WILLIAMSON COUNTY, TEXAS

CHANGE ORDER NUMBER: 2

Project:	*T5045*
Roadway:	CR 404
CSJ Number:	

1. CONTRACTOR: **Austin Underground, Inc.**
2. Change Order Work Limits: Sta. **139+10.75** to Sta. **205+27.24**
3. Type of Change(on federal-aid non-exempt projects): **Minor** (Major/Minor)
4. Reasons: **3F** (3 Max. - In order of importance - Primary first)
5. Describe the work being revised:

3F. County Convenience. Additional work desired by the County. This Change Order adds the relocation of the Jonah Water line along CR 401 that is currently in conflict with the CR 401 Reconstruction project. It is necessary to add this scope to this Contract, in order to meet Samsung's deadline of 7/31/2023.

6. Work to be performed in accordance with Items: **See attached.**
7. New or revised plan sheet(s) are attached and numbered: **Jonah CR 401: Title, 01-02, K1, 1-8**
8. New Special Provisions/Specifications to the contract are attached: ☐ Yes ☑ No
9. New Special Provisions to Item N/A No. N/A, Special Specification Item N/A are attached.

Each signatory hereby warrants that each has the authority to execute this Change Order (CO).

The contractor must sign the Change Order and, by doing so, agrees to waive any and all claims for additional compensation due to any and all other expenses; additional changes for time, overhead and profit; or loss of compensation as a result of this change.

THE CONTRACTOR Date 7-5-22

By Valentin Gomez

Typed/Printed Name Valentin Gomez, Jr

Typed/Printed Title Sr PM

The following information must be provided

Time Ext. #: **N/A** Days added on this CO: **0**

Amount added by this change order: **$625,239.52**

RECOMMENDED FOR EXECUTION:

Project Manager 7/5/2022 Date

N/A
Design Engineer Date

Program Manager 7/5/2022 Date

Design Engineer's Seal:

County Commissioner Precinct 1 Date
☐ APPROVED ☐ REQUEST APPROVAL

County Commissioner Precinct 2 Date
☐ APPROVED ☐ REQUEST APPROVAL

County Commissioner Precinct 3 Date
☐ APPROVED ☐ REQUEST APPROVAL

County Commissioner Precinct 4 Date
☐ APPROVED ☐ REQUEST APPROVAL

Bill Gravell Jr.
Bill Gravell (Jul 13, 2022 08:13 CDT)
Jul 13, 2022
County Judge Date
☑ APPROVED

WILLIAMSON COUNTY, TEXAS

CHANGE ORDER NUMBER: ***2*** ***Project #*** ***T5045***

TABLE A: Force Account Work and Materials Placed into Stock

	LABOR	HOURLY RATE			HOURLY RATE

TABLE B: Contract Items:

				ORIGINAL + PREVIOUSLY REVISED		ADD or (DEDUCT)	NEW		
ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	ITEM COST	QUANTITY	QUANTITY	ITEM COST	OVERRUN/ UNDERRUN
J106-01	4" C-900 DR-18 PVC Pipe and Fittings, w/ Tracer Wire; Installed	LF	$58.91	0.00	$0.00	1,372.00	1,372.00	$80,824.52	$80,824.52
J106-02	4" C-900 DR-18 PVC Restrained Joint Pipe and Fittings, w/ Tracer Wire; Installed	LF	$55.00	0.00	$0.00	202.00	202.00	$11,110.00	$11,110.00
J106-03	2" HDPE SDR 9 and Fittings; w/ Tracer Wire; Installed	LF	$180.00	0.00	$0.00	7.00	7.00	$1,260.00	$1,260.00
J106-04	20" Steel Enc. Pipe, Bored; w/ 4" Restrained Joint C900 DR18 PVC Pipe; Installed	LF	$800.00	0.00	$0.00	295.00	295.00	$236,000.00	$236,000.00
J106-05	20" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR18 PVC Pipe; Installed	LF	$280.00	0.00	$0.00	265.00	265.00	$74,200.00	$74,200.00
J106-06	8" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR18 PVC Pipe; Installed	LF	$150.00	0.00	$0.00	208.00	208.00	$31,200.00	$31,200.00
J106-07	Concrete Encased; 8" Steel Enc. Pipe, Open Cut; 4" Restrained Joint C900 DR 18 PVC Pipe; Installed	LF	$295.00	0.00	$0.00	200.00	200.00	$59,000.00	$59,000.00
J106-08	4" Gate Valve, Box, and Marker; Installed	EA	$2,100.00	0.00	$0.00	9.00	9.00	$18,900.00	$18,900.00
J106-09	Air/Vacuum Relief Valve Assembly and Marker; Installed	EA	$6,000.00	0.00	$0.00	1.00	1.00	$6,000.00	$6,000.00
J106-10	Blow Off Valve Assembly And Marker; Installed	EA	$2,300.00	0.00	$0.00	2.00	2.00	$4,600.00	$4,600.00
J106-11	Connect New 4" to Existing 4"; Installed	EA	$2,300.00	0.00	$0.00	2.00	2.00	$4,600.00	$4,600.00
J106-12	Connect New 4" to Existing 2"; Installed	EA	$2,400.00	0.00	$0.00	3.00	3.00	$7,200.00	$7,200.00
J106-13	Connect New 2" To Existing 1.5"; Installed	EA	$2,200.00	0.00	$0.00	1.00	1.00	$2,200.00	$2,200.00
J106-14	Cap Existing 2" Line; Complete	EA	$510.00	0.00	$0.00	1.00	1.00	$510.00	$510.00
J106-15	Trench Safety System Design and Implementation	LF	$2.50	0.00	$0.00	2,254.00	2,254.00	$5,635.00	$5,635.00
J106-16	Traffic Control Plan Development And Implementation	LS	$2,000.00	0.00	$0.00	1.00	1.00	$2,000.00	$2,000.00
J106-17	SWPPP Design and Implementation	LS	$18,000.00	0.00	$0.00	1.00	1.00	$18,000.00	$18,000.00
J106-18	Mobilization (Not to Exceed 10% of Total Project Bid)	LS	$62,000.00	0.00	$0.00	1.00	1.00	$62,000.00	$62,000.00
	TOTALS				$0.00			$625,239.52	$625,239.52

CHANGE ORDER REASON(S) CODE CHART

1. Design Error or Omission	1A. Incorrect PS&E 1B. Other
2. Differing Site Conditions (unforeseeable)	2A. Dispute resolution (expense caused by conditions and/or resulting delay) 2B. Unavailable material 2C. New development (conditions changing after PS&E completed) 2D. Environmental remediation 2E. Miscellaneous difference in site conditions (unforeseeable)(Item 9) 2F. Site conditions altered by an act of nature 2G. Unadjusted utility (unforeseeable) 2H. Unacquired Right-of-Way (unforeseeable) 2I. Additional safety needs (unforeseeable) 2J. Other
3. County Convenience	3A. Dispute resolution (not resulting from error in plans or differing site conditions) 3B. Public relations improvement 3C. Implementation of a Value Engineering finding 3D. Achievement of an early project completion 3E. Reduction of future maintenance 3F. Additional work desired by the County 3G. Compliance requirements of new laws and/or policies 3H. Cost savings opportunity discovered during construction 3I. Implementation of improved technology or better process 3J. Price adjustment on finished work (price reduced in exchange for acceptance) 3K. Addition of stock account or material supplied by state provision 3L. Revising safety work/measures desired by the County 3M. Other
4. Third Party Accommodation	4A. Failure of a third party to meet commitment 4B. Third party requested work 4C. Compliance requirements of new laws and/or policies (impacting third party) 4D. Other
5. Contractor Convenience	5A. Contractor exercises option to change the traffic control plan 5B. Contractor requested change in the sequence and/or method of work 5C. Payment for Partnering workshop 5D. Additional safety work/measures desired by the contractor 5E. Other
6. Untimely ROW/Utilities	6A. Right-of-Way not clear (third party responsibility for ROW) 6B. Right-of-Way not clear (County responsibility for ROW) 6C. Utilities not clear 6D. Other

Williamson County Road Bond Program

CR 404 Hutto Water Line
Williamson County Project No. T5045

Change Order No. 2
Reason for Change

This Change Order adds the relocation of the Jonah Water line along CR 401 that is currently in conflict with the CR 401 Reconstruction project. It is necessary to add this scope to this Contract in order to meet project's delivery deadline of 7/31/2023.

The following new items will be added by this Change Order.

ITEM	DESCRIPTION	QUANTITY	UNIT
J106-01	4" C-900 DR-18 PVC Pipe and Fittings, w/ Tracer Wire; Installed	1,372.00	LF
J106-02	4" C-900 DR-18 PVC Restrained Joint Pipe and Fittings, w/ Tracer Wire; Installed	202.00	LF
J106-03	2" HDPE SDR 9 and Fittings; w/ Tracer Wire; Installed	7.00	LF
J106-04	20" Steel Enc. Pipe, Bored; w/ 4" Restrained Joint C900 DR18 PVC Pipe; Installed	295.00	LF
J106-05	20" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR18 PVC Pipe; Installed	265.00	LF
J106-06	8" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR18 PVC Pipe; Installed	208.00	LF
J106-07	Concrete Encased; 8" Steel Enc. Pipe, Open Cut; 4" Restrained Joint C900 DR 18 PVC Pipe; Installed	200.00	LF
J106-08	4" Gate Valve, Box, and Marker; Installed	9.00	EA
J106-09	Air/Vacuum Relief Valve Assembly and Marker; Installed	1.00	EA
J106-10	Blow Off Valve Assembly And Marker; Installed	2.00	EA
J106-11	Connect New 4" to Existing 4"; Installed	2.00	EA
J106-12	Connect New 4" to Existing 2"; Installed	3.00	EA
J106-13	Connect New 2" To Existing 1.5"; Installed	1.00	EA
J106-14	Cap Existing 2" Line; Complete	1.00	EA
J106-15	Trench Safety System Design and Implementation	2,254.00	LF
J106-16	Traffic Control Plan Development And Implementation	1.00	LS
J106-17	SWPPP Design and Implementation	1.00	LS
J106-18	Mobilization (Not to Exceed 10% of Total Project Bid)	1.00	LS

This Change Order results in an increase of $625,239.52 to the Contract amount, for an adjusted Contract total of $3,290,328.25. The original Contract amount was $2,897,639.00. As a result of this and all Change Orders to-date, $392,689.25 has been added to the Contract, resulting in a 13.55% net increase to the overall Contract cost. Due to the current uncertainty in material lead times, time adjustments for this work will be deferred to a later time. Additional time will be determined once materials are on site and will only be granted after the completion of the original scope of work.

HNTB Corporation

Oscar Salazar-Bueno, P.E.

Austin Underground

P.O. Box 5650
Lago Vista, TX 78645

Phone: 512-535-3285

To:	Williamson County	**Contact:**	
Address:	901 South Austin Avenue	**Phone:**	
	Georgetown, TX 78626	**Fax:**	
Project Name:	Jonah SUD - CR 401 Utility Adjustments	**Bid Number:**	
Project Location:		**Bid Date:**	

Item Description	Estimated Quantity	Unit	Unit Price	Total Price
4" C-900 DR-18 PVC Pipe and Fittings, w/ Tracer Wire; Installed	1,372.00	LF	$58.91 ~~$48.00~~	$80,824.52 ~~$65,856.00~~
4" C-900 DR-18 PVC Restrained Joint Pipe and Fittings, w/ Tracer Wire; Installed	202.00	LF	$55.00	$11,110.00
2" HDPE SDR 9 and Fittings; w/ Tracer Wire; Installed	7.00	LF	$180.00	$1,260.00
20" Steel Enc. Pipe, Bored; w/ 4" Restrained Joint C900 DR18 PVC Pipe; Installed	295.00	LF	$800.00	$236,000.00
20" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR18 PVC Pipe; Installed	265.00	LF	$280.00	$74,200.00
8" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR18 PVC Pipe; Installed	208.00	LF	$150.00	$31,200.00
Concrete Encased; 8" Steel Enc. Pipe, Open Cut; 4" Restrained Joint C900 DR 18 PVC Pipe, Installed	200.00	LF	$295.00	$59,000.00
4" Gate Valve, Box, and Marker; Installed	9.00	EACH	$2,100.00	$18,900.00
Air/Vacuum Relief Valve Assembly and Marker; Installed	1.00	EACH	$6,000.00	$6,000.00
Blow Off Valve Assembly And Marker; Installed	2.00	EACH	$2,300.00	$4,600.00
Connect New 4" to Existing 4"; Installed	2.00	EACH	$2,300.00	$4,600.00
Connect New 4" to Existing 2"; Installed	3.00	EACH	$2,400.00	$7,200.00
Connect New 2" To Existing 1.5"; Installed	1.00	EACH	$2,200.00	$2,200.00
Cap Existing 2" Line; Complete	1.00	EACH	$510.00	$510.00
Trench Safety System Design and Implementation	2,254.00	LF	$2.50	$5,635.00
Traffic Control Plan Development And Implementation	1.00	LS	$2,000.00	$2,000.00
SWPPP Design and Implementation	1.00	LS	$18,000.00	$18,000.00
Mobilization (Not to Exceed 10% of Total Project Bid)	1.00	LS	$62,000.00	$62,000.00

Total Bid Price: $625,239.52

Notes:

- The above prices include all cost for Performance and Payment Bonds.
- Permits Included ___x__ is included, ____ is not included.
- The Project includes __1___ Mobilizations, Additionals Mob fee is __$2500___ Per Each
- Survey __x___ is included, ____ is not included
- Trench Safety ___x__ is included, ____ is not included
- Testing-Water ___x__ is included, ____ is not included
- Dewater __x___ is included, ____ is not included
- Asphalt Repairs __x___ is included, ____ is not included
- Traffic Control ___x__ is included, ____ is not included
- Offsite Disposal __x___ is included, ____ is not included
- Gradation, Proctors & Density Testing _____ is included, __x__ is not included
- Plan Sheets __1__ to __6__ were used for work included. Plans dated 6-28-22
- CAD files and or GPS Coordinates of Asbuilts are NOT Included
- This proposal includes only the scope of work specifically listed within our schedule of values.
- This proposal may be withdrawn or modified without further notice if not accepted in writing within 30 days of transmittal.
- This proposal must be accepted in its entirety or the remaining scope and pricing is subject to change
- Testing lab, inspection fees and their related fees by others.
- Austin Underground is not responsible for existing utility conflicts not shown on plans.
- Taxes ____ are included, __x__ are NOT included.
- Lead times as follows: Fittings/valves/casing - 1 week; Brass fittings - 4-6 weeks; Air release valve - 6-8 weeks; Integral restrained pipe/bell restraints: 6-8 weeks (1 week for Certalok with couplings); 6" C-900 proposed for valve risers due to 6" ductile iron shortages.

