



SHT. NO.	SHEET TITLE
1	COVER SHEET, LOCATION MAP, VICINITY MAP
2	INDEX OF SHEETS
3	HCFCD REVIEW SHEET
4	LEGEND AND ABBREVIATIONS
5	UTILITY AND GENERAL CONSTRUCTION NOTES-1
6	UTILITY AND GENERAL CONSTRUCTION NOTES-2
7	WATER LINE SHEET LAYOUT AND BORING PLAN (SHEET 1 OF 4)
8	WATER LINE SHEET LAYOUT AND BORING PLAN (SHEET 2 OF 4)
9	WATER LINE SHEET LAYOUT AND BORING PLAN (SHEET 3 OF 4)
10	WATER LINE SHEET LAYOUT AND BORING PLAN (SHEET 4 OF 4)
11	SURVEY CONTROL MAP SITE-1 (SHEET 1 OF 2)
12	SURVEY CONTROL MAP SITE-1 (SHEET 2 OF 2)
13	SURVEY CONTROL MAP SITE 4 & 5 (SHEET 1 OF 4)
14	SURVEY CONTROL MAP SITE 4 & 5 (SHEET 2 OF 4)
15	SURVEY CONTROL MAP SITE 4 & 5 (SHEET 3 OF 4)
16	SURVEY CONTROL MAP SITE 4 & 5 (SHEET 4 OF 4)
17	KATY FREE WAY-WATER LINE PLAN-BEGIN TO STA 5+50
18	KATY FREE WAY-WATER LINE PROFILE-BEGIN TO STA 5+50
19	KATY FREE WAY-WATER LINE PLAN- STA 5+50 TO STA 10+00
20	KATY FREE WAY-WATER LINE PROFILE- STA 5+50 TO STA 10+00
21	KATY FREE WAY-WATER LINE PLAN- STA 10+00 TO STA 14+00
22	KATY FREE WAY-WATER LINE PROFILE- STA 10+00 TO STA 14+00
23	KATY FREE WAY-WATER LINE PLAN- STA 14+00 TO STA 19+00
24	KATY FREE WAY-WATER LINE PROFILE- STA 14+00 TO STA 19+00
25	KATY FREE WAY-WATER LINE PLAN- STA 19+00 TO STA 24+00
26	KATY FREE WAY-WATER LINE PROFILE- STA 19+00 TO STA 24+00
27	KATY FREE WAY-WATER LINE PLAN- STA 24+00 TO STA 29+00
28	KATY FREE WAY-WATER LINE PROFILE- STA 24+00 TO STA 29+00
29	KATY FREE WAY-WATER LINE PLAN- STA 29+00 TO STA 33+00
30	KATY FREE WAY-WATER LINE PROFILE- STA 29+00 TO STA 33+00
31	KATY FREE WAY-WATER LINE PLAN- STA 33+00 TO END
32	KATY FREE WAY-WATER LINE PROFILE- STA 33+00 TO END
33	MEMORIAL WAY-WATER LINE PLAN-BEGIN TO STA 5+50
34	MEMORIAL WAY-WATER LINE PROFILE-BEGIN TO STA 5+50
35	MEMORIAL WAY-WATER LINE PLAN- STA 5+50 TO STA 10+00
36	MEMORIAL WAY-WATER LINE PROFILE- STA 5+50 TO STA 10+00
37	MEMORIAL WAY-WATER LINE PLAN- STA 10+00 TO STA 14+20
38	MEMORIAL WAY-WATER LINE PROFILE- STA 10+00 TO STA 14+20
39	HOUSTON AVE-WATER LINE PLAN-STA 1+00 TO STA 5+00
40	HOUSTON AVE-WATER LINE PROFILE-STA 1+00 TO STA 5+00
41	HOUSTON AVE-WATER LINE PLAN- STA 5+00 TO STA 9+50
42	HOUSTON AVE-WATER LINE PROFILE- STA 5+00 TO STA 9+50
43	HOUSTON AVE-WATER LINE PLAN- STA 9+50 TO STA 13+00
44	HOUSTON AVE-WATER LINE PROFILE- STA 9+50 TO STA 13+00
45	HOUSTON AVE-WATER LINE PLAN- STA 13+00 TO STA 16+80
46	HOUSTON AVE-WATER LINE PROFILE- STA 13+00 TO STA 16+80
47	WASHINGTON AVE-WATER LINE PLAN-BEGIN TO STA 4+00
48	WASHINGTON AVE-WATER LINE PROFILE-BEGIN TO STA 4+00
49	WASHINGTON AVE-WATER LINE PLAN- STA 4+00 TO STA 8+50
50	WASHINGTON AVE-WATER LINE PROFILE- STA 4+00 TO STA 8+50
51	PRESTON STREET-WATER LINE PLAN-STA 1+20 TO STA 5+00
52	PRESTON STREET-WATER LINE PROFILE-STA 1+20 TO STA 5+00
53	PRESTON STREET-WATER LINE PLAN- STA 5+00 TO STA 8+50
54	PRESTON STREET-WATER LINE PROFILE- STA 5+00 TO STA 8+50
55	PRESTON STREET-WATER LINE PLAN- STA 8+50 TO STA 13+00
56	PRESTON STREET-WATER LINE PROFILE- STA 8+50 TO STA 13+00
57	PRESTON STREET-WATER LINE PLAN- STA 13+00 TO STA 17+00
58	PRESTON STREET-WATER LINE PROFILE- STA 13+00 TO STA 17+00
59	PRESTON STREET-WATER LINE PLAN- STA 17+00 TO STA 22+00
60	PRESTON STREET-WATER LINE PROFILE- STA 17+00 TO STA 22+00
61	PRESTON STREET-WATER LINE PLAN- STA 22+00 TO STA 27+00
62	PRESTON STREET-WATER LINE PROFILE- STA 22+00 TO STA 27+00
63	PRESTON STREET-WATER LINE PLAN- STA 27+00 TO STA 31+50
64	PRESTON STREET-WATER LINE PROFILE- STA 27+00 TO STA 31+50
65	PRESTON STREET-WATER LINE PLAN- STA 31+50 TO STA 35+00
66	PRESTON STREET-WATER LINE PROFILE- STA 31+50 TO STA 35+00
67	PRESTON STREET-WATER LINE PLAN- STA 35+00 TO STA 39+00
68	PRESTON STREET-WATER LINE PROFILE- STA 35+00 TO STA 39+00
69	PRESTON STREET-WATER LINE PLAN- STA 39+00 TO STA 44+00
70	PRESTON STREET-WATER LINE PROFILE- STA 39+00 TO STA 44+00
71	PRESTON STREET-WATER LINE PLAN- STA 44+00 TO STA 47+40
72	PRESTON STREET-WATER LINE PROFILE- STA 44+00 TO STA 47+40
73	LATERAL- KATY FREEWAY SITE-1 -WATER LINE PLAN &PROFILE- STA 1+00 TO STA 1+50
74	LATERAL- KATY FREEWAY SITE-1 -WATER LINE PLAN &PROFILE- STA 1+00 TO STA 1+50
75	LATERAL- KATY FREEWAY SITE-1 -WATER LINE PLAN &PROFILE- STA 1+00 TO STA 1+50
76	LATERAL- KATY FREEWAY SITE-1 -WATER LINE PLAN &PROFILE- STA 1+00 TO STA 1+50
77	LATERAL- MEMORIAL WAY @ HOUSTON AVE SITE-4 -WATER LINE PLAN & PROFILE-STA 1+00 TO STA 3+00
78	LATERAL- HOUSTON AVE @ MEMORIAL WAY SITE-4 -WATER LINE PLAN & PROFILE-STA 1+00 TO STA 3+00
79	LATERAL- STATE STREET @ HOUSTON AVE SITE-4 -WATER LINE PLAN & PROFILE-STA 1+00 TO STA 3+00
80	LATERAL- WASHINGTON AVE @ GOLIAD STREET AND PRESTON STREET SITE-4 WATER LINE PLAN & PROFILE-STA 1+00 TO STA 3+00

SHT. NO.	SHEET TITLE
81	LATERAL- PRESTON STREET @ BAGBY STREET AND PRESTON STREET SITE-4&5 WATER LINE PLAN & PROFILE-STA 1+00 TO STA 2+00
82	LATERAL- PRESTON STREET AND MILAM STREET @ PRESTON STREET SITE-5 WATER LINE PLAN & PROFILE-STA 1+00 TO STA 2+00
83	LATERAL- TRAVIS STREET @ PRESTON STREET SITE-5 WATER LINE PLAN & PROFILE-STA 1+00 TO STA 2+00
84	LATERAL- FANNIN STREET @ PRESTON STREET AND CAROLINE STREET @ PRESTON STREET SITE-5 WATER LINE PLAN & PROFILE-STA 1+00 TO STA 3+00
85	CONSTRUCTION SIGN
86	STANDARD LDWL STEEL PIPE DETAILS
87	STANDARD LDWL HEAVY DUTY MANHOLE FRAME AND ACCESS MANHOLE DETAILS
88	STANDARD LDWL EXTRA DEPTH MANHOLE AND BUTTERFLY VALVE AND OPERATOR MANHOLE DETAILS
89	STANDARD LDWL DRAIN LINE VALVE AND COMBINATION AIR VALVE ASSEMBLY IN SERVICE MANHOLE DETAILS
90	STANDARD LDWL AIR VALVE ASSEMBLY IN SERVICE MANHOLE DETAILS AND TUNNEL AND CASING DETAILS
91	STANDARD LDWL EXCAVATION AND BACKFILL DETAILS
92	STANDARD LDWL CATHODIC PROTECTION SCHEDULES
93	STANDARD LDWL CATHODIC PROTECTION DETAILS (SHEET 1 OF 3)
94	STANDARD LDWL CATHODIC PROTECTION DETAILS (SHEET 2 OF 3)
95	STANDARD LDWL CATHODIC PROTECTION DETAILS (SHEET 3 OF 3)
96	STANDARD SMALL DIAMETER WATER LINE DETAILS (SHEET 1 OF 7)
97	STANDARD SMALL DIAMETER WATER LINE DETAILS (SHEET 2 OF 7)
98	STANDARD SMALL DIAMETER WATER LINE DETAILS (SHEET 3 OF 7)
99	STANDARD SMALL DIAMETER WATER LINE DETAILS (SHEET 4 OF 7)
100	STANDARD SMALL DIAMETER WATER LINE DETAILS (SHEET 5 OF 7)
101	STANDARD SMALL DIAMETER WATER LINE DETAILS (SHEET 6 OF 7)
102	STANDARD SMALL DIAMETER WATER LINE DETAILS (SHEET 7 OF 7)
103	STANDARD SANITARY SEWER DETAILS (SHEET 1 OF 3)
104	STANDARD SANITARY SEWER DETAILS (SHEET 2 OF 3)
105	STANDARD SANITARY SEWER DETAILS (SHEET 3 OF 3)
106	STANDARD SANITARY SEWER AND STORM SEWER DETAILS BEDDING & BACKFILL DETAILS
107	STANDARD STREET PAVING AND SIDEWALK DETAILS (SHEET 1 OF 3)
108	STANDARD STREET PAVING AND SIDEWALK DETAILS (SHEET 2 OF 3)
109	STANDARD STREET PAVING AND SIDEWALK DETAILS (SHEET 3 OF 3)
110	COH STANDARD STREET CUT PAVEMENT REPLACEMENT DETAILS (SHEET 1 OF 3)
111	COH STANDARD STREET CUT PAVEMENT REPLACEMENT DETAILS (SHEET 2 OF 3)
112	COH STANDARD STREET CUT PAVEMENT REPLACEMENT DETAILS (SHEET 3 OF 3)
113	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 1 OF 16)
114	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 2 OF 16)
115	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 3 OF 16)
116	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 4 OF 16)
117	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 5 OF 16)
118	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 6 OF 16)
119	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 7 OF 16)
120	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 8 OF 16)
121	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 9 OF 16)
122	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 10 OF 16)
123	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 11 OF 16)
124	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 12 OF 16)
125	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 13 OF 16)
126	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 14 OF 16)
127	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 15 OF 16)
128	COH STANDARD PAVEMENT MARKING DETAILS (SHEET 16 OF 16)
129	SLIPSPINNING DETAILS
130	TXDOT STANDARD DETAILS (SHEET 1 OF 6)
131	TXDOT STANDARD DETAILS (SHEET 2 OF 6)
132	TXDOT STANDARD DETAILS (SHEET 3 OF 6)
133	TXDOT STANDARD DETAILS (SHEET 4 OF 6)
134	TXDOT STANDARD DETAILS (SHEET 5 OF 6)
135	TXDOT STANDARD DETAILS (SHEET 6 OF 6)
136	TCP NOTES CHANNELIZING DEVICES AND BARRICADES (SHEET 1 OF 30)
137	TRAFFIC CONTROL PLANS CONSTRUCTION NARRATIVE - 1 (SHEET 2 OF 30)
138	TRAFFIC CONTROL PLANS CONSTRUCTION NARRATIVE - 2 (SHEET 3 OF 30)
139	SITE 1 - KATY FREEWAY OVERALL TCP LAYOUT -1 (SHEET 4 OF 30)
140	SITE 4 & 5 - OVERALL TCP LAYOUT -2 (SHEET 5 OF 30)
141	SITE 4 & 5 - OVERALL TCP LAYOUT -3 (SHEET 6 OF 30)
142	SITE 1 - KATY FREEWAY OVERALL PHASING PLAN - 1 (SHEET 7 OF 30)
143	SITE 4 & 5 OVERALL PHASING PLAN - 2 (SHEET 8 OF 30)
144	SITE 4 & 5 OVERALL PHASING PLAN - 3 (SHEET 9 OF 30)
145	SITE 1 - KATY FREEWAY TRAFFIC CONTROL PLAN STA 1+00 TO END (SHEET 10 OF 30)
146	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 1 SHEET 1 OF 2 (SHEET 11 OF 30)
147	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 1 SHEET 2 OF 2 (SHEET 12 OF 30)
148	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 2 SHEET 1 OF 2 (SHEET 13 OF 30)
149	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 2 SHEET 2 OF 2 (SHEET 14 OF 30)
150	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 3 SHEET 1 OF 3 (SHEET 15 OF 30)
151	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 3 SHEET 2 OF 3 (SHEET 16 OF 30)
152	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 3 SHEET 3 OF 3 (SHEET 17 OF 30)
153	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 4 (SHEET 18 OF 30)
154	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 5 (SHEET 19 OF 30)
155	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 6 SHEET 1 OF 2 (SHEET 20 OF 30)
156	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 6 SHEET 2 OF 2 (SHEET 21 OF 30)
157	SITE 4 & 5 TRAFFIC CONTROL PLAN - PHASE 7 (SHEET 22 OF 30)

SHT. NO.	SHEET TITLE
158	SITE 4 & 5 DETOUR PLAN PHASE 2 - STEP 2 (SHEET 23 OF 30)
159	TYPICAL SECTIONS -1 (SHEET 24 OF 30)
160	TYPICAL SECTIONS -2 (SHEET 25 OF 30)
161	BARRICADE AND CHANNELIZING DEVICES (SHEET 26 OF 30)
162	ONE LANE CLOSURE PHASE 1 & 2 (SHEET 27 OF 30)
163	BARRIER SYSTEM ABSORB 350 (SHEET 28 OF 30)
164	LOW PROFILE CONCRETE BARRIER (SHEET 29 OF 30)
165	CROSSWALKS CLOSURES AND PEDESTRIAN DETOURS (SHEET 30 OF 30)
166	SWPPP GENERAL NOTES (SHEET 1 OF 14)
167	SITE 1 - KATY FREEWAY STORM WATER POLLUTION PREVENTION PLAN - 1 (SHEET 2 OF 14)
168	SITE 1 - KATY FREEWAY STORM WATER POLLUTION PREVENTION PLAN - 2 (SHEET 3 OF 14)
169	SITE 4 & 5 - KATY FREEWAY STORM WATER POLLUTION PREVENTION PLAN - 3 (SHEET 4 OF 14)
170	SITE 4 & 5 - KATY FREEWAY STORM WATER POLLUTION PREVENTION PLAN - 4 (SHEET 5 OF 14)
171	SITE 4 & 5 - KATY FREEWAY STORM WATER POLLUTION PREVENTION PLAN - 5 (SHEET 6 OF 14)
172	SITE 4 & 5 - KATY FREEWAY STORM WATER POLLUTION PREVENTION PLAN - 6 (SHEET 7 OF 14)
173	SITE 4 & 5 - KATY FREEWAY STORM WATER POLLUTION PREVENTION PLAN - 7 (SHEET 8 OF 14)
174	SWPPP DETAIL - 1 (SHEET 9 OF 14)
175	SWPPP DETAIL - 2 (SHEET 10 OF 14)
176	SWPPP DETAIL - 3 (SHEET 11 OF 14)
177	SWPPP DETAIL - 4 (SHEET 12 OF 14)
178	SWPPP DETAIL - 5 (SHEET 13 OF 14)
179	SWPPP DETAIL - 6 (SHEET 14 OF 14)
180	TREE PROTECTION PLAN SHEET (1 OF 11)
181	TREE PROTECTION PLAN SHEET (2 OF 11)
182	TREE PROTECTION PLAN SHEET (3 OF 11)
183	TREE PROTECTION PLAN SHEET (4 OF 11)
184	TREE PROTECTION PLAN SHEET (5 OF 11)
185	TREE PROTECTION PLAN SHEET (6 OF 11)
186	TREE PROTECTION PLAN SHEET (7 OF 11)
187	TREE PROTECTION PLAN SHEET (8 OF 11)
188	TREE PROTECTION PLAN SHEET (9 OF 11)
189	TREE PROTECTION PLAN SHEET (10 OF 11)
190	TREE PROTECTION PLAN SHEET (11 OF 11)

 <p><b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO &amp; ASSOCIATES, LLC FB NO. P-6395</p>		<p>THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES</p>
<p><b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS</p> <p>MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4</p> <p>INDEX OF SHEETS</p>		
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY	
S-000701-0043-4		
DRAWING SCALE		
N/A		
CITY OF HOUSTON PM		
MARTIN MATHIEW, ENV SP		
SHEET NO. 2	OF 190	

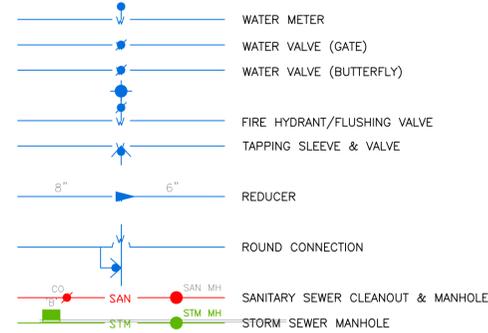
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NO.	DATE	REVISION	APP.

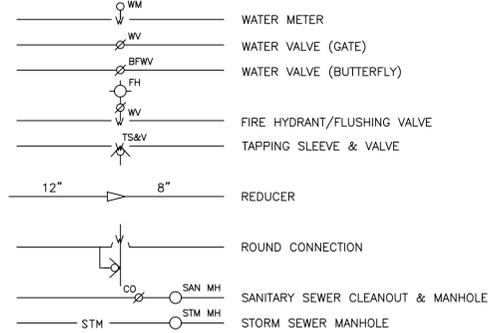


NO.	DATE	REVISION	APP.

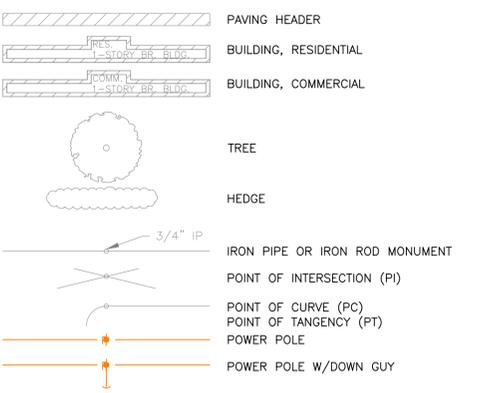
**EXISTING PLAN VIEW**



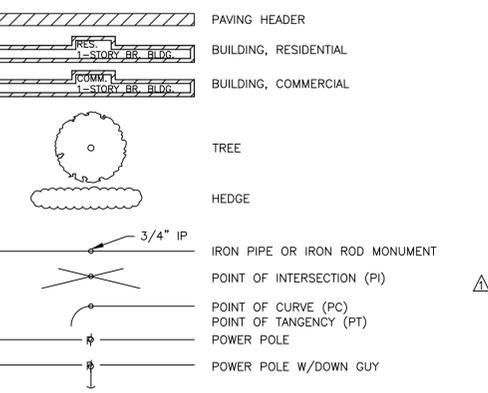
**PROPOSED PLAN VIEW**



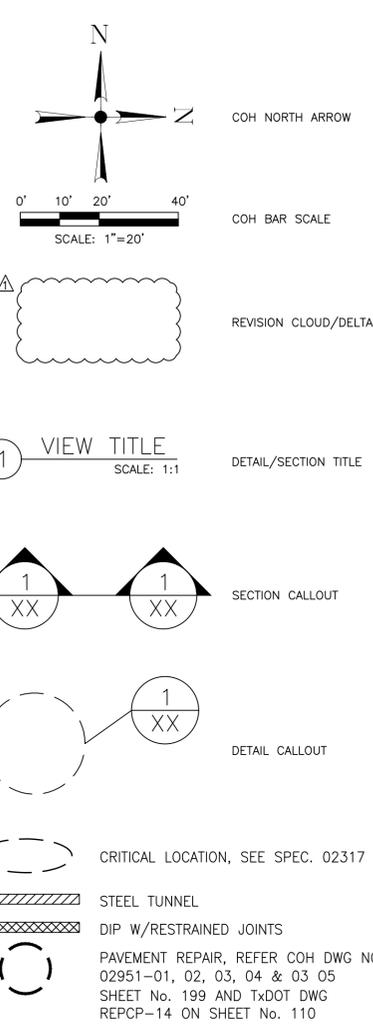
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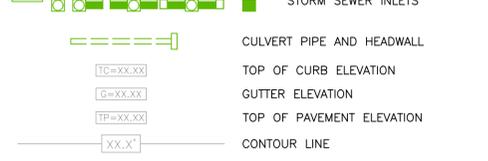
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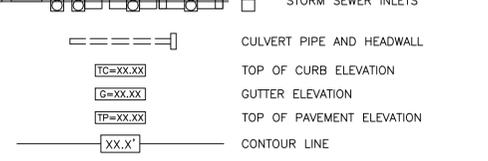
**MISC STANDARD ELEMENTS**



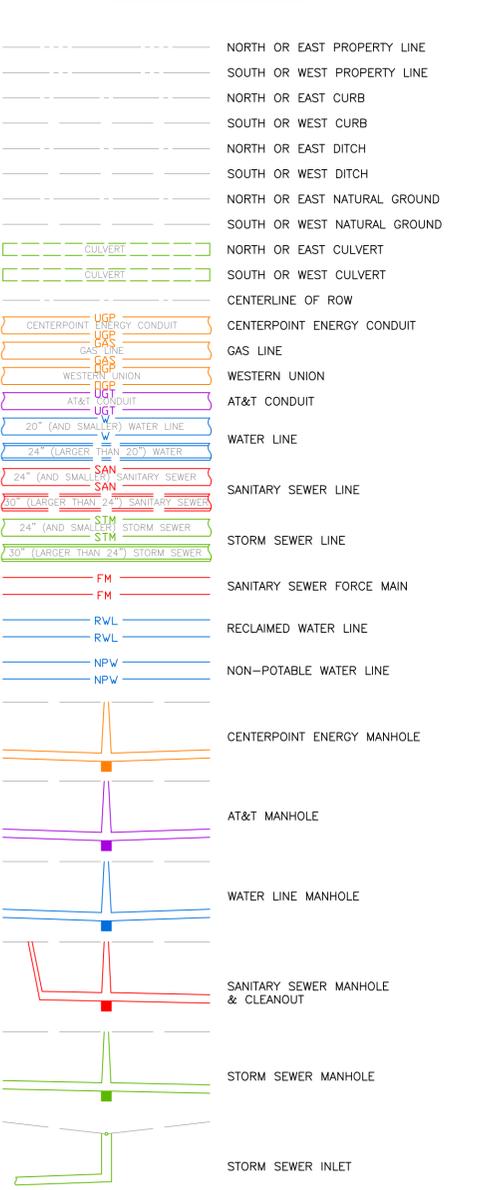
**STORM SEWER INLETS**



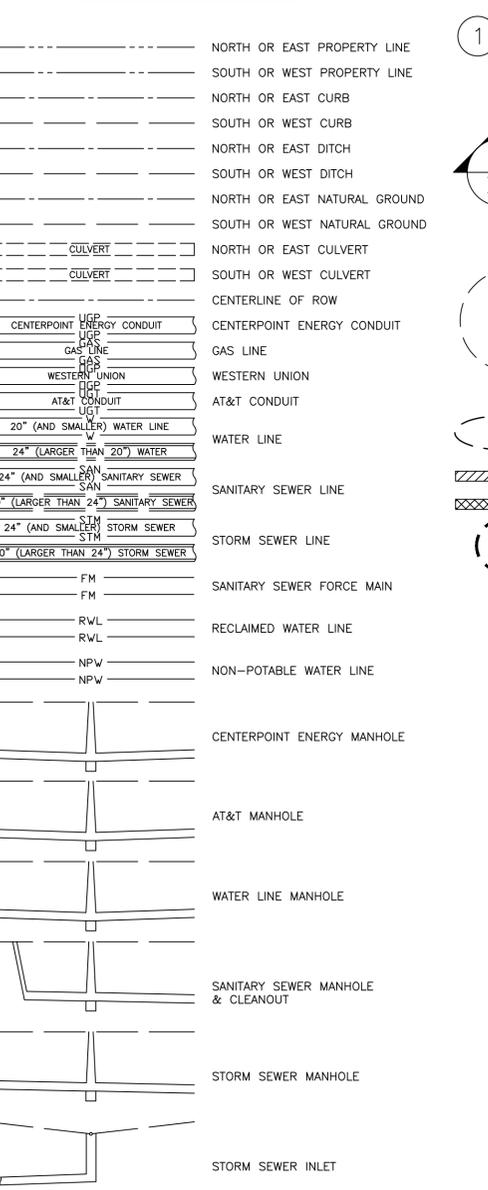
**STORM SEWER INLETS**



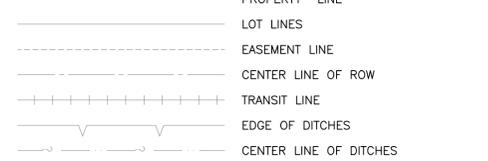
**EXISTING PROFILE VIEW**



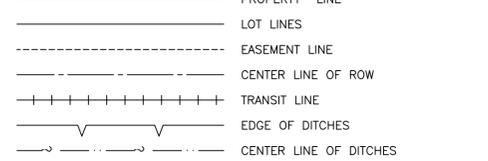
**PROPOSED PROFILE VIEW**



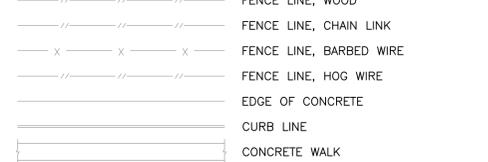
**CULVERT PIPE AND HEADWALL**



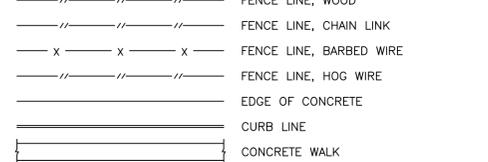
**CULVERT PIPE AND HEADWALL**



**TOP OF CURB ELEVATION**



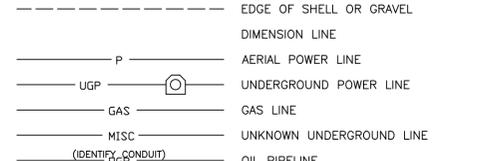
**TOP OF CURB ELEVATION**



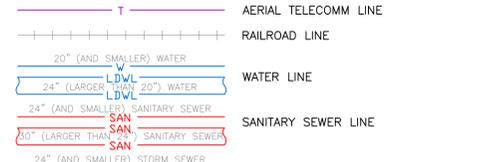
**ROW LINE**



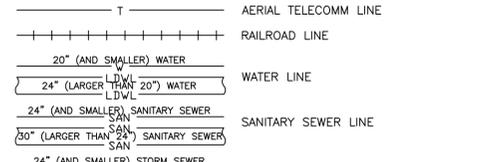
**ROW LINE**



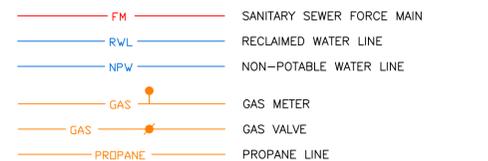
**FENCE LINE, WOOD**



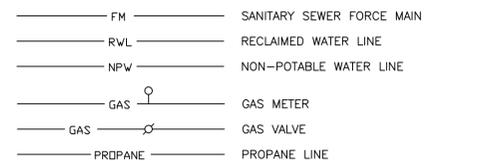
**FENCE LINE, WOOD**



**EDGE OF CONCRETE**



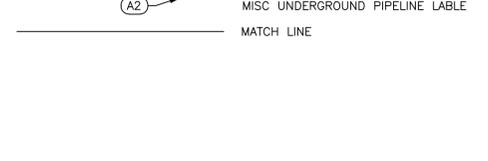
**EDGE OF CONCRETE**



**AERIAL POWER LINE**



**AERIAL POWER LINE**



**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
LEGEND AND ABBREVIATIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 4 OF 190	

**AT&T TEXAS/SWBT FACILITIES**

1. THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.
6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER MR. KEVIN RAY AT (713) 614-1983 OR E-MAIL HIM AT kr7896@att.com, IF CABLE LOCATE REQUESTS ARE NOT COMPLETED FOR OUR AT&T TEXAS/SWBT FACILITIES.

**CENTERPOINT ENERGY**

**CAUTION: UNDERGROUND GAS FACILITIES**

LOCATIONS OF CENTERPOINT ENERGY MAIN LINES (TO INCLUDE CENTERPOINT ENERGY, INTRASTATE PIPELINE, LLC. WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. OUR SIGNATURE ON THESE PLANS ONLY INDICATES THAT OUR FACILITIES ARE SHOWN IN APPROXIMATE LOCATION. IT DOES NOT IMPLY THAT A CONFLICT ANALYSIS HAS BEEN MADE. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- WHEN CENTERPOINT ENERGY PIPELINE MARKINGS ARE NOT VISIBLE, CALL (713) 207-5463 OR (713) 945-8037 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
- WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
- WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
- FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-2111 or (713) 207-4200.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

**WARNING: OVERHEAD ELECTRICAL FACILITIES**

OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH AND SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:

- ANY ACTIVITY WHERE PERSON OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND
- OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.

PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT 713-207-2222.

ACTIVITIES ON/OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY NO APPROVAL TO USE, CROSS OR OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN. IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING AND RIGHT OF WAY DIVISION AT (713) 207-6348 OR (713) 207-5769

**WARNING: UNDERGROUND ELECTRICAL FACILITIES**

THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- ALL INFORMATION CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTORS ARE RESPONSIBLE MAKING THEIR OWN DETERMINATIONS AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND PIPELINES, CONDUITS, AND STRUCTURES BY CONTACTING OWNERS OF UNDERGROUND UTILITIES OR BY EXCAVATING IN ADVANCE OF CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES WHEN AND WHERE THEY FALL IN THE PATH OF CONSTRUCTION.
- THE CONTRACTOR IS ALSO RESPONSIBLE FOR CONTACTING THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567 AND TEXAS ONE CALL AT 1-800-245-4545, FORTY-EIGHT (48) HOURS PRIOR TO ANY CONSTRUCTION.
- THE LOCATION OF ANY CENTERPOINT ENERGY UTILITIES ARE SHOWN IN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. THEY AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
- ALL PROPOSED FACILITIES SHALL MAINTAIN 12" CLEAR FROM ALL EXISTING UTILITIES.

**COMCAST OF HOUSTON, LLC**

THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UNDERGROUND FACILITIES BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ALL DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UNDERGROUND FACILITIES.

**FLOOD PLAIN NOTE:**

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S PRELIMINARY FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 48201C0880M, REVISED JANUARY 06, 2017 AND PANEL NUMBER 48201C0860L, REVISED JUNE 18, 2017, THE ENTIRE PROJECT LIMITS LIES WITHIN THE UNSHADED ZONE "X", WHICH IS DETERMINED TO BE OUTSIDE THE 500-YR FLOOD ZONE.

**METRO**

THE CONTRACTOR SHALL CONTACT METRO BUS OPERATIONS, A MINIMUM OF SEVEN (7) TO TEN (10) BUSINESS DAYS PRIOR TO CONSTRUCTION CHANGES. THE CONTACT INFORMATION IS CARL TAYLOR, CARL.TAYLOR@RIDEMETRO.ORG, 713-615-7219 OR SHIRLEY MITCHELL, SHIRLEY.MITCHELL@RIDEMETRO.ORG, 713-615-7212.

**STANDARD NOTES FOR CONSTRUCTION DRAWINGS (HCFCD):**

1. OBTAIN AND COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE, AND FEDERAL PERMITS AND APPROVALS, WITH ASSISTANCE FROM ENGINEER, IF NECESSARY. OBTAIN PERMIT (CERTIFICATION) FROM HARRIS COUNTY ENGINEER TO ENTER HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY.
2. NOTIFY THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S DEVELOPMENT COORDINATION AND INSPECTION DEPARTMENT IN WRITING AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. SUBMIT THE HCFCD 48 HOUR PRE-CONSTRUCTION NOTIFICATION FORM, A COPY OF THE APPROVED CONSTRUCTION DRAWINGS, AND A COPY OF THE CORPS OF ENGINEERS INDIVIDUAL SECTION 404 PERMIT OR COMPLIANCE WITH NATIONWIDE PERMIT, IF APPLICABLE, TO HCFCD, 9900 NORTHWEST FREEWAY, HOUSTON, TEXAS 77092, ATTN: DEVELOPMENT COORDINATION AND INSPECTION, DEPT. BY HAND DELIVERY, BY EMAIL DCID@HCFCD.ORG OR FAX TO 713-684-4129 (FAX NUMBER).
3. ENGINEER SHALL SUBMIT CERTIFICATION LETTER AND RECORD DRAWINGS TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S DEVELOPMENT COORDINATION AND INSPECTION SECTION REQUESTING INSPECTION OF ITEMS CONSTRUCTED IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. PRIOR TO REQUESTING INSPECTION, THE DRAINAGE RIGHT-OF-WAY AND/OR EASEMENTS SHALL BE STAKED AND FLAGGED.
4. PROTECT, MAINTAIN, AND RESTORE EXISTING BACKSLOPE DRAINAGE SYSTEMS.
5. BACKSLOPE SWALE AND INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
6. ESTABLISH TURF GRASS ON ALL DISTURBED AREAS WITHIN THE CHANNEL OR DETENTION RIGHT-OF-WAY, EXCEPT THE CHANNEL BOTTOM AND WHERE STRUCTURAL EROSION MEASURES ARE USED. MINIMUM ACCEPTANCE CRITERIA ARE 75% COVERAGE OF LIVE BERMUDA GRASS AND NO EROSION OR RILLS DEEPER THAN 4".
7. PERFORM ALL ACTIVITIES WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY IN ACCORDANCE WITH THE MOST RECENT HARRIS COUNTY FLOOD CONTROL DISTRICT STANDARD SPECIFICATIONS BOOK.
8. EXCAVATE CHANNEL FLOWLINE TO DESIGN ELEVATION AS SHOWN ON PLANS AND DOWNSTREAM, AS NECESSARY, TO ENSURE NO WATER REMAINS IN THE FACILITY (STORM SEWER, LATERAL CHANNEL, OR DRY BOTTOM DETENTION BASIN) DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL, SO THE FACILITY WILL FUNCTION AS INTENDED. FOR WET BOTTOM DETENTION BASINS, ENSURE NO WATER IS ABOVE THE DESIGN LEVEL IN THE WET BOTTOM DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL.
9. MAINTAIN FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORE CHANNEL TO ORIGINAL CONDITION.
10. REMOVE ALL EXCAVATED MATERIAL FROM THE HARRIS COUNTY FLOOD CONTROL DISTRICT OR DRAINAGE RIGHT-OF-WAY. NO FILL IS TO BE PLACED WITHIN A DESIGNATED FLOOD PLAIN AREA WITHOUT FIRST OBTAINING A FILL PERMIT FROM THE APPROPRIATE JURISDICTIONAL AUTHORITY.

<p><b>NOTICE:</b>                  FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811</p>	
<p><b>VERIFICATION OF PRIVATE UTILITY LINES</b></p>	
<p>Date</p>	
<p>CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.</p> <p style="text-align: center;">Signature valid for six months.</p>	
<p>Date</p>	
<p>CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)</p> <p style="text-align: center;">Signature valid for six months.</p>	
<p>Date</p>	
<p>Approved for AT&amp;T underground conduit facilities only.                  Signature valid for one year.</p>	
 <p><b>10300 WESTOFFICE DR. SUITE 800</b>  <b>HOUSTON, TX 77042</b>  <b>713-975-8769</b>  <b>TX FIRM NO.: F-4578</b></p> <p><b>SURVEYED BY:</b>  <b>KUO &amp; ASSOCIATES, LLC</b>  <b>FB NO. P-6395</b></p>	<p>THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF</p> <p>KIRAN V. PUNYAMANTHULA, P.E.                  TEXAS REG. NO.: 116965</p> <p>ON 01/15/2026                  IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES</p>
<p><b>CITY OF HOUSTON</b>                  HOUSTON PUBLIC WORKS</p>	
<p>MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4</p>	
<p>UTILITY AND GENERAL CONSTRUCTION NOTES</p>	
<p>WBS NUMBER</p> <p>S-000701-0043-4</p> <p>DRAWING SCALE</p> <p>N/A</p> <p>CITY OF HOUSTON PM</p> <p>MARTIN MATHEW, ENV SP</p> <p>SHEET NO. 5 OF 190</p>	<p>FOR CITY OF HOUSTON USE ONLY</p>

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**GENERAL NOTES**

1. THE FLOW LINES AND LOCATIONS OF ALL UNDERGROUND UTILITIES MUST BE LOCATED BY WHATEVER MEANS MAY BE REQUIRED (METAL DETECTION EQUIPMENT, PROBES, EXCAVATION, SURVEY, COORDINATION WITH UTILITY COMPANIES) BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ALL FIELD VERIFICATION WORK AND UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO EXCAVATION FOR PROPOSED UTILITIES. NO SEPARATE PAY; INCLUDE COST IN UNIT PRICE FOR WORK IN APPROPRIATE SECTIONS.
2. SERVICES ARE TO BE TRANSFERRED BETWEEN EXISTING AND PROPOSED WATER LINES WITH MINIMUM DISRUPTION OF SERVICE. EXISTING WATER LINES MUST BE MAINTAINED IN SERVICE UNTIL SERVICE TRANSFER IS DONE.
3. CALL THE TRAFFIC MANAGEMENT AND MAINTENANCE DIVISION OF THE CITY OF HOUSTON PUBLIC WORKS AND ENGINEERING DEPARTMENT WHEN WORK IS SCHEDULED NEAR SIGNAL CONDUITS WITHIN THE CITY OF HOUSTON (713) 837-7280. CALL AT LEAST FIVE WORKING DAYS IN ADVANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING TRAFFIC SIGNAL CABLES AS A RESULT OF CONSTRUCTION ACTIVITIES FOR THE PROJECT. NO SEPARATE PAYMENT FOR REPAIR TO SIGNAL CONDUIT.
4. SERVICE LINE INSTALLATION COULD BE HINDERED BY THE CEMENT STABILIZED SAND BACKFILL. INCLUDE COST OF CROSSING CEMENT STABILIZED BACKFILL IF ENCOUNTERED DURING SERVICE LINE INSTALLATION IN THE UNIT PRICE OF SERVICES.
5. THE CONTRACTOR TO PROVIDE CUT SHEETS (GROUND ELEVATIONS AND PROPOSED LINE INVERTS WITH AMOUNT OF CUT, LOCATION OF BENDS, FIRE HYDRANTS, VALVES AND OTHER FITTINGS AT EVERY 100 FEET IN TABULAR FORMAT) ON EACH STREET TO THE CITY FOR APPROVAL PRIOR TO CONSTRUCTION AT NO ADDITIONAL COST TO THE CITY.
6. CONTRACTOR MUST REFER TO THE CITY OF HOUSTON STANDARD DETAIL DRAWINGS INCLUDED IN THE CITY OF HOUSTON'S "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING" DATED OCTOBER, 2002, FOR ANY OTHER DETAILS NOT INCLUDED IN THE CONSTRUCTION DRAWINGS.
7. CONTRACTOR SHALL COORDINATE AHEAD OF TIME WITH BUSINESS OWNERS AND RESIDENTS FOR INSTALLATION OF WATER LINES IN ENCROACHED AREAS OF THE PUBLIC RIGHT-OF-WAY. NO SEPARATE PAY.

**METRO NOTES:**

1. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL SECURE "TRACK ALLOCATION PERMITS" ISSUED BY METRO RAIL OPERATIONS. CONTACT EDDIE ESPINOSA (EDDIE.ESPINOSA@RIDEMETRO.ORG, 832-392-0758) FOR TRACK ALLOCATION REQUESTS AND TRACK ACCESS PROCEDURES.
2. ALL CONTRACTORS MUST SUCCESSFULLY COMPLETE THE ROADWAY WORKER PROTECTION TRAINING PRIOR TO CONSTRUCTION. THE COURSE IS HELD AT THE SERVICE AND INSPECTION FACILITY (S&I) LOCATED AT 5880 TEXAS STREET, HOUSTON, TEXAS 77011, ROOM #107 AND IS OFFERED IN BOTH ENGLISH AND SPANISH. CONTRACTOR MUST EMAIL TRACK.SAFETY@RIDEMETRO.ORG TO SCHEDULE THE CLASS. TRACK SAFETY CERTIFICATION FOR CONTRACTOR IS VALID FOR 1 YEAR.
3. TRACKWAY ALLOCATION REQUEST FORM MUST BE SUBMITTED BY 5:00 PM TUESDAY PRIOR TO THE WEEK OF THE SCHEDULED WORK.
4. WORK ACTIVITIES WITHIN TEN FEET OF THE OVERHEAD CONTACT SYSTEM (OCS) REQUIRE A RED TAG IN ADDITION TO A METRO RAIL WORK PERMIT. THE SUPERINTENDENT, RAIL CONTROL, OR DESIGNEE MAY ALSO REQUIRE A RED TAG DUE TO OTHER SPECIAL CONDITIONS OR SITUATIONS (E.G., CRANES, AREAS OF HEAVY CONSTRUCTION, ETC.).
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY METRO FACILITIES DAMAGED DURING CONSTRUCTION. IF THE CONTRACTOR CANNOT IMMEDIATELY MAKE THE REPAIRS TO METRO'S SATISFACTION, METRO WILL MAKE THE REPAIRS AND BILL THE COST TO THE CONTRACTOR.
6. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY IN THE FIELD THAT THERE ARE NO CONFLICTS WITH OUR FIBER OPTICS, COMMUNICATION, SIGNALING, ELECTRICAL POWER, HIGH VOLTAGE CABLES OR ANY OTHER METRO INFRASTRUCTURE.
7. THE CONTRACTOR SHALL CONTACT THE DIRECTOR OF PRECONSTRUCTION, CASEY MCKAY, BY EMAIL AT CASEY.MCKAY@RIDEMETRO.ORG OR BY PHONE 713-750-4236 ONE WEEK PRIOR TO CONSTRUCTION. THE CONSTRUCTION DEPARTMENT MAY ASSIGN AN INSPECTOR TO ASSURE NO DAMAGES ARE MADE TO METRO'S FACILITIES.
8. THE CONTRACTOR SHALL "HAND EXCAVATE" IN THE VICINITY OF COMMUNICATION AND POWER LINES FEEDING THE METRO SYSTEM.
9. AUGER BORE PITS SHALL BE LOCATED AT A MINIMUM DISTANCE OF THIRTY-FIVE FEET (35') FROM CENTERLINE OF TRACKS.
10. THE CONTRACTOR SHALL CONTACT METRO BUS OPERATIONS A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO CONSTRUCTION CHANGES. THE CONTACT INFORMATION IS JULIO RIVERA, JR122@RIDEMETRO.ORG, 713-615-7219.
11. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY BUS STOP FACILITIES NEEDED, EXCEPT FOR BUS STOP SIGNS, AT NO COST TO METRO AND SHALL RESTORE ANY AFFECTED BUS STOP TO ITS ORIGINAL CONDITION AND MEET CURRENT AMERICAN DISABILITY ACT (ADA) REQUIREMENTS AS REQUIRED BY LOCAL, STATE, AND FEDERAL CODE AND REQUIREMENTS. NO BUS STOP SHALL BE PERMANENTLY REMOVED WITHOUT APPROVAL FROM METRO.
12. THE CONTRACTOR SHALL CONTACT THE DIRECTOR OF UNIVERSAL ACCESSIBILITY, TIM MILLS BY EMAIL AT TM14@RIDEMETRO.ORG OR BY PHONE 713-739-6861 ONE WEEK PRIOR TO CONSTRUCTION. METRO MAY ASSIGN AN INSPECTOR TO ASSURE NO DAMAGES ARE MADE TO METRO'S FACILITIES. UNIVERSAL ACCESSIBILITY WILL COORDINATE ANY PERMANENT OR TEMPORARY IMPACT ON BUS STOPS, SHELTERS, AND SIDEWALK TO MAINTAIN ACCESSIBILITY

**GENERAL CONSTRUCTION NOTES**

1. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING, AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING PUBLISHED BY HOUSTON PUBLIC WORKS.
2. THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT WAS CONDUCTED IN ACCORDANCE WITH CHAPTER 11 OF THE LATEST EDITION OF THE PUBLICATION INFRASTRUCTURE DESIGN MANUAL, PUBLISHED BY HOUSTON PUBLIC WORKS. SOILS REPORT WAS PREPARED BY AVILES ENGINEERING, CORP., REPORT NO. Q147-1Z (Revision 1), DATED DECEMBER, 2021.
3. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. UTILITIES MARKED WITHIN THE PUBLIC RIGHT OF WAY OR IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, RULE §18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE HOUSTON PUBLIC WORKS, STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEM, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING, REFERENCED ABOVE, AT NO ADDITIONAL COST.
5. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, HOUSTON PUBLIC WORKS @ 832-394-9098 OR VIA FAX AT 832-395-4424 FOR INSPECTION AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
6. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER.
7. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG THE AREA OF EXCAVATION.
8. CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.
9. CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS AND RECORD AS-BUILT CONDITIONS DURING CONSTRUCTION. THESE REDLINE MARKED UP DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.
10. THIS PROJECT SHALL BE BUILT BY MEANS OF OPEN CUT EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATION OF BORE PITS IN FIELD FOR TRENCHLESS CONSTRUCTION. LOCATION OF BORE PITS ARE SUBJECT TO THE CITY ENGINEER'S APPROVAL.
11. THE SIZES OF WATER METERS SHOWN BUT NOT SPECIFICALLY CALLED OUT IN THIS PROJECT ARE ONE INCH OR SMALLER STANDARD CITY OF HOUSTON WATER METERS. ALL OTHER SIZES LARGER THAN ONE INCH ARE SPECIFICALLY CALLED OUT ON THESE DRAWINGS.
12. SERVICES ARE TO BE TRANSFERRED BETWEEN EXISTING AND PROPOSED WATER LINES WITH MINIMUM DISRUPTION OF SERVICE. EXISTING WATER LINES MUST BE MAINTAINED IN SERVICE UNTIL SERVICE TRANSFER IS DONE.
13. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, PARK AND RECREATION DEPARTMENT AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION, IN ORDER FOR THEM TO SUSPEND OR RESCHEDULE MOWING OPERATION IN THE MEDIAN OF THE CONSTRUCTION ZONE AREA.

**STREET AND BRIDGE CONSTRUCTION NOTES**

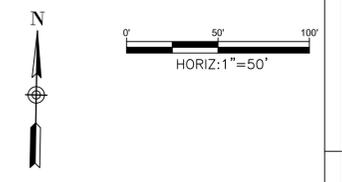
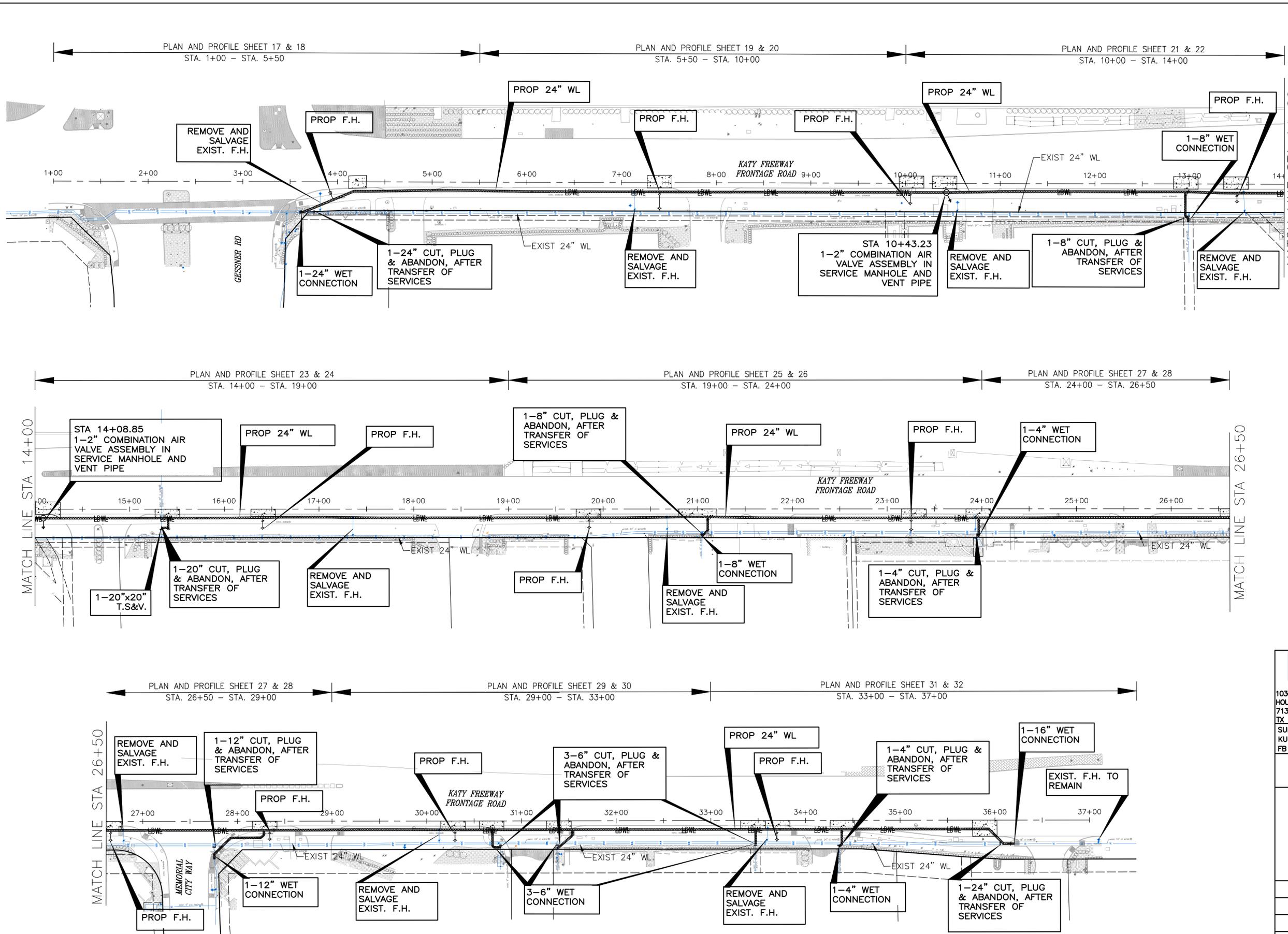
1. HOUSTON PUBLIC WORKS "STANDARD CONSTRUCTION SPECIFICATIONS" AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING" UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN IS CONSISTENT WITH THE MINIMUM STANDARDS ESTABLISHED IN THE "INFRASTRUCTURE DESIGN MANUAL" REFERENCED AT: <https://www.houstonpermittingcenter.org/media/2276/download>
2. FILL AREAS ON PLANS SHALL BE FILLED IN LAYERS NOT EXCEEDING 8" IN DEPTH AND EACH COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY PRIOR TO INSTALLATION OF WATER LINE AND FILL AREA SHALL BE SEEDED AND FERTILIZED WITHIN 10 WORKING DAYS.
3. UTILITY CONTRACTOR SHALL PROVIDE TEMPORARY SILT BARRIER FENCE ON ALL NON-CURBED INLETS WHICH WILL REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.
4. CONTRACTOR SHALL PROVIDE SILT BARRIER FENCE ON ALL STAGE 1 CURB INLETS.
5. EXISTING PAVEMENTS, CURBS, DRIVEWAYS, AND SIDEWALKS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO CITY OF HOUSTON STANDARDS, WITH LATEST ADDENDA AND AMENDMENTS THERETO.
6. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY UPON COMPLETION OF JOB SHALL BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK.
7. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO SATISFACTION OF THE OWNING AUTHORITY.
8. EXPOSED 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BARS 24" LONG 24" C-C DRILLED AND EMBEDDED 8" INTO THE CENTER OF THE EXISTING SLAB WITH "PO ROC" OR EQUAL.
9. CONTRACTOR TO TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG AREAS OF EXCAVATION.
10. CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAWS CONCERNING EXCAVATION, TRENCHING AND SHORING AS SPECIFIED IN CITY OF HOUSTON ORDINANCE #87-1457.
11. WHEEL CHAIR RAMPS SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF HOUSTON STANDARDS AT ALL INTERSECTIONS WHERE SIDEWALKS EXIST AND THE EXISTING CURB OR SIDEWALK IS DAMAGED OR REMOVED DURING CONSTRUCTION.

12. WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE HOUSTON PUBLIC WORKS "STANDARD CONSTRUCTION SPECIFICATIONS" AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING" UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN SHOULD BE CONSISTENT WITH THE MINIMUM STANDARD ESTABLISHED IN THE "DESIGN MANUAL FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORMS DRAINAGE AND STREET PAVING".
13. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGES TO EXISTING WATER, WASTEWATER, STORM SEWER AND TRAFFIC SIGNAL CONDUITS, ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE HOUSTON PUBLIC WORKS "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THERETO, AT NO COST TO THE CITY OF HOUSTON.
14. PRIOR TO STREET CONSTRUCTION, THE CONTRACTOR SHALL CONTACT HOUSTON PUBLIC WORKS AT (PHONE) 832-394-9578 AND COMPLY WITH ALL REQUIREMENTS FOR THE ISSUANCE OF NECESSARY PERMITS/WORK ORDERS FOR STREET CONSTRUCTION.
15. DOUBLE REFLECTORIZED BLUE TRAFFIC MARKERS SHALL BE PLACED 6-INCHES OFFSET OF THE CENTERLINE OF ALL FIRE HYDRANT LOCATIONS BY THE PAVING CONTRACTOR. HYDRANTS LOCATED AT INTERSECTIONS SHALL HAVE A BUTTON PLACED ON EACH STREET.

**STORM CONSTRUCTION NOTES**

1. STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 2317-02, 02317-3, 02317-05, 02317-06, AND 02317-07 (JULY 2019) AS APPLICABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. ALL STORM SEWER CONSTRUCTED IN SIDELOT EASMENT SHALL BE R.C.P (C-76, CLASSIII) AND SHALL BE EMBEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 AS APPLICABLE.
3. ALL SEWER UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT/C.Y. STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL.
4. ALL TRENCH BACKFILL SHALL BE IN 8" LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN EACH LIFT, AND MECHANICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMACTION TEST (ASTM D-698/AASHTO T99).
5. CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.
6. ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24" AND LARGER R.C.P. (C-76, CLASSIII).
7. ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.
8. MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 48-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES. MINIMUM VERTICAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 24-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES.
9. ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02086-ADJUSTING MANHOLES, INLETS, AND VALAVE BOXES TO GRADE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK.
11. ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.
12. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

<p><b>NOTICE:</b> FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811</p>														
<p><b>VERIFICATION OF PRIVATE UTILITY LINES</b></p>														
<p>Date</p>														
<p>CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.  Signature valid for six months.</p>														
<p>Date</p>														
<p>CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  Signature valid for six months.</p>														
<p>Date</p>														
<p>Approved for AT&amp;T underground conduit facilities only. Signature valid for one year.</p>														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%; padding: 5px;">   <b>10300 WESTOFFICE DR. SUITE 800</b>  <b>HOUSTON, TX 77042</b>  <b>713-975-8769</b>  <b>TX FIRM NO.: F-4578</b>  <b>SURVEYED BY:</b>  <b>KUO &amp; ASSOCIATES, LLC</b>  <b>FB NO. P-6395</b> </td> <td style="width: 20%; padding: 5px; text-align: center;"> <p>THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYANATHULA, P.E. TEXAS REG. NO.: 116965  ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES</p> </td> </tr> </table>	 <b>10300 WESTOFFICE DR. SUITE 800</b> <b>HOUSTON, TX 77042</b> <b>713-975-8769</b> <b>TX FIRM NO.: F-4578</b> <b>SURVEYED BY:</b> <b>KUO &amp; ASSOCIATES, LLC</b> <b>FB NO. P-6395</b>	<p>THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYANATHULA, P.E. TEXAS REG. NO.: 116965  ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES</p>												
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<p>UTILITY AND GENERAL CONSTRUCTION NOTES</p>														
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<p>SHEET NO. 6 OF 190</p>														



- LEGEND:**
- PROP. FIRE HYDRANT, GATE VALVE WITH BOX
  - PROP. TAPPING SLLEEVE AND VALVE WITH BOX
  - PROP. CUT, PLUG & ABAND.
  - PROP. REDUCER
  - PROP. GATE VALVE
  - PROP. WATER LINE
  - EXIST. WATER LINE
  - DESIGN BASE LINE
  - EXIST. FIRE HYDRANT TO REMAIN IN SERVICE
  - PIEZOMETER
  - BOREHOLE

NO.	DATE	REVISION	APP.

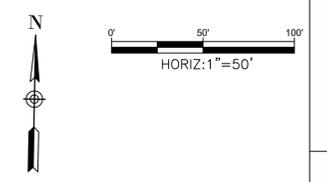
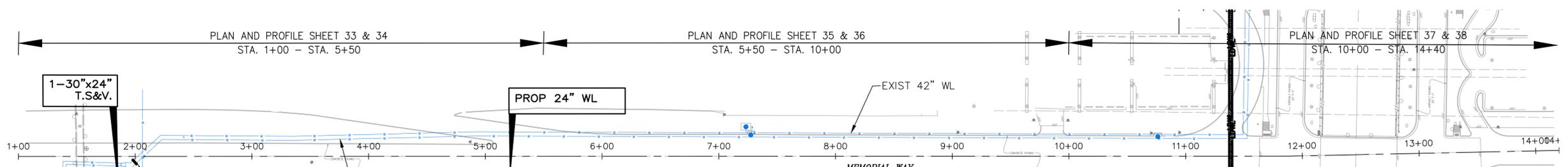
**KUO & ASSOCIATES**  
 ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578  
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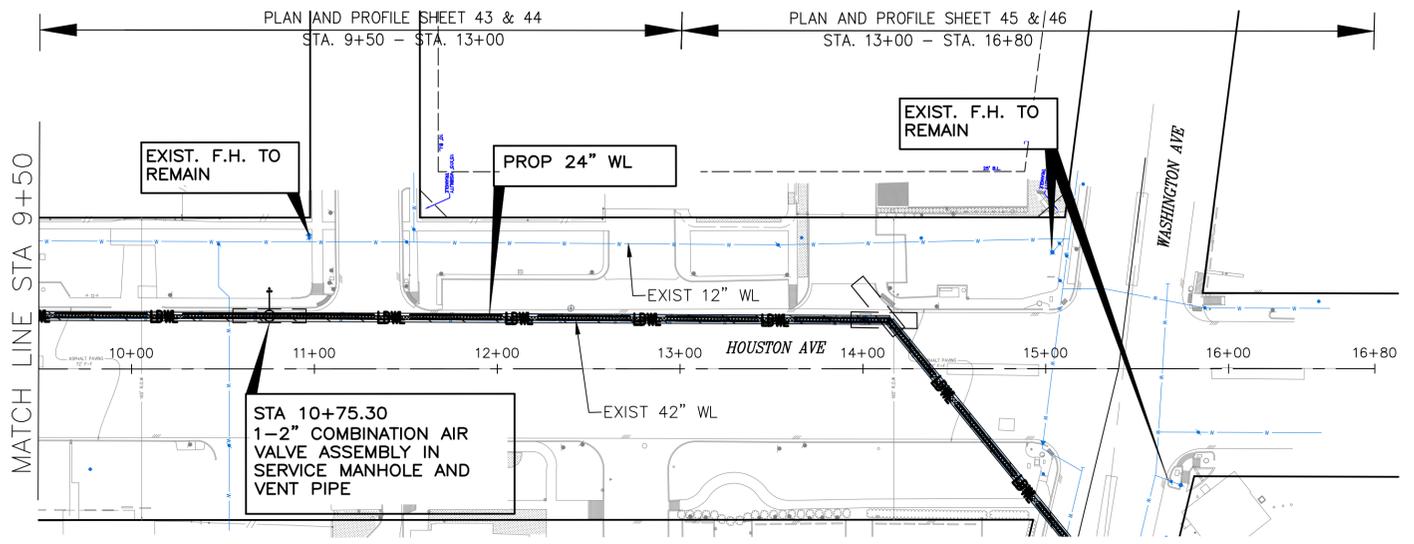
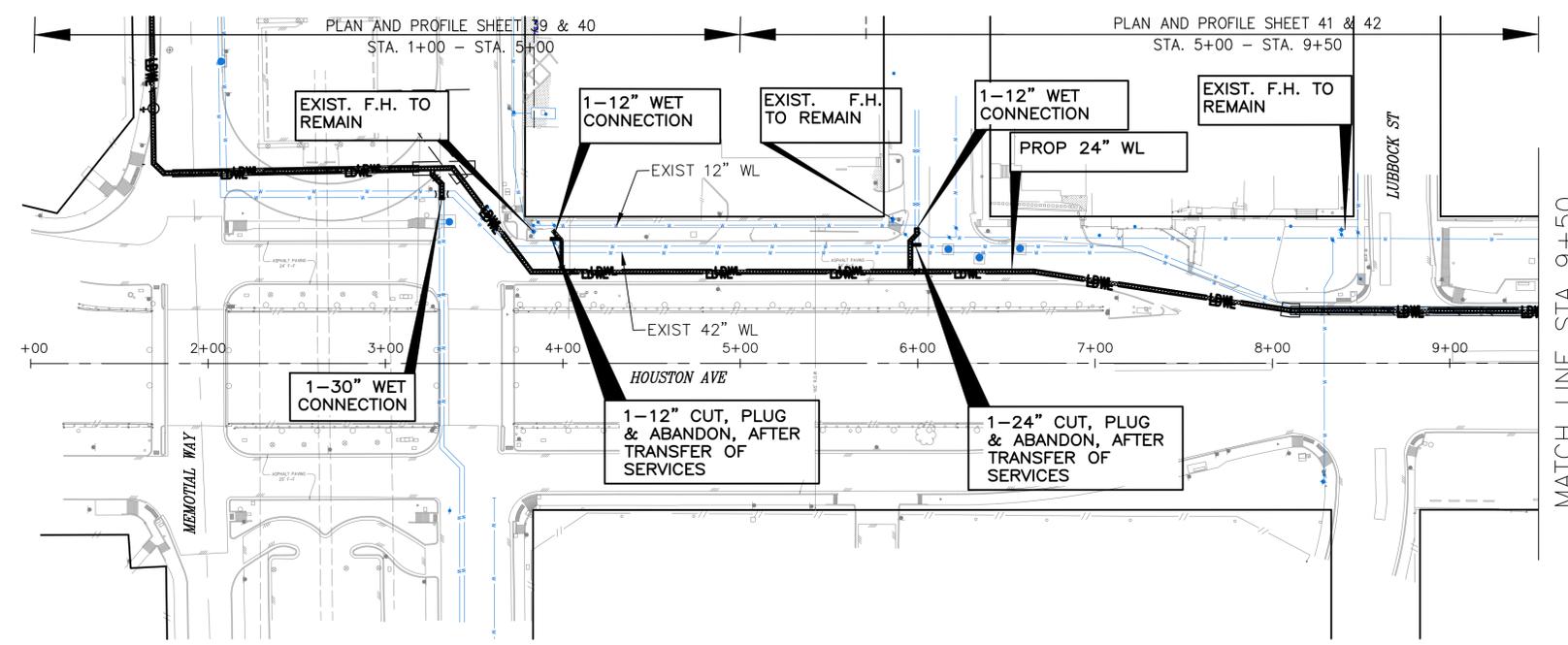
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 WATER LINE SHEET LAYOUT  
 SITE-1  
 SHEET 1 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=50'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 7 OF 190	

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- LEGEND:**
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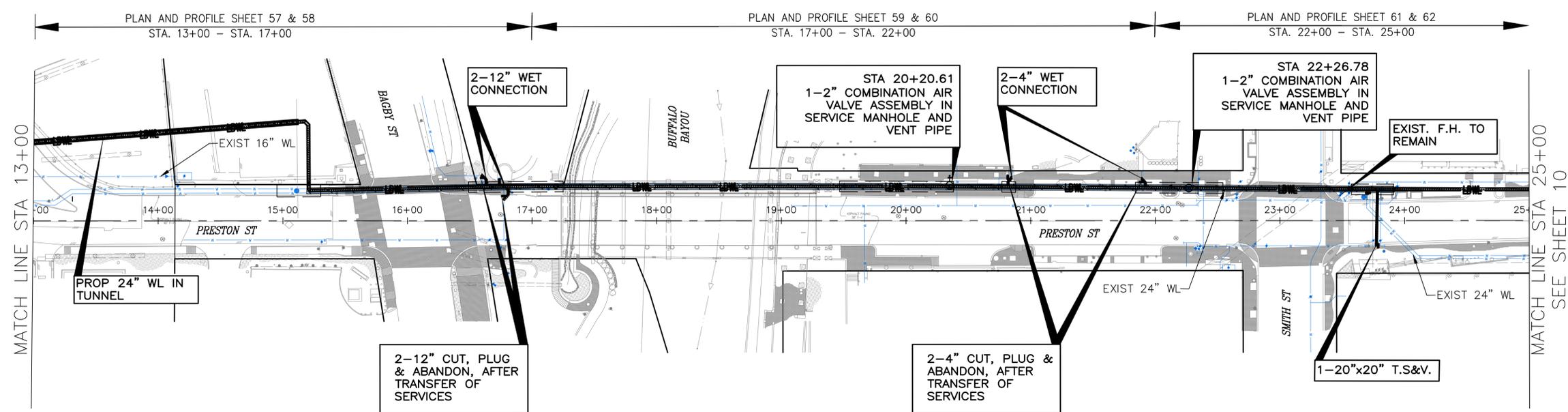
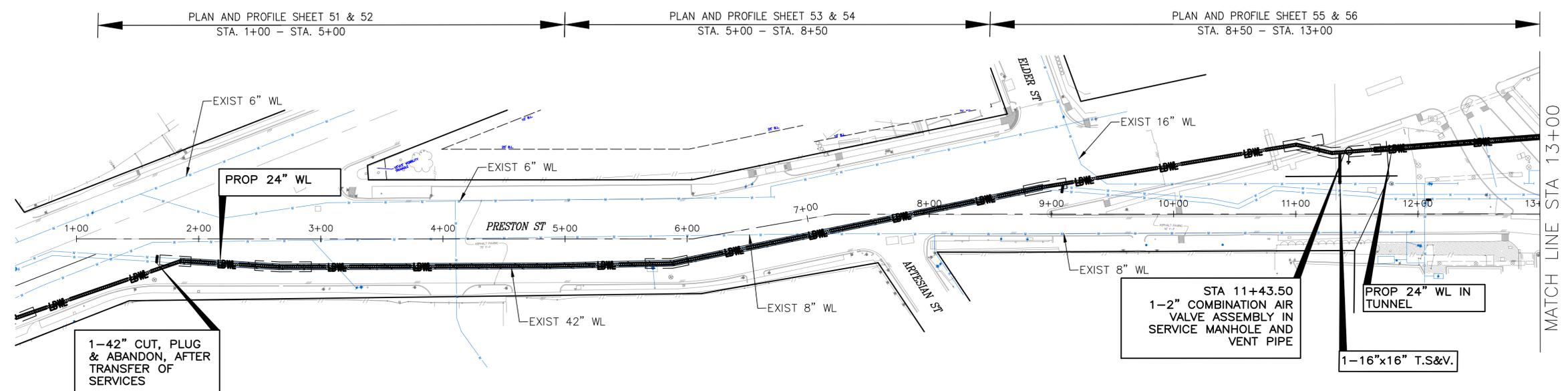
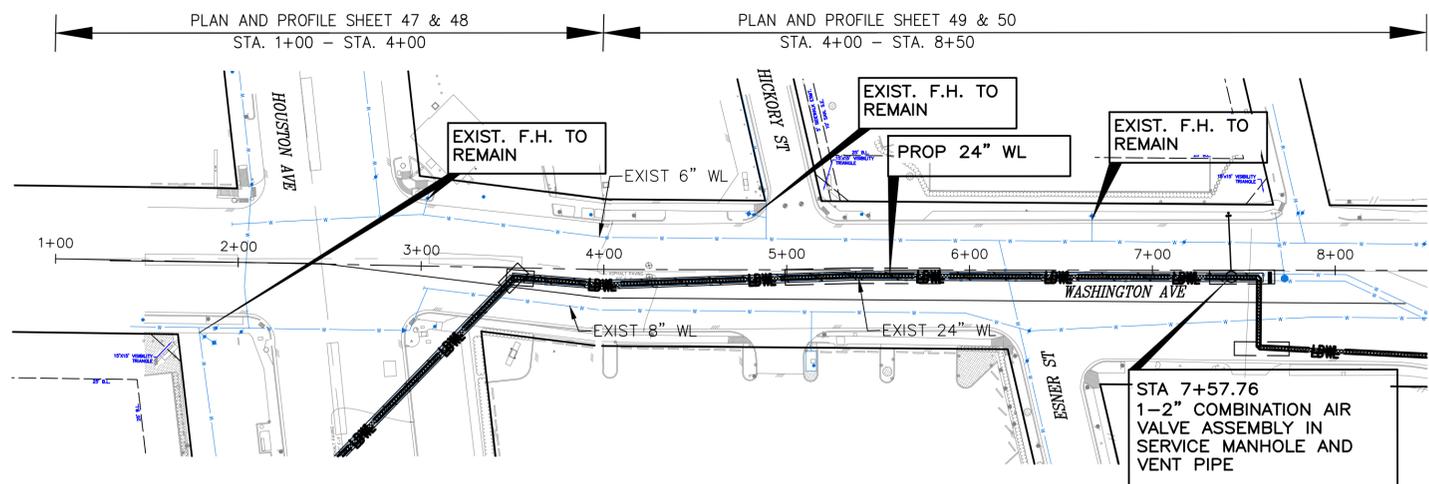
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WATER LINE SHEET LAYOUT SITE-4  
SHEET 2 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 8 OF 190	

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NO.	DATE	REVISION	APP.



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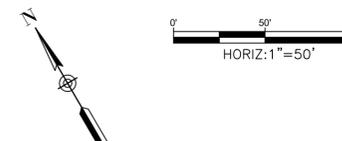
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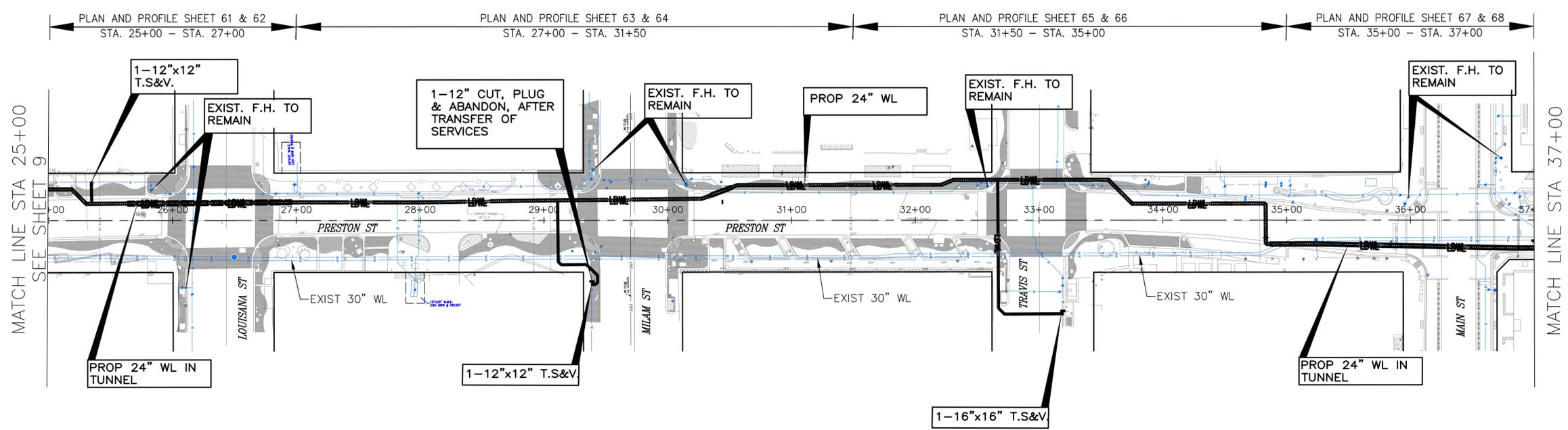
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 SHEET 3 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 9 OF 190	

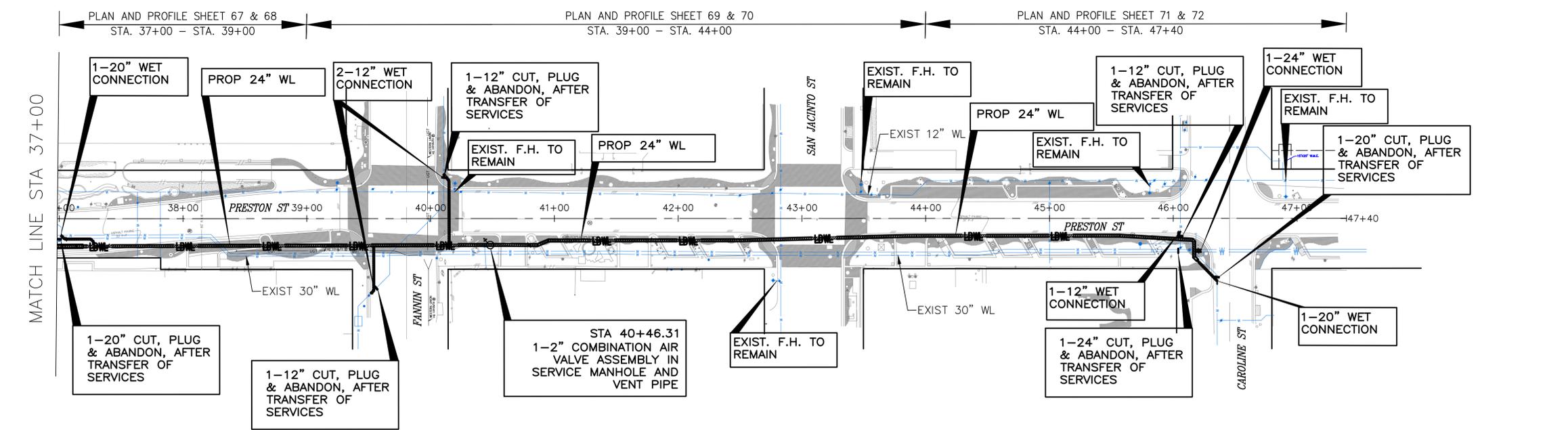
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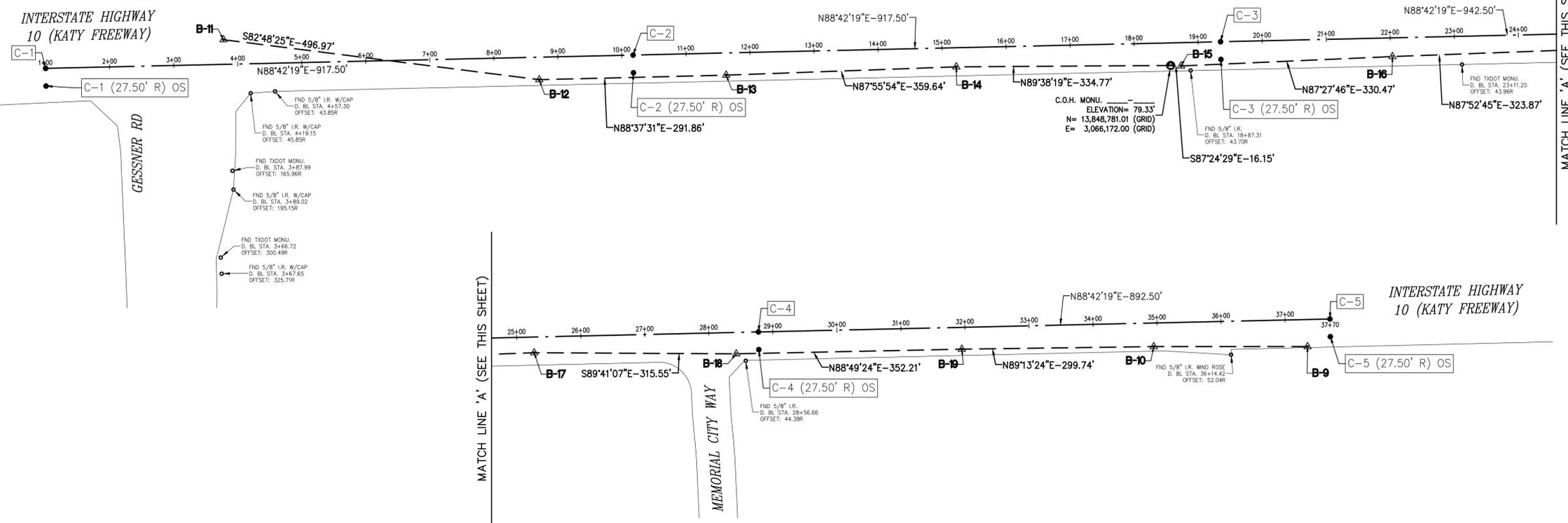
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 WATER LINE SHEET LAYOUT SITE-5  
 SHEET 4 OF 4

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H: 1"=50'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 10 OF 190	

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**INTERSTATE HIGHWAY 10 (KATY FREEWAY)**



**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD  
ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

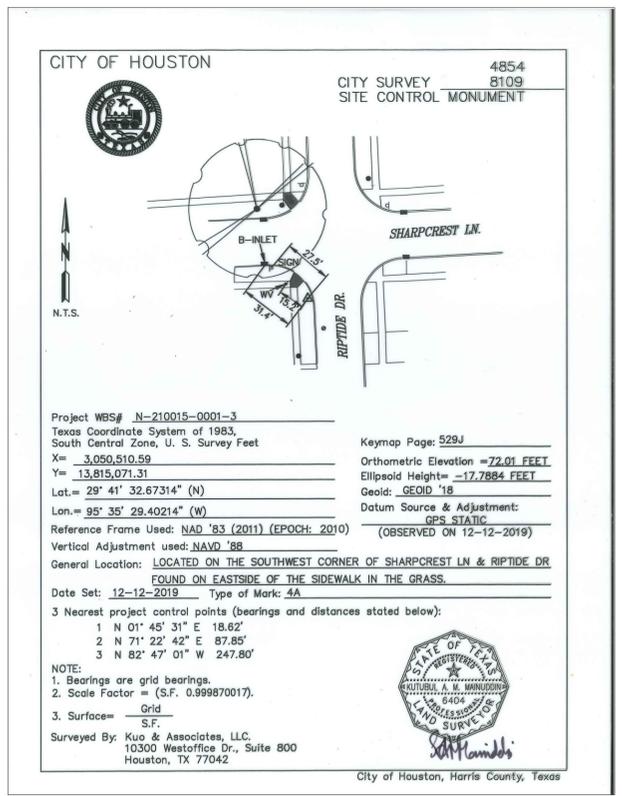
**NOTE:**  
ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.  
THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

**LEGEND:**  
B-X SURVEY CONTROL POINT NUMBER  
C-X DESIGN BASELINE POINT NUMBER  
▲ SURVEY CONTROL POINT  
● DESIGN BASELINE POINT  
● CITY OF HOUSTON MONUMENT  
D. BL: DESIGN BASELINE  
S. BL: SURVEY BASELINE

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL. STA.	OFFSET	DESCRIPTION
B-9	13,850,616.83	3,068,448.03	13,848,816.49	3,068,049.18	77.24'	37+34.10	42.12R	SET 'X' CUT ON CONC.
B-10	13,850,616.80	3,068,207.93	13,848,816.45	3,067,809.11	78.37'	34+94.06	36.73R	SET 1/2" I.R. W/CAP
B-11	13,850,621.49	3,065,091.59	13,848,821.14	3,064,693.18	81.47'	3+78.63	38.37L	SET 'X' CUT ON PAVER
B-12	13,850,559.26	3,065,584.65	13,848,758.92	3,065,186.18	79.91'	8+70.16	34.99R	SET 1/2" I.R. W/CAP
B-13	13,850,566.26	3,065,876.44	13,848,765.92	3,065,477.92	80.02'	11+62.03	34.58R	SET 1/2" I.R. W/CAP
B-14	13,850,579.24	3,066,235.84	13,848,778.90	3,065,837.28	80.91'	15+21.63	29.72R	SET 'X' CUT ON CONC.
B-15	13,850,580.62	3,066,586.74	13,848,780.28	3,066,188.13	79.20'	18+72.47	36.27R	SET 1/2" I.R. W/CAP
B-16	13,850,595.25	3,066,916.89	13,848,794.91	3,066,518.24	78.94'	22+02.87	29.10R	SET 1/2" I.R. W/CAP
B-17	13,850,607.23	3,067,240.53	13,848,806.89	3,066,841.84	78.27'	25+26.70	24.43R	SET 'X' CUT ON CONC.
B-18	13,850,605.50	3,067,556.08	13,848,805.16	3,067,157.35	77.71'	28+42.13	33.30R	SET 'X' CUT ON CONC.
B-19	13,850,612.73	3,067,908.21	13,848,812.39	3,067,509.44	78.70'	31+94.33	34.02R	SET 1/2" I.R. W/CAP

DESIGN BASELINE OFFSET POINTS DATA						
POINT No.	D. BL. STA.	OFFSET	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	0.00R	13,850,576.83	3,064,813.90	13,848,776.49	3,064,416.53
C-2	10+17.50	0.00R	13,850,597.56	3,065,731.17	13,848,797.22	3,065,332.67
C-3	19+35.00	0.00R	13,850,618.29	3,066,648.43	13,848,817.95	3,066,249.82
C-4	28+77.50	0.00R	13,850,639.59	3,067,590.69	13,848,839.24	3,067,191.96
C-5	37+70.00	0.00R	13,850,659.75	3,068,482.96	13,848,859.40	3,068,084.11

DESIGN BASELINE OFFSET POINTS DATA						
POINT No.	D. BL. STA.	OFFSET	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1 (27.50' R) OS	1+00.00	27.50R	13,850,549.34	3,064,814.52	13,848,749.00	3,064,416.15
C-2 (27.50' R) OS	10+17.50	27.50R	13,850,570.07	3,065,731.79	13,848,769.73	3,065,333.29
C-3 (27.50' R) OS	19+35.00	27.50R	13,850,590.80	3,066,649.05	13,848,790.46	3,066,250.44
C-4 (27.50' R) OS	28+77.50	27.50R	13,850,612.10	3,067,591.31	13,848,811.75	3,067,192.58
C-5 (27.50' R) OS	37+70.00	27.50R	13,850,632.26	3,068,483.58	13,848,831.91	3,068,084.73



T.B.M. B-10  
SET 1/2" I.R. W/CAP  
ELEV.=78.37  
D. BL. STA. 34+94.06 OFFSET: 36.73R

T.B.M. B-15  
SET 1/2" I.R. W/CAP  
ELEV.=79.20  
D. BL. STA. 18+72.47 OFFSET: 36.27R

T.B.M. B-9  
SET 'X' CUT ON CONC.  
ELEV.=77.26  
D. BL. STA. 37+34.10 OFFSET: 42.12R

T.B.M. B-16  
SET 1/2" I.R. W/CAP  
ELEV.=78.94  
D. BL. STA. 22+02.87 OFFSET: 29.10R

T.B.M. B-11  
SET 'X' CUT ON PAVER  
ELEV.=81.47  
D. BL. STA. 3+78.63 OFFSET: 38.37L

T.B.M. B-17  
SET 'X' CUT ON CONC.  
ELEV.=78.27  
D. BL. STA. 25+26.70 OFFSET: 24.43R

T.B.M. B-12  
SET 1/2" I.R. W/CAP  
ELEV.=79.91  
D. BL. STA. 8+70.16 OFFSET: 34.99R

T.B.M. B-18  
SET 'X' CUT ON CONC.  
ELEV.=77.701  
D. BL. STA. 28+42.13 OFFSET: 33.30R

T.B.M. B-13  
SET 1/2" I.R. W/CAP  
ELEV.=80.02  
D. BL. STA. 11+62.03 OFFSET: 34.58R

T.B.M. B-19  
SET 1/2" I.R. W/CAP  
ELEV.=78.70  
D. BL. STA. 31+94.33 OFFSET: 34.02R

T.B.M. B-14  
SET 'X' CUT ON CONC.  
ELEV.=80.91  
D. BL. STA. 15+21.63 OFFSET: 29.72R

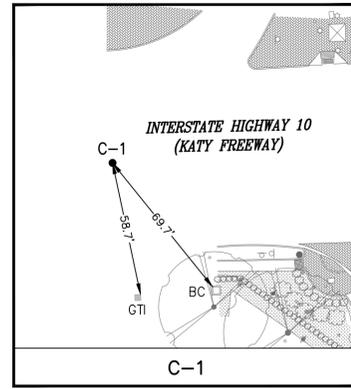
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ENGINEERING & SURVEYING  
10300 Westoffice Dr., Suite 800, Houston, Texas 77042  
Tel: 713-975-8769, Fax: 713-975-0520, www.kuasurveys.com  
TBPELS Engineering Firm Reg. No. F-4378  
TBPELS Surveying Firm Reg. No. 10075600

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BIDDING OR CONSTRUCTION.  
KUTUBUL A. M. MAINUDDIN, R.P.L.S.  
TEXAS REG. NO.: 6404  
DATE: JANUARY 07, 2026

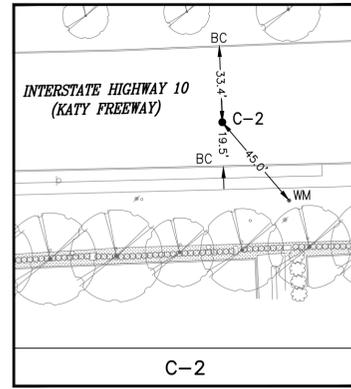
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
KATY FREEWAY SITE-1  
SURVEY CONTROL MAP  
(SHEET 1 OF 2)

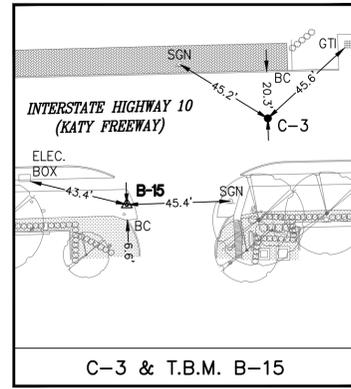
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S-000701-0043-4	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 11 OF 190	



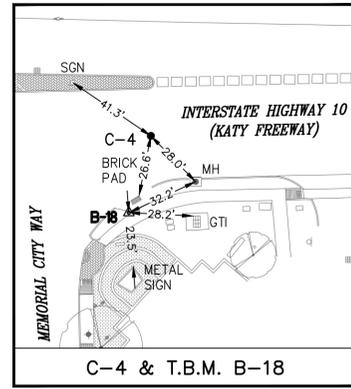
C-1



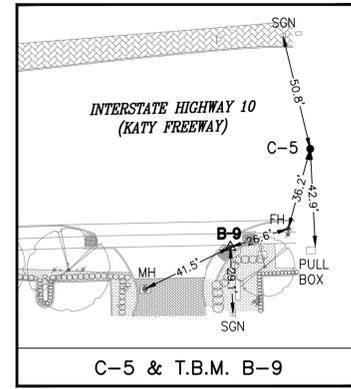
C-2



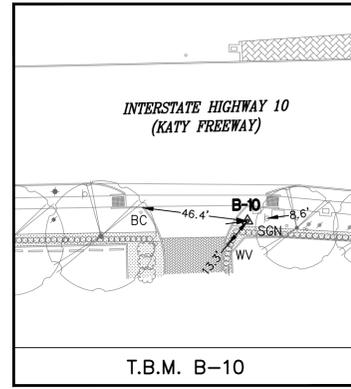
C-3 & T.B.M. B-15



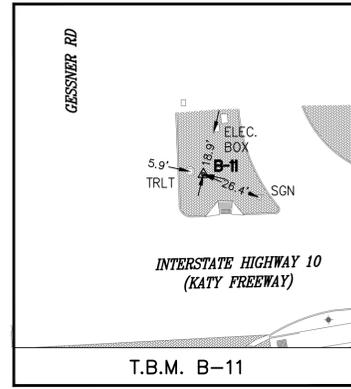
C-4 & T.B.M. B-18



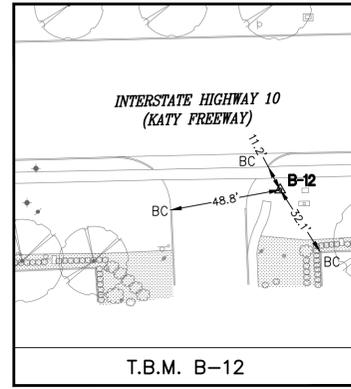
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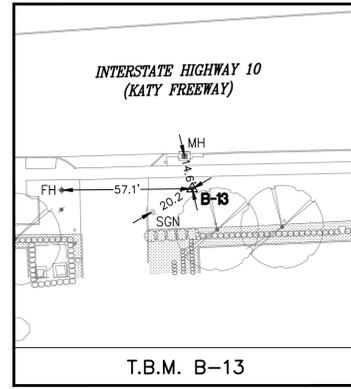
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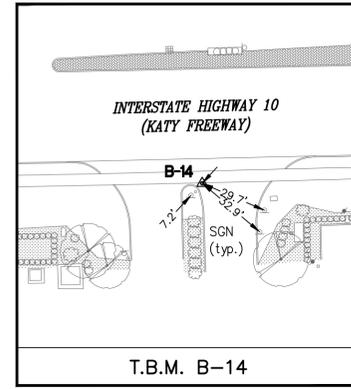
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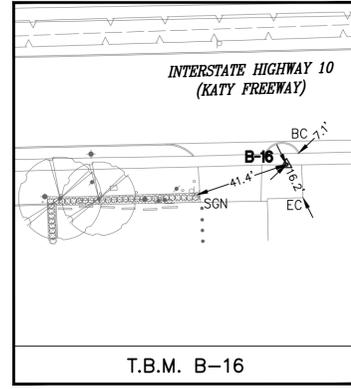
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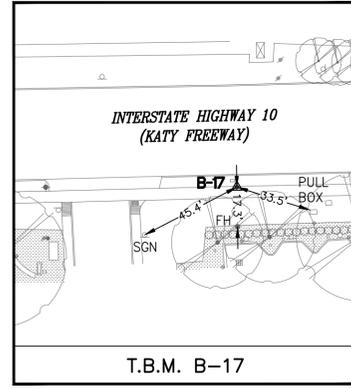
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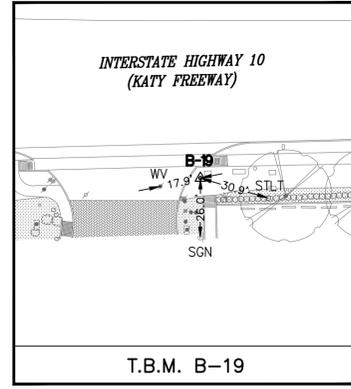
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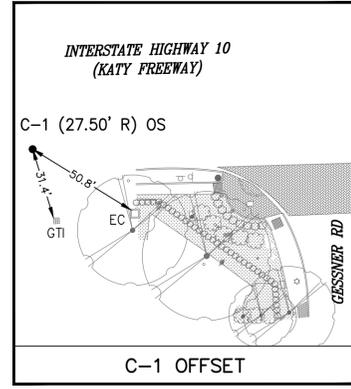
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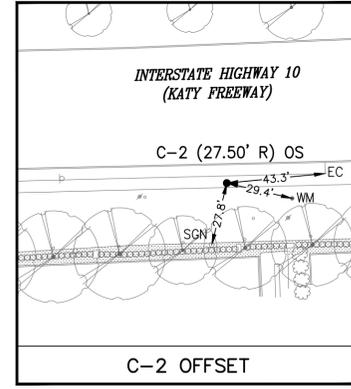
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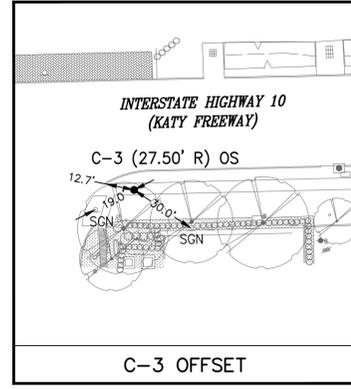
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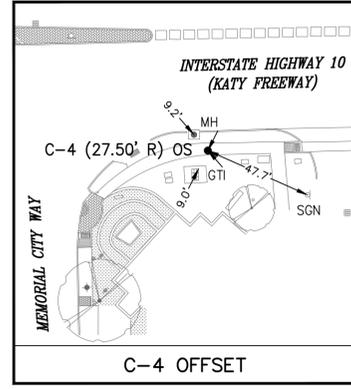
C-1 OFFSET



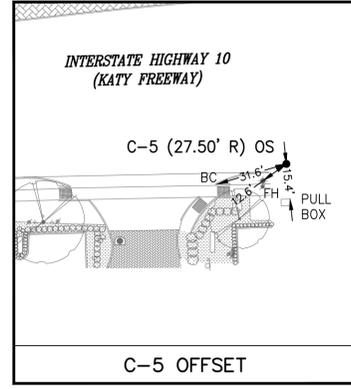
C-2 OFFSET



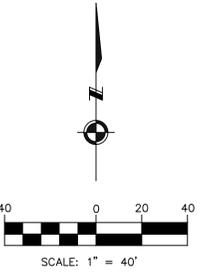
C-3 OFFSET



C-4 OFFSET



C-5 OFFSET



- EXIST. TOPOGRAPHIC LEGEND**
- ASPHALT SYMBOL
  - B OR BB INLET
  - BUSH
  - C INLET
  - CLEANOUT
  - brick column
  - DOWN GUY
  - E INLET
  - ELEC MANHOLE
  - FIRE HYDRANT
  - GAS METER
  - GAS VALVE
  - GATE
  - GRATE INLET
  - GRATE INLET
  - MAIL BOX
  - STORM MANHOLE
  - SANITARY MANHOLE
  - PLANTER
  - POWER POLE W/LT.
  - SIGN
  - SIGNAL POLE
  - SPRINKLER VALVE
  - SPRINKLER HEAD
  - STREET LIGHT/FLOOD LIGHT
  - STREET LIGHT/PARKING LIGHT
  - TREE
  - TREE STUMP
  - TREE-CREPE MYRTLE
  - TREE-PINE
  - WATER METER
  - WATER VALVE
  - IRRIGATION CONTROL VALVE

- ABBREVIATIONS**
- FH - FIRE HYDRANT
  - FC - FENCE CORNER
  - LT - LIGHT POLE
  - MB - MAIL BOX
  - MH - MANHOLE
  - PP - POWER POLE
  - PP/LT - POWER POLE W/LIGHT
  - SGN - SIGN
  - TRLT - TRAFFIC LIGHT
  - WM - WATER METER

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TEXAS REG. NO.: 6404  
DATE: JANUARY 07, 2026

SURVEYED BY: KUO & ASSOC.  
FB NO. P-6395

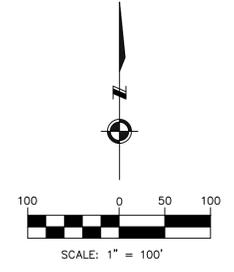
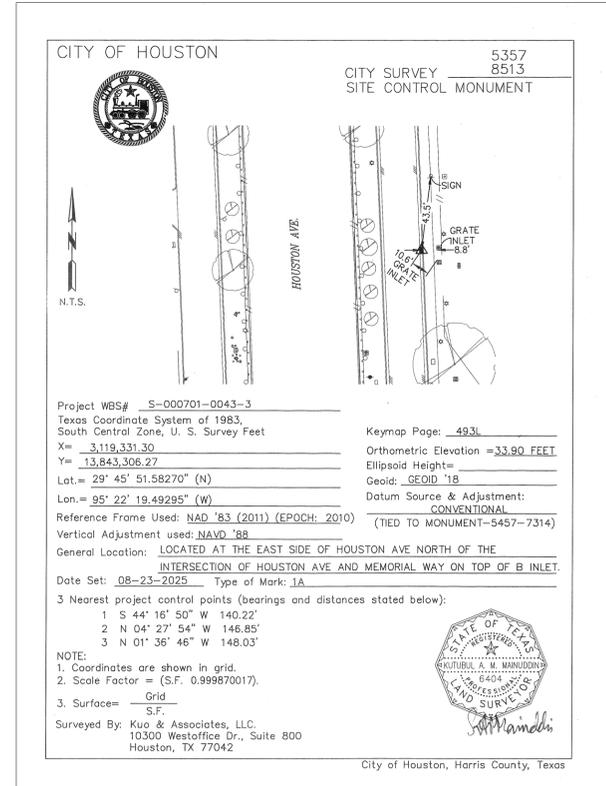
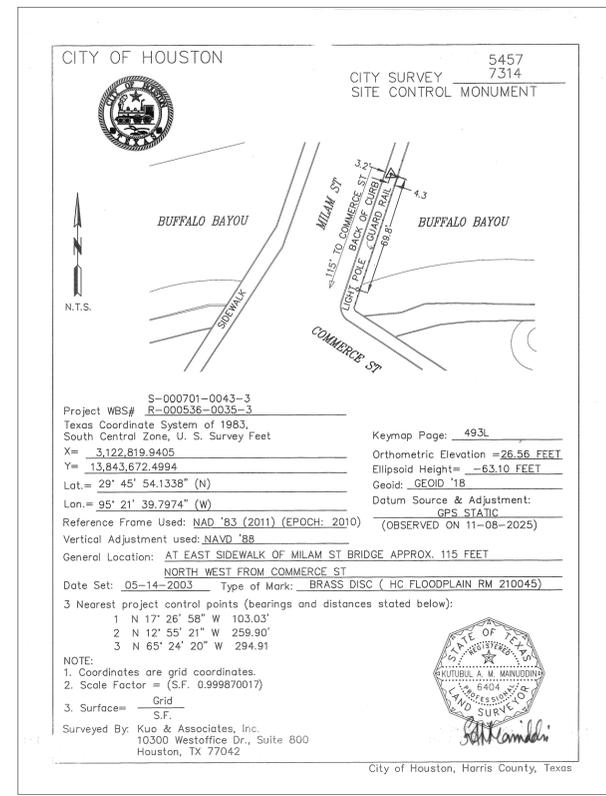
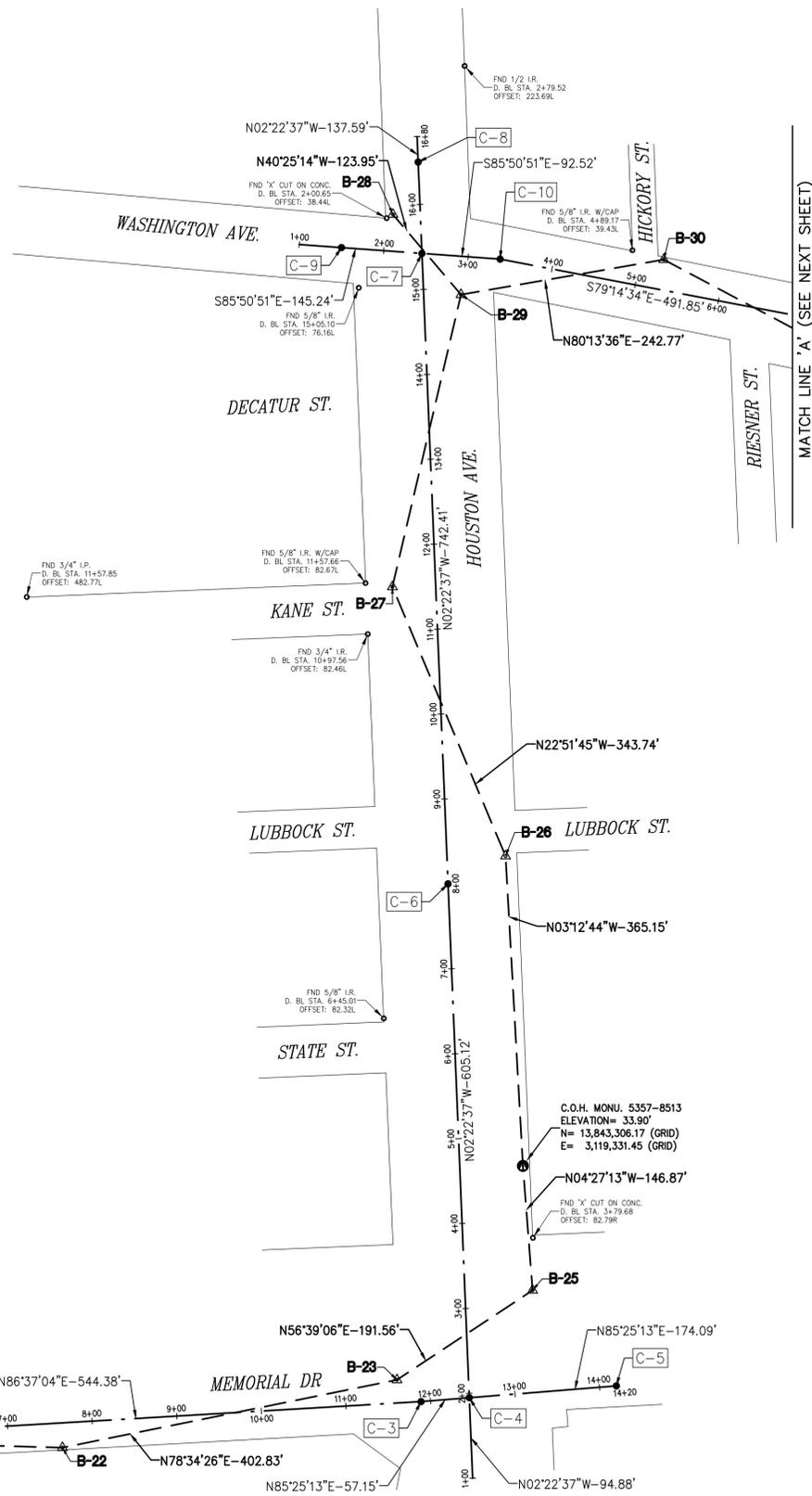
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
KATY FREEWAY SITE-1  
SURVEY CONTROL MAP  
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 12 OF 190	

FILE PATH: S:\Proj-2024\24057-(MISC LDWL IMPROVEMENTS-PKG 4)\Dwgs\SCM\Site 2\24057-SCM-Site 2.dwg PLOT STYLE: LARGE\_FORMAT\_BN.CTB PLOTTED: 1/8/2026 10:45 AM

- T.B.M. B-20  
SET 'X' CUT ON CONC.  
ELEV.=38.58  
D. BL STA. 1+75.82 OFFSET: 35.49R
- T.B.M. B-21  
SET 1/2" I.R. W/CAP  
ELEV.=38.33  
D. BL STA. 2+41.64 OFFSET: 16.47L
- T.B.M. B-22  
FND 5/8" I.R.  
ELEV.=39.30  
D. BL STA. 7+63.05 OFFSET: 29.13R
- T.B.M. B-23  
SET 1/2" I.R. W/CAP  
ELEV.=38.01  
D. BL STA. 11+61.93 OFFSET: 27.24L
- T.B.M. B-25  
SET 'X' CUT ON CONC.  
ELEV.=34.28  
D. BL STA. 3+18.02 OFFSET: 79.83R
- T.B.M. B-24  
FND 5/8" I.R.  
ELEV.=39.38  
D. BL STA. 13+32.33 OFFSET: 103.64R
- T.B.M. B-26  
SET 'X' CUT ON CONC.  
ELEV.=40.12  
D. BL STA. 8+29.91 OFFSET: 69.18R
- T.B.M. B-27  
SET 'X' CUT ON CONC.  
ELEV.=44.13  
D. BL STA. 11+51.91 OFFSET: 51.11L
- T.B.M. B-28  
SET 'X' CUT ON CONC.  
ELEV.=44.13  
D. BL STA. 2+07.74 OFFSET: 43.27L
- T.B.M. B-29  
SET 'X' CUT ON CONC.  
ELEV.=44.36  
D. BL STA. 2+94.73 OFFSET: 45.03R
- T.B.M. B-30  
SET 'X' CUT ON CONC.  
ELEV.=43.42  
D. BL STA. 5+27.54 OFFSET: 35.46L
- T.B.M. B-32  
SET 1/2" I.R. W/CAP  
ELEV.=42.02  
D. BL STA. 8+14.92 OFFSET: 53.16R
- T.B.M. B-33  
SET 5/8" I.R. W/CAP  
ELEV.=41.23  
D. BL STA. 3+49.67 OFFSET: 36.90L
- T.B.M. B-34  
SET MAGNAIL W/SHINER  
ELEV.=39.69  
D. BL STA. 7+24.10 OFFSET: 32.32L
- T.B.M. B-35  
FND 'X' CUT ON CONC.  
ELEV.=40.60  
D. BL STA. 9+20.39 OFFSET: 3.64L
- T.B.M. B-36  
SET MAGNAIL W/SHINER  
ELEV.=38.59  
D. BL STA. 12+59.39 OFFSET: 6.31L
- T.B.M. B-37  
SET 'X' CUT ON PAVERS  
ELEV.=30.93  
D. BL STA. 16+46.90 OFFSET: 27.98R
- T.B.M. B-38  
SET 'X' CUT ON PAVERS  
ELEV.=32.98  
D. BL STA. 19+64.23 OFFSET: 25.88L
- T.B.M. B-39  
SET 'X' CUT ON CONC.  
ELEV.=36.44  
D. BL STA. 23+44.86 OFFSET: 27.19R
- T.B.M. B-40  
SET 'X' CUT ON CONC.  
ELEV.=38.02  
D. BL STA. 26+01.60 OFFSET: 25.20L
- T.B.M. B-41  
SET 'X' CUT ON CONC.  
ELEV.=43.51  
D. BL STA. 30+10.07 OFFSET: 18.64R
- T.B.M. B-42  
FND 'X' CUT ON CONC.  
ELEV.=44.90  
D. BL STA. 32+61.76 OFFSET: 27.81L
- T.B.M. B-43  
FND 'X' CUT ON CONC.  
ELEV.=45.66  
D. BL STA. 36+78.83 OFFSET: 9.22L
- T.B.M. B-44  
SET 'X' CUT ON CONC.  
ELEV.=43.73  
D. BL STA. 39+43.92 OFFSET: 28.07L
- T.B.M. B-45  
SET 'X' CUT ON CONC.  
ELEV.=42.72  
D. BL STA. 43+43.72 OFFSET: 20.97L
- T.B.M. B-46  
SET 'X' CUT ON CONC.  
ELEV.=40.58  
D. BL STA. 46+19.94 OFFSET: 21.45R



**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 5757-7314, AN BRASS DISK IN CONCRETE, LOCATED ON THE EAST SIDEWALK OF MILAM ST. BRIDGE APPROXIMATELY 115 FEET NORTHWEST OF THE INTERSECTION WITH COMMERCE STREET.  
ELEV. 26.56 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED DECEMBER 1, 2024.

**VERTICAL DATUM ADJUSTMENT:**  
THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 210045) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (GEOID '18) IS 0.22'  
NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988 (GEOID '18) ELEVATION - 0.22 FT

**NOTE:**  
ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.  
THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

- LEGEND:**
- B-X** SURVEY CONTROL POINT NUMBER
  - C-X** DESIGN BASELINE POINT NUMBER
  - ▲** SURVEY CONTROL POINT
  - DESIGN BASELINE POINT
  - ⊙** CITY OF HOUSTON MONUMENT
  - D. BL: DESIGN BASELINE ————
  - S. BL: SURVEY BASELINE - - - - -

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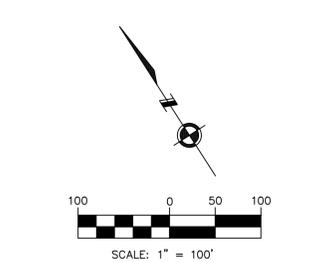
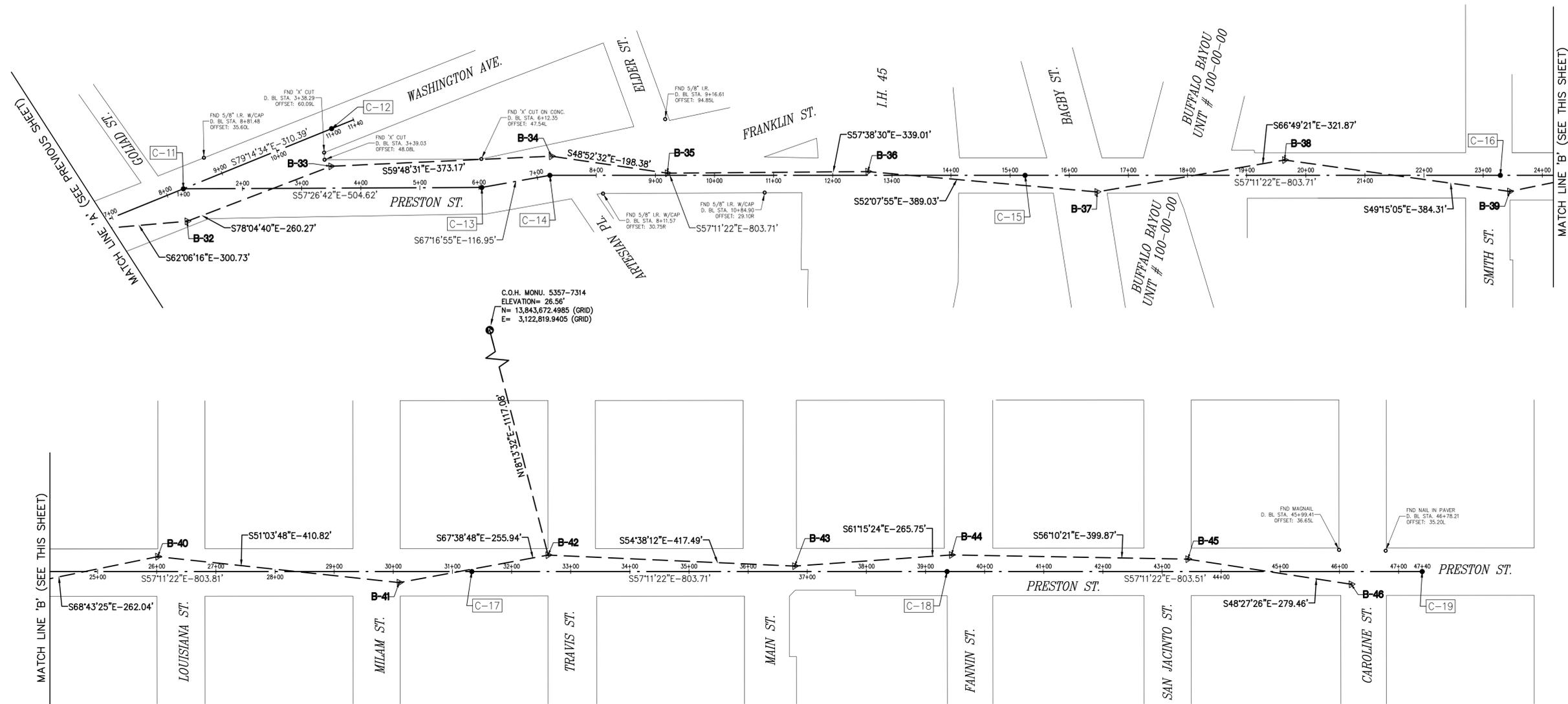
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FB NO. P-6395

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEROUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
SITE 4 & 5

SURVEY CONTROL MAP  
(SHEET 1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 13 OF 190	



**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 5757-7314, AN BRASS DISK IN CONCRETE, LOCATED ON THE EAST SIDEWALK OF MILAM ST. BRIDGE APPROXIMATELY 115 FEET NORTHWEST OF THE INTERSECTION WITH COMMERCE STREET.  
 ELEV. 26.56 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED DECEMBER 1, 2024.

**VERTICAL DATUM ADJUSTMENT:**  
 THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 210045) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (GEOID '18) IS 0.22'  
 NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988 (GEOID '18) ELEVATION - 0.22 FT

**NOTE:**  
 ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.  
 THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

**LEGEND:**  
 B-X SURVEY CONTROL POINT NUMBER  
 C-X DESIGN BASELINE POINT NUMBER  
 ● SURVEY CONTROL POINT  
 ○ DESIGN BASELINE POINT  
 ● CITY OF HOUSTON MONUMENT  
 D. BL.: DESIGN BASELINE  
 S. BL.: SURVEY BASELINE

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL. STA.	OFFSET	DESCRIPTION
B-20	13,844,733.28	3,118,607.66	13,842,933.70	3,118,202.30	38.58'	1+75.82	35.49R	SET 'X' CUT ON CONC.
B-21	13,844,789.03	3,118,670.30	13,842,989.44	3,118,264.93	38.33'	2+41.64	16.47L	SET 1/2" I.R. W/CAP
B-22	13,844,774.27	3,119,193.50	13,842,974.68	3,118,788.05	39.30'	7+63.05	29.13R	FND 5/8" I.R.
B-23	13,844,854.07	3,119,588.35	13,843,054.48	3,119,182.85	38.01'	11+61.93	27.24L	SET 1/2" I.R. W/CAP
B-25	13,844,959.38	3,119,748.36	13,843,159.77	3,119,342.85	34.28'	3+18.02	79.83R	SET 'X' CUT ON CONC.
B-26	13,845,470.38	3,119,716.50	13,843,670.70	3,119,310.99	40.12'	8+29.91	69.18R	SET 'X' CUT ON CONC.
B-27	13,845,787.12	3,119,582.95	13,843,987.40	3,119,177.46	44.13'	11+51.91	51.11L	SET 'X' CUT ON CONC.
B-28	13,846,225.27	3,119,583.55	13,844,425.50	3,119,178.06	44.13'	2+07.74	43.27L	SET 'X' CUT ON CONC.
B-29	13,846,130.91	3,119,663.92	13,844,331.15	3,119,258.42	44.36'	2+94.73	45.03R	SET 'X' CUT ON CONC.
B-30	13,846,172.12	3,119,903.17	13,844,372.35	3,119,497.63	43.42'	5+27.54	35.46L	SET 'X' CUT ON CONC.
B-32	13,846,031.42	3,120,168.95	13,844,231.67	3,119,763.38	42.02'	8+14.92	53.16R	SET 1/2" I.R. W/CAP
B-33	13,845,977.65	3,120,423.61	13,844,177.91	3,120,018.01	41.23'	3+49.67	36.90L	SET 5/8" I.R. W/CAP
B-34	13,845,789.99	3,120,746.16	13,843,990.27	3,120,340.51	39.69'	7+24.10	32.32L	SET MAGNAIL W/SHINER
B-35	13,845,659.52	3,120,895.59	13,843,859.82	3,120,489.93	40.60'	9+20.39	3.64L	FND 'X' CUT ON CONC.
B-36	13,845,478.08	3,121,181.96	13,843,678.40	3,120,776.25	38.59'	12+59.39	6.31L	SET MAGNAIL W/SHINER
B-37	13,845,239.27	3,121,489.07	13,843,439.63	3,121,083.33	30.93'	16+46.90	27.98R	SET 'X' CUT ON PAVERS
B-38	13,845,112.59	3,121,784.96	13,843,312.96	3,121,379.18	32.98'	19+64.23	25.88L	SET 'X' CUT ON PAVERS
B-39	13,844,861.74	3,122,076.10	13,843,062.14	3,121,670.28	36.44'	23+44.86	27.19R	SET 'X' CUT ON CONC.
B-40	13,844,766.65	3,122,320.28	13,842,967.07	3,121,914.43	38.02'	26+01.60	25.20L	SET 'X' CUT ON CONC.
B-41	13,844,508.47	3,122,639.83	13,842,708.92	3,122,233.94	43.51'	30+10.07	18.64R	SET 'X' CUT ON CONC.
B-42	13,844,411.13	3,122,876.53	13,842,611.60	3,122,470.61	44.90'	32+61.76	27.81L	FND 'X' CUT ON CONC.
B-43	13,844,169.51	3,123,216.99	13,842,370.00	3,122,811.03	45.66'	36+78.83	9.22L	FND 'X' CUT ON CONC.
B-44	13,844,041.71	3,123,450.00	13,842,242.22	3,123,044.00	43.73'	39+43.92	28.07L	SET 'X' CUT ON CONC.
B-45	13,843,819.11	3,123,782.18	13,842,019.65	3,123,376.14	42.72'	43+43.72	20.97L	SET 'X' CUT ON CONC.
B-46	13,843,633.78	3,123,991.34	13,841,834.34	3,123,585.27	40.58'	46+19.94	21.45R	SET 'X' CUT ON CONC.

DESIGN BASELINE POINTS DATA						
POINT No.	D. BL. STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	MATERIAL SET
C-1	1+00.00	13,844,764.23	3,118,529.88	13,842,964.65	3,118,124.52	SET 'X' CUT
C-2	6+44.38	13,844,796.35	3,119,073.31	13,842,996.76	3,118,667.89	SET 'X' CUT
C-3	11+88.77	13,844,828.47	3,119,616.75	13,843,028.88	3,119,211.25	SET 'X' CUT
C-4	12+45.91	13,844,833.03	3,119,673.71	13,843,033.44	3,119,268.21	SET 'X' CUT
C-5	14+20.00	13,844,846.93	3,119,847.24	13,843,047.34	3,119,441.72	SET 'X' CUT
C-6	8+00.00	13,845,437.63	3,119,648.61	13,843,637.96	3,119,243.11	SET MAGNAIL W/SHINER
C-7	15+42.41	13,846,179.40	3,119,617.82	13,844,379.63	3,119,212.33	SET MAGNAIL W/SHINER
C-8	16+50.00	13,846,286.90	3,119,613.37	13,844,487.12	3,119,207.88	SET MAGNAIL W/SHINER
C-9	1+50.00	13,846,186.29	3,119,522.83	13,844,386.52	3,119,117.35	SET MAGNAIL W/SHINER
C-10	3+37.76	13,846,172.70	3,119,710.10	13,844,372.94	3,119,304.59	SET MAGNAIL W/SHINER
C-11	8+29.61	13,846,080.90	3,120,193.31	13,844,281.15	3,119,787.74	UNABLE TO SET-CONSTRUCTION
C-12	11+00.00	13,846,030.43	3,120,458.95	13,844,230.68	3,120,053.34	SET MAGNAIL W/SHINER
C-13	6+04.62	13,845,809.36	3,120,618.64	13,844,009.64	3,120,213.01	SET MAGNAIL W/SHINER
C-14	7+21.57	13,845,764.20	3,120,726.52	13,843,964.48	3,120,320.88	SET MAGNAIL W/SHINER
C-15	15+25.27	13,845,328.70	3,121,402.00	13,843,529.04	3,120,996.28	SET MAGNAIL W/SHINER
C-16	23+28.98	13,844,893.20	3,122,077.49	13,843,093.60	3,121,671.68	SET 'X' CUT
C-17	31+32.79	13,844,457.64	3,122,753.06	13,842,658.10	3,122,347.16	SET MAGNAIL W/SHINER
C-18	39+36.49	13,844,022.14	3,123,428.55	13,842,222.66	3,123,022.56	SET 'X' CUT
C-19	47+40.00	13,843,586.75	3,124,103.87	13,841,787.32	3,123,697.79	SET 'X' CUT

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 Tel: 713-975-9769, Fax: 713-975-9200, www.kuasurvey.com  
 TBPES Engineering Firm Reg. No. F-4378  
 TBPES Surveying Firm Reg. No. 10075600

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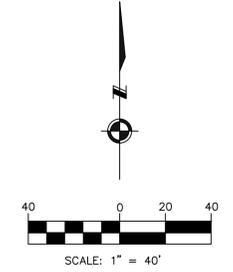
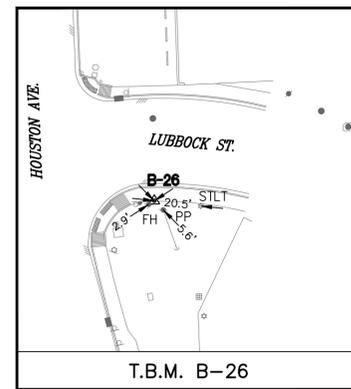
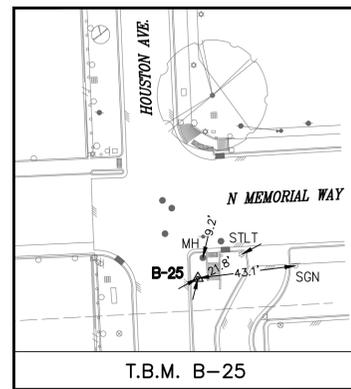
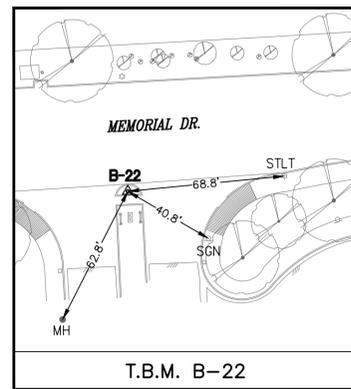
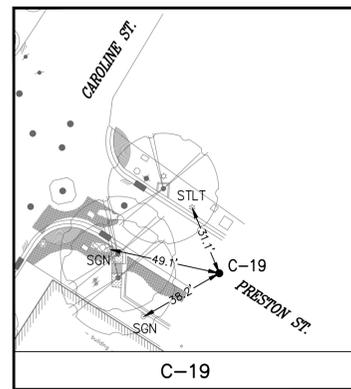
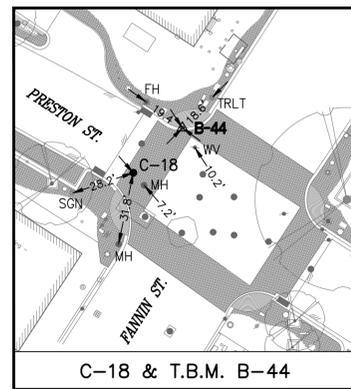
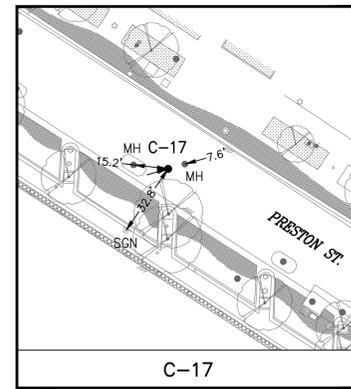
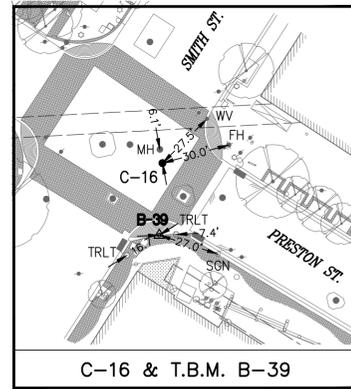
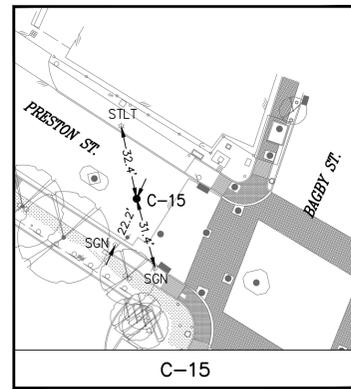
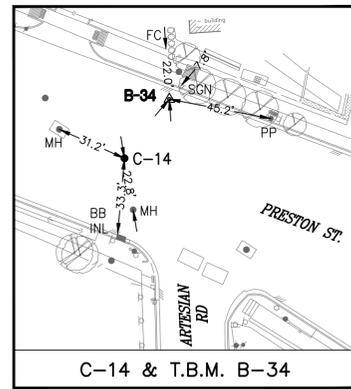
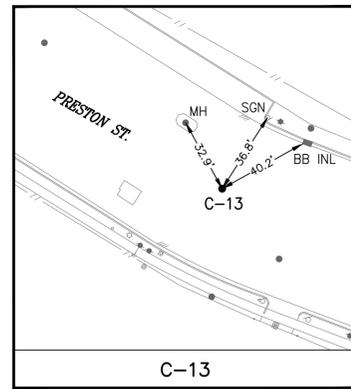
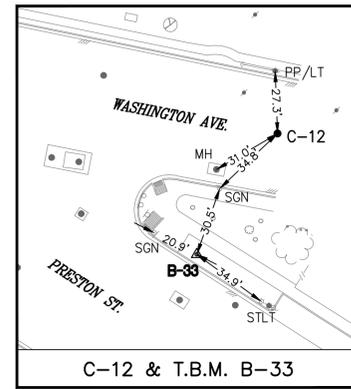
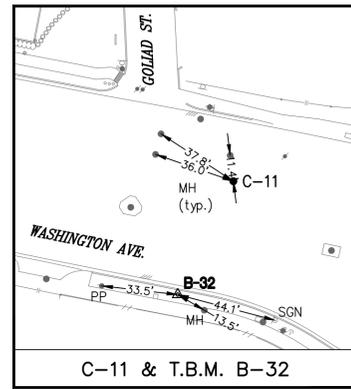
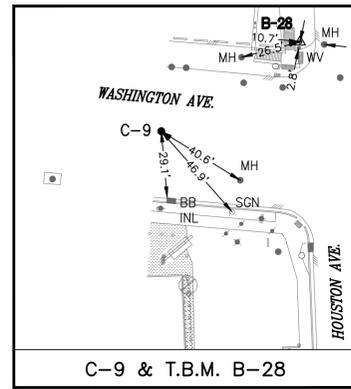
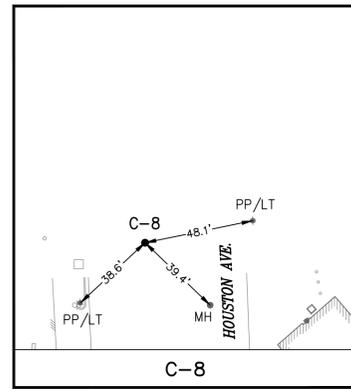
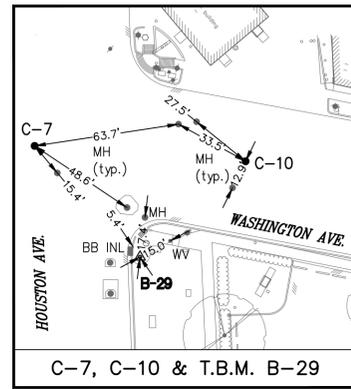
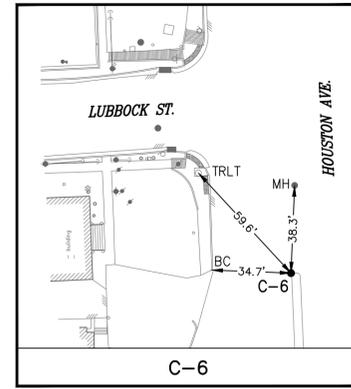
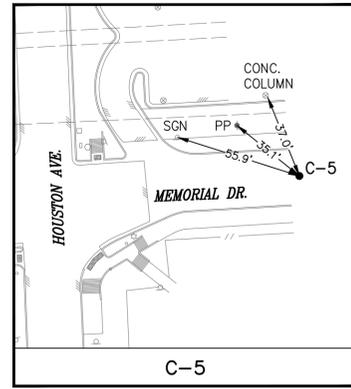
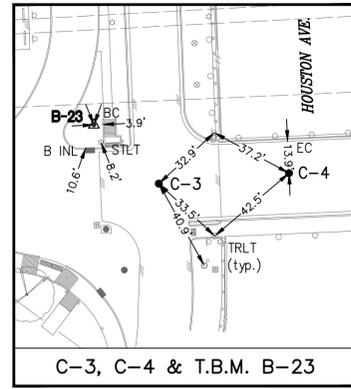
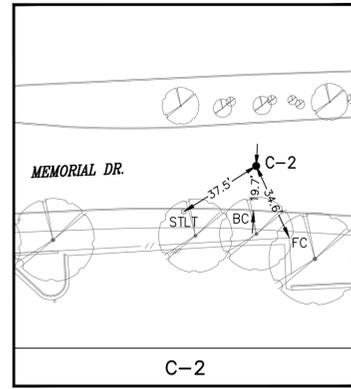
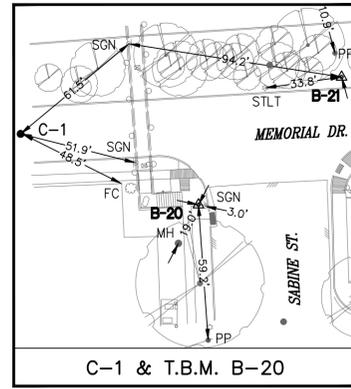
KUTUBUL A. M. MAINUDDIN, R.P.L.S.  
 TEXAS REG. NO.: 6404  
 DATE: JANUARY 07, 2026

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEROUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4  
 SITE 4 & 5

SURVEY CONTROL MAP  
 (SHEET 2 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 14 OF 190	



- EXIST. TOPOGRAPHIC LEGEND**
- ASPHALT SYMBOL
  - B OR BB INLET
  - BUSH
  - C INLET
  - CLEANOUT
  - brick column
  - DOWN GUY
  - E INLET
  - ELEC MANHOLE
  - FIRE HYDRANT
  - GAS METER
  - GAS VALVE
  - GATE
  - GRATE INLET
  - GRATE INLET
  - MAIL BOX
  - STORM MANHOLE
  - SANITARY MANHOLE
  - PLANTER
  - POWER POLE
  - POWER POLE W/LT.
  - SIGN
  - SIGNAL POLE
  - SPRINKLER VALVE
  - SPRINKLER HEAD
  - STREET LIGHT/PARKING LIGHT
  - STREET LIGHT/PARKING LIGHT
  - TREE
  - TREE STUMP
  - TREE-CREPE MYRTLE
  - TREE-PINE
  - WATER METER
  - WATER VALVE
  - IRRIGATION CONTROL VALVE
- ABBREVIATIONS**
- FH - FIRE HYDRANT
  - FC - FENCE CORNER
  - INL - INLET
  - LT - LIGHT
  - MB - MAIL BOX
  - MH - MANHOLE
  - PP - POWER POLE
  - PP/LT - POWER POLE W/LIGHT
  - SGN - SIGN
  - STLT - STREET LIGHT
  - WM - WATER METER

**KUO & ASSOCIATES**  
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TBP&LS Surveying Firm Reg. No. 10075660

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KUTUBUL A. M. MAINUDDIN, R.P.L.S.  
TEXAS REG. NO.: 6404  
DATE: JANUARY 07, 2026

SURVEYED BY: KUO & ASSOC.  
FB NO. P-6395

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

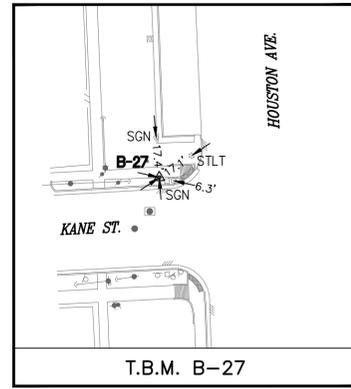
MISCELLANEROUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
SITE 4 & 5

SURVEY CONTROL MAP  
(SHEET 3 OF 4)

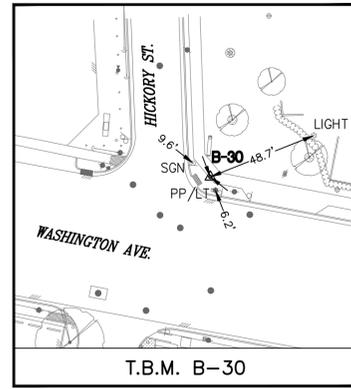
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S-000701-0043-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 15 OF 190	

NO.	DATE	REVISION	APP.

