below asphaltic concrete pavements as determined by ASTM Test Method D 698 or as specified by

local specification. The moisture content during compaction should be maintained within two percent of optimum moisture content.

5.1.4. Engineered Fill

Engineered fill may consist of native soils and/or imported soils. Pea gravel and poorly-graded materials should not be used as engineered fill unless approved by the geotechnical engineer. All engineered fills should be compacted as noted in section 5.

- 1. Native soils with low expansive potentials can be used as fill material for the following:
 - general site grading
 - foundation areas
 - Exterior concrete flatwork (See section 5.1.1 for moisture content requirements)

- 2. Imported soils with low expansive potentials could be used as fill material for the following:
 - general site grading
 - foundation areas
 - Exterior concrete flatwork

- 3. Imported soils (if required) should conform to the following:

<u>Gradation</u>	<u>Percent finer by weight (ASTM C136)</u>
3".....	100
No. 4 Sieve.....	50-100
No. 200 Sieve.....	50 (max)
Liquid Limit.....	30 (max)



Plasticity Index.....15 (max)

Swell Test

Maximum Swell Potential1.5 %*

*Measured on a sample compacted to approximately 95 percent of the ASTM D 698 maximum dry density at about 3 percent below optimum water content.

The sample is confined under a 144 psf surcharge and submerged.

<u>Corrosion Potential</u>	<u>(PPM)</u>
Sulfate Content (ARIZ 733).....	1,000(max)
Chloride Content (ARIZ 736).....	500(max)

4. Aggregate base should conform to MAG and/or local governing specifications.
5. The following are intended to guide in establishing adequate support for the conventional foundation elements:
 - Any natural washes, depressions or new excavations which are to be filled, should be widened as necessary to accommodate compaction equipment and provide a level base for placing fill.
 - Any engineered fill (backfill) materials placed beneath the foundations should meet the requirements for Engineered Fill Materials.
 - All footing excavations should be relatively level and free of loose or disturbed material and inspected by a qualified representative of the Geotechnical Engineer.
6. All fill soils to be used beneath the foundations foundation slabs should be approved by the Geotechnical Engineer. Fill should be placed in eight (8) inch loose lifts, moisture conditioned to within 2 percent of optimum moisture content and compacted to a minimum of 95 percent of maximum dry density. Fill materials placed at depth greater than five (5) feet should be compacted to 100

percent of maximum dry density to finished grade elevation. Optimum moisture content and maximum dry density should be determined by ASTM Test Method D 698.

5.2. Excavation

The field sampling and exploration was performed using a truck-mounted drill rig with 7 and ¾-inch outside diameter hollow stem augers. We present the following general comments regarding ease of excavation with the understanding that they are opinions based on the test borings. The project consultant and contractor should become familiar with this report including boring logs to evaluate potential hard dig conditions. Please note that excavation characteristics are best evaluated by performing test excavations with the size and type of equipment the contractor plans on using at the site, which was not conducted as part of this study.

It is anticipated that shallow excavations in the site soils can most likely be accomplished by conventional earth moving equipment in good operating condition. Cohesionless soils were encountered during our field study. Cohesionless soils are prone to sloughing and caving and should be considered during excavation operations. Please refer to Section 4 and the boring logs presented in Appendix C of this report for more information.

5.2.1. Trench Backfill

Trench backfill, pipe bedding material, and compaction shall be as per the 2025 MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION and MAG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SECTION 601.

5.2.2. Temporary Excavations

General

All excavations must comply with applicable local, state, and federal safety regulations including the current Occupational Safety and Health Administration (OSHA) Excavation and Trench Safety Standards. Generally, Construction site safety is solely the responsibility of the Contractor, who shall also be responsible for the means, methods, and sequencing of construction operations. We are providing the information below strictly as a service to our client. Under no circumstances should the information be interpreted that ATEK is assuming responsibility for **construction site safety or the Contractor's activities; such responsibility is not** being implied and should not be inferred.

Excavations and Slopes

The Contractor should be aware that slope height, slope inclination, or excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, and/or federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations). Such regulations are strictly enforced; and, if not followed, could result in substantial penalties to the Owner, Contractor, and/or earthwork subcontractor and/or utility subcontractors.

Near-surface soils encountered during our field study consisted predominantly mixtures of clay and sands. In our opinion, these soils would be considered a Type B soil when applying OSHA regulations. For this soils type OSHA recommends a maximum slope inclination of 1(h):1(v) or flatter for excavations 20 feet or less in depth. Steeper cut slopes may be utilized for excavations less than five (5) feet deep depending on the strength, moisture content, and homogeneity of the soils as observed in the field. Flatter slopes and/or trench shields may be required if loose, cohesionless soils and/or water are encountered along the slope face.

Construction Considerations

Heavy construction equipment, building materials, excavated soil, and vehicular traffic should not be allowed within one-third the slope height from the top of any excavation. Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning may be required to provide structural stability and to protect personnel working within the excavation. Shoring, bracing, or underpinning required for the project (if any) should be designed by a professional engineer registered in the State of Arizona.

During wet weather, earthen berms or other methods should be used to prevent runoff water from entering all excavations. All runoff water should be collected and disposed of outside the construction limits.

5.3. Structures

5.3.1. Pier Foundations (Drilled Cast-in-Place)

Pier foundations (Drilled Cast-in-Place) bearing on undisturbed native soils can be used to support the shade structure. The following values should be used in design.

Design Parameters	
Lateral Bearing Capacity	150 psf/ft, Maximum lateral resistance is limited to 2,250 psf.
Lateral Sliding Resistance	0.25

Foundation Depth Below Finish Grade (ft.)	Allowable Toe Bearing Capacity (psf)
5-10	4,000
11-15	4,500
15+	5,000

A one-third increase may be applied to the design bearing pressures when considering short duration loads, such as wind and seismic.

All the foundation excavations should be observed by the Geotechnical Engineer prior to placement of reinforcing steel and/or concrete. A minimum of 8 hours should be allowed between concrete placement in one pole foundation before drilling an adjacent shaft within 5 diameters, center-to-center. Loose soils at the bottom of the drilled holes should be removed to the extent possible. If subsurface conditions are encountered that are different than indicated by the test borings and/or water is encountered, revised recommendations may be required.

5.3.1.1. Steel and Concrete Placement

We recommend steel reinforcement and concrete be placed immediately upon completion of each shaft excavation. Concrete used for shaft construction should be discharged vertically into the drilled hole to minimize aggregate segregation. Under no circumstances should concrete be allowed to free-fall against either the steel reinforcement or the sides of the excavation during shaft construction.

For construction in a dry hole, concrete should be placed through a suitable tube or tremie, so that it is channeled in such a manner to free-fall and clear the walls of the excavation and reinforcing steel until it strikes the bottom. Adequate compaction will be achieved by free-fall of the concrete up to the top 10 feet. The top 10 feet of concrete should be vibrated in order to achieve proper compaction. Placement of concrete and concrete mix design details should be in accordance with Section 609 of the ADOT Standard Specifications.

5.3.1.2. Quality Assurance

Observation of the drilled shaft construction should be performed by a representative of the Geotechnical Engineer to verify proper diameter, depth and cleaning, and to also

verify the nature of the materials encountered in the shaft excavations. Concrete placement should be observed by the engineer's representative to ensure that it meets requirements. A quality control report should be submitted on each shaft, documenting compliance with design details and specifications.

5.3.1.3. Estimated Settlements

Settlement of pier foundations designed as recommended above are estimated not to exceed $\frac{3}{4}$ -inch. Significant moisture increases above those recommended for compaction could result in additional movements. In order to minimize the sensitivity of the structure to differential settlements, footings should be reinforced to allow for a degree of load redistribution should a localized zone of supporting soils become saturated.

5.4. Moisture Protection

Soil support values reduce with an increase of moisture content. Therefore, positive drainage is essential to the successful performance of any structure. Good surface and subsurface drainage should be established during and after construction to prevent the soils below or adjacent to the structural areas and utility trenches from becoming wet.

Infiltration of water into utility or foundation excavations must be prevented during construction. The drainage design must route all storm and sprinkler water away from the structural areas in a positive manner. All water should be diverted away from areas where it could penetrate the ground surface near the concrete flatwork. Watering of plants should be avoided adjacent to the concrete flatwork. Desert-type landscaping is advisable near the structural areas. Plants, which require more water, should be located and drained away from the structural areas.

5.5. Corrosion Potential

5.5.1. Electrical Resistivity

Electrical Resistivity of a soil is a measure of resistance to the flow of electrical current. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of electrical current (DC) from the metal into the soil. As a soil's resistivity decreases, its corrosivity increases.

A commonly accepted correlation between soil resistivity and corrosivity towards ferrous metals is shown in the following table.

<u>Resistivity (ohm-cm)</u>	<u>Corrosivity Classification</u>
0 to 1,000	Severely corrosive
1,000 to 2,000	Corrosive
2,000 to 10,000	Moderately corrosive
Over 10,000	Mildly corrosive

Sample Location	Depth (ft)	pH	Resistivity (Ohm-cm)
Bulk, Sample B-1	0.0 - 5.0	6.6	830
Bulk, Sample B-3	0.0 - 5.0	6.8	1,170
Bulk, Sample B-4	0.0 - 5.0	6.6	440
Bulk Sample B-6	0.0 - 5.0	6.9	170

Based on the laboratory tests as shown above, this soil would be considered “severely corrosive”. It should be noted that these corrosion conditions are for the soils at submerged moisture conditions. Resistivities at drier moisture contents would be less corrosive than the results of the test.

The pH values of the samples tested were slightly basic. In most cases, pH is not a significant factor in corrosion in the near-neutral pH range ($5 < \text{pH} < 9$).

Estimated life for various gage galvanized CMP, based on Figure 6.7 of the Handbook of Steel Drainage & Highway Construction Products published by American Iron and

Steel Institute Fourth Edition, 1993, is tabulated below. Details of the laboratory test results are presented in the Appendix C of this report.

Sample Location	Depth (ft)	Design Life (yrs)		
		16 Gage	14 Gage	12 Gage
Bulk, Sample B-1	0.0 - 5.0	42	54	75
Bulk, Sample B-3	0.0 - 5.0	36	47	66
Bulk, Sample B-4	0.0 - 5.0	16	14	12
Bulk Sample B-6	0.0 - 5.0	34	45	62

5.5.2. Sulfate and Chloride Content

Selected samples of the near-surface soils encountered at the site were subjected to chemical analysis for the purpose of corrosion assessment. The samples were tested for soluble sulfates, and soluble chlorides. The samples were tested in general accordance with Arizona Test Methods 733, and 736 for soluble sulfates, and soluble chlorides, respectively. The test results are provided in Appendix C.

Based on provisions of American Concrete Institute (ACI) 318 Section 4.3, Table 4.3.1, *Requirements for Concrete Exposed to Sulfate-Containing Solutions* a sulfate concentration below 0.10 percent by weight (1,000 ppm) is negligible. Based on the laboratory results, sulfate contents of the site soils tested indicate a negligible corrosion potential to concrete.

Based on the laboratory result of the sample collected for this project, chloride contents of the site soils tested indicate a negligible corrosion potential except at samples collected at B-6. The chloride content should be considered during steel reinforcing design.

6. CLOSURE

6.1. Limitations

Our professional services have been performed using that degree and skill ordinarily exercised, under similar circumstances, by reputable Geotechnical Engineers practicing in this or similar localities. No warranty is expressed or implied.

The recommendations contained in this report are based on our field exploration, laboratory test results, and our understanding of the proposed construction. The subsurface data used in the preparation of this report was obtained from the test borings excavated during the field subsurface exploration. It is anticipated that some variations in the soil conditions will exist on-site. The nature and extent of variations may not be evident until construction occurs. If any conditions are encountered at this site that are different from those described in this report, we should be immediately notified so that we may make any necessary revisions to the recommendations contained in this report. In addition, if the scope of the proposed construction changes from that described in this report, our firm should also be notified.

It is the Client's responsibility to see that all parties to the project including the designer, contractor, subcontractor, etc. are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the contractor's option and risk.

This report is for the exclusive purpose of providing Geotechnical Engineering and/or testing information and recommendations. The scope of services for this project does not include, either specifically or by implication, any environmental assessment of the site or identification of contaminated or hazardous materials or conditions. If the owner is concerned about the potential for such contamination, other studies should be undertaken. This report has also not addressed the site geology and the possible presence of geologic hazards.

This report may be used only by the Client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on and off-site), or other factors may change over time, and additional work may be required with the passage of time. Any party, other than the Client, who wishes to use this report, shall notify ATEK of such intended use. Based on the intended use of this report, ATEK may require that additional work be performed and that an updated report be issued.

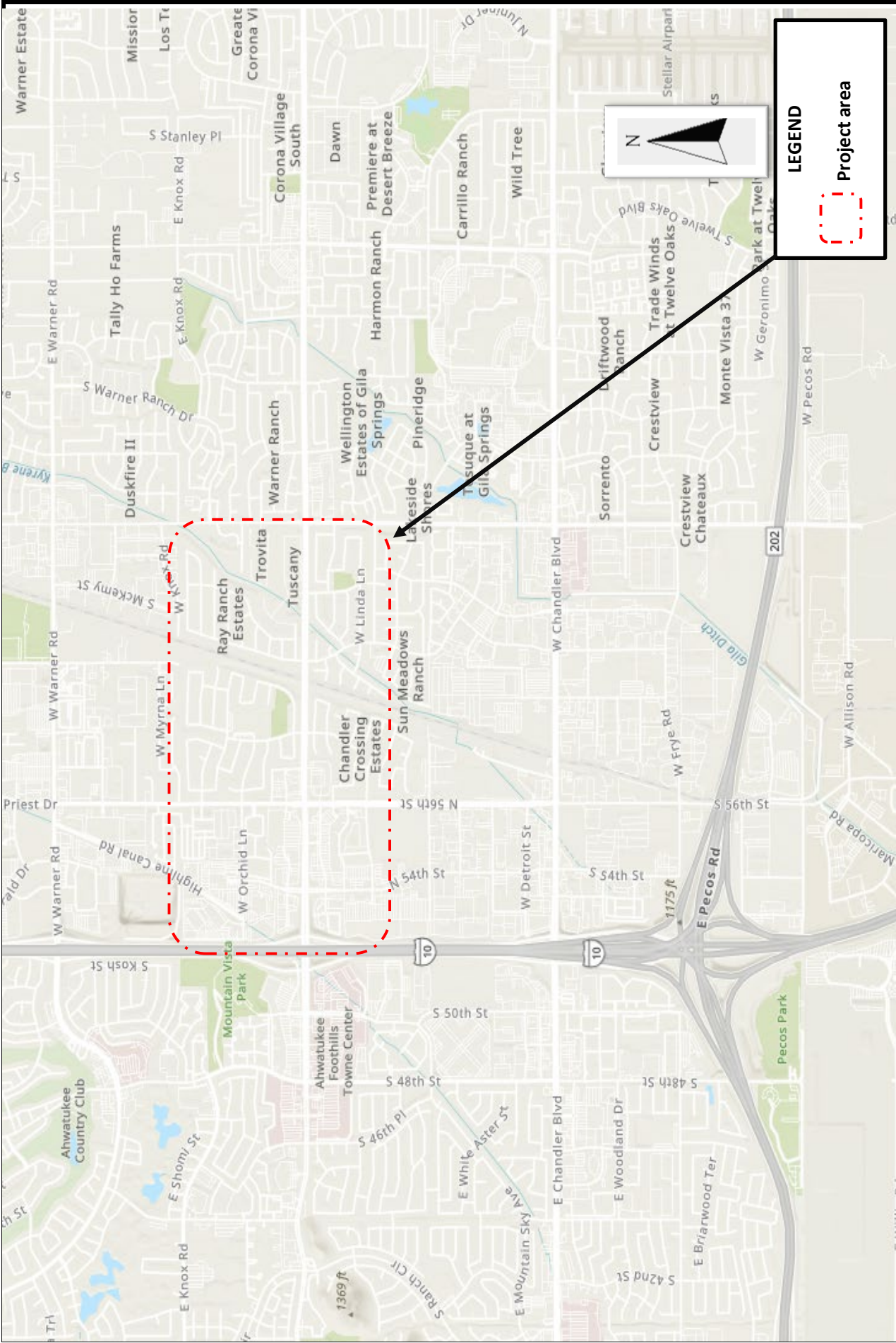
6.2. Recommended Additional Services

The recommendations provided in this report are based on the assumption that an adequate program of tests and observations will be performed during the construction. These tests and observations should be performed by the Geotechnical Engineer's representative and should include, but not limited to the following:

- Observe and document that any existing surficial vegetation and other deleterious materials have been removed from the site as required in site preparation section.
- Approve any material used as import to document that it meets the requirements outlined above before placement.
- Monitor the backfill procedures.
- Perform field density tests, as needed, to verify compaction compliance. The representative should monitor the progress of compaction and filling operations.
- Keep records of on-site activities and progress.

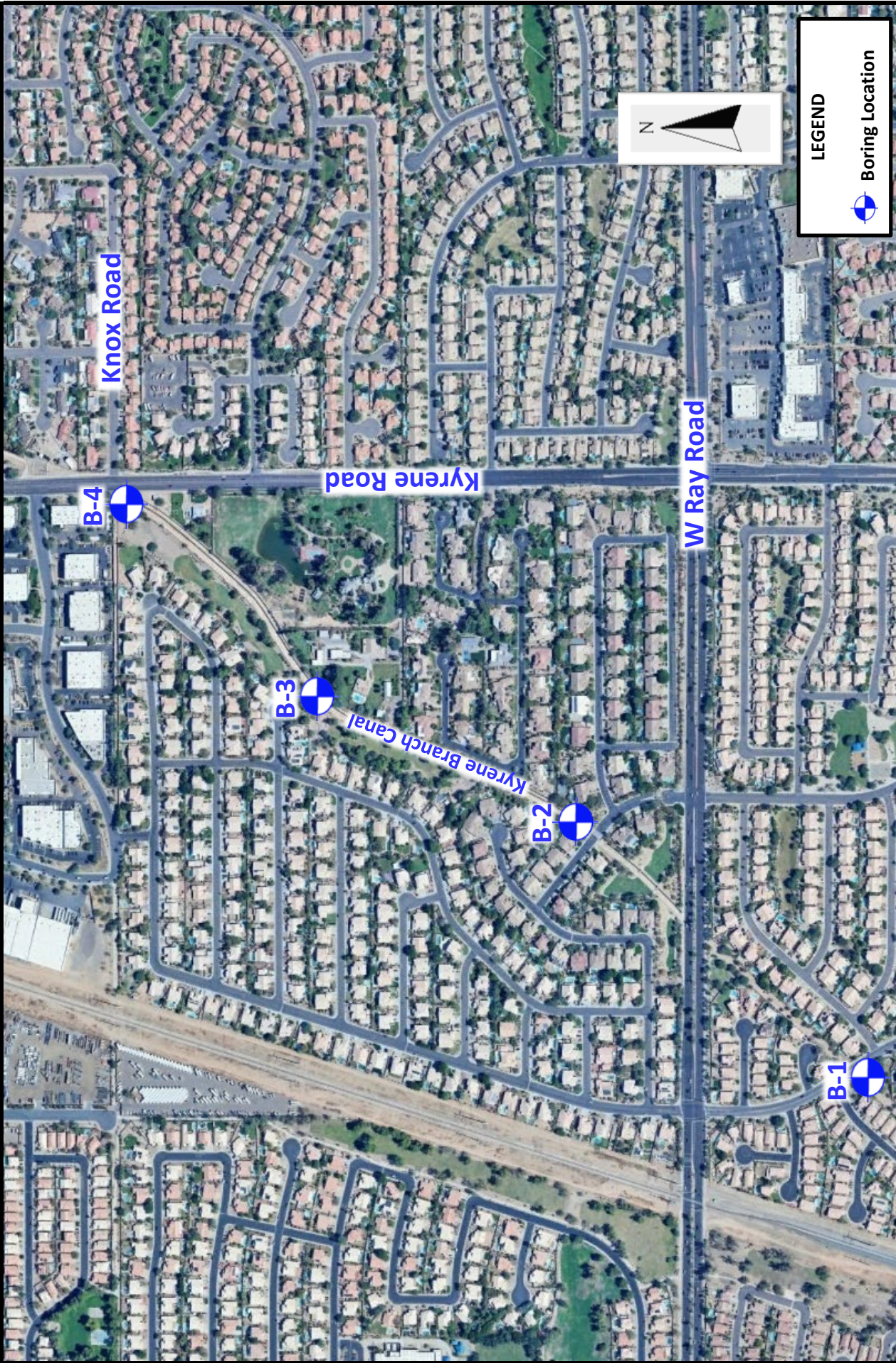
Observation of footing excavations should be performed prior to placement of reinforcing and concrete to confirm that satisfactory bearing materials are present. Construction testing, including field and laboratory evaluation of fill and backfill materials, concrete and steel should be performed to determine whether applicable project requirements have been met.

APPENDIX A
Site Location Map

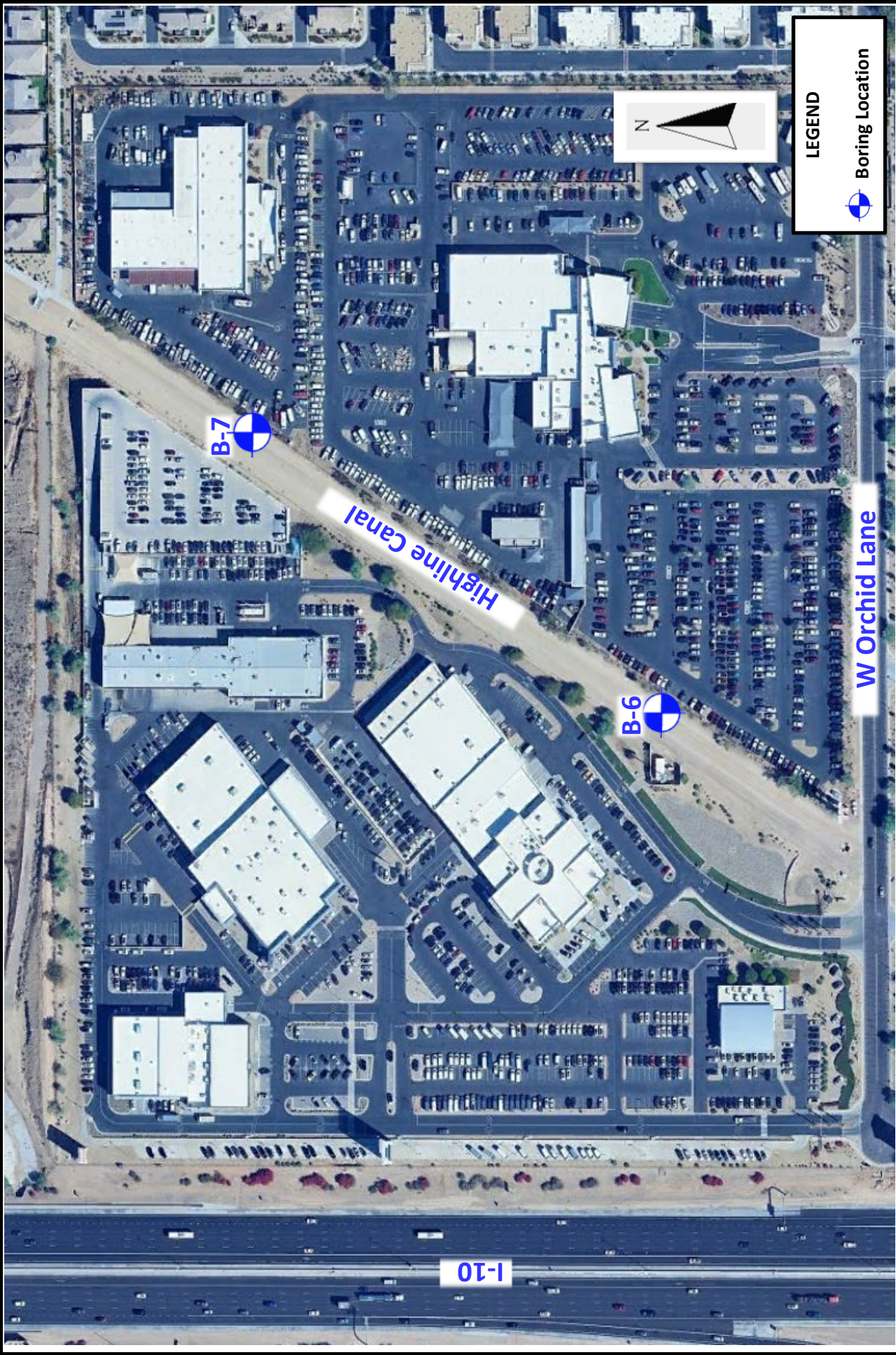


Project #:		230056	Site Location Map - Sheet 1 of 1	 111 South Weber Drive, Suite 1 Chandler, AZ 85226
Date:		2/26/2025		
Drawn by:		GLR		
Basemap provided by ArcGIS				
Kyrene Branch and Highline Canal SUP				
Chandler, Arizona				

APPENDIX B
Sample Location Plan



Basemap provided by Google Earth	Project #:		230056	Boring Location Plan - Sheet 1 of 2
	Date:		2/26/2025	
	Drawn by:		GLR	
Kyrene Branch and Highline Canal SUP				Chandler, Arizona
 111 South Weber Drive, Suite 1 Chandler, AZ 85226				



LEGEND

 Boring Location



ENGINEERING CONSULTANTS
111 South Weber Drive, Suite 1
Chandler, AZ 85226

Boring Location Plan - Sheet 2 of 2		
Project #:	230056	Kyrene Branch and Highline Canal SUP Chandler, Arizona
Date:	2/26/2025	
Drawn by:	GLR	

Basemap provided by Google Earth

APPENDIX C
FIELD STUDY AND BORING LOGS

APPENDIX C FIELD STUDY

BORINGS

The subsurface conditions at the site were explored on February 19, 2025, by drilling soil borings using a truck mounted CME drill rig with 7 and a ¼-inch outside diameter hollow stem auger. The locations of soil test borings performed for this study are shown in Appendix B of this report.

The locations of borings were located by visual sighting and pacing from existing site features and, therefore, should be considered approximate. Actual boring locations may vary from those indicated in Appendix B.

Our field engineer maintained a log of the excavations; visually classified soils encountered according to the Unified Soil Classification System (USCS) (see USCS Table); and obtained samples of the subsurface materials.

SAMPLING PROCEDURES

Soil samples obtained from the borings were packaged and sealed in the field to reduce moisture loss and disturbance, and returned to our laboratory for further testing. After borings were completed, they were backfilled with the excavated soils.

LIST OF ATTACHMENTS

The following plates are attached and complete this appendix.