Construction Related Items; Base Bid

Item No.	Description of Item	Unit	Approx. Quantity	Unity Amount	Total Price
1	4" C-900, DR-18 PVC Pipe and Fittings; w/ Tracer Wire; Installed	L.F.	1,372	$	$
2	4" C-900, DR-18 PVC Restrained Joint Pipe and Fittings; w/ Tracer Wire; Installed	L.F.	202	$	$
3	2" HDPE SDR 9 and Fittings; w/ Tracer Wire; Installed	L.F.	7	$	$
4	20" Steel Enc. Pipe, Bored; w/ 4" Restrained Joint C900 DR18 PVC Pipe: Installed	L.F.	295	$	$
5	20" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR18 PVC Pipe: Installed	L.F.	265	$	$
6	8" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR 18 PVC Pipe; Installed	L.F.	208	$	$
7	Concrete Encased; 8" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR 18 PVC Pipe; Installed	L.F.	200	$	$
8	4" Gate Valve, Box, and Marker; Installed	Ea.	9	$	$
9	Air/Vacuum Relief Valve Assembly and Marker; Installed	Ea.	1	$	$
10	Blow Off Valve Assembly and Marker; Installed	Ea.	2	$	$
11	Connect New 4" to Existing 4"; Installed	Ea.	2	$	$
12	Connect New 4" to Existing 2"; Installed	Ea.	3	$	$
13	Connect New 2" to Existing 1.5"; Installed	Ea.	1	$	$

14	Cap Existing 2" Line; Complete	Ea.	1	$	$
15	Trench Safety System Design and Implementation	L.F.	2,254	$	$
			Construction Related Base Bid ItemsTotal	=	$

Other Project Related Items; Base Bid

Item No.	Description of Item	Unit	Approx. Quantity	Unity Amount	Total Price
16	Traffic Control Plan Development and Implementation	L.S.	1		
17	SWPPP Design and Implementation	L.S.	1		
18	Mobilization (Not to Exceed 10% of Total Project Bid)	L.S.	1		
			Other Project Related Items; Base Bid Items Total	=	

Base Bid Project Totals

Construction Related Base Bid ItemsTotal = $

Other Project Related Base Bid Items Total = $ -

Amount of Total Base Bid =

JONAH SUD
4050 FM 1660
HUTTO , TEXAS 78634
1-512-759-1286
PWS ID 246002
CCN ID 10970

2021 - CR 401, Utility Adjustments

GENERAL CONSTRUCTION NOTES

1. THESE PLANS DO NOT INDICATE DETAILED TOPOGRAPHY, AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PROJECT BEFORE SUBMITTING BIDS TO DETERMINE LOCATIONS OF VARIOUS TOPOGRAPHIC FEATURES THAT COULD EFFECT CONSTRUCTION METHODS

2. THE CONTRACTOR SHALL NOTIFY
   2.1. THE TxDOT HIGHWAY MAINTENANCE FOREMAN
   2.2. RAILWAY SUPERINTENDENT
   2.3. COUNTY COMMISSIONER
   2.4. APPLICABLE CITY
   2.5. APPLICABLE UTILITY COMPANIES
   48 HOURS PRIOR TO STARTING CONSTRUCTION ON ANY HIGHWAY OR RAILROAD AND IN THE VICINITY OF ANY EXISTING UTILITIES, AND SHALL BE SUBJECT TO INSPECTION AND COMPLIANCE WITH THE ABOVE AUTHORITIES.

3. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D.

4. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION (ANSI/NSF) STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI.

5. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF POTABLE WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY.

6. WATER TRANSMISSION AND DISTRIBUTION LINES MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

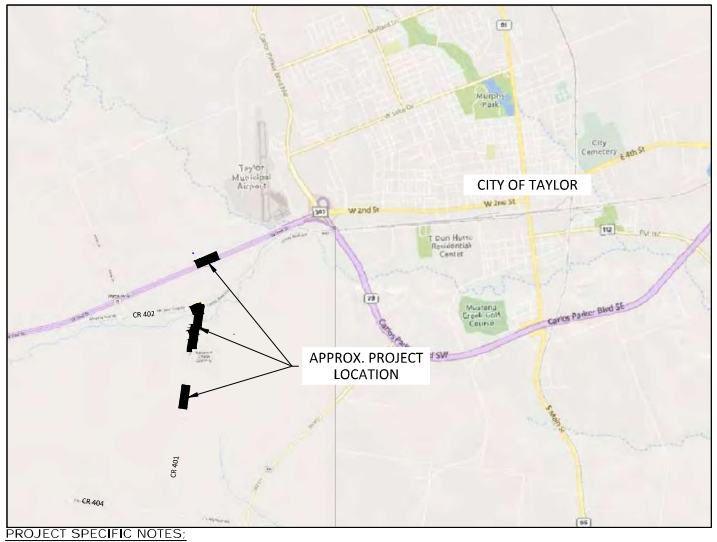
7. THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN BE FLOODED WITH WATER OR SEWAGE DURING ITS STORAGE OR INSTALLATION.

8. COORDINATE ANY PLANNED INTERRUPTIONS TO SERVICE WITH THE APPLICABLE UTILITY PURVEYOR A MINIMUM 48 HOURS IN ADVANCE

9. ANY AND ALL OBJECTS THAT BECOME DAMAGED AND/OR DESTROYED BY THE CONSTRUCTION PROCESS SHALL BE REPLACED OR RESTORED TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED JUST PRIOR TO THE INCIDENT OR INCIDENTS.

10. PROPERTY OWNERS SHALL HAVE ACCESS TO THEIR RESPECTED PROPERTY DURING THE CONSTRUCTION PROCESS. THE CONTRACTOR SHALL NOTIFY THE APPLICABLE PROPERTY OWNER IF PROPERTY ACCESS IS TO BE DENIED FOR ANY PERIOD OF TIME. THE CONTRACTOR SHALL TAKE STEPS TO ASSURE THAT ACCESS IS ACHIEVED IN THE PERIODS OF THE CONTRACTOR'S ABSENCE.

11. TRAFFIC CONTROL PLANS SHALL BE IN ACCORDANCE WITH TCP(1-1)-12 THROUGH TCP(1-6)-12. SEE https://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/toc.htm FOR SHEETS.



PROJECT SPECIFIC NOTES:

1. SCHEDULE ALL PLANNED INTERRUPTIONS TO WATER SERVICE WITH JONAH WATER S.U.D. AT LEAST 48 HOURS IN ADVANCE.
2. FIELD VERIFY DEPTH AND LOCATIONS OF ALL EXISTING APPLICABLE UTILITIES.
3. COORDINATE AND GIVE PROPER NOTICE TO OWNER OF POSSIBLE INTERRUPTIONS TO SERVICE.
4. ALL COMPONENTS OF THIS PROJECT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS.
5. THE ROW LIMITS, UTILITY LOCATIONS, AND PROPOSED ROADWAY/DRAINAGE IMPROVEMENTS, ETC., WERE OBTAINED FROM WILLIAMSON COUNTY'S REPRESENTATIVES. JONAH WATER NOR ITS REPRESENTATIVES SHALL BE LIABLE FOR THE ACCURACY OF THIS INFORMATION PROVIDED TO THEM.
6. CONTRACTOR SHALL REFER TO THE ACTUAL EASEMENT DOCUMENTS FOR DESCRIPTIONS OF EASEMENTS REPRESENTED WITHIN THESE PLANS.

Sheet Index:

G1	GENERAL NOTES
G2	TAKE OFF
K1	KEY MAP
1	WATERLINE ALIGN. "A". STA. A-00+00 TO A-07+00
2	WATERLINE ALIGN. "A". STA. A-24+00 TO A-31+50
3	WATERLINE ALIGN. "A". STA. A-31+50 TO A-38+50
4	WATERLINE ALIGN. "A". STA. A-38+50 TO A-47+00
5	WATERLINE ALIGN. "B". STA. B-00+00 TO B-02+50
6	STANDARD DETAILS
7	STANDARD DETAILS
8	TCP / EROSION CONTROL DETAIL

THIS DOCUMENT IS ISSUED FOR BIDDING PURPOSES ONLY. NOT TO BE USED FOR CONSTRUCTION

APPROVED

CIVIL ENGINEER

6/28/22
DATE APPROVED

OWNER

DATE APPROVED

CAYOTE CONSULTING, LLC
T.B.P.E. F-16387
P.O. Box 24189
Waco, TX 76702 Ph. 254-744-3439
MILES@CAYOTECON.COM

JONAH WATER S.U.D.
2021 - CR 401, Utility Adjustments

General notes:

1) The proposed roadway, drainage, existing utilities shown on these plans were received by Jonah Water S.U.D. from thier represnitilives. It shall be the Contractor's responsibility to familiarize themselves with the County's project documents, so that any discrepancies can be avoided.
2) Various portions of the work shall be performed on private property as shown in the drawings. The owner has or is obtaining right of entry permission, permanent easement, or permanent right of way for all portions of private property requiring work (in addition to areas where there are pre-existing permanent easements), unless noted otherwise in project special provisions. The contractor shall not access or disturb private property without giving notice to each private property owner at least one week prior to construction activities on their property, including an estimated duration that their property will be affected. Every effort shall be made by the contractor to schedule work to minimize disruption to property owners. Upon completion of work (or phases of work), private properties shall be restored to existing or better conditions, than that of those that existed just prior to the beginning of construction.
   a) Refer to project Property Owner line list for tract information and easement statuses.
3) The locations of underground utilities as shown hereon are based on above ground structures, record drawings, or information from other entities provided to the engineer. Locations of underground utilities structures may vary from locations shown hereon. Additional buried utilities structures may be encountered. Before excavations are begun, the following entities shall be contacted for verification of utility type and field locations.
   a. Gas, telephone, electric, fiber optic, oil: call Texas 811 at 800-344-8377
   b. Water:call the Jonah Water and/or City of Taylor
4) The Contractor shall pothole the existing utilities lines ahead of the pipeline installation to verify adequate room is available for the trenching of the proposed lines. If the proposed trench for the water lines and the existing location of the utility lines are to become in conflict, the Contractor shall at his cost provide excavation and possible shoring up of the conflicting utilities, to allow for the trenching of the proposed water lines. The Contractor protect the existing utility lines at their expense and shall place the line back into its original alignment once the trench is being backfilled. It will be imperative that the contractor shall compact the trench so to not allow excessive settlement that could damage the exiting utility line.
   a) If shoring of lines is required, the Contractor shall notify the utility's owner of the process that is to take place at least 72 hours in advance to schedule inspections and assistance from the utility's owner. No separate payment, for the costs associated with this process, shall be made and shall be subsidiary to the other applicable costs.
4) Prior to beginning any construction, the contractor shall verify horizontal and vertical locations of all known existing utilities which will either be connected to, adjacent, or crossed, if there are any conflicts between proposed and existing utilities, or if the existing utilities are in any way different from what is shown on the drawings. It shall be the contractor's responsibility to notify the engineer before proceeding with any construction. The contractor shall work with the engineer in resolving such conflicts before proceeding with work.
5) When unlocated or incorrectly located underground piping, or a break located in the line, or other utilities and services are encountered during work operations, notify the applicable utility company immediately to obtain procedure directions. Cooperate with the applicable utility company in maintaining active services in operation.
6) Contractor shall take all due precautions to protect existing facilities and features from damage during construction, including all features on private property (trees, landscaping irrigation, fences, etc.) and franchise utilities. Any damage to existing features that are not called to be removed shall be repaired or restored to conditions equal to or greater than those just prior to the beginning of construction, by the Contractor, at no additional cost to the owner.
7) Any work completed without prior written authorization which is not included in these plans and specifications will not be compensated by the Owner.
8) Protect mailboxes and other features located within the R.O.W. If features conflict with proposed construction, contractor shall remove, protect, and reinstall features accordingly (temporary mailboxes may be required). Protecting installed features is subsidiary to other bid items.
9) Contractor shall not store materials, equipment or other construction items on adjacent properties or ROW without the prior written consent of the property owner, the City, County and/or State (for within ROW).
10) The Contractor shall not place any waste materials in the 100-year Flood Plain without first obtaining an approved Flood Plain Permit.
11) The contractor shall protect all survey control during construction and be responsible for damaged control.
12) The contractor is responsible for performing all construction staking.
13) Contractor shall be responsible for protecting all property pins for the duration of construction. Any pins disturbed during construction shall be replaced by the contractor at no additional cost to the owner.
14) Contractor shall always maintain a clean construction site free from trash, litter, blowing debris, and silt runoff.
15) The contractor shall keep accurate records of all construction that deviates from the plans. The contractor shall furnish the Owner accurate 'Record Drawings" following completion of all construction.
16) When construction is being carried out within easements, the contractor shall confine their work within the permanent and any temporary easements. Prior to final acceptance, the contractor shall be responsible for removing all trash and debris within the permanent and temporary easements. Clean-up shall be to the satisfaction of the property owner and or Owner.
17) Contractor to trench in such a manner as to separate topsoil, stockpile, and place on top layer of trench.
18) When work requires a permit, the contractor shall follow the provisions of the permit.
19) Pre-Construction Site Video: Before the start of any construction. The Project shall be video recorded by the Contractor with one copy submitted to the Owner's Inspector. A pre-site video is to provide accurate documentation of the existing conditions.
20) Power Pole Bracing: Contractors should be advised that there are existing overhead utility poles along the project. Contractors should further be advised that if the distance from the outside face of a utility trench to the face of a utility pole is less than 5 feet, said utility pole is subject to bracing, based on a determination made by utility pole owner. Costs incurred by Contractor for bracing of these utility poles is made through a separate bid item, no additional payment shall be made. It is advisable for the Contractor to review the construction documents and visit the construction site to determine potential impacts.
21) Holiday Work: Contractors will not be allowed to perform work on Owner recognized holidays.
   a) Weekend Work: Contractors are required to notify the Owner/Project's Inspector 48 hours in advance to request weekend work. Submitted requests do not grant automatic acceptance of request.
   b) All work installed without holiday/weekend approval will be subject to be uncovered for proper inspection, at no additional cost to the Owner/Project.
22) The contractor shall be responsible for training his employees and subcontractors in the recognition and avoidance of unsafe conditions, and in the regulations and hazards which apply to the area in which the work will take place.
23) All contract work in these drawings shall be carried out in accordance with the latest editions of the following national codes and standards:
   a) International Building Codes, 2012 (IBS2012).
   b) American Society of Civil Engineers (ASCE) 7- 02.
   c) Occupational Safety and Health Administration (OSHA).
   d) National Fire Protection Association (NFPA).
   e) National Fire Code (NFC).
24) The Contractor shall dispose of all materials removed which are not to be reinstalled or salvaged on the project. Disposal of materials shall be the responsibility of the contractor.
25) Unless prior permission is obtained from the owner's representative, the contractor shall confine all construction activity, staging areas, etc., within the limits of construction.
26) Adequate barricades, warnings and lighting will be employed for safety and traffic flow. All work shall be done in accordance with the Texas Manual of Uniform Control Devices for Streets and Highways.
27) Excavations shall not be made during inclement weather. Water accumulation in excavations exceeding 1 inch shall be pumped out before concrete is placed.
28) The contractor shall be solely responsible for the design and implementation of a trench safety program. The contractor shall appoint a trench safety foreman who will always be on site while trenching or excavation is being performed. All excavations and backfill operations shall be in accordance with the latest OSHA excavation safety standards, OSHA 2226 and 29 CFR Part 1926 subpart P. The contractor shall provide an excavation plan prepared by an engineer registered in the State of Texas. The excavation plan shall indicate the procedures to be used by the contractor to comply with the OSHA requirements. The excavation plan shall identify the "competent person" as required by paragraph 1926.651 (k)(1), within United States Department of Labor, that will work with each crew.
29) Contractor shall stay within the boundaries of easements at all times.
30) The contractor shall protect property from damage due to the progress of the work. Any damage to private property shall be repaired or replaced by the Contractor at his own expense.
31) The Contractor shall remove, replace, and restore to original condition, elevation, and location, all existing culverts, mailboxes, fences, and other existing improvements, including driveways and roads encountered during construct ion. All entrances shall be restored immediately. Ingress and egress to the property adjacent to construct ion shall be maintained by the Contractor.