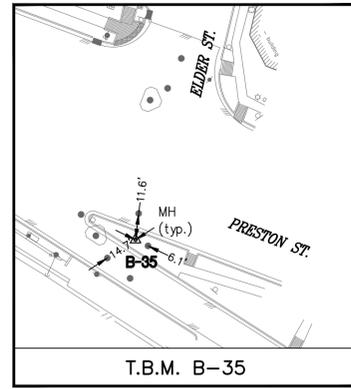
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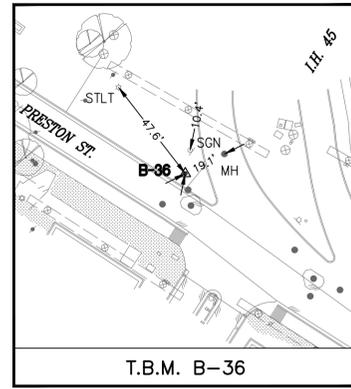
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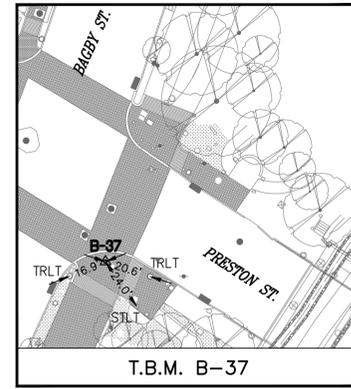
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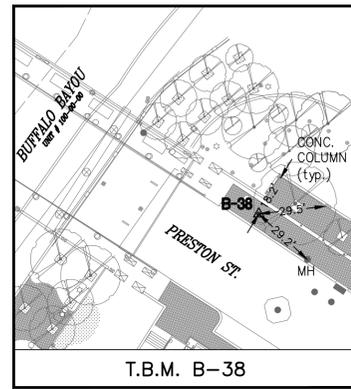
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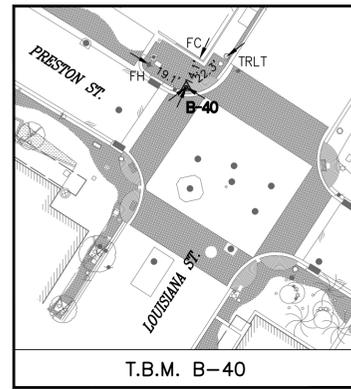
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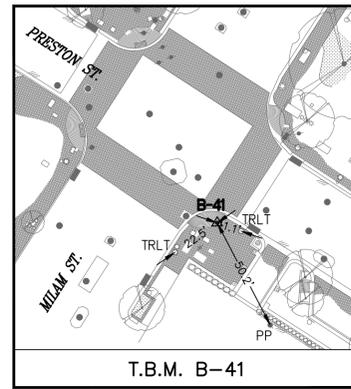
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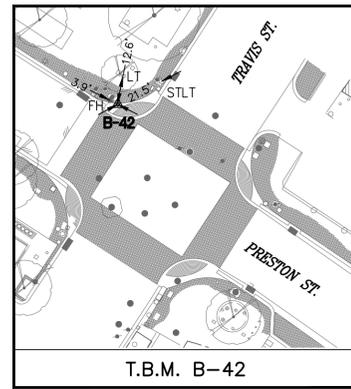
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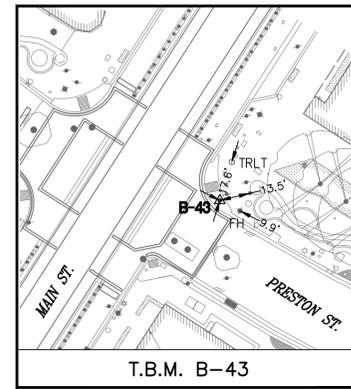
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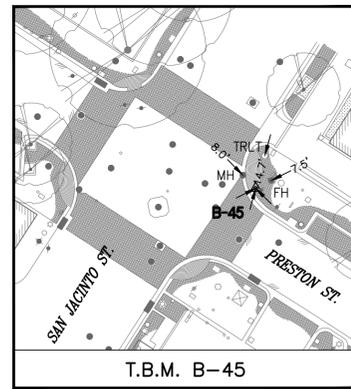
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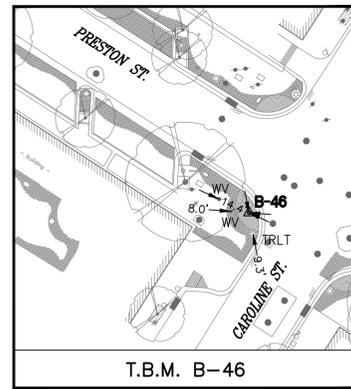
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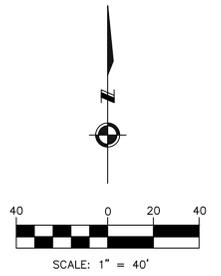
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T.B.M. B-45



T.B.M. B-46



**EXIST. TOPOGRAPHIC LEGEND**

- |                  |                            |
|------------------|----------------------------|
| ASPHALT SYMBOL   | PLANTER                    |
| B OR BB INLET    | POWER POLE                 |
| BUSH             | POWER POLE W/LT.           |
| C INLET          | SIGN                       |
| CLEANOUT         | SIGNAL POLE                |
| brick column     | SPRINKLER VALVE            |
| DOWN GUY         | SPRINKLER HEAD             |
| E INLET          | STREET LIGHT/FLOOD LIGHT   |
| ELEC MANHOLE     | STREET LIGHT/PARKING LIGHT |
| FIRE HYDRANT     | TREE                       |
| GAS METER        | TREE STUMP                 |
| GAS VALVE        | TREE-CREPE MYRTLE          |
| GATE             | TREE-PINE                  |
| GRATE INLET      | WATER METER                |
| GRATE INLET      | WATER VALVE                |
| MAIL BOX         | IRRIGATION CONTROL VALVE   |
| STORM MANHOLE    |                            |
| SANITARY MANHOLE |                            |

**ABBREVIATIONS**

- FH - FIRE HYDRANT  
 FC - FENCE CORNER  
 INL - INLET  
 LT - LIGHT  
 MB - MAIL BOX  
 MH - MANHOLE  
 PP/LT - POWER POLE W/LIGHT  
 SGN - SIGN  
 STLT - STREET LIGHT  
 WM - WATER METER

**KUO & ASSOCIATES**  
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 TBP&LS Engineering Firm Reg. No. F-45378  
 TBP&LS Surveying Firm Reg. No. 10075600

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KUTUBUL A. M. MAINUDDIN, R.P.L.S.  
 TEXAS REG. NO.: 6404  
 DATE: JANUARY 07, 2026

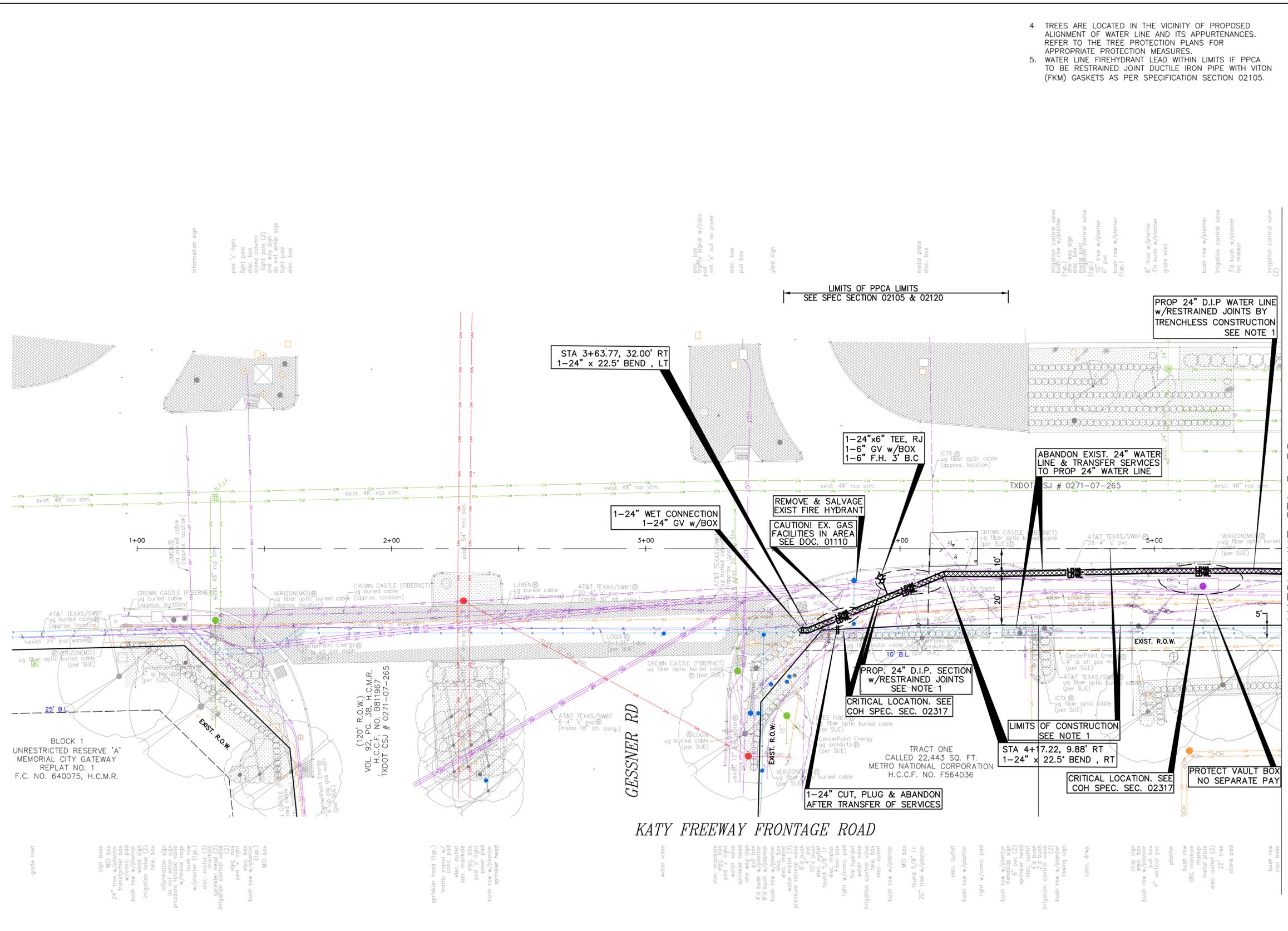
SURVEYED BY: KUO & ASSOC.  
 FB NO. P-6395

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

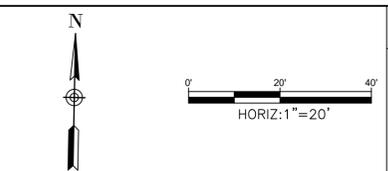
MISCELLANEROUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4  
 SITE 4 & 5

SURVEY CONTROL MAP  
 (SHEET 4 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 16 OF 190	



- TREES ARE LOCATED IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.



**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV.79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-11  
SET 'X' CUT ON PAVER  
ELEV.=81.470  
D. STA. 3+78.63 OFFSET: 38.37L

**NOTES:**

- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
- RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
- THIS PROJECT SHALL BE BUILT BY MEANS OF TRENCHLESS CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

Date \_\_\_\_\_  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.  
Signature valid for six months.

Date \_\_\_\_\_

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification).  
Signature valid for six months.

Date \_\_\_\_\_

Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF  
KIRAN V. PUNYANATHULA, P.E.  
TEXAS REG. NO.: 116965  
ON 01/15/2026  
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
KATY FREEWAY SITE-1

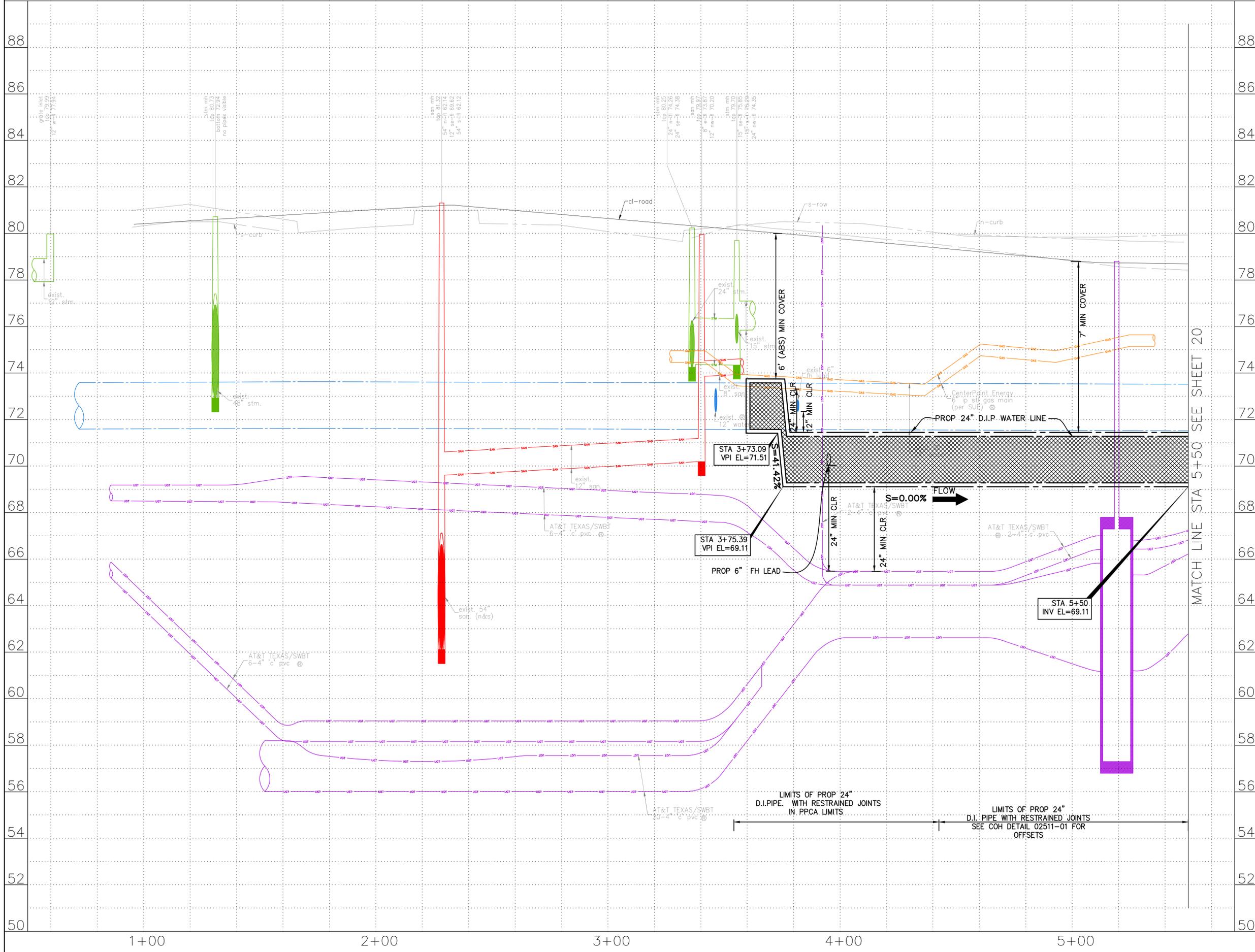
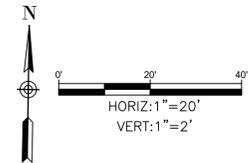
PLAN  
BEGIN TO STA 5+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 17 OF 190	

SEE SHEET 18 FOR PROFILE

MATCH LINE STA 5+50  
SEE SHEET 19

SEE SHEET 17 FOR PLAN



NOTES:

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

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Date  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
Signature valid for six months.

Date  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification).  
Signature valid for six months.

Date  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 KATY FREEWAY SITE-1 PROFILE BEGIN TO STA 5+50

WBS NUMBER  
S-000701-0043-4

DRAWING SCALE  
H: 1"=20' V: 1"=2'

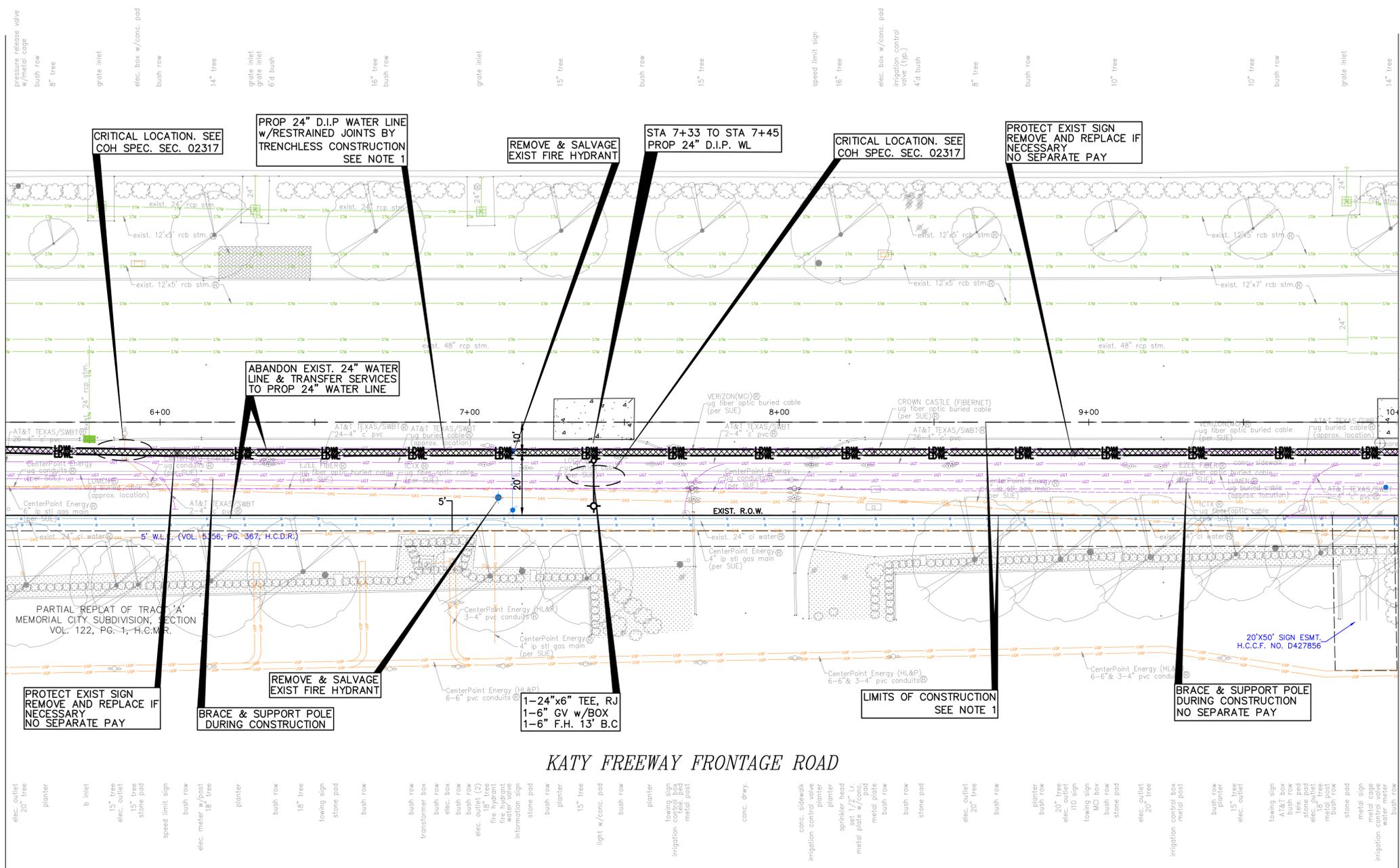
CITY OF HOUSTON PM  
MARTIN MATHEW, ENV SP

SHEET NO. 18 OF 190

NO.	DATE	REVISION	APP.

SEE SHEET 17  
MATCH LINE STA 5+50

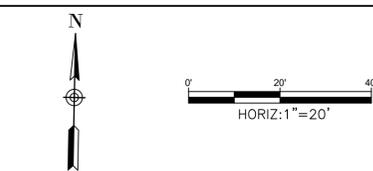
MATCH LINE STA 10+00  
SEE SHEET 21



**KATY FREEWAY FRONTAGE ROAD**

SEE SHEET 20 FOR PROFILE

- 4 TREES ARE LOCATED IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- 5. WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.



**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-12  
SET 1/2" I.R. W/CAP  
ELEV. = 79.910  
D. BL. STA. 8+70.16 OFFSET: 34.99R

- NOTES:**
1. EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
  2. RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
  3. THIS PROJECT SHALL BE BUILT BY MEANS OF TRENCHLESS CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL.

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

Date \_\_\_\_\_  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.  
Signature valid for six months.

Date \_\_\_\_\_

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Signature valid for six months.

Date \_\_\_\_\_

Approved for AT&T underground conduit facilities only. Signature valid for one year.

**10300 WESTOFFICE DR. SUITE 800**  
**HOUSTON, TX 77042**  
**713-975-8769**  
**TX FIRM NO.: F-4578**

**SURVEYED BY:**  
**KUO & ASSOCIATES, LLC**  
**FB NO. P-6395**

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

KIRAN V. PUNYANATHULA, P.E.  
TEXAS REG. NO.: 116965

ON 01/15/2026  
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

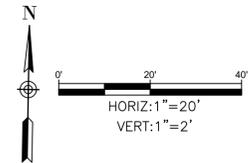
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
KATY FREEWAY SITE-1

PLAN  
5+50 TO STA 10+00

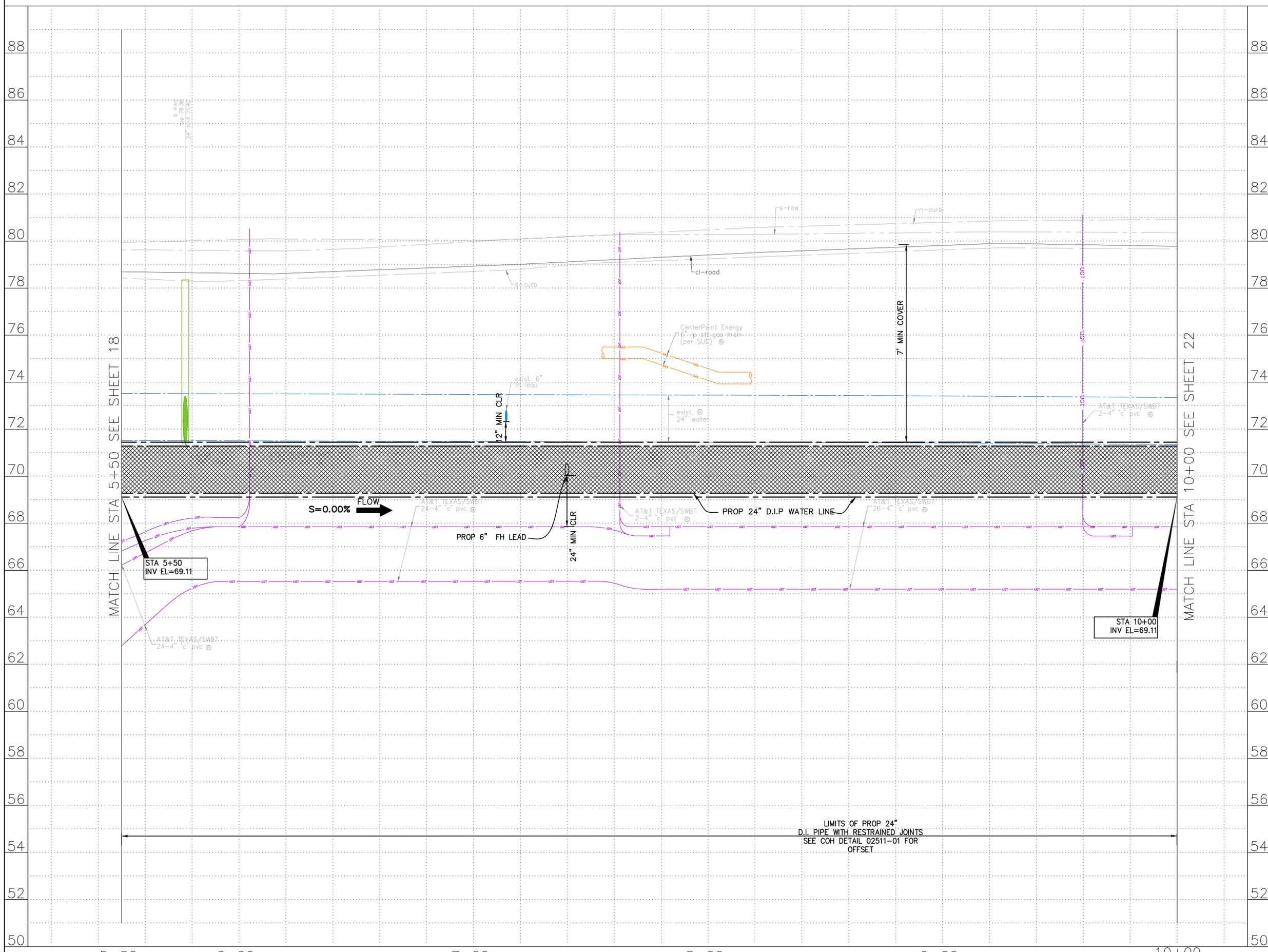
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 19 OF 190	

NO.	DATE	REVISION	APP.

SEE SHEET 19 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

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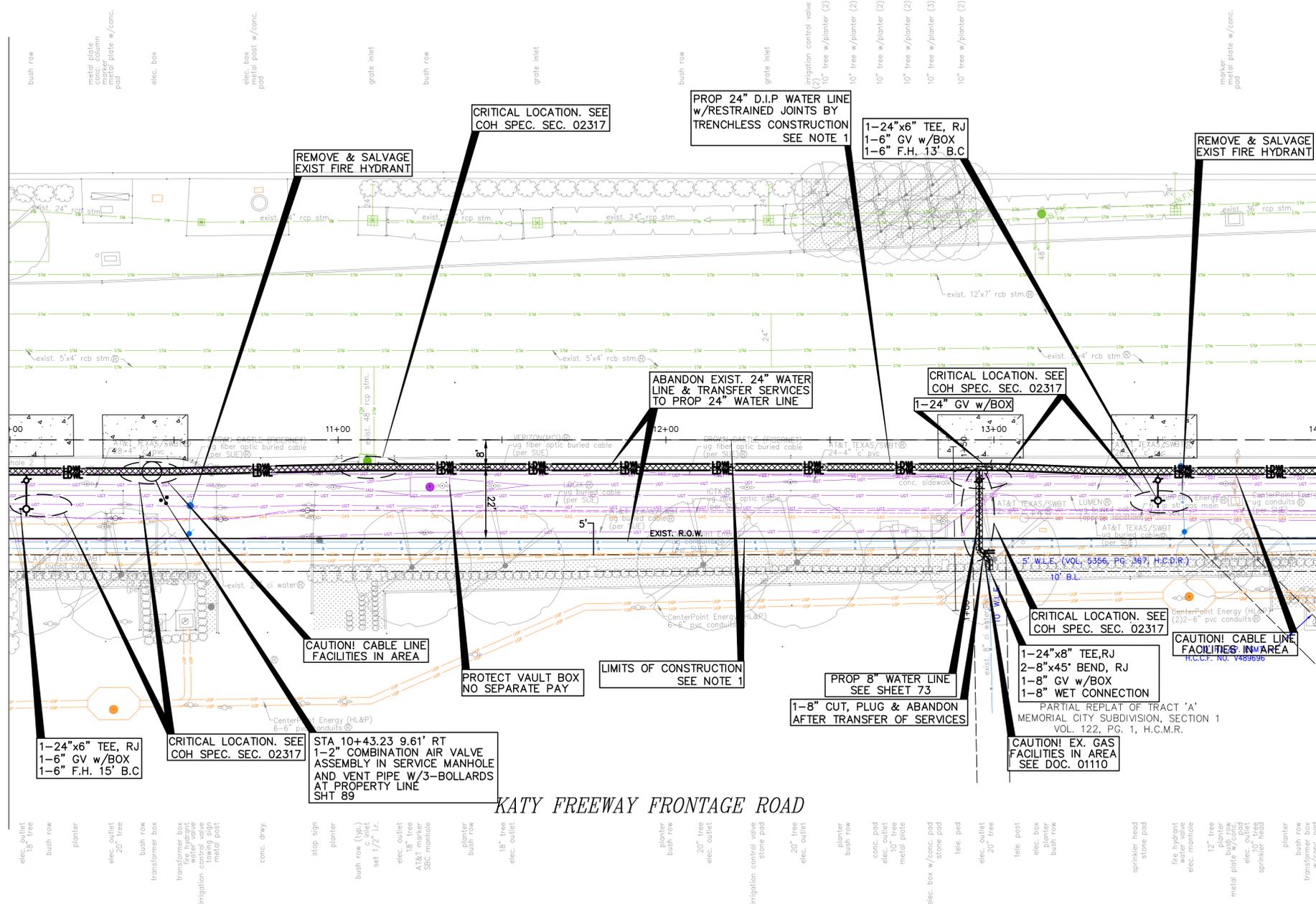
 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	SURVEYED BY: <b>KUO &amp; ASSOCIATES, LLC</b> FB NO. P-6395

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
KATY FREEWAY SITE-1 PROFILE  
STA 5+50 TO STA 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 20 OF 190	

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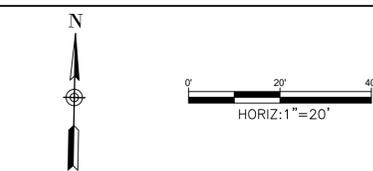
SEE SHEET 19  
MATCH LINE STA 10+00



MATCH LINE STA 14+00  
SEE SHEET 23

SEE SHEET 22 FOR PROFILE

- TREES ARE LOCATED IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH WITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.



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CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV.79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-13  
SET 1/2" I.R. W/CAP  
ELEV.=80.015  
D. BL. STA. 11+62.03 OFFSET: 34.58R

- NOTES:**
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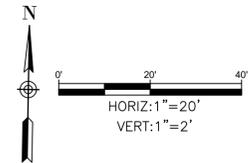
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Signature valid for six months.

Date \_\_\_\_\_  
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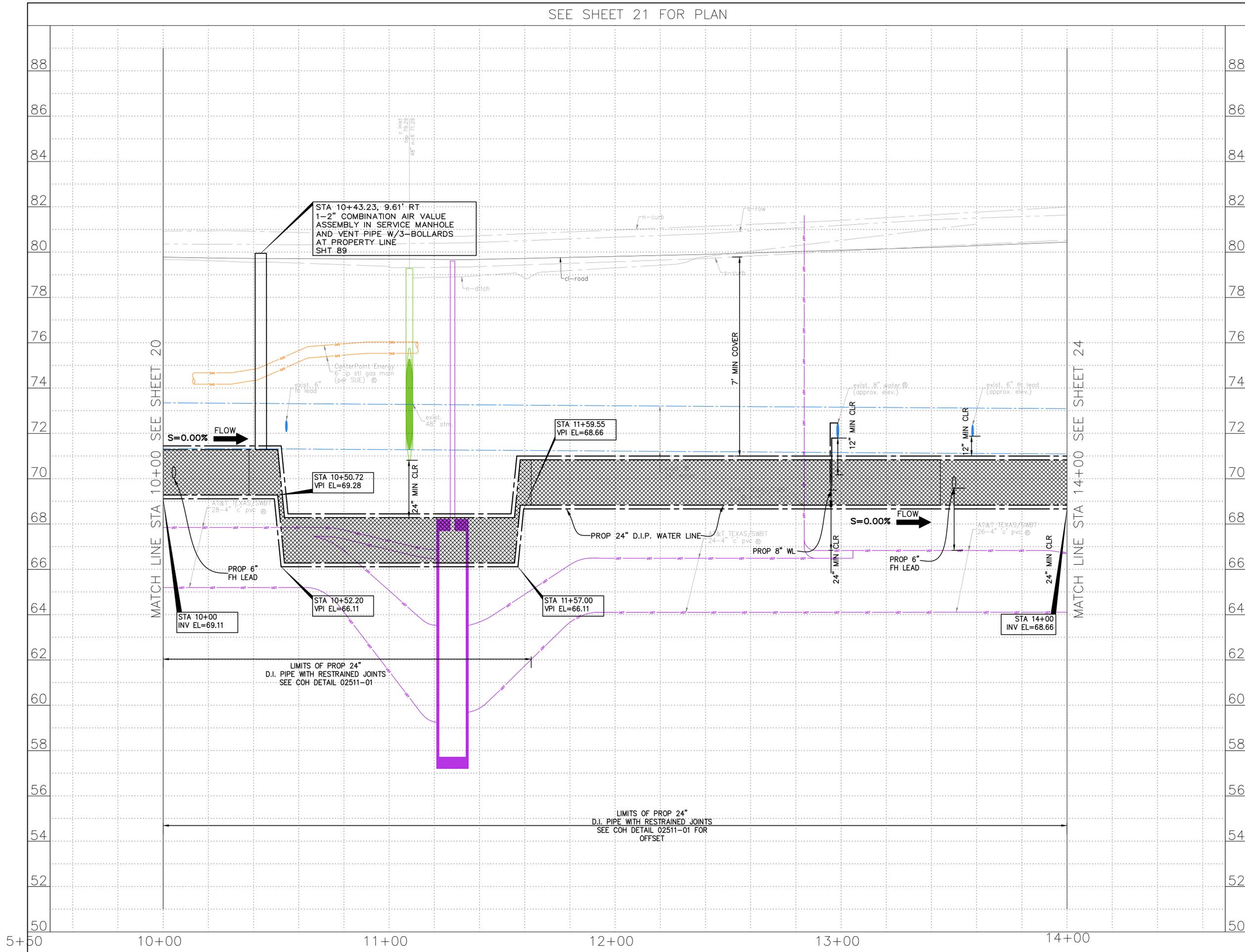
 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 KATY FREEWAY SITE-1 PLAN 10+00 TO STA 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 21 OF 190	

SEE SHEET 21 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

**NOTICE:**  
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	SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
KATY FREEWAY SITE-1  
PROFILE  
STA 10+00 TO STA 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 22 OF 190	

C:\Users\PAVAN\1-1-NAG\AppData\Local\Temp\AcPublish\25008\17-32-P&P\_Sheet-Katy\FreeWay.dwg plotted on Jan 15, 2026 - 4:35pm

- TREES ARE LOCATED IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.
- THIS INTERCONNECT WILL BE USED FOR TESTING, DISINFECTING, AND FLUSHING THE NEW 24-INCH WATERLINE. BECAUSE THE EXISTING 20-INCH LINE IS CONNECTED TO THE 48-INCH LINE NORTH OF IH-10, BOTH THE NEW AND EXISTING WATERLINES CAN REMAIN IN SERVICE WHILE SERVICES ARE TRANSFERRED AND WET CONNECTIONS ARE MADE TO THE NEW 24-INCH LINE. THE NOTE SHOULD ALSO STATE THAT THE CUT AND PLUG WILL BE COMPLETED ONLY AFTER ALL SERVICES HAVE BEEN TRANSFERRED.
- CONTRACTOR TO DISCUSS AND GET APPROVAL FROM CITY CM FOR POTENTIALLY USE THE 20-INCH WATER LINE INTERCONNECTION FOR TESTING, DISINFECTATION AND FLUSHING THE PROPOSED 24-INCH WATER LINE. 20-INCH CUT, PLUG AND ABANDONED TO BE PERFORMED AFTER SERVICES ARE TRANSFERRED TO PROPOSED WATER LINE.

N

**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*

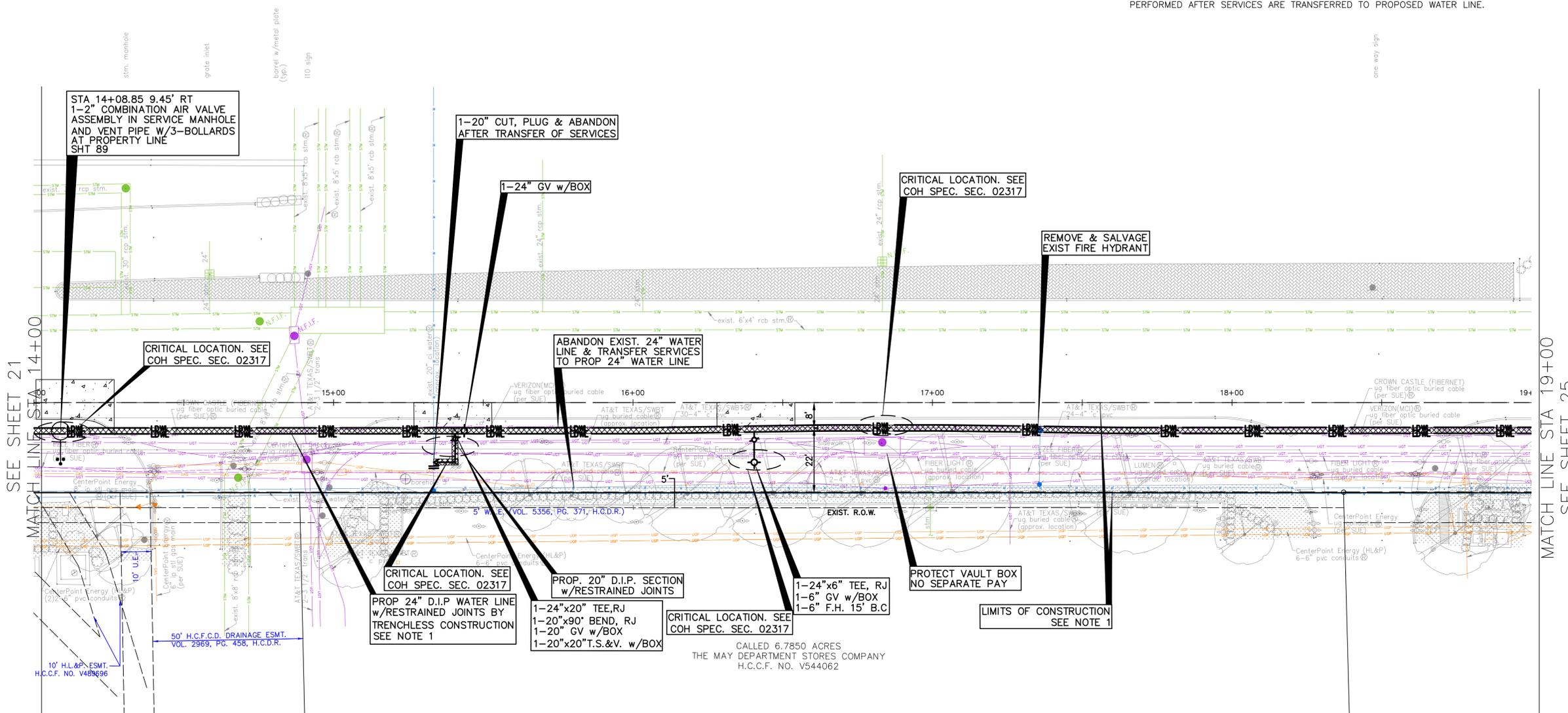
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-15  
SET 1/2" I.R. W/CAP  
ELEV.=79.196  
D. BL. STA. 18+72.47 OFFSET= 36.27R

**NOTES:**

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NO.	DATE	REVISION	APP.



SEE SHEET 21  
MATCH LINE STA 14+00

MATCH LINE STA 19+00  
SEE SHEET 25

**KATY FREEWAY FRONTAGE ROAD**

CALLED 6.7850 ACRES  
THE MAY DEPARTMENT STORES COMPANY  
H.C.C.F. NO. V544062

- bush row
- transformer box
- 7x7' bush
- 4x4' bush
- 12" tree
- 10" tree
- plant
- metal post
- conc. drwy.
- one way sign
- planter
- bush row
- set 'X' cut
- conc. drwy.
- stone sign
- one way sign
- elec. box
- 12" tree
- 10" tree
- planter
- stone sign
- 6" d bush
- pressure release valve
- elec. box
- water valve
- stone pad
- irrigation control valve (Z)
- 2" pvc
- sprinkler head
- 2"x3" pvc (Z)
- elec. box
- bush row
- elec. meter w/post
- 12" tree
- 2" x 2" pvc
- elec. outlet
- 14" crepe myrtle
- 10" tree
- stone column
- 10" tree
- elec. outlet
- 16" tree
- planter
- bush row
- 18" tree
- elec. outlet
- marker
- stone pad
- 18" tree
- elec. outlet
- S&S manhole
- grate inlet
- elec. outlet
- 20" tree
- planter
- bush row
- stone pad
- fire hydrant
- water valve
- elec. outlet
- 20" tree
- planter
- bush row
- elec. box
- metal post w/antenna
- elec. box
- stone pad
- bush row
- 10" tree
- bush row
- planter
- sprinkler head
- metal post w/camera
- set 1/2" I.R.
- found 5/8" I.R.
- irrigation control valve
- 2" bush
- sprinkler head
- elec. box (Z)
- elec. box (Z)
- 14" tree
- 4"x4' bush
- metal sign w/stone pad
- elec. outlet (Z)
- approx 20" tree
- transformer box
- 12" crepe myrtle
- bush row (typ.)

SEE SHEET 24 FOR PROFILE

- CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY REQUIRES;
  - HCFC DISTRICT RIGHT-OF-WAY NOTIFICATION (PERMIT)
  - HCFC 48-HR PRE-CONSTRUCTION NOTIFICATION

BOTH ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. BOTH THE HCFC DISTRICT RIGHT-OF-WAY NOTIFICATION AND 48-HR NOTIFICATION MUST BE PROVIDED TO HCFC AT DCID@HCFC.ORG. SITE PLANS MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED HCFC DISTRICT RIGHT-OF-WAY NOTIFICATION. BE ADVISED THAT THE RIGHT-OF-WAY NOTIFICATION IS SEPARATE FROM THE SITE DEVELOPMENT PERMIT PACKAGE.

TO APPLY FOR THE HCFC DISTRICT RIGHT-OF-WAY NOTIFICATION PLEASE GO TO [HTTP://APPS.HARRISCOUNTYTX.GOV/EPERMIT](http://apps.harriscountytx.gov/epermits)S AND APPLY FOR THE HCFC ROW UNDER ROW NOTIFICATION.

FAILURE TO PROVIDE BOTH ITEMS COULD RESULT IN DELAYS AND ADDITIONAL CONSTRUCTION COSTS.

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TX FIRM NO.: F-4578  
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FB NO. P-6395

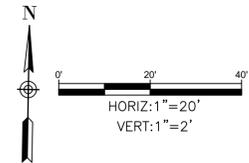
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

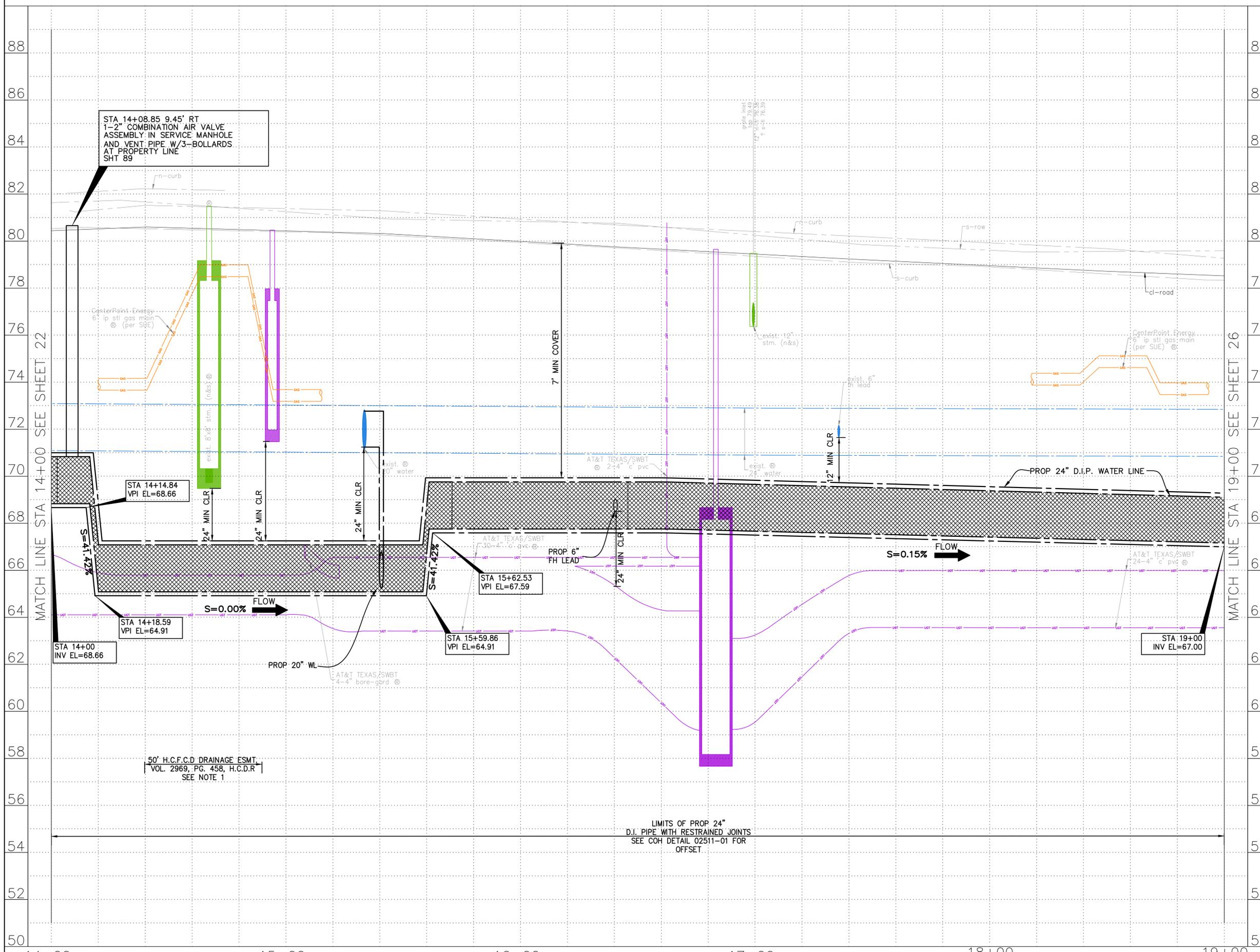
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
KATY FREEWAY SITE-1  
  
PLAN  
14+00 TO STA 19+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHWE, ENV SP	
SHEET NO. 23	OF 190

SEE SHEET 23 FOR PLAN



NO.	DATE	REVISION	APP.



1) CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY REQUIRES:  
 1) HCFC D RIGHT-OF-WAY NOTIFICATION (PERMIT)  
 2) HCFC D 48-HR PRE-CONSTRUCTION NOTIFICATION

BOTH ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. BOTH THE HCFC D RIGHT-OF-WAY NOTIFICATION AND 48-HR NOTIFICATION MUST BE PROVIDED TO HCFC D AT DCID@HCFC D.ORG. SITE PLANS MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED HCFC D RIGHT-OF-WAY NOTIFICATION. BE ADVISED THAT THE RIGHT-OF-WAY NOTIFICATION IS SEPARATE FROM THE SITE DEVELOPMENT PERMIT PACKAGE.

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 ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
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**SURVEYED BY:**  
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 KATY FREEWAY SITE-1

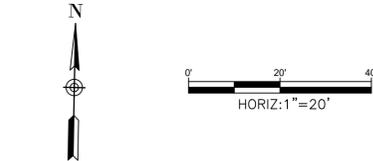
PROFILE  
 STA 14+00 TO STA 19+00

FOR CITY OF HOUSTON USE ONLY	
WBS NUMBER	S-000701-0043-4
DRAWING SCALE	H: 1"=20' V: 1"=2'
CITY OF HOUSTON PM	MARTIN MATHEW, ENV SP
SHEET NO.	24 OF 190

LIMITS OF PROP 24" D.I. PIPE WITH RESTRAINED JOINTS  
 SEE COH DETAIL 02511-01 FOR OFFSET

50' H.C.F.C.D DRAINAGE ESMT.  
 VOL. 2969, PG. 458, H.C.D.R.  
 SEE NOTE 1

C:\Users\PAVAN\1-NAG\AppData\Local\Temp\AcPublish\17-32-P&P\_Sheet-Katy\FreeWay.dwg plotted on Jan 15, 2026 - 4:35pm



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D. BL. STA. 22+02.87 OFFSET: 29.10R

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**NOTICE:**  
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**VERIFICATION OF PRIVATE UTILITY LINES**

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Signature valid for six months.

Date \_\_\_\_\_  
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Signature valid for six months.

Date \_\_\_\_\_  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

Date \_\_\_\_\_

**10300 WESTOFFICE DR. SUITE 800**  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578

**SURVEYED BY:**  
Kuo & Associates, LLC  
FB NO. P-6395

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

KIRAN V. PUNYANATHULA, P.E.  
TEXAS REG. NO.: 116965

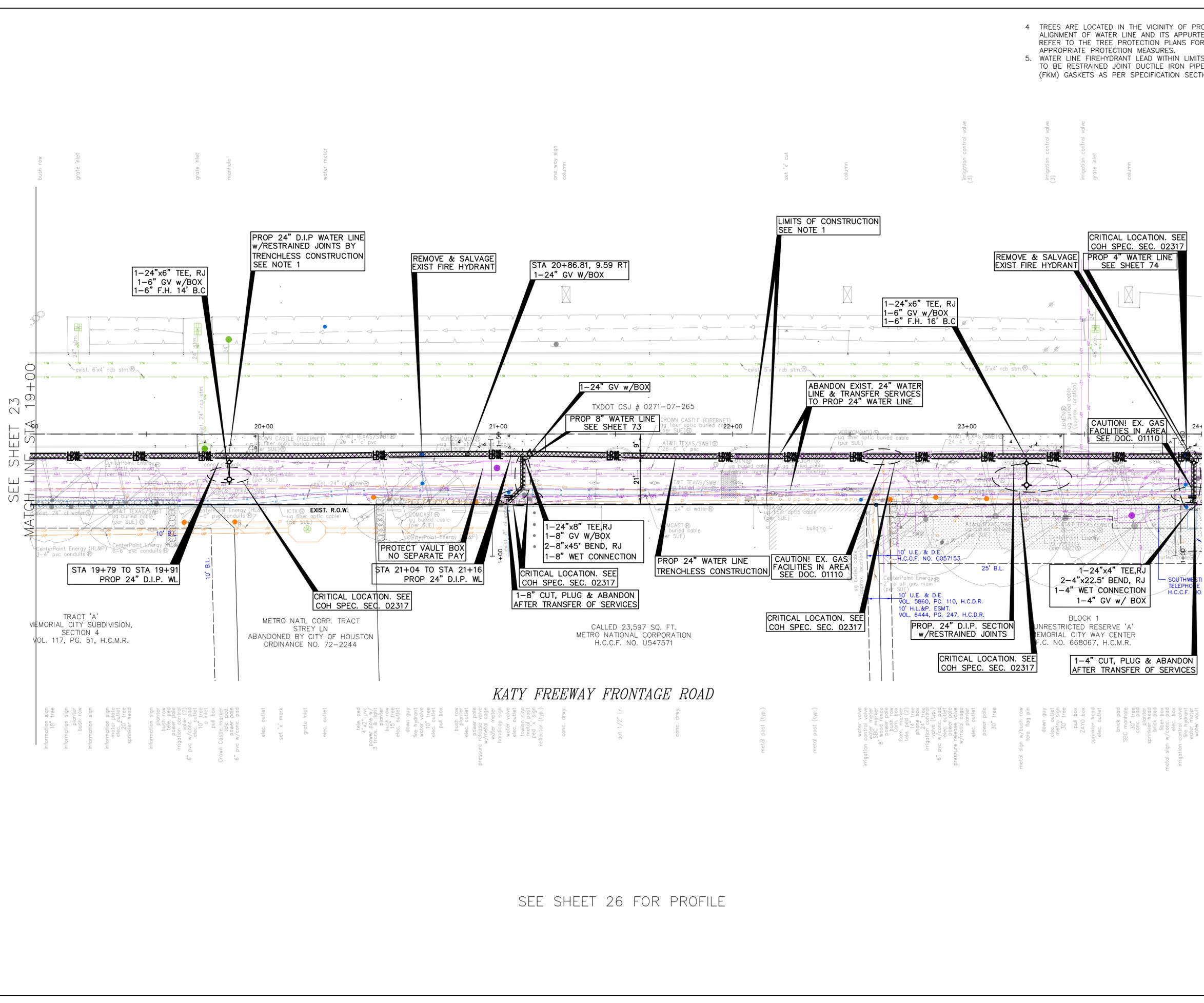
ON 01/15/2026  
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
KATY FREEWAY SITE-1

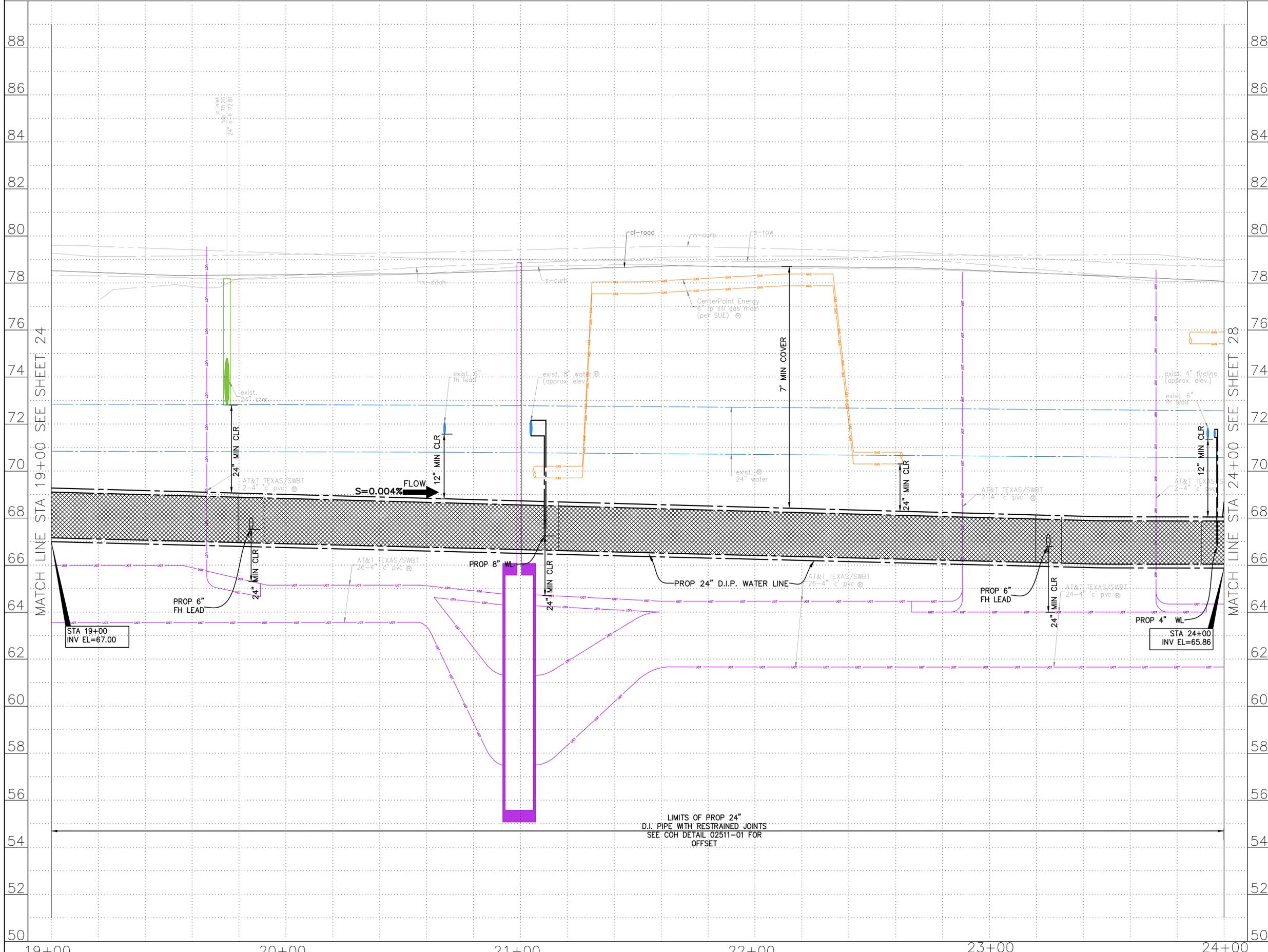
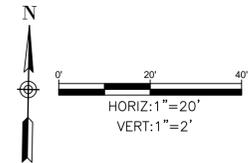
PLAN  
19+00 TO STA 24+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 25 OF 190	



SEE SHEET 26 FOR PROFILE

SEE SHEET 25 FOR PLAN



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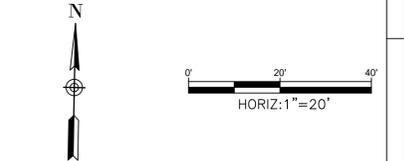
Date  
 Approved for AT&T underground conduit facilities only. Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 KATY FREEWAY SITE-1 PROFILE STA 19+00 TO STA 24+00

WBS NUMBER  
 S-000701-0043-4  
 DRAWING SCALE  
 H: 1"=20' V: 1"=2'  
 CITY OF HOUSTON PM  
 MARTIN MATHEW, ENV SP  
 SHEET NO. 26 OF 190

C:\Users\PAVAN\1-NA\AppData\Local\Temp\AcPublish\_25008\17-32-P&P\_Sheet-Katy\FreeWay.dwg plotted on Jan 15, 2026 - 4:35pm

- TREES ARE LOCATED IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.



**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-18  
 SET 'X' CUT ON CONC.  
 ELEV. = 77.708  
 D. BL STA. 28+42.13 OFFSET: 33.30R

- NOTES:**
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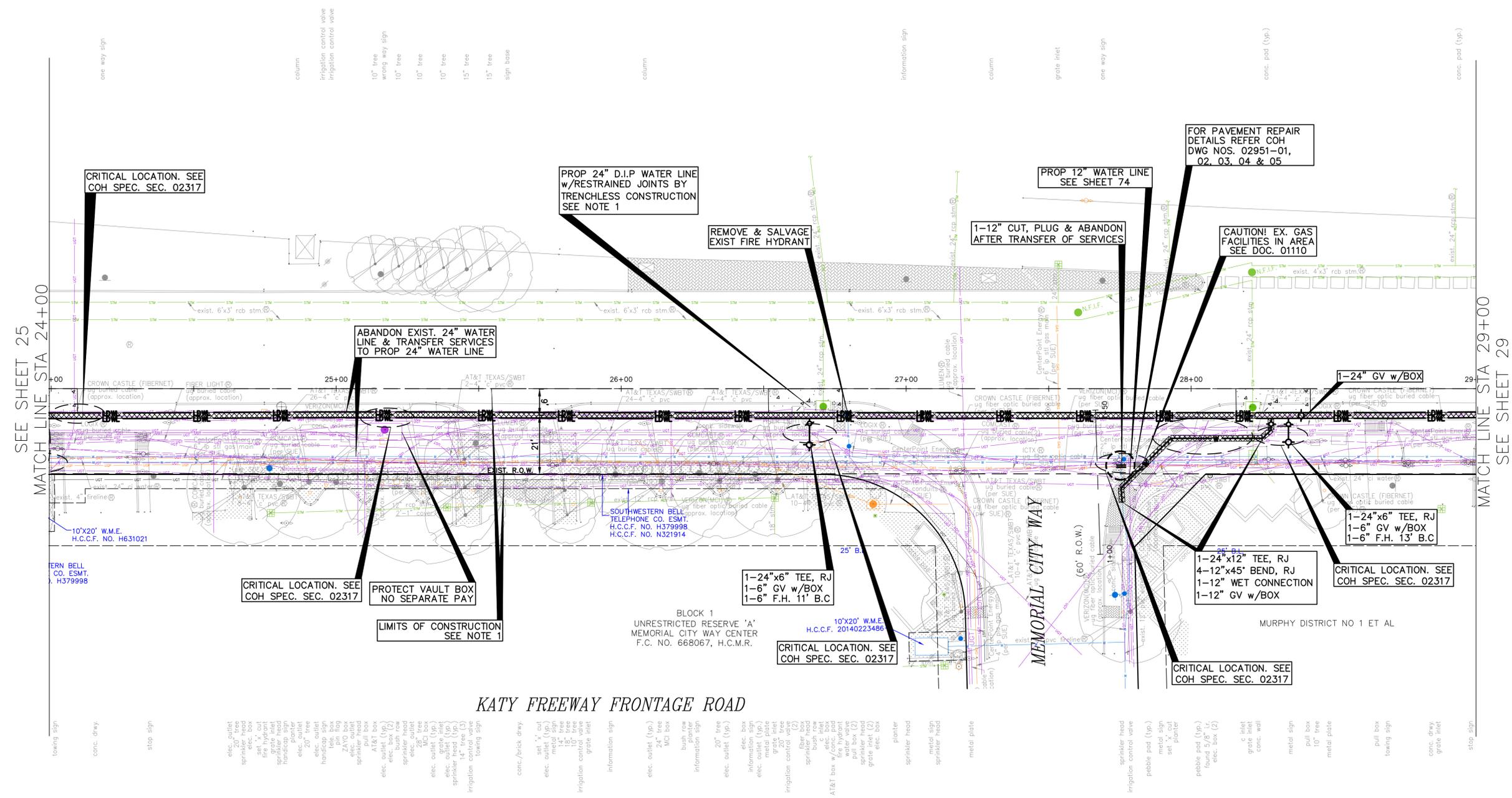
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 KATY FREEWAY SITE-1

PLAN  
 STA 24+00 TO STA 29+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 27 OF 190	



SEE SHEET 25  
 MATCH LINE STA 24+00

MATCH LINE STA 29+00  
 SEE SHEET 29

SEE SHEET 28 FOR PROFILE

- towing sign
- conc. draw.
- stop sign
- elec. outlet
- 20" tree
- sprinkler head
- elec. box
- set 'x' out
- fire hydrant
- sprinkler head
- handicap sign
- elec. outlet
- 20" tree
- elec. outlet
- handicap sign
- pin flag
- ZAYO box
- sprinkler head
- pull box
- AT&T box
- elec. box (2)
- elec. box (2)
- sprinkler head
- elec. box
- pull box
- fire hydrant
- water valve
- pull box (2)
- elec. box
- grate inlet (2)
- elec. box
- planter
- sprinkler head
- metal sign
- sprinkler head
- metal plate
- sprinkler head
- irrigation control valve
- pebble pad (typ.)
- pebble pad (typ.)
- found 5/8" Lr.
- elec. box (2)
- 6" inlet
- grate inlet
- conc. wall
- metal sign
- pull box
- pull box
- 10" tree
- metal plate
- pull box
- towing sign
- conc. draw.
- grate inlet
- stop sign

- one way sign
- column
- irrigation control valve
- irrigation control valve
- 10" tree
- wrong way sign
- 10" tree
- 10" tree
- 10" tree
- 15" tree
- 15" tree
- sign base
- column
- information sign
- column
- grate inlet
- one way sign
- conc. pad (typ.)
- conc. pad (typ.)

10'x20' W.M.E.  
 H.C.C.F. NO. H631021

CRITICAL LOCATION. SEE COH SPEC. SEC. 02317

PROTECT VAULT BOX NO SEPARATE PAY

LIMITS OF CONSTRUCTION SEE NOTE 1

BLOCK 1  
 UNRESTRICTED RESERVE 'A'  
 MEMORIAL CITY WAY CENTER  
 F.C. NO. 668067, H.C.M.R.

10'x20' W.M.E.  
 H.C.C.F. NO. 20140223486

CRITICAL LOCATION. SEE COH SPEC. SEC. 02317

CRITICAL LOCATION. SEE COH SPEC. SEC. 02317

1-24"x6" TEE, RJ  
 1-6" GV w/BOX  
 1-6" F.H. 13' B.C

1-24"x12" TEE, RJ  
 4-12"x45" BEND, RJ  
 1-12" WET CONNECTION  
 1-12" GV w/BOX

CRITICAL LOCATION. SEE COH SPEC. SEC. 02317

1-12" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES

FOR PAVEMENT REPAIR DETAILS REFER COH DWG NOS. 02951-01, 02, 03, 04 & 05

CAUTION! EX. GAS FACILITIES IN AREA SEE DOC. 01110

PROP 24" D.I.P WATER LINE w/RESTRAINED JOINTS BY TRENCHLESS CONSTRUCTION SEE NOTE 1

REMOVE & SALVAGE EXIST FIRE HYDRANT

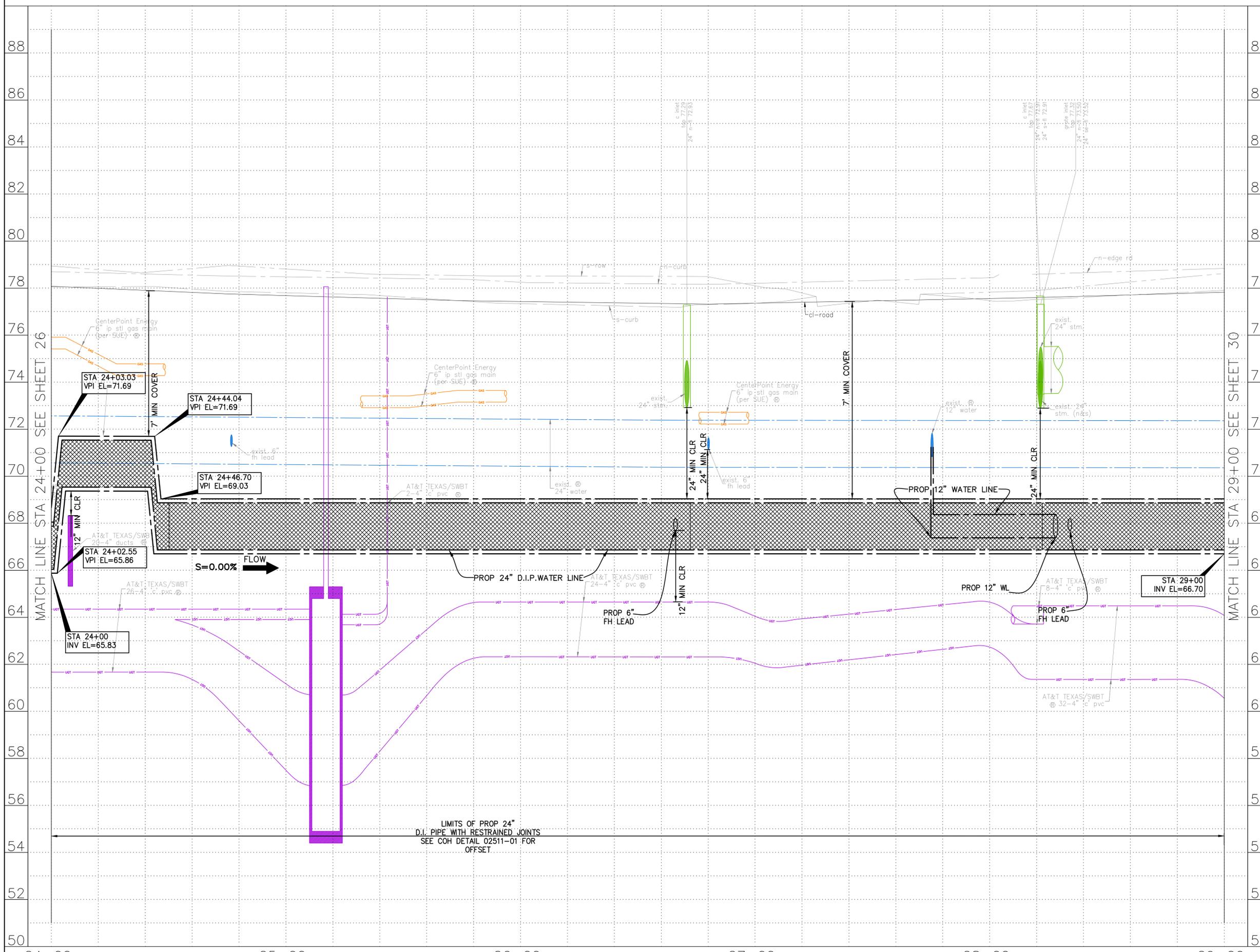
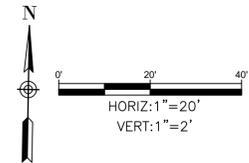
CRITICAL LOCATION. SEE COH SPEC. SEC. 02317

ABANDON EXIST. 24" WATER LINE & TRANSFER SERVICES TO PROP 24" WATER LINE

PROP 12" WATER LINE SEE SHEET 74

1-24" GV w/BOX

SEE SHEET 27 FOR PLAN



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**KUO & ASSOCIATES**  
 ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578  
 SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. P-6395

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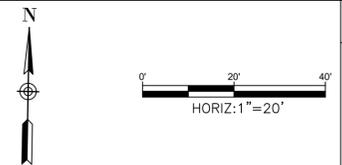
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 KATY FREEWAY SITE-1  
 PROFILE  
 STA 24+00 TO STA 29+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 28 OF 190	

C:\Users\PAVAN\1-NA\AppData\Local\Temp\AcPublish\25008\17-32-P&P\_Sheet-Katy Freeway.dwg plotted on Jan 15, 2026 - 4:33pm

- 4. TREES ARE LOCATED IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
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ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-19  
SET 1/2" I.R. W/CAP  
ELEV. = 78.697  
D. BL STA. 31+94.33 OFFSET: 34.02R  
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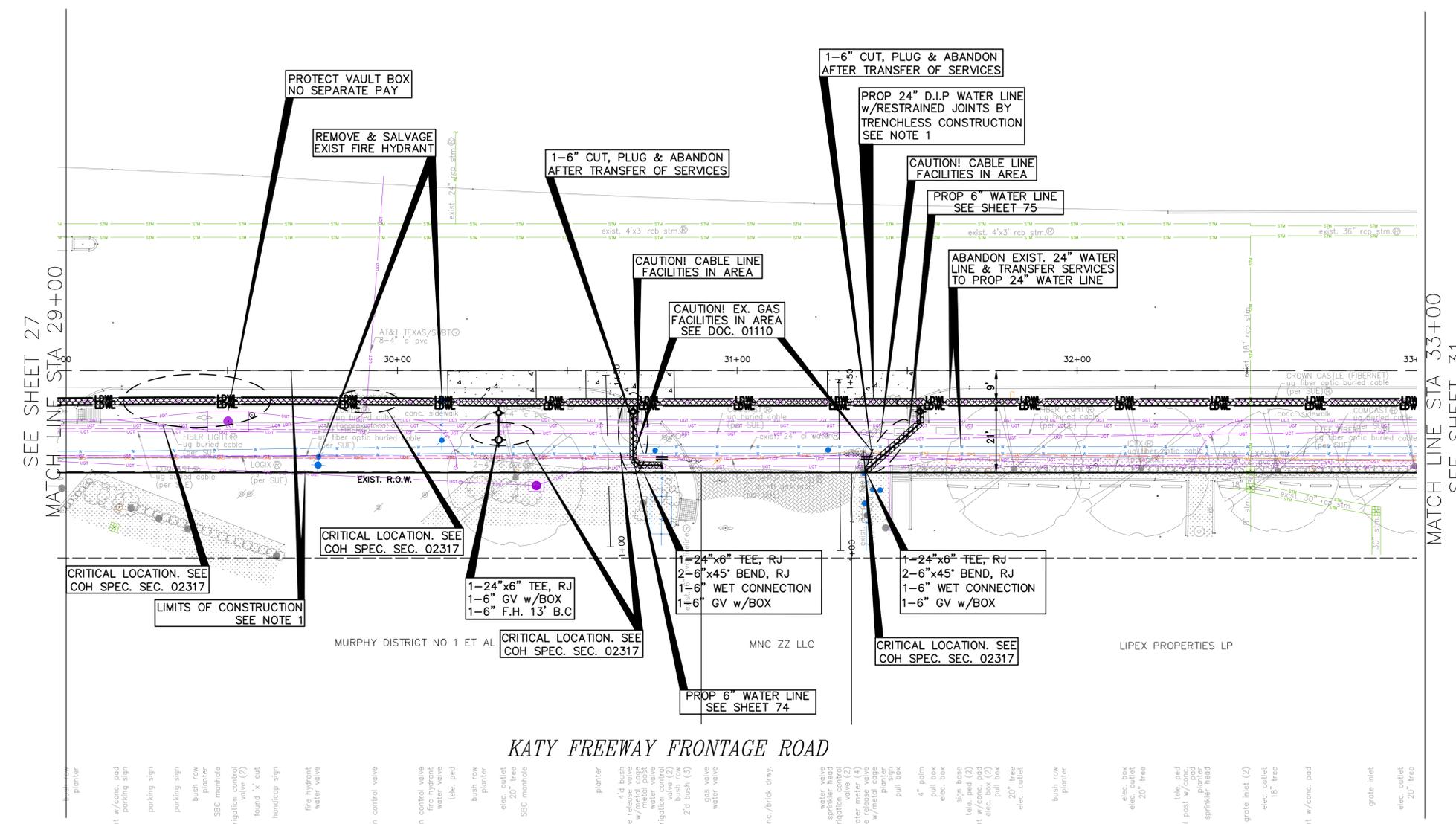
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	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 KATY FREEWAY SITE-1 PLAN STA 29+00 TO STA 33+00

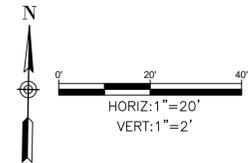


SEE SHEET 27  
MATCH LINE STA 29+00

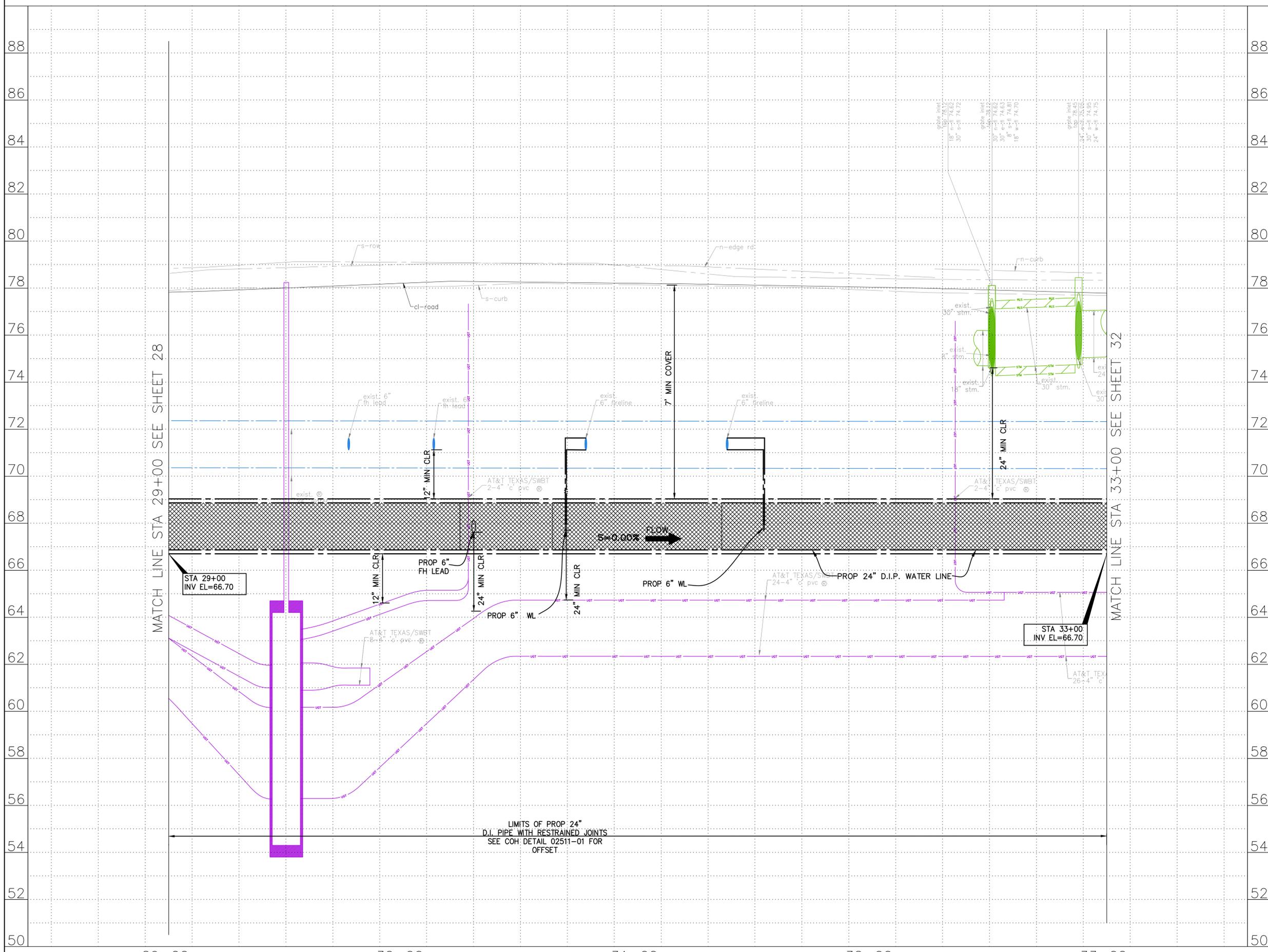
MATCH LINE STA 33+00  
SEE SHEET 31

SEE SHEET 30 FOR PROFILE

SEE SHEET 29 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

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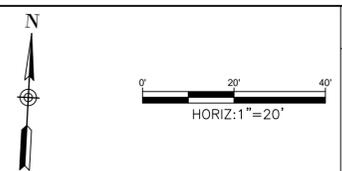
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
KATY FREEWAY SITE-1  
PROFILE  
STA 29+00 TO STA 33+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 30 OF 190	





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ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 SET "X" CUT ON CONC.  
 ELEV = 38.58  
 D. STA. 1+75.82 OFFSET: 35.49R

- NOTES:**
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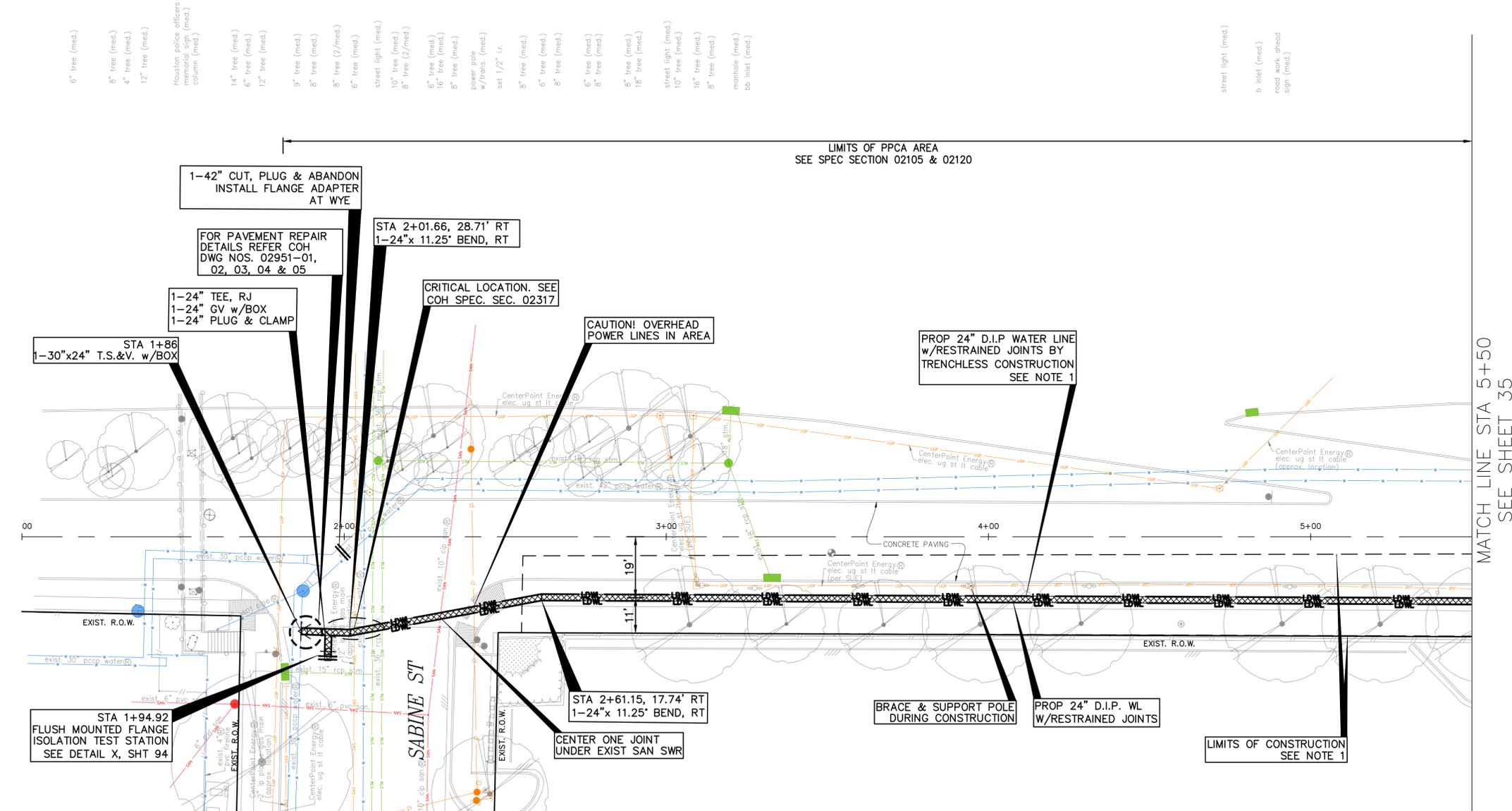
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 MEMORIAL WAY  
 SITE 4  
 PLAN  
 BEGIN TO STA 5+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 33 OF 190	



SEE SHEET 34 FOR PROFILE

MATCH LINE STA 5+50  
SEE SHEET 35

LIMITS OF PPCA AREA  
SEE SPEC SECTION 02105 & 02120

street light (med.)  
b inlet (med.)  
road work ahead sign (med.)

6" tree (med.)  
8" tree (med.)  
4" tree (med.)  
12" tree (med.)  
Houston police officers memorial sign (med.)  
column (med.)  
14" tree (med.)  
6" tree (med.)  
12" tree (med.)  
9" tree (med.)  
8" tree (med.)  
8" tree (2/med.)  
6" tree (med.)  
street light (med.)  
10" tree (med.)  
8" tree (2/med.)  
6" tree (med.)  
16" tree (med.)  
8" tree (med.)  
power pole w/arms (med.)  
set 1/2" r.  
8" tree (med.)  
6" tree (med.)  
8" tree (med.)  
6" tree (med.)  
8" tree (med.)  
18" tree (med.)  
street light (med.)  
10" tree (med.)  
16" tree (med.)  
8" tree (med.)  
manhole (med.)  
bb inlet (med.)

STA 1+86  
1-30"x24" T.S.&V. w/BOX

1-42" CUT, PLUG & ABANDON  
INSTALL FLANGE ADAPTER  
AT WYE

FOR PAVEMENT REPAIR  
DETAILS REFER COH  
DWG NOS. 02951-01,  
02, 03, 04 & 05

1-24" TEE, RJ  
1-24" GV w/BOX  
1-24" PLUG & CLAMP

STA 2+01.66, 28.71' RT  
1-24"x 11.25' BEND, RT

CRITICAL LOCATION. SEE  
COH SPEC. SEC. 02317

CAUTION! OVERHEAD  
POWER LINES IN AREA

PROP 24" D.I.P. WATER LINE  
w/RESTRAINED JOINTS BY  
TRENCHLESS CONSTRUCTION  
SEE NOTE 1

STA 1+94.92  
FLUSH MOUNTED FLANGE  
ISOLATION TEST STATION  
SEE DETAIL X, SHT 94

STA 2+61.15, 17.74' RT  
1-24"x 11.25' BEND, RT

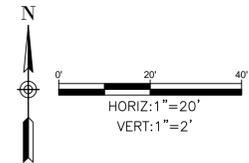
BRACE & SUPPORT POLE  
DURING CONSTRUCTION

PROP 24" D.I.P. WL  
w/RESTRAINED JOINTS

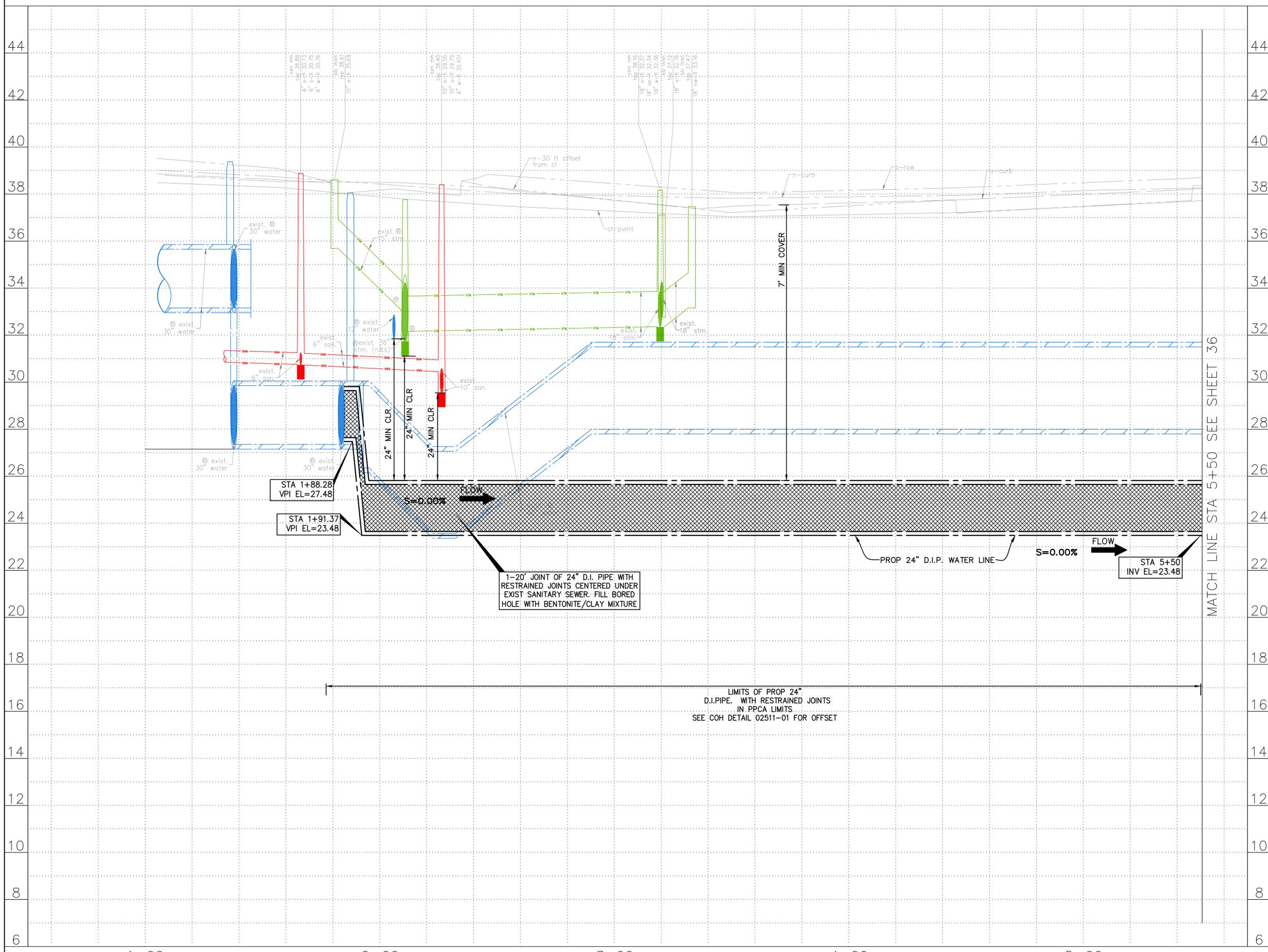
LIMITS OF CONSTRUCTION  
SEE NOTE 1

MEMORIAL WAY

SEE SHEET 33 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.  
Signature valid for six months.

Date  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Signature valid for six months.

Date  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578

SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

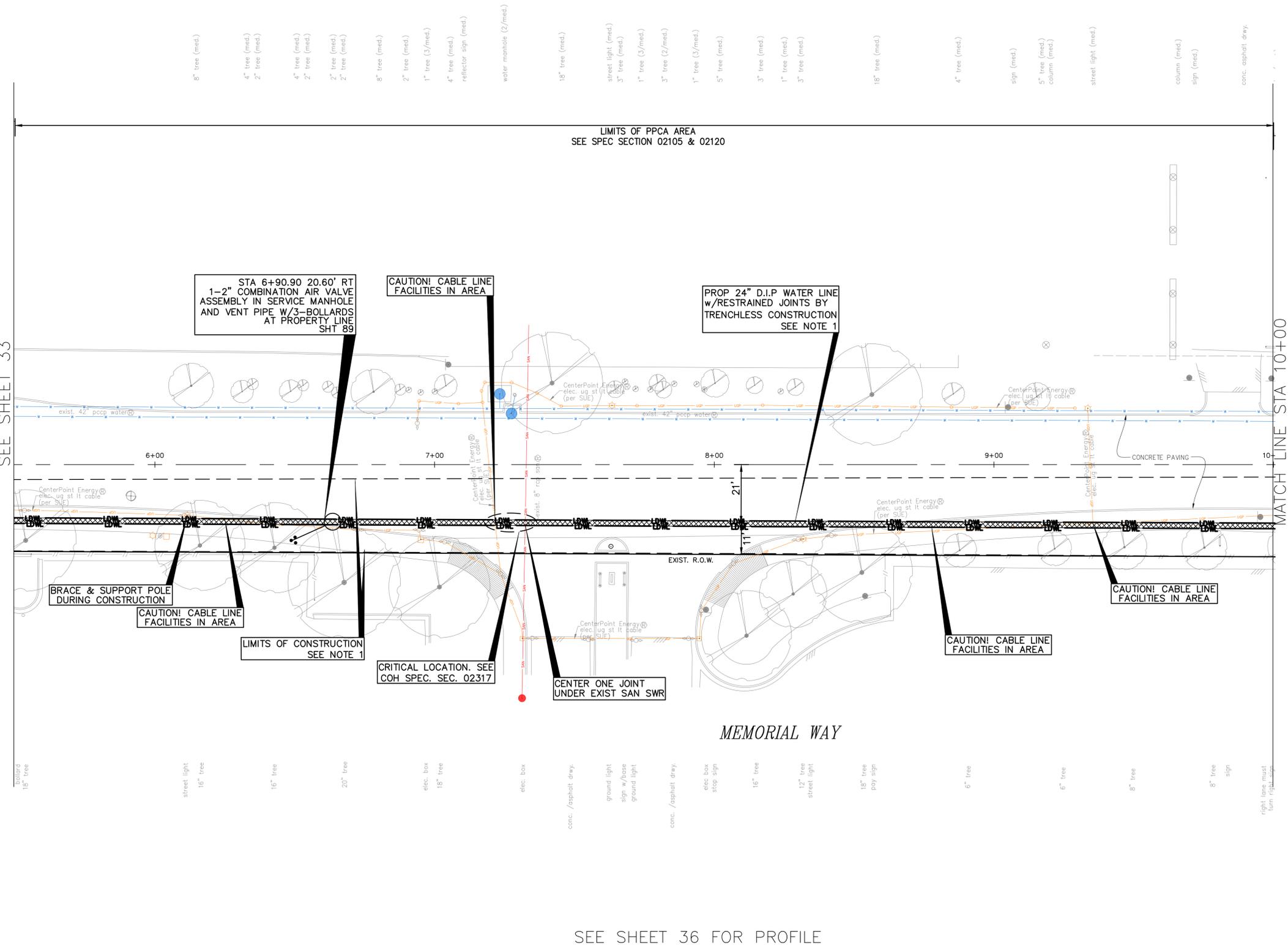
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF  
KIRAN V. PUNYAMANTHULA, P.E.  
TEXAS REG. NO.: 116965  
ON 01/15/2026  
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
MEMORIAL WAY  
SITE 4  
PROFILE  
BEGIN TO STA 5+50

FOR CITY OF HOUSTON USE ONLY	
WBS NUMBER	S-000701-0043-4
DRAWING SCALE	H: 1"=20' V: 1"=2'
CITY OF HOUSTON PM	MARTIN MATHEW, ENV SP
SHEET NO. 34 OF 190	

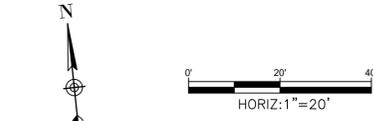
C:\Users\PAVAN\1-NAG\AppData\Local\Temp\AcPublish\25008\33-46-P&P\_Sheet-Memorial Way and Houston Ave.dwg plotted on Jan 15, 2026 - 4:36pm

MATCH LINE STA 5+50  
SEE SHEET 33



SEE SHEET 36 FOR PROFILE

- TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.



**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-22  
FND 5/8" I.R.  
ELEV.=39.30  
D. STA. 7+63.05 OFFSET: 29.13R

- NOTES:**
- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
  - RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
  - THIS PROJECT SHALL BE BUILT BY MEANS OF TRENCHLESS CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL.

**NOTICE:**  
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**VERIFICATION OF PRIVATE UTILITY LINES**

Date \_\_\_\_\_  
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Signature valid for six months.

Date \_\_\_\_\_  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Signature valid for six months.

Date \_\_\_\_\_  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

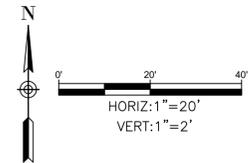
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF  
KIRAN V. PUNYAMANTHULA, P.E.  
TEXAS REG. NO.: 116965  
ON 01/15/2026  
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

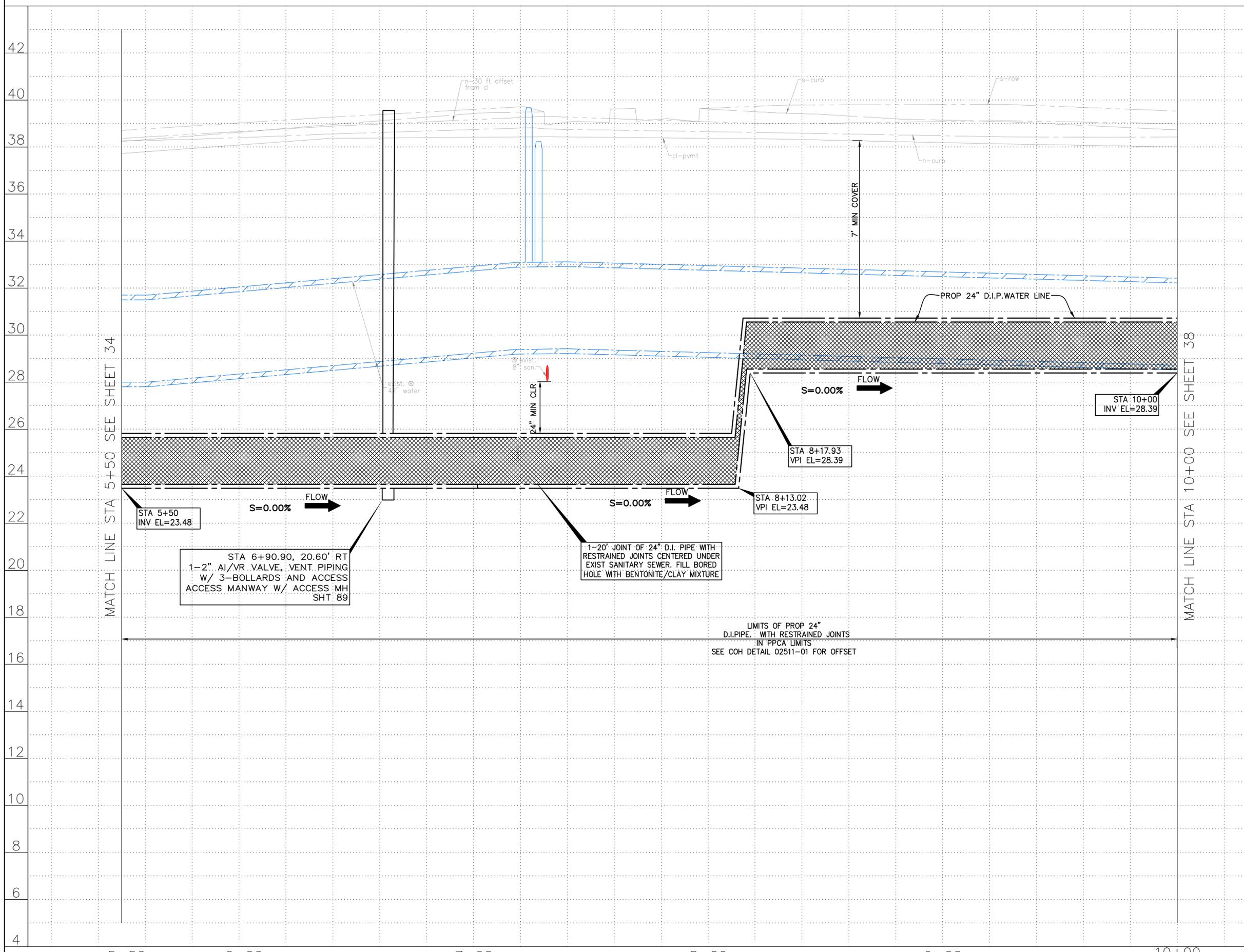
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
MEMORIAL WAY  
SITE 4  
PLAN  
STA 5+50 TO STA 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 35 OF 190	

SEE SHEET 35 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

**NOTICE:**  
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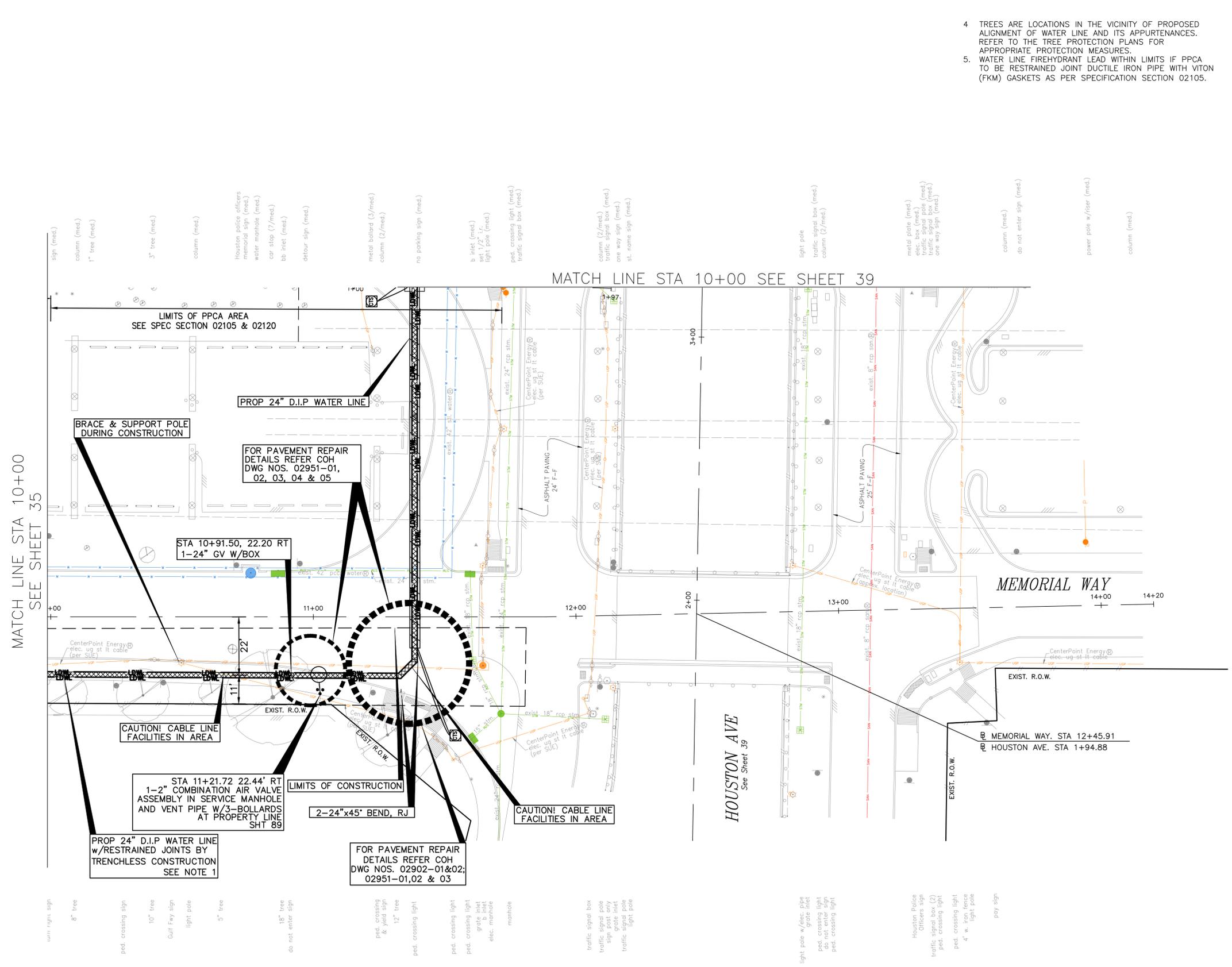
Date  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395

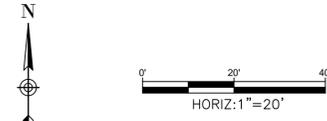
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
MEMORIAL WAY  
SITE 4  
PROFILE  
STA 5+50 TO STA 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 36 OF 190	

C:\Users\PAVAN\1-1\AG\AppData\Local\Temp\AcPublish\25008\33-46-P&P\_Sheet-Memorial Way and Houston Ave.dwg plotted on Jan 15, 2026 - 4:40pm



- 4 TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- 5. WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.



**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-23  
 SET 1/2" I.R. W/ CAP  
 ELEV.=38.01  
 D. STA. 11+61.93 OFFSET: 27.24L  
**NOTES:**

- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
- RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
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**VERIFICATION OF PRIVATE UTILITY LINES**

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 Signature valid for six months.

Date \_\_\_\_\_  
 Approved for AT&T underground conduit facilities only. Signature valid for one year.

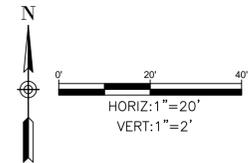
 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 MEMORIAL WAY SITE 4 PLAN STA 10+00 TO STA 14+20

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 37 OF 190	

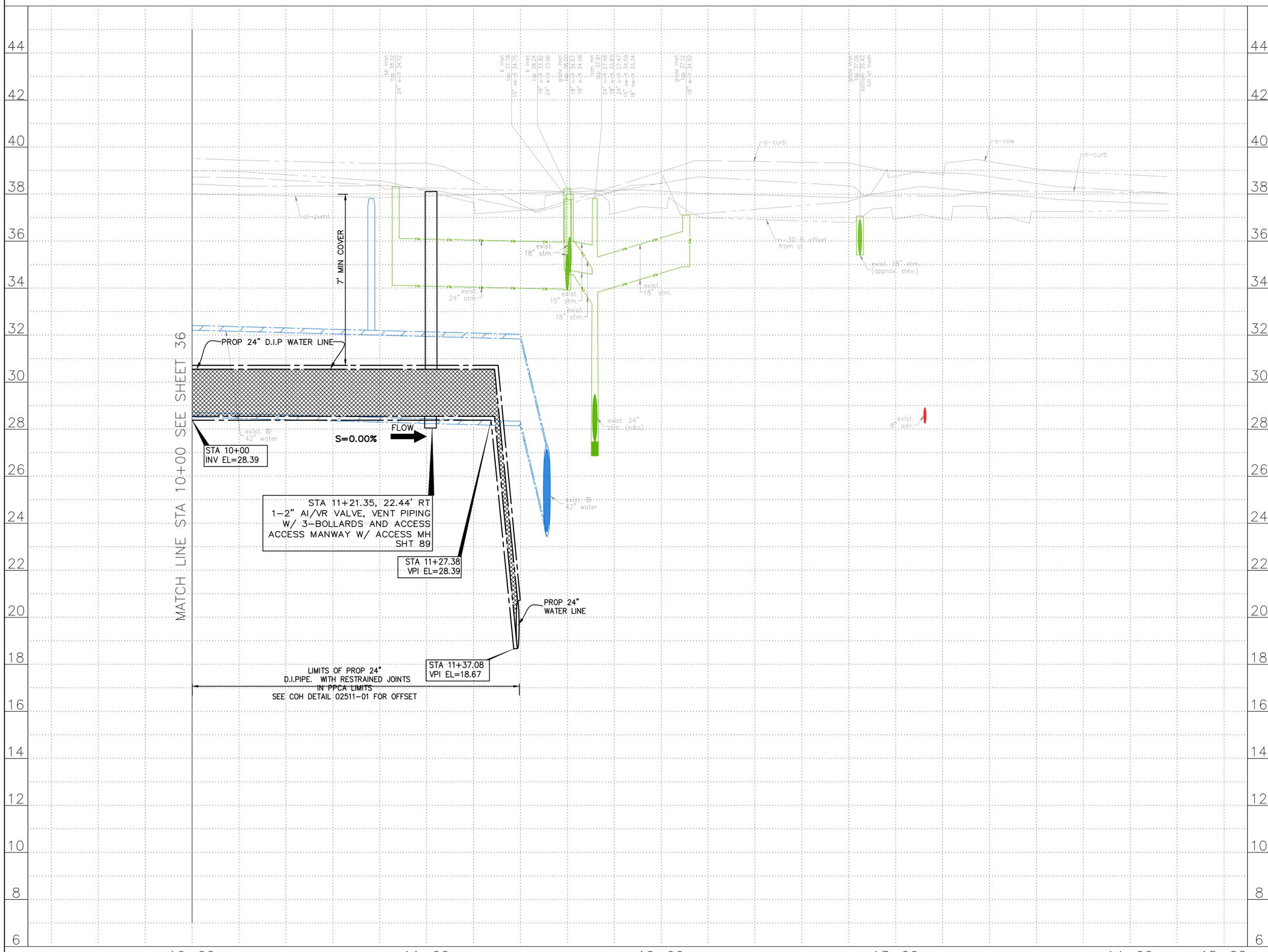
SEE SHEET 38 FOR PROFILE

C:\Users\PAVAN~1\NAG\AppData\Local\Temp\AcPublish\_25008\33-46-P&P-Sheet-Memorial Way and Houston Ave.dwg plotted on Jan 15, 2026 - 4:41 pm

SEE SHEET 37 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

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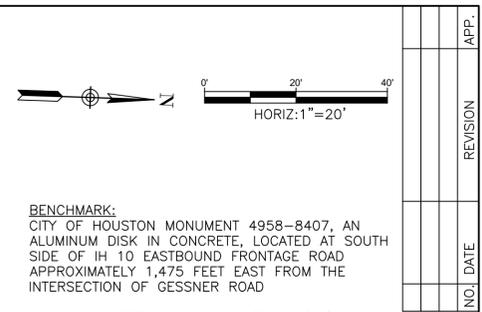
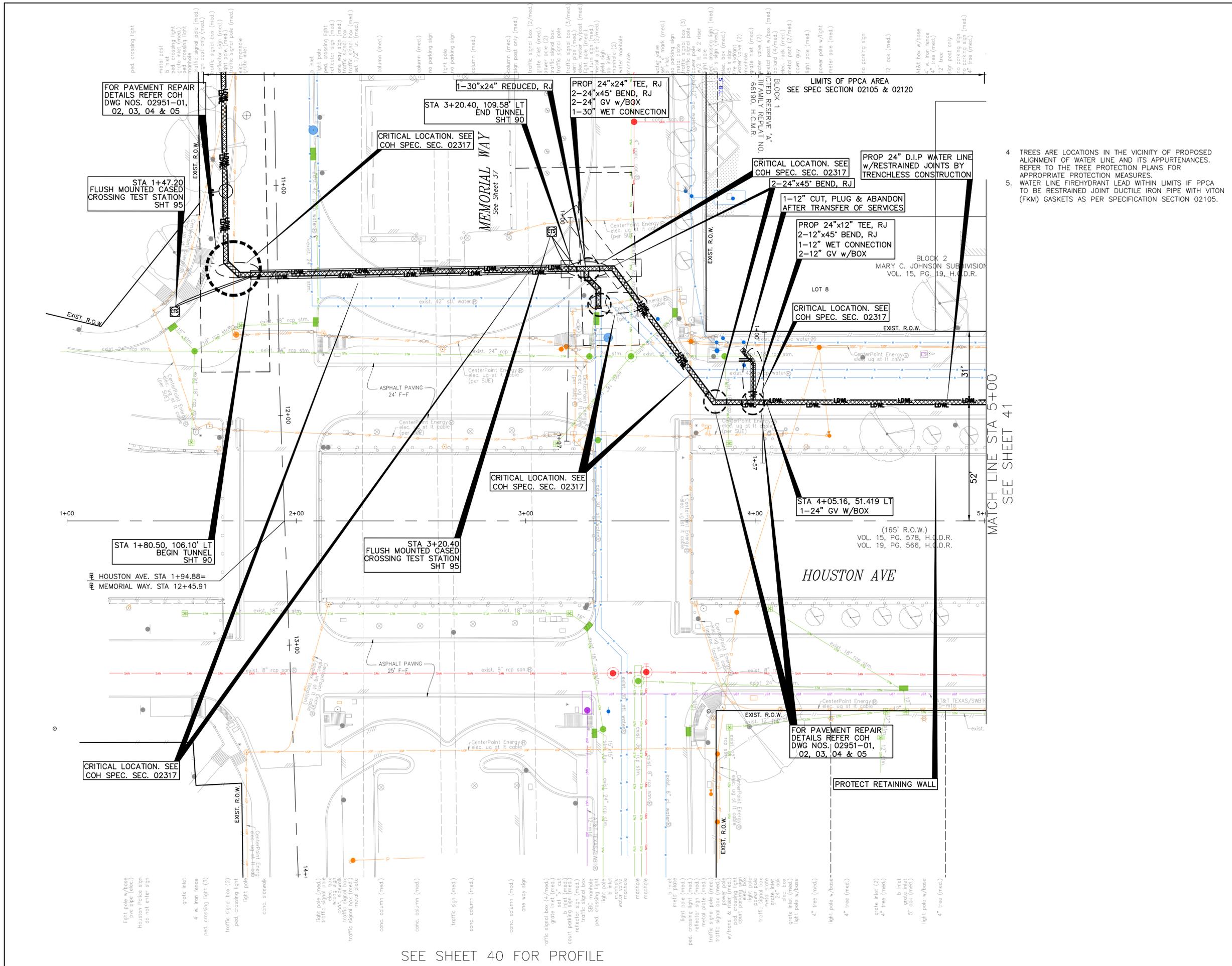
Date  
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	SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 MEMORIAL WAY  
 SITE 4  
 PROFILE  
 STA 10+00 TO STA 14+20

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 38 OF 190	



**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*

\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-25  
 SET BY CUT ON CONC.  
 ELEV. = 34.28  
 D. STA. 3+18.02 OFFSET: 79.83R

**NOTES:**

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Date \_\_\_\_\_

Approved for AT&T underground conduit facilities only. Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 HOUSTON AVE SITE 4 PLAN STA 1+00 TO STA 5+00

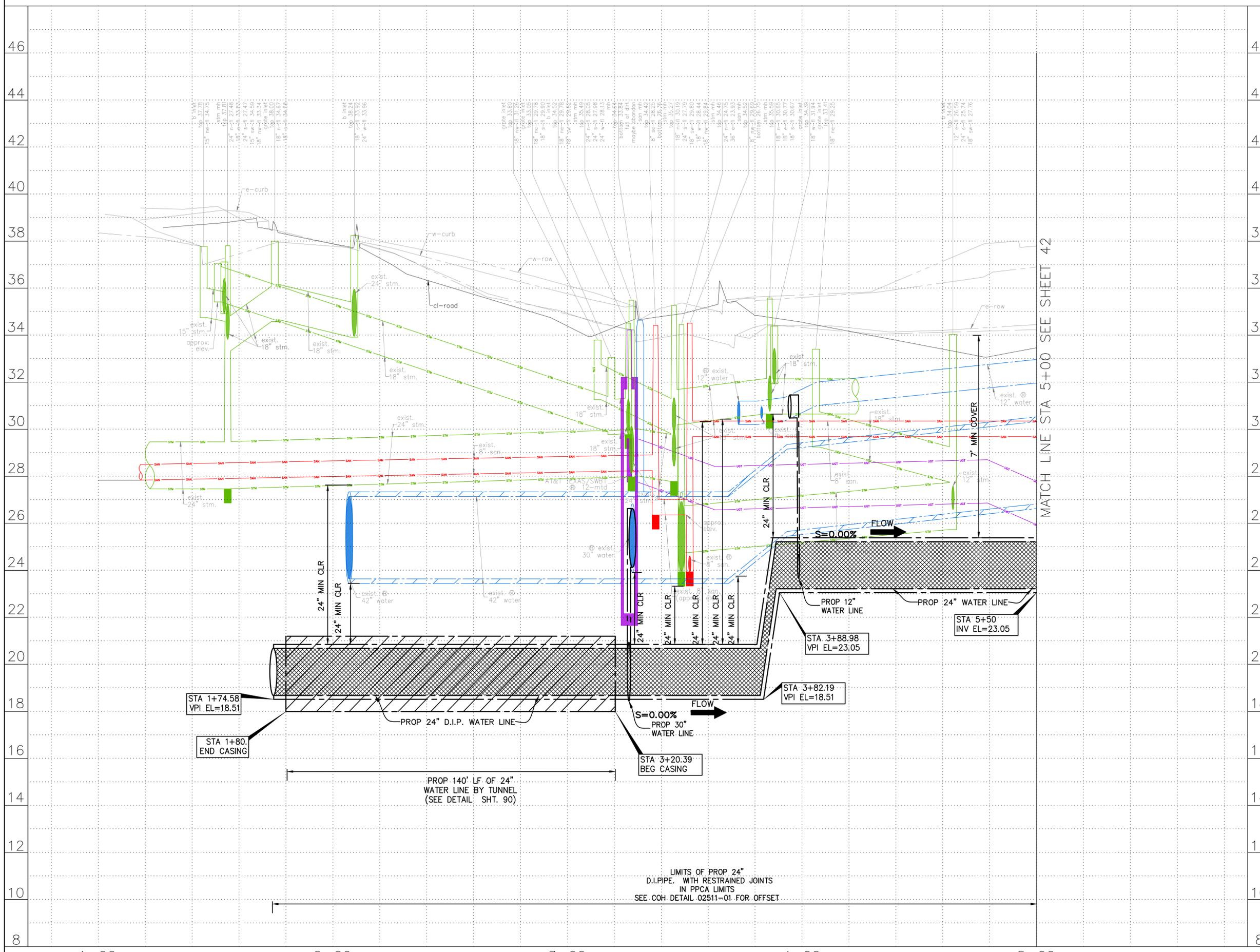
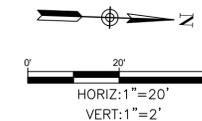
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 39 OF 190	

SEE SHEET 40 FOR PROFILE

MATCH LINE STA 5+00  
SEE SHEET 41

C:\Users\PAVAN\OneDrive\AppData\Local\Temp\AcPublish\_25008\33-46-P&P\_Sheet-Memorial Way and Houston Ave.dwg plotted on Jan 15, 2026 - 4:42pm

SEE SHEET 39 FOR PLAN



**NOTICE:**  
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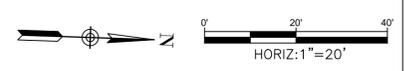
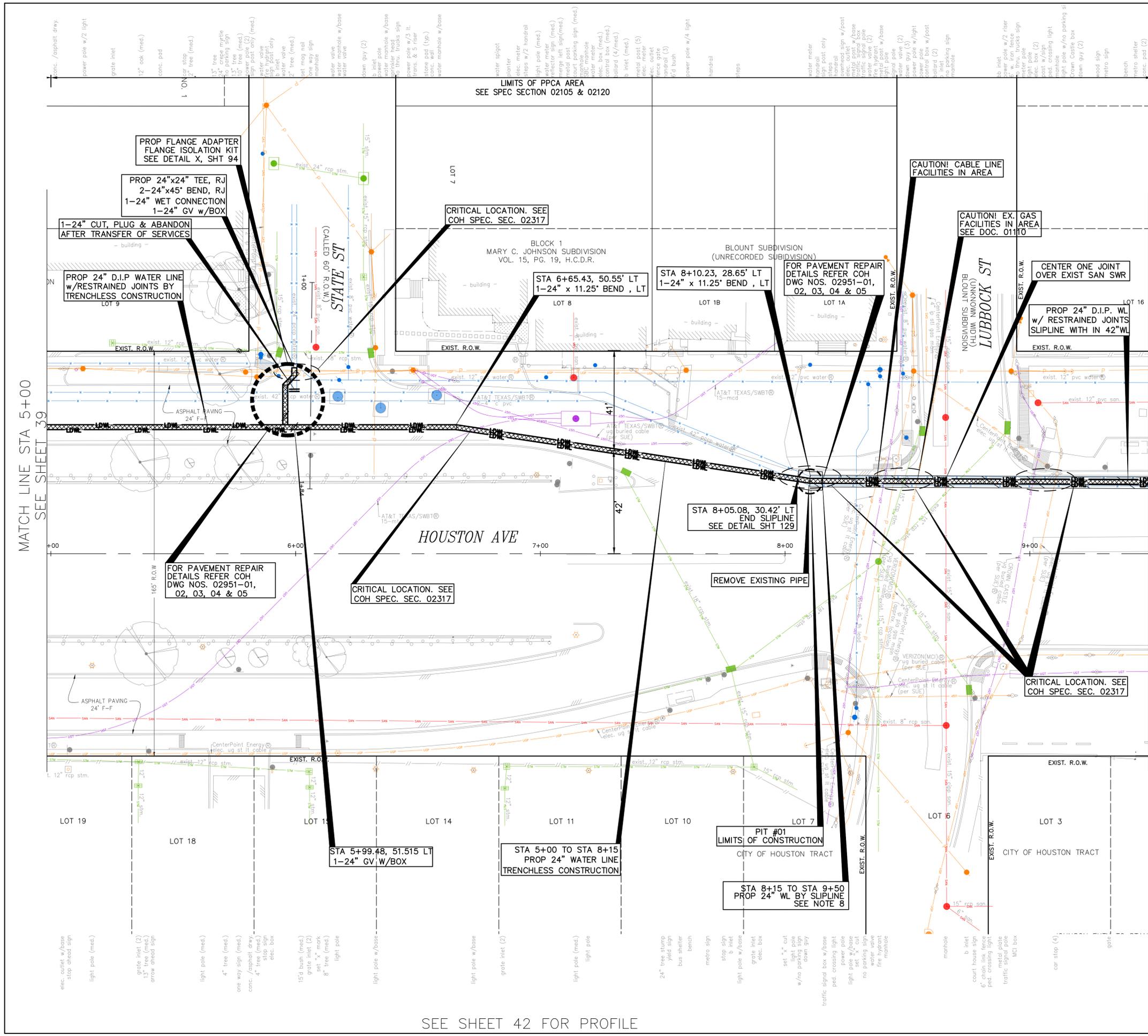
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	SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 HOUSTON AVE  
 SITE 4  
 PROFILE  
 STA 1+00 TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 40 OF 190	

LIMITS OF PROP 24" D.I.P. PIPE WITH RESTRAINED JOINTS IN PPCA LIMITS SEE COH DETAIL 02511-01 FOR OFFSET

C:\Users\PAVAN\1-1\AG\Temp\Local\Temp\AcPublish\25008\33-46-P&P\_Sheet-Memorial Way and Houston Ave.dwg plotted on Jan 15, 2026 - 4:43pm



**BENCHMARK:**  
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ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 SET 'X' CUT ON CONC.  
 ELEV. = 40.12  
 D. STA. 8+29.91 OFFSET: 69.18R

- NOTES:**
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	<b>SURVEYED BY:</b> KUO & ASSOCIATES, LLC FB NO. P-6395

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 HOUSTON AVE  
 SITE 4  
 PLAN  
 STA 5+00 TO STA 9+50

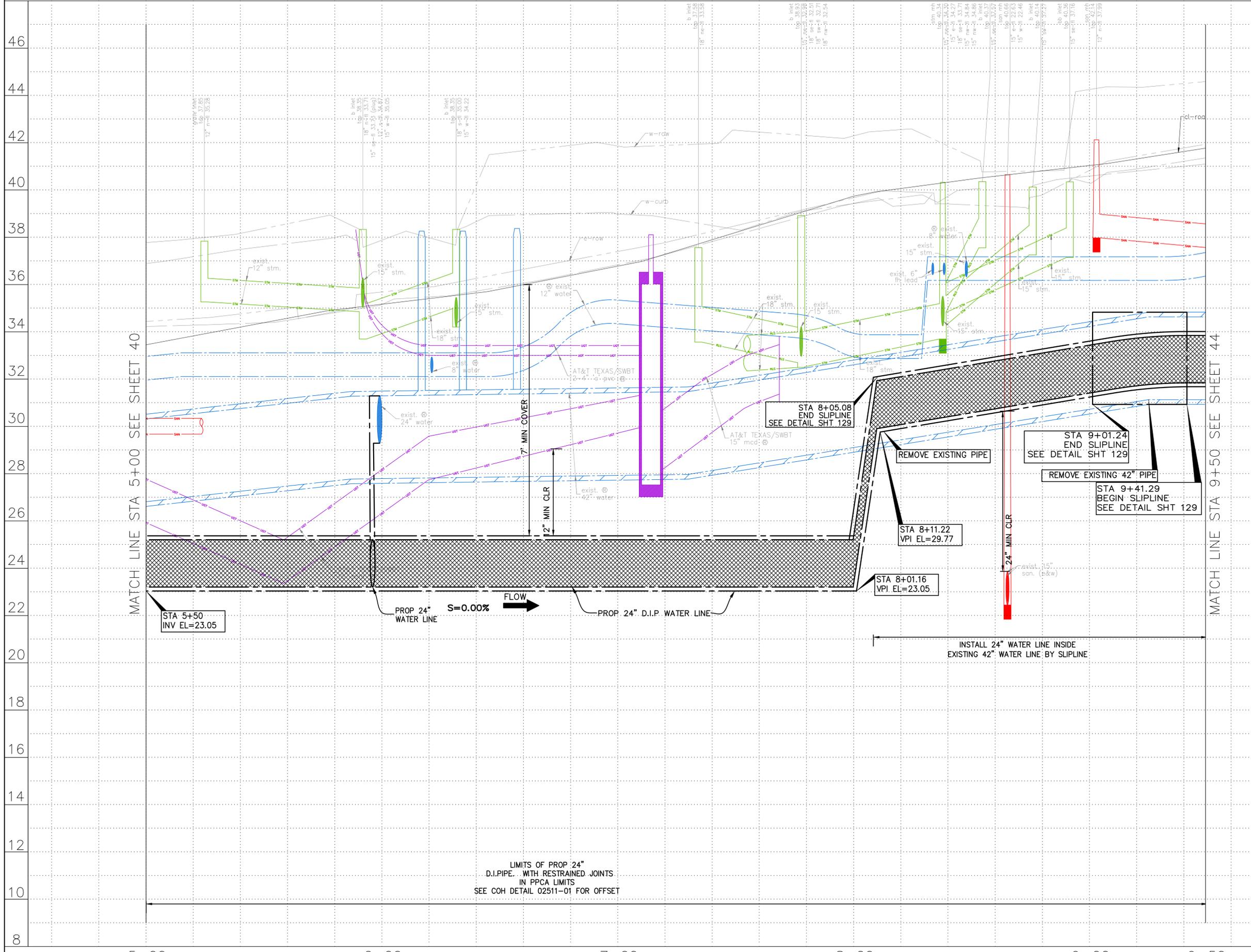
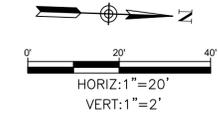
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 41 OF 190	

MATCH LINE STA 9+50  
SEE SHEET 43

MATCH LINE STA 5+00  
SEE SHEET 39

SEE SHEET 42 FOR PROFILE

SEE SHEET 41 FOR PLAN



NOTES:

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
Signature valid for six months.

