

Document 00911

NOTICE OF  
ADDENDUM/NO

Date of Addendum: 6/8/16

PROJECT NAME: Work Orders & On-Call Large Diameter Water Mains and Valves -  
Package No. 13

PROJECT NO: WBS No. S-000701-0020-4

BID DATE: June 9, 2016 (There is no change to the Bid Date.)

FROM: J. Timothy Lincoln, P.E., City Engineer  
City of Houston  
Department of Public Works and Engineering  
611 Walker, 15<sup>th</sup> Floor  
Houston, Texas 77002  
Attn: Anh H. Hunter, P.E., Project Manager

TO: Prospective Bidders

The referenced Addendum forms a part of the Bidding Documents and will be incorporated into the Contract documents, as applicable.

Written questions regarding this Addendum may be submitted to the Project Manager following the procedures specified in Document 00200 – Instructions to Bidders. Immediately notify the City Engineer through the named Project Manager upon finding discrepancies or omissions in the Bid Documents.



Ravi Kaleyatodi, P.E., CPM  
Senior Assistant Director  
Department of Public Works and  
Engineering



END OF DOCUMENT

Document 00910

ADDENDUM NO. 1

Date of Addendum: \_\_\_\_\_

PROJECT NAME: Work Orders & On-Call Construction of Large Diameter Water Lines  
– Package No. 13

PROJECT NO: WBS No. S-000701-0020-4

BID DATE: June 9, 2016 (There is no change to the Bid Date.)

FROM: J. Timothy Lincoln, P.E., City Engineer  
City of Houston, Department of Public Works and Engineering  
611 Walker  
Houston, Texas 77002  
Attn: Anh H. Hunter, P.E., Project Manager

TO: Prospective Bidders

This Addendum forms a part of the Bidding Documents and will be incorporated into the Contract documents, as applicable. Insofar as the original Project Manual and Drawings are inconsistent, this Addendum governs.

*This Addendum uses the change page method: remove and replace or add pages, or Drawing sheets, as directed in the change instructions below. Change bars ( | ) are provided in the outside margins of pages from the Project Manual to indicate where changes have been made; no change bars are provided in added Sections. Reissued Drawing Sheets show the Addendum number below the title block and changes in the Drawing are noted by a revision mark and enclosed in a revision cloud.*

#### CHANGES TO PROJECT MANUAL

#### BIDDING REQUIREMENTS

1. Section 00410 – Bid Form. Replace Entire Section

00910-1  
02-01-2004  
Addendum No. 1

SPECIFICATIONS

2. Section 01110 – Summary of Work. Replace Entire Section
3. Section 02519 – Assessment and Rehabilitation of Large Diameter Water Lines. Replace Entire Section.
4. Section 02614 – Temporary Pipe Plug. Replace Entire Section.

END OF ADDENDUM NO. 1



Firm F-2614  
Lockwood, Andrews & Newnam, Inc.

DATED: Ravi Kaleyatodi  
Ravi Kaleyatodi, P.E./CPM  
Senior Assistant Director  
Department of Public Works and  
Engineering

END OF DOCUMENT

**Document 00410A**

**BID FORM - PART A**

To: **The Honorable Mayor and City Council of the City of Houston  
City Hall Annex  
900 Bagby Street  
Houston, Texas 77002**

Project: Work Orders & On-Call Construction of Large Diameter Water Lines and  
Appurtenances, Package No.13

Project No.: WBS No. S-000701-0020-4

Bidder:

(Print or type full name of proprietorship, partnership, corporation, or joint venture)

**1.0 OFFER**

- A. **Contract Price, Unit Prices and Adjustment Factor:** Having examined the Project Manual, the Multipliers in Document 01110, and all matters referred to in Bid Documents for the Project, we, the undersigned, offer to enter into a Work Order Contract to perform the Work for the not to exceed Contract Price, Unit Prices and Adjustment Factor shown in Document 00410B.
- B. **Security Deposit:** Included with the Bid is a Security Deposit in the amount of 10 percent of the Contract Price subject to terms described in Document 00200 - Instructions to Bidders.
- C. **Period for Bid Acceptance:** This offer is open to acceptance and is irrevocable for 90 days from Bid Date. That period may be extended by mutual written agreement of the City and Bidder.
- D. **Addenda:** All Addenda have been received. Modifications to Bid Documents have been considered and all related costs are included in the Adjustment Factor.
- E. **Bid Supplements:** The following documents are attached:
  - Security Deposit (as defined on Document 00200 - Instructions to Bidders)
  - Document 00450 - Bidder's Statement of MWBE/PDBE/DBE Status
  - Document 00452 - Contractor's Submission List - Fair Campaign Ordinance Form A
  - Document 00453 - Bidder's Statement of Residency
  - Document 00454 - Affidavit of Non-interest
  - Document 00455 - Affidavit of Ownership or Control
  - Document 00457 - Conflicts of Interest Questionnaire (CIQ)
  - Document 00460 - (POP 1) Pay or Play Acknowledgement Form
  - Document 00470 - Bidder's MWSBE Participation Plan
  - Document 00471 - Pre-Bid Good Faith Efforts
  - Document 00471 - Pre-Bid Good Faith Efforts
  - Document 00472 - Bidder's Goal Deviation Request
  - Others as listed: Valid official letter from OBO with your designation as a City or  
Local Business

**2.0 CONTRACT TIME**

- A. If offer is accepted, Contractor shall achieve Date of Substantial Completion in accordance with Document 00520, Article 2.

Bidder's Initials [ ]

**Document 00410B**

**BID FORM - PART B**

**1.0 THE ADJUSTMENT FACTOR<sup>(1)</sup> HAS BEEN CALCULATED BY BIDDER, USING THE FOLLOWING UNIT PRICES, ALLOWANCES, AND ALTERNATES:**

**A. STIPULATED PRICE:**

N/A

(Total Bid Price; minus Base Unit Prices, Extra Unit Prices, Cash Allowances and All Alternates, if any)

**B. BASE UNIT PRICE TABLE:**

Item No.	Section No.	Item Description	Unit	Unit Qty <sup>(2)</sup>	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
<b>B.1 - General Items 1</b>						
1	01502S	Mobilization (Same Day, Working Hours)	EA	2	\$ 5,000.00	\$ 10,000.00
2	01502S	Mobilization (Same Day, Non-Working Hours)	EA	2	\$ 6,000.00	\$ 12,000.00
3	01502S	Mobilization (2 - 4 Days, Working Hours)	EA	5	\$ 4,000.00	\$ 20,000.00
4	01502S	Mobilization (2 - 4 Days, Holiday)	EA	5	\$ 5,000.00	\$ 25,000.00
5	01502S	Mobilization (Over 4 Days)	EA	10	\$ 2,500.00	\$ 25,000.00
6	01502S	Demobilization / Remobilization	EA	5	\$ 750.00	\$ 3,750.00
7	01502S	PUD Site Security Clearance	EA	2	\$ 500.00	\$ 1,000.00
8	01110	Permit Application Fee for excavations on or under pavement by Tunneling, Jacking and Boring	EA	10	\$ 125.00	\$ 1,250.00
9	01110	Permit Application Fee for excavations on or under pavement by methods other than Tunneling, Jacking and Boring	EA	10	\$ 175.00	\$ 1,750.00
10	01110	Permit extension application fee for steel plate temporary surface	EA	10	\$ 50.00	\$ 500.00
11	01110	Permit extension application fee for temporary surface other than steel plate	EA	10	\$ 25.00	\$ 250.00
12	01110	Data Entry Fee for Non Electronic Submission	EA	10	\$ 50.00	\$ 500.00
13	01110	Notification Assistance Support (0-10 Customers)	EA	10	\$ 750.00	\$ 7,500.00
14	01110	Notification Assistance Support (11-25 Customers)	EA	8	\$ 1,250.00	\$ 10,000.00
15	01110	Notification Assistance Support (26-50 Customers)	EA	2	\$ 2,500.00	\$ 5,000.00
<b>ADJUSTMENT FACTOR (for Group B.1)</b>						<b>1.000</b>

(5)

