

WATER AND SEWER
Engineering Design

DATE:
September 23, 2026

**ADDENDUM NO. 2
TO
PROJECT NO. TMUA-W 25-03 C2 AND C3
2" WATERLINE REPLACEMENT – VICINITY OF 31ST TO
41ST STREETS AND LEWIS TO WHEELING AVENUES**

This Addendum No. 2 consisting of fifteen (15) items, submitted by Kimley-Horn & Associates, Inc., is hereby made a part of the Contract Documents to the same extent as though it were originally included therein and shall supersede anything contained in the Plans and Specifications with which it might conflict. **All addenda to the contract documents should be denoted on the last page of the Proposal in the space provided.**

This Addendum No. 2 consists of the following:

1. The attached documents list the detailed items that have been modified in Addendum No. 1. These documents shall be inclusive and apply to this project.
2. Delete the existing bid proposal form in its entirety and replace with the revised Bid Proposal located at:
<https://www.cityoftulsa.org/government/departments/public-works/engineering-services/construction-bids/>. It is the Bidder's responsibility to download the revised Bid Proposal.

All other provisions of the Plans and Specifications shall remain in full force and effect.

CITY OF TULSA

Jonathan D. Lee 9/24/26

FOR Eric Lee
Director

HAS/typ
HAS/TGP/CW/JR



WATER AND SEWER
Engineering Design

DATE:
September 23, 2026

TO:
Plan Holders
Contractors

FROM:
Jenna Richardson
918-596-9637
jennarichardson@cityoftulsa.org

EMAIL TRANSMITTAL

ADDENDUM NO. 2

PROJECT NO. TMUA-W 25-03 C2 AND C3
2" WATERLINE REPLACEMENT – VICINITY OF 31ST TO 41ST
STREETS AND LEWIS TO WHEELING AVENUES

Number of pages: 47

All addenda to the contract documents should be denoted on the
last page of the Proposal in the space provided.

Thank you,
Contract Administration



SEPTEMBER 22, 2026

ADDENDUM NO. 2

**TULSA METROPOLITAN UTILITY AUTHORITY
2" WATERLINE REPLACEMENT – VINICTY OF 31ST & 41ST
PROJECT NO. TMUA-W 25-03 C2/C3**

This Addendum No. 2, consisting of 15 items, submitted by Kimley-Horn & Associates Inc., is hereby made a part of the Contract Documents to the same extent as though it were originally included herein, and shall supersede anything contained in the Plans and Specifications with which it might conflict. All addenda to the contract documents should be denoted on the last page of the Proposal in the space provided.

This Addendum No. 2 consists of the following items:

1. The bid proposal form has changed and is being reissued with this addendum. Please delete the existing bid proposal form in its entirety and replace it with the revised bid proposal document.
2. Contract time has increased from 365 to 450 calendar days.
3. Drawing Sheet 2 (C2) has been revised to include updated quantities for Option 1 Pay Items #18, #19, and #20 concrete and asphalt removal and replacement and curb and gutter. These updated quantities are intended to reflect the additional quantity of pavement needed to meet the required City of Tulsa Standards 714, 730 & 731 which requires replacement of pavement and curb to edge of street if the saw cut is less than 5 feet from the outside edge of pavement or curb. This sheet has also been updated to include 3 materials for pipe bursting option 2.
4. Drawing Sheet 25 (C2) has been revised to include the 2" air relief valve and vault callout in the plan view.
5. Drawing Sheet 27 (C2) has been revised to include the 2" air relief valve and vault callout in the profile view.
6. Drawing Sheet 28 (C2) has been revised to include the 2" air relief valve and vault callout in the plan view.
7. Drawing Sheet 2 (C3) has been revised to include updated quantities for Option 1 Pay Items #20, #21, and #22 concrete and asphalt removal and replacement and curb and gutter. These updated quantities are intended to reflect the additional quantity of pavement needed to meet the required City of Tulsa Standards 714, 730 & 731 which

requires replacement of pavement and curb to edge of street if the saw cut is less than 5 feet from the outside edge of pavement or curb. This sheet has also been updated to include 3 materials for pipe bursting option 2.

8. Drawing Sheet 21 (C3) has been revised to include the 2" air relief valve and vault callout in the plan view.
9. Drawing Sheet 23 (C3) has been revised to include the 2" air relief valve and vault callout in the plan view.
10. Specification sections 33 11 43 Rehabilitation of Existing Water Main by Pipe Bursting and 33 13 20 Temporary Water are being issued regarding Contract 2 Option 2 and Contract 3 Option 2.
11. Question: Regarding the City of Tulsa 50% Resident Resolution Affidavit for Bid, in the event the specialty pipe bursting contractor, submitting as PRIME, does not meet the specified 50% local worker documentation, will the City consider waiving that requirement? The PRIME would utilize local contractors/labor for many of the supplemental work, ie, trucking/hauling, MOT, Restoration, etc.

Answer: Attaining 50% is not required and documentation of the efforts to attain the 50% is not required. Signing and submitting the affidavit is required, but not attaining will vary based on the contents of the contract.

12. Question: Will the pressure classes for the DIP Pipe and PVC Pipe options be reduced to a DR that is equal to that of the specified DR11 HDPE Pipe? Or; 2) Will the HDPE Pipe pressure class and DR be increased to DR7.3, to be equal to that of the specified DIP and PVC pipe options?

Answer: There will be no changes to the pressure classifications of the pipe, the City standards will be used.

13. Question: Contract 2 and 3 / Pipe Bursting Option – 6" AWWA C900 PVC pipe is an approved material for the Open-cut installation option. Please confirm that fused, fully restrained, gasketless 6" AWWA C900 Fusible PVC Pipe is approved as equal for use in lieu of 8" HDPE pipe for all water pipe bursting.

Answer: Yes, fusible PVC as well as integral restrained bell joint PVC pipe have been added to the project.

14. Question: Is there a bore log for the project?

Answer: No, there is no bore log for the project.

15. Question: Per note on sheet 8 should these quantities be included in the fire hydrant bid item or will they be paid out via the contract bid items?

Answer The quantities shown on sheet 8 (fire hydrants installed on lines not being replaced in the project waterline plan and profiles) are included with and will be paid out with the contract bid proposal items.

All other provisions of the Plans and Specifications shall remain in full force and effect.

Kimley-Horn & Associates, Inc.



Ryan W. Smith, P.E.
Sr. Project Manager

ELECTRONIC BID PROPOSAL INSTRUCTIONS - EXCEL SPREADSHEET
PROJECT NO. TMUA-W 25-03 CONTRACT 2 AND CONTRACT 3
2" WATERLINE REPLACEMENT - VICINITY OF 31ST TO 41ST STREETS AND LEWIS TO WHEELING AVENUES

Please read the following instructions carefully.

1. After opening this file re-save it as your company's name.
2. Open the BID FORM Sheet from the tabs below.
3. Input the unit price of the appropriate pay item in the cells highlighted in blue.
4. Review all data input and check calculations to ensure accuracy of Bid.
5. Print 1hardcopy of the "PROPOSAL" tab, BID FORM and the "SIGNATURE PAGE" tab.
6. Complete and sign the "Signature Page" document.
6. Submit hardcopy and electronic disk with Contract Documents and Specifications for Bid opening date.

LEGEND

- \$ 1.00 Cells Requiring Data Input.
\$ 1.00 Internal Data Transfer.
\$ 2.00 Calculated Results.

AGREEMENT FOR USING ELECTRONIC BID PROPOSAL

By and Between: Kimley-Horn and Associates, Inc. (ENGINEER) and RECIPIENT. The enclosed electronic media is provided pursuant to your request and is for your limited use in connection with your submittal of Bid Proposal for Project No. TMUA-W 25-03 Contract 2 and Contract 3. In no event shall the information be used for any other purpose or be released to third parties without the written consent of the ENGINEER. In the event of a discrepancy between the hard copy and this electronic media at delivery or in the future, the hard copy shall govern. ENGINEER hereby disclaims any and all liability for the consequences from use of the electronic media and makes no warranty or guarantee of accuracy. RECIPIENT shall assume full responsibility for the uses and consequences of the electronic media. It is agreed that ENGINEER has and retains ownership of the electronic media. ENGINEER does not warrant or guarantee that the electronic data is compatible with RECIPIENT'S computer hardware or software, and ENGINEER'S responsibility for the electronic media is limited to replacement of defective media for a period of thirty (30) days after delivery to RECIPIENT. !!! By opening and using this FILE, You AGREE to these TERMS AND CONDITIONS!!!

PROPOSAL
PROJECT NO: TMUA-W 25-03 CONTRACT 2 AND CONTRACT 3
2" WATERLINE REPLACEMENT - VICINITY OF 31ST TO 41ST STREETS AND LEWIS TO
WHEELING AVENUES

TO: TULSA METROPOLITAN UTILITY AUTHORITY
CITY OF TULSA, OKLAHOMA

THE UNDERSIGNED BIDDER, having carefully examined the drawings, specifications, and other Contract Documents of the above project presently on file in the City Clerk, City of Tulsa Oklahoma:

CERTIFIES THAT he has inspected the site of the proposed work and has full knowledge of the extent and character of the work involved, construction difficulties that may be encountered, and materials necessary for construction, class and type of excavation, and all other factors affecting or which may be affected by the specified work; and

CERTIFIES THAT he has not entered into collusion with any other bidder or prospective bidder relative to the project and/or bid: and

HEREBY PROPOSES: to enter into a contract to provide all necessary labor, materials, equipment and tools to completely construct and finish all the work required by the Contract Documents hereto attached and other documents referred to therein: to complete said work within 450 calendar days after the work order is issued; and to accept in full payment therefore the amount set forth below for all work actually performed as computed by the Engineer as set forth in the Contract.

Basis of Award

THE BID PROPOSAL CONTAINS A CONTRACT 2 AND A CONTRACT 3, EACH WITH TWO CONSTRUCTION METHODS, AN OPEN CUT OPTION HAVING A BASE BID AND THREE MATERIAL OPTIONS AND A PIPE BURSTING OPTION HAVING A BASE BID AND THREE MATERIAL OPTIONS. BIDDERS NEED ONLY SUBMIT PRICING ON ONE OF THE CONSTRUCTION METHODS. IF PRICING IS SUBMITTED ON BOTH CONSTRUCTION METHODS, THE CONSTRUCTION METHOD WITH THE LOWER COST WILL BE SELECTED. BOTH OPTIONS CONTAIN THE BASE BID PLUS THREE MATERIAL OPTIONS. WHEN BIDDING EITHER OPTION, PRICING FOR ALL THREE MATERIAL OPTIONS MUST BE SUBMITTED. FAILURE TO DO SO WILL RENDER THE BID NON-RESPONSIVE. THE CITY OF TULSA RESERVES THE RIGHT TO PICK THE MATERIAL OPTION IF THE LOWEST MATERIAL OPTION COSTS ARE EQUAL. THE CITY OF TULSA RESERVES THE RIGHT TO SELECT EITHER CONSTRUCTION METHOD OPTION FOR THE PROJECT AWARD IF BOTH THE CONSTRUCTION METHOD OPTIONS ARE SUBMITTED AND THE COSTS ARE EQUAL.

PROPOSAL FOR OPEN CUT OPTION
PROJECT NO. TMUA-W 25-03 CONTRACT 2 AND CONTRACT 3
2" WATERLINE REPLACEMENT - VICINITY OF 31ST TO 41ST STREETS AND LEWIS TO WHEELING AVENUES

OPEN CUT OPTION 1

TMUA-W 25-03 CONTRACT 2 & 3

BID ITEM	SPEC NO.	DESCRIPTION	UNIT	QTY	DATA INPUT UNIT PRICE	TOTAL EACH ITEM
1	ODOT 220	SWPP DOCUMENTATION AND MANAGEMENT	LSUM	1		\$0.00
2	ODOT 880J	CONSTRUCTION TRAFFIC CONTROL	LSUM	1		\$0.00
3	COT 102	PROJECT SIGN	LSUM	1		\$0.00
4	COT 301	RIGHT-OF-WAY CLEARING AND RESTORING, COMPLETE IN PLACE	SY	6,575		\$0.00
5	COT 302	EXCAVATION AND BACKFILL, UNCLASSIFIED	CY	8,539		\$0.00
6	COT 303	MOBILIZATION	EA	1		\$0.00
7	ODOT 642	CONSTRUCTION STAKING (LEVEL II)	EA	1		\$0.00
8	COT 307	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED, (RJ)	LF	897		\$0.00
9	COT 312(A)	6 INCHX 6 INCH D.I. TEE (RJ)	EA	8		\$0.00
10	COT 312(B)	6 INCH D.I. SLEEVE (RJ)	EA	47		\$0.00
11	COT 312(C)	2 INCH D.I. PLUG (RJ)	EA	1		\$0.00
12	COT 312(D)	6 INCH D.I. PLUG (RJ)	EA	1		\$0.00
13	COT 315(A)	3/4 INCH WATER METER CAN, LID & RIM	EA	263		\$0.00
14	COT 315(B)	PRIVATE SERVICE CONNECTION BY LICENSED BONDED PLUMBER	EA	20		\$0.00
15	COT 317(A)	3-WAY FIRE HYDRANT, IN PLACE	EA	33		\$0.00
16	COT 317(B)	12 INCH FIRE HYDRANT EXTENSION	EA	21		\$0.00
17	COT 318(A)	VALVE BOX	EA	82		\$0.00
18	COT 318(B)	VALVE BOX EXTENSION	VF	44		\$0.00
19	COT 325	SOD REPLACEMENT, LIKE KIND	SY	1,660		\$0.00
20	COT 329(A)	PAVEMENT, REMOVAL AND REPLACEMENT (ASPHALT)	SY	2,839		\$0.00
21	COT 329(B)	PAVEMENT, REMOVAL AND REPLACEMENT (CONCRETE)	SY	4,345		\$0.00
22	COT 329(C)	PAVEMENT, REMOVAL AND REPLACEMENT (CURB & GUTTER)	LF	6,212		\$0.00
23	COT 329(D)	PAVEMENT, REMOVAL AND REPLACEMENT (CONCRETE DRIVEWAY)	SY	128		\$0.00
24	COT 333(A)	2 INCH WATERLINE ABANDONMENT	LF	11,131		\$0.00
25	COT 333(B)	6 INCH WATERLINE ABANDONMENT	LF	798		\$0.00
26	COT 334	CONSTRUCTION AS-BUILT	EA	1		\$0.00
27	COT 335	CONTRACTOR QUALITY CONTROL	LSUM	1		\$0.00
28	SPECIAL	OWNER ALLOWANCE	ALLOW (USD)	100,000	\$1.00	\$100,000.00
BASE BID						\$100,000.00

Material Option 1A (DIP)

29	COT 307(A)	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED, (RJ)	LF	3,845		\$0.00
30	COT 307(B)	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED	LF	9,107		\$0.00
31	COT 309	8 INCH HDPE, AWWA C906, PE4710, DR-11 (DIPS) (BORED)	LF	118		\$0.00
30	COT 312(A)	6 INCH D.I. 11-1/4 DEGREE BEND (RJ)	EA	24		\$0.00
31	COT 312(B)	6 INCH D.I. 22-1/2 DEGREE BEND (RJ)	EA	17		\$0.00
32	COT 312(C)	6 INCH D.I. 45 DEGREE BEND (RJ)	EA	136		\$0.00
33	COT 312(D)	6 INCHX 6 INCH D.I. TEE (RJ)	EA	45		\$0.00
34	COT 312(E)	8 INCH X 6 INCH D.I. REDUCER (RJ)	EA	2		\$0.00
35	COT 312(F)	6 INCH HDPE MJ ADAPTOR (DIPS) (RJ)	EA	2		\$0.00
36	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	97		\$0.00
37	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	97		\$0.00
38	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	28		\$0.00
39	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	38		\$0.00
40	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
41	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
42	COT 315(G)	3/4 INCH WATER SERVICE CONNECTION (LONG) (HDPE)	EA	1		\$0.00
43	COT 315(H)	SERVICE LINE EXTENSION	LF	39		\$0.00
44	COT 317(A)	6 INCH GATE VALVE (RJ)	EA	82		\$0.00
45	COT 317(B)	2 INCH AIR RELIEF VALVE & VAULT	EA	12		\$0.00
46	COT 328	6-INCH BORE	LF	425		\$0.00
47	SPECIAL	8 INCH HDPE WALL ANCHOR (DIPS)(RJ), COMPLETE IN PLACE	EA	2		\$0.00
BASE BID WITH DIP OPTION 1A						\$100,000.00