Date  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Signature valid for six months.

Date  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

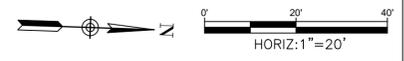
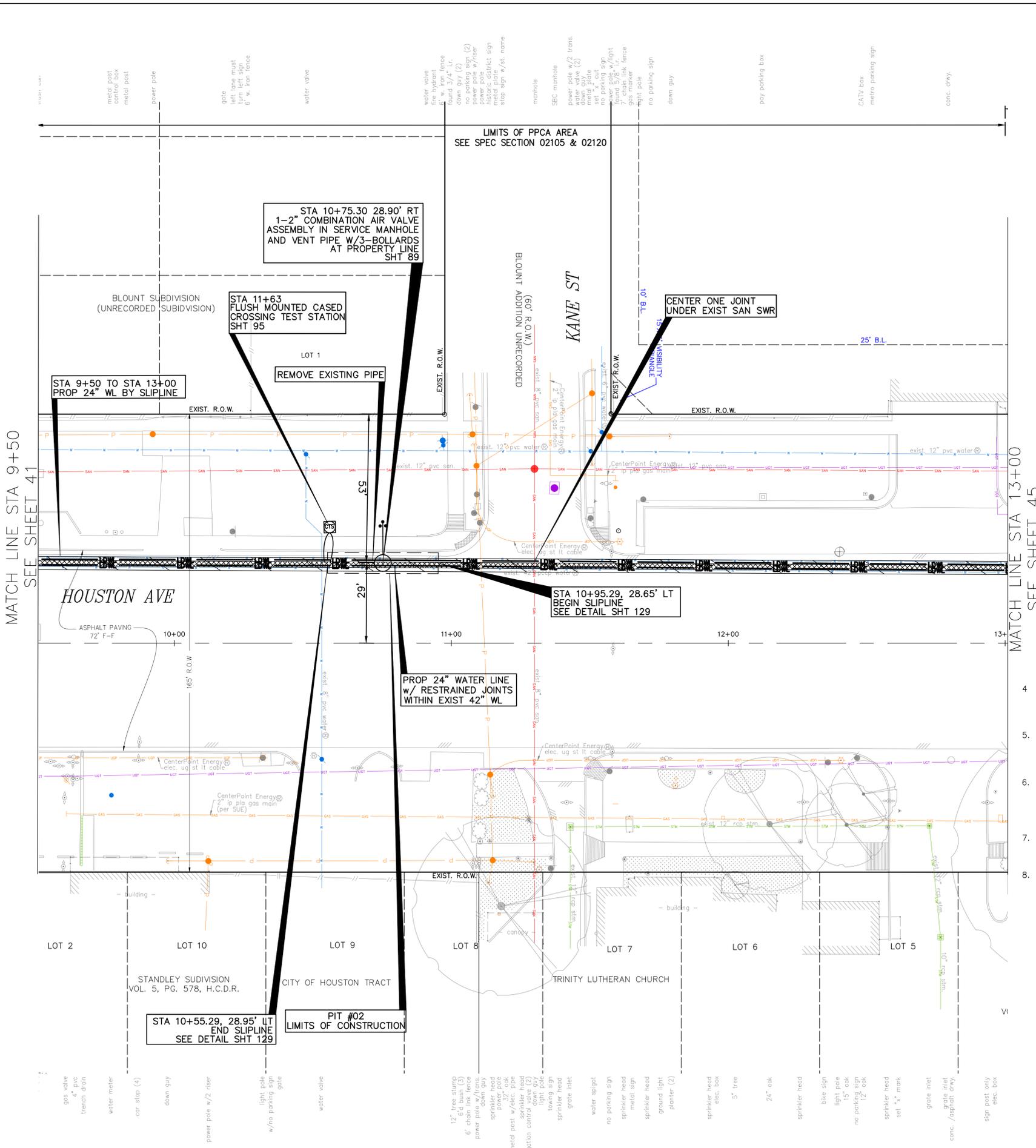
 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
HOUSTON AVE  
SITE 4  
PROFILE  
STA 5+00 TO STA 9+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 42 OF 190	

C:\Users\PAVAN\1\NAG\AppData\Local\Temp\AcPublish\25008\33-46-P&P\_Sheet-Memorial Way and Houston Ave.dwg plotted on Jan 15, 2026 - 4:44pm



**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-26  
 SET X CUT ON CONC.  
 ELEV. = 40.12  
 D. STA. 8+29.91 OFFSET: 69.18R  
**NOTES:**

- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
- RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
- THIS PROJECT SHALL BE BUILT BY MEANS OF TRENCHLESS CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL

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Date \_\_\_\_\_

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
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Date \_\_\_\_\_

Approved for AT&T underground conduit facilities only. Signature valid for one year.

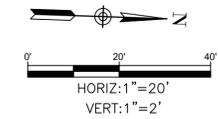
 <b>10300 WESTOFFICE DR. SUITE 800</b> <b>HOUSTON, TX 77042</b> <b>713-975-8769</b> <b>TX FIRM NO.: F-4578</b> <b>SURVEYED BY:</b> <b>KUO &amp; ASSOCIATES, LLC</b> <b>FB NO. P-6395</b>	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 HOUSTON AVE SITE 4 PLAN STA 9+50 TO STA 13+00

- TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.
- CONTRACTOR TO LOCATE EXISTING 24-INCH PCCP JOINT AND MAKE CONNECTION TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER INCLUDE A FLANGE ISOLATION KIT BETWEEN PCCP AND D.I. PIPES.
- CONTRACTOR TO LOCATE EXISTING 42-INCH PCCP JOINT AND MARK CUT AND PLUG TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER.
- LOCATION OF PROPOSED WATER LINE IN SLIP-LINE WITHIN EXISTING 42-INCH WATER LINE IS SHOWN BASED ON APPROXIMATE LOCATION OF THE EXISTING 42-INCH LINE. THEREFORE STATIONS AND INVERTS OF PROPOSED WATER LINE ARE ESTIMATES ONLY. CONTRACTOR TO FIELD VERIFY LOCATION OF 42-INCH WATER LINE PROPOSED TO BEGINNINGS SLIP-LINING AND ADJUST LOCATIONS. SLIP-LINING PIT/LIMIT, PROPOSED BENDS, INVERTS ETC., RELATED TO SLIP-LINING ACCORDINGLY WITH APPROVAL OF THE PROJECT MANAGER.

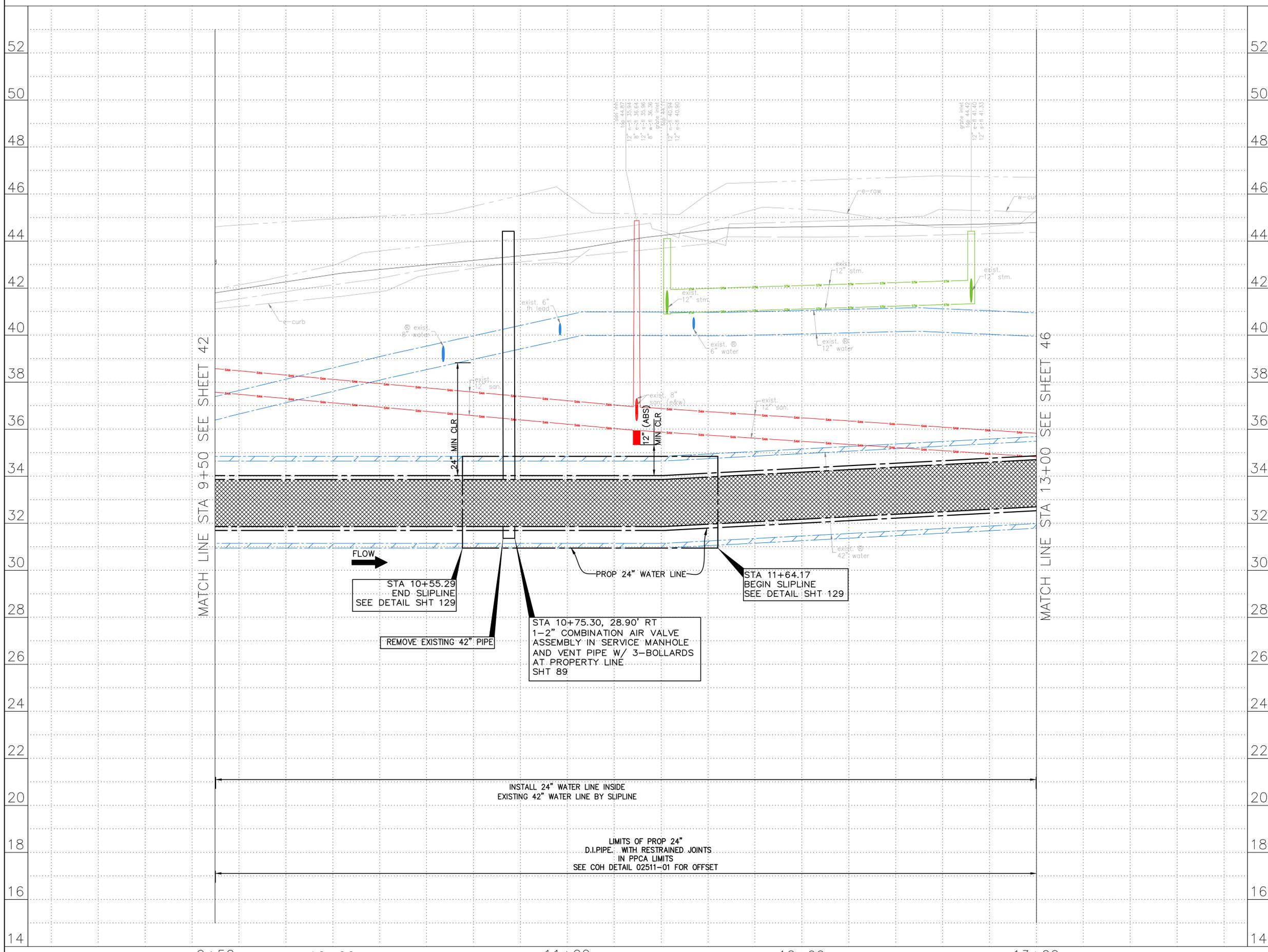
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 43 OF 190	

SEE SHEET 44 FOR PROFILE

SEE SHEET 43 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

**NOTICE:**  
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VERIFICATION OF PRIVATE UTILITY LINES

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Date  
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 Signature valid for six months.

Date  
 Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	SURVEYED BY: <b>KUO &amp; ASSOCIATES, LLC</b> FB NO. P-6395

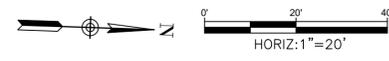
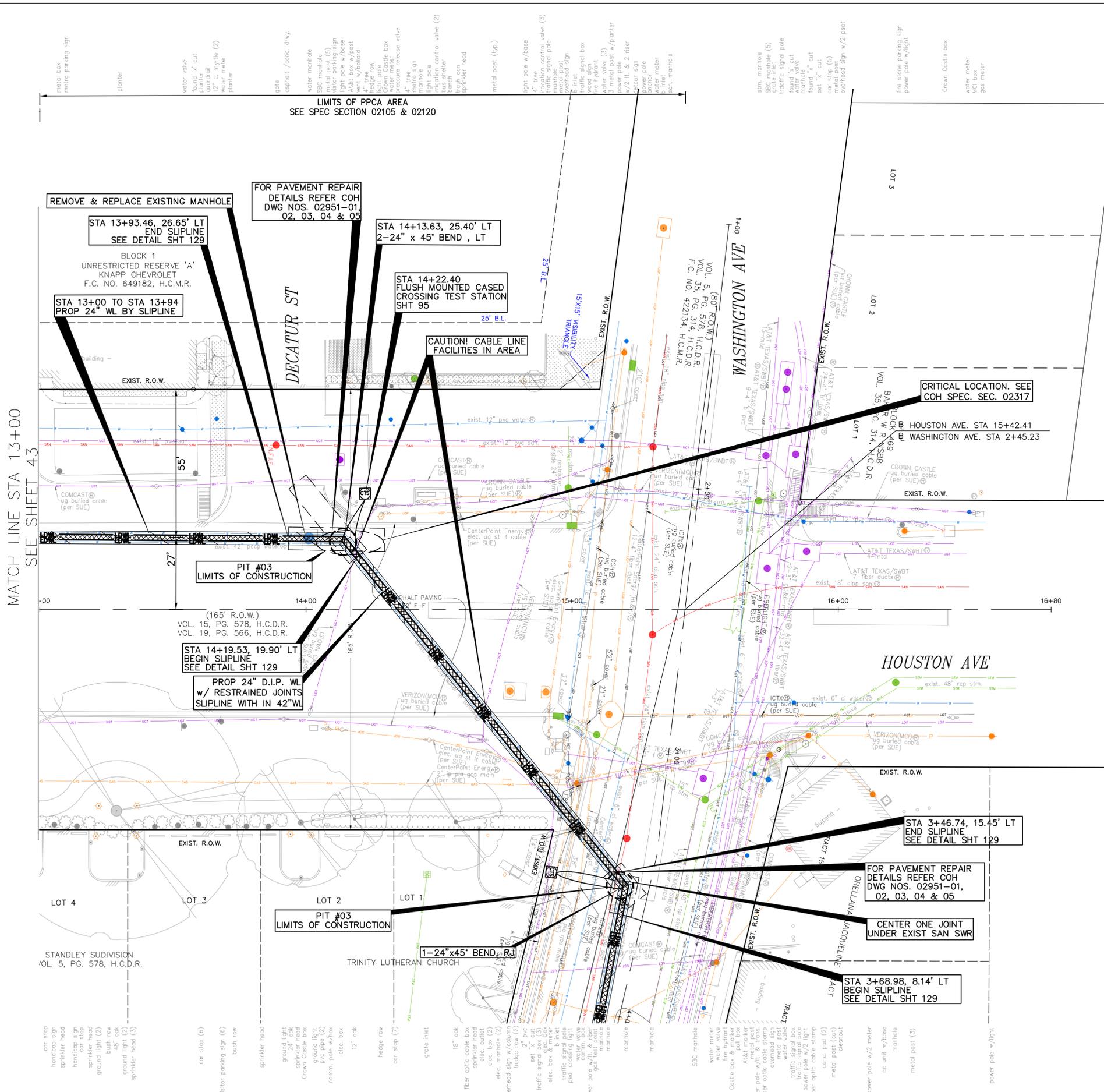
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 HOUSTON AVE  
 SITE 4  
 PROFILE  
 STA 9+50 TO STA 13+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 44 OF 190	

C:\Users\PAVAN\1-NA\Temp\Temp\AcPublish\Local\Temp\AcPublish\_25008\33-46-P&P\_Sheet-Memorial Way and Houston Ave.dwg plotted on Jan 15, 2026 - 4:46pm

MATCH LINE STA 13+00  
SEE SHEET 43



**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-28  
SET 'X' CUT ON CONC.  
ELEV.=44.13  
D. STA. 2+07.74 OFFSET: 43.27L  
**NOTES:**

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- RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
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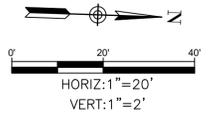
Date  
Approved for AT&T underground conduit facilities only. Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 HOUSTON AVE SITE 4 PLAN STA 13+00 TO STA 16+80

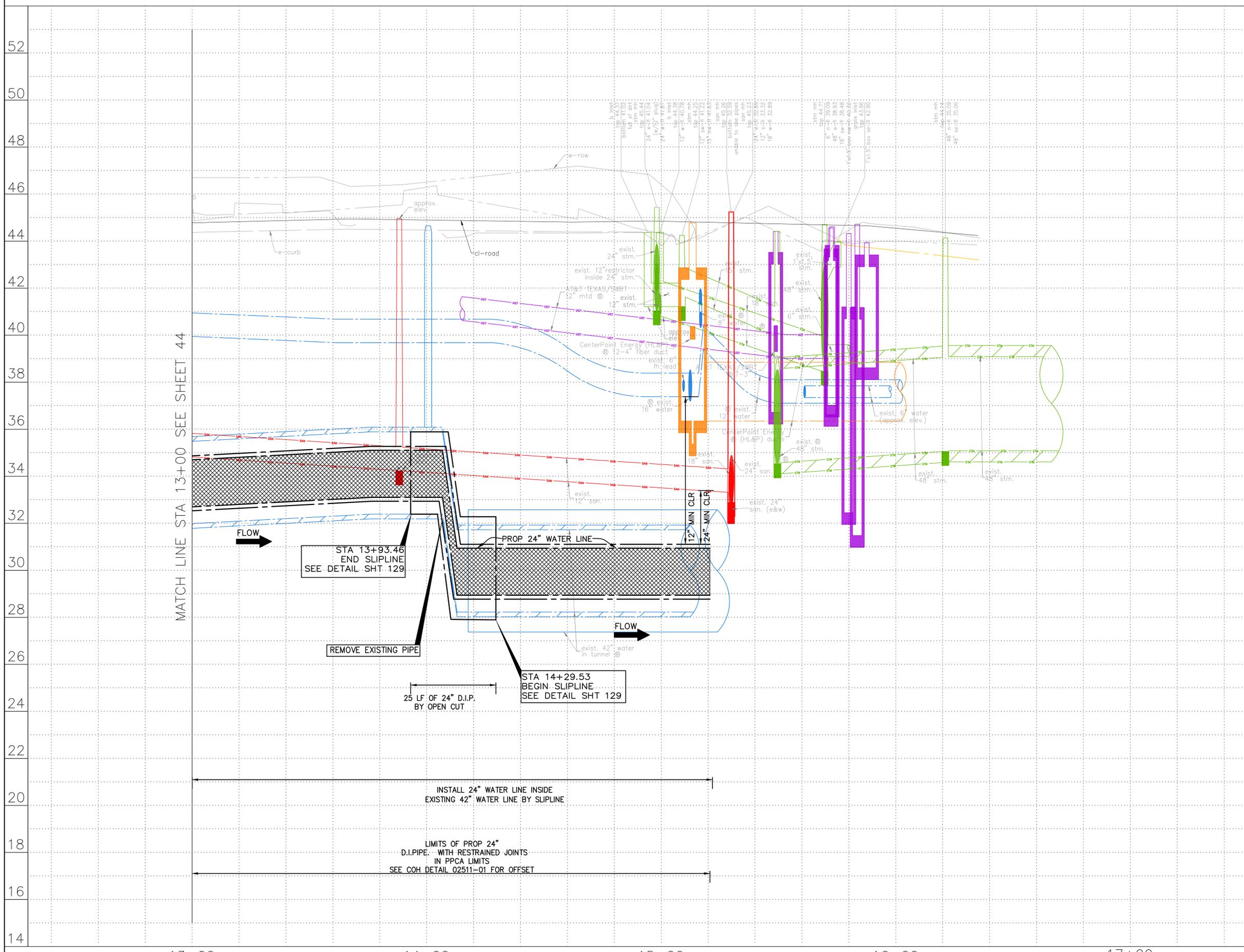
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- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.
- CONTRACTOR TO LOCATE EXISTING 24-INCH PCCP JOINT AND MAKE CONNECTION TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER INCLUDE A FLANGE ISOLATION KIT BETWEEN PCCP AND D.I.PIPES.
- CONTRACTOR TO LOCATE EXISTING 42-INCH PCCP JOINT AND MARK CUT AND PLUG TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER.
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SEE SHEET 46 FOR PROFILE

SEE SHEET 45 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

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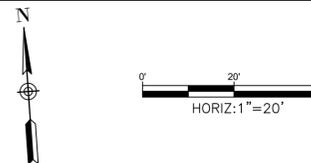
 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	SURVEYED BY: <b>KUO &amp; ASSOCIATES, LLC</b> FB NO. P-6395

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
HOUSTON AVE  
SITE 4  
PROFILE  
STA 13+00 TO STA 16+80

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 46 OF 190	

C:\Users\PAVAN\1-NA\AppData\Local\Temp\AcPublish\25008\33-46-P&P\_Sheet-Memorial Way and Houston Ave.dwg plotted on Jan 15, 2026 - 4:47pm



**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV.79.33 FEET NAVD 1988 (GEOID '18)\*

\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**

T.B.M. B-28  
SET 'X' CUT ON CONC.  
ELEV.=44.13  
D. STA. 2+07.74 OFFSET: 43.27L

**NOTES:**

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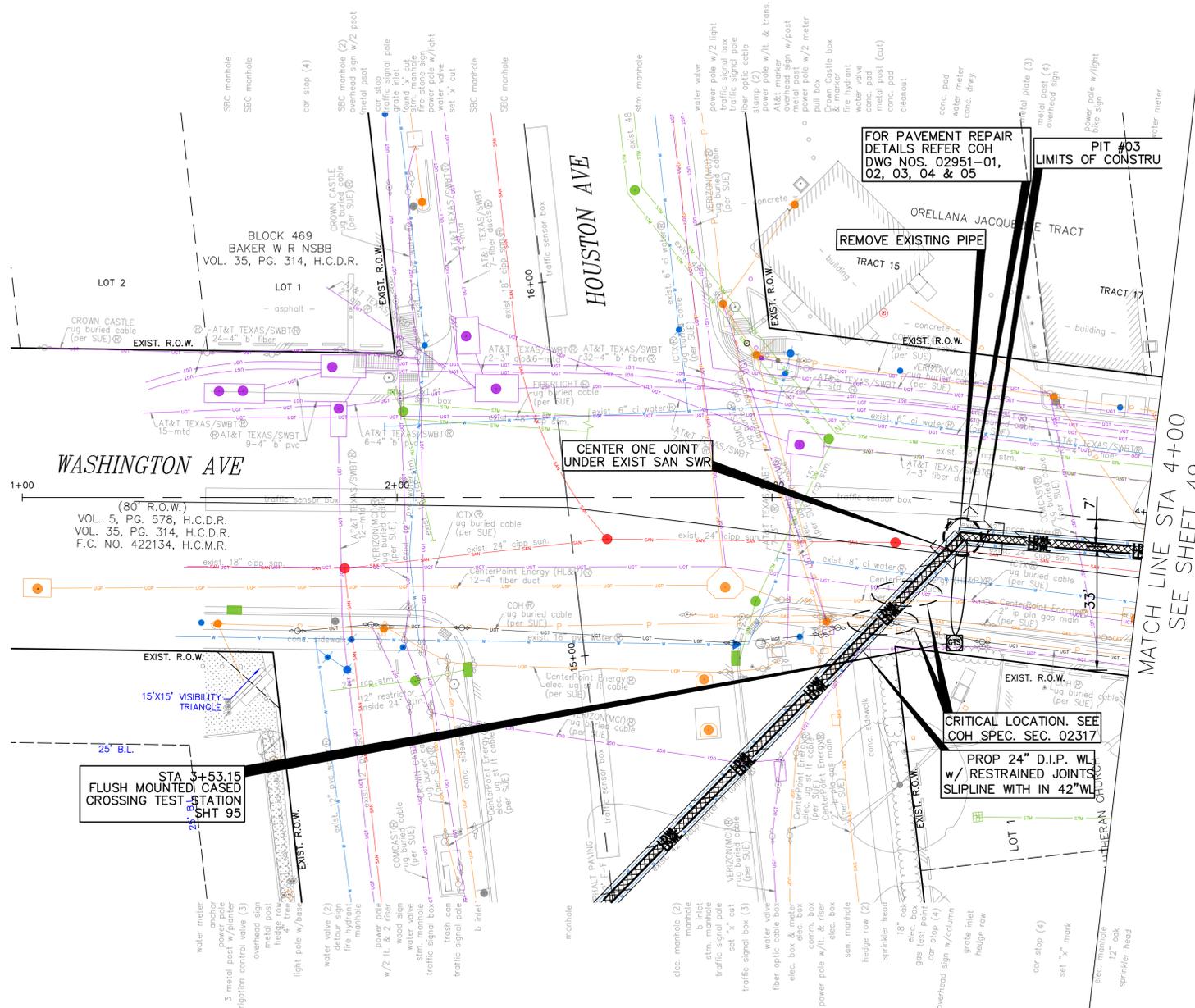
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
Kuo & Associates, LLC  
FB NO. P-6395

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF  
KIRAN V. PUNYANATHULA, P.E.  
TEXAS REG. NO.: 116965  
ON 01/15/2026  
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
WASHINGTON AVE  
SITE 4  
PLAN  
BEGIN TO STA 4+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 47 OF 190	

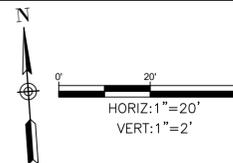


- TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
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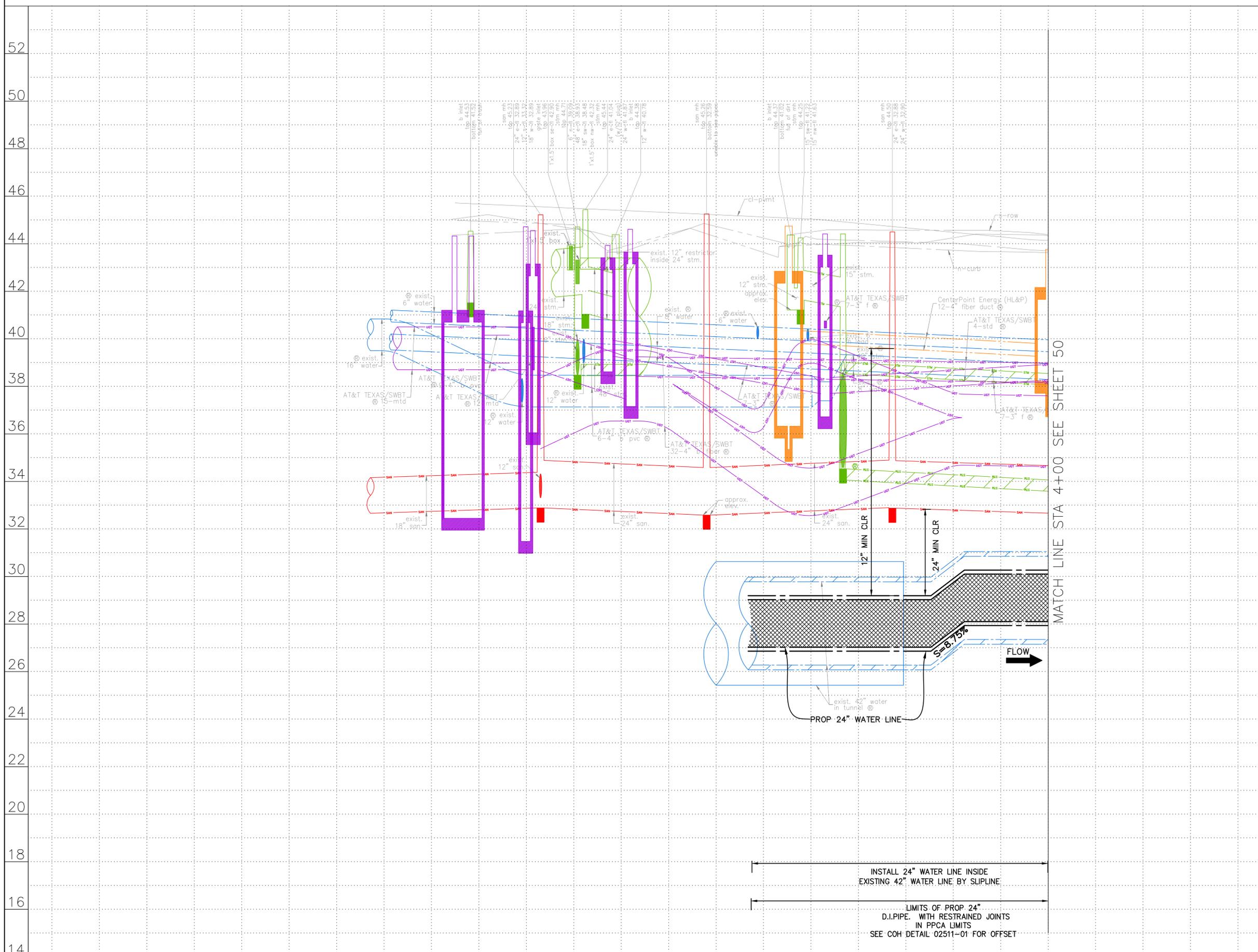
SEE SHEET 48 FOR PROFILE

C:\Users\vanumola\AppData\Local\Temp\AcPublish\_17576\47-58-P&P\_Sheet-Washington Ave and Preston street.dwg plotted on Jan 15, 2026 - 6:24pm

SEE SHEET 47 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

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	SURVEYED BY: <b>KUO &amp; ASSOCIATES, LLC</b> FB NO. P-6395

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
WASHINGTON AVE  
SITE 4  
PROFILE  
BEGIN TO STA 4+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 48 OF 190	

INSTALL 24" WATER LINE INSIDE EXISTING 42" WATER LINE BY SLIPLINE  
LIMITS OF PROP 24" D.I.PIPE. WITH RESTRAINED JOINTS IN PPCA LIMITS  
SEE COH DETAIL: 02511-01 FOR OFFSET

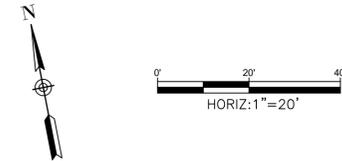
MATCH LINE STA 4+00 SEE SHEET 50

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14

1+00 2+00 3+00 4+00

C:\Users\vanumola\AppData\Local\Temp\AcPublish\_17576\47-58-P&P\_Sheet-Washington Ave and Preston street.dwg plotted on Jan 15, 2026 - 6:25pm



**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-32  
SET 1/2" I.R. W/CAIP  
ELEV. = 42.02  
D. BL STA. 8+14.92 OFFSET: 53.16R

- NOTES:**
- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
  - RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
  - THIS PROJECT SHALL BE BUILT BY MEANS OF TRENCHLESS CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

Date  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
Signature valid for six months.

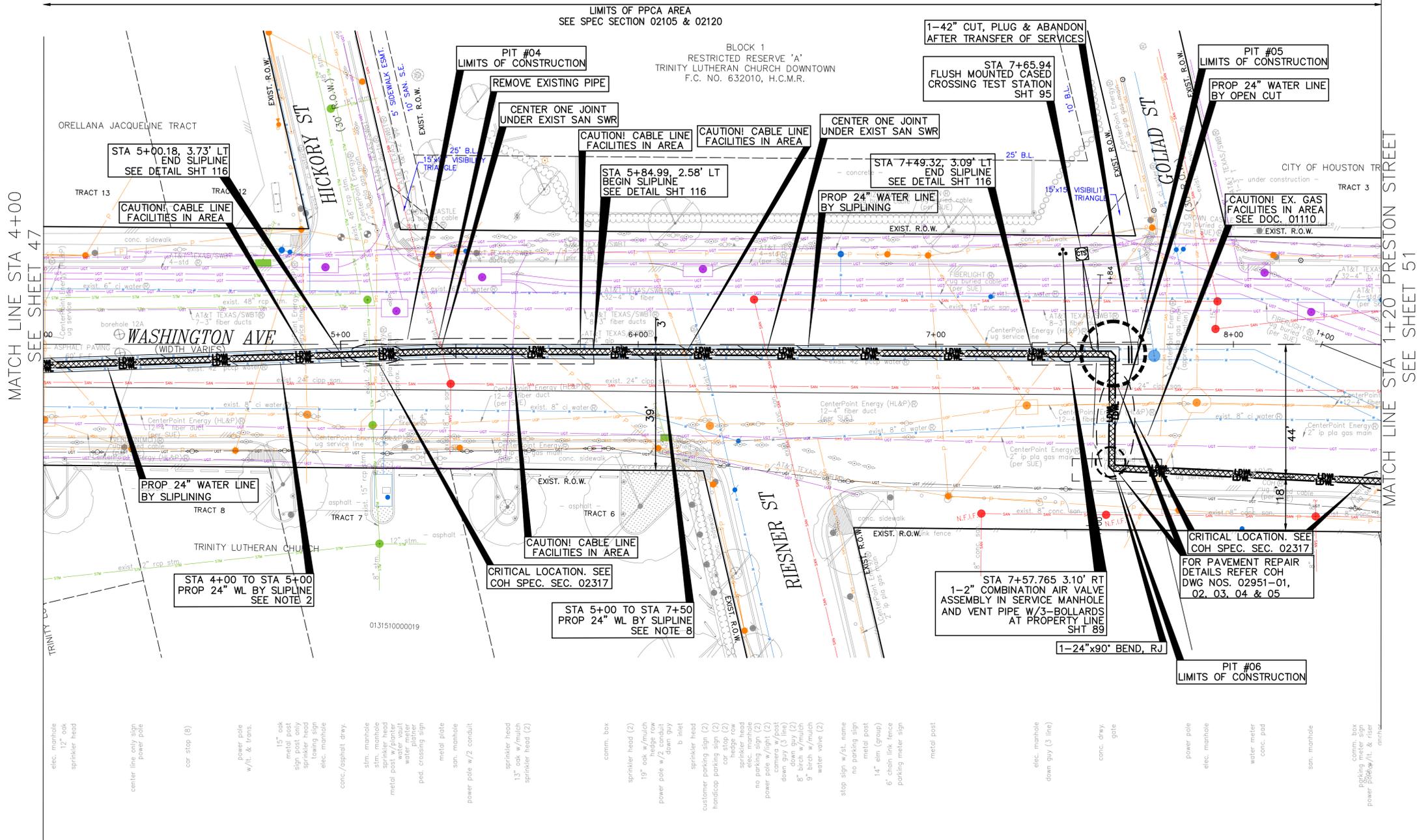
Date  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Signature valid for six months.

Date  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

<p><b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO &amp; ASSOCIATES, LLC FB NO. P-6395</p>	<p>THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES</p>
	<p><b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS</p>

**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 WASHINGTON AVE SITE 4 PLAN STA 4+00 TO STA 8+50**

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 49 OF 190	



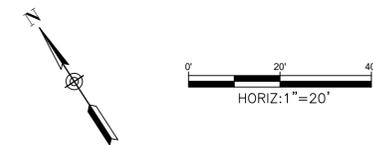
SEE SHEET 50 FOR PROFILE

- TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.
- CONTRACTOR TO LOCATE EXISTING 24-INCH PCCP JOINT AND MAKE CONNECTION TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER INCLUDE A FLANGE ISOLATION KIT BETWEEN PCCP AND D.I.PIPES.
- CONTRACTOR TO LOCATE EXISTING 42-INCH PCCP JOINT AND MARK CUT AND PLUG TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER.
- LOCATION OF PROPOSED WATER LINE IN SLIPLINE WITHIN EXISTING 42-INCH WATER LINE IS SHOWN BASED ON APPROXIMATE LOCATION OF THE EXISTING 42-INCH LINE. THEREFORE STATIONS AND INVERTS OF PROPOSED WATER LINE ARE ESTIMATES ONLY. CONTRACTOR TO FIELD VERIFY LOCATION OF 42-INCH WATER LINE PROPOSED TO BEGINNINGS SLP-LINING AND ADJUST LOCATIONS. SLP-LINING PIT/LIMIT, PROPOSED BENDS, INVERTS ETC., RELATED TO SLP-LINING ACCORDINGLY WITH APPROVAL OF THE PROJECT MANAGER.

metal riser (2)  
ac unit w/ base  
down guy (3)  
power pole  
center line only sign  
Crown Castle box  
conc. /asphalt drwy.  
weed post (2)  
bb inlet  
down guy  
metal post  
fire hydrant  
meter pit  
meter pit  
down guy  
power pole  
wood post  
stop sign w/st. name  
no parking sign  
SBC manhole  
borehole (2/old)  
slm. manhole (2)  
SBC manhole  
overhead sign w/2 post  
pvc pipe (elec.)  
power pole w/lt. & riser  
7" birch w/much  
ped. crossing sign  
power pole  
water meter  
water meter  
metro sign  
SBC manhole  
irrigation control  
hedge row  
light pole  
8" tree w/much  
7" tree slump  
9" tree  
A&T manhole  
set "x" cut  
son. manhole  
hedge row  
fire hydrant  
down guy  
power pole w/ conduit  
down guy  
power pole w/ conduit  
9" birch  
sprinkler head  
sprinkler head  
bush row  
vent pipe w/2 bollard  
metal post  
power pole w/riser  
found mag nail  
water manhole  
water valve (2)  
son. manhole  
son. manhole  
no. outlet sign  
A&T manhole  
power pole w/light  
center line only sign  
found mag nail  
A&T manhole

etc. manhole  
12" oak  
sprinkler head  
center line only sign  
power pole  
car stop (8)  
power pole w/lt. & trans.  
15" oak  
metal post  
sign post only  
sprinkler head  
towing sign  
elec. manhole  
conc./asphalt drwy.  
slm. manhole  
slm. manhole  
sprinkler head  
metal post  
water vault  
water meter  
ped. crossing sign  
metal plate  
son. manhole  
power pole w/2 conduit  
sprinkler head  
13" oak w/much  
sprinkler head (2)  
comm. box  
sprinkler head (2)  
19" oak w/much  
power pole w/2 conduit  
down guy  
down guy  
b inlet  
sprinkler head  
customer parking sign (3)  
handicap parking sign (2)  
car stop (2)  
hedge row  
sprinkler head  
no. manhole  
elec. manhole  
power pole w/riser (2)  
camera w/fast  
down guy (3 line)  
down guy (2)  
9" birch w/much  
9" birch w/much  
water valve (2)  
stop sign w/st. name  
no parking sign  
metal post  
14" em (group)  
6" chain link fence  
parking meter sign  
metal post  
elec. manhole  
down guy (3 line)  
conc. drwy.  
gate  
power pole  
elec. manhole  
water meter  
conc. pad  
son. manhole  
picking  
comm. box  
concrete box  
power pole w/lt. & riser  
power pole w/riser





**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-33  
 SET 5/8" I.R. W/CAP  
 ELEV.=41.23  
 D. BL STA. 3+49.67 OFFSET: 36.90L

- NOTES:**
- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
  - RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
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**NOTICE:**  
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**VERIFICATION OF PRIVATE UTILITY LINES**

Date \_\_\_\_\_  
 Signature valid for six months.

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.

Date \_\_\_\_\_  
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Date \_\_\_\_\_  
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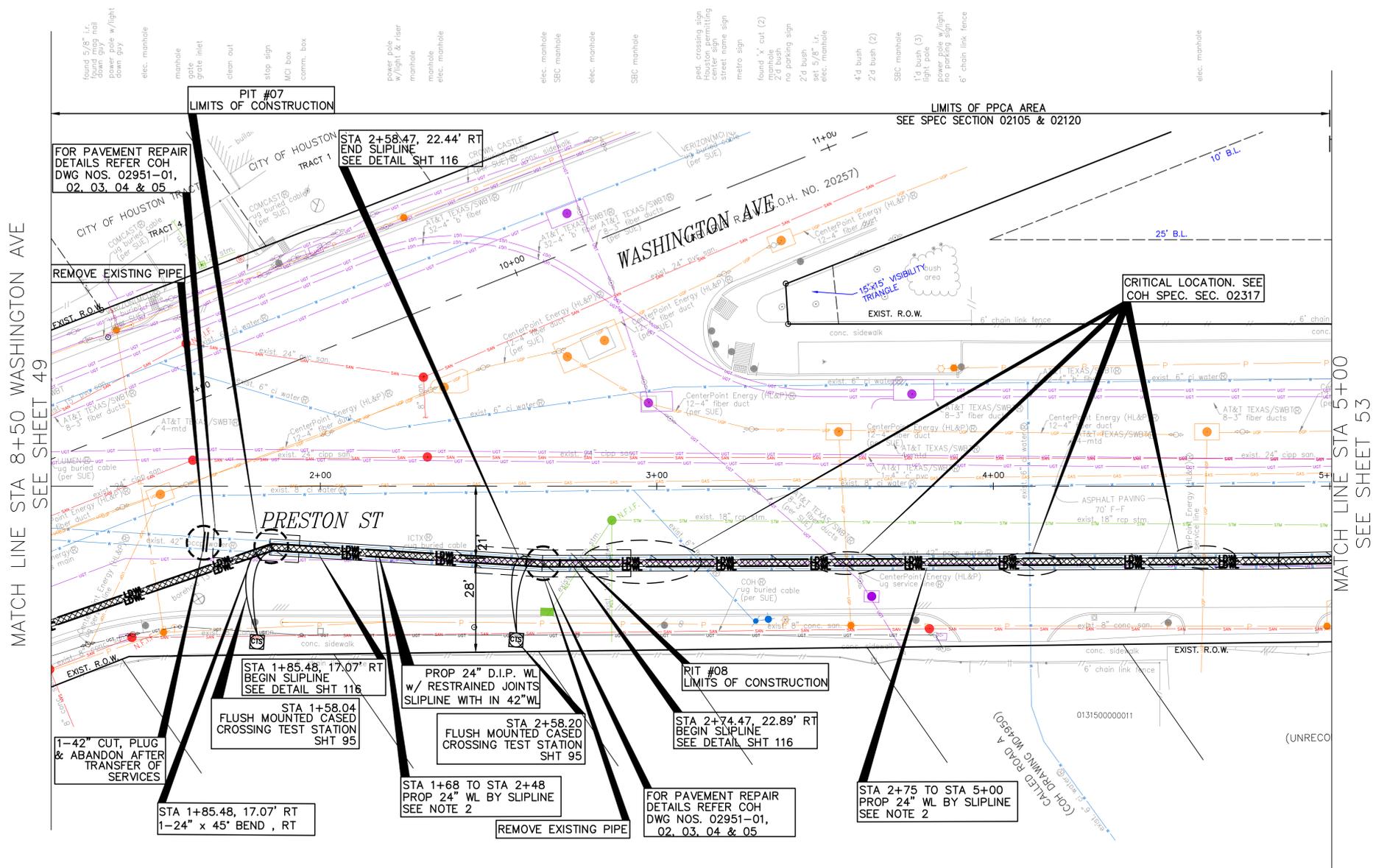
Approved for AT&T underground conduit facilities only. Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 PRESTON STREET SITE 4 PLAN STA 1+20 TO STA 5+00

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 PRESTON STREET SITE 4 PLAN  
 STA 1+20 TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 51 OF 190	



MATCH LINE STA 8+50 WASHINGTON AVE SEE SHEET 49

MATCH LINE STA 5+00 SEE SHEET 53

SEE SHEET 52 FOR PROFILE

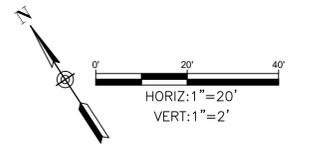
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found 5/8" I.R. down guy nail  
 power pole w/light  
 down guy  
 elec. manhole  
 manhole  
 gate  
 gate inlet  
 clean out  
 stop sign  
 MCO box  
 comm. box  
 power pole w/light & riser  
 manhole  
 elec. manhole  
 elec. manhole  
 SBC manhole  
 elec. manhole  
 SBC manhole  
 ped. crossing sign  
 center sign  
 street name sign  
 metro sign  
 found 'x' cut (2)  
 manhole  
 2'0 bush  
 no parking sign  
 2'0 bush  
 set 5/8" I.R.  
 elec. manhole  
 4'0 bush  
 2'0 bush (2)  
 SBC manhole  
 1'0 bush (3)  
 light pole  
 power pole w/light  
 no parking sign  
 6' chain link fence  
 elec. manhole

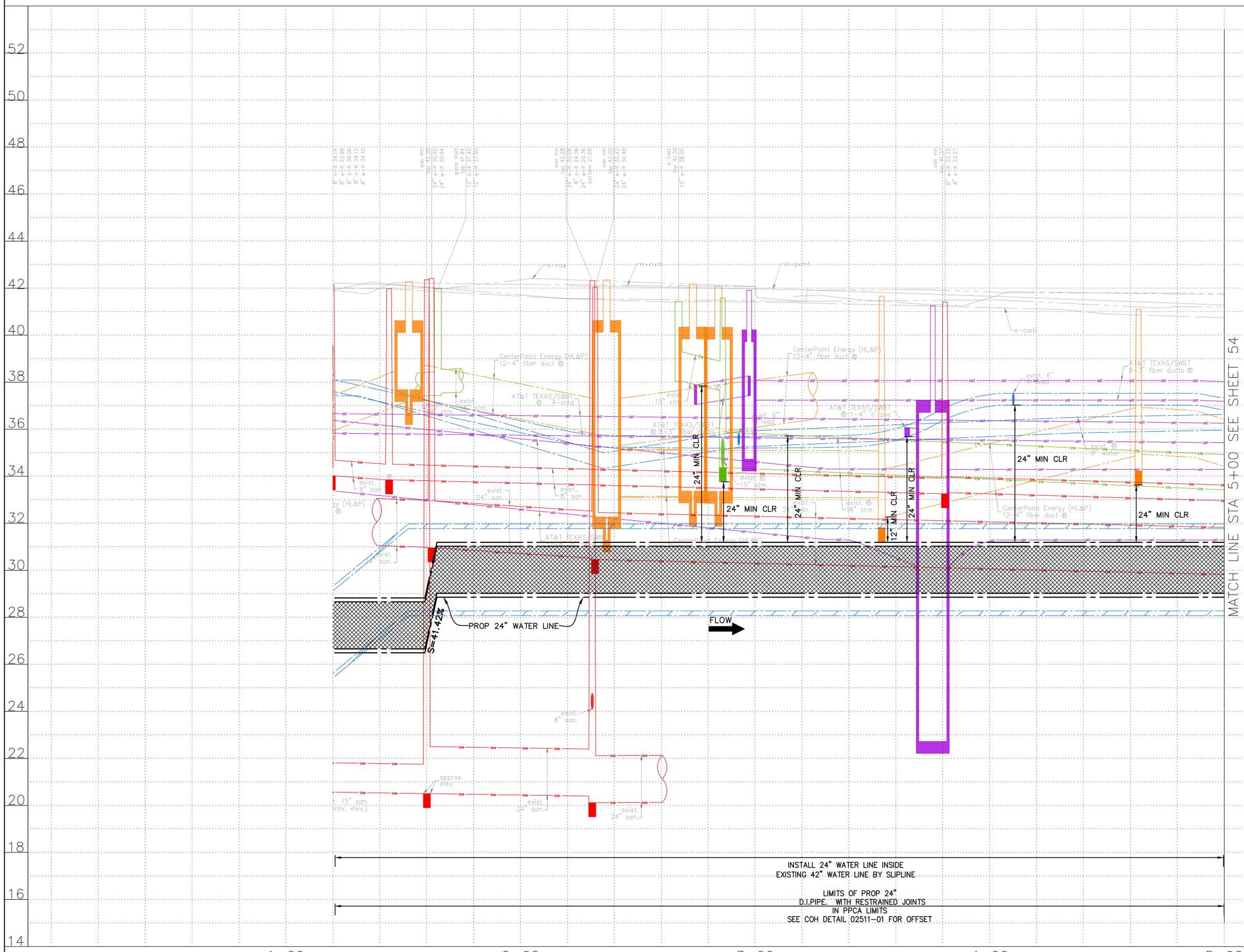
manhole  
 comm. box  
 parking meter sign  
 power pole w/L. & riser  
 anchor  
 sign  
 down guy  
 parking meter  
 power pole  
 found 5/8" I.R.  
 b inlet  
 no parking sign  
 metal post w/base  
 water valve  
 fire hydrant  
 street light w/base  
 power pole w/light  
 manhole  
 metal base  
 no parking sign  
 manhole  
 comm. box  
 gate  
 conc./asphalt drry.  
 metal base  
 6' chain link fence  
 no parking sign  
 conc./asphalt drry.  
 power pole w/light

C:\Users\vanuola\AppData\Local\Temp\AcPublish\_17576\47-58-P&P\_Sheet-Washington Ave and Preston street.dwg plotted on Jan 15, 2026 - 6:27pm

SEE SHEET 51 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
Signature valid for six months.

Date  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Signature valid for six months.

Date  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

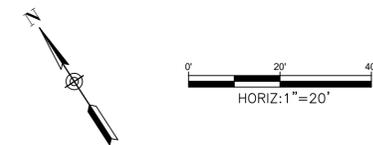
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
PRESTON STREET  
SITE 4  
PROFILE  
STA 1+20 TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 52 OF 190	

INSTALL 24" WATER LINE INSIDE EXISTING 42" WATER LINE BY SLIPLINE  
LIMITS OF PROP 24" D.I.P.I.P.E. WITH RESTRAINED JOINTS IN PPCA LIMITS  
SEE COH DETAIL 02511-01 FOR OFFSET

C:\Users\vanumola\AppData\Local\Temp\AcPublish\_17576\47-58-P&P\_Sheet-Washington Ave and Preston street.dwg plotted on Jan 15, 2026 - 6:28pm



NO.	DATE	REVISION	APP.

**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-34  
 SET MAGNAIL W/SHINER  
 ELEV.=39.69  
 D. BL STA. 7+24.10 OFFSET: 32.32L

- NOTES:**
- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
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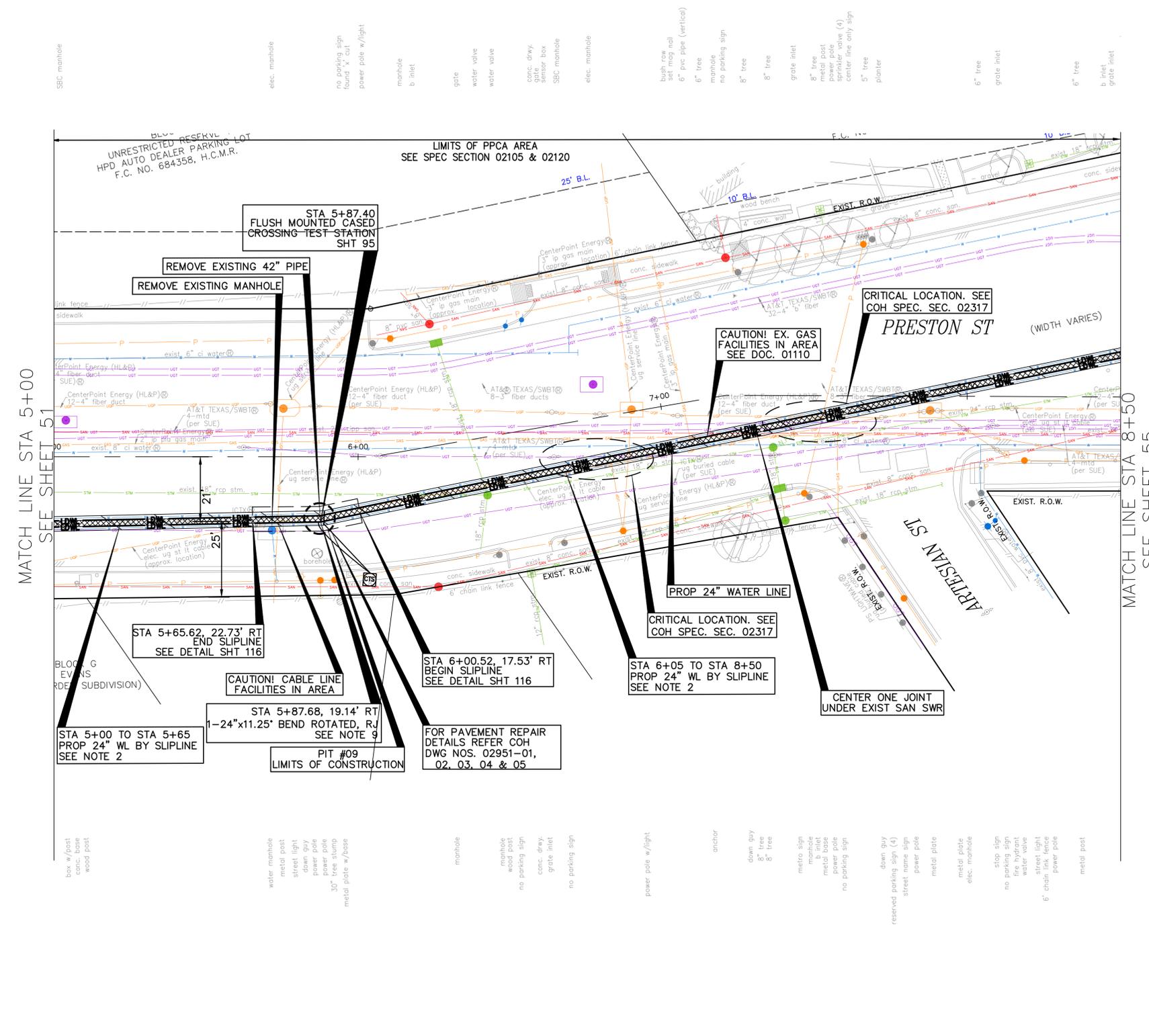
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS -  
 PACKAGE 4  
 PRESTON STREET  
 SITE 4  
 PLAN  
 STA 5+00 TO STA 8+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 53 OF 190	



SEE SHEET 54 FOR PROFILE

- TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.
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- ANGLE OF ROTATED BEND REPRESENTS FABRICATED ANGLE.

UNRESTRICTED RESERVE HPD AUTO DEALER PARKING LOT  
 F.C. NO. 684358, H.C.M.R.

LIMITS OF PPCA AREA  
 SEE SPEC SECTION 02105 & 02120

PRESTON ST (WIDTH VARIES)

ARTESIAN ST

EXIST. R.O.W.

PROP 24" WATER LINE

CRITICAL LOCATION. SEE COH SPEC. SEC. 02317

CAUTION! EX. GAS FACILITIES IN AREA SEE DOC. 01110

CAUTION! CABLE LINE FACILITIES IN AREA

CAUTION! GAS FACILITIES IN AREA SEE DOC. 01110

STA 5+00 TO STA 5+65 PROP 24" WL BY SLIPLINE SEE NOTE 2

STA 5+65.62, 22.73' RT END SLIPLINE SEE DETAIL SHT 116

STA 5+87.40 FLUSH MOUNTED CASED CROSSING TEST STATION SHT 95

REMOVE EXISTING 42" PIPE

REMOVE EXISTING MANHOLE

STA 5+87.68, 19.14' RT 1-24"x11.25' BEND ROTATED, RJ SEE NOTE 9

PIT #09 LIMITS OF CONSTRUCTION

FOR PAVEMENT REPAIR DETAILS REFER COH DWG NOS. 02951-01, 02, 03, 04 & 05

STA 6+00.52, 17.53' RT BEGIN SLIPLINE SEE DETAIL SHT 116

STA 6+05 TO STA 8+50 PROP 24" WL BY SLIPLINE SEE NOTE 2

CRITICAL LOCATION. SEE COH SPEC. SEC. 02317

CENTER ONE JOINT UNDER EXIST SAN SWR

LEGEND:

- SBC manhole
- elec. manhole
- no parking sign found 'x' cut
- power pole w/light
- manhole b inlet
- gate
- water valve
- water valve
- conc. drwy. gate
- sensor box
- SBC manhole
- elec. manhole
- bush row
- set mag nail
- 6" pvc pipe (vertical)
- 6" tree
- manhole
- no parking sign
- 8" tree
- 8" tree
- grate inlet
- 8" tree
- metal post
- power pole
- metal base (4)
- center line only sign
- 5" tree
- planter
- 6" tree
- grate inlet
- 6" tree
- b inlet
- grate inlet

LEGEND (continued):

- box w/post
- conc. base
- wood post
- water manhole
- metal post
- street light
- down guy
- power pole
- power pole
- 30" tree stump
- metal plate w/base
- manhole
- manhole
- wood post
- no parking sign
- conc. drwy. grate inlet
- no parking sign
- power pole w/light
- anchor
- down guy
- 8" tree
- 8" tree
- metro sign
- manhole
- manhole
- metal base
- power pole
- no parking sign
- down guy
- reserved parking sign (4)
- street name sign
- power pole
- metal plate
- metal plate
- etc. manhole
- stop sign
- no parking sign
- fire hydrant
- water valve
- street light
- 6" chain link fence
- power pole
- metal post

LEGEND (continued):

- water manhole
- metal post
- street light
- down guy
- power pole
- power pole
- 30" tree stump
- metal plate w/base
- manhole
- manhole
- wood post
- no parking sign
- conc. drwy. grate inlet
- no parking sign
- power pole w/light
- anchor
- down guy
- 8" tree
- 8" tree
- metro sign
- manhole
- manhole
- metal base
- power pole
- no parking sign
- down guy
- reserved parking sign (4)
- street name sign
- power pole
- metal plate
- metal plate
- etc. manhole
- stop sign
- no parking sign
- fire hydrant
- water valve
- street light
- 6" chain link fence
- power pole
- metal post

LEGEND (continued):

- water manhole
- metal post
- street light
- down guy
- power pole
- power pole
- 30" tree stump
- metal plate w/base
- manhole
- manhole
- wood post
- no parking sign
- conc. drwy. grate inlet
- no parking sign
- power pole w/light
- anchor
- down guy
- 8" tree
- 8" tree
- metro sign
- manhole
- manhole
- metal base
- power pole
- no parking sign
- down guy
- reserved parking sign (4)
- street name sign
- power pole
- metal plate
- metal plate
- etc. manhole
- stop sign
- no parking sign
- fire hydrant
- water valve
- street light
- 6" chain link fence
- power pole
- metal post

LEGEND (continued):

- water manhole
- metal post
- street light
- down guy
- power pole
- power pole
- 30" tree stump
- metal plate w/base
- manhole
- manhole
- wood post
- no parking sign
- conc. drwy. grate inlet
- no parking sign
- power pole w/light
- anchor
- down guy
- 8" tree
- 8" tree
- metro sign
- manhole
- manhole
- metal base
- power pole
- no parking sign
- down guy
- reserved parking sign (4)
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- metal plate
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- metro sign
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- manhole
- metal base
- power pole
- no parking sign
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- fire hydrant
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- street light
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- power pole
- metal post

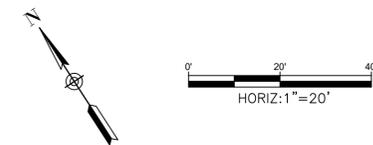
LEGEND (continued):

- water manhole
- metal post
- street light
- down guy
- power pole
- power pole
- 30" tree stump
- metal plate w/base
- manhole
- manhole
- wood post
- no parking sign
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- stop sign
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- fire hydrant
- water valve
- street light
- 6" chain link fence
- power pole
- metal post





**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
FIND 'X' CUT ON CONC.  
ELEV = 40.60  
D. BL STA. 9+20.39 OFFSET: 3.64L

- NOTES:**
- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
  - RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
  - THIS PROJECT SHALL BE BUILT BY MEANS OF TRENCHLESS CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL.

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

Date  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
Signature valid for six months.

Date  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification).  
Signature valid for six months.

Date  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

**10300 WESTOFFICE DR. SUITE 800**  
**HOUSTON, TX 77042**  
**713-975-8769**  
**TX FIRM NO.: F-4578**

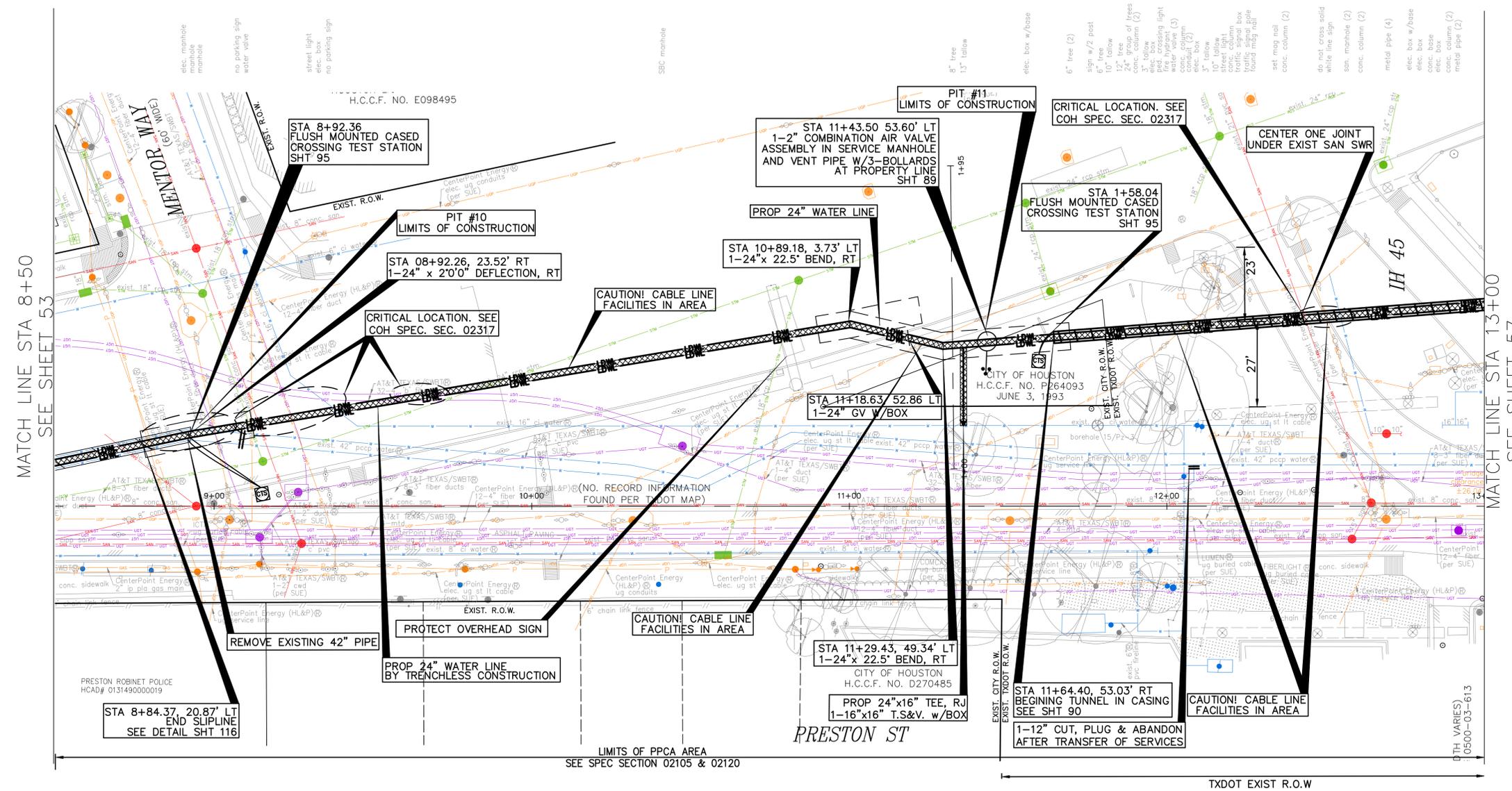
**SURVEYED BY:**  
**KUO & ASSOCIATES, LLC**  
**FB NO. P-6395**

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF  
KIRAN V. PUNYANATHULA, P.E.  
TEXAS REG. NO.: 116965  
ON 01/15/2026  
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
PRESTON STREET SITE 4 PLAN  
STA 8+50 TO STA 13+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 55 OF 190	



- 4 TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
5. WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.
6. CONTRACTOR TO LOCATE EXISTING 24-INCH PCCP JOINT AND MAKE CONNECTION TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER INCLUDE A FLANGE ISOLATION KIT BETWEEN PCCP AND D.I.PIPES.
7. CONTRACTOR TO LOCATE EXISTING 42-INCH PCCP JOINT AND MARK CUT AND PLUG TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER.
8. LOCATION OF PROPOSED WATER LINE IN SLIPLINE WITHIN EXISTING 42-INCH WATER LINE IS SHOWN BASED ON APPROXIMATE LOCATION OF THE EXISTING 42-INCH LINE. THEREFORE STATIONS AND INVERTS OF PROPOSED WATER LINE ARE ESTIMATES ONLY. CONTRACTOR TO FIELD VERIFY LOCATION OF 42-INCH WATER LINE PROPOSED TO BEGINNINGS SLIP-LINING AND ADJUST LOCATIONS. SLIP-LINING PIT/LIMIT, PROPOSED BENDS, INVERTS ETC., RELATED TO SLIP-LINING ACCORDINGLY WITH APPROVAL OF THE PROJECT MANAGER.

SEE SHEET 56 FOR PROFILE

MATCH LINE STA 8+50 SEE SHEET 53

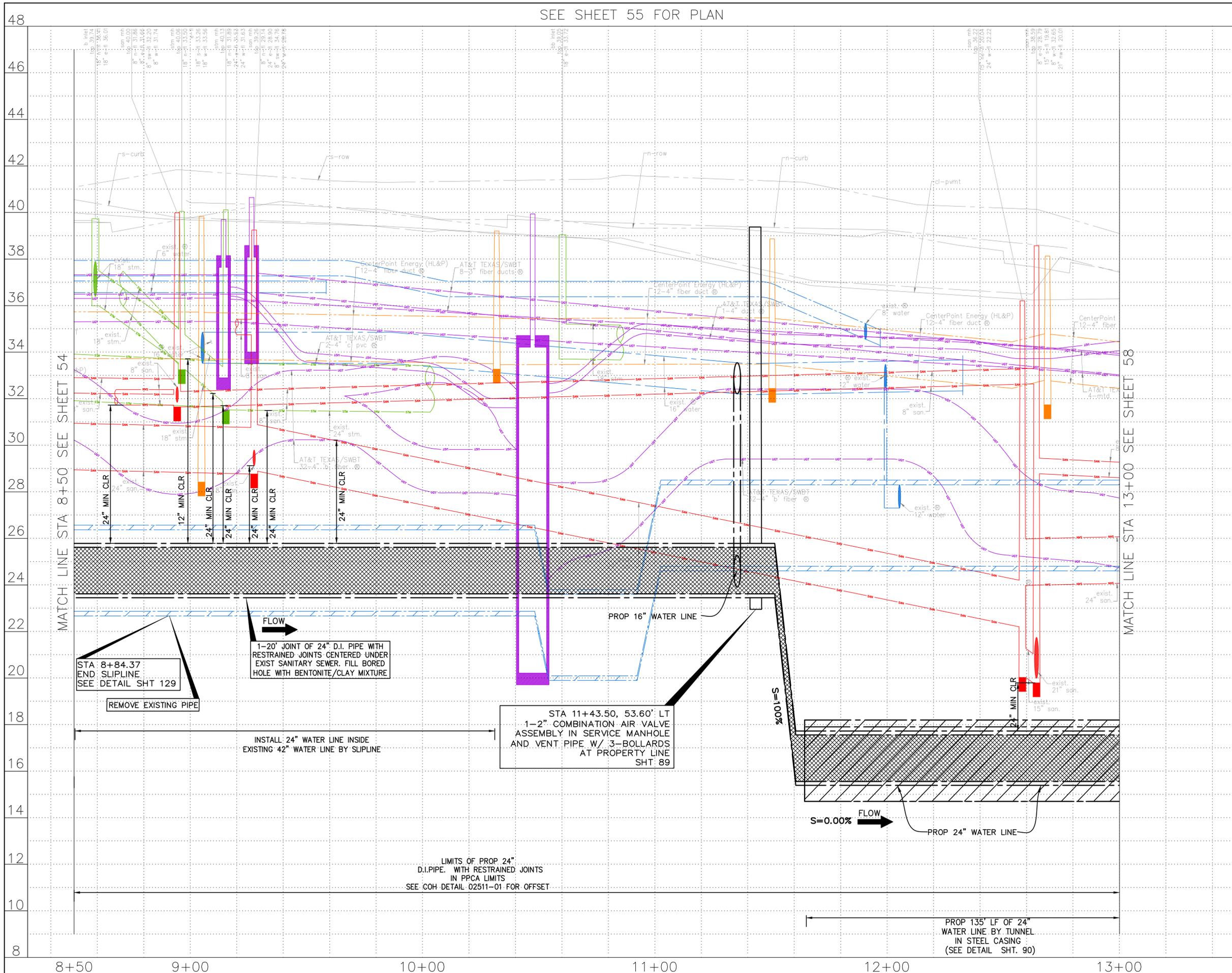
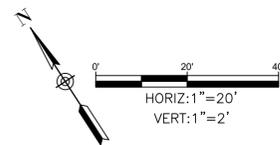
MATCH LINE STA 13+00 SEE SHEET 57

DTH VARIES 0500-03-613

NO. DATE REVISION APP.

C:\Users\vanuola\AppData\Local\Temp\AcPublish\_17576\47-58-P&P\_Sheet-Washington Ave and Preston street.dwg plotted on Jan 15, 2026 - 6:30pm

SEE SHEET 55 FOR PLAN



NOTES:

NOTICE:  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date  
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
Signature valid for six months.

Date  
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Signature valid for six months.

Date  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578

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TEXAS REG. NO.: 116965  
ON 01/15/2026  
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SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

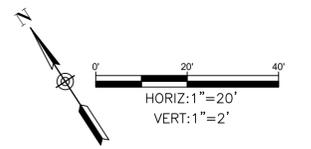
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
PRESTON STREET  
SITE 4  
PROFILE  
STA 8+50 TO STA 13+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 56 OF 190	

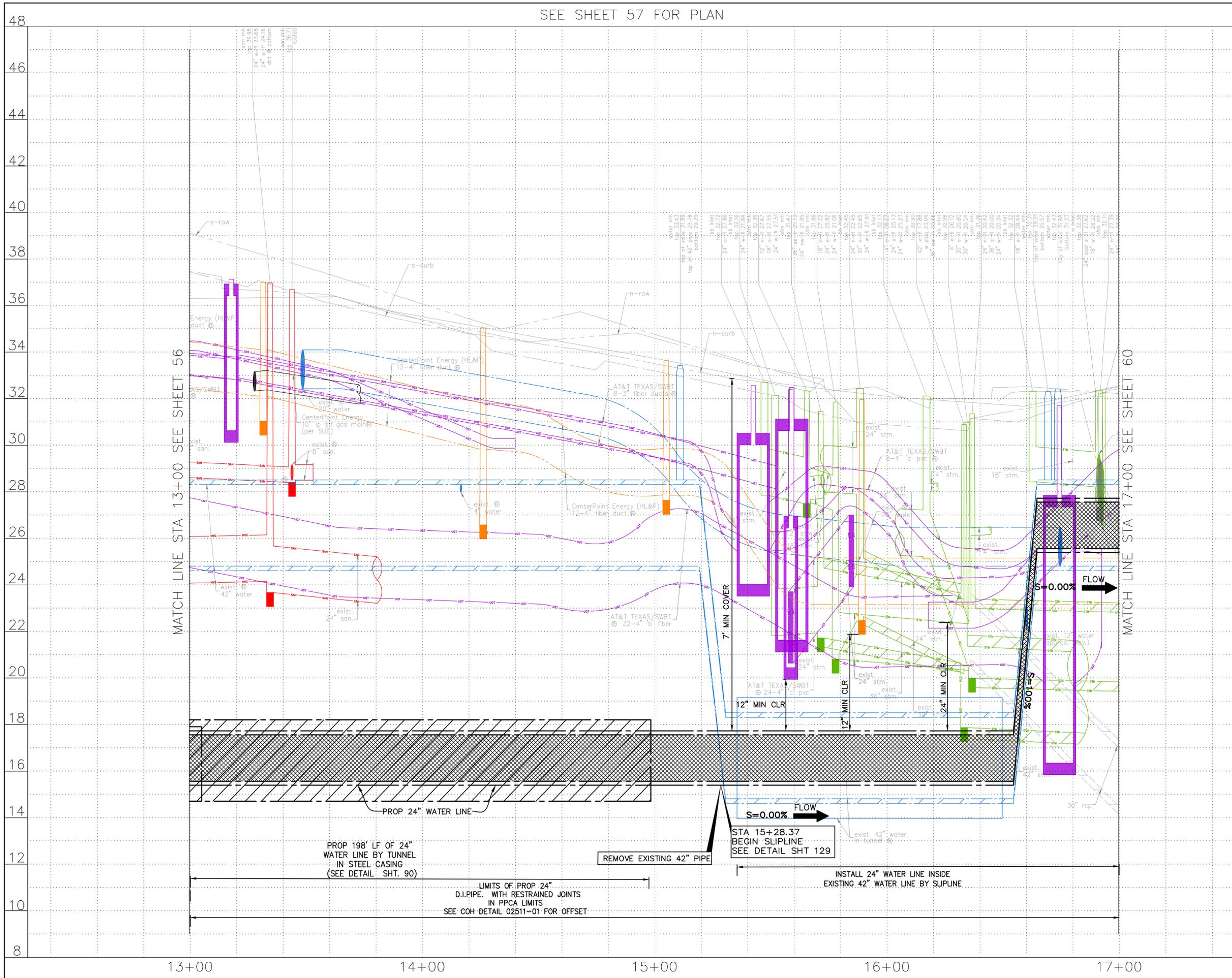
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SEE SHEET 57 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

**NOTICE:**  
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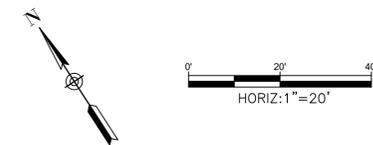
**KUO & ASSOCIATES**  
 ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578  
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 PRESTON STREET  
 SITE 4  
 PROFILE  
 STA 13+00 TO STA 17+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 58 OF 190	



NO.	DATE	REVISION	APP.

**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-38  
 SET "X" CUT ON PAVERS.  
 ELEV.=32.98  
 D. BL. STA. 19+64.23 OFFSET: 25.88L

**NOTES:**

- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
- RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
- THIS PROJECT SHALL BE BUILT BY MEANS OF TRENCHLESS CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL

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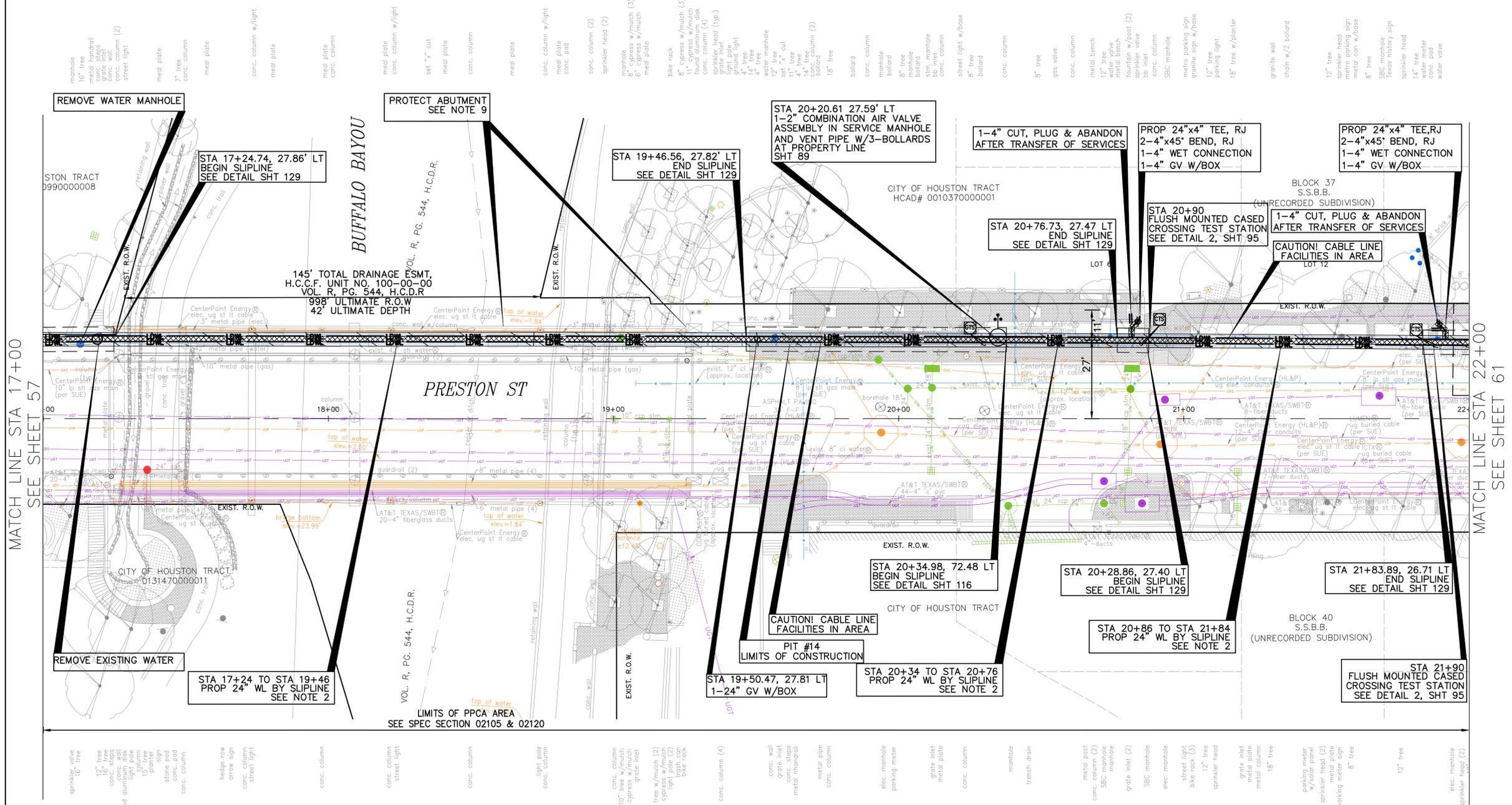
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 ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578  
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 PRESTON STREET  
 SITE 4  
 PLAN  
 STA 17+00 TO STA 22+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 59 OF 190	



1) CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY REQUIRES:  
 1) HCFCD RIGHT-OF-WAY NOTIFICATION (PERMIT)  
 2) HCFCD 48-HR PRE-CONSTRUCTION NOTIFICATION

BOTH ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. BOTH THE HCFCD RIGHT-OF-WAY NOTIFICATION AND 48-HR NOTIFICATION MUST BE PROVIDED TO HCFCD AT DCID@HCFCD.ORG. SITE PLANS MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED HCFCD RIGHT-OF-WAY NOTIFICATION. BE ADVISED THAT THE RIGHT-OF-WAY NOTIFICATION IS SEPARATE FROM THE SITE DEVELOPMENT PERMIT PACKAGE.

TO APPLY FOR THE HCFCD RIGHT-OF-WAY NOTIFICATION PLEASE GO TO [HTTP://APPS.HARRISCOUNTYTX.GOV/EPERMITS](http://apps.harriscountytx.gov/epermits) AND APPLY FOR THE HCFCD ROW UNDER ROW NOTIFICATION.

FAILURE TO PROVIDE BOTH ITEMS COULD RESULT IN DELAYS AND ADDITIONAL CONSTRUCTION COSTS.

4 TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.

5. WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.

6. CONTRACTOR TO LOCATE EXISTING 24-INCH PCCP JOINT AND MAKE CONNECTION TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER INCLUDE A FLANGE ISOLATION KIT BETWEEN PCCP AND D.I.PIPES.

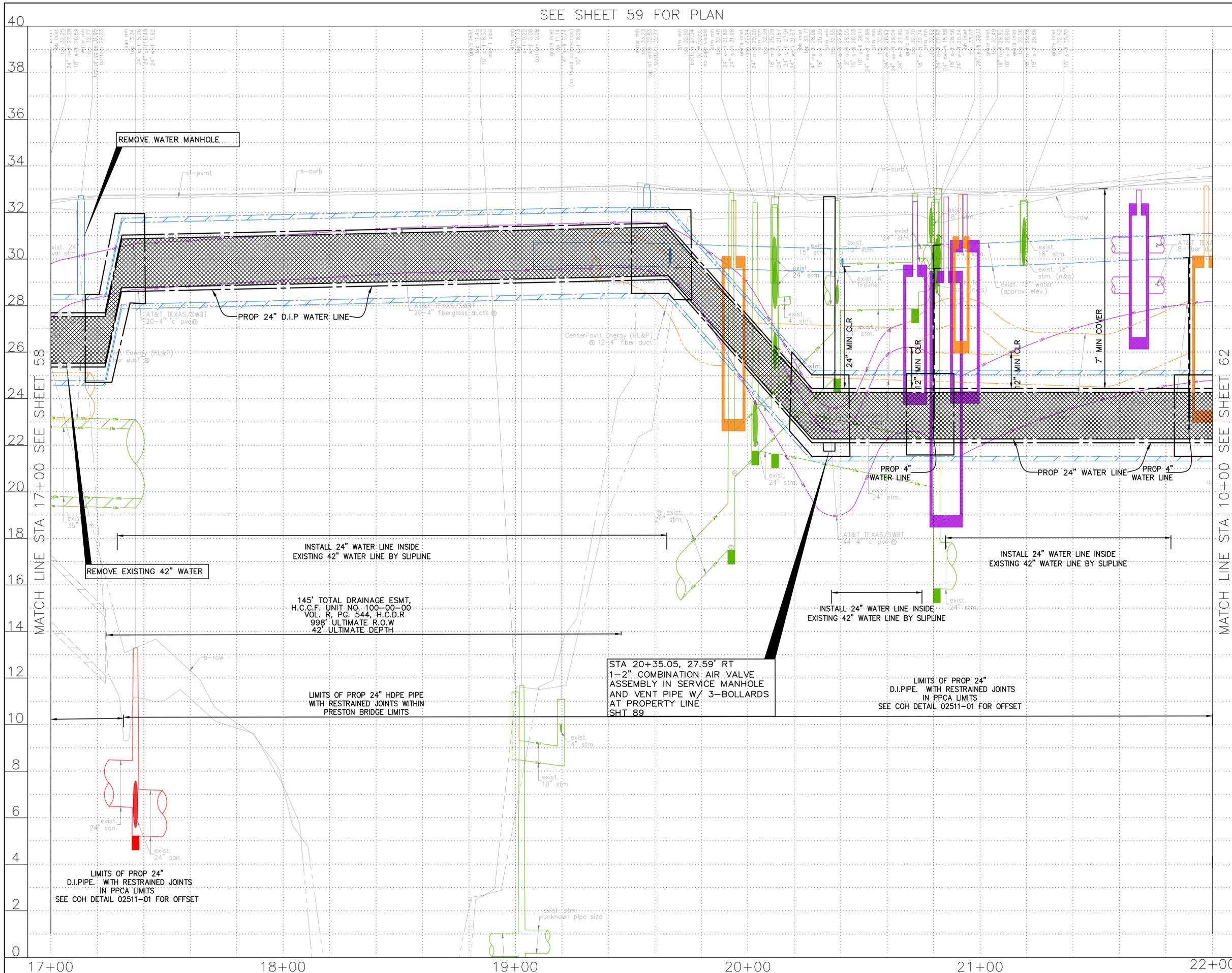
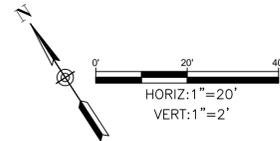
7. CONTRACTOR TO LOCATE EXISTING 42-INCH PCCP JOINT AND MARK CUT AND PLUG TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER.

8. LOCATION OF PROPOSED WATER LINE IN SLIP-LINE WITHIN EXISTING 42-INCH WATER LINE IS SHOWN BASED ON APPROXIMATE LOCATION OF THE EXISTING 42-INCH LINE. THEREFORE STATIONS AND INVERTS OF PROPOSED WATER LINE ARE ESTIMATES ONLY. CONTRACTOR TO FIELD VERIFY LOCATION OF 42-INCH WATER LINE PROPOSED TO BEGINNINGS SLIP-LINING AND ADJUST LOCATIONS. SLIP-LINING PIT/LIMIT, PROPOSED BENDS, INVERTS ETC., RELATED TO SLIP-LINING ACCORDINGLY WITH APPROVAL OF THE PROJECT MANAGER.

9. EXCAVATION ADJOINING THE PRESTON BRIDGE TO BE PERFORMED WITH DUE CARE AND CONSIDERATIONS INCLUDING BUT NOT LIMITED TO HAND EXCAVATION FOR EXISTENCE OF RETAINING WALL SYSTEM IS COMPOSED OF MECHANICALLY STABILIZED EARTH(MSC) WALLS AS PER TXDOT RECORD DRAWING FOR THE PRESTON BRIDGE. CONTRACTOR TO INSPECT THE MSE WALLS BEFORE EXCAVATION TO ASSESS ITS CURRENT CONDITION. THE EXCAVATION IS EXPECTED TO ENCR OACH THE EXISTING CEMENT STABILIZED BACKFILL AND REINFORCEMENT MESH OR STRAPS BASED ON THE TXDOT MSE WALL STANDARDS PROVIDED IN THE RECORD DRAWINGS. THE CONTRACTOR MUST BE PREPARED TO DISCOVER DIFFERENT MATERIALS DURING EXCAVATION. THE CONTRACTOR SHALL EXERCISE DUE CARE TO PROTECT THE STRUCTURAL INTEGRITY OF THE MSE WALL AND ITS COUNTERPARTS DURING ALL CONSTRUCTION ACTIVITIES PERTAINING TO EXCAVATION AND FILLING. THE CONTRACTOR MUST DOCUMENT THE TYPE OF MATERIAL USED FOR BACKFILLING AND REINFORCEMENT DURING EXCAVATION TO ENSURE THAT THE SAME MATERIAL WILL BE REPLACED WHEN RECONSTRUCTING. NEED TO CUT REINFORCING MESH OR STRAPS TO REPLACE THE PIPE BENDS AND VALUES IS ALSO ANTICIPATED. RECOMMEND INSTALLING EXTERNAL BRACING AND SHORING TO SUPPORT THE WALL. ADDITIONALLY A THIRD-PARTY GEOTECHNICAL ENGINEER SHOULD BE ON-SITE DURING EXCAVATION UNTIL THE MATERIALS HAVE BEEN ADEQUATELY REPLACED. DUE TO THE DEPTH AND NATURE OF THE EXCAVATION, SHORING MAY BE REQUIRED TO MEET AND SATISFY LOCAL REQUIREMENTS TO ENSURE SAFETY.

SEE SHEET 60 FOR PROFILE

SEE SHEET 59 FOR PLAN



1) CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY REQUIRES:  
 1) HCFCFD RIGHT-OF-WAY NOTIFICATION (PERMIT)  
 2) HCFCFD 48-HR PRE-CONSTRUCTION NOTIFICATION

NOTES:  
 BOTH ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. BOTH THE HCFCFD RIGHT-OF-WAY NOTIFICATION AND 48-HR NOTIFICATION MUST BE PROVIDED TO HCFCFD AT DCID@HCFCFD.ORG. SITE PLANS MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED HCFCFD RIGHT-OF-WAY NOTIFICATION. BE ADVISED THAT THE RIGHT-OF-WAY NOTIFICATION IS SEPARATE FROM THE SITE DEVELOPMENT PERMIT PACKAGE.

TO APPLY FOR THE HCFCFD RIGHT-OF-WAY NOTIFICATION PLEASE GO TO [HTTP://APPS.HARRISCOUNTYTX.GOV/EPERMIT](http://APPS.HARRISCOUNTYTX.GOV/EPERMIT) AND APPLY FOR THE HCFCFD ROW UNDER ROW NOTIFICATION.

FAILURE TO PROVIDE BOTH ITEMS COULD RESULT IN DELAYS AND ADDITIONAL CONSTRUCTION COSTS.

NOTICE:  
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VERIFICATION OF PRIVATE UTILITY LINES

Date \_\_\_\_\_  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

Date \_\_\_\_\_  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

Date \_\_\_\_\_  
 Approved for AT&T underground conduit facilities only. Signature valid for one year.

**KUO & ASSOCIATES**  
 ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF  
 KIRAN V. PUNYAMANTHULA, P.E.  
 TEXAS REG. NO.: 116965  
 ON 01/15/2026  
 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. P-6395

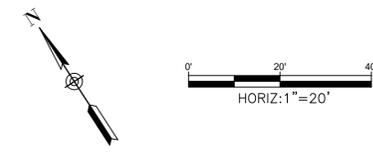
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 PRESTON STREET  
 SITE 4  
 PROFILE  
 STA 17+00 TO STA 22+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 60 OF 190	

NO. DATE REVISION APP.

C:\Users\PAVAN\OneDrive\AppData\Local\Temp\AcPublish\_25008\59-72-P&P\_Sheet-Preston Street.dwg plotted on Jan 15, 2026 5:08pm



**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-39  
 SET 'X' CUT ON CONC.  
 ELEV = 36.44  
 D. BL STA. 23+44.86 OFFSET: 27.19R  
**NOTES:**

- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
- RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
- THIS PROJECT SHALL BE BUILT BY MEANS OF TRENCHLESS CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL

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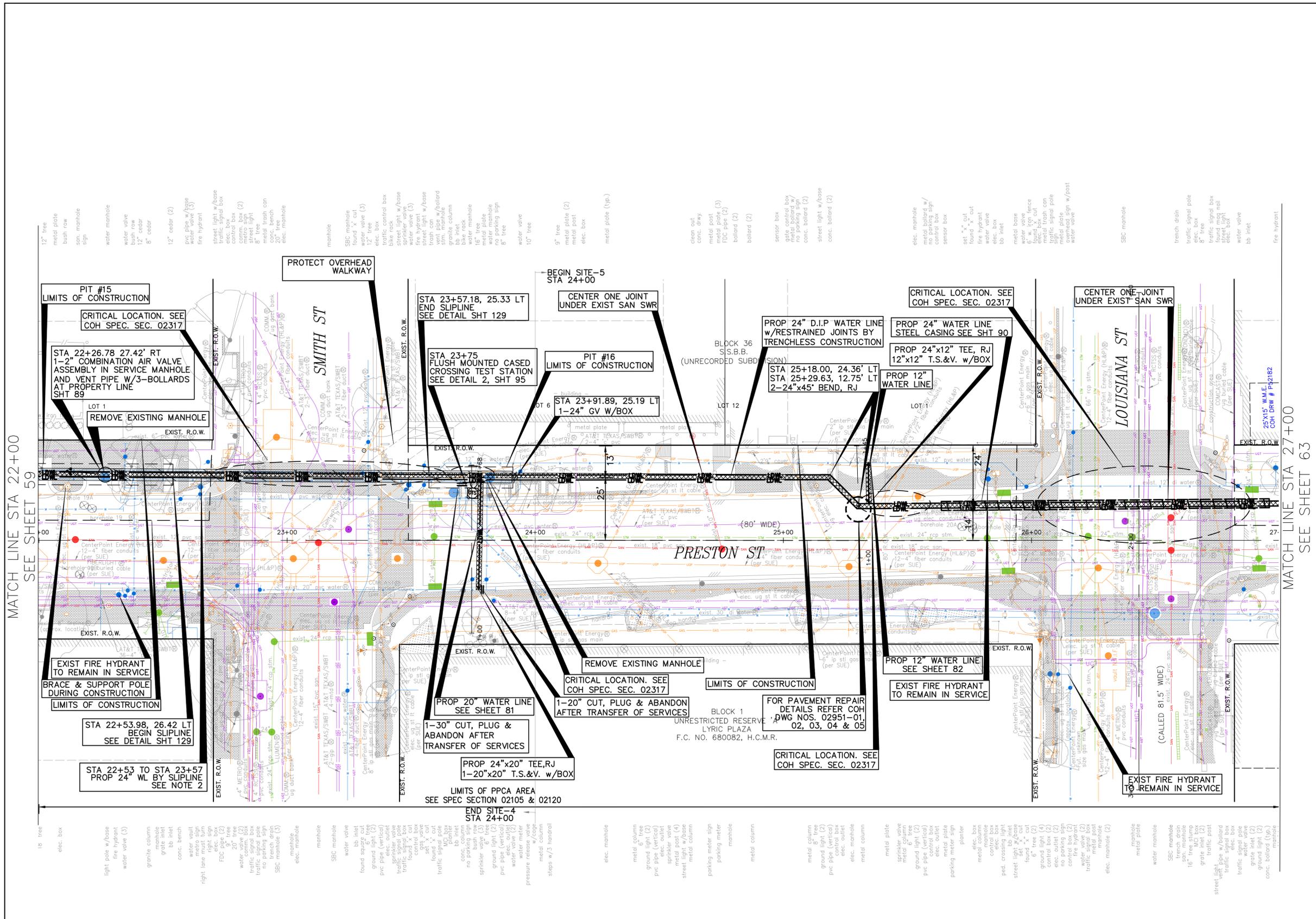
**KUO & ASSOCIATES**  
 ENGINEERING & SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578  
 SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. P-6395

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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 PRESTON ST  
 SITE 4&5  
 PLAN  
 STA 22+00 TO STA 27+00

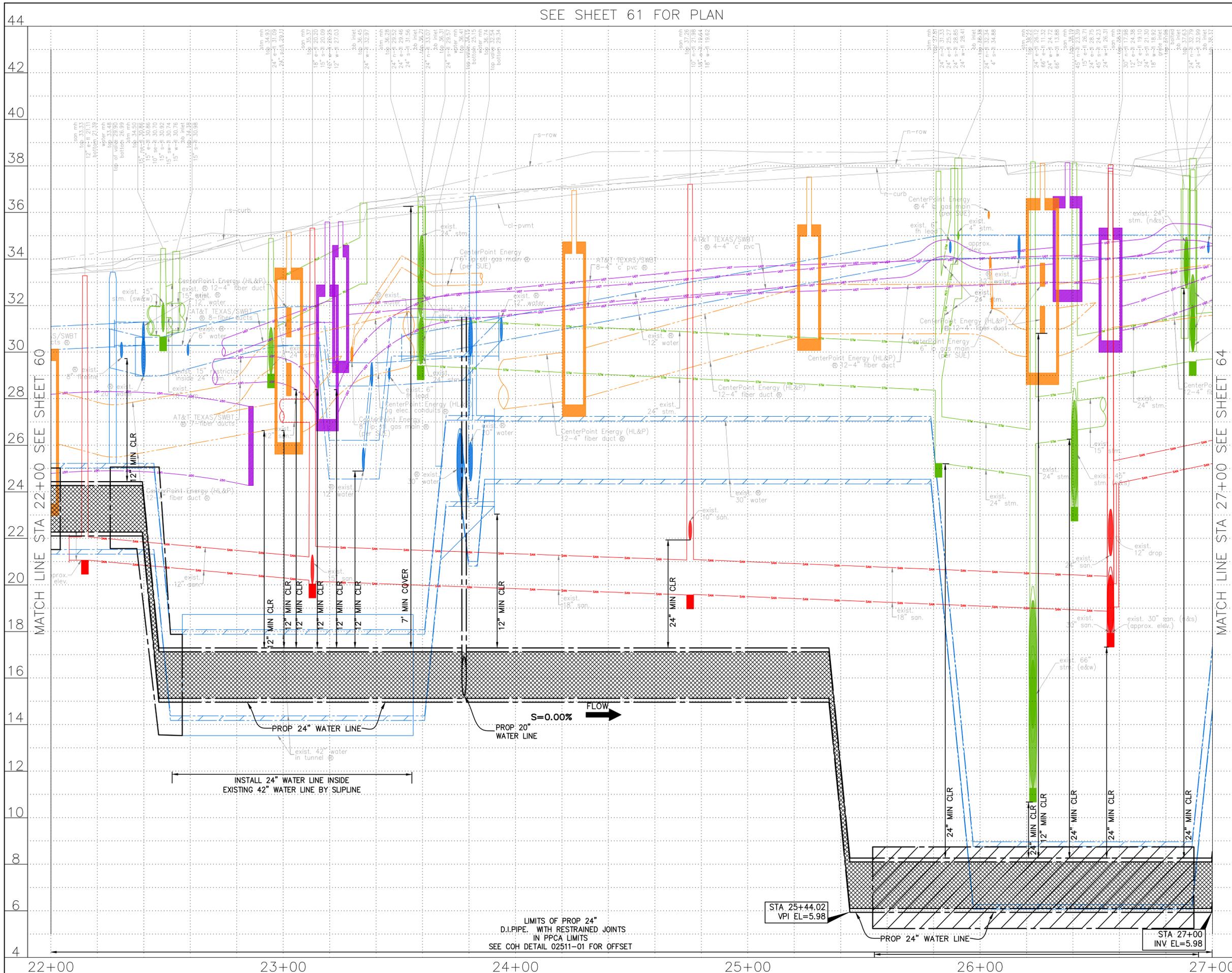
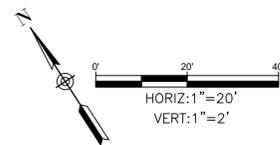
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHWE, ENV SP	
SHEET NO. 61 OF 190	



SEE SHEET 62 FOR PROFILE

- TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.
- CONTRACTOR TO LOCATE EXISTING 24-INCH PCCP JOINT AND MAKE CONNECTION TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER INCLUDE A FLANGE ISOLATION KIT BETWEEN PCCP AND D.I.PIPES.
- CONTRACTOR TO LOCATE EXISTING 42-INCH PCCP JOINT AND MARK CUT AND PLUG TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER.
- LOCATION OF PROPOSED WATER LINE IN SLIP-LINE WITHIN EXISTING 42-INCH WATER LINE IS SHOWN BASED ON APPROXIMATE LOCATION OF THE EXISTING 42-INCH LINE. THEREFORE STATIONS AND INVERTS OF PROPOSED WATER LINE ARE ESTIMATES ONLY. CONTRACTOR TO FIELD VERIFY LOCATION OF 42-INCH WATER LINE PROPOSED TO BEGINNINGS SLIP-LINING AND ADJUST LOCATIONS. SLIP-LINING PIT/LIMIT, PROPOSED BENDS, INVERTS ETC., RELATED TO SLIP-LINING ACCORDINGLY WITH APPROVAL OF THE PROJECT MANAGER.

SEE SHEET 61 FOR PLAN



NOTES:

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ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578

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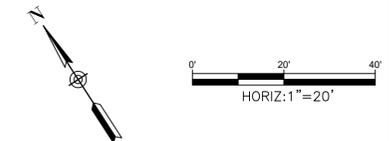
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
PRESTON STREET  
SITE 4&5  
PROFILE  
STA 22+00 TO STA 27+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 62 OF 190	

C:\Users\PAVAN\1-NAG\AppData\Local\Temp\AcPublish\_25008\59-72-P&P\_Sheet-Preston Street.dwg, plotted on Jan 15, 2026 5:10pm



NO.	DATE	REVISION	APP.

**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-41  
 SET 'X' CUT ON CONC.  
 ELEV. = 43.51  
 D. BL STA. 30+10.07 OFFSET: 18.64R

- NOTES:**
- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
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VERIFICATION OF PRIVATE UTILITY LINES	
Date	Signature

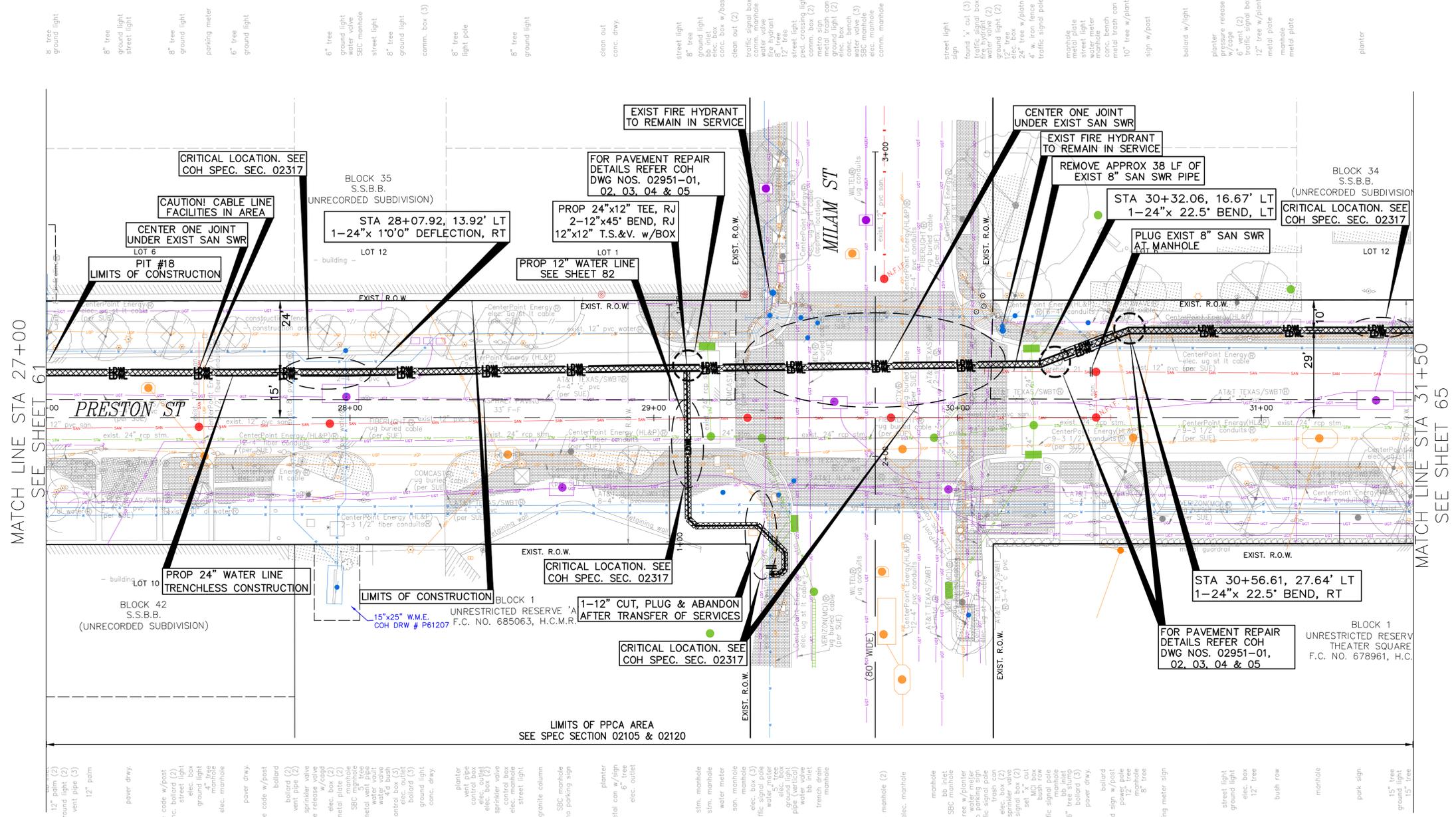
**KUO & ASSOCIATES**  
 ENGINEERING & SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-875-8769  
 TX FIRM NO.: F-4578  
 SURVEYED BY:  
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 FB NO. P-6395

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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS – PACKAGE 4  
 PRESTON STREET  
 SITE 5  
 PLAN  
 STA 27+00 TO STA 31+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV. SP	
SHEET NO. 63 OF 190	



- SEE SHEET 64 FOR PROFILE
- TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
  - WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.
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  - CONTRACTOR TO LOCATE EXISTING 42-INCH PCOP JOINT AND MARK CUT AND PLUG TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER.
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MATCH LINE STA 27+00 SEE SHEET 61

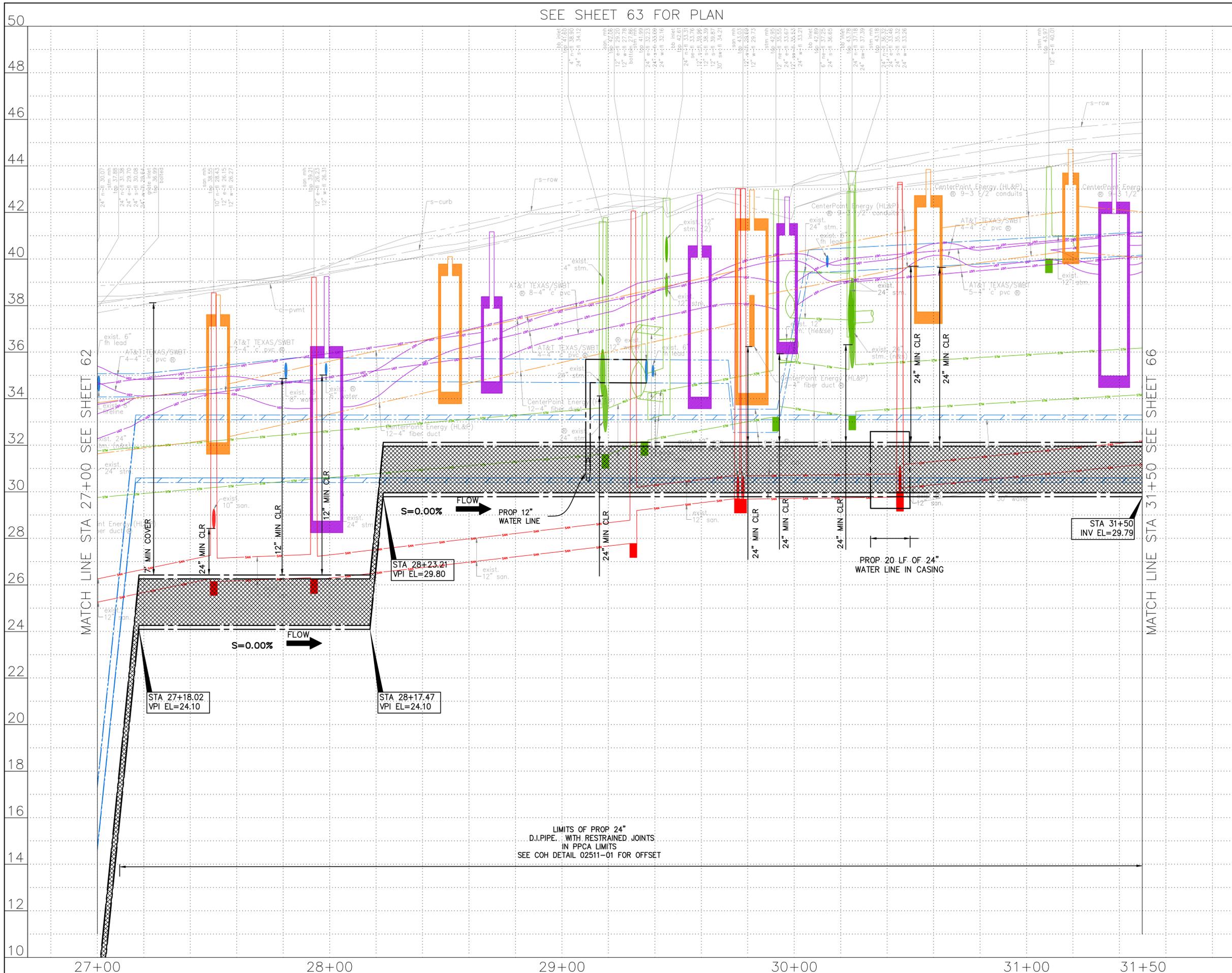
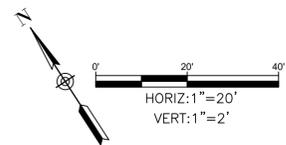
MATCH LINE STA 31+50 SEE SHEET 65

- 8" tree ground light
- 8" tree ground light street light
- 8" tree ground light
- parking meter
- 6" tree ground light
- 6" tree ground light water valve SBC manhole street light
- 8" tree ground light
- comm. box (3)
- 8" tree light pole
- 8" tree ground light
- clean out conc. drwy.
- street light
- 8" tree ground light
- elec. box w/ base
- conc. box w/ base
- clean out (2)
- traffic signal box comm. manhole
- elec. valve from manhole
- 8" tree
- 12" tree
- 8" tree
- ped crossing light
- comm. box (2)
- metro sign
- ground light (2)
- conc. bench
- elec. box
- SBC manhole (3)
- elec. manhole
- comm. manhole
- street light
- sign
- found 'x' cut (3)
- traffic signal box
- water valve (2)
- ground light (2)
- 24" tree w/planter
- 24" tree w/planter
- 4" w. iron fence
- traffic signal pole
- manhole
- metal plate
- street light
- manhole
- conc. bench
- metal trash can
- 10" tree w/planter
- sign w/post
- ballard w/light
- planter
- pressure release valve
- 6" tree (2)
- traffic signal box
- 12" tree w/planter
- metal plate
- manhole
- metal plate
- planter

- 12" palm (2)
- ground light (2)
- vent pipe (3)
- 12" palm
- paver drwy.
- gate code w/post
- conc. ballard (2)
- street light
- elec. box
- ground light
- manhole
- elec. manhole
- paver drwy.
- gate code w/post
- ballard (2)
- vent pipe (2)
- sprinkler valve
- pressure release w/cogd
- metal plate (2)
- elec. box (2)
- SBC manhole
- metal
- metal
- water vault
- water valve
- control box (3)
- elec. outlet
- ballard (3)
- ground light
- conc. drwy.
- planter
- vent pipe
- conc. outlet
- elec. box (2)
- sprinkler valve
- elec. manhole
- street light
- granite column
- SBC manhole
- SBC manhole
- no parking sign
- planter
- metal can w/sign
- 6" tree
- elec. outlet
- slip. manhole
- slip. manhole
- water meter
- san. manhole
- manhole
- elec. box (3)
- water meter
- water meter
- ground light
- ground light
- water valve
- bb inlet
- trench drain
- manhole
- elec. manhole (2)
- elec. manhole
- manhole
- bb inlet
- SBC
- 10" tree w/planter
- no parking sign
- traffic light can
- elec. box (2)
- elec. box (2)
- sprinkler valve
- traffic sign w/ cut
- MC box
- bush row
- bb inlet
- manhole
- ballard (3)
- power drwy.
- ballard
- overhead sign w/light
- power pole
- 12" tree
- manhole
- parking meter sign
- street light
- ground light
- elec. box
- 12" tree
- bush row
- manhole
- park sign
- 15" tree
- ground light

C:\Users\PAVAN-1.NAG\AppData\Local\Temp\AcPublish\_L25008\59-72-P&P Sheet-Preston Street.dwg plotted on Jan 15, 2026 5:10pm

SEE SHEET 63 FOR PLAN



NOTES:

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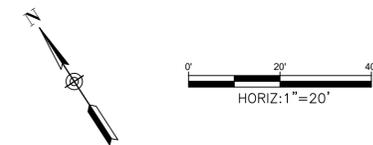
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	SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
PRESTON STREET  
SITE 5  
PROFILE  
STA 27+00 TO STA 31+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 64 OF 190	

C:\Users\PAVAN\OneDrive\AppData\Local\Temp\AcPublish\25008\59-72-P&P\_Sheet-Preston\_Street.dwg plotted on Jan 15, 2026 - 5:11pm



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ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-42  
 FND "X" CUT ON CONC.  
 ELEV. -44.90  
 D. BL STA. 32+61.76 OFFSET: 27.81L

- NOTES:**
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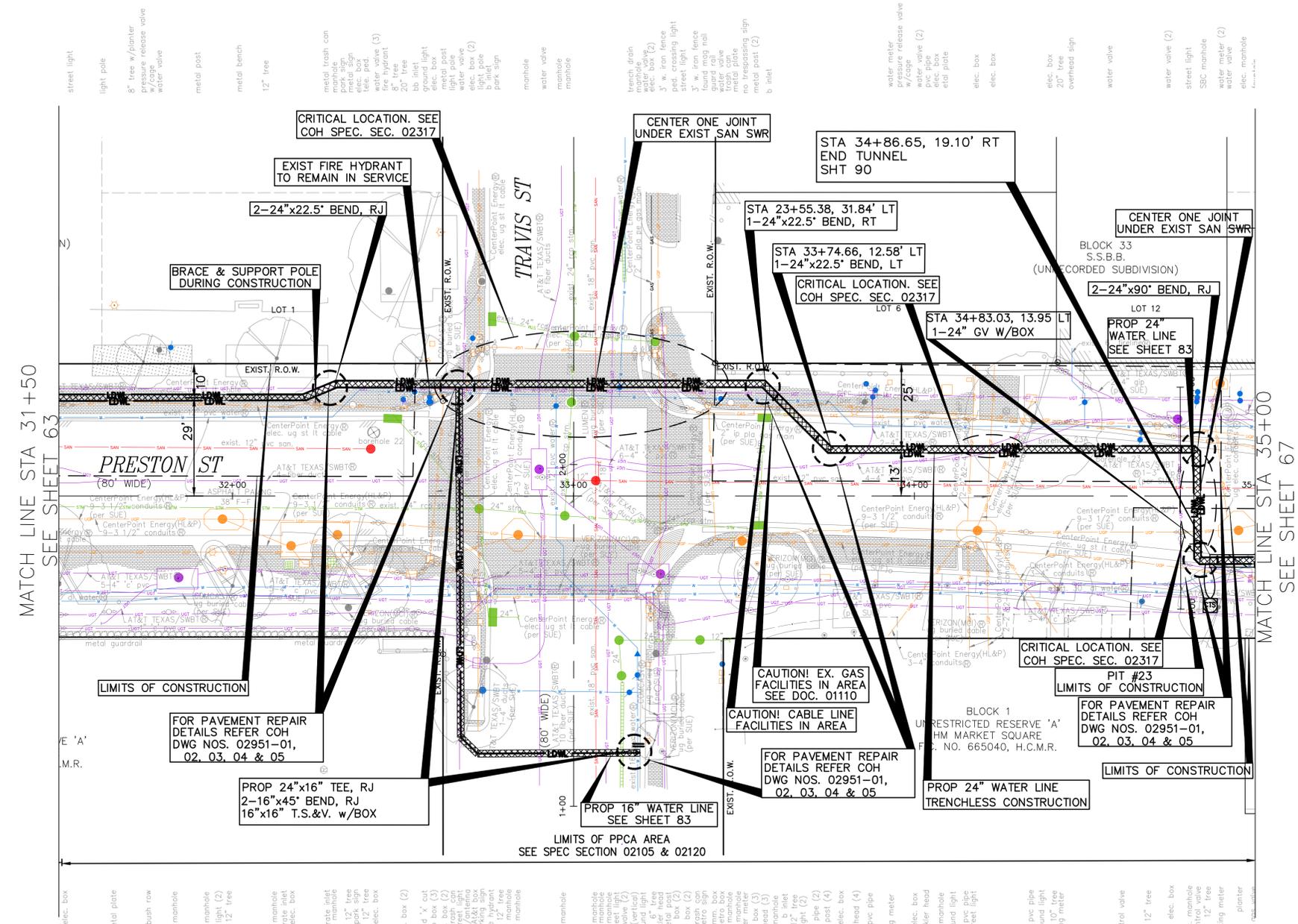
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 PRESTON STREET  
 SITE 5  
 PLAN  
 STA 31+50 TO STA 35+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 65 OF 190	

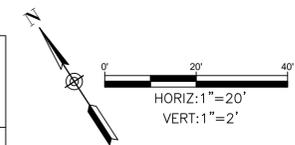


MATCH LINE STA 31+50  
SEE SHEET 63

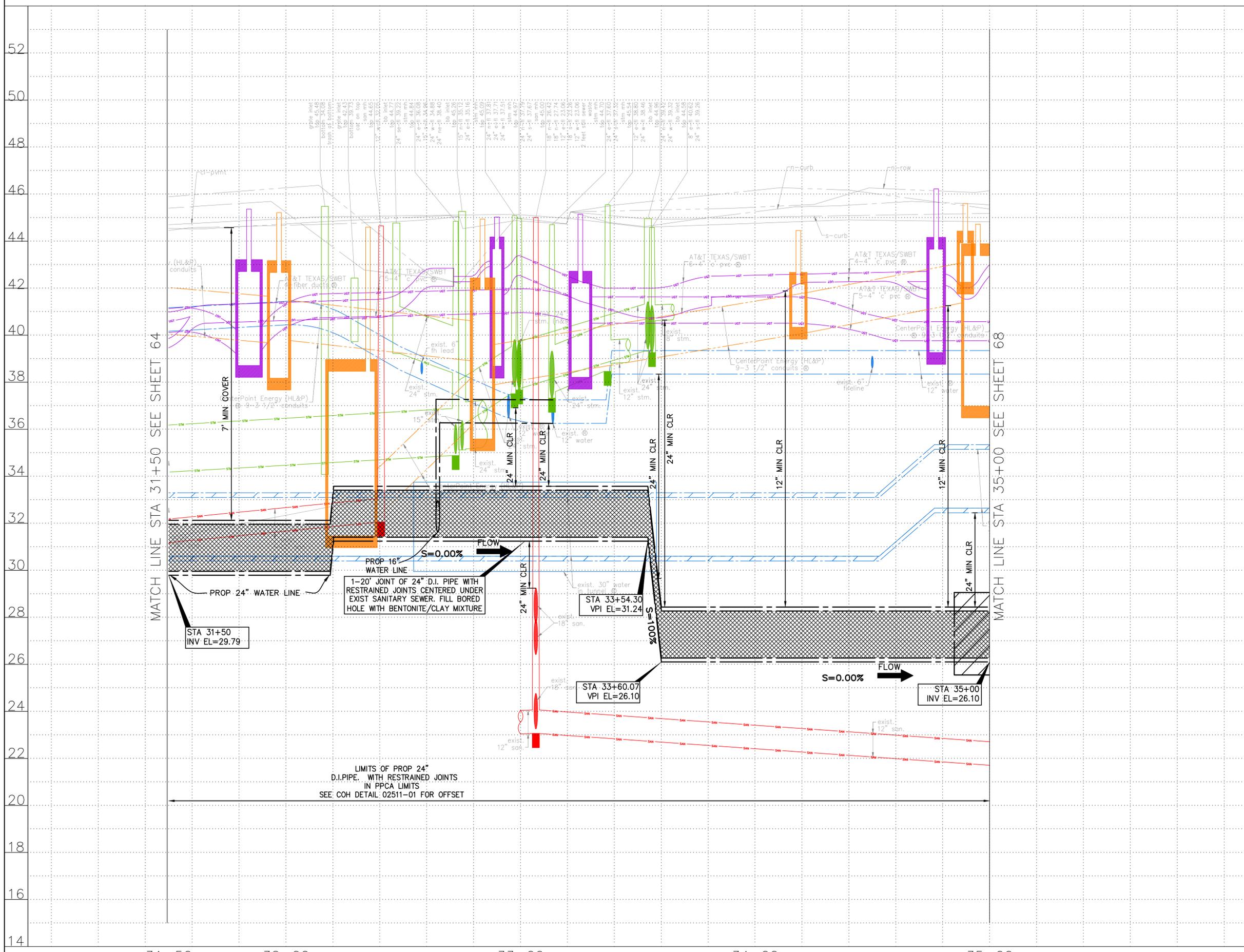
MATCH LINE STA 35+00  
SEE SHEET 67

SEE SHEET 66 FOR PROFILE

SEE SHEET 65 FOR PLAN



NO.	DATE	REVISION	APP.



NOTES:

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**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

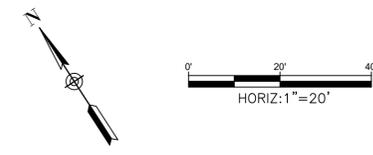
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
PRESTON STREET  
SITE 5  
PROFILE  
STA 31+50 TO STA 35+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 66 OF 190	

C:\Users\PAVAN\1-NA\Temp\Local\Temp\AcPublish\25008\59-72-P&P-Sheet-Preston Street.dwg plotted on Jan 15, 2026 5:12pm



**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-43  
 FND 'X' CUT ON CONC.  
 ELEV. -45.66  
 D. BL. STA. 36+78.83 OFFSET: 9.22L

- NOTES:**
- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE, CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
  - RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
  - THIS PROJECT SHALL BE BUILT BY MEANS OF TRENCHLESS CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL.

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

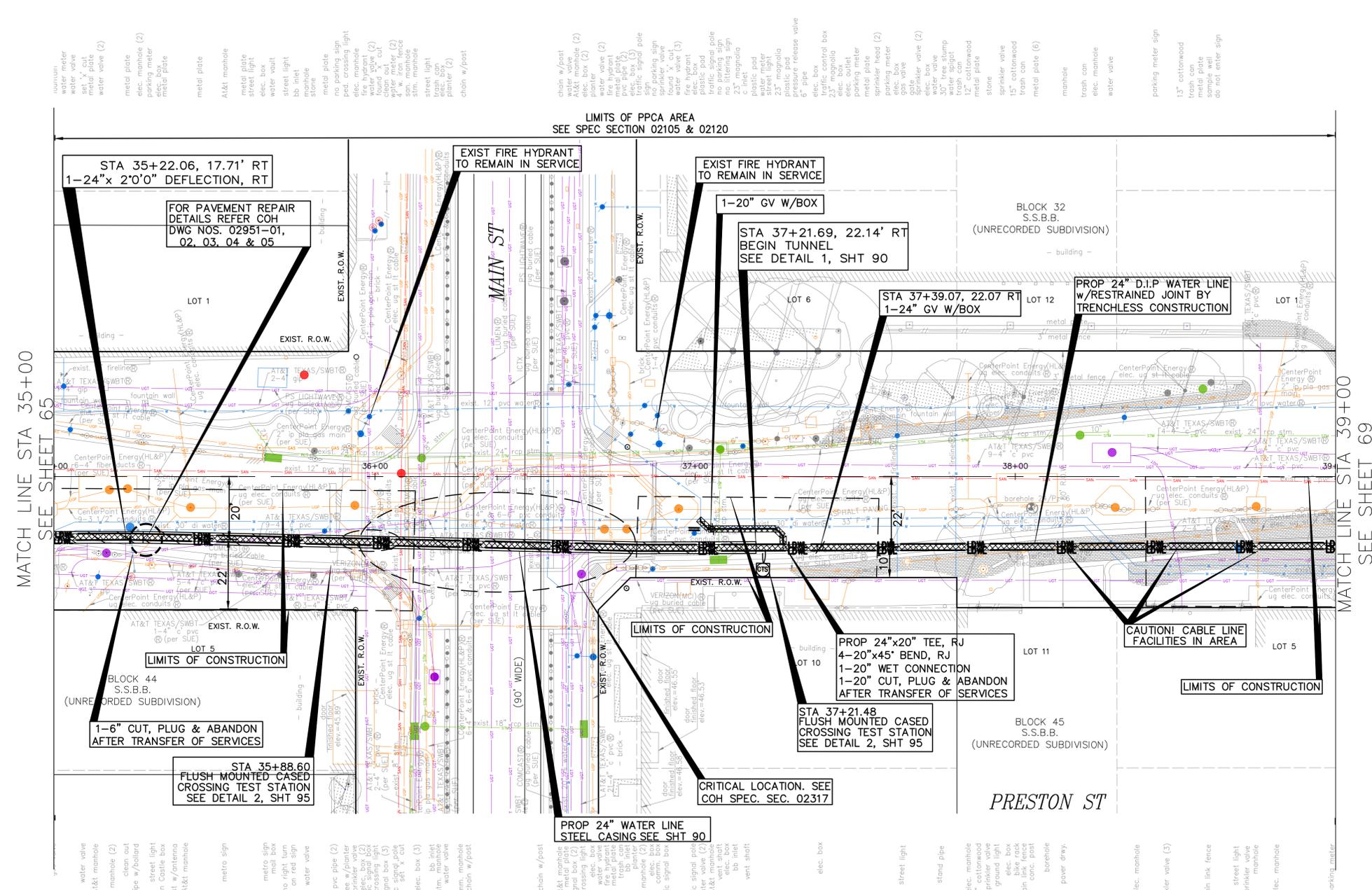
Date  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.  
 Signature valid for six months.