Unified Soil Classification System - C1

Log Key - C2

Charts and Definitions - C3

Terminology Used to Describe Soils - C4

Logs of Soil Borings

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			USCS SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	GRAVELS (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVELS WITH LESS THAN 5% PASSING NO. 200 SIEVE	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH OVER 12% PASSING NO. 200 SIEVE	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH LESS THAN 5% PASSING NO. 200 SIEVE	SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH OVER 12% PASSING NO. 200 SIEVE	SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid limit less than 50)		ML	INORGANIC SILTS & VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid limit greater than 50)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY

Note: Fine grained soils that plot within the hatched area on the Plasticity Chart, and coarse grained soils with between 5% and 12% passing No. 200 sieve require dual USCS symbols. (See KEY A-3 if provided)



UNIFIED SOIL CLASSIFICATION SYSTEM

Kyrene Branch and Highline Canal SUP
Kimley-Horn
Chandler, Arizona

KEY

C-1

Drafted By: GLR

Project Number:

Date: March, 2025

230056

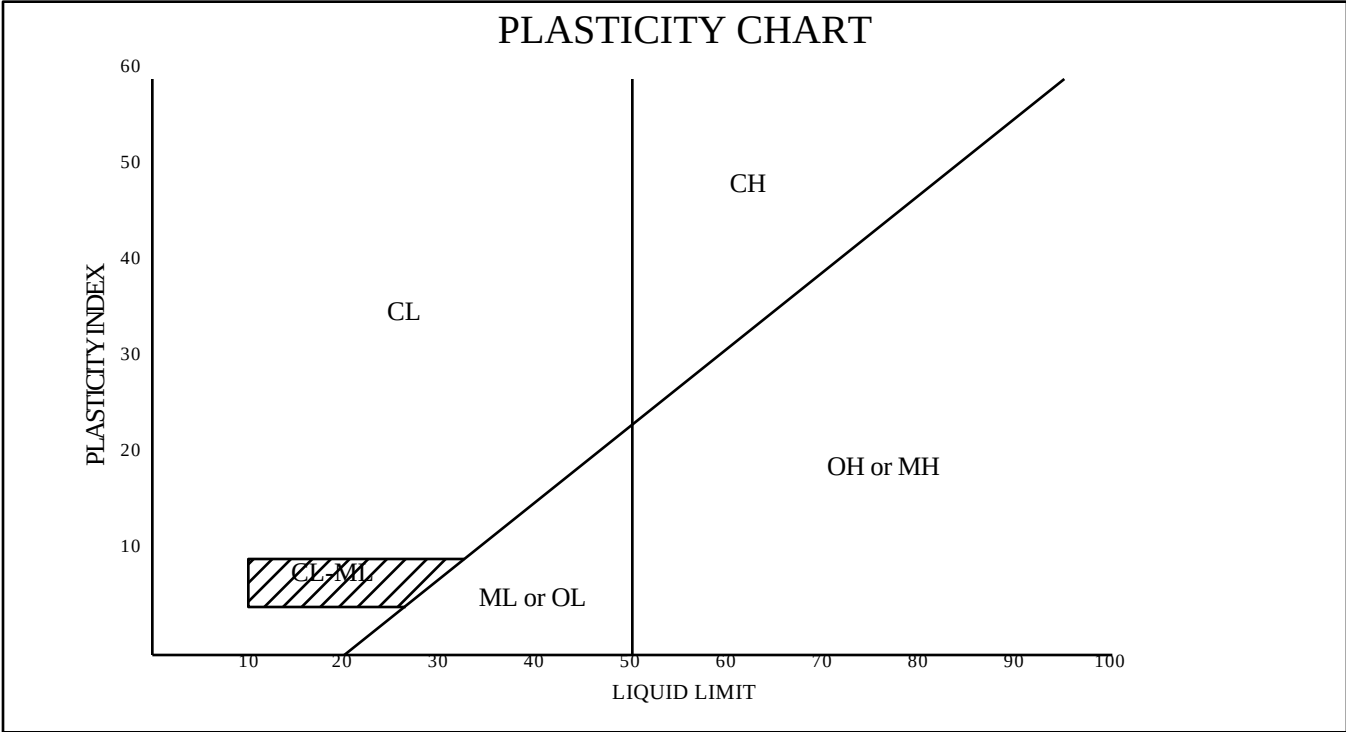
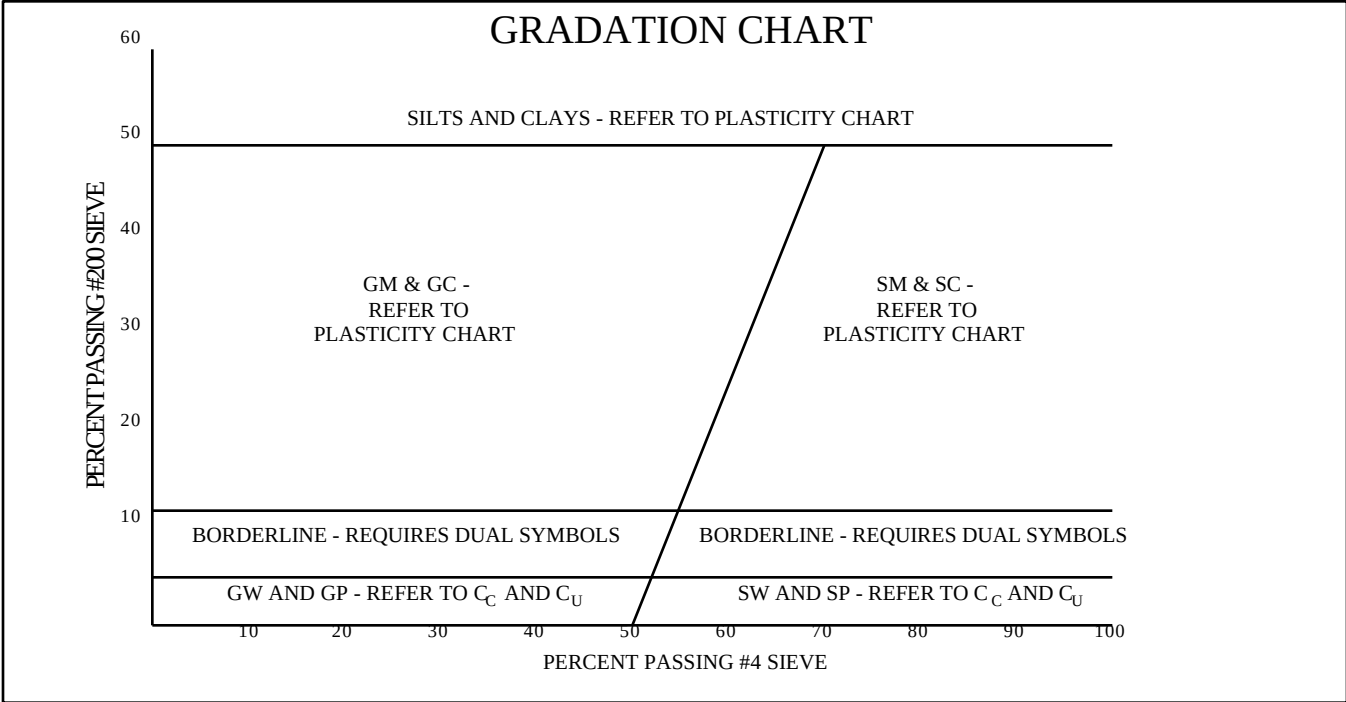
LOG SYMBOLS

	BULK / GRAB SAMPLE		NON-STANDARD PENETRATION SPLIT SPOON SAMPLER (1.5-inch O.D. X 0.9-inch I.D.)
	MODIFIED CALIFORNIA SAMPLER (2 inch inside diameter)		BDBGM SIZE CORE BARREL (1.65-inch I.D.)
	GRAB SAMPLE		BW44 SIZE CORE BARREL (1.75-inch I.D.)
	STANDARD PENETRATION SPLIT SPOON SAMPLER (2.0-inch O.D. X 1.4-inch I.D.)		HQ-3 SIZE CORE BARREL (2.4-inch I.D.)
	SHELBY TUBE (3 inch outside diameter)		
			WATER LEVEL (level after completion)
			WATER LEVEL (level where first encountered)

GENERAL NOTES

1. Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual.
2. No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.
3. Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.
4. In general, the Unified Soil Classification designations presented on the logs were based on visual classification in the field, modified where appropriate by visual classifications in the office, and/or laboratory gradation and index testing.
5. NA = Not Analyzed

		LOG KEY Kyrene Branch and Highline Canal SUP Kimley-Horn Chandler, Arizona	KEY
Drafted By: GLR	Project Number: 230056		C-2
Date: March, 2025			



DEFINITIONS OF SOIL FRACTIONS

SOIL FRACTION	PARTICLE SIZE RANGE
Boulders	Greater than 300mm (12in.)
Cobbles	300mm to 75mm (12in. to 3in.)
Coarse Gravel	75mm to 19mm (3in. to 3/4in.)
Fine Gravel	19mm (3/4in.) to No. 4 sieve
Coarse Sand	No. 4 sieve to No. 10 sieve
Medium Sand	No. 10 sieve to No. 40 sieve
Fine Sand	No. 40 sieve to No. 200 sieve
Fines	less than No. 200 sieve



CHARTS & DEFINITIONS

Kyrene Branch and Highline Canal SUP
Kimley-Horn
Chandler, Arizona

KEY

C-3

Drafted By: GLR

Project Number:

Date: March, 2025

230056

TERMINOLOGY USED ON THE BORING LOGS TO DESCRIBE THE FIRMNESS, DENSITY, OR CONSISTENCY OF SOILS

The standard penetration resistance (N) in blows per foot is obtained by the ASTM D1586 procedure using 2" O.D., 1 3/8" I.D. samplers.

1. Terms for description of partially saturated and/or cemented soils including clays, cemented granular materials, silts and silty and clayey granular soils.

N	Relative Firmness
0 - 4	Very soft
5 - 8	soft
9 - 15	Moderately firm
16 - 30	Firm
31 - 50	Very firm
51+	Hard

2. Terms for description of cohesionless, uncemented sands and sand-gravel mixtures.

N	Relative Density
0 - 4	Very loose
5 - 10	Loose
11 - 30	Medium dense
31 - 50	Dense
51+	Very dense

3. Terms for description of clays which are saturated or near saturation.

N	Relative Consistency
0 - 2	Very soft
3 - 4	soft
5 - 8	Moderately stiff
9 - 15	Stiff
16 - 30	Very Stiff
31+	Hard



TERMINOLOGY USED TO DESCRIBE SOILS

Kyrene Branch and Highline Canal SUP
Kimley-Horn
Chandler, Arizona

KEY

C-4

Drafted By: GLR

Project Number:

Date: March, 2025

230056

Project Name: Kyrene Branch and Highline Canal SUP		Client: Kimley-Horn	
Borehole Location: See Location Plan		Sheet 1 of 1	
Borehole Number: B-1		Driller: RC'S Drilling	Logger: German Lopez Romo
Drilling Equipment: D-50	Borehole Diameter (in.): 7.25 HSA	Date Started: 2/19/2025	Date Finished: 2/19/2025

Elevation (ft)										Notes:			
DEPTH (ft)	DRILL OPERATION	SAMPLE	STANDARD PENETRATION TEST	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	PI	USCS CLASSIFICATION	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
			SPT										
				7.3		29	12	49	SC		CLAYEY SAND (SC), 4% fine graded gravel, 47% fine to coarse sand, 49% fines, firm, low plasticity, brown, slightly moist, weakly cemented, moderate reaction to HCl		
5			15-11	8.4	85.7								
			15-21	9.8	90.7						Very firm, light brown, no cementation		
10			13-10-18								Firm, weakly cemented		
15			8-10-12								Strong reaction to HCl		
20			23-50/3"						CL		SANDY LEAN CLAY (CL), hard, low plasticity, brown, slightly moist, weakly cemented, weak reaction to HCl	20	
25			50/3"								Light brown		
30			20-50/4"								Medium plasticity	30	
												30.8	

Bottom of auger @ 30.0 feet bgs.
Bottom of sampler @ 30.8 feet bgs.
No groundwater encountered.

Sampler Types:		Operation Types:		WATER LEVEL OBSERVATIONS			
☒ Split Spoon	☐ Penetrometer	☒ Hand Auger	☐ Auger Hollow Stem	While Drilling	N/A	ft	Upon Completion of Drilling
☒ Shelby	☐ Vane Shear	☒ ODEX	☐ Bullnose	Time After Drilling	N/A		N/A
☒ Bulk Sample	☒ California		☐ Core Barrel	Depth To Water (ft)	N/A		N/A
☒ Grab Sample			☐ Excavated Pit	Remarks:	Not Encountered		

230056 FINAL LOGS.GPJ 3-6-25 G Lopez ATEK BORING (W/REMARKS-SH#-SAME FIG#)

Project Name: Kyrene Branch and Highline Canal SUP		Client: Kimley-Horn	
Borehole Location: See Location Plan		Sheet 1 of 1	
Borehole Number: B-2		Driller: RC'S Drilling	Logger: German Lopez Romo
Drilling Equipment: D-50	Borehole Diameter (in.): 7.25 HSA	Date Started: 2/19/2025	Date Finished: 2/19/2025

Elevation (ft)										Notes: Swell Potential of Soil = 3.1%		
DEPTH (ft)	DRILL OPERATION	SAMPLE	STANDARD PENETRATION TEST	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
5			6-10	10.0	89.4	NV	13	55	CL	SANDY LEAN CLAY (CL), 3% fine graded gravel, 42% fine to coarse sand, 55% fines, firm, low plasticity, brown, slightly moist, no cementation, moderate reaction to HCl		
			12-16	9.6	93.1							
10			13-20-26						SC	CLAYEY SAND (SC), very firm, low plasticity, light brown, slightly moist, weakly cemented, strong reaction to HCl	10	
			21-35-30									
15										Hard		
20			11-11-50/5"						ML	SANDY SILT (ML), very dense, nonplastic, brown, slightly moist, no cementation, weak reaction to HCl	20	
			30-35-50/4"									
25												
30			17-42-49						CL	SANDY LEAN CLAY (CL), hard, low plasticity, light brown, slightly moist, weakly cemented, strong reaction to HCl	30	

Bottom of auger @ 30.0 feet bgs.
Bottom of sampler @ 31.5 feet bgs.
No groundwater encountered.

Sampler Types:		Operation Types:		WATER LEVEL OBSERVATIONS			
☒ Split Spoon	☐ Penetrometer	☒ Hand Auger	☐ Auger Hollow Stem	While Drilling	N/A	ft	Upon Completion of Drilling
☒ Shelby	☐ Vane Shear	☒ ODEX	☐ Bullnose	Time After Drilling	N/A		N/A
☒ Bulk Sample	☒ California		☐ Core Barrel	Depth To Water (ft)	N/A		N/A
☐ Grab Sample			☐ Excavated Pit	Remarks:	Not Encountered		

230056 FINAL LOGS.GPJ 3-6-25 G Lopez ATEK BORING (W/REMARKS-SH#-SAME FIG#)

Project Name: Kyrene Branch and Highline Canal SUP		Client: Kimley-Horn	
Borehole Location: See Location Plan		Sheet 1 of 1	
Borehole Number: B-3		Driller: RC'S Drilling	Logger: German Lopez Romo
Drilling Equipment: D-50	Borehole Diameter (in.): 7.25 HSA	Date Started: 2/19/2025	Date Finished: 2/19/2025

Elevation (ft)										Notes:		
DEPTH (ft)	DRILL OPERATION	SAMPLE	STANDARD PENETRATION TEST	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
			SPT			LL	PI	-200 (%)				
5			7-3	8.7		26	9	46	SC	CLAYEY SAND (SC), 1% fine graded gravel, 53% fine to coarse sand, 46% fines, moderately firm, low plasticity, brown, slightly moist, no cementation, moderate reaction to HCl	5	
10			10-15-14						SC	CLAYEY SAND WITH GRAVEL (SC), firm, low plasticity, light brown, slightly moist, weakly cemented, strong reaction to HCl	10	
15			5-12	10.2	87.2				SC	CLAYEY SAND (SC), firm, low plasticity, brown, slightly moist, no cementation, moderate reaction to HCl	15	
20			10-20-10						CL	SANDY LEAN CLAY (CL), firm, low plasticity, light brown, slightly moist, no cementation, strong reaction to HCl	20	
25			50/5"						SM	SILTY SAND (SM), very dense, nonplastic, brown, slightly moist, moderately cemented, no reaction to HCl	25	
30			18-19-18						ML	SANDY SILT (ML), dense, nonplastic, brown, slightly moist, no cementation, weak reaction to HCl	30	
31.5			11-13-14						SC	CLAYEY SAND WITH GRAVEL (SC), firm, low plasticity, light brown, slightly moist, no cementation, strong reaction to HCl	31.5	

Bottom of auger @ 30.0 feet bgs.
Bottom of sampler @ 31.5 feet bgs.
No groundwater encountered.

Sampler Types:		Operation Types:		WATER LEVEL OBSERVATIONS			
☒ Split Spoon	☐ Penetrometer	☒ Hand Auger	☐ Auger Hollow Stem	While Drilling	∇	N/A	ft
☒ Shelby	☐ Vane Shear	☒ ODEX	☐ Bullnose	Upon Completion of Drilling	∇	N/A	ft
☒ Bulk Sample	☒ California		☐ Core Barrel	Time After Drilling		N/A	N/A
☒ Grab Sample			☐ Excavated Pit	Depth To Water (ft)		N/A	N/A
				Remarks: Not Encountered			

230056 FINAL LOGS.GPJ 3-6-25 G. Lopez ATEK BORING (W/REMARKS-SH#-SAME FIG#)

Project Name: Kyrene Branch and Highline Canal SUP		Client: Kimley-Horn	
Borehole Location: See Location Plan			Sheet <u>1</u> of <u>1</u>
Borehole Number: B-4		Driller: RC'S Drilling	Logger: German Lopez Romo
Drilling Equipment: D-50	Borehole Diameter (in.): 7.25 HSA	Date Started: 2/19/2025	Date Finished: 2/19/2025

[illegible]

Bottom of auger @ 30.0 feet bgs.
Bottom of sampler @ 31.5 feet bgs.
No groundwater encountered.

Sampler Types:		Split Spoon		Penetrometer	Operation Types:		Auger Hollow Stem	WATER LEVEL OBSERVATIONS										
		Shelby		Vane Shear			Hand Auger		Bullnose	While Drilling	∇	N/A	ft	Upon Completion of Drilling	∇	N/A	ft	
		Bulk Sample		California			ODEX		Core Barrel	Time After Drilling		N/A		N/A		N/A		N/A
		Grab Sample							Excavated Pit	Depth To Water (ft)		N/A		N/A		N/A		N/A
									Remarks: Not Encountered									

Project Name: Kyrene Branch and Highline Canal SUP		Client: Kimley-Horn	
Borehole Location: See Location Plan		Sheet 1 of 1	
Borehole Number: B-6		Driller: RC'S Drilling	Logger: German Lopez Romo
Drilling Equipment: D-50	Borehole Diameter (in.): 7.25 HSA	Date Started: 2/19/2025	Date Finished: 2/19/2025

Elevation (ft)											Notes: Swell Potential of Soil = 2.0%		
DEPTH (ft)	DRILL OPERATION	SAMPLE	STANDARD PENETRATION TEST	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	-200 (%)	USCS CLASSIFICATION	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
			SPT			LL	PI						
				3.0		22	7	47	SC-SM		SILTY, CLAYEY SAND (SC-SM), 1% fine graded gravel, 52% fine to coarse grained sand, 47% fines, moderately firm, low plasticity, light brown, slightly moist, no cementation, weak reaction to HCl		Swell Potential of Soil = 2.0%
5			6-8	4.7	111.7								
			5-6-8										
10			11-6-6										
15			8-8-8										
20			10-12	14.0	93.3						Low plasticity, brown, moderate reaction to HCl		
25			7-8-9						CL				
30			6-7-9										
											LEAN CLAY WITH SAND (CL), firm, medium plasticity, dark brown, slightly moist, no cementation, moderate reaction to HCl	25	
												31.5	

Bottom of auger @ 30.0 feet bgs.
Bottom of sampler @ 31.5 feet bgs.
No groundwater encountered.

Sampler Types:		Operation Types:		WATER LEVEL OBSERVATIONS			
☒ Split Spoon	☐ Penetrometer	☒ Hand Auger	☐ Auger Hollow Stem	While Drilling	☒ N/A	ft	Upon Completion of Drilling
☒ Shelby	☐ Vane Shear	☒ ODEX	☐ Bullnose	Time After Drilling	N/A		N/A
☒ Bulk Sample	☒ California		☐ Core Barrel	Depth To Water (ft)	N/A		N/A
☒ Grab Sample			☐ Excavated Pit	Remarks:	Not Encountered		

230056 FINAL LOGS.GPJ 3-6-25 G. Lopez ATEK BORING (W/REMARKS-SH#-SAME FIG#)

Project Name: Kyrene Branch and Highline Canal SUP		Client: Kimley-Horn	
Borehole Location: See Location Plan		Sheet 1 of 1	
Borehole Number: B-7		Driller: RC'S Drilling	Logger: German Lopez Romo
Drilling Equipment: D-50	Borehole Diameter (in.): 7.25 HSA	Date Started: 2/19/2025	Date Finished: 2/19/2025

Elevation (ft)										Notes:					
DEPTH (ft)	DRILL OPERATION	SAMPLE	STANDARD PENETRATION TEST	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION	GRAPHIC LOG						
			SPT			LL	PI			-200 (%)					
										MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS			
									SC				CLAYEY SAND (SC), firm, low plasticity, light brown, slightly moist, no cementation, weak reaction to HCl		
5		X	4-10-10	4.0		27	11	55					45% fine to medium grained sand, 55% fines		
		X	16-14-10										Low to medium plasticity		
10		X	12-16-21										Very firm, low plasticity, brown, moderately cemented, strong reaction to HCl		
15		X	7-10-10										Firm, low to medium plasticity, light brown, weakly cemented		
20		⬛	16-18	7.8	97.8								Very firm, low plasticity, moderate reaction to HCl		
25		X	14-27-33										Hard, brown		
30		X	12-15-18										Very firm, light brown	31.5	

Bottom of auger @ 30.0 feet bgs.
Bottom of sampler @ 31.5 feet bgs.
No groundwater encountered.

Sampler Types:		Operation Types:		WATER LEVEL OBSERVATIONS			
☒ Split Spoon	☐ Penetrometer	☒ Auger Hollow Stem		While Drilling	▽	N/A	ft
☒ Shelby	☐ Vane Shear	☒ Hand Auger		Upon Completion of Drilling	▽	N/A	ft
☒ Bulk Sample	☒ California	☒ ODEX		Time After Drilling		N/A	N/A
☒ Grab Sample		☒ Core Barrel		Depth To Water (ft)		N/A	N/A
		☒ Excavated Pit		Remarks:	Not Encountered		

230056 FINAL LOGS.GPJ 3-6-25 G Lopez ATEK BORING (W/REMARKS-SH#-SAME FIG#)

APPENDIX D
Laboratory Test

APPENDIX D LABORATORY TESTING

LABORATORY TESTS

Laboratory tests were performed on selected samples to aid in soil classification and to evaluate physical properties of the soils, which may affect the Geotechnical aspects of project design and construction. A description of the laboratory testing program is presented below.

Sieve Analysis

Sieve analyses were performed to evaluate the gradation characteristics of the material and to aid in soil classification. Tests were performed in general accordance with ASTM Test Method C 136 and D 2487.

Atterberg Limits

Atterberg Limits tests were performed to aid in soil classification and to evaluate the plasticity characteristics of the material. Tests were performed in general accordance with ASTM Test Method D 4318.

Moisture Content

Moisture content tests were performed to evaluate moisture-conditioning requirements during site preparation and earthwork grading. Moisture content was evaluated in general accordance with ASTM Test Method D 2216.

One-Dimensional Consolidation

A one-dimensional consolidation test was performed on a ring samples to evaluate consolidation potential of the site soil. Test procedure was in general accordance with ASTM Test Method D 2435.

Undisturbed Ring Density

Undisturbed ring density tests were performed on ring samples to evaluate the in-situ density and moisture content of the site soils. Test procedures were in general accordance with ASTM Test Method D 2937.

Swell Test

Swell test was performed on bulk soil samples to evaluate the expansion potential of the site soils. Test procedures were in general accordance with ASTM Test Method D 4829.

Standard Proctor

Standard Proctor tests were performed on bulk soil samples to evaluate the maximum dry density and optimum moisture of the site soils. Test procedures were in general accordance with ASTM Test Method D 698A.

pH and Resistivity

pH and resistivity tests were performed on the bulk soil sample to evaluate the site soil corrosion potential. Test procedure was in general accordance with Arizona Test Method 236.

Sulfate Content

Sulfate content tests were performed to evaluate the corrosion potential of the on-site soils. Tests were performed in general accordance with ARIZ 733.

Chloride Content

Chloride content tests were performed to evaluate the corrosion potential of the on-site soils. Tests were performed in general accordance with ARIZ 736.



PROJECT: Kyrene Branch and Highline Canal SUP
LOCATION: Chandler, Arizona
SAMPLE DATE: 2/19/2025

PROJECT: 230056
WORK ORDER: 2500041
REVIEWED BY: GLR

MOISTURE CONTENT OF SOIL -- ASTM D 2216

LAB #	SAMPLE SOURCE	MOISTURE		
		WET WEIGHT (g)	DRY WEIGHT (g)	MOISTURE CONTENT
1	Bulk, B-1 @ 0.0'-5.0'	505.5	470.9	7.3%
9	Bulk, B-2 @ 0.0'-5.0'	509.2	467.4	8.9%
17	Bulk, B-3 @ 0.0'-5.0'	511.0	470.1	8.7%
25	Bulk, B-4 @ 0.0'-5.0'	516.7	484.2	6.7%



PROJECT: Kyrene Branch and Highline Canal SUP
LOCATION: Chandler, AZ
SAMPLE DATE: 2/12/2025

PROJECT: 230056
WORK ORDER: 2500038
REVIEWED BY: A Lopez

MOISTURE CONTENT OF SOIL -- ASTM D 2216

LAB #	SAMPLE SOURCE	MOISTURE		
		WET WEIGHT (g)	DRY WEIGHT (g)	MOISTURE CONTENT
1	Bulk, B-6 @ 0.0'-5.0'	508.1	493.2	3.0%
6	SPT, B-7 @ 2.5'-4.0'	605.6	582.4	4.0%



PROJECT: Kyrene Branch and Highlin Canal SUP
LOCATION: Chandler, Arizona
SAMPLE DATE: 2/19/2025

PROJECT: 230056
WORK ORDER: 2500041
REVIEWED BY: GLR

DENSITY OF SOIL IN PLACE BY THE DRIVE-CYLINDER METHOD -- ASTM D 2937

LAB #	SAMPLE SOURCE	MOISTURE			# OF RINGS	WET WEIGHT + RINGS (g)	WEIGHT OF RINGS (g)	DRY DENSITY (pcf)
		WET WEIGHT (g)	DRY WEIGHT (g)	MOISTURE CONTENT				
2	Ring, B-1 @ 2.5'-3.5'	673.3	621.1	8.4%	6	939.0	265.7	85.7
3	Ring, B-1 @ 5.0'-6.0'	721.6	657.4	9.8%	6	985.3	263.7	90.7
10	Ring, B-2 @ 2.5'-3.5'	712.4	647.8	10.0%	6	981.2	268.8	89.4
11	Ring, B-2 @ 5.0'-6.0'	739.5	674.5	9.6%	6	1006.4	266.9	93.1
20	Ring, B-3 @ 10.0'-11.0'	695.9	631.6	10.2%	6	967.0	271.1	87.2
26	Ring, B-4 @ 2.5'-3.5'	824.1	763.3	8.0%	6	1093.7	269.6	105.3
27	Ring, B-4 @ 5.0'-6.0'	754.5	633.4	19.1%	6	1024.9	270.4	87.4
33	Ring, B-6 @ 20.0'-21.0'	770.5	675.8	14.0%	6	1029.7	259.2	93.3
36	Ring, B-7 @ 20.0'-21.0'	764.3	708.9	7.8%	6	1029.1	264.8	97.8



PROJECT: Kyrene Branch and Highline Canal SUP
LOCATION: Chandler, Arizona
SAMPLE DATE: 2/12/2025

PROJECT: 230056
WORK ORDER: 2300038
REVIEWED BY: A Lopez

DENSITY OF SOIL IN PLACE BY THE DRIVE-CYLINDER METHOD -- ASTM D 2937

LAB #	SAMPLE SOURCE	MOISTURE			# OF RINGS	WET WEIGHT + RINGS (g)	WEIGHT OF RINGS (g)	DRY DENSITY (pcf)
		WET WEIGHT (g)	DRY WEIGHT (g)	MOISTURE CONTENT				
2	Ring, B-6 @ 2.5'-3.5'	564.6	539.4	4.7%	4	740.1	175.5	111.7



PROJECT: Kyrene Branch and Highline SUP
LOCATION: Chandler, Arizona
DATE SAMPLED: 2/19/2025

PROJECT NO: 230056
WORK ORDER NO: 2500041
REVIEWED BY: GLR

**MATERIALS FINER THAN NO. 200 (ASTM C-117)
SIEVE IN MINERAL AGGREGATES BY WASHING, PROCEDURE A**

Lab No.	Location & Depth	% Finer Than 200
1	Bulk, B-1 @ 0.0'-5.0'	49
17	Bulk, B-3 @ 0.0'-5.0'	46
25	Bulk, B-4 @ 0.0'-5.0'	55



PROJECT: Kyrene Branch and Highline Canal SUP
LOCATION: Chandler, Arizona
DATE SAMPLED: 2/19/2025

PROJECT NO: 230056
WORK ORDER NO: 2500041
REVIEWED BY: GLR

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS
(ASTM D-4318, DRY PREP)

Lab #	Location & Depth	LL	PL	PI
1	Bulk, B-1 @ 0.0'-5.0'	29	17	12
17	Bulk, B-3 @ 0.0'-5.0'	26	17	9
25	Bulk, B-4 @ 0.0'-5.0'	26	17	9



PROJECT: Kyrene Branch and Highline SUP
LOCATION: Chandler, Arizona
DATE SAMPLED: 2/12/2025

PROJECT NO: 230056
WORK ORDER NO: 2500038
REVIEWED BY: A Lopez

MECHANICAL SIEVE ANALYSIS
GROUP SYMBOL, USCS (ASTM D-2487)

SIEVE SIZES

Location & Depth	USCS	LL	PL	PI	COBBLES					GRAVEL					SAND					Silt or Clay		Lab #
					6"	4"	3"	2"	Coarse			Fine		Coarse	Medium			Fine		Clay		
									1 1/2"	1 1/4"	1"	3/4"	1/2"		3/8"	1/4"	#4	#8	#10		#16	

PERCENT PASSING BY WEIGHT

This is a summarized report of the referenced procedures and does not include all reporting requirements. Additional data can be provided at client's request.



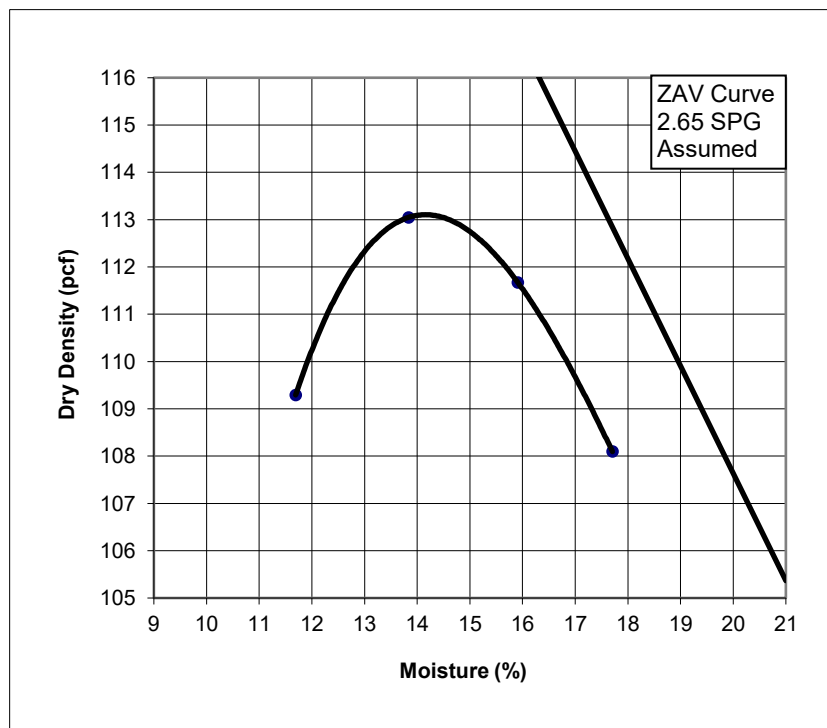
PROJECT: Kyrene Branch and Highline Canal SUP
LOCATION: Chandler, Arizona
MATERIAL: Native
SAMPLE SOURCE: Bulk, B-2 @ 0.0'-5.0'

PROJECT NO: 230056
WORK ORDER NO: 2500041
LAB NO: 9
SAMPLE DATE: 2/19/2025

**LABORATORY COMPACTION CHARACTERISTICS OF SOILS USING
 STANDARD EFFORT (12,400ft-lb-ft/cu.ft) (ASTM D698A)
 SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES (ASTM C136/C117)
 LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ASTM D4318) (DRY PREP)**

Maximum dry density:
 Optimum moisture (%):

English (pcf)	Metric (kg / cu.m.)
113.1	1812
14.2	14.2



SIEVE SIZE	PERCENT PASSING
6 in / 152mm	100
4 in / 100mm	100
3 in / 75mm	100
2 in / 50mm	100
1 1/2 in / 37.5mm	100
1 1/4 in / 32 mm	100
1 in / 25 mm	100
3/4 in / 19 mm	100
1/2 in / 12.5 mm	99
3/8 in / 9.5 mm	99
1/4 in / 6.4 mm	98
#4, 4.75mm	97
#8, 2.36mm	95
#10, 2.00mm	94
#16, 1.18mm	89
#30, 0.60mm	82
#40, .425mm	78
#50, .300mm	75
#100, .150mm	66
#200, .075mm	55

LL: 34
 PL: 21
 PI: 13

USCS: CL
 AASHTO: A-6(5)

NOTES:

AASHTO Description: Clayey soils

- The zero air void curve represents a specific gravity of: 2.65 assumed, (also used in the 'Rock Correction Calculation)
- This is a summarized report of the referenced procedures and does not include all reporting requirements. Additional data can be provided at clients request.