Traffic Control Plan (TCP)

1) The Contractor shall be responsible to submit a traffic control plan for review. The plan shall be based upon applicable state requirements and established standards.
2) The Contractor will be required to keep traffic open during the utility crossings.
3) The Contractor is responsible to monitor the plan as the work progresses and submit modifications for review as needed.
4) The Contractor shall be responsible to ensure the Project's Engineer and Inspector a copy of the signed plan prior to beginning work.

Demolition Notes:

1) Existing pavement to be removed (HMAC and concrete pavement, curb, sidewalk, driveway aprons, etc.) Shall become property of the contractor and disposed of legally (base bid and alternate bid).
2) Contractor shall keep existing water and wastewater systems in service for the duration of the project while constructing proposed improvements.
3) Contractor shall saw-cut neat line where new pavement adjoins existing pavement to remain. Reference saw-cut notes below:
   a) HMAC paving: saw-cut neat line and place proposed HMAC flush with existing surface at limits.
   b) Curb & gutter: saw-cut neat line and dowel into existing curb & gutter at limits. Contractor to match flowlines.
   c) Driveway and sidewalks: saw-cut neat line and place expansion joint at limits.
4) All existing fences are to remain unless otherwise noted on the drawings. Any damage to fences shall be repaired to equal or better conditions, than that of those that existed just prior to the beginning of construction, at no additional cost to the owner.

Tree Protection Requirements:

1) Prior to construction, the contractor shall mark all trees that are to be protected (as indicated on plans or as directed by Owner) with clearly marked 4' tall orange barricade fence and signage to protect the area under the canopy drip line of any protected tree or group of protected trees. The drip line is the outer extent of any branching and or leaves. At select trees, as shown on the plans or directed by the Owner, the tree protection limits may encroach within the dripline to accommodate construction. Do not exceed 24" ground penetration with support stakes at any location.
2) During construction, the contractor shall:
   a) Prohibit employees and equipment from accessing areas within tree protection limits.
   b) Prohibit cleaning of equipment or storage of materials and disposal of any waste material, including, but not limited to, paint, oil, solvents, asphalt, concrete, mortar, etc., within tree protection limits.
   c) Prohibit attachments or wires of any kind, other than those of a protective nature, to any protected tree.
   d) Prohibit the disturbance of existing ground grades within tree protection limits.
3) If roots are exposed when performing excavations near protected trees, roots shall be cut cleanly at 90-degree angles (no ripping, tearing, or pulling).
4) All trees to be removed shall be marked in the field and reviewed with the engineer and owner prior to removal.
5) Contractor may be financially responsible for trees damaged due to contractor's neglect.
6) When directed by owner, contractor shall trim trees. This work is subsidiary to the applicable items. Remove all limbs to a point 10 feet above natural ground (or 18' above pavement) utilizing the following steps:
   i) Cut 1/3 through bottom of limb 8" to 12" away from main stem or trunk
   ii) Remove limb 4" to 6" beyond the first cut
   iii) Remove stump with a smooth cut so that trace collar of the removed limb protrudes approximately ½" from main stem or trunk.

Paving Construction Notes:

1) Contractor shall protect all existing and or proposed water, wastewater, and storm drain facilities throughout paving operations. Contractor shall replace any facilities damaged during paving operations at no additional cost to the Owner. All manholes and valves falling within pavement area shall be adjusted to finished grade and shall be subsidiary to other bid items.
2) Contractor shall match existing driveway/sidewalk with exposed aggregate finish, if applicable.
3) Contractor shall protect all adjoining pavement during construction. Damages shall be prepared at contractor's expense.
4) Asphalt pavement and/or concrete items shall be saw- cut where existing asphalt pavement or a concrete item is being partially removed. These cuts shall be vertical and made with a saw (1- 1/ 2" deep).
5) At a minimum, pavement repair shall consist of 2" of HMAC and 12" of concrete subgrade If the existing pavement section is found to be thicker, the pavement the repair section shall be increased to match the existing section.
6) Unless noted otherwise, concrete for rip- rap, sidewalks and other miscellaneous site structures and/or site flatwork shall be normal weight and shall attain a minimum 28- day compressive strength of 3,000 psi. Use gray Portland cement conforming to ASTM c 150 Type 1. Minimum cement content shall be 4 sacks per cubic yard. Maximum water cement ratio shall be 0.50. Maximum slump shall be 5 inches. Maximum aggregate size shall be 1 ½ ". Provide 4 to 6 percent air- entrainment, conforming to ASTM C260. Chemical admixtures shall conform to ASTM C494, type a, d, or e. If flyash is to be used in the concrete mix, it shall be included in the mi x design submittal. The amount of fly ash used shall be no greater than 15 to 20 percent by weight of the specified cement. In no case shall the Portland cement content of the mix be less than 4 sacks per yard. Concrete shall not be placed prior to approval of the concrete mix design by the engineer.
7) Reinforcing steel shall be new domestic deformed billet steel, conforming to ASTM A615, grade 60. Welded wire fabric shall conform to ASTM a185, grade 60 and shall be supplied in flat sheets only, and only used if approved by the applicable governmental entity.
8) The paint for pavement markings shall meet the requirements of FED spec TT-P- 85. The paint may be used with or without reflective media. The painting shall be performed only when all the following conditions are satisfied:
   a) The existing surface is dry and clean
   b) When the atmospheric temperature is 40° F and rising
   c) When the weather is not excessively windy, dusty, or foggy
9) A minimum of 28- days shall elapse between the placement of the asphalt or concrete surface and the application of the pavement paint/ markings. The paint shall not bleed excessively, curl or discolor when applied to asphalt surfaces.

Water Construction Notes:

1) Contractor shall keep existing water main and private service lines in service while constructing proposed water system. Contractor shall construct as much proposed waterline as possible prior to tying into existing main and reconnecting services.
   a) Temporary water services to meters may be required in some locations, and the cost of such shall be subsidiary to the cost of the applicable line work.
2) The Contractor is hereby notified that connecting to, shutting down, or termination existing utility lines, may have to occur at off-peak hours. Such hours are usually outside normal working hours and possibly between 12 a.m. and 6 a.m.
3) Pipe material for water mains shall be as required for the project. PVC (AWWA C-900/905, min. class 200), Ductile Iron (AWWA C-150/151, min. Class 200), or Spiral Welded Steel Pipe (AWWA C200, min. Class 200). Water services (2" or less) shall be polyethylene tubing (200 psi, DR 9).
4) The Contractor shall not operate any existing valves without the approval of the utility's Owner.
5) Contractor shall locate, verify, and protect the working conditions of all existing private service lines, including meters, lines, etc... Contractor shall employ a licensed plumber to perform all reconstruction of the private side of the meter and verify the system is operational. The contractor shall remove, adjust, reinstall, and/or replace service lines, if in direct conflict with proposed construction with the same or better-quality material and appurtenances. Damage to existing service lines shall be restored to equal or better condition which it was found prior to construction. All work shall be subsidiary to other bid items.
6) Line flushing or any activity using a large quantity of water must be scheduled with the Owner.
7) The Contractor, at his expense, shall perform disinfection of all potable water lines constructed and shall provide all equipment (including test gauges), supplies (including concentrated chlorine disinfecting material), and necessary labor required for the disinfection procedure. The disinfection procedure shall be monitored by the Projects Inspector. Water samples will be collected by the Owner/Inspector to verify each treated line has attained an initial chlorine concentration of 50 ppm.
8) At the Contractor's request, and in his presence, samples for bacteriological testing will be collected by the Owner/Inspector no less than 24 hours after the treated line has been flushed of the concentrated chlorine solution and charged with water approved by the Owner. The Contractor shall pay invoices, to cover the fee charged for testing each water sample.
9) Where means of flushing is necessary, the Contractor, at his expense, shall provide flushing devices and remove said devices prior to final acceptance by the Owner.
10) All excess excavated material, not suitable for backfill is to be removed and disposed of by the contractor.
11) All salvaged equipment, if owner desires, shall be remain the property of the owner and shall be delivered to a location of their choosing. Otherwise, it and all pipe, fittings, poles, fencing, electrical boxes, wires, etc... Shall become the property of the contractor, shall be removed from the project, and shall be considered in the bid price, unless otherwise noted. Disposal of equipment shall not be in violation of city, state, or federal laws.
12) Water valve covers, fire hydrants, etc., shall be raised to finished pavement grade at the Contractor's expense. All utility adjustments shall be completed once finish grade has been achieved.
13) All bends and changes in direction on water mains shall be restrained and thrust blocked
14) Fire hydrant leads shall be restrained ductile iron pipe (AWWA C-100, min. class 200).
15) All ductile iron pipe and fittings shall be wrapped with minimum 8-mil polyethylene and sealed with tape accepted by the pipe/fitting manufacturer.
16) All water lines shall be completed and in place including all bends, blocks, fittings, services, and appurtenances before pressure testing.
17) Existing gate valves, that are to be removed and/or abandoned, shall be completely removed if the operation nut is within 18" to top of the ground, topsoil shall be placed to fill void. If the operation nut is deeper than 19" then the contractor shall remove the valve stack and place topsoil to fill void created.
18) Prior to tie-ins, any shutdowns of existing mains of any size must be coordinated with the Owner and Project's Inspector at least one week or more in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to the project and it is the responsibility of the Contractor to sequence the work accordingly.
19) Contractor shall obtain the necessary fittings required to connect existing and proposed pipelines in a manner that is approved by the fitting/pipeline manufacturers, and at no additional cost to the Owner.
20) In locations where a vertical change in elevation occurs with the utilization of bends, that contractor shall restrain joints for a distance as required by the soil conditions prior to initial fitting, and past last fitting used for the vertical change. The use of restrained joints does not eliminate the need for thrust blocking.
21) If during the construction process additional water services are discovered that are connected to a line that is to be abandoned, the contractor shall notify the Project's Inspector and the Project Engineer for direction on how to proceed with the reconnection of the service.

Drainage Construction Notes:

1) Prior to final acceptance, all new or existing drainage structures and extensions shall be cleaned by the contractor (subsidiary).
2) Contractor may provide pre-cast or cast-in-place box culverts.
3) Joints between pre-cast concrete box culverts shall be pre-formed flexible joint sealants as described in TxDOT specifications.
4) Place non-erodible material (pneumatically placed concrete, cement stabilized sand, etc.) On channel bottom and side slopes at temporary culvert/storm drain ends to minimize erosion, as directed by owner (subsidiary).
5) Welds are not allowed to splice safety pipe runners; must be one continuous pipe.

Trench Safety Notes:

1) In accordance with the laws of the state of Texas and the U.S. Occupational Safety and Health Administrations Regulations, all trenches over 5 feet in depth in either hard and stable or soft and unstable soil shall be sloped, shored, sheeted, braced or otherwise supported. Furthermore, all trenches less than 5 feet in depth shall also be effectively protected when hazardous ground movement may be expected. Trench safety systems to be utilized for this project shall be provided by the contractor.
2) In accordance with the U.S Occupational Safety and Health Administration regulations, when employees are required to be in trenches 4 feet deep or more, adequate means of exit such as ladder or steps, must be provided and locates so as to require no more than 25 feet of lateral travel.

Storm Water Pollution Prevention Plan (SWPPP)

1) The Contractor shall submit a SWPPP for review. The Plans shall be based upon applicable City, State, and Federal requirements and established standards.
2) The Contractor is responsible to monito the plan as the work progresses and submit modifications for review as needed.
3) The Contractor is responsible to ensure the Project's Engineer and Inspector has been provided a copy of the signed plans prior to beginning work.
4) The SWPPP Best Management Practices (BMPs) approved must be installed prior to and excavation activities.

Irrigation Revegetation and Slope Stabilization Notes:

1) Contractor shall locate, verify, and protect the working conditions of all existing irrigation systems, including meters, lines, and heads. Contractor shall employ a licensed irrigation installer or plumber to perform all reconstruction of irrigation systems and verify the system is operational. The contractor shall remove, adjust, and reinstall irrigation systems back to good condition; replace irrigation systems, if in direct conflict with proposed construction with the same or better-quality material and appurtenances. Damage to existing irrigation systems shall be restored to equal or better condition which it was found prior to construction. All work shall be subsidiary to other bid items.
2) Provide temporary vegetation and watering as part of contractor's stormwater pollution prevention plan implementation.
3) All disturbed areas shall be permanently revegetated unless the location is utilized as a cultivated field. Payment includes watering necessary to fully establish vegetation. Contractor shall check regularly to verify that coverage is properly established and maintained.
4) Contractor shall be responsible for mowing within project limits throughout construction, as directed by owner (subsidiary).
5) The following guidance shall be used for permanent vegetation and soil stabilization:
   a) At established lawns, place solid block sod matching existing grass type (Bermuda or St. Augustine).
   b) Between back of curb and edge of sidewalk, place solid block sod (Bermuda).
   c) Roadway side slopes (non-ditch areas):
      i) If steeper than 6: 1, place soil retention blanket (spray-on application allowed) and Bermuda seed.
      ii) If 6: 1 or flatter, place Bermuda seed.
   d) Ditch channel side slopes:
      i) Place Bermuda seed in all disturbed areas.
      ii) If shown on plans, place flexible channel liner.
      iii) For all other locations:
         (1) If steeper than 6: 1, place soil retention blanket (non-spray application) and Bermuda seed.
         (2) If 6: 1 or flatter, place Bermuda seed.
   e) All soil retention blanket shall be class 1 type a per TxDOT Item 169.
   f) All flexible channel liner shall be class 2 type g per TxDOT Item 169.
6) For broadcast seed seed rate, refer to specifications
7) Broadcast seed shall immediately be watered with a minimum of 5 gallons of water per square yard, then weekly at a minimum rate of 10 gallons per square yard. Until the grass in uniformly 1 inch in height. Sod shall immediately be watered with a minimum of 5 gallons of water per square yard, then weekly at a minimum rate of 6 gallons per square yard weekly until the grass in uniformly 2 inches in height. When allowed by engineer, watering may be postponed for one week when rainfall of 1 inch or greater occurs on the site. Do not cause damage by over watering.
8) Prior to placing block sod, contractor shall blade and rake smooth topsoil. Sod shall not be placed such that it impedes drainage runoff.