Date  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Signature valid for six months.

Date  
 Approved for AT&T underground conduit facilities only. Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 PRESTON STREET SITE 5 PLAN STA 35+00 TO STA 39+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHWE, ENV SP	
SHEET NO. 67 OF 190	



4 TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.

5. WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PCPA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.

6. CONTRACTOR TO LOCATE EXISTING 24-INCH PCCP JOINT AND MAKE CONNECTION TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER INCLUDE A FLANGE ISOLATION KIT BETWEEN PCCP AND D.I.PIPES.

7. CONTRACTOR TO LOCATE EXISTING 42-INCH PCCP JOINT AND MARK CUT AND PLUG TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER.

8. LOCATION OF PROPOSED WATER LINE IN SLIP-LINE WITHIN EXISTING 42-INCH WATER LINE IS SHOWN BASED ON APPROXIMATE LOCATION OF THE EXISTING 42-INCH LINE. THEREFORE STATIONS AND INVERTS OF PROPOSED WATER LINE ARE ESTIMATES ONLY. CONTRACTOR TO FIELD VERIFY LOCATION OF 42-INCH WATER LINE PROPOSED TO BEGINNINGS SLIP-LINING AND ADJUST LOCATIONS. SLIP-LINING PIT/LIMIT, PROPOSED BENDS, INVERTS ETC., RELATED TO SLIP-LINING ACCORDINGLY WITH APPROVAL OF THE PROJECT MANAGER.

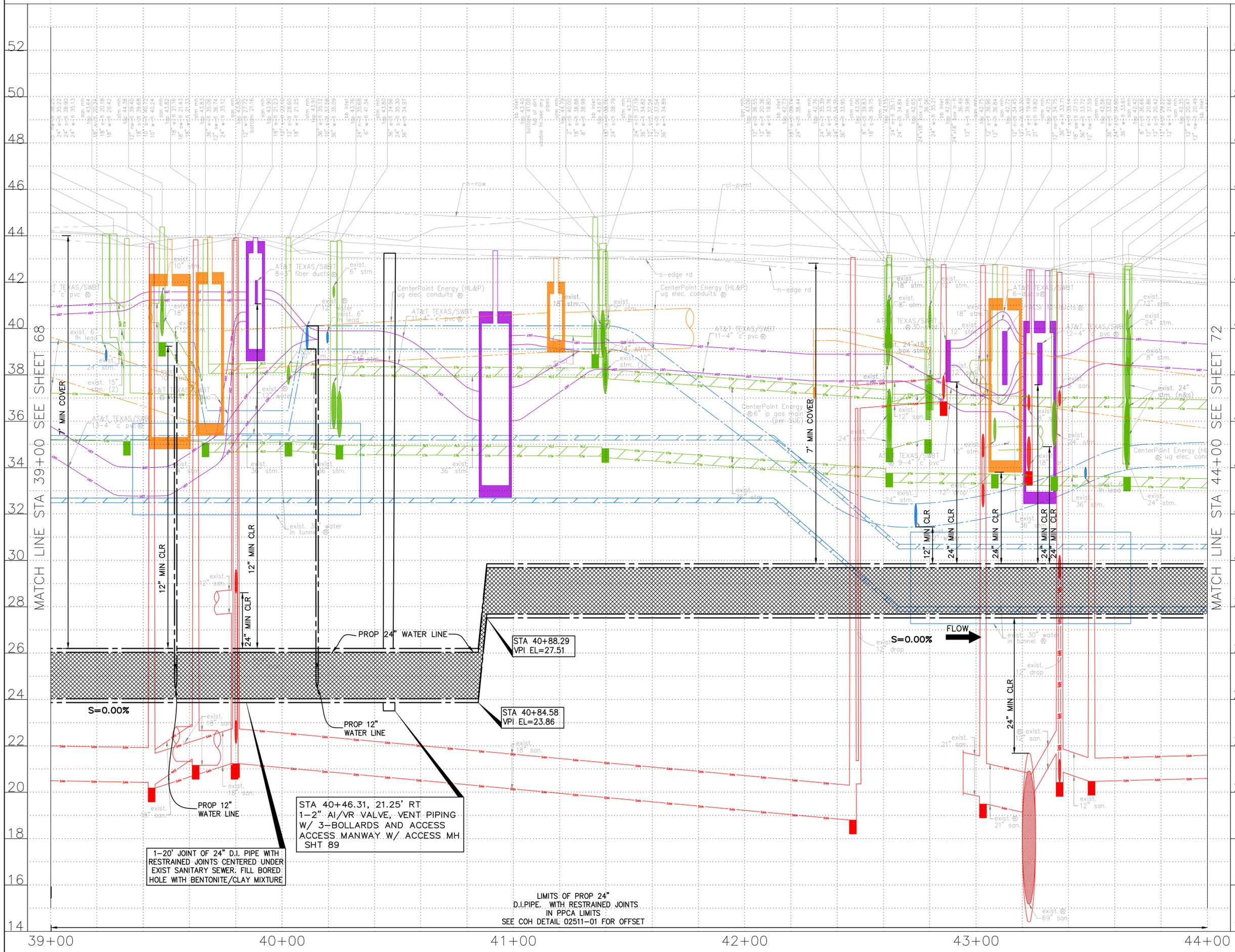
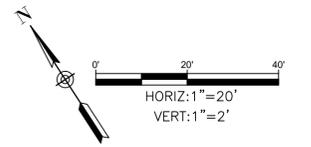
SEE SHEET 68 FOR PROFILE

water valve  
 AT&T manhole  
 elec. manhole (2)  
 clean out  
 vent pipe w/halld  
 street light  
 Crown Castle box  
 metal post w/antenna  
 AT&T manhole  
 metro sign  
 metro sign  
 metal box  
 no right turn  
 on red sign  
 water valve  
 pvc pipe (2)  
 5\"/>





SEE SHEET 69 FOR PLAN



NOTES:

NOTICE: FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

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Signature valid for six months.

Date  
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**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578

SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
PRESTON STREET  
SITE 5  
PROFILE  
STA 39+00 TO STA 44+00

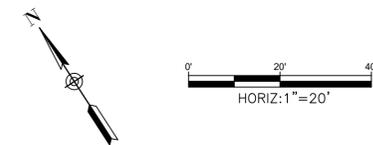
WBS NUMBER	S-000701-0043-4	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	MARTIN MATHEW, ENV SP	
SHEET NO.	70 OF 190	

1-20' JOINT OF 24" D.I. PIPE WITH RESTRAINED JOINTS CENTERED UNDER EXIST SANITARY SEWER. FILL BORED HOLE WITH BENTONITE/CLAY MIXTURE

STA 40+46.31, 21.25' RT  
1-2" AI/VR VALVE, VENT PIPING W/ 3-BOLLARDS AND ACCESS ACCESS MANWAY W/ ACCESS MH SHT 89

LIMITS OF PROP 24" D.I. PIPE WITH RESTRAINED JOINTS IN PPCA LIMITS SEE COH DETAIL 02511-01 FOR OFFSET

C:\Users\PAVAN\1\MAG\AppData\Local\Temp\Acpublish\_25008\59-72-P&P\_Sheet-Preston Street.dwg plotted on Jan 15, 2026 5:15pm



**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-46  
 SET 'X' CUT ON CONC.  
 ELEV.=40.58  
 D. BL STA. 46+19.94 OFFSET: 24.45R  
**NOTES:**

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- RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
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**VERIFICATION OF PRIVATE UTILITY LINES**

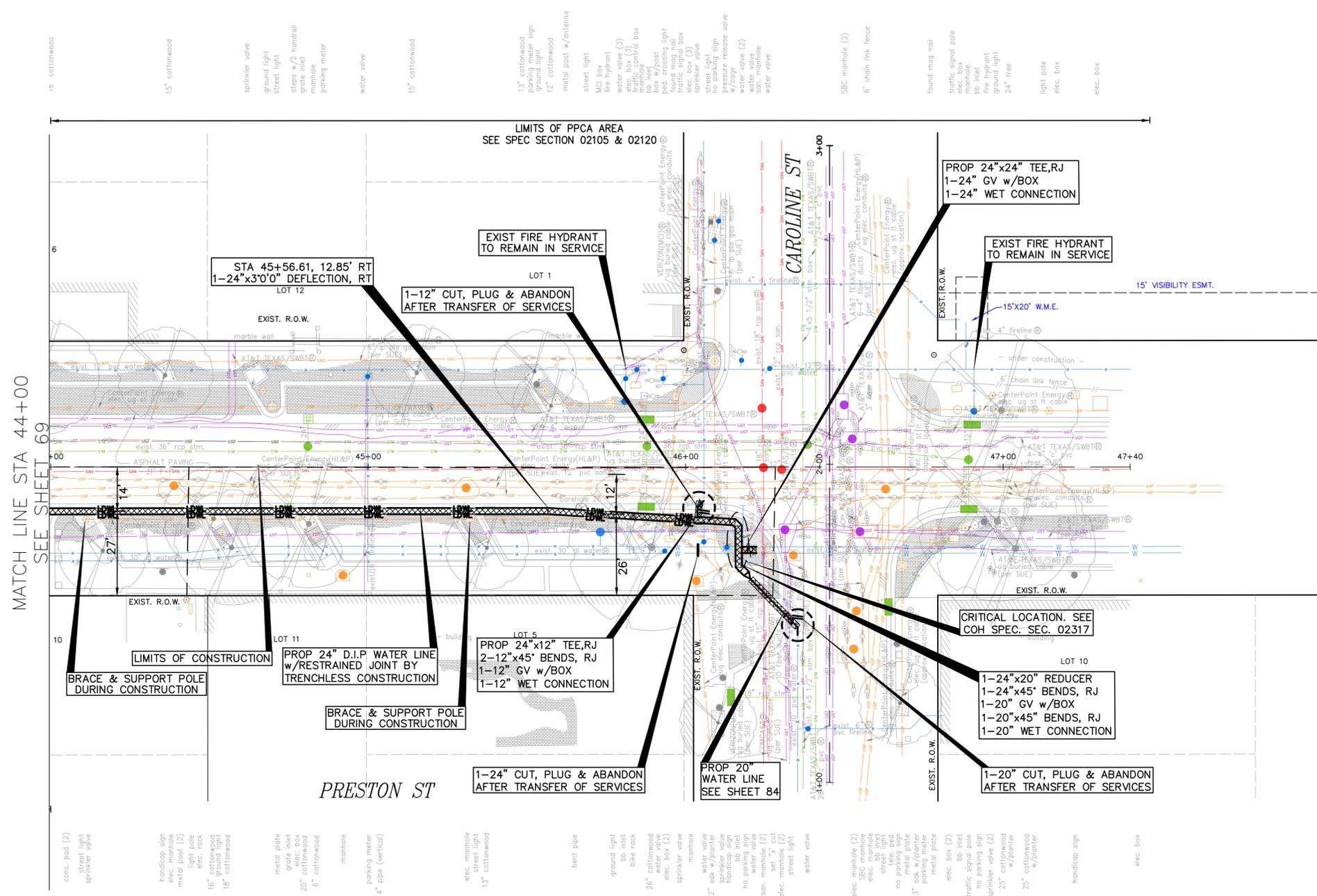
Date  
 CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.  
 Signature valid for six months.

Date  
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
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Date  
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 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 PRESTON STREET SITE 5 PLAN STA 44+00 TO STA 47+40

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 71 OF 190	



- TREES ARE LOCATIONS IN THE VICINITY OF PROPOSED ALIGNMENT OF WATER LINE AND ITS APPURTENANCES. REFER TO THE TREE PROTECTION PLANS FOR APPROPRIATE PROTECTION MEASURES.
- WATER LINE FIREHYDRANT LEAD WITHIN LIMITS IF PPCA TO BE RESTRAINED JOINT DUCTILE IRON PIPE WITH VITON (FKM) GASKETS AS PER SPECIFICATION SECTION 02105.
- CONTRACTOR TO LOCATE EXISTING 24-INCH PCCP JOINT AND MAKE CONNECTION TO INTACT BELL OR SPIGOT WITH APPROPRIATE ADAPTER INCLUDE A FLANGE ISOLATION KIT BETWEEN PCCP AND D.I.PIPES.
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SEE SHEET 72 FOR PROFILE

MATCH LINE STA 44+00  
SEE SHEET 69

LIMITS OF CONSTRUCTION  
BRACE & SUPPORT POLE DURING CONSTRUCTION

PROP 24\"/>

BRACE & SUPPORT POLE DURING CONSTRUCTION

PROP 24\"/>

1-24\"/>

PROP 20\"/>

1-24\"/>

1-24\"/>

1-24\"/>

1-24\"/>

1-24\"/>

1-24\"/>

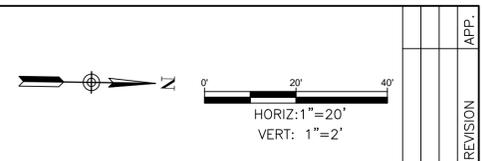
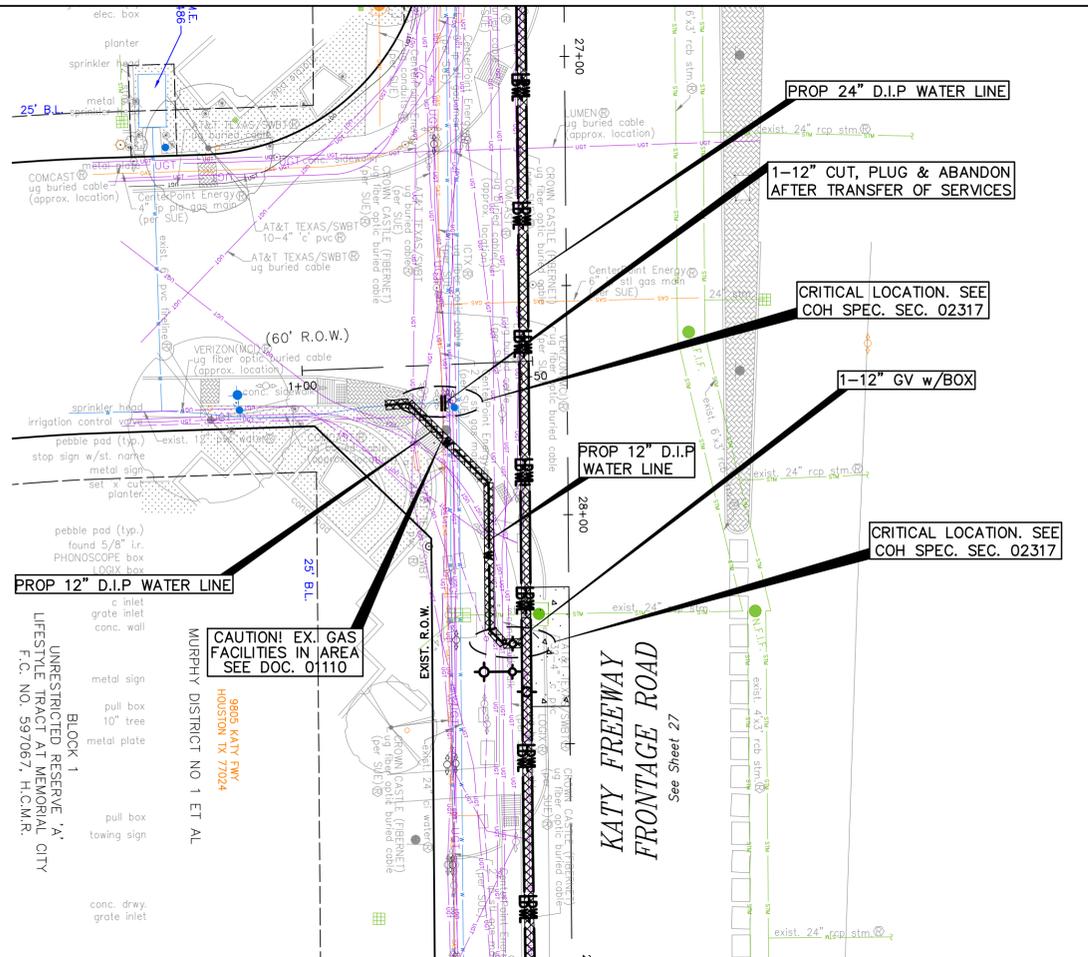
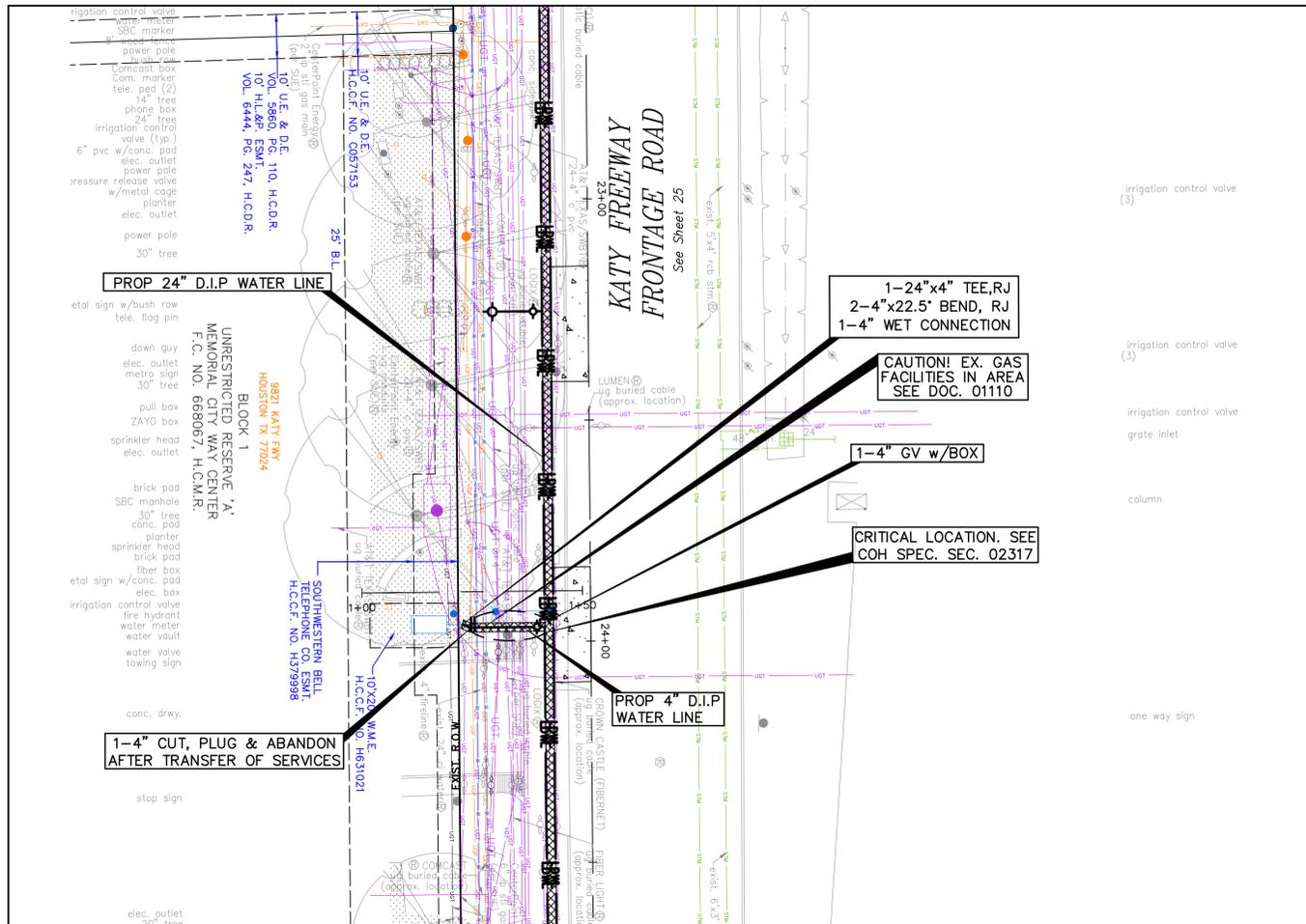
1-24\"/>

1-24\"/>

1-24\"/>







**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:** B-16 SET 1/2" I.R. W/CAP ELEV.=78.940 D. BL STA. 22+02.87 OFFSET: 29.10R  
T.B.M. B-18 SET "X" CUT ON CONC. ELEV.=77.708 D. BL STA. 28+42.13 OFFSET: 33.30R

- NOTES:**
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  - RELOCATE CONDUIT/CABLE BY OTHERS. CONTACT XXXX CONSTRUCTION MANAGER, XXX AT XXX-XXX-XXXX 4 TO 6 WEEKS PRIOR TO BEGINNING CONSTRUCTION.
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Date

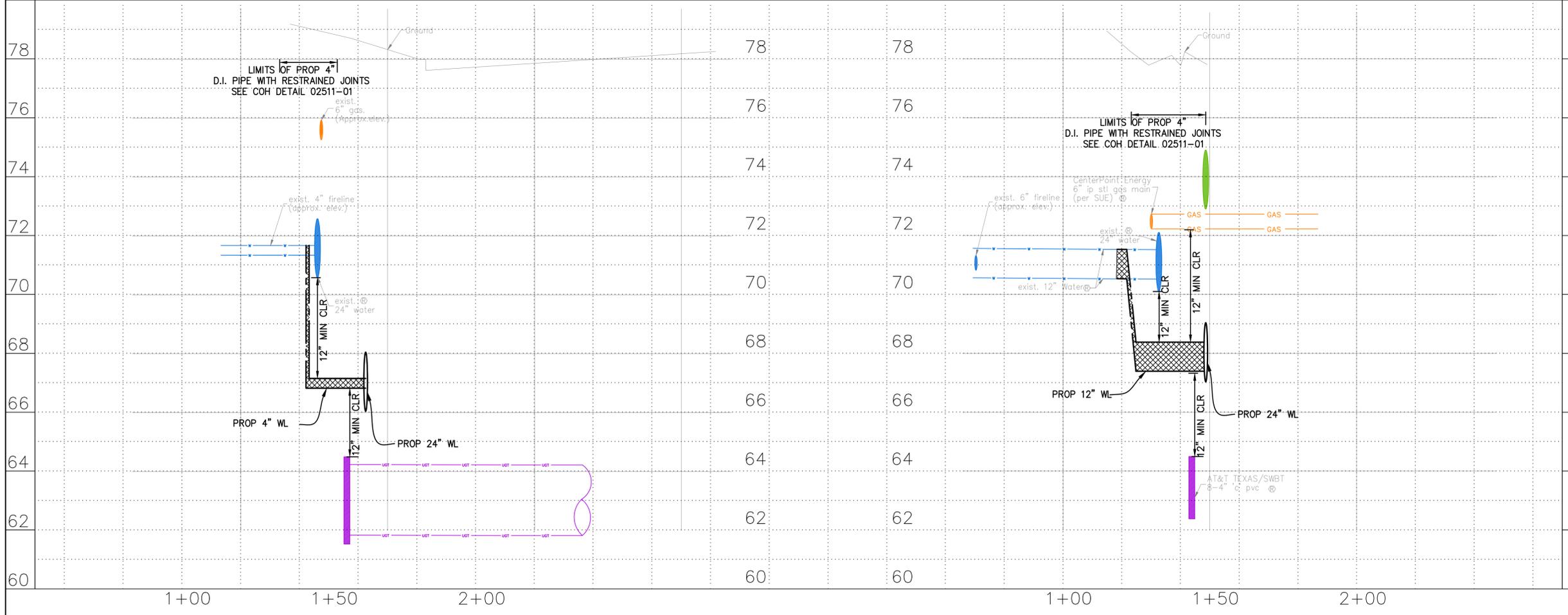
**VERIFICATION OF PRIVATE UTILITY LINES**

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.  
Signature valid for six months.

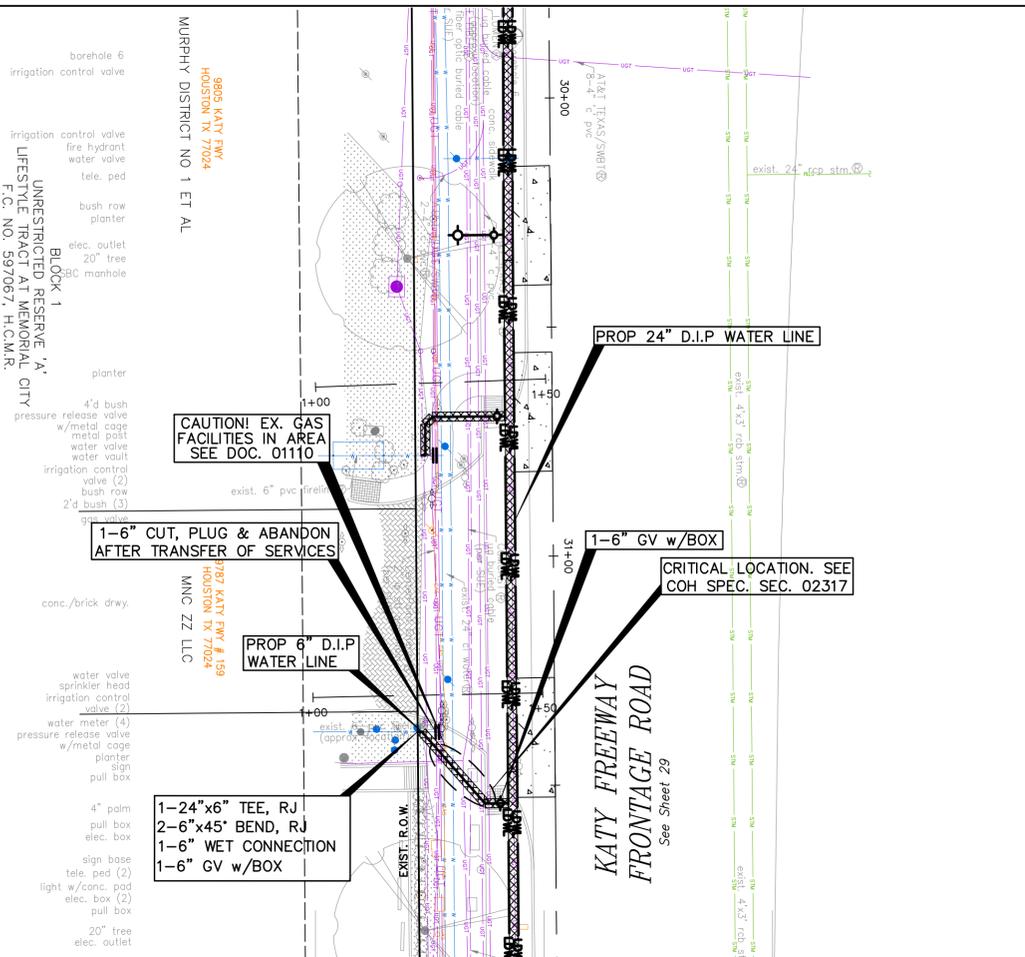
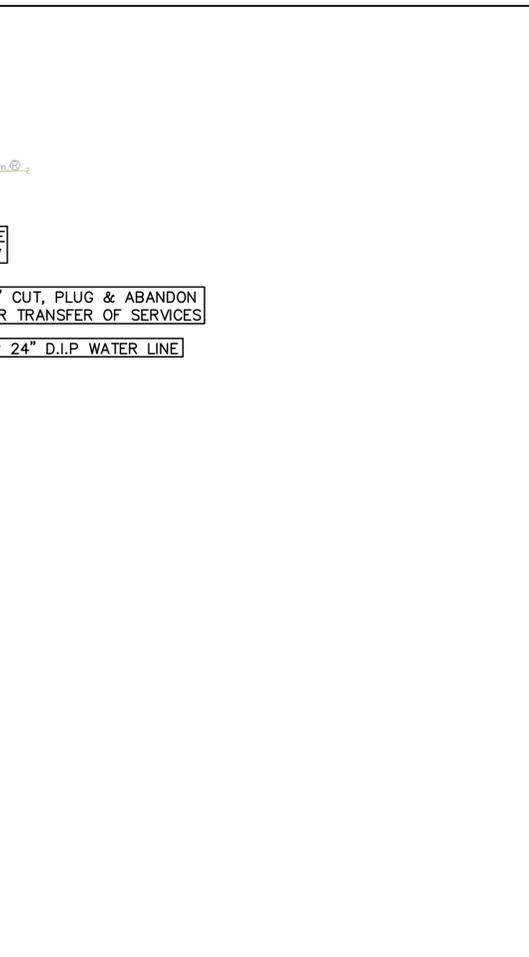
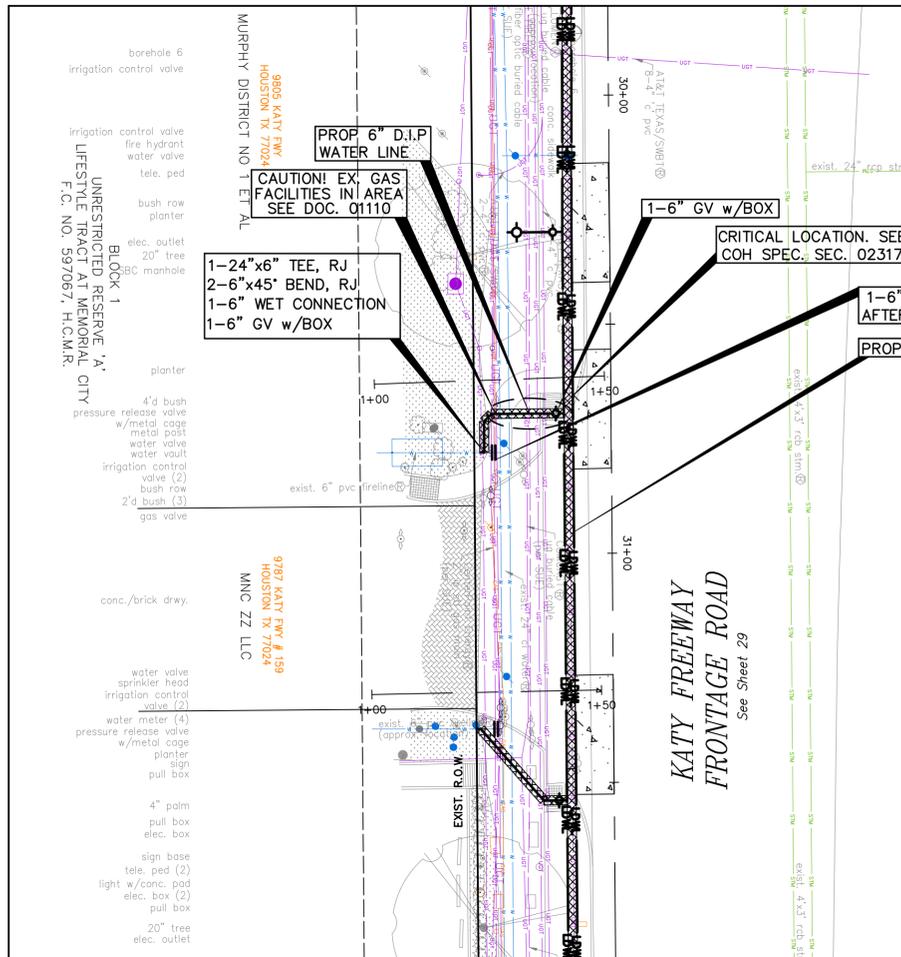
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
Date  
Signature valid for six months.

Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 KATY FREEWAY SITE-1 PLAN & PROFILE STA 1+00 TO STA 1+50



WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 74 OF 190	



HORIZ: 1"=20'  
 VERT: 1"=2'

**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

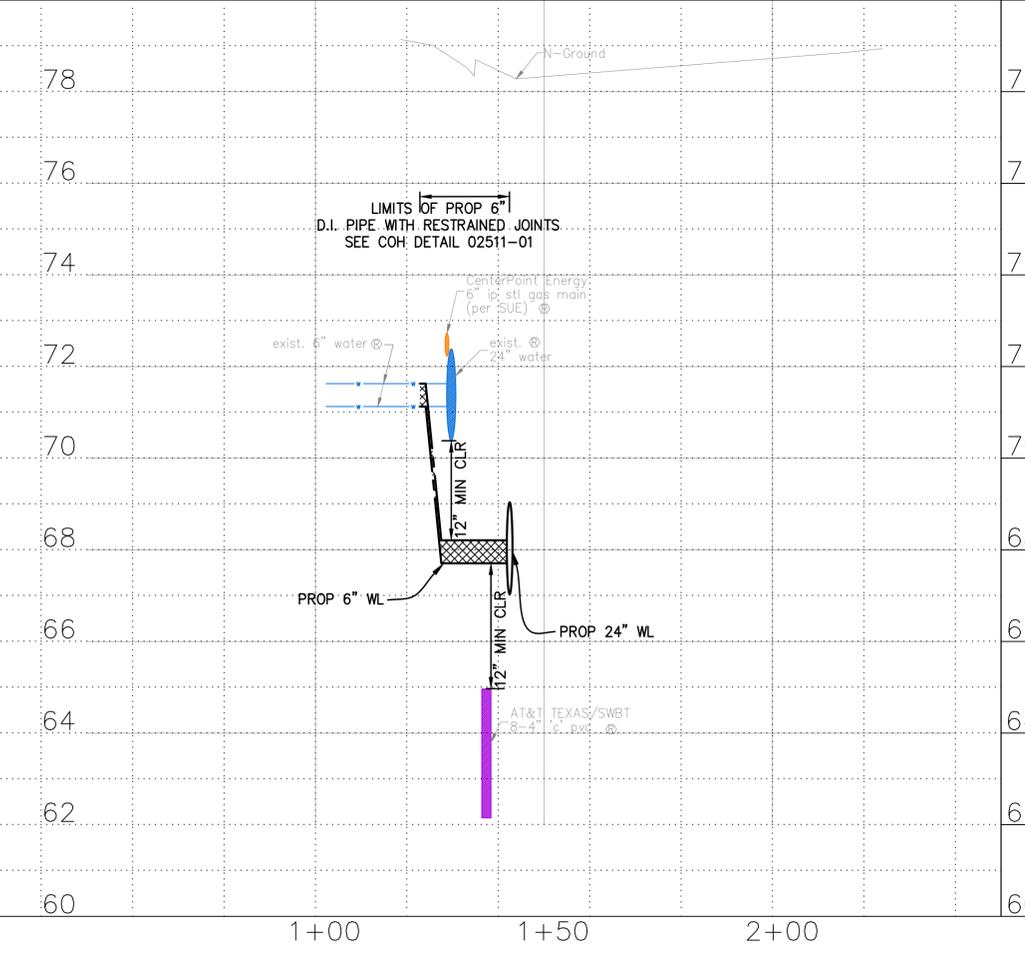
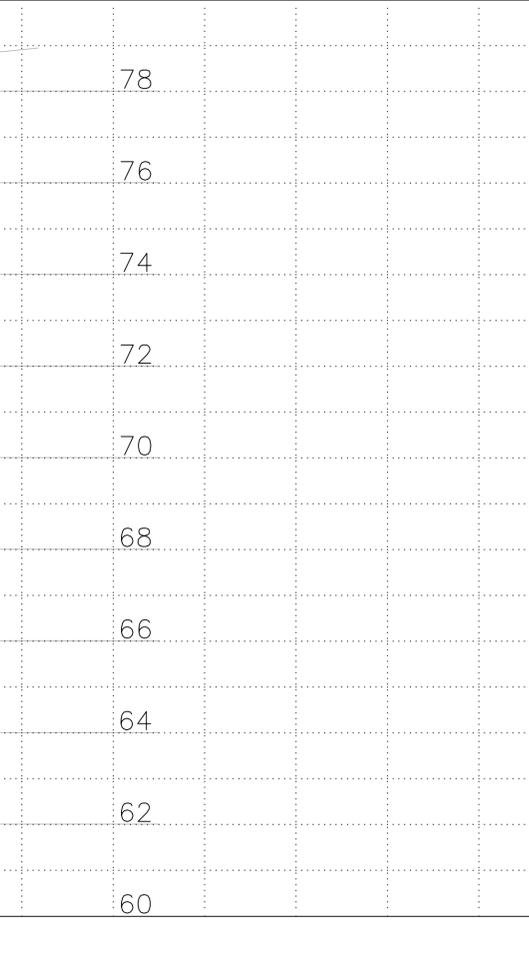
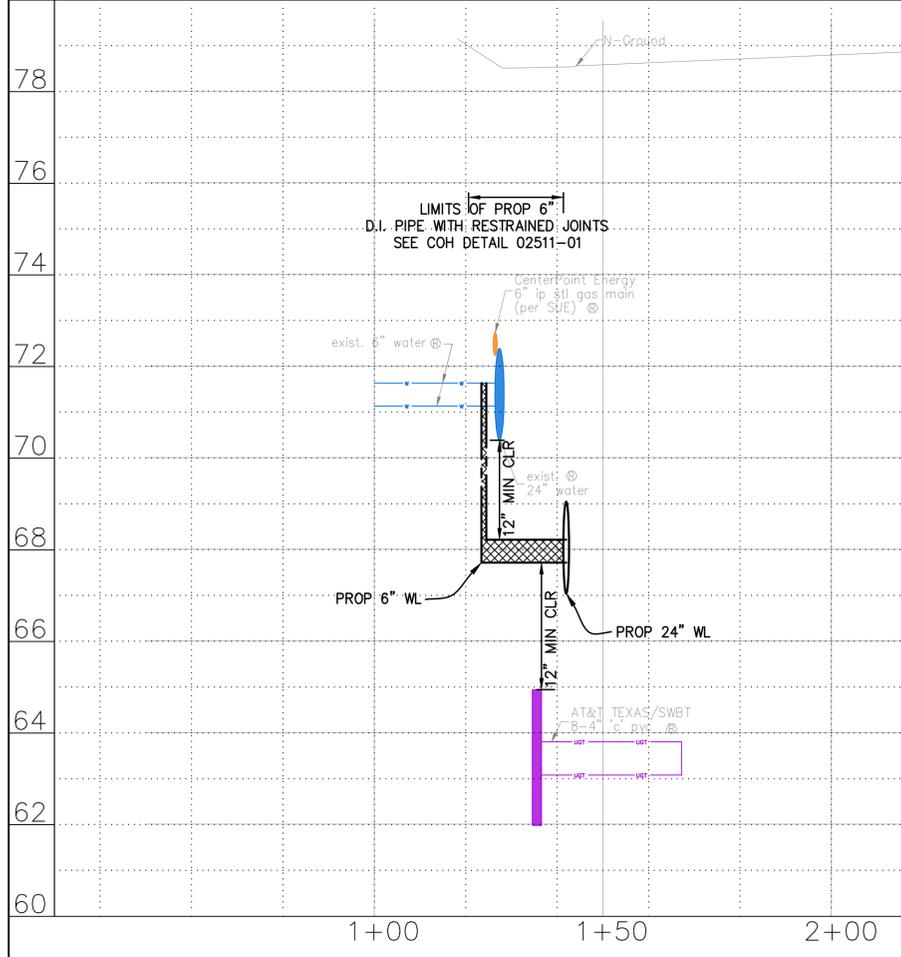
ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:** B-19  
 SET 1/2" I.R. W/CAP  
 ELEV. = 78.697  
 D. BL STA. 31+94.33 OFFSET:  
 34.02R

**NOTES:**

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NO.	DATE	REVISION	APP.



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Date

Signature valid for six months.

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Signature valid for six months.

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Date

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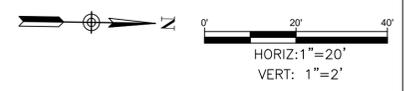
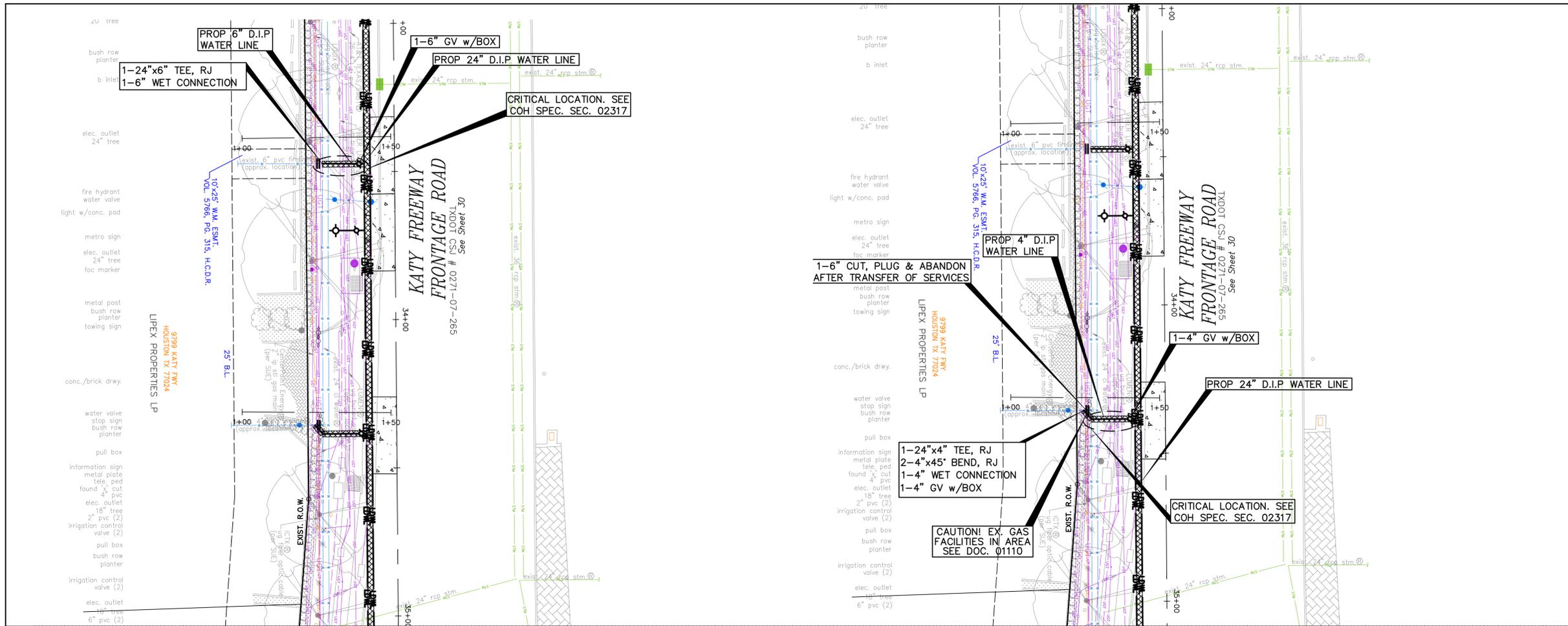
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 TEXAS REG. NO.: 116965  
 ON 01/15/2026  
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 KATY FREEWAY SITE-1  
 PLAN & PROFILE  
 STA 1+00 TO STA 1+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 75 OF 190	



**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:** B-10  
 SET 1/2" I.R. W/CAP  
 ELEV. = 78.374  
 D. BL STA. 34+94.06 OFFSET: 36.73R

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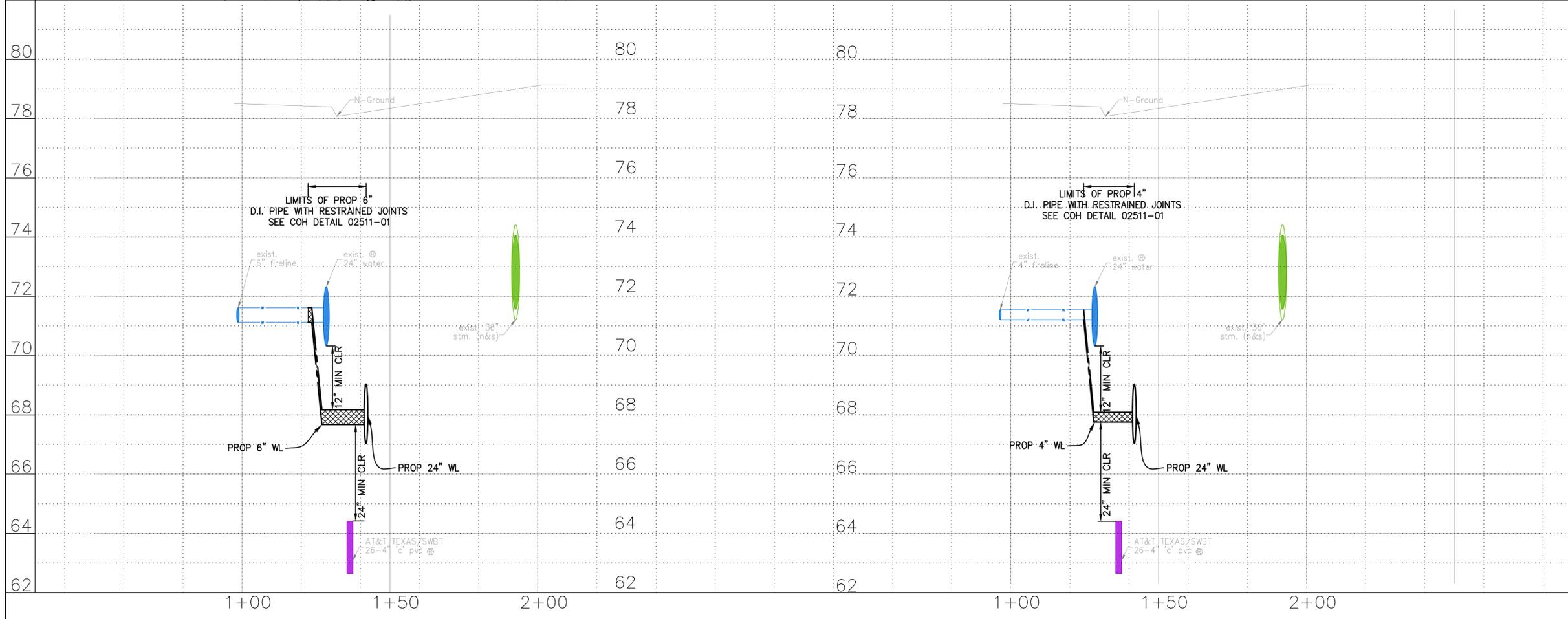
**VERIFICATION OF PRIVATE UTILITY LINES**

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 Signature valid for six months.

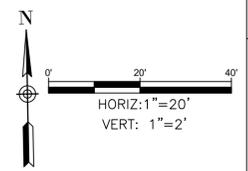
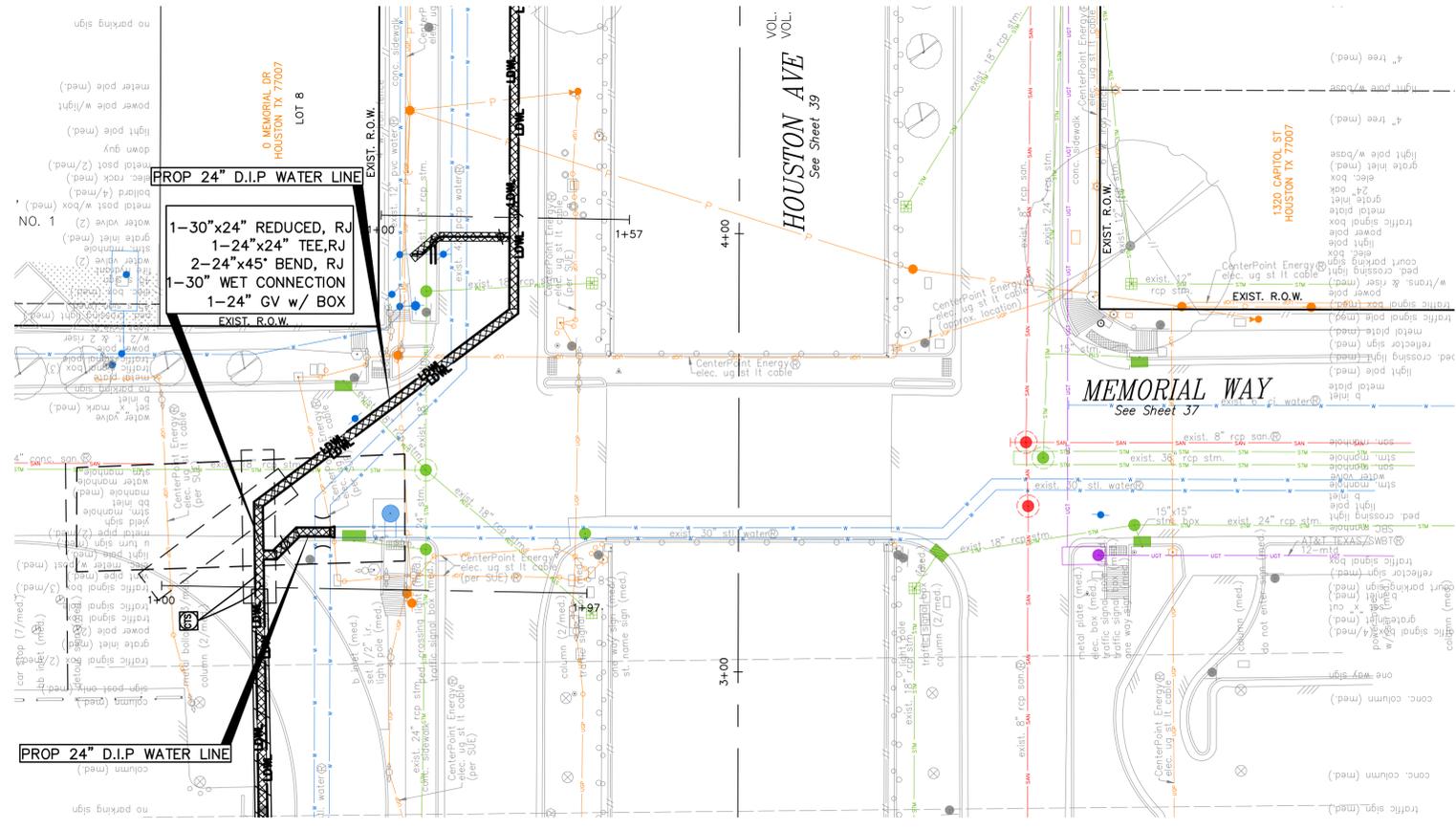
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)  
 Date  
 Signature valid for six months.

Approved for AT&T underground conduit facilities only.  
 Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING • SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 KATY FREEWAY SITE-1 PLAN & PROFILE STA 1+00 TO STA 1+50



WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 76 OF 190	



**BENCHMARK:**  
 CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.  
**T.B.M.:**  
 T.B.M. B-23  
 SET 1/2" I.R. W/CAP  
 ELEV.=38.01  
 D. STA. 11+61.93 OFFSET: 27.24L

- NOTES:**
- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PLY.
  - SITE 4 & 5 BE BUILT BY MEANS OF TRENCHLESS AND SPLITLINE CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL

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Approved for AT&T underground conduit facilities only. Signature valid for one year.

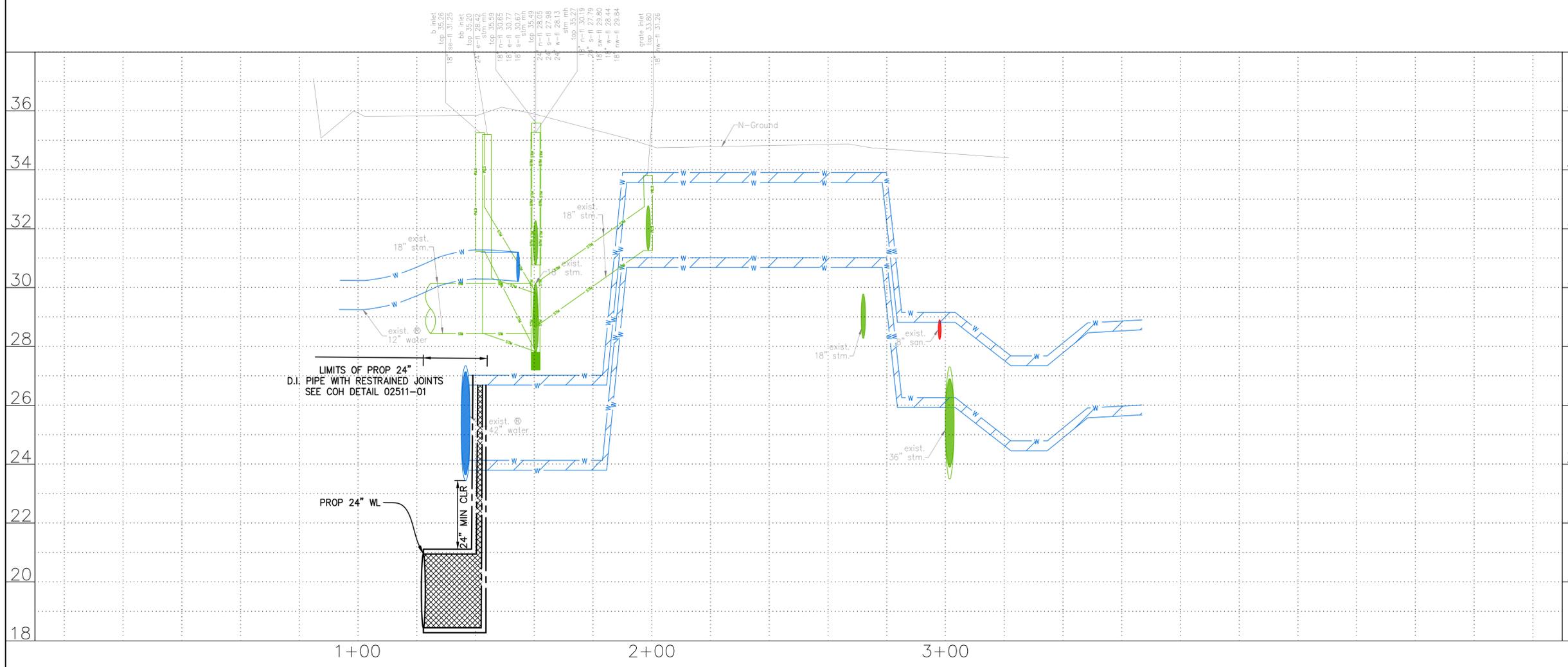
**KUO & ASSOCIATES**  
 ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578  
 SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. P-6395

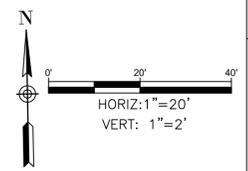
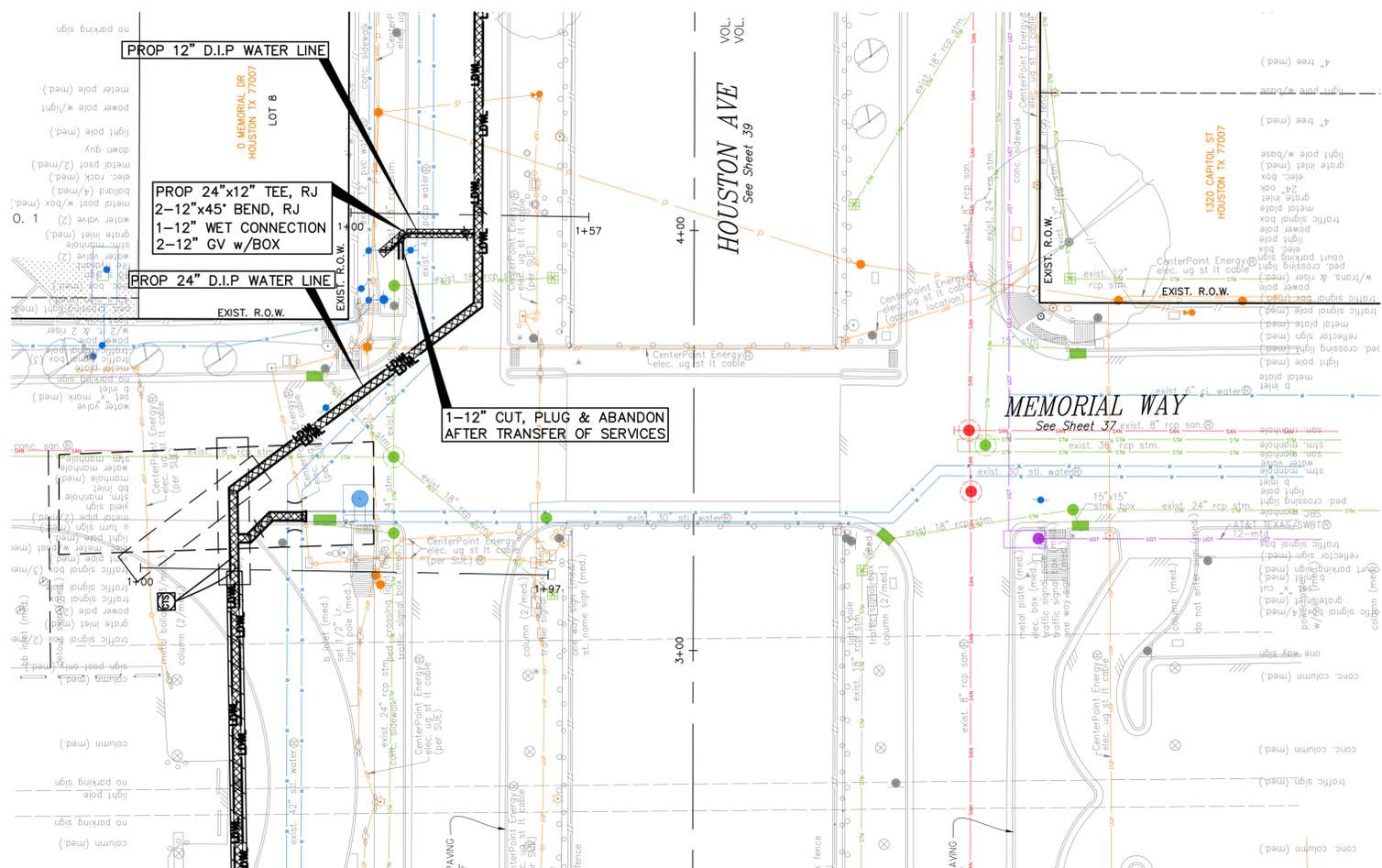
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 KIRAN V. PUNYAMANTHULA, P.E.  
 TEXAS REG. NO.: 116965  
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 MEMORIAL WAY @HOUSTON AVE  
 SITE 4  
 PLAN & PROFILE  
 STA 1+00 TO STA 3+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 77 OF 190	





**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-25  
SET 'X' CUT ON CONC.  
ELEV.=34.28  
D. STA. 3+18.02 OFFSET: 79.83R

- NOTES:**
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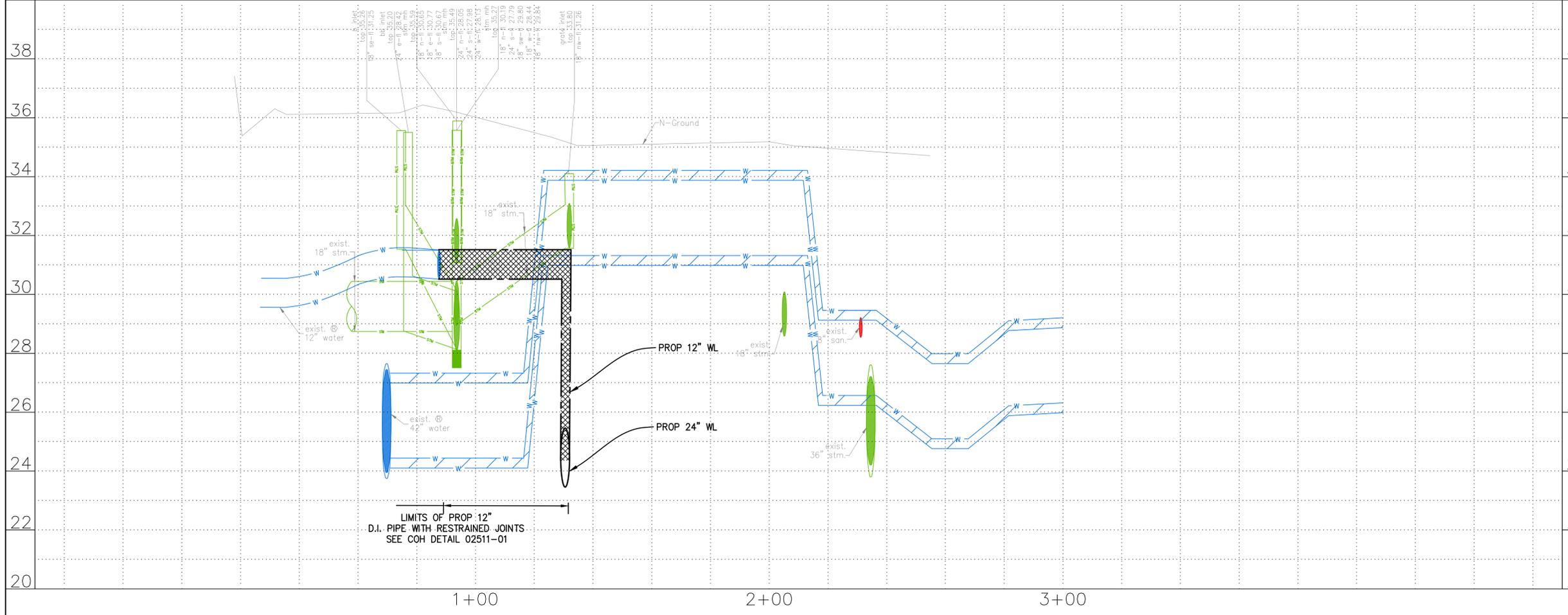
**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

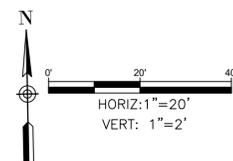
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KIRAN V. PUNYAMANTHULA, P.E.  
TEXAS REG. NO.: 116965  
ON 01/15/2026  
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
HOUSTON AVE @ MEMORIAL WAY SITE 4  
PLAN & PROFILE  
STA 1+00 TO STA 3+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 78 OF 190	





**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-26  
SET 'X' CUT ON CONC.  
ELEV.=40.12  
D. STA. 8+29.91 OFFSET: 69.18R

**NOTES:**

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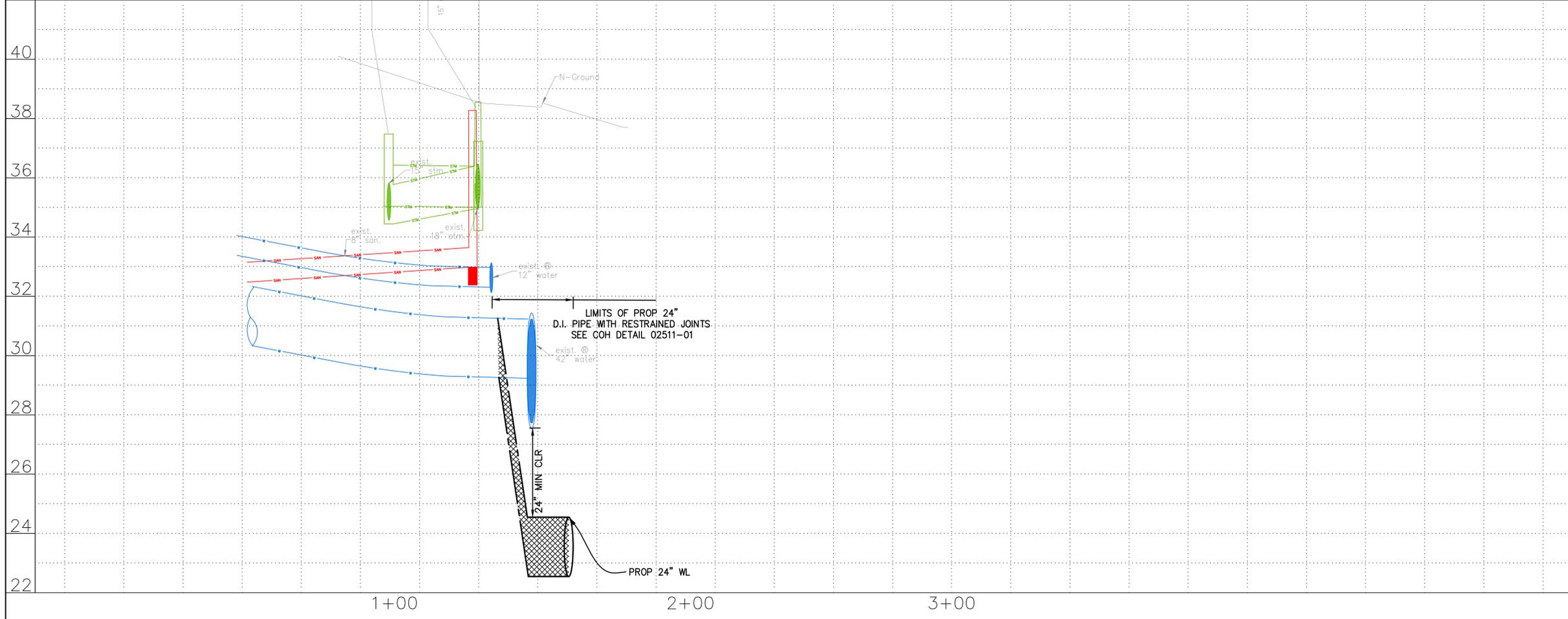
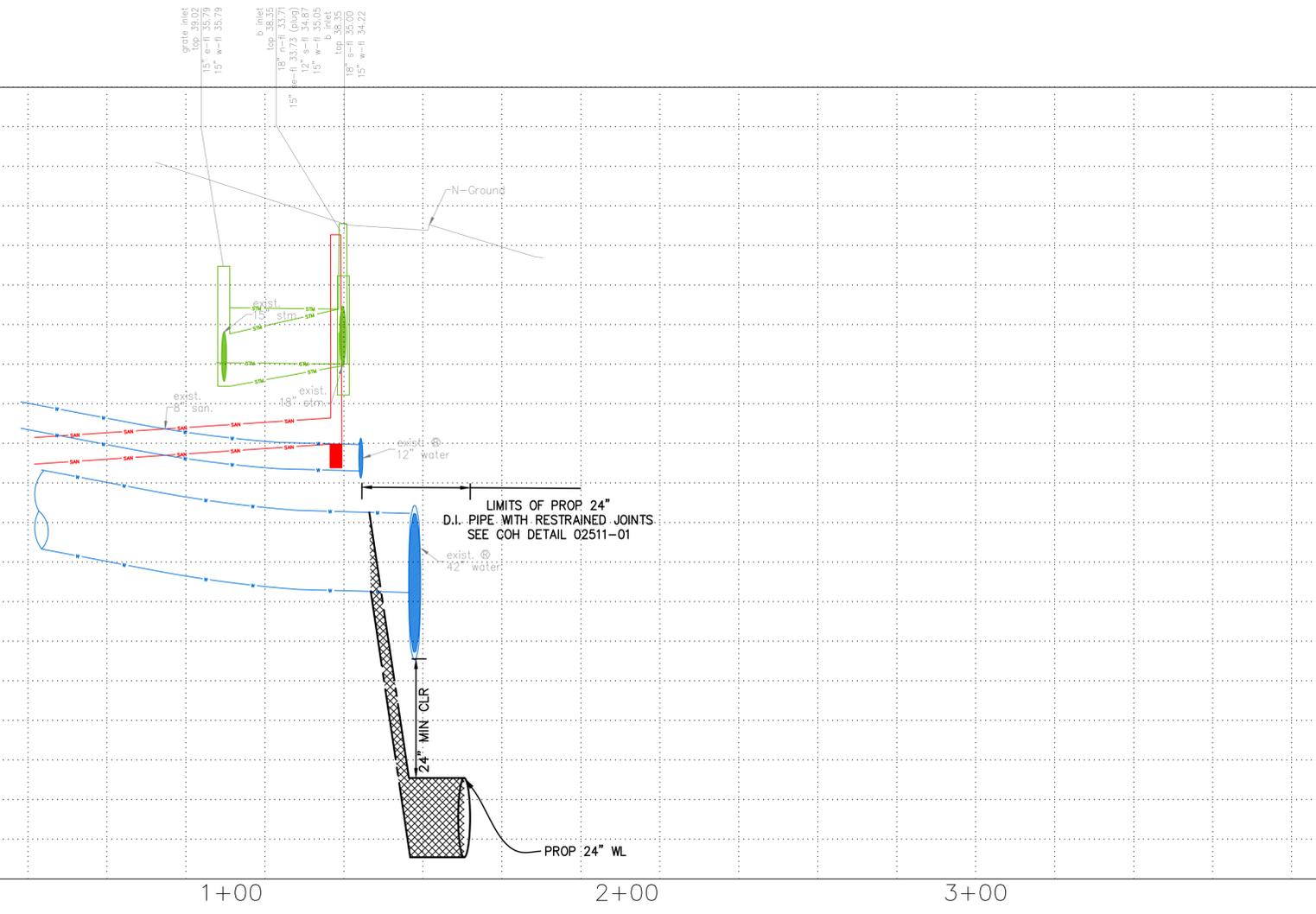
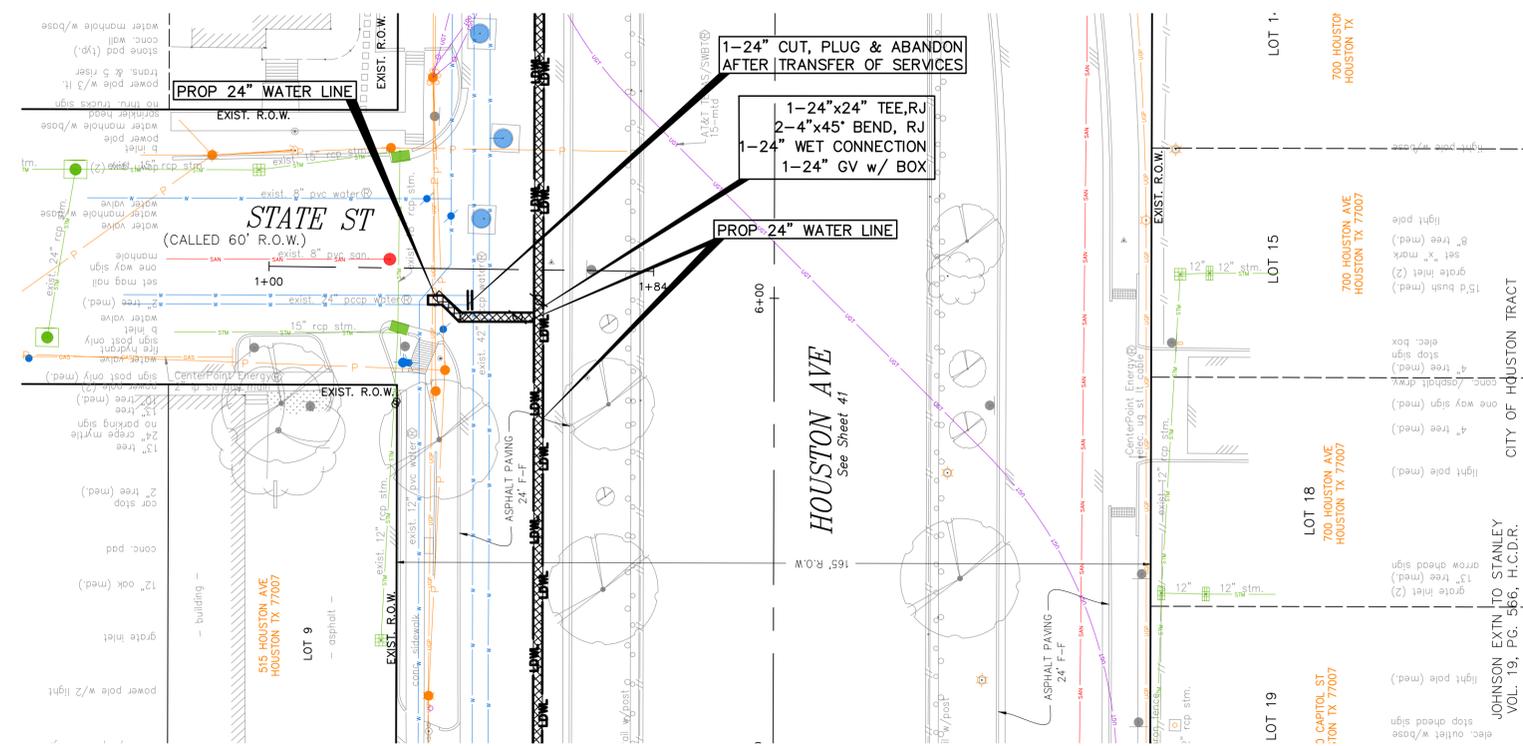
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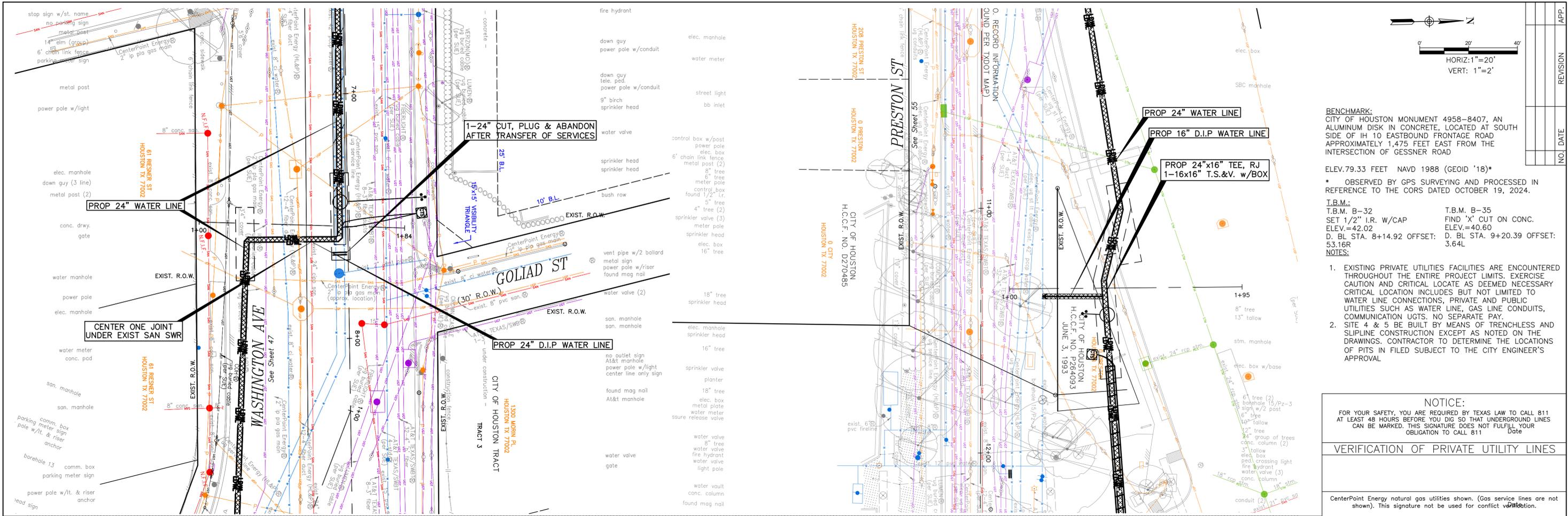
 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 STATE ST & HOUSTON AVE SITE 4 PLAN & PROFILE STA 1+00 TO STA 3+00

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
STATE ST & HOUSTON AVE  
SITE 4  
PLAN & PROFILE  
STA 1+00 TO STA 3+00

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S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 79 OF 190	



S:\Proj-2024\24057-(MISC LDWL IMPROVEMENTS-PKG 4)\Dwg\Design\Sheets\77-84-Lateral\Sheets-site4&5.dwg plotted on Jan 15, 2026 - 5:50pm



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ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*

\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-32 SET 1/2" I.R. W/CAP ELEV.=42.02 D. BL STA. 8+14.92 OFFSET: 53.16R  
T.B.M. B-35 FIND 'X' CUT ON CONC. ELEV.=40.60 D. BL STA. 9+20.39 OFFSET: 3.64L

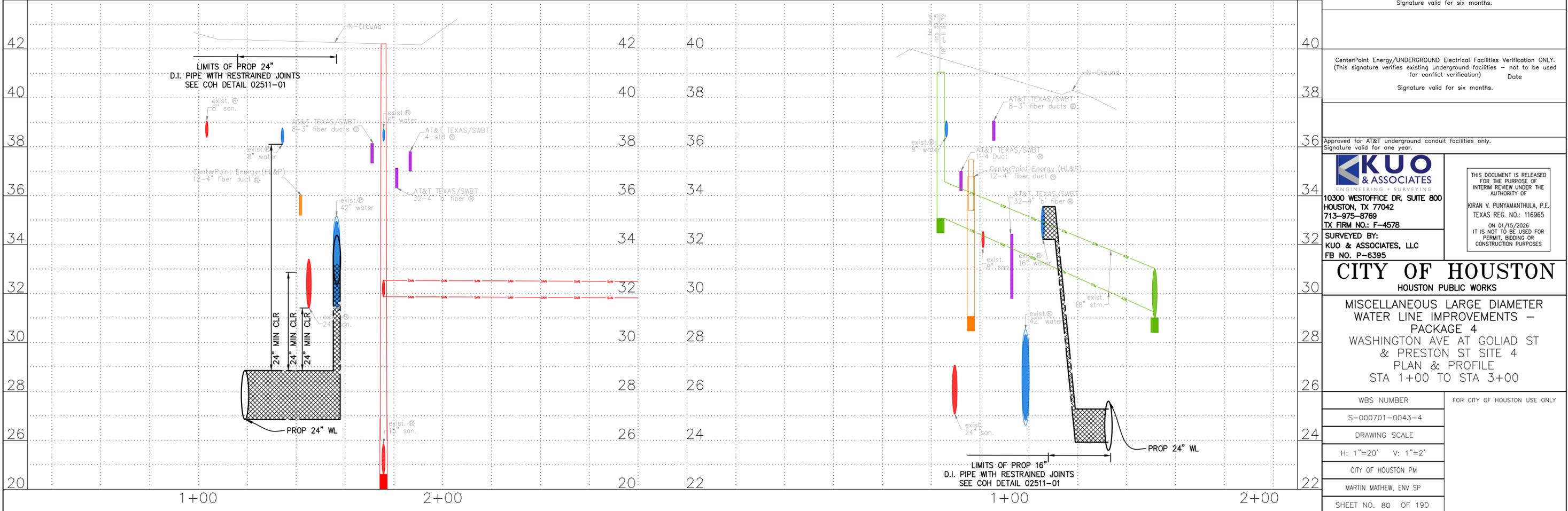
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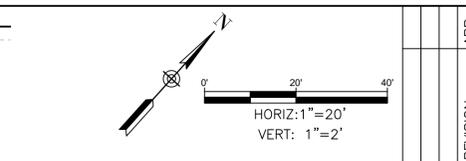
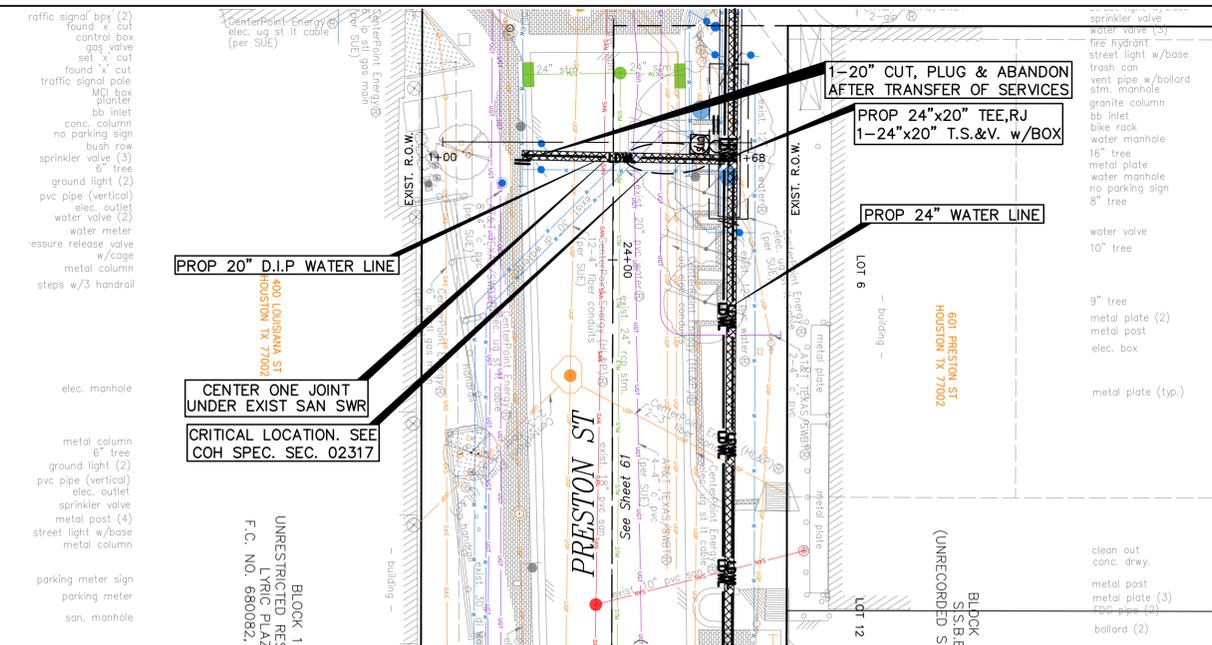
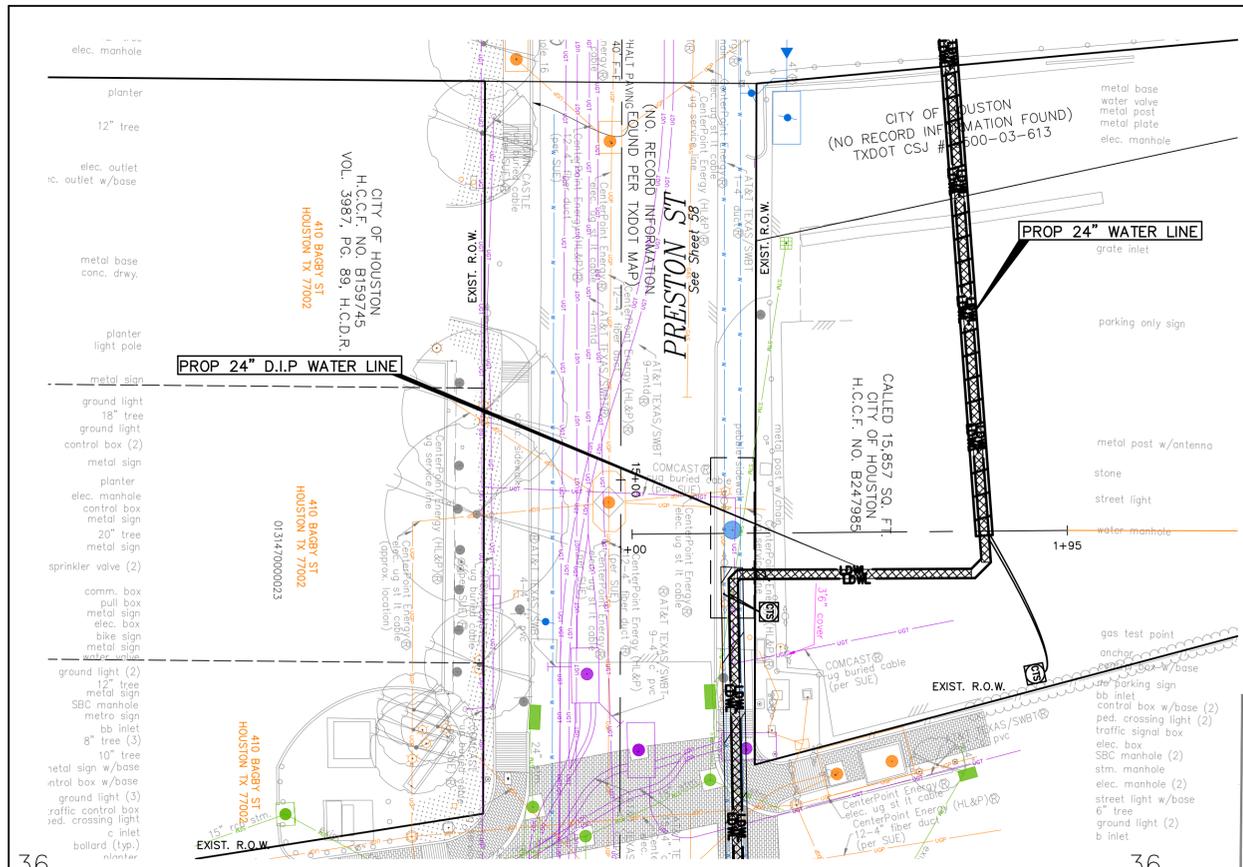


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<p><b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578</p>	<p>THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF</p> <p>KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES</p>
	<p><b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS</p> <p>MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 WASHINGTON AVE AT GOLIAD ST &amp; PRESTON ST SITE 4 PLAN &amp; PROFILE STA 1+00 TO STA 3+00</p>

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 80 OF 190	

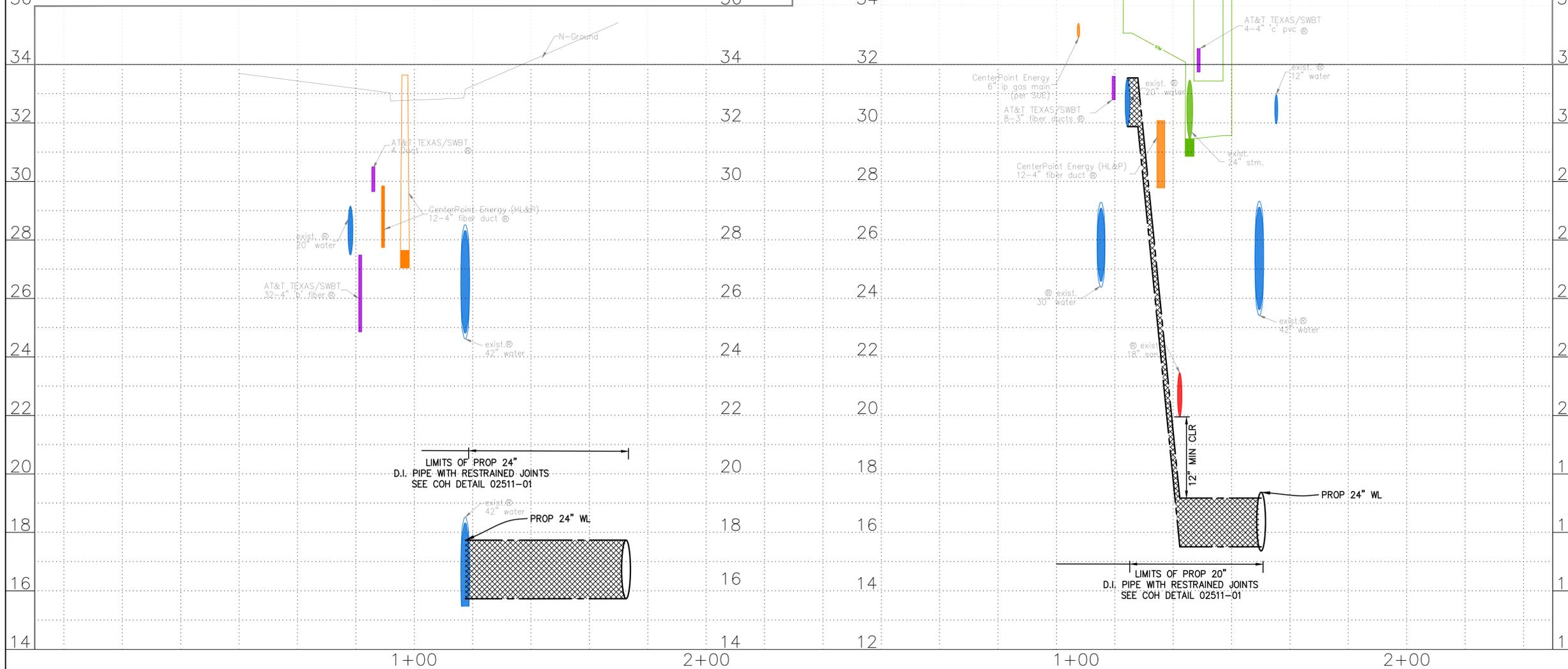


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ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
 \* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
 T.B.M. B-37 SET 'X' CUT ON PAVERS. ELEV.=30.93  
 D. BL STA. 16+46.90 OFFSET: 27.98R  
 T.B.M. B-39 SET 'X' CUT ON CONC. ELEV.=36.44  
 D. BL STA. 23+44.86 OFFSET: 27.19R

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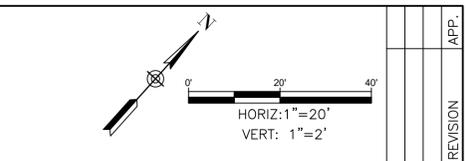
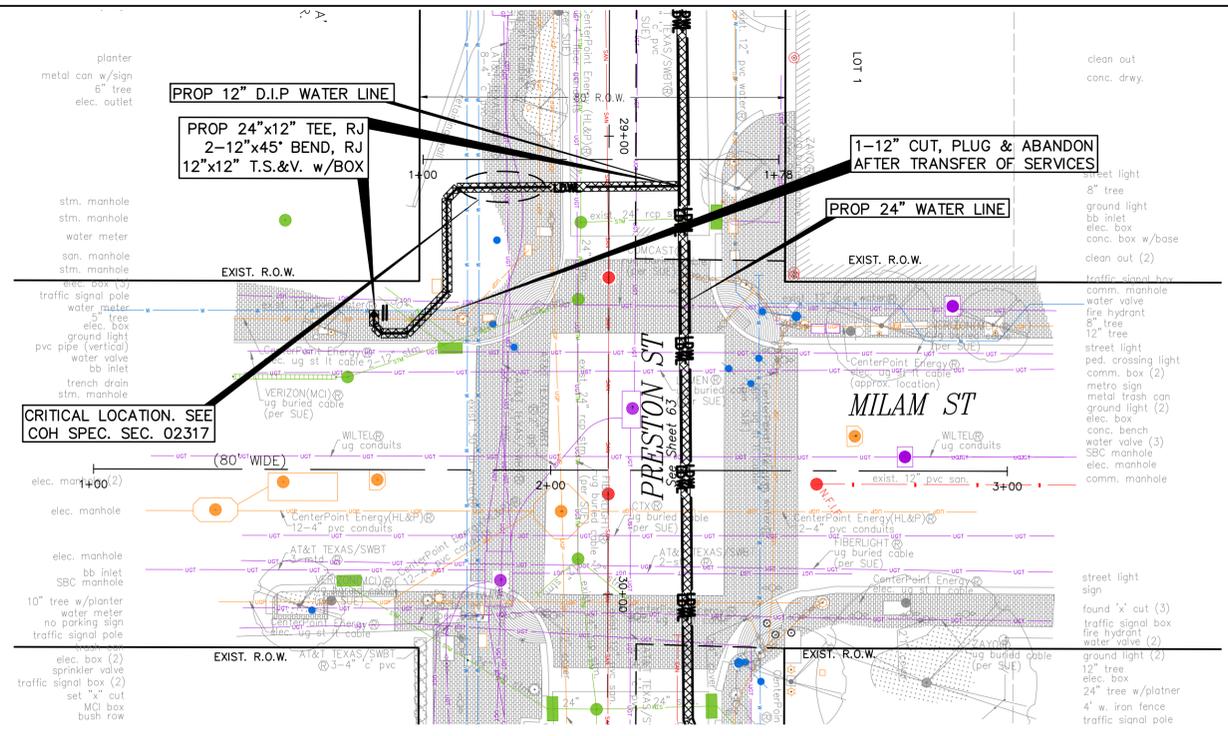
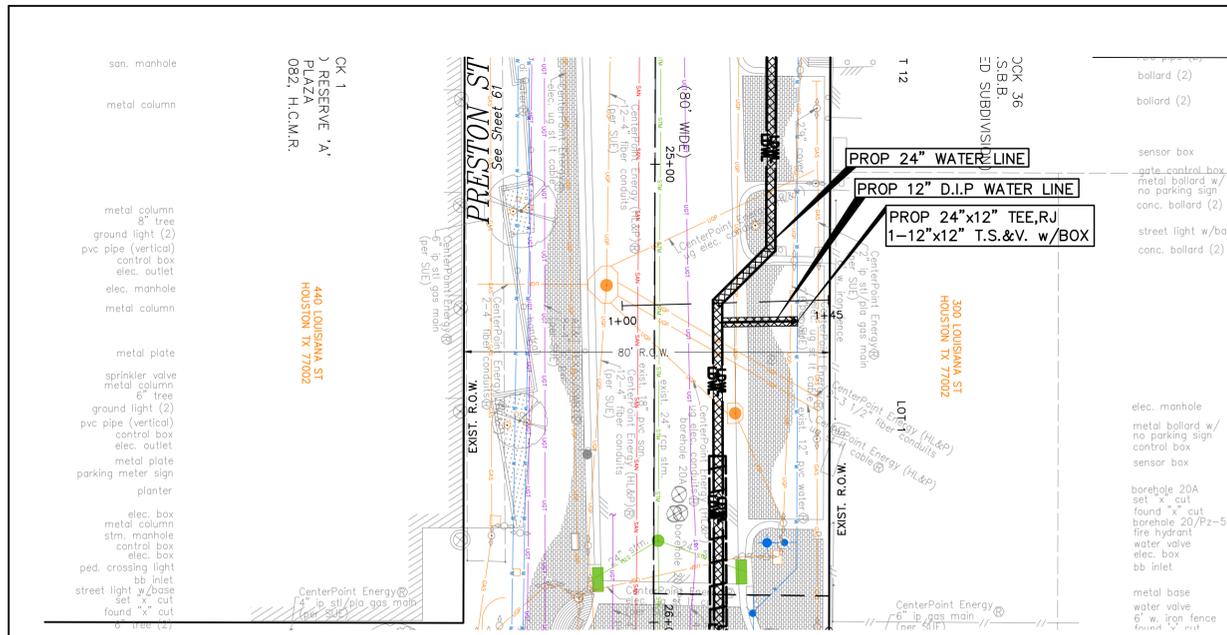
**KUO & ASSOCIATES**  
 ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
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 FB NO. P-6395

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 TEXAS REG. NO.: 116965  
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 PRESTON STREET @ BAGBY STREET AND PRESTON STREET  
 SITE 4 & 5  
 PLAN & PROFILE  
 STA 1+00 TO STA 2+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 81 OF 190	

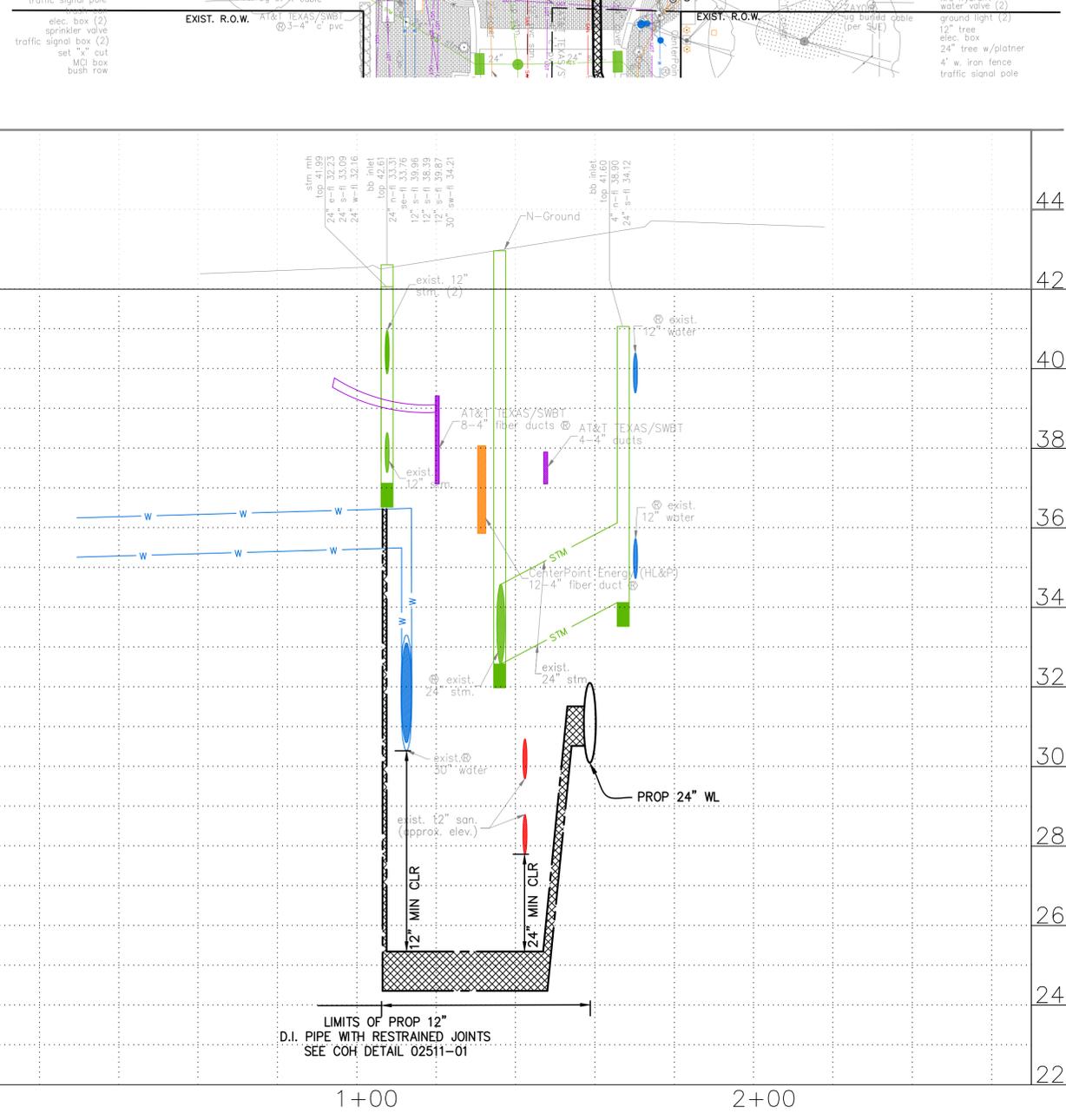
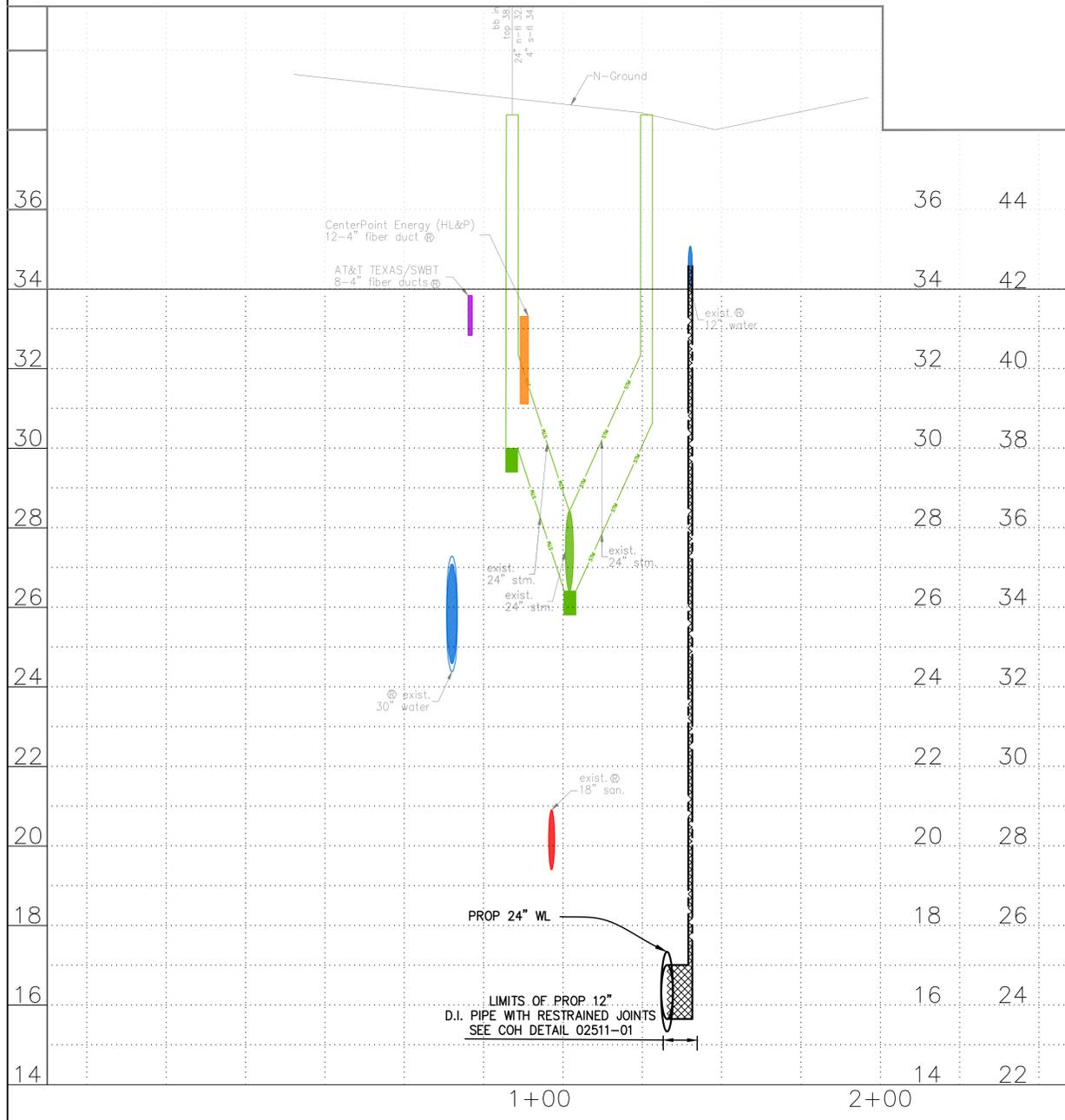


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ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-39 SET "X" CUT ON CONC. ELEV.=36.44 D. BL STA. 23+44.86 OFFSET: 27.19R  
T.B.M. B-41 SET "X" CUT ON CONC. ELEV.=43.51 D. BL STA. 30+10.07 OFFSET: 18.64R

- NOTES:**
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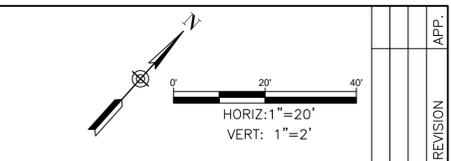
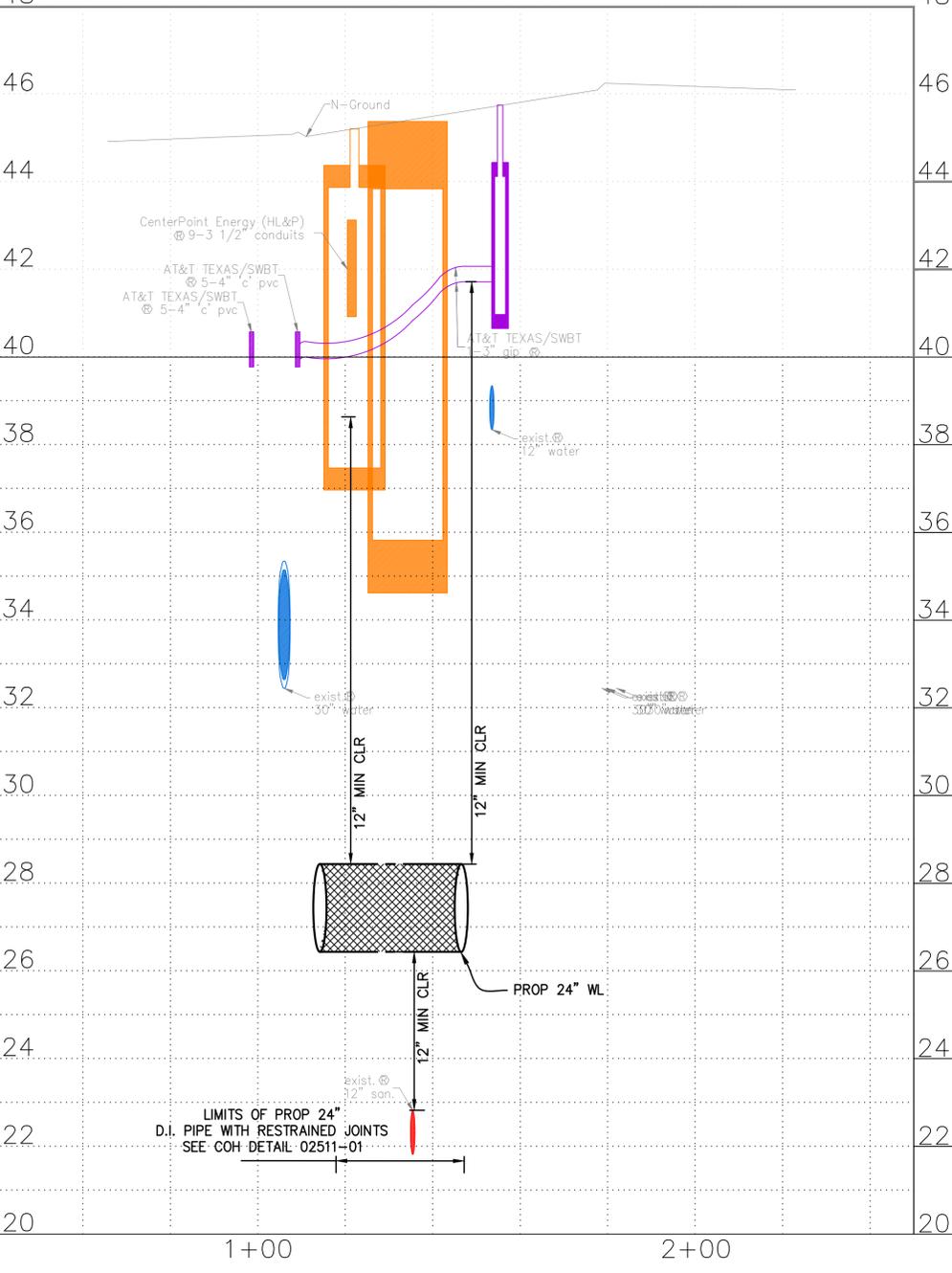
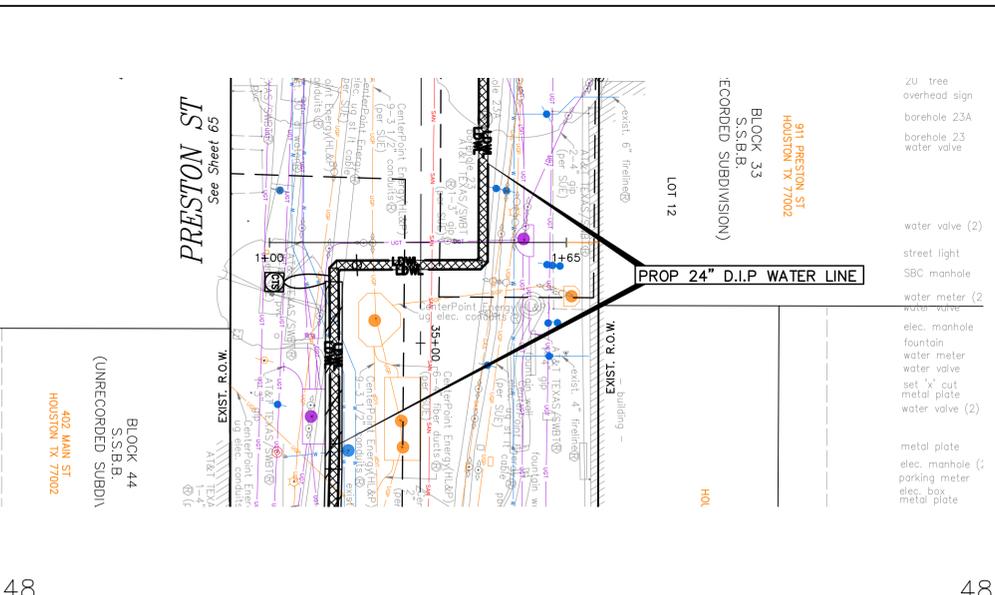
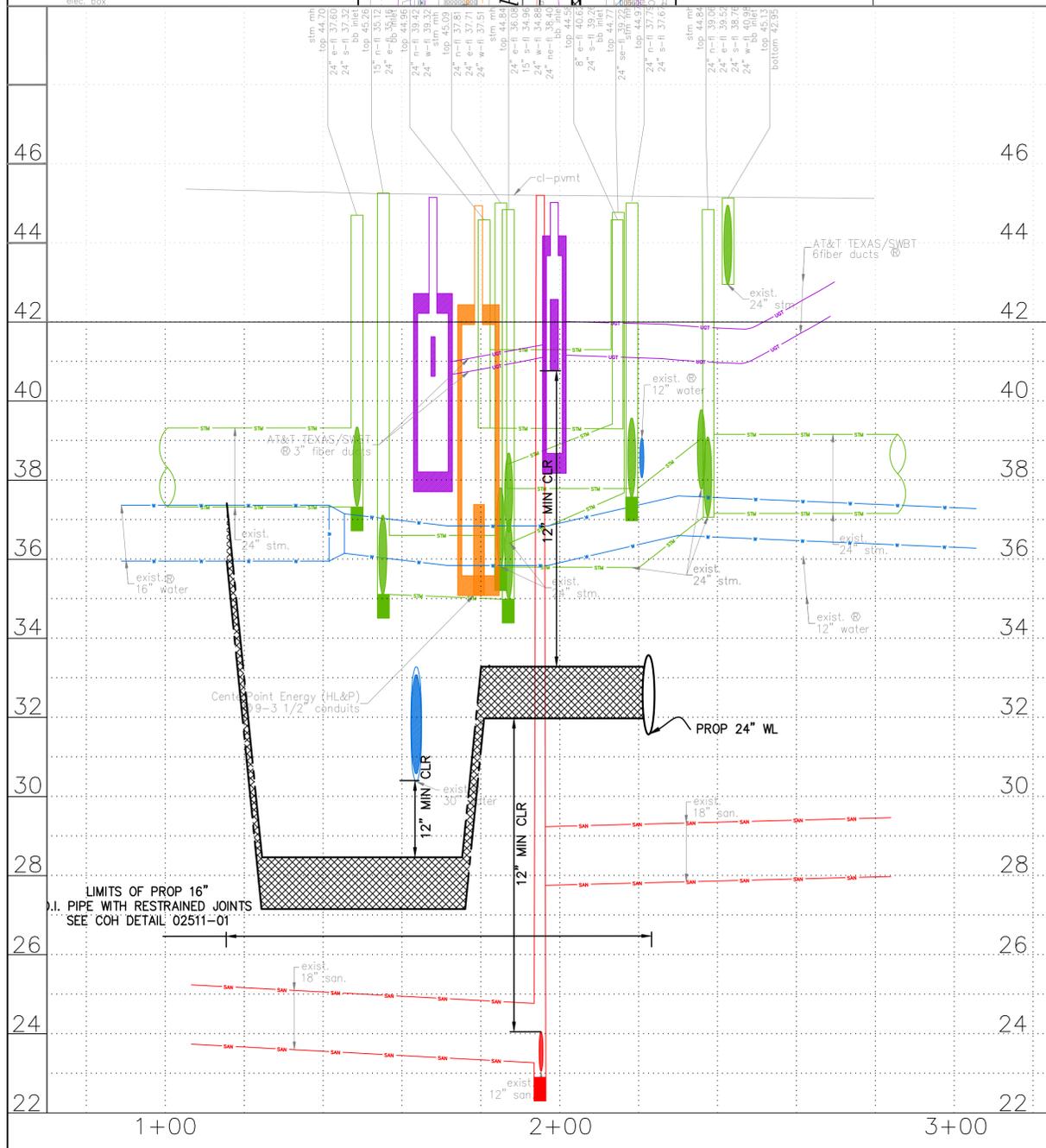
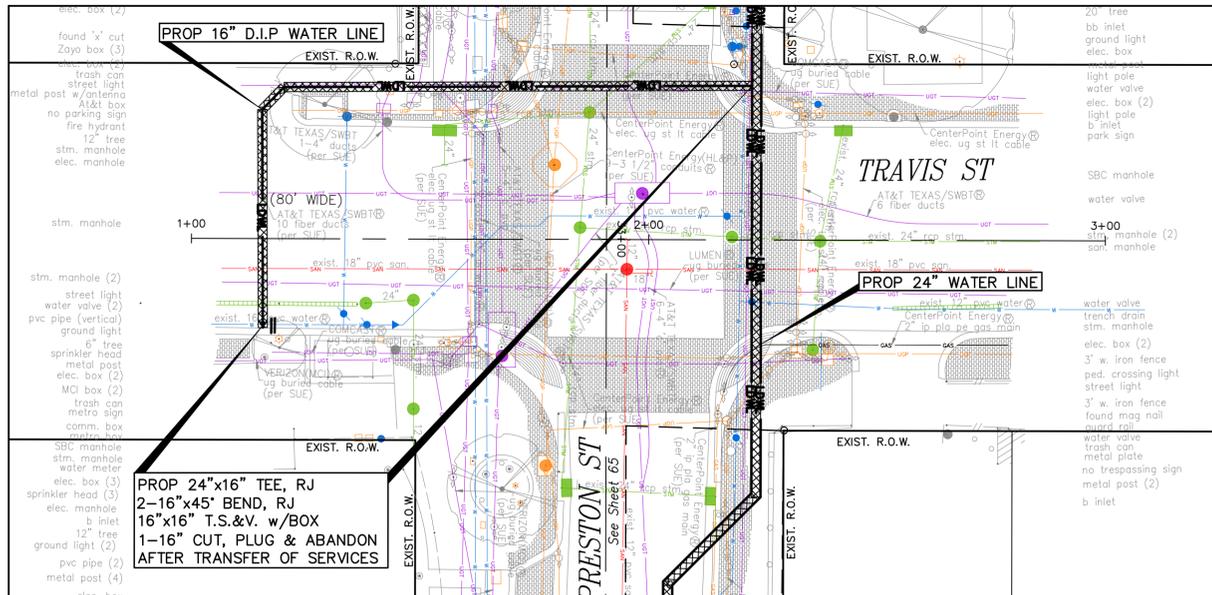
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Approved for AT&T underground conduit facilities only.  
Signature valid for one year.

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 PRESTON STREET AND MILAM STREET @ PRESTON STREET SITE 5 PLAN & PROFILE STA 1+00 TO STA 2+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 82 OF 190	

S:\Proj-2024\24057-(MISC) LDWL IMPROVEMENTS-PKG 4)\Dwg\Design\Sheets\77-84-Lateral\Sheets-site4&5.dwg plotted on Jan 15, 2026 - 6:03pm



**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*

\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-42  
FND "X" CUT ON CONC.  
ELEV.=44.90  
D. BL STA. 32+61.76 OFFSET:  
27.81L

**NOTES:**

- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
- SITE 4 & 5 BE BUILT BY MEANS OF TRENCHLESS AND SLIPLINE CONSTRUCTION EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

**VERIFICATION OF PRIVATE UTILITY LINES**

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.

Signature valid for six months.

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)

Signature valid for six months.

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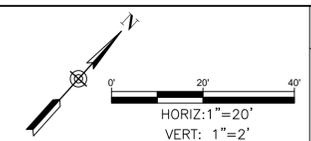
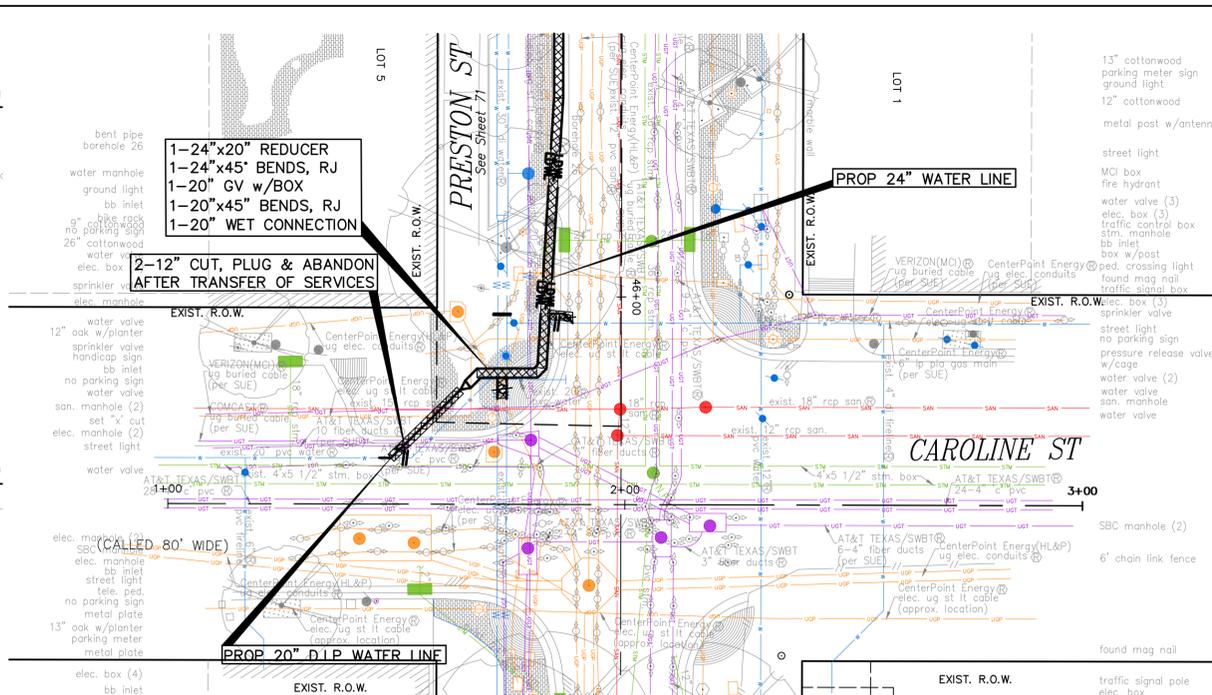
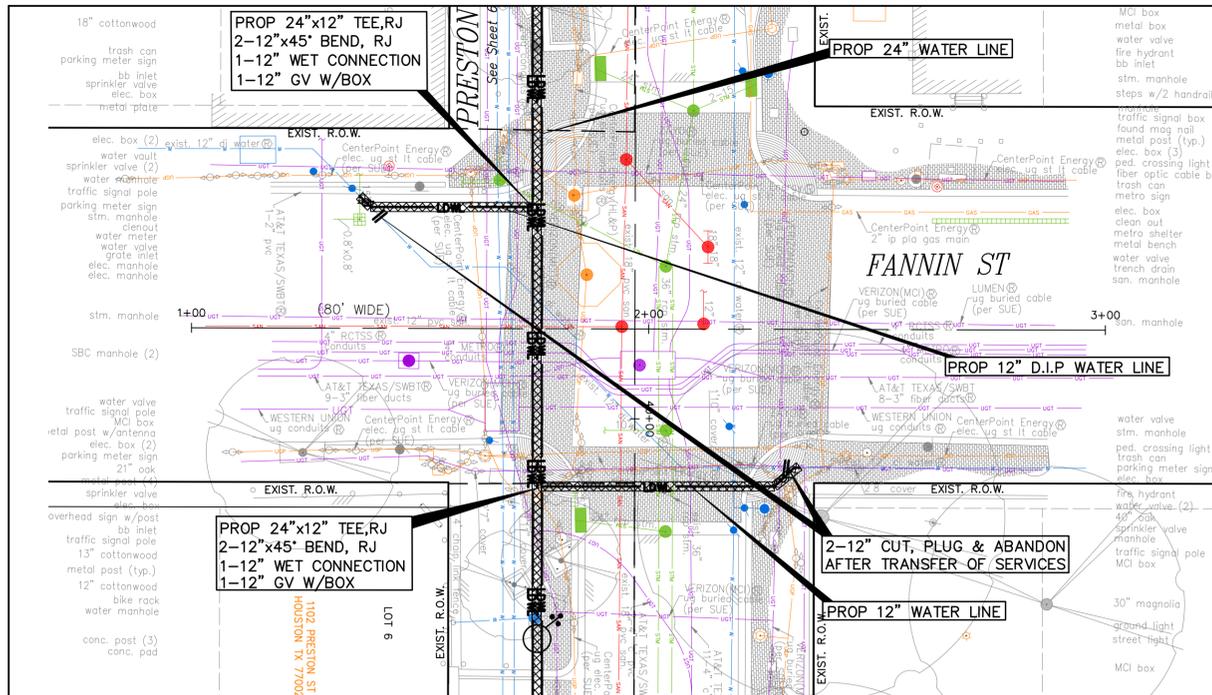
<p><b>KUO &amp; ASSOCIATES</b> ENGINEERING &amp; SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578</p>	<p>THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF</p> <p>KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES</p>
	<p><b>SURVEYED BY:</b> KUO &amp; ASSOCIATES, LLC FB NO. P-6395</p>

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
TRAVIS STREET @ PRESTON ST  
SITE 5  
PLAN & PROFILE  
STA 1+00 TO STA 2+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 83 OF 190	

S:\Proj-2024\24057-(MISC) LDWL IMPROVEMENTS-PKG 4)\Dwg\Design\Sheets\77-84-Laterals Sheets-site4&5.dwg plotted on Jan 15, 2026 - 6:10pm

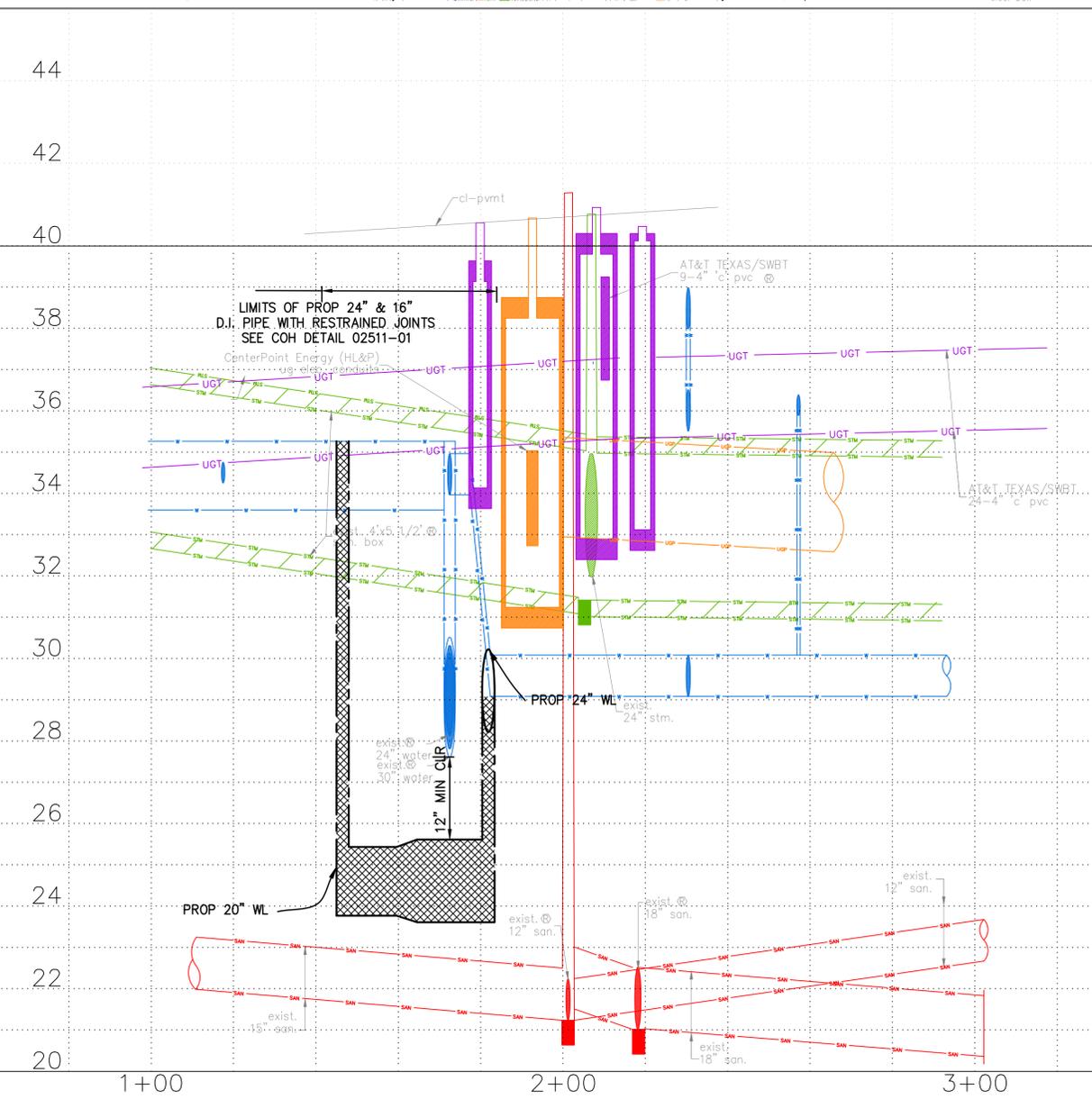
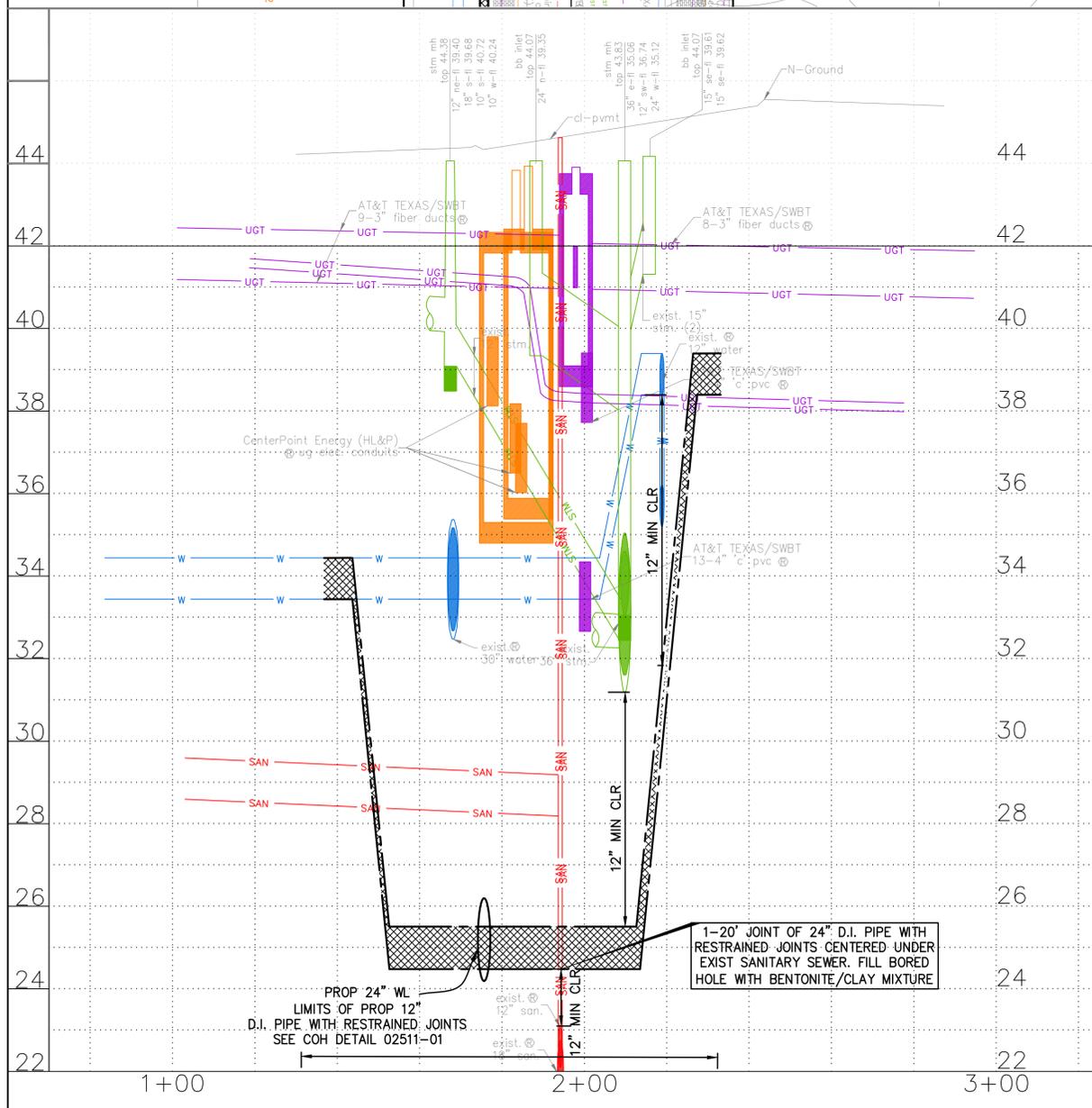


**BENCHMARK:**  
CITY OF HOUSTON MONUMENT 4958-8407, AN ALUMINUM DISK IN CONCRETE, LOCATED AT SOUTH SIDE OF IH 10 EASTBOUND FRONTAGE ROAD APPROXIMATELY 1,475 FEET EAST FROM THE INTERSECTION OF GESSNER ROAD

ELEV. 79.33 FEET NAVD 1988 (GEOID '18)\*  
\* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2024.