Material Option 1B (PVC)

48	COT 307	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED, (RJ)	LF	21		\$0.00
49	COT 309(A)	6 INCH PVC, AWWA C900, CLASS 200, DR-14, (RJ)	LF	3,824		\$0.00
50	COT 309(B)	6 INCH PVC, AWWA C900, CLASS 200, DR-14	LF	9,107		\$0.00
51	COT 309	8 INCH HDPE, AWWA C906, PE4710, DR-11 (DIPS) (BORED)	LF	118		\$0.00
52	COT 312(A)	6 INCH D.I. 11-1/4 DEGREE BEND (RJ)	EA	24		\$0.00
53	COT 312(B)	6 INCH D.I. 22-1/2 DEGREE BEND (RJ)	EA	17		\$0.00
54	COT 312(C)	6 INCH D.I. 45 DEGREE BEND (RJ)	EA	136		\$0.00
55	COT 312(D)	6 INCHX 6 INCH D.I. TEE (RJ)	EA	45		\$0.00
56	COT 312(E)	8 INCH X 6 INCH D.I. REDUCER (RJ)	EA	2		\$0.00
57	COT 312(F)	6 INCH HDPE MJ ADAPTOR (DIPS) (RJ)	EA	2		\$0.00
58	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	97		\$0.00
59	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	97		\$0.00
60	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	28		\$0.00
61	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	38		\$0.00
62	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
63	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
64	COT 315(G)	3/4 INCH WATER SERVICE CONNECTION (LONG) (HDPE)	EA	1		\$0.00

BID ITEM	SPEC NO.	DESCRIPTION	UNIT	QTY	DATA INPUT UNIT PRICE	TOTAL EACH ITEM
65	COT 315(H)	SERVICE LINE EXTENSION	LF	39		\$0.00
66	COT 317(A)	6 INCH GATE VALVE (RJ)	EA	82		\$0.00
67	COT 317(B)	2 INCH AIR RELIEF VALVE & VAULT	EA	12		\$0.00
68	COT 328	8-INCH BORE	LF	380		\$0.00
69	SPECIAL	8 INCH HDPE WALL ANCHOR (DIPS)(RJ), COMPLETE IN PLACE	EA	2		\$0.00
BASE BID WITH PVC OPTION 1B						\$100,000.00
Material Option 1C (HDPE)						
70	COT 307	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED, (RJ)	LF	21		\$0.00
71	COT 309A	8 INCH HDPE, AWWA C906, PE4710, DR-11 (DIPS)	LF	12,931		\$0.00
72	COT 309	8 INCH HDPE, AWWA C906, PE4710, DR-11 (DIPS) (BORED)	LF	118		\$0.00
73	COT 312(A)	8 INCH HDPE MJ ADAPTOR (DIPS) (RJ)	EA	127		\$0.00
74	COT 312(B)	8 INCH HDPE 11-1/4 DEGREE BEND (DIPS)	EA	24		\$0.00
75	COT 312(C)	8 INCH HDPE 22-1/2 DEGREE BEND (DIPS)	EA	17		\$0.00
76	COT 312(D)	8 INCH HDPE 45 DEGREE BEND (DIPS)	EA	136		\$0.00
77	COT 312(E)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	8		\$0.00
78	COT 312(F)	8 INCH X 8 INCH HDPE TEE (DIPS)	EA	37		\$0.00
79	COT 312(G)	8 INCH X 6 INCH D.I. REDUCER (RJ)	EA	49		\$0.00
80	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	97		\$0.00
81	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	97		\$0.00
82	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	28		\$0.00
83	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	38		\$0.00
84	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
85	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
86	COT 315(G)	3/4 INCH WATER SERVICE CONNECTION (LONG) (HDPE)	EA	1		\$0.00
87	COT 315(H)	SERVICE LINE EXTENSION	LF	39		\$0.00
88	COT 317(A)	6 INCH GATE VALVE (RJ)	EA	16		\$0.00
89	COT 317(B)	8 INCH GATE VALVE (RJ)	EA	66		\$0.00
90	COT 317(C)	2 INCH AIR RELIEF VALVE & VAULT	EA	12		\$0.00
91	COT 328	8-INCH BORE	LF	380		\$0.00
92	SPECIAL	8 INCH HDPE WALL ANCHOR (DIPS)(RJ), COMPLETE IN PLACE	EA	24		\$0.00
BASE BID WITH HDPE OPTION 1C						\$100,000.00

PROPOSAL FOR PIPE BURSTING OPTION
PROJECT NO. TMUA-W 25-03 CONTRACT 2 AND CONTRACT 3
2" WATERLINE REPLACEMENT - VICINITY OF 31ST TO 41ST STREETS AND LEWIS TO WHEELING AVENUES

TMUA-W 25-03 CONTRACT 2				PIPE BURSTING OPTION 2		
BID ITEM	SPEC NO.	DESCRIPTION	UNIT	QTY	DATA INPUT UNIT PRICE	TOTAL EACH ITEM
1	ODOT 220	SWPP DOCUMENTATION AND MANAGEMENT	LSUM	1		\$0.00
2	ODOT 880J	CONSTRUCTION TRAFFIC CONTROL	LSUM	1		\$0.00
3	COT 102	PROJECT SIGN	LSUM	1		\$0.00
4	COT 301	RIGHT-OF-WAY CLEARING AND RESTORING, COMPLETE IN PLACE	SY	824		\$0.00
5	COT 302	EXCAVATION AND BACKFILL, UNCLASSIFIED	CY	1,081		\$0.00
6	COT 303	MOBILIZATION	EA	1		\$0.00
7	ODOT 642	CONSTRUCTION STAKING (LEVEL II)	EA	1		\$0.00
8	COT 307	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED, (RJ)	LF	897		\$0.00
9	COT 312(A)	6 INCH D.I. SLEEVE (RJ)	EA	47		\$0.00
10	COT 312(B)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	16		\$0.00
11	COT 315(A)	SERVICE LINE EXTENSION	LF	39		\$0.00
12	COT 315(B)	3/4 INCH WATER METER CAN, LID & RIM	EA	263		\$0.00
13	COT 315(C)	PRIVATE SERVICE CONNECTION BY LICENSED BONDED PLUMBER	EA	20		\$0.00
14	COT 317(A)	3-WAY FIRE HYDRANT, IN PLACE	EA	33		\$0.00
15	COT 317(B)	12 INCH FIRE HYDRANT EXTENSION	EA	21		\$0.00
16	COT 317(C)	2 INCH AIR RELIEF VALVE & VAULT	EA	12		\$0.00
17	COT 318(A)	VALVE BOX	EA	82		\$0.00
18	COT 318(B)	VALVE BOX EXTENSION	VF	44		\$0.00
19	COT 325	SOD REPLACEMENT, LIKE KIND	SY	752		\$0.00
20	COT 329(A)	PAVEMENT, REMOVAL AND REPLACEMENT (ASPHALT)	SY	36		\$0.00
21	COT 329(B)	PAVEMENT, REMOVAL AND REPLACEMENT (CONCRETE)	SY	36		\$0.00
22	COT 329(C)	PAVEMENT, REMOVAL AND REPLACEMENT (CURB & GUTTER)	LF	90		\$0.00
23	COT 334	CONSTRUCTION AS-BUILT	EA	1		\$0.00
24	COT 335	CONTRACTOR QUALITY CONTROL	LSUM	1		\$0.00
25	SPECIAL	OWNER ALLOWANCE	ALLOW (USD)	100,000	\$1.00	\$100,000.00
Material Option 2A (HDPE)				BASE BID		\$100,000.00
26	33 11 43	8 INCH HDPE, AWWA C906, PE4710, DR-11 (DIPS), PIPE BURSTING	LF	11,929		\$0.00
27	COT 312(A)	8 INCH HDPE MJ ADAPTOR (DIPS) (RJ)	EA	127		\$0.00
28	COT 312(B)	8 INCH HDPE 11-1/4 DEGREE BEND (DIPS)	EA	27		\$0.00
29	COT 312(C)	8 INCH HDPE 22-1/2 DEGREE BEND (DIPS)	EA	13		\$0.00
30	COT 312(D)	8 INCH HDPE 45 DEGREE BEND (DIPS)	EA	14		\$0.00
31	COT 312(E)	8 INCH X 8 INCH HDPE TEE (DIPS)	EA	37		\$0.00
32	COT 312(F)	8 INCH X 6 INCH D.I. REDUCER (RJ)	EA	49		\$0.00
33	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	97		\$0.00
34	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	98		\$0.00
35	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	28		\$0.00
36	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	38		\$0.00
37	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
38	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
39	COT 317(A)	6 INCH GATE VALVE (RJ)	EA	16		\$0.00
40	COT 317(B)	8 INCH GATE VALVE (RJ)	EA	66		\$0.00
41	SPECIAL	8 INCH HDPE WALL ANCHOR (DIPS)(RJ), COMPLETE IN PLACE	EA	24		\$0.00
Material Option 2B (FUSIBLE)				BASE BID WITH HDPE OPTION 2A		\$100,000.00
42	33 11 43	6 INCH PVC AWWA C900 CLASS 200 DR-14 FUSIBLE, PIPE BURSTING	LF	11,929		\$0.00
43	COT 312(A)	6 INCH D.I. 11-1/4 DEGREE BEND (RJ)	EA	67		\$0.00
44	COT 312(B)	6 INCH D.I. 22-1/2 DEGREE BEND (RJ)	EA	21		\$0.00
45	COT 312(C)	6 INCH D.I. 45 DEGREE BEND (RJ)	EA	7		\$0.00
46	COT 312(D)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	37		\$0.00
47	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	97		\$0.00
48	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	98		\$0.00
49	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	28		\$0.00
50	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	11		\$0.00
51	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
52	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
53	COT 317	6 INCH GATE VALVE	EA	82		\$0.00
Material Option 2C (RESTRAINED JOINT INTEGRAL BELL)				BASE BID WITH FUSIBLE OPTION 2B		\$100,000.00
54	33 11 43	6 INCH PVC AWWA C900 CLASS 200 DR-14 RJ INTEGRAL BELL, PIPE BURSTING	LF	11,929		\$0.00
55	COT 312(A)	6 INCH D.I. 11-1/4 DEGREE BEND (RJ)	EA	67		\$0.00
56	COT 312(B)	6 INCH D.I. 22-1/2 DEGREE BEND (RJ)	EA	21		\$0.00
57	COT 312(C)	6 INCH D.I. 45 DEGREE BEND (RJ)	EA	7		\$0.00
58	COT 312(D)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	37		\$0.00
59	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	97		\$0.00
60	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	98		\$0.00
61	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	28		\$0.00
62	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	38		\$0.00
63	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
64	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1		\$0.00
65	COT 317	6 INCH GATE VALVE	EA	82		\$0.00
Material Option 2C (RESTRAINED JOINT INTEGRAL BELL)				BASE BID WITH RESTRAINED JOINT INTEGRAL BELL OPTION 2C		\$100,000.00

C2 & C3 Lowest Material Option Open Cut	<u>\$100,000.00</u>
C2 & C3 Lowest Material Option Pipe Bursting	<u>\$100,000.00</u>

SIGNATURE PAGE
PROJECT NO: TMUA-W 25-03 CONTRACT 2 AND CONTRACT 3

TOTAL BID

\$100,000.00

Enclosed is a () Bidder's Surety Bond, () Certified Check, () Cashier's Check for

_____ Dollars (\$ _____)
Figures

which the City of Tulsa may retain or recover as liquidated damages in the event that the undersigned fails to enter into contract for the work covered by this proposal., provided the Contract is awarded to the undersigned within thirty (30) days, or within ninety (90) days if Federal funds are utilized, from the date fixed for opening of bids and the undersigned fails to execute said Contract and furnish the required bonds and other requirements as called for in these Contract Documents within thirty (30) days after award of Contract.

Dated at Tulsa, Oklahoma, this _____ day of _____, 20__.

Respectfully submitted,

(Complete legal name of company)

(State of Organization)

By:

ATTEST:

Title: _____

Title: Corporate Secretary

(SEAL)

Address: _____

Telephone Number: _____

Fax Number: _____

The undersigned acknowledge receipt of the following Addenda (give number and date of each):

FOR CONTRACTOR USE
PROJECT NO. TMUA-W 25-03 CONTRACT 2 AND CONTRACT 3
2" WATERLINE REPLACEMENT - VICINITY OF 31ST TO 41ST STREETS AND LEWIS TO WHEELING AVENUES

TMUA-W 25-03 CONTRACT 2 & 3			OPEN CUT OPTION 1	
BID ITEM	SPEC NO.	DESCRIPTION	UNIT	QTY
1	ODOT 220	SWPP DOCUMENTATION AND MANAGEMENT	LSUM	1
2	ODOT 880J	CONSTRUCTION TRAFFIC CONTROL	LSUM	1
3	COT 102	PROJECT SIGN	LSUM	1
4	COT 301	RIGHT-OF-WAY CLEARING AND RESTORING, COMPLETE IN PLACE	SY	6,575
5	COT 302	EXCAVATION AND BACKFILL, UNCLASSIFIED	CY	8,539
6	COT 303	MOBILIZATION	EA	1
7	ODOT 642	CONSTRUCTION STAKING (LEVEL II)	EA	1
8	COT 307	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED, (RJ)	LF	897
9	COT 312(A)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	8
10	COT 312(B)	6 INCH D.I. SLEEVE (RJ)	EA	47
11	COT 312(C)	2 INCH D.I. PLUG (RJ)	EA	1
12	COT 312(D)	6 INCH D.I. PLUG (RJ)	EA	1
13	COT 315(A)	3/4 INCH WATER METER CAN, LID & RIM	EA	263
14	COT 315(B)	PRIVATE SERVICE CONNECTION BY LICENSED BONDED PLUMBER	EA	20
15	COT 317(A)	3-WAY FIRE HYDRANT, IN PLACE	EA	33
16	COT 317(B)	12 INCH FIRE HYDRANT EXTENSION	EA	21
17	COT 318(A)	VALVE BOX	EA	82
18	COT 318(B)	VALVE BOX EXTENSION	VF	44
19	COT 325	SOD REPLACEMENT, LIKE KIND	SY	1,660
20	COT 329(A)	PAVEMENT, REMOVAL AND REPLACEMENT (ASPHALT)	SY	2,839
21	COT 329(B)	PAVEMENT, REMOVAL AND REPLACEMENT (CONCRETE)	SY	4,345
22	COT 329(C)	PAVEMENT, REMOVAL AND REPLACEMENT (CURB & GUTTER)	LF	6,212
23	COT 329(D)	PAVEMENT, REMOVAL AND REPLACEMENT (CONCRETE DRIVEWAY)	SY	128
24	COT 333(A)	2 INCH WATERLINE ABANDONMENT	LF	11,131
25	COT 333(B)	6 INCH WATERLINE ABANDONMENT	LF	798
26	COT 334	CONSTRUCTION AS-BUILT	EA	1
27	COT 335	CONTRACTOR QUALITY CONTROL	LSUM	1
28	SPECIAL	OWNER ALLOWANCE	ALLOW (USD)	40,000
BASE BID				

Material Option 1A (DIP)