Special Notes:

1) Owner shall be responsible for materials testing in accordance with applicable specifications. Contractor shall coordinate testing with owner and testing agency. Contractor shall bear the cost for re-tests due to failing tests.
2) Stockpile all topsoil removed from project separate from other cut/fill materials. Utilize stockpiled topsoil to finalize grades in disturbed areas.
3) Contractor shall keep drainage structures and ditches free from obstructions during times when weather conditions require its use to convey runoff.
   a) Contractor shall verify that temporary of final grading shall not adversely affect surrounding/adjoining properties.
4) Excavation in existing driveways shall be backfilled and repaired to existing condition.
5) Contractor shall shape embedment material to accommodate the belled joints of pipes to insure support throughout their lengths. Belled joints shall have a minimum of 2" of fill beneath them.
6) If excavated material is not acceptable to the engineer for backfill, the contractor shall provide select import material as required. All backfill material is subsidiary to the price of pipe in place.
7) Max joint deflection shall be half the manufacturer recommended maximum.
8) Contractor shall adjust, repair, or reconstruct residential services (not already specifically called on the plans) as necessary. Payment shall be subsidiary to installation of pipeline & not an additional pay item.

Construction Sequencing:

1) Mobilization.
2) Temporary traffic control.
3) Storm water pollution prevention plan and implementation.
4) Clearing and stripping of the work corridor to limits indicated on the plans.
5) Exploratory excavation of existing pipe.
6) Installation of pipe along the Projects pathway, utilizing both the private easement and County/State ROW. Along with the installation of water transmission line appurtenances including valves, fittings, restrained joints, thrust and anchor blocks, polyvinyl wrapping, air/ vacuum release valves and vaults, blow- off/ flush valve assemblies and vaults, flush hydrants, pipe markers, tracing wire, detection tape, and driveway and county road repairs.
7) Trench safety, excavation, bedding and backfill.
6) Temporary connection of the new water line pipe to the existing water lines for flushing and disinfection.
7) Perform final connections and switch over water services.
8) Abandon existing waterlines, that are labeled to be abandoned.
9) Fence repair and access gate installation.
10) Seeding of disturbed acreage.

REVISION DESCRIPTION	DATE	BY	CKD

Jonah Water S.U.D.

Williamson County, Texas
2021 - CR 401, Utility Adjustments

general notes

DESIGN: MWW
DRAWN: MWW
CKD: MWW
SEAL:

THIS DOCUMENT IS ISSUED FOR BIDDING PURPOSES ONLY. NOT TO BE USED FOR CONSTRUCTION

APPROVED:

DATE: 5/23/22

AYOTE CONSULTING, LLC
T.B.P.E. F-16387
P.O. Box 24189
Waco, TX 76702
Ph. 254-744-3439

SHEET G1

		1	2	3	4	5	
Item No.	Item Description	A-00+00 to A-07+00	A-23+00 to A-31+50	A-31+50 to A-38+50	A-38+50 to A-45+50	B-0+00 to B-2+25	Project Totals
1	4" C-900, DR-18 PVC Pipe and Fittings; w/ Tracer Wire; Installed		769	461	142		1,372
2	4" C-900, DR-18 PVC Restrained Joint Pipe and Fittings; w/ Tracer Wire; Installed			50	96	56	202
3	2" HDPE SDR 9 and Fittings; w/ Tracer Wire; Installed				7		7
4	20" Steel Enc. Pipe, Bored; w/ 4" Restrained Joint C900 DR18 PVC Pipe: Installed				295		295
5	20" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR18 PVC Pipe: Installed				265		265
6	8" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR 18 PVC Pipe; Installed					208	208
7	Concrete Encased; 8" Steel Enc. Pipe, Open Cut; w/ 4" Restrained Joint C900 DR 18 PVC Pipe; Installed			200			200
8	4" Gate Valve, Box, and Marker; Installed		1	2	4	2	9
9	Air/Vacuum Relief Valve Assembly and Marker; Installed				1		1
10	Blow Off Valve Assembly and Marker; Installed		1			1	2
11	Connect New 4" to Existing 4"; Installed		1		1		2
12	Connect New 4" to Existing 2"; Installed			1		2	3
13	Connect New 2" to Existing 1.5"; Installed				1		1
14	Cap Existing 2" Line; Complete	1					1
15	Trench Safety System Design and Implementation	0	769	711	510	264	2,254
16	Traffic Control Plan Development and Implementation						1
17	SWPPP Design and Implementation						1
18	Mobilization (Not to Exceed 10% of Total Project Bid)						1

REVISION DESCRIPTION	DATE	BY	CKD
UPDATED QUANTITIES	6/28/22	MWW	MWW

Jonah Water S.U.D.
Williamson County, Texas
2021 - CR 401, Utility Adjustments
TAKE OFF

DESIGN: MWW
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CKD: MWW
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APPROVED:

DATE:
6/28/22

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Waco, TX 76702
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SHEET G2

EXISTING LEGEND

	EDGE OF ROAD
E	OVERHEAD LINE
	DIRT ROAD
CB	UNDERGROUND CABLE
W	WATERLINE
	FENCE
FO	FIBER OPTIC CABLE
G	PETROLEUM LINE
G	GAS LINE
T	TELEPHONE LINE
	WATERLINE EASEMENT
	SIGN
	POWER POLE
	GUY
	FENCE POST
W	WELL
	MARKER
C.O.	CLEAN OUT
W	WATER METER
	WATER VALVE
	BOLLARD
	GUARD RAIL POST
V	VENT
D	STORM MANHOLE
S	SEWER MANHOLE
	FIRE HYDRANT
WV	WATER VAULT
	BORE LOCATION
T	TELEPHONE
ELEC	ELECTRIC STRUCTURE

PROPOSED LEGEND

A-1+00	WATERLINE W/ STATIONING
A-45+00	CASING W/ CARRIER PIPE
	TEMPORARY CONSTRUCTION EASEMENT (TCE)
SF SF	SILT FENCE
	BLOW OFF/FLUSH VALVE ASSEMBLY
	AIR/VACUUM RELIEF ASSEMBLY
	GATE VALVE
	BUTTERFLY VALVE
	FIRE HYDRANT
	WATERLINE MARKER

REVISION DESCRIPTION	DATE	BY	CKD
REMOVAL OF PLAN SHEET 1a	6/28/22	AWW	MWW

Jonah Water S.U.D.

Williamson County, Texas

2021 - CR 401, Utility Adjustments

KEY MAP

DESIGN: MWW

DRAWN: MWW

CKD: MWW

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DATE: 6/28/22

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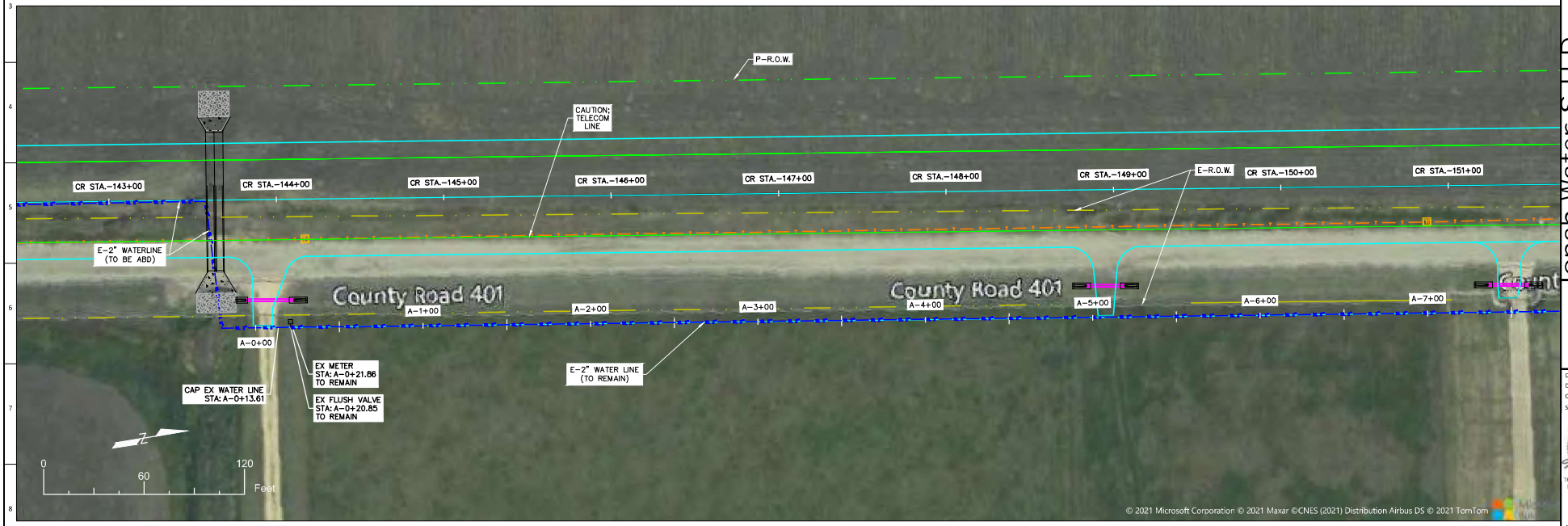
SHEET K1



REVISION DESCRIPTION	DATE	BY	CKD
UPDATED WILCO BASE FILE	6/22/22	MWW	MWW
REMOVAL OF TEMP. WATERLINE	6/28/22	MWW	MWW

Jonah Water S.U.D.

Williamson County, Texas

2021 - CR 401, Utility Adjustments

WATERLINE ALIGN. "A": STA. A-00+00 TO A-7+00

DESIGN: MWW
DRAWN: MWW
CKD: MWW
SEAL:

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APPROVED:

DATE: 6/28/22

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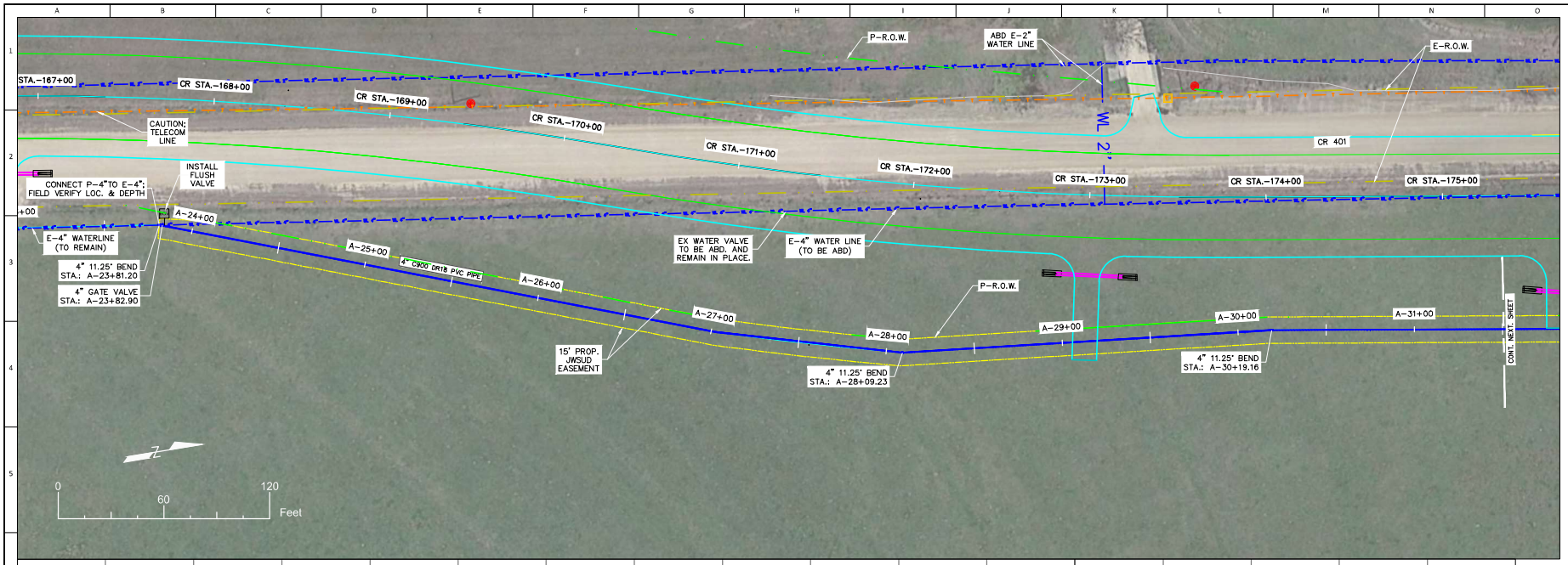
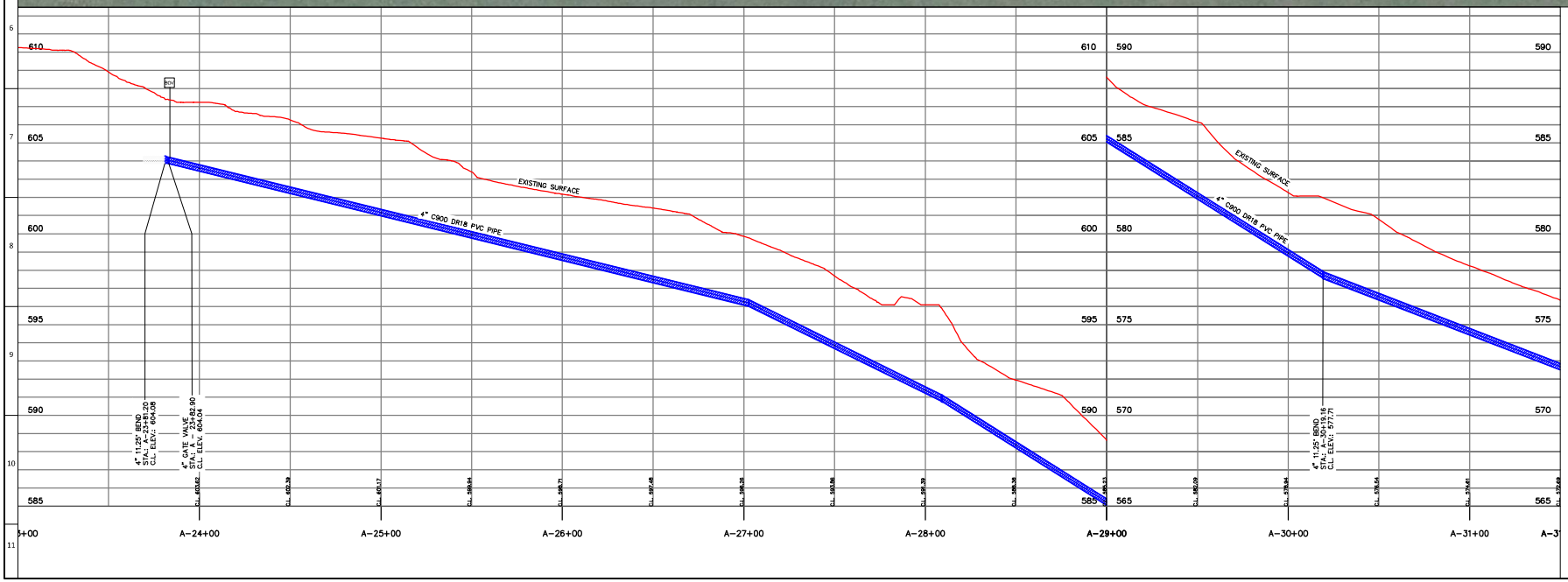
SHEET 1





REVISION DESCRIPTION	DATE	BY	CKD
UPDATED WILCO BASE FILE	6/23/22	MWW	MWW

Jonah Water S.U.D.