**T.B.M.:**  
T.B.M. B-44 SET 'X' CUT ON CONC. ELEV.=43.73  
D. BL STA. 39+43.92 OFFSET: 28.07L  
T.B.M. B-46 SET 'X' CUT ON CONC. ELEV.=40.58  
D. BL STA. 46+19.94 OFFSET: 24.45R

- NOTES:**
- EXISTING PRIVATE UTILITIES FACILITIES ARE ENCOUNTERED THROUGHOUT THE ENTIRE PROJECT LIMITS. EXERCISE CAUTION AND CRITICAL LOCATE AS DEEMED NECESSARY. CRITICAL LOCATION INCLUDES BUT NOT LIMITED TO WATER LINE CONNECTIONS, PRIVATE AND PUBLIC UTILITIES SUCH AS WATER LINE, GAS LINE CONDUITS, COMMUNICATION UGTS. NO SEPARATE PAY.
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Date

**VERIFICATION OF PRIVATE UTILITY LINES**

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.  
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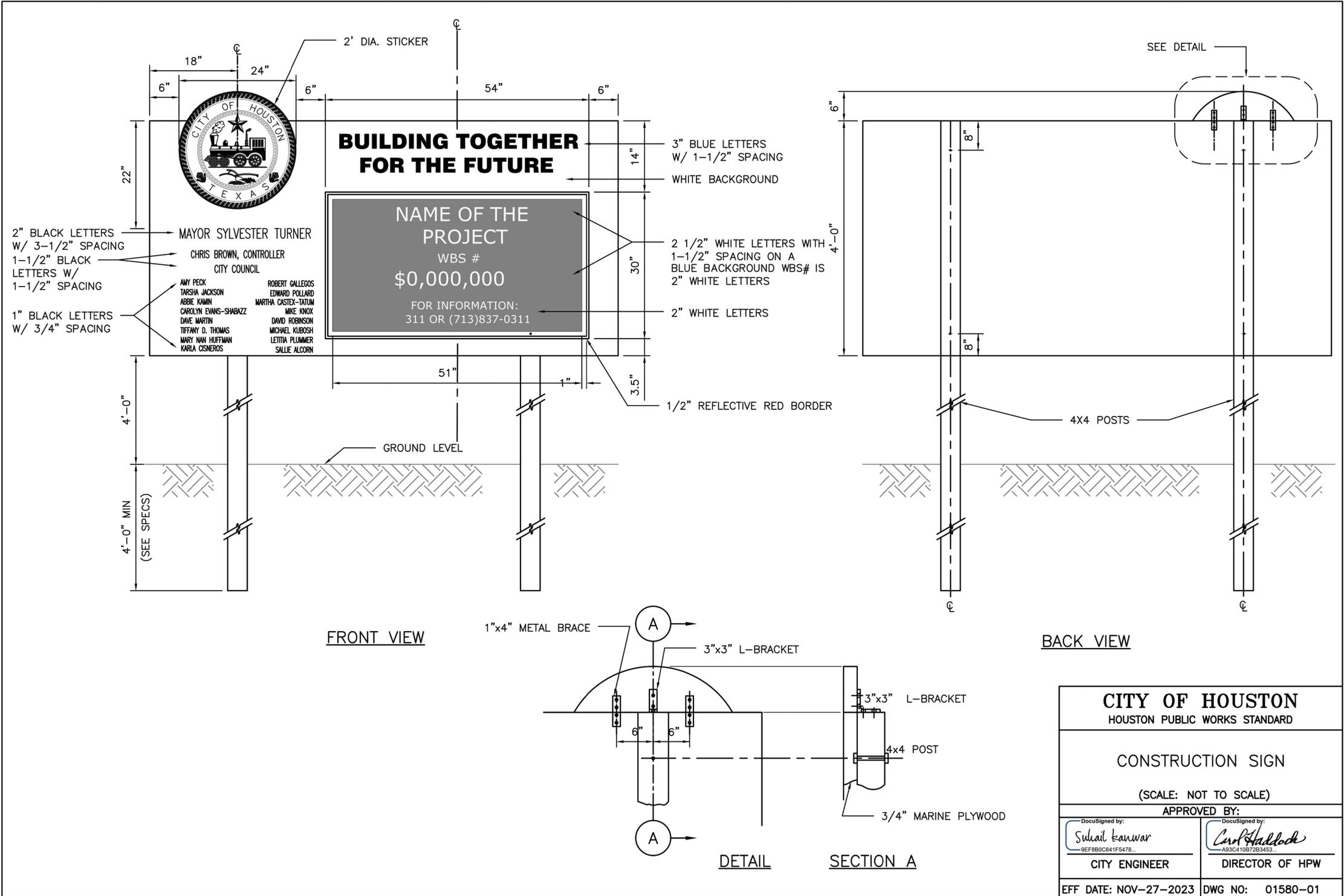
 <b>KUO &amp; ASSOCIATES</b> ENGINEERING • SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 FANNIN STREET @ PRESTON STREET AND CAROLINE STREET @ PRESTON ST SITE 5 PLAN & PROFILE STA 1+00 TO STA 3+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 84 OF 190	

S:\Proj-2024\24057-(MISC LDWL IMPROVEMENTS-PKG 4)\Dwg\Design\Sheets\77-84-Lateral\Sheets-site4&5.dwg plotted on Jan 15, 2026 - 6:11pm

NO.	DATE	REVISION	APP.

DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

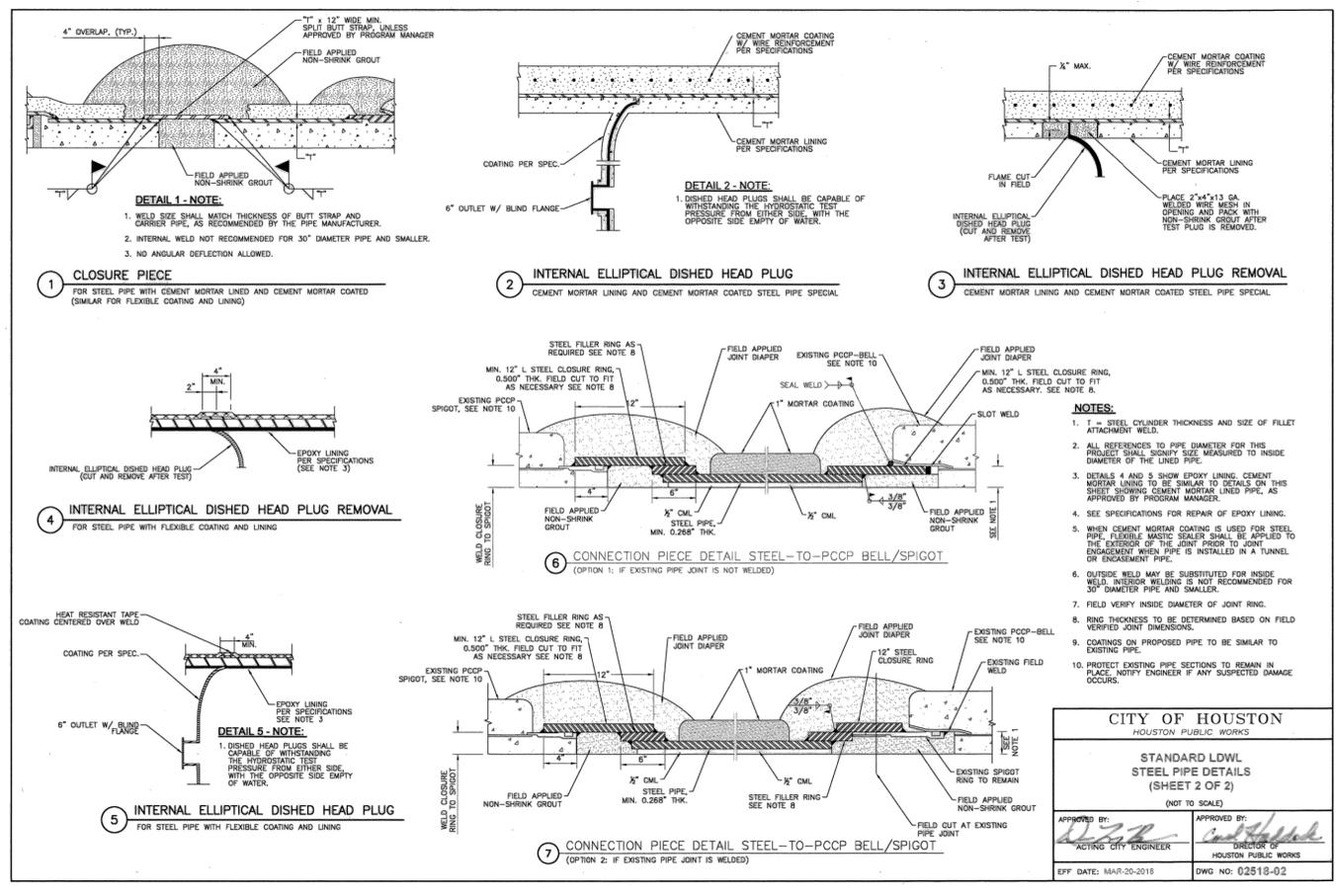
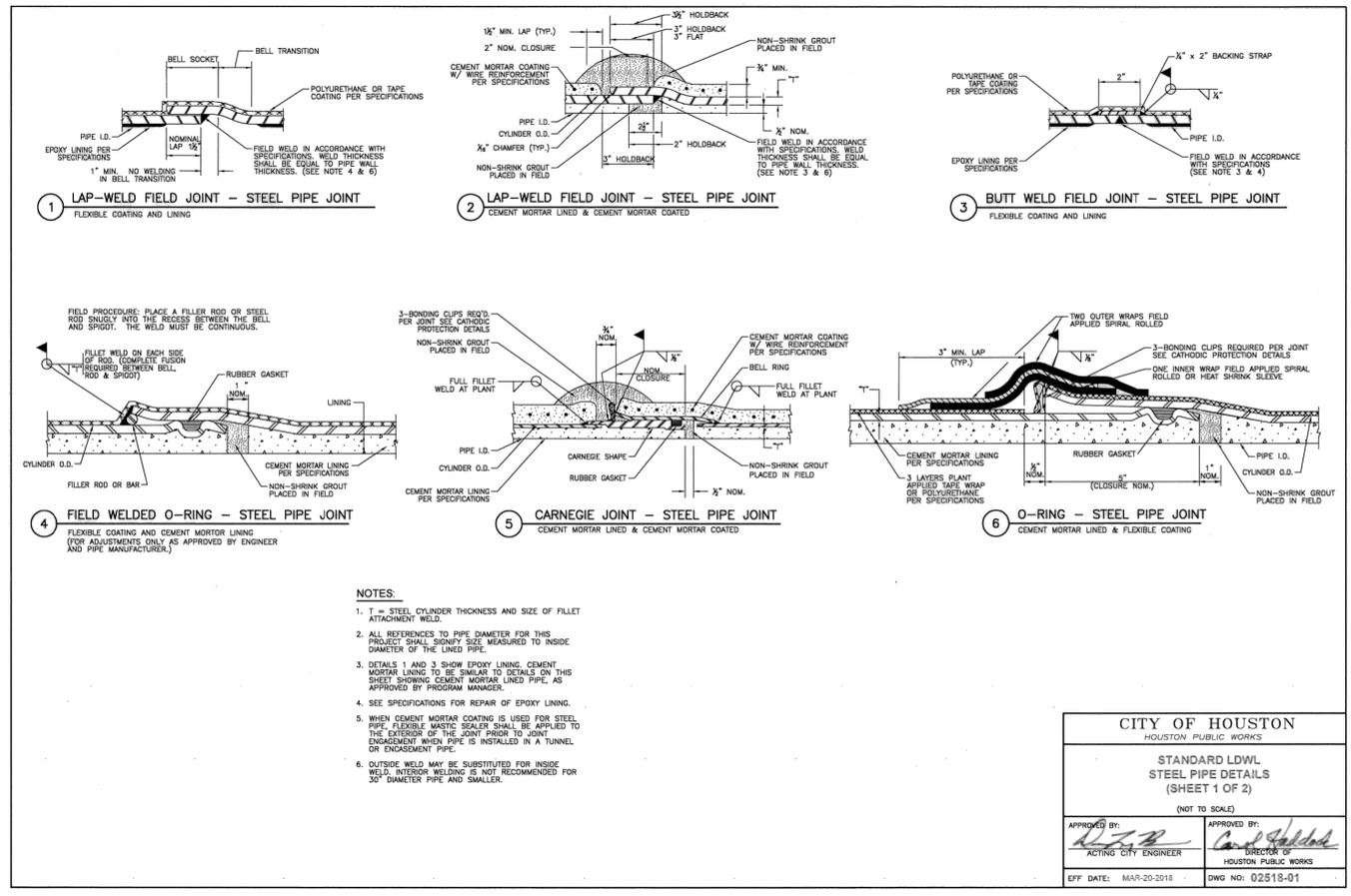


<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
<b>CONSTRUCTION SIGN</b> (SCALE: NOT TO SCALE)	
APPROVED BY:	
DocuSigned by: <i>Sulhail Kanwar</i> 9EF80C841F5478... CITY ENGINEER	DocuSigned by: <i>Carl Haddock</i> A93C41067263453... DIRECTOR OF HPW
EFF DATE: NOV-27-2023	DWG NO: 01580-01

<b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
--	--

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 CONSTRUCTION SIGN STANDARD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 85 OF 190	



**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING

10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578

SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

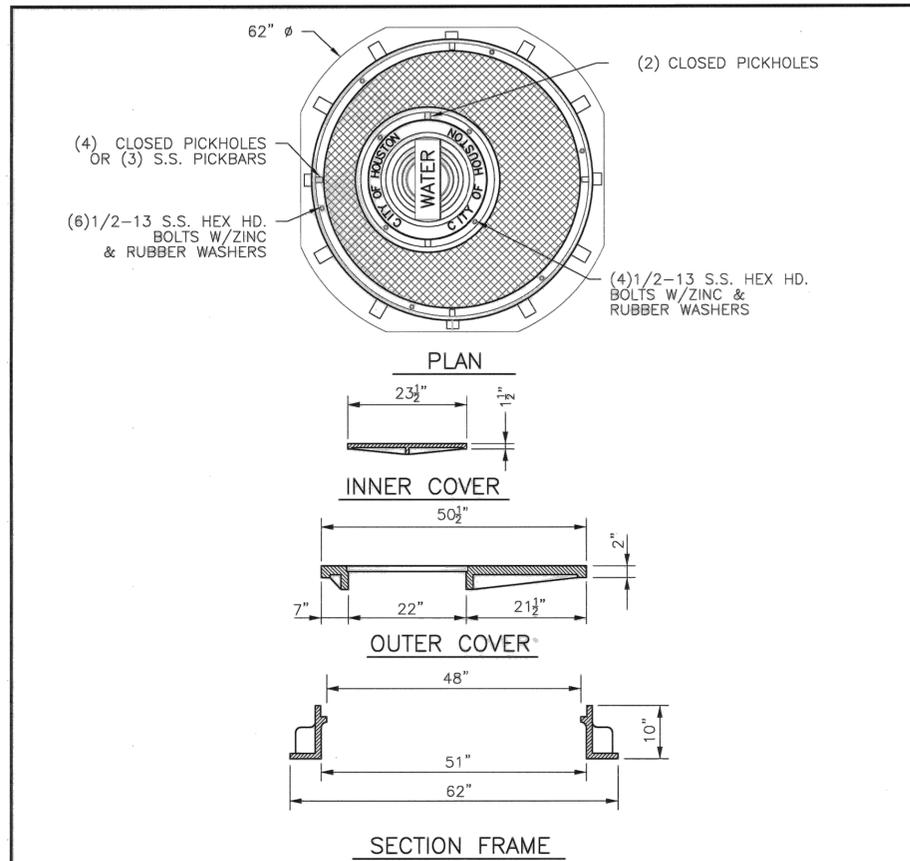
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF  
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TEXAS REG. NO.: 116965  
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

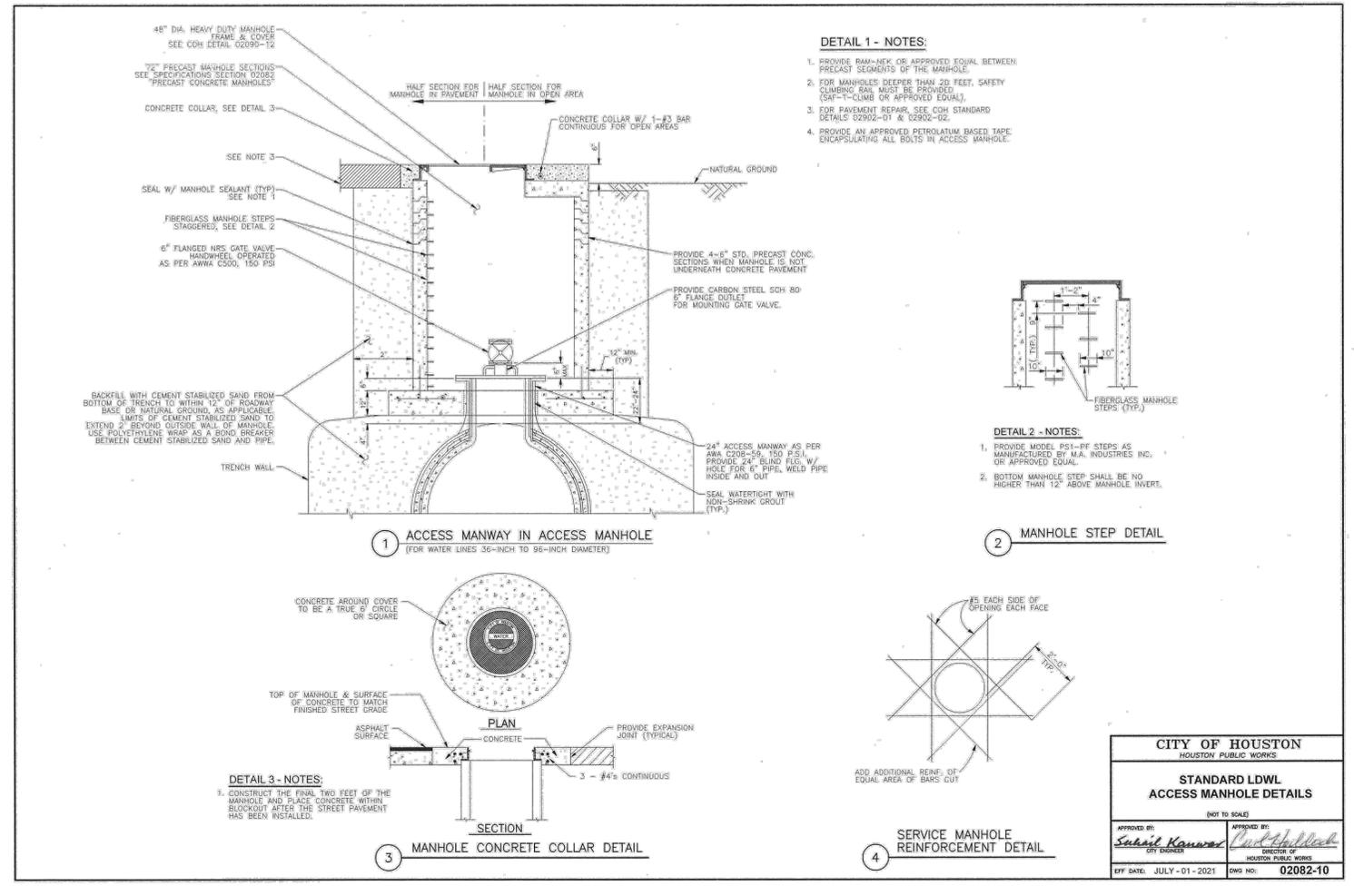
STANDARD LDWL  
STEEL PIPE DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 86	OF 190



- NOTES:**
1. MATERIAL - GRAY IRON ASTM A48 CL35B / DUCTILE IRON ASTM A536 70-50-05
  2. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
  3. EUJW MODEL V-7048-2 OR APPROVED EQUAL.

<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS	
<b>STANDARD LDWL</b> <b>48" DIA HEAVY DUTY MANHOLE</b> <b>FRAME AND COVER DETAIL</b> <small>(NOT TO SCALE)</small>	
<small>APPROVED BY:</small>  <small>ACTING CITY ENGINEER</small>	<small>APPROVED BY:</small>  <small>DIRECTOR OF HOUSTON PUBLIC WORKS</small>
<small>EFF DATE:</small> MAR-20-2018	<small>DWG NO.:</small> 02090-12



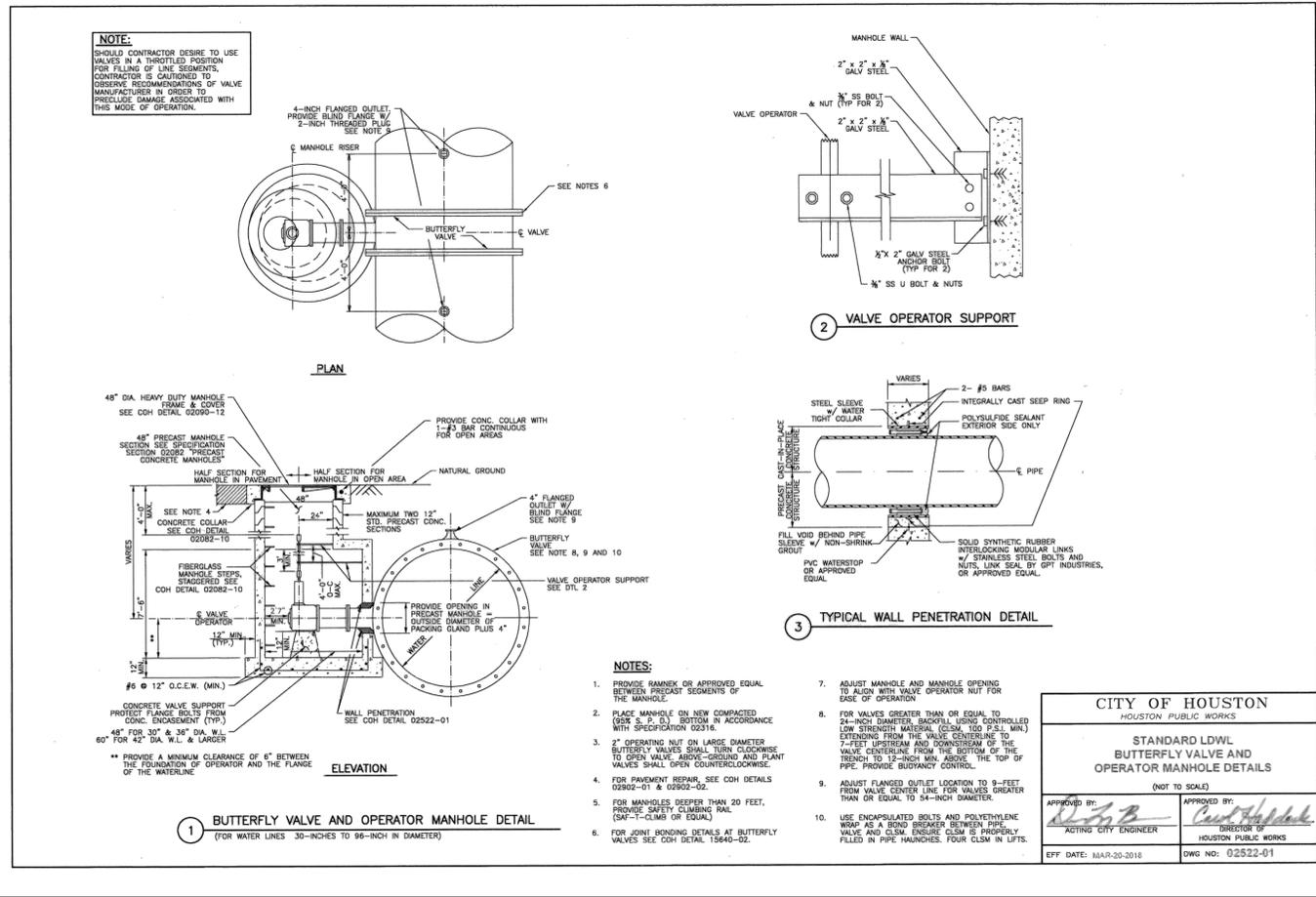
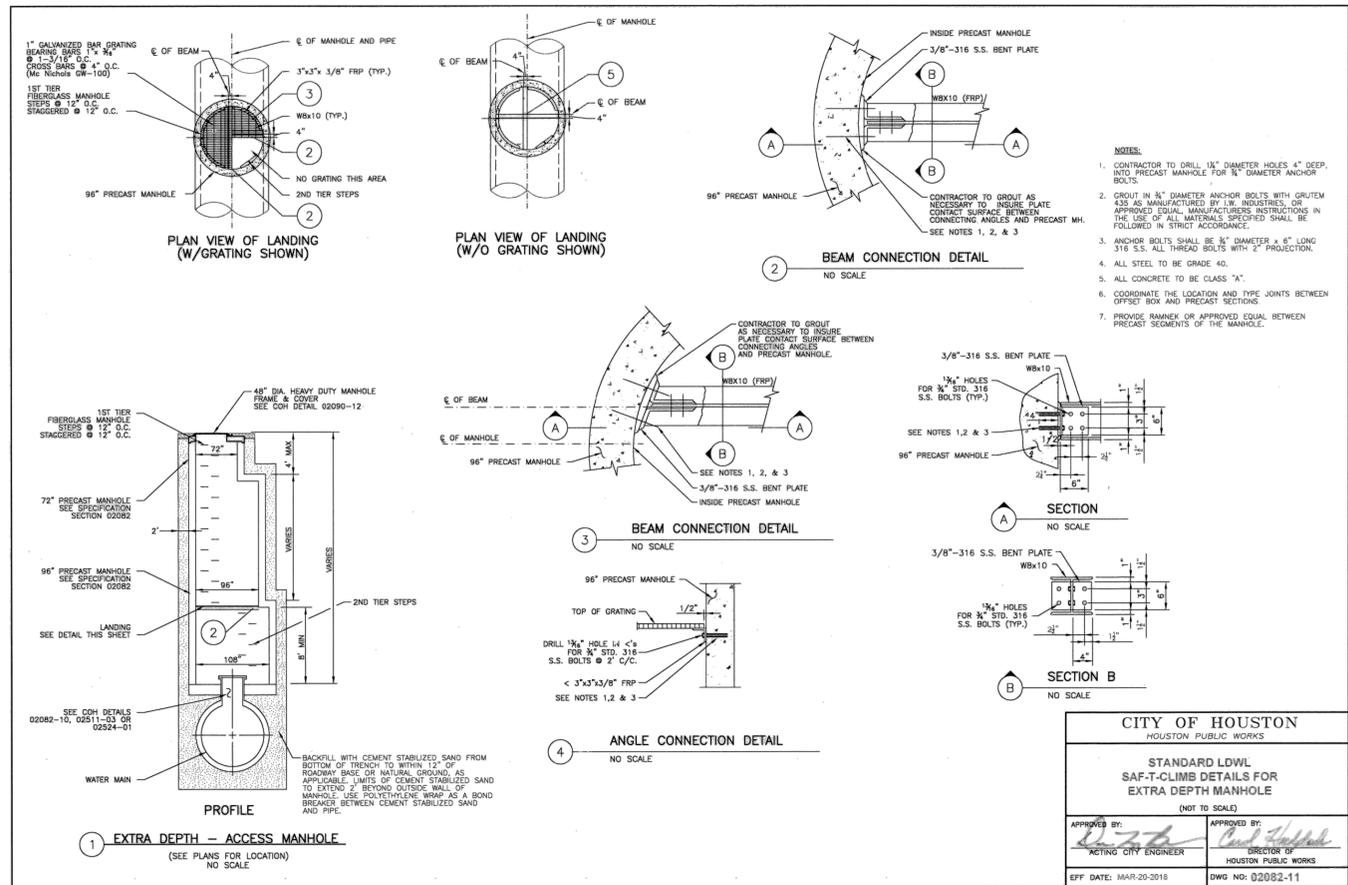
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS	
<b>STANDARD LDWL</b> <b>ACCESS MANHOLE DETAILS</b> <small>(NOT TO SCALE)</small>	
<small>APPROVED BY:</small>  <small>CITY ENGINEER</small>	<small>APPROVED BY:</small>  <small>DIRECTOR OF HOUSTON PUBLIC WORKS</small>
<small>EFF DATE:</small> JULY-01-2021	<small>DWG NO.:</small> 02082-10

ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578  
 SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. P-6395

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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 STANDARD LDWL HEAVY DUTY MANHOLE FRAME AND ACCESS MANHOLE DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 87 OF 190	



**KUO & ASSOCIATES**  
 ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578  
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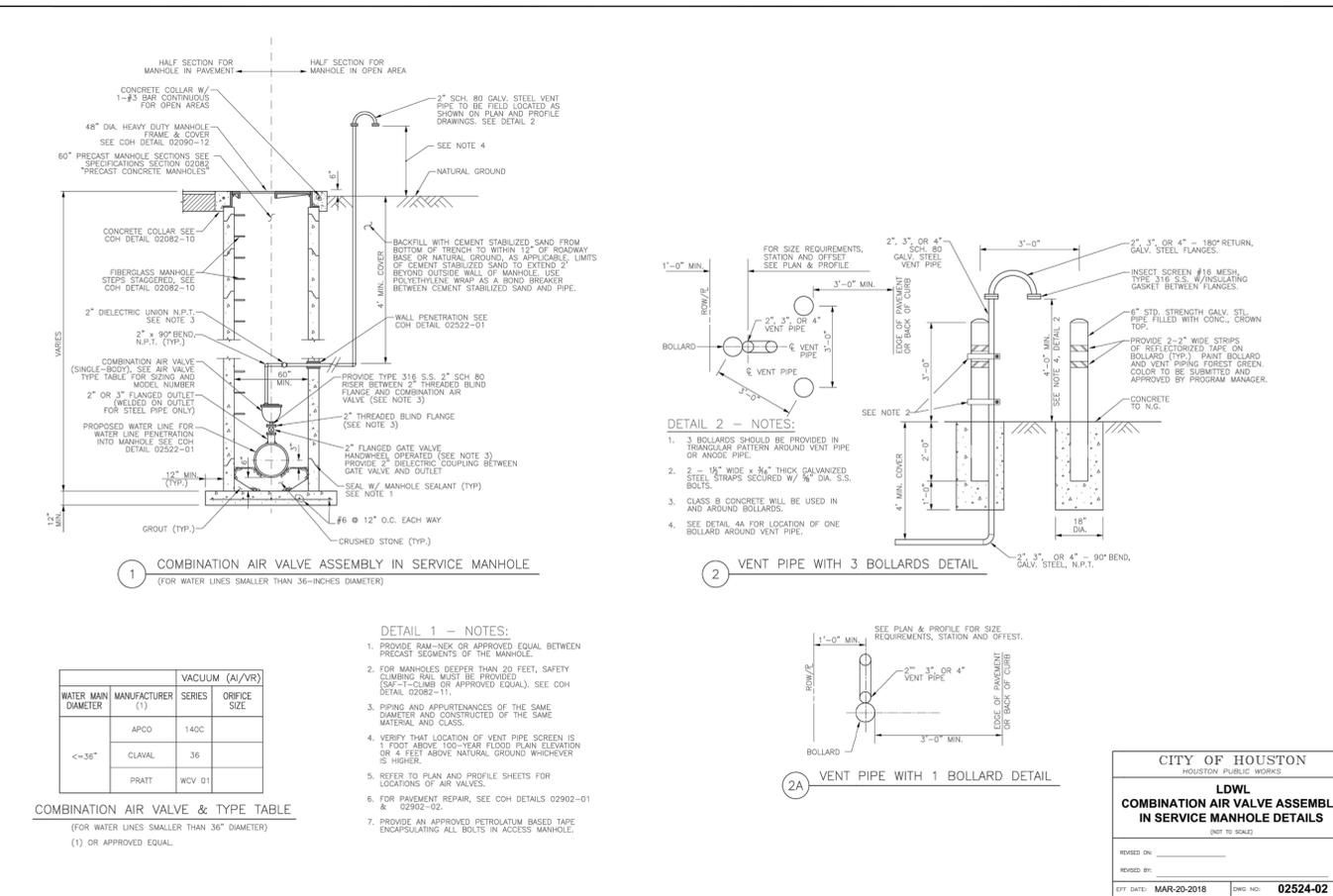
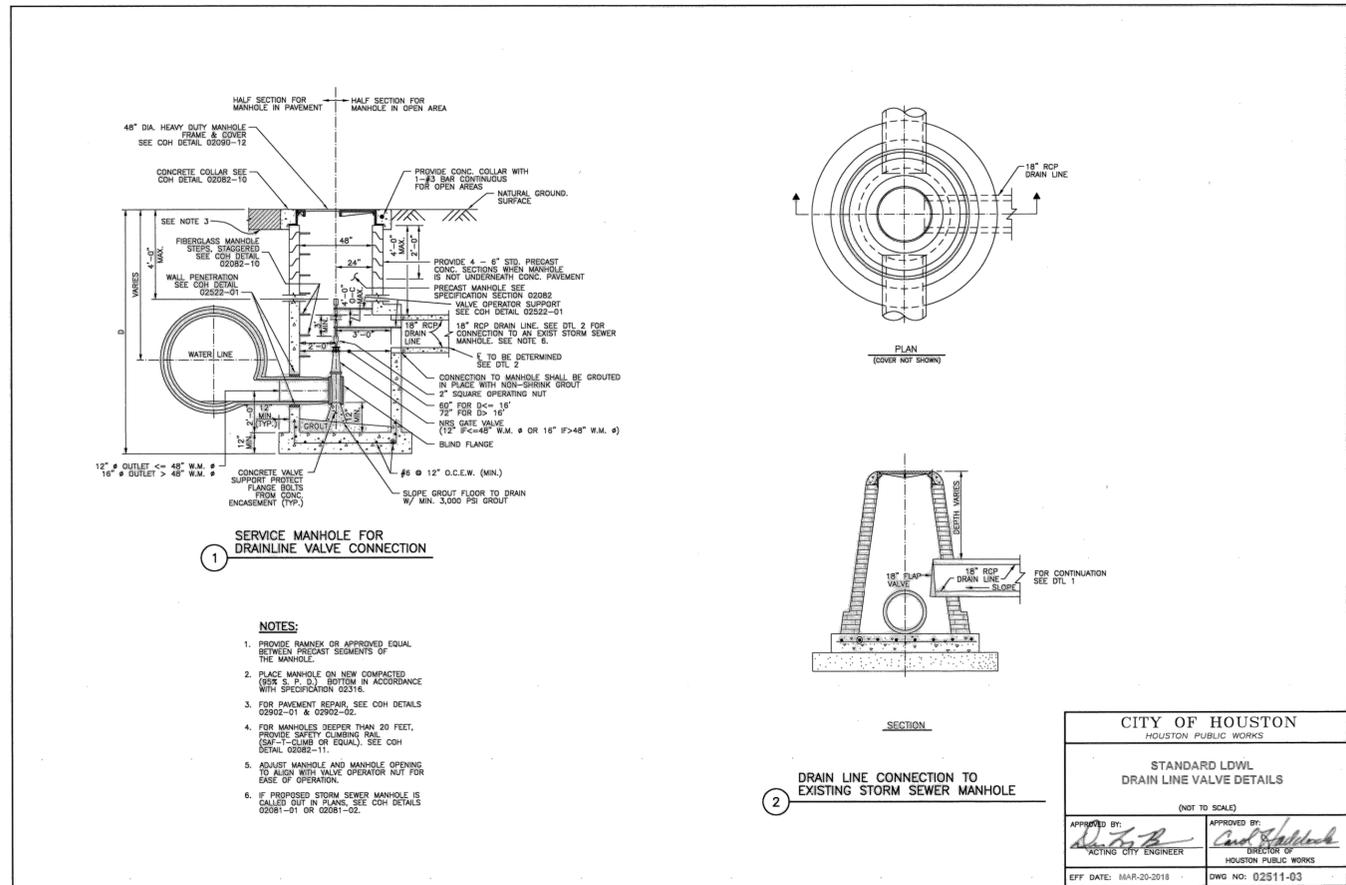
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 STANDARD LDWL DETAILS EXTRA DEPTH MANHOLE AND BUTTERFLY VALVE AND OPERATOR MANHOLE DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 88 OF 190	

NO.	DATE	REVISION	APP.



**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING

10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578

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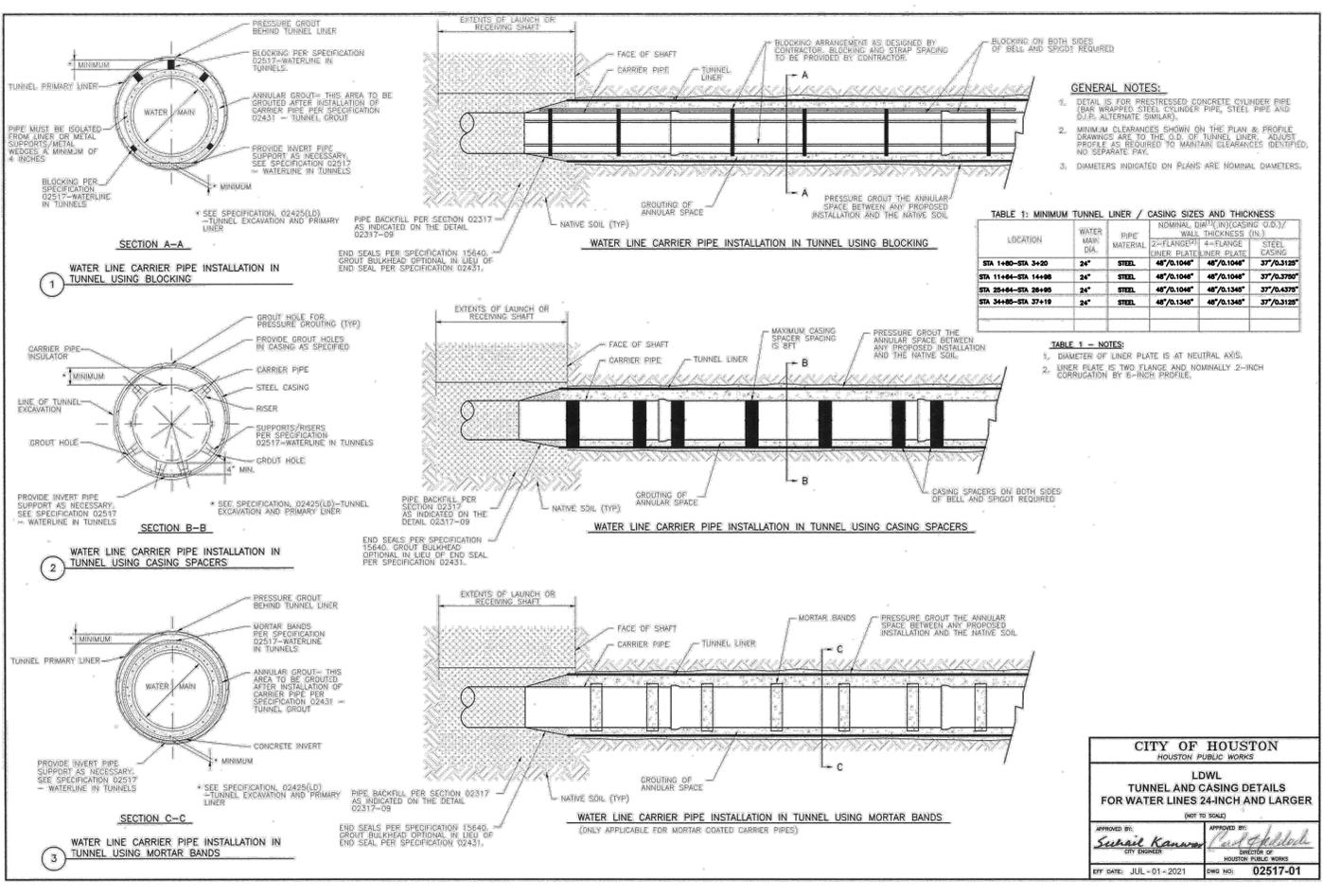
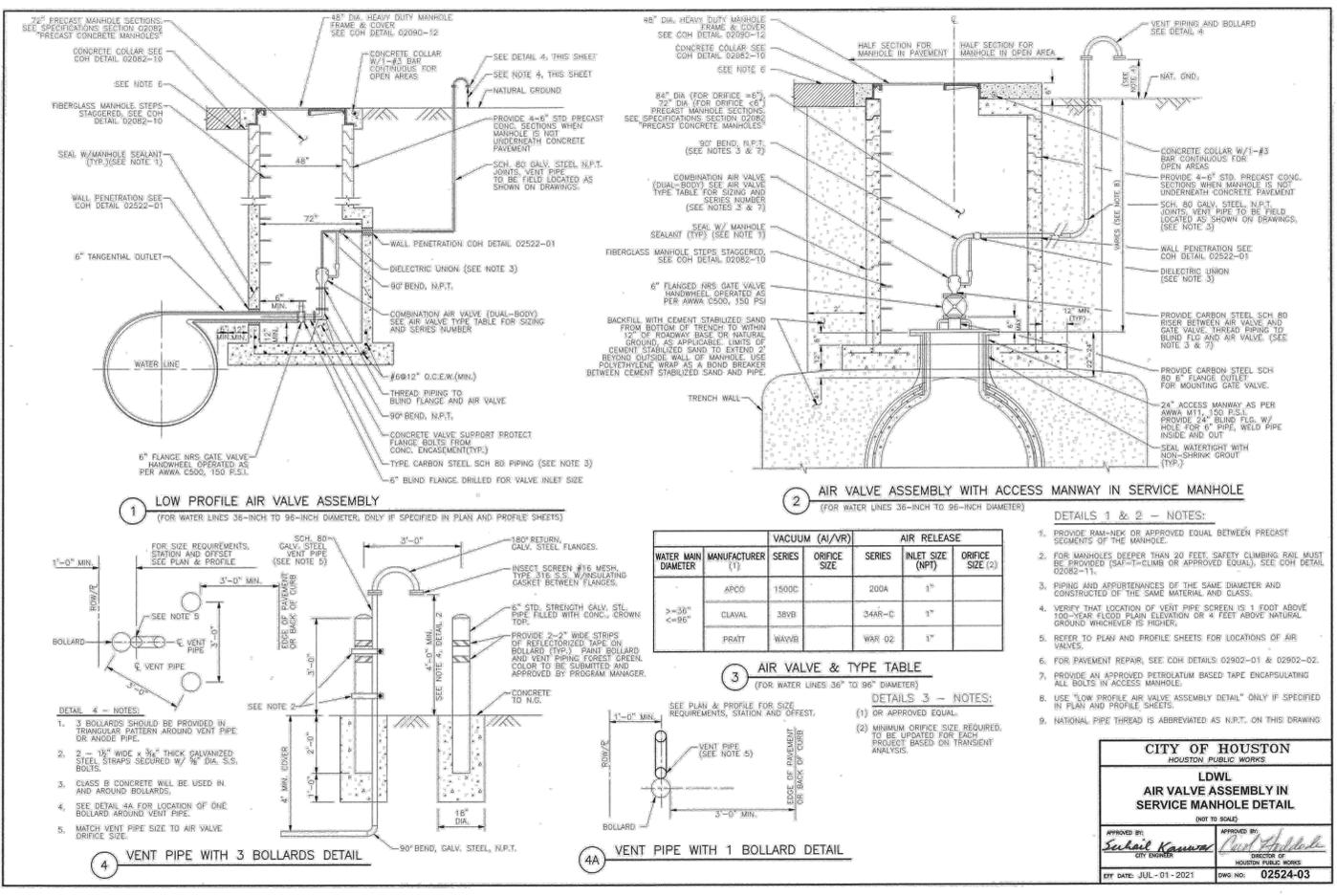
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

STANDARD LDWL DETAILS DRAIN LINE VALVE AND COMBINATION AIR VALVE ASSEMBLY IN SERVICE MANHOLE DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 89 OF 190	



**KUO & ASSOCIATES**  
ENGINEERING & SURVEYING

10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578

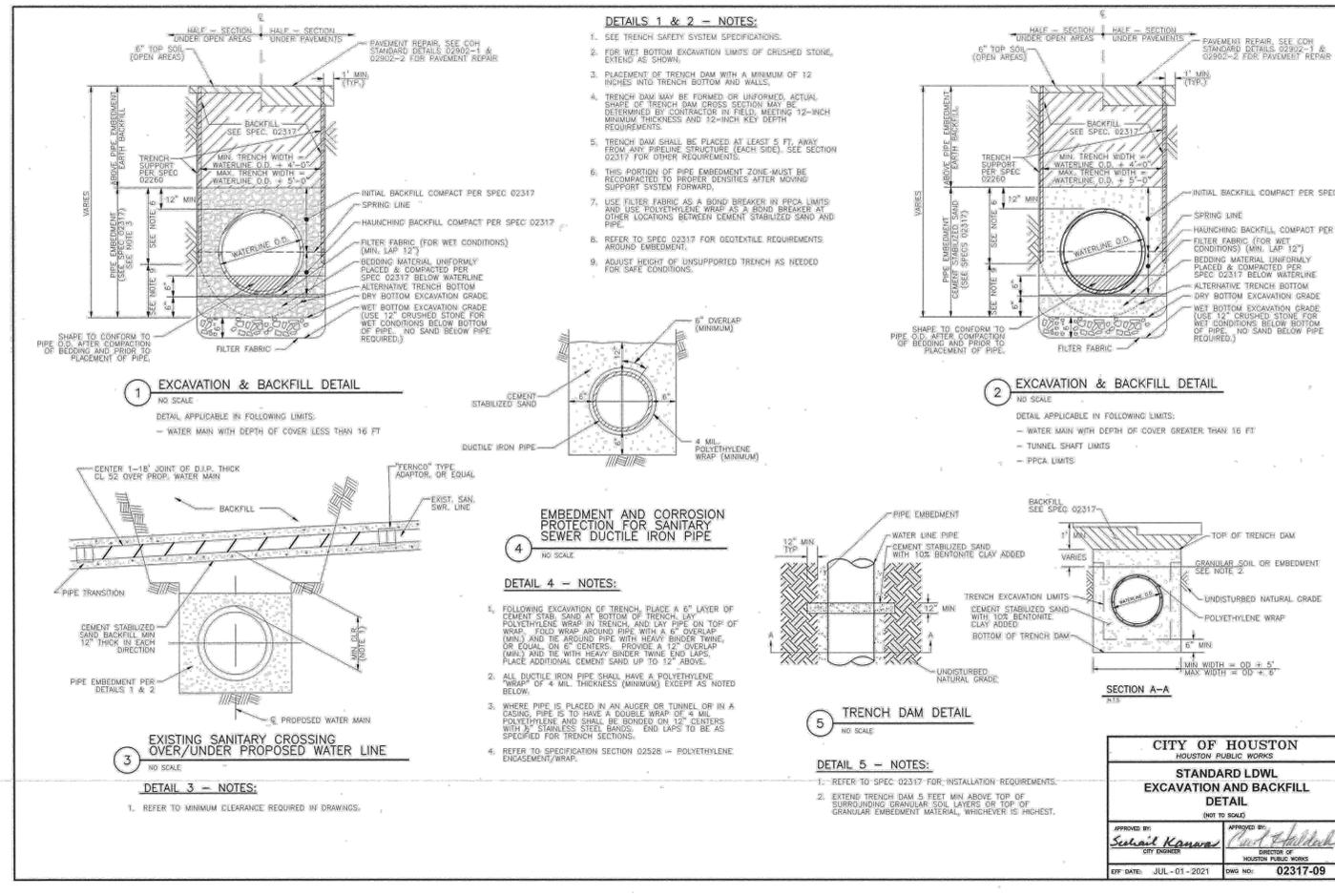
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
STANDARD LDWL AIR VALVE ASSEMBLY IN SERVICE MANHOLE DETAILS AND STANDARD LDWL TUNNEL AND CASING DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHWE, ENV SP	
SHEET NO. 90	OF 190



NO.	DATE	REVISION	APP.

**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
STANDARD LDWL  
EXCAVATION AND BACKFILL DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
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NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 91 OF 190	

IMPRESSED CURRENT ANODE & RECTIFIER SCHEDULE													
PIPE DIA. (IN.)	SITE	STREET NAME	PIPE MATERIAL	RECTIFIER NO.	STATION NO.	SIZE		ANODES		ANODE WELL DIA. (IN.)	ANODE WELL DEPTH (FT)	STRUCTURE	DETAIL REFERENCE
						AMPS	VOLTS	NO.	TYPE				
24	1	KATY FREEWAY	AWWA C105 POLYETHYLENE ENCASED DUCTILE IRON PIPE	1	20+50	5	10	4	HIGH-SILICON CAST IRON (2284)	10	118	SITE 1 24" WATERLINE	1ICP-2, 2ICP-2, 3ICP-2, 4ICP-2, 1ICP-3, 2ICP-3, 3ICP-3, 4ICP-3, 5ICP-3
24	485	WASHINGTON AVE	AWWA C105 POLYETHYLENE ENCASED DUCTILE IRON PIPE	1	8+50	20	15	10	HIGH-SILICON CAST IRON (3884)	10	154	SITE 4 AND 5 24" WATERLINE	1ICP-2, 2ICP-2, 3ICP-2, 4ICP-2, 1ICP-3, 2ICP-3, 3ICP-3, 4ICP-3, 5ICP-3

SITE 1 WATERLINE CATHODIC PROTECTION TEST STATION SCHEDULE						
TEST STATION NO.	STATION NO.	STREET NAME	PIPE DIAMETER (IN.)	TEST STATION TYPE	STRUCTURES	DETAIL REFERENCE
1	3+61	KATY FREEWAY	24	INSULATING JOINT TEST STATION	SITE 1 WATERLINE AND ISOLATION FROM CONNECTION TO 24" WATERLINE	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
2	4+95	KATY FREEWAY	24	FOREIGN PIPELINE TEST STATION	SITE 1 WATERLINE AND 6" CENTERPOINT STEEL GAS LINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
3	10+15	KATY FREEWAY	24	POTENTIAL TEST STATION	SITE 1 24" WATERLINE	1ICP-4, 6ICP-4, 4ICP-5
4	12+99	KATY FREEWAY	8	INSULATING JOINT TEST STATION	SITE 1 WATERLINE AND ISOLATION FROM CONNECTION TO EXISTING 8" CAST IRON WATERLINE	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
5	15+41	KATY FREEWAY	24	BONDING TEST STATION	SITE 1 WATERLINE AND BOND TO 6" CENTERPOINT STEEL GAS LINE	1ICP-4, 6ICP-4, 1ICP-7, 2ICP-7
6	15+34	KATY FREEWAY	24	FOREIGN PIPELINE TEST STATION	SITE 1 WATERLINE AND EXISTING 20" DI WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
7	19+99	KATY FREEWAY	24	FOREIGN PIPELINE TEST STATION	SITE 1 WATERLINE AND 6" CENTERPOINT STEEL GAS LINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
8	27+50	KATY FREEWAY	24	FOREIGN PIPELINE TEST STATION	SITE 1 WATERLINE AND 6" CENTERPOINT STEEL GAS LINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
9	28+11	KATY FREEWAY	24	BONDING TEST STATION	SITE 1 WATERLINE AND BOND TO 2" CENTERPOINT STEEL GAS LINE	1ICP-4, 6ICP-4, 1ICP-7, 2ICP-7
10	38+14	KATY FREEWAY	24	INSULATING JOINT TEST STATION	SITE 1 WATERLINE AND ISOLATION FROM CONNECTION TO 16" WATERLINE	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5

SITE 4 AND 5 WATERLINE CATHODIC PROTECTION TEST STATION SCHEDULE (1 OF 2)						
TEST STATION NO.	STATION NO.	STREET NAME	PIPE DIAMETER (IN.)	TEST STATION TYPE	STRUCTURES	DETAIL REFERENCE
1	1+87	MEMORIAL RD	24	INSULATING JOINT TEST STATION	SITE 4 WATERLINE AND ISOLATION FROM CONNECTION TO 24" WATERLINE	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
2	2+03	MEMORIAL RD	24	FOREIGN PIPELINE TEST STATION	SITE 4 WATERLINE AND 12" CENTERPOINT STEEL GAS LINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
3	2+96	MEMORIAL RD	24	FOREIGN PIPELINE TEST STATION	SITE 4 WATERLINE AND 12" CAST IRON WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
4	1+82	HOUSTON AVE	24	CASING TEST STATION	SITE 4 WATERLINE AND CASING SOUTH END	1ICP-4, 6ICP-4, 2ICP-6, 3ICP-6
5	3+20	HOUSTON AVE	24	CASING TEST STATION	SITE 4 WATERLINE AND CASING NORTH END	1ICP-4, 6ICP-4, 2ICP-6, 3ICP-6
6	3+32	HOUSTON AVE	24	INSULATING JOINT TEST STATION	SITE 4 WATERLINE AND ISOLATION FROM CONNECTION TO EXISTING 30" STEEL WATERLINE	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
7	3+73	HOUSTON AVE	24	FOREIGN PIPELINE TEST STATION	SITE 4 WATERLINE AND 42" PCCP WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
8	3+95	HOUSTON AVE	24	POTENTIAL TEST STATION	SITE 4 WATERLINE AND 12" PVC WATERLINE	1ICP-4, 6ICP-4, 4ICP-6
9	6+01	HOUSTON AVE	24	INSULATING JOINT TEST STATION	SITE 4 WATERLINE AND ISOLATION FROM CONNECTION TO EXISTING 24" PCCP WATERLINE	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
10	8+15	HOUSTON AVE	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE NORTH END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
11	8+29	HOUSTON AVE	24	FOREIGN PIPELINE TEST STATION	SITE 4 WATERLINE AND 6" PH LEAD WATERLINE CROSSING (DO NOT INSTALL IF WATERLINE CROSSING IS NON-METALLIC)	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
12	13+94	HOUSTON AVE	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE SOUTH END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
13	14+19	HOUSTON AVE	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE NORTH END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
14	15+10	HOUSTON AVE	24	FOREIGN PIPELINE TEST STATION	SITE 4 WATERLINE AND 6" CAST IRON WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
15	3+45	WASHINGTON AVE	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE WEST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
16	3+68	WASHINGTON AVE	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE EAST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
17	7+50	WASHINGTON AVE	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE WEST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
18	7+70	WASHINGTON AVE	24	FOREIGN PIPELINE TEST STATION	SITE 4 WATERLINE AND 6" CAST IRON WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
19	1+46	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE WEST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
20	1+72	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE EAST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
21	2+58	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE WEST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
22	2+74	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE EAST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
23	5+64	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE WEST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
24	6+00	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE EAST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
25	10+07	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE WEST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
26	10+13	PRESTON ST	24	INSULATING JOINT TEST STATION	SITE 4 WATERLINE AND ISOLATION FROM CONNECTION TO 16" CAST IRON WATERLINE	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
27	10+35	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND CASING WEST END	1ICP-4, 6ICP-4, 2ICP-6, 3ICP-6
28	15+31	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND CASING EAST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
29	16+81	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE EAST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
30	20+41	PRESTON ST	24	FOREIGN PIPELINE TEST STATION	SITE 4 WATERLINE AND 4" FIRELINE WATERLINE CROSSING (DO NOT INSTALL IF WATERLINE CROSSING IS NON-METALLIC)	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
31	20+77	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE WEST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
32	20+85	PRESTON ST	4	POTENTIAL TEST STATION	SITE 4 WATERLINE AND 4" PVC WATERLINE	1ICP-4, 6ICP-4, 4ICP-6
33	20+87	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE EAST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
34	21+84	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE WEST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
35	21+89	PRESTON ST	4	POTENTIAL TEST STATION	SITE 4 WATERLINE AND 4" PVC WATERLINE	1ICP-4, 6ICP-4, 4ICP-6
36	22+54	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE EAST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
37	23+57	PRESTON ST	24	CASING TEST STATION	SITE 4 WATERLINE AND 42" PCCP SURLINE WEST END	1ICP-4, 2ICP-6, 3ICP-6, 3ICP-7
38	23+78	PRESTON ST	24	POTENTIAL TEST STATION	SITE 4 WATERLINE AND 20" PVC WATERLINE CROSSING	1ICP-4, 6ICP-4, 4ICP-6
39	23+79	PRESTON ST	24	FOREIGN PIPELINE TEST STATION	SITE 4 WATERLINE AND 30" CENTERPOINT DI WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
40	28+05	PRESTON ST	24	FOREIGN PIPELINE TEST STATION	SITE 5 WATERLINE AND 6" CENTERPOINT GAS LINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5

- NOTES:
- VERIFY PIPE MATERIAL FOR ALL FOREIGN PIPELINES. FOREIGN PIPELINE TEST STATIONS ARE NOT REQUIRED FOR PROJECT PIPELINE CROSSINGS WITH NON-METALLIC FOREIGN PIPELINES.
  - SITE 4 IS DESIGNED TO BE ELECTRICALLY CONTINUOUS WITH SITE 5.
  - IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM DESIGNS ARE PROVIDED FOR DUCTILE IRON PIPE MATERIAL.
  - GALVANIC ANODES ARE INCLUDED WITH FOREIGN PIPELINE TEST STATIONS.



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ENGINEERING + SURVEYING  
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713-975-8769  
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SURVEYED BY:  
KIRAN V. PUNYAMANTHULA, P.E.  
FB NO. 000000

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Authority expires on 12/31/2025  
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
CP-0  
CATHODIC PROTECTION SCHEDULES  
(1 OF 2)

SITE 4 AND 5 WATERLINE CATHODIC PROTECTION TEST STATION SCHEDULE (2 OF 2)						
TEST STATION NO.	STATION NO.	STREET NAME	PIPE DIAMETER (IN.)	TEST STATION TYPE	STRUCTURES	DETAIL REFERENCE
41	26+16	PRESTON ST	24	INSULATING JOINT TEST STATION	SITE 5 WATERLINE AND ISOLATION FROM CONNECTION TO 12" DI WATERLINE SOUTH END	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
42	26+17	PRESTON ST	24	INSULATING JOINT TEST STATION	SITE 5 WATERLINE AND ISOLATION FROM CONNECTION TO 12" DI WATERLINE NORTH END	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
43	29+27	PRESTON ST	24	FOREIGN PIPELINE TEST STATION	SITE 5 WATERLINE AND EXISTING 30" DI WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
44	29+38	PRESTON ST	24	POTENTIAL TEST STATION	SITE 5 WATERLINE AND 12" PVC WATERLINE	1ICP-4, 6ICP-4, 4ICP-6
45	30+37	PRESTON ST	24	CASING TEST STATION	SITE 5 WATERLINE AND CASING EAST END	1ICP-4, 6ICP-4, 2ICP-6, 3ICP-6
46	35+00	PRESTON ST	24	FOREIGN PIPELINE TEST STATION	SITE 5 WATERLINE AND EXISTING 30" DI WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
47	35+25	PRESTON ST	8	INSULATING JOINT TEST STATION	SITE 5 WATERLINE AND ISOLATION FROM CONNECTION TO 10" WATERLINE (INSTALL PITS IF WATERLINE NON-METALLIC)	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
48	35+89	PRESTON ST	24	CASING TEST STATION	SITE 5 WATERLINE AND CASING WEST END	1ICP-4, 6ICP-4, 2ICP-6, 3ICP-6
49	38+37	PRESTON ST	24	CASING TEST STATION	SITE 5 WATERLINE AND CASING EAST END	1ICP-4, 6ICP-4, 2ICP-6, 3ICP-6
50	39+52	PRESTON ST	24	INSULATING JOINT TEST STATION	SITE 5 WATERLINE AND ISOLATION FROM CONNECTION TO 12" DI WATERLINE	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
51	39+54	PRESTON ST	24	FOREIGN PIPELINE TEST STATION	SITE 5 WATERLINE AND EXISTING 30" DI WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
52	39+74	PRESTON ST	24	FOREIGN PIPELINE TEST STATION	SITE 5 WATERLINE AND EXISTING 12" DI WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
53	40+11	PRESTON ST	24	INSULATING JOINT TEST STATION	SITE 5 WATERLINE AND ISOLATION FROM CONNECTION TO 12" DI WATERLINE	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
54	42+83	PRESTON ST	24	FOREIGN PIPELINE TEST STATION	SITE 5 WATERLINE AND EXISTING 12" DI WATERLINE CROSSING	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
55	45+00	PRESTON ST	24	FOREIGN PIPELINE TEST STATION	SITE 5 WATERLINE AND 6" FIRELINE WATERLINE CROSSING (DO NOT INSTALL IF WATERLINE CROSSING IS NON-METALLIC)	2ICP-4, 6ICP-4, 3ICP-5, 4ICP-5
56	45+87	PRESTON ST	24	INSULATING JOINT TEST STATION	SITE 5 WATERLINE AND ISOLATION FROM CONNECTION TO 30" DI WATERLINE	1ICP-4, 3ICP-4, 4ICP-4, 5ICP-4, 6ICP-4, 1ICP-5, 2ICP-5
57	49+99	PRESTON ST	24	POTENTIAL TEST STATION	SITE 5 WATERLINE AND 20" PVC WATERLINE	1ICP-4, 6ICP-4, 4ICP-6

- NOTES:
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  - SITE 4 IS DESIGNED TO BE ELECTRICALLY CONTINUOUS WITH SITE 5.
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TX FIRM NO. F-4578  
SURVEYED BY:  
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FB NO. 000000

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Authority expires on 12/31/2025  
12/15/2025  
12/29/2025

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CITY OF HOUSTON PM  
MARTIN MATHEW, ENV SP  
SHEET NO. OF 153

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
CP-1  
CATHODIC PROTECTION SCHEDULES  
(2 OF 2)

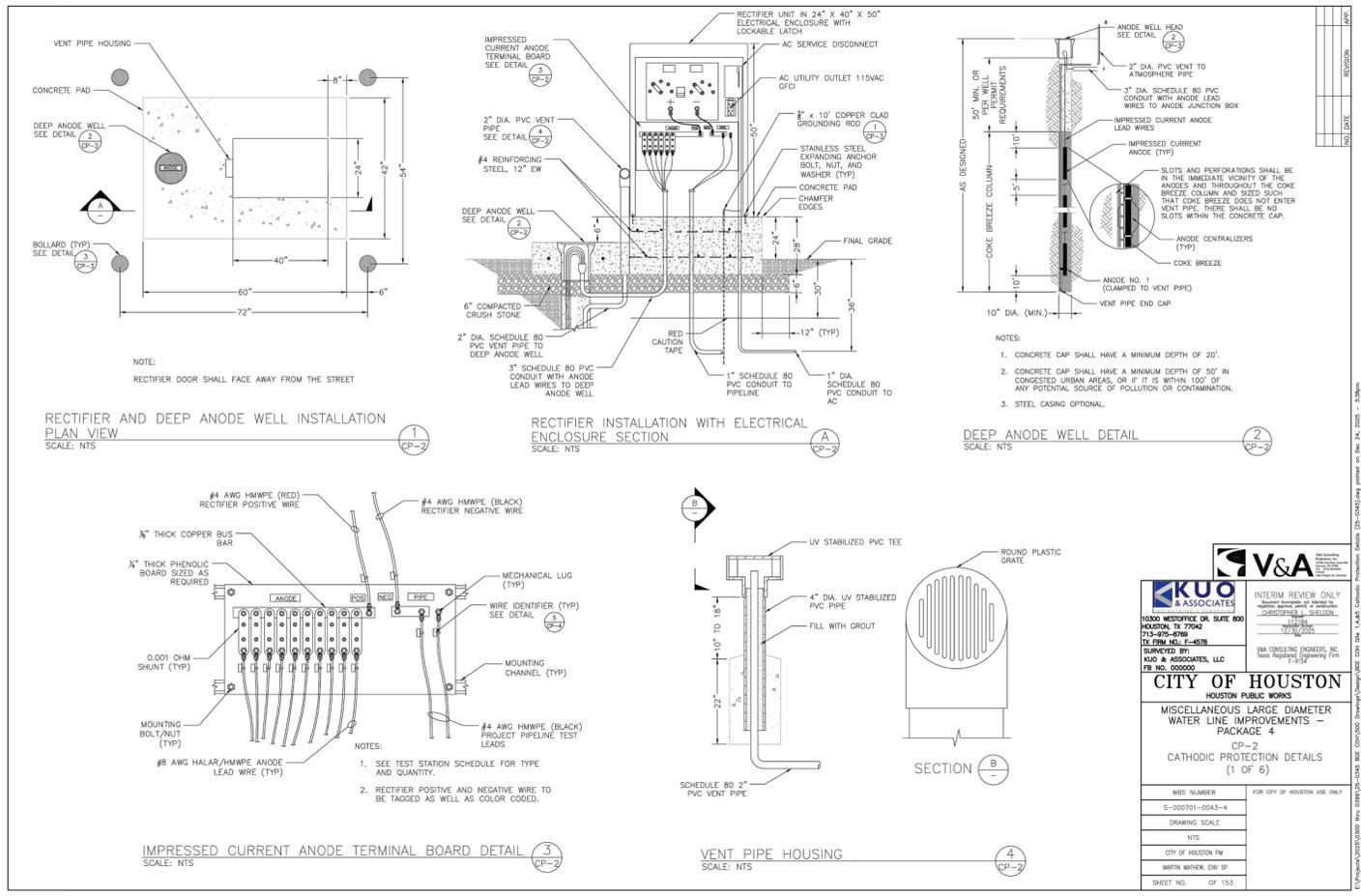


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KIRAN V. PUNYAMANTHULA, P.E.  
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HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
STANDARD LDWL  
CATHODIC PROTECTION  
SCHEDULES

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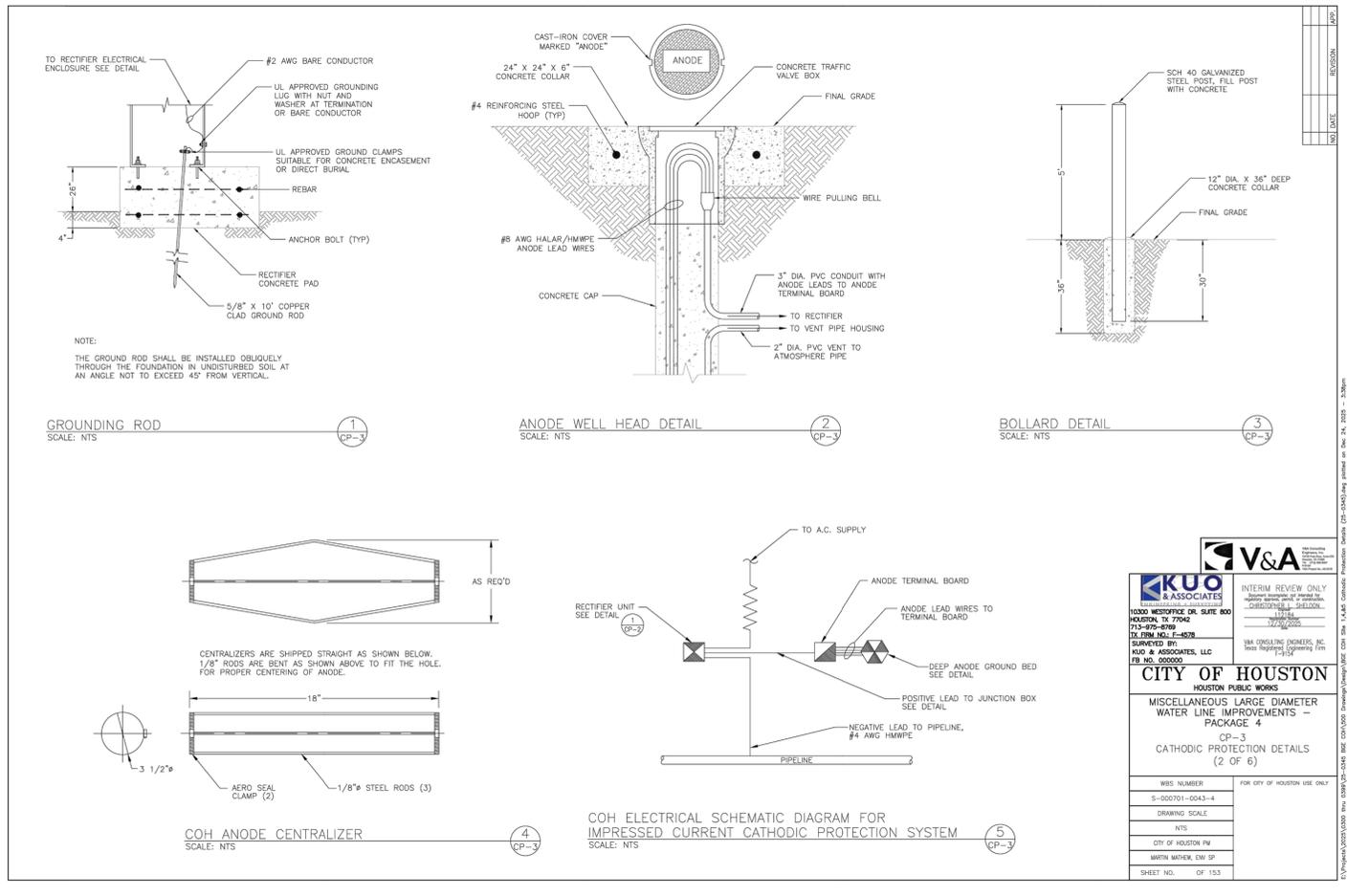


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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
CP-2  
CATHODIC PROTECTION DETAILS  
(1 OF 6)

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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
CP-3  
CATHODIC PROTECTION DETAILS  
(2 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
MARTIN MATHEN, ENV SP	
SHEET NO. OF 153	

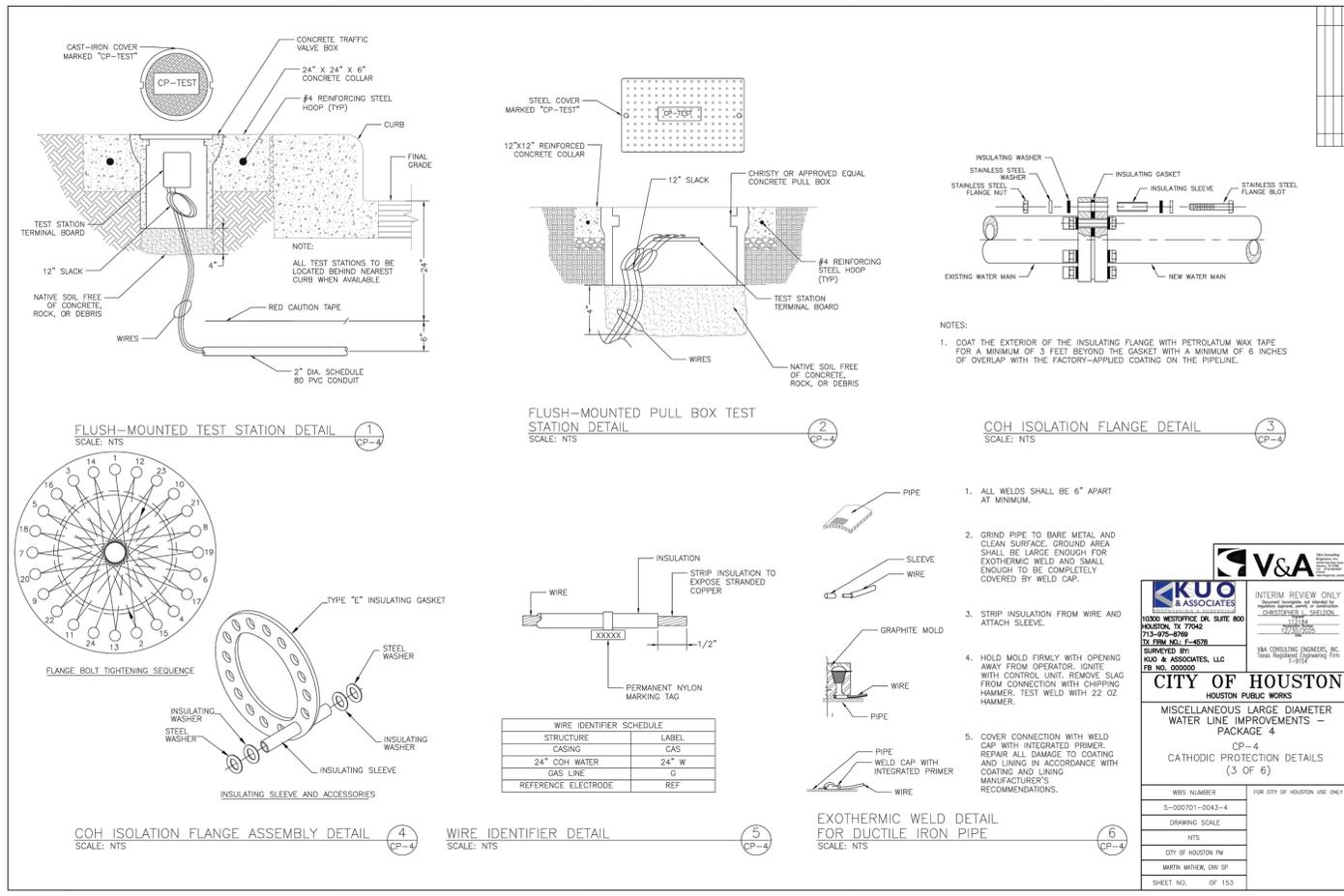
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
STANDARD LDWL  
CATHODIC PROTECTION DETAILS  
SHEET 1 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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MARTIN MATHEN, ENV SP	
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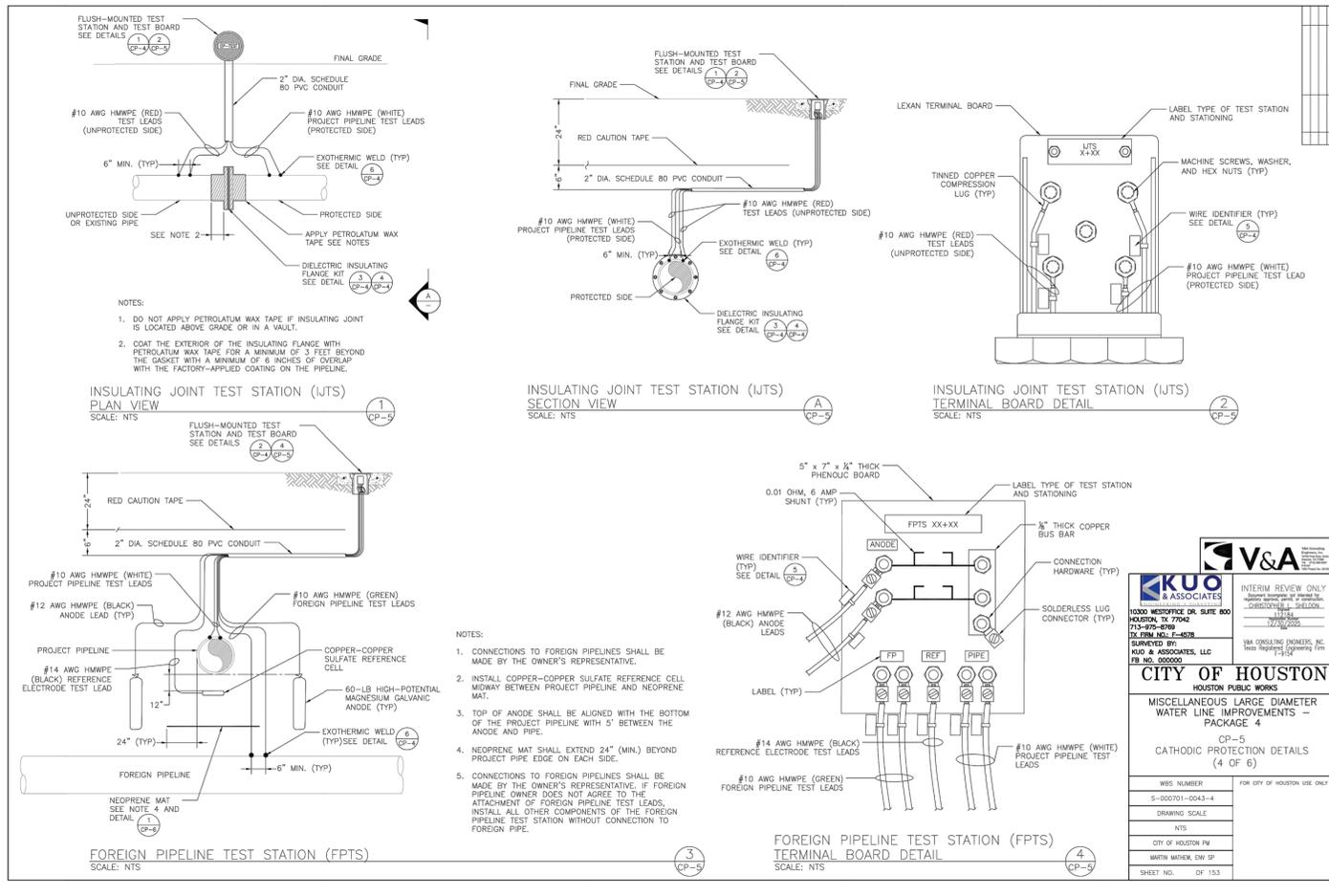
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
CP-4  
CATHODIC PROTECTION DETAILS (3 OF 6)

WBS NUMBER: S-000701-0043-4  
DRAWING SCALE: NTS  
CITY OF HOUSTON PM  
MARTIN MATHEW, ENV SP  
SHEET NO. OF 153



**KUO & ASSOCIATES**  
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TX FIRM NO. F-4578

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
CP-5  
CATHODIC PROTECTION DETAILS (4 OF 6)

WBS NUMBER: S-000701-0043-4  
DRAWING SCALE: NTS  
CITY OF HOUSTON PM  
MARTIN MATHEW, ENV SP  
SHEET NO. OF 153

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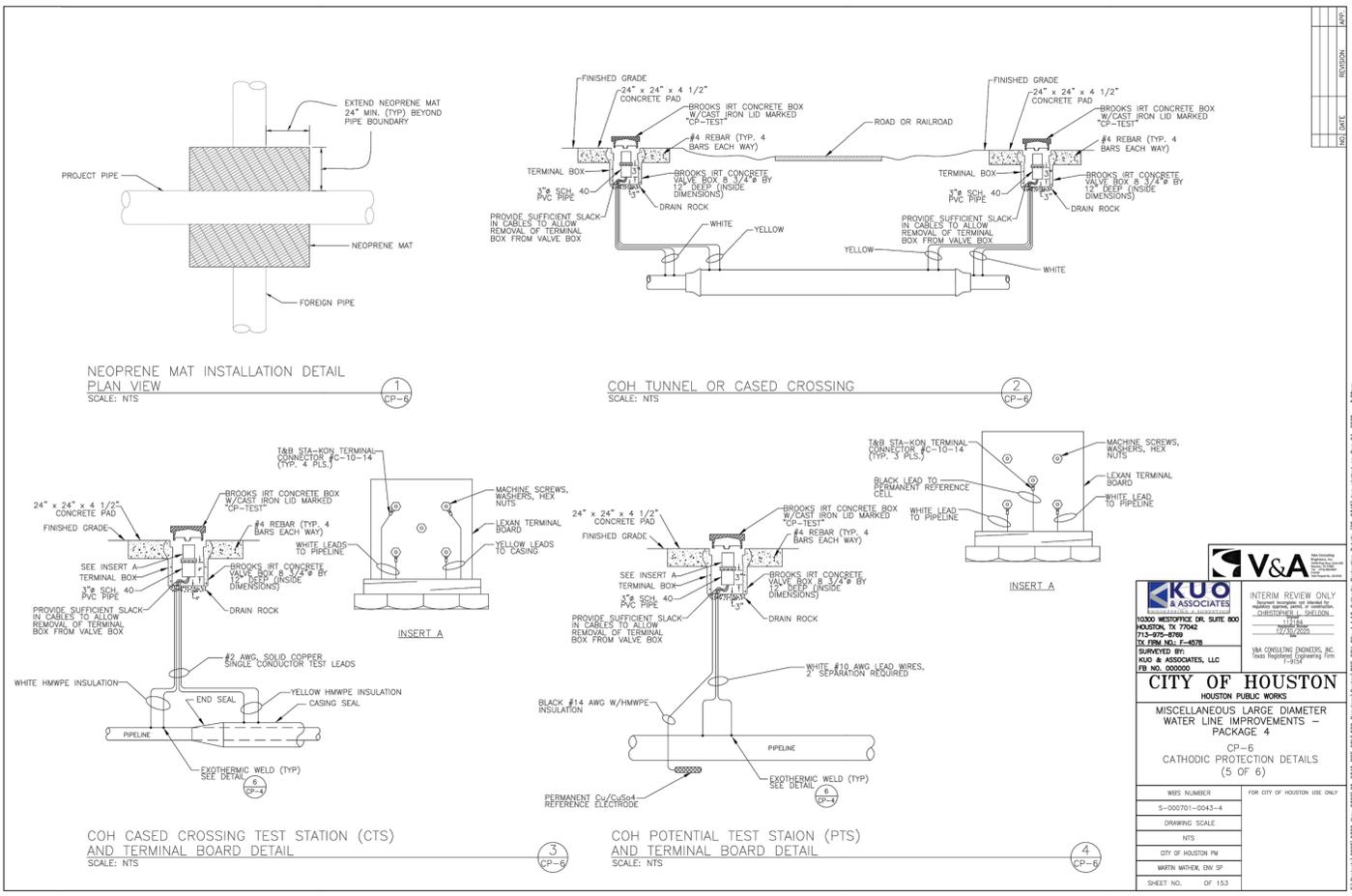
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HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
CP-5  
CATHODIC PROTECTION DETAILS (4 OF 6)

WBS NUMBER: S-000701-0043-4  
DRAWING SCALE: NTS  
CITY OF HOUSTON PM  
MARTIN MATHEW, ENV SP  
SHEET NO. OF 153

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
STANDARD LDWL  
CATHODIC PROTECTION DETAILS  
SHEET 2 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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SHEET NO. 94	OF 190

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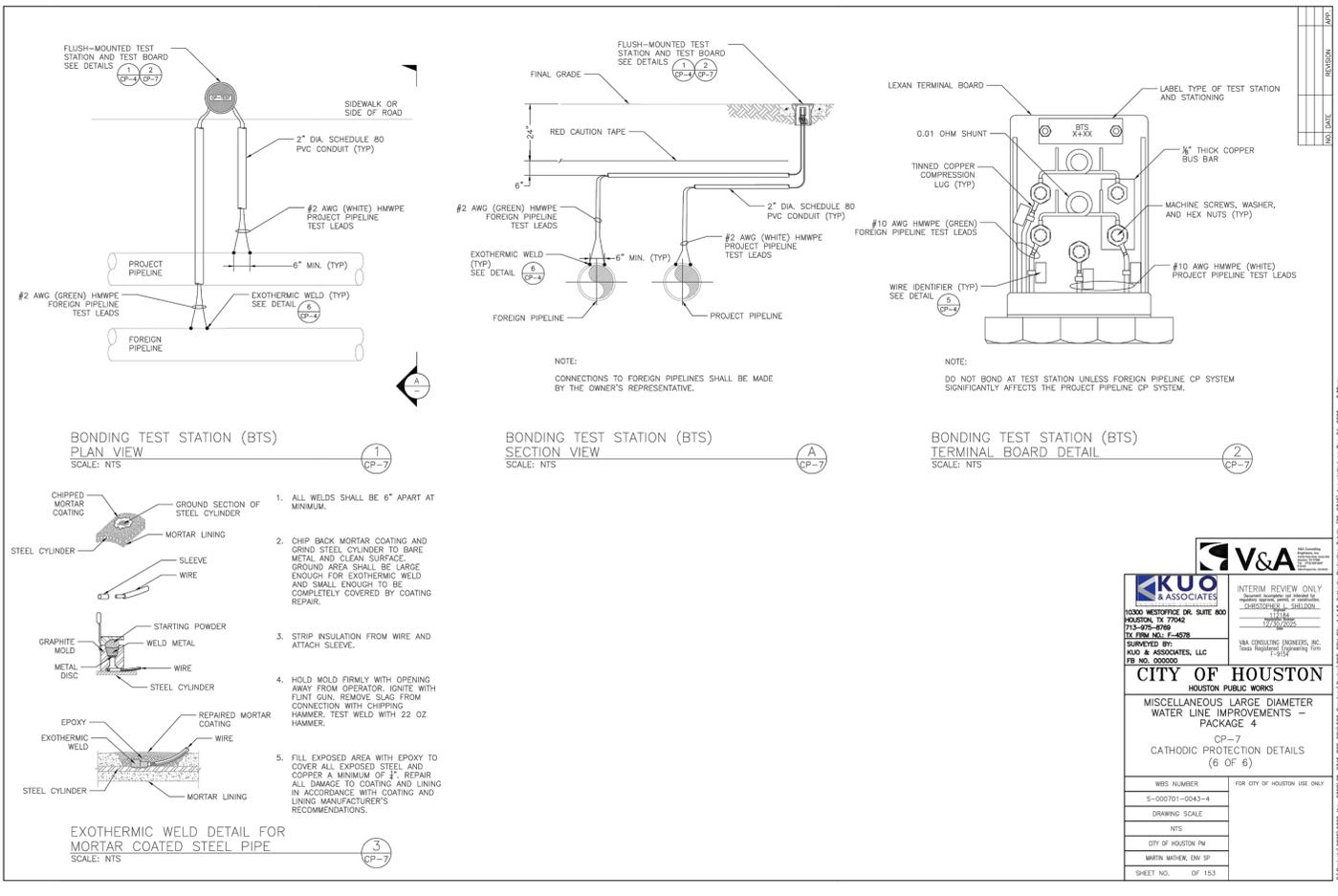


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HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
CP-6  
CATHODIC PROTECTION DETAILS  
(5 OF 6)

WBS NUMBER: S-000701-0043-4  
DRAWING SCALE: NTS  
CITY OF HOUSTON PM  
MARTIN MATHEW, ENV SP  
SHEET NO. OF 153



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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
CP-7  
CATHODIC PROTECTION DETAILS  
(6 OF 6)

WBS NUMBER: S-000701-0043-4  
DRAWING SCALE: NTS  
CITY OF HOUSTON PM  
MARTIN MATHEW, ENV SP  
SHEET NO. OF 153

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TX FIRM NO.: F-4578

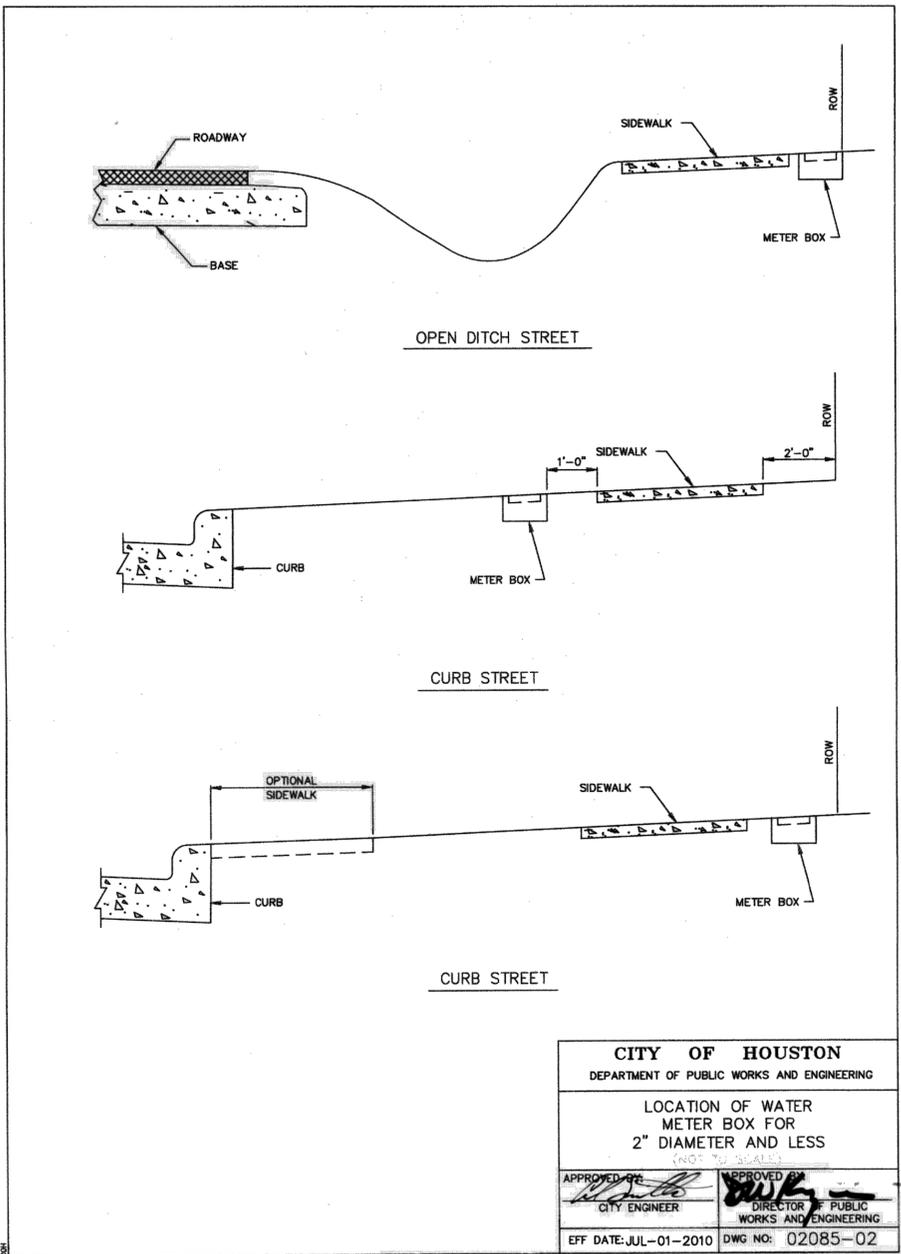
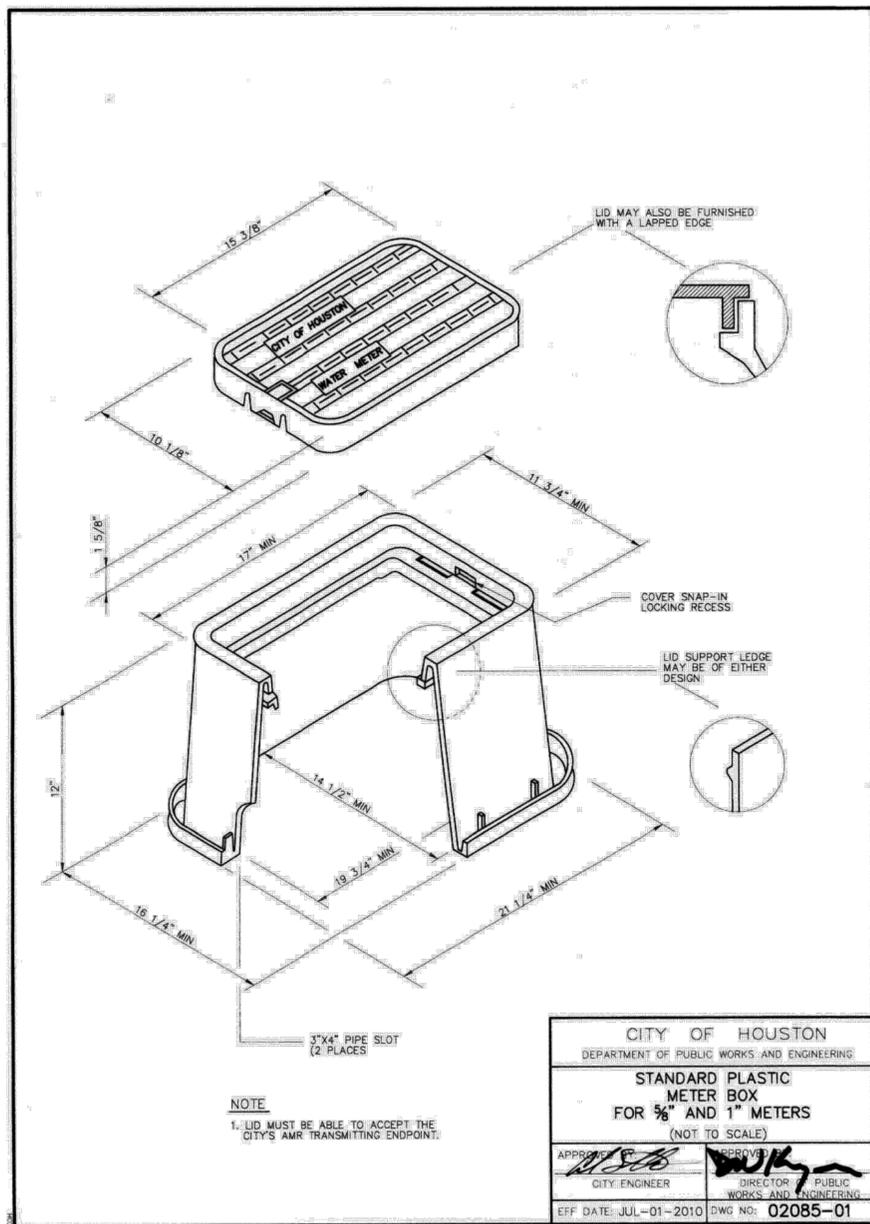
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
STANDARD LDWL  
CATHODIC PROTECTION DETAILS  
SHEET 3 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 95	OF 190

NO.	DATE	REVISION	APP.



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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

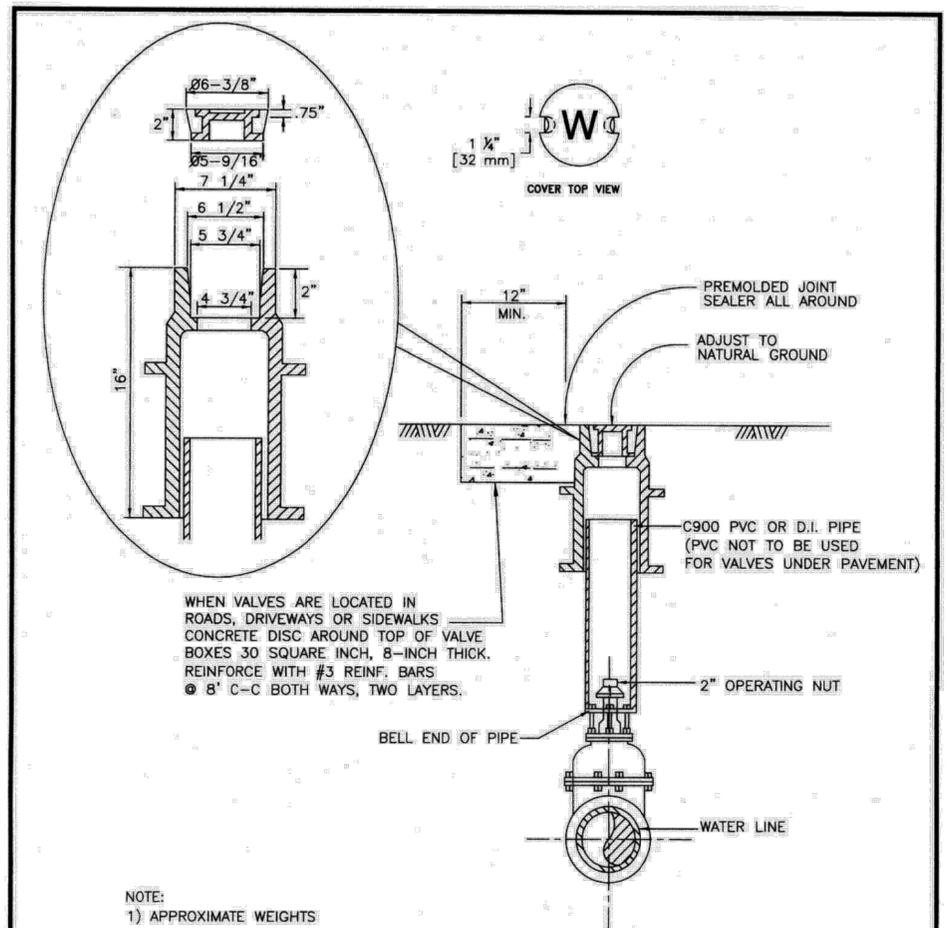
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

STANDARD SDWL DETAILS  
SHEET 1 OF 7

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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 96 OF 190	

NO.	DATE	REVISION	APP.

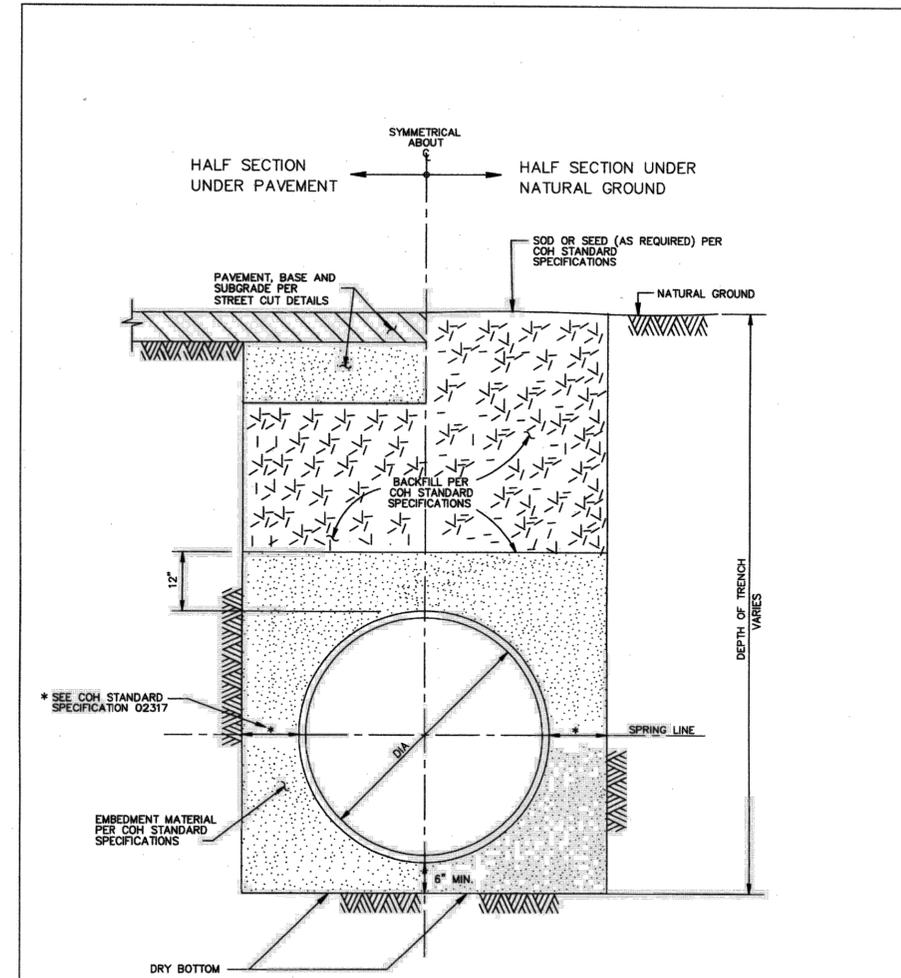
NO.	DATE	REVISION	APP.



WHEN VALVES ARE LOCATED IN ROADS, DRIVEWAYS OR SIDEWALKS CONCRETE DISC AROUND TOP OF VALVE BOXES 30 SQUARE INCH, 8-INCH THICK. REINFORCE WITH #3 REINF. BARS @ 8" C-C BOTH WAYS, TWO LAYERS.

- NOTE:
- APPROXIMATE WEIGHTS  
 FRAME - 46 LBS  
 COVER - 10 LBS
  - MATERIAL - GRAY IRON ASTM A48 CL35B

<b>CITY OF HOUSTON</b> DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
<b>VALVE BOX DETAIL</b> (NOT TO SCALE)	
APPROVED BY  CITY ENGINEER	APPROVED BY  DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF. DATE: JULY 01, 2010	DWG. NO: 02085-03



<b>CITY OF HOUSTON</b> DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
<b>WATER DISTRIBUTION MAIN BEDDING AND BACKFILL FOR OPEN CUT TRENCHES</b> (NOT TO SCALE)	
APPROVED BY  CITY ENGINEER	APPROVED BY  DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF. DATE: JUL-01-2010	DWG. NO: 02317-04

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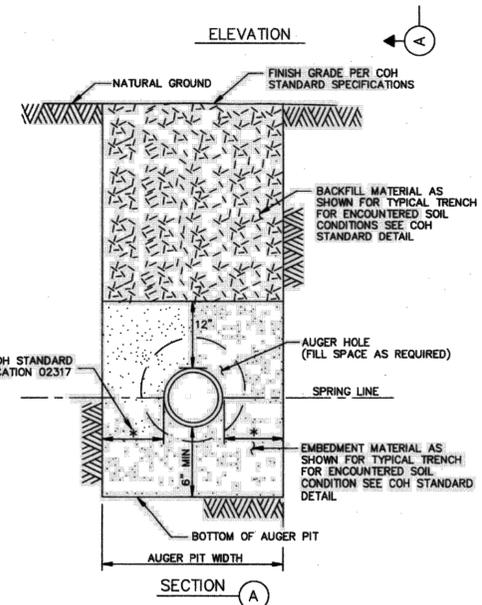
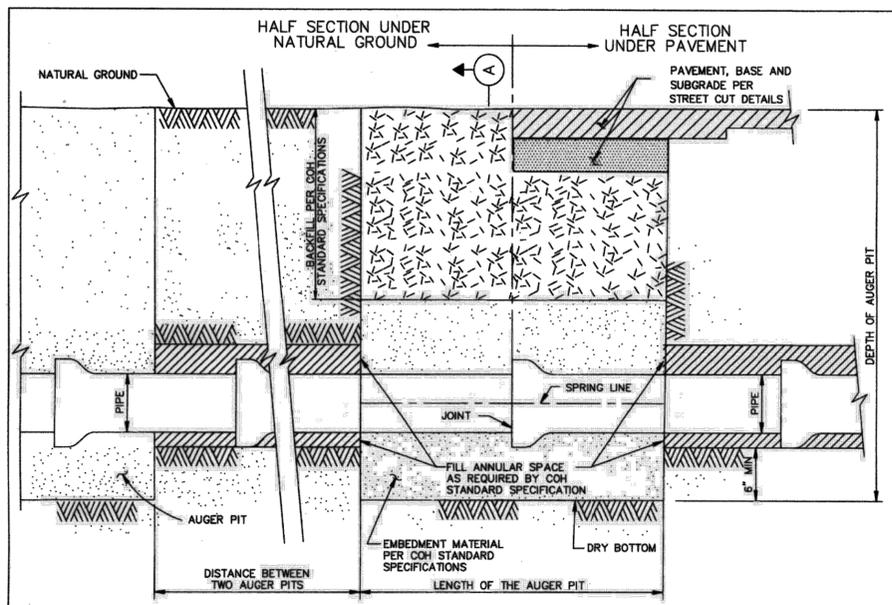
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

STANDARD SDWL DETAILS  
 SHEET 2 OF 7

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 97 OF 190	

NO.	DATE	REVISION	APP.

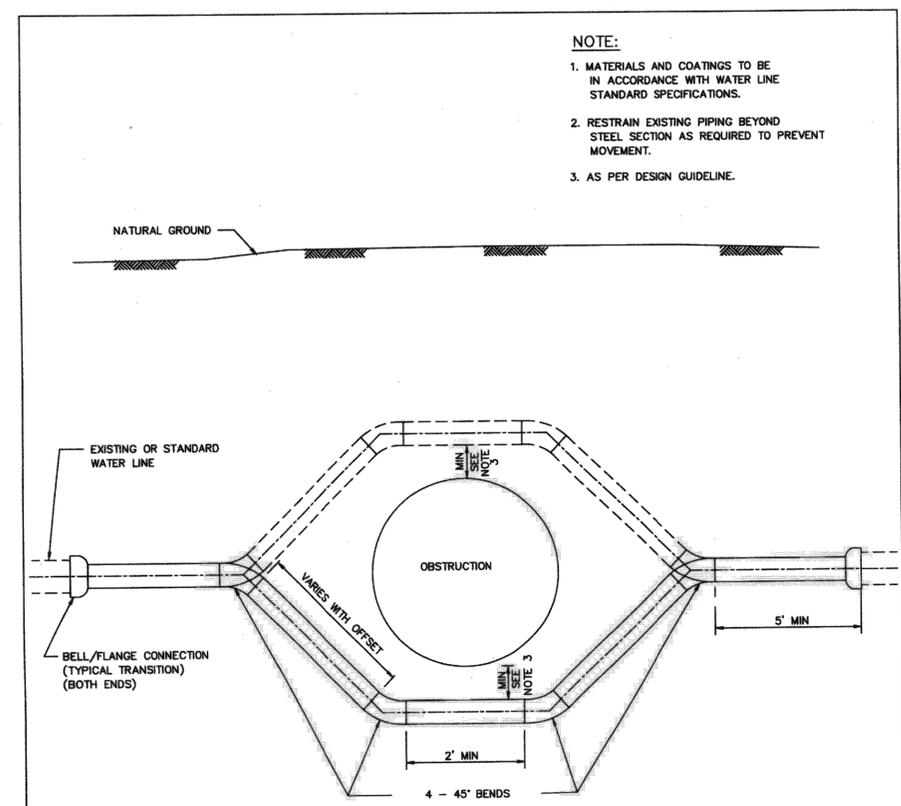


**NOTE:**  
1. SELECT BACKFILL FOR RIGID PAVEMENT; FLEXIBLE BASE MATERIAL FOR ASPHALT PAVEMENT.

**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

**BEDDING AND BACKFILL  
AUGER PIT AND AUGER HOLE**  
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF. DATE: JUL-01-2010	DWG NO.: 02447-01



**NOTE:**  
1. MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH WATER LINE STANDARD SPECIFICATIONS.  
2. RESTRAIN EXISTING PIPING BEYOND STEEL SECTION AS REQUIRED TO PREVENT MOVEMENT.  
3. AS PER DESIGN GUIDELINE.

- PIPE OFFSET ALTERNATES**
1. DUCTILE IRON PIPE PRESSURE 250 PSI WITH APPROVED RESTRAINED JOINTS.
  2. PVC PIPE WITH INTEGRAL RESTRAINED JOINT SYSTEM, OR DUCTILE - IRON RESTRAINED JOINT FITTINGS, EPOXY LINED AND COATED. USE 250 PSI AWWA C900 DR 14 FOR PVC RESTRAINED JOINTS.
  3. PVC NOT ALLOWED FOR GREATER THAN 20 FT OF COVER OR FOR DIAMETER LARGER THAN 20 IN.
  4. USE ONLY DUCTILE IRON AND PVC PRODUCTS LISTED ON OCE DIVISION APPROVED PRODUCTS LIST AND IN ACCORDANCE WITH CITY STANDARD SPECIFICATIONS.

**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

**TYPICAL STEEL PIPE OFFSET  
SECTION FOR WATER LINES**  
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF. DATE: JULY-01-2010	DWG NO.: 02511-01

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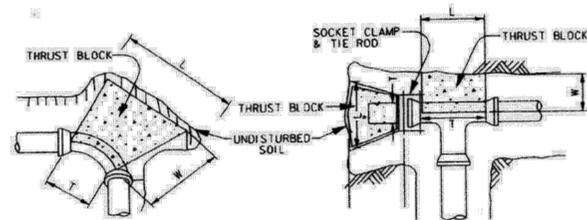
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4

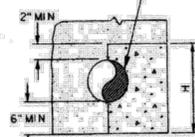
STANDARD SDWL DETAILS  
SHEET 3 OF 7

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S-000701-0043-4	
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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 98 OF 190	



90° BEND  
(45° BENDS SIMILAR)

TEE & PLUG  
INSTALL POLYETHYLENE WRAP AS A ROOT BREAKER BETWEEN PIPE AND CONCRETE



PIPE CROSS SECTION

MINIMUM BLOCKING DIMENSION IN INCHES

PIPE SIZE	90° BEND			45° BEND			TEE/PLUG					
	W	H	L	W	H	L	W	H	L			
4"	6	12	14	10	6	8	11	8	6	10	12	12
6"	8	14	26	12	8	14	14	12	8	14	19	19
8"	10	16	40	16	10	18	20	16	10	18	26	26
10"	12	24	42	18	12	22	25	18	12	24	30	30
12"	14	36	40	30	14	26	30	22	14	26	40	40

CORRECTION FACTORS

SOIL TYPE	SOIL BEARING STRENGTH $S_u$ (lb/ft <sup>2</sup> )	MULTIPLY "L" AND "H" BY
SOFT CLAY	1000	1.73
SILT	1500	1.41
SANDY SILT	3000	1.00
SAND	4000	0.87
SANDY CLAY	6000	0.71
HARD CLAY	9000	0.58

NOTES:

- DEPTH "W" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE.
- BLOCKING MUST BE PLACED AGAINST UNDISTURBED EARTH. WHERE THIS IS NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND UNDISTURBED SOIL MUST BE COMPACTED TO AT LEAST 90% STANDARD PROCTOR DENSITY.
- PROVIDE CONCRETE IN ACCORDANCE WITH STANDARD SPECIFICATION SECTION 03315 - CONCRETE FOR UTILITY CONSTRUCTION.
- BLOCKING DIMENSIONS SHOWN ARE BASED ON 3000 PSI SOIL BEARING STRENGTH AND 125 PSI INTERNAL WATER PRESSURE. FOR OTHER SOIL CONDITIONS, MULTIPLY DIMENSIONS "L" AND "H" BY THE APPROPRIATE CORRECTION FACTOR.

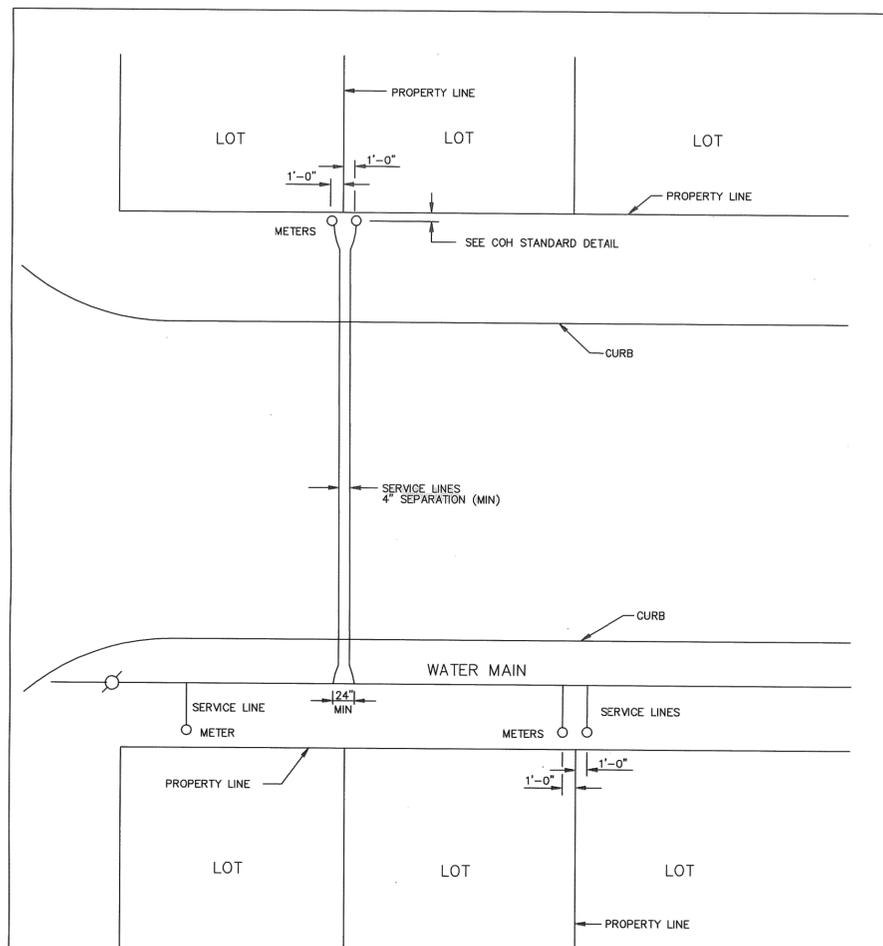
CITY OF HOUSTON  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

THRUST BLOCK DETAIL FOR WATER LINES (4-INCH TO 12 INCH)  
(NOT TO SCALE)

APPROVED BY: *[Signature]*  
CITY ENGINEER

APPROVED BY: *[Signature]*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF. DATE: JULY-01-2010 DWG NO: 02511-02



GENERAL NOTES:

- TWO SERVICE LINES MAY BE INSTALLED IN SAME TRENCH PROVIDING 4" CLEARANCE IS MAINTAINED.
- ONE METER PER SERVICE LINE

CITY OF HOUSTON  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

TYPICAL 3/4" THROUGH 2" SERVICE ARRANGEMENTS  
(NOT TO SCALE)

APPROVED BY: *[Signature]*  
CITY ENGINEER

APPROVED BY: *[Signature]*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF. DATE: JUL-01-2016 DWG NO: 02512-01

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HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

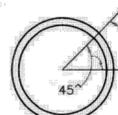
STANDARD SDWL DETAILS  
SHEET 4 OF 7

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 99 OF 190	

NO.	DATE	REVISION	APP.

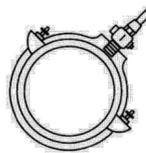
PIPE TAPPING SCHEDULE				
WATER MAIN TYPE AND DIAMETER	SERVICE SIZE			
	3/4"	1"	1 1/2"	2"
4" CAST IRON OR DUCTILE IRON	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
4" ASBESTOS (EXISTING) CEMENT	WBSS	WBSS	DSS, WBSS	DSS, WBSS
4" PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6" AND 8" CAST IRON OR DUCTILE IRON	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6" AND 8" ASBESTOS (EXISTING) CEMENT	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6" AND 8" CAST IRON OR DUCTILE IRON	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6" AND 8" PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
12" CAST IRON OR DUCTILE IRON	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
12" ASBESTOS (EXISTING) CEMENT	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
12" PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
16" AND UP CAST IRON OR DUCTILE IRON	DWBSS	DWBSS	DWBSS	DWBSS
16" AND UP ASBESTOS (EXISTING) CEMENT	DWBSS	DWBSS	DWBSS	DWBSS
16" AND UP PVC (AWWA C900)	DWBSS	DWBSS	DWBSS	DWBSS

DSS — DUAL STRAP SADDLES  
 WBSS — WIDE BAND STRAP SADDLES  
 DWBSS — DUAL WIDE BAND STRAP SADDLES



SERVICE TAPS TO BE MADE IN THIS ZONE EXCEPT FOR PVC FASTTAP

BLOW-OFF & CHLORINATION TAPS ARE MADE IN VERTICAL POSITION.



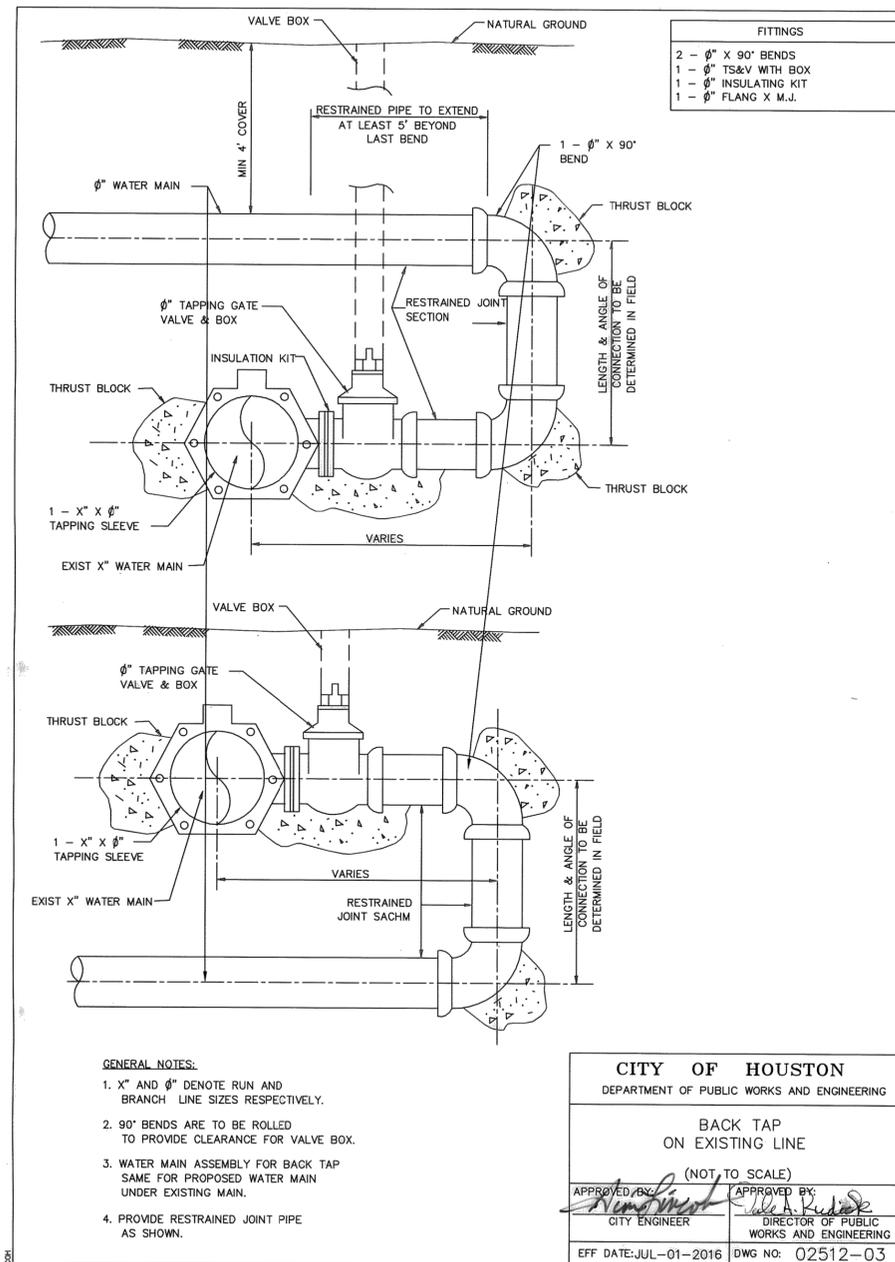
WIDE BAND SINGLE SADDLE OR DUAL SADDLES

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SERVICE TAPS

(NOT TO SCALE)

APPROVED BY: [Signature] CITY ENGINEER  
 APPROVED BY: [Signature] DIRECTOR OF PUBLIC WORKS AND ENGINEERING  
 EFF DATE: JUL-01-2010 DWG NO: 02512-02



FITTINGS	
2	— 90° X 90° BENDS
1	— 90° TS&V WITH BOX
1	— 90° INSULATING KIT
1	— 90° FLANG X M.J.

GENERAL NOTES:

1. X" AND 90° DENOTE RUN AND BRANCH LINE SIZES RESPECTIVELY.
2. 90° BENDS ARE TO BE ROLLED TO PROVIDE CLEARANCE FOR VALVE BOX.
3. WATER MAIN ASSEMBLY FOR BACK TAP SAME FOR PROPOSED WATER MAIN UNDER EXISTING MAIN.
4. PROVIDE RESTRAINED JOINT PIPE AS SHOWN.