<b>B.2 - General Items 2</b>						
16	01555	Traffic Control - typical one lane closure, complete in place	DAY	3	\$ 350.00	\$ 1,050.00
17	01555	Traffic Control - typical one lane closure, complete in place	WK	2	\$ 1,050.00	\$ 2,100.00
18	01555	Traffic Control - typical one lane closure, complete in place	MTH	1	\$ 3,150.00	\$ 3,150.00
19	01555	Traffic Control - typical two lane closure, complete in place	DAY	3	\$ 550.00	\$ 1,650.00
20	01555	Traffic Control - typical two lane closure, complete in place	WK	2	\$ 1,650.00	\$ 3,300.00
21	01555	Traffic Control - typical two lane closure, complete in place	MTH	1	\$ 5,000.00	\$ 5,000.00
22	01555	Traffic Control - typical one lane closure, complete in place for Major Thoroughfare	DAY	3	\$ 1,000.00	\$ 3,000.00
23	01555	Traffic Control - typical one lane closure, complete in place for Major Thoroughfare	WK	2	\$ 3,000.00	\$ 6,000.00
24	01555	Traffic Control - typical one lane closure, complete in place for Major Thoroughfare	MTH	1	\$ 9,000.00	\$ 9,000.00
25	01555	Traffic Control - typical two lane closure, complete in place for Major Thoroughfare	DAY	3	\$ 2,000.00	\$ 6,000.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
26	01555	Traffic Control - typical two lane closure, complete in place for Major Thoroughfare	WK	2	\$ 6,000.00	\$ 12,000.00
27	01555	Traffic Control - typical two lane closure, complete in place for Major Thoroughfare	MTH	1	\$ 18,000.00	\$ 18,000.00
28	01555S	Type III barricade	DAY	3	\$ 10.00	\$ 30.00
29	01555S	Type III barricade	WK	2	\$ 35.00	\$ 70.00
30	01555S	Type III barricade	MTH	1	\$ 100.00	\$ 100.00
31	01555S	Traffic Control - advance warning/detour signs	DAY	3	\$ 3.50	\$ 10.50
32	01555S	Traffic Control - advance warning/detour signs	WK	2	\$ 10.50	\$ 21.00
33	01555S	Traffic Control - advance warning/detour signs	MTH	1	\$ 35.00	\$ 35.00
34	01555S	Flashing arrow board	DAY	3	\$ 175.00	\$ 525.00
35	01555S	Flashing arrow board	WK	2	\$ 525.00	\$ 1,050.00
36	01555S	Flashing arrow board	MTH	1	\$ 1,575.00	\$ 1,575.00
37	01555S	Flagmen	HR	500	\$ 15.00	\$ 7,500.00
38	02260	Trench safety system for linear work, up to 8 feet wide and 8 feet cover.	LF	700	\$ 8.00	\$ 5,600.00
39	02260	Trench safety system for linear work, up to 8 feet wide and 16 feet cover.	LF	1,000	\$ 10.00	\$ 10,000.00
40	02260	Trench safety system for linear work, up to 8 feet wide and 25 feet cover.	LF	600	\$ 15.00	\$ 9,000.00
41	02260	Trench safety system for linear work, greater than 8 feet wide, up to 8 feet cover.	LF	300	\$ 40.00	\$ 12,000.00
42	02260	Trench safety system for linear work, greater than 8 feet wide, up to 16 feet cover.	LF	100	\$ 60.00	\$ 6,000.00
43	02260	Trench safety system for linear work, greater than 8 feet wide, up to 25 feet cover.	LF	50	\$ 80.00	\$ 4,000.00
44	01578	Ground water control for 0-16 feet depth of Excavation	LF	1,500	\$ 16.00	\$ 24,000.00
45	01578	Ground water control for 16 to 20 feet depth of Excavation	LF	500	\$ 24.00	\$ 12,000.00
46	01578	Ground water control for greater than 20 feet depth of Excavation	LF	200	\$ 45.00	\$ 9,000.00
47	02317	Critical Locate - Vacuum Excavation	DAY	3	\$ 2,500.00	\$ 7,500.00
48	02317	Exploratory Excavation - Excavation and Shoring around existing pipe, up to 8' x 8' x 8' deep	EA	2	\$ 3,000.00	\$ 6,000.00
49	02317	Exploratory Excavation - Excavation and Shoring around existing pipe, up to 12' x 20' x 8' deep	EA	2	\$ 6,000.00	\$ 12,000.00
50	02317	Exploratory Excavation - Excavation and Shoring around existing pipe, up to 12' x 20' x 8' to 14' deep	EA	5	\$ 8,000.00	\$ 40,000.00
51	02317	Exploratory Excavation - Excavation and Shoring around existing pipe, up to 12' x 20' x 14' to 20' deep	EA	2	\$ 12,000.00	\$ 24,000.00
52	02317	Exploratory Excavation - Excavation and Shoring around existing pipe, up to 12' x 20' x 20' to 30' deep	EA	1	\$ 25,000.00	\$ 25,000.00
53	02317	Placement and removal of granular backfill material (3/4-inch crushed limestone or other approved material)	CY	200	\$ 35.00	\$ 7,000.00
54	02519	Water Pumping; Includes 1 - 6" Pump and 25 linear feet of Suction and Discharge Hose	DAY	3	\$ 500.00	\$ 1,500.00
55	02519	Water Pumping; Includes 1 - 6" Pump and 25 linear feet of Suction and Discharge Hose	WK	2	\$ 2,800.00	\$ 5,600.00
56	02519	Water Pumping; Includes 1 - 6" Pump and 25 linear feet of Suction and Discharge Hose	MTH	1	\$ 9,000.00	\$ 9,000.00
57	02519	Water Pumping; Includes 1 - 3" Pump and 25 linear feet of Suction and Discharge Hose	HR	7	\$ 40.00	\$ 280.00
58	02519	Water Pumping; Includes 1 - 3" Pump and 25 linear feet of Suction and Discharge Hose	DAY	3	\$ 150.00	\$ 450.00
59	02519	Water Pumping; Includes 1 - 3" Pump and 25 linear feet of Suction and Discharge Hose	WK	2	\$ 800.00	\$ 1,600.00
60	02519	Water Pumping; Includes 1 - 3" Pump and 25 linear feet of Suction and Discharge Hose	MTH	1	\$ 2,900.00	\$ 2,900.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
61	02519	Water Pumping; Includes 1 - 2" Pump and 25 linear feet of Suction and Discharge Hose	DAY	3	\$ 100.00	\$ 300.00
62	02519	Water Pumping; Includes 1 - 2" Pump and 25 linear feet of Suction and Discharge Hose	WK	2	\$ 550.00	\$ 1,100.00
63	02519	Water Pumping; Includes 1 - 2" Pump and 25 linear feet of Suction and Discharge Hose	MTH	1	\$ 2,200.00	\$ 2,200.00
64	02519	Water Pumping Extra 6-inch Discharge & Suction Hoses	LF	100	\$ 10.00	\$ 1,000.00
65	02519	Water Pumping Extra 3-inch Discharge & Suction Hoses	LF	100	\$ 6.00	\$ 600.00
66	02519	Water Pumping Extra 2-inch Discharge & Suction Hoses	LF	100	\$ 5.00	\$ 500.00
67	02519	Type I - Confined Space Entry Support	DAY	10	\$ 800.00	\$ 8,000.00
68	02519	Type II - Advanced Confined Space Entry Support	DAY	10	\$ 2,000.00	\$ 20,000.00
69	02519	Preparatory Work for Type II Confined Space Entry Support	EA	5	\$ 2,500.00	\$ 12,500.00
70	02519	Temporary Lockout-Taggout Devices	EA	25	\$ 250.00	\$ 6,250.00
71	02221	Remove and dispose of miscellaneous concrete, brick, and/or masonry	CY	50	\$ 5.00	\$ 250.00
72	02713 02714	6-inch thick recycled crushed concrete for temporary driveways and road shoulders	SY	200	\$ 10.50	\$ 2,100.00
73	02921	Hydromulch Seeding	AC	2	\$ 1,250.00	\$ 2,500.00
74	02922	Sodding	SY	700	\$ 5.50	\$ 3,850.00
75	02120	Transportation and Disposal of Category I contaminated soil	CY	50	\$ 20.00	\$ 1,000.00
76	02120	Transportation and Disposal of Category II contaminated soil	CY	50	\$ 40.00	\$ 2,000.00
77	02105	Preparatory Work for sampling and analysis in PPCA, including environmental work plan and supplemental insurance for dealing with PPCA (once per work order when applicable)	LS	5	\$ 5,000.00	\$ 25,000.00
78	02821	Remove and Replace Wood Fence Up to 8 feet High	LF	50	\$ 28.00	\$ 1,400.00
79	02821	Remove and Replace Chain Link Fence Up to 8 feet High	LF	50	\$ 20.00	\$ 1,000.00
80	02821	Install Temporary Fencing	LF	50	\$ 15.00	\$ 750.00
81	02821	Remove and Replace Wood Gate, including hardware	EA	1	\$ 300.00	\$ 300.00
82	02821	Remove and Replace Chain Link Gate, including hardware	EA	1	\$ 300.00	\$ 300.00
83	02519	Geotechnical Boring Mobilization	EA	10	\$ 2,000.00	\$ 20,000.00
84	02519	Geotechnical Boring Up to 15 feet Vertically	EA	10	\$ 500.00	\$ 5,000.00
85	02519	Extra Depth for Geotechnical Boring	VF	40	\$ 25.00	\$ 1,000.00
86	02317	3/4-inch to 1-1/2-inch Sch 40 PVC or copper pipe or conduit in augured hole (for electric conduit, sprinklers and service connections).	LF	100	\$ 50.00	\$ 5,000.00
87	02317	2-inch to 4-inch Sch 40 PVC or copper pipe or conduit in augured hole (for electric conduit, sprinklers and service connections).	LF	100	\$ 60.00	\$ 6,000.00
88	02317	3/4-inch to 1-1/2-inch Sch 40 PVC Installed in Open Trench	LF	100	\$ 10.00	\$ 1,000.00
89	02317	2-inch to 4-inch Sch 40 PVC Installed in Open Trench	LF	100	\$ 20.00	\$ 2,000.00
90	16710	Pull Box for PVC Electrical Conduit	EA	5	\$ 1,500.00	\$ 7,500.00
91	01270	Shipment of construction materials	MI	1,000	\$ 2.50	\$ 2,500.00
92	01575S	Timber Mats, 15 Standard 8-foot wide x 16-foot long, 3-ply	DAY	3	\$ 130.00	\$ 390.00
93	01575S	Timber Mat round-trip delivery and pick up, maximum 13-15 timber mats per each vehicle	HR	4	\$ 95.00	\$ 380.00
94	02519	Certified Field Welder	HR	200	\$ 125.00	\$ 25,000.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
95	02519	Certified Field Welder (Within Confined Space)	HR	100	\$ 150.00	\$ 15,000.00
96	02511	Certified Weld Testing Technician (per trip)	EA	15	\$ 500.00	\$ 7,500.00
97	02519	3/16- to 1/4-inch Steel	SF	20	\$ 24.00	\$ 480.00
98	02519	5/16- to 3/8- inch Steel	SF	20	\$ 30.00	\$ 600.00
99	02519	1/2- to 3/4-inch Steel	SF	10	\$ 50.00	\$ 500.00
100	02519	Roll steel to match pipe diameter	EA	10	\$ 250.00	\$ 2,500.00
101	02519	Miscellaneous Small Steel Fittings	EA	10	\$ 200.00	\$ 2,000.00
102	09901	Protective Coatings (Epoxy or other paint)	SF	100	\$ 6.00	\$ 600.00 (7)
103	02519	Chemical Grout (for structural repair or water line leak sealing - Sikafix HH or approved equal)	GAL	50	\$ 100.00	\$ 5,000.00
104	03310	Structural Concrete	CY	100	\$ 400.00	\$ 40,000.00
105	03211	Reinforcing Steel	LB	1,000	\$ 0.40	\$ 400.00
106	03100	Formwork Lumber	BF	500	\$ 2.20	\$ 1,100.00
107	03310	Labor for formwork	DAY	10	\$ 1,000.00	\$ 10,000.00
108	03305	Miscellaneous Concrete	CY	100	\$ 250.00	\$ 25,000.00
109	02523	Fiberglass Ladder, All Heights	EA	2	\$ 1,200.00	\$ 2,400.00
110	02915	Tree, Up to 5 gallons	EA	15	\$ 200.00	\$ 3,000.00
111	02915	Tree, 6 to 100 gallons	EA	10	\$ 500.00	\$ 5,000.00
<b>B.3 - Paving Items</b>						
112	02221	Remove and dispose of concrete curb	LF	1,500	\$ 2.75	\$ 4,125.00
113	02221	Remove and dispose of concrete sidewalks and driveways, all thicknesses	SY	700	\$ 3.50	\$ 2,450.00
114	02221	Remove and dispose of asphalt pavement, all thicknesses	SY	4,000	\$ 4.00	\$ 16,000.00
115	02221	Remove and dispose of reinforced concrete pavement with or without asphalt surface and with or without curbs, all thicknesses	SY	300	\$ 5.00	\$ 1,500.00
116	02983	Removal & Restoration Existing Brick Paved Street	SY	150	\$ 250.00	\$ 37,500.00
117	02336	Lime	TON	350	\$ 130.00	\$ 45,500.00
118	02337	Fly-ash	TON	250	\$ 130.00	\$ 32,500.00
119	02337	6-inch Thick Lime/fly-ash stabilized subgrade	SY	750	\$ 15.00	\$ 11,250.00
120	02712	Minimum 6-inch Cement Stabilized Sand Base Course	SY	250	\$ 15.00	\$ 3,750.00
121	02711	6-inch Hot Mix Asphaltic Base Course	SY	4,300	\$ 40.00	\$ 172,000.00
122	02713	Minimum 6-inch Base Course/Crushed Concrete (or similar)	SY	4,300	\$ 35.00	\$ 150,500.00
123	02741	Type D Hot Mix Asphaltic Concrete Surfacing, 2-inch thick	SY	500	\$ 15.00	\$ 7,500.00
124	02741	Asphaltic Temporary Detour Pavement	SY	500	\$ 38.00	\$ 19,000.00
125	02751	6-inch reinforced concrete pavement	SY	4,000	\$ 85.00	\$ 340,000.00
126	02751	8-inch reinforced concrete pavement	SY	500	\$ 100.00	\$ 50,000.00
127	02751	10-inch reinforced concrete pavement	SY	500	\$ 115.00	\$ 57,500.00
128	02751	8-inch high early strength reinforced concrete pavement	SY	500	\$ 85.00	\$ 42,500.00
129	02751	10-inch reinforced concrete pavement, high early strength	SY	200	\$ 92.00	\$ 18,400.00
130	02752	Board expansion joint with load transfer device and sealant.	LF	500	\$ 8.00	\$ 4,000.00
131	02752	Board expansion joint 1-inch x (4-inch to 8-inch wide), no load transfer device	LF	500	\$ 2.30	\$ 1,150.00
132	02752	Horizontal dowels	EA	3,500	\$ 7.00	\$ 24,500.00
133	02752	Preformed expansion joint	LF	1,000	\$ 2.50	\$ 2,500.00
134	02752	2-inch Saw-cut concrete pavement	LF	750	\$ 5.00	\$ 3,750.00
135	02752	Saw-cut concrete pavement. Full depth (up to 10-inch) w/ or w/out reinforcing	LF	750	\$ 15.00	\$ 11,250.00
136	02754	6-inch high early strength concrete driveway, including base	SF	1,000	\$ 11.00	\$ 11,000.00
137	02771	6-inch concrete curb, all heights	LF	250	\$ 4.75	\$ 1,187.50
138	02771	Monolithic concrete curb and gutter, all heights	LF	250	\$ 28.00	\$ 7,000.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
139	02771	Concrete esplanade curb, all heights	LF	100	\$ 9.00	\$ 900.00
140	02772	6-inch concrete medians and directional islands	SY	50	\$ 49.00	\$ 2,450.00
141	02775	4-1/2-inch concrete sidewalk, including headers, dowels and expansion joints	SF	150	\$ 7.00	\$ 1,050.00
142	02775	Concrete wheelchair ramp including headers, dowels expansion joints, staining and truncated dome pavers (as required)	SF	500	\$ 25.00	\$ 12,500.00
143	02765	Raised reflective pavement markers, (Type I)	EA	1	\$ 0.20	\$ 0.20
144	02765	Raised reflective pavement markers, (Type II-C-R)	EA	1	\$ 0.20	\$ 0.20
145	02765	Raised reflective pavement markers CL B, (Type II-B-B)	EA	1	\$ 0.20	\$ 0.20
146	02767	Thermoplastic pavement marking (4" wide) (broken) White or Yellow	LF	50	\$ 0.40	\$ 20.00
147	02767	Thermoplastic pavement marking (8" wide) White	LF	50	\$ 1.00	\$ 50.00
148	02767	Thermoplastic pavement marking (12" wide) White	LF	50	\$ 3.00	\$ 150.00
149	02767	Pavement marking (12" wide) Yellow	LF	50	\$ 1.00	\$ 50.00
150	02764	Thermoplastic pavement marking (24" wide) White	LF	50	\$ 4.00	\$ 200.00
151	02764	Thermoplastic pavement marking (Words) White	EA	1	\$ 144.00	\$ 144.00
152	02764	Thermoplastic pavement marking (Symbols) White	EA	1	\$ 109.00	\$ 109.00
<b>B.4 - Storm Items</b>						
153	02221	Remove and dispose 36-inch and smaller size storm sewers	LF	200	\$ 21.00	\$ 4,200.00
154	02221	Remove and dispose 42 or 48-inch storm sewers	LF	50	\$ 40.00	\$ 2,000.00
155	02221	Remove and dispose storm sewer inlet	EA	5	\$ 250.00	\$ 1,250.00
156	02631	18-inch diameter storm sewer by open cut	LF	150	\$ 77.00	\$ 11,550.00
157	02631	24-inch diameter storm sewer by open cut	LF	100	\$ 82.00	\$ 8,200.00
158	02221	Remove and dispose 18-inch diameter culvert	LF	100	\$ 17.00	\$ 1,700.00
159	02631	Install 18-inch diameter culvert	LF	100	\$ 43.00	\$ 4,300.00
160	02221	Remove and dispose 24-inch diameter culvert	LF	100	\$ 22.00	\$ 2,200.00
161	02631	Install 24-inch diameter culvert	LF	100	\$ 53.00	\$ 5,300.00
162	02221	Remove and dispose 36-inch diameter culvert	LF	100	\$ 25.00	\$ 2,500.00
163	02631	Install 36-inch diameter culvert	LF	50	\$ 90.00	\$ 4,500.00
164	02081 02087	Type "C" manhole for 42-inch diameter and smaller sewers	EA	2	\$ 4,400.00	\$ 8,800.00
165	02632 02633	Type "BB" inlet	EA	1	\$ 2,750.00	\$ 2,750.00
166	02632 02633	Type "A" inlet	EA	1	\$ 1,900.00	\$ 1,900.00
167	02632 02633	Type "D" inlet	EA	1	\$ 1,900.00	\$ 1,900.00
168	02632 02633	Type "D-1" inlet	EA	1	\$ 1,900.00	\$ 1,900.00
169	02632 02633	Type "E" inlet	EA	1	\$ 3,250.00	\$ 3,250.00
170	02633	Type "C-1" inlet	EA	1	\$ 3,250.00	\$ 3,250.00
171	02632 02633	Headwall including flared wings	EA	2	\$ 4,400.00	\$ 8,800.00
172	02315	Reconstruction of roadside ditch	LF	250	\$ 6.00	\$ 1,500.00
173	02084	Standard Ring Inlet	EA	4	\$ 165.00	\$ 660.00
174	01506	Bypass Pumping - Storm, 12" - 36" Dia.	EA	2	\$ 3,700.00	\$ 7,400.00
175	01506	Bypass Pumping - Storm, 12" - 36" Dia., After 7 Days	DAY	5	\$ 390.00	\$ 1,950.00
<b>B.5 - Sanitary Items</b>						
176	02221	Remove and dispose 8-inch diameter sanitary sewer	LF	100	\$ 50.00	\$ 5,000.00
177	02221	Remove and dispose 10-inch diameter sanitary sewer	LF	50	\$ 40.00	\$ 2,000.00
178	02221	Remove and dispose 12-inch diameter sanitary sewer	LF	100	\$ 30.00	\$ 3,000.00
179	02531	8-inch diameter sanitary sewer, by open-cut - Pressure Rated	LF	100	\$ 120.00	\$ 12,000.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
180	02531	10-inch diameter sanitary sewer, by open-cut - Pressure Rated	LF	50	\$ 158.00	\$ 7,900.00
181	02531	12-inch diameter sanitary sewer, by open-cut - Pressure Rated	LF	100	\$ 175.00	\$ 17,500.00
182	02082	4-foot diameter precast concrete manholes	EA	5	\$ 3,200.00	\$ 16,000.00
183	02082	Extra depth, 4-foot diameter precast concrete manhole	VF	10	\$ 50.00	\$ 500.00
184	02082	4-foot diameter watertight manhole	EA	2	\$ 4,200.00	\$ 8,400.00
185	02082	Extra depth, 4-foot diameter watertight manholes	VF	5	\$ 75.00	\$ 375.00
186	02534	Service stubs or reconnections including construction of stack within 5 feet of existing sanitary sewer	EA	5	\$ 1,200.00	\$ 6,000.00
187	2558	Cleaning and Television inspection of existing sanitary sewer	LF	150	\$ 15.00	\$ 2,250.00
188	02534	Remove existing sanitary sewer service stubs and replace with 6-inch stubs	EA	5	\$ 750.00	\$ 3,750.00
189	02222	Abandonment Grouting of 8-inch Sanitary Sewer	LF	50	\$ 11.00	\$ 550.00 (7)
190	02222	Abandonment Grouting of 10-inch Sanitary Sewer	LF	50	\$ 12.00	\$ 600.00 (7)
191	02222	Abandonment Grouting of 12-inch Sanitary Sewer	LF	50	\$ 14.00	\$ 700.00 (7)
192	01506	Bypass Pumping - Sanitary, 12" - 24" Diameter	EA	2	\$ 3,700.00	\$ 7,400.00
193	01506	Bypass Pumping - Sanitary, 12" - 24" Diameter, After 7 Days	EA	5	\$ 390.00	\$ 1,950.00
<b>B.6 - Small Diameter Water Items - 20-inch and Smaller</b>						
194	01270	Flush existing water line	LF	500	\$ 1.25	\$ 625.00
195	02511S	Remove and Dispose of Small Diameter Water Line (20-inch and smaller)	LF	200	\$ 15.00	\$ 3,000.00
196	02511S	Remove and Dispose of Small Diameter Asbestos Cement Water Line (20-inch and smaller)	LF	50	\$ 75.00	\$ 3,750.00
197	02511	6" - 8" Water Line, Open Cut	LF	50	\$ 79.69	\$ 3,984.50
198	02511	12" - 16" Water Line, Open Cut	LF	50	\$ 98.33	\$ 4,916.50
199	02511	20" Water Line, Open Cut	LF	50	\$ 140.00	\$ 7,000.00
200	02511	6" - 8" Restrained Joint Water Line, Open Cut	LF	50	\$ 109.16	\$ 5,458.00
201	02511	12" - 16" Restrained Joint Water Line, Open Cut	LF	50	\$ 135.23	\$ 6,761.50
202	02511	20" Restrained Joint Water Line, Open Cut	LF	50	\$ 145.00	\$ 7,250.00
203	02511	6" - 8" Restrained Joint Water Line, Augured	LF	50	\$ 109.60	\$ 5,480.00
204	02511	12" - 16" Restrained Joint Water Line, Augured	LF	50	\$ 135.23	\$ 6,761.50
205	02511	20" Restrained Joint Water Line, Augured	LF	50	\$ 145.00	\$ 7,250.00
206	02511	8" Restrained Joint Water Line, in casing	LF	50	\$ 116.04	\$ 5,802.19
207	02511	12" Restrained Joint Water Line, in casing	LF	50	\$ 127.70	\$ 6,384.99
208	02511	16" Restrained Joint Water Line, in casing	LF	50	\$ 142.76	\$ 7,137.98
209	02511	20" Restrained Joint Water Line, in casing	LF	50	\$ 150.00	\$ 7,500.00
210	02511	Compact Ductile Iron Fittings, in place (including bolts and gaskets)	TON	1	\$ 4,000.00	\$ 4,000.00
211	02511	6" Restrained joint MJ clamp, bell joint repair clamp, or full circle repair clamp on new or existing DIP, PVC or CI pipe	EA	2	\$ 750.00	\$ 1,500.00
212	02511	8" Restrained joint MJ clamp, bell joint repair clamp, or full circle repair clamp on new or existing DIP, PVC or CI pipe	EA	2	\$ 843.75	\$ 1,687.50
213	02511	12" Restrained joint MJ clamp, bell joint repair clamp, or full circle repair clamp on new or existing DIP, PVC or CI pipe	EA	2	\$ 928.50	\$ 1,857.00
214	02511	16" Restrained joint MJ clamp, bell joint repair clamp, or full circle repair clamp on new or existing DIP, PVC or CI pipe	EA	2	\$ 1,038.00	\$ 2,076.00
215	02511	20" Restrained joint MJ clamp, bell joint repair clamp, or full circle repair clamp on new or existing DIP, PVC or CI pipe	EA	2	\$ 1,364.25	\$ 2,728.50
216	02511	6" Bolted Coupling with restraints on new or existing DIP, PVC or CI pipe	EA	2	\$ 1,500.00	\$ 3,000.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
217	02511	8" Bolted Coupling with restraints on new or existing DIP, PVC or CI pipe	EA	2	\$ 1,687.50	\$ 3,375.00
218	02511	12" Bolted Coupling with restraints on new or existing DIP, PVC or CI pipe	EA	2	\$ 1,857.00	\$ 3,714.00
219	02511	16" Bolted Coupling with restraints on new or existing DIP, PVC or CI pipe	EA	2	\$ 2,076.00	\$ 4,152.00
220	02511	20" Bolted Coupling with restraints on new or existing DIP, PVC or CI pipe	EA	2	\$ 2,728.50	\$ 5,457.00
221	02516	6" Cut, Plug & Abandon	EA	1	\$ 495.00	\$ 495.00
222	02516	8" Cut, Plug & Abandon	EA	1	\$ 556.88	\$ 556.88
223	02516	12" Cut, Plug & Abandon	EA	1	\$ 612.81	\$ 612.81
224	02516	16" Cut, Plug & Abandon	EA	1	\$ 685.08	\$ 685.08
225	02516	20" Cut, Plug & Abandon	EA	1	\$ 900.41	\$ 900.41
226	02513	6" Wet Connection	EA	1	\$ 1,500.00	\$ 1,500.00
227	02513	8" Wet Connection	EA	1	\$ 1,687.50	\$ 1,687.50
228	02513	12" Wet Connection	EA	1	\$ 1,857.00	\$ 1,857.00
229	02513	16" Wet Connection	EA	1	\$ 2,076.00	\$ 2,076.00
230	02513	20" Wet Connection	EA	1	\$ 2,728.50	\$ 2,728.50
231	02511S	Adaptor or built up end to match new pipe to existing pipe (6" to 12")	EA	6	\$ 1,500.00	\$ 9,000.00
232	02511S	Adaptor or built up end to match new pipe to existing pipe (16" to 20")	EA	6	\$ 2,500.00	\$ 15,000.00
233	02520	Fire hydrant assembly, all depths, including 6-inch diameter gate valve and box	EA	2	\$ 3,500.00	\$ 7,000.00
234	02520	6-inch diameter fire hydrant branch by open-cut	LF	25	\$ 38.00	\$ 950.00
235	02520	6-inch diameter fire hydrant branch by auguring	LF	25	\$ 56.00	\$ 1,400.00
236	02520	Remove and salvage existing fire hydrant	EA	2	\$ 285.00	\$ 570.00
237	02521	2-inch diameter permanent blow-off valve on new or existing water line with box	EA	10	\$ 625.00	\$ 6,250.00
238	02512	3/4-inch to 1-inch diameter copper service line with meter box, short side	EA	5	\$ 562.00	\$ 2,810.00
239	02512	3/4-inch to 1-inch diameter copper service line with meter box, long side	EA	5	\$ 937.00	\$ 4,685.00
240	02512	3/4-inch to 1-inch diameter copper service line with meter box, extra long	EA	5	\$ 1,125.00	\$ 5,625.00
241	02512	1-1/2-inch to 2-inch diameter copper service line with meter box, short side	EA	5	\$ 1,250.00	\$ 6,250.00
242	02512	1-1/2-inch to 2-inch diameter copper service line with meter box, long side	EA	5	\$ 3,000.00	\$ 15,000.00
243	02512	1-1/2-inch to 2-inch diameter copper service line with meter box, extra long	EA	5	\$ 3,250.00	\$ 16,250.00
244	02514	Disinfection Preparation of existing small diameter water line	LF	150	\$ 1.50	\$ 225.00
<b>B.7 - Large Diameter Water Items - 24-inch and Larger</b>						
245	02519	Install and Remove Temporary blow-off piping on existing outlet, 2" through 6"	EA	25	\$ 750.00	\$ 18,750.00
246	02511S	Saw-Cut Existing 24" - 36" Water Line	EA	1	\$ 450.73	\$ 450.73
247	02511S	Saw-Cut Existing 42" - 54" Water Line	EA	1	\$ 620.20	\$ 620.20
248	02511S	Saw-Cut Existing 60" - 72" Water Line	EA	1	\$ 868.35	\$ 868.35
249	02511S	Saw-Cut Existing 84" - 96" Water Line	EA	1	\$ 1,218.84	\$ 1,218.84
250	02511	Remove and dispose of existing 24" - 42" water line	LF	500	\$ 63.83	\$ 31,915.00
251	02511	Remove and dispose of existing 48" - 60" water line	LF	500	\$ 94.38	\$ 47,190.00
252	02511	Remove and dispose of existing 66" - 78" water line	LF	500	\$ 132.40	\$ 66,200.00
253	02511	Remove and dispose of existing 84" - 96" water line	LF	500	\$ 185.73	\$ 92,865.00
254	02511	Procure up to 50 linear feet of 24" water line	LF	50	\$ 713.00	\$ 35,650.00
255	02511	Procure up to 50 linear feet of 30" water line	LF	50	\$ 798.00	\$ 39,900.00
256	02511	Procure up to 50 linear feet of 36" water line	LF	50	\$ 893.00	\$ 44,650.00
257	02511	Procure up to 50 linear feet of 42" water line	LF	50	\$ 1,000.00	\$ 50,000.00
258	02511	Procure up to 50 linear feet of 48" water line	LF	50	\$ 1,119.00	\$ 55,950.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures (3)(4)	Total In Figures (2)
259	02511	Procure up to 50 linear feet of 54" water line	LF	50	\$ 1,253.00	\$ 62,650.00
260	02511	Procure up to 50 linear feet of 60" water line	LF	50	\$ 1,403.00	\$ 70,150.00
261	02511	Procure up to 50 linear feet of 66" water line	LF	50	\$ 1,570.00	\$ 78,500.00
262	02511	Procure up to 50 linear feet of 72" water line	LF	50	\$ 1,758.00	\$ 87,900.00
263	02511	Procure up to 50 linear feet of 84" water line	LF	50	\$ 2,203.00	\$ 110,150.00
264	02511	Procure up to 50 linear feet of 90" water line	LF	50	\$ 2,466.00	\$ 123,300.00
265	02511	Procure up to 50 linear feet of 96" water line	LF	50	\$ 2,760.00	\$ 138,000.00
266	02511	Procure 51-100 linear feet of 24" water line	LF	100	\$ 570.40	\$ 57,040.00
267	02511	Procure 51-100 linear feet of 30" water line	LF	100	\$ 638.40	\$ 63,840.00
268	02511	Procure 51-100 linear feet of 36" water line	LF	100	\$ 714.40	\$ 71,440.00
269	02511	Procure 51-100 linear feet of 42" water line	LF	100	\$ 800.00	\$ 80,000.00
270	02511	Procure 51-100 linear feet of 48" water line	LF	100	\$ 895.20	\$ 89,520.00
271	02511	Procure 51-100 linear feet of 54" water line	LF	100	\$ 1,002.40	\$ 100,240.00
272	02511	Procure 51-100 linear feet of 60" water line	LF	100	\$ 1,122.40	\$ 112,240.00
273	02511	Procure 51-100 linear feet of 66" water line	LF	100	\$ 1,256.00	\$ 125,600.00
274	02511	Procure 51-100 linear feet of 72" water line	LF	100	\$ 1,406.40	\$ 140,640.00
275	02511	Procure 51-100 linear feet of 84" water line	LF	100	\$ 1,762.40	\$ 176,240.00
276	02511	Procure 51-100 linear feet of 90" water line	LF	100	\$ 1,972.80	\$ 197,280.00
277	02511	Procure 51-100 linear feet of 96" water line	LF	100	\$ 2,208.00	\$ 220,800.00
278	02511	Procure greater than 100 linear feet of 24" water line	LF	500	\$ 285.20	\$ 142,600.00
279	02511	Procure greater than 100 linear feet of 30" water line	LF	500	\$ 319.20	\$ 159,600.00
280	02511	Procure greater than 100 linear feet of 36" water line	LF	500	\$ 357.20	\$ 178,600.00
281	02511	Procure greater than 100 linear feet of 42" water line	LF	500	\$ 400.00	\$ 200,000.00
282	02511	Procure greater than 100 linear feet of 48" water line	LF	500	\$ 447.60	\$ 223,800.00
283	02511	Procure greater than 100 linear feet of 54" water line	LF	500	\$ 501.20	\$ 250,600.00
284	02511	Procure greater than 100 linear feet of 60" water line	LF	500	\$ 561.20	\$ 280,600.00
285	02511	Procure greater than 100 linear feet of 66" water line	LF	500	\$ 628.00	\$ 314,000.00
286	02511	Procure greater than 100 linear feet of 72" water line	LF	500	\$ 703.20	\$ 351,600.00
287	02511	Procure greater than 100 linear feet of 84" water line	LF	500	\$ 881.20	\$ 440,600.00
288	02511	Procure greater than 100 linear feet of 90" water line	LF	500	\$ 986.40	\$ 493,200.00
289	02511	Procure greater than 100 linear feet of 96" water line	LF	500	\$ 1,104.00	\$ 552,000.00
290	02511	Procure 24" Elliptical Dished Head Plug	EA	1	\$ 500.00	\$ 500.00
291	02511	Procure 30" Elliptical Dished Head Plug	EA	1	\$ 500.00	\$ 500.00
292	02511	Procure 36" Elliptical Dished Head Plug	EA	1	\$ 500.00	\$ 500.00
293	02511	Procure 42" Elliptical Dished Head Plug	EA	1	\$ 700.00	\$ 700.00
294	02511	Procure 48" Elliptical Dished Head Plug	EA	1	\$ 700.00	\$ 700.00
295	02511	Procure 54" Elliptical Dished Head Plug	EA	1	\$ 700.00	\$ 700.00
296	02511	Procure 60" Elliptical Dished Head Plug	EA	1	\$ 1,000.00	\$ 1,000.00
297	02511	Procure 66" Elliptical Dished Head Plug	EA	1	\$ 1,000.00	\$ 1,000.00
298	02511	Procure 72" Elliptical Dished Head Plug	EA	1	\$ 1,000.00	\$ 1,000.00
299	02511	Procure 84" Elliptical Dished Head Plug	EA	1	\$ 1,500.00	\$ 1,500.00
300	02511	Procure 90" Elliptical Dished Head Plug	EA	1	\$ 1,500.00	\$ 1,500.00
301	02511	Procure 96" Elliptical Dished Head Plug	EA	1	\$ 1,500.00	\$ 1,500.00
302	02511	Procure 24" Blind Flange	EA	2	\$ 500.00	\$ 1,000.00
303	02511	Procure 30" Blind Flange	EA	2	\$ 500.00	\$ 1,000.00
304	02511	Procure 36" Blind Flange	EA	2	\$ 500.00	\$ 1,000.00
305	02511	Procure 42" Blind Flange	EA	2	\$ 700.00	\$ 1,400.00
306	02511	Procure 48" Blind Flange	EA	2	\$ 700.00	\$ 1,400.00
307	02511	Procure 54" Blind Flange	EA	2	\$ 700.00	\$ 1,400.00
308	02511	Procure 60" Blind Flange	EA	1	\$ 1,000.00	\$ 1,000.00
309	02511	Procure 66" Blind Flange	EA	1	\$ 1,000.00	\$ 1,000.00
310	02511	Procure 72" Blind Flange	EA	1	\$ 1,000.00	\$ 1,000.00
311	02511	Procure 84" Blind Flange	EA	1	\$ 1,500.00	\$ 1,500.00
312	02511	Procure 90" Blind Flange	EA	1	\$ 1,500.00	\$ 1,500.00
313	02511	Procure 96" Blind Flange	EA	1	\$ 1,500.00	\$ 1,500.00
314	02511	Procure Up to 11-1/4" x 24" - 36" Fittings	EA	1	\$ 2,564.27	\$ 2,564.27
315	02511	Procure Up to 11-1/4" x 42" - 54" Fittings	EA	1	\$ 3,596.80	\$ 3,596.80
316	02511	Procure Up to 11-1/4" x 60" - 72" Fittings	EA	1	\$ 5,046.80	\$ 5,046.80
317	02511	Procure Up to 11-1/4" x 84" - 96" Fittings	EA	1	\$ 7,080.47	\$ 7,080.47