Williamson County, Texas

2021 - CR 401, Utility Adjustments

WATERLINE ALIGN. "A": STA. A-23+00 TO A-31+50

DESIGN: MWW
DRAWN: MWW
CKD: MWW
SEAL:

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APPROVED:

DATE: 6/28/22

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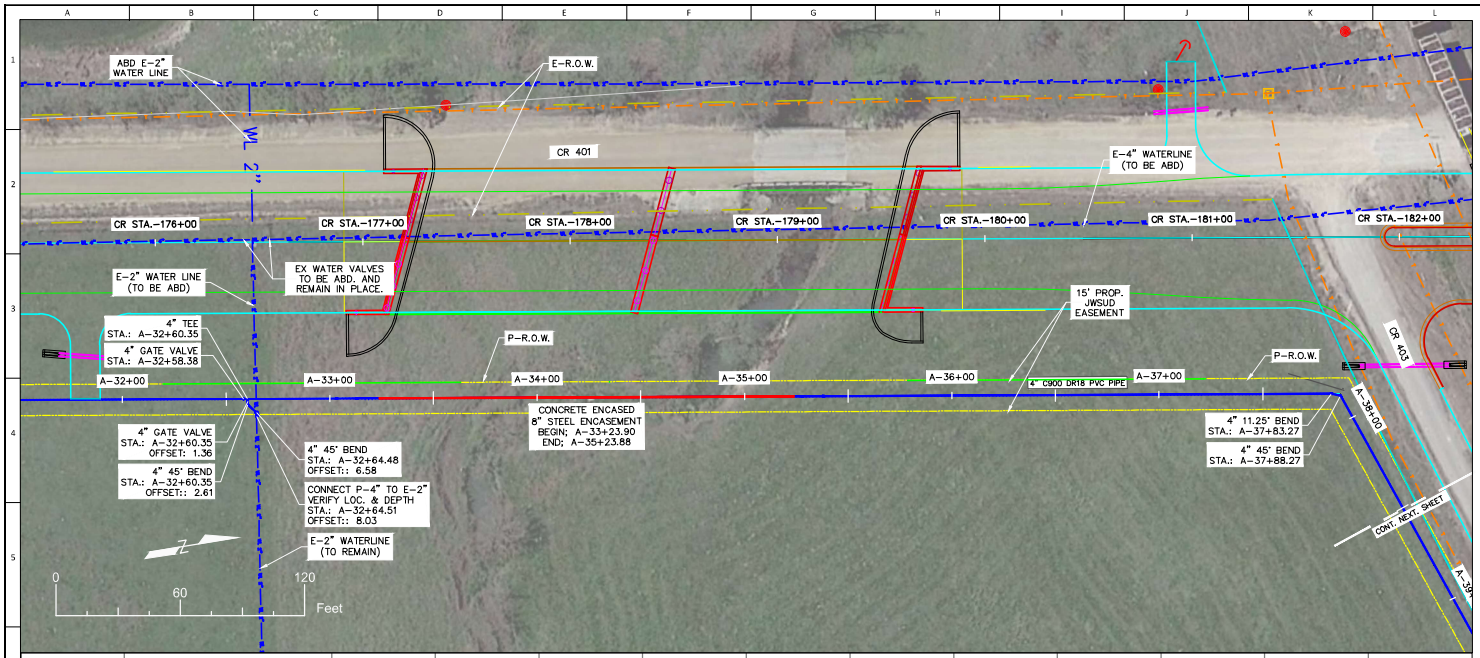
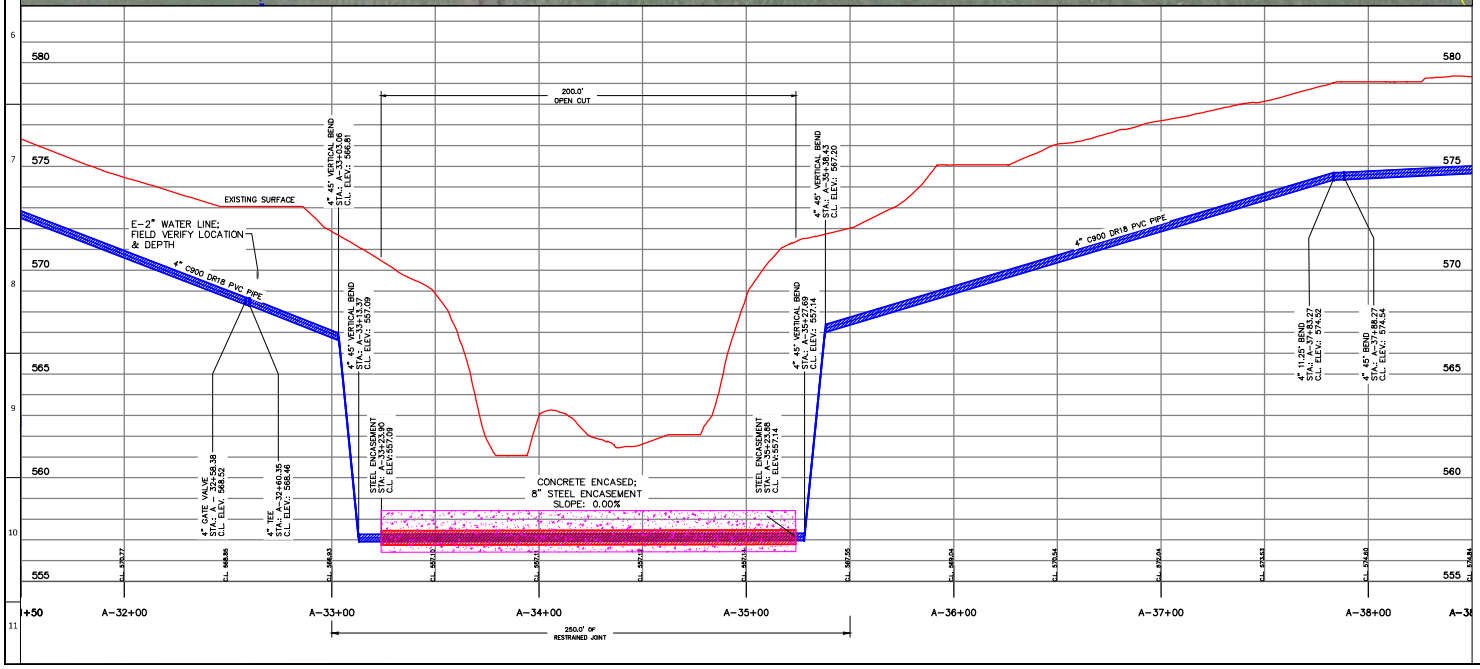
SHEET 2





Note:

1. CONTRACTOR SHALL FIELD VERIFY LOCATION AND DEPTH OF ALL UTILITY CONFLICTS PRIOR TO CONSTRUCTION.
2. A MINIMUM OF 1 FOOT VERTICAL SEPARATION SHALL BE MAINTAINED BETWEEN THE BOTTOM OF THE UTILITY CONFLICT AND THE TOP OF THE PROPOSED PIPING.

REVISION DESCRIPTION	DATE	BY	CKD
UPDATED WILCO BASE FILE	6/22/22	MWW	MWW

Jonah Water S.U.D.

Williamson County, Texas

2021 - CR 401, Utility Adjustments

WATERLINE ALIGN. "A": STA. A-31+50 TO A-38+50

DESIGN: MWW
DRAWN: MWW
CKD: MWW
SEAL:

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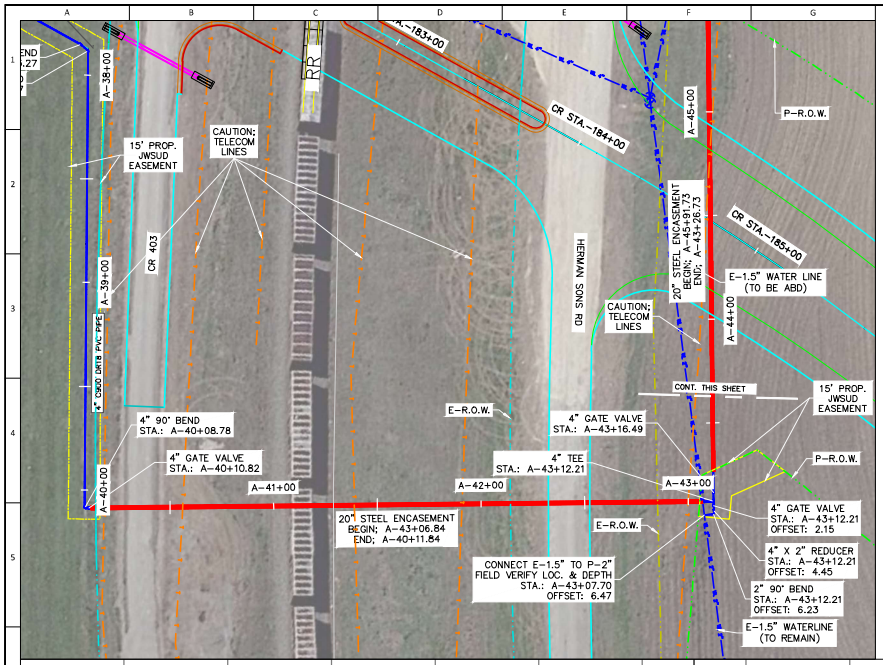
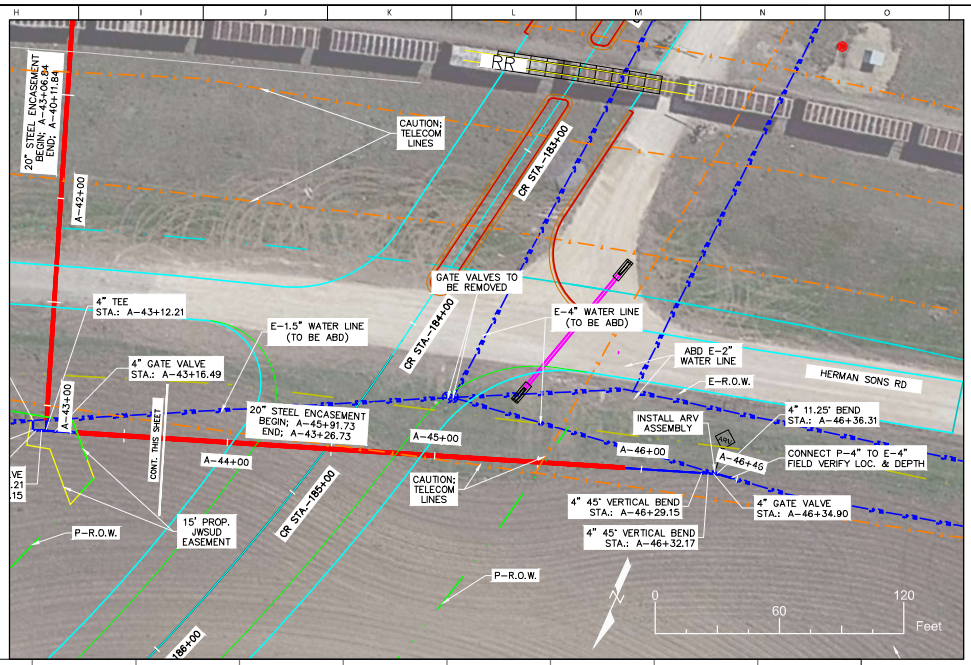
APPROVED:

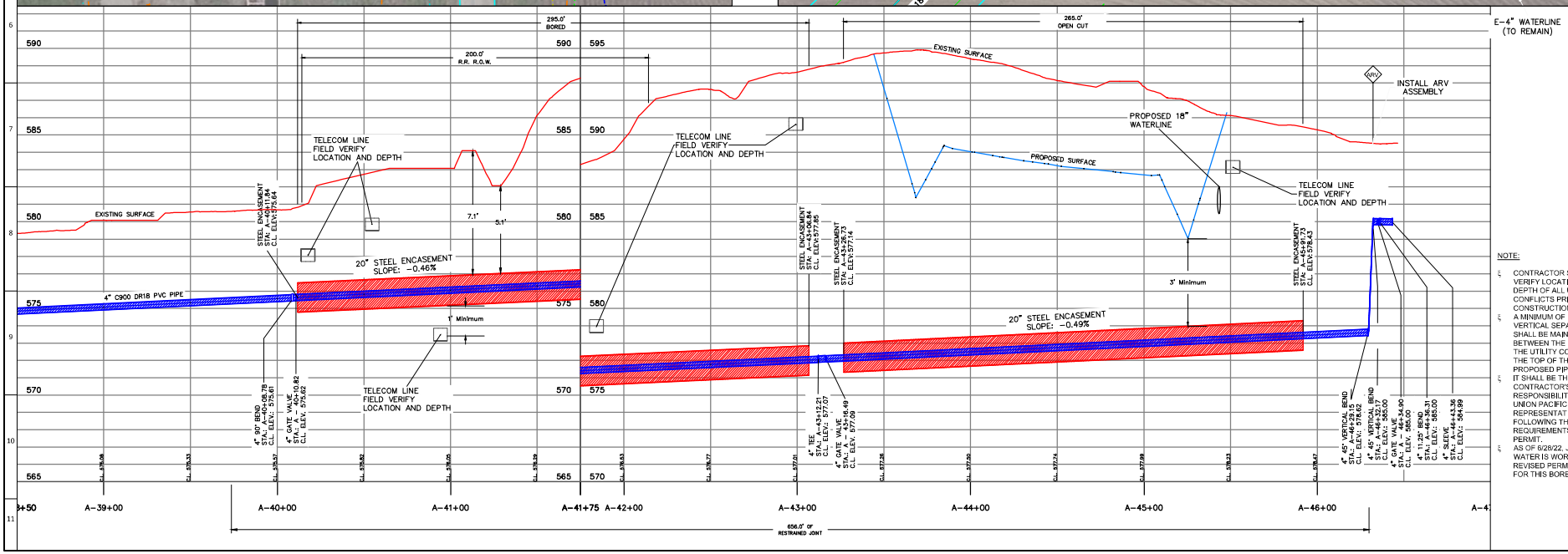
DATE: 6/28/22

COYOTE CONSULTING, LLC
T.B.P.E. F-16387
P.O. Box 24189
Waco, TX 76702
Ph. 254-744-3439

SHEET 3







NOTE:

- CONTRACTOR SHALL FIELD VERIFY LOCATION AND DEPTH OF ALL UTILITY CONFLICTS PRIOR TO CONSTRUCTION.
- A MINIMUM OF 1 FOOT VERTICAL SEPARATION SHALL BE MAINTAINED BETWEEN THE BOTTOM OF THE UTILITY CONFLICT AND THE TOP OF THE PROPOSED PIPING.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY UNION PACIFIC AND THEIR REPRESENTATIVES, FOLLOWING THE REQUIREMENTS OF THE PERMIT.
- AS OF 6/28/22, JONAH WATER IS WORKING ON A REVISED PERMIT TO UPRR FOR THIS BORE.