Reviewed by: A Lopez



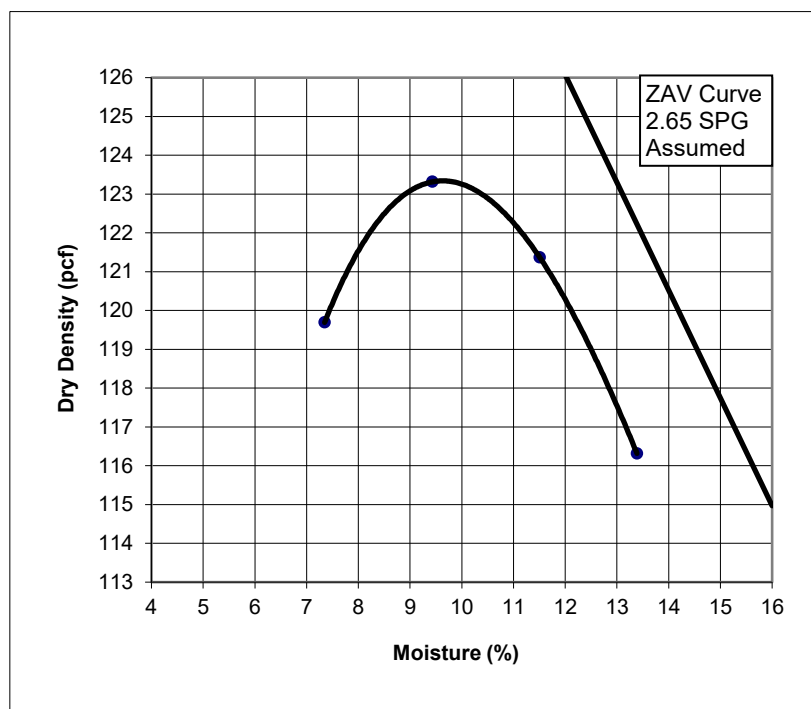
PROJECT: Kyrene Branch and Highline Canal SUP
LOCATION: Chandler, Arizona
MATERIAL: Native
SAMPLE SOURCE: Bulk, B-6 @ 0.0'-5.0'

PROJECT NO: 230056
WORK ORDER NO: 2500038
LAB NO: 1
SAMPLE DATE: 2/12/2025

**LABORATORY COMPACTION CHARACTERISTICS OF SOILS USING
 STANDARD EFFORT (12,400ft-lb-ft/cu.ft) (ASTM D698A)
 SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES (ASTM C136/C117)
 LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ASTM D4318) (DRY PREP)**

Maximum dry density:
 Optimum moisture (%):

English (pcf)	Metric (kg / cu.m.)
123.3	1976
9.6	9.6



**SIEVE
SIZE**

**PERCENT
PASSING**

6 in / 152mm	100
4 in / 100mm	100
3 in / 75mm	100
2 in / 50mm	100
1 1/2 in / 37.5mm	100
1 1/4 in / 32 mm	100
1 in / 25 mm	100
3/4 in / 19 mm	100
1/2 in / 12.5 mm	100
3/8 in / 9.5 mm	100
1/4 in / 6.4 mm	99
#4, 4.75mm	99
#8, 2.36mm	95
#10, 2.00mm	94
#16, 1.18mm	86
#30, 0.60mm	77
#40, .425mm	73
#50, .300mm	70
#100, .150mm	61
#200, .075mm	47

LL: 22
 PL: 15
 PI: 7

USCS: SC-SM
 AASHTO: A-4(0)

NOTES:

AASHTO Description: Silty soils

- The zero air void curve represents a specific gravity of: 2.65 assumed, (also used in the 'Rock Correction Calculation)
- This is a summarized report of the referenced procedures and does not include all reporting requirements. Additional data can be provided at clients request.

Reviewed by: A Lopez, PE



Project: Kyrene Branch and Highline Canal SUP
Location: Chandler, Arizona
Client: Kimley Horn
Material: Native
Sample Source: See Below

Project Number: 250036
Work Order Number: 2500041
Lab Number: See Below
Date Sampled: 02/19/25

Swell Potential of Soil ASTM D4546

Sample Number	Sample Source	Swell (%)	Target Compaction (%)	Actual Compaction (%)	Target Moisture (%)	Actual Moisture (%)
9	Bulk, B-2 @ 0.0'-5.0'	3.1	95.0	94.5	11.2	11.5

Note: Ring Samples were subjected to a 144 psf surcharge.



Project: Kyrene Branch and Highline Canal SUP
Location: Chandler, Arizona
Client: Kimley Horn
Material: Native
Sample Source: See Below

Project Number: 230056
Work Order Number: 2500038
Lab Number: See Below
Date Sampled: 02/12/25

Swell Potential of Soil ASTM D4546

Sample Number	Sample Source	Swell (%)	Target Compaction (%)	Actual Compaction (%)	Target Moisture (%)	Actual Moisture (%)
1	Bulk, B-6 @ 0.0'-5.0'	2.0	95.0	95.3	6.6	6.8

Note: Ring Samples were subjected to a 144 psf surcharge.

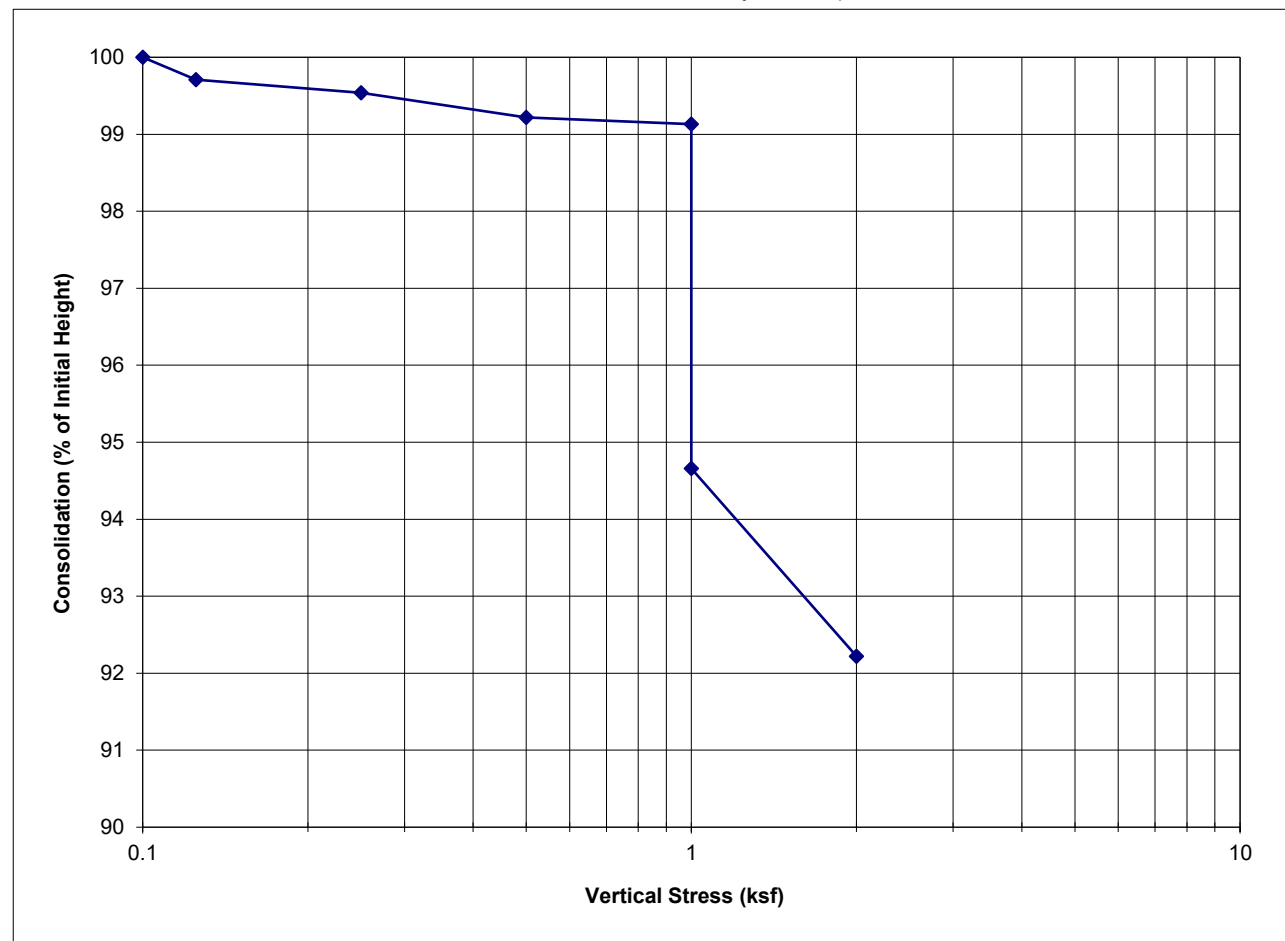


Project: Kyrene Branch and Highline Canal SUP
Project Location: Chandler, Arizona
Client: Kimley Horn
Material: Native
Sample Source: Ring Sample B-6 @ 2.5'-3.5'
Sample Prep: In-Situ

Project Number: 230056
Work Order Number: 2500038
Lab Number: 2
Date Sampled: 02/12/25

One-Dimensional Consolidation Properties of Soils (ASTM D2435)

Initial Volume (cu.in)	4.60	Final Volume (cu.in)	4.25
Initial Moisture Content	4.9%	Final Moisture Content	20.4%
Initial Dry Density(pcf)	98.6	Final Dry Density(pcf)	106.9
Initial Degree of Saturation	19%	Final Degree of Saturation	99%
Initial Void Ratio	0.7	Final Void Ratio	0.5
Estimated Specific Gravity	2.65	Saturated at	1 ksf
		Hydro Collapse Potential	4.47%





Project: Kyrene Branch and Highline Canal SUP
Location: Chandler, AZ
Client: Kimley-Horn
Material: See Below
Sample Source: See Below

Project Number: 230056
Work Order Number: 2500041
Lab Number: See Below
Date Sampled: 02/19/25

pH & Resistivity (AZ 236)

Sample Number	Sample Source	Resistivity (Ohm-cm)	pH
1	Bulk, B-1 @ 0.0'-5.0'	830	6.6
17	Bulk, B-3 @ 0.0'-5.0'	1,170	6.8
25	Bulk, B-4 @ 0.0'-5.0'	440	6.6



Project: Kyrene Branch and Highling Canal SUP
Location: Chandler, Arizona
Client: Kimley Horn
Material: See Below
Sample Source: See Below

Project Number: 230056
Work Order Number: 2500038
Lab Number: See Below
Date Sampled: 02/12/25

pH & Resistivity (AZ 236)

Sample Number	Sample Source	Resistivity (Ohm-cm)	pH
1	Bulk, B-6 @ 0.0'-5.0'	170	6.9



Report: 954468
 Reported: 2/27/2025
 Received: 2/25/2025
 PO: 2500041

Laboratory Analysis Report

Atek Engineering Consultants
 Antonio Lopez
 111 South Weber Dr Suite 1
 Chandler, AZ 85226

Project: 230056

Lab Number	Sample ID
954468-1	1) Bulk, B-1 (0.0-5.0')

Test Parameter

Test	Method	Result	Units
Sulfate	ARIZ 733b	179	ppm
Chloride	ARIZ 736b	81	ppm

Lab Number	Sample ID
954468-2	9) Bulk, B-2 (0.0-5.0')

Test Parameter

Test	Method	Result	Units
Sulfate	ARIZ 733b	136	ppm
Chloride	ARIZ 736b	202	ppm

Lab Number	Sample ID
954468-3	17) Bulk, B-3 (0.0-5.0')

Test Parameter

Test	Method	Result	Units
Sulfate	ARIZ 733b	49	ppm
Chloride	ARIZ 736b	19	ppm

Lab Number	Sample ID
954468-4	25) Bulk, B-4 (0.0-5.0')

Test Parameter

Test	Method	Result	Units
Sulfate	ARIZ 733b	293	ppm
Chloride	ARIZ 736b	243	ppm



Report: 954399
Reported: 2/26/2025
Received: 2/20/2025
PO: 2500038

Laboratory Analysis Report

Atek Engineering Consultants
Antonio Lopez
111 South Weber Dr Suite 1
Chandler, AZ 85226

Project: 230056

Lab Number	Sample ID
954399-1	1) Bulk, B-6 (0.0-5.0')

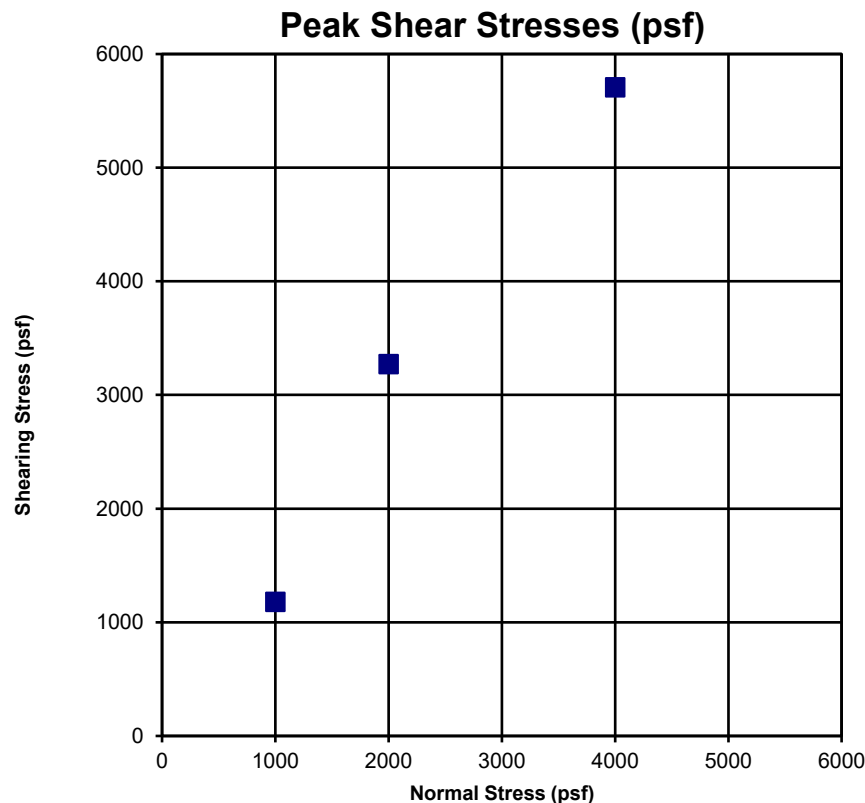
Test Parameter

<i>Test</i>	<i>Method</i>	<i>Result</i>	<i>Units</i>
Sulfate	ARIZ 733b	215	ppm
Chloride	ARIZ 736b	1340	ppm

**PROJECT:** Atek Job #230029, WO #2500041**LOCATION:** Chandler, AZ**MATERIAL:** Native Soil**SAMPLE SOURCE:** B-3 @ 2.5-3.5**SAMPLE PREPARATION:** Sat**JOB NO:** 19-2011-1087**WORK ORDER NO:** 313**LAB NO:** 25-0335**DATE ASSIGNED:** 3/4/2025

DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS (ASTM D3080)

Initial thickness of specimen (in.):	1.00	1.00	1.00
Initial diameter of specimen (in.):	2.42	2.42	2.42
Final thickness before shear (in.):	0.890	0.900	0.930
Shearing device used: Humboldt Automated Shear Test System by Trautwein Soil Testing Equipment			
Rate of deformation (in/min):	0.01	0.01	0.01
Direct shear point:	1	2	3
Dry mass of specimen (g):	100.6	107.6	111.9
Initial Moisture Content:	8.9%	9.8%	9.3%
Initial Wet Density (pcf):	90.8	97.8	101.3
Initial Dry Density (pcf):	83.3	89.1	92.7
Final Moisture Content:	27.6%	27.7%	27.3%
Final Wet Density (pcf):	119.5	126.4	126.9
Final Dry Density (pcf):	93.6	99.0	99.7
Normal Stress (psf):	1000	2000	4000
Maximum Shearing Stress (psf):	1179	3272	5707
Vertical Deformation @ Max Shear (in):	0.197	0.217	0.196
Horizontal Deformation @ Max Shear (in):	0.489	0.495	0.476





PROJECT: Atek Job #230029, WO #2500041

LOCATION: Chandler, AZ

MATERIAL: Native Soil

SAMPLE SOURCE: B-3 @ 2.5-3.5

SAMPLE PREPARATION: Sat

JOB NO: 19-2011-1087

WORK ORDER NO: 313

LAB NO: 25-0335

DATE ASSIGNED: 3/4/2025

NORMAL LOADS (psf): 1000 2000 4000

DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS (ASTM D3080)

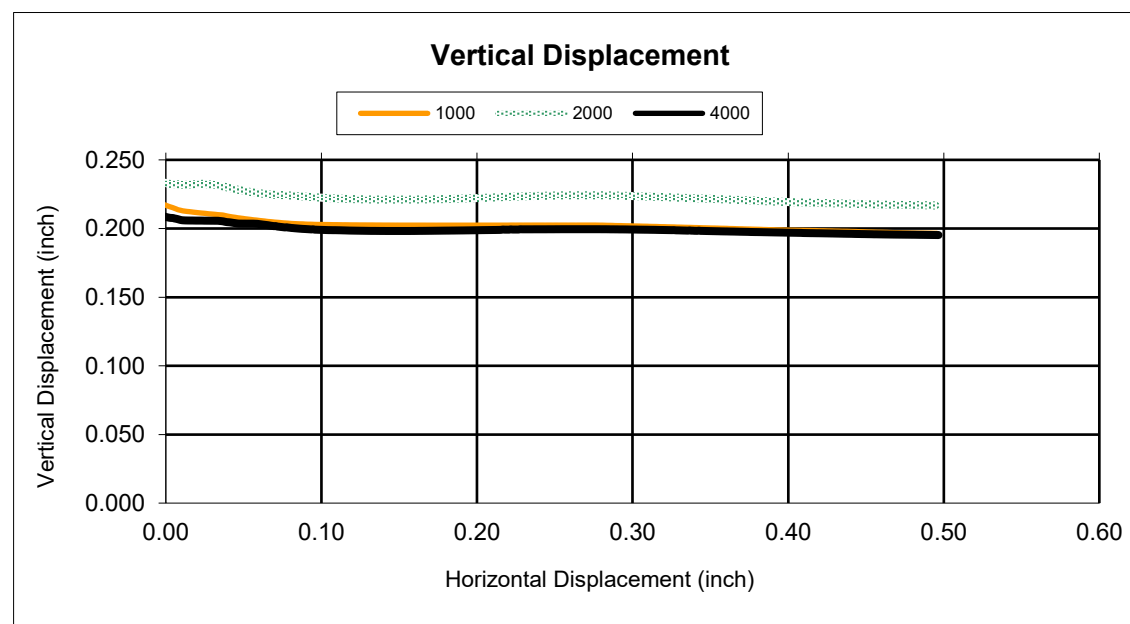
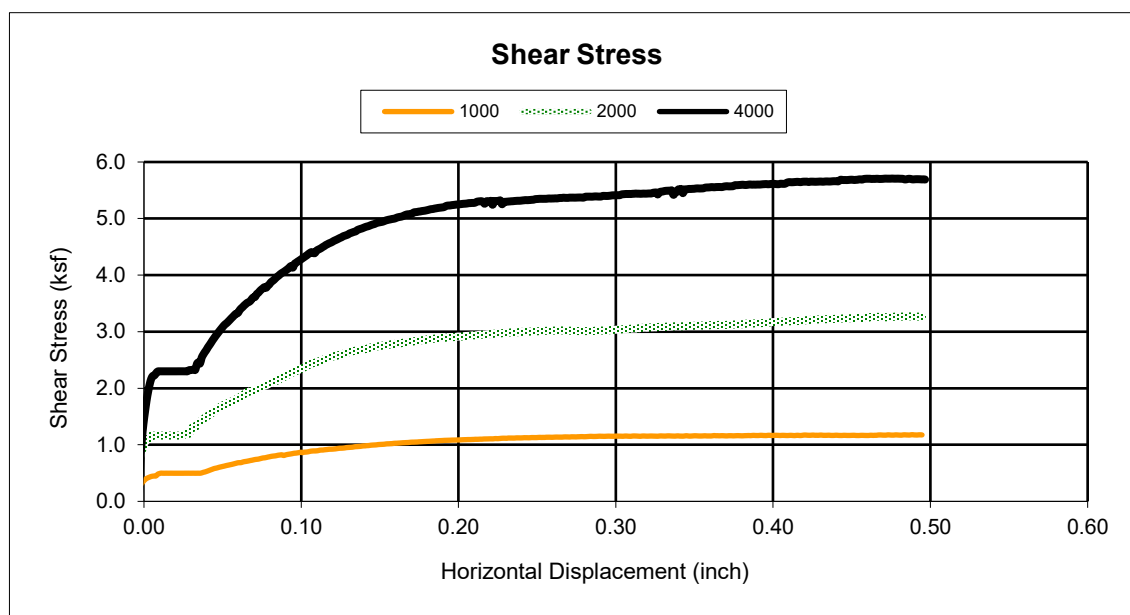


EXHIBIT D

GIS / GPS DATA DELIVERY REQUIREMENTS

GIS / GPS Data Delivery Requirements

Contractor shall provide survey grade GPS / GIS data, meeting the following requirements for all facilities to be owned and/or operated by the City of Chandler.

a) ESRI File Geodatabase format:

All GPS point data, along with corresponding GIS Attribute data, must be submitted in ESRI File Geodatabase format. The City of Chandler will provide a copy of the File Geodatabase in ESRI ArcGIS format. Please submit your request through the Project Manager.

b) Data dictionary and Attribute data:

Attribute data should be provided for each of the GPS'd Utility Features listed in Section 'd' below. All Attribute data should conform to the ESRI File Geodatabase format, provided by the City. A copy of the data dictionary is also attached here for reference.

c) Coordinate System:

Horizontal Datum: Arizona State Plane Coordinates, Central Zone NAD83 (HARN)
Vertical Datum: NAVD88

d) Point Data for GPS:

1) Water System Features:

- Water main location (top of pipe), size and material (one (1) coordinate provided every 100 feet minimum) and at fittings.
- Water fitting location (top of feature), size, material and type including: Bend (22.5, 45, or 90), Tee, Tapping Sleeve, Cross, Coupling, End Cap, Line Stop, Reducer, Saddle, Other.
- Water valve location (center of valve box cover), size and type.
- Fire hydrant location (top of hydrant), manufacturer and year.
- Water service line location (at connection to main, any bends, and termination at meter box or meter vault or at the edge of easement or ROW), size and material.
- Water blow-off and air release valve location (center of cover), size, type and manufacturer.
- Water manhole or vault location (center of cover), size and type.

2) Waste Water System Features:

- Sewer manhole and cleanout location (center of cover), size, material, and cover type.
- Sewer gravity main location (invert of pipe), size, material and flow direction (from) at all manholes, cleanouts and structures.
- Sewer service line location, size and material (at connection to main, and termination at cleanout, or stub out at edge of the easement or ROW).
- Sewer force main location (top of pipe), size, and material (one (1) coordinate provided every 100 feet minimum) and at fittings.

- Sewer force main (and gravity) fitting location (top of feature), size, material and type including: Bend (22.5, 45, or 90), Tee, Tapping Sleeve, Cross, Coupling, End Cap, Linestop, Reducer, Saddle, Wye, Other
- Sewer force main valve location (center of valve box cover), size and type.
- Sewer force main air release valve location (center of cover), size, type and manufacturer.
- Sewer force main manhole or vault location (center of cover), size and material.
- Sewer structure (center of structure), type (diversion, junction box).

3) Reclaimed Water System Features:

- Reclaimed main location (top of pipe), size, and material (one (1) coordinate provided every 100 feet minimum) and at fittings.
- Reclaimed fitting location (top of feature), size, material and type including: Bend (22.5, 45, or 90), Tee, Tapping Sleeve, Cross, Coupling, End Cap, Linestop, Reducer, Saddle, Other.
- Reclaimed valve location (center of valve box cover), size and type.
- Reclaimed service line location (at connection to main, any bends, and termination at meter box or meter vault or at the edge of easement or ROW), size and material.
- Reclaimed blow-off and air release valve location (center of cover), size, type and manufacturer.
- Reclaimed manhole or vault location (center of cover), size and type.

4) Storm Water System Features:

- Storm manhole and cleanout location (center of cover), size, material, and cover type.
- Storm gravity main location (invert of pipe), size, material, and flow direction (from) at all manholes, cleanouts and structures.
- Storm structure location (center of structure), type and category including: Drywell, Catch Basin, Scupper, Bubbler Box, and Collection Vault.

5) Streetlight Feature:

- Streetlights

6) Abandonments:

- Use Miscellaneous Feature (MISC_POINT) to capture abandoned utilities.

7) Standard GPS Metadata on all points collected: Date, Time, Horizontal Accuracy, Vertical Accuracy, Latitude, Longitude, Altitude (Orthometric Height), Surveyor, and Comments.

8) Electronic Data Submittal: Each submittal must consist of

- ESRI – ArcGIS Geodatabase with cumulative data and attributes
- Construction plans with collected utilities clearly redlined and changes marked

The frequency of data submittals will be every two weeks after water, sewer, reclaim or storm assets go into the ground. Please email submittals to: GIS@chandleraz.gov

DATA DICTIONARY: WATER

WATER_BACKFLOW				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	GIS_BACKFLOW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	GIS_BACKFLOW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	GIS_BACKFLOW_SPATIALSOURCE
SIZE	SIZE	Double		
TYPE	TYPE	Text	25	GIS_BACKFLOW_TYPE
MANUFACTURER	MANUFACTURER	Text	25	GIS_BACKFLOW_MANUFACTURER
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

WATER_FITTING				
Field Name	Alias Name	Data Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WS_SPATIALSOURCE_STD
MATERIAL	MATERIAL	Text	20	WS_FITTING_MATERIAL
DIAMETER1	DIAMETER1	Text	8	RWS_FITTING_DIAMETER
DIAMETER2	DIAMETER2	Text	8	RWS_FITTING_DIAMETER
TYPE	TYPE	Text	30	WS_FITTING_TYPE
BEND	BEND	Text	20	WS_FITTING_BEND
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

WATER_HYDRANT				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	Feature Owner	Text	25	WS_FEATUREOWNER
LIFECYCLESTATUS	Lifecycle Status	Text	25	WS_LIFECYCLESTATUS
SPATIALSOURCE	Spatial Source	Text	25	WS_SPATIALSOURCE_STD
BARRELDIAMETER	Barrel Diameter	Double		
LARGENOZZLEDIAMETER	Large Nozzle Diameter	Double		
SMALLNOZZLEDIAMETER	Small Nozzle Diameter	Double		
OUTLETCONFIGURATION	Outlet Configuration	Double		
SEATDIAMETER	Seat Diameter	Double		
MANUFACTURER	Manufacturer	Text	25	WS_HYD_MANUFACTURER
YEARMANUFACTURED	Manufacture Year	Text	25	
HASLOCK	Has Lock ?	Text	25	GIS_BOOLEAN_YES_NO
COLOR	Color	Text	25	WS_HYD_COLOR
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	25	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

WATER_MANHOLE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WS_SPATIALSOURCE_STD
ACCESSDIAMETER	ACCESSDIAMETER	Text	8	
ACCESSTYPE	ACCESSTYPE	Text	20	
GROUNDTYPE	GROUNDTYPE	Text	20	WS_SYSVAL_GROUNDTYPE
COVERMATERIAL	COVERMATERIAL	Text	10	
COVERTYPE	COVERTYPE	Text	8	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

WATER_METER				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	Feature Owner	Text	20	GBA_WMSL_FEATUREOWNER
LIFECYCLESTATUS	Lifecycle Status	Text	25	GBA_WMSL_LIFECYCLESTATUS
SPATIALSOURCE	Spatial Source	Text	25	GBA_STATIC_SPATIALSOURCE
DIAMETER	DIAMETER	Double		WS_METER_DIAM
MANUFACTURER	Manufacturer	Text	25	WS_METER_MANUFACTURER
METER_TYPE	Meter Type	Text	25	WS_METER_TYPE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

WATER_SYSTEM_VALVE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATURE OWNER	Text	20	WS_SYSVAL_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLE STATUS	Text	20	WS_SYSVAL_LIFECYCLESTATUS
SPATIALSOURCE	SPATIAL SOURCE	Text	20	WS_SYSVAL_SPATIALSOURCE
TYPE	TYPE	Text	25	WS_SYSVAL_TYPE
VALVETYPE	VALVE TYPE	Text	10	WS_SYSVAL_VALVETYPE
FUNCTION	FUNCTION	Text	25	WS_SYSVAL_FUNCTION
GROUNDTYPE	GROUNDTYPE	Text	25	WS_SYSVAL_GROUNDTYPE
DIAMETER	Diameter	Text	8	WS_SYSVAL_DIAM
GPS_DATE	GPS DATE	Date		
GPS_TIME	GPS TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS COMMENT	Text	30	

Water Domains:

Domain name	WS_LIFECYCLESTATUS
ABANDONED	ABANDONED
ACTIVE	ACTIVE
FUTURE	FUTURE
INACTIVE	INACTIVE
REMOVED	REMOVED
UNKNOWN	UNKNOWN

Domain name	WS_SYSVAL_SPATIALSOURCE
APPROVED PLANS	APPROVED PLANS
ASBUILT	ASBUILT
DESIGN	DESIGN
GPS	GPS
HYDRMAINT	HYDRMAINT
ORTHOPHOTO	ORTHOPHOTO
TM7	TM7
UNKNOWN	UNKNOWN

Domain name	WS_HYD_MANUFACTURER
AMERICANDARLING	AMERICANDARLING
AVK	AVK
CLOW	CLOW
DRESSER	DRESSER
GREENBERG	GREENBERG
KENNEDY	KENNEDY
MUELLER	MUELLER
PACIFIC	PACIFIC
UNKNOWN	UNKNOWN
WATEROUS	WATEROUS