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
318	02511	Procure 11-1/4 to 45° x 24" - 36" Fittings	EA	1	\$ 3,210.00	\$ 3,210.00
319	02511	Procure 11-1/4 to 45° x 42" - 54" Fittings	EA	1	\$ 4,496.00	\$ 4,496.00
320	02511	Procure 11-1/4 to 45° x 60" - 72" Fittings	EA	1	\$ 6,310.00	\$ 6,310.00
321	02511	Procure 11-1/4 to 45° x 84" - 96" Fittings	EA	1	\$ 8,850.00	\$ 8,850.00
322	02511	Procure 90° Bend x 24" - 36" Fitting	EA	1	\$ 6,010.00	\$ 6,010.00
323	02511	Procure 90° Bend x 42" - 54" Fitting	EA	1	\$ 8,430.00	\$ 8,430.00
324	02511	Procure 90° Bend x 60" - 72" Fitting	EA	1	\$ 11,828.00	\$ 11,828.00
325	02511	Procure 90° Bend x 84" - 99" Fitting	EA	1	\$ 16,593.00	\$ 16,593.00
326	02511S	Adapter or built up end to match new pipe to existing pipe (24" to 36")	EA	4	\$ 2,500.00	\$ 10,000.00
327	02511S	Adapter or built up end to match new pipe to existing pipe (42" to 54")	EA	4	\$ 3,000.00	\$ 12,000.00
328	02511S	Adapter or built up end to match new pipe to existing pipe (60" to 72")	EA	4	\$ 1,500.00	\$ 6,000.00
329	02511S	Adaptor or built up end to match new pipe to existing pipe (84" to 96")	EA	4	\$ 1,500.00	\$ 6,000.00
330	02511	Procure Tee Fitting (Use Run Diameter for Payment) 24"	EA	1	\$ 7,130.00	\$ 7,130.00
331	02511	Procure Tee Fitting (Use Run Diameter for Payment) 30"	EA	1	\$ 7,980.00	\$ 7,980.00
332	02511	Procure Tee Fitting (Use Run Diameter for Payment) 36"	EA	1	\$ 8,930.00	\$ 8,930.00
333	02511	Procure Tee Fitting (Use Run Diameter for Payment) 42"	EA	1	\$ 10,000.00	\$ 10,000.00
334	02511	Procure Tee Fitting (Use Run Diameter for Payment) 48"	EA	1	\$ 11,190.00	\$ 11,190.00
335	02511	Procure Tee Fitting (Use Run Diameter for Payment) 54"	EA	1	\$ 12,530.00	\$ 12,530.00
336	02511	Procure Tee Fitting (Use Run Diameter for Payment) 60"	EA	1	\$ 14,030.00	\$ 14,030.00
337	02511	Procure Tee Fitting (Use Run Diameter for Payment) 66"	EA	1	\$ 15,700.00	\$ 15,700.00
338	02511	Procure Tee Fitting (Use Run Diameter for Payment) 72"	EA	1	\$ 17,580.00	\$ 17,580.00
339	02511	Procure Tee Fitting (Use Run Diameter for Payment) 78"	EA	1	\$ 19,680.00	\$ 19,680.00
340	02511	Procure Tee Fitting (Use Run Diameter for Payment) 84"	EA	1	\$ 22,030.00	\$ 22,030.00
341	02511	Procure Tee Fitting (Use Run Diameter for Payment) 90"	EA	1	\$ 24,660.00	\$ 24,660.00
342	02511	Procure Tee Fitting (Use Run Diameter for Payment) 96"	EA	1	\$ 27,600.00	\$ 27,600.00
343	02511	Procure Reducers (Use Larger Diameter for Payment) 24" - 42"	EA	1	\$ 2,650.00	\$ 2,650.00
344	02511	Procure Reducers (Use Larger Diameter for Payment) 48" - 60"	EA	1	\$ 3,775.00	\$ 3,775.00
345	02511	Procure Reducers (Use Larger Diameter for Payment) 66" - 78"	EA	1	\$ 5,492.00	\$ 5,492.00
346	02511	Procure Reducers (Use Larger Diameter for Payment) 84" - 96"	EA	1	\$ 7,429.00	\$ 7,429.00
347	02511S	Procure 24" - 36" Ring Flanges	EA	1	\$ 4,000.00	\$ 4,000.00
348	02511S	Procure 42" - 54" Ring Flanges	EA	1	\$ 5,000.00	\$ 5,000.00
349	02511S	Procure 60" - 72" Ring Flanges	EA	1	\$ 7,500.00	\$ 7,500.00
350	02511S	Procure 84" - 96" Ring Flanges	EA	1	\$ 9,500.00	\$ 9,500.00
351	02511S	Procure 24" - 36" Flat gaskets	EA	1	\$ 75.00	\$ 75.00
352	02511S	Procure 42" - 54" Flat gaskets	EA	1	\$ 125.00	\$ 125.00
353	02511S	Procure 60" - 72" Flat gaskets	EA	1	\$ 145.00	\$ 145.00
354	02511S	Procure 84" - 96" Flat gaskets	EA	1	\$ 250.00	\$ 250.00
355	02511S	Procure 4" to 8" Diameter Flanged Outlet	EA	1	\$ 600.00	\$ 600.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
356	02511S	Procure 10" to 16" Diameter Flanged Outlet	EA	1	\$ 1,200.00	\$ 1,200.00
357	02511S	Procure 20" to 30" Diameter Flanged Outlet	EA	1	\$ 4,000.00	\$ 4,000.00
358	02511S	Procure 36" to 42" Diameter Flanged Outlet	EA	1	\$ 5,000.00	\$ 5,000.00
359	02511S	Install 24" to 36" water line. Up to 50 feet length	LF	150	\$ 200.00	\$ 30,000.00
360	02511S	Install 42" to 54" water line. Up to 50 feet length	LF	150	\$ 250.00	\$ 37,500.00
361	02511S	Install 60" to 72" water line. Up to 50 feet length	LF	150	\$ 350.00	\$ 52,500.00
362	02511S	Install 84" to 96" water line. Up to 50 feet length	LF	150	\$ 700.00	\$ 105,000.00
363	02511S	Install 24" to 36" water line. Up to 50 feet length	LF	500	\$ 140.00	\$ 70,000.00
364	02511S	Install 42" to 54" water line. Up to 50 feet length	LF	500	\$ 225.00	\$ 112,500.00
365	02511S	Install 60" to 72" water line. Up to 50 feet length	LF	500	\$ 350.00	\$ 175,000.00
366	02511S	Install 84" to 96" water line. Up to 50 feet length	LF	500	\$ 450.00	\$ 225,000.00
367	02511	Flange Adapter for existing 24" - 36" pipe, in Open Trench	EA	1	\$ 3,000.00	\$ 3,000.00
368	02511	Flange Adapter for existing 42" - 54" pipe, in Open Trench	EA	1	\$ 4,250.00	\$ 4,250.00
369	02511	Flange Adapter for existing 60" - 72" pipe, in Open Trench	EA	1	\$ 6,000.00	\$ 6,000.00
370	02511	Flange Adapter for existing 84" - 96" pipe, in Open Trench	EA	1	\$ 8,000.00	\$ 8,000.00
371	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 24" pipe	EA	1	\$ 1,526.00	\$ 1,526.00
372	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 30" pipe	EA	1	\$ 1,796.00	\$ 1,796.00
373	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 36" pipe	EA	1	\$ 2,250.00	\$ 2,250.00
374	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 42" pipe	EA	1	\$ 3,500.00	\$ 3,500.00
375	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 48" pipe	EA	1	\$ 4,000.00	\$ 4,000.00
376	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 54" pipe	EA	1	\$ 4,250.00	\$ 4,250.00
377	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 60" pipe	EA	1	\$ 4,500.00	\$ 4,500.00
378	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 66" pipe	EA	1	\$ 4,875.00	\$ 4,875.00
379	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 72" pipe	EA	1	\$ 5,500.00	\$ 5,500.00
380	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 84" pipe	EA	1	\$ 5,875.00	\$ 5,875.00
381	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 96" pipe	EA	1	\$ 6,500.00	\$ 6,500.00
382	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 24" pipe	EA	1	\$ 6,875.00	\$ 6,875.00
383	02511	Clamp or coupling (Restrained joint MJ clamp, leak repair clamp, or coupling) on new or existing 24" pipe	EA	1	\$ 7,200.00	\$ 7,200.00
384	02519	24" to 36" Internal Joint Seal	EA	1	\$ 500.00	\$ 500.00
385	02519	42" to 54" Internal Joint Seal	EA	1	\$ 1,200.00	\$ 1,200.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
386	02519	60" to 72" Internal Joint Seal	EA	1	\$ 1,500.00	\$ 1,500.00
387	02519	84" to 96" Internal Joint Seal	EA	1	\$ 2,000.00	\$ 2,000.00
388	02519	Clean and re-grout interior joints on existing 24" to 42" water line	EA	1	\$ 212.75	\$ 212.75
389	02519	Clean and re-grout interior joints on existing 48" to 60" water line	EA	1	\$ 314.58	\$ 314.58
390	02519	Clean and re-grout interior joints on existing 66" to 78" water line	EA	1	\$ 441.33	\$ 441.33
391	02519	Clean and re-grout interior joints on existing 84" to 96" water line	EA	1	\$ 619.08	\$ 619.08
392	02519	Clean and re-grout exterior joints on existing 24" to 42" water line, In Open Trench	EA	1	\$ 88.10	\$ 88.10
393	02519	Clean and re-grout exterior joints on existing 48" to 60" water line, In Open Trench	EA	1	\$ 127.83	\$ 127.83
394	02519	Clean and re-grout exterior joints on existing 66" to 78" water line, In Open Trench	EA	1	\$ 176.53	\$ 176.53
395	02519	Clean and re-grout exterior joints on existing 84" to 96" water line, In Open Trench	EA	1	\$ 248.63	\$ 248.63
396	02511S	24" - 42" Blind Flange	EA	1	\$ 1,725.00	\$ 1,725.00
397	02511S	48" - 60" Blind Flange	EA	1	\$ 2,248.00	\$ 2,248.00
398	02511S	66" - 84" Blind Flange	EA	1	\$ 3,154.00	\$ 3,154.00
399	02511S	90" - 96" Blind Flange	EA	1	\$ 4,180.00	\$ 4,180.00
400	02511S	24" - 36" Internal Elliptical Dished Head Plug	EA	1	\$ 1,620.67	\$ 1,620.67
401	02511S	42" - 54" Internal Elliptical Dished Head Plug	EA	1	\$ 2,248.00	\$ 2,248.00
402	02511S	60" - 72" Internal Elliptical Dished Head Plug	EA	1	\$ 3,154.00	\$ 3,154.00
403	02511S	78" - 90" Internal Elliptical Dished Head Plug	EA	1	\$ 4,425.00	\$ 4,425.00
404	02511S	96" Internal Elliptical Dished Head Plug	EA	1	\$ 5,520.00	\$ 5,520.00
405	02511	Removal of 24" - 42" Internal Elliptical Dished Head Plug	EA	1	\$ 1,450.76	\$ 1,450.76
406	02511	Removal of 48" - 60" Internal Elliptical Dished Head Plug	EA	1	\$ 2,139.70	\$ 2,139.70
407	02511	Removal of 66" - 78" Internal Elliptical Dished Head Plug	EA	1	\$ 3,001.07	\$ 3,001.07
408	02511	Removal of 84" - 96" Internal Elliptical Dished Head Plug	EA	1	\$ 4,210.77	\$ 4,210.77
409	02519	24-inch Access Manway with 6-inch outlet and 6-inch flanged gate valve w/ handwheel on New Steel Pipe	EA	1	\$ 9,500.00	\$ 9,500.00
410	02519	24-inch Access Manway with 6-inch outlet and 6-inch flanged gate valve w/ handwheel on Existing 24" through 36" pipe, by Tapping	EA	1	\$ 18,000.00	\$ 18,000.00
411	02519	24-inch Access Manway with 6-inch outlet and 6-inch flanged gate valve w/ handwheel on Existing 42" through 54" pipe, by Tapping	EA	1	\$ 25,000.00	\$ 25,000.00
412	02519	24-inch Access Manway with 6-inch outlet and 6-inch flanged gate valve w/ handwheel on Existing 60" through 72" pipe, by Tapping	EA	1	\$ 30,000.00	\$ 30,000.00
413	02519	24-inch Access Manway with 6-inch outlet and 6-inch flanged gate valve w/ handwheel on Existing 84 or 96" pipe, by Tapping	EA	1	\$ 42,000.00	\$ 42,000.00
414	02519	Remove and Reinstall 24-inch Manway Flange with new gasket and Cadmium Plated Bolts	EA	10	\$ 1,200.00	\$ 12,000.00
415	02519	24-inch Manway Covers (blind flanges) w/ 6-inch flanged outlet and gate valve	EA	1	\$ 2,500.00	\$ 2,500.00
416	02511S	New Structural Stainless Steel Bolt - Small Sizes (1/2" - 3/4" Dia.)	EA	50	\$ 25.00	\$ 1,250.00
417	02511S	New Structural Stainless Steel Bolt - Large Sizes (larger than 3/4" Dia.)	EA	50	\$ 75.00	\$ 3,750.00
418	02511S	New Structural Cadmium/Zinc Bolt - Small Sizes (1/2" to 3/4" Dia.)	EA	150	\$ 5.00	\$ 750.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
419	02511S	New Structural Cadmium/Zinc Bolt - Large Sizes (Larger than 3/4" Dia.)	EA	150	\$ 25.00	\$ 3,750.00
420	02084	48-inch Manhole Ring, Frame and Cover	EA	2	\$ 1,400.00	\$ 2,800.00
421	02084	Adjust Existing Manhole Rings	EA	2	\$ 100.00	\$ 200.00
422	02082	60-inch Diameter Manholes for Water Lines	EA	1	\$ 12,000.00	\$ 12,000.00
423	02082	72-inch Diameter Manholes for Water Lines	EA	1	\$ 13,000.00	\$ 13,000.00
424	02082	84-inch Diameter Manholes for Water Lines	EA	1	\$ 15,000.00	\$ 15,000.00
425	02082	Extra Depth for 60-inch Dia. Manholes for Water Lines	VF	10	\$ 220.00	\$ 2,200.00
426	02082	Extra Depth for 72-inch Diameter Manholes for Water Lines	VF	10	\$ 240.00	\$ 2,400.00
427	02082	Extra Depth for 84-inch Diameter Manholes for Water Lines	VF	10	\$ 300.00	\$ 3,000.00
428	01270	Remove debris and disposal of limited sediment volume from within existing pipe or manhole	CF	150	\$ 50.00	\$ 7,500.00
429	02514	Disinfection Preparation of existing large diameter water line	LF	1,000	\$ 1.00	\$ 1,000.00
430	02516	Abandonment Grouting or Annular Space Grouting of Existing Water Lines and Casings	CY	25	\$ 250.00	\$ 6,250.00
<b>B.8 - Valves and Valve Vaults</b>						
431	02519	Valve Technician (Assessment or Inspection)	HR	24	\$ 150.00	\$ 3,600.00
432	02519	Valve Location Field Support	DAY	24	\$ 500.00	\$ 12,000.00
433	02519	Concrete or Steel Saddle support for small diameter WL	EA	4	\$ 300.00	\$ 1,200.00
434	02519	Concrete or Steel Saddle support for diameters 24-in and larger WL	EA	4	\$ 500.00	\$ 2,000.00
434	02521S	2" Gate or Ball Valve (Threaded)	EA	1	\$ 250.00	\$ 250.00
435	02521S	4" Gate Valve (Threaded or Bolted, Incl. Bolts and Gaskets)	EA	1	\$ 1,500.00	\$ 1,500.00
436	02521S	6" Gate Valve (Incl. Bolts and Gaskets)	EA	1	\$ 3,000.00	\$ 3,000.00
437	02521S	8" Gate Valve (Incl. Bolts and Gaskets)	EA	4	\$ 3,375.00	\$ 13,500.00
438	02521S	10" Gate Valve (Incl. Bolts and Gaskets)	EA	1	\$ 3,543.00	\$ 3,543.00
439	02521S	12" Gate Valve (Incl. Bolts and Gaskets)	EA	4	\$ 3,714.00	\$ 14,856.00
440	02521S	16" Gate Valve (Incl. Bolts and Gaskets)	EA	1	\$ 6,500.00	\$ 6,500.00
441	02521S	20" Gate Valve (Incl. Bolts and Gaskets)	EA	1	\$ 9,200.00	\$ 9,200.00
442	02522S	8" Butterfly Valve (Incl. Bolts and Gaskets)	EA	1	\$ 3,375.00	\$ 3,375.00
443	02522S	12" Butterfly Valve (Incl. Bolts and Gaskets)	EA	1	\$ 3,714.00	\$ 3,714.00
444	02522S	16" Butterfly Valve (Incl. Bolts and Gaskets)	EA	1	\$ 6,500.00	\$ 6,500.00
445	02522S	20" Butterfly Valve (Incl. Bolts and Gaskets)	EA	1	\$ 9,200.00	\$ 9,200.00
446	02522S	Procure 24" butterfly valve	EA	1	\$ 21,390.00	\$ 21,390.00
447	02522S	Procure 30" butterfly valve	EA	1	\$ 23,940.00	\$ 23,940.00
448	02522S	Procure 36" butterfly valve	EA	1	\$ 26,790.00	\$ 26,790.00
449	02522S	Procure 42" butterfly valve	EA	1	\$ 30,000.00	\$ 30,000.00
450	02522S	Procure 48" butterfly valve	EA	1	\$ 33,570.00	\$ 33,570.00
451	02522S	Procure 54" butterfly valve	EA	1	\$ 37,590.00	\$ 37,590.00
452	02522S	Procure 60" butterfly valve	EA	1	\$ 63,135.00	\$ 63,135.00
453	02522S	Procure 66" butterfly valve	EA	1	\$ 70,650.00	\$ 70,650.00
454	02522S	Procure 72" butterfly valve	EA	1	\$ 79,110.00	\$ 79,110.00
455	02522S	Procure 84" butterfly valve	EA	1	\$ 99,135.00	\$ 99,135.00
456	02522S	Procure 96" butterfly valve	EA	1	\$ 124,200.00	\$ 124,200.00
457	02521S	Procure 24" gate valve	EA	5	\$ 21,390.00	\$ 106,950.00
458	02521S	Procure 30" gate valve	EA	2	\$ 23,940.00	\$ 47,880.00
459	02521S	Procure 36" gate valve	EA	2	\$ 26,790.00	\$ 53,580.00
460	02521S	Procure 42" gate valve	EA	1	\$ 45,000.00	\$ 45,000.00
461	02521S	Procure 48" gate valve	EA	1	\$ 48,000.00	\$ 48,000.00
462	02521S	Install 24" to 36" gate valve or butterfly valve	EA	1	\$ 3,000.00	\$ 3,000.00
463	02521S	Install 42" to 54" gate valve	EA	1	\$ 12,500.00	\$ 12,500.00
463	02521S	Install 60" to 72" gate valve	EA	1	\$ 15,000.00	\$ 15,000.00
463	02522S	Install 42" to 54" butterfly valve	EA	1	\$ 5,000.00	\$ 5,000.00
462	02522S	Install 60" to 72" butterfly valve	EA	1	\$ 7,500.00	\$ 7,500.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
463	02522S	Install 84" to 96" butterfly valve	EA	1	\$ 20,000.00	\$ 20,000.00
464	02522S	Remove and Replace BFV Actuator, 24" to 42"	EA	1	\$ 10,000.00	\$ 10,000.00
464	02522S	Remove and Replace BFV Actuator, 48" to 54"	EA	1	\$ 15,000.00	\$ 15,000.00
465	02522S	Remove and Replace BFV Actuator, 60" and greater	EA	1	\$ 17,500.00	\$ 17,500.00
466	02522S	Remove and replace BFV seat, 24" to 42"	EA	2	\$ 20,000.00	\$ 40,000.00
467	02522S	Remove and replace BFV seat, 48" to 52"	EA	2	\$ 40,000.00	\$ 80,000.00
468	02522S	Remove and replace BFV seat, 60" and larger	EA	2	\$ 55,000.00	\$ 110,000.00
469	02522S	Recoat Existing BFV Disk, 24" to 42"	EA	2	\$ 450.00	\$ 900.00
470	02522S	Recoat Existing BFV Disk, 48" to 52"	EA	2	\$ 550.00	\$ 1,100.00
471	02522S	Recoat Existing BFV Disk, 60" and larger	EA	2	\$ 700.00	\$ 1,400.00
472	02524S	Air valve (Combination, AI/VR, or similar), 4" and smaller	EA	5	\$ 2,500.00	\$ 12,500.00
473	02524S	Air valve (Combination, AI/VR, or similar), larger than 4"	EA	5	\$ 3,000.00	\$ 15,000.00
474	02524S	Vent piping for air valve, 4" and smaller, up to 8' Horizontal Length	EA	5	\$ 4,500.00	\$ 22,500.00
475	02524S	Vent piping for air valve, larger than 4", up to 8' Horizontal Length	EA	5	\$ 5,500.00	\$ 27,500.00
476	02524S	Additional Horizontal Length of Vent Piping	LF	8	\$ 50.00	\$ 400.00
477	02524S	Remove and replace existing air valve, all sizes	EA	5	\$ 3,500.00	\$ 17,500.00
478	02524S	Bollards	EA	10	\$ 200.00	\$ 2,000.00
479	02524	Clean and repaint bollards and vent piping including reflectorized tape and insect screens	EA	10	\$ 200.00	\$ 2,000.00
480	02525	TS&V - 6"x6"	EA	1	\$ 3,440.00	\$ 3,440.00
481	02525	TS&V - 8"x8"	EA	1	\$ 3,600.00	\$ 3,600.00
482	02525	TS&V - 12"x8"	EA	1	\$ 5,100.00	\$ 5,100.00
483	02525	TS&V - 12"x12"	EA	1	\$ 5,610.00	\$ 5,610.00
484	02525	TS&V - 16"x8"	EA	1	\$ 6,860.00	\$ 6,860.00
485	02525	TS&V - 16"x12"	EA	1	\$ 7,550.00	\$ 7,550.00
486	02525	TS&V - 16"x16"	EA	1	\$ 8,440.00	\$ 8,440.00
487	02525	TS&V - 20"x8"	EA	1	\$ 7,390.00	\$ 7,390.00
488	02525	TS&V - 20"x12"	EA	1	\$ 8,310.00	\$ 8,310.00
489	02525	TS&V - 20"x16"	EA	1	\$ 9,090.00	\$ 9,090.00
490	02525	TS&V - 24" through 36" x 6" or smaller	EA	1	\$ 5,000.00	\$ 5,000.00
491	02525	TS&V - 24" through 36" x 8" through 12"	EA	1	\$ 22,500.00	\$ 22,500.00
492	02525	TS&V - 24" through 36" x 16" through 24"	EA	1	\$ 45,000.00	\$ 45,000.00
493	02525	TS&V - 42" through 54" x 6" or smaller	EA	1	\$ 7,500.00	\$ 7,500.00
494	02525	TS&V - 42" through 54" x 8" through 12"	EA	1	\$ 25,000.00	\$ 25,000.00
495	02525	TS&V - 42" through 54" x 16" through 24"	EA	1	\$ 75,000.00	\$ 75,000.00
496	02525	TS&V - 42" through 54" x 30" through 42"	EA	1	\$ 100,000.00	\$ 100,000.00
497	02525	TS&V - 60" through 72" x 6" or smaller	EA	1	\$ 19,000.00	\$ 19,000.00
498	02525	TS&V - 60" through 72" x 8" through 12"	EA	1	\$ 37,500.00	\$ 37,500.00
499	02525	TS&V - 60" through 72" x 16" through 24"	EA	1	\$ 75,000.00	\$ 75,000.00
500	02525	TS&V - 60" through 72" x 30" through 42"	EA	1	\$ 132,500.00	\$ 132,500.00
501	02525	TS&V - 60" through 72" x 48" through 60"	EA	1	\$ 225,000.00	\$ 225,000.00
502	02525	TS&V - 84" through 96" x 6" or smaller	EA	1	\$ 21,500.00	\$ 21,500.00
503	02525	TS&V - 84" through 96" x 8" through 12"	EA	1	\$ 37,500.00	\$ 37,500.00
504	02525	TS&V - 84" through 96" x 16" through 24"	EA	1	\$ 75,000.00	\$ 75,000.00
505	02525	TS&V - 84" through 96" x 30" through 42"	EA	1	\$ 150,000.00	\$ 150,000.00
506	02525	TS&V - 84" through 96" x 48" through 60"	EA	1	\$ 225,000.00	\$ 225,000.00
507	02525	TS&V - 84" through 96" x 66" through 72"	EA	1	\$ 300,000.00	\$ 300,000.00
508	02521 02522 02525	Type "A" Valve Box and Cover	EA	15	\$ 250.00	\$ 3,750.00
509	02614	96" Temporary Pipe Plug, "Stopple" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 187,500.00	\$ 187,500.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
510	02614	84" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 125,000.00	\$ 125,000.00
511	02614	72" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 100,000.00	\$ 100,000.00
512	02614	66" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 70,650.00	\$ 70,650.00
513	02614	60" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 63,140.00	\$ 63,140.00
514	02614	54" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 56,390.00	\$ 56,390.00
515	02614	48" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 50,360.00	\$ 50,360.00
516	02614	42" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 45,000.00	\$ 45,000.00
517	02614	36" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 40,190.00	\$ 40,190.00
518	02614	30" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 35,910.00	\$ 35,910.00
519	02614	24" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 32,090.00	\$ 32,090.00
520	02614	16" to 20" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 20,000.00	\$ 20,000.00
521	02614	8" to 12" Temporary Pipe Plug, "Stopples" system by T.D. Williamson, or approved equal, insert into existing saddle. (Include TS&V Item if no saddle is present)	EA	1	\$ 10,000.00	\$ 10,000.00
522	02519	Temporary Pipe Plug (8" to 12") - Extended Daily Rental Rate	DAY	1	\$ 1,200.00	\$ 1,200.00
523	02519	Temporary Pipe Plug (16" to 20") - Extended Daily Rental Rate	DAY	1	\$ 2,300.00	\$ 2,300.00
524	02519	Temporary Pipe Plug (24" to 36") - Extended Daily Rental Rate	DAY	1	\$ 4,600.00	\$ 4,600.00
525	02519	Temporary Pipe Plug (42" to 54") - Extended Daily Rental Rate	DAY	1	\$ 6,500.00	\$ 6,500.00
526	02519	Temporary Pipe Plug (60" to 72") - Extended Daily Rental Rate	DAY	1	\$ 11,500.00	\$ 11,500.00
527	02519	Temporary Pipe Plug (84" to 96") - Extended Daily Rental Rate	DAY	1	\$ 21,500.00	\$ 21,500.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
528	02519	Temporary Pipe Plug (8" to 12") - Extended Weekly Rental Rate	WK	1	\$ 5,000.00	\$ 5,000.00
529	02519	Temporary Pipe Plug (16" to 20") - Extended Weekly Rental Rate	WK	1	\$ 9,600.00	\$ 9,600.00
530	02519	Temporary Pipe Plug (24" to 36") - Extended Weekly Rental Rate	WK	1	\$ 19,300.00	\$ 19,300.00
531	02519	Temporary Pipe Plug (42" to 54") - Extended Weekly Rental Rate	WK	1	\$ 27,300.00	\$ 27,300.00
532	02519	Temporary Pipe Plug (60" to 72") - Extended Weekly Rental Rate	WK	1	\$ 48,300.00	\$ 48,300.00
533	02519	Temporary Pipe Plug (84" to 96") - Extended Weekly Rental Rate	WK	1	\$ 90,300.00	\$ 90,300.00
534	02519	Temporary Pipe Plug (8" to 12") - Extended Monthly Rental Rate	MTH	1	\$ 14,000.00	\$ 14,000.00
535	02519	Temporary Pipe Plug (16" to 20") - Extended Monthly Rental Rate	MTH	1	\$ 27,000.00	\$ 27,000.00
536	02519	Temporary Pipe Plug (24" to 36") - Extended Monthly Rental Rate	MTH	1	\$ 54,000.00	\$ 54,000.00
537	02519	Temporary Pipe Plug (42" to 54") - Extended Monthly Rental Rate	MTH	1	\$ 76,400.00	\$ 76,400.00
538	02519	Temporary Pipe Plug (60" to 72") - Extended Monthly Rental Rate	MTH	1	\$ 135,000.00	\$ 135,000.00
539	02519	Temporary Pipe Plug (84" to 96") - Extended Monthly Rental Rate	MTH	1	\$ 250,000.00	\$ 250,000.00
540	02523S	Remove & Dispose Manhole on Existing PRV Vault; including Ring and Cover	EA	2	\$ 1,000.00	\$ 2,000.00
541	02523S	Precast 48-inch manhole; including water tight Ring and Cover on new proposed PRV Vault	EA	2	\$ 3,200.00	\$ 6,400.00
542	02523S	Pressure Reducing Valve Concrete Vault (precast or cast in place), up to 12'x16'x8'	EA	1	\$ 30,000.00	\$ 30,000.00
543	02523S	Pressure Reducing Valve Concrete Vault (precast or cast in place), up to 16'x20'x12'	EA	1	\$ 50,000.00	\$ 50,000.00
544	02523S	6" Pressure Reducing Valve	EA	1	\$ 35,000.00	\$ 35,000.00
545	02523S	8" Pressure Reducing Valve	EA	1	\$ 39,375.00	\$ 39,375.00
546	02523S	10" Pressure Reducing Valve	EA	1	\$ 41,335.00	\$ 41,335.00
547	02523S	12" Pressure Reducing Valve	EA	1	\$ 43,330.00	\$ 43,330.00
548	02523S	14" Pressure Reducing Valve	EA	1	\$ 45,000.00	\$ 45,000.00
549	02523S	16" Pressure Reducing Valve	EA	1	\$ 48,440.00	\$ 48,440.00
550	02523S	Install PRV piping inside vault	EA	1	\$ 25,000.00	\$ 25,000.00
551	02523S	Remove and Dispose or Reinstall of existing 1/4-inch metal cover plate on existing vault, all size plates	EA	1	\$ 500.00	\$ 500.00
552	02523S	Procure and Install new 1/4-inch metal cover plate on existing vault	SF	250	\$ 30.00	\$ 7,500.00
553	02523S	Concrete vault wall core	EA	2	\$ 500.00	\$ 1,000.00
<b>B.9 - Cathodic Protection Items</b>						
554	15640S	8" to 20" Flange Isolation Kit	EA	1	\$ 1,311.00	\$ 1,311.00
555	15640S	24 to 36" Flange Isolation Kit	EA	1	\$ 3,192.00	\$ 3,192.00
556	15640S	42" to 54" Flange Isolation Kit	EA	1	\$ 4,476.00	\$ 4,476.00
557	15640S	60" to 72" Flange Isolation Kit	EA	1	\$ 6,280.00	\$ 6,280.00
558	15640S	84" to 96" Flange Isolation Kit	EA	1	\$ 9,926.00	\$ 9,926.00
559	15641S	Cathodic Protection Test Stations (All Types) on new pipe, including reference cells	EA	20	\$ 500.00	\$ 10,000.00
560	15641S	Cathodic Protection Test Stations (All Types) on existing pipe, including reference cells, in open trench or existing manhole	EA	10	\$ 1,500.00	\$ 15,000.00
561	16640S	32 lb. Zinc or Magnesium Anodes on new or existing pipe	EA	20	\$ 1,500.00	\$ 30,000.00