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

BACK TAP ON EXISTING LINE

(NOT TO SCALE)

APPROVED BY: [Signature] CITY ENGINEER  
 APPROVED BY: [Signature] DIRECTOR OF PUBLIC WORKS AND ENGINEERING  
 EFF DATE: JUL-01-2016 DWG NO: 02512-03

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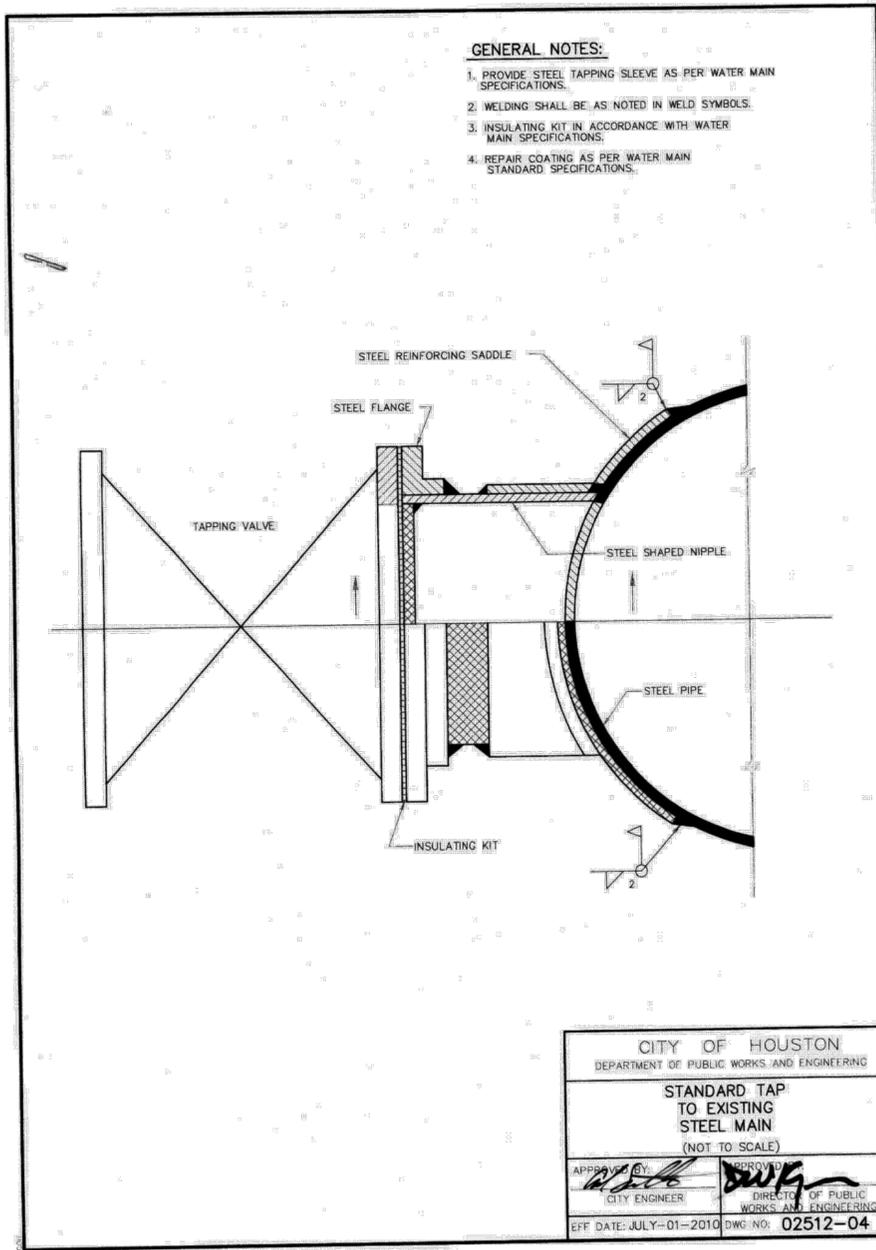
CITY OF HOUSTON  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS — PACKAGE 4

STANDARD SDWL DETAILS  
 SHEET 5 OF 7

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 100 OF 190	

NO. DATE REVISION APP. C:\Users\PAVAN\1-NA\Temp\AcPublish\25008\85-128-Standard Details.dwg plotted on Jan 15, 2026 — 1:44pm

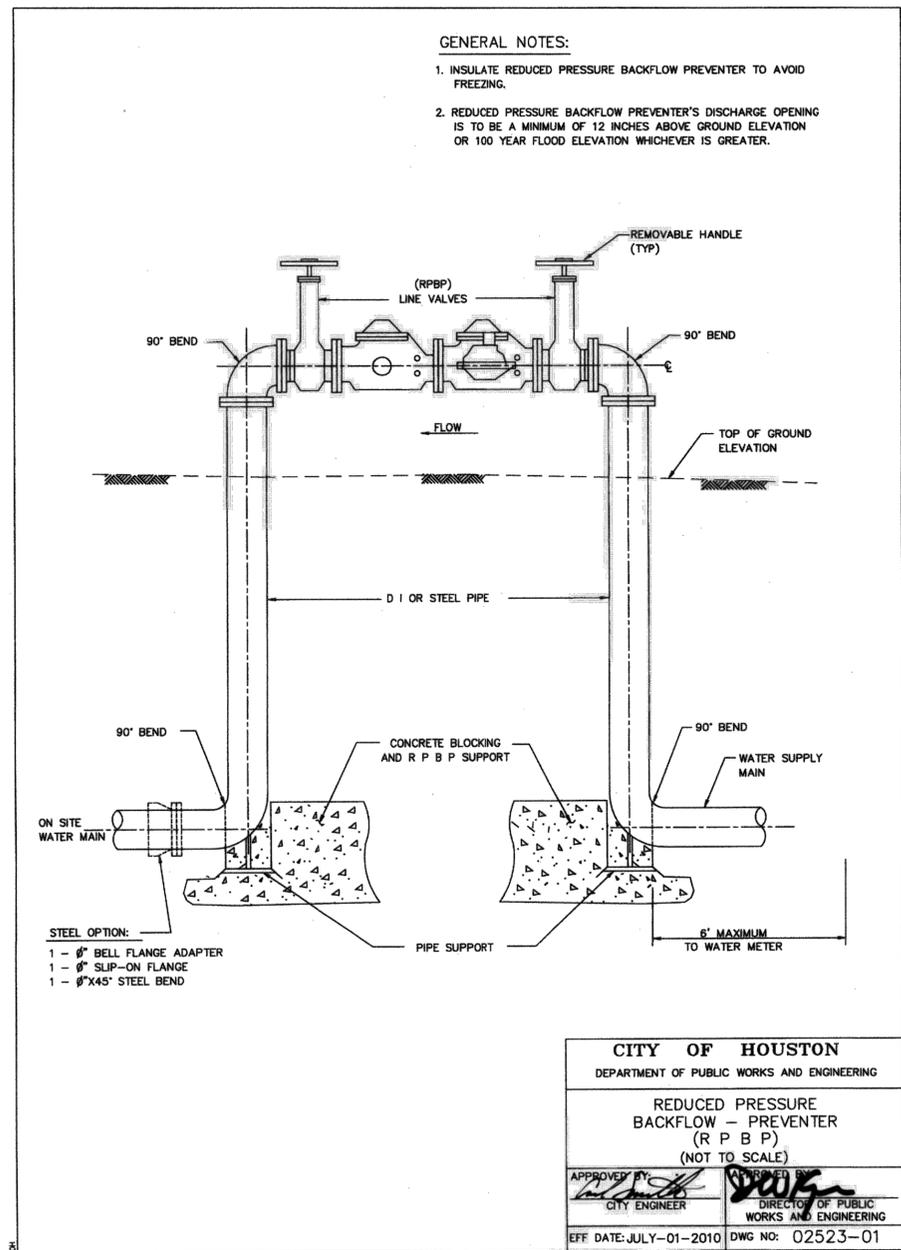


**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

**STANDARD TAP TO EXISTING STEEL MAIN**  
(NOT TO SCALE)

APPROVED BY: *[Signature]* CITY ENGINEER  
APPROVED BY: *[Signature]* DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY-01-2010 DWG NO: 02512-04

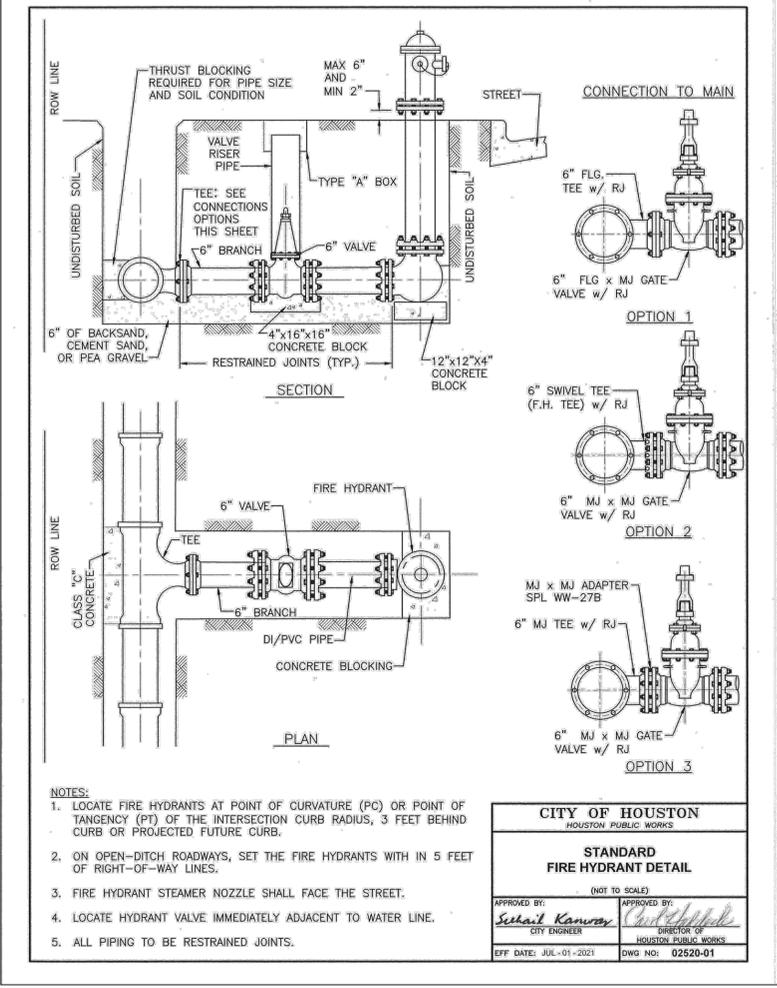


**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

**REDUCED PRESSURE BACKFLOW - PREVENTER (R P B P)**  
(NOT TO SCALE)

APPROVED BY: *[Signature]* CITY ENGINEER  
APPROVED BY: *[Signature]* DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY-01-2010 DWG NO: 02523-01



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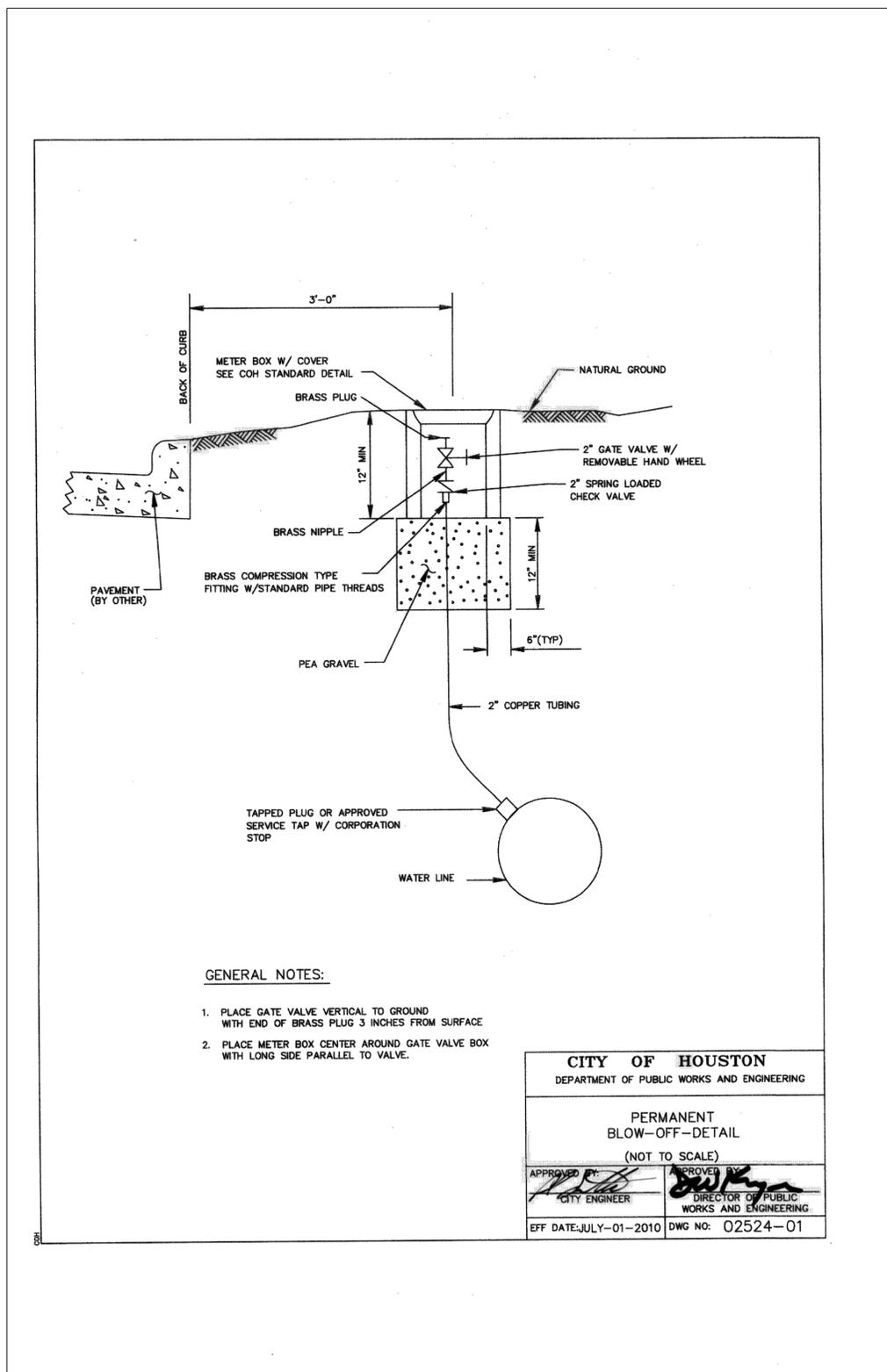
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

STANDARD SDWL DETAILS  
SHEET 6 OF 7

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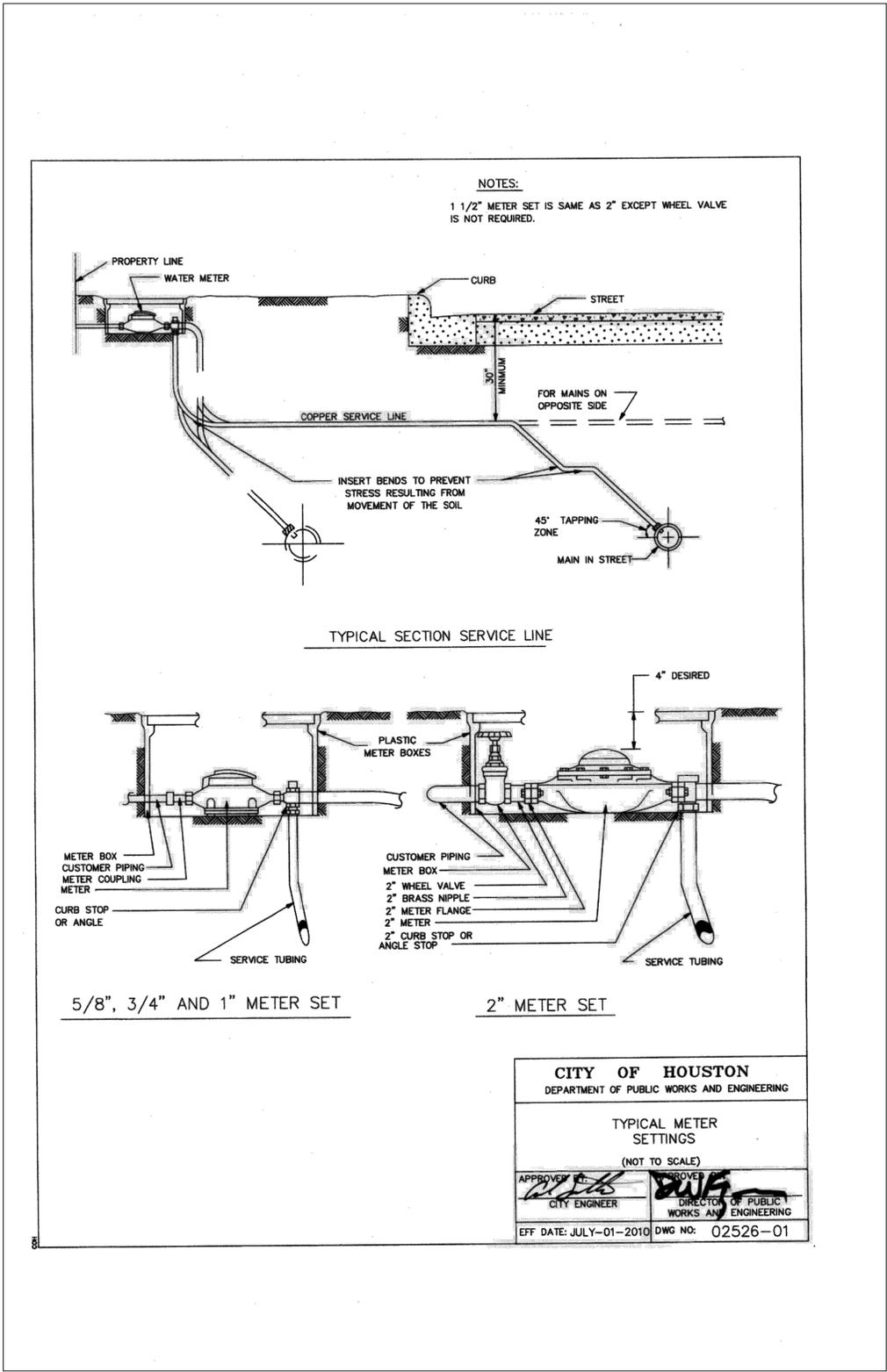
NO.	DATE	REVISION	APP.



**GENERAL NOTES:**

1. PLACE GATE VALVE VERTICAL TO GROUND WITH END OF BRASS PLUG 3 INCHES FROM SURFACE
2. PLACE METER BOX CENTER AROUND GATE VALVE BOX WITH LONG SIDE PARALLEL TO VALVE.

<b>CITY OF HOUSTON</b> DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
PERMANENT BLOW-OFF-DETAIL (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 02524-01



5/8", 3/4" AND 1" METER SET

2" METER SET

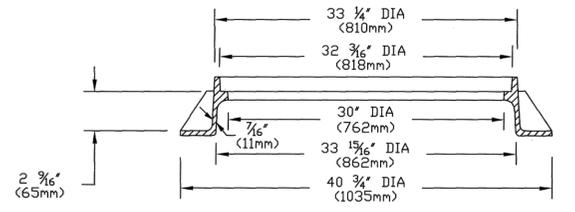
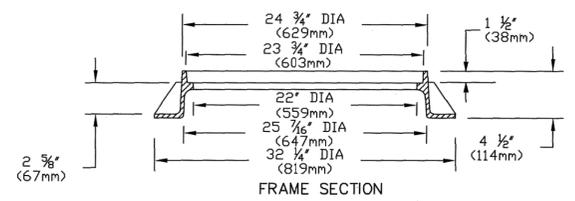
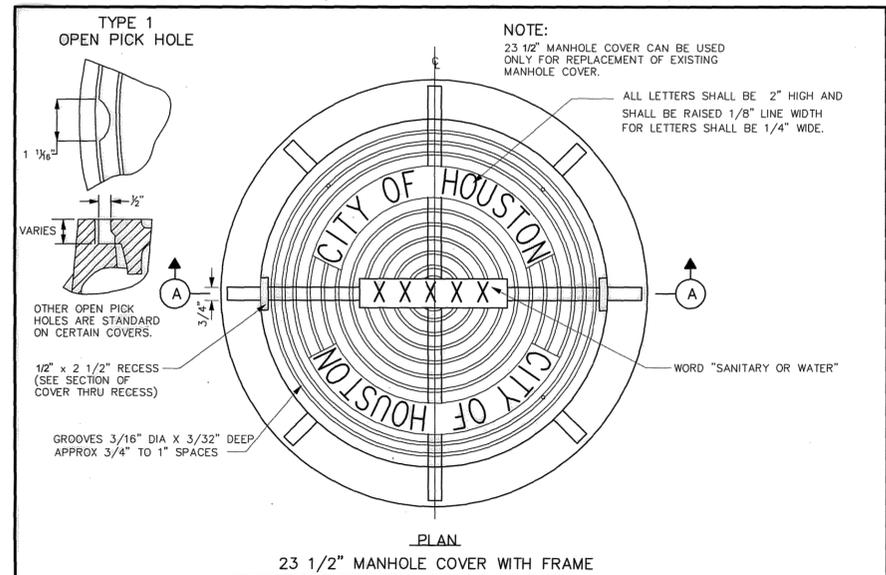
<b>CITY OF HOUSTON</b> DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
TYPICAL METER SETTINGS (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
STANDARD SDWL DETAILS  
SHEET 7 OF 7

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
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NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 102 OF 190	



- 1) NOTE: APPROXIMATE WEIGHTS.  
 FRAME- 170 LBS 77 kg  
 COVER- 270 LBS 123 kg  
 UNIT- 440 LBS 200 kg
- 2) MATERIAL- GRAY IRON ASTM A48 CL35B
- 3) CASTING TO MEET M306 PROOF LOAD SPECIFICATION
- 4) MODEL V-14240 ASY OR APPROVED EQUAL

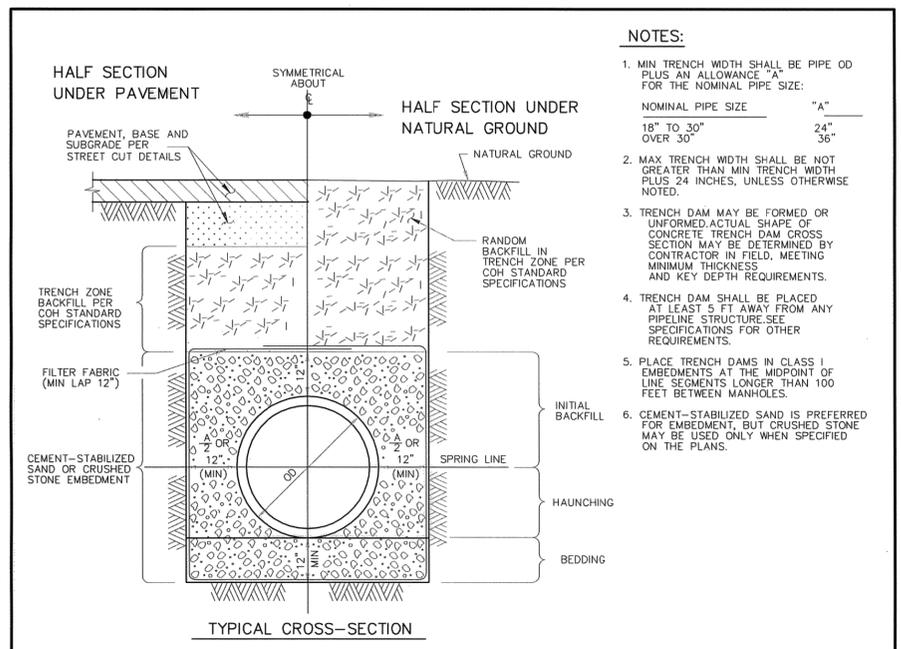
CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SANITARY SEWER AND WATER  
 MANHOLE FRAME AND COVER

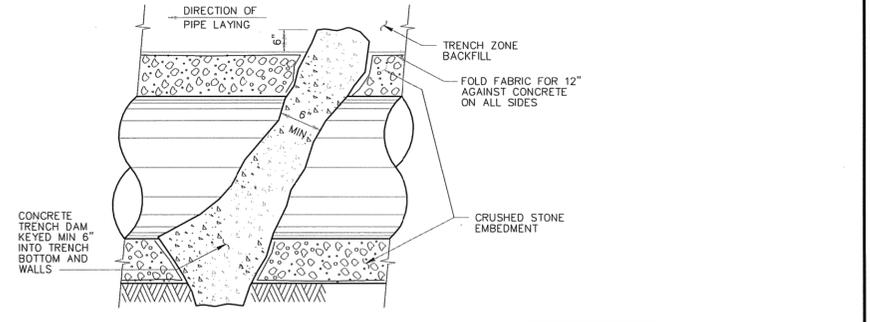
(NOT TO SCALE)

APPROVED BY: *[Signature]* CITY ENGINEER  
 APPROVED BY: *[Signature]* DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JUL-01-2016 DWG NO: 02090-01



- NOTES:
1. MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:  
 NOMINAL PIPE SIZE "A"  
 18" TO 30" 24"  
 OVER 30" 36"
  2. MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
  3. TRENCH DAM MAY BE FORMED OR UNFORMED ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING MINIMUM THICKNESS AND KEY DEPTH REQUIREMENTS.
  4. TRENCH DAM SHALL BE PLACED AT LEAST 5 FT AWAY FROM ANY PIPELINE STRUCTURE SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.
  5. PLACE TRENCH DAMS IN CLASS I EMBEDMENTS AT THE MIDPOINT OF LINE SEGMENTS LONGER THAN 100 FEET BETWEEN MANHOLES.
  6. CEMENT-STABILIZED SAND IS PREFERRED FOR EMBEDMENT, BUT CRUSHED STONE MAY BE USED ONLY WHEN SPECIFIED ON THE PLANS.



CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SANITARY SEWER EMBEDMENT  
 AND TRENCH ZONE BACKFILL  
 FOR DRY OR WET STABLE TRENCH

(NOT TO SCALE)

APPROVED BY: *[Signature]* CITY ENGINEER  
 APPROVED BY: *[Signature]* DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JUL-01-2016 DWG NO: 02317-01

**KUO & ASSOCIATES**  
 ENGINEERING & SURVEYING

10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578

SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. P-6395

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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

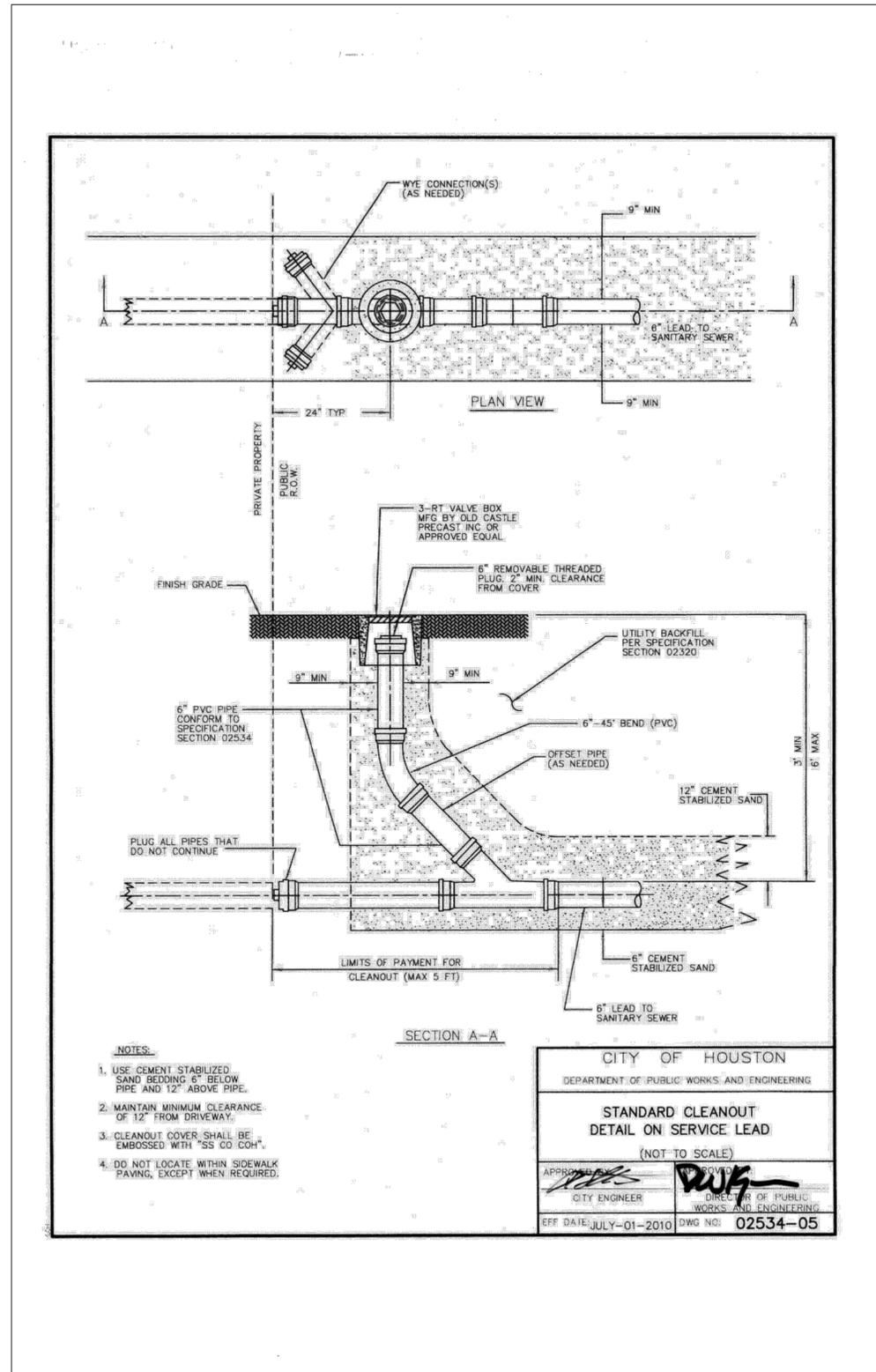
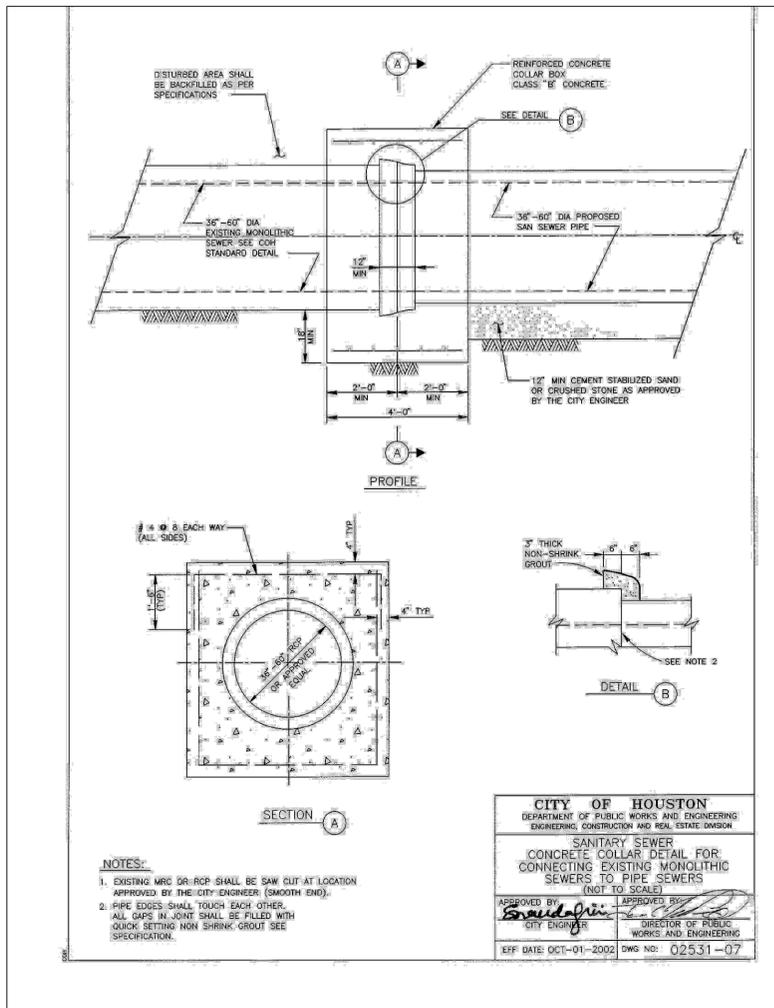
MISCELLANEOUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4

STANDARD SANITARY SEWER DETAILS  
 SHEET 1 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 103 OF 190	

NO.	DATE	REVISION	APP.

NO.	DATE	REVISION	APP.



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 HOUSTON, TX 77042  
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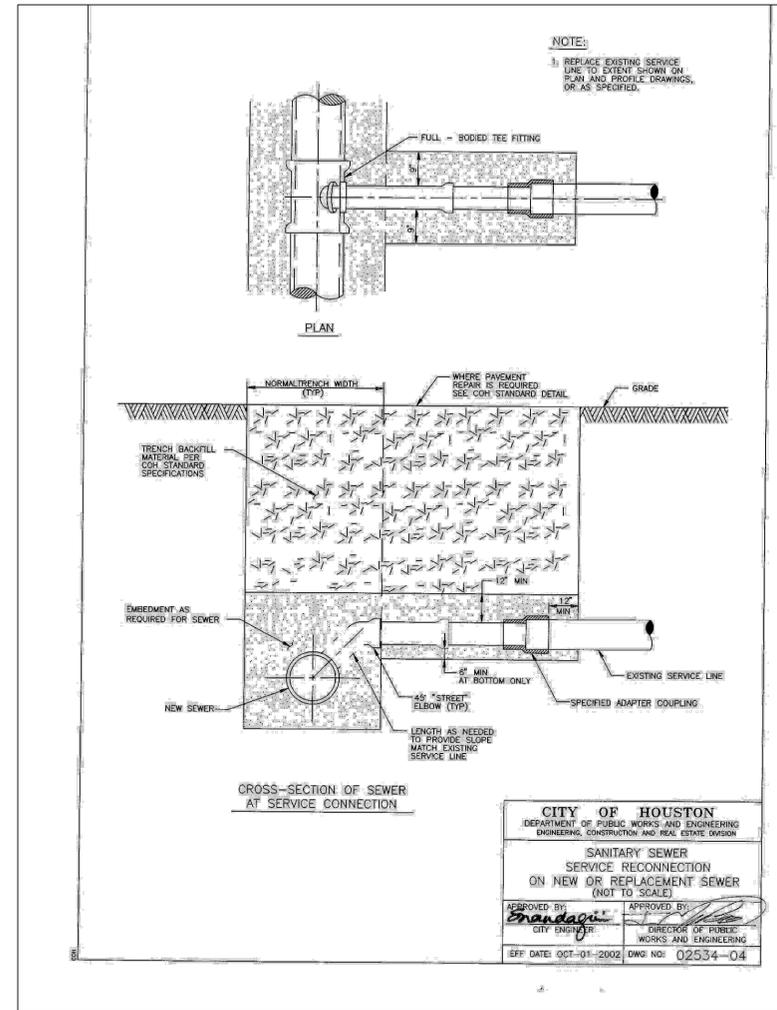
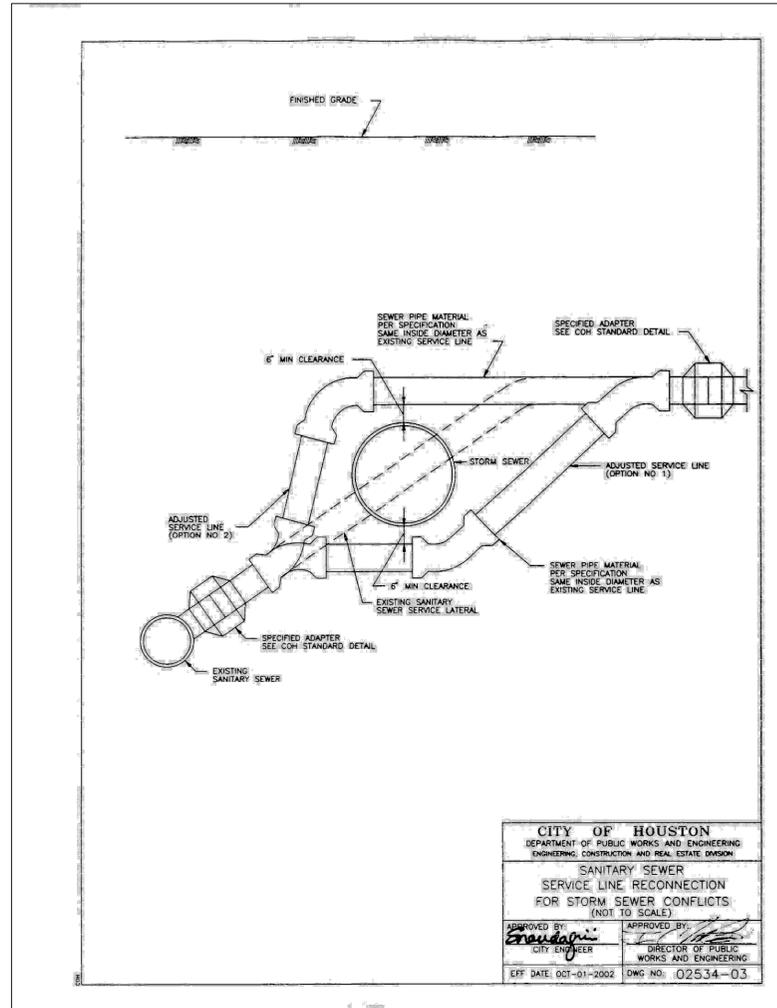
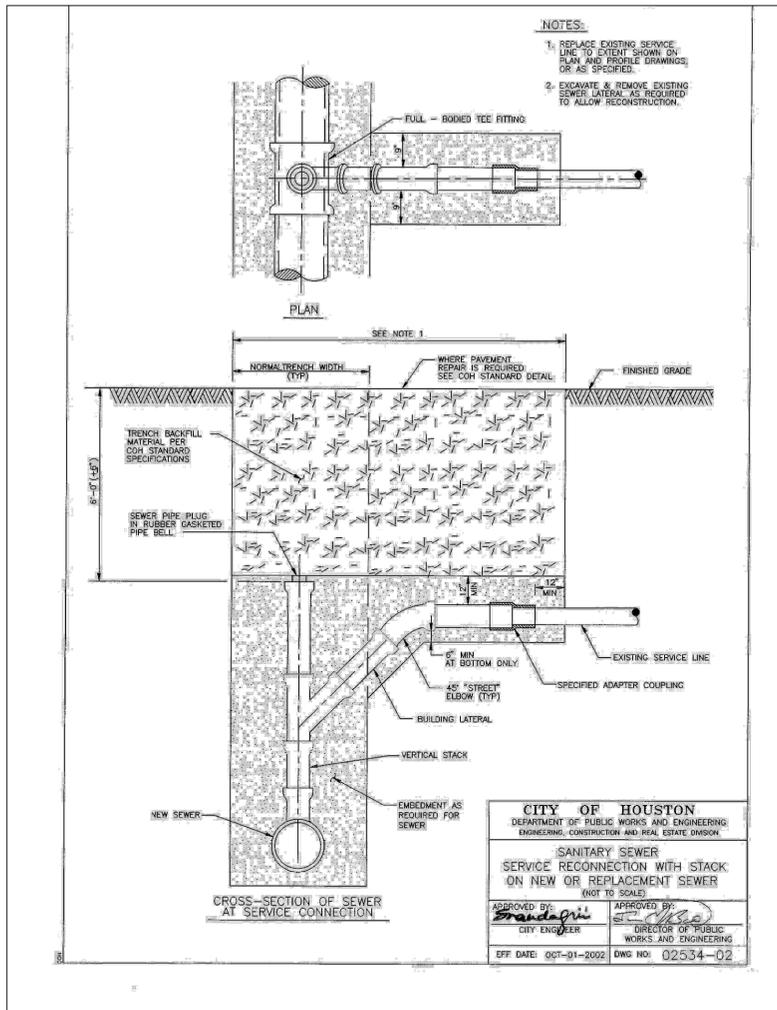
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

STANDARD SANITARY SEWER DETAILS SHEET 2 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 104 OF 190	

NO.	DATE	REVISION	APP.



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 713-975-8769  
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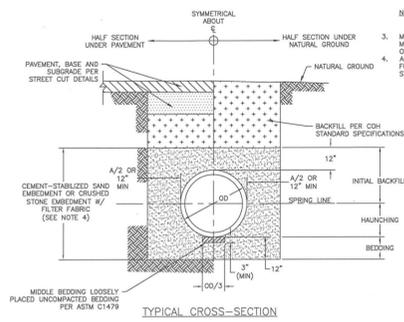
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 STANDARD SANITARY SEWER DETAILS  
 SHEET 3 OF 3

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DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 105 OF 190	

NO.	DATE	REVISION	APP.

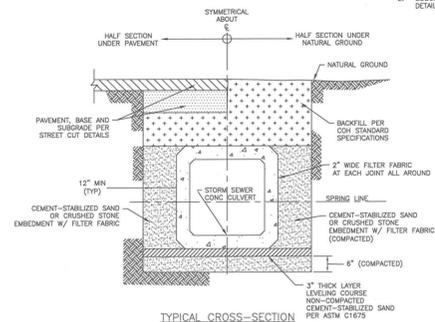
02317-03



- NOTES:
1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARD. SEE COH STANDARD SPECIFICATION FOR REQUIREMENTS IN OTHER CONDITIONS.
  2. MIN. TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "X" FOR THE NOMINAL PIPE SIZE.
  3. MAX. TRENCH WIDTH SHALL BE NOT GREATER THAN MIN. TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
  4. ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED. SEE COH STANDARD SPECIFICATIONS.

SANITARY OR STORM SEWER BEDDING AND BACKFILL FOR DRY STABLE TRENCH NTS

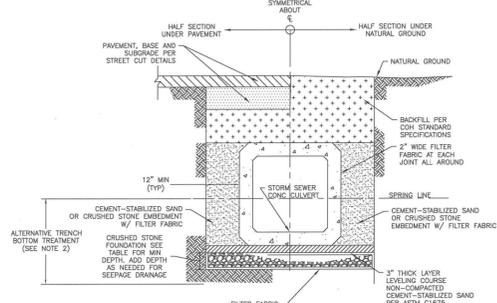
02317-05



- NOTES:
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPARATION SHALL BE 6\"/>
  2. SUBGRADE AND PAVEMENT FOR STREET CUT DETAILS - 20251.

PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL FOR DRY STABLE TRENCH NTS

02317-06

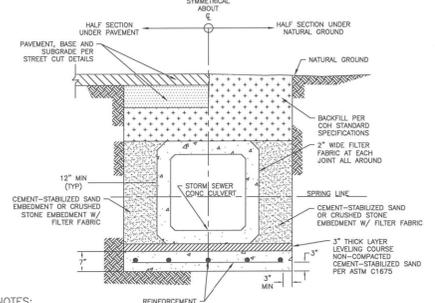


- NOTES:
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPARATION SHALL BE 6\"/>
  2. ALTERNATIVE TRENCH BOTTOM TREATMENT MAY BE USED AS APPROVED BY THE CITY OF ENGINEERS AND AS PAID FOR IN THE PROPOSAL.

CULVERT SIZE (FT)	FOUNDATION DEPTH(INCHES)
3' X 2' TO 6' X 6'	12
6' X 6' AND LARGER	18

PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL FOR WET STABLE TRENCH NTS

02317-07



- NOTES:
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPARATION SHALL BE 6\"/>
  2. REINFORCED CONCRETE SLAB PIPE, BEGONG TO BE PLACED IN DRY TRENCH ONLY. COMPRESSIVE STRENGTH OF 1000 PSI BASED ON MAX DESIGN STRESS PER PIPE IS LAD.
  3. PRECAST SEAL SLAB MAY BE USED AS APPROVED BY CITY ENGINEER.

PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL WITH SEAL SLAB NTS

FIRM INFORMATION	ENGINEER'S SEAL
CITY OF HOUSTON HOUSTON PUBLIC WORKS	
STORM SEWER 02317-03 THROUGH 07	
APPROVED BY: <i>[Signature]</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DEPUTY DIRECTOR
APPROVED BY: <i>[Signature]</i> DIRECTOR	
EFFECTIVE DATE: JUL-01-2019	
FOR CITY OF HOUSTON USE ONLY	
SHEET NO.	

**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
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HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
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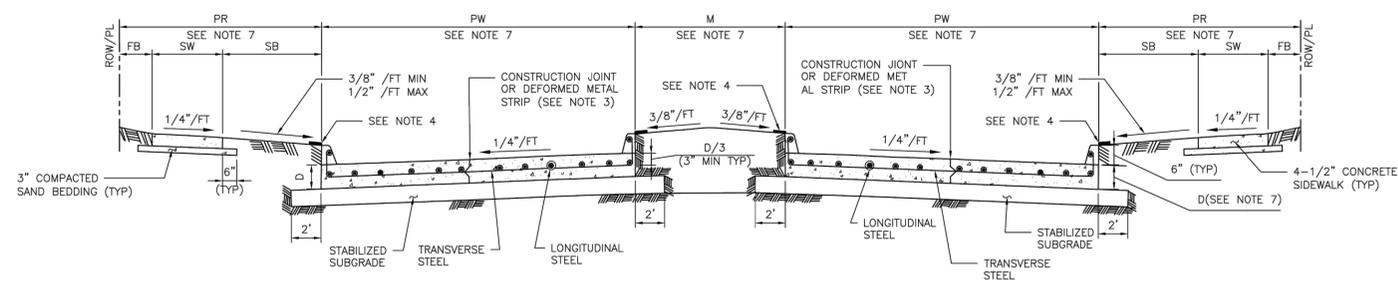
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

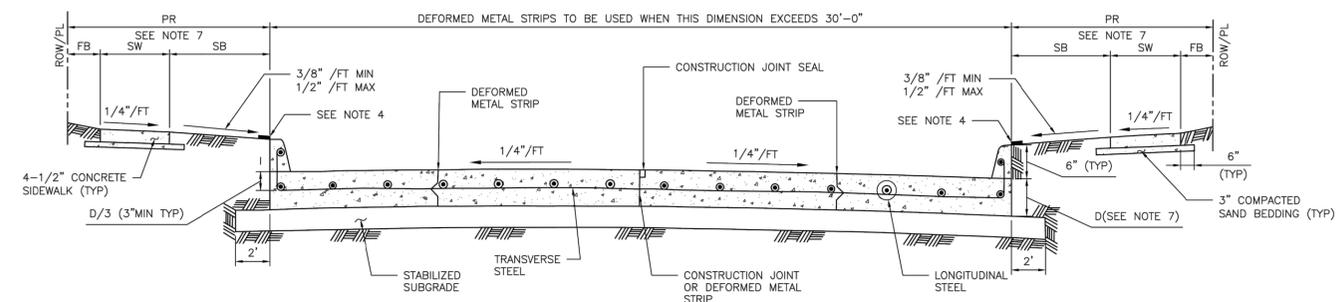
STANDARD SANITARY SEWER DETAILS AND STORM SEWER BEDDING & BACKFILL DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 106 OF 190	

NO.	DATE	REVISION	APP.



TYPICAL DOUBLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS



TYPICAL SINGLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS

- NOTES:**
1. THE MAXIMUM WIDTH BETWEEN LONGITUDINAL JOINTS SHALL NOT EXCEED 15'-0".
  2. ALL EARTHEN AREAS ARE TO BE HYDROMULCHED UNLESS SHOWN OTHERWISE ON DRAWINGS.
  3. CONTRACTOR MAY SAW CUT IN LIEU OF DEFORMED METAL STRIP.
  4. USE STRIP OF SOD GRASS TO PREVENT EROSION UNTIL STAND OF GRASS IS ESTABLISHED.
  5. AN EQUAL OR LARGER AREA OF WELDED REINFORCEMENT BAR CONFORMING TO ASTM A497, MAY BE SUBSTITUTED FOR REBARS LISTED IN TABLE 1.
  6. IF AVAILABLE ROW IS NOT SUFFICIENT TO ACCOMMODATE SIDEWALK WIDTH (SW) ACCORDING TO IDM REQUIREMENTS, ENGINEER SHALL OBTAIN A VARIANCE FROM THE CITY ENGINEER.
  7. REFER TO CONTRACT DRAWINGS FOR PAVEMENT WIDTH (PW) AND PAVEMENT THICKNESS (D), MEDIAN (M), PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.

TABLE 1

REINFORCING STEEL BAR SIZES AND SPACINGS FOR VARIOUS PAVEMENT THICKNESSES (D) WITH: MAXIMUM TRANSVERSE CONTROL JOINT SPACING = 20'-0"  
 MAXIMUM EXPANSION JOINT SPACING = 80'-0"  
 f<sub>c</sub>' = 4,000 PSI/28 DAYS AND F<sub>y</sub> = 60,000 PSI

PAVEMENT THICKNESS 'D' (IN)	PAVEMENT WIDTH 'PW' (FT)	LONGITUDINAL STEEL									TRAVERSE STEEL		
		#4 BARS			#5 BARS			#6 BARS			#4 BARS	#5 BARS	#6 BARS
		NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	SPACING (IN)	SPACING (IN)	SPACING (IN)
6	28	17	20.50	4.00	-	-	-	-	-	-	36	-	-
7	25	17	18.25	4.00	-	-	-	-	-	-	36	-	-
7	35	24	18.00	3.00	-	-	-	-	-	-	36	-	-
7	36	25	17.75	3.00	-	-	-	-	-	-	36	-	-
7	37	25	18.25	3.00	-	-	-	-	-	-	36	-	-
7	41	28	18.00	3.00	-	-	-	-	-	-	36	-	-
7	45	31	17.75	3.75	-	-	-	-	-	-	36	-	-
8	25	20	15.50	2.75	13	24.50	3.0	-	-	-	36	36	-
8	34	27	15.50	2.50	17	25.00	4.0	-	-	-	36	36	-
8	35	27	16.00	2.00	18	24.25	4.0	-	-	-	36	36	-
8	36	28	15.75	3.25	18	25.00	3.0	-	-	-	30	36	-
8	44	24	15.75	4.00	22	24.75	4.0	-	-	-	30	36	-
8	45	35	15.75	2.25	23	24.25	3.0	-	-	-	30	36	-
9	25	22	14.00	3.00	14	22.50	4.0	-	-	-	36	36	-
9	34	31	13.50	2.00	19	22.25	3.5	-	-	-	30	36	-
9	35	31	13.75	3.75	20	21.75	3.5	-	-	-	30	36	-
9	36	32	13.75	3.00	21	21.25	3.5	-	-	-	30	36	-
9	44	39	13.75	2.75	25	21.75	3.0	-	-	-	24	36	-
9	45	39	14.00	4.00	26	21.25	4.5	-	-	-	24	36	-
10	25	24	12.75	3.50	17	18.25	4.0	-	-	-	36	36	36
10	34	33	12.50	4.00	21	20.00	4.0	-	-	-	30	36	36
10	35	34	12.50	3.75	23	18.75	4.0	-	-	-	30	36	36
10	36	35	12.50	3.50	24	18.50	3.0	-	-	-	30	36	36
10	44	44	12.00	4.00	29	18.50	4.5	-	-	-	24	36	36
10	45	44	12.50	3.00	29	19.00	3.0	-	-	-	24	36	36
11	25	27	11.25	3.00	17	18.25	4.0	12	26.75	3	36	36	36
11	34	36	11.50	2.75	24	17.50	2.5	17	25.00	4	24	36	36
11	35	37	11.50	3.00	24	18.00	3.0	17	25.75	4	24	36	36
11	36	40	11.00	2.00	25	17.75	3.0	17	26.50	4	24	36	36
11	44	48	11.125	2.50	30	18.00	3.0	21	26.00	4	24	36	36
11	45	49	11.125	3.00	31	17.75	4.0	22	25.50	3	24	36	36
12	25	-	-	-	19	16.25	4.0	13	24.50	3	36	36	36
12	34	-	-	-	26	16.00	4.0	18	23.50	4	24	36	36
12	35	-	-	-	26	16.50	4.0	19	23.00	3	24	36	36
12	36	-	-	-	27	16.25	4.5	20	22.25	4.5	24	36	36
12	44	-	-	-	33	16.25	4.0	24	22.50	5	24	30	36
12	45	-	-	-	35	15.75	3.0	25	22.25	3	24	30	36

MINIMUM LAP LENGTH (L):  
 A. # 4 BARS : L = 22 INCHES  
 B. # 5 BARS : L = 27 INCHES  
 C. # 6 BARS : L = 32 INCHES

DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INACCURATE RESULTS OR DAMAGES RESULTING FROM ITS USE.

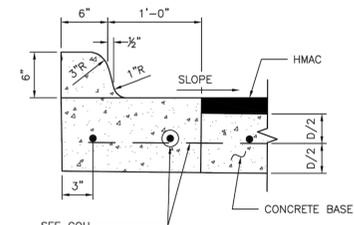
APPROVED BY: <i>Sulek Banwar</i> CITY ENGINEER	APPROVED BY: <i>KIRAN NAUEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hallock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02751-01
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
<b>CONCRETE PAVEMENT DETAILS</b>	
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	CITY OF HOUSTON HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 STANDARD STREET PAVING AND SIDEWALK DETAILS SHEET 1 OF 3

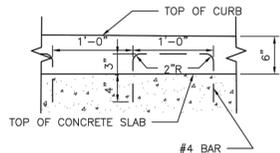
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SHEET NO. 107 OF 190	



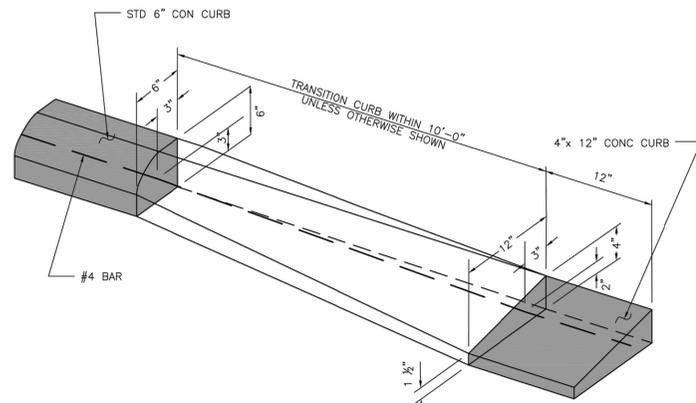
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ESPLANADE CURB CONNECTED TO CONCRETE BASE



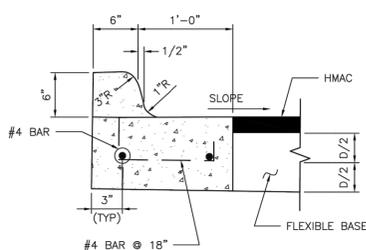
ALTERNATE CONCRETE CURB REINFORCEMENT



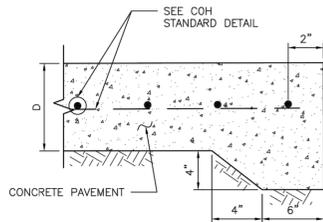
CURB TRANSITION  
(SEE NOTES)

4"x12" MONOLITHIC AND TRANSITION CURB NOTES:

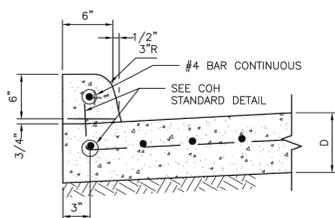
- 6-INCH CONCRETE CURB TO BE CONSTRUCTED ON ALL ESPLANADES, ISLANDS, NON-RESIDENTIAL STREETS, AND RESIDENTIAL STREETS.
- TRANSITIONS FROM 6-INCH CONCRETE CURB TO 4-INCH x 12-INCH CONCRETE CURB TO BE ACCOMPLISHED WITHIN 10 FEET, UNLESS OTHERWISE SHOWN. IF THIS 10-FOOT TRANSITION CURB IS NOT POURED MONOLITHICALLY WITH THE PAVEMENT, THEN REINFORCING STEEL AS SHOWN IN "4-INCH x 12-INCH TRANSITION CURB" IS TO BE INSTALLED.



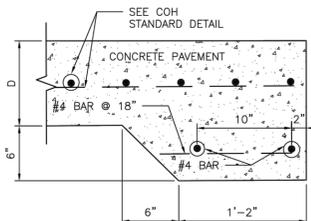
ESPLANADE CURB CONNECTED TO FLEXIBLE BASE



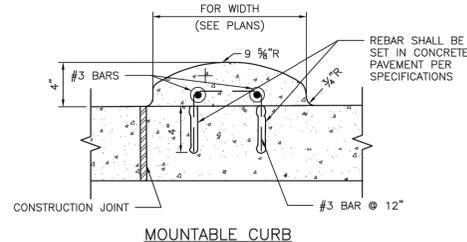
STANDARD CONCRETE PAVING HEADER



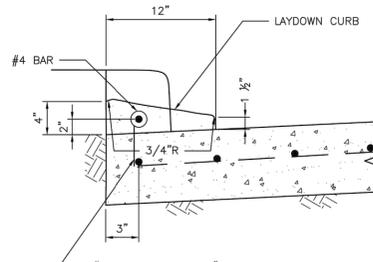
CONCRETE CURB



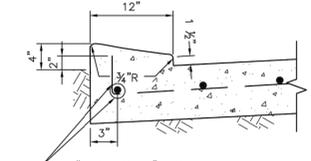
STANDARD RAILROAD HEADER



MOUNTABLE CURB

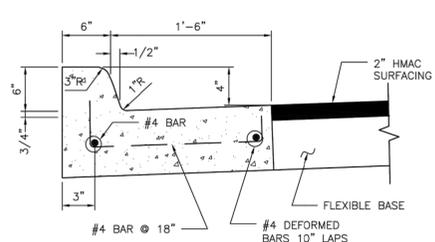


4-INCH x 12-INCH TRANSITION CURB  
(SEE NOTES)

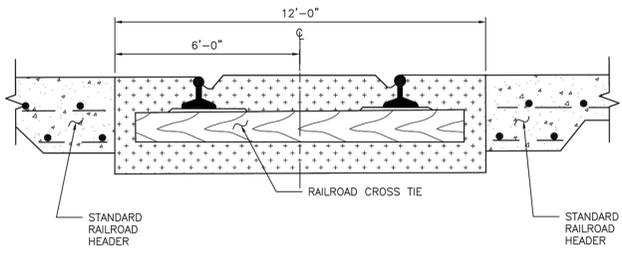


4-INCH x 12-INCH MONOLITHIC CURB  
(SEE NOTES)

WHEN CONCRETE CURB IS TO BE PLACED EXISTING CONCRETE USE BASE #4 BAR @ 18x10" LONG, DOWELED AND SET IN EPOXY GROUT. SET #4 DOWEL BARS, 25" LONG AT 12" C-C WHEN PAVEMENT SECTION POURED.



MONOLITHIC CURB AND GUTTER



STANDARD RAILROAD CROSSING - SINGLE TRACK

APPROVED BY: <i>Sulaiman</i> CITY ENGINEER	APPROVED BY: <i>KIRAN V. PUNYAMANTHULA</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hallock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02771-01
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
CURB, CURB AND GUTTER AND HEADER DETAILS	
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MARTIN MATHEW, ENV SP	
SHEET NO. 109 OF 190	

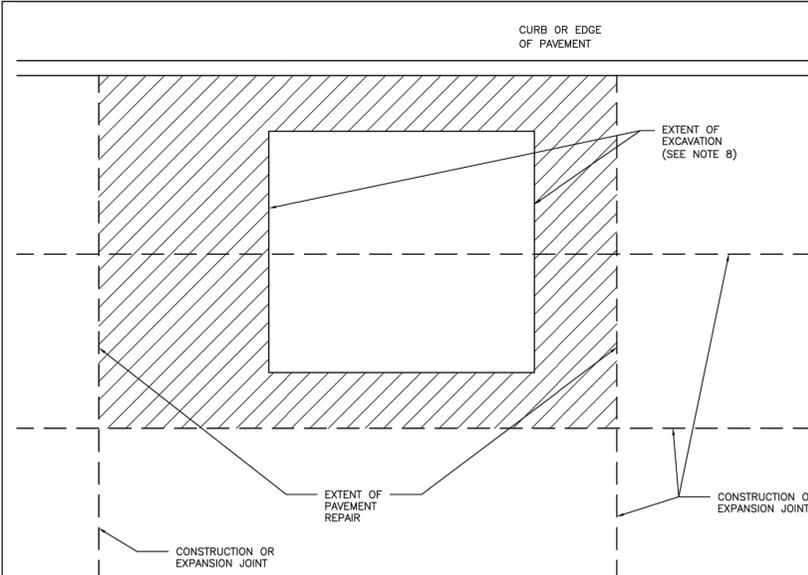
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ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
STANDARD STREET PAVING AND SIDEWALK DETAILS  
SHEET 3 OF 3

NO.	DATE	REVISION	APP.

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**NOTES:**

1. EXTENT OF PAVEMENT REPAIR SHALL BE PERPENDICULAR AND PARALLEL TO TRAVEL WAY.
2. REPLACE ENTIRE PANEL WIDTH AND LENGTH TO NEAREST CONSTRUCTION OR EXPANSION JOINT BEYOND EDGE OF EXCAVATION.
3. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL WITHIN EXISTING PAVEMENT. PROVIDE HORIZONTAL DOWELS (PER SPECIFICATION SECTION 02951-PAVEMENT REPAIR AND RESTORATION) IF EXISTING REINFORCING IS BROKEN OFF.
4. REPLACE CURB WHEN ADJACENT LANE IS REPLACED.
5. MAINTAIN EXPANSION JOINTS AT EXISTING LOCATIONS UNLESS OTHERWISE DIRECTED BY CITY ENGINEER.
6. SPECIALTY PAVEMENTS (IE: BRICK PAVERS) TO BE REPLACED WITH MATCHING PAVEMENT IN ALL CASES.
7. REPLACE PAVEMENT MARKINGS IN ACCORDANCE WITH CITY OF HOUSTON STANDARD SPECIFICATIONS 02764-RAISED PAVEMENT MARKERS AND 02767-THERMOPLASTIC PAVEMENT MARKINGS.
8. EXTENT OF EXCAVATION INCLUDES 18" OVERCUT AS SHOWN ON STANDARD DETAIL 02951-04 PAVEMENT REPAIR DETAIL FOR STREET CUTS (FLEX-BASE PAVEMENT & CONCRETE PAVEMENT).

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

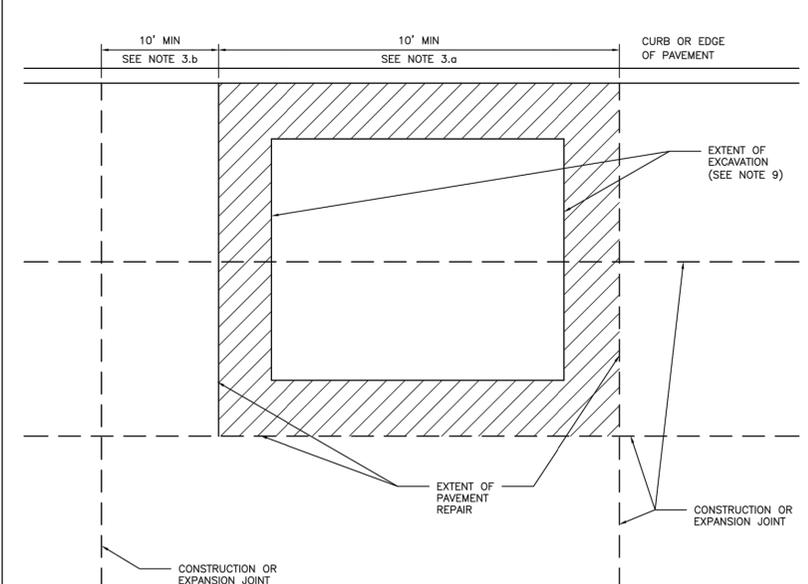
**STREET CUT FOR CONCRETE PAVEMENT**  
REPLACEMENT/RESTORATION AGE OF PAVEMENT ≤ 5YRS  
(SCALE: NOT TO SCALE)

APPROVED BY:

Designed by:  CITY ENGINEER	Designed by:  DIRECTOR OF HPW
Designed by:  CITY TRAFFIC ENGINEER	

EFF DATE: NOV-27-2023 DWG NO: 02951-01

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**NOTES:**

1. EXTENT OF PAVEMENT REPAIR SHALL BE PERPENDICULAR AND PARALLEL TO TRAVEL WAY.
2. WIDTH: REPLACE PANEL WIDTH TO NEAREST CONSTRUCTION OR EXPANSION JOINT BEYOND EDGE OF EXCAVATION.
3. LENGTH:
  - a. MINIMUM LENGTH OF PAVEMENT REPAIR ALONG TRAVEL WAY IS 10' FROM THE NEAREST JOINT.
  - b. IF EXTENT OF PAVEMENT REPAIR IS LESS THAN 10' FROM EXISTING CONSTRUCTION OR EXPANSION JOINT, EXTEND PAVEMENT REPAIR TO EXISTING JOINT.
4. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL AROUND EDGE OF PANEL REPLACEMENT. PROVIDE HORIZONTAL DOWELS (PER SPECIFICATION SECTION 02951-PAVEMENT REPAIR AND RESTORATION) IF REINFORCING IS BROKEN OFF OR DOES NOT EXIST.
5. REPLACE CURB WHEN ADJACENT LANE IS REPLACED.
6. MAINTAIN EXPANSION JOINTS AT EXISTING LOCATIONS UNLESS OTHERWISE DIRECTED BY CITY ENGINEER.
7. SPECIALTY PAVEMENTS (IE: BRICK PAVERS) TO BE REPLACED WITH MATCHING PAVEMENT IN ALL CASES.
8. REPLACE PAVEMENT MARKINGS IN ACCORDANCE WITH CITY OF HOUSTON STANDARD SPECIFICATIONS 02764-RAISED PAVEMENT MARKERS AND 02767-THERMOPLASTIC PAVEMENT MARKINGS.
9. EXTENT OF EXCAVATION INCLUDES 18" OVERCUT AS SHOWN ON STANDARD DETAIL 02951-04 PAVEMENT REPAIR DETAIL FOR STREET CUTS (FLEX-BASE PAVEMENT & CONCRETE PAVEMENT).

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

**STREET CUT FOR CONCRETE PAVEMENT**  
REPLACEMENT/RESTORATION AGE OF PAVEMENT > 5YRS  
(SCALE: NOT TO SCALE)

APPROVED BY:

Designed by:  CITY ENGINEER	Designed by:  DIRECTOR OF HPW
Designed by:  CITY TRAFFIC ENGINEER	

EFF DATE: NOV-27-2023 DWG NO: 02951-02

**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING

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HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578

SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

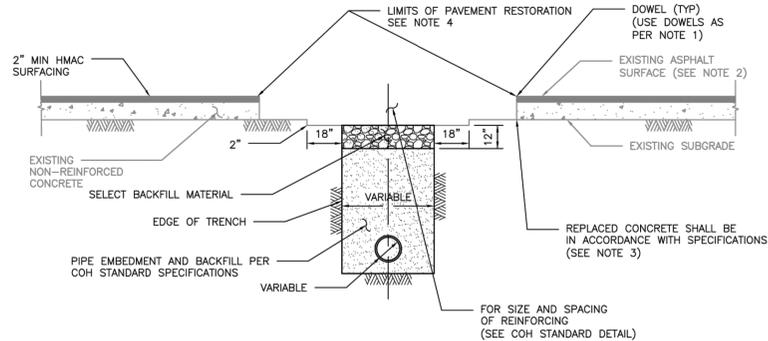
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

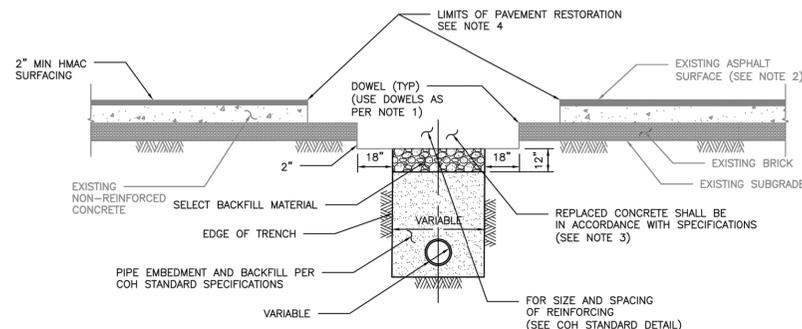
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

COH STANDARD STREET CUT PAVEMENT REPLACEMENT DETAILS SHEET 1 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 110 OF 190	



ELEVATION C  
REPAIR OF NON-REINFORCED CONCRETE PAVEMENT



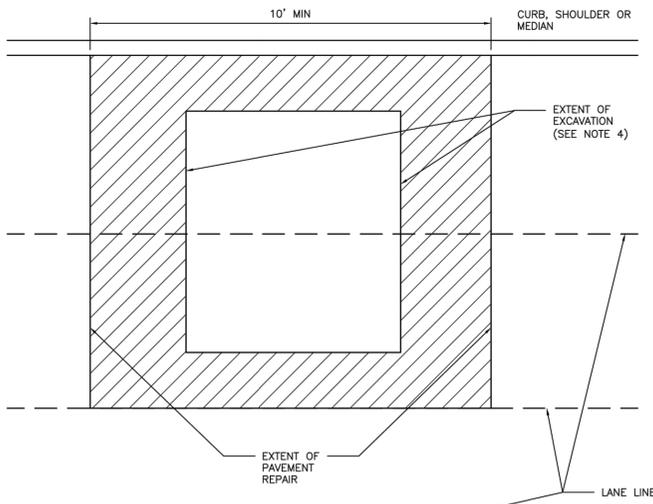
ELEVATION D  
REPAIR OF NON-REINFORCED CONCRETE PAVEMENT WITH BRICK

NOTES:

1. EXPOSE 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BAR, 24" LONG, 24" C-C, DRILLED AND EMBEDDED 8" INTO THE CENTER OF THE EXISTING SLAB WITH "PO ROC" OR EQUAL.
2. IF REINFORCED CONCRETE IS OVERLAYED REPLACE WITH SAME THICKNESS OF HMAc SURFACING.
3. REFER TO STANDARD DETAIL 02751-01 FOR REINFORCING STEEL REQUIREMENT
4. REFER TO STANDARD DETAILS 02951-01 THROUGH 03 FOR PAVEMENT RESTORATION LIMITS.

DISCLAIMER:  
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS THE LIABILITY OF ANY PARTY. THE USER OF THIS STANDARD SHALL BE RESPONSIBLE FOR THE PROPER APPLICATION OF THIS STANDARD AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PERSONS OR PROPERTY THAT MAY BE CAUSED BY THE USER OF THIS STANDARD. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
PAVEMENT REPAIR DETAIL FOR STREET CUTS (NON-REINFORCED CONCRETE & BRICK PAVEMENT) (SCALE: NOT TO SCALE)	
APPROVED BY:	
Designated by:  SULEIL IBRAHIM CITY ENGINEER	Designated by:  CARL HADDOCK DIRECTOR OF HPW
Designated by:  BRIAN NEUFEN CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023 DWG NO: 02951-05	



NOTES:

1. EXTENT OF PAVEMENT REPAIR SHALL BE PERPENDICULAR AND PARALLEL TO TRAVEL WAY.
2. FLEXIBLE BASE: REPLACE BASE TO SAME THICKNESS PLUS TWO INCHES (2") FOR EXTENT OF EXCAVATION. USE APPROVED BASE MATERIAL TYPE.\*
3. SURFACE COURSE:
  - 3.1. WIDTH: SURFACE MILL AND OVERLAY FULL WIDTH OF LANE(S) TO NEAREST LANE DIVIDER BEYOND EDGE OF EXCAVATION.
  - 3.2. LENGTH: MINIMUM LENGTH OF SURFACE MILL ALONG TRAVEL WAY IS 10'.
  - 3.3. REPLACE PAVEMENT MARKINGS IN ACCORDANCE WITH CITY OF HOUSTON STANDARD SPECIFICATIONS 02764-RAISED PAVEMENT MARKERS AND 02767-THERMOPLASTIC PAVEMENT MARKINGS.
4. EXTENT OF EXCAVATION INCLUDES 18" OVER CUT AS SHOWN ON STANDARD DETAIL 02951-04 PAVEMENT REPAIR DETAIL FOR STREET CUTS (FLEX-BASE PAVEMENT AND CONCRETE PAVEMENT).
5. ADDITIONAL REQUIREMENTS FOR ASPHALT OVERLAY ON CONCRETE PAVEMENT:
  - 5.1. REPLACE CONCRETE FOR EXTENT OF EXCAVATION. REPLACE TO SAME THICKNESS PLUS TWO INCHES (2").
  - 5.2. WIDTH:
    - 5.2.1. IF EXCAVATION EXTENDS MORE THAN HALF OF A LANE, REPLACE ENTIRE LANE OF CONCRETE. OTHERWISE USE STANDARD DETAIL 02951-04 THROUGH 05.
  - 5.3. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL AROUND EDGE OF CONCRETE REPLACEMENT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS PER CITY OF HOUSTON STANDARD SPECIFICATION SECTION 02951-PAVEMENT REPAIR AND RESTORATION.
  - 5.4. REPLACE CURB WHEN ADJACENT LANE IS REPLACED.
  - 5.5. MAINTAIN CONCRETE EXPANSION JOINTS AT EXISTING LOCATIONS UNLESS OTHERWISE APPROVED BY CITY ENGINEER.

DISCLAIMER:  
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<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
STREET CUT FOR ASPHALT PAVEMENT REPLACEMENT/RESTORATION FOR PAVEMENT OF ALL AGES (SCALE: NOT TO SCALE)	
APPROVED BY:	
Designated by:  SULEIL IBRAHIM CITY ENGINEER	Designated by:  CARL HADDOCK DIRECTOR OF HPW
Designated by:  BRIAN NEUFEN CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023 DWG NO: 02951-03	

 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

COH STANDARD STREET CUT PAVEMENT REPLACEMENT DETAILS SHEET 2 OF 3

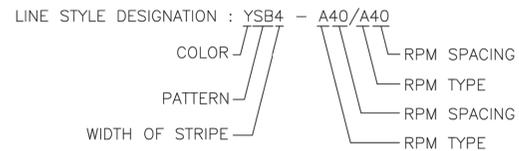
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 111 OF 190	



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DESCRIPTION AND APPLICATION OF PAVEMENT MARKING LINES				
LINE SERIES	COLOR	DESCRIPTION	WIDTH (INCHES)	TYPICAL APPLICATIONS
WB	WHITE	BROKEN (10' STRIPE W/30' GAP)	4"	LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS PERMITTED.
WS	WHITE	SOLID	4"	EDGE LINES TO DELINEATE THE RIGHT EDGE OF THE ROADWAY.
			6"	LEFT EDGE OF BICYCLE LANE AND LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS DISCOURAGED.
			12"	PERPENDICULAR CROSSWALK LINES.
			24"	STOP BARS AT INTERSECTIONS (SIGNALIZED AND UNSIGNALIZED).
			12", 24"	HATCHING AT HIGH VISIBILITY CROSSWALKS.
WG	WHITE	GUIDE (2' STRIPE W/6' GAP)	6"	GUIDE LINES THROUGH INTERSECTIONS.
				TAPER LINES FOR TURN LANES.
				GUIDE LINES FOR BICYCLE LANES.
YS	YELLOW	SOLID	4"	EDGE LINES TO DELINEATE THE LEFT EDGE OF A DIVIDED ROADWAY, A ONE-WAY ROAD, OR RAMP.
			6"	BIDIRECTIONAL BICYCLE LANE PAVEMENT MARKING.
			12", 24"	DIAGONAL HATCHING USED IN GORES BETWEEN OPPOSING DIRECTION OF TRAVEL LANES.
YDS	YELLOW	DOUBLE SOLID	4" - (4") - 4" (GAP)	CENTERLINE THAT SEPARATES OPPOSING TRAVEL LANES AND DELINEATION OF MEDIAN ISLANDS.
YDB	YELLOW	DOUBLE BROKEN	4" - (4") - 4" (GAP)	DEFINES THE EDGES OF CENTER REVERSIBLE LANES THAT ARE USED AS TWLTLs DURING INTERMITTENT PERIODS.
YB	YELLOW	BROKEN (10' STRIPE W/30' GAP)	4"	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YB (BIKE)	YELLOW	BROKEN (3' STRIPE W/9' GAP)	4"	SEPARATES BICYCLE TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YSB	YELLOW	SOLID & BROKEN BROKEN (10' STRIPE W/30' GAP)	4" - (4") - 4" (GAP)	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN ONE DIRECTION AND PROHIBITED IN THE OPPOSITE DIRECTION.
				USED FOR EDGE OF TWO-WAY LEFT TURN LANES (TWLTL).
BICYCLE GREEN	GREEN	SOLID COLORED PAVEMENT	VARIES	PED/BIKE CROSSING
				VEHICLE / BIKE / CONFLICT AREA
YIELD LINE	WHITE	TRIANGLE	16" x 24"	MID-BLOCK CROSSING.

DESCRIPTION AND APPLICATION OF REFLECTIVE RAISED PAVEMENT MARKERS (RPM)			
RRPM TYPES	COLOR	COH SPEC. SEC. 02764 EQUIVALENT	DESCRIPTION
C	CLEAR	TYPE I-C	APPROACH FACE THAT REFLECTS WHITE LIGHT, AND THE OTHER SIDE DOES NOT REFLECT.
R	CLEAR & RED	TYPE II-C-R	APPROACH FACE THAT REFLECTS WHITE LIGHT, AND THE OTHER SIDE REFLECTS RED LIGHT.
A	AMBER & AMBER	TYPE II-A-A	APPROACH FACE AND THE OTHER SIDE BOTH REFLECT AMBER LIGHT.



**GENERAL PAVEMENT MARKING NOTES:**

- PRIOR TO START OF CONSTRUCTION, ALL EXISTING PAVEMENT MARKINGS WITHIN THE AREA OF CONSTRUCTION SHALL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING ALL EXISTING PAVEMENT MARKINGS AND LANE CONFIGURATIONS WILL BE DUPLICATED AGAIN. THIS REVIEW CAN BE DONE IN CONJUNCTION WITH SIGN INVENTORY. THE CONTRACTOR IS HELD ACCOUNTABLE FOR EXISTING AND TEMPORARY CONSTRUCTION PAVEMENT MARKINGS THROUGHOUT THE PROJECT AND AT THE PROJECT'S COMPLETION.
- ALL PAVEMENT MARKINGS SHALL CONFORM TO CITY OF HOUSTON STANDARDS AND SPECIFICATIONS AND GENERAL GUIDELINES OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
- THE PERMANENT PAVEMENT MARKINGS MAY BE MODIFIED AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
- THE DESIGN SPEED FOR THE ROAD IS: \_\_\_\_\_. THE POSTED SPEED LIMIT IS: \_\_\_\_\_.
- ALL LANE DIMENSIONS ARE FROM CENTER OF LANE LINE, CENTER OF DOUBLE LANE LINE, FACE OF CURB, OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
- THE PAVEMENT MARKING DRAWINGS ARE SCHEMATIC ONLY. THE CONTRACTOR SHALL FOLLOW ALL DIMENSIONS, DETAILS, AND STANDARDS WHEN INSTALLING PAVEMENT MARKINGS AND SYMBOLS.
- THE FINAL LONGITUDINAL STRIPINGS SHALL BE 60 MIL (0.060") THICK HOT-SPRAYED THERMOPLASTIC PLACED OVER THE TEMPORARY STRIPING WITHIN 14 TO 30 CALENDAR DAYS AFTER COMPLETION OF THE FINAL PAVEMENT SURFACE, OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER. ALL OTHER PAVEMENT MARKINGS SHALL BE APPLIED AT THE SAME TIME. TEMPORARY STRIPING SHALL BE WATER BASED PAINT.
- ALL FINAL TRANSVERSE MARKINGS SHALL BE 90 MIL (0.090") HOT-SPRAYED THERMOPLASTIC. ALL PAVEMENT ARROWS AND LEGENDS SHALL ALSO BE 90 MIL (0.090") HOT-SPRAYED THERMOPLASTIC. PREFORMED THERMOPLASTIC APPLICATIONS MAY BE USED IF ONLY APPROVED BY THE CITY TRAFFIC ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT AND INSTALLATION OF PAVEMENT MARKINGS OF FINAL SURFACE COURSE FOLLOWING CONTROL POINTS THAT HAVE BEEN SET NO MORE THAN 50 FEET APART ALONG THE LINES TO BE IMPLEMENTED. IN TANGENT SECTIONS OF A ROAD WHERE THE PAVEMENT MARKING PATTERN DOES NOT CHANGE, CONTROL POINTS CAN BE SET AT 200 FEET SPACING. THE LAYOUT AND INSPECTION OF ALL PAVEMENT MARKINGS SHALL BE APPROVED BY CITY OF HOUSTON REPRESENTATIVE PRIOR TO THE APPLICATION OF MATERIALS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE FINAL SURFACE COURSE IS PLACED SO THAT THE STRIPING IS OFFSET NO MORE THAN ONE FOOT CLEAR OF THE CONSTRUCTION JOINT, UNLESS OTHERWISE DIRECTED BY THE CITY TRAFFIC ENGINEER.
- ALL RAISED PAVEMENT MARKERS (RPMs) SHALL BE INSTALLED SO THAT THE REFLECTIVE FACE OF EACH MARKER IS FACING THE DIRECTION OF TRAFFIC AND IS PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW. TYPE C PAVEMENT MARKERS SHALL BE INSTALLED SO THAT THE CLEAR FACE OF EACH MARKER IS FACING THE APPROACHING TRAFFIC FLOW AND PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW.
- ALL REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED IN ACCORDANCE TO CITY OF HOUSTON STANDARD SPECIFICATION 02762. APPLYING OVER EXISTING PAVEMENT MARKINGS DOES NOT CONSTITUTE AS APPROVED OBLITERATION METHOD.
- THE ENGINEER OF RECORD SHALL BE REQUIRED TO PRODUCE AS-BUILT OF PAVEMENT MARKING PLANS WITHIN 30 DAYS AFTER COMPLETION OF PAVEMENT MARKING IMPLEMENTATION.
- BLUE RPMs MAY BE PLACED ADJACENT TO FIRE HYDRANTS WITH THE APPROVAL OF THE CITY TRAFFIC ENGINEER.
- FOR ALL CONSTRUCTION, ALL PAVEMENT MARKINGS AND SIGNING SHALL BE INSTALLED AND SHALL BE PAID BY THE PROJECT OWNER/DEVELOPER.
- FINAL INSPECTION AND ACCEPTANCE OF PAVEMENT MARKINGS SHALL BE PERFORMED BY TRANSPORTATION & DRAINAGE OPERATION REPRESENTATIVE (713-803-3054).

APPROVED BY: <i>Sulal Hanwar</i> CITY ENGINEER	APPROVED BY: <i>HANS NGUYEN</i> CITY TRAFFIC ENGINEER
--	---

APPROVED BY: <i>Carl Hubbard</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-01

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

**PAVEMENT MARKINGS GENERAL NOTES AND LEGENDS**

FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE
NOT TO SCALE

**KUO & ASSOCIATES**  
ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

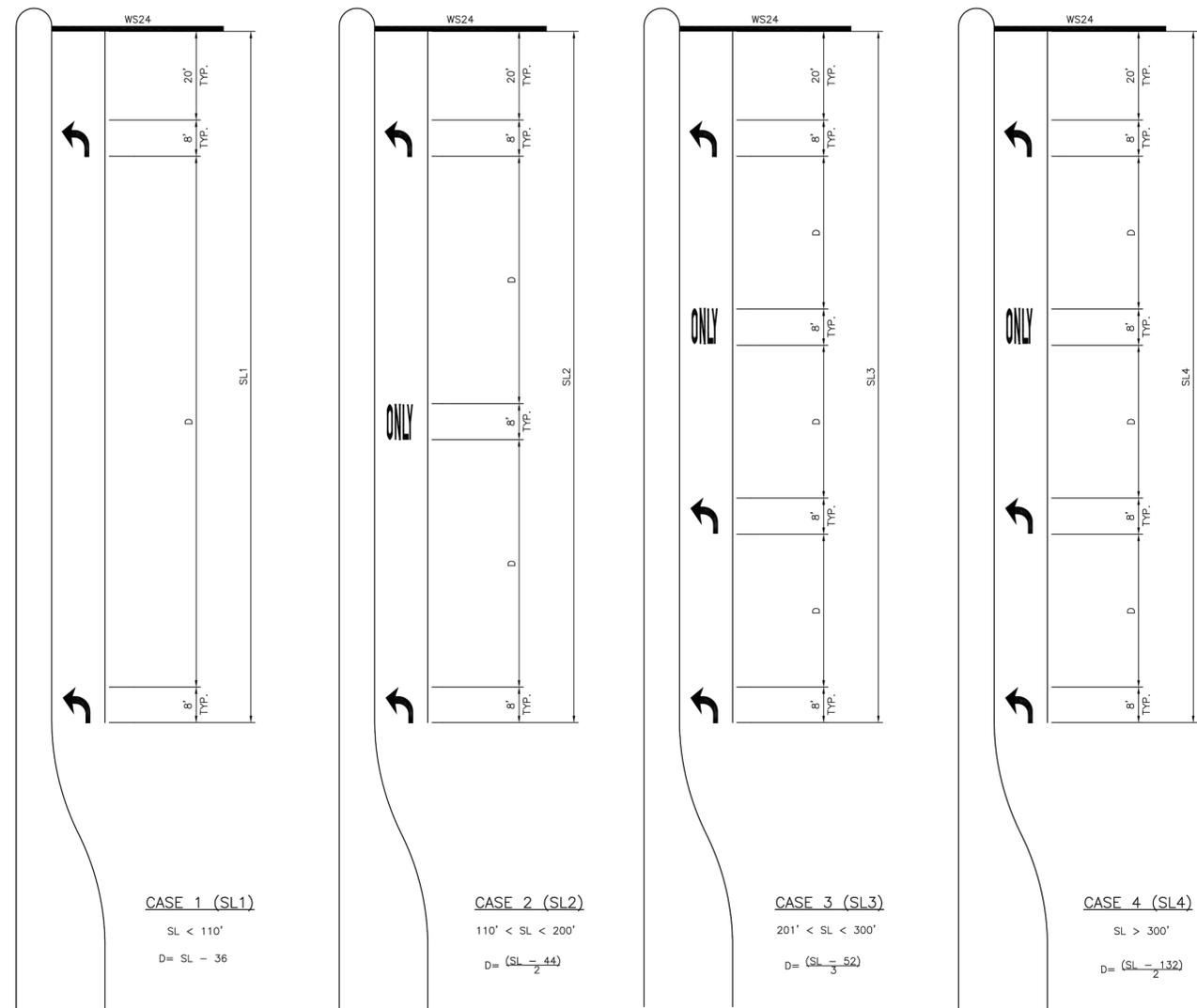
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

COH STANDARD PAVEMENT MARKING DETAILS SHEET 1 OF 16

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 113 OF 190	

NO.	DATE	REVISION	APP.

DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THE USE OF THIS STANDARD FOR THE PURPOSES OF DESIGNING AND CONSTRUCTING WATER MAINS. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR DAMAGES RESULTING FROM ITS USE.



**CASE 1 (SL1)**  
 SL < 110'  
 D = SL - 36

**CASE 2 (SL2)**  
 110' < SL < 200'  
 D =  $(\frac{SL - 44}{2})$

**CASE 3 (SL3)**  
 201' < SL < 300'  
 D =  $(\frac{SL - 52}{3})$

**CASE 4 (SL4)**  
 SL > 300'  
 D =  $(\frac{SL - 132}{2})$

**KEY (FOR TURN LANES ONLY):**  
 SL - STORAGE LENGTH (FEET)  
 D - DISTANCE BETWEEN ARROWS AND/OR WORDS (FEET)

- GENERAL NOTES:**
- ALL CASES AND DETAILS ALSO APPLY TO RIGHT-TURN LANES.
  - FOR DUAL-TURN LANES, DIMENSIONS SHALL BE THE SAME FOR EACH LANE.
  - SL DIMENSION IS FROM BACK OF STOP LINE TO END OF TURN LANE.  
NOTE: DO NOT INCLUDE TAPER LENGTH.
  - PAVEMENT ARROWS AND "ONLY" LEGEND MARKINGS ARE TYPICALLY USED AT ALL SIGNALIZED INTERSECTIONS AND AT ALL UNSIGNALIZED INTERSECTIONS THAT HAVE TURN LANES.
  - MINIMUM SL = 100'. SL MAY BE LESS THAN 100 FEET ONLY BY APPROVAL OF THE CITY TRAFFIC ENGINEER.

APPROVED BY:  CITY ENGINEER	APPROVED BY:  CITY TRAFFIC ENGINEER
APPROVED BY:  DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-02
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
LEFT/RIGHT-TURN "ONLY" AND ARROW SPACING	
FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE	
NOT TO SCALE	

**KUO & ASSOCIATES**  
 ENGINEERING & SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578  
 SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. P-6395

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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 COH STANDARD PAVEMENT MARKING DETAILS  
 SHEET 2 OF 16

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 114 OF 190	

NO.	DATE	REVISION	APP.

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APPROVED BY:  CITY ENGINEER	APPROVED BY:  CITY TRAFFIC ENGINEER
APPROVED BY:  DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-03
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
STANDARD PAVEMENT MARKING - (WORDS)	
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 <b>KUO &amp; ASSOCIATES</b> ENGINEERING + SURVEYING 10300 WESTOFFICE DR. SUITE 800 HOUSTON, TX 77042 713-975-8769 TX FIRM NO.: F-4578 SURVEYED BY: KUO & ASSOCIATES, LLC FB NO. P-6395	THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF KIRAN V. PUNYAMANTHULA, P.E. TEXAS REG. NO.: 116965 ON 01/15/2026 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES
	<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

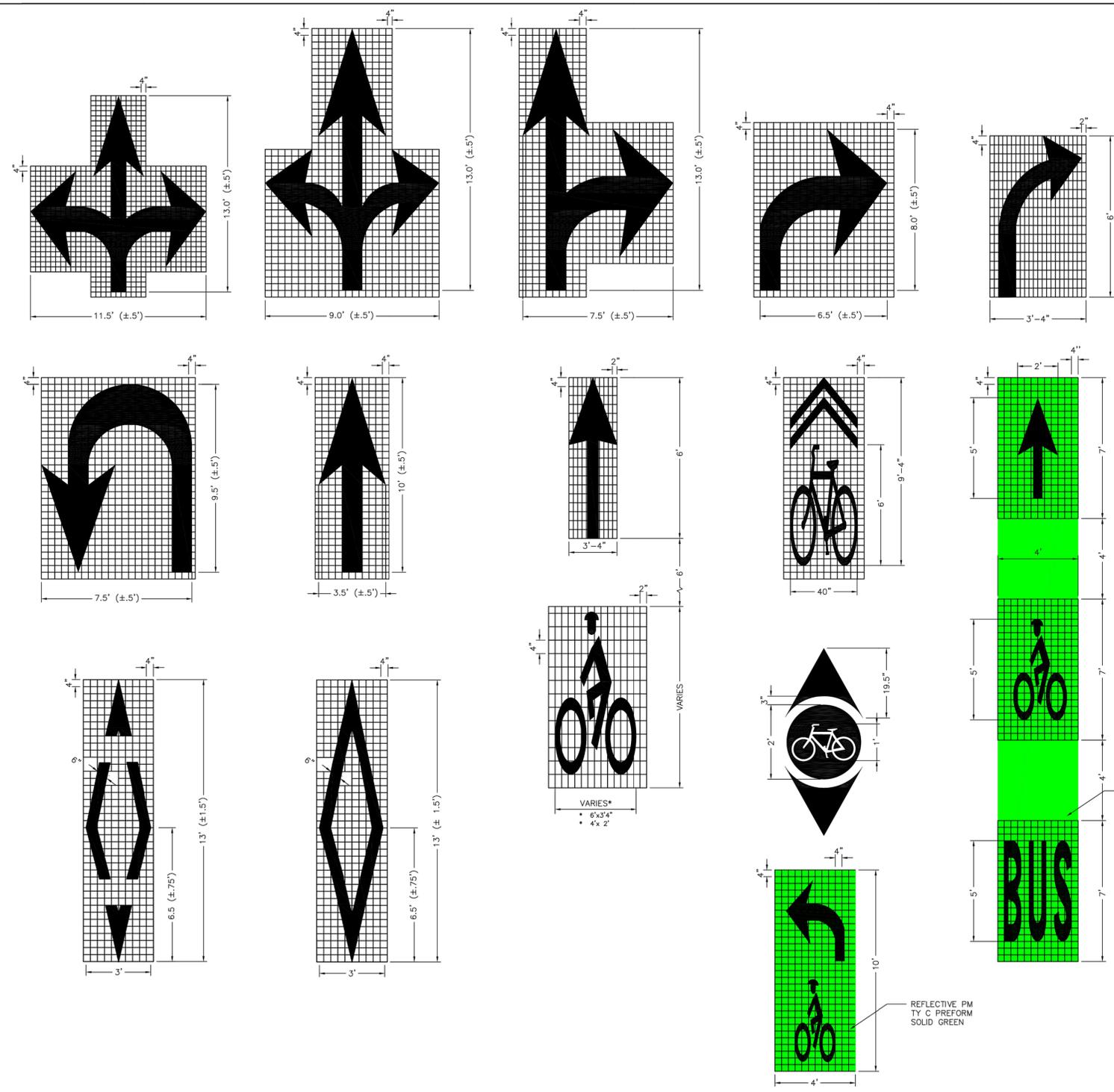
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4

COH STANDARD  
PAVEMENT MARKING DETAILS  
SHEET 3 OF 16

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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SHEET NO. 115 OF 190	

NO.	DATE	REVISION	APP.

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- NOTES FOR PAVEMENT MARKINGS "SYMBOLS" AND "ARROWS":**
- MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.
  - THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION; SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR REDUCTION BELOW ONE-THIRD OF STANDARD SIZES.
  - THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET, OR AS INDICATED ON THE PLANS.
  - MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:
    - A. REGULATOR
      - STOP
      - RIGHT (LEFT) TURN ONLY, SYMBOL ARROWS.
    - B. WARNING
      - STOP AHEAD
      - SIGNAL AHEAD
      - SCHOOL
      - SCHOOL X-ING
      - PED X-ING
      - R X R (SEE SHEET 02760-08 DETAILS)
  - UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.
  - THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES (ALL-WAY STOP).
  - PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VII OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
  - SPACING BETWEEN STANDARD SIZE LETTERS SHOULD BE 4 INCHES (MIN). THE WIDTH OF NON-STANDARD SIZE LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES. APPROVAL BY CITY TRAFFIC ENGINEER. SPECIAL PERMISSION NEEDED FOR NON-STANDARD SIZE "LETTER" AND/OR "ARROWS".
  - LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. SINGLE TURN ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".
  - PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED IN THE DESIGN PLANS.

APPROVED BY: <i>Sudal Kanwar</i> CITY ENGINEER	APPROVED BY: <i>KIRAN NAUHEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Stallock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-04
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
STANDARD PAVEMENT MARKING - SYMBOLS	
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ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
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FB NO. P-6395

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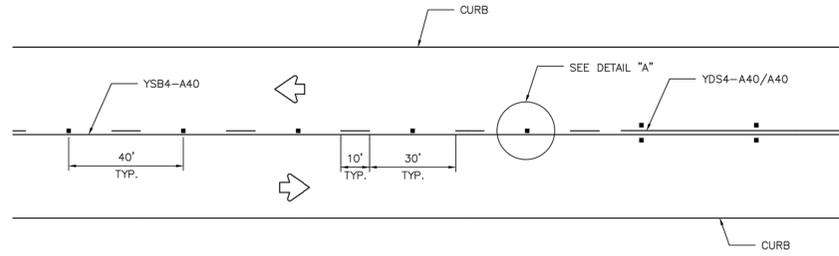
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
COH STANDARD PAVEMENT MARKING DETAILS  
SHEET 4 OF 16

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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 116 OF 190	

NO.	DATE	REVISION	APP.

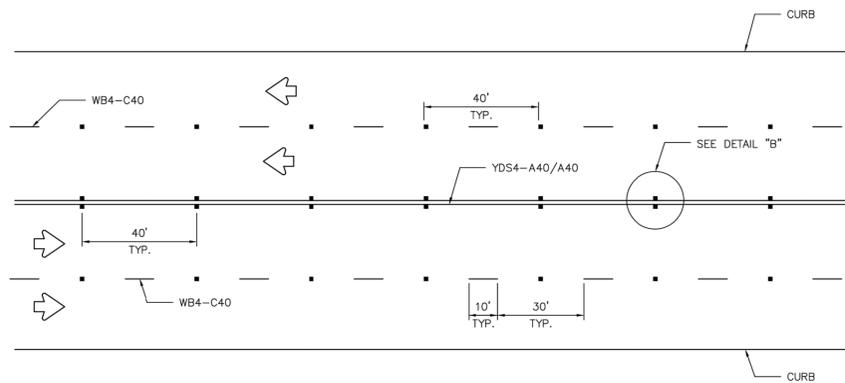
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**CENTERLINE & FOR ALL TWO LANE STREETS WITH PASSING ZONE**

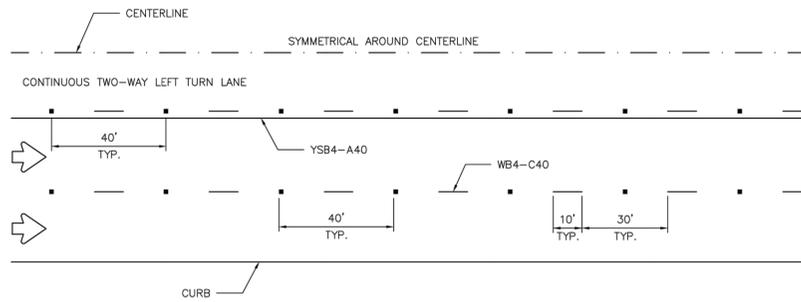


**CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY STREETS**

RRPM TYPE C, CLEAR FACE TOWARD NORMAL TRAFFIC, SHALL BE PLACED ON 40-FOOT CENTERS.

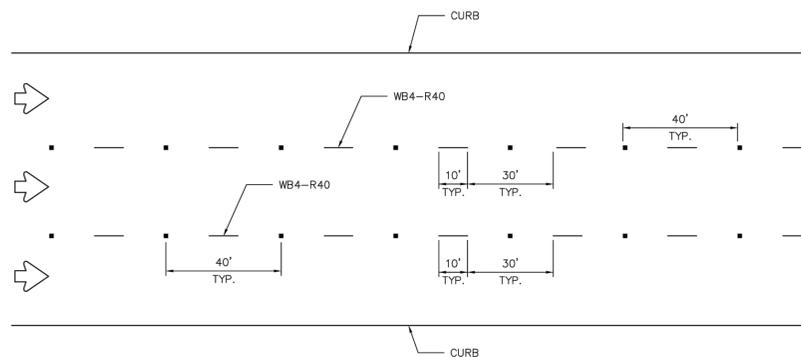


**CENTERLINE & LANE LINES FOR TWO-WAY LEFT TURN LANE**



**LANE LINES FOR ONE-WAY MULTILANE STREET**

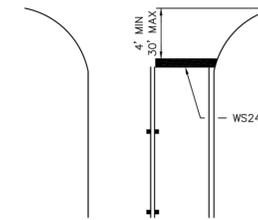
RRPM TYPE R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG-WAY TRAFFIC.



**GENERAL NOTES:**

1. EDGELINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED IN ALL CASES, HOWEVER SHALL BE PLACED AS DIRECTED BY CITY TRAFFIC ENGINEER.
2. THE TRAVELED WAY INCLUDES ONLY THAT PORTION OF THE ROADWAY USED FOR VEHICULAR TRAVEL AND NOT THE PARKING LANES, SIDEWALKS, BERMS AND SHOULDERS. THE TRAVELED WAYS SHALL BE MEASURED FROM THE INSIDE OF EDGELINE TO INSIDE OF EDGELINE OF A TWO LANE ROADWAY.
3. ALL RAISED PAVEMENT MARKERS PLACED IN BROKEN LINES SHALL BE PLACED IN LINE WITH AND MIDWAY BETWEEN THE STRIPES.
4. ON CONCRETE PAVEMENTS THE RAISED PAVEMENT MARKERS SHOULD BE PLACED TO ONE SIDE OF THE LONGITUDINAL JOINTS.
5. ALL PAVEMENT MARKING MATERIAL SHALL MEET THE REQUIRED MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF HOUSTON STANDARD SPECIFICATIONS.

**GUIDE FOR PLACEMENT OF STOP LINES & CENTERLINE**



APPROVED BY: Sulal Banwar CITY ENGINEER	APPROVED BY: KIRAN NALLIKEN CITY TRAFFIC ENGINEER
---	---

APPROVED BY: Carl Hallack DIRECTOR OF HOUSTON PUBLIC WORKS
--

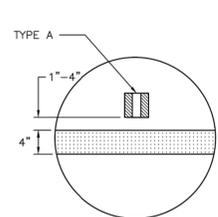
EFF DATE: NOV-27-2023	DWG NO: 02760-05
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

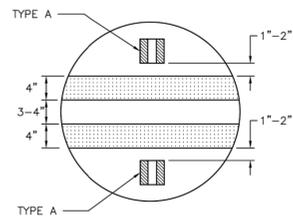
STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE

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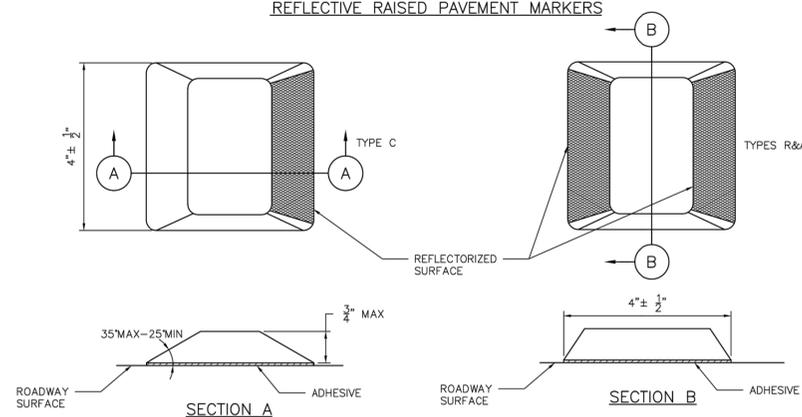
**DETAIL "A"**



**DETAIL "B"**



**REFLECTIVE RAISED PAVEMENT MARKERS**



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HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

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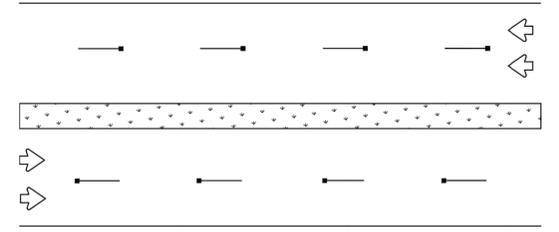
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
COH STANDARD PAVEMENT MARKING DETAILS SHEET 5 OF 16

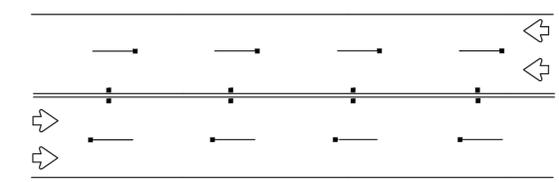
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SHEET NO. 117 OF 190	

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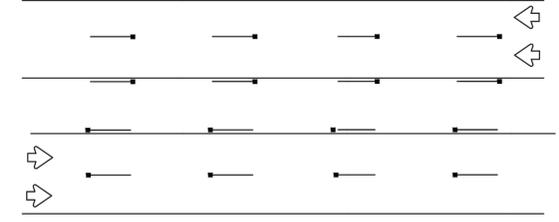
**LANE LINES FOR DIVIDED STREET**



**LANE & CENTER LINES FOR MULTILANE UNDIVIDED STREETS**

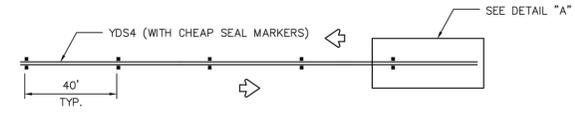


**TWO-WAY LEFT TURN LANE**

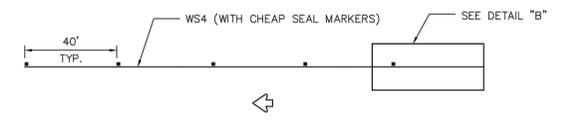


**TEMPORARY PAVEMENT MARKINGS PLACEMENT DETAILS**

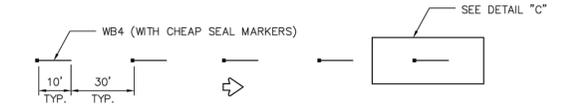
**DOUBLE YELLOW LINE**



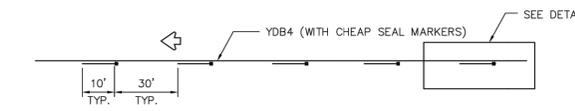
**SOLID LINES**  
EDGE LINE OR SINGLE NO-PASSING LINE



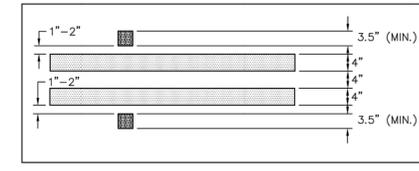
**BROKEN LINE**



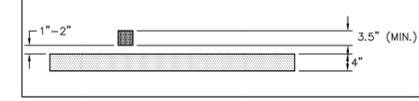
**YELLOW DOUBLE BROKEN LINE**



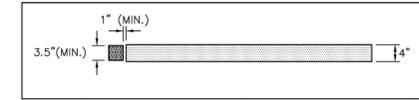
**DETAIL "A"**



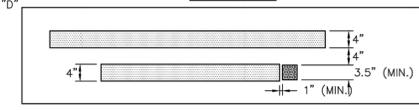
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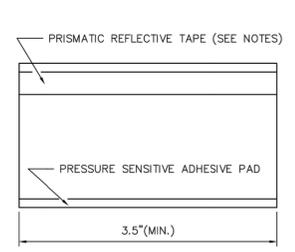
**DETAIL "C"**



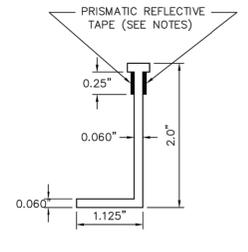
**DETAIL "D"**



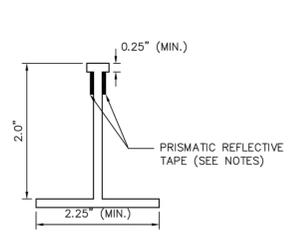
**TEMPORARY CHIP SEAL MARKER DETAIL**



**TEMPORARY PAVEMENT MARKER FRONT VIEW**



**1" DESIGN RIGHT VIEW**



**2" DESIGN RIGHT VIEW**

**NOTES:**

1. YELLOW MARKERS SHALL HAVE YELLOW BODIES AND YELLOW REFLECTIVE TAPE.
2. WHITE MARKERS SHALL HAVE WHITE BODIES AND WHITE REFLECTIVE TAPE.
3. ONE-WAY OR TWO-WAY REFLECTIVE SHALL BE USED AS NECESSARY FOR APPLICATION.
4. THE CLEAR PLASTIC COVER MAY VARY FROM ONE MANUFACTURER TO ANOTHER IF DEEMED NECESSARY BY SPECIFIC PROJECT.
5. ALL TEMPORARY PAVEMENT MARKERS SHALL BE PLACED WITH REFLECTIVE SIDE FACING ONCOMING TRAFFIC.
6. ALL TEMPORARY STRIPING SHALL BE WATER BASED PAINT.

APPROVED BY: <i>Sulad Banwar</i> CITY ENGINEER	APPROVED BY: <i>KIRAN MATHUEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hubbard</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-06
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
REFLECTIVE CHIP SEAL MARKER USE FOR TEMPORARY MARKINGS	
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ENGINEERING + SURVEYING  
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HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
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FB NO. P-6395

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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

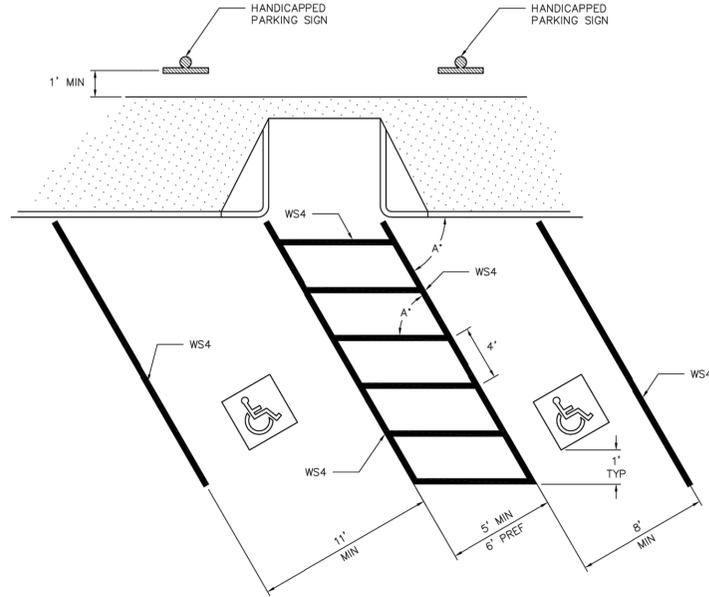
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

COH STANDARD PAVEMENT MARKING DETAILS SHEET 6 OF 16

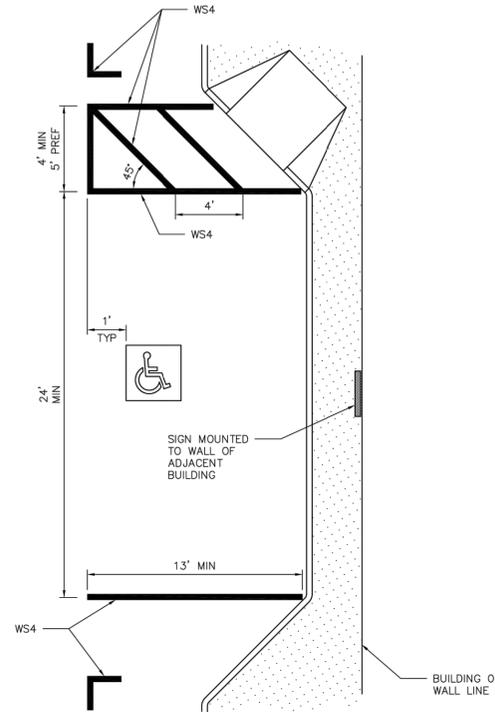
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CITY OF HOUSTON PM	
MARTIN MATHUEN, ENV SP	
SHEET NO. 118 OF 190	

NO.	DATE	REVISION	APP.

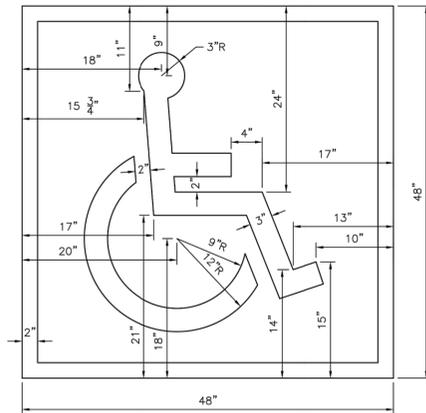
TYPICAL ACCESSIBLE PARKING SPACE DIMENSIONS



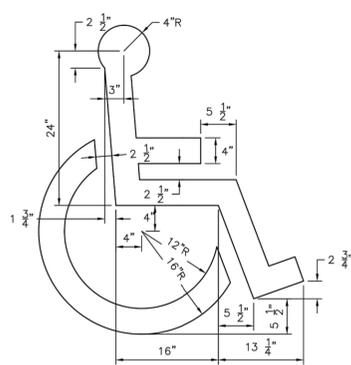
RAMP DETAILS ARE AS SHOWN ELSEWHERE IN THE PLANS. REFER TO CITY OF HOUSTON STANDARDS ON WHEELCHAIR RAMP CRITERIA.



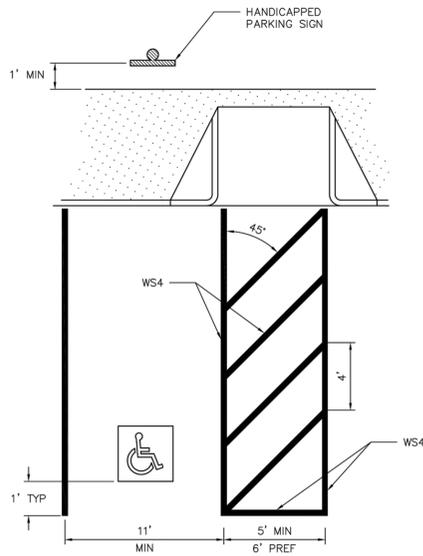
HANDICAPPED PAVEMENT MARKING SYMBOLS



WITH BACKGROUND  
SYMBOL & BORDER: WHITE  
BACKGROUND: BLUE



SYMBOL ONLY  
SYMBOL: BLUE OR WHITE



NOTES:

1. ALL PARKING SPACE LIMIT LINES SHALL BE 4", WS4.
2. AISLE MARKINGS SHOWN ARE EXAMPLES ONLY. OTHER METHODS TO INDICATE A NO PARKING AREA ARE ACCEPTABLE. AISLE MARKINGS SHALL BE WHITE.
3. DIMENSIONS OF LIMIT LINES, AISLE MARKINGS, AND SYMBOL (WITH OR WITHOUT BACKGROUND) MAY VARY ± 10%.
4. PAVEMENT MARKING SYMBOLS (WITH BACKGROUND):  
A) ARE REQUIRED UNLESS STATED ELSEWHERE IN THE PLANS.  
B) SHOULD BE PLACED TOWARD THE FAR END OF THE PARKING SPACES SO AS TO BE VISIBLE TO MOTORISTS IN THE TRAVEL LANE.  
C) MAY BE PAINTED OR PREFABRICATED MATERIAL, AND D) SHALL BE 30"x 30" MINIMUM.
5. WITH APPROVAL OF THE CITY TRAFFIC ENGINEER, PREFABRICATED PAVEMENT MARKING SYMBOLS WITH BACKGROUND OF OTHER DIMENSIONS EXCEEDING THE 30"x 30" MINIMUM MAY BE USED. ALTERNATIVE DESIGNS SHALL INCLUDE A PROPORTION SIZED SYMBOL OF ACCESSIBILITY, AND SHALL CONFORM TO THE ILLUSTRATED COLORS FOR BACKGROUND, SYMBOL AND BORDER.
6. ALL SLOPE IN AND AROUND EXPECTED WHEELCHAIR PATH SHALL NOT EXCEED ADA REQUIREMENTS FOR WHEELCHAIR RAMPS.
7. REFER TO CITY OF HOUSTON TRAFFIC SIGN STANDARDS FOR HANDICAPPED PARKING SIGN DETAILS.
8. NOTE THAT ANGLED PARKING ON PUBLIC ROADWAYS REQUIRE CITY COUNCIL APPROVAL BEFORE IMPLEMENTATION.

APPROVED BY: <i>Suhail Khanwar</i> CITY ENGINEER	APPROVED BY: <i>BRAND NATHAN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hallock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-07
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
PAVEMENT MARKINGS FOR ACCESSIBLE PARKING	
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ENGINEERING + SURVEYING  
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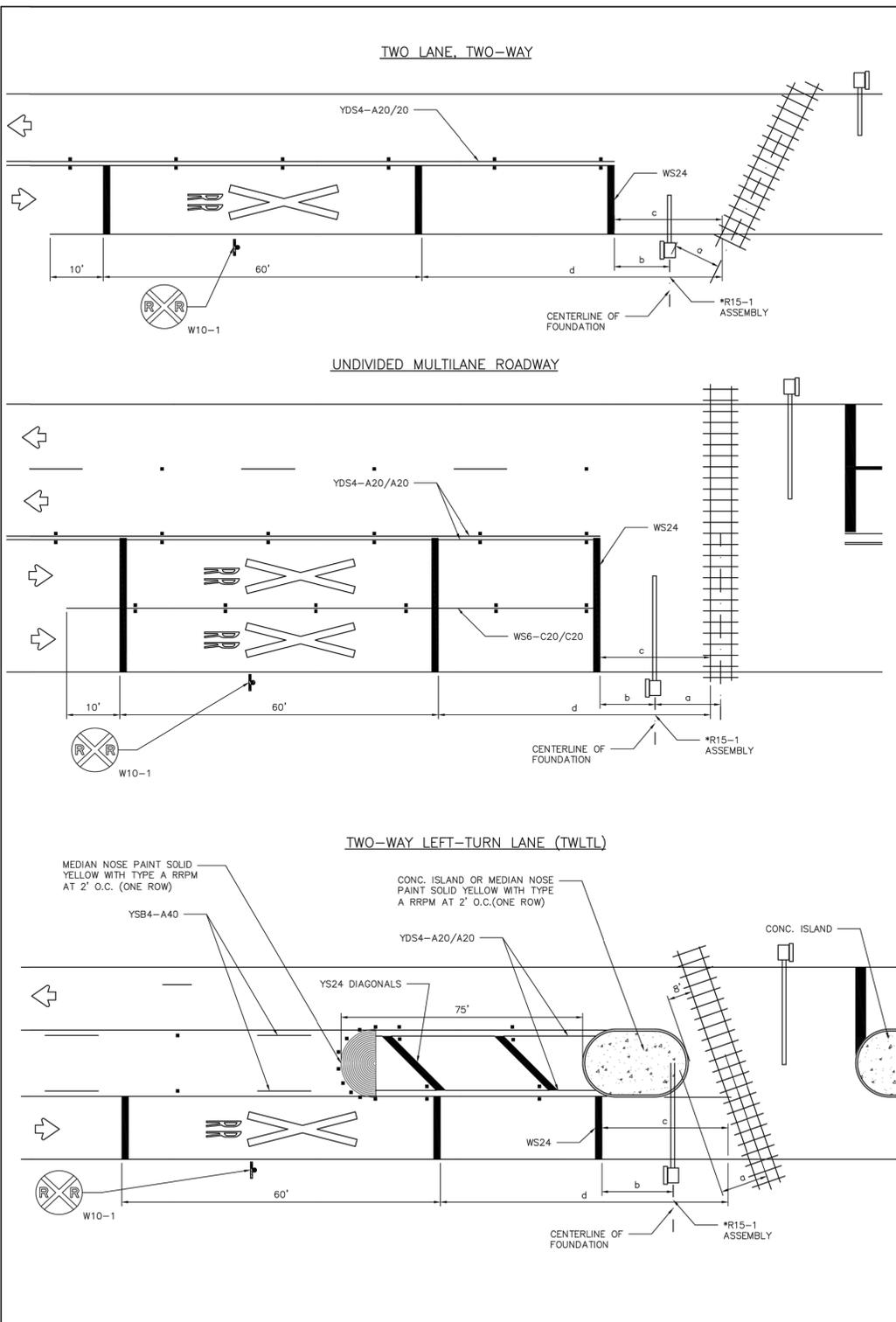
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
COH STANDARD PAVEMENT MARKING DETAILS SHEET 7 OF 16

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MARTIN MATHEW, ENV SP	
SHEET NO. 119 OF 190	

DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INDIRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

NO.	DATE	REVISION	APP.

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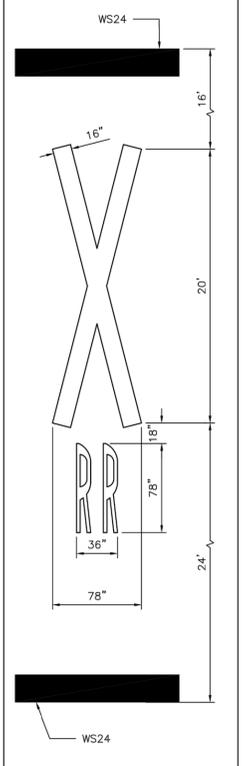


- a = 12 FEET MINIMUM, 15 FEET USUAL, IF ACTIVE WARNING DEVICES ARE PRESENT. DISTANCE "a" SHOULD BE MEASURED FROM THE CENTER-LINE OF \*R15-1 ASSEMBLY TO THE CENTER-LINE OF NEAREST TRACK.
- b = STOP LINES SHOULD BE APPROXIMATELY 8 FEET IN ADVANCE OF ACTIVE WARNING DEVICES (TYPE A, E OR F). STOP LINE SHOULD BE APPROXIMATELY 15 FEET FROM NEAR RAIL IF ONLY PASSIVE DEVICES (R15-1, PLUS R15-2 WHEN APPLICABLE) ARE PRESENT.
- c = 15 FEET DESIRABLE MINIMUM IF NO GATE OR SIGNAL IS PRESENT. R15-1 SHOULD BE PLACED BETWEEN STOP LINE AND RAILS WITH ADEQUATE DISTANCE PROVIDED FOR "a".

d\* =

APPROACH SPEED LIMIT (MPH)	DESIRABLE PLACEMENT (FEET)
20	145
25	220
30	295
35	370
40	445
45	520
50	595
55	670
60	745
65	820
70	900

\*LOCAL CONDITIONS MAY REQUIRE ALTERNATE PLACEMENT LOCATIONS.



**NOTES:**

- THE PAVEMENT MARKINGS ON AN APPROACH TO A RAILROAD GRADE CROSSING SHALL CONSIST OF:
  - THE RR X-ING SYMBOL,
  - THREE TRANSVERSE 24" LINES, AND
  - LANE LINES: A SOLID NO PASSING LINE FOR TWO-WAY TRAFFIC APPROACHES, OR SOLID LAND LINES FOR MULTILANE APPROACHES.
- FOR BIDDING PURPOSES, THE RR X-ING SYMBOL WILL BE MEASURED AND PAID FOR AS FOR EACH (EA) LANE IN PLACE. THE TRANSVERSE MARKINGS AND LANE LINES WILL BE MEASURED AND PAID FOR BY THE LINEAR FOOT (LF).
- APPROACH LANES LESS THAN 8 FOOT WIDTH SHALL NOT HAVE MARKINGS.
- MARKINGS SHOULD NOT BE PLACED WHERE LESS THAN 110 FEET OF APPROACH ROADWAY IS AVAILABLE FOR PLACEMENT UNLESS DIRECTED BY CITY TRAFFIC ENGINEER.
- RR X-ING SYMBOLS SHOULD BE PLACED APPROXIMATELY IN THE CENTER OF THE APPROACH LANE.
- ALL TRANSVERSE MARKINGS, INCLUDING STOP LINES, SHALL BE PLACED AT RIGHT ANGLES TO THE CENTERLINE AND ACROSS ALL APPROACH LANES.
- EXISTING NON-STANDARD MARKINGS SHALL BE REMOVED TO THE FULLEST EXTENT POSSIBLE SO AS NOT TO LEAVE A DISCERNABLE MARKING, BY ANY METHOD APPROVED BY THE CITY TRAFFIC ENGINEER. OVERPAINTING WILL NOT BE ALLOWED.
- ADDITIONAL MARKINGS AND PLACEMENT DETAILS MAY BE FOUND IN THE TMTCD, APPENDIX H.
- THE CITY TRAFFIC ENGINEER MAY REQUIRE ADDITIONAL LONGITUDINAL MARKINGS IF THE DISTANCE BETWEEN THE STOP LINES IS GREATER THAN 80 FEET. MARKINGS ARE NOT REQUIRED ACROSS OR BETWEEN THE RAILS UNLESS SPECIFIED ELSEWHERE IN THE PLANS.

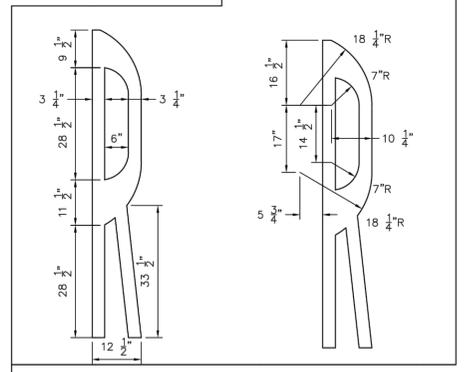


SIGN W10-1 TO BE PLACED AS SHOWN IN TYPICAL DETAILS WHEN PAVEMENT MARKINGS ARE INSTALLED.

**\*R15-1 ASSEMBLY**

MAY CONSIST OF ONE OR MORE OF THE FOLLOWING:

- R15-1 CROSSBUCK SIGN
- R15-2 MULTIPLE TRACK SIGN
- TYPE A MAST FLASHERS
- TYPE E CANTILEVERS
- TYPE F GATES



APPROVED BY: <i>Sulrat Banwar</i> CITY ENGINEER	APPROVED BY: <i>KIRAN MATHWEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hallock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-08
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
RAILROAD CROSSING PAVEMENT MARKING DETAILS	
FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE	
NOT TO SCALE	

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ENGINEERING + SURVEYING  
10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578

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SURVEYED BY:  
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HOUSTON PUBLIC WORKS

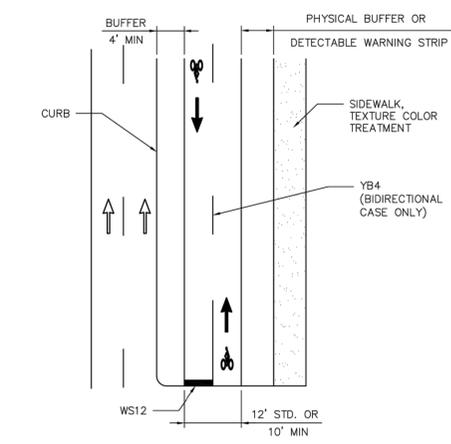
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

COH STANDARD PAVEMENT MARKING DETAILS SHEET 8 OF 16

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHWEN, ENV SP	
SHEET NO. 120 OF 190	

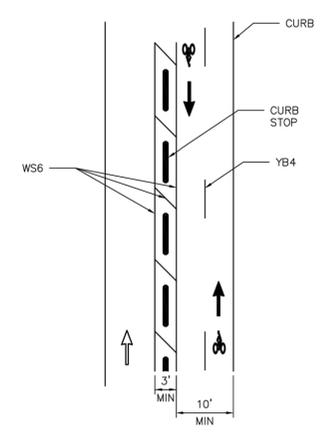
NO.	DATE	REVISION	APP.

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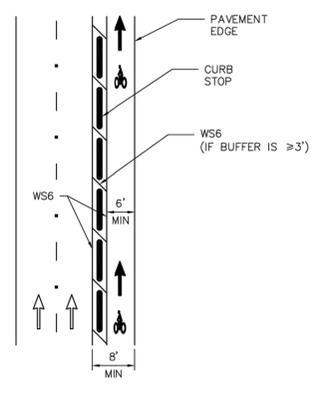


**DEDICATED BIKE PATH**

BIDIRECTIONAL CASE SHOWN, ONE-WAY CASE SIMILAR (LANE WIDTH 6' STD OR 5' MIN)

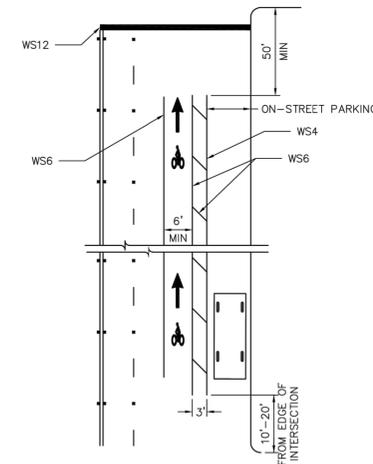


**BIDIRECTIONAL PROTECTED BIKE LANE**



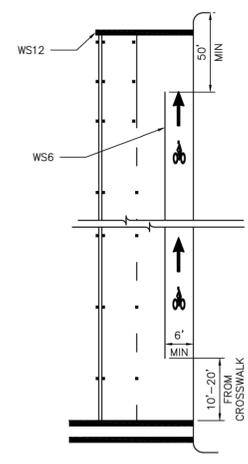
**ON-STREET PROTECTED/BUFFERED BIKE LANE**  
SEE NOTE 6

- NOTES:**
- ALL PAVEMENT MARKINGS SHALL BE WHITE EXCEPT WHEN NOTED OTHERWISE ON PLANS.
  - PAVEMENT MARKINGS SHALL BE OF THE MATERIALS SPECIFIED AND SHALL BE IN CONFORMANCE WITH MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF HOUSTON STANDARD SPECIFICATIONS.
  - EXACT SIGN PLACEMENT AND DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.
  - ADDITIONAL REFERENCES: TMUTCD (TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) GUIDE FOR THE DEVELOPMENT OF BICYCLES FACILITIES, AASHTO, LATEST EDITION.
  - SHARED LANE MARKING SHALL BE IMPLEMENTED ONLY ON ROADWAY SEGMENT BUT NOT WITHIN THE FUNCTIONAL LIMITS OF AN INTERSECTION.
  - PHYSICAL PROTECTION IS PREFERRED FOR BIKE WAY DESIGN. A BIKE WAY DESIGN THAT LACKS PHYSICAL PROTECTION SHALL REQUIRE APPROVAL FROM TDO.
  - REFER TO CONTRACT DRAWINGS FOR MARKINGS FOR ADDITIONAL SHARED LANE REQUIREMENTS.