Domain name	WS_FEATUREOWNER
COC	Chandler
COG	Gilbert
COM	Mesa
COP	Phoenix
COT	Tempe
COUNTY	Maricopa County
GOULD	Gould
GRIC	GRIC
INTEL	Intel
MICROCHIP	Microchip
MOTOROLA	Motorola
PRIVATE	Private
SRP	SRP
SRVWUA	SRVWUA
UNKNOWN	UNKNOWN

Domain name	WS_SYSVAL_LIFECYCLESTATUS
FUTURE	FUTURE
UNKNOWN	UNKNOWN
INACTIVE	INACTIVE
ACTIVE	ACTIVE
REMOVED	REMOVED
ABANDONED	ABANDONED

Domain name	WS_FITTING_BEND
HORIZONTAL	HORIZONTAL
VERTICAL	VERTICAL

Domain name	WS_SYSVAL_DIAM
2	2
3	3
4	4
6	6
8	8
10	10
12	12
16	16
20	20
24	24
30	30
36	36
42	42
48	48
54	54

Domain name	WS_HYD_COLOR
0	YELLOW
1	BLACK/YELLOW
2	RED
3	UNKNOWN

Domain name	WS_FITTING_TYPE
11B	11B
22B	22B
45B	45B
90B	90B
COUPLING	COUPLING
CROSS	CROSS
ENDCAP	ENDCAP
LINESTOP	LINESTOP
OTHER	OTHER
REDUCER	REDUCER
SADDLE	SADDLE
TAPPING SLEEVE	TAPPING SLEEVE
TEE	TEE
UNKNOWN	UNKNOWN
WYE	WYE

Domain name	WS_SYSVAL_GROUNDTYPE
CONCRETE	CONCRETE
ASPHALT	ASPHALT
LANDSCAPE	LANDSCAPE
UNKNOWN	UNKNOWN

Domain name	WS_SPATIALSOURCE_STD
ASBUILT	ASBUILT
DESIGN	DESIGN
FIELD	FIELD
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
UNKNOWN	UNKNOWN

Domain name	WS_METER_DIAM
0.63	.63
0.75	.75
1	1
1.5	1.5
2	2
2.5	2.5
3	3
4	4
6	6
8	8
10	10

Domain name	WS_METER_MANUFACTURER
BADGER METERS	BADTER METERS
NEPTUNE METERS	NEPTUNE METERS
PRECISION METERS	PRECISION METERS
BADGER-NEPTUNE	BADGER-NEPTUNE
SENSUS	SENSUS

Domain name	WS_METER_TYPE
BYPASS	BYPASS
COMBO	COMBO
CMPND	CMPND
DISC	DISC
MAG	MAG
FDTEC	FDTEC
MLTJET	MLTJET
TURBIN	TURBIN
Ultrasonic	Ultrasonic

S

Domain name	WS_SYSVAL_FEATUREOWNER
COC	COC
PRIVATE	PRIVATE
COM	COM
MOTOROLA	MOTOROLA
INTEL	INTEL
UNKNOWN	UNKNOWN
TOG	TOG

Domain name	WS_FITTING_MATERIAL
DI	DI
PVC	PVC
BRASS	BRASS
STL	STL
COPPER	COPPER
AC	AC
CC	CC
CI	CI

Domain name	WS_SYSVAL_TYPE
STANDARD	STANDARD
BLOWOFF	BLOWOFF
ARV	ARV
AIR VACUUM	AIR VACUUM
PERMASEAL	PERMASEAL

Domain name	GBA_WMSI_LIFECYCLESTATUS
Operational	Operational
Empty	Empty
Out of Service	Out of Service
Abandoned	Abandoned

Domain name	WS_SYSVAL_FUNCTION
INLINE	INLINE
HYDRANT	HYDRANT
STUBOUT	STUBOUT
UNKNOWN	UNKNOWN
SERVICE	SERVICE
BYPASS	BYPASS
WPF	WPF
FDC	FDC
VAULT	VAULT
BACKFLOW	BACKFLOW
PUMPOUT	PUMPOUT
PUMPSTATION	PUMPSTATION
FIRELINE	FIRELINE
ARV	ARV
ZONE_SPLIT_VALVES	ZONE_SPLIT_VALVES

Domain name	GIS_BACKFLOW_FEATUREOWNER
COC	COC
PRIVATE	PRIVATE
CONTRACTOR	CONTRACTOR
INTEL	INTEL
OCA	OCA
OMG	OMG
TOG	TOG
UNKNOWN	UNKNOWN

Domain name	WS_SYSVAL_VALVETYPE
GATE	GATE
BUTTERFLY	BUTTERFLY
BALL	BALL
PLUG	PLUG
PIV	PIV
UNKNOWN	UNKNOWN
INSERTA	INSERTA

Domain name	GIS_BACKFLOW_MANUFACTURER
FEBCO	FEBCO
WATTS	WATTS
WILKINS	WILKINS
AMES	AMES
CONBRACO	SERVICE
HERSEY	HERSEY
RAIN BIRD	RAIN BIRD
APOLLO VALVES	APOLLO VALVES
METRON	METRON
OTHER	OTHER

Domain name	GIS_BACKFLOW_TYPE
Air Gap	Air Gap
Unknown	Unknown
Double Check Detector	Double Check Detector
Pressure Vacuum Breaker	Pressure Vacuum Breaker
Double Check	Double Check
Reduced Pressure Detector	Reduced Pressure Detector
Atmospheric Vacuum Breaker	Atmospheric Vacuum Breaker

DATA DICTIONARY: SEWER

SEWER CLEANOUT				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
RIM_ELEV	RIM_ELEV	Double		
INV_ELEV	INV_ELEV	Double		
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

SEWER CONTROL VALVE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
TYPE	TYPE	Text	25	WW_CONTROL_VALVE_TYPE
DIAMETER	DIAMETER	Text	8	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

SEWER_FITTING				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
MATERIAL	MATERIAL	Text	20	WW_FITTING_MATERIAL
TYPE	TYPE	Text	30	WW_FITTING_TYPE
BEND	BEND	Text	20	WW_FITTING_BEND
SIZE	SIZE	Text	20	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

SEWER_MANHOLE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	WW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	WW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	WW_SPATIALSOURCE
TYPE	TYPE	Text	20	WW_MH_TYPE
COVER_MATERIAL	COVER_MATERIAL	Text	25	WW_MH_COVER_MATERIAL
COVER_HOLE	COVER_HOLE	Text	25	WW_MH_COVER_HOLE
COVER_SIZE	COVER_SIZE	Text	20	WW_MH_COVER_SIZE
RIM_ELEV	RIM_ELEV	Double		
INV_ELEV	INV_ELEV	Double		
LINING	LINING	Text	255	WW_MH_LINER
WALL_MATERIAL	WALL_MATERIAL	Text	255	WW_MH_WALL_MATERIAL
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

Sewer Domains:

Domain name	WW_FEATUREOWNER
COC	COC
PRIVATE	PRIVATE
TOG	TOG
UNKNOWN	UNKNOWN

Domain name	WW_SPATIALSOURCE
GPS	GPS
ASBUILT	ASBUILT
UNKNOWN	UNKNOWN

Domain name	WW_MH_COVER_HOLE
UNKNOWN	UNKNOWN
SEALED	SEALED

Domain name	WW_MH_LINER
CAST-IN-PLACE	CAST-IN-PLACE
CEMENTITIOUS	CEMENTITIOUS
COMPOSITE	COMPOSITE
CURED-IN-PLACE	CURED-IN-PLACE
EPOXY	EPOXY
FR PLASTIC INSERT	FR PLASTIC INSERT
FR POLYMER INSERT	FR POLYMER INSERT
INSERT	INSERT
UNKNOWN	UNKNOWN

Domain name	WW_LIFECYCLESTATUS
ABANDONED	ABANDONED
ACTIVE	ACTIVE
INACTIVE	INACTIVE
PULLED	PULLED
UNKNOWN	UNKNOWN

Domain name	WW_MH_COVER_MATERIAL
ALUMINUM	ALUMINUM
CASTIRON	CASTIRON
HDPE COMPOSITE - CAP	HDPE COMPOSITE - CAP
HDPE COMPOSITE - EJ	HDPE COMPOSITE - EJ
HDPE COMPOSITE - HD20	HDPE COMPOSITE - HD20
STEEL	STEEL
UNKNOWN	UNKNOWN

Domain name	WW_MH_COVER_SIZE
0	Unknown
4	4
6	6
8	8
22	22
24	24
26	26
28	28
30	30
32	32
38	38
48	48
60	60

Domain name	WW_MH_WALL_MATERIAL
NONE	NONE
COMPOSITE	COMPOSITE
UNKNOWN	UNKNOWN
CONCRETE	CONCRETE
POURED	POURED
TLOCK	TLOCK
PRECAST	PRECAST
BRICK	BRICK

Domain name	WW_FITTING_MATERIAL
PVC	PVC
DIP	DIP
HDPE	HDPE
RCP	RCP
ACP	ACP
ABS	ABS
RUBBER	RUBBER
CONCRETE	CONCRETE
CLAY	CLAY
STEEL ENCASED VCP	STEEL ENCASED VCP
TLOCK LINE	TLOCK LINE
LINED RCP	LINED RCP
PVC LINED RCP	PVC LINED RCP
PVC LINED DIP	PVC LINED RCP

Domain name	WW_FITTING_BEND
HORIZONTAL	HORIZONTAL
VERTICAL	VERTICAL
NONE	NONE

Domain name	WW_MH_TYPE
0	UNKNOWN
1	SANITARY SEWER
2	ARV

Domain name	WW_FITTING_TYPE
TEE	TEE
WYE	WYE
90 BEND	90 BEND
45 BEND	45 BEND
22 BEND	22 BEND
11 BEND	11 BEND
ENCAP	ENCAP
PLUG	PLUG
REDUCER	REDUCER
ARV	ARV
FLOW METER	FLOW METER
NO FLOW POINT	NO FLOW POINT
OWNERSHIP CHANGE	OWNERSHIP CHANGE
OTHER	OTHER
UNKNOWN	UNKNOWN
COUPLING	COUPLING

Domain name	WW_CONTROL_VALVE_TYPE
AIRRELEASE	AIRRELEASE
AIRVACUUMRELEASE	AIRVACUUMRELEASE
PRESSURERELIEF	PRESSURERELIEF
VACUUMRELEASE	VACUUMRELEASE
UNKNOWN	UNKNOWN
N/A	N/A

DATA DICTIONARY: RECLAIM

RECLAIM_WATER_BACKFLOW				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	GIS_BACKFLOW_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	GIS_BACKFLOW_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	GIS_BACKFLOW_SPATIALSOURCE
SIZE	SIZE	Double		
TYPE	TYPE	Text	25	GIS_BACKFLOW_TYPE
MANUFACTURER	MANUFACTURER	Text	25	GIS_BACKFLOW_MANUFACTURER
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

RECLAIM_WATER_FITTING				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	RWS_SPATIALSOURCE
MATERIAL	MATERIAL	Text	20	RWS_MAIN_OR_SERVICE_MATERIAL
DIAMETER1	DIAMETER1	Text	8	RWS_FITTING_DIAMETER
DIAMETER2	DIAMETER2	Text	8	RWS_FITTING_DIAMETER
TYPE	TYPE	Text	30	RWS_FITTING_TYPE
BEND	BEND	Text	20	RWS_FITTING_BEND
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double	8	
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double	8	
GPS_COMMENT	GPS_COMMENT	Text	30	

RECLAIM_WATER_MANHOLE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	RWS_SPATIALSOURCE
ACCESSDIAMETER	ACCESSDIAMETER	Text	8	
ACCESSTYPE	ACCESSTYPE	Text	20	
GROUNDTYPE	GROUNDTYPE	Text	20	RWS_GROUNDTYPE
COVERMATERIAL	COVERMATERIAL	Text	10	RWS_COVER_MATERIAL
COVERTYPE	COVERTYPE	Text	8	RWS_COVER_TYPE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

RECLAIM_WATER_METER				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	Feature Owner	Text	20	GBA_WMSL_FEATUREOWNER
LIFECYCLESTATUS	Lifecycle Status	Text	25	GBA_WMSL_LIFECYCLESTATUS
SPATIALSOURCE	Spatial Source	Text	25	GBA_STATIC_SPATIALSOURCE
DIAMETER	DIAMETER	Double		RWS_METER_DIAM
MANUFACTURER	Manufacturer	Text	25	RWS_METER_MANUFACTURER
METERTYPE	Meter Type	Text	25	RWS_METERTYPE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	15	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	30	

RECLAIM WATER SYSTEM VALVE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATURE OWNER	Text	20	RWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLE STATUS	Text	20	RWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIAL SOURCE	Text	20	RWS_SPATIALSOURCE
TYPE	TYPE	Text	25	RWS_SYSVAL_TYPE
VALVETYPE	VALVE TYPE	Text	10	RWS_SYSVAL_VALVETYPE
FUNCTION	FUNCTION	Text	25	RWS_SYSVAL_FUNCTION
GROUNDTYPE	GROUNDTYPE	Text	25	RWS_SYSVAL_GROUNDTYPE
DIAMETER	DIAMETER	Double		RWS_SYSVAL_DIAM
GPS_DATE	GPS DATE	Date	8	
GPS_TIME	GPS TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS COMMENT	Text	30	

Reclaim Water Domains:

Domain name	RWS_SYSVAL_VALVETYPE
BALL	BALL
BUTTERFLY	BUTTERFLY
GATE	GATE
INSERTA	INSERTA
PIV	PIV
PLUG	PLUG
UNKNOWN	UNKNOWN

Domain name	RWS_SYSVAL_FUNCTION
ARV	ARV
INLINE	INLINE
PUMPOUT	PUMPOUT
PUMPSTATION	PUMPSTATION
SERVICE	SERVICE
STUBOUT	STUBOUT
UNKNOWN	UNKNOWN
VAULT	VAULT

Domain name	RWS_SYSVAL_TYPE
ARV	ARV
AIR VACUUM	AIR VACUUM
BLOWOFF	BLOWOFF
PERMASEAL	PERMASEAL
STANDARD	STANDARD

Domain name	RWS_FITTING_BEND
HORIZONTAL	HORIZONTAL
VERTICAL	VERTICAL

Domain name	RWS_MAIN_OR_SERVICE_MATERIAL
AC	AC
CC	CC
CI	CI
CU	COPPER
DI	DI
PVC	PVC
UNKNOWN	UNKNOWN
AC	AC
CC	CC

Domain name	RWS_FITTING_TYPE
11B	11B
22B	22B
45B	45B
90B	90B
COUPLING	COUPLING
CROSS	CROSS
ENDCAP	ENDCAP
LINESTOP	LINESTOP
MECHANICAL JOINT	MECHANICAL JOINT
OTHER	OTHER
RECHARGE WELL	RECHARGE WELL
REDUCER	REDUCER
SADDLE	SADDLE
TAPPING SLEEVE	TAPPING SLEEVE
TEE	TEE
UNKNOWN	UNKNOWN
WYE	WYE

Domain name	RWS_SPATIALSOURCE
ASBUILT	ASBUILT
FIELD	FIELD
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
UNKNOWN	UNKNOWN

Domain name	RWS_LIFECYCLESTATUS
ABANDONED	ABANDONED
ACTIVE	ACTIVE
INACTIVE	INACTIVE
REMOVED	REMOVED
UNKNOWN	UNKNOWN

Domain name	RWS_SYSVAL_DIAM
1.5	1.5
2	2
3	3
4	4
6	6
8	8
10	10
12	12
16	16
20	20
24	24
30	30
36	36
42	42
48	48
9999	UNKNOWN

Domain name	RWS_GROUNDTYPE
ASPHALT	ASPHALT
CONCRETE	CONCRETE
DIRT	DIRT
UNKNOWN	UNKNOWN

Domain name	RWS_SYSVAL_GROUNDTYPE
ASPHALT	ASPHALT
CONCRETE	CONCRETE
LANDSCAPE	LANDSCAPE
UNKNOWN	UNKNOWN

Domain name	RWS_FITTING_DIAMETER
0.63	0.63
0.75	0.75
1	1
1.25	1.25
1.5	1.5
2	2
2.5	2.5
3	3
4	4
6	6
8	8
10	10
12	12
15	15
16	16
18	18
20	20
24	24
30	30

Domain name	RWS_COVER_MATERIAL
CAST IRON	CAST IRON
ALUMINUM	ALUMINUM
UNKNOWN	UNKNOWN

Domain name	RWS_COVER_TYPE
SEALED	SEALED
VENTED	VENTED
BOLTED	BOLTED
UNKNOWN	UNKNOWN

Domain name	RWS_METER_MANUFACTURER
BADGER METERS	BADGER METERS
NEPTUNE METERS	NEPTUNE METERS
PRECISION METERS	PRECISION METERS
BADGER-NEPTUNE	BADGER-NEPTUNE
SENSUS	SENSUS

Domain name	RWS_METERTYPE
BYPASS	BYPASS
COMBO	COMBO
CMPND	CMPND
DISC	DISC
MAG	MAG
FDTEC	FDTEC
MLTJET	MLTJET
TURBIN	TURBIN

Domain name	RWS_METER_DIAM
0.63	.63
0.75	.75
1	1
1.5	1.5
2	2
2.5	2.5
3	3
4	4
6	6
8	8
10	10

Domain name	RWS_FEATUREOWNER
COC	CHANDLER
COM	MESA
INTEL	INTEL
OCA	OCA
OMG	OMG
PRIVATE	PRIVATE
SRP	SRP
TOG	GILBERT
UNKNOWN	UNKNOWN

DATA DICTIONARY: STORM

STORM_BUBBLER_BOX				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
GRATE_OPENINGS_NUM	GRATE_OPENINGS_NUM	Short		SWS_GRATE_OPENINGS
GRATE_LENGTH	GRATE_LENGTH	Double	8	SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double	8	SWS_GRATE_WIDTH
DRYWELL_ASSOC	DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

STORM_CATCHBASIN				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
STRUCTURE_TYPE	STRUCTURE_TYPE	Short		SWS_STRUCTURE_TYPE
CATCHBASIN_TYPE	CATCHBASIN_TYPE	Text	25	SWS_CB_TYPE
CITY_EMBLEM	CITY_EMBLEM	Text	5	GIS_BOOLEAN_YES_NO
ACCESS_OPENING_TYPE	ACCESS_OPENING_TYPE	Text	25	SWS_CB_ACCESS_OPENING_TYPE
GRATE_LENGTH	GRATE_LENGTH	Double		SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double		SWS_GRATE_WIDTH
LID	LID	Text	5	GIS_BOOLEAN_YES_NO
LID_TYPE	LID_TYPE	Text	25	SWS_CB_LID_TYPE
DRYWELL_CONN	DRYWELL_CONN	Text	5	GIS_BOOLEAN_YES_NO
OUTLET_CONN	OUTLET_CONN	Text	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_CONN	BUBBLERBOX_CONN	Text	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_DRYWELL_ASSOC	BUBBLERBOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
LAKE_DRAIN	LAKE_DRAIN	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

STORM_COLLECTION_VAULT				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	20	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	20	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	20	SWS_SPATIALSOURCE
INLET_NUM	INLET_NUM	Short		SWS_CV_NUMB_INLETS
INLET_DIAM	INLET_DIAM	Short		SWS_CV_PIPE_SIZE
INLET_PIPE_TYPE	INLET_PIPE_TYPE	Text	30	SWS_CV_PIPE_TYPE
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
DRYWELL_ASSOC	DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
LID_GRATE	LID_GRATE	Text	5	SWS_LID_GRATE
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

STORM_DRAIN_MANHOLE				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
STRUCTURE_TYPE	STRUCTURE_TYPE	Short	2	SWS_STRUCTURE_TYPE
CHANDLER_NAME	CHANDLER_NAME_ON_LID	Text	5	GIS_BOOLEAN_YES_NO
DIAMETER	DIAMETER	Short	2	SWS_SDMH_SIZE
VENT_HOLE	VENT_HOLE	Text	30	GIS_BOOLEAN_YES_NO
ACCESS_OPENING_TYPE	ACCESS_OPENING_TYPE	Text	25	SWS_SDMH_ACCESS_OPENING_TYPE
LID_TYPE	LID_TYPE	Text	30	SWS_SDMH_TYPE
LID_TEXT	LID_TEXT	Text	30	SWS_SDMH_LID_TEXT
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

STORM_DRYWELL				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
FIELD_LOC	FIELD_LOC	Text	100	SWS_DW_LOCATION
INSTALLER	INSTALLER	Text	30	SWS_DW_INSTALLER
CHAMBER_TYPE	CHAMBER_TYPE	Text	30	SWS_DW_CHAMBER_TYPE
LID_SIZE	LID_SIZE	Short		SWS_DW_LID_SIZE
LID_TYPE	LID_TYPE	Text	25	SWS_DW_LID_TYPE
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
CONCRETE_PAD	CONCRETE_PAD	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

STORM_INLET				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
CATCHBASIN_TYPE	CATCHBASIN_TYPE	Text	25	SWS_CB_TYPE
FIELD_LOC	FIELD_LOC	Text	100	SWS_FIELD_LOC
GRATE_ASSOC	GRATE_ASSOC	Text	25	GIS_BOOLEAN_YES_NO
GRATE_LENGTH	GRATE_LENGTH	Double		SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double		SWS_GRATE_WIDTH
INLET_PIPE_DIAM	INLET_PIPE_DIAM	Short		SWS_INLET_PIPE_DIAM
INLET_NUMBER	NUMBER_OF_INLETS	Short		SWS_INLET_NUMBER
TRASHRACK_ASSOC	TRASHRACK_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
TRASH_LENGTH	TRASH_LENGTH	Double		
TRASH_WIDTH	TRASH_WIDTH	Double		
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
HEADWALLASSOC	HEADWALLASSOC	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

STORM_OUTLET				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
GRATE_ASSOC	GRATE_ASSOC	Text	25	GIS_BOOLEAN_YES_NO
GRATE_LENGTH	GRATE_LENGTH	Double		SWS_GRATE_LENGTH
GRATE_WIDTH	GRATE_WIDTH	Double		SWS_GRATE_WIDTH
INLET_PIPE_DIAM	INLET_PIPE_DIAM	Short		SWS_INLET_PIPE_DIAM
INLET_NUMBER	NUMBER_OF_INLETS	Short		SWS_INLET_NUMBER
TRASHRACK_ASSOC	TRASHRACK_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
TRASH_LENGTH	TRASH_LENGTH	Double		
TRASH_WIDTH	TRASH_WIDTH	Double		
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
HEADWALLASSOC	HEADWALLASSOC	Text	5	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

STORM_SCUPPER				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	FEATUREOWNER	Text	25	SWS_FEATUREOWNER
LIFECYCLESTATUS	LIFECYCLESTATUS	Text	25	SWS_LIFECYCLESTATUS
SPATIALSOURCE	SPATIALSOURCE	Text	25	SWS_SPATIALSOURCE
CITY_EMBLEM	CITY_EMBLEM	Text	5	GIS_BOOLEAN_YES_NO
NUMBER_OPENINGS	NUMBER_OPENINGS	Short		
WIDTH	WIDTH	Double		
SPILLWAY_ASSOC	SPILLWAY_ASSOC	Text	25	GIS_BOOLEAN_YES_NO
HEADWALL_ASSOC	HEADWALL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
NUISANCE_LINE_ASSOC	NUISANCE_LINE_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLERBOX_ASSOC	BUBBLERBOX_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
BUBBLER_BOX_DRYWELL_ASSOC	BUBBLER_BOX_DRYWELL_ASSOC	Text	5	GIS_BOOLEAN_YES_NO
LAKE_DRAIN	LAKE_DRAIN	Text	5	GIS_BOOLEAN_YES_NO
RIPRAP	RIPRAP	Text	25	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

Storm Domains:

Domain name	SWS_DW_LOCATION
AIRPORT	AIRPORT
CITYRETENTION	CITY RETENTION
PARK	PARK
PARKING_LOT	PARKING LOT
PRIVATERETENTION	PRIVATE RETENTION
STREET	STREET
WELL_SITE	WELL SITE

Domain name	SWS_GRATE_LENGTH
12	12
24	24
28	28
30	30
36	36
38	38
40	40
50	50
60	60
76	76

Domain name	SWS_CB_LID_TYPE
STEEL	STEEL
CONCRETE	CONCRETE

Domain name	SWS_DW_CHAMBER_TYPE
DOUBLE	DOUBLE
SINGLE	SINGLE
TRIPLE	TRIPLE

Domain name	SWS_LIFECYCLESTATUS
ACTIVE	ACTIVE
REMOVED	REMOVED
ABANDONED	ABANDONED
INACTIVE	INACTIVE
FUTURE	FUTURE

Domain name	SWS_GRATE_OPENINGS
1	1
2	2
3	3
4	4
5	5
6	6

Domain name	SWS_SPATIALSOURCE
APPROVED_PLANS	APPROVED_PLANS
ASBUILT	ASBUILT
DESIGN	DESIGN
FIELD	FIELD
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
UNKNOWN	UNKNOWN

Domain name	SWS_SDMH_SIZE
22	22
24	24
26	26
28	28
30	30
32	32
38	38

Domain name	SWS_DW_LID_SIZE
22	22
24	24
25	25
26	26
32	32
38	38

Domain name	SWS_STRUCTURE_TYPE
1	CATCH BASIN
2	SCUPPER
3	DRYWELL
4	MANHOLE
5	OUTLET
6	INLET
7	BUBBLERBOX
8	SPILLWAY
9	SEPARATOR

Domain name	SWS_SDMH_LID_TEXT
CHANDLER_SANITATION_SEWER	CHANDLER SANITATION SEWER
CHANDLER_STORM/SEWER	CHANDLER STORM/SEWER
NONE	NONE
OTHER	OTHER
STORM SEWER	STORM SEWER

Domain name	SWS_DW_INSTALLER
McGUCKINDRILLING	McGUCKIN DRILLING
TORRENTRESOURCES	TORRENT RESOURCES
WACODRILLING	WACO DRILLING
OTHER	OTHER

Domain name	SWS_CB_ACCESS_OPENING_TYPE
NONE	NONE
RECTANGULAR	RECTANGULAR
ROUND	ROUND
SQUARE	SQUARE

Domain name	SWS_FEATUREOWNER
ADOT	ADOT
CITY_OF_CHANDLER	CITY_OF_CHANDLER
HOA	HOA
OTHER	OTHER

Domain name	SWS_GRATE_WIDTH
6	6
12	12
16	16
18	18
24	24
28	28
30	30
36	36
38	38
44	44
72	72

Domain name	SWS_SDMH_ACCESS_OPENING_TYPE
NONE	NONE
RECTANGULAR	RECTANGULAR
ROUND	ROUND
SQUARE	SQUARE

Domain name	SWS_FIELD_LOC
PARK	PARK
WELLSI	WELL_SITE
PRKLOT	PARKING_LOT
STREET	STREET
AIRPOR	AIRPORT
CTYRTN	CITYRETENTION
PVRET	PRIVATERETENTION

Domain name	SWS_SDMH_TYPE
PRESSURIZED	PRESSURIZED
NON-PRESSURIZED	NON-PRESSURIZED

Domain name	SWS_DW_LID_TYPE
STEEL	STEEL
GRANITE	GRANITE
CONCRETE_SEALED	CONCRETE_SEALED
GRATE	GRATE

Domain name	SWS_INLET_PIPE_DIAM
12	12
13	13
14	14
15	15
16	16
18	18
24	24
26	26
30	30
36	36
42	42
46	46
60	60
72	72

Domain name	SWS_INLET_NUMBER
1	1
2	2
3	3
4	4

Domain name	SWS_CB_TYPE
TYPE_A	TYPE_A
TYPE_B	TYPE_B
TYPE_C	TYPE_C
TYPE_D	TYPE_D
TYPE_E	TYPE_E
TYPE_F	TYPE_F
TYPE_G	TYPE_G
TYPE_H	TYPE_H
TYPE_Q	TYPE_Q
NONE	NONE

Domain name	SWS_LID_GRATE
LID	LID
GRATE	GRATE

Domain name	SWS_CV_PIPE_TYPE
CONCRETE	CONCRETE
OTHER	OTHER
METAL	METAL

Domain name	SWS_CV_PIPE_SIZE
12	12
14	14
16	16
18	18
20	20
24	24
30	30
36	36

DATA DICTIONARY: MISCELLANEOUS POINTS

MISCELLANEOUS POINT				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
SIZE	SIZE	Double		
MATERIAL	MATERIAL	Text	30	
UTILITY_TYPE	UTILITY_TYPE	Text	30	PW_UTILITY_TYPE
NOTES	NOTES	Text	150	
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	50	

Domains:

Domain name	PW_UTILITY_TYPE
WATER	WATER
WASTEWATER	WASTEWATER
RECLAIM	RECLAIM
STORM	STORM
OTHER	OTHER

DATA DICTIONARY: STREETLIGHTS

STREETLIGHTS				
Field Name	Alias Name	Type	Length	Domain
OBJECTID	OBJECTID	OID		
SHAPE	SHAPE	Geometry		
FEATUREOWNER	POLE_OWNER	Text	10	ST_STLITINV_FEATUREOWNER
SPATIALSOURCE	SPATIALSOURCE	Text	25	GBA_STATIC_SPATIALSOURCE
POLENUMBER	POLENUMBER	Text	10	
POLE_HEIGHT	POLE_HEIGHT	Short		
POLE_TYPE	POLE_TYPE	Text	30	TE_STLITINV_POLE_TYPE
POLE_COAT	POLE_COAT	Text	30	TE_STLITINV_POLE_COAT
FOUNDATION	FOUNDATION	Text	30	GIS_BOOLEAN_YES_NO
GPS_DATE	GPS_DATE	Date		
GPS_TIME	GPS_TIME	Text	10	
LATITUDE	LATITUDE	Double		
LONGITUDE	LONGITUDE	Double		
ALTITUDE	ALTITUDE	Double		
HORIZONTAL_ACCURACY	HORIZONTAL_ACCURACY (m)	Double		
VERTICAL_ACCURACY	VERTICAL_ACCURACY (m)	Double		
GPS_COMMENT	GPS_COMMENT	Text	255	

Streetlights Domains:

Domain name	ST_STLITINV_FEATUREOWNER
COC	CITY OF CHANDLER
PRIVATE	PRIVATE
SRP	SRP
AP	APS

Domain name	GBA_STATIC_SPATIALSOURCE
GPS	GPS
ORTHOPHOTO	ORTHOPHOTO
APPROVED_PLANS	APPROVED_PLANS
GEOCODED	GEOCODED
UNKNOWN	UNKNOWN

Domain name	TE_STLITINV_POLE_TYPE
SL 1	SL 1
SL 6	SL 6
SL 8	SL 8
SL 10	SL 10
SL 16	SL 16
SL 17	SL 17
CURVED	CURVED
CUSTOM	CUSTOM
STERNBERG	STERNBERG
SIGNAL POLE	SIGNAL POLE
POWER POLE	POWER POLE

Domain name	TE_STLITINV_POLE_COAT
GALVANIZED	GALVANIZED
PAINTED	PAINTED
POWDER COATED	POWDER COATED

EXHIBIT E

FEDERAL PROVISIONS

FEDERAL PROVISIONS, DOCUMENTS & FORMS

CONSTRUCTION BID

With Davis Bacon Wages

No DBE Goal – / Race Neutral

FEDERAL DOCUMENTS / FORMS FROM THIS SECTION THAT MUST BE SUBMITTED WITH BID

1. Federal Non-Collusion Certification Form
2. Verification Statement
3. Forced Labor Ethnic Uyghurs Form
4. EEO Clause Statement & Contractor EEO Officer Form

FEDERAL DBE FORMS FROM THIS SECTION THAT MUST BE SUBMITTED DURING THE 5-DAYS POST BID DUE DATE TO CP.Fedfund@CHANDLERAZ.GOV (see instructions in DBE)

1. DBE Bidders/Proposers List Email Confirmation pdf

FEDERAL DOCUMENTS
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FEDERAL FUNDED CONSTRUCTION CONTRACT DOCUMENTS

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1.0

**FEDERAL GUIDE
FOR CONTRACTORS**

Federal Funded Contract Guide for Contractors/Subcontractors

This is an FHWA federal funded project.