Item No.	Section No.	Item Description	Unit	Unit Qty (2)	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
562	16640	Negative lead cable between existing pipe and existing or new rectifier unit including reference cell and structure test wire	EA	5	\$ 2,000.00	\$ 10,000.00
563	16640S	Impressed Current Cathodic Protection Deep Anode Groundbed including 8" dia. x 200' deep drilled hole and 10 anodes terminated inside rectifier	EA	2	\$ 12,800.00	\$ 25,600.00
564	16640S	Impressed Current Cathodic Protection Rectifier with stainless steel cabinet including materials and labor	EA	1	\$ 8,500.00	\$ 8,500.00
565	16640S	AC Service to Impressed Current Cathodic Protection rectifier including materials and labor	EA	1	\$ 2,200.00	\$ 2,200.00
566	16640	12-Anode Sacrificial Cathodic Protection groundbed including 8-inch dia. x 12-foot deep augured holes	EA	2	\$ 2,750.00	\$ 5,500.00
567	16640	12-Anode Sacrificial Cathodic Protection groundbed including 60-lb. anodes and header cable	EA	2	\$ 2,200.00	\$ 4,400.00
568	15640S	Joint Bonding using Pin brazing, including copper cable and removal and repair of linings and coatings	EA	5	\$ 150.00	\$ 750.00
569	15640S	Joint Bonding using welded steel bonding clip or copper cable, including removal and repair of linings or coatings	EA	25	\$ 350.00	\$ 8,750.00