29	COT 307(A)	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED, (RJ)	LF	3,845
30	COT 307(B)	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED	LF	9,107
31	COT 309	8 INCH HDPE, AWWA C906, PE4710, DR-11 (DIPS) (BORED)	LF	118
30	COT 312(A)	6 INCH D.I. 11-1/4 DEGREE BEND (RJ)	EA	24
31	COT 312(B)	6 INCH D.I. 22-1/2 DEGREE BEND (RJ)	EA	17
32	COT 312(C)	6 INCH D.I. 45 DEGREE BEND (RJ)	EA	136
33	COT 312(D)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	45
34	COT 312(E)	8 INCH X 6 INCH D.I. REDUCER (RJ)	EA	2
35	COT 312(F)	6 INCH HDPE MJ ADAPTOR (DIPS) (RJ)	EA	2
36	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	97
37	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	97
38	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	28
39	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	38
40	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	1
41	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1
42	COT 315(G)	3/4 INCH WATER SERVICE CONNECTION (LONG) (HDPE)	EA	1
43	COT 315(H)	SERVICE LINE EXTENSION	LF	39
44	COT 317(A)	6 INCH GATE VALVE (RJ)	EA	82
45	COT 317(B)	2 INCH AIR RELIEF VALVE & VAULT	EA	12
46	COT 328	6-INCH BORE	LF	425
47	SPECIAL	8 INCH HDPE WALL ANCHOR (DIPS)(RJ), COMPLETE IN PLACE	EA	2
BASE BID WITH DIP OPTION 1A				

Material Option 1B (PVC)

48	COT 307	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED, (RJ)	LF	21
49	COT 309(A)	6 INCH PVC, AWWA C900, CLASS 200, DR-14, (RJ)	LF	3,824
50	COT 309(B)	6 INCH PVC, AWWA C900, CLASS 200, DR-14	LF	9,107
51	COT 309	8 INCH HDPE, AWWA C906, PE4710, DR-11 (DIPS) (BORED)	LF	118
52	COT 312(A)	6 INCH D.I. 11-1/4 DEGREE BEND (RJ)	EA	24
53	COT 312(B)	6 INCH D.I. 22-1/2 DEGREE BEND (RJ)	EA	17
54	COT 312(C)	6 INCH D.I. 45 DEGREE BEND (RJ)	EA	136
55	COT 312(D)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	45
56	COT 312(E)	8 INCH X 6 INCH D.I. REDUCER (RJ)	EA	2

57	COT 312(F)	6 INCH HDPE MJ ADAPTOR (DIPS) (RJ)		
58	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	2
59	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	97
60	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	97
61	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	28
62	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	38
63	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1
64	COT 315(G)	3/4 INCH WATER SERVICE CONNECTION (LONG) (HDPE)	EA	1
65	COT 315(H)	SERVICE LINE EXTENSION	EA	1
66	COT 317(A)	6 INCH GATE VALVE (RJ)	LF	39
67	COT 317(B)	2 INCH AIR RELIEF VALVE & VAULT	EA	82
68	COT 328	8-INCH BORE	EA	12
69	SPECIAL	8 INCH HDPE WALL ANCHOR (DIPS)(RJ), COMPLETE IN PLACE	LF	380
			EA	2
BASE BID WITH PVC OPTION 1B				

Material Option 1C (HDPE)				
70	COT 307	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED, (RJ)		
71	COT 309A	8 INCH HDPE, AWWA C906, PE4710, DR-11 (DIPS)	LF	21
72	COT 309	8 INCH HDPE, AWWA C906, PE4710, DR-11 (DIPS) (BORED)	LF	12,931
73	COT 312(A)	8 INCH HDPE MJ ADAPTOR (DIPS) (RJ)	LF	118
74	COT 312(B)	8 INCH HDPE 11-1/4 DEGREE BEND (DIPS)	EA	127
75	COT 312(C)	8 INCH HDPE 22-1/2 DEGREE BEND (DIPS)	EA	24
76	COT 312(D)	8 INCH HDPE 45 DEGREE BEND (DIPS)	EA	17
77	COT 312(E)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	136
78	COT 312(F)	8 INCH X 8 INCH HDPE TEE (DIPS)	EA	8
79	COT 312(G)	8 INCH X 6 INCH D.I. REDUCER (RJ)	EA	37
80	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	49
81	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	97
82	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	97
83	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	28
84	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	38
85	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1
86	COT 315(G)	3/4 INCH WATER SERVICE CONNECTION (LONG) (HDPE)	EA	1
87	COT 315(H)	SERVICE LINE EXTENSION	EA	1
88	COT 317(A)	6 INCH GATE VALVE (RJ)	LF	39
89	COT 317(B)	8 INCH GATE VALVE (RJ)	EA	16
90	COT 317(C)	2 INCH AIR RELIEF VALVE & VAULT	EA	66
91	COT 328	8-INCH BORE	EA	12
92	SPECIAL	8 INCH HDPE WALL ANCHOR (DIPS)(RJ), COMPLETE IN PLACE	LF	380
			EA	24
BASE BID WITH HDPE OPTION 1C				

FOR CONTRACTOR USE
PROJECT NO. TMUA-W 25-03 CONTRACT 2 AND CONTRACT 3
2" WATERLINE REPLACEMENT - VICINITY OF 31ST TO 41ST STREETS AND LEWIS TO WHEELING AVENUES

TMUA-W 25-03 CONTRACT 2		PIPE BURSTING OPTION 2		
BID ITEM	SPEC NO.	DESCRIPTION	UNIT	QTY
1	ODOT 220	SWPP DOCUMENTATION AND MANAGEMENT	LSUM	1
2	ODOT 880J	CONSTRUCTION TRAFFIC CONTROL	LSUM	1
3	COT 102	PROJECT SIGN	LSUM	1
4	COT 301	RIGHT-OF-WAY CLEARING AND RESTORING, COMPLETE IN PLACE	SY	824
5	COT 302	EXCAVATION AND BACKFILL, UNCLASSIFIED	CY	1,081
6	COT 303	MOBILIZATION	EA	1
7	ODOT 642	CONSTRUCTION STAKING (LEVEL II)	EA	1
8	COT 307	6 INCH DIP, CL 51 POLYETHYLENE WRAPPED, (RJ)	LF	897
9	COT 312(A)	6 INCH D.I. SLEEVE (RJ)	EA	47
10	COT 312(B)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	16
11	COT 315(A)	SERVICE LINE EXTENSION	LF	39
12	COT 315(B)	3/4 INCH WATER METER CAN, LID & RIM	EA	263
13	COT 315(C)	PRIVATE SERVICE CONNECTION BY LICENSED BONDED PLUMBER	EA	20
14	COT 317(A)	3-WAY FIRE HYDRANT, IN PLACE	EA	33
15	COT 317(B)	12 INCH FIRE HYDRANT EXTENSION	EA	21
16	COT 317(C)	2 INCH AIR RELIEF VALVE & VAULT	EA	12
17	COT 318(A)	VALVE BOX	EA	82
18	COT 318(B)	VALVE BOX EXTENSION	VF	44
19	COT 325	SOD REPLACEMENT, LIKE KIND	SY	752
20	COT 329(A)	PAVEMENT, REMOVAL AND REPLACEMENT (ASPHALT)	SY	36
21	COT 329(B)	PAVEMENT, REMOVAL AND REPLACEMENT (CONCRETE)	SY	36
22	COT 329(C)	PAVEMENT, REMOVAL AND REPLACEMENT (CURB & GUTTER)	LF	90
23	COT 334	CONSTRUCTION AS-BUILT	EA	1
24	COT 335	CONTRACTOR QUALITY CONTROL	LSUM	1
25	SPECIAL	OWNER ALLOWANCE	ALLOW (USD)	40,000
		BASE BID		
Material Option 2A (HDPE)				
26	33 11 43	8 INCH HDPE, AWWA C906, PE4710, DR-11 (DIPS), PIPE BURSTING	LF	11,929
27	COT 312(A)	8 INCH HDPE MJ ADAPTOR (DIPS) (RJ)	EA	127
28	COT 312(B)	8 INCH HDPE 11-1/4 DEGREE BEND (DIPS)	EA	27
29	COT 312(C)	8 INCH HDPE 22-1/2 DEGREE BEND (DIPS)	EA	13
30	COT 312(D)	8 INCH HDPE 45 DEGREE BEND (DIPS)	EA	14
31	COT 312(E)	8 INCH X 8 INCH HDPE TEE (DIPS)	EA	37
32	COT 312(F)	8 INCH X 6 INCH D.I. REDUCER (RJ)	EA	49
33	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	97
34	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	98
35	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	28
36	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	38
37	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	1
38	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1
39	COT 317(A)	6 INCH GATE VALVE (RJ)	EA	16
40	COT 317(B)	8 INCH GATE VALVE (RJ)	EA	66
41	SPECIAL	8 INCH HDPE WALL ANCHOR (DIPS)(RJ), COMPLETE IN PLACE	EA	24
		BASE BID WITH HDPE OPTION 2A		
Material Option 2B (FUSIBLE)				
42	33 11 43	6 INCH PVC AWWA C900 CLASS 200 DR-14 FUSIBLE, PIPE BURSTING	LF	11,929
43	COT 312(A)	6 INCH D.I. 11-1/4 DEGREE BEND (RJ)	EA	67
44	COT 312(B)	6 INCH D.I. 22-1/2 DEGREE BEND (RJ)	EA	21
45	COT 312(C)	6 INCH D.I. 45 DEGREE BEND (RJ)	EA	7
46	COT 312(D)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	37
47	COT 315(A)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	97
48	COT 315(B)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	98
49	COT 315(C)	1 INCH WATER SERVICE CONNECTION (SHORT)	EA	28
50	COT 315(D)	1 INCH WATER SERVICE CONNECTION (LONG)	EA	11
51	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	1
52	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1
53	COT 317	6 INCH GATE VALVE	EA	82
		BASE BID WITH FUSIBLE OPTION 2B		
Material Option 2C (RESTRAINED JOINT INTEGRAL BELL)				
54	33 11 43	6 INCH PVC AWWA C900 CLASS 200 DR-14 RJ INTEGRAL BELL, PIPE BURSTING	LF	11,929
55	COT 312(A)	6 INCH D.I. 11-1/4 DEGREE BEND (RJ)	EA	67
56	COT 312(B)	6 INCH D.I. 22-1/2 DEGREE BEND (RJ)	EA	21
57	COT 312(C)	6 INCH D.I. 45 DEGREE BEND (RJ)	EA	7
58	COT 312(D)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	37
59	COT 315(A)	6 INCH D.I. 45 DEGREE BEND (RJ)	EA	97
60	COT 315(B)	6 INCH X 6 INCH D.I. TEE (RJ)	EA	98
61	COT 315(C)	3/4 INCH WATER SERVICE CONNECTION (SHORT)	EA	28
62	COT 315(D)	3/4 INCH WATER SERVICE CONNECTION (LONG)	EA	38
63	COT 315(E)	1 1/2 INCH WATER SERVICE CONNECTION (LONG)	EA	1
64	COT 315(F)	2 INCH WATER SERVICE CONNECTION (LONG)	EA	1
65	COT 317	6 INCH GATE VALVE	EA	82
		BASE BID WITH RESTRAINED JOINT INTEGRAL BELL OPTION 2C		

PART 1 GENERAL

1.01 SCOPE OF WORK

This specification provides the minimum requirements for the trenchless installation of water pipe and consists of furnishing all labor, materials and equipment necessary for the replacement of water mains by pipe bursting. Pipe bursting replacement is defined as a trenchless method which splits the existing pipe and immediately installs a new polyethylene or polyvinyl chloride pipe behind an apparatus which expands the existing water pipe.

A. Pre-Chlorinated Pipe Bursting

The general method for rehabilitation using pre-chlorinated pipe is outlined below for each section of pipe being rehabilitated. These processes may be performed in series or in parallel with other sections of pipe within the job; however, each section will require these steps.

- 1) Deliver notice of work to each affected property owner in advance of work.
- 2) Install temporary water main to serve all affected properties.
- 3) Fuse proposed water pipe on surface in the length of the proposed burst section.
- 4) Chlorinate the length of water pipe that yields passing test results for potable water per AWWA, ODEQ and City standards.
- 5) Hydrostatic test of the product pipe section per City standards.
- 6) Excavate a Burst Pit at one end of the section down to pipe grade for placement of the pipe bursting equipment.
- 7) Excavate an Insertion Pit at the opposite end of the section down to pipe grade for entry of the product pipe.
- 8) Excavate Service Connection Pits.
- 9) Isolate the section to be rehabilitated from the rest of the system so as to maintain pressure integrity of the system as well as preventing any backflow of chlorinated solution or non-potable water into the system.
- 10) Excavate and remove hydrant tees and valve tees from the host pipe.
- 11) Rod string to be assembled as it is thrust through the host pipe from Burst Pit to Insertion Pit.
- 12) Burst tooling and product pipe attached to rod end at Entry Pit.
- 13) Rod string pulled back and disassembled simultaneously while tooling and product pipe travels from Insertion Pit to Burst Pit.

- 14) Super-Chlorinate main for 15 minutes to 300 ppm. A de-chlorination unit will be used to neutralize the residual chlorine when flushing. Flush the newly installed main with potable water.
- 15) Service Connections shall be made to the newly installed main.
- 16) Inspect for leaks at new connections.
- 17) Final connection of the replaced section of pipe into the system.

It should be noted that item 6 through 17 are to be accomplished within a single 10 hour day to eliminate the need for any temporary services. The length of pipe to be burst per run should be chosen to conform to this time frame. Items 6 through 8 (excavation items) may be performed one day prior to bursting operations to expedite process.

B. Non Pre-Chlorinated Pipe Bursting

The general method for rehabilitation using non pre-chlorinated cartridge style pipe is outlined below for each section of pipe being rehabilitated. These processes may be performed in series or in parallel with other sections of pipe within the job; however, each section will require these steps.

- 1) Deliver notice of work to each affected property owner in advance of work.
- 2) Install temporary water main to serve all affected properties.
- 3) Excavate a Burst Pit at one end of the section down to pipe grade for placement of the pipe bursting equipment.
- 4) Excavate an Insertion Pit at the opposite end of the section down to pipe grade for entry of the product pipe.
- 5) Excavate Service Connection Pits.
- 6) Isolate the section to be rehabilitated from the rest of the system so as to maintain pressure integrity of the system as well as preventing any backflow of chlorinated solution or non-potable water into the system.
- 7) Excavate and remove hydrant tees and valve tees from the host pipe.
- 8) Rod string to be assembled as it is thrust through the host pipe from Burst Pit to Insertion Pit.
- 9) Burst tooling and product pipe attached to rod end at Entry Pit.
- 10) Join product pipe during pullback.
- 11) Rod string pulled back and disassembled simultaneously while tooling and product pipe travels from Insertion Pit to Burst Pit.
- 12) Chlorinate the length of water pipe that yields passing test results for potable water per AWWA, ODEQ and City standards. A de-chlorination

unit will be used to neutralize the residual chlorine when flushing. Flush the newly installed main with potable water.

- 13) Hydrostatic test of the product pipe section per City standards.
- 14) Service Connections shall be made to the newly installed main.
- 15) Inspect for leaks at new connections.
- 16) Final connection of the replaced section of pipe into the system.

It should be noted that item 3 through 16 are to be accomplished within a single 10 hour day to eliminate the need for any temporary services. The length of pipe to be burst per run should be chosen to conform to this time frame. Items 3 through 5 (excavation items) may be performed one day prior to bursting operations to expedite process.

1.02 RELATED WORK

- A. City of Tulsa Standard Specifications and Standard Details – March 2022
- B. Specification Section 33 13 20 – Temporary Water

1.03 QUALIFICATION REQUIREMENTS

In order to assure quality execution of the method, the Contractor shall submit the following to the Owner:

- A. Experience – the Contractor shall provide documented evidence of:
 1. Being actively engaged in the installation of pipe using the static pipe bursting method to replace water main for a minimum of five (5) years with evidence of projects.
 2. Performing 50,000 feet or more of water main replacement using the process of pre-chlorinated pipe bursting in the United States of America over the past five (5) years, if using the pre-chlorinated method.
 3. The work experience must have been performed under the company name.
 4. Experience must be with the use of a static pipe bursting system with evidence of 6-inch, 8-inch and 12-inch projects.
 5. Performing 20,000 feet or more of water main replacement using the process of fusible HDPE or PVC pipe in the United States of America over the past five (5) years, if using thermal fusion method.
 6. References must accompany each project experience submitted with detailed project description and contact information to be qualified.