1. This an FHWA Federal Funded Contract/Project. There is a ZERO TOLERANCE for compliance of the federal requirements.
2. Key Important Notes (additional details under that topic in this guide or in your contract/subcontract).
 - a. No retention allowed (FHWA requirement).
 - b. All Contractors/Subcontractors/Consultants/Subconsultants cannot have any debarments or pending debarments from working on a federal funded project, cannot have unresolved federal tax liens, must use E-Verify for employment process, must have an ROC license if Arizona requires it for that business type.
 - c. Prime Contractor Must self-perform **50%** of the contract.
 - d. Record Retention for federal projects must be maintained for five (5) years following completion.
 - e. Material Certs are required for all material in order to approve pay applications. NOTIFY YOUR VENDORS.
3. Web Site Registration Requirements:
 - a. **AZ UTRACS** - <https://utracs.azdot.gov>: All Contractors/Subcontractors are required to have a 5-digit AZ UTRACS Number and have an updated non-expired profile in this system.
 - b. **ADOT Payment Reporting System (DOORS)** – <https://adotdoors.dbesystem.com>: Contractors/Subcontractors must be registered in the ADOT DOORS System. This is where monthly payments will be reported and verified.
 - c. **SAM** – www.sam.gov : This site identifies contractors who cannot work on a federal funded project. See Code of Federal Regulations Title 2 Subtitle A Part 180 Subpart H.
 - d. **LCPTTracker (Certified Payroll)** – <https://prod-cdn.lcptracker.net>: All Contractors/Subcontractors required to submit certified payrolls will need an account set up. The subscription is with City of Chandler.
4. Retention on Payments Not Allowed
 - a. Due to FHWA Federal requirements, on FHWA Federal Funded Contracts, the City no longer holds retention.
 - b. Contractors CANNOT hold retention on Subcontractors.
 - c. Penalties for Certified Payroll, Payment Reporting, Payments to Subcontractors/Lower Tiers that may be assessed from the City to the Prime can be passed on to the applicable subcontractor and is not considered retention with City concurrence.
5. Subcontractors
 - a. Subcontractor: Includes lower tiers to first level Subcontractors.
 - b. Subcontractors must be approved by the City (Prime will receive packet with required forms and instructions).
 - c. Inspector and Prime Contractor must know when subcontractor is on site each day. It is recommended to have a daily sign in located on site or at the yard for subcontractors.
 - d. FHWA requires Inspector to document on daily report each day, what Subcontractors and identify their employees, the task classifications, and equipment that the Subcontractor is utilizing on site.
 - e. All Subcontractors must have an ROC license (if the business type requires it in Arizona).
 - f. All Contractors/Subcontractors must have a 5-digit AZ UTRACS number.
 - g. All Contractors/Subcontractors will be required to report monthly into the ADOT DOORS Payment Reporting System.
 - h. **Testing Subcontractors** must be on the ADOT Accredited Materials Testing Laboratories List. (<https://azdot.gov/business/engineering-and-construction/materials/materials-quality-assurance/adot-accredited>).
 - i. **Trucking**: Vendors delivering material to the jobsite are not trucking companies and do not require a subcontractor approval. Trucking companies that the Contractor or Subcontractor has a subcontract with to work on site hauling in or out is a subcontractor and must go through the subcontractor approval process.
 - j. No Subcontractor including Barricades/Traffic Control can start before the Prime Contractor's NTP Date.
6. Registrar of Contractors license (ROC)
 - a. A current ROC License is required if business type in Arizona requires an ROC license.
 - b. Name on the Subcontract, the SRF Request Form, and the ROC License MUST MATCH.
7. Quality Control Reports
 - a. Reports are required to be submitted and up to date at least monthly (weekly is preferred), and pay applications will not be signed / approved unless Quality Control Reports are up to date and provided to the City.
8. As Builts / Red Lines
 - a. Must be current and up to date each month. Pay application will not be signed / approved until this task is current.
9. Buy America and Buy America/Build America (BABA) Requirements / Material Certifications
 - a. **MATERIALS USED ON THIS PROJECT MUST FOLLOW THE BUY AMERICA AND BABA REQUIREMENTS.**
 - b. Suppliers, Vendors, Contractors, and Subcontractors must provide material certifications before material can be accepted, installed, and paid for.
 - c. No payments for materials without approved material certification.
 - d. See the Buy America documents in the contract/subcontract for details on requirements.

10. Certified Payroll / Fringe Benefits / Employee Deductions / Classifications

- a. Certified Payrolls Reporting is a requirement to work on this project.
- b. IMPORTANT: Hours/dates/employees/classifications worked MUST MATCH what jobsite inspector reports on his/her daily report each day. ENSURE CREWS CHECK IN WITH PRIME AND INSPECTOR.
- c. City of Chandler requires the use of LCPTracker system for transmitting certified payroll reports.
- d. Certified Payroll Reporting Starts: The first day a Contractor/Subcontractor starts work on site until their contract work is complete and finalized. This includes working and non-working weeks.
- e. Late or non-submittal of payroll reports:
 - i. US Department of Labor requires that payroll reports be submitted within seven (7) days of pay date.
 - ii. City of Chandler may assess penalty retainer of \$2,500 for each discrepancy report AND THE PRIME CONTRACTOR CAN WITHHOLD THAT AMOUNT FROM THE PAYMENT OWED TO THE SUBCONTRACTOR.
- f. Foreman, Superintendents, Owners who perform labor on site are considered laborers and MUST BE REPORTED ON CERTIFIED PAYROLL with exception to de minimis time.
- g. Payroll Time Requirements / Legal
 - i. All Laborers / Mechanics on Federal Funded Projects Must Be Paid Weekly.
 - ii. Contractor Penalty for not paying weekly - \$5,000 Fine and/or up to five (5) years in Prison.
 - iii. If Contractor lies/falsifies Certified Payroll, penalty can be up to 15 years in jail.
 - iv. Under-paying employees – subcontract may be terminated, contractor/subcontractor can be debarred from working on federal funded contracts for up to three (3) years.
- h. Project Specific Davis Bacon Wage Decision is included in your contract. Not all Wage Decisions are the same and are "Project Specific". Employees must be paid at or above the Davis Bacon Wage Decision rates (Base + Fringe).
- i. Site of Work: Includes project site, other areas where significant portion of the building or work is constructed provided that: 1) such site is established specifically for the contract and no other work, and 2) is located adjacent or virtually adjacent to the site of the work (within visual).
- j. Employee Benefits Plans / Fringes:
 - i. If Contractor / Subcontractor wants to utilize company paid benefits paid to employee towards the required Davis Bacon Wage requirement in lieu of cash, the following items must be submitted to and approved by the City Federal Compliance Oversight.
 1. Company-Employee Benefits Document such as an employee handbook that shows company benefits.
 2. Health Care: Plan detail and copy of payment to carrier if this fringe is being requested.
 3. Pension/401K: Plan detail and copy of payment to carrier if this fringe is being requested.
 4. Worksheet detail showing the hourly breakdown of the costs being requested to be used.
- k. Employee Deduction Authorization Form (EDA): All Contractors/Subcontractors submitting certified payroll must submit these forms **for every employee that has dollars in the "Other" box** on the payroll reports. This is a one-time submittal unless deductions change for that employee, and does not need to be submitted with every payroll report.
- l. Classification Requests (also known as Conformance Requests): If no classification matches a task/employee work classification from the wage decision for this contract, YOU WILL NEED TO SUBMIT A Classification Request SF1444 (City of Chandler Form, ADOT Forms are not allowed).
- m. Overtime Requirement by Department of Labor: The overtime rate must be 1.5 x the Base Rate on the Wage Decision or 1.5 x a higher wage rate that you already pay, (you cannot pay 1.5 OT rate on the base rate if you are paying a lower base rate due to higher fringe rate).
- n. **DO NOT USE 'GENERAL LABORER CLEANUP' as a catch all. DOL DOES NOT WANT TO SEE MORE THAN three (3) GENERAL LABORERS TO A SKILLED LABOR CLASSIFICATION.**

11. Employee Interviews

- a. Employee Interviews process is a Department of Labor federal requirement on federal funded projects. This is to ensure employees are being paid correctly for the tasks they are working. Interviews are confidential and employers cannot have access to interview documentation.

12. Payment Reporting:

- a. ALL CONTRACTORS AND SUBCONTRACTORS, **MUST** be registered with ADOT's DOORs Reporting System in order to work on this federal funded project.
- b. ALL CONTRACTORS/SUBCONTRACTORS are required to report monthly in the above listed system from your first payment to when your contract is complete. This includes months that \$-0- payments occur.
- c. Report the date paid; Report the date received. **DO NOT GUESS.**
- d. Reporting Schedule: Primes must report payments made to subcontractors no later than the 10th of each month for payments made the previous month. Subcontractors must verify or report payment discrepancies by the 30th of each month for report made by the Prime. Subcontractors must report payments made to lower tiers by the 15th of each month for payments made the previous month (including \$0).

13. Prompt Pay

- a. Subcontractors must be paid within seven (7) days from payment received from the City for the related work.
- b. Prime is responsible for ensuring Subcontractors pay Lower Tiers.
- c. Subcontractors must pay Lower Tiers within seven (7) days of receiving payment from the Prime for work the Lower Tier performed that was paid to the Prime – to the Subcontractor.
- d. Note that just because a Subcontractor or a Lower Tier Subcontractor performed work, the Prime may not have been paid for that work. Prompt Pay 7-day payment requirements is for work paid for from the City to the Prime; Prime to the Subcontractor; Subcontractor to the Lower Tier Subcontractor.
- e. Payment reporting: is the reported amount correct, was payment received within seven (7) days from the date the Prime was paid? DO NOT GUESS.

14. Jobsite Posters

- a. There are jobsite poster requirements and City of Chandler will assist will required posters list.
- b. All employees working on site must have access to view jobsite posters without supervision.
- c. All employees must be able to state they have seen the wage decision for this project.

15. Title VI

- a. Any complaints related to Title VI while on the jobsite must be forwarded to the City of Chandler.

16. T&M Work

- a. For T&M work activities, Lump Sum charges/Hourly Rates/Daily Rates ARE NOT ALLOWED on federal funded contracts. Contractors and Subcontractors – required: daily work document signed off by inspector with employees, hours, equipment, description. Invoice documentation must show each date for employees, hours, and certified payroll rates on the applicable APPROVED certified payroll.

17. Sanctions – Penalties – Liquidated Damages for Certified Payroll, Prompt Pay, Payment Reporting

- a. Certified Payrolls
 - i. Monthly discrepancies will be notified to Prime for the previous month's discrepancies.
 - ii. Discrepancy penalties are \$2,500 each with a 10-day grace period to correct the discrepancy. Corrections made 11th day to 90th day, the penalty is assessed. Corrections after the 90th day \$500 is non-refundable.
- b. Payment Reporting
 - i. Not Reporting has required Penalties - Liquidated Damages, non-refundable: Not reporting a payment has a federal required penalty that the City must assess of \$5,000, non-refundable.
 - ii. After 90 consecutive days of non-reporting of those payment(s), the penalty/liquidated damages will increase to \$10,000 for each subsequent month until the Contractor reports.
 - iii. This Liquidated Damages \$1000.00 can only be initiated by the City of Chandler to the Prime, BUT the Prime CAN pass on to the respective Subcontractor who did not report for a payment to a lower tier.
- c. Prompt Pay Provisions - Penalty for Non-Payments
 - i. City of Chandler is required to withhold two times (2x) the amount due to subcontractors if not paid within 7 days of receiving payment. If full payment is made within 30 days of the date the City of Chandler pays the Prime, the amount withheld will be released. If payment is made after the 30 days of the City of Chandler's payment date to the Prime Contractor, 75% will be returned and 25% will be withheld as liquidated damages.
 - ii. This also applies to subcontractors' payments to lower tier subcontractors.
 - iii. If non-payment lasts for three consecutive months, or any four months over the course of one project:
 1. Withhold monthly progress payments
 2. Terminate the contract for default
 3. Can be disqualified from future bidding, temporarily or permanently, based on severity of violations.

2.0

FEDERAL NON-COLLUSION BIDDING CERTIFICATION



FEDERAL NON-COLLUSION BIDDING CERTIFICATION

(This form must be filled out, signed, notarized, and submitted with bid or proposal)

(State of)

ss.

(County of)

I, _____ of the City of _____, in the County of _____, and the State of _____, of full age, being duly sworn according to the law of my oath depose and say that:

I am _____, a _____
(Name)(Title, Position, etc.)

Of the firm of _____, the Bidder making the bid for:

Project Name:

City Project No

Federal Project No

ADOT Project No

And that I executed the said Bid with full authority so to do, that said Bidder has not, directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project, and that all statements contained in said Bid and in this affidavit are true and correct, and made with full knowledge that the City of Chandler relies upon the truth of the statements contained in said Bid and in the statements contained in this affidavit in awarding the Contract for the said Project.

The bidder certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that

1. No federally appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a member of Congress, an officer or employee of Congress, or an employee of a Member of Congress, or an employee of a Member of Congress, in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract grant, loan, or cooperative agreement, renewal, amendment, or modification of any Federal contract grant, loan, or cooperative agreement.
2. If any funds other than Federally appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL "Disclosure Form to Report Lobbying," in accordance with its instructions. Copies of Form-LLL, "Disclosure Form to Report Lobbying", are available at ADOT Contracts and Specifications Services, 1651 W Jackson, Room 121F, Phoenix, AZ 85007. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$1,000,000 for each such failure.

The bidder also agrees, by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all subcontracts, and lower tier subcontracts which exceed \$100,000 and that all such subcontractors and lower tier subcontractors shall certify and disclose accordingly.

The City of Chandler will keep the prime contractor's certifications on file as part of their original bid proposals. Each prime contractor shall keep individual certifications from all subcontractors and lower tier subcontractors on file. Certifications shall be retained for three years following completion and acceptance of any given project.

Disclosure forms for the prime contractor shall be submitted to the Engineer at the pre-construction conference. Disclose forms for subcontractors and lower tier subcontractors shall be submitted to the Engineer by the prime contractor along with the submittal of each subcontract or lower tier subcontract as required under 23 CFR 635A and ADOT Specification 108.01 when said subcontracts exceed \$100,000.00 During the performance of the contract the prime contractor and any affected subcontractors shall file revised disclosure forms at the end of each calendar year quarter in which events occur that materially affect the accuracy of any previously filed disclosure form. Disclosure forms will be submitted by the engineer to the Federal Highway Administration for further processing.

I further warrant that no person or selling agency has been employed or retained to solicit or secure such contract. I upon an agreement of understanding for a commission, percentage, brokerage or contingent fee, except bonafide employees or bonafide established commercial or selling agencies maintained by:

Signature of Bidder

Printed or Typed Name of Bidder

(required)
NOTARY

Subscribed and sworn to before me

this _____ day of _____ (month), _____ (year)

Notary Public

Seal:

3.0

VERIFICATION STATEMENT



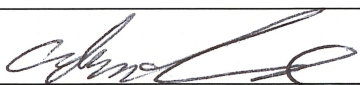
**VERIFICATION STATEMENT
FEDERAL FUNDED CONTRACTS
Construction**

**NO FEDERAL TAX LIENS, NO DEBARMENTS,
USE OF E-VERIFY FOR EMPLOYMENT HIRING,
AZUTRACS REGISTRATION/STATUS,
ROC LICENSE, FEDERAL EMPLOYER IDENTIFICATION NUMBER (EIN),
BUY AMERICA / BUILD AMERICA-BUY AMERICA COMPLIANCE,
FORCED LABOR OF ETHNIC UYGHURS BAN**

This form represents certifying compliance for items listed below:

- a) This company has no outstanding unresolved federal tax liens.
- b) This company has not been suspended or debarred from working on a federal funded contract, does not have a proposed debarment pending, has not been indicted, convicted, or had a civil judgement rendered against the firm by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three (3) years as specified by Code of Federal Regulations 49 CFR.
- c) This company uses E-Verify for employment verifications.
- d) This company has a current AZUTracs Registration (<https://utracs.azdot.gov>)
- e) ROC License: To work on a federal funded project, all contractors, subcontractors, consultants, subconsultants must have an ROC license (exception if business type does not require ROC license in Arizona). For bidding process, For Construction, Low Bidder will have 60 days from Bid Opening Day to obtain the required State ROC license. If your business type does not require an ROC License, please write in the box below, "not applicable". If applying for, write in "Pending" or "In Process".
- f) EIN: Must have an Employer Identification Number (EIN) if you are the Prime. For Subcontractors and Subconsultants - you are required only If required by Law / Federal Requirements.
- g) This company agrees to comply with Buy America and Build America-Buy America (BABA).
- h) Forced Labor of Ethnic Uyghurs Ban: This company does not use and agrees not to use during the term of the contract, any Forced Labor of Ethnic Uyghurs in the People's Republic of China; any goods or services produced by the forced labor of Ethnic Uyghurs in the People's Republic of China; and will ensure that all Consultants, Subconsultants, and Suppliers comply with this.
- i) This company has experience with federal funded projects including complying with Buy America, Build America-Buy America (BABA), material certifications, certified payroll through LCPTTracker system, payment reporting in ADOT DOORs Payment Reporting system, and overseeing their subcontractors complying with federal requirements.

A company that is unable to certify to the statements above is ineligible to enter into an agreement for federal funded contracts with the City of Chandler.

Company Name:	KLASS Services Inc		
Company AZUTracs No:	23228		
Company ROC No:(if applicable)	KA 174296		
EIN:	86-1041053		
Name of Person Signing:	Adam Sheppard		
Title of Person Signing:	Principal		
Signature:		Date:	5-28-28

4.0

**FORCED LABOR OF ETHNIC UYGHURS BAN
CERTIFICATION FORM**

**FORCED LABOR OF ETHNIC UYGHURS BAN
CERTIFICATION FORM FOR CITY OF CHANDLER**

Please note that if any of the following apply to the Consultant, then the Offeror shall select the "Exempt Consultant" option below:

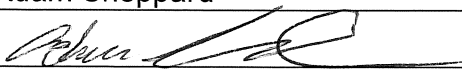
- Consultant is a sole proprietorship;
- Consultant has fewer than ten (10) employees; OR
- Consultant is a non-profit organization.

Pursuant to A.R.S. § 35-394, the State of Arizona prohibits a public entity from entering into or renewing a contract with a company unless the contract includes written certification that the company does not use the forced labor, or any goods or services produced by the forced labor, or use any consultants, subconsultants, or suppliers that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China.

Under A.R.S. §35-394:

1. "Company" means an organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, limited liability company or other entity or business association, including a wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate, that engages in for-profit activity and that has ten or more full-time employees.
- (a) Based in part on the fact that the entity does business in Israel or in territories controlled by Israel.
- (b) In a manner that discriminates on the basis of nationality, national origin or religion and that is not based on a valid business reason.
2. "Public entity" means this State, a political subdivision of this State or an agency, board, commission or department of this State or a political subdivision of this State.

In compliance with A.R.S. 35-394 et seq., Company must select one of the three options below. Please initial in the box to the left, the one that applies to your company.	
☐	The Company submitting this form does not use, and agrees not to use during the term of the contract, any of the following: • Forced Labor of ethnic Uyghurs in the People's Republic of China • Any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China, • Any Consultants, Subconsultants, or suppliers that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China
☐	The Company submitting this form DOES participate in the use of Forced Uyghurs Labor as described in A.R.S. 35-394 and therefore understands that working on a federal funded contract with the City of Chandler is prohibited.
☐	Exempt: This Company submitting this form is exempt based on one or ore of the three items below. Mark an "X" in the applicable items below and you may mark more than one.
☐	Is a sole proprietorship
☐	Has fewer than ten (10) employees
☐	Is a non-profit organization

Company Name	KLASS Services Inc
Address	1300 S Litchfield Rd. #210F, Goodyear AZ 85338
Printed Name	Adam Sheppard
Signature	
Date	5/28/26

5.0

EEO CLAUSE STATEMENT

AND

CONTRACTOR EEO OFFICER

**EEO CLAUSE / STATEMENT
And
CONTRACTOR EEO OFFICER**

**CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS
SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS
APRIL, 1969**

The bidder/contractor hereby certifies that: (Mark One)

	<u>Has</u> participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114
OR	
	<u>Has not</u> participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114

And (Mark One)

	<u>Has</u> filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.
OR	
	<u>Has not</u> filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

CONTRACTOR NAME	KLASS Services Inc
CONTRACTOR EEO OFFICER NAME	Sarah Peters
CONTRACTOR SIGNATURE	

Note: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7b (1),) and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5 (Generally only contracts or subcontracts of \$10,000 or under are exempt). Currently, Standard Form 10 (EEO-1) is the only report required by the Executive Orders or their implementing regulations. Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b)(1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor

Information is available from: Joint Reporting Committee
P.O. Box 19100
Washington, D.C. 20036-9100

**Special Note: In 2025 President Trump rescinded Executive Order 11246. This form has been revised to remove identifying that you have or have not participated in a project related to Executive Order 11246.*

6.0

PROMPT PAY PROVISIONS

CONSTRUCTION AND PROFESSIONAL SERVICES/DESIGN CONTRACTS PROMPT PAY AND PAYMENT REPORTING PROVISIONS

**** FOR USE ON LPA FEDERAL AID PROJECTS ****

(07/24/2023)

MEASUREMENTS AND PAYMENT:

(A) Partial Payments:

If satisfactory progress is being made, the contractor shall receive a payment based on the amount of work completed. Progress payments may be made by the LPA/Subrecipient Procurement Office to the contractor on the basis of an approved estimate of the work performed during a preceding period of time. The progress payments will be paid on or before 14 days after the estimate of the work is approved. The estimate of the work will be deemed received by the LPA/Subrecipient Procurement Office on submission to the person designated by the LPA/Subrecipient Procurement Office for the submission, review or approval of the estimate of the work. The LPA/Subrecipient Procurement Office by mutual agreement may make progress payments on contracts of less than 90 days and will make monthly progress payments on all other contracts. Payment to the contractor on the basis of a duly certified and approved estimate of the work performed during the preceding calendar month under the contract may include payment for material and equipment.

An estimate of the work submitted will be deemed approved and certified for payment after seven days from the date of submission unless before that time the LPA/Subrecipient Procurement Office or Designee prepares and issues a specific written finding setting forth those items in detail in the estimate of the work that are not approved for payment under the contract. The contractor shall work with the LPA/Subrecipient or the LPA/Subrecipient Designee to finalize monthly estimate. The progress payments will be paid on or before 14 days after the estimate of the work is certified and approved in accordance with Arizona Revised Statutes Section 34-221.

The contractor shall pay to the contractor's subcontractors or material suppliers and each subcontractor shall pay to the subcontractor's subcontractor or material supplier, within seven days of receipt of each progress payment the respective amounts allowed the contractor or subcontractor on account of the work performed by the subcontractors, to the extent of each subcontractor's interest.

No contract for construction services may materially alter the rights of any contractor, subcontractor, or material supplier to receive prompt and timely payment.

A subcontractor may notify the LPA/Subrecipient Procurement Office in writing requesting that the subcontractor be notified by the Subrecipient Procurement Office in writing within five days from payment of each progress payment made to the contractor.

(B) No Retainage on Progress Payments:

- (1) This is a federally-funded project. Therefore, notwithstanding A.R.S. § 34-221, the LPA/Subrecipient Procurement Office will not withhold retainage from progress payments. Neither the contractor, nor the subcontractor of any tier, may withhold any retainage on progress payments to subcontractors or suppliers of any tier.
- (2) This provision does not prevent the LPA/Subrecipient Procurement Office from withholding retainage or reducing payments where otherwise provided in the contract. These cases may include, but are not limited to:
 - (a) Delayed work;
 - (b) Work that is not satisfactorily performed; or
 - (c) A failure to submit necessary reports, certifications, or documents to the LPA/Subrecipient Procurement Office.

(C) Subcontractor Payments:

(1) No Retainage:

- (a) This is a federally-funded project. Therefore, notwithstanding A.R.S. § 34-221, neither the contractor, nor the subcontractor of any tier, may withhold any retainage on progress payments to subcontractors or suppliers of any tier.
- (b) Pursuant to Subsection (B)(2) of this Specification, the contract does not prevent the LPA/Subrecipient Procurement Office from withholding retainage or reducing payments where otherwise provided in the contract. These cases may include, but are not limited to:
 - (i) Delayed work;
 - (ii) Work that is not satisfactorily performed; or
 - (iii) A failure to submit necessary reports, certifications, or documents to the LPA/Subrecipient Procurement Office.
- (c) When the LPA/Subrecipient Procurement Office withholds retainage or reduces payments under Subsection (B)(2) of this Specification, the contractor may withhold retainage on progress payments to subcontractors or suppliers of any tier. However, the contractor may only withhold a reasonable amount of retainage.
- (d) For the purpose of this section, a “reasonable amount” of retainage is based on the subcontractor’s involvement or the supplier’s involvement in the cause for the LPA/Subrecipient Procurement Office’s reduction of payment. The final amount retained from all subcontractors and suppliers shall not be higher than the amount retained by the LPA/Subrecipient. However, tier subcontracts shall include provisions that comply with this section.

(2) No Set-offs Arising from Other Contracts:

If a subcontractor is performing work on multiple contracts for the same contractor or subcontractor of any tier, the contractor or subcontractor of any tier shall not withhold or reduce payment from its subcontractors on the contract because of disputes or claims on another contract.

(3) Partial Payment:

The contractor and each subcontractor of any tier shall make prompt partial payments to its subcontractors within seven days of receipt of payment from the LPA/Subrecipient Procurement Office. Notwithstanding any provision of Arizona Revised Statutes Section 34-221, the parties may not agree otherwise.

(4) Final Payment:

The contractor and each subcontractor of any tier shall make prompt final payment to each of its subcontractors. The contractor and each subcontractor of any tier shall pay all monies, including retention, due to its subcontractor within seven days of receipt of payment. Notwithstanding any provision of Arizona Revised Statutes Section 34-221, the parties may not agree otherwise.

(5) Payment Reporting:

For the purposes of this subsection "Reportable Contracts" means any subcontract, of any tier, DBE or non-DBE, by which work shall be performed on behalf of the contractor and any contract of any tier with a DBE material supplier.

The requirements of this subsection apply to all Reportable Contracts.

Payment Reporting for all Reportable Contracts shall be done through the LPA DBE System which can be accessed at AZ UTRACS on the Arizona Transportation Business Portal at www.azutracs.com. No later than fifteen calendar days after the preconstruction conference, the contractor shall log into the system and enter or verify the name, contact information, and subcontract amounts for Reportable Contracts on the project. As Reportable Contracts are approved over the course of the contract, the contractor shall enter the subcontractor information in the LPA DBE System. Reportable contracts information shall be entered into the system no later than five calendar days after approval by the LPA/Subrecipient Procurement Office.

The contractor shall report on a monthly basis indicating the amounts actually paid and the dates of each payment under any Reportable Contract on the project. The contractor shall provide information for payments made on all Reportable Contracts during the previous month by the last day of the current month. In the event that no payments were made during a given month, the contractor shall identify that by entering a dollar value of zero. If the contractor does not pay the full amount of any invoice from a subcontractor, the contractor shall note that and provide the reasons in the comment section of the Monthly Payment Audit of the LPA DBE System.

In addition, the contractor shall require that all participants in any Reportable Contract electronically verify receipt of payment on the contract within 15 days of receipt of electronic payment notification and the contractor shall actively monitor the system to ensure that the verifications are input. The contractor shall proactively work to resolve any payment discrepancies in the system between payment amounts it reports and payment confirmation amounts reported by others.

The contractor shall ensure that all Reportable Contract payment activity is in the LPA DBE System. This includes all lower-tier Reportable Contracts.

The contractor shall maintain records for each payment explaining the amount requested by the subcontractor, and the amount actually paid pursuant to the request, which may include but are not limited to, estimates, invoices, pay requests, copies of checks or wire transfers, and lien waivers in support of the monthly payments in the system.

The contractor shall ensure that a copy of this Subsection is included in every Reportable Contract of every tier.

(a) Sanctions for Inadequate Reporting:

For each month that the contractor fails to submit timely and complete payment information the LPA/Subrecipient Procurement Office will retain \$5,000 as sanctions from the monies due to the contractor. After 90 consecutive days of non-reporting, the sanctions will increase to \$10,000 for each subsequent month which the contractor fails to report until the information is provided. These sanctions will be in addition to all other retention or liquidated damages provided for elsewhere in the contract.

(6) Completion of Work:

A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished, documented, and accepted by the LPA/Subrecipient Procurement Office.

(7) Disputes:

If there is a discrepancy between what is reported by the contractor in the LPA DBE System and what the subcontractor indicates, an alert email will automatically be sent to the contractor. The email will be sent to the email address provided by the contractor in the LPA DBE System. It is the contractor's responsibility to ensure that the email address in the system is kept current.

The contractor shall provide a verifiable explanation of the discrepancy in the LPA DBE System as early as practicable but in no case later than seven days after the date of the alert email.