<b>B.10 - SWPPP Items</b>						
570	01570	Filter fabric fence	LF	500	\$ 2.50	\$ 1,250.00
571	01570	Reinforced filter fabric	LF	50	\$ 3.00	\$ 150.00
572	01570	Sand Bag Barrier	LF	50	\$ 1.75	\$ 87.50
573	01575	Stabilized construction road, parking area, exits and truck washing area	SY	150	\$ 8.00	\$ 1,200.00
<b>ADJUSTMENT FACTOR (for Groups B.2 through B.8)</b>					<b>(Selected in Doc. 00410B, Article 1.0F)</b>	

**C. EXTRA UNIT PRICE TABLE:**

Item No.	Section No.	Item description	Unit	Unit Qty <sup>(2)</sup>	Unit price in figures <sup>(3)(4)</sup>	Total In Figures <sup>(2)</sup>
574	02317	Extra 6-inch Over excavate trench bottom	LF	100	\$ 3.00	\$ 300.00
575	02318	Extra excavation around obstructions	CY	50	\$ 30.00	\$ 1,500.00
576	02318	Extra hand excavation	CY	50	\$ 15.00	\$ 750.00
577	02318	Extra machine excavation	CY	50	\$ 20.00	\$ 1,000.00
578	02318	Extra placement of select backfill material	CY	50	\$ 17.00	\$ 850.00
579	02318	Extra placement of backfill using same material excavated	CY	50	\$ 6.50	\$ 325.00
580	02318	Extra Cement Stabilized Sand Backfill	CY	50	\$ 26.00	\$ 1,300.00
581	02501	Extra Ductile Iron Compact Fittings in place	TON	1	\$ 1,500.00	\$ 1,500.00
582	02120	Extra Excavation around obstructions in PPCA	CY	50	\$ 60.00	\$ 3,000.00
583	02120	Extra hand excavation in PPCA	CY	50	\$ 60.00	\$ 3,000.00
584	02120	Extra machine excavation in PPCA	CY	50	\$ 40.00	\$ 2,000.00
585	02120	Extra placement of select backfill in PPCA	CY	50	\$ 15.00	\$ 750.00
586	02519	Extended rental - 8'x20" steel plate	WK	1	\$ 190.00	\$ 190.00
587	02519	Extended rental - 8'x20" steel plate	MTH	1	\$ 510.00	\$ 510.00
588	02519	Extended rental - 8'x16' trench box	WK	1	\$ 660.00	\$ 660.00
589	02519	Extended rental - 8'x16' trench box	MTH	1	\$ 1,800.00	\$ 1,800.00
590	02519	Extended rental - 8'x24' trench box	WK	1	\$ 850.00	\$ 850.00
591	02519	Extended rental - 8'x24' trench box	MTH	1	\$ 2,500.00	\$ 2,500.00
592	01575S	Extended rental - 8'x16' timber mat	WK	1	\$ 40.25	\$ 40.25
593	01575S	Extended rental - 8'x16' timber mat	MTH	1	\$ 95.00	\$ 95.00
<b>ADJUSTMENT FACTOR (for Extra Unit Items Group)</b>					<b>(Selected in Doc. 00410B, Article 1.0F)</b> (1)	

**D. CASH ALLOWANCE TABLE:**

Item No.	Section No.	Item Description	Cash Allowance In Figures <sup>(4)</sup>
594	01110	Utility Reimbursement	\$ 50,000.00
595	01110	Insurance and Bonds	\$ 50,000.00
596	01110	Street Cut Permit Fee	\$ 2,500.00
597	01502S	Mobilization for Specialty Out-of-Town Subcontractors	\$ 80,000.00
<b>ADJUSTMENT FACTOR (for Allowance Items Group)</b>			<b>1.000</b> (5)

**E. ALTERNATES TABLE:**

Alternate No.	Alternate Short Title	Total Price for Alternate In Figures <sup>(4)</sup>
	N/A	\$0.00
<b>ADJUSTMENT FACTOR (for Alternate Items Group)</b>		<b>1.000</b> (5)

F. ADJUSTMENT FACTOR <sup>(1)</sup>

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G. CONTRACT PRICE (Not To Exceed) <sup>(8)</sup>

**\$2,000,000.00**

**2.0 SIGNATURES:** By signing this Document, I agree that I have received and reviewed all Addenda and considered all costs associated with the Addenda in calculating the Adjustment Factor.