B. Certification

1. Certificate of training endorsed by the manufacturer of the pipe bursting equipment.
 2. Certificate of training endorsed by the manufacturer of thermal fusion equipment in butt fusing pipe. In lieu of certificate, evidence of training may be substituted.
 3. Certificate of training endorsed by the supplier or manufacturer of electro-fusion couplers to be used in the method. In lieu of certificate, evidence of training may be substituted.
- C. Personnel overseeing pre-chlorination process shall be trained and qualified in process.

1.04 SUBMITTALS

Contractor and manufacturers of the selected water rehabilitation piping are to furnish engineering data covering design and installation. Submittals shall be made in a timely manner so that project schedule can be met. The data shall include:

- A. Shop drawings, catalog data and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe and fittings. Include manufacturer's recommendation for handling, storage, and repair of pipe and fittings damaged.
- B. Detailed installation procedure including pipe bursting method to be used and method of construction and restoration of existing service connections. This shall include detail drawings and written description of the entire construction procedure to install pipe, temporary water line and reconnection of water service connections.
- C. Project references and certification of workmen training for installing pipe
- D. Fusion, chlorination and hydro-static test reports

1.05 WARRANTY

- A. A one-year warranty for the pipe shall be included from the Contractor, and shall cover the cost of replacement pipe and freight to project site, should the pipe have any defects in material or workmanship
- B. In addition to the standard pipe warranty, the pipe bursting Contractor shall provide in writing a warranty for a period of one year for all the pipe bursting work including material, installation, and pressure testing at no additional cost to the Owner
- C. Unless otherwise specified, the warranty period shall begin after the Certificate of Acceptance is issued for the Contract

PART 2 PRODUCTS

2.01 HIGH DENSITY POLYETHYLENE WATER PIPE

- A. High Density Polyethylene Pipe shall be AWWA C906 (HDPE) and per City Specifications.
- B. Pipe must conform to ASTM F714 and NSF 61.
- C. HDPE resin shall be PE4710 characterized by ASTM D3350.
- D. All pipe shall be made of virgin material, no rework except that obtained from manufacturers own production.
- E. Pipe shall be a minimum of SDR 11 wall thickness (200 psi).
- F. The tensile loads on the pipe shall not exceed the manufacturer's recommended values.
- G. Cuts or gouges, per ASTM F585 are acceptable up to 10% of wall thickness. Beyond 10% of wall, damage must be removed by cutting the damaged section from the pipe string and butt fusing the ends.
- H. Stripe along the length of the pipe shall be blue in color to identify the pipe as potable water.

2.02 POLYVINYL CHLORIDE WATER PIPE

- A. Restrained Joint Integral Bell Polyvinyl Chloride Pipe
 - 1) Polyvinyl chloride (PVC) pipe shall be per AWWA C900 with a minimum of DR 14 wall thickness (305 psi).
 - 2) Pipe shall be made from un-plasticized PVC compounds having a minimum cell classification of 12454 as defined in ASTM D1784.
 - 3) Pipe and materials shall be manufactured to meet the testing requirements of NSF 61, ASTM D2837, ASTM D3139 and ASTM F477.
 - 4) All pipe shall be made of virgin material, no rework except that obtained from manufacturers own production.
 - 5) The tensile loads on the pipe shall not exceed the manufacturer's recommended values.
 - 6) Restrained joints shall be designed for use at or above the pressure class of the pipe with which they are a part of, and shall incorporate an elastomeric sealing gaskets meeting the requirements of ASTM F 477.

- 7) Restrained joints shall be designed to meet the zero leakage test requirements of ASTM D 3139.
 - 8) Pipe color shall be blue.
- B. Fusible Polyvinyl Chloride Pipe
- 1) Polyvinyl chloride (PVC) pipe shall be per AWWA C900 with a minimum of DR 14 wall thickness (305 psi).
 - 2) Fusible polyvinyl chloride pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.
 - 3) Pipe shall be made from un-plasticized PVC compounds having a minimum cell classification of 12454 as defined in ASTM D1784.
 - 4) Pipe and materials shall be manufactured to meet the testing requirements of NSF 61.
 - 5) All pipe shall be made of virgin material, no rework except that obtained from manufacturers own production.
 - 6) The tensile loads on the pipe shall not exceed the manufacturer's recommended values.
 - 7) Pipe color shall be blue.
 - 8) Unless otherwise specified, fusible polyvinyl chloride pipe lengths shall be assembled in the field with butt-fused joints. The Contractor shall follow the pipe supplier's written guidelines for this procedure.

2.03 OTHER PRODUCT SPECIFICATIONS

- A. Fittings for pressure systems shall be ductile iron and comply with AWWA C153. The minimum pressure rating shall be 160 PSI and meet all city standard specifications.
- B. Stiffener inserts shall be used for all fittings and connections to HDPE pipe. Stiffeners shall be 304 stainless steel and be of wedge type design.
- C. Service Connection Fittings shall be HDPE electro-fusion type and/or mechanical saddles with a minimum working pressure of 160 PSI and per City specification.
- D. Pipe Connection Fittings for HDPE pipe shall meet AWWA C906 and meet or exceed the pressure requirements of the HDPE Pipe.

2.04 PRODUCT COMPLIANCE

- A. Certificate of compliance shall be supplied to the City that the Product Pipe is in compliance with the specifications.
- B. All materials used with the coupling or connecting HDPE water main must be submitted and approved by the City.

PART 3 EXECUTION

3.01 DELIVERY, STORAGE AND HANDLING

Transport, handle and store pipe and fittings as recommended by manufacturer. If new pipe and fittings become damaged before or during installation, it shall be repaired as recommended by the manufacturer or replaced as required by the Engineer at the Contractor's expense, before proceeding further. Deliver, store and handle other materials as required to prevent damage.

3.02 DOCUMENTATION AND PLANNING

- A. Contractor shall submit a plan to the City on a marked up copy of the Project Drawings showing the Contractor's construction phasing and plans at the Pre-Construction Meeting. Plan details should include:
 - 1. Pit locations for pipe insertion and burst machine location.
 - 2. Pit locations for service re-connects.
 - 3. Schedule of when various sections are to be rehabilitated.
 - 4. Distances of each pull.
 - 5. Isolating points used to seal the system during the pipe burst.
 - 6. Chlorination/De-chlorination logs for each pipe section.
- B. The Project Construction drawings provided by the Owner shall be marked by the contractor to show actual locations of services, fittings, fire hydrants and other reconnects. These markups shall be done the day of the actual placement. A set of marked up plans shall be returned to the Owner within 15 days of substantial completion of job.
- C. Chlorination Submission Documents, pipes Pre-Chlorinated with intent to install under this specification must have a log sheet placed in a sealed waterproof envelope attached to the pipe at the start of the Chlorination process. This sheet makes up the Chlorination Submission Documents and shall be delivered to the Owner at the same time as the marked up

construction drawing. Information on the log sheet shall at a minimum include:

1. Date of Swabbing
2. Date of Chlorinating and amount of chlorine used
3. Date of samplings
4. Results of Sample tests
5. Date of pipe installation
6. Date of Pressure Test
7. Makeup water details (if any)
8. End test pressure
9. Final pressure test results
10. Location of installation

3.03 TEMPORARY WATER

Prior to commencement of construction, the Contractor shall install temporary water for all affected properties in accordance with Section 33 13 20 Temporary Water.

3.04 JOINING OF PIPE

- A. Fusing per Butt fusion methods in strict conformance to the pipe and/or fusing equipment manufacturers recommendations and shall be used to join sections of High Density Polyethylene Pipe or Fusible Polyvinyl Chloride Pipe.
- B. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine in accordance with ASTM F3124 "Standard Practice for Data Recording the Procedure used to Produce Heat Butt Fusion Joints in Plastic Piping Systems or Fittings". The Contractor shall document and provide to the Owner approved data logger device reports with the following information for fused joints:
 1. Pipe Size and Thickness
 2. Machine Size
 3. Fusion Technician and Job Identification
 4. Fusion Joint Number
 5. Fusion, Heating and Drag Pressure Settings
 6. Heat Plate Temperature
 7. Time Stamp
 8. Heating and Cool Down Time of Fusion
 9. Ambient Temperature
 10. Approximate location of the fused joints indicated by the fusion joint number on the record drawings.

- C. Fusing of 'sticks' of pipe shall be performed in the general vicinity of the pipe insertion pit or lay down yard (staging area).
- D. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. Fusion machines must incorporate the following elements:
 - 1. Heat Plate – Heat plates shall be in good condition with no deep gouges or scratches. Plates shall be clean and free of any debris or contamination. Heater controls shall function properly; cord and plug shall be in good condition. The appropriately sized heat plate shall be capable of maintaining a uniform and consistent heat profile and temperature for the size of pipe being fused, per the pipe supplier's guidelines.
 - 2. Carriage – Carriage shall travel smoothly with no binding at less than 50 psi. Jaws shall be in good condition with proper inserts for the pipe size being fused. Insert pins shall be installed with no interference to carriage travel.
 - 3. General Machine – Overview of the machine body shall yield no obvious defects, missing parts, or potential safety issues during fusion.
 - 4. Data Logging Device – An approved data logging device with the current version of the pipe supplier's recommended and compatible software shall be used. Data logging device operations and maintenance manual shall be with the unit at all times.
- E. Other equipment specifically for the fusion process shall include the following:
 - 1. Pipe rollers shall be used for support of pipe to either side of the machine.
 - 2. A weather protection canopy that allows full machine motion of the heat plate, fusion assembly and carriage shall be provided for fusion in inclement, extreme temperatures, and/or windy weather, per the pipe supplier's recommendations.
 - 3. An infrared (IR) pyrometer for checking pipe and heat plate temperatures.
 - 4. Fusion machine operations and maintenance manual shall be kept with the fusion machine at all times.
 - 5. Facing blades specifically designed for cutting fusible polyvinyl chloride or high density polyethylene pipe shall be used.
- F. Solvent cement joints performed by anyone other than the manufacturer are unacceptable for any HDPE pipe or fitting.
- G. All HDPE pipe connections to fittings or existing pipe shall include a fused mechanical joint adapter with backup ring and stainless steel pipe insert stiffener.

- H. Restrained joint integral bell PVC pipe shall be joined using non-metallic integral bell restrained joints to form an integral system for maximum reliability and interchangeability.
- I. High-strength, flexible thermoplastic splines shall be inserted into mating, precision machined grooves in the spigot and bell end of the restrained joint integral bell PVC pipe, to provide full 360° restraint with evenly distributed loading.

3.05 PRE-CHLORINATION OF PRODUCT PIPE

Chlorination of pipes prior to bursting shall be carried out per ANSI/AWWA C651-05 Standard for Disinfecting Water Mains and in cooperation with the City's Water Distribution Division. Any information here shall facilitate that method when performed on pipes not yet placed on grade. In general, the method includes the following:

- A. Disinfect all equipment, tools, end caps, pipe fittings or product that may contact pipe.
- B. Disinfection shall be carried out by immersing or rinsing items in a hypochlorous solution containing 1 to 5 percent chlorine measured by weight. See details of Chlorination solution in section 3.07.
- C. Product pipe shall be fused into a string of sufficient length to complete the designated section or be coiled in a manner suitable for delivery on a pipe reel. Maximum allowable length is 800 feet.
- D. The surface upon which the product pipe rests during Chlorination shall be relatively impervious and free from visible contamination. Coiled pipe must be laid horizontally to allow all air to be expelled.
- E. Swabbing, Chlorination and testing of the inside diameter of the pipe shall be accomplished by:
 - 1. Swab being inserted at the lowest end of the pipe.
 - 2. Calcium Hypochlorite tablets or granules as described in section 3.07 shall be placed behind the swab.
 - 3. Pressure tight end cap shall be mounted to the low end of the pipe either by fusing or mechanically assembled to the pipe.
 - 4. Potable water shall be introduced through this end cap at a controlled rate such that the swab is propelled at a velocity less than or equal to one foot per second. All air is to be expelled from the pipe.

5. Upon discharge of the swab from the elevated end of the pipe, the elevated end shall be capped with a pressure tight seal. This seal having a tapped access hole of size at least 1.25" NPT or incorporating the ability to leak (purge) air or water at will by adjustment of clamping bolts. Additional potable water should be added after capping to ensure that no air remains between the caps.
6. Pressure testing of the pipe section should be performed per details in section 3.08 upon replacement of the second end cap.
7. Chlorinated solution should be maintained in the pipe for a minimum of 24 hours prior to flushing when water temperature is above 41 °F (5°C), 48 hours when water temperature is 41°F (5°C) or less. Time for retention of the chlorinated solution shall not be significantly over designated holding time so as to prevent damage to the pipe or end caps.
8. After designated holding time, the pipe shall be drained, flushed and filled with potable water so as to expel the highly chlorinated solution. The spent Chlorinated solution shall not be allowed to enter any water shed, a sanitary sewer or any other area where environmental damage may occur without neutralizing it in an industry acceptable manner. Flushing water shall be from a source known to be of drinking water standard.
9. Test samples shall be taken from each end of the pipe on consecutive days, 24 hours apart. Samples shall be tested by a state certified lab within 30 hours of being taken.
10. Failure of any sample to pass a bacteriological test should result in the related section of pipe being re-flushed and retested. Should any sample again fail, the section must be chlorinated before retest.
11. Time before re-connection of a passing pipe section shall be limited to 14 days from the last sampling. After this time the pipe must be retested to be acceptable for use.
12. Drain the section of pipe prior to pipe bursting. The pipe shall be drained on the day of the pipe bursting, and sealed after draining and for the pipe bursting process.
13. Swabs should be designated by the manufacturer as suitable for potable water system use. Swabs are to be manufactured by Knapp Industries or be of equivalent design.

3.06 CHLORINATION SOLUTIONS

- A. Acceptable forms of chlorine include Calcium Hypochlorite conforming to ANSI/AWWA B300, preferably in 5 gram tablets, alternately in granular form. Material must be stored per manufacturer's recommendations.
- B. Unacceptable forms of chlorine include Calcium Hypochlorite intended for swimming pool use.
- C. Calcium Hypochlorite tablets shall be placed behind the swab in quantity based on pipe size and length per ANSI/AWWA C651-05 AWWA Standard for Disinfecting Water Mains.
- D. Calcium Hypochlorite in granular form shall be placed behind the swab in quantity based on pipe size and length per ANSI/AWWA C651-05 AWWA Standard for Disinfecting Water Mains.
- E. Solutions acceptable for pipe chlorination shall be acceptable for disinfection of equipment, tools, and caps, pipe fitting or product that may contact pipe.
- F. Dilute Chlorinated solutions over 7 days old shall be disposed of properly and not used as a disinfection agent.

3.07 HYDROSTATIC PRESSURE TESTING

- A. Maximum allowable test pressure as referenced by Plastics Pipe Institute (PPI) Chapter 2 shall be 1.5 times the pipe rated operating pressure (min. test pressure 125 psi) at the lowest point in the section under test or that of the lowest rated pressure component such as flanges, valves, fittings, etc.
- B. Air trapped in the product pipe must be purged before test.
- C. At the discretion of the Owner, the test method used may be either a Monitored Make-up Water Test or a Non-monitored Make-up Water Test. Either test shall be performed above ground without fittings prior to pipe bursting. If damage to the product pipe occurs during bursting that requires a fused joint repair, the Owner may require re-test, with or without fittings after bursting.
- D. Monitored Make-up Water Test shall be comprised of two stages.
 - 1. Initial expansion and stabilization stage. The initial test pressure is applied and the system is allowed to stand without make-up water during a 2 to 3 hour period. During this time the pipe is allowed to expand and stabilize.