The LPA/Subrecipient will determine whether the contractor has acted in good faith concerning any such explanations. The LPA/Subrecipient and ADOT BECO reserves the right to request and receive documents from the contractor and all subcontractors of any

tier, in order to determine whether prompt payment requirements are met.

The contractor shall implement and use the dispute resolution process outlined in the subcontract or by following the LPA/Subrecipient escalation process, to resolve payment disputes.

(8) Non-compliance:

Failure to make prompt partial payment, or prompt final payment including any retention, within the time frames established above, will result in remedies, as the LPA/Subrecipient Procurement Office deems appropriate, which may include but are not limited to:

- (a) Sanctions: These sanctions will be in addition to all other retention or liquidated damages provided for elsewhere in the contract.
 - (i) The LPA/Subrecipient Procurement Office will withhold two times the disputed dollar amount not paid to each subcontractor.
 - (ii) If full payment is made within 30 days of the LPA/Subrecipient Procurement Office's payment to the contractor, the amount withheld by the LPA/Subrecipient Procurement Office will be released.
 - (iii) If full payment is made after 30 days of the LPA/Subrecipient Procurement Office's payment to the contractor, the LPA/Subrecipient Procurement Office will release 75 percent of the funds withheld. The LPA/Subrecipient Procurement Office will retain 25 percent of the monies withheld as sanctions.
- (b) Additional Remedies. If the contractor fails to make prompt payment for three consecutive months, or any four months over the course of one project, or if the contractor fails to make prompt payment on two or more projects within 24 months, the LPA/Subrecipient Procurement Office may, in addition, invoke the following remedies:
 - (i) Withhold monthly progress payments until the issue is resolved and full payment has been made to all subcontractors, subject to the sanctions described in paragraph (a) above,
 - (ii) Terminate the contract for default,
 - (iii) Disqualify the contractor from future bidding, temporarily or
 - (iv) permanently, depending on the number and severity of violations, if applicable.

In determining whether sanctions will be assessed, the extent of the sanctions, or additional remedies assessed, the LPA/Subrecipient will consider whether there have been other violations on this or other contracts, whether the failure to make prompt payment was due to circumstances beyond the contractor's control, and other circumstances. The contractor may, within 15 calendar days of receipt of the decision of the LPA/Subrecipient, escalate the decision according to the contract's escalation process.

7.0

TITLE VI

City of Chandler
Title VI / Non-Discrimination Assurances
DOT Order No 1950.2A

The **City of Chandler** (herein referred to as the "Recipient"), HEREBY AGREES THAT, as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation (DOT), through *Federal Highway Administration and Arizona Department of Transportation*, is subject to and will comply with the following:

Statutory/Regulatory Authorities

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
- 49 C.F.R. Part 21 (entitled *Non-discrimination In Federally-Assisted Programs Of The Department Of Transportation--Effectuation Of Title VI Of The Civil Rights Act Of 1964*);
- 28 C.F.R. section 50.3 (U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964);

The preceding statutory and regulatory cites hereinafter are referred to as the "Acts" and "Regulations," respectively.

General Assurances

In accordance with the Acts, the Regulations, and other pertinent directives, circulars, policy, memoranda and/or guidance, the Recipient hereby gives assurances that it will promptly take any measures necessary to ensure that:

"No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity," for which the Recipient receives Federal financial assistance from DOT, including the Federal Highway Administration.

The Civil Rights Restoration Act of 1987 clarified the original intent of Congress, with respect to Title VI and other Non-discrimination requirements (The Age Discrimination Act of 1975, and Section 504 of the Rehabilitation Act of 1973), by restoring the broad, institutional-wide scope and coverage of these non-discrimination statutes and requirements to include all programs and activities of the Recipient, so long as any portion of the program is Federally assisted.

Specific Assurances

More specifically, and without limiting the above general Assurance, the Recipient agrees with and gives the following Assurances with respect to its *Federal Aid Highway Program*.

1. The Recipient agrees that each "activity," "facility," or "program," as defined in §§ 21.23 (b) and 21.23 (e) of 49 C.F.R. § 21 will be (with regard to an "activity") facilitated, or will be (with regard to a "facility") operated, or will be (with regard to a "program") conducted in compliance with all requirements imposed by, or pursuant to the Acts and the Regulations.

2. The Recipient will insert the following notification in all solicitations for bids, Requests For Proposals for work, or material subject to the Acts and the Regulations made in connection with all *Federal Aid Highway Program* and, in adapted form, in all proposals for negotiated agreements regardless of finding source:

*"The **City of Chandler**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252.42 U.S.C. §§ 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award."*

3. The Recipient will insert the clauses of Appendix A and E of this Assurance in every contract or agreement subject to the Acts and the Regulations.

4. The Recipient will insert the clauses of Appendix B of this Assurance, as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a Recipient.

5. That where the Recipient receives Federal financial assistance to a construct a facility or part of a facility, the Assurance will extend to the entire facility and facilities operated in connection therewith.

6. That where the Recipient receives Federal financial assistance in the form, or for the acquisition of real property or an interest in real property, the Assurance will extend to rights to space on, over, or under such property.

7. That the Recipient will include the clauses set forth in Appendix C and Appendix D of this Assurance, as a covenant running with the land, in any future deeds, leases, licenses, permits, or similar instruments entered into by the Recipient with other parties:

- a. for the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and
- b. for the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project or program.

8. That this Assurance obligates the Recipient for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the Assurance obligates the Recipient, or any transference for the longer of the following periods:

- a. the period during which the property is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits; or
- b. the period during which the Recipient retains ownership or possession of the property.

9. The Recipient will provide for such methods of administration for the program as are found by the Secretary of Transportation or the official whom he/she delegates specific authority to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the Acts, the Regulations, and this Assurance.

10. The Recipient agrees that the United States has a right to seek judicial enforcement with regard to any matter arising under the Acts, the Regulations, and this Assurance.

By signing this ASSURANCE, The **City of Chandler** also agrees to comply (and require any sub-recipients, sub-grantees, contractors, successors, transferees, and/or assignees to comply) with all applicable provisions governing *Federal Highway Administration or Arizona Department of Transportation* access to records, accounts, documents, information, facilities, and staff. You also recognize that you must comply with any program or compliance reviews, and/or complaint investigations conducted by the *Federal Highway Administration or Arizona Department of Transportation*. You must keep records, reports, and submit the material for review upon request to *Federal Highway Administration, Arizona Department of Transportation*, or its designee in timely, complete, and accurate way. Additionally, you must comply with all other reporting, data collection, and evaluation requirements, as prescribed by law or detailed in program guidance.

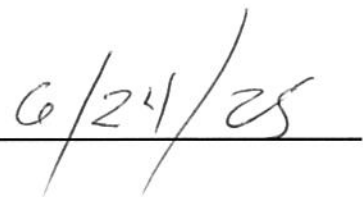
The **City of Chandler** gives this ASSURANCE in consideration of and for obtaining any Federal grants, loans, contracts, agreements, property, and/or discounts, or other Federal-aid and Federal financial assistance extended after the date hereof to the recipients by the U.S. Department of Transportation under the *Federal Highway Administration and Arizona Department of Transportation*. This ASSURANCE is binding on Arizona, other recipients, sub-recipients, sub-grantees, contractors, subcontractors and their subcontractors', transferees, successors in interest, and any other participants in the *Federal Aid Highway Program* the person(s) signing below is authorized to sign this ASSURANCE on behalf of the Recipient.

City of Chandler
(Name of Recipient)

By


John Knudson
Public Works & Utilities Director

DATED


6/24/25

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, *Federal Highway Administration or the Arizona Department of Transportation*, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performance by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient, the *Federal Highway Administration or Arizona Department of Transportation* to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient, the *Federal Highway Administration, or Arizona Department of Transportation*, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the *Federal Highway Administration or Arizona Department of Transportation*, may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with request to any subcontract or procurement as the Recipient, the *Federal Highway Administration, or Arizona Department of Transportation* may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX B

CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4:

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the City of Chandler will accept title to the lands and maintain the project constructed thereon in accordance with *Title 23*, United States Code the Regulations for the Administration of *Federal Aid for Highways*, and the policies and procedures prescribed by the *Arizona Department of Transportation*, *Federal Highway Administration* and the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252;42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the City of Chandler all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto the City of Chandler and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the City of Chandler, its successors and assigns.

The City of Chandler, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [.] [and]* (2) that the City of Chandler will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this instruction].*

*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.

APPENDIX C

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE ACTIVITY, FACILITY, OR PROGRAM

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the **City of Chandler** to the provisions of Assurance 7(a):

A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities,

B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, the **City of Chandler** will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*

C. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, The City of Chandler will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the **City of Chandler** and its assigns*.

*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.

APPENDIX D

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by the City of Chandler pursuant to the provisions of Assurance 7(b):

- A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended set forth in this Assurance.
- B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non-discrimination covenants, the City of Chandler will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*
- C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, the City of Chandler will there upon revert to and vest in and become the absolute property of the City of Chandler and its assigns.*

Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1687 *et seq.*).

8.0

DBE EPRISE

CONSTRUCTION CONTRACTS DBE PROVISIONS

** FOR USE ON LPA FEDERAL AID PROJECTS WITHOUT GOALS. **

(LPA EPRISE WITHOUT DBE GOAL, 10/24/2025)

DISADVANTAGED BUSINESS ENTERPRISES:

1.0 Policy:

The Arizona Department of Transportation (hereinafter the Department) has established a Disadvantaged Business Enterprise (DBE) program in accordance with the regulations of the U.S. Department of Transportation (USDOT), 49 Code of Federal Regulation Part 26 (49 CFR Part 26), as revised by the USDOT DBE Interim Final Rule (IFR) issued October 3, 2025 (hereinafter referred to as IFR).

The Department has received Federal financial assistance from the U.S. Department of Transportation and as a condition of receiving this assistance, the Department has signed an assurance that it will comply with 49 CFR Part 26, as revised by the IFR.

It is the policy of the Department to ensure that DBEs (hereinafter DBE or DBE firm), as defined in Part 26, have an equal opportunity to receive and participate in USDOT-assisted contracts. It is also the policy of the Department:

- (A) To ensure nondiscrimination in the award and administration of USDOT-assisted contracts;
- (B) To create a level playing field on which DBEs can compete fairly for USDOT-assisted contracts;
- (C) To ensure that the DBE program operates in a nondiscriminatory manner and without regard to race or sex, while maximizing efficiency of service;
- (D) To ensure that only firms that fully meet 49 CFR Part 26 eligibility standards are counted as DBEs;
- (E) To help remove barriers to the participation of DBEs in USDOT-assisted contracts;
- (F) To assist in the development of firms that can compete successfully in the market place outside the DBE program and;
- (G) To promote the use of DBEs in all types of federally-assisted contracts and procurement activities.

It is also the policy of the Department to facilitate and encourage participation of Small Business Concerns (SBCs), as defined herein in USDOT-assisted contracts. The Department encourages contractors to take reasonable steps to eliminate obstacles to SBCs' participation and to utilize SBCs in performing contracts.

Local Public Agencies (LPA) and or Subrecipients of Federal financial assistance have adopted the Department's DBE Program Plan, adhere to the Department's DBE policy and will administer and manage the contracts from advertising, consultant selection, negotiation, contract execution, processing payment reports and contract modifications, audits, DBE compliance (e.g., reporting and monitoring) through contract closeout.

2.0 Assurances of Non-Discrimination:

The contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 as revised by the IFR in the award and administration of USDOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the LPA/Subrecipient, with the Department's concurrence, deems appropriate, which may include, but not limited to:

- (A) Withholding monthly progress payments;
- (B) Assessing sanctions;
- (C) Disqualifying the contractor from future bidding as non-responsible.

The contractor, subrecipient, or subcontractor shall ensure that all subcontract agreements contain this non-discrimination assurance.

3.0 Definitions:

- (A) **Commercially Useful Function (CUF):** Commercially Useful Function is defined in 49 CFR Part 26.55. That definition is incorporated herein by reference.
- (B) **Disadvantaged Business Enterprise (DBE):** A DBE, as defined in 49 CFR Part 26.5, is a for-profit small business concern which meets both of the following requirements:
 - (1) Is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged; and,
 - (2) Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.
- (C) **Joint Check:** a two-party check between a subcontractor, DBE and/or non-DBE, a prime contractor and the regular dealer of material supplies.
- (D) **Joint Venture:** an association of a DBE firm and one or more other firms to carry out a single, for-profit business enterprise, for which parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

- (E) **NAICS Code:** The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the US business economy.
- (F) **Non-DBE:** any firm that is not a DBE.
- (G) **DBE Conscious:** a measure or program that is focused specifically on assisting only DBEs.
- (H) **DBE Neutral:** a measure or program that is, or can be, used to assist all small businesses.
- (I) **Small Business Concern:** a business that meets all of the following conditions:
 - (1) Operates as a for-profit business;
 - (2) Operates a place of business primarily within the U.S., or makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials, or labor;
 - (3) Is independently owned and operated;
 - (4) Is not dominant in its field on a national basis; and
 - (5) Does not have annual gross receipts that exceed the Small Business Administration size standards average annual income criteria for its primary North American Industry Classification System (NAICS) code.
- (J) **Socially and Economically Disadvantaged Individuals:** Socially and Economically Disadvantaged Individuals is defined in 49 CFR Part 26.5, as revised by the IFR. That definition is incorporated here.
 - (1) Any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who a certifier finds to be socially and economically disadvantaged on an individual basis.
 - (2) A determination that an individual is socially and economically disadvantaged must not be based in whole or in part on race or sex. For that reason, all applicants shall qualify as socially and economically disadvantaged if they can demonstrate that they can meet the relevant criteria described in 49 CFR Part 26.67.
 - (3) Being born in a particular country does not, standing alone, mean that a person is necessarily socially and economically disadvantaged.

4.0 Working with DBEs:

The Department works with DBEs and assists them in their efforts to participate in the highway construction program. All bidders should contact the Department's Business Engagement & Compliance Office (BECO) by phone, through email, or at the address shown below, for assistance in their efforts to use DBEs in the highway construction program of the Department. BECO contact information is as follows:

Arizona Department of Transportation
 Business Engagement & Compliance Office
 1801 W. Jefferson Street, Ste. 101, Mail Drop 154A
 Phoenix, AZ 85007
 Phone (602) 712 7761
 Email: LPAcontractorcompliance@azdot.gov
 Website: azdot.gov/business/business-engagement-and-compliance

4.01 Business Development Program:

The Department has established the Business Development Program as an initiative to encourage and develop disadvantaged businesses in the highway construction industry. The Department is committed to providing new, emerging, developmental and transitional DBEs with general and firm-specific training and technical assistance. The Department intends for this assistance to aid DBEs to become competitive within the heavy highway and construction industry market places. In particular, the Department's DBE Supportive Services Program (DBE/SS) is designed to work in collaboration with stakeholder organizations (including departments and agencies of State and Federal Governments, small business organizations, tribal governments, profit and nonprofit corporations) to help DBEs to successfully compete for highway construction projects and become self-sufficient. The program provides educational opportunities for DBEs regarding current market conditions, federal regulatory compliance, and best business practices. These efforts are reinforced with one-on-one business counseling for DBEs certified in areas that directly support Federal-aid highway projects, small group workshops, conferences, business expositions, regular in-person training opportunities, and regular virtual training opportunities. For guidance regarding this program, refer to the Business Development Program Guidelines available on the BECO website at azdot.gov/business/business-engagement-and-compliance/dbe-supportive-services/business-development-program/disadvantaged-business-enterprise-dbe-program/dbe.

The Business Development Program is intended to increase legitimate DBE activities. The program operates in conformity with the Federal DBE rules and regulations. The Department's DBE/SS participants may not circumvent the Federal DBE rules or regulations.

5.0 Applicability:

During the transition period, the IFR provides that until the Arizona Unified Certification Program (UCP) completes the recertification process, the Department may not 1) set any DBE contract goals or 2) count any participation towards its overall DBE goal.

The Department has established an overall annual goal for DBE participation on Federal-aid contracts. The Department intends for the goal to be met with a combination of DBE conscious and DBE neutral efforts once the DBE recertification process is completed in accordance with the IFR. DBE conscious participation occurs where the contractor uses a percentage of DBEs, as defined herein, to meet the contract-specified goal. DBE neutral efforts are those that are, or can be, used to assist all small businesses or increase opportunities for all small businesses. The regulation, 49 CFR 26, as revised by the IFR describes DBE neutral participation as when a DBE wins a prime contract through customary competitive procurement procedures or is awarded a subcontract on a prime contract that does not carry a DBE contract goal.

The DBE provisions are applicable to all bidders.

6.0 Certification and Registration:

6.01 DBE Certification:

Certification as a DBE shall be predicated on:

- (A) The completion and execution of an application for certification as a "Disadvantaged Business Enterprise".
- (B) The submission of documents pertaining to the firm(s) as stated in the application(s), including but not limited to a statement of social disadvantage and a personal financial statement.
- (C) The submission of any additional information which the Department may require to determine the firm's eligibility to participate in the DBE program.
- (D) The information obtained during the on-site visits to the offices of the firm and to active job-sites.

Application Submission. Applications for Disadvantaged Business Enterprise (DBE) certification may be filed online with the Department or the applicable UCP agency at any time through the Arizona Unified Transportation Registration and Certification System (AZ UTRACS) website at utracs.azdot.gov/Home/.

Implementation of Revised Federal Standards. Effective October 3, 2025, all certification applications and renewals shall be reviewed and processed in accordance with the 49 CFR Part 26 as revised by the IFR. The revised rule modifies certification standards, documentation, and evidentiary requirements applicable to determinations of social and economic disadvantage, business size, ownership, and control.

Transition Period. During the transition period in which the Department and participating UCP agencies are updating internal procedures and the AZ UTRACS system to implement the revised rule, certification applications may continue to be submitted through the existing online platform. Applicants submitting applications during this period may be required to furnish additional or supplemental documentation consistent with the revised certification criteria upon system update or upon request by the certifying agency.

All applicants, whether filing initial or renewal applications, shall comply with any new or amended federal documentation requirements that become effective under 49 CFR Part 26 as revised by the IFR, including but not limited to personal narrative statements, financial disclosures, and supporting affidavits required to demonstrate eligibility under the revised standards.

The Department is a member of the AZ Unified Certification Program (AZUCP). During the transition period, the list of firms listed in AZ UTRACS were certified prior to October 3, 2025, not in accordance with the IFR, and therefore do not count for DBE credit, unless otherwise noted in AZ UTRACS. The list indicates contact information and specialty for each DBE firm, and may be sorted in a variety of ways. However, the Department does not guarantee the accuracy and/or completeness of this information, nor does the Department represent that any licenses or registrations are appropriate for the work to be done.

The Department's certification of a DBE is not a representation of qualifications and/or abilities; only that the firm has met the criteria for DBE certification as outlined in 49 CFR Part 26, as revised by the IFR. The contractor bears all risks of ensuring that DBE firms selected by the contractor are able to perform the work.

6.02 SBC Registration:

To comply with 49 CFR Part 26.39, the Department's DBE Program incorporates contracting requirements to facilitate participation by Small Business Concerns (SBCs) in federally assisted contracts. SBCs are for-profit businesses authorized to do business in Arizona that meet the Small Business Administration (SBA) size standards for average annual revenue criteria for its primary North American Industry Classification System (NAICS) code.

While the SBC component of the DBE program does not require utilization goals on projects, the Department and the LPA/Subrecipient encourages contractors to utilize small businesses that are registered in AZ UTRACS on their contracts, in addition to DBEs meeting the certification requirement in accordance with the IFR. However, SBCs that are not DBEs will not be counted toward the DBE contract goal.

SBCs can register online at the AZ UTRACS website at utracs.azdot.gov/Home/. The registration of SBCs is not a representation of qualifications and/or abilities. The contractor bears all risks of ensuring that SBC firms selected by the contractor are able to perform the work.

7.0 DBE Financial Institutions:

The Department thoroughly investigates the full extent of services offered by financial institutions owned and controlled by socially and economically disadvantaged individuals in its service area and makes reasonable efforts to use these institutions. The Department encourages prime contractors to use such institutions on USDOT assisted contracts. However, use of DBE financial institutions will not be counted toward the DBE contract goal.

The Department and the LPA/Subrecipient encourages prime contractors to research the Federal Reserve Board website at federalreserve.gov to identify minority-owned banks in Arizona derived from the Consolidated Reports of Condition and Income filed quarterly by banks (FFIEC 031 and 041) and from other information on the Board's National Information Center database.

8.0 Time is of the Essence:

TIME IS OF THE ESSENCE IN RESPECT TO THE DBE PROVISIONS.

9.0 Computation of Time:

In computing any period of time described in this DBE special provision, such as calendar days, the day from which the period begins to run is not counted. When the last day of the period is a Saturday, Sunday, or Federal or State holiday, the period extends to the next day that is not a Saturday, Sunday, or Federal or State holiday. When the LPA/Subrecipient Procurement Office is closed for all or part of the last day, the period extends to the next day on which the LPA/Subrecipient Procurement Office is open.

10.0 Contractor and Subcontractor Requirements:

10.01 General:

The contractor shall establish a DBE program that will ensure nondiscrimination in the award and administration of contracts and subcontracts.

Agreements between the bidder and a DBE in which the DBE promises not to provide subcontracting quotations to other bidders are prohibited.

10.02 Blank:

11.0 Bidders/Proposers List and AZ UTRACS Registration Requirement:

Under 49 CFR Part 26.11, DOTs are required to collect certain information from all contractors and subcontractors who seek to work on federally-assisted contracts in order to set overall and contract DBE goals. The Department collects this information through a Bidders/Proposers List when firms register their companies on the Arizona Unified Transportation Registration and Certification System (AZ UTRACS) web portal at utracs.azdot.gov/Home/ a centralized database for companies that seek to do business with the Department. This information will be maintained as confidential to the extent allowed by Federal and State law.

All prime contractors, subcontractors, and DBEs shall: (1) register in AZ UTRACS, and (2) maintain their profile with current and accurate firm information. Bidders may verify that their firm and each subcontractor is registered using the AZ UTRACS website.

Bidders may obtain additional information at the AZ UTRACS website or by contacting the LPA/Subrecipient.

Bidders shall create the Bidders/Proposers List in the AZ UTRACS by selecting all subcontractors, service providers, manufacturers and suppliers that expressed interest or submitted bids, proposals or quotes for this contract. The Bidders/Proposers List form must be complete and must include the names for all subcontractors, service providers, manufacturers and suppliers regardless of the bidders' intentions to use those firms on the project.

All bidders must complete the Bidders/Proposers List online at AZ UTRACS whether they are the apparent low bidder or not. A confirmation email will be generated by the system. The bidders shall submit to the LPA/Subrecipient a copy of the email confirmation no later than 4:00 p.m. on the fifth calendar day following the bid opening. Faxed copies are acceptable.

FAILURE TO SUBMIT THE REQUIRED BIDDERS/PROPOSERS LIST TO THE LPA/SUBRECIPIENT PROCUREMENT OFFICE BY THE STATED TIME AND IN THE MANNER HEREIN SPECIFIED SHALL BE CAUSE FOR THE BIDDER BEING DEEMED INELIGIBLE FOR AWARD OF THE CONTRACT.

12.0 DBE Goals:

During the transition period, the IFR provides that until the UCP completes the recertification process, the Department may not 1) set any DBE contract goals or 2) count any participation towards its overall DBE goal. The Department will not be counting any DBE conscious or DBE neutral efforts towards its overall DBE goal during this transitional period.

The Department has not established contract goals for DBE participation in this contract.

Contractors are still encouraged to employ reasonable means to obtain DBE neutral efforts. Contractors must retain records in accordance with these DBE specifications. The contractor is notified that this record keeping is important to the Department so that it can track DBE participation where only DBE neutral efforts are employed.

13.0 Payment Reporting:

The contractor shall report on a monthly basis indicating the amounts paid to all subcontractors, of all tiers, working on the project. Reporting shall be in accordance with Prompt Pay and Payment Reporting requirements section of the contract specifications.

14.0 Crediting DBE Participation:

14.01 General Requirements:

During the transition period, the IFR provides that until the UCP completes the recertification process, the Department may not count any participation towards its overall DBE goal. This applies to both DBE conscious and DBE neutral efforts.

To count toward DBE participation, the DBE firm must be certified in each NAICS code applicable to the kind of work the firm will perform on the contract. NAICS for each DBE can be found on the AZ UTRACS under the Firm Directory. General descriptions of all NAICS codes can be found at www.naics.com.

The entire amount of a contract that is performed by the DBE's own forces, including the cost of supplies and materials purchased by the DBE for the work on the contract and equipment leased by the DBE will be credited toward DBE participation. Supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate will not be credited toward DBE participation.

The contractor bears the responsibility to determine whether the DBE possesses the proper contractor's license(s) to perform the work.

The Department's certification is not a representation of a DBE's qualifications and/or abilities. The contractor bears all risks that the DBE may not be able to perform its work for any reason.

A DBE may participate as a prime contractor, subcontractor, joint venture partner with either a prime contractor or a subcontractor, or as a vendor of materials or supplies. A DBE joint venture partner shall be responsible for a clearly defined portion of the work to be performed, in addition to meeting the requirements for ownership and control.

The dollar amount of work to be accomplished by DBEs, including partial amount of a lump sum or other similar item, shall be on the basis of agreements such as: subcontract, purchase order, hourly rate, and rate per ton.

With the exception of bond premiums, all work must be attributed to specific bid items. Where work applies to several items, the DBE contracting arrangement must specify unit price and amount attributable to each bid item. DBE credit for any individual item of work performed by the DBE shall be the lesser of the amount to be paid to the DBE or the prime contractor's bid price. If the amount bid by the DBE on any item exceeds the prime contractor's bid amount, the prime contractor may not obtain credit by attributing the excess to other items.

Where more than one DBE is engaged to perform parts of an item (for example, supply and installation), the total amount payable to the DBEs will not be considered in excess of the prime contractor's bid amount for that item.

Bond premiums may be stated separately, so long as the arrangement between the prime contractor and the DBE provides for separate payment not to exceed the price charged by the bonding company.

DBE credit may be obtained only for specific work done for the project, supply of equipment specifically for physical work on the project, or supply of materials to be incorporated in the work. DBE credit will not be allowed for costs such as overhead items, capital expenditures (for example, purchase of equipment), and office items.

If a DBE performs part of an item (for example, installation of materials purchased by a Non-DBE), the DBE credit shall not exceed the lesser of (1) the DBE's contract or (2) the prime

contractor's bid for the item, less a reasonable deduction for the portion performed by the Non- DBE.

When a DBE performs as a partner in a joint venture, only that portion of the total dollar value of the contract which is clearly and distinctly performed by the DBE's own forces can be credited.

The contractor may credit second-tier subcontracts issued to DBEs by non-DBE subcontractors. Any second-tier subcontract to a DBE must meet the requirements of a first-tier DBE subcontract.

A prime contractor may credit the entire amount of that portion of a construction contract that is performed by the DBE's own forces. The cost of supplies and materials obtained by the DBE for the work of the contract can be included so long as that cost is reasonable. Leased equipment may also be included. No credit is permitted for supplies purchased or equipment leased from the prime contractor or its affiliate(s).

When a DBE subcontracts a part of the work of its contract to another firm, the value of the subcontract may be credited towards DBE participation only if the DBE's subcontractor is itself a DBE and performs the work with its own forces. Work that a DBE subcontracts to a non-DBE firm does not count towards DBE participation.

A prime contractor may credit the entire amount of fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a USDOT-assisted contract, provided the fees are reasonable and not excessive as compared with fees customarily allowed for similar services.

14.02 Effect of Loss of DBE Eligibility:

If a DBE or a DBE prime contractor is deemed ineligible, decertified, or suspended by the Department in accordance with 49 CFR Part 26.87 and 49 CFR Part 26.88, the following provisions shall apply:

- (A) If a DBE firm loses its DBE eligibility because the DBE firm was acquired by a non-DBE firm, no work performed by the DBE firm after the Decision Date will be counted toward DBE participation.
- (B) If a subcontract, contract, or supplier arrangement has been executed before the Decision Date, work performed by the DBE firm will be counted toward DBE participation.
- (C) If neither paragraph (A) nor paragraph (B) above applies, the work performed by the DBE firm after the Decision Date will be counted toward DBE participation.
- (D) If the contractor extends or adds work to the DBE firm's subcontract, that work will not be counted towards DBE participation unless the contractor has obtained prior approval from the Department for DBE credit. Any requests to extend or add work to the DBE firm's subcontract to count towards DBE participation shall be submitted using the

request form, made available on BECO's website at azdot.gov/business/business-engagement-and-compliance/lpasubrecipient/contract-forms-specs to extend Decertified DBE contract for DBE credit.

- (E) The Department will consent to such DBE credit only if the added work is within the foreseeable range of added work, given the circumstances of the original DBE contract.
- (F) For the purposes of this subsection, "Decision Date" means the date the Department notifies the DBE that it has become ineligible, decertified, or suspended under 49 CFR Part 26.87(c)(4), (g).

14.03 Notifying the Contractor of DBE Certification Status:

Each DBE contract of any tier shall require any DBE subcontractor or supplier that is either decertified or certified during the term of the contract to immediately notify the contractor and all parties to the DBE contract in writing, with the date of decertification or certification. The contractor shall require that this provision be incorporated in any contract of any tier in which a DBE is a participant.

14.04 Police Officers:

DBE credit will not be permitted for procuring DPS officers. For projects on which officers from other agencies are supplied, DBE credit will be given only for the broker fees charged, and will not include amounts paid to the officers. The broker fees must be reasonable.

14.05 Commercially Useful Function:

A prime contractor can credit expenditures to a DBE subcontractor only if the DBE performs a Commercially Useful Function (CUF).

In conformity with 49 CFR Part 26.55(c), a DBE performs a CUF when it is responsible for execution of the work of a contract and carries out its responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the DBE must also be responsible, with respect to materials and supplies on the contract, for negotiating price, determining quality and quantity, ordering the material, and installing (where applicable) and paying for the material itself that it uses on the project. To determine whether a DBE is performing a commercially useful function, the LPA/Subrecipient will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and other relevant factors.

A DBE will not be considered to perform a commercially useful function if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation. In determining whether a DBE is such an extra participant, the LPA/Subrecipient will examine similar transactions, particularly those in which DBEs do not participate.