REVISION DESCRIPTION	DATE	BY
UPDATED WILCO BASE FILE	6/22/22	KWW/MWW

Jonah Water S.U.D.

Williamson County, Texas

2021 - CR 401, Utility Adjustments

WATERLINE ALIGN. "A": STA. A-38+50 TO A-47+00

DESIGN: MWW
DRAWN: MWW
CKD: MWW
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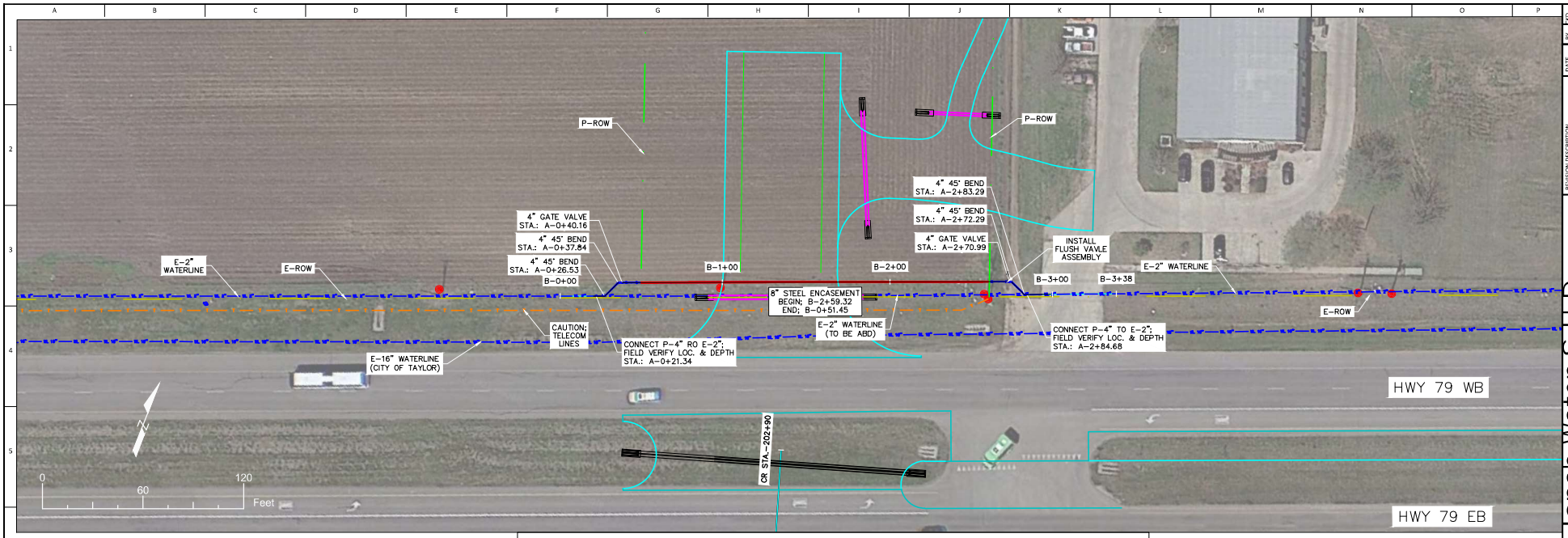

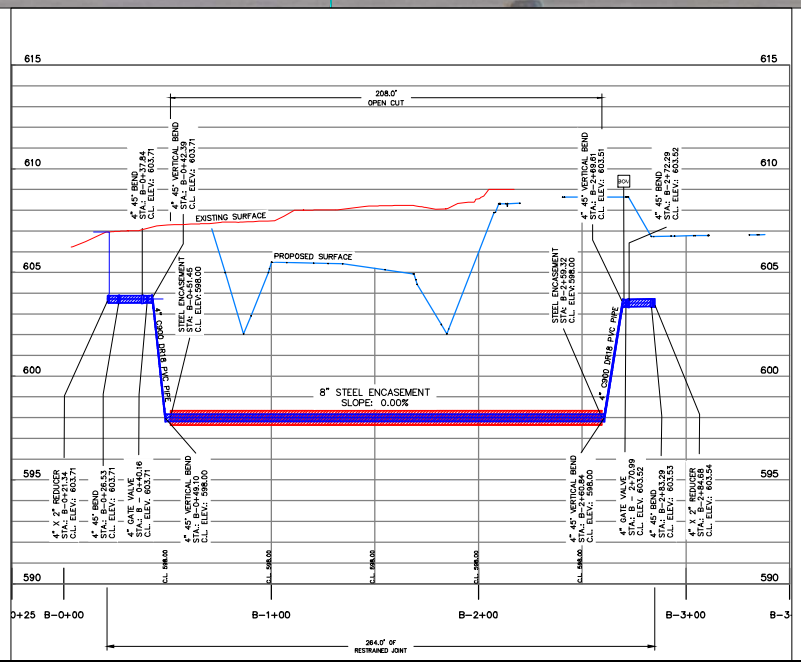

REVISION DESCRIPTION	DATE	BY	CKD
UPDATED WILCO BASE FILE	6/22/22	JAW	MWW
UPDATED WATERLINE ALIGNMENTS	6/28/22	JAW	MWW

Jonah Water S.U.D.

Williamson County, Texas

2021 - CR 401, Utility Adjustments

WATERLINE ALIGN. "B": STA. B-0+00 TO B-2+25

DESIGN: MWW
DRAWN: MWW
CKD: MWW
SEAL:

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6/28/22

COYOTE CONSULTING, LLC
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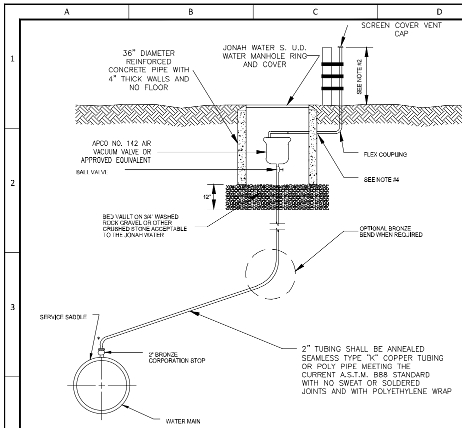
Waco, TX 76702
Ph. 254-744-3439

SHEET 5



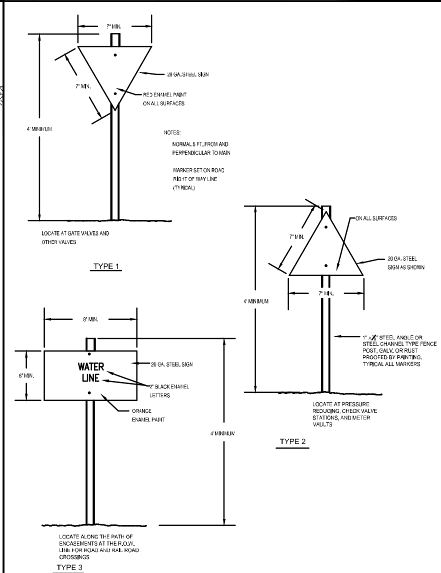
GALVANIZED IRON PIPE	
A.R. VALVE	BALL VALVE
1"	1"
2"	2"

* THREAD TO COMPRESSION BRASS
ELBOW ALLOWED IF NECESSARY DUE TO DEPTH LIMITATIONS.

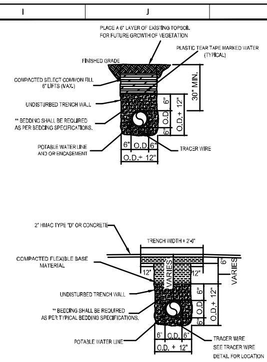
NOTES:

1. AIR RELEASE VALVE VAULT FOR USE IN NON–PAVEMENT AREAS.
2. EXTERIOR SURFACES OF EXPOSED AIR VENT PIPE AND STEEL SUPPORT PIPE SHALL BE CLEANED, PREPPED, PRIMED AND PAINTED WITH RUST–OLEUM SAFETY BLUE ACRYLIC #5225402 PAINT, OR APPROVED EQUAL.
3. THE AIR VENT PIPE SHALL BE 5' MINIMUM IN HEIGHT AND SHALL BE SUPPORTED BY A 4" STEEL PIPE, WHICH IS TO BE SET IN 2500 P.S.I. CONCRETE, FILLED WITH CONCRETE AND SUPPORTED WITH 3 STAINLESS STEEL CLAMPS.
4. CONCRETE VAULT PENETRATION SHALL BE CORE BIT DRILLED. VOID SHALL BE FILLED BY PRESS–SEAL GASKET CORP. PSX RESILIENT CONNECTOR MEETING A.S.T.M. C923, OR APPROVED EQUAL.
5. PIPE SUPPORT TO BE PROVIDED FOR THE AIR RELEASE VALVE.

JONAH SUD — JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS — "MODIFIED" AIR RELEASE VALVE FOR WATER MAIN DETAIL — W08.1 — SCALE: N.T.S. — DATE: 1/8/21



JONAH SUD — JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS — MARKERS: TYPE 1, 2, & 3 — W03 — APRIL 3, 2014 — SCALE: N.T.S. — DATE: 7-2-13



NOTES:

1. REPLACED BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE.
2. FLEXIBLE BASE MATERIAL TYPE II (TYPICAL), SHALL BE PLACED IN MULTIPLE LIFTS NOT TO EXCEED 6". EACH LAYER SHALL BE THOROUGHLY ROLLED OR TAMPED TO SPECIFIED MAXIMUM DENSITY. VERIFY BASE MATERIAL WITH APPLICABLE CITY OR COUNTY SPECIFICATIONS.
3. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
4. SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE.
5. DENSITY TESTS SHALL BE TAKEN IN ACCORDANCE WITH APPLICABLE CITY OR COUNTY SPECIFICATIONS.
6. CONTRACTOR OR ENGINEER MAY USE FLOWABLE BACKFILL AS AN ALTERNATE BACKFILL MATERIAL IF PERMITTED BY CITY OR COUNTY (SEE APPLICABLE CITY OR COUNTY FLOWABLE BACKFILL SPECIFICATION).

** TYPICAL BEDDING SPECIFICATIONS:

SIEVE SIZE	3/8" F % RETAINED
1/2"	0
3/8"	0-2
4m	40-85
10m	95-100
3/4"	-

1/2" D % RETAINED	WASHED GRAVEL % RETAINED
0	0
5-25	-
80-100	-
96-100	-
-	100

NOTE:
BURIED PIPING SHALL HAVE THE FOLLOWING LISTED MINIMUM COVER:

12" AND SMALLER - 30" MINIMUM COVER
14" THRU 24" - 54" MINIMUM COVER

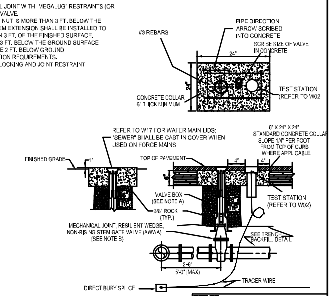
JONAH SUD — JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS — TRENCH & EMBEDMENT DETAIL — W04 — MARCH 10, 2014 — SCALE: N.T.S. — DATE: 7-2-13 — DRAWN BY: M.W.W. — APPROVED BY: W.E.A.

NOTES:

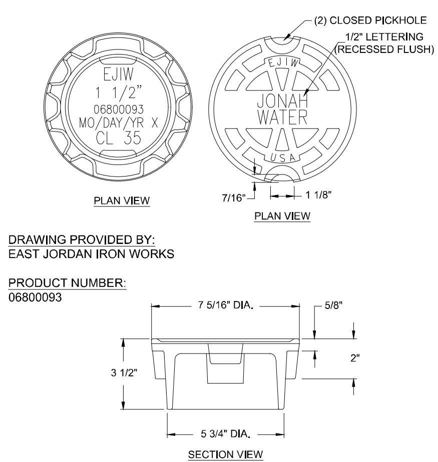
1. REPLACED BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE.
2. BASE MATERIAL SHALL BE PLACED IN TWO OR THREE LAYERS AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO 95% MAXIMUM DENSITY.
3. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
4. SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE.
5. A MINIMUM OF TWO DENSITY TESTS SHALL BE TAKEN FOR EACH SIX (6) INCH LIFT OF SUBGRADE AND EACH OPEN CUT CROSSING WHEN THE SPECIFIED COMPACTED BASE IS GREATER THAN SIX AND ONE-HALF (6 1/2") INCHES THE BASE SHALL BE CONSTRUCTED IN TWO OR MORE COURSES. PROCTORS FOR MATERIALS USED IN BACKFILLING SHALL BE OBTAINED BY A CERTIFIED LABORATORY. DENSITY TEST SHALL BE CONDUCTED BY A CERTIFIED LABORATORY OF THE PERMITTEE'S CONSULTANTS. THE PERCENTAGE OF MAXIMUM DENSITY REQUIRED SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "TxDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AT THE TIME THE PERMIT WAS ISSUED. ALL DENSITY TESTS SHALL BE COMPLETED AND ACCEPTED DENSITY TESTS SHALL BE FURNISHED TO JWSUD. BACKFILL COMPACTION SHALL BE A MINIMUM OF 95% MAXIMUM DENSITY PER AASHTO T-180 SPECIFICATIONS.
6. THESE SPECIFICATIONS MAY BE SUPERSEDED BY THE GOVERNING AGENCY.
7. SELECT MATERIAL TYPE II:
   7.1. TxDOT TYPE A - GRADE 2 OR BETTER CRUSHED LIMESTONE BASE COMPACTED TO 98% OF ASTM D-698 AT OPTIMUM MOISTURE. PROCTOR TO BE PROVIDED BY THE CONTRACTOR TO THE S.J.D. INSPECTOR.

NOTES:

A. VALVE BOX SHALL BE EAST JORDAN IRON WORKS SERIES 8550 TWO PIECE SCREW TYPE OR APPROVED EQUAL HAVING AN ADJUSTABLE RANGE OF +/- 6 INCHES FROM INSTALLED FINISH GRADE.
B. 2. ACCEPTABLE GATE VALVES ARE:
   B.1. AMERICAN FLOW CONTROL - SERIES 2500
   B.2. MUELLER - 2360 SERIES
   B.3. EAST JORDAN IRONWORKS
   B.4. CLOW
C. FOR IN LINE VALVES, USE MECHANICAL JOINT WITH "MEGALUG" RESTRAINTS (OR APPROVED EQUAL) ON EACH SIDE OF VALVE.
D. IF THE TOP OF THE VALVE OPERATING NUT IS MORE THAN 3 FT. BELOW THE FINISHED SURFACE, A OPERATING STEM EXTENSION SHALL BE INSTALLED TO BRING THE OPERATING NUT TO WITHIN 3 FT. OF THE FINISHED SURFACE.
E. VALVE OPERATING NUTS MORE THAN 3 FT. BELOW THE GROUND SURFACE ELEVATION SHALL BE EXTENDED TO BE 2 FT. BELOW GROUND.
F. REFER TO DETAIL W02 FOR TEST STATION REQUIREMENTS.
G. REFER TO DETAIL W09 FOR THRUST BLOCKING AND JOINT RESTRAINT REQUIREMENTS.