2. Test stage, after the stabilization is complete, the system is pumped back to test pressure and allowed to sit for 2 additional hours. Water is then added until the test pressure is attained. Water added shall not exceed that of Table 5.01.
- E. Non-monitored Make-up Water Test shall be comprised of two stages.
1. Initial expansion and stabilization state. The initial test pressure is applied and the system is allowed to stand without make-up water during a 2 to 3 hour period. During this time the pipe is allowed to expand and stabilize.
 2. Test stage. After the stabilization is complete, the system is pumped back to test pressure and then reduced by 10 PSI. The pressure shall remain steady, not falling more than 5% from reduced pressure during a one hour test period.
 3. Total time allotted for test shall not exceed 8 hours. If successful test can not be completed in this period, then the test section must be depressurized and allowed to relax for a minimum of 8 hours before retest.
- F. Re-test after repair. Should the Owner require test after repair, refer to Equation 5.02 for Leakage Allowance due to fittings for the Monitored Make-up Water Test.
- G. Manifest shall be filled out with all pressure test results.

3.08 PIPE BURSTING OPERATION

The pipe bursting operation described within provides guidance on the basic process. It is to be understood that the need to make exceptions or additions to this process are common. These changes are made to accommodate non-standard conditions. The contractor experience requirements make it reasonable to put the responsibility of devising these exceptions upon the contractor.

3.09 PIT LOCATION AND EXCAVATION

- A. Burst pit and insertion pit locations shall be placed such that excavations are minimized. This may be accomplished by placing either or both of these pits at the point of a service connection.
- B. Burst length shall be 400 feet (+/-) 50 feet in length for first 2 bursts. After soil pipe friction is evaluated longer burst runs may be performed.

- C. All pits shall be shored to ensure worker safety per OSHA or other local regulations.
- D. All pits shall be roped off and or covered when not active per OSHA or local regulations to ensure public safety.
- E. Traffic control shall be accommodated for by Contractor as per the Contract specifications. Safe traffic passage around pit excavations that are located in or adjacent to streets or highways shall meet requirements of City Right-of-way Department. Parking of related employee vehicles, trucks and auxiliary and equipment shall be such that congestion and traffic delays are minimized.
- F. Utilities intersecting the host pipe shall be exposed using an excavation technique appropriate for the utility. This Utility Crossing Pit shall exist prior to commencement of bursting. Man entry shoring is not required however appropriate safety precautions should be made.

3.10 BURSTING MACHINE LOCATION AND SHORING

Bursting machines of the static pull style require preparation and planning for the bursting pit that they are to operate from.

- A. Burst pit shall be shored in accordance to 3.10 (C).
- B. Forward face of the Burst Pit or the surface that the machine bears against while pulling back, shall be shored in workman like manner. This shoring shall maintain perpendicular burst machine alignment to the pipe during pullback. Any loss of perpendicular alignment during pull shall result in stopping of the bursting process and improvement of the forward face shoring.
- C. Rearward shoring shall be provided to react rod thrust forces during payout. While these forces are substantially lower than pullback forces, shoring must be used to stabilize the bursting machine so as to maintain perpendicular alignment of the machine during payout. The weight of the machine cannot be depended on to react thrust forces. Host pipe at rear face of pit may only be utilized for rearward shoring if scheduled for replacement.
- D. Pipe face for Cast Iron, Ductile Iron or PVC shall be cut off using a saw or similar device to produce a square face for the bursting machine forward face to bear against. Final separation of cast iron pipe with a wedge may provide a clean face. Host Pipe shall be removed in sufficient length to accommodate burst machine.
- E. Burst machine must be positioned so as to have rod centerline at approximate centerline of host pipe.

- F. Rod Box delivery and removal between temporary rod storage location and Burst Pit must be accommodated for with appropriate lifting equipment and techniques. Additionally, movement and or placement of lifting machine must be included in Traffic Control plans.

3.11 ROD PAYOUT OPERATION

- A. Rod payout is the process of assembling a string of rods and pushing them in a step wise manner from Burst Pit, through the interior of the host pipe to Insertion Pit.
- B. Lifting of rod boxes into or out of the Burst Pit shall be performed per OSHA or other applicable requirements with respect to equipment and method.
- C. Threads shall be cleaned of foreign matter before assembly.
- D. Counting of Rods during payout, or quantity of rods per box shall be monitored such that the operator is aware of the distance between the burst machine and the lead end of the rod string.
- E. Thrust force should be monitored by the operator. Should an unexpected sudden and significant increase in thrust force be experienced, the process shall be halted. The operator or contractor shall review the results of 3.12 (E.1) with the Owner to remedy per 3.12 (E.2) in an attempt to determine if offsets, valves or other features or obstruction exist that may cause the rod string to leave the pipe.
 - 1. Front end of the rod string should be located by distance from the Burst Pit.
 - 2. Location should be painted and compared to as built plans.
 - 3. Appropriate action should be taken to remedy the cause. This action may include an additional pit at the obstruction to determine the cause, and remove or accommodate for the obstruction. The decision may be to continue thrusting if the obstruction is believed to be encrustation.
- F. Host pipe in the Insertion Pit shall be cut or broken prior to arrival of the rod string. Sufficient length shall be removed so as to allow the Burst Tooling to enter the host pipe and bend the product within the allowable radius specified by the pipe manufacturer. The second end of the host pipe in the Insertion Pit shall be positioned or worked so as not to damage the product pipe as it travels through the Insertion Pit.

- G. Workmen shall not enter the Insertion Pit when the rod string is nearing the Pit. A workman shall be in visual or radio contact with the burst machine operator so as to have the payout halted in a position that allows attachment of the Burst tooling. Burst tooling style shall be chosen based on anticipated properties of host pipe and host pipe repairs.
 - 1. Cast Iron or Asbestos Concrete host pipe anticipated to be free of either Ductile Iron repair sections or Dresser Style Couplings may use a simple conical burst head with a single or double longitudinal blade.
 - 2. Ductile Iron, PVC or host pipe with Ductile Iron repair sections or Dresser Style Couplings require use of a rolling blade cutter (slitter) ahead of the conical expander.

3.12 TOOLING AND ATTACHMENT

- A. The Product Pipe shall be moved into position for attachment to the rod string. Appropriate traffic or pedestrian control will be exercised along the path of the Product Pipe.
- B. The lead and second rod shall be painted orange or yellow so as to give notice to the burst machine operator position of the Burst Tooling.
- C. Attachment of the Burst Tooling to the rod shall be through the use of removable pin joint allowing the tooling to pivot at least 46 degrees to the rod axis.
- D. Burst head diameter must be a minimum of 15% over size to the outside diameter of the Product Pipe. Actual size is left to the discretion of the contractor. A greater outside diameter allows for reduced pipe friction and increases bursting forces pushed and increases solid pipe placement.
- E. Attachment of the Product pipe to the Burst Tooling shall be with a swivel that permits rotation to relieve torsional (twist) stress on the Product pipe.
- F. Burst Head shall slide on the rod string such that the rear of the burst head overlaps the forward end of the Product Pipe to eliminate the chance of damage to the Product Pipe.

3.13 PULLBACK OPERATION

- A. Prior to commencement of pullback, there will be visual or radio contact between observers stationed adjacent to the Insertion Pit, the Burst Machine operator and a Product Pipe Observer stationed strategically along the length

of the product pipe to watch for product pipe entanglement with above ground obstructions.

- B. The Burst Machine operator will begin the pullback with the consent of the Insertion Pit Observer. Progress will be made at a slow rate until the city inspector sees the Burst Tooling has completely entered the Host Pipe.
- C. Pipe progress will be monitored for the first 20 feet of pullback by the Insertion Pit Observer and the Product Pipe Observer.
- D. As the Burst Tooling nears any Utility Crossing Pit, an observer in radio or visual contact with the Burst Machine Operator will monitor and control movement of the Burst Tooling past the utility.
- E. Should the forward shoring upon which the bursting machine bears yield sufficiently to bring the Bursting Machine out of square to the host pipe, the shoring will be reworked according to 3.11 (B).

3.14 TOOLING REMOVAL

- A. Burst Machine Operator shall note rod count and anticipate entry of painted rods into the Burst Pit. As the Pin Joint Connection nears the Burst Machine forward face, the burst is to be halted. Load on the forward face is relieved by reversing the rod direction slightly.
- B. The Burst Machine Shore Plate is to be removed, allowing the tooling to enter a cage or the hull of the Burst Machine. The tooling string will be disassembled and removed, in sections if necessary until the Product Pipe face has been pulled beyond the face of the Burst Pit. The distance past the face of the Burst Pit shall be at the discretion of the contractor anticipating the length required for connection/fusing.

3.15 AFTER PIPE BURSTING

Upon completion of the pipe bursting, certain tasks must be followed through in order to complete the overall process.

3.16 PIT CONDITIONS PRIOR TO TAPS OR JOINING SYSTEM

- A. Maintaining sanitary conditions within the product pipe after pipe bursting must take high priority. Should any foreign matter, including ground water be allowed to enter the pipe interior, the condition of the pipe is no longer suitable for connection to the system. For this reason connections may not be made in standing water. Such water must be pumped or bailed prior to

making the connection or unsealing the pipe. Areas under connections should be excavated below the pipe invert.

- B. Before joining a surface and before any special surface preparation to accommodate that joining, external surfaces should be clean and dry. Dust may be removed by wiping with clean, lint free cloth. Heavier deposits must be washed from the surface with soap and water and dried with a clean, lint free cloth.
- C. Incidental exposure of the interior of the pipe to any foreign matter shall require that one of the two following remedies be carried out:
 - 1. Complete chlorination per AWWA specifications for buried pipe.
 - 2. Localized contamination at the end of the pipe may be removed and the contaminated interior surface of the pipe wiped with a solution of 1 to 5% hypochlorite disinfecting solution.

3.17 SERVICE TAPS AND SERVICE LINES

- A. Service taps shall be of a type approved by the Owner and must meet AWWA C906. Construction of taps shall be per the manufacturer's recommendation. Acceptable choices include:
 - 1. Service clamp shall be POLY-CAM 415 or 575.
- B. Replacement or rehabilitation of service lines, if required, shall be according to contract.

3.18 POST CHLORINATION

The section of main will be super-chlorinated to 300 ppm by inserting a swab at one end. The swab shall travel the entire length of the pipe section.

3.19 SERVICE REINSTATEMENT

Prior to connection of the newly installed pipe, the section of pipe shall be fully flushed with the use of a de-chlorination unit and ascorbic acid to neutralize the residual chlorine. Following flushing, the newly installed section may be connected to the main at both ends and service reinstated.

3.20 BACKFILL AND SURFACE REINSTATEMENT

- A. Any surface heave or settlement of paved surfaces shall be corrected by the Contractor. Corrective measures shall be approved by the Owner and may

include replacement of the affected paved area at no additional cost to the Owner.

- B. Any surface heave or settlement greater than 2 inches of unpaved surfaces shall be corrected by the Contractor at no additional cost to the Owner.
- B. Backfill used to restore pits shall be per applicable water construction standards applicable in the municipality.
- C. Lawn restoration shall be per applicable water construction standards applicable in the municipality.
- D. Asphalt, concrete or other roadway surface restoration shall be per applicable water construction standards applicable in the municipality.

3.21 DOCUMENTATION FINALIZATION

Within (15) days of completion of the job, all records including manifests, marked up construction plans or documents pertinent to describing the system as installed shall be provided to the Authority.

3.22 PAYMENT

Payment for providing and installing the pipe bursting as specified in this section shall be for the unit price bid per linear foot of pipe installed.

PART 4 DEFINITIONS

A

Authority: City and its Utility Engineering representatives

AWWA: American Water Works Association, see www.awwa.org

ASTM: American Society for Testing and Materials, see www.astm.org

B

Burst Head: Conical shaped portion of burst tooling used to expand fractured pipe and surrounding soil to accommodate product pipe.

Burst Pit: Excavation where Static Pull Pipe Bursting Machine is located. The product pipe is pulled toward this pit.

Burst Tooling: Tooling designed to crack the host pipe, expand the remains of the host pipe and surrounding soil so as to allow passage of the product pipe.

C

Chlorination Submission Documents: Written log attached to section of pipe detailing processes related to Pre-Chlorination and Hydrostatic Testing.

D

Dresser Coupling: Commonly used repair coupling, see www.dressercouplings.com
Ductile Iron Pipe: Centrifugally cast pipe with superior tensile and yield strength, high ductility (malleability) and impact resistant properties.

E

Electrofusion: Joint or saddle that connects two sections of HDPE pipe. These joints contain internal heating elements to facilitate a heat fused joint.

H

HDPE: High Density Poly-Ethylene, plastic material from which product pipe is manufactured.

Host Pipe: Existing pipe buried in the ground that will be rehabilitated by bursting (cracking) and pulling in a new replacement pipe (product pipe).

I

Insertion Pit: Excavation where product pipe enters the host pipe and bursting begins. Product pipe is pulled through the insertion pit towards the burst pit. Nominal depth of insertion it is 2.5 to 3.0 times depth of host pipe.

M

Manifest: Written log attached to section of pipe detailing processes related to Pre-Chlorination and Hydrostatic Testing.

P

Product Pipe: Newly installed pressure pipe made from HDPE or PVC

PPI: Plastic Pipe Institute, see www.plasticpipe.org

R

Rod String: Assembled string of rods that extend from Burst pit to insertion pit and serve to transmit tensile pullback forces to burst tooling.

U

Utility Crossing Pit: An excavation created at any point where another buried utility crosses the burst path.

PART 5 TABLES AND EQUATIONS

5.01 MAKEUP WATER ALLOWANCE TABLE FOR HDPE PIPE

Nominal Pipe Size In Inches	2	4	6	8	10	12
Makeup Water Allowance (Gallon/100 ft)	.1	.2	.6	1.0	1.3	2.3

5.02 ALLOWANCE FOR LEAKAGE DUE TO FITTINGS EQUATION

$$L = [ND(P^{.50})]/[7,400]$$

Where:

L = Maximum allowable leakage, Gallons/Hour

N = Number of joints in the tested pipe (connections for pipes or fitting, not fuse joints)

D = Nominal inside diameter of pipe, Inches

P = Test Pressure, PSI

END OF SECTION

PART 1: GENERAL

1.1 Scope of Work

This specification covers the requirements for the complete installation and removal of temporary water mains including all necessary labor, materials, and equipment as necessary.

1.2 Applicability

- Temporary water mains will be required as specified on the plans, specifications or as required by the Owner in order to maintain adequate water supply and fire protection.
- The temporary water main shall be maintained and repaired at all times by the Contractor until the new permanent main is placed in service.
- Temporary water mains may be reused in other phases as construction continues and as directed by the Owner.

PART 2: QUALITY ASSURANCE

2.1 References

Temporary water mains shall conform to all applicable requirements of authorities having jurisdiction, including the following:

- OAC 252:626: Public Water Supply Construction Standards
- City of Tulsa Standard Specifications and Standard Details – March 2022

2.2 Submittals

The Contractor shall furnish the following documents prior to installing any temporary water mains:

2.2.1 Material Data:

- Type and size of pipe and appurtenances to be used.

2.2.2 Design Data:

- Depth of cover or embedment to be used, if applicable. Consideration must be given regarding loads, public safety and protection of the pipe when placed in high traffic areas and exposed to freezing temperatures.

2.2.3 Layout Plan:

- Temporary water main layout plan based on proposed construction sequence as approved by the Owner.

PART 3: PRODUCT

All temporary water main and appurtenance shall be new or acceptable used as approved by the Owner.

3.1 Water Mains

- All temporary water mains shall be NSF/ANSI 61 approved.
- Contractor may select one of the following pipe materials based on the traffic, weather condition, and construction sequence, as approved by the Owner:
 - PVC (Restrained Joint)
 - HDPE
 - Copper
 - Galvanized Iron
 - Other approved equal

3.2 Fitting and Appurtenances

- All the fitting, valves, fire hydrants and other appurtenances shall be NSF/ANSI 61 approved.
- Glued fittings shall not be permitted.
- Fittings are to be suitable and compatible with the specified pipe materials and class with which they are used.

3.3 Design Data

- Temporary water mains 2" (or smaller) can be above ground or buried as approved by the Owner.
- Temporary water mains larger than 2" shall be buried a minimum depth of 2 feet in order to protect from traffic and freezing conditions.
- Temporary water service shall be connected to the temporary water main for each building or single residential unit. Bull heads shall not be permitted unless otherwise

approved by the Owner.