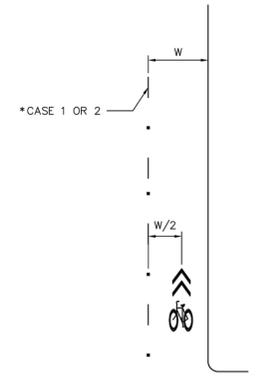
**STANDARD BIKE LANES**

ON-STREET PARKING ALONG BICYCLE LANE  
SEE NOTE 6



**STANDARD BIKE LANES**

NO ON-STREET PARKING ALONG BICYCLE LANE  
SEE NOTE 6



\* CASE 1: LANE STRIPING  
CASE 2: ROADWAY CENTERLINE

**SHARED LANE MARKING**  
SEE NOTE 6

APPROVED BY: <i>Suhail Hanwar</i> CITY ENGINEER	APPROVED BY: <i>BRAND NATHAN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hubbard</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-09
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
<b>BICYCLE LANE PAVEMENT MARKINGS</b>	
FOR CITY OF HOUSTON USE ONLY	
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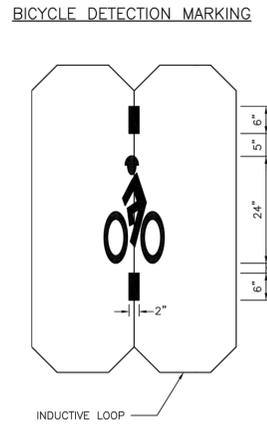
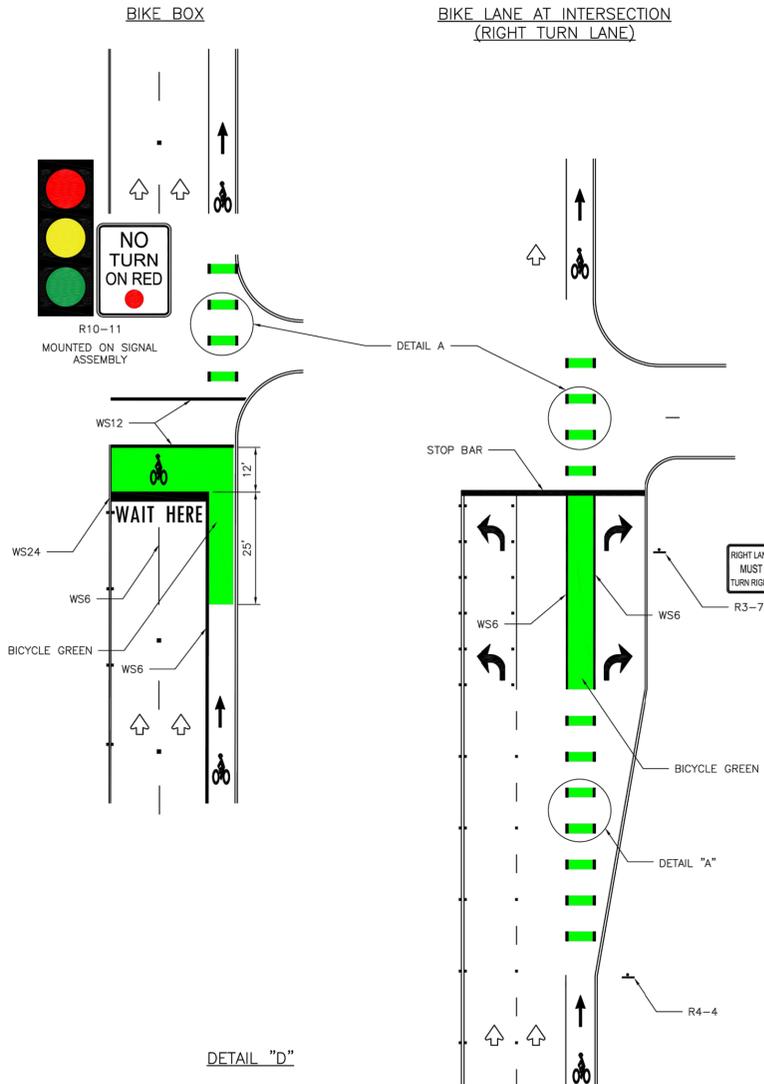
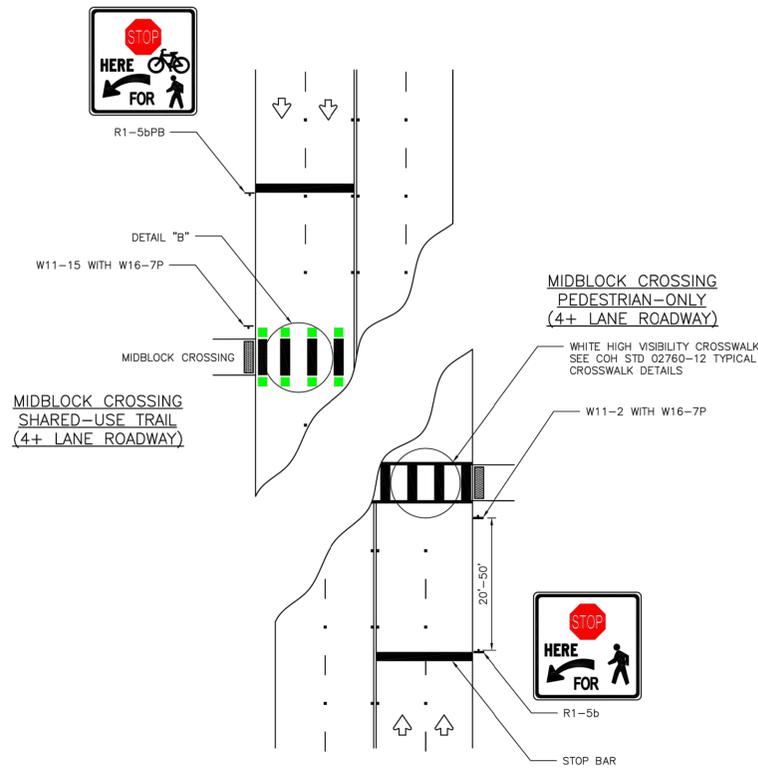
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

COH STANDARD PAVEMENT MARKING DETAILS SHEET 9 OF 16

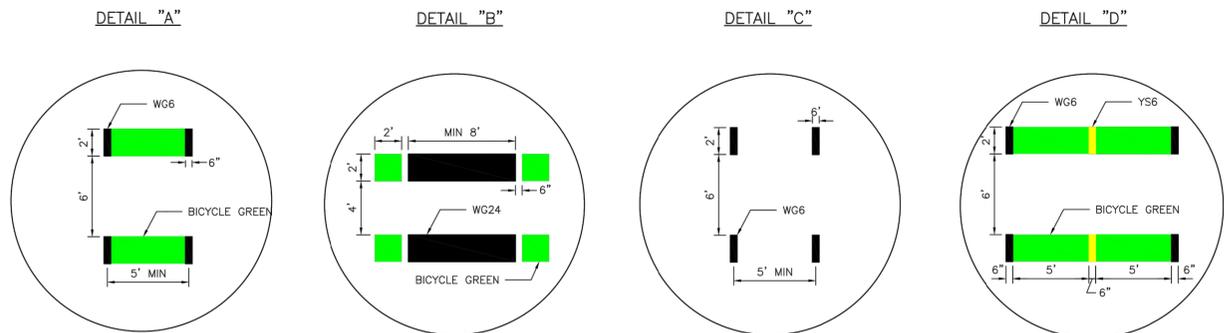
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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 121 OF 190	

NO.	DATE	REVISION	APP.

USE OF TREATMENTS ON THIS SHEET MUST BE PRE-APPROVED BY THE CITY TRAFFIC ENGINEER



- NOTE:**
1. ALL PAVEMENT MARKINGS SHALL BE WHITE EXCEPT WHEN NOTED OTHERWISE ON PLANS.
  2. PAVEMENT MARKINGS SHALL BE OF THE MATERIALS SPECIFIED AND SHALL BE IN CONFORMANCE WITH MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF HOUSTON STANDARD SPECIFICATIONS.
  3. WHERE NOT SHOWN ON THIS SHEET, SIGN PLACEMENT AND DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.
  4. ADDITIONAL REFERENCES (LATEST EDITION):
    - 4.1. T MUTCD (TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES)
    - 4.2. GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES, AASHTO
    - 4.3. URBAN BIKEWAY DESIGN GUIDE, NACTO
  5. FOR PLACEMENT OF PAVEMENT ARROWS AND WORDS SEE COH STD 02760-13 & 02760-14 LEFT-TURN LANE & RIGHT TURN LANE DESIGN.



APPROVED BY: <i>Suland Kaurwar</i> CITY ENGINEER	APPROVED BY: <i>KIRAN V. PUNYAMANTHULA</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Haddock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-10
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
<b>BICYCLE INTERSECTION TREATMENTS</b>	
SHEET 01 OF 02 FOR CITY OF HOUSTON USE ONLY	
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MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4

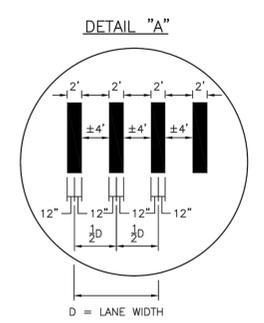
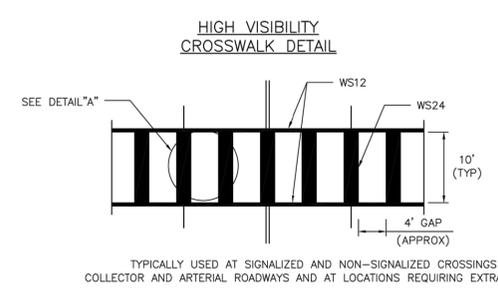
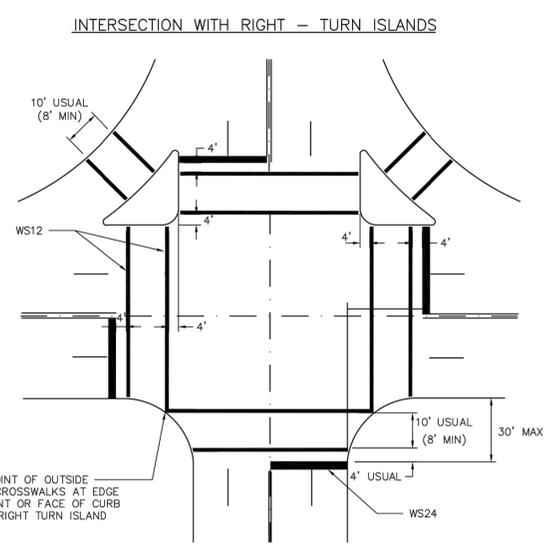
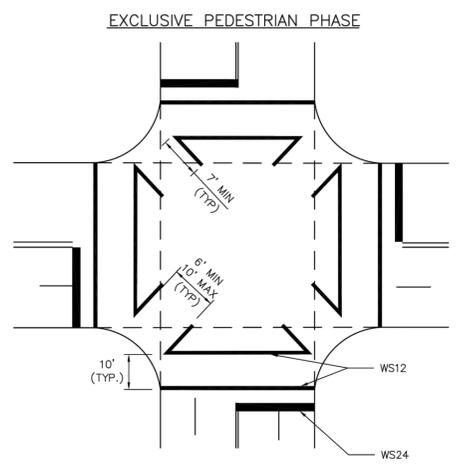
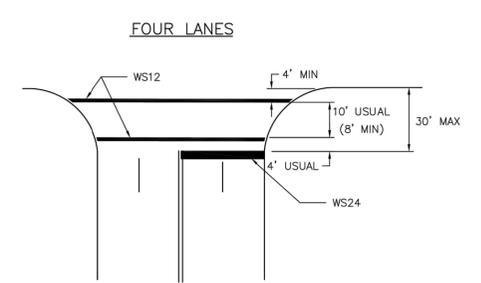
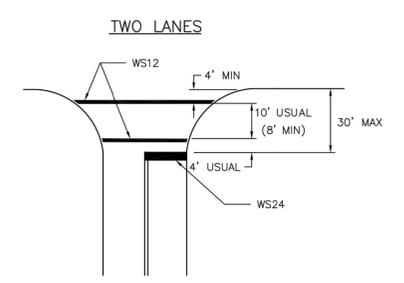
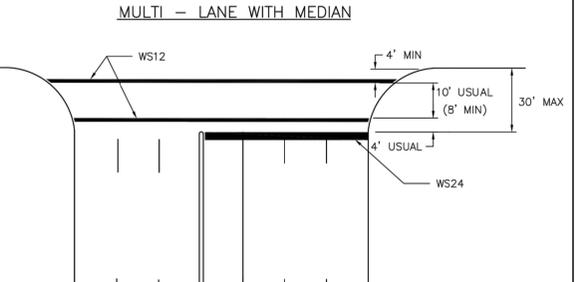
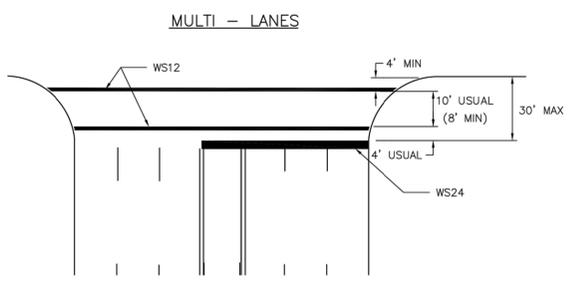
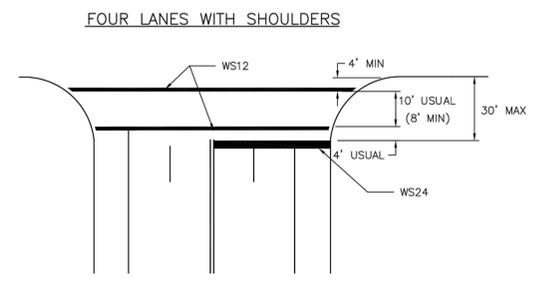
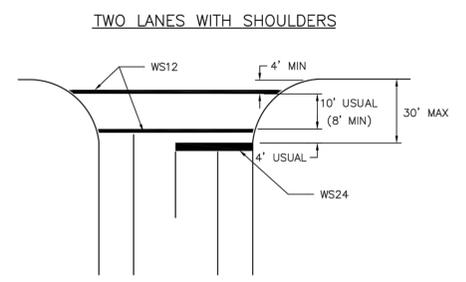
COH STANDARD  
PAVEMENT MARKING DETAILS  
SHEET 10 OF 16

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 122 OF 190	

NO.	DATE	REVISION	APP.



NO.	DATE	REVISION	APP.



- NOTES:**
- CROSSWALKS AND STOP LINES SHALL BE WHITE.
  - "D" IS EQUAL TO ONE HALF THE WIDTH OF TRAVEL LANE.

APPROVED BY: DocuSigned by: <i>Sudal Kanwar</i> 16218803641118476	APPROVED BY: DocuSigned by: <i>KIRAN V. PUNYAMANTHULA</i> 16A0E1F4A180C3C
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: <i>Carl Hallock</i> 16A0E1F4A180C3C	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-12
CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
TYPICAL CROSSWALK DETAILS	
FOR CITY OF HOUSTON USE ONLY	
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NOT TO SCALE	

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HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

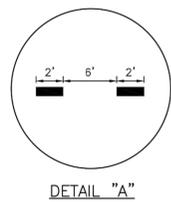
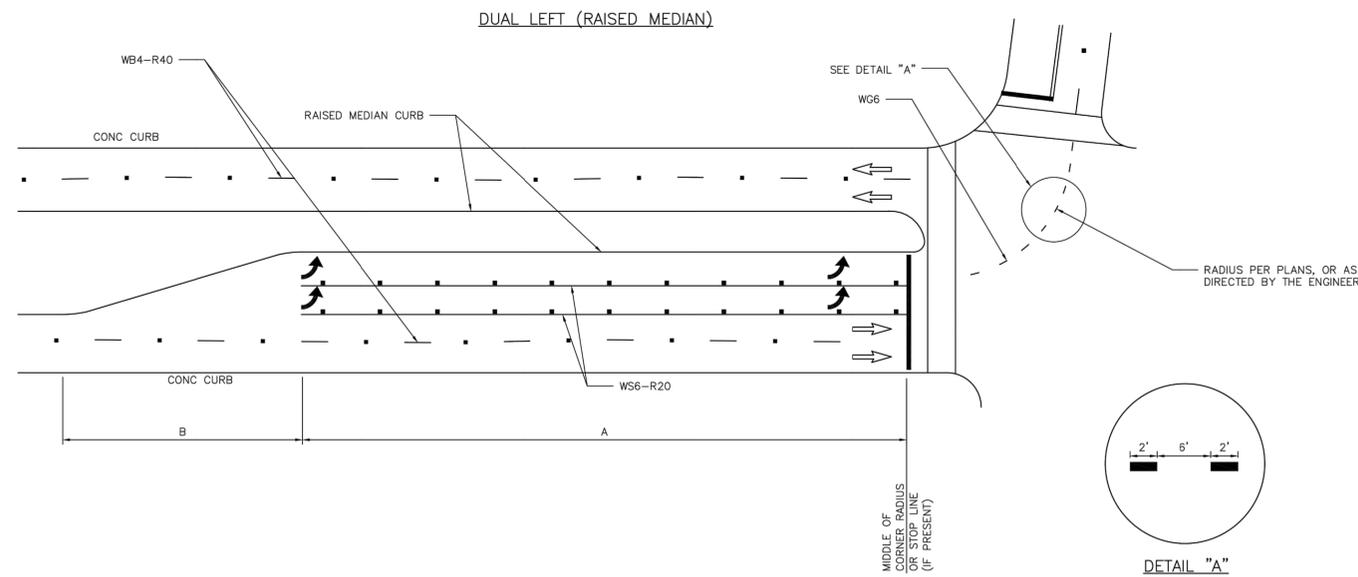
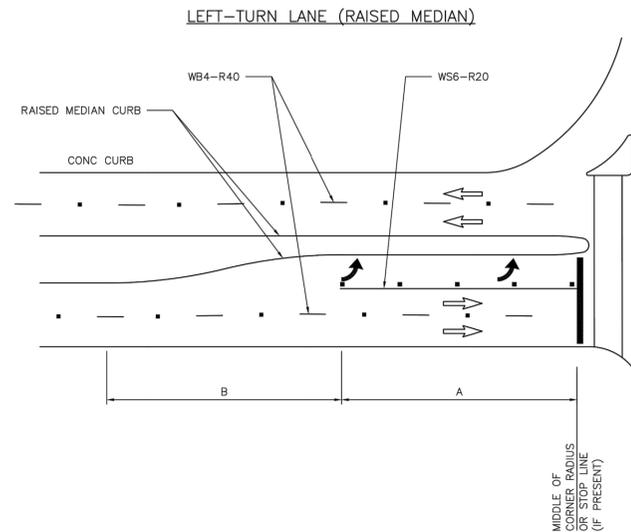
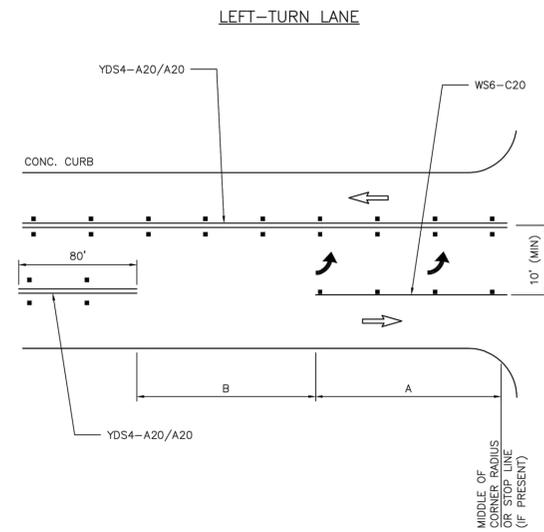
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
COH STANDARD PAVEMENT MARKING DETAILS  
SHEET 12 OF 16

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 124 OF 190	

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DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



**GENERAL NOTES:**

1. THE DIMENSIONS GIVEN FOR DUAL LEFT (RAISED MEDIAN) ON THIS SHEET ARE ALSO APPLICABLE FOR DUAL RIGHT-TURN LANES.
2. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS.
3. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS REFER TO 02760-02 - LEFT/RIGHT TURN "ONLY" AND ARROW SPACING.
4. REFER TO APPLICABLE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE AND LEFT-TURN & RIGHT-TURN LANE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKINGS.
5. REFER TO BICYCLE LANE PAVEMENT MARKINGS STANDARD FOR TYPE AND PLACEMENT.

**LEFT TURN BAY NOTES:**

1. LEFT TURN BAY DIMENSIONS
  - A = 150' MINIMUM AT INTERSECTION OF TWO (2) MAJOR STREETS WHEN PRACTICAL.
  - = 100' MINIMUM AT ALL OTHER INTERSECTIONS.
  - B = 100' MINIMUM ON STRAIGHT ROADWAYS.
  - \*TAPER LENGTH MAY BE SHORTER IF IT IS ON A HORIZONTAL CURVE TO THE LEFT.
  - \*TAPER LENGTH MAY BE LONGER IF CURVE IS TO THE RIGHT.
2. DIMENSIONS SHALL BE ADJUSTED AS DETERMINED BY CITY OF HOUSTON TRAFFIC ENGINEER.
3. REFER TO CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL (FIGURE 10.8) FOR DETAILS.

APPROVED BY: <i>Suhail Banwar</i> CITY ENGINEER	APPROVED BY: <i>BRANG NAUEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hubbard</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-13
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
LEFT-TURN LANE & RIGHT-TURN LANE DESIGN	
SHEET 01 OF 02	
FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE	
NOT TO SCALE	

**KUO & ASSOCIATES**  
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10300 WESTOFFICE DR. SUITE 800  
HOUSTON, TX 77042  
713-975-8769  
TX FIRM NO.: F-4578  
SURVEYED BY:  
KUO & ASSOCIATES, LLC  
FB NO. P-6395

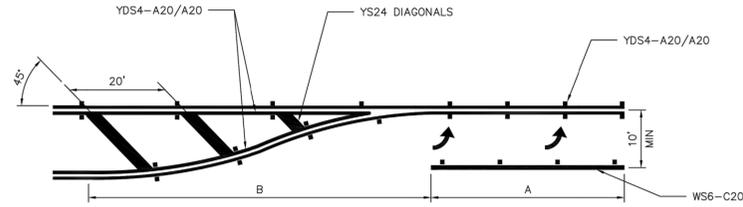
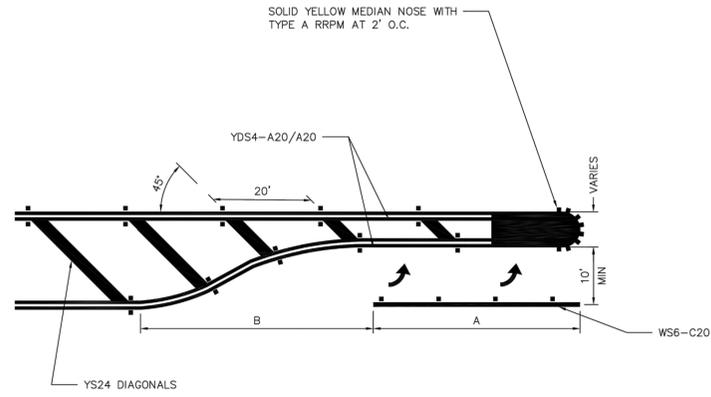
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
COH STANDARD PAVEMENT MARKING DETAILS  
SHEET 13 OF 16

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DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 125 OF 190	

NO.	DATE	REVISION	APP.

**PAINTED MEDIAN LEFT TURN BAY DETAILS**



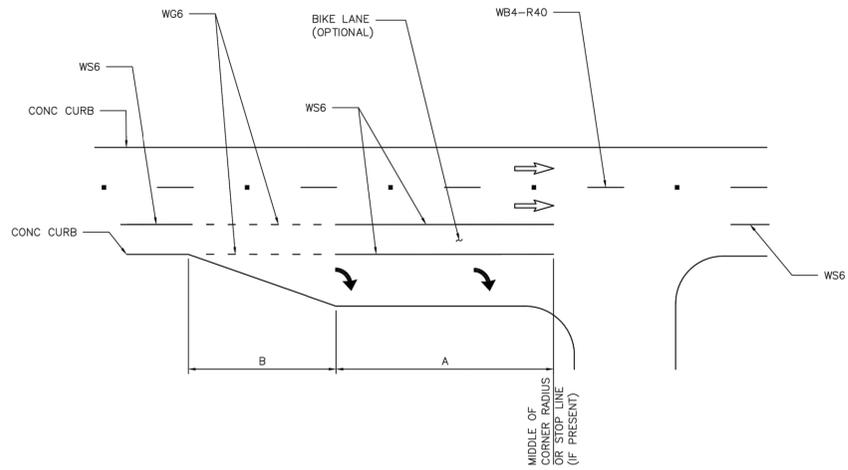
**GENERAL NOTES:**

1. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS OR APPROXIMATE CALCULATIONS.
2. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS REFER TO 02760-02 - LEFT/RIGHT TURN "ONLY" AND ARROW SPACING.
3. REFER TO APPLICABLE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE AND LEFT-TURN & RIGHT-TURN LANE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKINGS.
4. REFER TO BICYCLE LANE PAVEMENT MARKINGS STANDARD FOR TYPE AND PLACEMENT.

**LEFT TURN BAY NOTES:**

1. LEFT TURN BAY DIMENSIONS  
 A = 150' MINIMUM AT INTERSECTION OF TWO (2) MAJOR STREETS WHEN PRACTICAL.  
 = 100' MINIMUM AT ALL OTHER INTERSECTIONS.  
 B = 100' MINIMUM ON STRAIGHT ROADWAYS.  
 \*TAPER LENGTH MAY BE SHORTER IF IT IS ON A HORIZONTAL CURVE TO THE LEFT.  
 \*TAPER LENGTH MAY BE LONGER IF CURVE IS TO THE RIGHT.
2. DIMENSIONS SHALL BE ADJUSTED AS DETERMINED BY CITY OF HOUSTON TRAFFIC ENGINEER.
3. REFER TO CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL (FIGURE 10.8) FOR DETAILS.

**UNSIGNALIZED RIGHT-TURN LANE**



APPROVED BY: <i>Sulal Khanwar</i> CITY ENGINEER	APPROVED BY: <i>KIRAN NAJEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>[Signature]</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-14
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
LEFT TURN LANE & RIGHT TURN LANE DESIGN	
SHEET 02 OF 02 FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE	
NOT TO SCALE	

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713-975-8769  
TX FIRM NO.: F-4578

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

LEFT TURN LANE &  
RIGHT TURN LANE DESIGN

SHEET 02 OF 02  
FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE  
NOT TO SCALE

CITY OF HOUSTON PM  
MARTIN MATHEW, ENV SP

SHEET NO. 126 OF 190

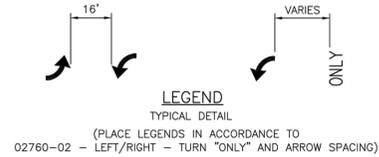
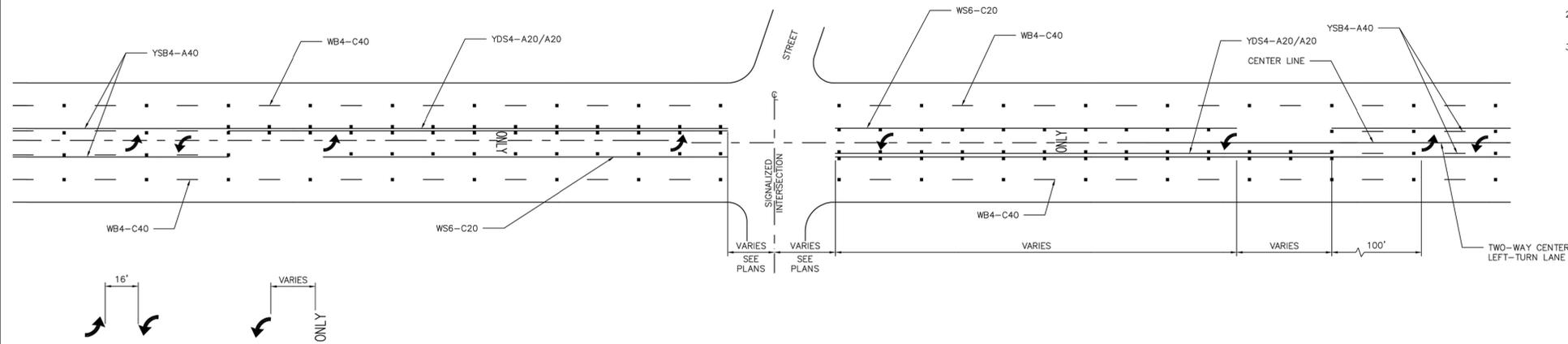
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ON 01/15/2026  
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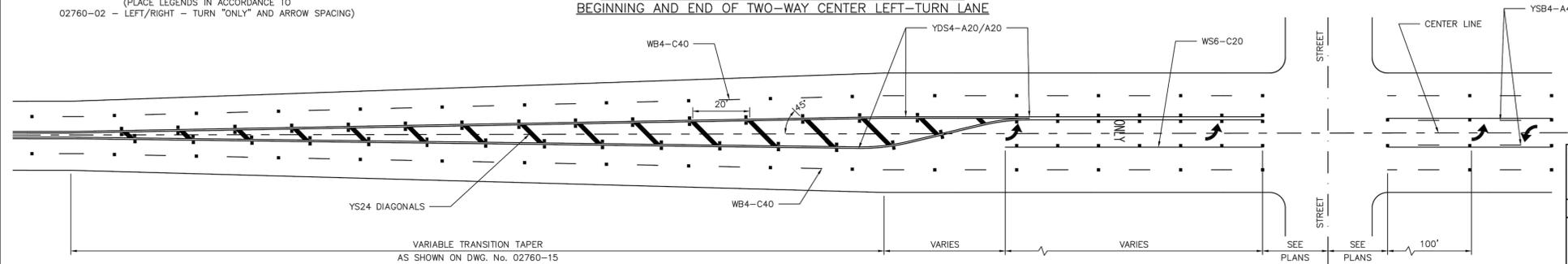
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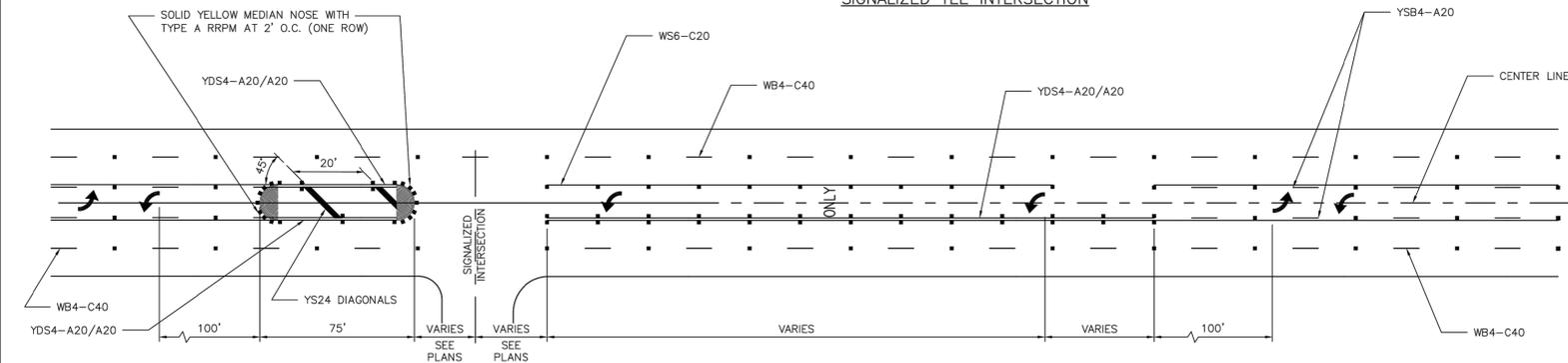
**TYPICAL TWO-WAY LEFT-TURN LANE DETAILS  
SIGNALIZED INTERSECTION**



**TYPICAL MEDIAN LEFT TURN BAY  
SIGNALIZED AND NON-SIGNALIZED CROSS STREETS AT  
BEGINNING AND END OF TWO-WAY CENTER LEFT-TURN LANE**



**TYPICAL TWO-WAY LEFT-TURN LANE DETAILS  
SIGNALIZED TEE INTERSECTION**



- NOTE:**
- REFLECTIVE RAISED PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE AND LEFT-TURN & RIGHT-TURN LANE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS.
  - SEE LEFT-TURN & RIGHT-TURN LANE DESIGN WORKSHEET FOR APPLICABLE INFORMATION.
  - REFER TO 02760-02 - LEFT/RIGHT TURN "ONLY" AND ARROW SPACING.

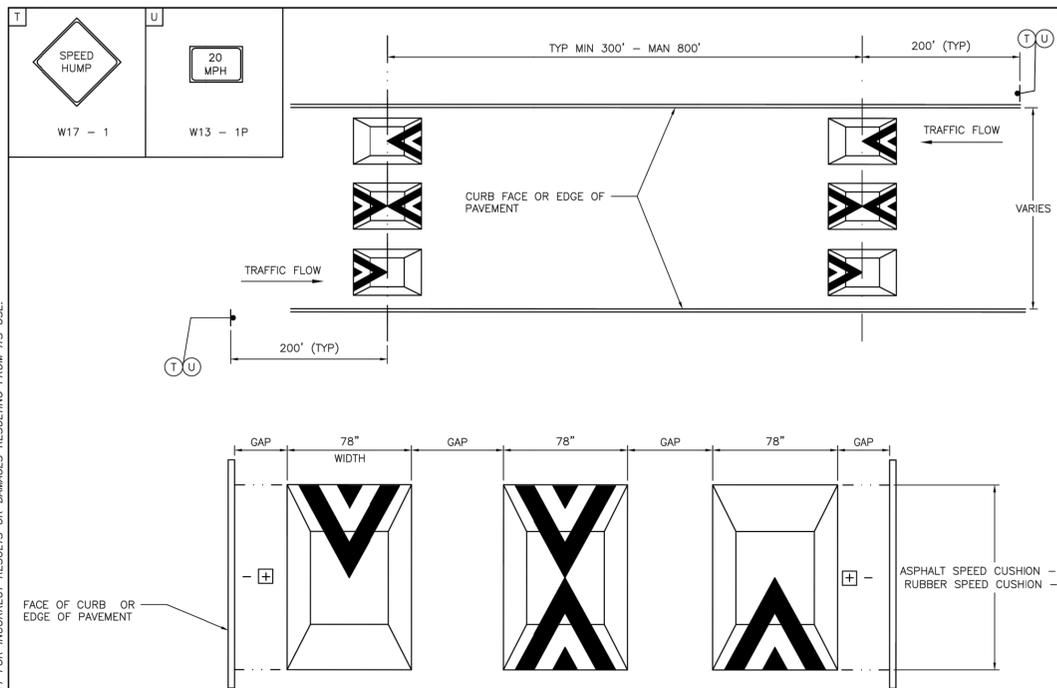
APPROVED BY: <i>Sudat Banwar</i> CITY ENGINEER	APPROVED BY: <i>KIRAN V. PUNYAMANTHULA</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Haddock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-16
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
<b>TWO-WAY LEFT-TURN LANE DETAIL 2</b>	
SHEET 02 OF 02 FOR CITY OF HOUSTON USE ONLY	
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	CITY OF HOUSTON HOUSTON PUBLIC WORKS MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 COH STANDARD PAVEMENT MARKING DETAILS SHEET 15 OF 16

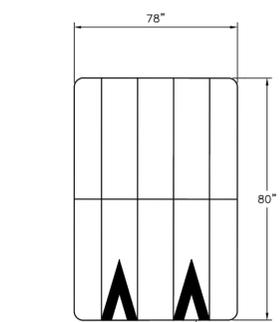
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
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MARTIN MATHEW, ENV SP	
SHEET NO. 127 OF 190	

NO.	DATE	REVISION	APP.

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**RUBBER SPEED CUSHION**

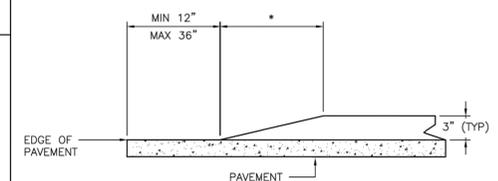
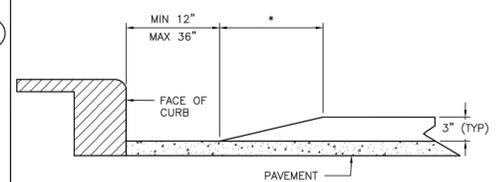
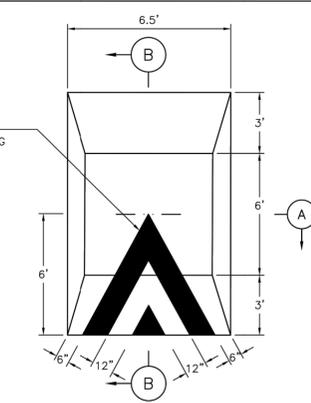
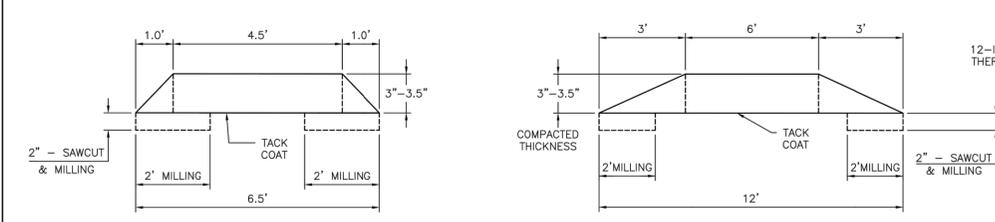


SEE SECTION 13500 FOR MATERIAL AND PRODUCT SPECIFICATIONS  
INSTALL PER MANUFACTURER'S SPECIFICATIONS

**NOTES:**

1. SPEED CUSHIONS AND ASSOCIATED SIGNS AND PAVEMENT MARKINGS WILL BE CONSTRUCTED AT LOCATIONS DESIGNED BY TRANSPORTATION AND DRAINAGE OPERATIONS (TDO) OR PER PLANS APPROVED BY TDO.
2. CONTRACTOR SHALL CONTACT THE CONSTRUCTION COORDINATOR BEFORE ANY STREET IS TEMPORARILY CLOSED FOR CONSTRUCTION.
3. THE TYPE OF SPEED CUSHION AND DISTANCE BETWEEN EACH CUSHION WILL BE DETERMINED BY TDO.
4. NO PART OF A SPEED CUSHION SHALL BE LOCATED IN FRONT OF DRIVEWAY APPROACH; RATHER THERE SHOULD BE A MINIMUM OF 6 FEET FROM THE EDGE OF A DRIVEWAY, WHEN PRACTICAL.
5. SPEED CUSHIONS SHOULD BE PLACED AS CLOSE AS POSSIBLE TO THE PROPERTY LINES INSTEAD OF MID - LOT LOCATION, WHERE PRACTICAL.
6. SPEED CUSHIONS SHOULD BE INSTALLED AT A RIGHT ANGLE TO THE CENTERLINE TANGENT OF THE ROADWAY.
7. TRAFFIC CONTROL CONSISTING OF SIGNS SHALL BE PROVIDED TO ADVISE ROADWAY USER OF SPEED CUSHIONS PRESENT; TRAFFIC SIGNS, AND PAVEMENT MARKINGS SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
8. ALL SIGNS AND PAVEMENT MARKINGS WILL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.
9. CONTRACTOR SHALL NOT OPEN SPEED CUSHIONS TO TRAFFIC UNTIL ALL REQUIRED WARNING SIGNS AND PAVEMENT MARKINGS ARE COMPLETED.
10. CONTRACTOR WILL MAINTAIN TEMPORARY MARKINGS UNTIL PERMANENT MARKINGS ARE INSTALLED.
11. CONTRACTOR SHALL COMPLETE THE CUSHION INSTALLATION TO FORM ONE COMPLETE HUMP BEFORE LEAVING THE JOB SITE.
12. CONTRACTOR SHALL WORK ONE HALF OF THE STREET AT A TIME AND MAINTAIN TWO - WAY TRAFFIC WITH CERTIFIED FLAGGER.
13. ASPHALT SPEED CUSHION SHALL BE CONSTRUCTED WITH TYPE D ASPHALT MIX PER CITY OF HOUSTON SPECIFICATIONS; A TACK COAT SHALL BE APPLIED PRIOR TO APPLICATION OF PAVEMENT MATERIAL.
14. ASPHALT SPEED CUSHIONS SHALL BE COMPACTED PER CITY OF HOUSTON SPECIFICATIONS AND SHAPE ACCORDING TO INSTALLATION DETAILS. COMPACTION SHALL REQUIRE UTILIZATION OF ALL NECESSARY SIZES AND TYPES OF ROLLERS TO ACCOMPLISH PROPER COMPACTION AND SHAPE.
15. ASPHALT SPEED CUSHIONS ARE TO BE CONSTRUCTED BETWEEN 3" - 3 1/2" IN HEIGHT.
16. CONTRACTOR SHALL NOTIFY GARY DRABEK (832-395-2997) A MINIMUM OF TWO BUSINESS DAYS IN ADVANCE OF THE INSTALLATION OF SPEED CUSHIONS.

**ASPHALT SPEED CUSHION - INSTALLATION DETAILS**



\* RUBBER CUSHION - 12" TAPER, ASPHALT CUSHION - 12" TAPER.

**TYPICAL SPEED CUSHIONS ARRANGEMENT FOR A GIVEN PAVEMENT WIDTH**

PAVEMENT WIDTH (FT)	No of CUSHIONS	GAP (IN)	CUSHION (IN)	GAP (IN)								
16	2	12	78	12	78	12						
18	2	20	78	20	78	20						
20	2	30	78	24	78	30						
22	2	36	78	36	78	36						
24	3	15	78	12	78	12	78	15				
26	3	20	78	19	78	19	78	20				
28	3	27	78	24	78	24	78	27				
30	3	31	78	32	78	32	78	31				
32	4	18	78	12	78	12	78	12	78	18		
34	4	21	78	18	78	18	78	18	78	21		
36	4	24	78	24	78	24	78	24	78	24		
38	4	30	78	28	78	28	78	28	78	30		
40	4	33	78	34	78	34	78	34	78	33		
42	5	19	78	19	78	19	78	19	78	19	78	19
44	5	23	78	23	78	23	78	23	78	23	78	23

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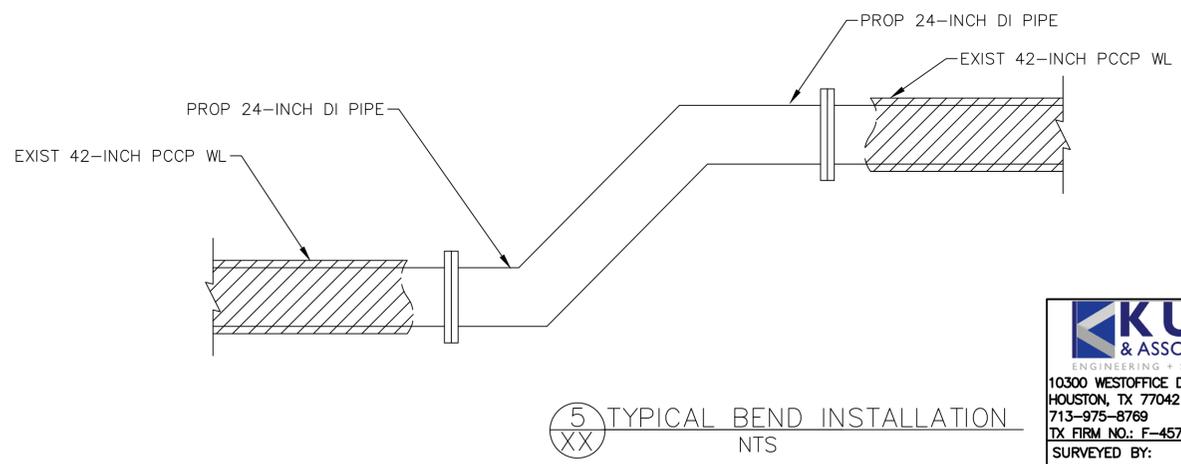
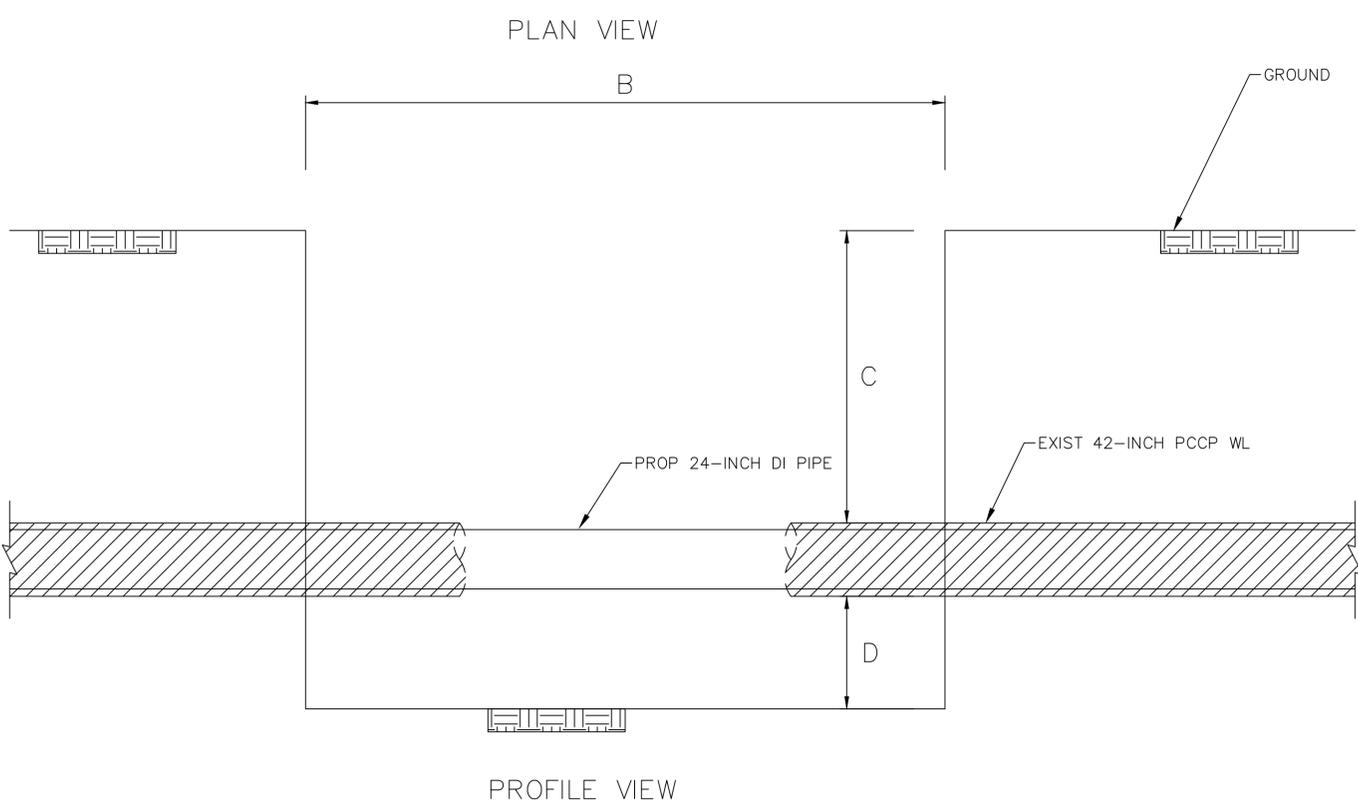
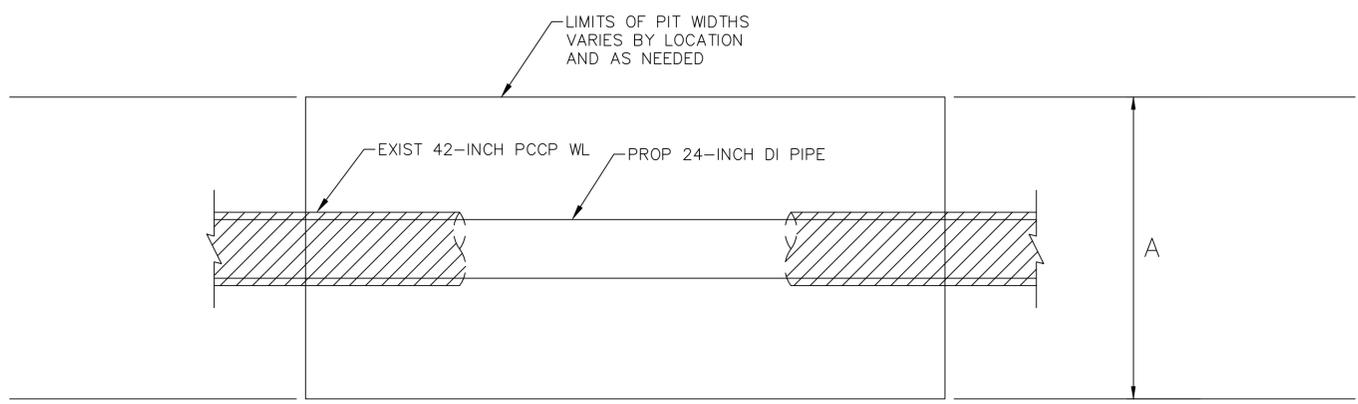
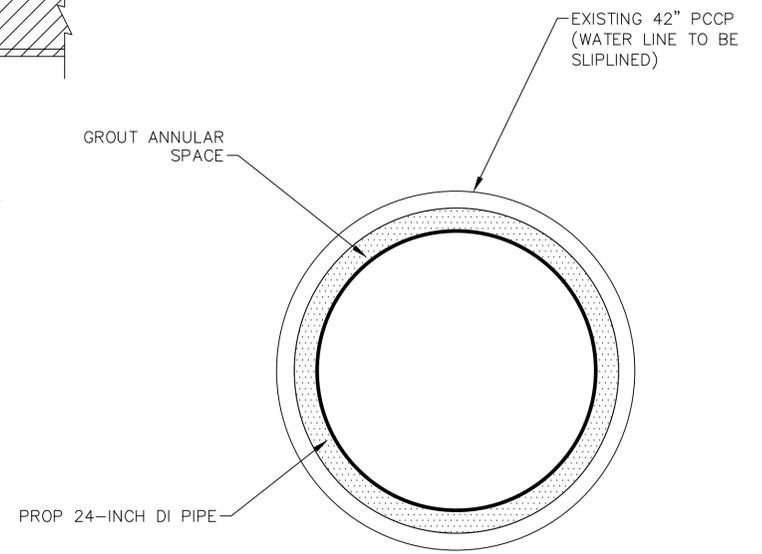
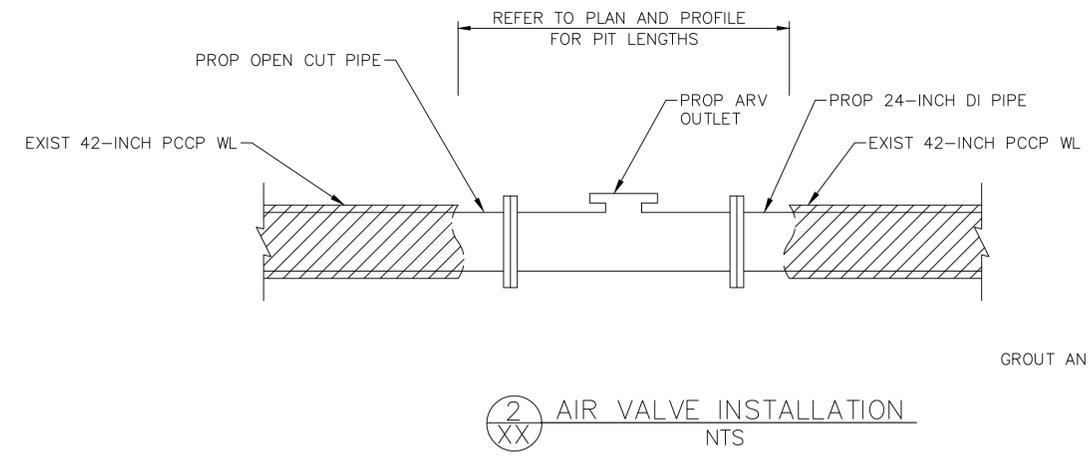
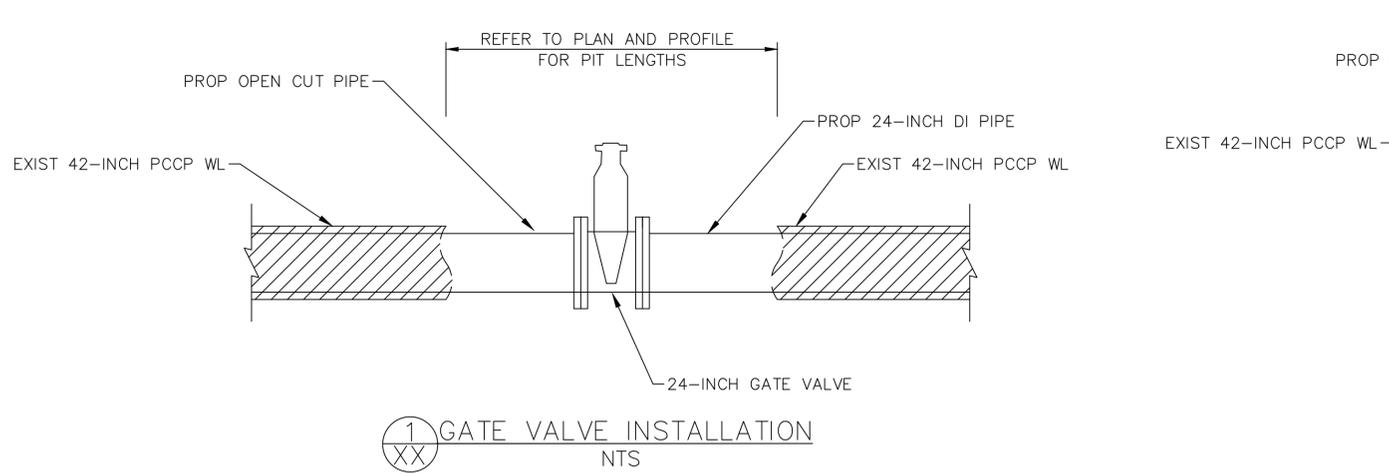
APPROVED BY: <i>Sulrat Banwar</i> CITY ENGINEER	APPROVED BY: <i>BRING MAIYEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Haddock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 13501-01
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
<b>SPEED CUSHIONS ARRANGEMENT AND INSTALLATION</b>	
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
COH STANDARD PAVEMENT MARKING DETAILS  
SHEET 16 OF 16

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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 128 OF 190	



A	+/- 8 FT MAXIMUM WIDTH
B	VARIES AS NEEDED FOR INSTALLATION
C	INVERT DEPTH
D	+/- 3 FT

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HOUSTON, TX 77042  
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TX FIRM NO.: F-4578  
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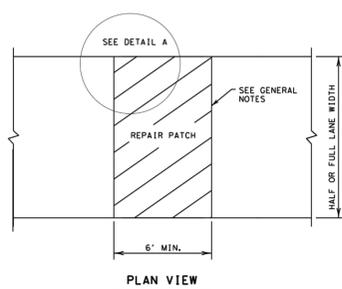
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS  
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
SLIPLINING DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 129 OF 190	

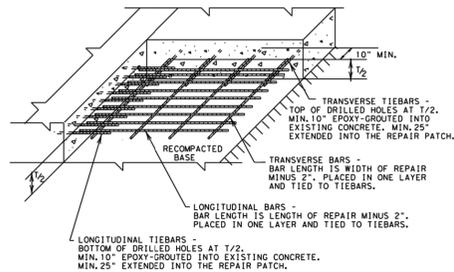
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TYPE PAVEMENT	SLAB THICKNESS AND BAR SIZE		LONGITUDINAL*		TRANSVERSE*	
	T (IN.)	BAR SIZE	REGULAR BARS	TIEBARS	BARS	TIEBARS
			SPACING (IN.)	SPACING (IN.)	SPACING (IN.)	SPACING (IN.)
CRCP	6.0	#5	7.5	7.5	24	24
	6.5		7.0	7.0		
	7.0		6.5	6.5		
	7.5		6.0	6.0		
	8.0		9.0	9.0		
	8.5	8.5	8.5			
	9.0	8.0	8.0			
	9.5	7.5	7.5			
	10.0	7.0	7.0	24	24	
	10.5	6.75	6.75			
11.0	6.5	6.5				
11.5	6.25	6.25				
≥12.0	6.0	6.0				
JRCP	8.0	#5	24.0	12.0	24	24
	8.0	#6	24.0	12.0	24	24
CPCD	8.0	#5	NONE	12.0	NONE	24
	8.0	#6	NONE	12.0	NONE	24

\* USE 12" SPACING AS FIRST AND LAST SPACING AT END OR SIDE FOR ALL BARS.



FULL-DEPTH REPAIR OF CRCP, JRCP, AND CPCD



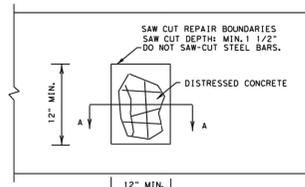
DETAIL A GROUDED TIEBARS & REINFORCEMENT

GENERAL NOTES

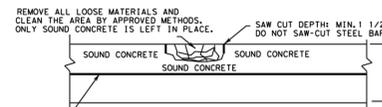
- ITEM 361, "REPAIR OF CONCRETE PAVEMENT" SHALL GOVERN FOR THIS WORK.
- MULTIPLE PIECE TIEBARS SHALL BE USED WHEN THE REPAIR AREA MUST BE PLACED IN TWO STAGES DUE TO SEQUENCE OF CONSTRUCTION.
- FULL DEPTH SAW CUTS SHALL BE MADE AROUND THE PERIMETER OF THE AREA TO BE REPAIRED. THE CUT SHALL BE MADE AT A RIGHT ANGLE TO THE PAVEMENT EDGE AND TO THE CENTER LINE OF THE PAVEMENT.
- AT LEAST ONE LONGITUDINAL FULL DEPTH SAW CUT SHALL BE AT AN EXISTING LONGITUDINAL JOINT.
- ADDITIONAL SAW CUTS MAY BE REQUIRED WITHIN THE AREA OF THE REPAIR TO FACILITATE REMOVAL OF THE CONCRETE OR TO ALLEVIATE BINDING OF THE FULL DEPTH SAW CUT AT THE REPAIR EDGE.
- THE SAW CUTS WHICH EXTEND OUTSIDE THE AREA OF THE REPAIR WILL BE CLEANED AND FILLED WITH A CEMENTITIOUS GROUT APPROVED BY THE ENGINEER.
- EXISTING LONGITUDINAL AND TRANSVERSE JOINTS REMOVED DUE TO REPAIR OPERATION SHOULD BE RESTORED IN ACCORDANCE WITH STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."

GENERAL NOTES

- ITEM 361, "REPAIR OF CONCRETE PAVEMENT" SHALL GOVERN FOR THIS WORK.
- THE SAW CUTS WHICH EXTEND OUTSIDE THE AREA OF THE REPAIR WILL BE CLEANED AND FILLED WITH A CEMENTITIOUS GROUT APPROVED BY THE ENGINEER.
- EXISTING LONGITUDINAL AND TRANSVERSE JOINTS REMOVED DUE TO REPAIR OPERATION SHOULD BE RESTORED IN ACCORDANCE WITH STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."



PLAN VIEW



- LONGITUDINAL STEEL BARS:
- REPAIR AREAS MAY BE ADJUSTED AFTER REMOVING DISTRESSED CONCRETE. SWITCH THE HALF-DEPTH REPAIR TO FULL-DEPTH REPAIR IF EXPOSED EXISTING LONGITUDINAL BARS ARE DEFICIENT, AS APPROVED. COMPENSATION WILL BE MADE FOR UNEXPECTED VOLUMES OF REPAIR AREAS OR CHANGES IN SCOPE OF WORK.
  - INCREASE THE REPAIR AREA AND PERFORM A FULL-DEPTH REPAIR AS DIRECTED IF LONGITUDINAL STEEL BARS WERE DAMAGED BY THE REMOVAL OPERATIONS. NO ADDITIONAL COMPENSATION WILL BE MADE.

SECTION A-A  
HALF-DEPTH REPAIR

SHEET 1 OF 2

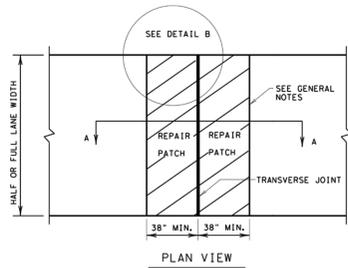
Texas Department of Transportation Design Division Standard

REPAIR OF CONCRETE PAVEMENT

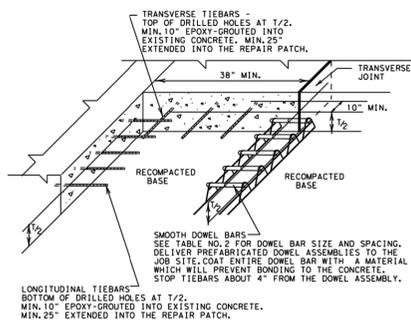
REPCP-14

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© 2014 TxDOT, DECEMBER 2014	DATE: 12/01/2014	TIME: 10:00	USER: JMM	PLT: JMM
PROJECT: 130-135-TxDOT	SHEET: 14	DATE: 12/01/2014	TIME: 10:00	USER: JMM
PROJECT: 130-135-TxDOT	SHEET: 14	DATE: 12/01/2014	TIME: 10:00	USER: JMM

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REPAIR OF TRANSVERSE JOINT OF CPCD



DETAIL B GROUDED TIEBARS & DOWELS

GENERAL NOTES

- ITEM 361, "REPAIR OF CONCRETE PAVEMENT" SHALL GOVERN FOR THIS WORK.
- MULTIPLE PIECE TIEBARS SHALL BE USED WHEN THE REPAIR AREA MUST BE PLACED IN TWO STAGES DUE TO SEQUENCE OF CONSTRUCTION.
- FULL DEPTH SAW CUTS SHALL BE MADE AROUND THE PERIMETER OF THE AREA TO BE REPAIRED. THE CUT SHALL BE MADE AT A RIGHT ANGLE TO THE PAVEMENT EDGE AND TO THE CENTER LINE OF THE PAVEMENT.
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- THE SAW CUTS WHICH EXTEND OUTSIDE THE AREA OF THE REPAIR WILL BE CLEANED AND FILLED WITH A CEMENTITIOUS GROUT APPROVED BY THE ENGINEER.
- EXISTING LONGITUDINAL AND TRANSVERSE JOINTS REMOVED DUE TO REPAIR OPERATION SHOULD BE RESTORED IN ACCORDANCE WITH STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."
- DOWEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1/4 IN. HORIZONTALLY AND VERTICALLY UNLESS OTHERWISE SPECIFIED. WHERE DOWEL BAR BASKETS ARE USED, REMOVE THE SHIPPING WIRES.

TABLE NO. 2 DOWELS (SMOOTH BARS)			
PAVEMENT THICKNESS (INCHES)	SIZE AND DIA.	LENGTH (IN.)	SPACING (IN.)
<10	#8 (1 IN.)	18.0	12.0
≥10	#10 (1 1/4 IN.)		

SHEET 2 OF 2

Texas Department of Transportation Design Division Standard

REPAIR OF CONCRETE PAVEMENT

REPCP-14

FILE: REPCP14.dgn	DATE: 12/01/2014	TIME: 10:00	USER: JMM	PLT: JMM
© 2014 TxDOT, DECEMBER 2014	DATE: 12/01/2014	TIME: 10:00	USER: JMM	PLT: JMM
PROJECT: 130-135-TxDOT	SHEET: 14	DATE: 12/01/2014	TIME: 10:00	USER: JMM
PROJECT: 130-135-TxDOT	SHEET: 14	DATE: 12/01/2014	TIME: 10:00	USER: JMM

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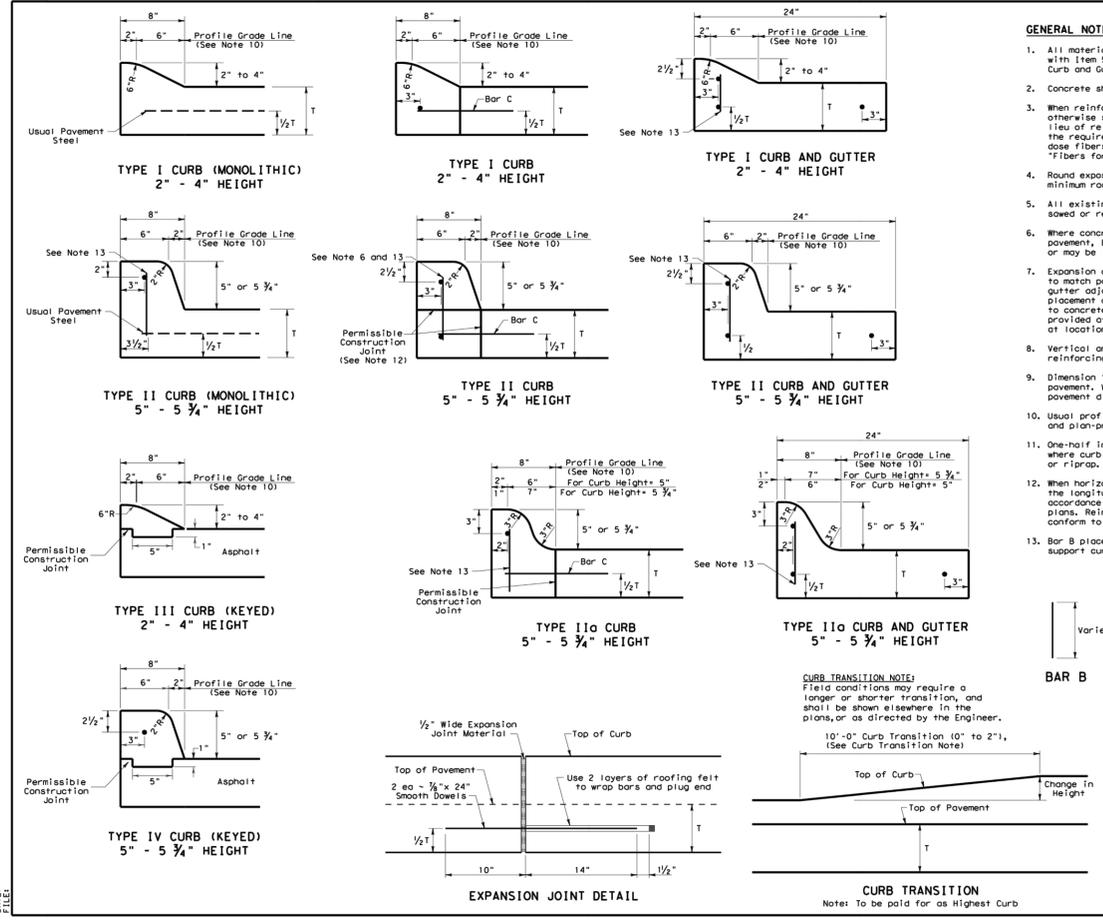
MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

TxDOT STANDARD DETAILS (SHEET 1 OF 6)

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SHEET NO. 130 OF 190	

NO.	DATE	REVISION	APP.

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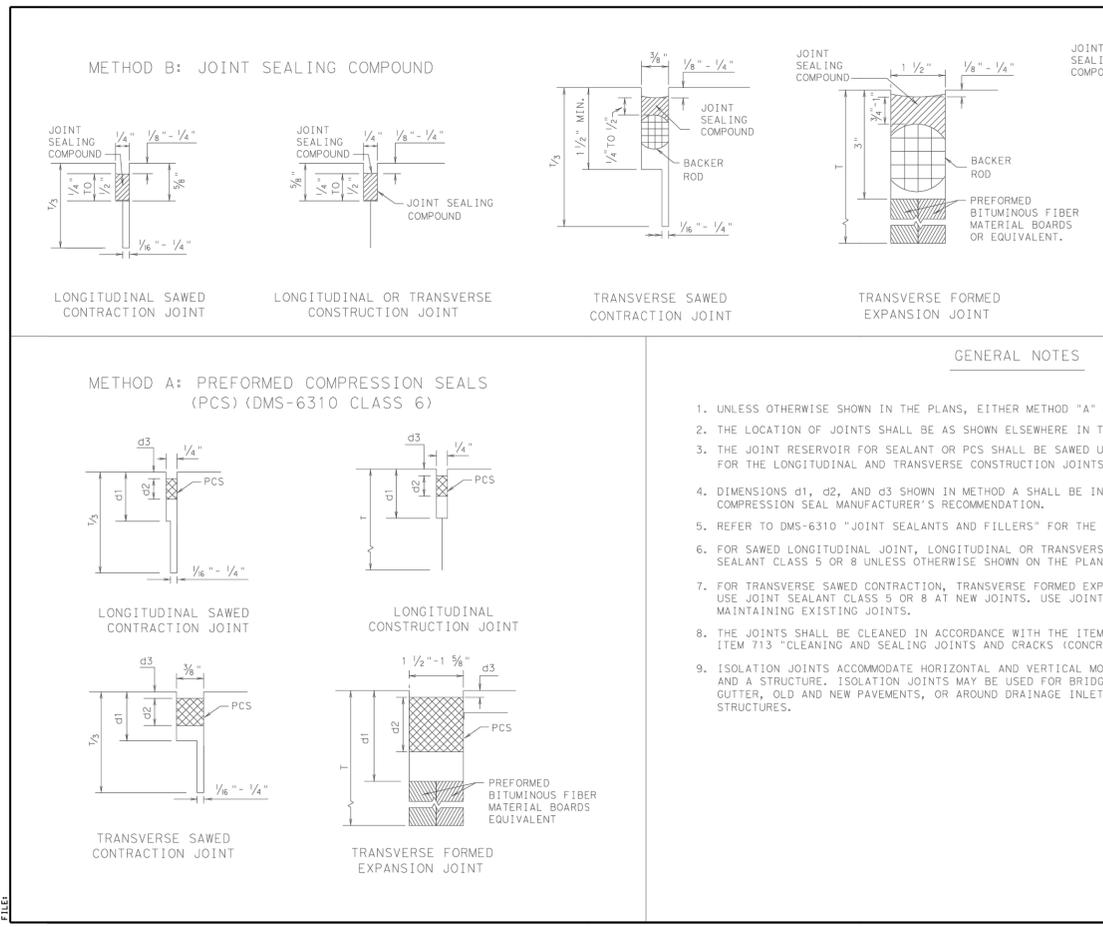


**CONCRETE CURB AND GUTTER**  
**CCCG-22**

FILE: cccg22.dwg | DATE: 06/2022 | COUNTY: | SHEET NO.:

DESIGN DIVISION STANDARD

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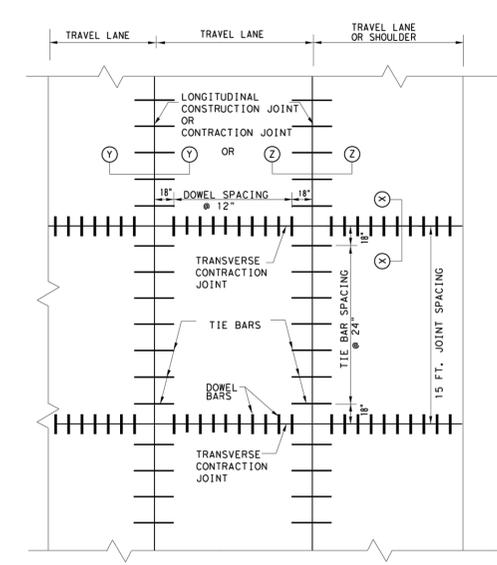
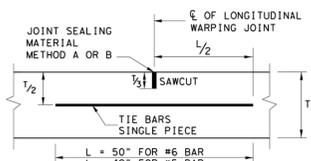
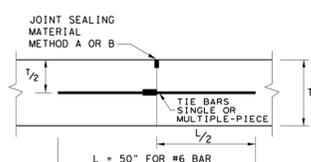
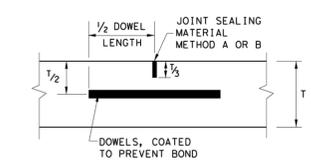
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MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 TxDOT STANDARD DETAILS (SHEET 2 OF 6)

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NO.	DATE	REVISION	APP.

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**TABLE NO. 1 DOWELS (SMOOTH BARS)**

SLAB THICKNESS (IN.)	BAR DIA. AND LENGTH	AVERAGE SPACING (IN.)
6 to 7.5	1" X 18"	12
8 to 10	1 1/4" X 18"	12
>= 10.5	1 1/2" X 18"	12

**TABLE NO. 2 TIE BARS (DEFORMED BARS)**

SLAB THICKNESS (IN.)	BAR SIZE	AVERAGE SPACING (IN.)
6 to 7.5	#5	24
>= 8	#6	24

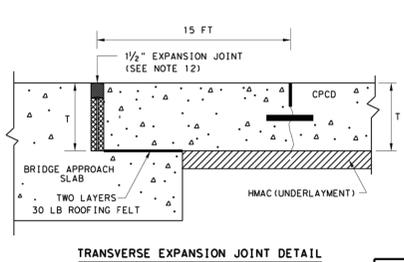
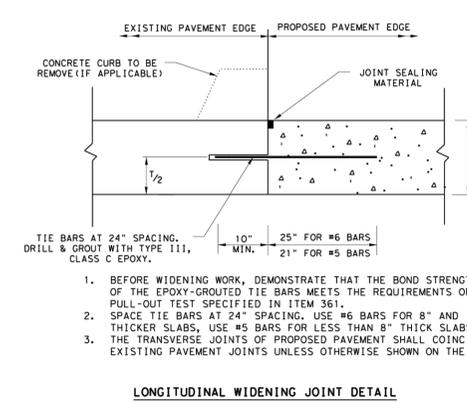
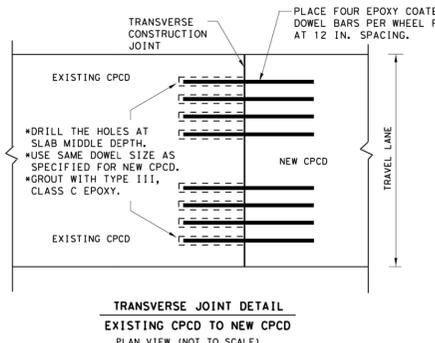
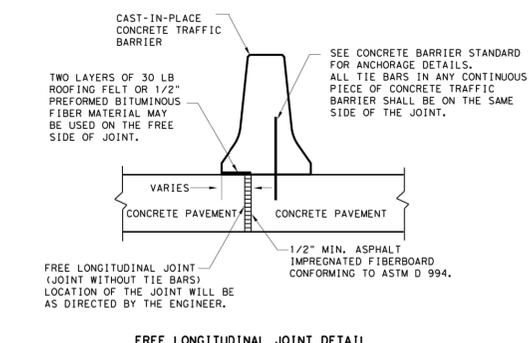
- GENERAL NOTES**
- DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT ARE NOT COVERED BY THIS STANDARD.
  - FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND LOAD TRANSFER DEVICES REFER TO THE GOVERNING SPECIFICATION FOR "CONCRETE PAVEMENT".
  - THE SPACING BETWEEN TRANSVERSE CONTRACTION JOINTS SHALL BE 15 FT. UNLESS OTHERWISE SHOWN IN THE PLANS.
  - TRANSVERSE CONSTRUCTION JOINTS MAY BE FORMED BY USE OF METAL OR WOOD FORMS EQUAL IN DEPTH TO THE DEPTH OF PAVEMENT, OR BY METHODS APPROVED BY THE ENGINEER.
  - USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL THE FORMED JOINTS.
  - PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
  - THE JOINT BETWEEN OUTSIDE LANE AND SHOULDER SHALL BE A LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z). UNLESS OTHERWISE SHOWN IN THE PLANS, THE SAW CUT DEPTH FOR THE LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z) SHALL BE ONE THIRD OF THE SLAB THICKNESS (T/3).
  - WHEN TYING CONCRETE GUTTER AT A LONGITUDINAL JOINT, THE TIE BAR LENGTH OR POSITION MAY BE ADJUSTED. PROVIDE 3 IN. OF CONCRETE COVER FROM THE BACK OF GUTTER TO THE END OF TIE BAR.
  - REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN. 10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
  - WHEN AN MONOLITHIC CURB IS SPECIFIED, THE JOINT IN THE CURB SHALL COINCIDE WITH PAVEMENT JOINTS AND MAY BE FORMED BY ANY MEANS APPROVED BY THE ENGINEER.
  - DOWEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1/4 IN. HORIZONTALLY AND VERTICALLY UNLESS OTHERWISE SPECIFIED. WHERE DOWEL BAR BASKETS ARE USED, REMOVE THE SHIPPING WIRES.
  - THE DETAIL FOR JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."

SHEET 1 OF 2

Design Division Standard  
**CONCRETE PAVEMENT DETAILS**  
**CONTRACTION DESIGN**  
**T-6 TO 12 INCHES**  
**CPCD-14**

FILE: cpd014.dgn	DATE: 12/01/2014	BY: TADOT	CHK: HC	APP: AK
PROJECT: HOUSTON	CONTRACT: 2014	SECTION: 100	JOB: 100	WORKSHEET: 100
SHEET NO.	COUNTY	SHEET NO.		

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- BEFORE WIDENING WORK, DEMONSTRATE THAT THE BOND STRENGTH OF THE EPOXY-GROUTED TIE BARS MEETS THE REQUIREMENTS OF PULL-OUT TEST SPECIFIED IN ITEM 361.
- SPACE TIE BARS AT 24" SPACING. USE #6 BARS FOR 8" AND THICKER SLABS. USE #5 BARS FOR LESS THAN 8" THICK SLABS. THE TRANSVERSE JOINTS OF PROPOSED PAVEMENT SHALL COINCIDE WITH EXISTING PAVEMENT JOINTS UNLESS OTHERWISE SHOWN ON THE PLANS.

SHEET 2 OF 2

Design Division Standard  
**CONCRETE PAVEMENT DETAILS**  
**CONTRACTION DESIGN**  
**T-6 TO 12 INCHES**  
**CPCD-14**

FILE: cpd014.dgn	DATE: 12/01/2014	BY: TADOT	CHK: HC	APP: AK
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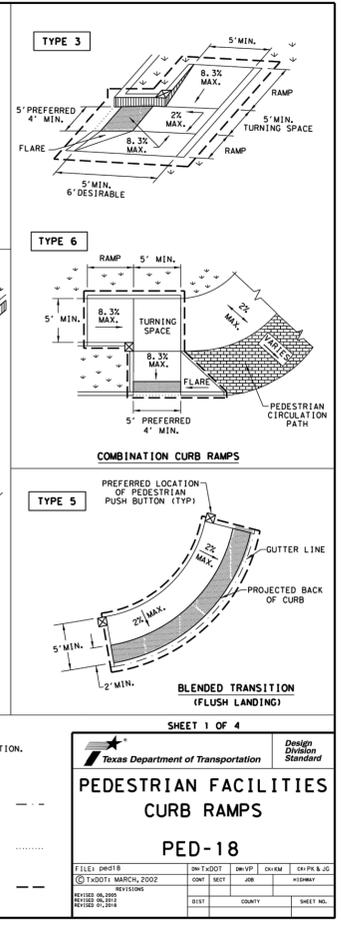
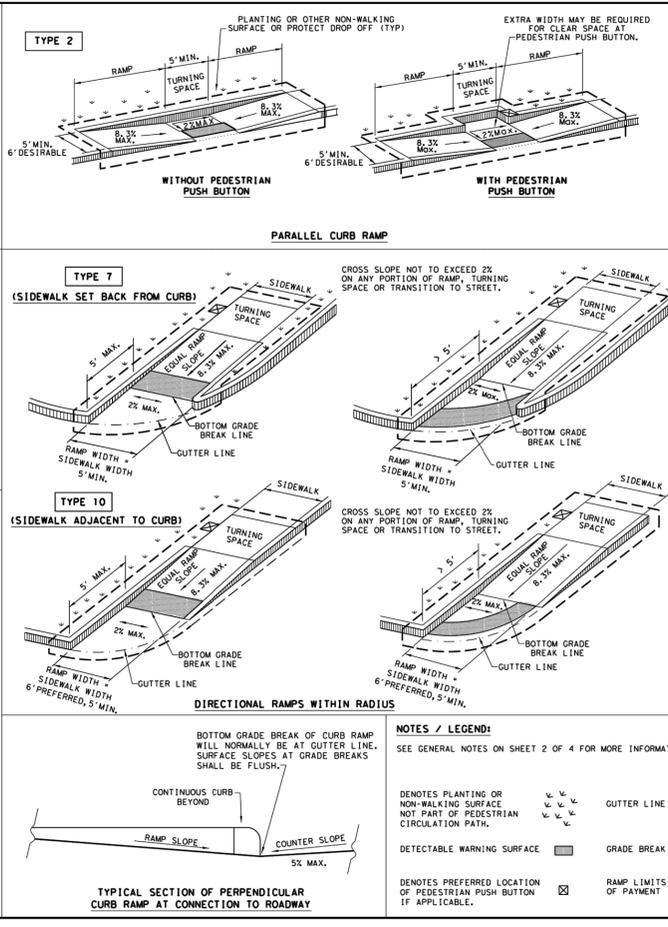
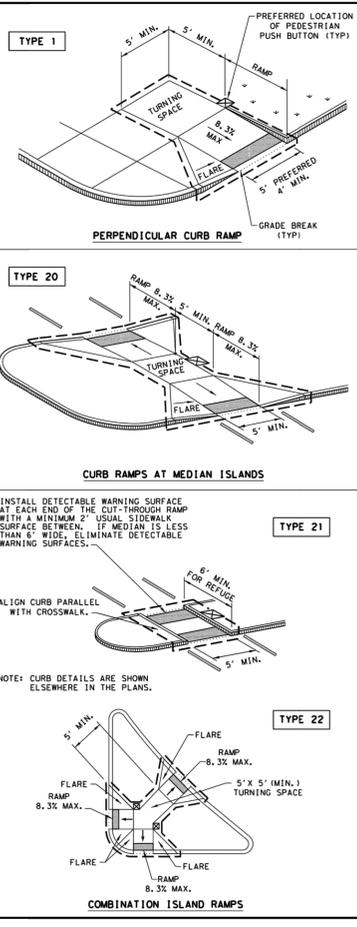
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 TxDOT STANDARD DETAILS (SHEET 3 OF 6)

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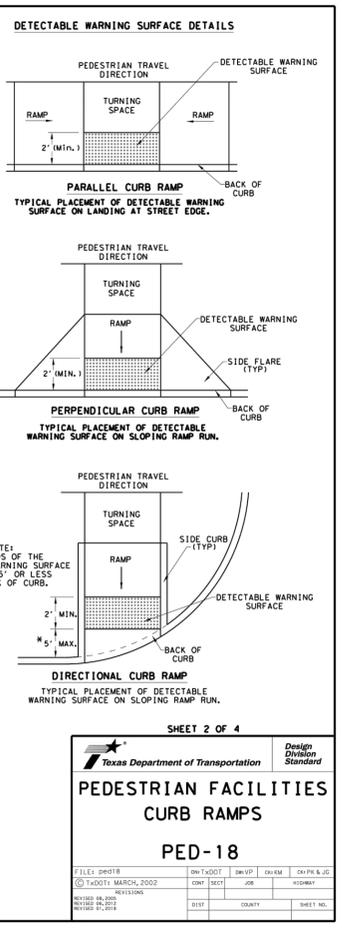
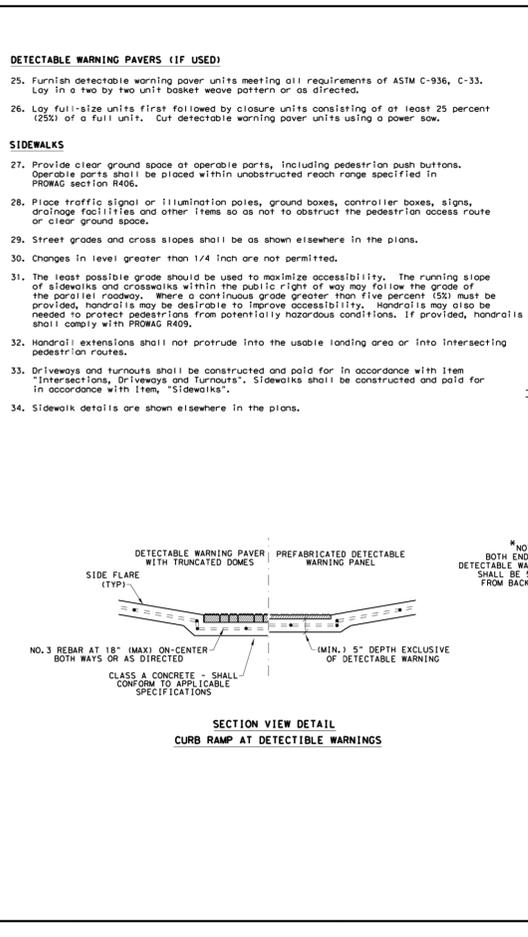
**NOTES / LEGEND:**  
 SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.  
 DENOTES PLANTING OR NON-WALKING SURFACE  
 DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.  
 GUTTER LINE  
 GRADE BREAK  
 RAMP LIMITS OF PAYMENT

**TEXAS DEPARTMENT OF TRANSPORTATION** Design Division Standard  
**PEDESTRIAN FACILITIES CURB RAMPS**  
**PED-18**

FILE: 09018	DATE: 03/01/02	BY: JWP	CHK: JWP	APP: JWP
REVISED: 03/01/02				
NO. 001				
CITY	COUNTY	CITY	COUNTY	CITY

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- GENERAL NOTES**
- CURB RAMPS**
1. Install a curb ramp or blended transition at each pedestrian street crossing.
  2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
  3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
  4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5' x 5' passing areas at intervals not to exceed 200' are required.
  5. Turning Spaces shall be 5' x 5' minimum. Cross slope shall be maximum 2%.
  6. Clear space at the bottom of curb ramps shall be a minimum of 4' x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
  7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
  8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
  9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
  10. Small channelization islands, which do not provide a minimum 5' x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
  11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
  12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
  13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
  14. Place concrete to a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
  15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
  16. Provide a smooth transition where the curb ramps connect to the street.
  17. Curbs shown on sheet within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
  18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.
- DETECTABLE WARNING MATERIAL**
19. Curb ramps must contain a detectable warning surface that consists of raised truncated cones complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
  20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
  21. Detectable warning surfaces must be firm, stable and slip resistant.
  22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
  23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
  24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.



**TEXAS DEPARTMENT OF TRANSPORTATION** Design Division Standard  
**PEDESTRIAN FACILITIES CURB RAMPS**  
**PED-18**

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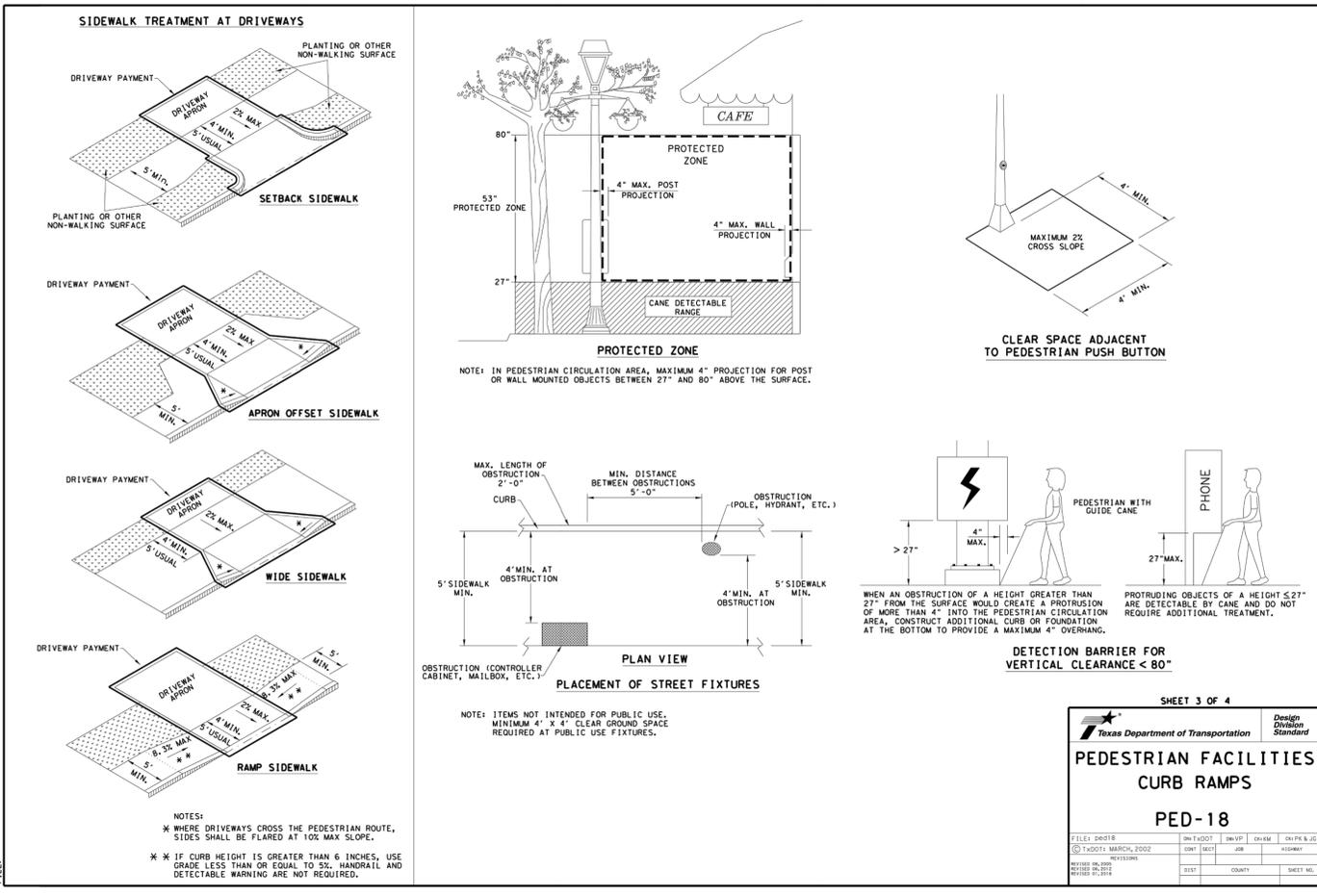
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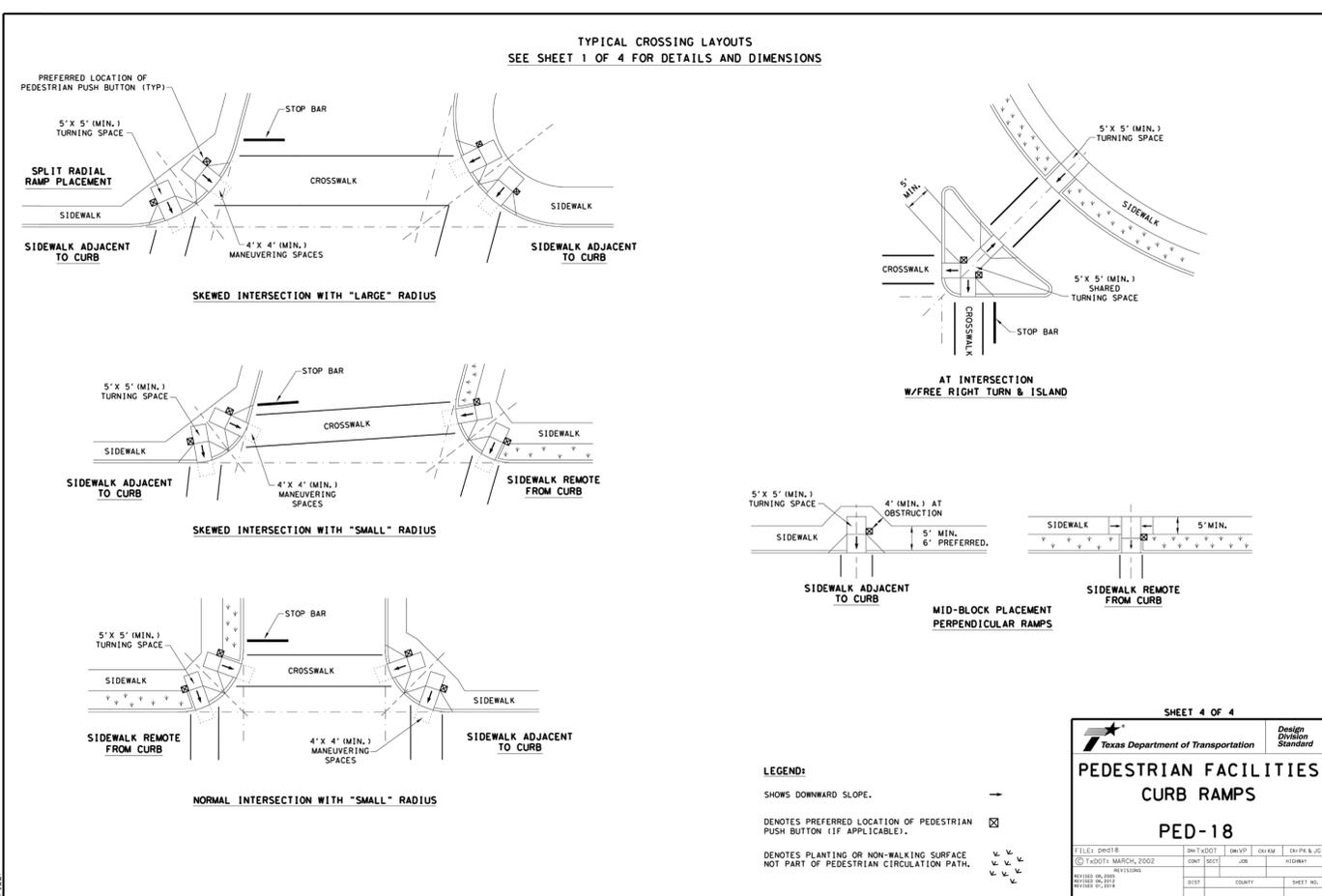
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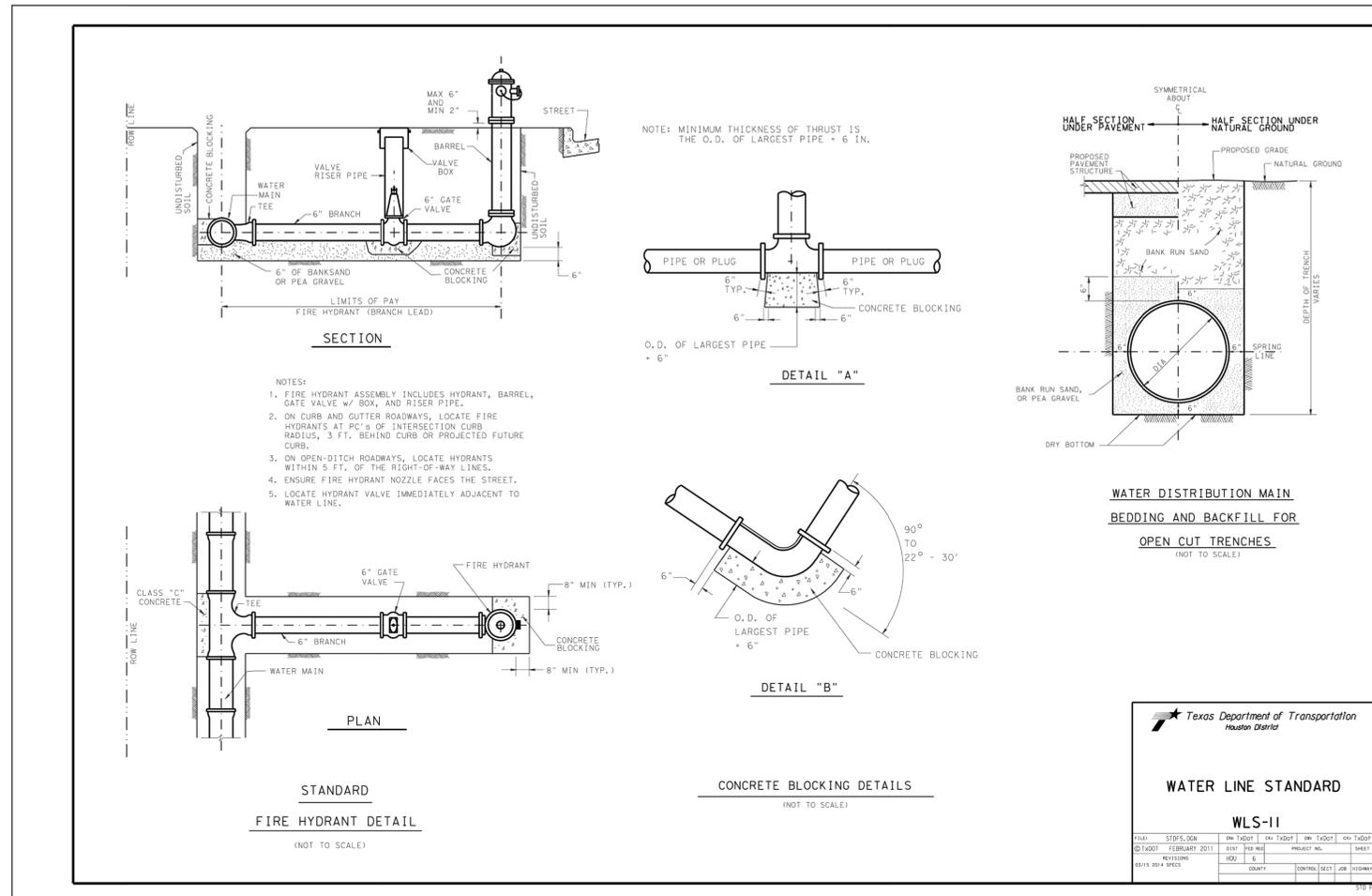
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**GENERAL NOTES**

- THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) LATEST EDITION WITH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
- ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM THE LATEST VERSION OF THE TMUTCD.
- NO LANES SHALL BE CLOSED DURING THE HOURS OF 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM MONDAY THRU FRIDAY WITHOUT APPROVAL OF THE CITY TRAFFIC ENGINEER.
- NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00 PM TO 7:00 AM.
- CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF THROUGH LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS. TRAFFIC CONTROL PLANS SHALL INCLUDE ONE-WAY AND/OR DETOUR PLANS. CONTRACTOR SHALL MAINTAIN ADA COMPLIANT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO ALL THE BUS STOPS.
- CONTRACTOR SHALL MAINTAIN TRAFFIC LANES AND DETOURS ACCORDING TO TRAFFIC CONTROL PLANS DURING WORKING HOURS.
- CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, AND OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.
- IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT AN ALTERNATE SET OF TRAFFIC CONTROL PLANS TO THE CITY OF HOUSTON PROJECT MANAGER FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION. THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SHALL BE SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. OFFICE OF CITY ENGINEER, MOBILITY PERMITS SECTION REPRESENTATIVE APPROVAL IS REQUIRED TO ACCEPT THE PROPOSED CHANGES.
- CONTRACTOR SHALL SECURE LANE/SIDEWALK/BICYCLE FACILITY CLOSURE PERMITS FROM OFFICE OF CITY ENGINEER (MOBILITY PERMIT SECTION AT <https://gehpub.houston.gov>) BEFORE IMPLEMENTING THE TRAFFIC CONTROL PLAN. THE APPLICATION MUST BE SUBMITTED AT LEAST TEN DAYS PRIOR TO THE IMPLEMENTATION OF THE TRAFFIC CONTROL PLAN AND/OR BEGINNING CONSTRUCTION WORK. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS, CONSTRUCTION SEQUENCING, AND CONSTRUCTION SCHEDULE WITH THE APPLICATION.
- CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES.
- DURING PAVEMENT SURFACE RESTORATION PROJECTS; THE CONTRACTOR SHALL NOT OPEN CLOSED LANES UNTIL THE PAVEMENT SURFACE HAS CURED ENOUGH TO ALLOW VEHICULAR TRAFFIC ACCORDING TO CITY OF HOUSTON STANDARD SPECIFICATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND COORDINATING ALL CONSTRUCTION ACTIVITIES WITH STAKE HOLDERS IN THE VICINITY INCLUDING EMERGENCY RESPONSE AGENCIES SUCH AS HOUSTON POLICE DEPARTMENT, HOUSTON FIRE DEPARTMENT, AND METROPOLITAN TRANSIT AUTHORITY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ISSUING ALL WORK DIRECTIVES TO ALL SUB-CONTRACTORS, UTILITY COMPANIES, AND ALL OTHER ENTITIES PERFORMING CONSTRUCTION WORK ASSOCIATED WITH THE PROJECT.
- NOTHING IN THESE NOTES OR PLANS SHALL RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT; INCLUDING SAFETY OF ALL MODES OF TRANSPORTATION, PERSONS, AND PROPERTY, AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO WORKING HOURS.
- THE OFFICE OF CITY ENGINEER (MOBILITY PERMITS GROUP) PER THE DIRECTION OF THE CITY TRAFFIC ENGINEER HAVE THE RIGHT TO DEMAND THE INSTALLATION OF ADDITIONAL TRAFFIC CONTROL DEVICES OR MODIFICATIONS OF THESE PLANS AND NOTES, AS DEEMED NECESSARY TO PROMOTE THE SAFE AND ORDERLY FLOW OF TRAFFIC, INCLUDING PEDESTRIANS AND BICYCLES, THROUGH THE CONSTRUCTION WORK ZONE. THE CONTRACTOR SHALL COMPLY WITH THESE ADDITIONAL REQUESTS OR MODIFICATIONS WITH DUE DILIGENCE.
- ALL EXISTING TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE MAINTAINED IN VISIBLE LOCATIONS DURING CONSTRUCTION UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER. THE CONTRACTOR SHALL RESTORE OR REPLACE (AT THE DISCRETION OF THE CITY TRAFFIC ENGINEER) ANY PAVEMENT MARKING OR SIGNING DAMAGE DURING CONSTRUCTION OPERATIONS, INCLUDING RAISED PAVEMENT MARKERS (RPMs).
- WHEN ENTERING OR LEAVING ROADWAYS CARRYING PUBLIC TRAFFIC, THE CONTRACTOR'S EQUIPMENT, WHETHER EMPTY OR LOADED SHALL IN ALL CASES YIELD TO PUBLIC TRAFFIC WITH THE ASSISTANCE OF CONTRACTOR PROVIDED CERTIFIED FLAGGER/PEACE OFFICER.
- ACCESS TO DRIVEWAYS ADJACENT TO THE CONSTRUCTION WORK ZONE SHALL BE MAINTAINED AT ALL TIMES AS MUCH AS POSSIBLE. ADDITIONAL CONES AND/OR DELINEATORS MAY BE REQUIRED TO DELINEATE THE DRIVEWAY ACCESS ROUTE THROUGH THE CONSTRUCTION WORK ZONE. A MINIMUM OF ONE TRAVEL LANE SHALL BE MAINTAINED ACROSS THE DRIVEWAYS, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER.
- SPILLAGE RESULTING FROM HAULING OPERATIONS ALONG OR ACROSS ANY PUBLIC TRAVELED WAY SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
- THE CONTRACTOR SHALL SUBMIT AN APPLICATION FOR TEMPORARY PARKING RESTRICTIONS IF THERE ARE PARKING METERS LOCATED AT THE PROPOSED LANE CLOSURES FROM PARKING MANAGEMENT DIVISION (832-393-8690) AT LEAST TEN BUSINESS DAYS BEFORE IMPLEMENTATION OF LANE CLOSURES. IN ADDITION, TEMPORARY NO PARKING SIGNS SHALL BE POSTED 24 HOURS PRIOR TO COMMENCEMENT OF WORK.
- ADDITIONAL OFF DUTY OFFICERS/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED AT THE DISCRETION OF THE CITY PROJECT MANAGER EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS.
- THE CONTRACTOR SHALL REPLACE WITHIN 72 HOURS, ALL TRAFFIC SIGNAL LOOP DETECTORS DAMAGED DURING CONSTRUCTION.
- IN GENERAL, A SOLAR POWERED FLASHING ARROW BOARD SHALL BE REQUIRED ON ALL MAJOR THOROUGHFARE LANES CLOSURES. EXCEPTIONS TO FLASHING ARROW BOARDS AND/OR IMPLEMENTATION ON RESIDENTIAL LANE CLOSURES SHALL BE APPROVED BY CITY TRAFFIC ENGINEER.
- APPROVED TRAFFIC CONTROL PLAN SHALL BE IN PLACE BEFORE STARTING ANY EXCAVATION.
- WATER FILLED BARRIERS CAN BE USED AS INSTRUCTED BY THE ENGINEER AND APPROVED BY THE CITY FOR PROJECTS WHERE SPACE IS LIMITED AND HEAVY EQUIPMENT TO PLACE CONCRETE BARRIERS IS NOT FEASIBLE. WATER FILLED BARRIERS SHALL NOT BE USED ON ROADWAYS WITH A POSTED SPEED LIMIT MORE THAN 45 MPH.
- WATER FILLED BARRIERS MUST BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S REQUIREMENTS AND ROUTINELY INSPECTED FOR DEFECTS.
- IF WATER FILLED BARRIER IS PROVIDED, USE ENVIRONMENTALLY SAFE ANTI-FREEZING AGENT IN THE WATER WHEN IT IS APPLICABLE PER MANUFACTURER SPECIFICATIONS AND RECOVER AGENT WHEN THE BARRIER IS DRAINED.

- DISPOSE OF WATER AND AGENT PROPERLY. DO NOT DRAIN WATER FILLED BARRIER INTO OR ACROSS AN EXISTING TRAVEL LANE.
- PROVIDE BARRIER UNITS THAT ARE CAPABLE OF BEING LIFTED AND MOVED WHEN FILLED IF DRAINING IS NOT POSSIBLE.
- PROVIDE WATER FILLED BARRIER THAT ACTS AS ITS OWN FREE STANDING, NON-REDIRECTIVE END TREATMENT.
- WHEN WATER FILLED BARRIERS ARE USED TO CHANNELIZE PEDESTRIANS, THEY MUST HAVE A CONTINUOUS DETECTABLE BOTTOM FOR USERS OF LONG CANES AND THE TOP OF THE UNIT SHALL NOT BE LESS THAN 32 INCHES IN HEIGHT.
- ANY CLOSURE OF A PEDESTRIAN OR BICYCLE FACILITY SHALL REQUIRE THE SHORTEST DETOUR THAT MAINTAINS THE SAFETY OF PEDESTRIAN AND/OR BICYCLISTS.

**SPACING FOR CHANNELIZING DEVICES**

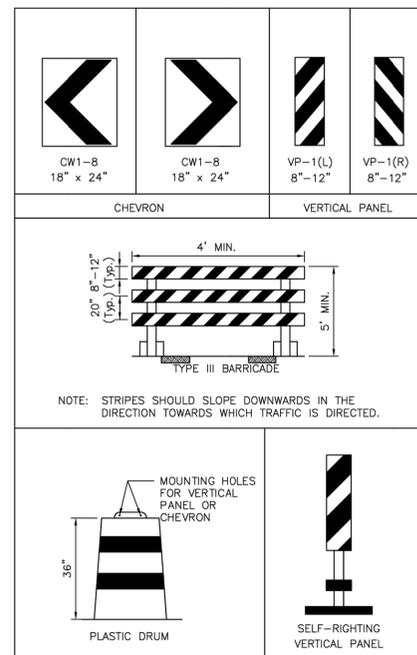
- PLASTIC DRUMS ON MERGING TAPER @ 30' C - C WITH CHEVRON SIGN @ 60' C - C AND WARNING LIGHTS FOR OVERNIGHT CLOSURE.
- PLASTIC DRUMS ON DOWNSLOPE TAPER @ 30' C - C (RETURN TAPER AND BARRICADE ARE OPTIONAL AND DIVIDED ROADWAY SECTION)
- PLASTIC DRUMS ON RADII @ 35' C - C.
- PLASTIC DRUMS ON TANGENT @ 35' C - C WITH VERTICAL PANEL AT 70' C - C AND APPROVED WARNING LIGHT @ 70' C - C (FOR OVERNIGHT CLOSURE).
- PLASTIC DRUMS IN FRONT OF CONSTRUCTION ZONE @ 20' C - C WITH VERTICAL PANEL AT 40' C - C AND APPROVED WARNING LIGHT @ 40' C - C (FOR OVERNIGHT CLOSURE).
- CONCRETE TRAFFIC BARRIER (CTB) OR LOW PROFILE CONCRETE TRAFFIC BARRIER (LPCTB) WITH APPROVED REFLECTORS @ 10' C - C IF PAVEMENT DROP IS GREATER THAN 1 FOOT.
- PLASTIC DRUMS W/GUARD RAIL MOUNTED.
- SELF-RIGHTING VERTICAL PANEL SPACING.
  - 4 LANES TO 2 LANES UNDIVIDED ROADWAY SECTION @ 20' C - C.
  - 4 LANES DIVIDED ROADWAY TO ONE SIDE TWO WAY ROADWAY @ 20' C - C.
  - LEFT LANE AND RIGHT LANE STORAGE BAYS @ 15' C - C.
- SPACING SHOWN ON TRAFFIC CONTROL SHALL SUPERSEDE THE ABOVE SPACING.
- SPACING MAY BE ADJUSTED TO PROVIDE DRIVEWAYS, INTERSECTIONS AND /OR MEDIAN OPENINGS.

**TABLE C3 - TYPICAL SIGN SPACING, TAPER LENGTHS, AND SUGGESTED SPACING OF CHANNELIZATION DEVICES**

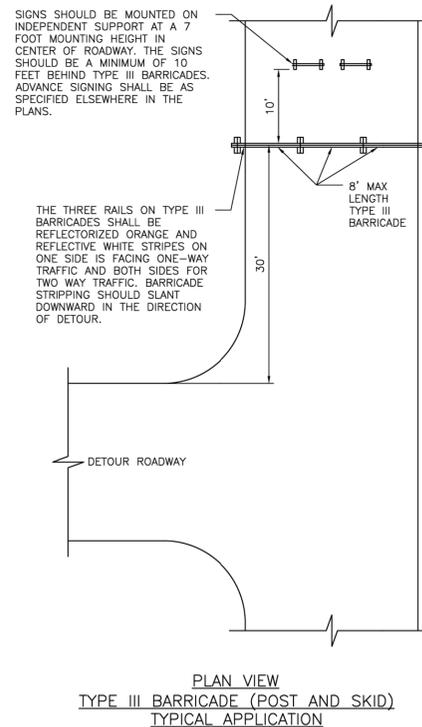
POSTED SPEED (MPH)	SIGN SPACING "X" (FEET)	MIN. DESIRABLE TAPER LENGTH "L"			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	120'	150'	165'	180'	30'	60'-75'
35	160'	205'	225'	245'	35'	70'-90'
40	240'	265'	295'	320'	40'	80'-100'
45	320'	450'	495'	540'	45'	90'-110'
50	400'	500'	550'	600'	50'	100'-125'
55	500'	550'	605'	660'	55'	110'-140'

**TABLE C4 - STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED**

POSTED SPEED (MPH)	DISTANCE "D" (FEET)
30	200
35	250
40	305
45	360
50	425
55	495



**CHANNELIZATION AND BARRICADES**



**LEGEND:**

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

APPROVED BY: *Suhail Khanwar* CITY ENGINEER

APPROVED BY: *Harish Nalluri* CITY TRAFFIC ENGINEER

APPROVED BY: *Carl Hubbard* DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023 DWG NO: 01555-01

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

TCP NOTES CHANNELIZING DEVICES AND BARRICADES

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE: NOT TO SCALE

ROAD NAME	SPEED LIMITS	
	EXISTING POSTED SPEED	ACTIVE CONSTRUCTION SPEED
KATY FREEWAY FRONTAGE RD.	45	45
MEMORIAL CITYWAY	30	30
GESSNER RD.	35	35
MEMORIAL DR.	35	35
N MEMORIAL DR.	35	35
SABINE ST.	30	30
HOUSTON AVE.	35	35
WASHINGTON AVE.	30	30
PRESTON ST.	30	30
FRANKLIN ST.	30	30

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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**

**TCP NOTES CHANNELIZING DEVICES AND BARRICADES**

TCP SHEET: 1 OF 30

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 136 OF 190	

DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THE USE OF THESE DEVICES. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

**TRAFFIC CONTROL PHASING NARRATIVE - SITE 4 & 5**

**FOR ALL PHASES AND STEPS:**

1. PLACE CONSTRUCTION ADVANCE WARNING SIGNS, DRUMS, LPCB, CHEVRON, BARRICADES, AND TRAFFIC CONTROL SIGNS PER TMUTCD AS NEEDED.
2. CONSECUTIVE INTERSECTION SHOULD NOT BE CONSTRUCTED TOGETHER.
3. ACCESS TO DRIVEWAYS SHOULD BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION.
4. WATER LINE TO BE INSTALLED BY TRENCHLESS CONSTRUCTION OF SLIP-LINING

**PHASE 1 (STEPS 1A-5)**

- PRIOR TO STARTING UTILITY WORK FOR PHASE 1, REMOVE CURB AND CONSTRUCT TEMPORARY ASPHALT PAVEMENT FROM STA (-)0+92 TO 3+72. CONTRACTOR TO DETERMINE IF REMOVAL OF STREET LIGHT AND TREE(S) ARE REQUIRED PRIOR TO PERFORMING THIS WORK.

**STEP 1A: (INTERSECTION OF MEMORIAL WAY AND SABINE STREET)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- SHUTDOWN ONE SEGMENT OF ROADWAY AT SABINE STREET.
- ONE LANE CLOSURE ALONG MEMORIAL WAY EASTBOUND TRAFFIC.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH):
  - a. 1-CUT, PLUG & ABANDON 42-INCH WATER LINE AND INSTALL DISHED HEAD PLUG AT WYE BELL
  - b. INSTALL 1-30"x24" T.S.V. w/ BOX AND 1-FLUSH MOUNTED FLANGE ISOLATION TEST STATION.

**STEP 1B: (EASTBOUND MEMORIAL DRIVE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STEP 1A TO TO STA 2+61.
- PAVEMENT REPAIR SHOULD BE PERFORMED AFTER COMPLETION OF STEP 1B. USE HIGH EARLY STRENGTH CONCRETE.

**STEP 2: (EASTBOUND MEMORIAL DRIVE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 2+61 TO APPROX. STA 5+65, OUTSIDE OF ROAD PAVEMENT AREA.
- CONTINUATION OF ONE LANE CLOSURE.

**STEP 3: (EASTBOUND MEMORIAL DRIVE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD ACROSS THE EXISTING DRIVEWAY FROM STA 5+65 TO STA 9+40.
- CONTINUATION OF ONE LANE CLOSURE.

**STEP 4: (EASTBOUND MEMORIAL DRIVE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 9+40 TO APPROX. STA 11+00, OUTSIDE OF ROAD PAVEMENT AREA.
- CLOSE U-TURN LANE ON MEMORIAL DRIVE.
- CONTINUATION OF ONE LANE CLOSURE.

**STEP 5: (INTERSECTION ON MEMORIAL PARKWAY AND HOUSTON AVE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- CLOSE EXISTING CURB RAMP AND INSTALL TEMPORARY RAMP. SIDEWALK CROSSING NORTH TO SOUTH ON THE WEST SIDE OF THE INTERSECTION TO BE CLOSED. CONTRACTOR TO ASSIST WITH PEDESTRIAN CROSSINGS.
- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD ACROSS MEMORIAL PARKWAY FROM STA 1+83 TO 3+17 (BASELINE 'C').
- INSTALL (2) 45-DEGREE BENDS, AIR VALVE MANHOLE, VENT PIPE, (2) CROSSING TEST STATIONS
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH) INSTALL 1-30" WET CONNECTION BY OPEN CUT CONSTRUCTION METHOD.
- PAVEMENT REPAIR AT SW CORNER OF INTERSECTION SHOULD BE PERFORMED AFTER COMPLETION OF STEP 5. USE HIGH EARLY STRENGTH CONCRETE.
- CONTINUATION OF ONE LANE CLOSURE.
- ONE LANE CLOSURE FOR WESTBOUND TRAFFIC ON N. MEMORIAL WAY.

**PHASE 2 (STEPS 1-4)**

**STEP 1: (INTERSECTION ON N. MEMORIAL WAY AND HOUSTON AVE, SOUTHBOUND HOUSTON AVE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- SEGMENT OF HOUSTON AVENUE ROADWAY LEADING TO N. MEMORIAL WAY WILL BE COMPLETELY SHUTDOWN.
- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD ACROSS N. MEMORIAL WAY
- PAVEMENT REPAIR ALONG N. MEMORIAL WAY SHOULD BE PERFORMED AFTER COMPLETION OF THIS STEP. USE HIGH EARLY STRENGTH CONCRETE.
- CONTINUATION OF ONE LANE CLOSURE ON N. MEMORIAL WAY.

**STEP 2: (SOUTHBOUND HOUSTON AVE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE ALONG HOUSTON AVENUE VIA TRENCHLESS CONSTRUCTION METHOD FROM STA 4+04 TO 6+65.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH):
  - a. INSTALL 1-12" WET CONNECTION AND 1-24" WET CONNECTION.
  - b. 1-CUT, PLUG & ABANDON 24-INCH WATER LINE AFTER TRANSFER OF SERVICES.
- ONE LANE CLOSURE ON HOUSTON AVENUE.
- CONTINUATION OF COMPLETE SHUTDOWN OF HOUSTON AVENUE ROADWAY LEADING TO N. MEMORIAL WAY.

**STEP 3: (SOUTHBOUND HOUSTON AVE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE ALONG HOUSTON AVENUE VIA TRENCHLESS CONSTRUCTION METHOD FROM STA 6+65 TO 8+05
- CONTINUATION OF COMPLETE SHUTDOWN OF HOUSTON AVENUE ROADWAY LEADING TO N. MEMORIAL WAY.
- CONTINUATION OF ONE LANE CLOSURE ON HOUSTON AVENUE.

**STEP 4A: (SOUTHBOUND HOUSTON AVENUE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIP-LINING FROM STA 8+15 TO STA 10+55.
- INSTALL AIR VALVE MANHOLE, VENT PIPE, AND CROSSING TEST STATION.
- CONTINUATION OF ONE LANE CLOSURE ON HOUSTON AVENUE.
- CONTINUATION OF COMPLETE SHUTDOWN OF HOUSTON AVENUE ROADWAY LEADING TO N. MEMORIAL WAY.
- PAVEMENT REPAIR ALONG HOUSTON AVENUE ROADWAY LEADING TO N. MEMORIAL WAY AFTER COMPLETION OF THIS STEP. USE HIGH EARLY STRENGTH CONCRETE WITH ASPHALT OVERLAY.

**STEP 4B: (SOUTHBOUND HOUSTON AVENUE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIP-LINING FROM STA 10+95 TO STA 13+94.
- INSTALL CROSSING TEST STATION.
- CONTINUATION OF ONE LANE CLOSURE ON HOUSTON AVENUE.
- PAVEMENT REPAIR ALONG HOUSTON AVENUE JUST SOUTH OF KANE STREET AFTER COMPLETION OF THIS STEP. USE HIGH EARLY STRENGTH CONCRETE WITH ASPHALT OVERLAY.

**PHASE 3 (STEPS 1-3)**

**STEP 1: (INTERSECTION OF WASHINGTON AVENUE AND HOUSTON AVENUE, EASTBOUND WASHINGTON AVENUE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIP-LINING FROM STA 14+19 TO STA 15+17.
- INSTALL CROSSING TEST STATION.
- CONTINUATION OF ONE LANE CLOSURE ON HOUSTON AVENUE.
- ONE LANE CLOSURE ON WASHINGTON AVENUE (WEST OF HOUSTON AVENUE).
- ONE LANE EACH DIRECTION WILL REMAIN OPEN ON WASHINGTON AVENUE (EAST OF HOUSTON AVENUE).
- PAVEMENT REPAIR SOUTH OF THE WASHINGTON AVENUE AND HOUSTON AVENUE INTERSECTION AFTER COMPLETION OF THIS STEP. USE HIGH EARLY STRENGTH CONCRETE WITH ASPHALT OVERLAY.

**STEP 2: (EASTBOUND WASHINGTON AVENUE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIP-LINING FROM STA 3+62 TO STA 5+00 (BASELINE 'D').
- INSTALL WATER LINE BY OPEN CUT CONSTRUCTION METHOD FROM STA 5+00 TO 5+84
- CONTINUATION OF ONE LANE CLOSURE ON WASHINGTON AVENUE (WEST OF HOUSTON AVENUE).
- CONTINUATION OF ONE LANE EACH DIRECTION WILL REMAIN OPEN ON WASHINGTON AVENUE (EAST OF HOUSTON AVENUE).

**STEP 3: (EASTBOUND WASHINGTON AVENUE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIP-LINING FROM STA 5+84 TO STA 7+50.
- INSTALL WATER LINE BY OPEN CUT CONSTRUCTION METHOD FROM STA 7+50 TO 7+75
- INSTALL AIR VALVE MANHOLE, VENT PIPE, AND CROSSING TEST STATION.
- CONTINUATION OF ONE LANE CLOSURE ON WASHINGTON AVENUE (WEST OF HOUSTON AVENUE).
- CONTINUATION OF ONE LANE EACH DIRECTION WILL REMAIN OPEN ON WASHINGTON AVENUE (EAST OF HOUSTON AVENUE).
- PAVEMENT REPAIR ALONG WASHINGTON AVENUE AFTER COMPLETION OF THIS STEP. USE HIGH EARLY STRENGTH CONCRETE WITH ASPHALT OVERLAY.

**PHASE 4 (STEPS 1-4)**

**STEP 1: (EASTBOUND WASHINGTON AVENUE)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 7+75 TO STA 9+73.
- INSTALL WATER LINE BY SLIP-LINING FROM STA 1+46 TO 2+58 (BASE LINE 'E').
- INSTALL CROSSING TEST STATION
- ONE EASTBOUND LANE TO REMAIN ON WASHINGTON AVENUE, PRESTON STREET, AND FRANKLIN STREET (FROM HOUSTON AVENUE IH-45 OVERPASS).

**STEP 2: (EASTBOUND PRESTON STREET)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIP-LINING FROM STA 2+74 TO STA 5+66.
- INSTALL CROSSING TEST STATION
- CONTINUATION OF ONE EASTBOUND LANE TO REMAIN ON WASHINGTON AVENUE, PRESTON STREET, AND FRANKLIN STREET (FROM HOUSTON AVENUE IH-45 OVERPASS).

**STEP 3: (EASTBOUND PRESTON STREET)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIP-LINING FROM STA 6+00 TO STA 8+84.
- INSTALL CROSSING TEST STATION
- CONTINUATION OF ONE EASTBOUND LANE TO REMAIN ON WASHINGTON AVENUE, PRESTON STREET, AND FRANKLIN STREET (FROM HOUSTON AVENUE IH-45 OVERPASS).

**STEP 4: (EASTBOUND PRESTON STREET)**

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 8+84 TO STA 10+89.
- CONTINUATION OF ONE EASTBOUND LANE TO REMAIN ON WASHINGTON AVENUE, PRESTON STREET, AND FRANKLIN STREET (FROM HOUSTON AVENUE IH-45 OVERPASS).
- PAVEMENT REPAIR ALONG WASHINGTON AVENUE, PRESTON STREET, AND FRANKLIN STREET AFTER COMPLETION OF THIS STEP. USE HIGH EARLY STRENGTH CONCRETE WITH ASPHALT OVERLAY.

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 <p style="font-size: 8px; margin: 0;">10300 Westoffice Dr., Suite 800 Houston, TX 77042 Tel: (713) 975-8769 Fax: (713) 975-9929 www.kuasocietes.com Texas Firm Registration No. F-4579</p>	<p><b>INTERIM REVIEW ONLY</b></p> <p style="font-size: 8px; margin: 0;">*THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RAM GULIANI, P.E. 101094 ON 12/19/2025. IT IS NOT TO BE USED FOR CONSTRUCTION</p>
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<p><b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD</p>	
<p><b>MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS – PACKAGE 4</b></p>	
<p><b>TRAFFIC CONTROL PLANS CONSTRUCTION NARRATIVE - 1</b></p>	
<p>SWPPP SHEET: 2 OF 30</p>	
<p>WBS NUMBER</p> <p>S-000701-0043-4</p>	<p>FOR CITY OF HOUSTON USE ONLY</p>
<p>DRAWING SCALE</p> <p>N/A</p>	
<p>CITY OF HOUSTON PM</p>	
<p>MARTIN MATHEW, ENV SP</p>	
<p>SHEET NO. 137 OF 190</p>	

**TRAFFIC CONTROL PHASING NARRATIVE - SITE 4 & 5**

**PHASE 5 (STEPS 1-5)**

STEP 1:(UNDER IH-45 OVERPASS)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- BORE AND JACK (IN CASING/TUNNEL) WATER LINE FROM STA 11+60 TO STA 15+11.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH)
  - a. INSTALL 1-16" X 16" T.S. & V. w/BOX.
  - b. 1-12" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
- INSTALL AIR VALVE MANHOLE, VENT PIPE, AND (2) CROSSING TEST STATION.
- ONE LANE CLOSURE ON PRESTON STREET.

STEP 2:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIPLINING FROM STA 15+20 TO STA 16+48.
- INSTALL CROSSING TEST STATION.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 3:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY OPEN CUT CONSTRUCTION METHOD FROM STA 16+48 TO 17+24.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH), INSTALL 2-12" WET CONNECTIONS.
- INSTALL CROSSING TEST STATION.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 4:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIPLINING FROM STA 17+24 TO STA 19+46.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 5:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD.
- INSTALL AIR VALVE MANHOLE, VENT PIPE, AND CROSSING TEST STATION
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

**PHASE 6 (STEPS 1-9)**

STEP 1:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIPLINING FROM STA 20+34 TO STA 20+76 AND FROM STA 20+86 TO 21+84.
- INSTALL WATER LINE BY OPEN CUT CONSTRUCTION METHOD FROM STA 21+84 TO STA 22+54
- INSTALL (2) CROSSING TEST STATION.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH):
  - a. INSTALL 1-16" X 16" T.S. & V. w/BOX.
  - b. 1-12" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
  - c. 1-4" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
  - d. INSTALL 2-4" WET CONNECTION
- ONE LANE CLOSURE ON PRESTON STREET.