Bidder: \_\_\_\_\_  
(Print or type full name of your proprietorship, partnership, corporation, or joint venture.\*)

\*\* By: \_\_\_\_\_  
Signature \_\_\_\_\_ Date \_\_\_\_\_

Name: \_\_\_\_\_  
(Print or type name) \_\_\_\_\_ Title \_\_\_\_\_

Address: \_\_\_\_\_  
(Mailing) \_\_\_\_\_  
\_\_\_\_\_  
(Street, if different)

Telephone and Fax Number: \_\_\_\_\_  
(Print or type numbers)

\* If Bid is a joint venture, add additional Bid Form signature sheets for each member of the joint venture.

\*\* Bidder certifies that the only person or parties interested in this offer as principals are those named above. Bidder has not directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding.

\*\*\* Reference Document 01110 - Summary of Work, for additional details concerning the Adjustment Factor, and Document 00950 - Work Order for example.

- (1) Contractor to select Adjustment Factor up to two (2) decimal places.\*\*\*
- (2) At Bid time, the Unit Quantity and Total In Figures is unknown for all Unit Price Items, except for insurance and bond Items. The actual Unit Quantity and Total In Figures for each Unit Price Item will be determined by the Project Manager for each Work Order. The total value of all Work Orders will not exceed the Contract Price.
- (3) In the event of a discrepancy, this column shall govern.
- (4) Fixed Price determined prior to Bid. Cannot be adjusted by the Bidder.
- (5) An Adjustment Factor of 1.00 will be applied to all Items in this group.
- (6) Not used
- (7) A minimum and/or maximum price will be applied per work order where this item is used. Reference Document 01270 for details.
- (8) This is a Work Order Contract with a Not To Exceed Contract Price that is fixed prior to Bid, which cannot be adjusted by the Bidder.

Note: This document constitutes a government record, as defined by § 37.01 of the Texas Penal Code. Submission of a false government record is punishable as provided in § 37.10 of the Texas Penal Code.

**END OF DOCUMENT**

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Summary of the Work including work by City, City furnished products, Work sequence, future Work, Contractor use of Premises, and City occupancy.
- B. The site(s) are unknown at bid time, but can be located within the limits of the City of Houston, its Extra Territorial Jurisdictions (ETJs) and Strategic Partnership Agreements (SPAs). Visit the City's website for information about the City's ETJs and SPAs at <http://www.houstontx.gov/planning/Annexation/annexation.html>.

1.02 PROJECT DESCRIPTION

- A. Construction or rehabilitation to primarily large diameter water lines, valves and appurtenances (24 inches in diameter and greater), including mobilizing and cooperating with City's Engineer to develop appropriate rehabilitation solutions, installing remedies, bedding and backfilling utilities, and restoring surface around area of work.
- B. Work may be required on small diameter water lines and other utilities or paving which are associated with work on a large diameter line, or otherwise requested by the City.
- C. Rehabilitation will require manned entry into confined spaces by both Contractor personnel and City representatives.
- D. City may issue Work Orders over a two-year period. Amount of work to be performed may vary from no construction activity to times when multiple crews are necessary to meet requirements.

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work is for rehabilitation or replacement of large diameter water lines, valves and appurtenances in various locations throughout the City of Houston, ETJs and SPAs. The Scope of Work will be determined by Work Order from time to time on an as-needed basis.
- B. Location of the Work can not be determined at time of Bid, but will be established by Work Order issued from time to time. Drawings, appropriate specifications and

geotechnical and environmental reports, as required or as available, will be provided with each Work Order.

C. Work Orders may include restoration of pavement and other utilities impacted by the Work. Compensation for specific work required in a Work Order but not addressed by Unit Price Work Items included in Document 00410 shall be in accordance with Article 7 of the Document 00700 – General Conditions.

D. Work includes but is not limited to:

1. Assist City Representative and their consultants to evaluate condition of existing water line and appurtenances.
2. Assist in identifying existing problem or cause of problem.
3. Work in cooperation with the City Representative and engineering consultants to develop a cost effective solution.
4. Properly notify Texas One-Call and other utilities impacted.
5. Establish necessary shoring to minimize damage to the facilities in the area.
6. Provide appropriate Traffic Control Measures.
7. Assist the City with turning off water supplies.
8. Pump out excess water.
9. Assist engineering consultant with manned entry.
10. Secure materials.
11. Perform agreed upon rehabilitation or repairs to pipe and valves.
12. Arrange for soils, weld and concrete testing, as required.
13. Restore site to its original condition or better.
14. Assist other utility companies in securing their facilities, if necessary.
15. Flushing and/or Disinfection of Water Lines.

E. Work Orders will establish the scope, duration and cost of the work. The cost of the work will be determined using the Unit Prices, Actual Quantities, Adjustment Factor, and approved premium time multiplier.

F. Unless approved by the Project Manager, the Contractor shall use products on the City of Houston's approved products list (reference Document 00020) and shall perform work in accordance with the City of Houston's standard details (reference Document 00015).

#### 1.04 DEFINITION

A. Large Diameter Water Lines: Water lines 24-inch in diameter and larger. References to large diameter water lines shall apply to pipe, valves and appurtenances 24-inch and larger associated with projects involving water lines, plant and water facility construction.

- B. Small Diameter Water Lines: Water lines 20-inch in diameter and smaller. Unless otherwise noted in the Contract Documents, requirements pertaining to large diameter water lines do not apply to pipe, valves and appurtenances 20-inches in diameter and smaller. Work under this contract may include some rehabilitation or replacement of small diameter water lines and valves when necessary to complete the large diameter rehabilitation.
- C. Assignment: Entire Work required to fulfill the intent of a specific Work Order. Additional Work Orders may be given to complete the same assignment if the Scope of Work for that original Work Order is inadequate to complete the Work.
- D. Tasks: Construction activities that make up an assignment. One assignment may have several tasks.

1.05 CASH ALLOWANCES

- A. Include the following specific Cash Allowances in the Contract Price under provision of General Conditions Paragraph 3.11:
  - 1. UTILITY REIMBURSEMENT: Allow the stipulated sum indicated in Document 0410B for Work associated with compensating private utility companies. Costs incurred by Contractor to repair or relocate private utilities necessary to complete work will be compensated on time and materials basis.
  - 2. INSURANCE AND BONDS: Allow the stipulated sum indicated in Document 00410B for obtaining required insurance and bonds to complete the Work.
  - 3. STREET CUT PERMIT FEE: Obtain street cut permit as per the requirement of the Paragraph 1.11 of this Section.

1.06 CITY FURNISHED PRODUCTS

- A. City may supply materials for use on rehabilitation. At the City Project Manager's approval, the material furnished shall either be replaced in-kind, or a reasonable cost for the material refunded to the City through Change Order, unless the Pay Item is intended for installation only and does not include procurement of the material.
- B. Warranty for materials provided to the Contractor will be for installation and workmanship only, not for the product itself.

1.07 CONTRACTOR'S RESPONSIBILITIES:

- A. Provide a Project Sign in accordance with Attachment A of this Section. Provide a general project title and display sign at each Work Order location.
- B. Arrange and pay for product delivery to site.
- C. Receive and unload products at site; jointly with City, inspect for completeness or damage.
- D. Handle, store, install, and finish products.
- E. Repair or replace damaged items.

1.08 WORK SEQUENCE

- A. Work anticipated for purpose of performing rehabilitation to large diameter water lines, valves and appurtenances. Maintain readiness so as to mobilize supervision, labor and equipment immediately upon notice to isolate and rehabilitate existing City water lines, valves and appurtenances.
  - 1. Perform necessary rehabilitation including incidental damage to other City utilities and pavement caused by water line failures as directed by Project Manager.
  - 2. Contractor and Engineering Consultant will mobilize at the same time and, after hearing recommendations from Consultant, Contractor and City forces, Project Manager will make determinations as to type of rehabilitation and limits of repairs needed at any given location.
- B. Work may include:
  - 1. Mobilizing labor forces, equipment and available supplies on site.
  - 2. Setting up temporary traffic control to minimize hazards to public.
  - 3. Performing such immediate temporary and permanent work as determined necessary by City Engineer to mitigate against further damage to surrounding facilities.
  - 4. Setting up and performing required pumping to remove excess water.
  - 5. Assisting City forces in locating and turning off valves to isolate area of failure.
  - 6. Cooperate with City Engineer to examine damaged water lines and surrounding facilities to determine most effective repair procedure. Employ

- specialty firms as approved by City Engineer to assist in evaluation and repair.
7. Procure necessary materials from City contracted vendors or suppliers, or other sources as approved by City Engineer.
  8. Expeditiously proceed to complete rehabilitation and restoration work once rehabilitation procedure, schedule, and estimated cost have been agreed upon by City Engineer.
  9. Mobilize qualified personnel and foreman at site to meet with City and engineering consultant to determine plan of action.
- C. Written notification will be issued with a Work Order via fax or email. Work Order will identify type of mobilization, unit price work items, quantities, and schedule for completion.
1. Contract Time for each Assignment will be included in each Work Order. However, Interim Completion times may be given for certain portions of each Assignment in order to return water service in a timely manner.
  2. Failure complete work by completion date will result in liquidated damages per Document 00803 – Work Order Supplementary Conditions.
- D. Barricades: Establish project barricades as determined by Project Manager.
- E. Traffic Control and Warning Signs: Maintain traffic on involved streets; however, on major thoroughfares maintain normal flow of traffic during peak hours (7:00-9:00 A.M. and 4:00-6:00 P.M.), unless otherwise approved by City Engineer. Furnish all steel plates, warning signs, detour signs, etc., required to maintain safety and traffic's use of roadway. Use flag-men and Uniformed Peace Officers as required to supplement traffic control.
- F. Sanitation Facilities: Contractor to provide portable toilet facilities to job site expected to last greater than one day for use of all employees and City employees assigned to job.
- G. Laboratory Services: Testing laboratory will be used to inspect and test pipeline installation and other materials purchased for use on this project.
- H. Coordination of the Work: Refer to Section 01312 - Coordination and Meetings.
- 1.09 WORK BY CITY
- A. City or its consultants will inspect work.

- B. The Water Maintenance Division will perform the following work without cost to the Contractor.
  - 1. Operate water line valves. **VALVES (including new valves connected to existing water lines that are in service) ARE TO BE OPERATED ONLY BY PUBLIC WORKS – UTILITY MAINTENANCE BRANCH PERSONNEL.**
  - 2. Operate valves for disinfection, hydrostatic testing, wet connections, shut-downs, and placing lines in service.
  - 3. Valving Off lines: City forces will operate all valves for closing down the sections of lines to be repaired. The City cannot guarantee a complete bubble-tight shutdown of the section to be repaired and, under certain conditions, Contractor may have to proceed with the work with less than a dry trench condition.
- C. Work Orders may involve a joint effort between Contractor and City personnel to perform required work. Compensation will only be for actual work Contractor performs.

#### 1.10 CONTRACTOR USE OF PREMISES

- A. Field Office: No field office is required for this project.
- B. Comply with procedures for access to site and Contractor's use of rights-of way as specified in Section 01145 – Contractor's Use of Premises.
- C. Construction Operations: Limited to City's rights-of-way provided by City.
- D. Utility Outages and Shutdown: Provide notification to City and private utility companies (when applicable) a minimum of 48 hours, excluding weekends and holidays, in advance of required utility shutdown unless otherwise directed by City Engineer or emergency exists. Coordinate all work as required.
- E. Prevent overstress of any structure, and any part or member of it, during construction. This applies to existing work and structures affected by operations. Check effect of operations in this regard, and provide temporary supports and connections required to assure safety and stability of both new and existing work and to prevent overstress of any part.
- F. Solid sod areas damaged during construction or as a result of prior failure as per Specification Section 02922 - Sodding, unless otherwise approved by City Engineer.

1.11 STREET CUT ORDINANCE

- A. Excavations on or under pavement in the City’s right-of-way must have a permit. Comply with City of Houston, Texas Ordinance No. 2000-1115, an ordinance amending Chapter 40 of the Code of Ordinances, Houston, Texas, relating to excavating in the Public right-of-way and comply with amendments provided by Texas Ordinance No. 2006-0595 including the following fee schedule:

Schedule of Permit Application Fees\*

Initial Application Fee:

Tunneling, Jacking and Boring only \$125.00

All other Methods of Excavation \$175.00

Permit Extension Application Fee:

Other Than Steel Plate Temporary Surface \$ 25.00

Steel Plate Temporary Surface \$ 50.00

Data Entry Fee for Non-Electronic Submission (per application): \$ 50.00

\* All fees/charges are non-refundable

Comply with the latest edition of street cut “New Pavement Repair and Pavement Replacement details”.

Contractor shall comply with requirements from Chapter 12 of the City of Houston’s Infrastructure Design Manual (dated October, 2002), entitled “Street Cut Requirements”.

- B. The bid items for the cost of street cut pavement repair and replacement identified on the drawings are included in the Bid Form Part B (Document 00410 B).
- C. Contractor shall obtain all required permits and signs prior to performing any methods of construction involving street excavation in the existing pavement.

1.12 WARRANTY

- A. Comply with warranty requirements in accordance with Document 00700 - General Conditions.
- B. In addition to above warranty, assign to City all warranty from equipment and materials issued by manufacturers or Subcontractors which extends beyond the 12-month period specified above.

1.13 TEXAS DEPARTMENT OF TRANSPORTATION

- A. Adhere to the following specifications which are standard Texas Department of Transportation Requirements:
1. Backfill excavations within right-of-way and not under surfacing by compacting in layers sufficiently thin enough to achieve 95 percent density throughout backfill as determined by ASTM D698. Backfill within  $\pm 5$  percent of optimum moisture. Remove surplus material from right-of-way. Finish excavation flush with surrounding natural ground.
  2. Keep operating equipment and excavated material off pavement at all times.
  3. Provide barricades and warning signs, and flag-men when necessary. Keep one-half traveled portion of roadway open to traffic at all times.
  4. Where sodding is disturbed by excavation or backfilling operations, such areas shall be replaced by sodding. Replace slopes 4H:1V or steeper by solid block sodding. This work shall be in accordance with Texas Department of Transportation specifications.
  5. Place highway crossings under surfaced roads and surfaced crossroads within right-of-way by boring, tunneling or jacking as allowed by contract documents. Such crossing shall extend from crown line to crown line. Enclose lines carrying pressure in satisfactory casing. Unless otherwise indicated, casing shall consist of smooth wall pipe with welded joints and seams and shall extend from centerline of ditch to centerline of ditch (where practical).
  6. Conduct work so that it will not interfere in any way with any highway contract construction or repair work, or any State maintenance work that may be done on this road. In event such interference occurs, Contractor will cease operations in area until such time as road-work referred to above is completed, and City will not be responsible for any down time caused by such incident.
  7. Use of water or other fluids in connection with boring operations will be permitted only in sufficient quantity to lubricate boring bit and to provide a smooth flow of cuttings. Jetting will not be permitted.
  8. Extend bored hole or tunnel for full width of pavement and 10 feet on each side thereof, or to limits shown on plans.
  9. For all sections of nonmetallic pipe installed within highway right-of-way and not within a metallic casing on this project, install a conductor along bottom centerline of water line for future use in pipeline location work.