- Each temporary water service shall be supplied with its own individual corporation cock where it connects to the temporary water main.

3.4 Sizing

- Minimum size of the temporary main shall be 2" as shown on the plans or as required by the Owner unless otherwise approved.
- Larger than 2" mains may also be required in order to provide interrupted and adequate water supply and fire protection in specific project sites. The sizing of the temporary mains shall depend on the number water services, water demand and fire protection requirements of the services being interrupted.

3.5 Valves

- Valves shall be furnished and installed by the contractor on the temporary mains at locations designated by the Owner, so that the temporary mains can be isolated.
- Valves shall be installed at each branch of a temporary water main.
- Before permanently shutting down an existing water main, the valves shall be tested to ensure that they are in proper working order.
- 3/4" corporation stop copper shall be installed at the end of the temporary mains.

PART 4: EXECUTION

4.1 Placement and Operation

- Water mains shall be placed parallel to each side of the street and as close as possible to the area being serviced.
- When a street must be crossed with temporary water mains, installation will either be by open-cut or surface mount.
- Temporary water mains 2" or smaller in diameter may be surface mounded with temporary cold mix asphalt at all driveways and street crossings or where applicable, as long as it does not pose a safety concern. The Contractor may choose to utilize Pipe and Hose Ramps as manufactured by RubberForm

Recycled Products, LLC or approved equal, to meet the safety requirements for small mains, per the manufacturer's specifications.

- The Contractor shall furnish, place and connect temporary water services from the temporary main to a point beyond each meter box. The services will consist of a service clamp, corporation cock, sufficient length of copper pipe to reach beyond each meter box, copper to iron pipe union, street ell and bushing.
- Temporary water services range from ¾" to 2" in diameter. Temporary water services over 30 feet shall be a minimum of 1" in diameter.
- In the event the temperatures fall, the Contractor shall take steps to prevent temporary mains and services from freezing. Mains that do freeze shall be thawed by the Contractor utilizing an outside heat source. If flushing is done, the run-off shall be directed such that the street or sidewalk icing does not occur.
- Temporary water mains larger than 2" in diameter shall require open-cut or by other than open cut (BOTOC) across any driveways and streets/alleys.
- No more than one fire hydrant shall be taken out of service at any time.

4.2 Flushing, Disinfection, Sampling & Service Transfer

- After installation, the temporary water main shall be flushed and chlorinated by the Owner and sampled by the Owner. Services shall not be transferred until the temporary main has been checked and approved by the Owner. There will be no additional compensation for delaying in obtaining approval to transfer services.
- Care shall be given during the installation process of temporary potable water supply services to avoid contamination.

4.3 Removal of Temporary Water Mains

- After the new permanent main services are in place and in service, the Contractor shall remove and dispose of the temporary mains, services, pipe hose ramps and/or temporary paving as necessary.
- All associate temporary paving and moundings shall be removed from the existing street surfaces.

4.4 Site Restoration

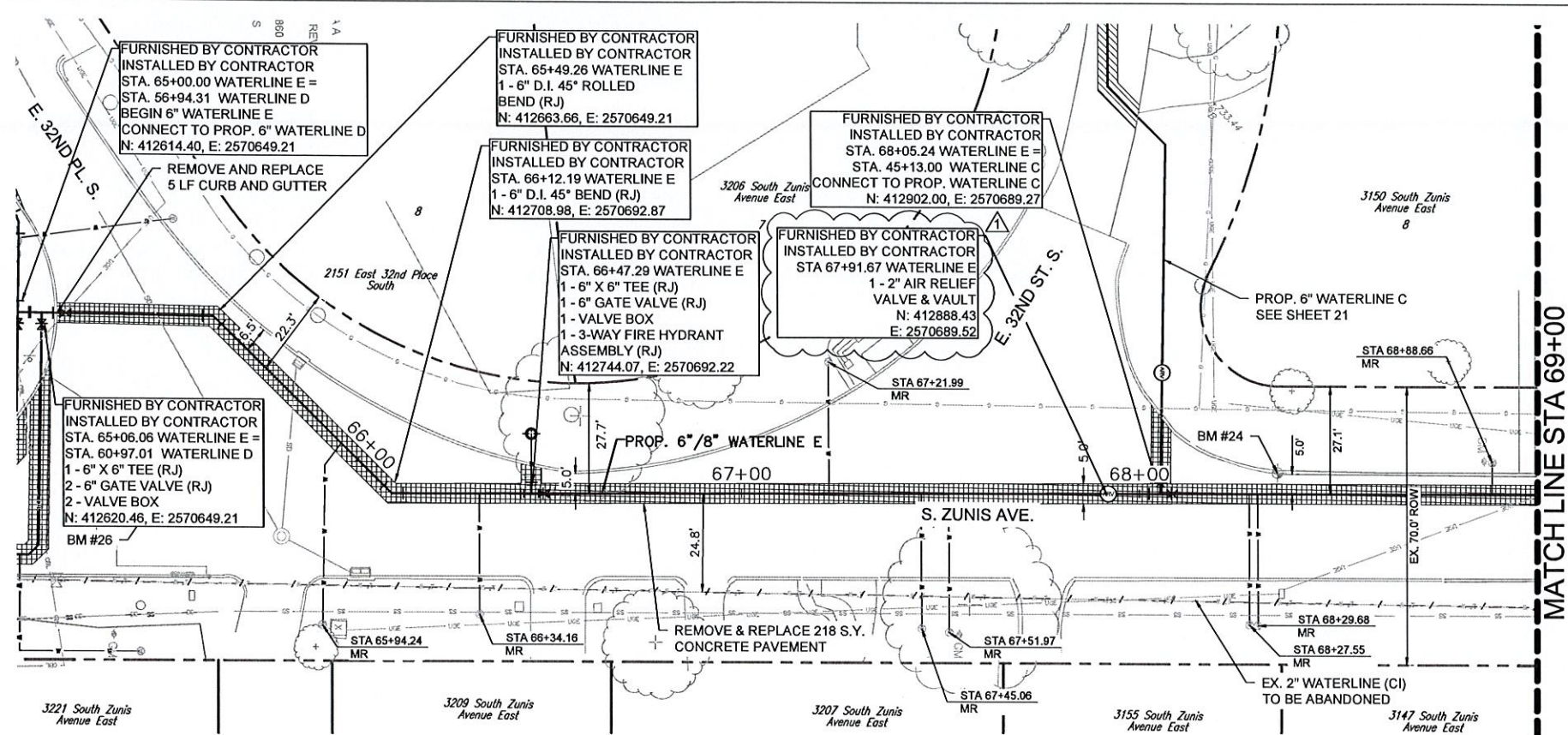
- Following construction operations, the contractor shall restore the work site to the

original conditions or better. Backfill and compact all excavations according to these specifications.

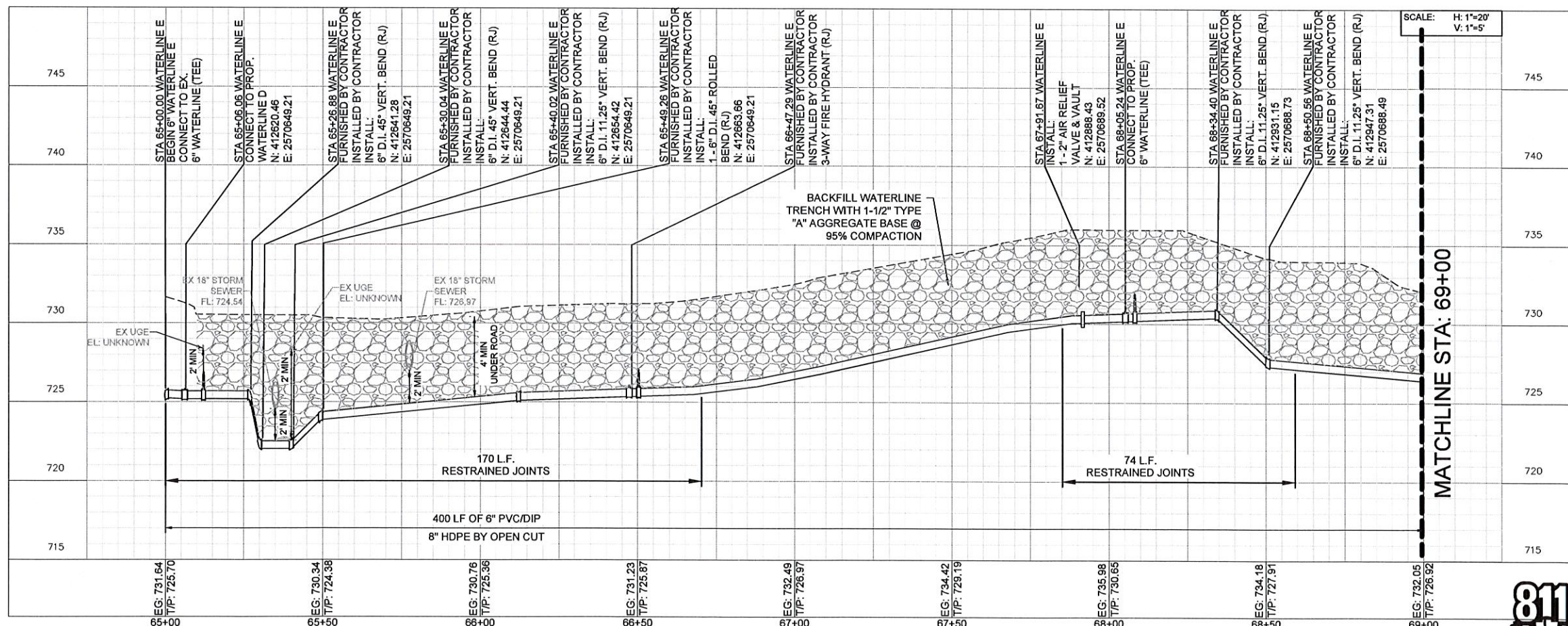
PART 5: METHOD OF MEASUREMENT AND PAYMENT

Temporary water mains shall be included in the cost for the installation of the pipe bursting waterline. No separate or additional payment shall be made.

****END OF SECTION****



WATERLINE E PLAN



WATERLINE E PROFILE

SERVICE CONNECTIONS

NO.	SERVICE TYPE
3	3/4" WATER SERVICE CONNECTION (LONG)
1	3/4" WATER SERVICE CONNECTION (SHORT)
4	1" WATER SERVICE CONNECTION (LONG)
0	1" WATER SERVICE CONNECTION (SHORT)

LEGEND

- BM #902 BENCHMARK
- EXISTING GRADE TOP OF PIPE
- ROAD ASPHALT PAVEMENT
- ROAD CONCRETE PAVEMENT
- DRIVEWAY REPLACEMENT
- WATERLINE BACKFILL
- WATERLINE ABANDONMENT
- PROPOSED WATERLINE
- WATER METER RELOCATION
- WATER METER RESET



REVISION	BY	DATE
1	OCB	08/26

WATERLINE E STA 65+00 TO 69+00

PROJECT NO. TMUA-W 25-03 C2

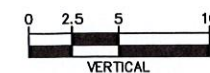
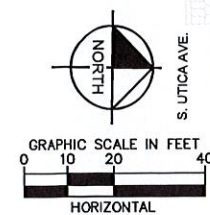
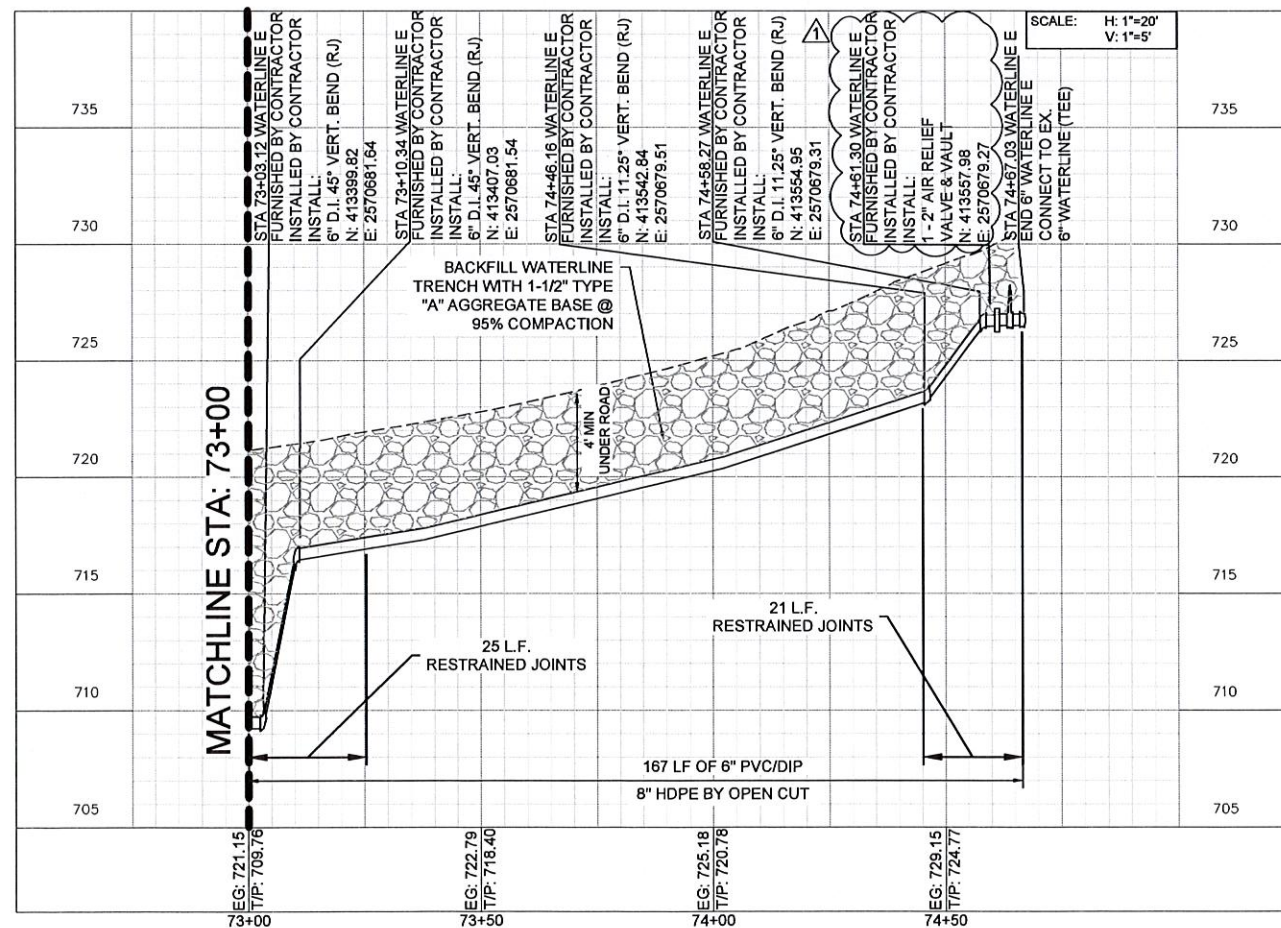
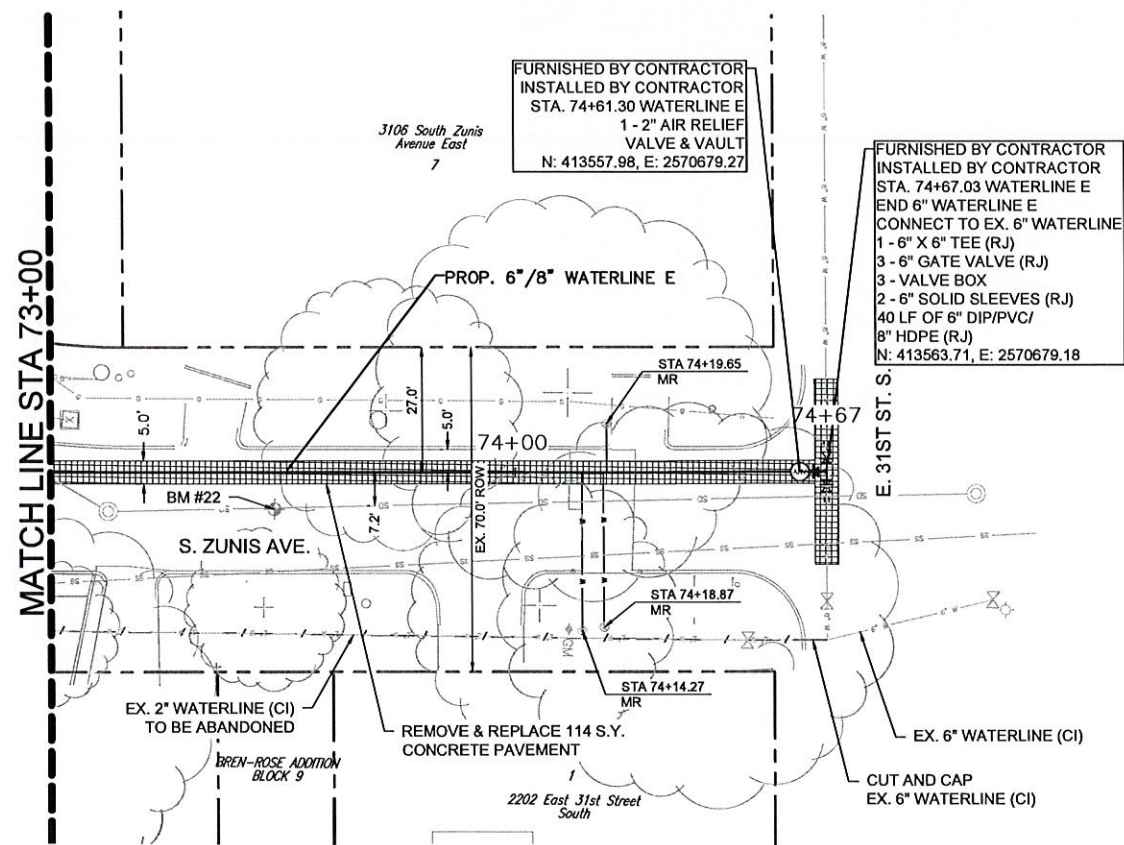
2" WATERLINE REPLACEMENT - VICINITY OF 31ST TO 41ST STREETS AND LEWIS TO WHEELING AVENUES