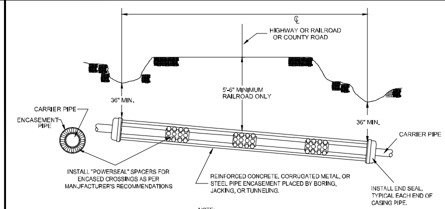
JONAH SUD — JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS — TYPICAL VALVE SETTING — W07 — 9/28/2018 — SCALE: N.T.S. — DATE: 7-2-13 — DRAWN BY: M.W.W. — APPROVED BY: W.E.A.



DRAWING PROVIDED BY:
EAST JORDAN IRON WORKS

PRODUCT NUMBER:
06800093

JONAH SUD — JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS — VALVE BOX LID — W17 — 8/28/2018 — SCALE: N.T.S. — DATE: 7-2-13 — DRAWN BY: M.W.W. — APPROVED BY: W.E.A.



NOTE:
ALL CARRIER PIPE THROUGH ENCASEMENTS SHALL BE RESTRAINED JOINT TYPE OR FUSIBLE ENDS TYPE PIPE AND SHALL BE INCLUDED IN THE PRICE OF THE CROSSING.

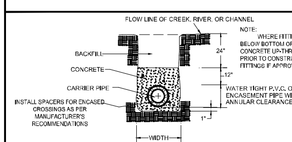
COUNTY ROAD, HIGHWAY AND RAILROAD CROSSINGS

STEEL ENCASEMENT WALL THICKNESS CHART FOR SMOOTH STEEL CASING PIPE WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI.

MINIMUM THICKNESS		DIAMETER OF CASING PIPE.
0'-0.2500"	0'-0 1/4"	12" OR LESS
0'-0.3125"	0'-0 5/16"	OVER 12" TO 18"
0'-0.3750"	0'-0 3/8"	OVER 18" TO 22"
0'-0.4375"	0'-0 7/16"	OVER 22" TO 28"
0'-0.5000"	0'-0 1/2"	OVER 28" TO 34"
0'-0.5625"	0'-0 9/16"	OVER 34" TO 42"
0'-0.6250"	0'-0 5/8"	OVER 42" TO 48"

NOTE:

1. ALL CARRIER PIPING SHALL BE RESTRAINED JOINT TYPE OR BUTT-FUSIBLE TYPE OF THE SAME SIZE AND THE SAME PRESSURE CLASS AT MINIMUM OF THE APPLICABLE PIPELINE.
2. OPEN CUT ENCASEMENT PIPE SHALL HAVE THE SAME TRENCH AND EMBEDMENT DETAILS AS AS SHOWN FOR PIPELINES.
3. DO NOT USE WEDGES BETWEEN TOP OF CARRIER PIPE AND INSIDE OF CASING TO KEEP THE CARRIER PIPE FROM MOVING.
4. PRIOR TO INSERTING CARRIER PIPE, ANY WATER SHOULD BE PUMPED OUT OF THE CASING PIPE SO THAT NO MORE THAN A FEW INCHES OF WATER REMAINS.
5. SPACERS SHALL BE REQUIRED WITHIN AT LEAST 3 FEET FROM BOTH ENDS OF THE ENCASEMENT PIPE.
6. ENCASEMENT PIPE SHALL BE SMOOTH STEEL, 35,000 PSI YIELD STRENGTH WITH WALL THICKNESS ACCORDING TO THE WALL THICKNESS CHART.
7. THE RESTRAINED JOINT CARRIER PIPE SHALL EXTEND A MINIMUM OF 10 L.F. PAST BOTH ENDS OF THE ENCASEMENT PIPING BEFORE TRANSITIONING BACK TO NON-JOINT RESTRAINED PIPING.



NOTE:
WHERE FITTINGS ARE TO BE USED TO ADJUST PIPE ELEVATIONS TO BELOW BOTTOM OF CREEK, THE CONTRACTOR SHALL OBTAIN APPROVAL OF CONCRETE UP-THRUST AND DOWN-THRUST BLOCKING FROM THE ENGINEER PRIOR TO CONSTRUCTION AND SHALL INSTALL JOINT RESTRAINTS INBETWEEN FITTINGS IF APPROVED TO DO SO.

CONCRETE ENCASED CREEK CROSSING

JONAH SUD — JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS — INSTALLATION OF PIPE THROUGH CASING/CREEK CROSSING — W14 — SCALE: N.T.S. — DATE: 7-2-13 — DRAWN BY: M.W.W. — APPROVED BY: W.E.A.

WATER MAINS AND SANITARY SEWERS SHALL BE INSTALLED NO CLOSER TO EACH OTHER THAN 9 FT. IN ALL DIRECTIONS AND PARALLEL LINES MUST BE INSTALLED IN SEPARATE TRENCHES. WHERE THE 9 FT. SEPARATION CANNOT BE ACHIEVED, THE FOLLOWING TABLE SHALL GOVERN:

CONDITION	LOCATION	MATERIAL: WATER	MATERIAL: SEWER	MINIMUM SEPARATION: VERT.	MINIMUM SEPARATION: HORIZ.	COMMENTS
NEW WATER AND NEW SEWER						
SEWER FORCE MAIN AND GRAVITY SANITARY SEWER PARALLEL TO WATER MAIN	WATER ABOVE SEWER	STD.	C.I., D.I., P.V.C., 150 P.S.I.	2'	4'	SEPARATE TRENCHES
GRAVITY SANITARY SEWER CROSSING WATER MAIN	WATER ABOVE SEWER OR SEWER ABOVE WATER	STD.	C.I., D.I., P.V.C., 150 P.S.I.	6"	NA	CENTER ONE JOINT OF SEWER PIPE ON WATER MAIN
GRAVITY SANITARY SEWER CROSSING WATER MAIN	WATER ABOVE SEWER	STD.	ABS., CLAY CONCRETE COMPOSITE	2'	NA	CEMENT STABILIZE SAND BACKFILL INITIAL BACKFILL ZONE OF SEWER FOR 9 FT. EACH SIDE OF CROSSING. CENTER ONE JOINT OF SEWER PIPE ON WATER MAIN.
NEW WATER AND EXISTING SANITARY SEWER						
NEW WATER PARALLEL TO EXISTING SEWER	WATER ABOVE SEWER	STD.	CLAY, CONC., ABS., C.I., D.I., P.V.C.	2'	4'	IF SEWER SHOWS NO SIGN OF LEAKAGE, THEN LEAVE SEWER ALONE. IF SEWER SHOWS SIGNS OF LEAKAGE, THEN REPAIR OR REPLACE.
NEW WATER CROSSING EXISTING SEWER	WATER ABOVE SEWER	STD.	ABS., CLAY, CONCRETE COMPOSITE	2'	NA	IF SEWER SHOWS NO SIGN OF LEAKAGE, THEN LEAVE SEWER ALONE. IF SEWER SHOWS SIGNS OF LEAKAGE, THEN REPAIR OR REPLACE.
NEW WATER CROSSING EXISTING SEWER	SEWER ABOVE WATER	STD.	ABS., CLAY, CONCRETE COMPOSITE	2'	NA	REPLACE EXISTING SEWER WITH ONE JOINT C.I., D.I., P.V.C. - 150 P.S.I., CENTERING OVER WATER LINE.
NEW WATER PARALLEL TO EXISTING SEWER	SEWER ABOVE WATER	STD.	ABS., CLAY, CONCRETE COMPOSITE	2'	4'	REPLACE EXISTING SEWER WITH C.I., D.I., P.V.C.-150 P.S.I. OR CEMENT STABILIZED SAND BACK FILL IN INITIAL BACKFIELD ZONE OF SEWER WHERE PARALLEL CLOSER THAN 9 FT. OR ENCASE THE WATER IN 150 P.S.I. PIPE TWO NOMINAL SIZES LARGER.
EXISTING WATER AND NEW SANITARY SEWER						
NEW SEWER PARALLEL TO EXISTING WATER	WATER ABOVE SEWER OR SEWER ABOVE WATER	STD.	C.I., D.I., P.V.C., 150 P.S.I.	2'	4'	SEPARATE TRENCHES
NEW SEWER CROSSING EXISTING WATER	WATER ABOVE SEWER OR SEWER ABOVE WATER	STD.	C.I., D.I., P.V.C., 150 P.S.I.	6"	NA	CENTER ONE JOINT OF SEWER PIPE ON WATER MAIN
NEW SEWER CROSSING EXISTING WATER	WATER ABOVE SEWER	STD.	ABS., CLAY, CONCRETE COMPOSITE	2'	NA	CEMENT STABILIZE SAND BACKFIELD INITIAL ZONE OF SEWER FOR 9 FT. EACH SIDE OF CROSSING. CENTER ONE JOINT OF SEWER PIPE ON WATER MAIN.

FIRE HYDRANTS SHALL NOT BE LOCATED WITHIN 9 FT. VERTICALLY OR HORIZONTALLY OF ANY SANITARY SEWER, REGARDLESS OF CONSTRUCTION.
WATER MAINS SHALL NOT BE INSTALLED CLOSER THAN 10 FT. TO SEPTIC TANK DRAINFIELDS.

JONAH SUD — JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS — TABLE FOR SEPARATION OF WATER AND SEWER PIPE LINES — W15 — SCALE: N.T.S. — DATE: 7-2-13 — DRAWN BY: M.W.W. — APPROVED BY: W.E.A.

REVISION DESCRIPTION	DATE	BY	CKD

Jonah Water S.U.D.
Williamson County, Texas
2021 - CR 401, Utility Adjustments
STANDARD DETAILS

DESIGN: MWW
DRAWN: MWW
CKD: MWW
SEAL:

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APPROVED:

DATE: 5/23/22

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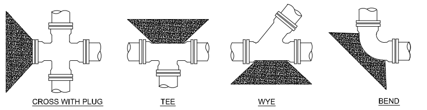
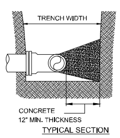
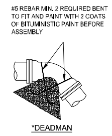


ALL THRUST BLOCKING SHALL BE FORMED, LAID FORMS SHALL BE INSPECTED BY JWSUD PRIOR TO THE POURING OF CONCRETE AND SHALL ALSO BE INSPECTED BY JWSUD PRIOR TO COVERING. TYPICAL LOCATIONS WHICH REQUIRE CONCRETE REACTION (THRUST) BLOCKS, FOR PRESSURE MAINS TWO INCHES (2") AND GREATER. CONCRETE SHALL HAVE 2500 P.S.I. MINIMUM STRENGTH AT TWENTY EIGHT (28) DAYS AND BEAR AGAINST UNDISTURBED STABLE SOILS. AREA OF CONTACT SHALL BE GOVERNED BY PIPE SIZE, MAXIMUM PRESSURE IN PIPE AND BEARING CAPACITY OF SOIL. PROTECT FITTINGS, BOLTS, ETC. BY COVERING WITH VISQUEEN OR OTHER ACCEPTABLE MATERIAL CONCRETE SHALL BE A MINIMUM OF TWELVE INCHES (12") THICK.



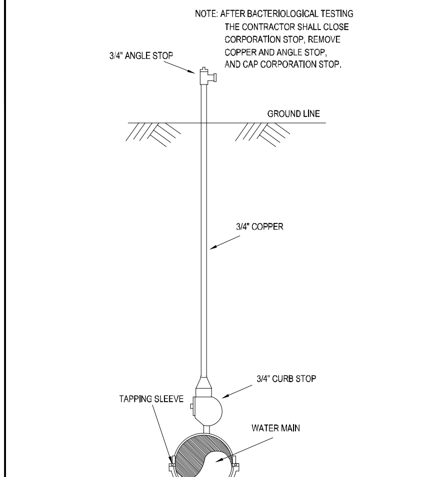


PIPE SIZE	THRUST BLOCK AREA REQUIRED	PIPE SIZE	THRUST BLOCK AREA REQUIRED	REMARKS
4"	2.0 SQ. FT.	18"	30.0 SQ. FT.	VALUES ARE FOR 90 BENDS, BASED ON 2000 P.S.F. SAFE BEARING LOAD AND PIPE PRESSURE OF 150 P.S.I. PLUS 33% SAFETY FACTOR FOR OTHER SOILS AND PRESSURES. THE AREA REQUIRED IS IN DIRECT PROPORTION.
6"	4.0 SQ. FT.	20"	37.0 SQ. FT.	
8"	6.6 SQ. FT.	24"	53.0 SQ. FT.	
10"	10.0 SQ. FT.	27"	80.0 SQ. FT.	
12"	14.0 SQ. FT.	30"	98.0 SQ. FT.	
14"	18.0 SQ. FT.	36"	127.0 SQ. FT.	
16"	24.0 SQ. FT.			

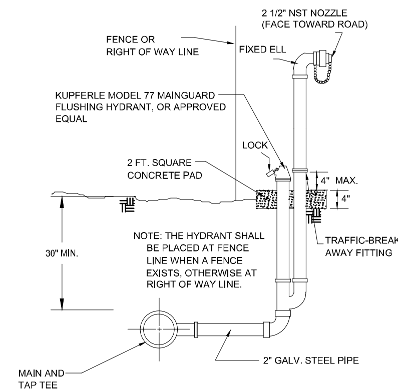
*THE ENGINEER OF RECORD SHALL CALCULATE THE SIZE OF THE DEADMAN REQUIRED AS WELL AS ANY INSTALLATION WHICH IS NOT COVERED BY THE ABOVE.

NOTE:
- ALL 3" AND LARGER ELLS, TEES AND BENDS SHALL BE MJ DUCTILE IRON FITTINGS WITH "MEGALUG" OR APPROVED EQUAL JOINT RESTRAINTS - CONCRETE THRUST BLOCKING AS SHOWN IN THE ABOVE TABLE SHALL BE INSTALLED. JOINT RESTRAINTS SHALL ALSO BE USED FOR ANY PIPE LENGTH LESS THAN ONE FULL PIPE JOINT AWAY FROM EACH M.J. FITTING.
- ALL 2-1/2" AND SMALLER CAPS, ELLS, TEES AND 45° BENDS SHALL BE HARCO PUSH-ON DUCTILE IRON FITTINGS WITH KNUCKLE JOINT RESTRAINT OR APPROVED EQUAL - CONCRETE THRUST BLOCKING AS SHOWN IN THE ABOVE TABLE SHALL BE INSTALLED.
- OTHER THRUST BLOCKING DIMENSIONS ACCEPTED IF DESIGNED BY LICENSED ENGINEER.