If a DBE does not perform or exercise responsibility for at least 30 percent of the total cost of its contract with its own work force, or if the DBE subcontracts a greater portion of the work

of a contract than would be expected within normal industry practice for the type of work involved, the LPA/Subrecipient will presume that the DBE is not performing a commercially useful function.

When a DBE is presumed not to be performing a commercially useful function as provided above, the DBE may present evidence to rebut this presumption. The LPA/Subrecipient will determine if the firm is performing a CUF given the type of work involved and normal industry practices.

The LPA/Subrecipient will notify the contractor, in writing, if it determines that the contractor's DBE subcontractor is not performing a CUF. The contractor will be notified within seven calendar days of the LPA/Subrecipient's decision.

Decisions on CUF may be appealed to the Department's BECO. The appeal must be in writing and personally delivered or sent by certified mail, return receipt requested, to the Department's BECO. The appeal must be received by the Department's BECO no later than seven calendar days after the decision of LPA/Subrecipient. LPA/Subrecipient decision remains in effect unless and until The Department's BECO reverses or modifies LPA/Subrecipient decision. The Department's BECO will promptly consider any appeals under this subsection and notify the contractor of the Department's BECO findings and decisions. Decisions on CUF matters are not administratively appealable to USDOT.

The LPA/Subrecipient will conduct project site visits on the contract to confirm that DBEs are performing a CUF. The contractor shall cooperate during the site visits and the LPA/Subrecipient staff will make every effort not to disrupt work on the project.

14.06 Trucking:

In conformity with 49 CFR Part 26.55(d), the LPA/Subrecipient will use the following factors in determining whether a DBE trucking company is performing a commercially useful function. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract.

The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract on every day that credit is to be given for trucking.

The contractor will receive credit for the total value of transportation services provided by the DBE using trucks it owns, insures and operates, and using drivers it employs.

The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services.

The DBE may also lease trucks from a non-DBE firm, including an owner-operator. The DBE who leases trucks with drivers from a non-DBE is entitled to credit for the total value of the transportation services provided by non-DBE leased trucks with drivers not to exceed the value of transportation services on the contract provided by DBE-owned trucks or leased trucks with DBE employee drivers. Additional participation by non-DBE owned trucks with drivers receives credit only for the fee or commission paid to the DBE as a result of the lease agreement.

Example: DBE Firm X uses two of its own trucks on a contract. It leases two trucks from DBE Firm Y and six trucks from non-DBE firm Z. DBE credit would be awarded for the total value of transportation services provided by Firm X and Firm Y, and may also be awarded for the total value of transportation services provided by four of the six trucks provided by Firm Z. In all, full credit would be allowed for the participation of eight trucks. DBE credit could be awarded only for the fees or commissions pertaining to the remaining trucks Firm X receives as a result of the lease with Firm Z.

The DBE may lease trucks without drivers from a non-DBE truck leasing company. If the DBE leases trucks from a non-DBE leasing company and uses its own employees as drivers, it is entitled to credit for the total value of these hauling services.

Example: DBE Firm X uses two of its own trucks on a contract. It leases three additional trucks from non-DBE Firm Z. Firm X uses its own employees to drive the trucks leased from Firm Z. DBE credit would be awarded for the total value of the transportation services provided by all five trucks.

For purposes of this section, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE. Credit will be allowed only for those lease costs related to the time each truck is devoted to the project.

DBE credit for supplying paving grade asphalt and other asphalt products will only be permitted for standard industry hauling costs, and only if the DBE is owner or lessee of the equipment and trucks. Leases for trucks must be long term (extending for a fixed time period and not related to time for contract performance) and must include all attendant responsibilities such as insurance, titling, hazardous waste requirements, and payment of drivers.

14.07 Materials and Supplies:

In conformity with 49 CFR Part 26.55(e), the LPA/Subrecipient will credit expenditures with DBEs for material and supplies towards the DBE goal as follows:

- (A) If the materials or supplies are obtained from a DBE manufacturer, 100 percent of the cost of the materials or supplies is credited.
 - (1) A DBE manufacturer is defined as: a firm that owns, or leases, and operates a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract, and of the general character described by the specifications.
 - (2) Manufacturing includes blending or modifying raw materials or assembling components to create the product to meet contract specifications. When a DBE makes minor modifications to the materials, supplies, articles, or equipment, the DBE is not a manufacturer. Minor modifications are additional changes to a

manufactured product that are small in scope and add minimal value to the final product.

- (B) If the materials or supplies are purchased from a DBE regular dealer, 60 percent of the cost of the materials or supplies, (including transportation costs), is credited.
- (1) A DBE regular dealer is defined as: a firm that owns, or leases, and operates, or maintains a store or warehouse or other establishment in which the materials, supplies, articles, or equipment of the general character described by the specifications and required under the contract are bought, kept in sufficient quantities, and regularly sold or leased to the public in the usual course of business.
- (a) To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question.
- (b) Items kept and regularly sold by the DBE are of the “general character” when they share the same material characteristics and application as the items specified by the contract.
- (2) A firm may be a DBE regular dealer in such bulk items as petroleum products, steel, concrete or concrete products, stone or asphalt without owning and operating a place of business, as provided above, if the person both owns and operates distribution equipment used to deliver the products. Any supplementing of regular dealers’ own distribution equipment must be by a long-term operating lease, and not on an ad-hoc or contract-by-contract basis.
- (3) A DBE supplier performs a CUF as a regular dealer and receives credit for 60 percent of the cost of materials or supplies, including transportation cost, when all, or at least 51 percent of, the items under a purchase order or subcontract are provided from the DBE’s inventory, and when necessary, any minor quantities delivered from and by other sources are of the general character as those provided from the DBE’s inventory.
- (4) A DBE supplier of items that are not typically stocked due to their unique characteristics (e.g., limited shelf life or items ordered to specification) should be considered in the same manner as a regular dealer of bulk items as described above. If the DBE supplier of these items does not own or lease distribution equipment, as described above, it is not a regular dealer.
- (5) Packagers, brokers, manufacturers’ representatives, or other persons who arrange, facilitate or expedite transactions are not regular dealers within the meaning of this paragraph and the paragraph above.
- (C) If the materials or supplies are purchased from a DBE distributor that neither maintains sufficient inventory nor uses its own distribution equipment for the products in question, 40 percent of the cost of materials or supplies (including transportation costs) count for credit.

- (1) A DBE distributor is defined as: an established business that engages in the regular sale or lease of the items specified by the contract. A DBE distributor assumes responsibility for the items it purchases once they leave the point of origin (e.g., a manufacturer's facility), making it liable for any loss or damage not covered by the carrier's insurance.
 - (2) A DBE distributor performs a CUF when it demonstrates ownership of the items in question and assumes all risk for loss or damage during transportation, evidenced by the terms of the purchase order or a bill of lading (BOL) from a third party, indicating Free on Board (FOB) at the point of origin or similar terms that transfer responsibility of the items in question to the DBE distributor.
 - (3) If paragraph (1) and paragraph (2), above, are met, DBE distributors may receive 40 percent for drop-shipped items.
 - (4) Terms that transfer liability to the distributor at the delivery destination (e.g., FOB destination), or deliveries made or arranged by the manufacturer or another seller do not satisfy this requirement.
- (D) With respect to materials or supplies purchased from a DBE which is neither a manufacturer, a regular dealer, nor a distributor, the following standards shall apply:
- (1) The LPA/Subrecipient will credit the entire amount of the fees or commissions charged by the DBE for: (1) assistance in the procurement of the materials and supplies, or (2) fees or transportation charges for the delivery of materials or supplies required on a job site, toward DBE goals.
 - (2) The LPA/Subrecipient will only credit the fees or commissions charged by the DBE if the Department determines the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services.
 - (3) The cost of the materials and supplies themselves may not be counted toward the DBE goal.
- (E) The LPA/Subrecipient will credit expenditures with DBEs for material and supplies (e.g. whether a firm is acting as a regular dealer, distributor or a transaction facilitator) towards the DBE goal on a contract-by-contract basis.
- (F) The fact that a DBE firm qualifies under a classification (manufacturer, regular dealer, distributor or supplier) for one contract does not mean it will qualify for the same classification on another contract.
- (G) The bidder shall be responsible for verifying whether a DBE qualifies as a DBE manufacturer, regular dealer, distributor or supplier.
- (1) For each DBE firm listed as a regular dealer or distributor, the bidder must assess a DBE firm's eligibility for 60 or 40 percent credit, respectively, of the cost of materials and supplies based on its demonstrated capacity and intent to perform as a regular dealer or distributor.

- (2) To receive credit toward the DBE goal, the bidder shall use and submit the form made available on BECO's website at azdot.gov/business/business-engagement-and-compliance/lpasubrecipient/contract-forms-specs to affirm the DBE firm's capacity and intent to perform as a regular dealer or distributor.

15.0 Joint Checks:

15.01 Requirements:

A DBE subcontractor and a material supplier (or equipment supplier) may request permission for the use of joint checks for payments from the prime contractor to the DBE subcontractor and the supplier. Joint checks may be issued only if all the conditions in this subsection are met.

- (A) The DBE subcontractor must be independent from the prime contractor and the supplier, and must perform a commercially useful function. The DBE subcontractor must be responsible for negotiating the price of the material, determining quality and quantity, ordering the materials, installing (where applicable), and paying for the material. The DBE subcontractor may not be utilized as an extra participant in a transaction, contract, or project in order to obtain the appearance of DBE participation.
- (B) The use of joint checks will be allowed only if the prime contractor, DBE subcontractor, and material supplier establish that the use of joint checks in similar transactions is a commonly recognized business practice in the industry, particularly with respect to similar transactions in which DBE's do not participate.
- (C) A material or supply contract may not bear an excessive ratio relative to the DBE subcontractor's normal capacity.
- (D) There may not be any exclusive arrangement between one prime and one DBE in the use of joint checks that may bring into question whether the DBE is independent of the prime contractor.
- (E) Any arrangement for joint checks must be in writing, and for a specific term (for example, one year, or a specified number of months) that does not exceed a reasonable time to establish a suitable credit line with the supplier.
- (F) The prime contractor may act solely as the payer of the joint check, and may not have responsibility for establishing the terms of the agreement between the DBE subcontractor and the supplier.
- (G) The DBE must be responsible for receiving the check from the prime contractor and delivering the check to the supplier.
- (H) The prime contractor cannot require the DBE subcontractor to use a specific supplier, and the prime contractor may not participate in the negotiation of unit prices between the DBE subcontractor and the supplier.

15.02 Procedure and Compliance:

- (A) BECO must approve the agreement for the use of joint checks in writing before any joint checks are issued. The prime contractor shall submit a DBE joint check request form, available from the BECO website, along with the joint check agreement, to LPA/Subrecipient and BECO through email within seven calendar days from the time the subcontract is executed.
- (B) After obtaining authorization from BECO for the use of joint checks, the prime contractor, the DBE, and the supplier must retain documentation to allow for efficient monitoring of the agreement by the LPA/Subrecipient.
- (C) Copies of canceled checks must be submitted, with the payment information for the period in which the joint check was issued, electronically through email to LPA/Subrecipient Procurement Office and made available for review at the time of the onsite CUF review. The prime contractor, DBE, and supplier each have an independent duty to report to the LPA/Subrecipient in the case of any change from the approved joint check arrangement.
- (D) Any failure to comply will be considered by the LPA/Subrecipient, with the Department's concurrence to be a material breach of this contract and will subject the prime contractor, DBE, and supplier to contract remedies and, in the case of serious violations, a potential for termination of the contract, or other remedies which may prevent future participation by the offending party.

16.0 Certification of Final DBE Payments:

DBE participation on the contract is measured by actual payments made to the DBEs. The contractor shall submit the "Certification of Final DBE Payments" form for each DBE firm working on the contract. This form shall be signed by the contractor and the relevant DBE, and submitted to the LPA/Subrecipient no later than 30 days after the DBE completes its work.

The contractor will not be released from the obligations of the contract until the "Certification of Final DBE Payments" forms are received and deemed acceptable by the LPA/Subrecipient.

17.0 False, Fraudulent, or Dishonest Conduct:

In addition to any other remedies or actions, the Department will bring to the attention of the USDOT any appearance of false, fraudulent, or dishonest conduct in connection with the DBE program, so that USDOT can take steps such as referral to the Department of Justice for criminal prosecution, referral to the USDOT Inspector General for possible initiation of suspension and debarment proceedings against the offending parties or application of "Program Fraud and Civil Penalties" rules provided in 49 CFR Part 31.

9.0

FHWA 1273

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Non-segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- XI. Certification Regarding Use of Contract Funds for Lobbying
- XII. Use of United States-Flag Vessels:

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work

performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (see 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide

sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than \$10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway

Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act ([29 CFR part 3](#))), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act ([40 U.S.C. 3141\(2\)\(B\)](#)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH-1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in [29 CFR part 1](#), a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to DBAconformance@dol.gov. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to DBAconformance@dol.gov, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division

under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. Basic record requirements (1) Length of record retention. All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) Information required. Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) Additional records relating to fringe benefits. Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) Additional records relating to apprenticeship. Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. Certified payroll requirements (1) Frequency and method of submission. The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting

agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) Information required. The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (e.g., the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at <https://www.dol.gov/sites/dolgov/files/WHDL/legacy/files/wh347.pdf> or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) Statement of Compliance. Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in [29 CFR part 3](#); and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) Use of Optional Form WH-347. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under [18 U.S.C. 1001](#) and [31 U.S.C. 3729](#).

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under [29 CFR part 6](#) any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address

of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices* (1) *Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and [29 CFR part 30](#).

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, [18 U.S.C. 1001](#).

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#); or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#).

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* \$31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the

event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

- a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;
- b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;
- c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or
- d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
 (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and

health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of \$150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contract). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.

(2) 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, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

3. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contractor). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

* * * * *

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

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XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or

cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

10.0

BUY AMERICA

BUILD AMERICA / BUY AMERICA

MATERIAL CERTIFICATIONS



BUY AMERICA
THE FINAL RULE, THE WAIVER, THE 55%, THE DATE DEADLINES

Project Name:	Kyrene Branch Canal & Highline Canal Shared Use Path	Federal Funds Obligation Date:	03-31-2026
Project Numbers:	TP2202-401 CHN0252D T038701C	Item No Below To Follow:	No 2
Agency Rep:	Janece Ray		

03/17/2025: FHWA FINAL RULE SIGNED - This has deadline phases for the Buy America Requirements.
The Final Rule amends FHWA's Buy America regulation to terminate FHWA's general waiver for manufactured products and establish Buy America requirements for manufactured products with respect to Federal-aid highway projects. The standards for applying Buy America to manufactured products are generally consistent with the Office of Management and Budget's (OMB) guidance implementing the Build America, Buy America Act (BABA) provisions of the infrastructure investment and Jobs Act (also known as the Bipartisan Infrastructure Law (BIL)).

Item No below to be marked by Agency with applicable requirement (X=Applicable, na=Not Applicable) ↓				
	1	10/01/2025 Before this date	Federal funds officially obligated to Agency before this date.	Waiver is in effect
Jray	2	10/01/2025 On and after this date (and before 10/01/2026)	Federal funds officially obligated to the Agency.	Final Assembly requirements
	3	10/01/2026 On and after this date	Federal funds officially obligated to Agency from this date forward.	All manufactured products permanently incorporated into the project must meet both the Final Assembly requirement and the 55% requirement .

DEFINITIONS / DETAILS**IRON/STEEL REQUIREMENTS:**

FHWA is required, by statute, to ensure that all projects funded under Title 23 of the United States Code, use only steel, iron, and manufactured products that are produced in the United States. 23 U.S.C. 313, FHWA refers to these requirements as “Buy America” requirements. FHWA's Buy America requirement for manufactured products mandates that all such products used on Federal aid projects must be ‘produced in the United States.’. 23 U.S.C. 313 The Buy America requirements for manufactured products has existed in some form since the enactment of the Surface Transportation Assistance Act of 1978.

THE WAIVER

In 1983 following the passage of the 1982 STAA, FHWA determined that it would be in the public interest to waive the Buy America requirements for manufactured products, with that waiver known as the “Manufactured Products General Waiver”. Under the Manufactured Products General Waiver, manufactured products that were permanently incorporated into Federal-aid projects did not need to be produced domestically (in the US) apart from predominantly iron or steel components of manufactured products. The ‘waiver’ does not apply to Iron and Steel.

:

FINAL ASSEMBLY – effective 10/01/2025:

Defined as an article, material, or supply that has been processed into a specific form and shape, or combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies. **IF, however, an article, materials, or supply meets this definition BUT Could also be classified as an iron or steel product, excluded material, or other product category as specified by law or in 2 CFR part 184, that article, materials, or supply is not a manufactured product.

FINAL RULE AND THE 55 PERCENT REQUIREMENT – effective 10/01/2026

Through this rule, FHWA is establishing specific dates on which the Manufactured Products General Waiver will be terminated and is amending its Buy America regulation at 23 CFR 635.410 to establish standards regarding Buy America requirements that will apply to manufactured products on Federal aid projects. These standards are substantially similar to those established by OMG that apply to manufactured products subject to “BABA”. This means that to be considered “Produced in the United States”, and therefore Buy America-compliant, manufactured products must be manufactured in the United States (“final assembly requirement” and have greater than 55% of the manufactured products components by cost, be mined, produced, or manufactured in the United States.

ON OR AFTER 10-01-2025 (AND BEFORE 10/01/2026)

FHWA requirement that the final assembly requirement will become effective for Federal aid projects obligated on or after 10-01-2025.

ON OR AFTER 10/01/2026

All manufactured products permanently incorporated into the project must both be manufactured in the United States and have the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States be greater than 55percent of the total cost of all components of the manufactured product.

Reference:

Federal Highway Administration
Federal Register / Buy America Requirements
Title 23 U.S.C.
OMB (Office of Management and Budgets)
Surface Transportation Assistance Act of 1978 (1978 STAA) and Act of 1982 (1982 STAA)
Public Law 95-599 (1978)
Public Law 97-424 (1983)
48 FR 1946 (Jan 17, 1983)
48 FR 63099 (Nov 25, 1983)
2 CFR Part 184
NPRM (Notice of Proposed Rulemaking – a formal announcement by a U.S. Federal Agency)

<https://www.fhwa.dot.gov/construction/cqit/buyam.cfm>

<https://www.federalregister.gov/documents/2025/01/14/2024-31350/buy-america-requirements-for-manufactured-products>

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:

FINAL ASSEMBLY – effective 10/01/2025:

Defined as an article, material, or supply that has been processed into a specific form and shape, or combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies. **IF, however, an article, materials, or supply meets this definition BUT Could also be classified as an iron or steel product, excluded material, or other product category as specified by law or in 2 CFR part 184, that article, materials, or supply is not a manufactured product.

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Federal Highway Administration
Federal Register / Buy America Requirements
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NPRM (Notice of Proposed Rulemaking – a formal announcement by a U.S. Federal Agency)

<https://www.fhwa.dot.gov/construction/cqit/buyam.cfm>

<https://www.federalregister.gov/documents/2025/01/14/2024-31350/buy-america-requirements-for-manufactured-products>

**BUY AMERICA / BUILD AMERICA BUY AMERICA / MATERIAL CERTIFICATION
REQUIREMENTS**
For City of Chandler Federal Funded Projects Per FHWA

The City of Chandler will follow Buy America requirements and the Build America Buy America requirements.

A. REGULATIONS

1. FHWA - BUY AMERICA AND THE NEW BUILD AMERICA, BUY AMERICA REGULATION EFFECTIVE NOVEMBER 1, 2022.

https://www.transportation.gov/sites/dot.gov/files/docs/buy_america_provisions_side_by_side.pdf

Federal Highway Administration (FHWA) - 23 U.S.C. § 313 – Buy America; 23 C.F.R. § 635.410

The Secretary of Transportation shall not obligate any funds unless steel, iron, and manufactured products used in such project are produced in the United States.

2. MAG SPECIFICATION SECTION 106.2.1
3. ADOT SPECIFICATION 106, 106.05 AND 106.15

B. PROCEDURE FOR MATERIAL CERTIFICATION REQUIREMENTS – CITY OF CHANDLER

1. All material for a federal funded project must have a material certification.
2. All material delivered to jobsite must be accompanied by a material certification.
3. Material Certifications must be submitted to the City of Chandler representative for review and approval and is not deemed accepted until City of Chandler representative approval.
4. Buy America Material – All Iron and Steel products. (See Item A above)
5. Buy America Material Installation: All Buy America Iron and Steel Products **MUST NOT be installed without Material Certification received and approval from City of Chandler.**
6. All non-Buy America Material Installation: All non-Buy America material, if installed without material certification receipt and approval is at the Prime Contractor's risk and WILL NOT BE PAID until approval of material certification for that material.

C. MATERIAL CERTIFICATIONS – Every Material Certification must have the following– Items 1-11

1. Project Name
2. City Project Number
3. Federal Project Number
4. ADOT Number (previously known as Tracs Number) (if FHWA funded project)
5. Supplier Information: Name, Address, Telephone Number
6. Description of the material supplied
7. Quantity of material represented by the certificate
8. Means of material identification, such as label, lot number, or marking
9. A Statement that the material complies in all respects with the requirements of the cited specifications. Certificates shall state compliance with the cited specification, such as AASHTO M 320, ASTM C 494; or specific table or subsection of the Arizona Department of Transportation Standard Specifications or Special Provisions. Certificates may cite both, if applicable.
10. Authorization Signature Statement: A statement that the individual signing has the legal authority to bind the manufacturer or the supplier of the material.
11. The name, title, signature, and date of signature of the signing-responsible individual.
12. Statement that that Federal Requirements for Buy America / BABA have been followed.

ADOT SPECIFICATION – BUILD AMERICA BUY AMERICA (106CMATLS, 10-20-22)

SECTION 106 CONTROL OF MATERIALS: of the Standard Specification is modified to add:

106.17 Construction Materials

A construction material, when used on a federal-aid construction project shall comply with the requirements of Build America Buy America (BABA) Act specific in Title IX, Subtitle A, Part 1, Sections 70901 and 70911-70918 of the Infrastructure Investment and Job Act (ILJA).

A 'construction material' that is permanently incorporated on the project shall include an article, material, or supply that is or consists primarily of the following:

- Non-ferrous metals;
- Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- Glass (including optic glass);
- Lumber; or
- Drywall

Items manufactured through a combination of either two or more materials listed above, or at least one of the materials list above and a material not listed shall be considered as a manufactured product, rather than as a construction material.

Build America Buy America provisions specified for manufactured products in Section 70912(6)(B) of the ILJA, do not apply to federal-aid construction projects per FHQWA's existing statutory requirement applicable to manufactured products. A "manufactured product" is considered to be an item that undergoes one or more manufacturing processes before the item can be used on a federal-aid construction project.

Construction materials shall not include cement and cementitious materials; bituminous materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives.

All construction materials shall be produced in the United States. This means, all manufacturing processes to produce the construction materials shall occur in the United States. All manufacturing processes for construction materials shall mean the final manufacturing process and the immediately preceding manufacturing stage for the construction material.

The contractor shall furnish the Engineer with Certificate of Compliance, conforming to the requirements of Subsection 106.05 of the ADOT specifications, which shall state that the construction materials incorporated in the project meet the requirements specified herein.

Certificates of Compliance shall also certify that all manufacturing processes to produce construction materials occurred in the United States.

Convict-produced materials are prohibited in accordance with the requirements of 23 CFR 635.417.

ADDITIONAL INFORMATION FOR THE BUILD AMERICA, BUY AMERICA ACT

Bipartisan Infrastructure Law – Build America, Buy America Act

Questions and Answers

Updated 2/1/2023

Except for any statutes and regulations cited, the contents of this document do not have the force and effect of law and are not meant to bind States or the public in any way. This document is intended only to provide clarity regarding existing requirements under the law or agency policies.

1. What does the Build America, Buy America Act (BABA or the Act) require?

The BABA, part of the Bipartisan Infrastructure Law (BIL), enacted as the Infrastructure Investment and Jobs Act, Pub. L. 117-58 (Nov. 15, 2021), establishes several procedural and substantive requirements with respect to Buy America.

The procedural requirements under BABA, generally focused on Buy America implementation, include requirements for agencies to review existing Buy America preference requirements, submit reports to the Office of Management and Budget (OMB) and to Congress, review waivers of general applicability, and coordinate with the Made in America Office (MIAO) within OMB in the processing of waivers. See BABA Sections 70913(a) and (b); 70914(d); and 70923(b).

The substantive requirements under BABA include a Buy America preference that all Federal agencies must apply to any Federal financial assistance program for infrastructure that is not already subject to existing Buy America requirements for the relevant categories. See BABA Sections 70914(a) and 70917(a).

2. Do FHWA's existing requirements for steel/iron items and manufactured products continue to apply?

Yes. BABA Section 70917(a) provides that the Buy America requirements under Section 70914 apply only to the extent that Federal agencies do not already apply a Buy America preference as described in Section 70914 to steel, iron, manufactured products, and construction materials. This provision clarifies that Section 70914 of the Act does not supplant FHWA's existing Buy America policies and provisions that meet or exceed the standards required by the Act, such as its requirements for iron and steel under 23 U.S.C. 313. BABA Section 70914(d) also provides a process for reviewing existing waivers of general applicability, such as FHWA's general waiver for manufactured products.

3. Does BABA require the application of Buy America to any new categories of products for Federal-aid highway projects?

Yes. BABA Section 70914(a) requires FHWA to extend coverage of Buy America to "construction materials." Since 23 U.S.C. 313 does not specifically apply to construction materials, the BABA requirements for construction materials apply to Federal-aid highway projects.

Contact

- **Edwin Okonkwo**
[Office of Preconstruction,](#)
[Construction and Pavements](#)
202-366-1558
[E-mail Edwin](#)

4. What guidance is available concerning the application of Buy America to construction materials?

On April 18, 2022, OMB issued Memorandum M-22-11 titled "Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure." The Memorandum provides initial guidance on the implementation of BABA, including preliminary guidance addressing the requirement at BABA Section 70915(b) for OMB to define the term "all manufacturing processes" for construction materials. This Memorandum can be found at: <https://www.whitehouse.gov/wp-content/uploads/2022/04/M-22-11.pdf>.

5. When did the BABA requirement for construction materials become effective on Federal-aid highway projects?

BABA Section 70914(a) provided that the new domestic preference requirements (including the requirement for construction materials) would become effective on May 14, 2022, which is 180 days after the date of enactment of the Act. However, DOT also issued a temporary transitional waiver of the BABA construction materials requirement to allow a reasonable adjustment period for recipients of DOT financial assistance — including States, local communities, Tribal nations, and industrial vendors — to develop and transition to new compliance and certification processes for construction materials. See <https://www.transportation.gov/regulations/temporary-waiver-buy-america-requirements-construction-materials>. The Temporary Construction Materials Waiver is applicable to awards that were obligated on or after May 14, 2022, and before November 10, 2022.

6. What is a construction material?

According to preliminary guidance in OMB Memorandum M-22-11, "construction materials" includes an article, material, or supply — other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives — that is or consists primarily of:

- non-ferrous metals;
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- glass (including optic glass);
- lumber; or
- drywall.

7. What are the Buy America standards that apply to the manufacturing process for construction materials?

According to OMB Memorandum M-22-11, pending issuance of final standards, agencies should consider "all manufacturing processes" for construction materials to include at least the final manufacturing process and the immediately preceding manufacturing stage for the construction material.

OMB Memorandum M-22-11 is preliminary guidance. OMB has sought additional stakeholder input and will be issuing further guidance identifying which products should be considered construction materials and the manufacturing processes that should be considered as part of "all manufacturing processes" for those products. FHWA plans to issue updated guidance once OMB has finalized its guidance.

11.0

EEO FEDERAL NOTIFICATIONS

-

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION
TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY
(EXECUTIVE ORDER 11246)

JULY 1, 1979 (Revised November 3, 1980)

(Revised April 15, 1981)

1. The bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered areas, are as follows:

	<u>Minority</u>	<u>Female</u>
Tucson & Balance of Pima County	24.1	6.9
Cochise, Graham, Greenlee & Santa Cruz Counties	27.0	6.9
Phoenix and Balance of Maricopa County	15.8	6.9
Apache, Coconino, Gila, Mohave, Navajo, Pinal, Yavapai, and Yuma Counties	19.6	6.9

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in all areas where the contractor has Federal or federally assisted work.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3 (a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

EQUAL EMPLOYMENT OPPORTUNITY
COMPLIANCE REPORTS

(Project, Training and Annual)

Federal-Aid Projects

February 1, 1977; Revised July 1, 1978; Revised November 3, 1980
Revised April 15, 1981; Revised September 7, 1983
Revised October 15, 1998; Revised August, 1, 2005;
Revised March 1, 2015, Revised August 24, 2016

ANNUAL REPORT:

For each contract in the amount of \$10,000 or more, and for each subcontract, regardless of tier not including material suppliers, in the amount of \$10,000 or more, the contractor and each subcontractor regardless of tier shall submit an annual Equal Employment Opportunity (EEO) Report containing all the information required on Form FHWA-1391.

The staffing figures to be reported should represent the project workforce on board in all or any part of the last payroll period preceding the end of July.

The report shall be submitted no later than August 15 to the City of Chandler federal compliance officer.

Executive Order 2009-09

**PROHIBITION OF DISCRIMINATION IN STATE CONTRACTS
NONDISCRIMINATION IN EMPLOYMENT BY GOVERNMENT CONTRACTORS AND
SUBCONTRACTORS**

Superseding Executive Order 99-4 and Amending Executive Order 75-5

WHEREAS, Executive Order 99-4 was effectuated to assure that persons or entities contracting with the State of Arizona or its political subdivisions comply with the provisions of Title VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000e, et. seq.) and with Arizona's Civil Rights Act (Title 41, Chapter 9, Article 4);

WHEREAS, Executive Order 99-4 correctly states that various religious organizations are exempted from Arizona's Civil Rights Act;

WHEREAS, Executive Order 99-4 does not expressly state the federal and state exemptions for Indian tribes under both the federal and State Civil Rights Acts;

WHEREAS, 42 U.S.C. § 200e(b)(1) exempts tribes from the definition of employer;

WHEREAS, A.R.S. § 41-1461 4 (b)(i) also exempts Indian tribes from the definition of employers to whom the Arizona Civil Rights Act applies;

WHEREAS, Indian tribes across the State have recently begun to experience difficulty contracting with the State, often for money or services to which they are lawfully entitled, as a result of their exclusion from specified exemptions within Executive Order 99-4;

WHEREAS, the Attorney General's Office has in some cases interpreted the existing provisions as requiring tribes to waive rights guaranteed by both federal and State law;

WHEREAS, a modification is necessary to expressly provide that the exemptions found in federal and State law continue in full force and effect;

NOW, THEREFORE, I, Janice K. Brewer, Governor of the State of Arizona, by virtue of the authority vested in me by the Constitution and laws of this State, hereby order and direct as follows:

1. Executive Order 75-5 is hereby amended as follows:

PART I - Non-discrimination in employment by government contractors and subcontractors.