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Kimley-Horn
1437 South Boulder Avenue, Suite 930, Tulsa, OK 74119
OK License No. 2740 Exp. Date 06/30/2027 (918) 269-3191

PLAN SCALE:	DRAWN	OCB	5/2/25	APPROVED:
1"=20'	DESIGNED	RWS	5/2/25	
	SURVEY	DB	5/2/25	
PROFILE SCALES:	PROJ MNGR.:			
HORIZONTAL:	1"=20'	LEAD ENGR.:		
VERTICAL:	1"=5'	FIELD MNGR.:		
DRAWING:	C-WATERLINE E.DWG			
ATLAS PAGE NO:	95			





SERVICE CONNECTIONS

NO.	SERVICE TYPE
1	¾" WATER SERVICE CONNECTION (LONG)
1	¾" WATER SERVICE CONNECTION (SHORT)
1	1" WATER SERVICE CONNECTION (LONG)

LEGEND

- BM #902

664.29
663.12

EXISTING GRADE
TOP OF PIPE

ROAD ASPHALT PAVEMENT

ROAD CONCRETE PAVEMENT

DRIVEWAY REPLACEMENT

WATERLINE BACKFILL

_____ / _____ WATERLINE ABANDONMENT

_____ PROPOSED WATERLINE

(W) WATER METER RELOCATION

(M) WATER METER RESET

REVISION	BY	DATE
1 REVISIONS	OCB	08/21/2018

WATERLINE E STA 73+00 TO END

PROJECT NO. TMUA-W 25-03 C2

2" WATERLINE REPLACEMENT -
VICINITY OF 31ST TO 41ST STREETS AND
LEWIS TO WHEELING AVENUES

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:

Kimley»Horn

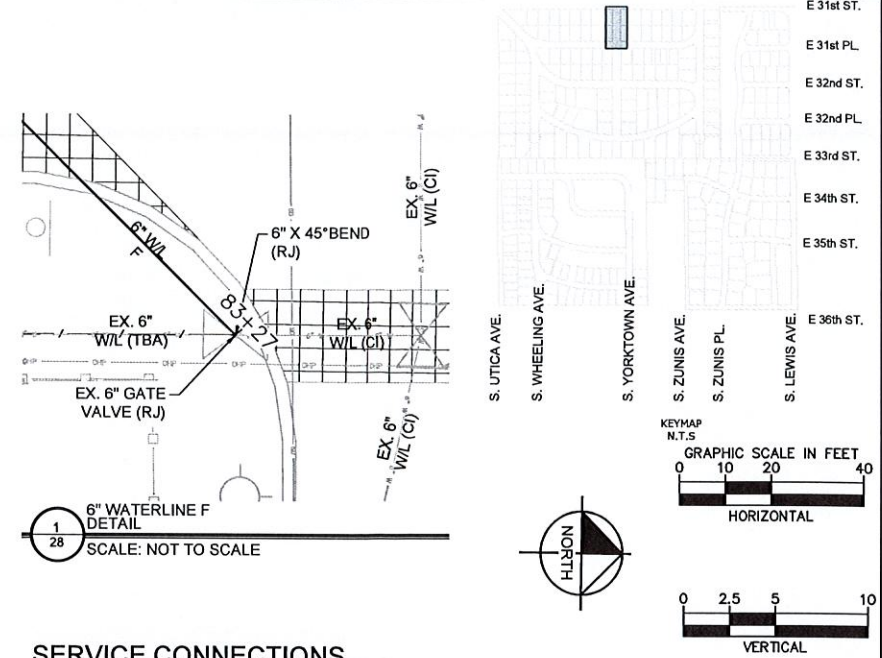
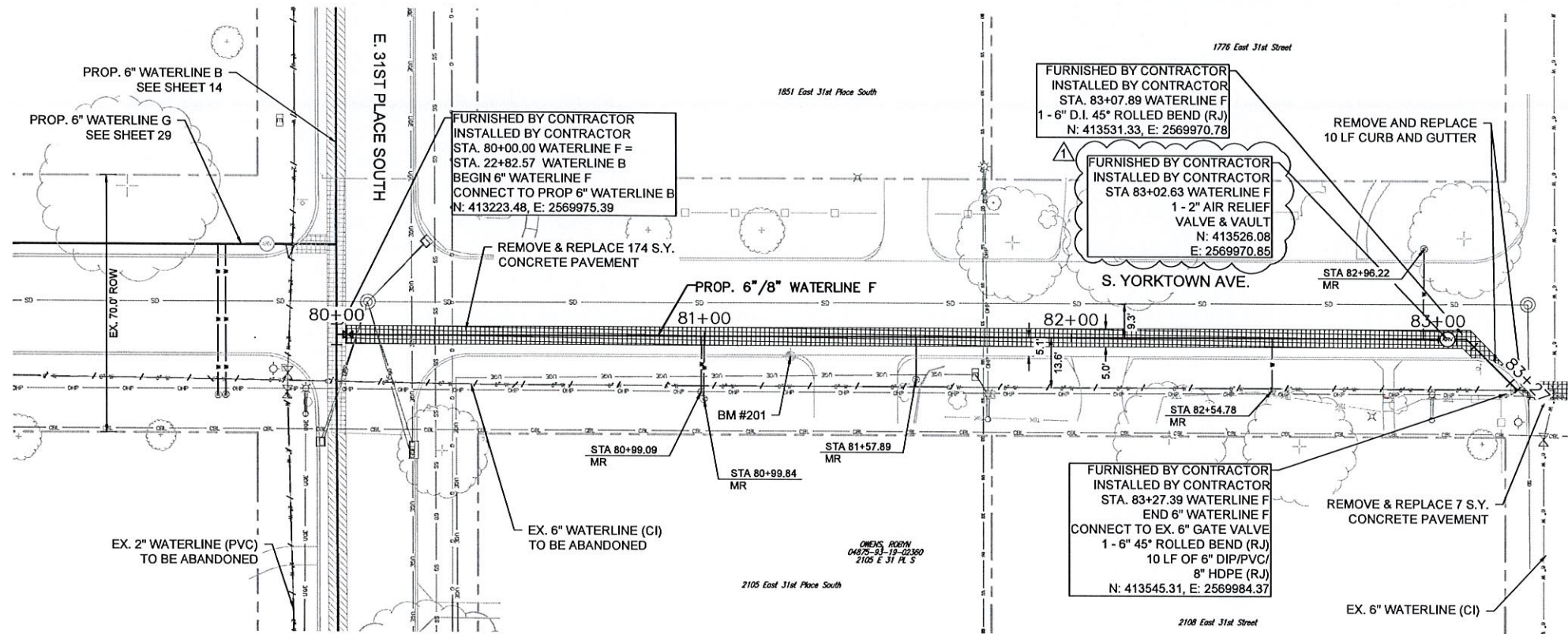
1437 South Boulder
Avenue, Suite 930, Tulsa,
OK 74119
OK License No. 2740 Exp
Date 06/30/2027
(918) 209-3191

PLAN SCALE:		DRAWN	OCB	5/2/25	APPROVED:
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		SURVEY	DB	5/2/25	
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HORIZONTAL:		LEAD ENGR.:			
1" = 20'		FIELD MNGR.:			
VERTICAL					
1" = 5'					
DRAWING:		C-WATERLINE E.DWG			DESIGN MANAGER
ATLAS PAGE NO:		95			SHEET 27 OF 32



811.
Know what's below.
Call before you dig.

CITY OF TULSA PROJECT NO. TMUA-W 25-03



SERVICE CONNECTIONS

NO.	SERVICE TYPE
0	¾" WATER SERVICE CONNECTION (LONG)
3	¾" WATER SERVICE CONNECTION (SHORT)
1	1" WATER SERVICE CONNECTION (LONG)
1	1" WATER SERVICE CONNECTION (SHORT)

LEGEND

- BM #902 BENCHMARK
- EXISTING GRADE
TOP OF PIPE
- ROAD ASPHALT PAVEMENT
- ROAD CONCRETE PAVEMENT
- DRIVEWAY REPLACEMENT
- WATERLINE BACKFILL
- WATERLINE ABANDONMENT
- PROPOSED WATERLINE
- WATER METER RELOCATION
- WATER METER RESET



REVISION	BY	DATE
1	OCB	08/26

WATERLINE F STA 80+00 TO END

PROJECT NO. TMUA-W 25-03 C2

2" WATERLINE REPLACEMENT -
VICINITY OF 31ST TO 41ST STREETS AND
LEWIS TO WHEELING AVENUES

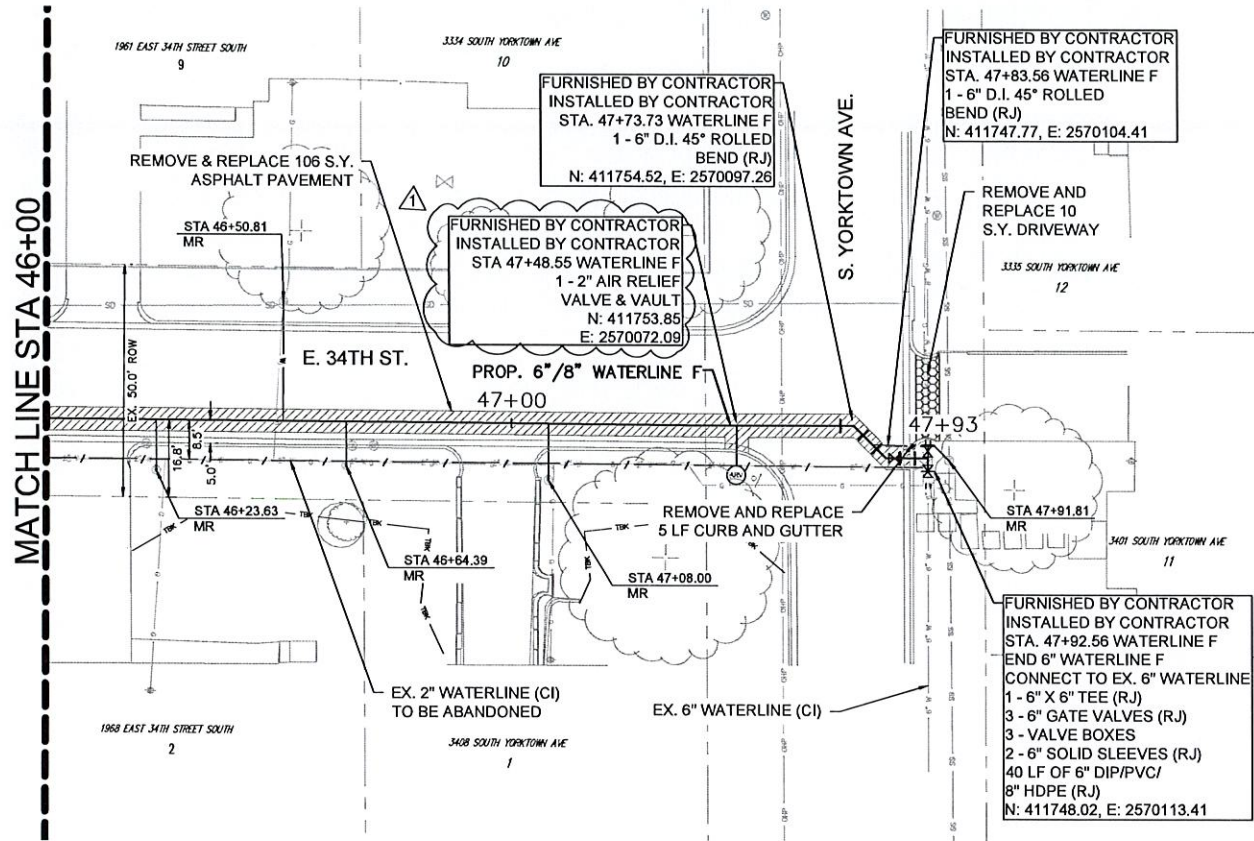
CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Kimley»Horn
1437 South Boulder
Avenue, Suite 630, Tulsa,
OK 74119
OK License No. 2740 Exp.
Date 05/30/2027
(918) 209-3191