Conductor shall be soft-drawn bare copper wire, No. 14 AWG or larger, laid after sand bedding has been completed and prior to placing pipe in trench. Run wire continuously throughout length of line, including bore tunnel or jacked section. Connect to valves and hydrants by looping wire around a flange bolt, adding a flat washer and retightening bolt. Connect to fire hydrants at lower side of bury flange. Wire splices will be permitted providing wire is tightly wrapped and soldered, or approved wire clamp is used. After backfilling, a conductivity test shall be made on system and line must be proven conductive.

10. In event Owner or Owner's representative (Contractor) fails to comply with requirements as set forth above, State may take such action as it deems appropriate to compel compliance.
11. All Texas Department of Transportation Permit Requirements must be strictly adhered to. These shall include but not be limited to insurance, notification, etc.
12. Submit traffic control plan to TxDOT Area Engineer for approval before commencing construction.

#### 1.14 HARRIS COUNTY FLOOD CONTROL DISTRICT REQUIREMENTS

- A. Adhere to the following standard Harris County Flood Control District requirements:
  1. Harris County Flood Control District, Watershed, Management Department shall be notified at least 48 hours prior to construction at (713) 684-4050. A copy of approved construction drawings is required at this time.
  2. City Engineer shall submit letter and record drawings to Harris County Flood Control District, Watershed Management Department, requesting inspection and acceptance of items constructed in Harris County Flood Control District right-of-way. Prior to requesting inspection, stake and flag drainage right-of-way and/or easements.
  3. Protect, maintain, and restore backslope drainage systems.
  4. All disturbed areas within Harris County Flood Control District right-of-way, except channel bottom, shall be hydromulch seeded as per Harris County Flood Control specification entitled "Hydromulch Seeding" or approved equal.
  5. Backfill to be compacted in no greater than 1 foot lifts to density of undisturbed adjacent soil.

6. Excavate channel flowline to design elevation as shown on plans and downstream as necessary to insure no water in storm sewer during Adry@ conditions.
7. Maintain flow in channel during construction and restore channel to original condition.
8. All excavated material is to be removed from Harris County Flood Control District right-of-way. No fill is to be placed within a designated flood plain area without first obtaining a fill permit.
9. Contractor with assistance of City Engineer, if necessary, shall be responsible for obtaining all applicable City, County, State, and Federal Permits.

1.15 SECURITY REQUIREMENTS FOR ACCESS TO PUBLIC UTILITIES  
DEPARTMENT (PUD) SITES

- A. The Contractor agrees to strictly abide by all security and safety regulations issued by the City as stated below. Payment for costs associated with compliance for all personnel needed for each assignment will be paid under Unit Price Item titled, "PUD Site Security Clearance"
  1. No claim shall be made against the COH by reason of any act of an employee or trespasser and Contractor shall make good all damage to the Owner's property resulting from the Contractor's failure to provide security measures as specified.
  2. All Contractor employees and subcontractors must be a U.S. Citizen or have a legal work permit. Each person must also present a valid unexpired U.S. state driver's license or photo identification card. A U.S. issued resident alien card, with photo, passport, or other U.S. state or U.S. federal photo documentation is acceptable to present for identification purposes. It is the responsibility of the Contractor to immediately inform the COH of any personnel changes.
  3. The COH/Public Utilities Division (PUD) Security Group will also conduct a criminal background check (at no cost to the Contractor) on all contractor and subcontractor employees assigned to work at the EWPP. The Contractor shall contact during normal business hours (8:00 am to 5:00 pm, M-F) one of the following PUD representatives identified below to coordinate completion of criminal background checks. Thomas Collins – (713) 837-7432 Carlos Martinez - (713) 837-0972 Jerry Zahn - (713) 837-0977

4. The Contractor shall agree to completion of the City's Disclosure and Consent for Release of Information and any other documentation necessary to complete criminal background checks.
5. Each employee of the Contractor and its subcontractors will be required to apply for, and receive, a COH identification card/access badge (at no cost to the Contractor) before being granted access to any PUD work site. The COH photo identification office is located at 611 Walker Street Street in Houston, Texas on the 3rd floor of the annex (713-837-7593 phone 713-837-0735 fax). Identification cards / access badges will only be issued by the City once a background check has been completed for the Contractor or subcontractor employee, and clearance has been granted by the City. Refer to Specification 01502S for measurement of payment.
6. All Contractor employees without current identification cards will be stopped by COH employees and/or security personnel and will not be given access to any COH/PUD facility. All construction employees must show a valid identification card at the entrance gate and upon request while working on site. The identification badge must be displayed prominently, on the outer garment between the waist line and shoulder.
7. Employees must present their card to enter and exit the site at the guard shack. Lost cards are disabled and replacement cost is \$50.00.

**B. VEHICLES BELONGING TO CONTRACT EMPLOYEES AND THEIR SUBS:**

1. Vehicles that are required in the performance of a contractor's job duties (welding truck, flat bed, etc.) will be allowed to operate freely on the plant site, but with the following conditions: (1) They must have identification with the company's name and a phone number, along with the company's insignia, so that the operator's identity may be verified. The sign must no smaller than 12 inches tall by 12 inches wide; (2) The employee agrees to adhere to all of the posted speed limits and parking restrictions, which include but are not limited to parking on the grass or on curbs, or leaving vehicles unattended in heavily trafficked areas.

**C. CONTRACT EMPLOYEES AND THEIR SUBS:**

1. Contractors and/or Subs that will be working on any PUD site for less than 60 days will not be issued a City of Houston Contractor badge. However, they must still pass a criminal check and wear a Photo ID issued by their company (A picture ID displaying their name, the company's name, logo, and the position they hold within the organization) along with having their state issued unexpired driver's license or ID.

2. Contractors and/or Subs that will be working on any PUD site for over 60 days will be issued a City of Houston Contractor badge with their picture after they pass a criminal check. They must also have in their possession their unexpired state issued driver's license or ID.
3. In addition, they must have a valid Texas Driver's License on their person at all times. (A valid US driver's license will be accepted only if the employee does not reside in Texas)
4. Badges shall be worn in a clearly visible area on the employee's person. Badges may not be kept in a wallet or pocket of any sort.
5. Construction Management is responsible for providing security a monthly updated list of all employees (contractors and subs).

**D. ENFORCEMENT:**

1. No contract employee will be allowed to enter the facility without having both badges in their possession. Any contract employee found on the plant site without proper identification will be immediately escorted off the property by HPD. In addition, construction management will issue a non-compliance letter to the contractor responsible. Furthermore, the City will not allow contract employees conditional access pending the arrival of requested badges. If an employee does not have proper identification, he/she should not be allowed to report to duty at any PUD site.
2. All General Contractors/Sub Contractors and their employees will be held accountable for the return of ALL City issued badges of their employees and sub contractor employees. Criminal charges may be filed in an effort to recover the outstanding badges.

**PART 2 PRODUCTS**

**2.01 TYPE OF PIPE FOR REHABILITATION OF WATER LINES**

- A. Provide material and rehabilitation methods as appropriate for rehabilitation of water line and as approved by Project Manager. Mortar coated steel pipe will be used for large diameter pipe replacements and ductile iron pipe will be used for small diameter pipe replacements unless otherwise approved by Engineer.
- B. Work Order specific Specifications, details and design criteria will be provided as appropriate for each Work Order.

PART 3 EXECUTION - Not Used

END OF SECTION

Section 02519

**ASSESSMENT SUPPORT AND  
REHABILITATION OF EXISTING WATER LINES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Rehabilitation and replacement of existing pipe and appurtenances.
- B. Contractor support for the City or their assigned representatives to perform internal Condition Assessment of existing large diameter water lines.

**1.02 MEASUREMENT AND PAYMENT**

- A. Temporary Lockout/Tagout Devices: Payment is on a unit price basis for each isolation valve. 50% of the unit price will be paid once the lockout system is in place and operating as specified. The remaining 50% will be paid once the tagout operations are completed and removed.
  - a. Prepare for shutdown by identifying the location and type of the isolation valves that will be closed to permit dewatering and entry. Identify whether valves have 2-inch operator nut or handwheel and if they are accessible in a vault, manhole, or buried with an A-box.
  - b. Submit product data for lockout/tagout devices capable of preventing valves identified by Contractor and/or City from being opened.
  - c. The City of Houston Public Utilities Division will handle, at no additional cost to the Contractor, operations involving opening and closing valves. The Contractor is not permitted to operate existing valves.
  - d. After the valves are closed, install lockout/tagout devices on each isolation valve.
  - e. All lockout/tagout devices must remain in place until work requiring entry of the line is complete. After completion of the work requiring entry of the water line, and the water line is ready for service, remove all lockout/tagout devices. Notify all affected personnel that the lockout or tagout has been removed.
- B. Confined space entry assistance: Payment is on a unit price basis for each day this assistance is required by Project Manager for performing internal inspections and includes all items necessary to provide assistance with confined space entry for City Representatives for assessment purposes. Confined Space Safety for contractor's Work

and workers is considered incidental to the Work and should be included in applicable pay items.

1. Type I – Confined Space Entry Support. This effort includes entry into a space where both entry and exit are from the same location. This may include vaults, manholes, and short runs or pipe. Typically, this entry will be used for inspection and minor repairs not including welding.
  2. Type II – Advanced Confined Space Entry Support. This effort includes entry into spaces where multiple entry and exit points are used, such as for a travelling inspection along a pipe line, or where specialized ventilation and retrieval measures are required due to welding, painting or activities that generate a hazardous environment.
  3. Preparations for Type II Confined Space Entry Support will be paid for each Work Order that requires this type of support. Preparation includes all effort associated with subcontracting trained personnel, procuring equipment, and planning and schedule work.
  4. Contractor assistance shall include providing OSHA trained supervisor and attendants with two-way radios, air blowers, air monitoring equipment, personal protective equipment, other safety equipment as appropriate, lighting, and use of an additional portable pump to maintain water level in pipe due to minor leaks.
  5. Provide lockout-tagout of valves that are to remain closed during manned entry. Proposed method of lockout-tagout should be submit for review, discussed in the field with all pipe entrants, and confirmed prior to each entry.
  6. Any required excavation and dewatering of pipe and removal and replacement of access manway flanges to provide adequate air circulation will be paid under separate Pay Items included in Document 00410.
  7. Cost of confined space support for contractor's or subcontractor's crews to perform work and for Project Manager's construction inspection of work should be included in Pay Items requiring entry.
- C. Dewater water line - Unit Price Work Item is included for water pumping cost per hour, day, week or month based on utilizing 6-inch, 3-inch or 2-inch water pump in order to dewater the main line and to pump out water due to leaking valves or other unforeseen conditions. This pay item includes 25 feet of suction hose & fittings, 25 feet of discharge hose & fittings, fuel cost, labor operation cost and maintenance cost. The least expensive rental rate combination shall apply.
1. Price includes the draining of existing water lines, vaults and other appurtenances necessary to perform work Contractor is to utilize adequate size and number of pumps needed to remove water in a timely manner, anticipate using a 6-inch pump at each low point in the line for large diameter water line work. Contractor

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- is responsible for monitoring the pumping rates to avoid the flooding of any private property, streets or sidewalks.
2. The line may be partially dewatered by gravity using drain outlets; however, much of the effort will require pumping from within the pipe. In order to maneuver pump suction hoses or submersible pumps into low areas in the line, anticipate manned entry, and pumping in stages to lower the water level.
  3. Continuous pumping due to leaky valves that may require periodic or continuous pumping during Work.
  4. Additional Unit Price Work Item is included for extra water pump suction and discharge hoses on a cost per linear foot. This item includes hose (beyond 25 linear feet), fittings, operation cost, maintenance cost and the effort to maneuver the hoses into place and remove the hoses when completed in situations when the location to be pumped is not located immediately adjacent to the pump.
- D. Pressure Washing of Water Line: Payment is on a per linear foot unit price basis and includes all equipment, materials and labor necessary to pressure wash and dispose of resulting water and debris from interior pipe surface.
- E. Temporary Blow-offs: Payment is on a unit price for each location required.
- a. Payment includes installation of temporary blow-off piping and valves on existing outlets on existing large diameter water lines, removal, coordination and assistance with City employees. Blow-off piping may range from 2-inches to 6-inches in diameter, based on the diameter and location of existing outlets. Blow-off sizing should be coordinated with Drinking Water Operations.
  - b. Blow-offs for flushing and testing new small diameter water lines installed through this contract is considered incidental to installation of those new water lines.
  - c. Contractor is responsible for locating and maintaining drainage in order to prevent flooding during flushing in accordance with Specification 02514.
- F. Remove and Dispose Existing Access Manway Flange: Payment is on a unit price basis for each access manway flange to be removed. Payment includes the following:
1. Remove existing access manway flange/cover; includes removal of blind flange cover bolts and nuts, removal of blind flange cover, removal and replacement of gasket. Existing flanges may be 18-, 20- or 24-inch diameter.
- G. Access Manway Flange: Payment is on a unit price basis for each access manway (blind) flange installed. Payment includes the following:

1. Install new flange/cover of matching dimensions with 6-inch flanged outlet and gate valve; includes installing new blind flange cover with new bolts, nuts and gaskets.
2. New blind flanges may be 18-, 20- or 24-inch diameter, and should match existing flange removed.
3. If deemed acceptable, by Project Manager, existing flange may be cleaned, retrofitted as needed (to provide 6-inch outlet and gate valve, and remove baffle), recoated and reused, at the same cost.

H. Remove and Replace Joint Grout:

1. Payment is on a unit price basis for each size and type of joint (whether interior or exterior), and includes effort to clean loose or damaged grout, remove rust and scale, brush clean steel surfaces, and apply new grout.
2. Excavation for exterior grout and dewatering for interior grout will be paid by separate pay items. Joint grout for new joints installed under this project are considered incidental to the installation of new water line.

I. Unit Price Work Items are also included for extended rental periods (e.g., trench boxes, steel plates, temporary pipe plugs, etc.). The least expensive rental rate combinations shall apply (e.g., for a four to six day period use weekly rental rate, etc.).

J. Welding:

1. Unit Price Work Item is included for the extra use of a Certified Field Welder as needed to complete point repairs, with payment on an hourly basis.
2. Unit Price Work Item is included for a Certified Welder, payment per hour, within a confined space to complete point repairs.
3. Unit Price Items are included for the use of Steel Plates of various thicknesses to be paid on a square foot basis. Effort to cut and fabricate and install plates will be covered under the pay item for field welder.
4. Unit Price Items are included for the miscellaneous small fittings be paid for each fitting installed. Fittings include such items as: weld-o-lets, small diameter outlets, brackets, or other small fabricated steel items. Effort to modify, fabricate and install fittings will be covered under the pay item for field welder.

K. Unit Price Work Item is included for the extra use of a Valve Technician as needed to complete valve assessment and inspection, with payment on an hourly basis. Repairs for specific pay item work, such as removing and replacing a valve actuator, shall be incidental to the pay item.

- L. Unit Price Work Items are also included for Valve Location Support from the Contractor when requested by the City. Payment will be based on a daily rate.
- M. Unit Price Work Items are also included for Notification Assistance Support from the Contractor when requested by the City. Payment will be based upon a range of customers requiring notification as listed in Doc 00410.
- N. Unit Price Work Item is included for placement or injection of potable water-approved chemical grout (Sikafix HH+ or approved equal) for leak repairs. Payment will be for each gallon of grout used.
- O. Unit Price Work Items is included for rolling steel to match pipe diameter. Payment is for each used.
- P. Geotechnical Borings:
1. Work Orders may require that the Contractor perform borings for geotechnical investigations. The Geotechnical Boring Mobilization Bid Item includes mobilization of equipment and all resources necessary to perform borings, investigate groundwater conditions, obtain soil samples for laboratory tests, and submission of a geotechnical report with findings prepared by a Texas Professional Engineer Registered in the State of Texas. The Geotechnical Boring Mobilization Bid Item will be paid only once per Work Order regardless of the quantity of borings required per Work Order. The borings must be completed and the geotechnical report must be submitted within the first 10 days after issuance of the Work Order, and prior to commencing with any Work Order activities that may require geotechnical investigation.
  2. The Geotechnical Boring Bid Item covers the cost to core pavement (all types and thickness), backfill bore holes, site and pavement restoration, bore 15 vertical feet (minimum, additional depth must be approved by the Project Manager), sampling at 5 foot intervals, noting ground water elevations during boring, and noting ground water elevation after sitting for at least 24 hours.
  3. Geotechnical Boring and Mobilization will be paid in addition to the augering bid items, however, groundwater control remains incidental to the augering bid items.
- Q. Refer to Section 01270 - Measurement and Payment for unit price procedures.
- R. Stipulated Price (Lump Sum): If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.
- 1.03 REFERENCES
- A. ANSI A 21.11/AWWA C111 - Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

- B. ANSI/NSF Standard 61 - Drinking Water System - Health Components.
  - C. ASTM A 36 - Standard Specification for Carbon Structural Steel.
  - D. ASTM A 536 - Standard Specification for Ductile Iron Castings.
  - E. ASTM A 126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
  - F. ASTM B 21 - Standard Specification for Naval Brass Rod, Bar, and Shapes.
  - G. ASTM B 98 - Standard Specification for Copper-Silicon Alloy Rod, Bar, and Shapes.
  - H. ASTM B 301 - Standard Specification for Free-Cutting Copper Rod and Bar.
  - I. ASTM B 584 - Standard Specification for Copper Alloy Sand Casting for General Application.
  - J. ASTM E 165 - Standard Test Method for Liquid Penetrant Examination.
  - K. ASTM E 709 - Standard Guide for Magnetic Particle Examination.
  - L. ASTM F 1674 - Standard Test Method for Joint Restraint Products for Use with PVC Pipe.
  - M. AWWA C 206 - Standard for Field Welding of Steel Water Pipe.
  - N. AWWA C 207 - Standard for Steel Pipe Flanges for Waterworks Service - Sizes 4 Inches through 144 Inches.
- 1.04 SUBMITTALS
- A. Conform to requirements of Section 01330 - Submittal Procedures.
  - B. Conform to submittal requirements of applicable Section for type of pipe used.