Unless otherwise exempted by federal or state civil rights laws, all government contracting agencies shall include in every government contract hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

- A. The Contractor will not discriminate against any employee or applicant for employment because of race, age, color, religion, sex, or national origin. The contractor will take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to their race, age, color, religion, sex or national origin. Such action shall include, but is not limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or

Executive Order 2009-09

Page 2

termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting officer setting forth the provisions of this non-discrimination clause.

A continued Executive Order No. 75-5 is hereby amended to permit government contractors and subcontractors that are exempted from compliance under Title 41, chapter 9, article 4, Arizona Revised Statutes or 42 U.S.C. § 200e(b)(1), to provide employment preferences consistently with federal and state statutes;

Therefore, Executive Order 75-5 does not apply to Indian tribes. It likewise does not apply to religious organizations with respect to the employment of individuals of a particular religion to perform work connected with the activities of the employer. It also provides that religious organizations may provide employment preferences based upon religion when dealing with a bona fide occupational qualification reasonably necessary to the operation of the religious organization. This is consistent with the provisions of the Civil Rights Act of 1964 (42 U.S.C. 2000e, et seq.). In addition, in the Personal Responsibility and Work Opportunity Reconciliation Act, P.L. 104-193, Congress provided that religious organizations are eligible for the receipt of federal funds on the same basis as other private organizations.

Executive Order No. 75-5 prohibits all other government contractors and subcontractors from discriminating against any employee or applicant for employment because of race, age, color, religion, sex or national origin. Executive Order No. 75-5 further requires all government contractors and subcontractors to take action to insure that applicants are employed and employees are treated during employment without regard to their race, age, color, religion, sex or national origin.

- B. The contractor will in all solicitations or advertisement for employees placed by or on behalf of the contractor state that all qualified applicants will receive consideration for employment without regard of race, age, color, religion, sex or national origin.
- C. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice to be provided by the agency contracting officer advising the labor union or workers' representative of the contractor's commitments under the Executive Order and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- D. The contractor will furnish all information and reports required by the contracting agency and will permit access to his books, records, and accounts by the contracting agency and the Civil Rights Division for purposes of investigation to ascertain compliance with such rules, regulations and orders.
- E. In the event of the contractor's noncompliance with the nondiscrimination clauses of the contract or with any such rules, regulations or orders of the Arizona Civil Rights Division said noncompliance will be considered a material breach of the contract and this contract may be cancelled, terminated or suspended, in whole or in part, and the contractor may be declared ineligible for future government contracts until said contractor has been found to be in compliance with the provisions of this order and the rules and regulations of the Arizona Civil Rights Division, and such sanctions may be

Executive Order 2009-09

Page 3

imposed and remedies invoked as provided in Part II of this order, and the rules and regulations of the Arizona Civil Rights Division.

- F. The contractor will include the provisions of paragraphs A through E in every subcontractor purchase order so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to the subcontract or purchase orders the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance, provided, however, that in the event the contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the State of Arizona to enter into such litigation to protect the interest of the State of Arizona.
- G. Each contractor having a contract containing the provisions prescribed in this section shall file and shall cause each of his subcontractors to file compliance reports with the contracting agency or the Civil Rights Division, as may be directed. Compliance reports shall be filed within such times and shall contain such information as the practices, policies, programs and employment policies, programs and employment statistics of the contractor and each subcontract and shall be in form as the Arizona Civil Rights Division may prescribe.
- H. Bidders or prospective contractors of subcontractors shall be required to state whether they have participated in any previous contract subject to the provisions of this order or any preceding similar Executive Order and in such event to submit on behalf of themselves and the proposed subcontractors compliance reports prior to, or as an initial part of negotiation of a contract.
- I. Whenever the contractor or subcontractor has a collective bargaining agreement or other contract or understanding with a labor union or an agency referring workers of providing or supervising apprenticeship or training for such workers, the compliance report shall include such information from such labor unions or agency practices and policies affecting compliance as the contracting agency or Civil Rights Division may prescribe: provided that, to the extent such information is within the exclusive possession of a labor union or an agency referring workers or providing or supervising apprenticeship or training and such labor union or agency shall refuse to furnish such information to the contractor, the contractor shall so certify the contracting agency as part of its compliance report and shall set forth what efforts he has made to obtain such information.
- J. The contracting agency or the Civil Rights Division shall require that the bidder or prospective contractor or subcontractor shall submit as part of his compliance report a statement in writing signed by an authorized officer or agent on behalf of any labor union or any agency referring workers or providing or supervising apprenticeship or other training with which the bidder or prospective contractor deals with supporting information to the effect that the signer's practices and policies do not discriminate on the grounds of race, color, religion, sex or national origin, and that the signer either will affirmatively cooperate in the implementation of the policy and provisions of this order or that it consents and agrees that recruitment, employment, and the terms and conditions

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of employment under the proposed contract shall be in accordance with the purpose and provisions of this order. In the event that the union or the agency shall refuse to execute such a statement, the compliance shall so certify and set forth what efforts have been made to secure such a statement and such additional factual material as the contracting agency or the Civil Rights Division may require.

PART II - Enforcement

- A. Each contracting agency shall be primarily responsible for obtaining compliance with this Executive Order with respect to contracts entered into by such agency or its contractors. All contracting agencies shall comply with the rules of the Civil Rights Division in discharging their primary responsibility for securing compliance with the provisions of contracts and otherwise with the terms of this order and the rules and regulations and orders of the Civil Rights Division issued pursuant to this order. They are directed to cooperate with the Civil Rights Division and to furnish the Division such information and assistance as it may require in the performance of the Division's functions under this order. They are further directed to appoint or designate from among the agency personnel compliance officers. It shall be the duty of such officers to first seek compliance with the objective of this order by conference, conciliation, mediation or persuasion.
- B. The Civil Rights Division may investigate the employment practices of any government contractor if subcontractor of initiate such investigation by the appropriate contracting agency or determine whether or not the contractual provisions specified in this order have been violated. Such investigations shall be conducted in accordance with the procedures established by the Civil Rights Division and the investigating agencies shall report to the Civil Rights Division any action taken or recommended. The Civil Rights Division may receive and investigate or cause to be investigated complaints by employees or prospective employees of a government contractor or subcontractor which alleges discrimination contrary to the contractual provisions specified in Part I of this order. If the investigation is conducted for the Civil Rights Division by a contracting agency, that agency shall report to the Civil Rights Division what action has been taken or it's recommendation with regard to such complaint.
- C. The Civil Rights Division shall use its best efforts directly and through contracting agencies, other interested state and local agencies, contractors and all other available instrumentalities to cause any labor union engaged in work under government contracts or any agency referring workers or providing or supervising apprenticeship or training for it in the course of such work or cooperate in the implementation of the purposes of this order.
- D. The Civil Rights Division or any agency, officer or employee in the executive branch of the government designated by rule, regulation or order of the Civil Rights Division may hold such hearings, public or private, as the Division may deem advisable for compliance, enforcement of educational purposes. The Civil Rights Division may hold or cause to be held hearings in accordance with rules and regulations issued by the Civil Rights Division prior to imposing, ordering or recommending the imposition of penalties and sanctions under this order.
- E. No order for debarment of any contractor from further government contracts under this order shall be made without affording the contractor an opportunity for a hearing.

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Page 5

F. **Sanctions and Penalties.** In accordance with such rules, regulations or orders as the Civil Rights Division may issue or adopt, the Civil Rights Division or the appropriate contracting agency may publish or cause to be published the names of contractors or unions which it has concluded have complied or have failed to comply with the provisions of this order and with the rules, regulations and orders of the Civil Rights Division.

1. Contracts may be cancelled, in whole or in part, terminated, or suspended absolutely, or continuation of contracts may be conditioned upon a program for future compliance approved by the contracting agency or the Civil Rights Division: provided that any contracting agency shall refrain from entering into further contracts, extensions or other modifications of existing contracts with any noncomplying contractor until such contractor has established and will carry out personnel and employment policies in compliance with the provisions of this order.
2. Under rules and regulations prescribed by the Civil Rights Division, each contracting agency shall make reasonable efforts within a reasonable time limitation to secure compliance with the contract provisions of this order by methods of conference, conciliation, mediation and persuasion before proceedings shall be instituted under this order or before a contract shall be cancelled or terminated in whole or in part under this order for failure of a contractor or subcontractor to comply with the contract provisions of this order.

G. This Executive Order shall become effective immediately of its issuance.



IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona.

Janice K. Brewer
GOVERNOR

DONE at the Capital in Phoenix, Arizona this 20th day of October
In the Year Two Thousand and Nine and of the Independence of
the United States of America the Two Hundred and Thirty-Third.

ATTEST:

Ken Bennett

SECRETARY OF STATE

12.0

FEDERAL IMMIGRATION AND NATIONALITY ACT

Federal Immigration and Nationality Act
(Reference to Arizona Executive Order 2005-30)

The contractor, including all subcontractors, shall comply with all federal, state and local immigration laws and regulations, as set forth in Arizona Executive Order 2005-30, relating to the immigration status of their employees who perform services on the contract during the duration of the contract. The Agency (City of Chandler) shall retain the right to perform random audits of contractor and subcontractor records or to inspect papers of any employee thereof to ensure compliance.

By submission of a bid, the contractor warrants that the contractor and all proposed subcontractors are and shall remain in compliance with all federal, state, and local immigration laws and regulations relating to the immigration status of their employees who perform services on the contract. The Agency may, at its sole discretion, require evidence of compliance from the contractor or subcontractor. Should the Agency request evidence of compliance, the contractor or subcontractor shall have ten (10) working days from receipt of the request to supply adequate information. The Department and Agency (City of Chandler) will accept, as evidence of compliance, a showing by the contractor or subcontractor, that it has followed the employment verification provisions of the Federal Immigration and Nationality Act as set forth in Sections 274A and 274B of that Act, including implementation of regulations and agreements between the Department of Homeland Security and the Social Security Administration's verification service. The contractor shall include the requirements of this provision in all subcontracts for this project.

Failure to comply with the immigration laws or to submit proof of compliance constitutes a material breach of contract. The Agency will recue the contractor's compensation by \$10,000 for the initial instance of non-compliance by the contractor or a subcontractor. Should the same contractor or subcontractor commit subsequent violations within a two (2) year time period from the initial violation, the contractor's compensation will be reduced by \$50,000 for each violation. The third instance by the same contractor or subcontractor within a two (2) year period may result, in addition to the \$50,000 reduction in compensation, in removal of the offending contractor or subcontractor, suspension of work in whole or in part or, in the case of a third violation by the contractor, termination of the contract for default in addition, the Department may debar a contractor or subcontractor who has committed three (3) violations within a two (2) year period for up to one (1) year. For purposes of this paragraph, a violation by a subcontractor does not count as a violation by the contractor.

Any delay resulting from a sanction under this subsection is a non-excusable delay. The contractor is not entitled to any compensation or extension of time for any delays or additional costs resulting from a sanction under this subsection.

13.0

RECORDS RETENTION

CONTRACTOR/SUBCONTRACTOR RECORDS

RECORDS RETENTION
Contractor and Subcontractor Project Records
(Reference to A.R.S.35-214)

The contractor, subcontractors and all suppliers shall keep and maintain all books, papers, records, files, accounts, reports, bid documents with backup data, including electronic data, and all other material relating to the contract and project for five (5) years following completion and acceptance of the work.

All of the above material shall be made available for auditing, inspection, and copying and shall be produced upon request to the Agency.

The City of Chandler – Capital Projects
215 E Buffalo Street, Mail Stop 407
Chandler, Arizona 85225.

The contractor shall insert the above requirement in each subcontract purchase order and lease agreement and shall also include in all subcontracts, a clause requiring subcontractors to include the above requirement in any lower-tier subcontract, purchase order, or lease agreement.

14.0

ENERGY EFFICIENCY PROVISION

ENERGY EFFICIENCY – FEDERAL PROVISION

Federal Code of Regulations – 42 U.S.C. 3701-3708

(H) Mandatory standards and policies relating to energy efficiency which are contained in the State Energy Conservation Plan issued in compliance with the Energy Policy and Conservation Act 42 U.S.C. 6201.

FHWA Requirements: If the State has an Energy Efficiency Plan, the project must adhere to the State's Energy Efficiency Plan and requirements.

15.0

WARRANTY

WARRANTY – FEDERAL PROVISION

**THERE WILL BE NO WARRANTY PERIOD ON THIS CONTRACT/PROJECT
BEYOND THE DATE OF THE FINAL ACCEPTANCE BY THE CITY TO THE
PRIME CONTRACTOR.**

Reference:

Federal Code of Regulations – 635.413

- (a) Warranty provisions shall be for a specific construction product or feature. Items of maintenance not eligible for Federal participation shall not be covered.*
- (b) All warranty requirements and subsequent revisions shall be submitted to the Division Administrator for advance approval.*
- (c) No warranty requirement shall be approved which, in the judgement of the Division Administrator, may place an undue obligation on the contractor for items over which the contractor has no control.*

16.0

JOBSITE POSTERS REQUIREMENTS

(Reference Guide Only)

TE POSTERS BOARD REQUIREMENTS

Date		Project Name	
Checked by		Project Numbers	

	Must have a Project Jobsite Poster Board
	Location – must be located away from Management View
	Must be updated if weather damaged

Item	English-1	Spanish-2	Poster Title
1			Employee Rights Under Davis Bacon for Laborers & Mechanics Act – (WH1321) 10-2017
2			Minimum Wage Jobsite Poster – Arizona 01-2026
2B			Minimum Wage Jobsite Poster – Federal – (<i>State is higher but Feds require this to be posted</i>)
3			Employee Rights under the Fair Labor St Act - Minimum Wage FEDERAL POSTER– 04-2023
4			Employee Rights Under the Employee Polygraph Protection Act – (WH1462) 02-2022
5			Employee Rights Under the Family Medical Leave Act – (WHD1420) 04-2023
6			Employee Rights Under the National Labor Relations Act (Exec Order 13496) ***MUST BE 11x17 or 2-page version as 8.5x11*** 2022-05-02
7			EEO Know Your Rights Discrimination 2023-06-27 (**replaces EEO Law & Law Supplement posters) FHWA says 1022. ADOT has 06-27-2023
8			EEO – Contractor EEO Policy Statement (comes with bid / contract) ***COC combines 8a and 8b into 1 By putting a statement at the bottom of the EEO Policy Statement to put EEO Officer name. 2024-01-09
9			Pay Transparency Nondiscrimination Provision (Exec Order 11246) 12-2016
10			USERRA Your Rights Under USERRA – Uniformed Serv Employ 05-2022 (FHWA list says 2017 but the actual poster has 05-2022)
11			OSHA Job Safety - Safe Work-Place – 2019 ***OSHA <u>states must be at least 8.5x14 (can be 11x17)</u>
12			FHWA 1022 Fraud - 05-2015 "Notice"
13			Arizona Workers' Compensation Law (English/Spanish all on one) NO Date
14			Unemployment Insurance AZ 02-2025 (POU-003)
15			Fair Wages Earned Paid Sick Time 07-01-2017 AZICA has no date on the poster
16			Title VI Poster (Notice to Public) provided by Agency
17			FHWA 1273 – Contract Provisions for Federal Aid Construction Contracts (Pink Sheets) 10-23-2023
18			Davis Bacon Wage Decision FROM THE SPECIFIC PROJECT CONTRACT
19			Added Classifications – During Contract Life – List of Classifications added per SF1444
20			E-VERIFY - 2026-01-28 Not required at jobsite board but recommended - Required to be provided to employees.
21			RIGHT TO WORK: 2026-01-28 Not required at jobsite but recommended - Required to be provided to employees.

*ADOT is attempting to require the N.O.I (Notice of Intent) as a jobsite poster – not required at this time (2026-02-04)

No 1 Poster copy to have the following information in the blank boxes at the bottom. (do not put contractor contact information)

CITY OF CHANDLER	CIUDAD DE CHANDLER
TEL: 480-782-3331	Tel: 480-782-3331
215 E Buffalo St	215 E Buffalo St
Chandler, AZ 85225	Chandler, AZ 85225p

No 6 Employee Rights Under the National Labor Relations Act: (www.nlr.gov)

Size requirement options are that you must post as 11x17 or you may use two-page format of 8.5x11's

No 8 This EEO Clause/Statement was in bid/submitted with bid. Contractor and/or City can provide.

No 12 FHWA 1022 Fraud – Information to add:

<u>Under "State Highway Department"</u>	<u>Under "Federal Highway Administration":</u>
Arizona Department of Transportation	4000 N Central Avenue #1500
Deputy State Engineer	Phoenix, AZ 85012
206 S 17 th Ave, Phoenix, AZ 85007	

No 14 Under Arizona DES site - type in POU-003 and jobsite poster will come up

No 16 This is a specific individual Agency required poster by ADOT Title VI -in the languages required by Agency approved Title VI Plan.

No 18 Davis Bacon Wage Decision is project specific. ONLY post the contract specific wage decision

No 19 Davis Bacon Wage Decision has a last page that is blank – use this page to provide / attach added Wage Classifications Have been added/approved through the US Department of Labor Form SF1444.

No 20/21 These two have not been verified by ADOT as required. Review in process. (01-28-2026)

Courtesy - Web Site Links to assist with researching for Posters

<https://www.fhwa.dot.gov/programadmin/contracts/poster.cfm> (posters at this site are: 1,3,4,6,8, 9,10,11)

<https://www.fhwa.dot.gov/construction/cqit/> (16)

<https://www.sam.gov> (17)

<https://www.dol.gov/agencies/olms/poster/labor-rights-federal-contractors> (5)

<https://www.dol.gov/agencies/whd/posters> (4,2C, 1)

<https://www.dol.gov/sites/dolgov/files/VETS/files/USERRA-Poster.pdf> (9)

<https://www.azica.gov/claims-workers-compensation-compliance-poster> (12, 14)

<https://des.az.gov/sites/default/files/legacy/dl/POU-003.pdf> (13)

<https://www.laborposters.org/arizona/16-arizona-minimum-wage-spanish-poster.htm> (2A.2)

<https://www.dol.gov/agencies/whd/government-contracts/eo14026> (2b)

<https://nlrb.gov/news-publications/publications/employee-rights-notice-posting>

17.0

DAVIS BACON WAGE DECISION

	Rates	Fringes
POWER EQUIPMENT OPERATOR:		

Loader/Front End Loader.....	\$ 35.56	18.12

ENGI0012-070 12/01/2024		
	Rates	Fringes
TRUCK DRIVER		
Off Road Truck.....	\$ 35.56	18.12

ENGI0012-071 12/01/2024		
	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
Crane/Derrick.....	\$ 36.64	18.12

ENGI0012-072 12/01/2024		
	Rates	Fringes
Power Equipment Operator:		
Excavator/Trackhoe		
1/2 cubic yard or smaller...	\$ 35.56	18.12
Greater than 1/2 cubic yard.	\$ 36.64	18.12

ENGI0012-073 12/01/2024		
	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
Grade Checker.....	\$ 36.64	18.12

ENGI0012-074 12/01/2024		
	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
Motor Grader/Blade.....	\$ 36.64	18.12

ENGI0012-075 12/01/2024		
	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
Mechanic.....	\$ 37.67	18.12

IRON0075-014 08/01/2025		
	Rates	Fringes
Ironworker.....	\$ 33.00	19.91

LAB01184-016 06/01/2025		
	Rates	Fringes
Power Equipment Operator:		
Horizontal Directional		
Drill.....	\$ 31.98	9.26

LAB01184-017 06/01/2025		
	Rates	Fringes
Laborer: Fence Erector.....	\$ 27.41	9.26

LAB01184-021 06/01/2025

	Rates	Fringes
Traffic Control.....	\$ 27.41	9.26

LAB01184-025 06/01/2025

	Rates	Fringes
Laborer: Asphalt, Includes Raker, Shoveler, Spreader and Distributor.....	\$ 29.91	9.26

LAB01184-027 06/01/2025

	Rates	Fringes
Laborer: Grade Setter.....	\$ 29.91	9.26

LAB01184-029 06/01/2025

	Rates	Fringes
LABORER: Guardrail Installer.....	\$ 29.91	9.26

LAB01184-033 06/01/2025

	Rates	Fringes
Power Equipment Operator: Trencher.....	\$ 30.88	9.26

LAB01184-044 06/01/2025

	Rates	Fringes
Power Equipment Operator: Forklift.....	\$ 30.88	9.26

LAB01184-047 06/01/2025

	Rates	Fringes
Truck Driver: Concrete.....	\$ 30.88	9.26

LAB01184-049 06/01/2025

	Rates	Fringes
Truck Driver: Water.....	\$ 30.88	9.26

LAB01184-051 06/01/2025

	Rates	Fringes
General Laborers.....	\$ 27.41	9.26

SUAZ2023-022 11/19/2024

Rates	Fringes
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Carpenter: Formwork Concrete.....\$ 29.86	8.89
Cement Mason/Concrete finisher...\$ 30.41	0.00
Electrician.....\$ 29.00	7.58
Laborer: Concrete Saw (Hand Held/Walk Behind).....\$ 25.22	5.08
Laborer: Landscape Laborer.....\$ 19.00	6.34
Laborer: Mason Tender.....\$ 25.92	7.09
Laborer: Pipelayer.....\$ 25.97	7.09
Painter: Pavement Marking.....\$ 23.35	6.34
Painter: Sign and Display Erector.....\$ 18.03	0.00
Power Equipment Operator: Bobcat/Skid Steer/Skid Loader....\$ 29.91	9.11
Power Equipment Operator: Boom/Crane Truck.....\$ 43.11	10.87
Power Equipment Operator: Broom/Sweeper.....\$ 25.95	6.62
Power Equipment Operator: Compactor/Roller.....\$ 30.24	0.00
Power Equipment Operator: Concrete Pump Truck.....\$ 43.11	10.87
Power Equipment Operator: Concrete Screed.....\$ 26.41	7.64
Power Equipment Operator: Drill Rig/Auger.....\$ 36.80	13.07
Power Equipment Operator: Milling Machine.....\$ 31.16	0.00
Power Equipment Operator: Paver/Spreader/Finish equipment (asphalt, aggregate, & concrete).....\$ 32.67	0.00
Power Equipment Operator: Scraper.....\$ 29.69	0.00
Truck Driver: Dump.....\$ 26.71	7.09
Truck Driver: Oil Distributor....\$ 29.41	7.63
Truck Driver: Sweeper.....\$ 20.24	5.48

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave

for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE:

UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION

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18.0

DBE FORMS

DBE Forms Instructions

IMPORTANT: ALL BIDDERS WHO WANT TO BE CONSIDERED MUST FOLLOW NO. 1 BELOW.
FAILURE TO SUBMIT THE REQUIRED DOCUMENTATION BY THE STATED TIME AND IN THE MANNER HEREIN SPECIFIED, AND FAILURE TO BE REGISTERED IN THE UTRACS SYSTEM SHALL BE CAUSE FOR THE BIDDERS TO BE DEEMED NONRESPONSIVE.

1. SUBMIT NO LATER THAN: 4PM OF THE 5TH CALENDAR DAY POST BID DUE DATE
-DBE BECO Bidders/Proposers List Submittal Email Confirmation as a pdf document

**note: this item is required whether the project/contract has a DBE Goal or does not have a DBE Goal.*

- a. If you submit the above required item, and then determine you made an error, you are allowed to re-submit as long as it is within the 5 day submittal period (no later than 4pm by the 5th day post bid opening day).

Important: Only your most recent/last submittal will be accepted and considered.

- b. If you have questions about this item:
- i. Questions allowed **ONLY AFTER** bid opening day – during the 5 Calendar Day DBE submittal period.
 - ii. Once you submit this item, you are not allowed to ask questions. You may **ONLY** ask questions IF YOU HAVE NOT SUBMITTED THIS FORM FOR THE FIRST TIME YET.
 - iii. Questions can be submitted by calling Janece Ray-Federal Compliance at 480-782-3331 or email question(s) to cp.fedfund@chandleraz.gov.
- c. **Submit Document as a pdf attachment by Email** to: cp.fedfund@chandleraz.gov
****do not forward the email confirmation.**

2. NOT REQUIRED AT BID SUBMITTAL

During the active contract/project, for any subcontractors that are certified DBE's, the following form will required at the end of completed subcontract work.

-DBE BECO Form 3110C – DBE Certification of Final Payment

BIDDERS/PROPOSERS LIST / EMAIL CONFIRMATION

FEDERAL DOCUMENT REQUIRED: Email Verification Print Out

Email Verification Print Out Received from Utracs/AzDOT.gov confirms your electronic submittal. The email confirmation should be a submitted document. Do not forward the email.

WHERE TO CREATE AND SUBMIT BIDDERS/PROPOSERS LIST: <https://utracs.azdot.gov/BiddersListInfo/>

WHERE TO CALL FOR QUESTIONS (SHOWN ON WEBSITE): 602-712-7761



Arizona's Transportation Business Portal

[Search \(DBE\) Firm Directory](#) | [Log in](#)

[Home](#) | [Register / Renew](#) | [Contract Compliance](#) | [Tools / Resources](#)

Certified DBEs

Update your profile with types of work you do to highlight your business capabilities to Primes.

[UPDATE FIRM PROFILE NOW](#)

AZ UTRACS makes it easy to find qualified firms to bid on our projects all over Arizona—especially where we need certified DBE contractors to meet our federal requirements.

—ADOT's Prime Contractors and Consultants

Quick Links

- ✓ [Log in to the ADOT DBE and OJT Online Reporting System \(DOORS\), formerly known as the ADOT DBE System](#)
- ✓ [Log in to ADOT LPA DBE System](#)
- ✓ [Log in to AZ UTRACS registration](#)
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Arizona's Transportation Business Portal

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Bidders/Proposers List

[Start or Manage a Bidders/Proposers List](#)

In compliance with 49 CFR Part 26.11, ADOT requires contractors and consultants submitting a bid, proposal, or statement of qualifications to work on a federally funded transportation project, to provide ADOT with a list of every firm who expressed interest in or submitted a bid or proposal to work on the project. Each project's advertisement or solicitation will provide the specifics for meeting this requirement. Any firm being awarded work as a prime or sub, MUST be AZ UTRACS registered.

The AZ UTRACS system has an online Bidders/Proposers List application to assist firms in quickly and efficiently providing this information. Contractors and Consultants should encourage any firm who contacts them about a project to register in the AZ UTRACS Registration System. The Bidders/Proposers List application allows any AZ UTRACS registered firm to be added with just one click. Firms will have to manually enter information for any firm not AZ UTRACS registered.

PLEASE NOTE: The bidders list has been updated with additional fields now required by USDOT per 49 CFR Part 26.11(c) (2). For firms added to the list, all fields must be completed in order to save the bidders list. The Bidders List Guide on the [Start or Manage a Bidders/Proposers List](#) page includes updated screenshots of the steps taken in order to save the bidders list. For questions or technical assistance, please contact AZ UTRACS Support at AZUTRACS-Support@azdot.gov.

A Bidders/Proposers List may be submitted by any employee in a firm, as long as the firm has an Active AZ UTRACS Registration. See right-column box for more information.

Once access has been provided, a user can log into the AZ UTRACS system, quickly create a new Bidder's/Proposer's List, and submit it. The list can also be saved and submitted at a later time, so a user can add to it over time as they work with various firms. The system also boasts the ability to copy from an existing project list, to help save time when firms work with the same group of firms for a different project.

Once a list is submitted, the creator of the list will receive email verification and should follow any additional instructions in the specific advertisement /solicitation to ensure the requirement to submit a Bidders/Proposers list requirement is met. For help with this process, contact the Business Engagement and Compliance Office by email at AZUTRACS-Support@azdot.gov or call 602.712.8000.

AZ UTRACS - Login

Email

Password

[LOGIN](#) Go to our [Log In](#) page to create a new login and password

* Access to Bidders List

The AZ UTRACS Registration process requires a firm to establish a Primary and Secondary contact. These two individuals may provide access for other firm employees, as needed. Your [Firm profile](#) will show the Primary and Secondary contacts. Note: If you are the primary or secondary contact, you may [grant access](#) to other firm employees any time, as needed.

- ✓ [Search for Firm's profile](#)
- ✓ [Start a Bidders List](#)

Firms that do not have an Active AZ UTRACS Registration, may NOT submit a Bidder or Proposer List, until an active AZ UTRACS Registration is established.



Clear Form

CITY OF CHANDLER

**DISADVANTAGED BUSINESS ENTERPRISE (DBE)
CERTIFICATION OF FINAL DBE PAYMENTS
CONSTRUCTION**

(Submit form for each DBE working on the contract)

The undersigned Contractor on **Agency Project No.:** TP2202-401 CHN0252D **ADOT TRACS No.:** T038701C
hereby, certifies that full payment was made, to the firm indicated for material and/or work performed
under this project's contract as follows:

DBE Firm AZ UTRACS Registration No.: _____

Name of DBE Firm _____ was paid the amount of _____

This certificate is made under Federal and State Laws concerning false statement. Supporting documentation for this payment is subject to audit and should be retained for a minimum of three years from project acceptance date. In the event the DBE was not paid in accordance with affidavits submitted by the contractor, all documentation supporting the contractor's position should be submitted.

I DECLARE UNDER PENALTY OF PERJURY IN THE SECOND DEGREE, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS, THAT THE STATEMENTS MADE ON THIS DOCUMENT ARE TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Contractor Company Name: _____

Check One: ☐ Contractor ☐ Subcontractor

Name: _____ **Title:** _____

Signature: _____ **Date:** _____

The undersigned contractor/subcontractor/supplier/manufacture for the above named project hereby certified that payments were received and/or justification by the contractor is correct.

I DECLARE UNDER PENALTY OF PERJURY IN THE SECOND DEGREE, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS, THAT THE STATEMENTS MADE ON THIS DOCUMENT ARE TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DBE Firm Name: _____

Check One: ☐ Contractor ☐ Subcontractor/Supplier/Manufacture
☐ Lower-tier: Subcontractor/Supplier/Manufacture

Name: _____ **Title:** _____

Signature: _____ **Date:** _____

**END OF
FEDERAL DOCUMENTS**