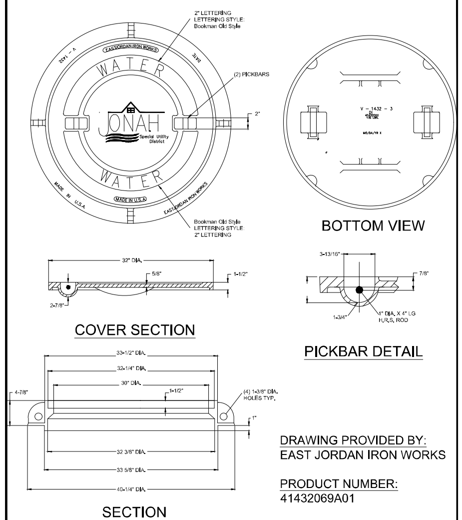
JONAH SUD | JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS | TYPICAL THRUST BLOCKS FOR WATER AND FORCE MAINS DETAIL | REVISION NOTED: JANUARY 13, 2017 | DRAWING NAME: W09 | SCALE: N.T.S. | DATE: 7-2-13 | DRAWN BY: M.W.W. | APPROVED BY: W.E.A.



JONAH SUD | JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS | TEMPORARY SAMPLING TEST STATION | DRAWING NAME: W10 | SCALE: N.T.S. | DATE: 7-2-13 | DRAWN BY: M.W.W. | APPROVED BY: W.E.A.



JONAH SUD | JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS | FIRE TYPE BLOW OFF HYDRANT | DRAWING NAME: W11 | SCALE: N.T.S. | DATE: 7-2-13 | DRAWN BY: M.W.W. | APPROVED BY: W.E.A.



DRAWING PROVIDED BY:
EAST JORDAN IRON WORKS

PRODUCT NUMBER:
41432069A01

JONAH SUD | JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS | WATER MANHOLE LID | REVISION NOTED: 9/28/2018 | DRAWING NAME: W12 | SCALE: N.T.S. | DATE: 7-2-13 | DRAWN BY: M.W.W. | APPROVED BY: W.E.A.

Hydrostatic Testing

Hydrostatic testing described in this section shall be conducted with water.

General

The contractor shall provide measurement gauge, pump, pipe, connection, and other necessary apparatuses, unless otherwise specified. Prior to testing the contractor shall place sufficient backfill to prevent pipe movement. The contractor shall ensure that thrust-blocking or other types of restraint systems will provide adequate restraint prior to pressurizing the pipeline.

Test Duration

The duration of the hydrostatic test shall be 2 hours.

Test Pressure

The hydrostatic test pressure shall not be less than 1.25 times the maximum anticipated sustained working pressure at the highest point along the test section unless the pressure exceeds the design pressure limit for any pipe, thrust restraint, valve, fitting or other appurtenance of the test section. In no case shall the test pressure exceed the design pressure limit for any pipe, thrust restraint, valve, fittings, or other appurtenance of the test section.

Test Allowance

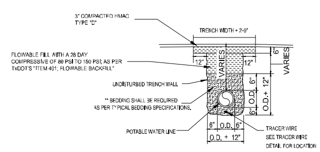
The testing allowance shall be defined as the quantity of water that must be supplied to the pipe section being tested to maintain the pressure within 5 psi of the specified hydrostatic test pressure. The installation will not be accepted, by the owner, if the quantity of the makeup water is greater than that determined by the formula below. All visible leaks are to be repair regardless of the amount of leakage.

$$Q=\frac{L \times D \times \sqrt{P}}{148000}$$

Q = quantity of makeup water in gallons per hour (gal./hr.)
L = length of pipe being tested in feet (ft.)
D = nominal diameter of pipe in inches (in.)
P = average test pressure during the hydrostatic test in pounds per square inch (psi)

Disinfection (Does Not Apply To Sewer Force Mains.)

New mains shall be thoroughly disinfected in accordance with AWWA Standard C651 and then flushed and sampled before being placed in service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure. Sampling shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed waterline will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer.



NOTES:
1. FLOWABLE FILL SHALL BE IN ACCORDANCE TO TxDOT'S ITEM 401 "FLOWABLE BACKFILL" SPECIFICATIONS. AS FOUND AT " http://ftp.dot.state.tx.us/pub/txdot-info/des/specs/specbook.pdf "
2. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
3. SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE.
4. DENSITY TESTS SHALL BE TAKEN IN ACCORDANCE WITH APPLICABLE STATE, COUNTY, OR CITY SPECIFICATIONS.

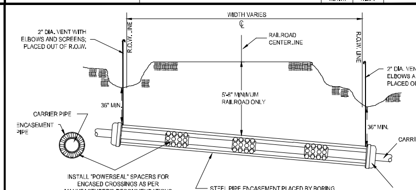
** TYPICAL BEDDING SPECIFICATIONS:

SIEVE SIZE	3/8" F % RETAINED
1/2"	0
3/8"	0-2
4m	40-85
10m	95-100
3/4"	-

1/2" D % RETAINED	WASHED GRAVEL % RETAINED
0	0
5-25	-
80-100	-
96-100	-
-	100

NOTE:
BURIED PIPING SHALL HAVE THE FOLLOWING LISTED MINIMUM COVER:
12" AND SMALLER - 30" MINIMUM COVER
14" THRU 24" - 54" MINIMUM COVER

JONAH SUD | JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS | TRENCH & EMBEDMENT DETAIL FLOWABLE FILL | DRAWING NAME: W19 | SCALE: N.T.S. | DATE: 7-11-16 | DRAWN BY: M.W.W. | APPROVED BY: M.W.W.



NOTE:
ALL CARRIER PIPE THROUGH ENCASEMENTS SHALL BE RESTRAINED JOINT TYPE OR FUSIBLE ENDS TYPE PIPE AND SHALL BE INCLUDED IN THE PRICE OF THE CROSSING.

STEEL ENCASEMENT WALL THICKNESS CHART FOR SMOOTH STEEL CASING PIPE WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI.

MINIMUM THICKNESS		DIAMETER OF CASING PIPE.
0'-0.2500"	0'-0 1/4"	12" OR LESS
0'-0.3125"	0'-0 5/16"	OVER 12" TO 18"
0'-0.3750"	0'-0 3/8"	OVER 18" TO 22"
0'-0.4375"	0'-0 7/16"	OVER 22" TO 28"
0'-0.5000"	0'-0 1/2"	OVER 28" TO 34"
0'-0.5625"	0'-0 9/16"	OVER 34" TO 42"
0'-0.6250"	0'-0 5/8"	OVER 42" TO 48"

NOTE:
1. ALL CARRIER PIPING SHALL BE RESTRAINED JOINT TYPE OR BUTT-FUSIBLE TYPE OF THE SAME SIZE AND THE SAME PRESSURE CLASS AT MINIMUM OF THE APPLICABLE PIPELINE.
2. OPEN CUT ENCASEMENT PIPE SHALL HAVE THE SAME TRENCH AND EMBEDMENT DETAILS AS AS SHOWN FOR PIPELINES.
3. DO NOT USE WEDGES BETWEEN TOP OF CARRIER PIPE AND INSIDE OF CASING TO KEEP THE CARRIER PIPE FROM MOVING.
4. PRIOR TO INSERTING CARRIER PIPE, ANY WATER SHOULD BE PUMPED OUT OF THE CASING PIPE SO THAT NO MORE THAN A FEW INCHES OF WATER REMAINS.
5. SPACERS SHALL BE REQUIRED WITHIN AT LEAST 3 FEET FROM BOTH ENDS OF THE ENCASEMENT PIPE.
6. ENCASEMENT PIPE SHALL BE SMOOTH STEEL, 35,000 PSI YIELD STRENGTH WITH WALL THICKNESS ACCORDING TO THE WALL THICKNESS CHART.
7. THE RESTRAINED JOINT CARRIER PIPE SHALL EXTEND A MINIMUM OF 10 L.F. PAST BOTH ENDS OF THE ENCASEMENT PIPING BEFORE TRANSITIONING BACK TO NON-JOINT RESTRAINED PIPING.
8. REFER TO AREMA'S PART 5 - PIPELINE FOR ALL TECHNICAL REQUIREMENTS FOR RAILWAY BORING.
9. VENTS SHALL BE INSTALLED AS PER AREMA'S Part 5 - PIPELINE TECHNICAL.

JONAH WATER SUD WATER CONSTRUCTION STANDARD DETAILS | RAILROAD CROSSING | DRAWING NAME: W22 | SCALE: N.T.S. | DATE: 3-29-16

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY WATER DISTRIBUTI SYSTEM GENERAL CONSTRUCTION NOTES

1. This water distribution system must be constructed in accordance with the current Texas Commission on Environmental Quality (TCEQ) Rules and Regulations for Public Water Systems 30 Texas Administrative Code (TAC) Chapter 290 Subchapter D.
2. Prior to commencement of construction, the owner of the system or his representative must notify the appropriate TCEQ regional office in writing of the date on which construction will begin.
3. All newly installed pipes and related products must conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61 and must be certified by an organization accredited by ANSI.
4. Plastic pipe for use in public water systems must bear the National Sanitation Foundation Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less.
5. No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply.
6. Water transmission and distribution lines must be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface.
7. The hydrostatic leakage rate shall not exceed the amount allowed or recommended by the most current AWWA formulas for PVC pipe, cast iron and ductile iron pipe.
8. The contractor shall install appropriate air release devices in the distribution system at all points where topography or other factors may create air locks in the lines. All vent openings to the atmosphere shall be covered with 16-mesh or finer, corrosion resistant screening material or an acceptable equivalent.
9. The contractor shall maintain a minimum separation distance in all directions of nine feet between the proposed waterline and wastewater collection facilities including manholes and septic tank drainfields. If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet '290.44(e) of the current rules.
10. The contractor shall disinfect the new water mains in accordance with AWWA Standard C651 and then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed water line will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer.
11. The contractor shall not place the pipe in water or where it can be flooded with water or sewage during its storage or installation.

REVISION DESCRIPTION	DATE	BY	CKD

Jonah Water S.U.D.

Williamson County, Texas
2021 - CR 401, Utility Adjustments
STANDARD DETAILS

DESIGN: MWW
DRAWN: MWW
CKD: MWW
SEAL:

THIS DOCUMENT IS ISSUED FOR BIDDING PURPOSES ONLY, NOT TO BE USED FOR CONSTRUCTION

APPROVED:

DATE: 5/23/22

AYOTE CONSULTING, LLC
T.B.P.E. F-16387
P.O. Box 24189
Waco, TX 76702
Ph. 254-744-3439

SHEET 7

Jonah Water S.U.D.

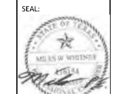
Williamson County, Texas

2021 - CR 401, Utility Adjustments

TCP / EROSION CONTROL DETAIL

REVISION DESCRIPTION	DATE	BY	CKD

DESIGN: MWW
DRAWN: MWW
CKD: MWW
SEAL:



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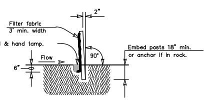


SECTION A–A

GENERAL NOTES

1. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

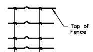
Sediment Control Fence —(SCF)—

SEDIMENT CONTROL FENCE USAGE GUIDELINES

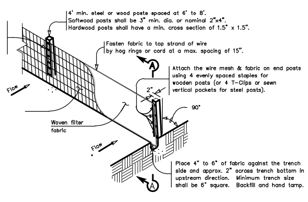
A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a max. flow through rate of 100 GPM/FT. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

Galv. Hinge joint knot woven mesh (12.5 Ga. Min.) requires a minimum of five horizontal wires spaced at a max.12 inches apart and all vertical wires spaced at a max. 12 inches apart.



Hinge Joint Knot Woven Mesh (Option)



TEMPORARY SEDIMENT CONTROL FENCE

—(SCF)—

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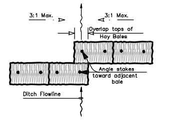
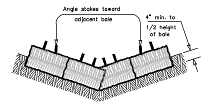


PLAN VIEW



PROFILE VIEW

PLANS SHEET LEGEND

Baled Hay —(BH)—

BALED HAY USAGE GUIDELINES

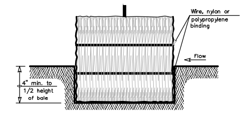
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 GPM/FT2 of cross sectional area. Baled hay may be used at the following locations:

1. Where the runoff approaching the baled hay flows over disturbed soil for less than 100'. If the slope of the disturbed soil exceeds 10%, the length of slope upstream the baled hay should be less than 50'.
2. Where the installation will be required for less than 3 months.
3. Where the contributing drainage area is less than 1/2 acre.

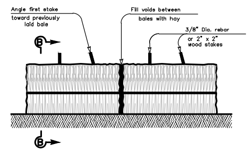
For Baled Hay installations in small ditches, the additional following considerations apply:

1. The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
2. The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.



SECTION B–B



BALED HAY FOR EROSION CONTROL

—(BH)—

GENERAL NOTES

1. Hay bales shall be a minimum of 30" in length and weigh a minimum of 50 Lbs.
2. Hay bales shall be bound by either wire or nylon or polypropylene string. The bales shall be composed entirely of vegetative matter.
3. Hay bales shall be embedded in the soil a minimum of 4" and where possible 1/2 the height of the bale.
4. Hay bales shall be placed in a row with ends tightly abutting the adjacent bales. The bales shall be placed with bindings parallel to the ground.
5. Hay bales shall be securely anchored in place with 3/8" Dia. rebar or 2" x 2" wood stakes, driven through the bales. The first stake shall be angled towards the previously laid bale to force the bales together.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & BALED HAY

EC(1)–09

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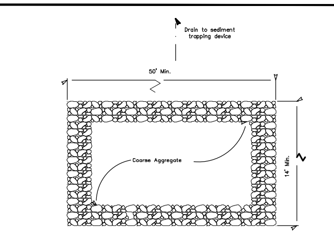
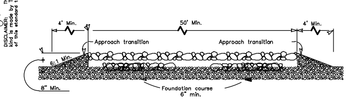


PLAN

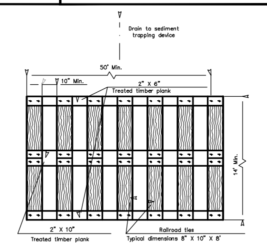


PROFILE

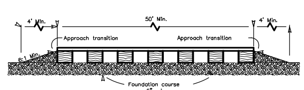
CONSTRUCTION EXIT (TYPE 1)

GENERAL NOTES

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.



PLAN

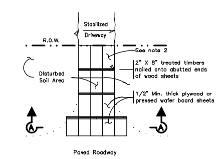


PROFILE

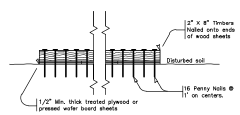
CONSTRUCTION EXIT (TYPE 2)

GENERAL NOTES

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with 1/2"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.



PLAN



SECTION A–A

CONSTRUCTION EXIT (TYPE 3)

GENERAL NOTES

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)–93

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