## PART 2 PRODUCTS

### 2.01 PIPE MATERIALS

- A. Install pipe materials which conform to following:
  - 1. Section 02501 - Ductile Iron Pipe and Fittings.
  - 2. Section 02507 - Prestressed Concrete Cylinder Pipe.
  - 3. Section 02518 - Steel Pipe and Fittings for Large Diameter Water Lines.

4. Section 02613 - Bar-Wrapped Steel Cylinder Pipe.
  - B. Conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61 and have certified by an organization accredited by ANSI.
  - C. Type of pipe materials shall match existing pipe, unless specifically identified on Drawings.

### PART 3 EXECUTION

#### 3.01 PREPARATION

- A. Conform to applicable installation specifications and details for types of pipe used.
- B. Employ workmen who are skilled and experienced in laying pipe of type and joint configuration being furnished.

#### 3.02 GENERAL REQUIREMENTS

- A. Excavation around existing pipe:
  1. When excavating around an existing large diameter water line, follow requirements described in Specification Section 02317.
  2. Excavate the shore trench a width of at least 4 feet wider than pipe, and 4 feet longer than the length of pipe to be exposed to permit observations of circumference of pipe.
  3. Provide field surveyed (horizontal and vertical elevations) "as-builts" existing underground utilities encountered and all new work installed.
- B. Removal of existing pipe:
  1. Where directed to remove existing pipe sections cut around the circumference of the existing pipe, whether with saw, torch, or other means.
  2. All new pipe to be designed, manufactured and installed in accordance with Specification Section 02511, and with materials compatible with the existing pipe. For example, for replacing and existing PCCP, mortar coated and lined steel pipe with ends built up to match PCCP bells and spigots shall be used.
- C. Pipeline Dewatering (Draining) and Cleaning:
  1. Contractor is to utilize adequate size and number of pumps needed to remove water in a timely manner and to maintain no more than 12-inches of water.

2. Provide continuous pumping as needed due to leaking valves that may be required to keep water line dewatered during internal inspection.
3. Avoid surface runoff or groundwater from entering water line.
4. The pipe shall be dewatered and accessible for a minimum of fourteen (14) full working days, Monday through Friday, between 8:00 AM and 5:00 PM, excluding City holidays, as allowed by traffic control plans and water line shut down requirements.
5. Contractor shall schedule the dewatering of each phased segment of pipe for condition assessment as early as possible within the waterline shutdown period and shall provide a minimum of four (4) business days (excluding holidays) prior written notice of when the phased segment will be dewatered and ready for safe confined space entry for the City's condition assessment.
6. Each section of water line required to be cleaned shall be pressure washed
  - a. Limit pressure washing to less than 500 psi spray. The spray pressure should be monitored and adjusted as necessary to clean the pipe interior without damaging joint grout and mortar lining of the pipe.
  - b. Wash water is to be disposed of lawfully using a vacuum truck, or other approved method, avoiding discharge into any City storm facility or Harris County Flood Control drainage facility, unless prior approval is granted.

D. Internal manned entry:

1. Provide positive shut-off and lockout-tagout of all valves prior to entering pipe.
  - a. It is preferred to provide two valve shutoff (two valves closed between the work zone and source of water pressure), whenever possible. In this case, it is also preferred to relieve the pressure between the two closed valves (but not drain water from the pipe between the valves).
2. Provide confined space entry support to City and their representatives for internal manned entry.
  - a. Provide certified attendants at each surface access point within the limits to be assessed. Attendants shall be able to communicate with assessment crew at all times.
  - b. Provide confined space safety equipment for City or their representatives (at least 3 people) intended the specific spaces to be entered. Verify calibration and expiration dates on all equipment.

- E. Joint Grout (Concrete Cylinder Pipe, Bar Wrapped Pipe, Mortar Coated or Lined Steel Pipe):
1. The City or their representative will identify existing joints for regrouting.
  2. Clean joint of all loose or damaged grout, rust, scale, or other debris, and wire brush to clean steel surfaces where accessible.
    - a. Make note of existing joint type (welded, O-ring gasket, etc., and whether joint bonding clips or cables are present. Provide this information to the Project Manager before installing grout, and document in “as-built” drawings.
    - b. If directed, install new joint bonding devices in accordance with Specification 15640.
  3. Prepare grout in small batches to prevent stiffening before it is used. Do not use grout which has become so stiff that proper placement cannot be assured without retempering. Use grout for filling grooves of such consistency that it will adhere to pipe.
  4. Surface Preparation: Remove defective concrete, laitance, dirt, oil, grease and other foreign material from concrete surfaces with wire brush or hammer to sound, clean surface. Remove rust and foreign materials from metal surfaces in contact with grout.
  5. Grouting Exterior Joint Space: Hold wrapper in place on both sides of joint with minimum 5/8-inch-wide steel straps or bands. Place no additional bedding or backfill material on either side of pipe until after grout band is filled and grout has mechanically stiffened. Pull ends of wrapper together at top of pipe to form access hole. Pour grout down one side of pipe until it rises on other side. Rod or puddle grout to ensure complete filling of joint recess. Agitate for 15 minutes to allow excess water to seep through joint band. When necessary, add more grout to fill joint completely. Protect gap at top of joint band from backfill by allowing grout to stiffen or by covering with structurally protective material. Do not remove band from joint. Proceed with placement of additional bedding and backfill material.
  6. Interior Joints for Water Lines: Clean joint space, wet joint surfaces, fill with stiff grout and trowel smooth and flush with inside surfaces of pipe using steel trowel so that surface is smooth. Accomplish grouting at end of each work day. Obtain written acceptance from Project Manager of inside joints before proceeding with next day's pipe laying operation. During inspection, insure no delamination of joint mortar has occurred by striking joint mortar lining with rubber mallet. Remove and replace delaminated mortar lining.
  7. Butterfly Valve Rehabilitation:

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- a. Where directed, remove and replace actuators on existing butterfly valves.
    - 1) Prior to purchasing new actuator, identify markings on existing actuator (make, model, serial number, etc.). Submit new actuator of similar or larger size, compatible with existing valve.
    - 2) Procure and install new actuator in accordance with City of Houston Specification 02522 – Butterfly Valves.
  - b. Where directed, field replace the rubber seat which may be located around the perimeter of the disk edge, or around the inner circumference of the valve body, depending on the original manufacturer's design.
  - c. Verify valve and valve seat type and check for availability of replacement seat parts prior to removing existing seat.
    - 1) New seat to be Buna-N or approved equal manufactured to specifications of original product.
    - 2) Anticipate removal and re-installation of stainless steel retainer glands and bolts.
  - d. Where directed, remove any existing coatings on the valve disk and around the inner circumference of the valve body which have become loose or disbonded. In those areas, expose the bare metallic surface. Intact coatings may remain in place, but must be thoroughly cleaned and prepared (roughened) for recoating.
    - 1) Coat with 2 part epoxy coating certified for potable water condition in accordance with City of Houston Specification 02522.
8. A specialty electromagnetic inspection subcontractor (the specialty subcontractor) will be required to provide specialty inspection services to identify broken prestressing wires. The specialty contractor shall also attempt to determine if joints along the pipe are electrically continuous (bonded).
- a. The specialty contractor shall have at least 10 years of experience and with pipe of this diameter and type (Embedded Cylinder PCCP).
  - b. Contractor shall provide schedule coordination and any necessary traffic control and confined space safety support required by their specialty subcontractor.

### 3.03 DISINFECTION OF WATER LINES

- A. Following the assessment and all repairs, remove construction debris or foreign material and thoroughly broom clean and flush piping systems. Provide equipment and labor for

cleaning. City will inspect water line for cleanliness prior to reinstalling access manway flanges and filling.

- B. Contractor to provide support during filling, disinfection and flushing by providing reasonable labor, blow-off piping at all new manway flanges, and traffic control where needed.
- C. Conform to requirements of Section 02514 - Disinfection of Water Lines.

#### 3.04 FIELD HYDROSTATIC TESTS

- A. Unless otherwise specified, no hydrostatic test shall be performed on existing pipe. All welds should be tested by an independent weld tester, and when possible, repaired line will be left exposed during refiling to visually inspect for leaks.

END OF SECTION

Section 02614

TEMPORARY PIPE PLUG

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary pipe plugs (Line Stop Valves) for temporary isolation of sections of existing water mains.

1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for temporary plug valves is on basis of each temporary pipe plug (Line Stop Valve) installed as required by the Project Manager. Payment will be made using a combination of three separate Pay Items:

a. Hot Tapping for Temporary Pipe Plug.

- 1) Use pay item for TS&V, see Section 02525. Payment includes labor, equipment and material required to install tapping sleeves and hot tapping pipe for temporary pipe plug including but not limited to excavation and concrete blocking, required for the installation of a temporary pipe plug. Sleeve and tap diameter shall be sized for the plug to be installed. Payment also includes installation of secondary sleeves and taps for additional outlets required for the tapping and plugging process.

b. Temporary Pipe Plug.

- 1) Payment is on a unit price basis for each temporary pipe plug installation and removal. Payment includes labor, equipment and material to install temporary pipe plug, remove the pipe plug and complete closure after removal of plug.
- 2) Payment includes temporary pipe plug for duration required to complete work proposed in a timely and effective manner, up to 7 days.

c. Extended Rental for Temporary Pipe Plug.

- 1) Payment for this Unit Price Item shall be considered full compensation for extended rental, beyond the original 7 days, of

plugging equipment, for each plug in place for each size range listed in Doc 00410.

2. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is a Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

1.03 REFERENCES

A. ASTM A 36 - Standard Specification for Carbon Structural Steel.

B. ASTM A 105 - Standard Specification for Carbon Steel Forgings for Piping Applications.

C. ASTM A 181 - Standard Specification for Carbon Steel Forgings, for General-Purpose Piping.

D. ASTM A 283 - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

E. AWWA C 111 - American National Standard for Rubber Gasket Joints for Ductile- Iron Pipe and Fittings for Water.

F. ASME B16.5 - Pipe Flanges and Flanged Fittings.

G. Hanson Pressure Pipe – Products and Services Guide – Tapping Procedures

1.04 DEFINITIONS

A. Temporary pipe plug valves – plugging mechanisms used for isolating sections of existing water line.

B. Plugged – when 95 percent or more of pipe’s existing water flow has been stopped.

1.05 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit qualifications and certificate from manufacture certifying operators are qualified to operate manufacturer’s pipe plugging equipment.

C. Submit qualifications of hot tap operating technician as being certified by manufacturer to operate hot tapping equipment.

D. Submit qualifications of manufacturer verifying a minimum of 5 years of experience performing hot tapping operations.

- E. Submit six (6) sets of shop drawings for approval prior to start of fabrication. Identify any special procedures required during and or after tapping procedure for the specified pipe material being tapped.
- F. Submit requirements for flow and pressure in line during tapping, plugging, and plug removal stages of the work. Include anticipated durations of each step.

PART 2 P R O D U C T S

2.01 MATERIALS

A. General:

- 1. Conduct welding in accordance with applicable codes and standards. Stress relieve all welds.
- 2. Clearly mark pipe plug saddle and attachments to permit proper alignment in field and to ensure ends are properly matched when installed around pipe.

B. Saddle:

- 1. Provide as a minimum saddle and attachments fabricated in accordance with ASTM A36 or ASTM A283 standards. Provide line plugging saddle which conforms to and reinforces existing pipe.
- 2. Saddle and attachments used in hot tapping procedure are to be in compliance with maximum working pressure of system as specified and/or shown on Drawings.
- 3. Provide flanges manufactured in accordance with ASTM A-181, ASTM A-105 grade steel, ASME B16.5 in sizes up to 24 inches and MSS-SP 44 in sizes 26 inches and larger.
- 4. Provide external bolting, studs and nuts consisting of corrosion resistant, high strength, low alloy (AWWA C 111). As an option, stainless steel 18-8 type 304 bolts, studs and nuts may be used.

PART 3 E X E C U T I O N

3.01 INSTALLATION

- A. Conduct pipe excavation in accordance with Section 02317 - Excavation and Backfill for Utilities.
- B. Plan pipe plugging procedure in such a manner and at such hours as to least inconvenience public. Notify City Engineer at least 48 hours in advance of pipe plugging procedure.

- C. Do not operate valves on mains in use by City. City of Houston Utility Operations Division will handle, at no cost to Contractor/subcontractors, operations involving opening and closing valves for wet connections. Provide at a minimum 2 weeks' notice for valve operations.
- D. Conduct plugging operations in presence of Project Manager. Continue pipe plugging work without interruption until pipe plugging operation is complete and water line is plugged. Perform work on connection to water main or associated work requiring installation of an isolation valve continuously and without interruption.
- E. Pipe Preparation:
  - 1. Thoroughly clean pipe down to factory supplied outside diameter. Carefully inspect pipe, especially at point where tap will take place. Do not tap within 4 feet of an existing joint unless approved.
  - 2. Diameter of tap should be no greater than 75% of pipe diameter, without approval.
  - 3. Cement mortar coating may be carefully removed within limits of tapping assembly outlet, exposing prestressing wire, prior to installing saddle.
- F. Saddle Installation:
  - 1. Place top half of saddle with flanged outlet at the 12 o'clock position on pipe, unless otherwise approved by Project Manager.
  - 2. Install saddle and attachments in accordance with manufacturer's recommendation. In no case will saddle or attachments be retrofitted while it is on pipe, unless otherwise approved by Project Manager. Any misalignment in saddle installation will require removal of saddle from pipe.
  - 3. Fill space between saddle and pipe with quick-set grout.
  - 4. Pour concrete foundation around tapping saddle. Foundation dimensions and materials to be designed by contractor.
- G. Remove prestressing wire and outer concrete core within opening of tapping saddle.
- H. Install gland with O-ring and tighten bolts to provide compression seal between O-ring and steel cylinder.
- I. Pressure Testing: After saddle is attached and before line tapping procedure begins, pressure test saddle in accordance with Section 02525 - Tapping Sleeves and Valves.
- J. Tap through cylinder and inner concrete core, and retrieve pipe coupon. Tap Procedure: Perform tap in accordance with Section 02512 - Water Tap and Service Line Installation and Section 02525 - Tapping Sleeves and Valves.

- K. Remove tapping assembly and mount plugging assembly.
- L. If pipe plug is unsuccessful in reducing 95 percent of existing water flow, mechanically clean interior of pipe as approved by Project Manager. Do not damage pipe's interior lining during mechanical cleaning.
- M. Pipe plug will reduce approximately 95 percent of existing water flow. Anticipate water leakage from pipe plug and include cost of water removal in unit price bid for Plug work.
- N. After connection to water main or associated work requiring installation of an isolation valve is complete, remove hot tapping/line plugging equipment from water main and seal hot tapping/line plugging saddle with blind flange.
- O. Apply external coating to saddle, flange and water main in accordance with Section 02502 - Steel Pipe and Fittings.

END OF SECTION