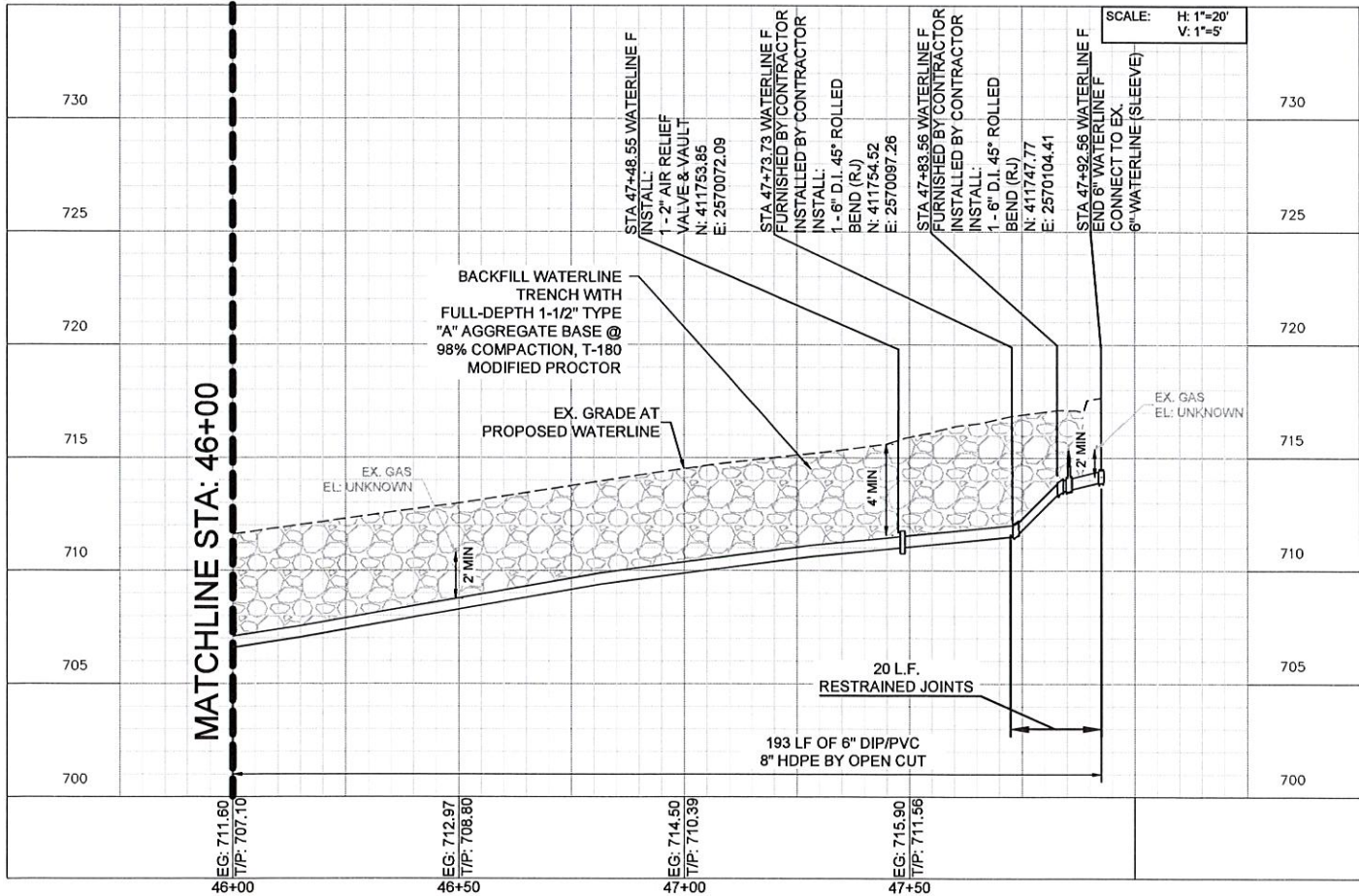
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HORIZONTAL:	LEAD ENGR.:			
1"=20'	FIELD MNGR.:			
VERTICAL				
1"=5'				

DRAWING: C-WATERLINE F.DWG
ATLAS PAGE NO: 95
SHEET 28 OF 32

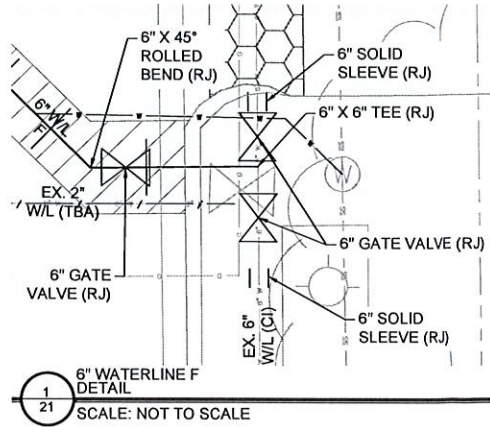




WATERLINE F PLAN

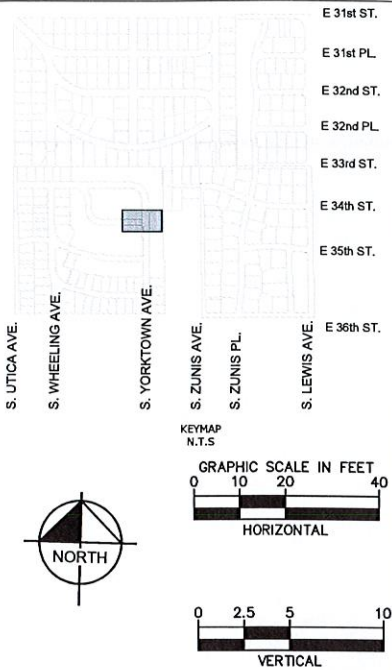


WATERLINE F PROFILE

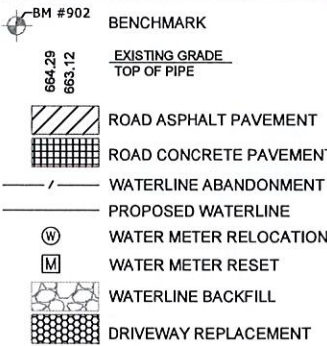


SERVICE CONNECTIONS

NO.	SERVICE TYPE
1	3/4" WATER SERVICE CONNECTION (LONG)
3	3/4" WATER SERVICE CONNECTION (SHORT)
1	1" WATER SERVICE CONNECTION (SHORT)



LEGEND



REVISION	BY	DATE
1	OCB	08/26

WATERLINE F STA 46+00 TO END

PROJECT NO. TMUA-W 25-03 C3

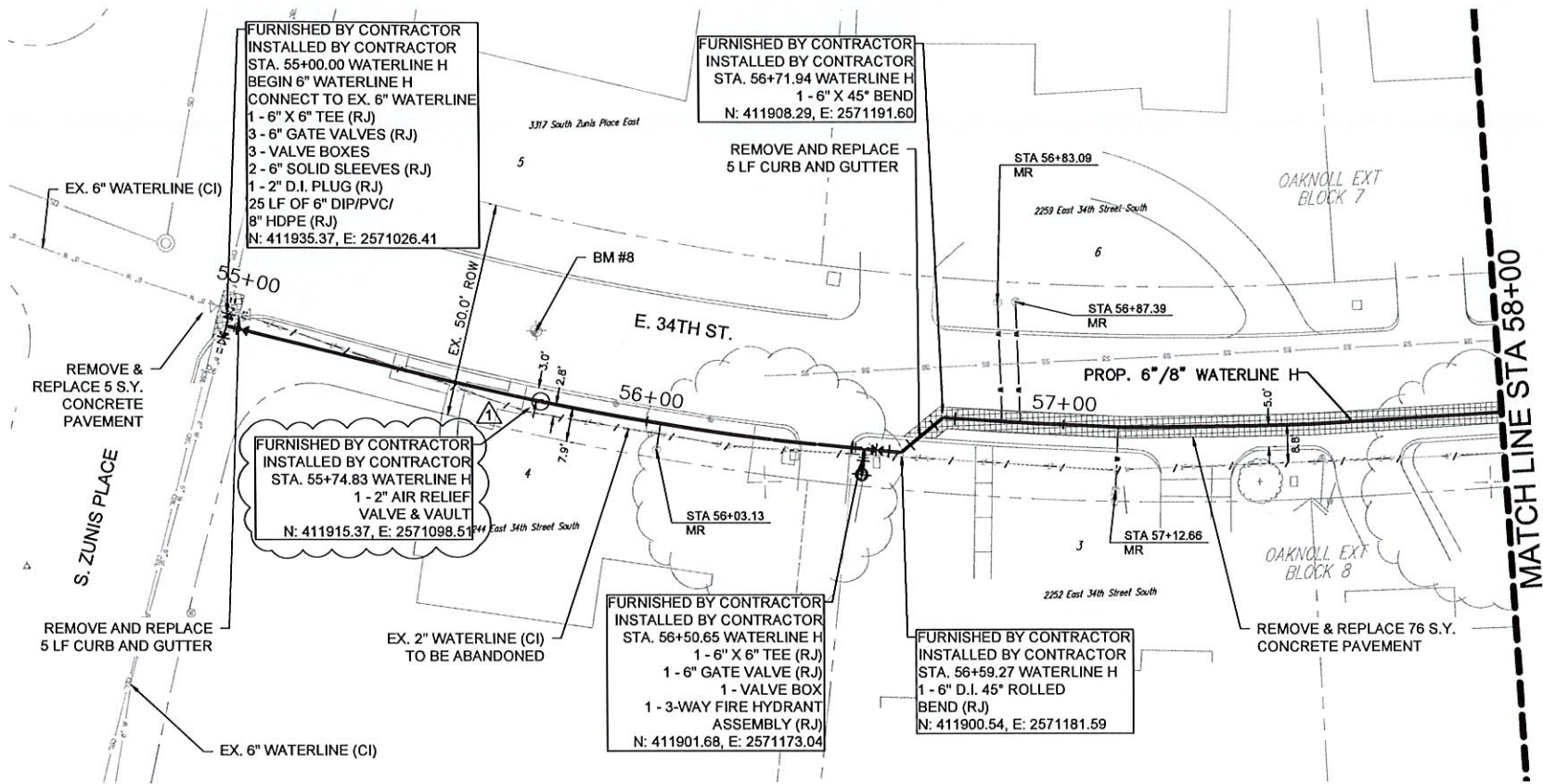
2" WATERLINE REPLACEMENT -
VICINITY OF 31ST TO 41ST STREETS AND
LEWIS TO WHEELING AVENUES

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

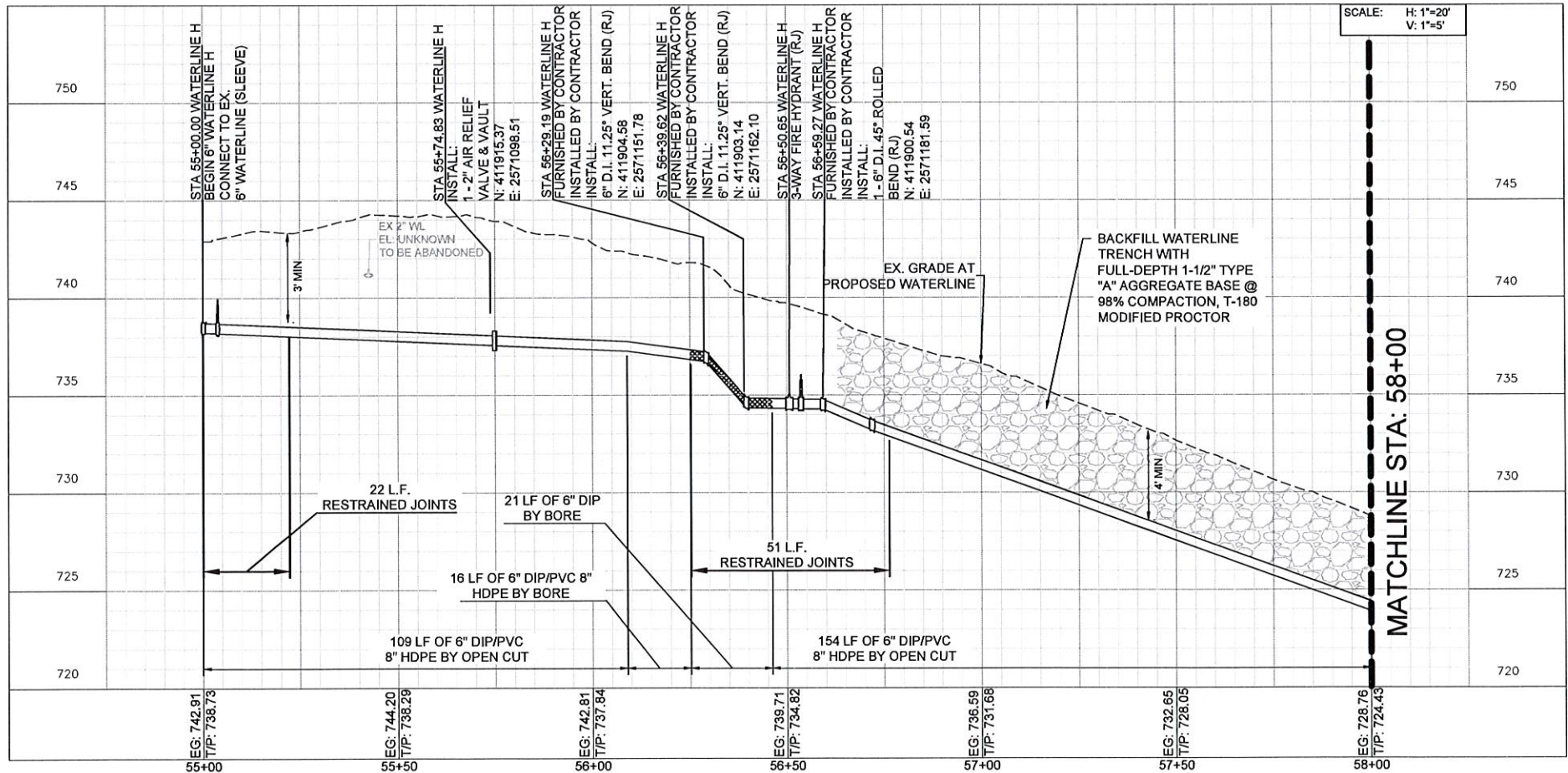
PLANS AND ESTIMATES PREPARED BY:
Kimley-Horn
1437 South Boulder Avenue, Suite 930, Tulsa, OK 74119
OK License No. 2740 Exp. Date 06/30/2027 (918) 209-3191

PLAN SCALE: 1"=20'	DRAWN DESIGNED SURVEY	OCB RWS DB	8/28/25 8/28/25 8/28/25	APPROVED:
PROFILE SCALES: HORIZONTAL: 1"=20' VERTICAL: 1"=5'	PROJ MNGR.: LEAD ENGR.: FIELD MNGR.:			
DRAWING: C-WATERLINE F.DWG ATLAS PAGE NO: 95				SHEET 21 OF 29

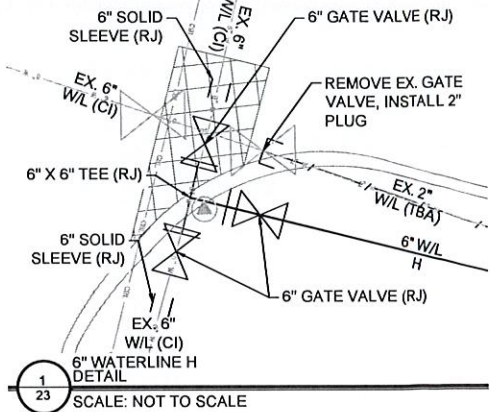




WATERLINE H PLAN

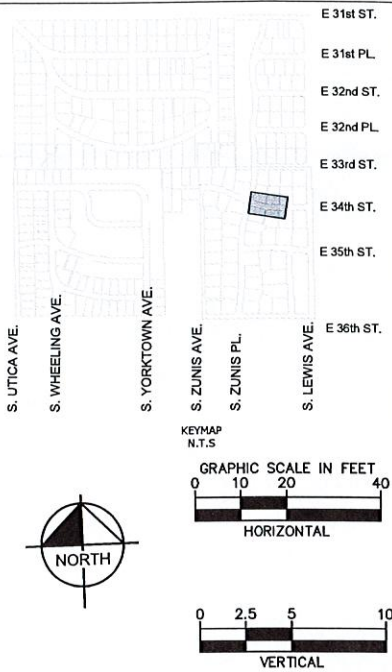


WATERLINE H PROFILE



SERVICE CONNECTIONS

NO.	SERVICE TYPE
1	3/4" WATER SERVICE CONNECTION (LONG)
2	3/4" WATER SERVICE CONNECTION (SHORT)
1	1" WATER SERVICE CONNECTION (LONG)



LEGEND



REVISION	BY	DATE
1	OCB	08/26

WATERLINE H STA 55+00 TO 58+00

PROJECT NO. TMUA-W 25-03 C3

2" WATERLINE REPLACEMENT -
VICINITY OF 31ST TO 41ST STREETS AND
LEWIS TO WHEELING AVENUES

CITY OF TULSA, OKLAHOMA
WATER & SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Kimley»Horn
1437 South Boulder Avenue, Suite 930, Tulsa, OK 74119
OK License No. 2740 Exp. Date 05/30/2027 (918) 209-3191

PLAN SCALE:	DRAWN	OCB	8/28/25	APPROVED:
1"=20'	DESIGNED	RWS	8/28/25	
PROFILE SCALES:	SURVEY	DB	8/28/25	
HORIZONTAL:	PROJ MNGR.:			
1"=20'	LEAD ENGR.:			
1"=5'	FIELD MNGR.:			

DRAWING: C-WATERLINE H.DWG
ATLAS PAGE NO: 95
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