STEP 2:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY SLIPLINING FROM STA 22+53 TO STA 23+57
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH, INSTALL 1-4" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 3:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 23+90 TO STA 25+17
- INSTALL CROSSING TEST STATION.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH):
  - a. 1-20" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
  - b. INSTALL 1-24" X 20" T.S.&V w/BOX.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 4:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 25+43 TO STA 26+93
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 5:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 27+27 TO STA 28+14 AND FROM STA 28+23 TO 28+83
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.
- PAVEMENT AND DRIVEWAY REPAIRS ALONG PRESTON STREET. USE HIGH EARLY STRENGTH CONCRETE.

STEP 6:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 29+16 TO STA 30+22
- REMOVE EXIST. 8" SANITARY PIPE AND PLUG PIPE AT MANHOLE
- PROVIDE 18 LF STEEL CASING STARTING AROUND STA 30+34
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH):
  - a. 1-12" WET CONNECTION
  - b. 1-12" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 7:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 30+60 TO STA 32+19.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 8:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 32+38 TO STA 33+54.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 9:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM STA 33+78 TO STA 34+70.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.
- PAVEMENT REPAIRS ALONG PRESTON STREET. USE HIGH EARLY STRENGTH CONCRETE.

**PHASE 7 (STEPS 1-3)**

STEP 1:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM FROM STA 35+03 TO STA 35+61.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH):
  - a. 1-6" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
  - b. INSTALL 1-6" WET CONNECTION.
- ONE LANE CLOSURE ON PRESTON STREET.

STEP 2:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- BORE AND JACK (IN CASING/TUNNEL) WATER LINE FROM STA 35+86 TO STA 37+20.
- (2) CROSSING TEST STATIONS.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH):
  - a. 1-6" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
  - b. 1-20" WET CONNECTION.
  - c. 1-20" CUT, PLUG & ABANDON.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 3:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM FROM STA 37+48 TO STA 38+78 AND FROM 38+84 TO STA 39+50, AND FROM STA 39+55 TO 4+12.
- AIR VALVE MANHOLE AND VENT PIPE.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH):
  - a. 2-12" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
  - b. 2-12" WET CONNECTION.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.
- PAVEMENT REPAIRS ALONG PRESTON STREET. USE HIGH EARLY STRENGTH CONCRETE.

**PHASE 8 (STEPS 1-3)**

STEP 1:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM FROM STA 40+96 TO STA 41+70.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH):
  - a. 2-12" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
  - b. 2-12" WET CONNECTION.
- AIR VALVE MANHOLE AND VENT PIPE.
- ONE LANE CLOSURE ON PRESTON STREET.

STEP 2:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM FROM STA 41+90 TO STA 43+73.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.

STEP 3:(EASTBOUND PRESTON STREET)

CONSTRUCT THE FOLLOWING DURING THIS STEP:

- INSTALL WATER LINE BY TRENCHLESS CONSTRUCTION METHOD FROM FROM STA 44+02 TO STA 45+40.
- 1-24" X 20" REDUCER.
- AFTER SUCCESSFUL CHLORINATION AND PRESSURE TESTING OF THE NEW WATER LINE (COORDINATE WITH COH):
  - a. 1-24" WET CONNECTION.
  - b. 1-12" WET CONNECTION.
  - c. 1-24" CUT, PLUG & ABANDON & 2-12" CUT, PLUG & ABANDON AFTER TRANSFER OF SERVICES.
- CONTINUATION OF ONE LANE CLOSURE ON PRESTON STREET.
- PAVEMENT REPAIRS ALONG PRESTON STREET. USE HIGH EARLY STRENGTH CONCRETE.

**TRAFFIC CONTROL PHASING NARRATIVE - SITE 1**

**FOR ALL PHASES AND STEPS:**

1. PLACE CONSTRUCTION ADVANCE WARNING SIGNS, DRUMS, LPCB, CHEVRON, BARRICADES, AND TRAFFIC CONTROL SIGNS PER TXDOT-TRAFFIC OPERATIONS DIVISION STANDARD DRAWINGS, AND TMUTCD AS NEEDED.
2. CONSTRUCT IMPROVEMENTS (WATER LINE AND PAVEMENT REPLACEMENTS) USING A COMBINATION OF TCP SHEETS FOR SITE 1 AND TYPICAL ONE LANE CLOSURE STANDARD DETAILS.
  - WORK ZONE MUST BE COMPLETELY RESTORED PRIOR TO MOVING TO THE NEXT WORKZONE PHASE.
  - UNIFORMED PEACE OFFICES AND CERTIFIED FLAGGERS TO BE USED AS NEEDED WITH PRIOR CITY APPROVAL. CONTRACTOR MUST OBTAIN APPROVAL TO USE UNIFORMED PEACE OFFICERS.
3. WATER LINE TO BE INSTALLED BY TRENCHLESS CONSTRUCTION METHOD.
4. FOR CHANNELIZING DEVICES DRUMS WILL BE USED. CONES ARE NOT ALLOWED DURING NIGHTTIME CLOSURE.
5. CONTRACTOR MUST PROVIDE TCP SHEETS AND CONTRACTOR POINT OF CONTACT TO THE EMERGENCY AND MEDICAL INSTITUTIONS AT LEAST 2 WEEKS PRIOR TO IMPLEMENTING TCP.
6. CONTRACTOR TO CONTACT TXDOT'S PERMIT COORDINATOR BY TELEPHONE AND EMAIL PRIOR TO SETTING UP ANY TRAFFIC CONTROL DEVICES AT INTERSECTIONS. PROVIDE AT LEAST 72-HOURS NOTIFICATION. COORDINATION WITH CM FOR CONTACT PERSON.

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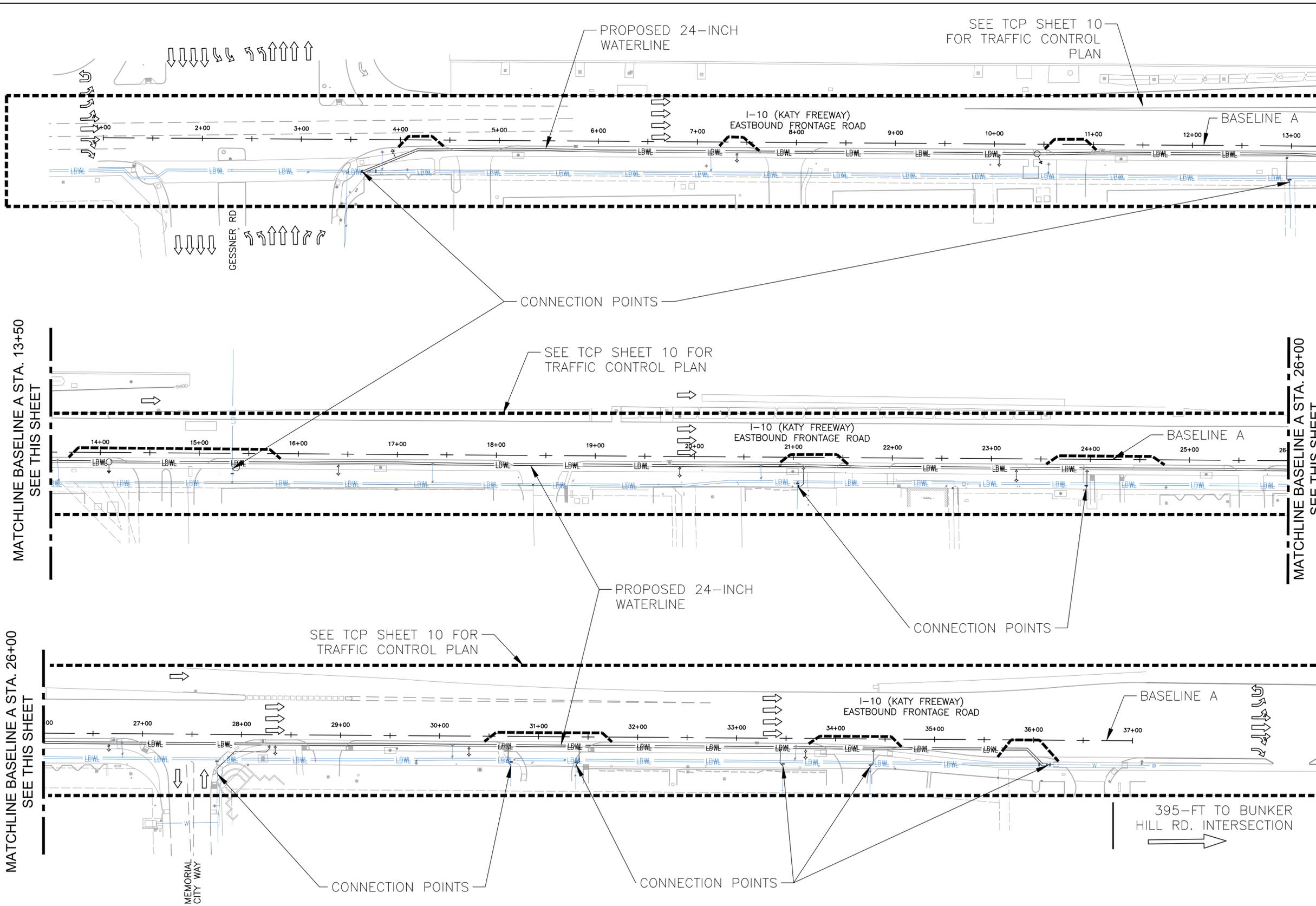
 <p style="font-size: 8px; margin: 0;">10300 Westoffice Dr., Suite 800 Houston, TX 77042 Tel: (713) 975-8769 Fax: (713) 975-9920 www.kuasocietes.com Texas Firm Registration No. F-4579</p>	<p><b>INTERIM REVIEW ONLY</b></p> <p style="font-size: 8px; margin: 0;">*THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RAM GULIANI, P.E. 101094 ON 12/19/2025. IT IS NOT TO BE USED FOR CONSTRUCTION</p>
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<p><b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD</p>															
<p><b>MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS – PACKAGE 4</b></p>															
<p><b>TRAFFIC CONTROL PLANS CONSTRUCTION NARRATIVE - 2</b></p>															
<p>SWPPP SHEET: 3 OF 30</p>															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">WBS NUMBER</td> <td style="padding: 2px;">FOR CITY OF HOUSTON USE ONLY</td> </tr> <tr> <td style="padding: 2px;">S-000701-0043-4</td> <td></td> </tr> <tr> <td style="padding: 2px;">DRAWING SCALE</td> <td></td> </tr> <tr> <td style="padding: 2px;">N/A</td> <td></td> </tr> <tr> <td style="padding: 2px;">CITY OF HOUSTON PM</td> <td></td> </tr> <tr> <td style="padding: 2px;">MARTIN MATHEW, ENV SP</td> <td></td> </tr> <tr> <td style="padding: 2px;">SHEET NO. 138 OF 190</td> <td></td> </tr> </table>	WBS NUMBER	FOR CITY OF HOUSTON USE ONLY	S-000701-0043-4		DRAWING SCALE		N/A		CITY OF HOUSTON PM		MARTIN MATHEW, ENV SP		SHEET NO. 138 OF 190		
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY														
S-000701-0043-4															
DRAWING SCALE															
N/A															
CITY OF HOUSTON PM															
MARTIN MATHEW, ENV SP															
SHEET NO. 138 OF 190															

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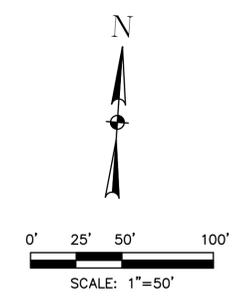
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MATCHLINE BASELINE A STA. 13+50  
SEE THIS SHEET

MATCHLINE BASELINE A STA. 26+00  
SEE THIS SHEET

MATCHLINE BASELINE A STA. 26+00  
SEE THIS SHEET



**NOTES:**

1. ACCESS TO EXISTING BUSINESSES AND RESIDENCIES SHALL BE MAINTAINED AT ALL TIMES.
2. ALL UTILITY WORK ON KATY FREEWAY FRONTAGE ROAD WILL BE COMPLETED VIA COMBINATION OF TRENCHLESS AND OPEN CUT CONSTRUCTION.

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**ISANI**  
 civil design engineers  
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**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 1 - KATY FREEWAY  
 OVERALL TCP LAYOUT - 1

TCP SHEET: 4 OF 30	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
1"= 50'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 139 OF 190	

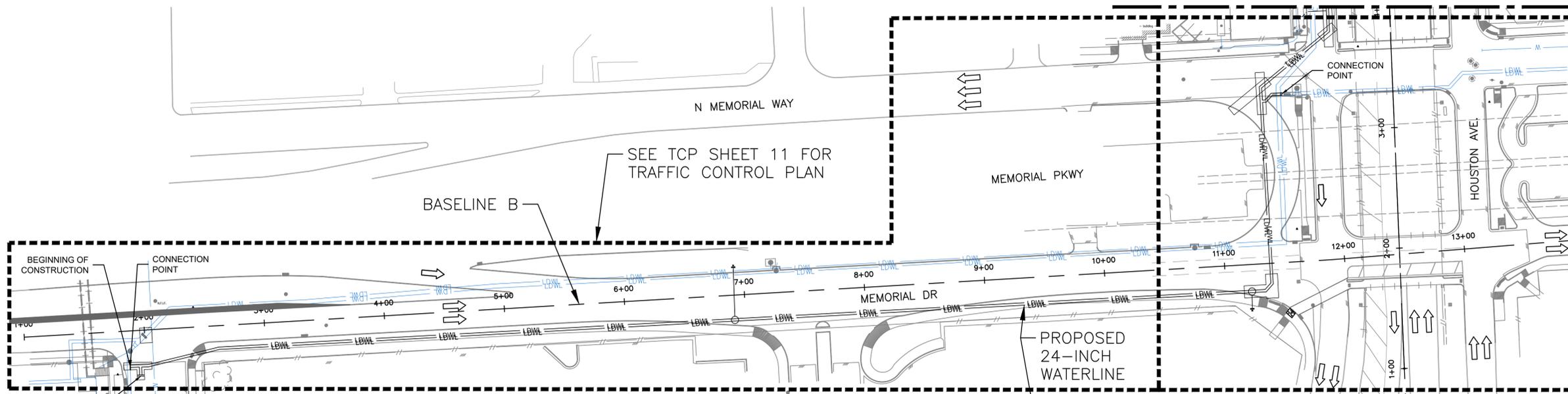
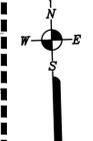
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MATCHLINE BASELINE C STA. 4+00  
SEE THIS SHEET

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SCALE: 1"=100'



SEE TCP SHEET 12 & 13  
FOR TRAFFIC CONTROL PLAN

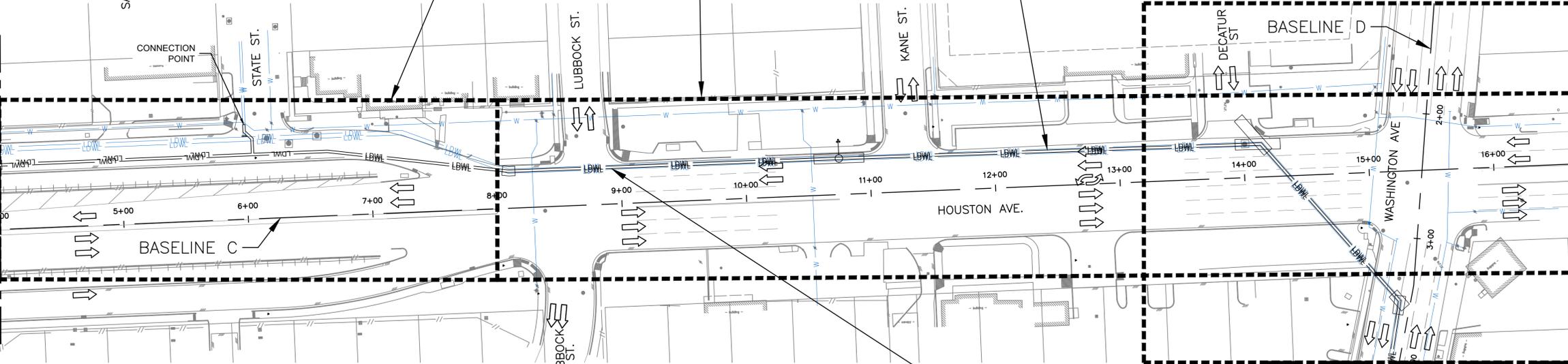
SEE TCP SHEETS 13 FOR  
TRAFFIC CONTROL PLAN

SEE TCP SHEETS 14 & 16  
FOR TRAFFIC CONTROL PLAN

SEE TCP SHEETS 15 FOR  
TRAFFIC CONTROL PLAN

MATCHLINE BASELINE C STA. 4+00  
SEE THIS SHEET

MATCHLINE BASELINE D STA. 4+00  
SEE THIS SHEET



NOTES:  
1. ACCESS TO EXISTING BUSINESSES AND RESIDENCIES  
SHALL BE MAINTAINED AT ALL TIMES.

MATCHLINE BASELINE D STA. 4+00  
SEE THIS SHEET

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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
SITE 4 & 5  
OVERALL TCP LAYOUT - 2

TCP SHEET: 5 OF 30	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
1"=100'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 140 OF 190	

SEE TCP SHEET 18 FOR  
TRAFFIC CONTROL PLAN

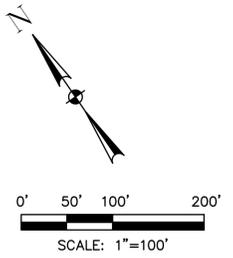
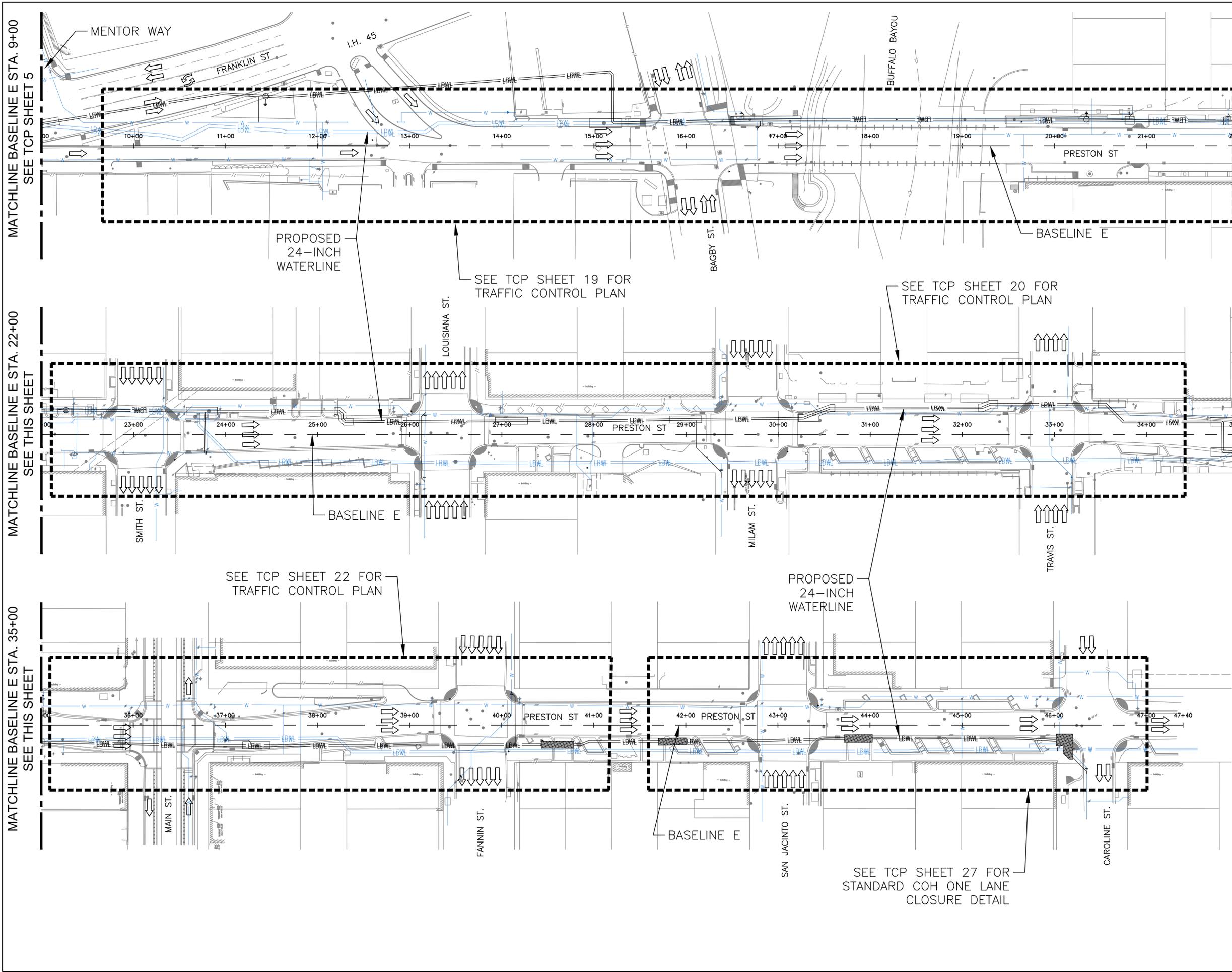
SEE TCP SHEETS 15 & 17  
FOR TRAFFIC CONTROL PLAN

MATCHLINE BASELINE E STA. 9+00  
SEE TCP SHEET 6

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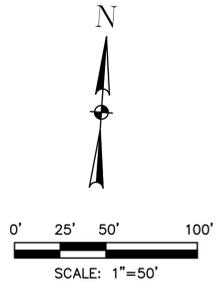
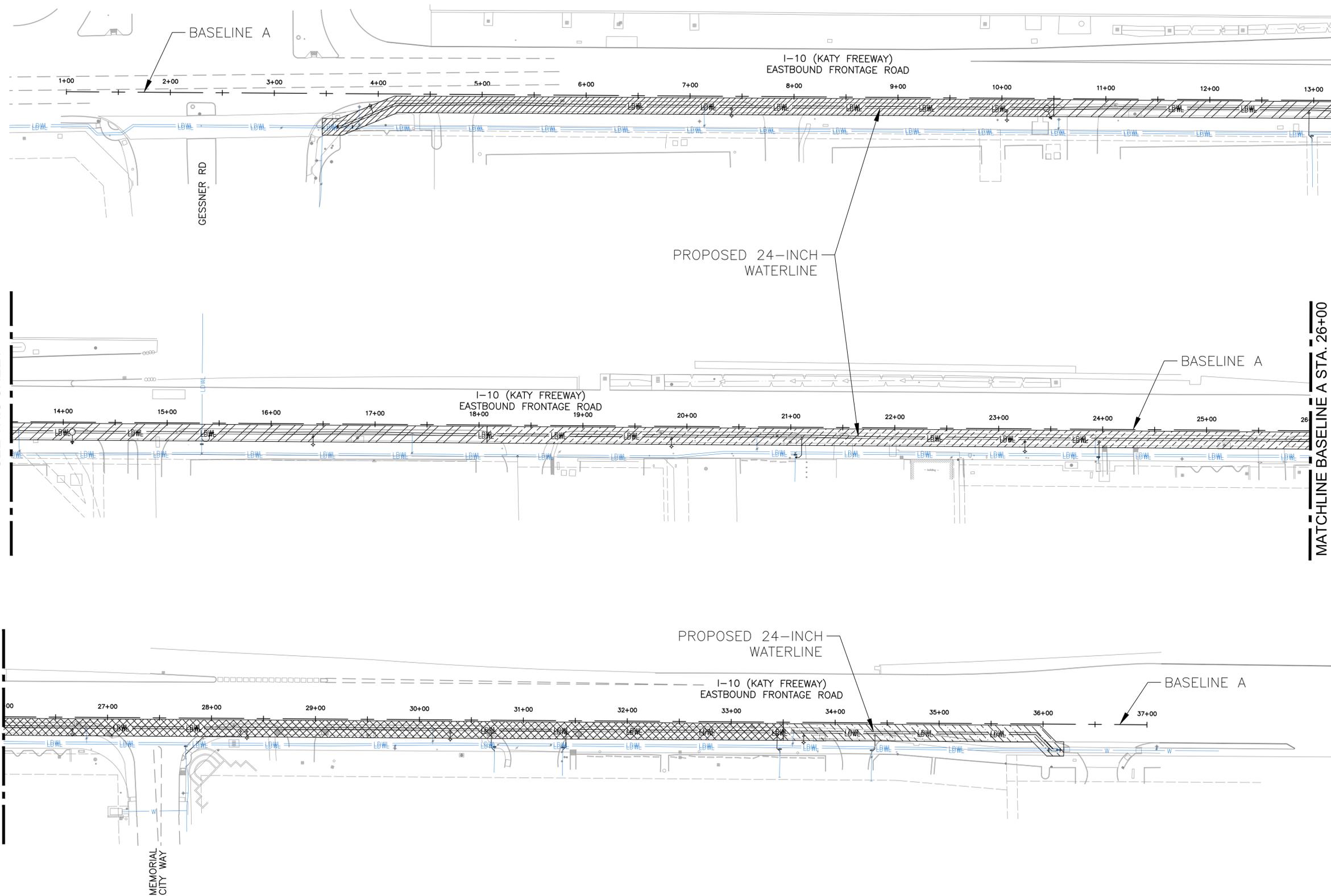
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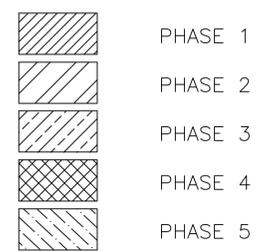
<b>KUO &amp; ASSOCIATES</b> Consulting Engineers & Surveyors 10300 Westoffice Dr., Suite 800 Houston, TX 77042 Tel: (713) 975-8769 Fax: (713) 975-9920 www.kuasociates.com Texas Firm Registration No. F-4578	<b>ISANI</b> civil design engineers 10449 Westoffice Dr., Houston, TX 77042 Tel: (713) 747-2399 Texas Firm Registration No. F-4575 SURVEYED BY: Kuo & Associates, LLC. C.O.H Field Book P-
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 4 & 5  
**OVERALL TCP LAYOUT - 3**

TCP SHEET: 6 OF 30	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER	S-000701-0043-4
DRAWING SCALE	1"=100'
CITY OF HOUSTON PM	MARTIN MATHEW, ENV SP
SHEET NO. 141 OF 190	



LEGEND:



MATCHLINE BASELINE A STA. 13+50  
SEE THIS SHEET

MATCHLINE BASELINE A STA. 26+00  
SEE THIS SHEET

MATCHLINE BASELINE A STA. 26+00  
SEE THIS SHEET

- ADDITIONAL TXDOT NOTES:
1. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING THE TRAFFIC CONTROL DEVICES AS SHOWN ON THE PLANS.
  2. FOR CHANNELIZING DEVICES DRUMS WILL BE USED, CONES ARE NOT ALLOWED DURING THE NIGHTTIME CLOSURE.
  3. ALL SIGNS & DEVICES SHALL BE PLACED IN ACCORDANCE WITH THE LATEST PROVISIONS OF THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT)-TRAFFIC OPERATIONS DIVISION STANDARD DRAWINGS.
  4. MEMORIAL CITY MALL MANAGEMENT TO BE CONTACTED FOR COORDINATION TO REDUCE IMPACTS TO THEIR FACILITIES. IMPACTS INCLUDE POTENTIAL DRIVEWAYS CLOSURES AND WATER LINES CONNECTIONS.
  5. PEACE OFFICERS OR FLAGGERS TO BE USED AS NEEDED BASIS SINCE MOST OF THE WORK WILL OCCUR BETWEEN THE PROPOSED CLOSED LANE AND THE EXISTING ROW.
  6. CONTRACTOR TO PROVIDE A COPY OF THE TCP SHEETS TO THE NEARBY EMERGENCY AND MEDICAL INSTITUTIONS
  7. CONTRACTOR WORKZONE IS LIMITED TO 800-FT. ALL OTHER AREAS NOT WITHIN THE WORKZONE MUST REMAIN OPEN FOR TRAFFIC. CONSTRUCT IMPROVEMENTS (WATER LINE AND PAVEMENT REPLACEMENTS) USING A COMBINATION OF TYPICAL ONE LANE CLOSURE, AND THIS SHEET. THE ONE LANE CLOSURE WILL BE USED AS A ROLLING CLOSURE.
  8. DO NOT CLOSE TWO DRIVEWAYS CONSECUTIVELY.
  9. LPCB MUST BE INSTALL AT ALL LAUNCHING AND RECEIVING PITS.

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 HOUSTON PUBLIC WORKS STANDARD  
 MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4  
 SITE 1 - KATY FREEWAY  
 OVERALL PHASING PLAN - 1

TCP SHEET: 7 OF 30	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER	
S-000701-0043-4	
DRAWING SCALE	
1" = 50'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 142 OF 190	

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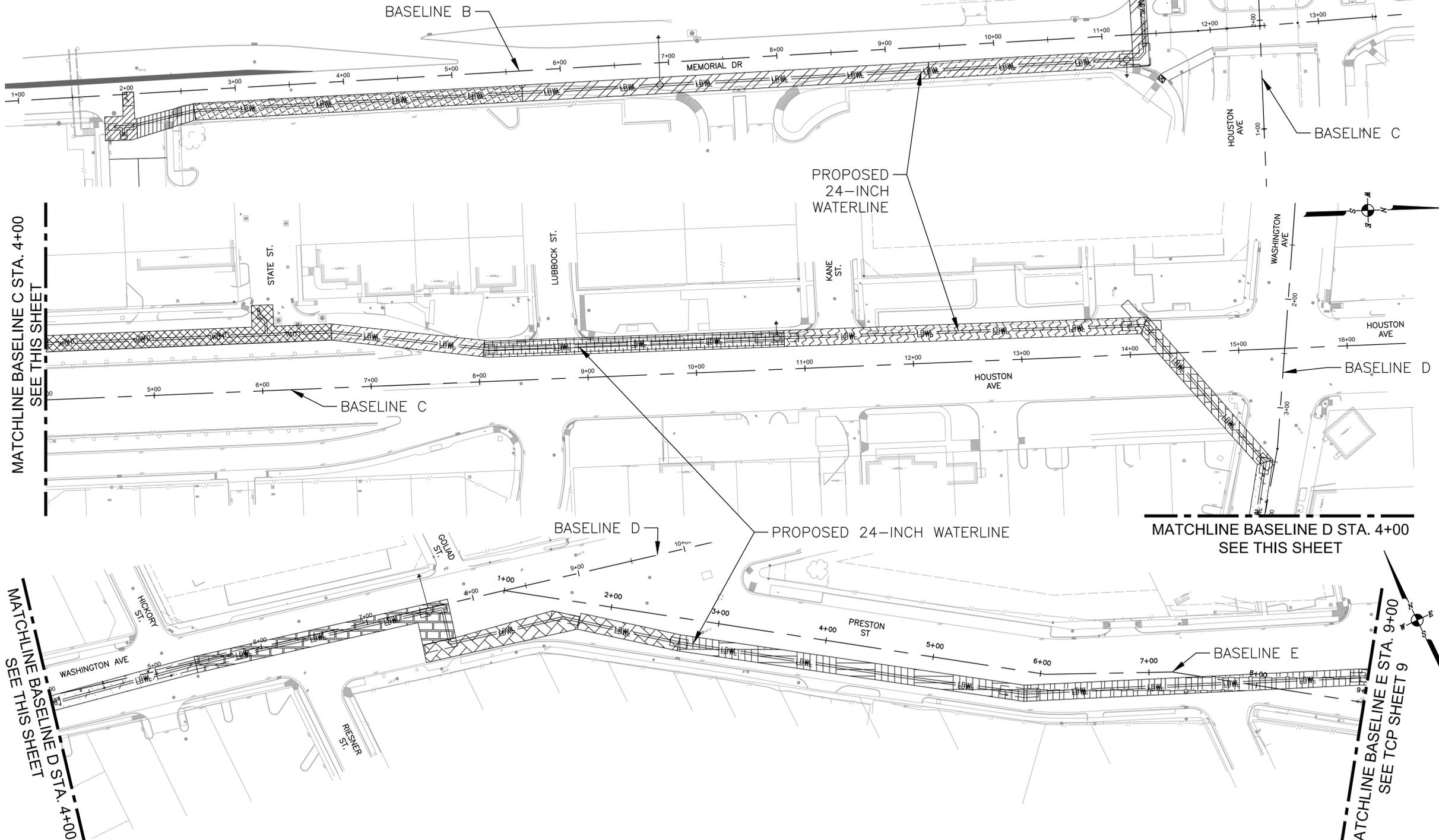
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MATCHLINE BASELINE C STA. 4+00  
SEE THIS SHEET

0' 25' 50' 100'  
SCALE: 1"=50'

LEGEND:

-  PHASE 1 - STEP 1A
-  PHASE 1 - STEP 1B
-  PHASE 1 - STEP 2
-  PHASE 1 - STEP 3
-  PHASE 1 - STEP 4A
-  PHASE 1 - STEP 5
-  PHASE 2 - STEP 1
-  PHASE 2 - STEP 2
-  PHASE 2 - STEP 3
-  PHASE 2 - STEP 4A
-  PHASE 2 - STEP 4B
-  PHASE 3 - STEP 1
-  PHASE 3 - STEP 2
-  PHASE 3 - STEP 3
-  PHASE 4 - STEP 1
-  PHASE 4 - STEP 2
-  PHASE 4 - STEP 3



MATCHLINE BASELINE C STA. 4+00  
SEE THIS SHEET

MATCHLINE BASELINE D STA. 4+00  
SEE THIS SHEET

MATCHLINE BASELINE D STA. 4+00  
SEE THIS SHEET

MATCHLINE BASELINE E STA. 9+00  
SEE TCP SHEET 9

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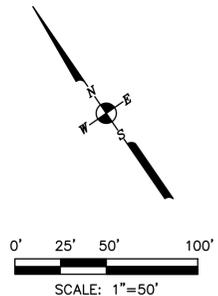
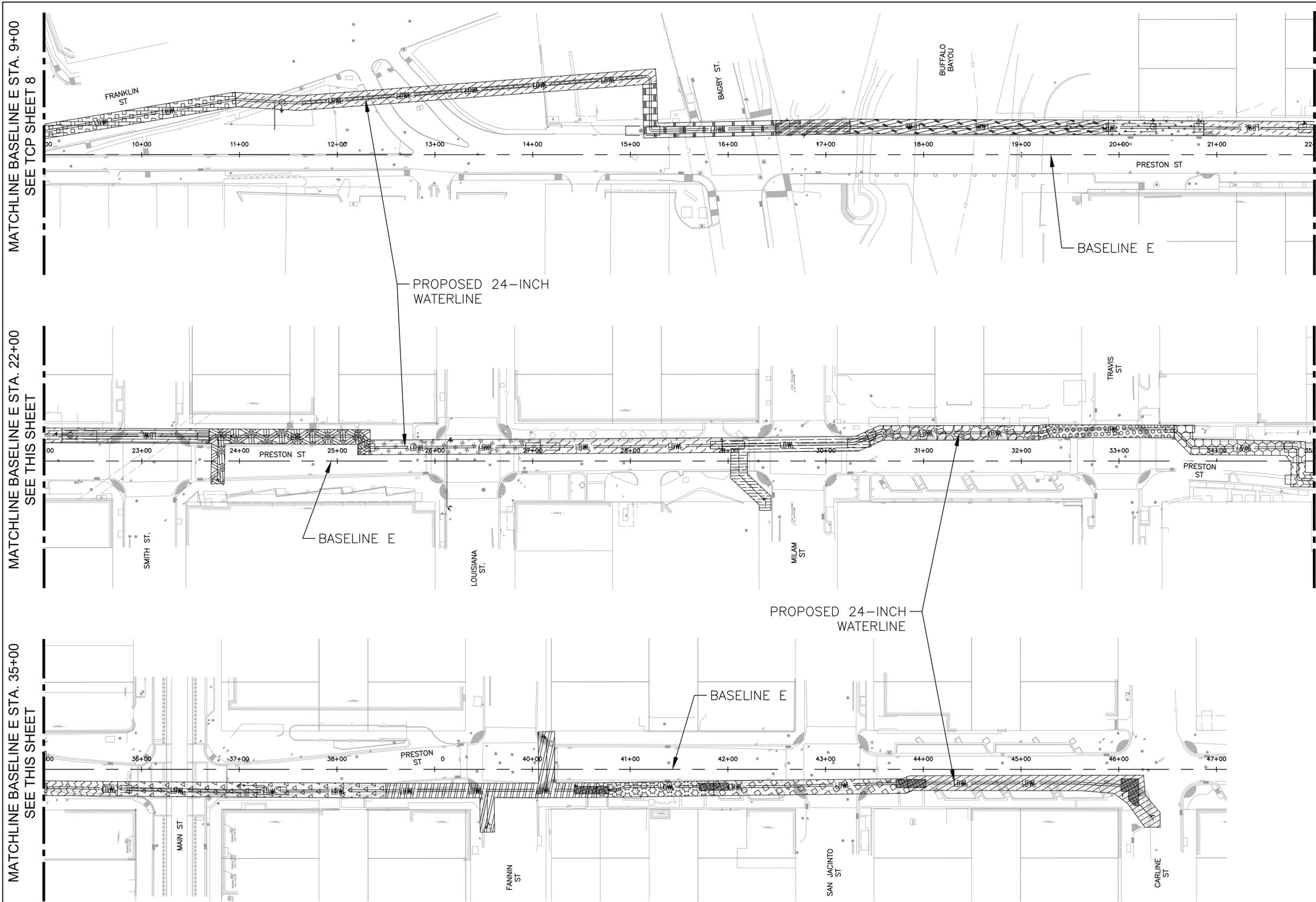
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**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 4 & 5

OVERALL PHASING PLAN-2

TCP SHEET: 8 OF 30

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H : 1"=50'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 143 OF 190	



LEGEND:

-  PHASE 4 - STEP 4
-  PHASE 5 - STEP 1
-  PHASE 5 - STEP 2
-  PHASE 5 - STEP 3
-  PHASE 5 - STEP 4
-  PHASE 5 - STEP 5
-  PHASE 6 - STEP 1
-  PHASE 6 - STEP 2
-  PHASE 6 - STEP 3
-  PHASE 6 - STEP 4
-  PHASE 6 - STEP 5
-  PHASE 6 - STEP 7
-  PHASE 6 - STEP 8
-  PHASE 6 - STEP 9
-  PHASE 6 - STEP 10
-  PHASE 7 - STEP 1

LEGEND:

-  PHASE 7 - STEP 2
-  PHASE 7 - STEP 3
-  PHASE 8 - STEP 1
-  PHASE 8 - STEP 2
-  PHASE 8 - STEP 3

**KUO & ASSOCIATES**  
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 Tel: (713) 975-8769  
 Fax: (713) 975-9929  
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 Texas Firm Registration No. F-4579

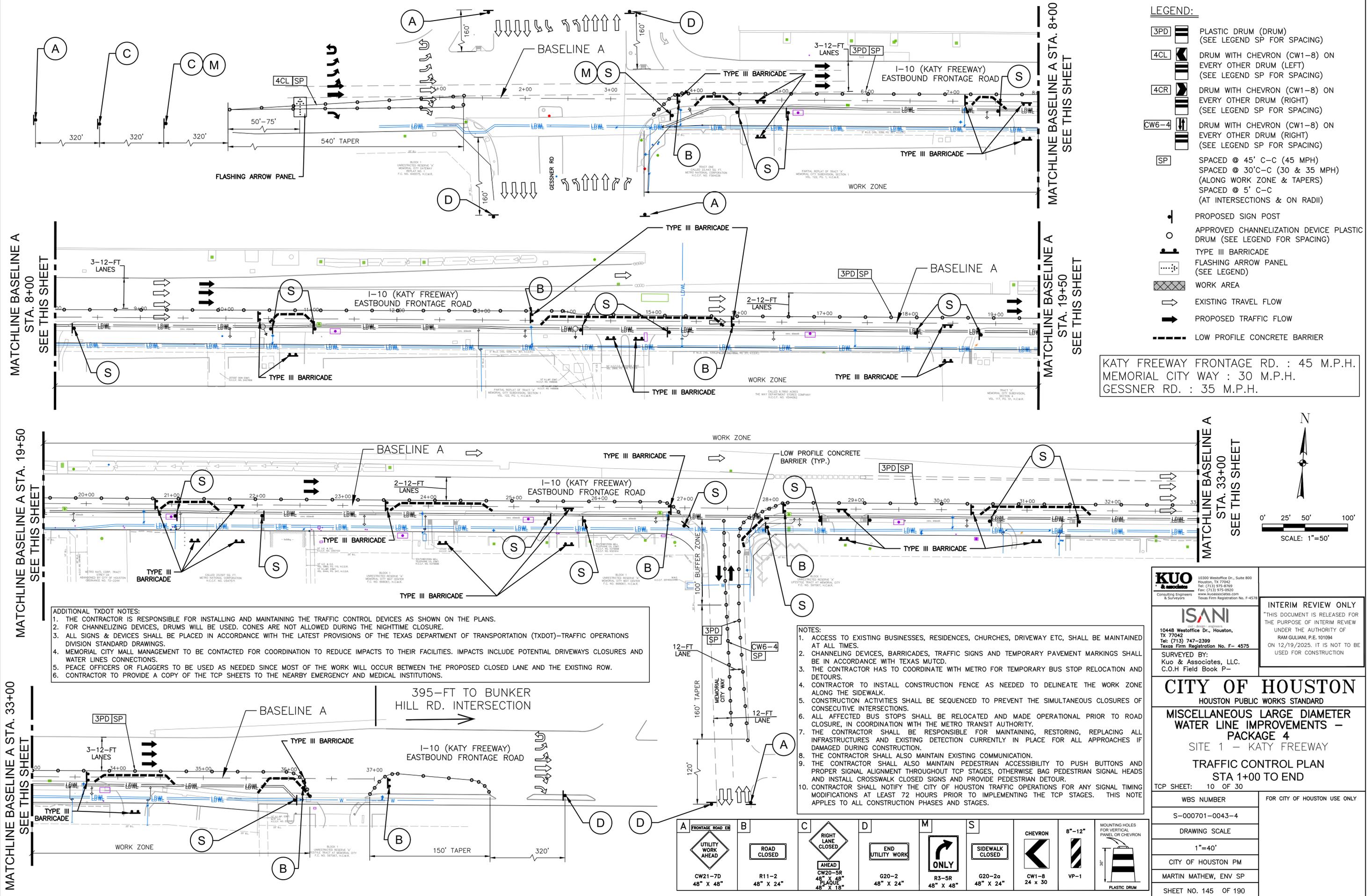
**ISANI**  
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 10449 Westoffice Dr., Houston,  
 TX 77042  
 Tel: (713) 747-2399  
 Texas Firm Registration No. F-4575

SURVEYED BY:  
 Kuo & Associates, LLC.  
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 4 & 5  
**OVERALL PHASING PLAN-3**

TCP SHEET: 9 OF 30	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H : 1"=50'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 144 OF 190	



KATY FREEWAY FRONTAGE RD. : 45 M.P.H.  
 MEMORIAL CITY WAY : 30 M.P.H.  
 GESSNER RD. : 35 M.P.H.

- ADDITIONAL TxDOT NOTES:**
1. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING THE TRAFFIC CONTROL DEVICES AS SHOWN ON THE PLANS.
  2. FOR CHANNELIZING DEVICES, DRUMS WILL BE USED, CONES ARE NOT ALLOWED DURING THE NIGHTTIME CLOSURE.
  3. ALL SIGNS & DEVICES SHALL BE PLACED IN ACCORDANCE WITH THE LATEST PROVISIONS OF THE TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT)-TRAFFIC OPERATIONS DIVISION STANDARD DRAWINGS.
  4. MEMORIAL CITY MALL MANAGEMENT TO BE CONTACTED FOR COORDINATION TO REDUCE IMPACTS TO THEIR FACILITIES. IMPACTS INCLUDE POTENTIAL DRIVEWAYS CLOSURES AND WATER LINES CONNECTIONS.
  5. PEACE OFFICERS OR FLAGGERS TO BE USED AS NEEDED SINCE MOST OF THE WORK WILL OCCUR BETWEEN THE PROPOSED CLOSED LANE AND THE EXISTING ROW.
  6. CONTRACTOR TO PROVIDE A COPY OF THE TCP SHEETS TO THE NEARBY EMERGENCY AND MEDICAL INSTITUTIONS.

- NOTES:**
1. ACCESS TO EXISTING BUSINESSES, RESIDENCES, CHURCHES, DRIVEWAY ETC, SHALL BE MAINTAINED AT ALL TIMES.
  2. CHANNELING DEVICES, BARRICADES, TRAFFIC SIGNS AND TEMPORARY PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
  3. THE CONTRACTOR HAS TO COORDINATE WITH METRO FOR TEMPORARY BUS STOP RELOCATION AND DETOURS.
  4. CONTRACTOR TO INSTALL CONSTRUCTION FENCE AS NEEDED TO DELINEATE THE WORK ZONE ALONG THE SIDEWALK.
  5. CONSTRUCTION ACTIVITIES SHALL BE SEQUENCED TO PREVENT THE SIMULTANEOUS CLOSURES OF CONSECUTIVE INTERSECTIONS.
  6. ALL AFFECTED BUS STOPS SHALL BE RELOCATED AND MADE OPERATIONAL PRIOR TO ROAD CLOSURE, IN COORDINATION WITH THE METRO TRANSIT AUTHORITY.
  7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING, RESTORING, REPLACING ALL INFRASTRUCTURES AND EXISTING DETECTION CURRENTLY IN PLACE FOR ALL APPROACHES IF DAMAGED DURING CONSTRUCTION.
  8. THE CONTRACTOR SHALL ALSO MAINTAIN EXISTING COMMUNICATION.
  9. THE CONTRACTOR SHALL ALSO MAINTAIN PEDESTRIAN ACCESSIBILITY TO PUSH BUTTONS AND PROPER SIGNAL ALIGNMENT THROUGHOUT TCP STAGES, OTHERWISE BAG PEDESTRIAN SIGNAL HEADS AND INSTALL CROSSWALK CLOSED SIGNS AND PROVIDE PEDESTRIAN DETOUR.
  10. CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON TRAFFIC OPERATIONS FOR ANY SIGNAL TIMING MODIFICATIONS AT LEAST 72 HOURS PRIOR TO IMPLEMENTING THE TCP STAGES. THIS NOTE APPLIES TO ALL CONSTRUCTION PHASES AND STAGES.

<b>A</b> FRONTAGE ROAD EB UTILITY WORK AHEAD CW21-7D 48" X 48"	<b>B</b> ROAD CLOSED R11-2 48" X 24"	<b>C</b> RIGHT LANE CLOSED AHEAD CW20-5R 48" X 48" PLAQUE 48" X 18"	<b>D</b> END UTILITY WORK G20-2 48" X 24"	<b>M</b> ONLY R3-5R 48" X 48"	<b>S</b> SIDEWALK CLOSED G20-2a 48" X 24"	<b>CHEVRON</b> CW1-8 24 X 30	<b>8"-12"</b> VP-1 MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON 30"	<b>PLASTIC DRUM</b>
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**KUO & Associates**  
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS STANDARD

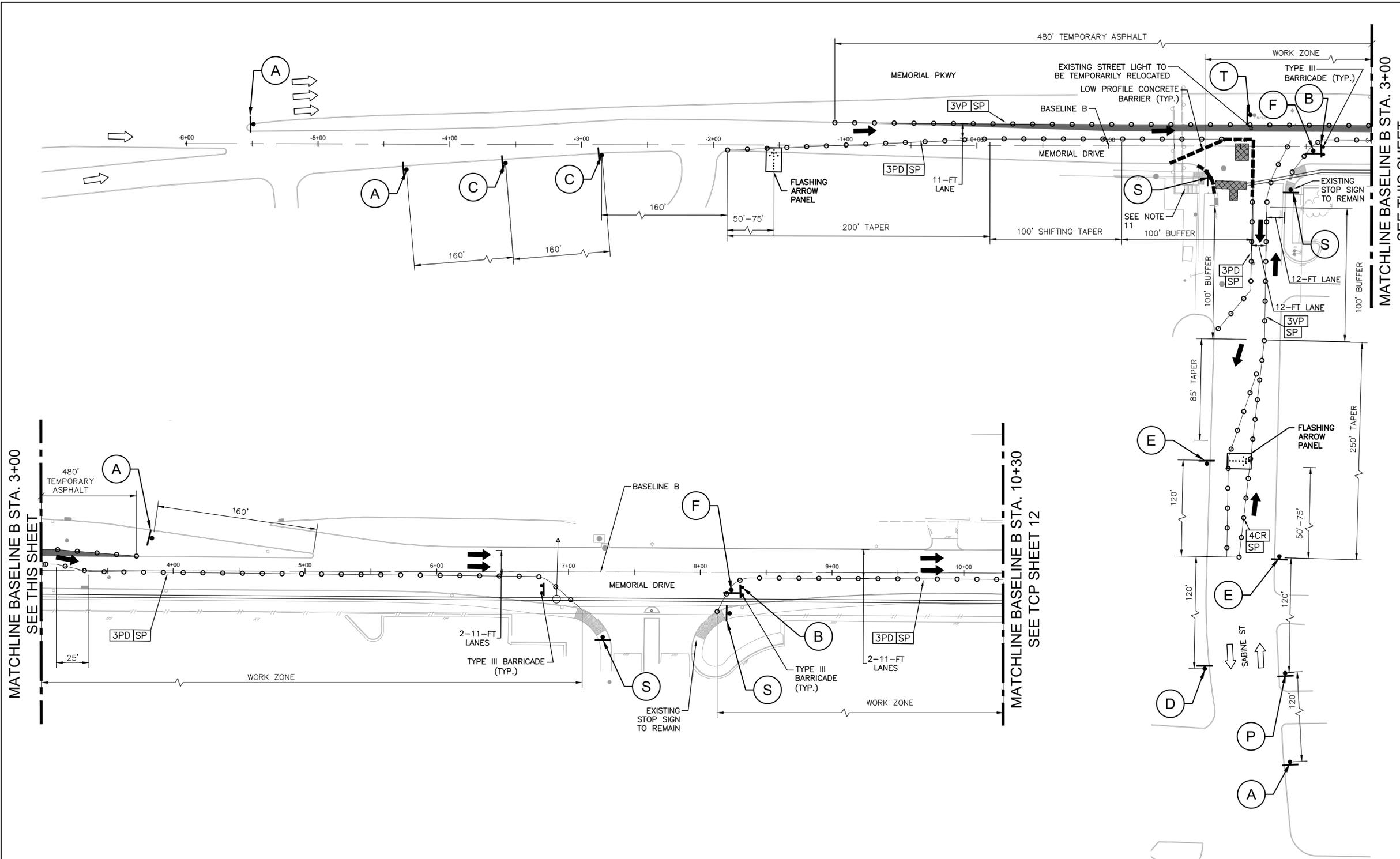
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 1 - KATY FREEWAY

**TRAFFIC CONTROL PLAN**  
 STA 1+00 TO END

TCP SHEET: 10 OF 30

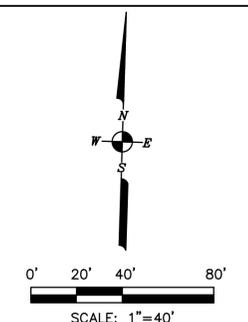
WBS NUMBER	S-000701-0043-4
DRAWING SCALE	1"=40'
CITY OF HOUSTON PM	MARTIN MATHEW, ENV SP
SHEET NO.	145 OF 190

FOR CITY OF HOUSTON USE ONLY



**LEGEND:**

- VERTICAL PANEL (SEE LEGEND SP FOR SPACING)
- PLASTIC DRUM (DRUM) (SEE LEGEND SP FOR SPACING)
- DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (LEFT) (SEE LEGEND SP FOR SPACING)
- DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
- DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
- SPACED @ 30' C-C (ALONG WORK ZONE & TAPERS)  
SPACED @ 5' C-C (AT INTERSECTIONS & ON RADII)
- PROPOSED SIGN POST
- APPROVED CHANNELIZATION DEVICE PLASTIC DRUM (SEE LEGEND FOR SPACING)
- TYPE III BARRICADE
- FLASHING ARROW PANEL (SEE LEGEND)
- WORK AREA
- EXISTING TRAVEL FLOW
- PROPOSED TRAFFIC FLOW
- LOW PROFILE CONCRETE BARRIER



HOUSTON AVE. : 35 M.P.H.
MEMORIAL DR. : 35 M.P.H.
SABINE ST. : 30 M.P.H.

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 HOUSTON PUBLIC WORKS STANDARD

**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 4 & 5

**TRAFFIC CONTROL PLAN - PHASE 1**  
 SHEET 1 OF 2

TCP SHEET: 11 OF 30

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 146 OF 190	

- NOTES:**
- ACCESS TO EXISTING BUSINESSES, RESIDENCES, CHURCHES, DRIVEWAY ETC, SHALL BE MAINTAINED AT ALL TIMES.
  - CHANNELING DEVICES, BARRICADES, TRAFFIC SIGNS AND TEMPORARY PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
  - THE CONTRACTOR HAS TO COORDINATE WITH METRO FOR TEMPORARY BUS STOP RELOCATION AND DETOURS.
  - CONTRACTOR TO INSTALL CONSTRUCTION FENCE AS NEEDED TO DELINEATE THE WORK ZONE ALONG THE SIDEWALK.
  - CONSTRUCTION ACTIVITIES SHALL BE SEQUENCED TO PREVENT THE SIMULTANEOUS CLOSURES OF CONSECUTIVE INTERSECTIONS.
  - ALL AFFECTED BUS STOPS SHALL BE RELOCATED AND MADE OPERATIONAL PRIOR TO ROAD CLOSURE, IN COORDINATION WITH THE LOCAL TRANSIT AUTHORITY.
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  - THE CONTRACTOR SHALL ALSO MAINTAIN EXISTING COMMUNICATION.
  - THE CONTRACTOR SHALL ALSO MAINTAIN PEDESTRIAN ACCESSIBILITY TO PUSH BUTTONS AND PROPER SIGNAL ALIGNMENT THROUGHOUT TCP STAGES, OTHERWISE BAG PEDESTRIAN SIGNAL HEADS AND INSTALL CROSSWALK CLOSED SIGNS AND PROVIDE PEDESTRIAN DETOUR.
  - CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON OR TXDOT TRAFFIC OPERATIONS FOR ANY SIGNAL TIMING MODIFICATIONS AT LEAST 72 HOURS PRIOR TO IMPLEMENTING THE TCP STAGES. THIS NOTE APPLIES TO ALL CONSTRUCTION PHASES AND STAGES.
  - CONTRACTOR SHALL MAINTAIN ACCESS TO THE PEDESTRIAN BRIDGE AT ALL TIME.

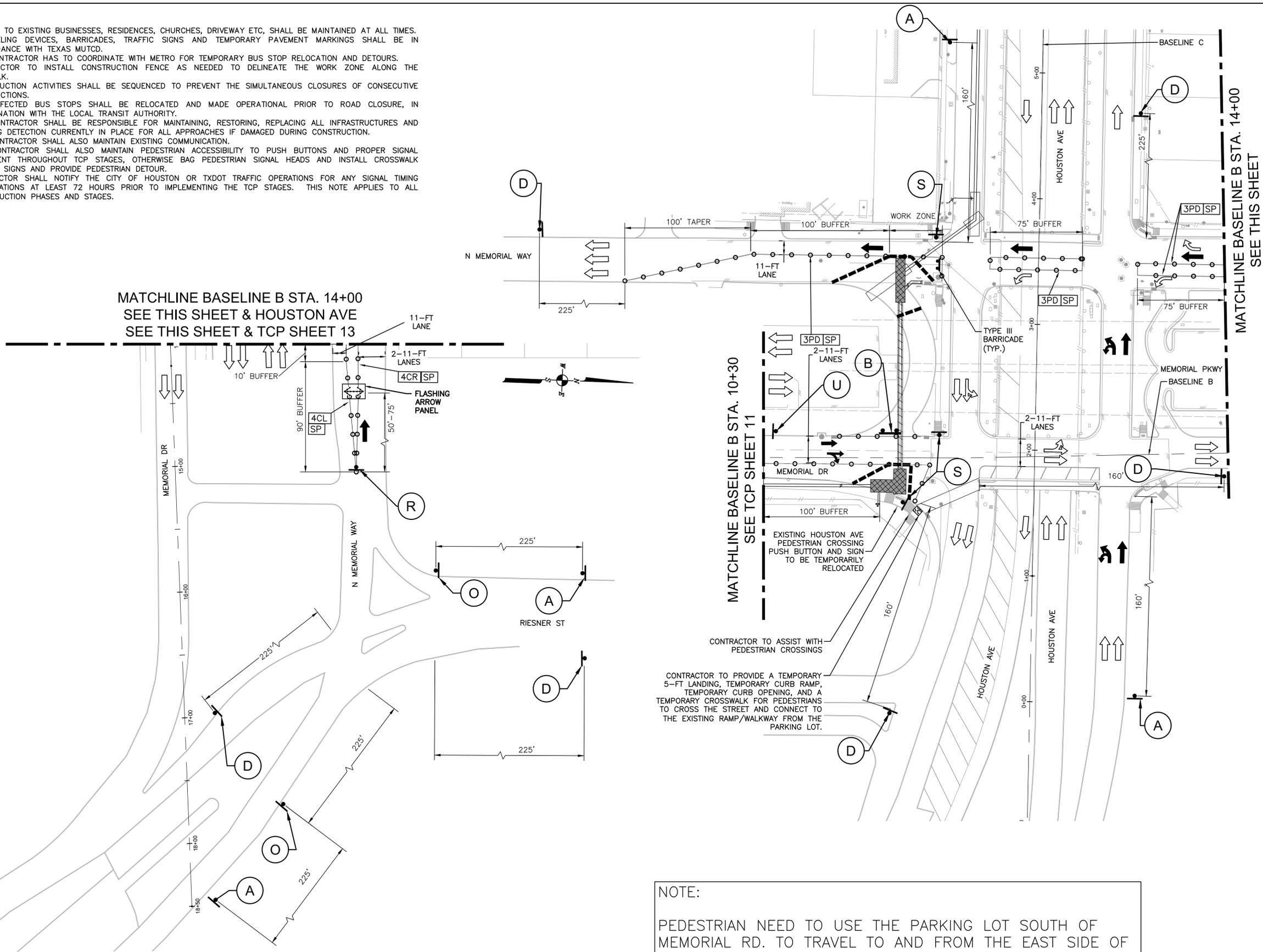
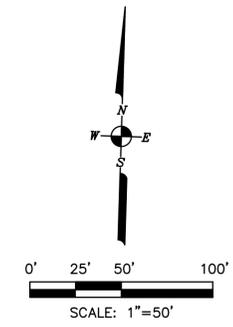
<b>A</b>  CW21-7D 36" X 36"	<b>B</b>  R11-2 36" X 18"	<b>C</b>  CW20-5R 36" X 36" PLAQUE 30" X 12"	<b>D</b>  G20-2 36" X 18"	<b>E</b>  R8-3 24" X 30"	<b>F</b>  R1-1 30" X 30"	<b>S</b>  G20-2a 36" X 18"	<b>U</b>  R3-4 24 X 24"
<b>MOUNTING HOLES</b>  CW1-8 18" X 24"	<b>FOR VERTICAL</b> 8"-12"  VP-1	<b>PANEL OR CHEVRON</b>  PLASTIC DRUM	<b>P</b>  W5-1 36" X 36"	<b>O</b>  CW20-5C 48" X 48" PLAQUE 30" X 12"	<b>Q</b>  CW4 - 2R 36" X 36"	<b>R</b>  R3 - 8 Varies X 30"	<b>T</b>  R5 - 2,2A 24" X 24"

PLOTTED: 1/9/2026 11:35 AM

PLOT STYLE: Coh\_ctb\_230809.ctb

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- NOTES:
- ACCESS TO EXISTING BUSINESSES, RESIDENCES, CHURCHES, DRIVEWAY ETC, SHALL BE MAINTAINED AT ALL TIMES.
  - CHANNELING DEVICES, BARRICADES, TRAFFIC SIGNS AND TEMPORARY PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
  - THE CONTRACTOR HAS TO COORDINATE WITH METRO FOR TEMPORARY BUS STOP RELOCATION AND DETOURS.
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- LEGEND:**
- 3PD** PLASTIC DRUM (DRUM) (SEE LEGEND SP FOR SPACING)
  - 4CL** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (LEFT) (SEE LEGEND SP FOR SPACING)
  - 4CR** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
  - CW6-4** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
  - SP** SPACED @ 30' C-C (ALONG WORK ZONE & TAPERS) SPACED @ 5' C-C (AT INTERSECTIONS & ON RADII)
  - PROPOSED SIGN POST
  - APPROVED CHANNELIZATION DEVICE PLASTIC DRUM (SEE LEGEND FOR SPACING)
  - TYPE III BARRICADE
  - FLASHING ARROW PANEL (SEE LEGEND)
  - WORK AREA
  - EXISTING TRAVEL FLOW
  - PROPOSED TRAFFIC FLOW
  - LOW PROFILE CONCRETE BARRIER
- HOUSTON AVE. : 35 M.P.H.  
MEMORIAL DR. : 35 M.P.H.

NOTE:  
PEDESTRIAN NEED TO USE THE PARKING LOT SOUTH OF MEMORIAL RD. TO TRAVEL TO AND FROM THE EAST SIDE OF MEMORIAL RD. AND HOUSTON AVE INTERSECTION.

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HOUSTON PUBLIC WORKS STANDARD

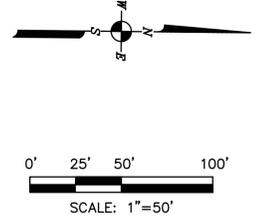
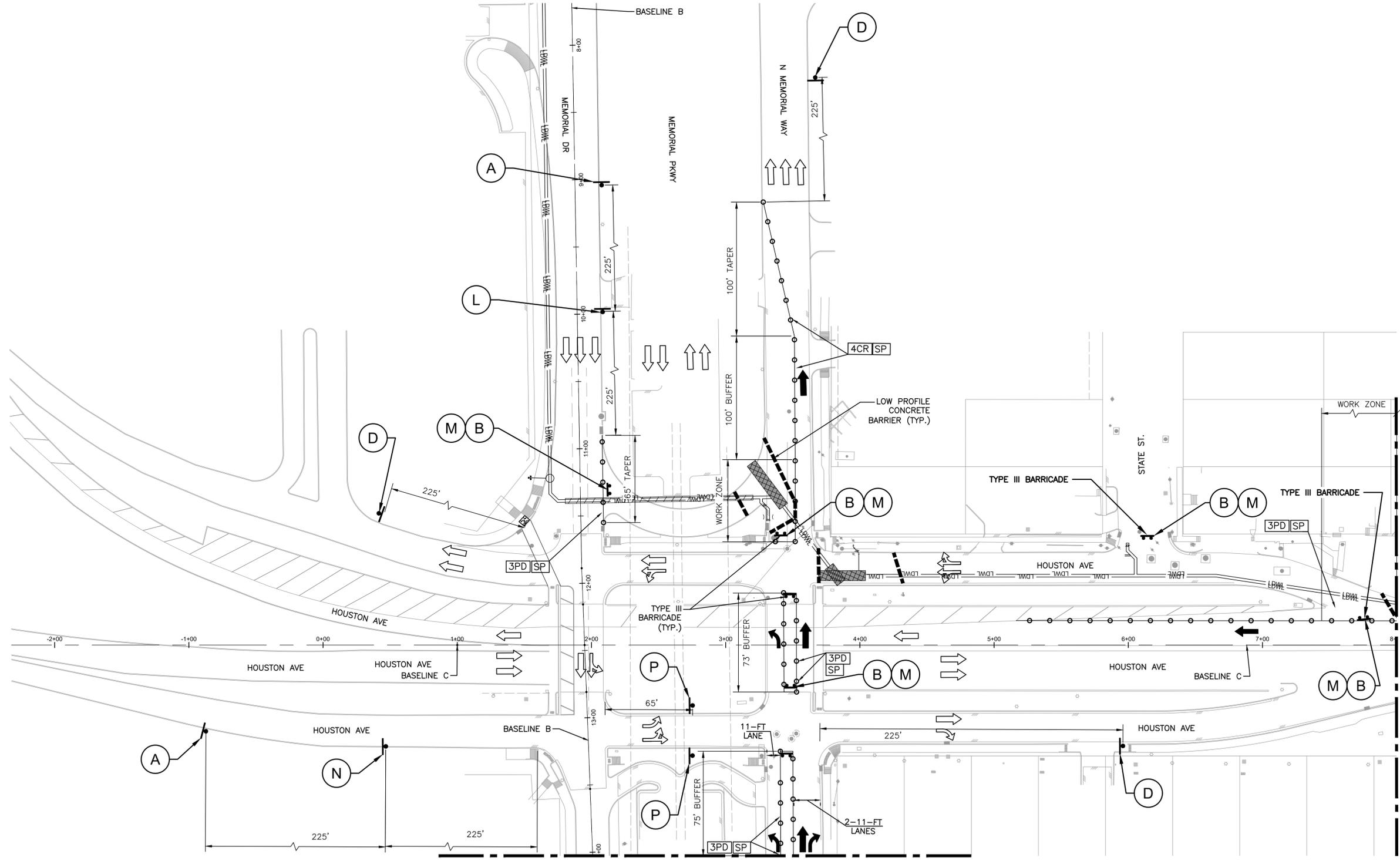
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
SITE 4 & 5

**TRAFFIC CONTROL PLAN - PHASE 1**  
SHEET 2 OF 2

TCP SHEET: 12 OF 30

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 147 OF 190	

<b>A</b>  CW21-7D 36" X 36"	<b>B</b>  R11-2 36" X 18"	<b>C</b>  CW20-5R 36" X 36" PLAQUE 30" X 12"	<b>D</b>  G20-2 36" X 18"	<b>E</b>  R8-3 24" X 30"	<b>F</b>  R1-1 30" X 30"	<b>S</b>  G20-2a 36" X 18"	<b>U</b>  R3-4 24 X 24"	<b>MOUNTING HOLES</b>  CHEVRON CW1-8 18" X 24"	<b>FOR VERTICAL 8"-12"</b>  VP-1	<b>P</b>  W5-1 36" X 36"	<b>O</b>  CW20-5C 48" X 48" PLAQUE 30" X 12"	<b>Q</b>  CW4 - 2R 36" X 36"	<b>R</b>  R3 - 8 Varies X 30"
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- LEGEND:**
- 3PD** PLASTIC DRUM (DRUM)  
(SEE LEGEND SP FOR SPACING)
  - 4CL** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (LEFT)  
(SEE LEGEND SP FOR SPACING)
  - 4CR** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT)  
(SEE LEGEND SP FOR SPACING)
  - CW6-4** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT)  
(SEE LEGEND SP FOR SPACING)
  - SP** SPACED @ 30' C-C (ALONG WORK ZONE & TAPERS)  
SPACED @ 5' C-C (AT INTERSECTIONS & ON RADII)
  - PROPOSED SIGN POST
  - APPROVED CHANNELIZATION DEVICE PLASTIC DRUM (SEE LEGEND FOR SPACING)
  - TYPE III BARRICADE
  - FLASHING ARROW PANEL (SEE LEGEND)
  - WORK AREA
  - EXISTING TRAVEL FLOW
  - PROPOSED TRAFFIC FLOW
  - LOW PROFILE CONCRETE BARRIER

N MEMORIAL WAY : 35 M.P.H.  
HOUSTON AVE. : 35 M.P.H.

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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
SITE 4 & 5

**TRAFFIC CONTROL PLAN - PHASE 2**  
SHEET 1 OF 2

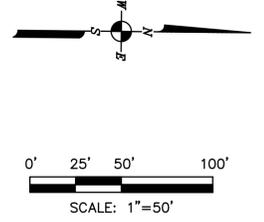
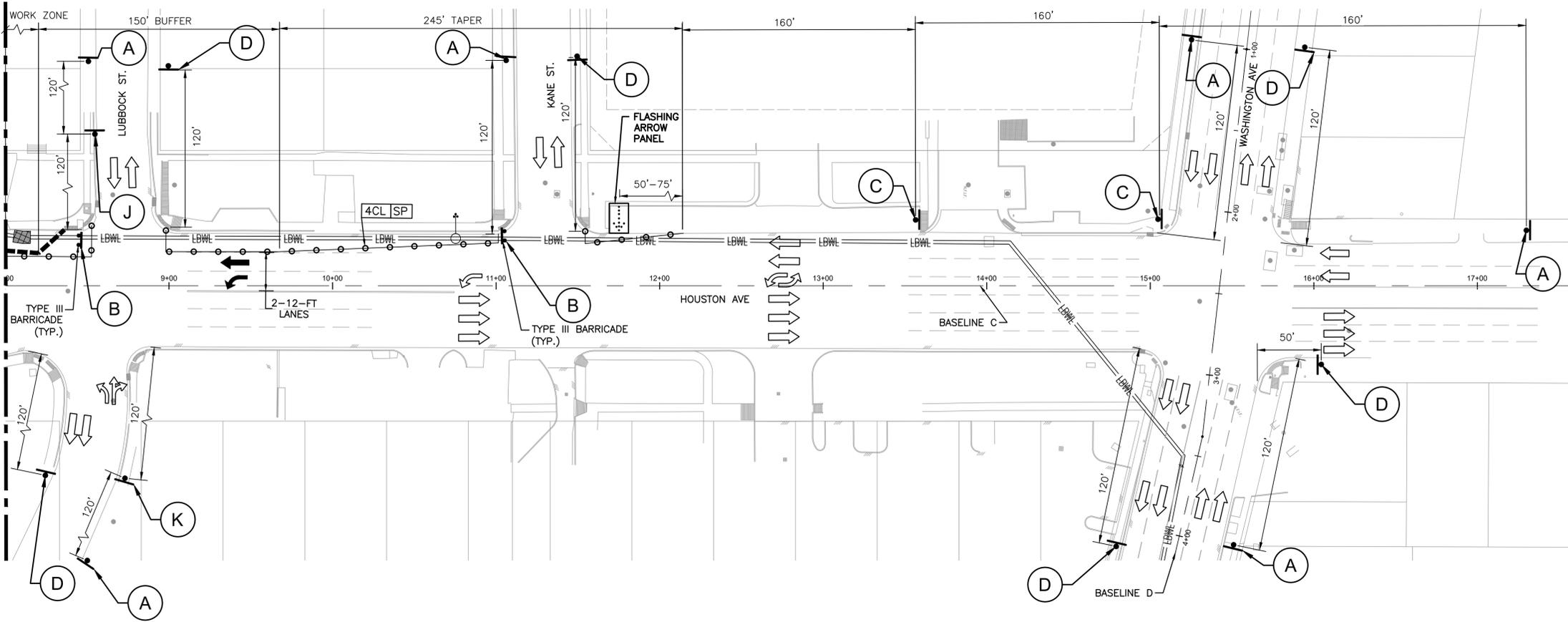
TCP SHEET: 13 OF 30

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S-000701-0043-4	
DRAWING SCALE	
H : 1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 148 OF 190	

<b>A</b> UTILITY WORK AHEAD CW21-7D 36" X 36"	<b>B</b> ROAD CLOSED R11-2 36" X 18"	<b>C</b> RIGHT LANE CLOSED AHEAD CW20-5R 36" X 36" PLAQUE 30" X 12"	<b>D</b> END UTILITY WORK G20-2 36" X 18"	<b>E</b> NO LEFT TURN R3-2 36" X 36"	<b>F</b> STOP R1-1 30" X 30"	<b>G</b> RIGHT TURN ONLY R3-5R 30" X 36"	<b>H</b> RIGHT TWO LANES CLOSED CW20-5aR 36" X 36" CW1-6R 60" X 30"	<b>I</b> LEFT TWO LANES CLOSED CW20-5aL 36" X 36" CW1-6L 60" X 30"	<b>J</b> RIGHT LANE CLOSED CW20-5R 36" X 36" CW1-6R 60" X 30"
<b>K</b> LEFT TURN ONLY R3-8 Varies X 30"	<b>L</b> NO U-TURN R3-4 24 X 24"	<b>M</b> DO NOT ENTER R5-1 30" X 30"	<b>N</b> LEFT LANE CLOSED AHEAD CW20-5L 36" X 36" PLAQUE 30" X 12"	<b>P</b> RIGHT TURN ONLY R3-8 Varies X 30"	<b>O</b> CENTER LANE CLOSED AHEAD CW20-5C 48" X 48" PLAQUE 30" X 12"	<b>S</b> SIDEWALK CLOSED G20-2a 36" X 18"	<b>VP-1</b> FOR VERTICAL 8"-12"	<b>CHEVRON</b> CW1-8 18" X 24"	<b>PANEL OR CHEVRON</b> PLASTIC DRUM

- NOTES:**
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MATCHLINE BASELINE C STA. 8+00  
SEE SHEET 13



**LEGEND:**

-  **3PD** PLASTIC DRUM (DRUM)  
(SEE LEGEND SP FOR SPACING)
-  **4CL** DRUM WITH CHEVRON (CW1-8) ON  
EVERY OTHER DRUM (LEFT)  
(SEE LEGEND SP FOR SPACING)
-  **4CR** DRUM WITH CHEVRON (CW1-8) ON  
EVERY OTHER DRUM (RIGHT)  
(SEE LEGEND SP FOR SPACING)
-  **CW6-4** DRUM WITH CHEVRON (CW1-8) ON  
EVERY OTHER DRUM (RIGHT)  
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-  **SP** SPACED @ 30' C-C  
(ALONG WORK ZONE & TAPERS)  
SPACED @ 5' C-C  
(AT INTERSECTIONS & ON RADII)
-  PROPOSED SIGN POST
-  APPROVED CHANNELIZATION DEVICE PLASTIC  
DRUM (SEE LEGEND FOR SPACING)
-  TYPE III BARRICADE
-  FLASHING ARROW PANEL  
(SEE LEGEND)
-  WORK AREA
-  EXISTING TRAVEL FLOW
-  PROPOSED TRAFFIC FLOW
-  LOW PROFILE CONCRETE BARRIER

HOUSTON AVE. : 35 M.P.H.  
WASHINGTON AVE. : 30 M.P.H.

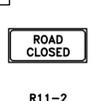
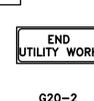
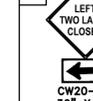
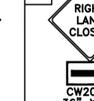
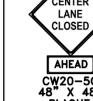
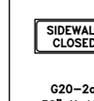
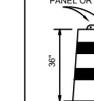
**KUO & ASSOCIATES**  
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10300 Westoffice Dr., Suite 800  
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Fax: (713) 975-9920  
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Texas Firm Registration No. F-4579

**ISANI**  
Civil Design Engineers  
10449 Westoffice Dr., Houston,  
TX 77042  
Tel: (713) 747-2399  
Texas Firm Registration No. F- 4575

SURVEYED BY:  
Kuo & Associates, LLC.  
C.O.H Field Book P-

**INTERIM REVIEW ONLY**  
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RAM GULIANI, P.E. 101094  
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- NOTES:**
1. ACCESS TO EXISTING BUSINESSES, RESIDENCES, CHURCHES, DRIVEWAY ETC, SHALL BE MAINTAINED AT ALL TIMES.
  2. CHANNELING DEVICES, BARRICADES, TRAFFIC SIGNS AND TEMPORARY PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
  3. THE CONTRACTOR HAS TO COORDINATE WITH METRO FOR TEMPORARY BUS STOP RELOCATION AND DETOURS.
  4. CONTRACTOR TO INSTALL CONSTRUCTION FENCE AS NEEDED TO DELINEATE THE WORK ZONE ALONG THE SIDEWALK.
  5. CONSTRUCTION ACTIVITIES SHALL BE SEQUENCED TO PREVENT THE SIMULTANEOUS CLOSURES OF CONSECUTIVE INTERSECTIONS.
  6. ALL AFFECTED BUS STOPS SHALL BE RELOCATED AND MADE OPERATIONAL PRIOR TO ROAD CLOSURE, IN COORDINATION WITH THE LOCAL TRANSIT AUTHORITY.
  7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING, RESTORING, REPLACING ALL INFRASTRUCTURES AND EXISTING DETECTION CURRENTLY IN PLACE FOR ALL APPROACHES IF DAMAGED DURING CONSTRUCTION.
  8. THE CONTRACTOR SHALL ALSO MAINTAIN EXISTING COMMUNICATION.
  9. THE CONTRACTOR SHALL ALSO MAINTAIN PEDESTRIAN ACCESSIBILITY TO PUSH BUTTONS AND PROPER SIGNAL ALIGNMENT THROUGHOUT TCP STAGES, OTHERWISE BAG PEDESTRIAN SIGNAL HEADS AND INSTALL CROSSWALK CLOSED SIGNS AND PROVIDE PEDESTRIAN DETOUR.
  10. CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON OR TXDOT TRAFFIC OPERATIONS FOR ANY SIGNAL TIMING MODIFICATIONS AT LEAST 72 HOURS PRIOR TO IMPLEMENTING THE TCP STAGES. THIS NOTE APPLIES TO ALL CONSTRUCTION PHASES AND STAGES.

<b>A</b>	 CW21-7D 36" X 36"	 R11-2 36" X 18"	 <b>AHEAD</b> CW20-5R 36" X 36" PLAQUE 30" X 12"	 G20-2 36" X 18"	 R3-2 36" X 36"	 R1-1 30" X 30"	 R3-5R 30" X 36"	 CW20-5aR 36" X 36" CW1-6R 60" X 30"	 CW20-5aL 36" X 36" CW1-6L 60" X 30"	 CW20-5R 36" X 36" CW1-6R 60" X 30"
<b>K</b>	 R3-8 Varies X 30"	 R3-4 24 X 24"	 R5-1 30" X 30"	 <b>AHEAD</b> CW20-5L 36" X 36" PLAQUE 30" X 12"	 R3-8 Varies X 30"	 <b>AHEAD</b> CW20-5C 48" X 48" PLAQUE 30" X 12"	 G20-2a 36" X 18"	 CW1-8 18" X 24"	 FOR VERTICAL 8"-12" VP-1	 PANEL OR CHEVRON 36" PLASTIC DRUM

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

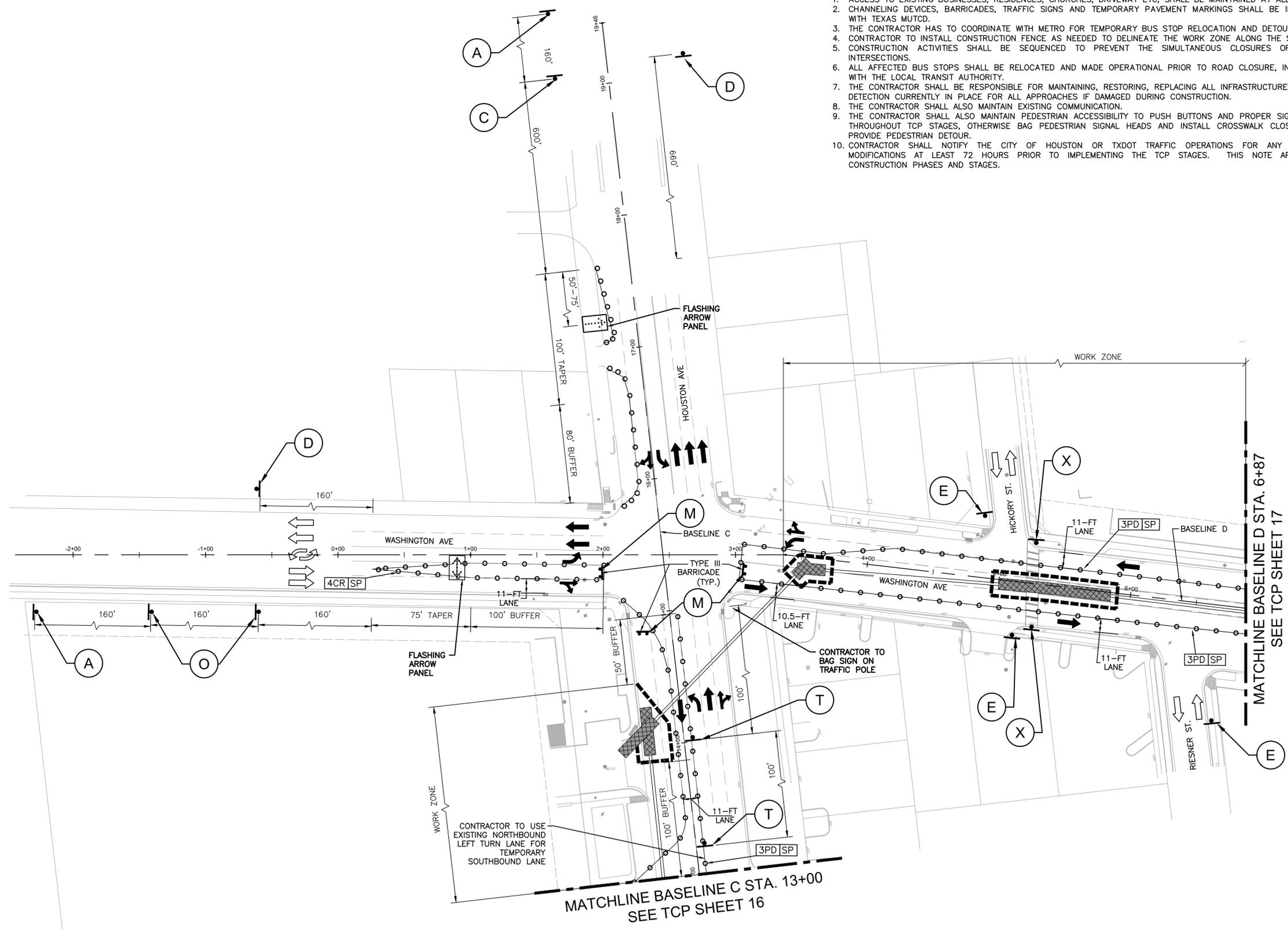
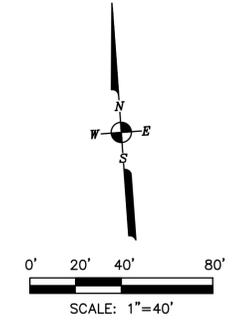
**MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4  
SITE 4 & 5**

**TRAFFIC CONTROL PLAN - PHASE 2  
SHEET 2 OF 2**

TCP SHEET: 14 OF 30

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H : 1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 149 OF 190	

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- LEGEND:**
- 3PD** PLASTIC DRUM (DRUM) (SEE LEGEND SP FOR SPACING)
  - 4CL** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (LEFT) (SEE LEGEND SP FOR SPACING)
  - 4CR** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
  - CW6-4** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
  - SP** SPACED @ 30' C-C (ALONG WORK ZONE & TAPERS) SPACED @ 5' C-C (AT INTERSECTIONS & ON RADII)
  - PROPOSED SIGN POST
  - APPROVED CHANNELIZATION DEVICE PLASTIC DRUM (SEE LEGEND FOR SPACING)
  - TYPE III BARRICADE
  - FLASHING ARROW PANEL (SEE LEGEND)
  - WORK AREA
  - EXISTING TRAVEL FLOW
  - PROPOSED TRAFFIC FLOW
  - LOW PROFILE CONCRETE BARRIER

HOUSTON AVE. : 35 M.P.H.  
 WASHINGTON AVE. : 30 M.P.H.

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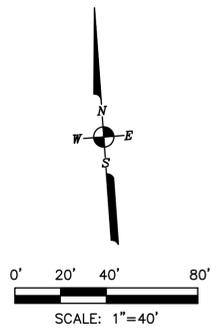
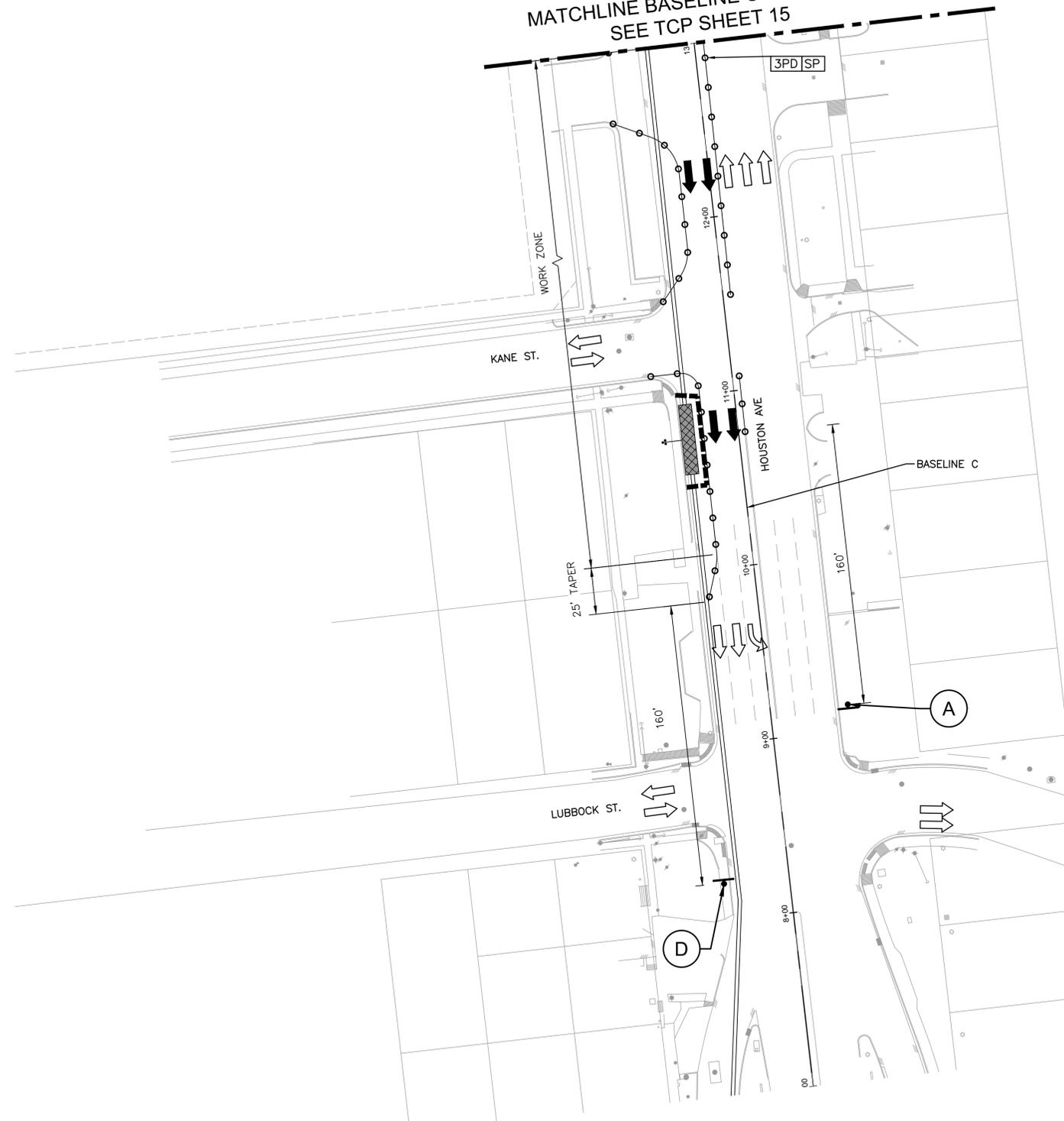
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 4 & 5  
**TRAFFIC CONTROL PLAN - PHASE 3**  
 SHEET 1 OF 3

TCP SHEET: 15 OF 30	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER S-000701-0043-4	
DRAWING SCALE H : 1"=40'	
CITY OF HOUSTON PM MARTIN MATHEW, ENV SP	
SHEET NO. 150 OF 190	

<b>A</b> UTILITY WORK AHEAD CW21-7D 36" X 36"	<b>B</b> ROAD CLOSED R11-2 36" X 18"	<b>C</b> RIGHT LANE CLOSED AHEAD CW20-5R 36 X 36 PLAQUE 30 X 12	<b>D</b> END UTILITY WORK G20-2 36" X 18"	<b>E</b> NO LEFT TURN R3-2 36" X 36"	<b>M</b> DO NOT ENTER R5-1 30" X 30"	<b>N</b> LEFT LANE CLOSED AHEAD CW20-5L 36 X 36 PLAQUE 30 X 12	<b>S</b> SIDEWALK CLOSED G20-2a 36" X 18"	<b>T</b> LEFT LANE MUST TURN LEFT R3-7L 30" X 30"	CHEVRON CW1-8 18" X 24"	8"-12" VP-1	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON PLASTIC DRUM	<b>X</b> CROSSWALK CLOSED R9-9 24" X 12"	<b>O</b> CENTER LANE CLOSED AHEAD CW20-5C 48" X 48" PLAQUE 30" X 12"
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MATCHLINE BASELINE C STA. 13+00  
SEE TCP SHEET 15



**LEGEND:**

- 3PD** PLASTIC DRUM (DRUM)  
(SEE LEGEND SP FOR SPACING)
- 4CL** DRUM WITH CHEVRON (CW1-8) ON  
EVERY OTHER DRUM (LEFT)  
(SEE LEGEND SP FOR SPACING)
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EVERY OTHER DRUM (RIGHT)  
(SEE LEGEND SP FOR SPACING)
- CW6-4** DRUM WITH CHEVRON (CW1-8) ON  
EVERY OTHER DRUM (RIGHT)  
(SEE LEGEND SP FOR SPACING)
- SP** SPACED @ 30' C-C  
(ALONG WORK ZONE & TAPERS)  
SPACED @ 5' C-C  
(AT INTERSECTIONS & ON RADII)
- PROPOSED SIGN POST
- APPROVED CHANNELIZATION DEVICE PLASTIC  
DRUM (SEE LEGEND FOR SPACING)
- TYPE III BARRICADE
- FLASHING ARROW PANEL  
(SEE LEGEND)
- WORK AREA
- EXISTING TRAVEL FLOW
- PROPOSED TRAFFIC FLOW
- LOW PROFILE CONCRETE BARRIER

HOUSTON AVE. : 35 M.P.H.

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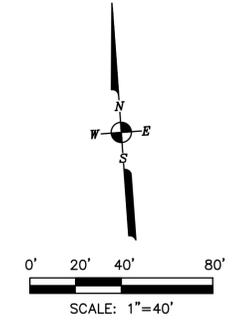
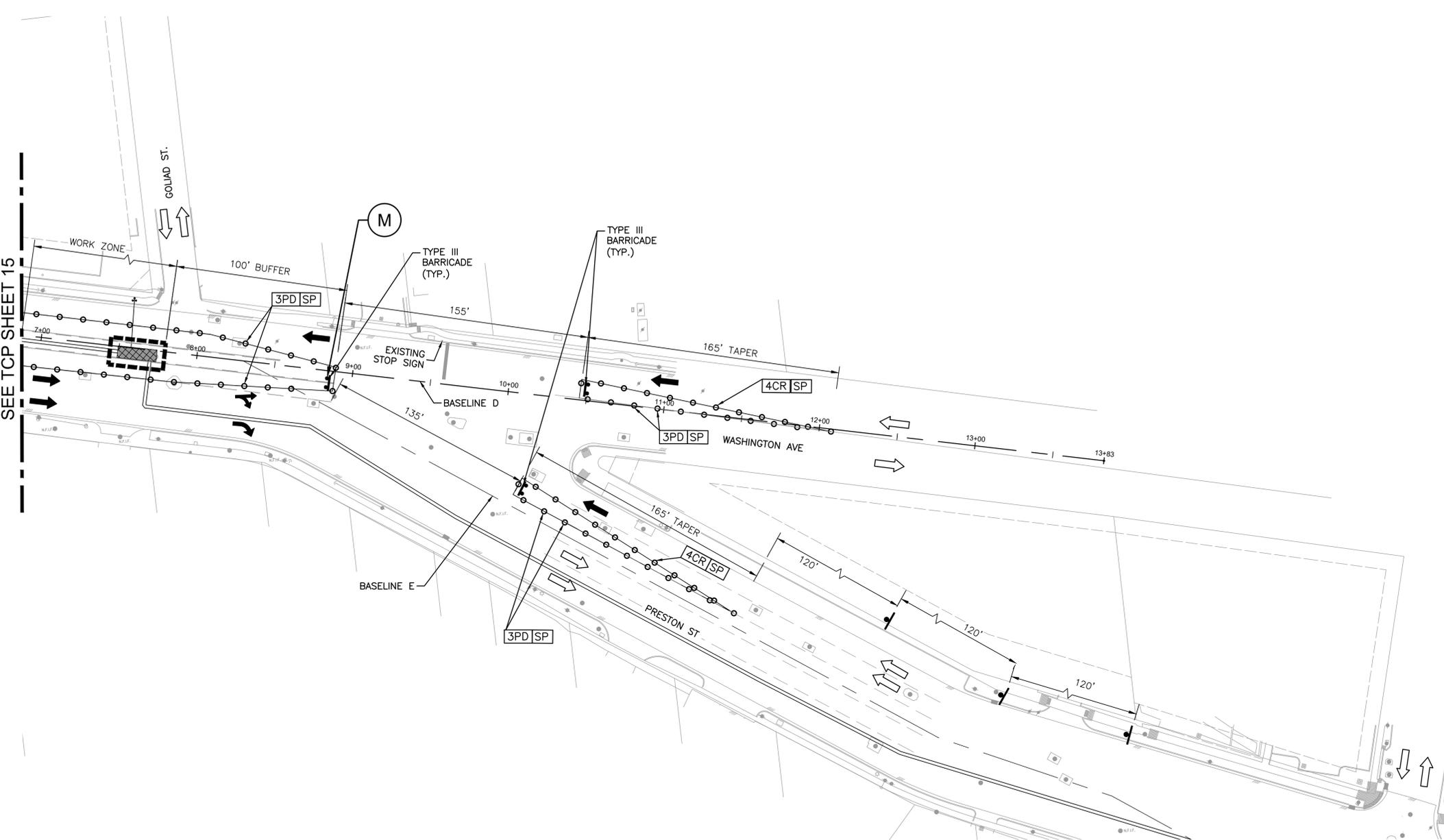
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4**  
SITE 4 & 5  
**TRAFFIC CONTROL PLAN - PHASE 3**  
SHEET 2 OF 3

TCP SHEET: 16 OF 30	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER	S-000701-0043-4
DRAWING SCALE	H : 1"=40'
CITY OF HOUSTON PM	MARTIN MATHEW, ENV SP
SHEET NO.	151 OF 190

- NOTES:**
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<b>A</b> UTILITY WORK AHEAD CW21-7D 36" X 36"	<b>B</b> ROAD CLOSED R11-2 36" X 18"	<b>C</b> RIGHT LANE CLOSED AHEAD CW20-5R 36 X 36 PLAQUE 30 X 12	<b>D</b> END UTILITY WORK G20-2 36" X 18"	<b>E</b> R3-2 36" X 36"	<b>M</b> DO NOT ENTER R5-1 30" X 30"	<b>N</b> LEFT LANE CLOSED AHEAD CW20-5L 36 X 36 PLAQUE 30 X 12	<b>S</b> SIDEWALK CLOSED G20-2a 36" X 18"	<b>T</b> LEFT LANE MUST TURN LEFT R3-7L 30" X 30"	CHEVRON CW1-8 18" X 24"	8"-12" VP-1	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON 36" PLASTIC DRUM	<b>X</b>
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MATCHLINE BASELINE D STA. 6+87  
SEE TCP SHEET 15



**LEGEND:**

- 3PD** PLASTIC DRUM (DRUM)  
(SEE LEGEND SP FOR SPACING)
- 4CL** DRUM WITH CHEVRON (CW1-8) ON  
EVERY OTHER DRUM (LEFT)  
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(ALONG WORK ZONE & TAPERS)  
SPACED @ 5' C-C  
(AT INTERSECTIONS & ON RADII)
- PROPOSED SIGN POST
- APPROVED CHANNELIZATION DEVICE PLASTIC  
DRUM (SEE LEGEND FOR SPACING)
- TYPE III BARRICADE
- FLASHING ARROW PANEL  
(SEE LEGEND)
- WORK AREA
- EXISTING TRAVEL FLOW
- PROPOSED TRAFFIC FLOW
- LOW PROFILE CONCRETE BARRIER

PRESTON ST : 30 M.P.H.  
WASHINGTON AVE : 30 M.P.H.

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HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4**  
SITE 4 & 5

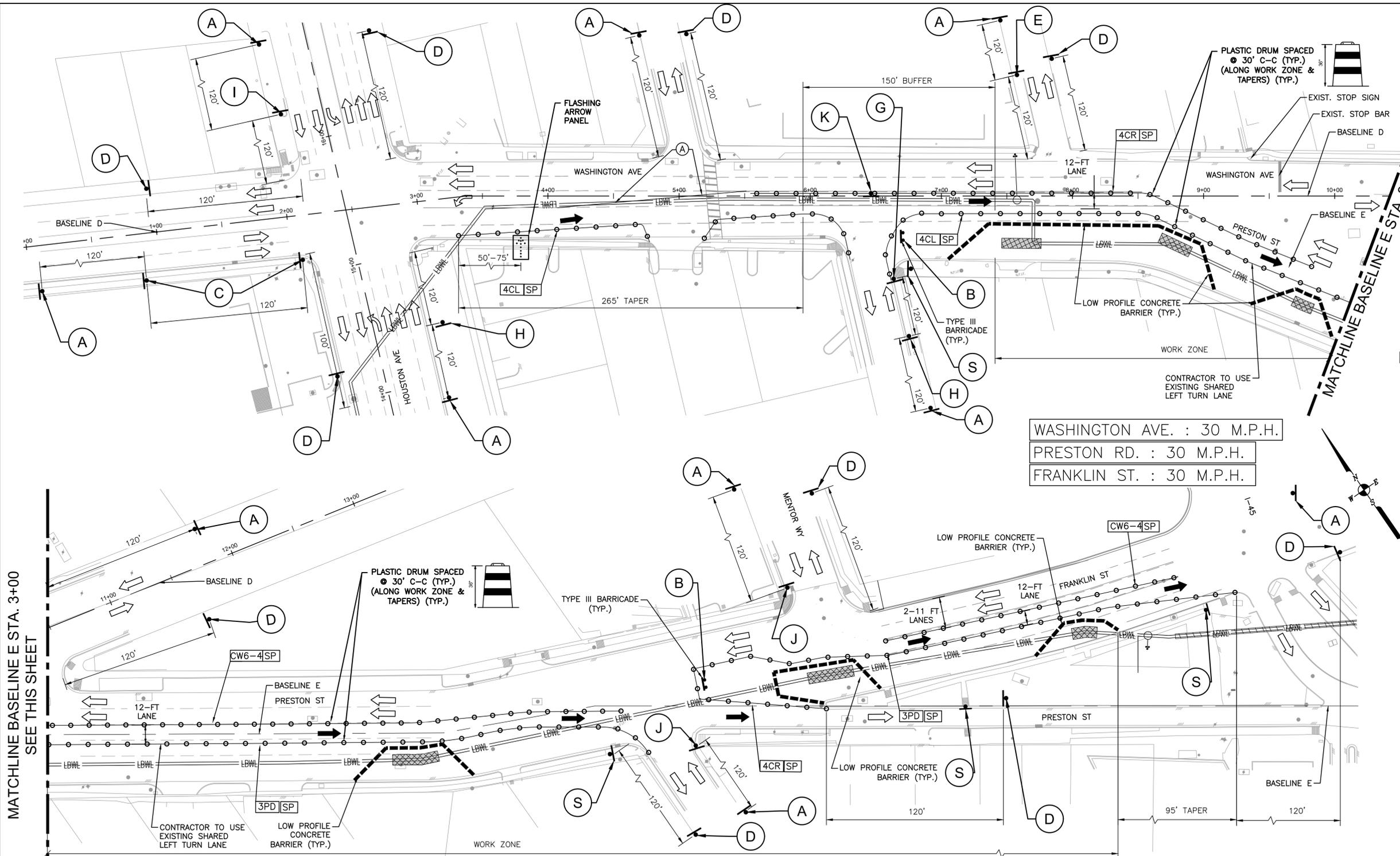
**TRAFFIC CONTROL PLAN - PHASE 3  
SHEET 3 OF 3**

TCP SHEET: 17 OF 30

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H : 1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 152 OF 190	

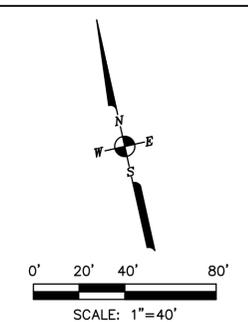
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<b>A</b>  CW21-7D 36" X 36"	<b>B</b>  R11-2 36" X 18"	<b>C</b>  CW20-5R 36" X 36" PLAQUE 30" X 12"	<b>D</b>  G20-2 36" X 18"	<b>E</b>  R3-2 36" X 36"	<b>M</b>  R5-1 30" X 30"	<b>N</b>  CW20-5L 36" X 36" PLAQUE 30" X 12"	<b>S</b>  G20-2a 36" X 18"	<b>T</b>  R3-7L 30" X 30"	<b>CHEVRON</b>  CW1-8 18" X 24"	<b>8"-12"</b>  VP-1	 PLASTIC DRUM
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**LEGEND:**

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- 4CL** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (LEFT) (SEE LEGEND SP FOR SPACING)
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- CW6-4** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
- SP** SPACED @ 30' C-C (ALONG WORK ZONE & TAPERS) (SEE LEGEND SP FOR SPACING) SPACED @ 5' C-C (AT INTERSECTIONS & ON RADII)
- Proposed Sign Post** PROPOSED SIGN POST
- Approved Channelization Device Plastic Drum** APPROVED CHANNELIZATION DEVICE PLASTIC DRUM (SEE LEGEND FOR SPACING)
- Type III Barricade** TYPE III BARRICADE
- Flashing Arrow Panel** FLASHING ARROW PANEL (SEE LEGEND)
- Work Area** WORK AREA
- Existing Travel Flow** EXISTING TRAVEL FLOW
- Proposed Traffic Flow** PROPOSED TRAFFIC FLOW
- Low Profile Concrete Barrier** LOW PROFILE CONCRETE BARRIER
- Wrk Zn Pav Mrk 4" Yellow Buttons - 10' C-C (Remov)** WRK ZN PAV MRK 4" YELLOW BUTTONS - 10' C-C (REMOV)



MATCHLINE BASELINE E STA. 3+00 SEE THIS SHEET

MATCHLINE BASELINE E STA. 3+00 SEE THIS SHEET

WASHINGTON AVE. : 30 M.P.H.  
 PRESTON RD. : 30 M.P.H.  
 FRANKLIN ST. : 30 M.P.H.

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- DURING CONSTRUCTION, TRUCKS ARE PROHIBITED FROM TURNING LEFT ONTO ELDER ST FROM FRANKLIN ST AND FROM TURNING RIGHT ONTO ELDER ST FROM WASHINGTON AVE.

<b>A</b> UTILITY WORK AHEAD CW21-7D 36" X 36"	<b>B</b> ROAD CLOSED R11-2 36" X 18"	<b>C</b> RIGHT LANE CLOSED AHEAD CW20-5R 36" X 36" PLAQUE 30" X 12"	<b>D</b> END UTILITY WORK G20-2 36" X 18"	<b>E</b> NO LEFT TURN R3-2 36" X 36"	<b>F</b> STOP AHEAD R1-1 30" X 30" PLAQUE 30" X 12"	<b>G</b> RIGHT TURN ONLY R3-5R 30" X 36"	<b>H</b> RIGHT LANE CLOSED CW20-5R 36" X 36" CW1-6R 60" X 30"	<b>I</b> RIGHT LANE CLOSED CW20-5L 36" X 36" CW1-6L 60" X 30"	<b>S</b> SIDEWALK CLOSED G20-2a 36" X 18"	<b>J</b> STOP R1-1 30" X 30"	
<b>K</b> ONE WAY R6-2R 12" X 16"	CHEVRON CW1-8 18" X 24"	MOUNTING HOLES 8" - 12"	FOR VERTICAL PANEL OR CHEVRON VP-1 36"								

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 Tel: (713) 975-8769  
 Fax: (713) 975-9920  
 www.kuasociates.com  
 Texas Firm Registration No. F-4579

**ISANI**  
 Civil Design Engineers  
 10449 Westoffice Dr., Houston,  
 TX 77042  
 Tel: (713) 747-2399  
 Texas Firm Registration No. F-4575

SURVEYED BY:  
 Kuo & Associates, LLC.  
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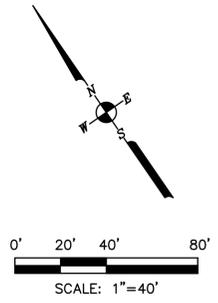
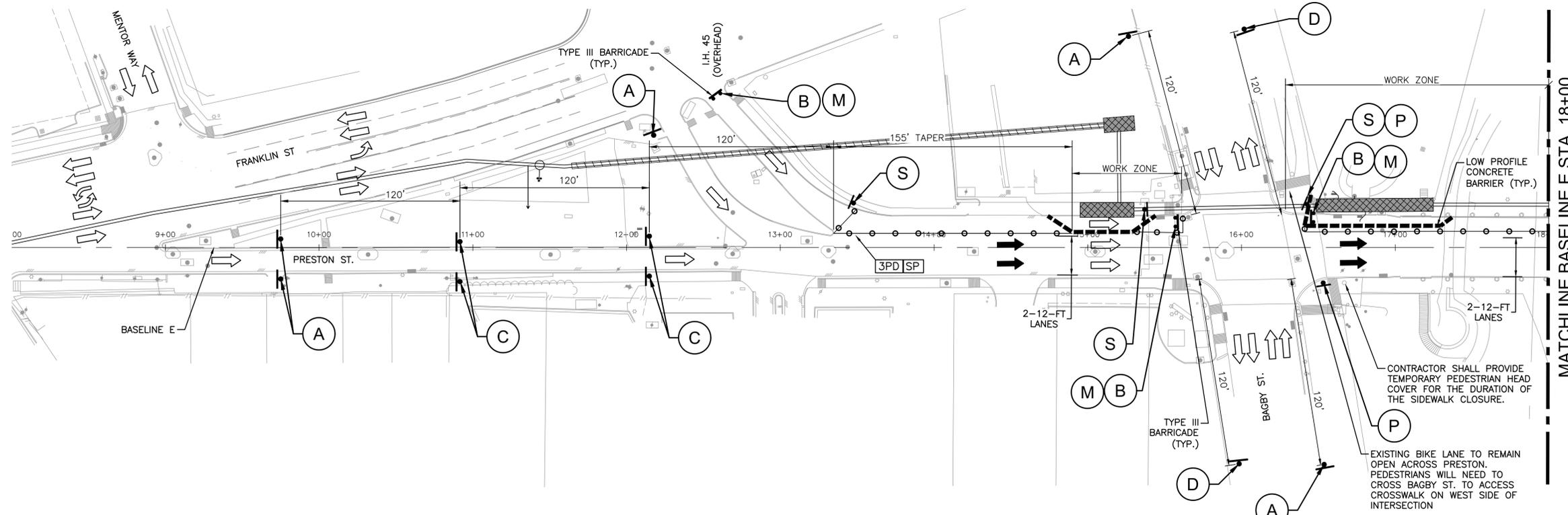
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS STANDARD

**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 4 & 5

**TRAFFIC CONTROL PLAN - PHASE 4**

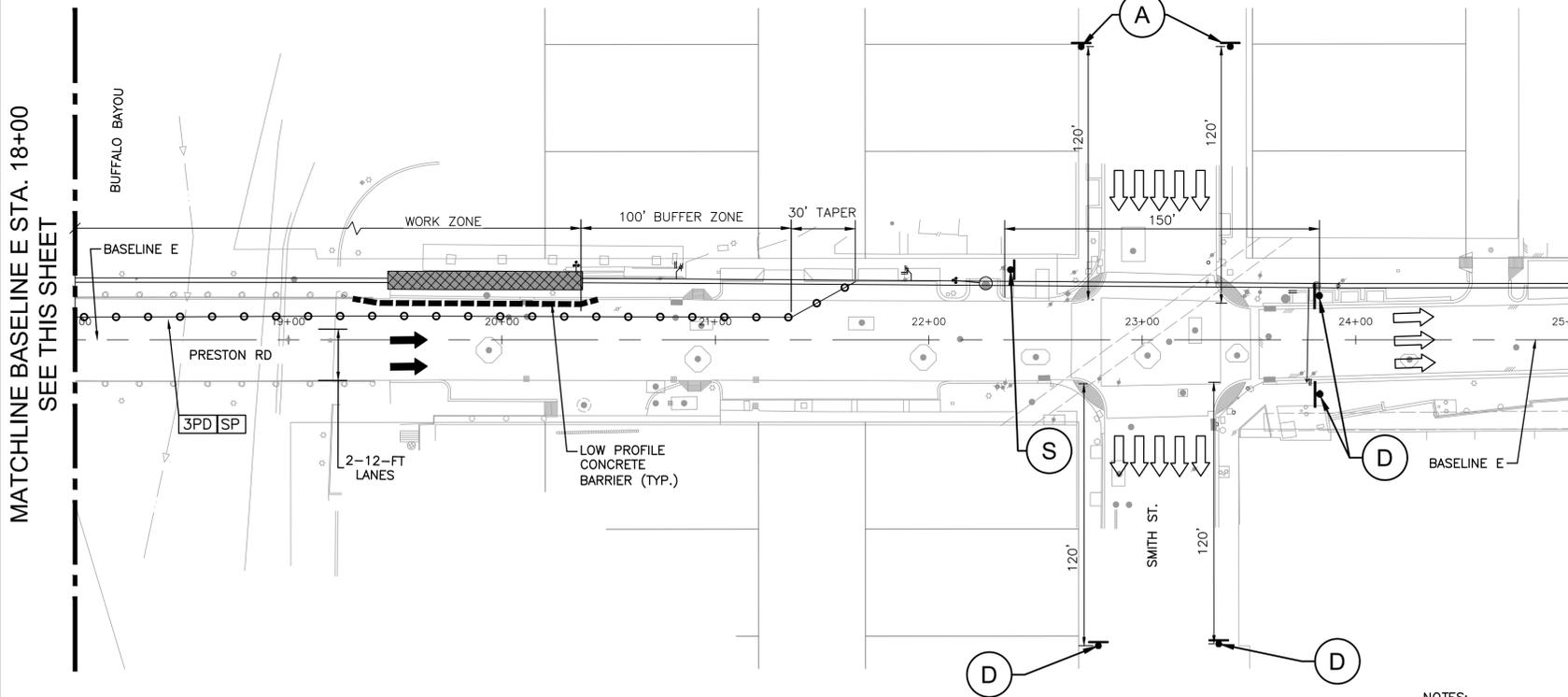
TCP SHEET: 18 OF 30

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H : 1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 153 OF 190	



**LEGEND:**

<b>3PD</b>	PLASTIC DRUM (DRUM) (SEE LEGEND SP FOR SPACING)
<b>4CL</b>	DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (LEFT) (SEE LEGEND SP FOR SPACING)
<b>4CR</b>	DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
<b>CW6-4</b>	DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
<b>SP</b>	SPACED @ 30' C-C (ALONG WORK ZONE & TAPERS) SPACED @ 5' C-C (AT INTERSECTIONS & ON RADII)
	PROPOSED SIGN POST
	APPROVED CHANNELIZATION DEVICE PLASTIC DRUM (SEE LEGEND FOR SPACING)
	TYPE III BARRICADE
	FLASHING ARROW PANEL (SEE LEGEND)
	WORK AREA
	EXISTING TRAVEL FLOW
	PROPOSED TRAFFIC FLOW
	LOW PROFILE CONCRETE BARRIER



PRESTON RD. : 30 M.P.H.

<p><b>KUO &amp; ASSOCIATES</b> Consulting Engineers &amp; Surveyors 10300 Westoffice Dr., Suite 800 Houston, TX 77042 Tel: (713) 975-8769 Fax: (713) 975-9920 www.kuasociates.com Texas Firm Registration No. F-4579</p>	<p><b>INTERIM REVIEW ONLY</b> "THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RAM GULIANI, P.E. 101094 ON 12/19/2025. IT IS NOT TO BE USED FOR CONSTRUCTION"</p>
	<p><b>ISANI</b> Civil Design Engineers 10449 Westoffice Dr., Houston, TX 77042 Tel: (713) 747-2399 Texas Firm Registration No. F-4575</p>
<p>SURVEYED BY: Kuo &amp; Associates, LLC. C.O.H Field Book P-</p>	

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
SITE 4 & 5

**TRAFFIC CONTROL PLAN - PHASE 5**

TCP SHEET: 19 OF 30	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER	S-000701-0043-4
DRAWING SCALE	H : 1"=40'
CITY OF HOUSTON PM	MARTIN MATHEW, ENV SP
SHEET NO. 154 OF 190	

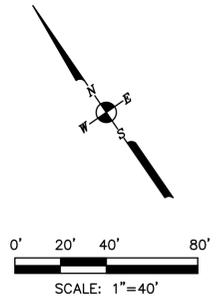
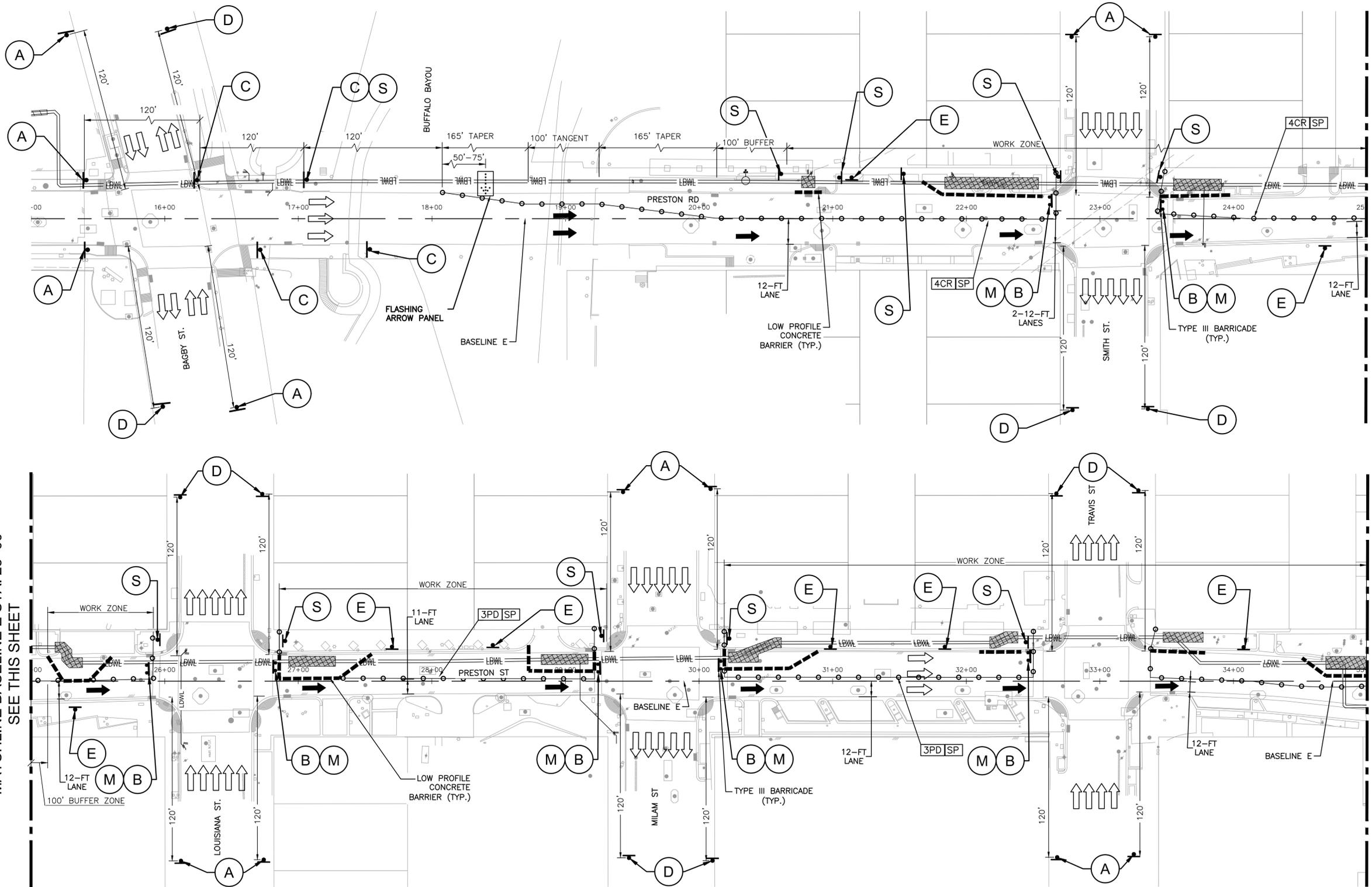
**NOTE:**

- CONTRACTOR SHALL LIMIT THE ACTIVE WORK ZONE TO A MAXIMUM OF TWO (2) BLOCK AT A TIME.
- CONTRACTOR SHALL WORK WITHIN THE INTERSECTION BETWEEN 9:00 AM AND 4:00 PM AND OPEN IT FOR THROUGH TRAFFIC FOR THE REST OF THE TIME.

**NOTES:**

- ACCESS TO EXISTING BUSINESSES, RESIDENCES, CHURCHES, DRIVEWAY ETC, SHALL BE MAINTAINED AT ALL TIMES.
- CHANNELING DEVICES, BARRICADES, TRAFFIC SIGNS AND TEMPORARY PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
- THE CONTRACTOR HAS TO COORDINATE WITH METRO FOR TEMPORARY BUS STOP RELOCATION AND DETOURS.
- CONTRACTOR TO INSTALL CONSTRUCTION FENCE AS NEEDED TO DELINEATE THE WORK ZONE ALONG THE SIDEWALK.
- CONSTRUCTION ACTIVITIES SHALL BE SEQUENCED TO PREVENT THE SIMULTANEOUS CLOSURES OF CONSECUTIVE INTERSECTIONS.
- ALL AFFECTED BUS STOPS SHALL BE RELOCATED AND MADE OPERATIONAL PRIOR TO ROAD CLOSURE, IN COORDINATION WITH THE LOCAL TRANSIT AUTHORITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING, RESTORING, REPLACING ALL INFRASTRUCTURES AND EXISTING DETECTION CURRENTLY IN PLACE FOR ALL APPROACHES IF DAMAGED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL ALSO MAINTAIN EXISTING COMMUNICATION.
- THE CONTRACTOR SHALL ALSO MAINTAIN PEDESTRIAN ACCESSIBILITY TO PUSH BUTTONS AND PROPER SIGNAL ALIGNMENT THROUGHOUT TCP STAGES, OTHERWISE BAG PEDESTRIAN SIGNAL HEADS AND INSTALL CROSSWALK CLOSED SIGNS AND PROVIDE PEDESTRIAN DETOUR.
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<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>M</b>	<b>S</b>	<b>CHEVRON</b>	<b>8"-12"</b>	<b>P</b>
CW21-7D 36" X 36"	R11-2 36" X 18"	AHEAD CW20-5L 36 X 36 PLAQUE 30 X 12	G20-2 36" X 18"	R5-1 30" X 30"	G20-2a 36" X 18"	CW1-8 18 X 24	VP-1	R9 - 9 24 X 12



- LEGEND:**
- 3PD** PLASTIC DRUM (DRUM)  
(SEE LEGEND SP FOR SPACING)
  - 4CL** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (LEFT)  
(SEE LEGEND SP FOR SPACING)
  - 4CR** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT)  
(SEE LEGEND SP FOR SPACING)
  - DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT)  
(SEE LEGEND SP FOR SPACING)
  - SP** SPACED @ 30' C-C  
(ALONG WORK ZONE & TAPERS)  
SPACED @ 5' C-C  
(AT INTERSECTIONS & ON RADII)
  - PROPOSED SIGN POST
  - APPROVED CHANNELIZATION DEVICE PLASTIC DRUM (SEE LEGEND FOR SPACING)
  - TYPE III BARRICADE
  - FLASHING ARROW PANEL (SEE LEGEND)
  - WORK AREA
  - EXISTING TRAVEL FLOW
  - PROPOSED TRAFFIC FLOW
  - LOW PROFILE CONCRETE BARRIER

PRESTON RD. : 30 M.P.H.

**KUO & Associates**  
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 4 & 5  
**TRAFFIC CONTROL PLAN - PHASE 6**  
 SHEET 1 OF 2

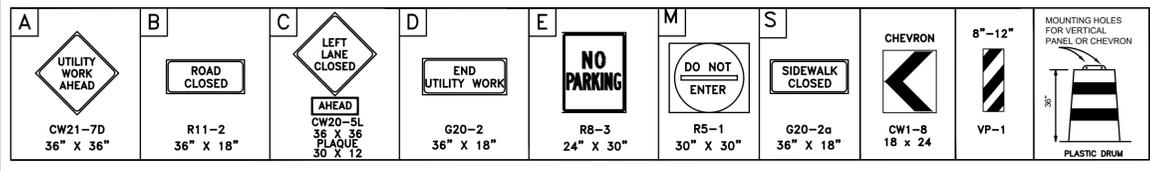
TCP SHEET: 20 OF 30

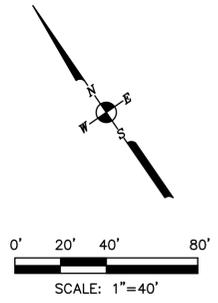
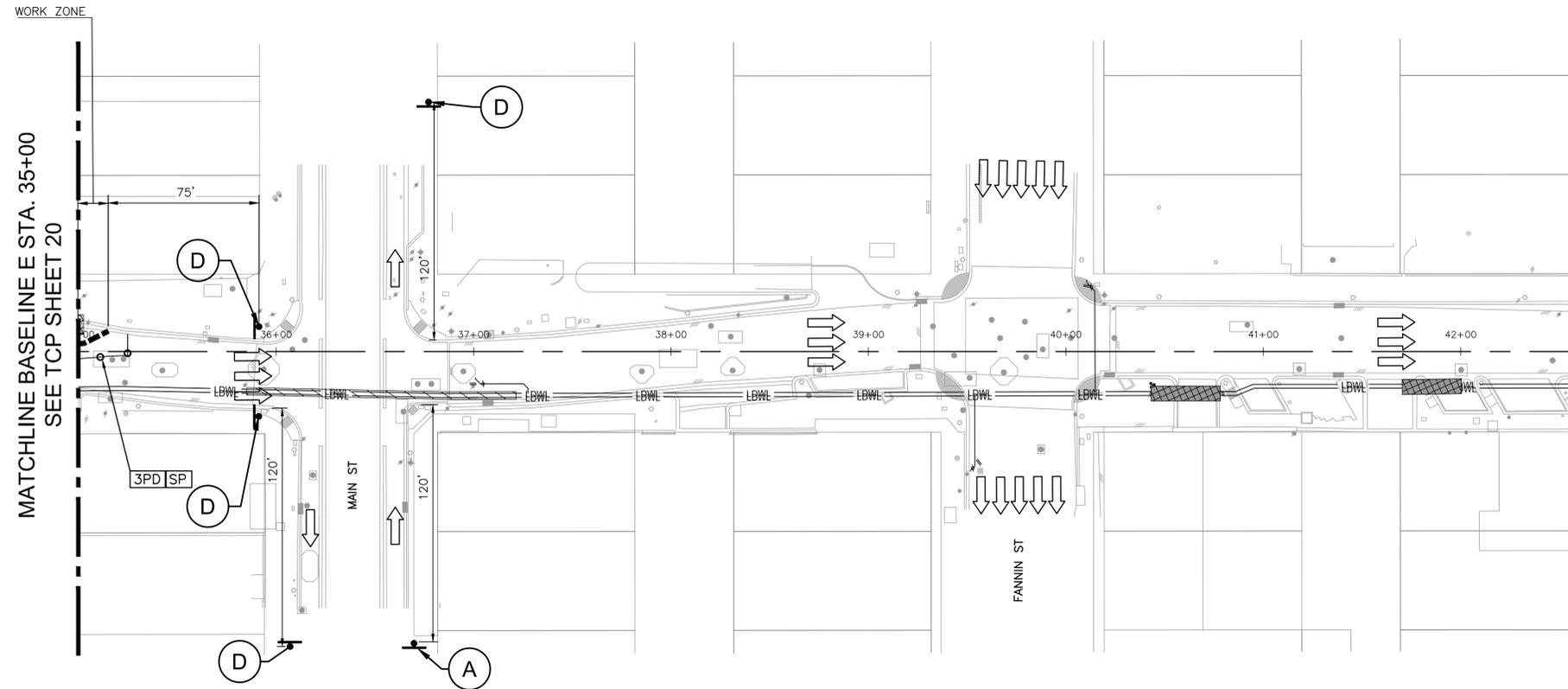
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
H : 1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 155 OF 190	

**NOTE:**

- CONTRACTOR SHALL LIMIT THE ACTIVE WORK ZONE TO A MAXIMUM OF TWO (2) BLOCK AT A TIME.
- CONTRACTOR SHALL WORK WITHIN THE INTERSECTION BETWEEN 9:00 AM AND 4:00 PM AND OPEN IT FOR THROUGH TRAFFIC FOR THE REST OF THE TIME.

- NOTES:**
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  - CHANNELING DEVICES, BARRICADES, TRAFFIC SIGNS AND TEMPORARY PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
  - THE CONTRACTOR HAS TO COORDINATE WITH METRO FOR TEMPORARY BUS STOP RELOCATION AND DETOURS.
  - CONTRACTOR TO INSTALL CONSTRUCTION FENCE AS NEEDED TO DELINEATE THE WORK ZONE ALONG THE SIDEWALK.
  - CONSTRUCTION ACTIVITIES SHALL BE SEQUENCED TO PREVENT THE SIMULTANEOUS CLOSURES OF CONSECUTIVE INTERSECTIONS.
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- LEGEND:**
- 3PD** PLASTIC DRUM (DRUM)  
(SEE LEGEND SP FOR SPACING)
  - 4CL** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (LEFT)  
(SEE LEGEND SP FOR SPACING)
  - 4CR** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT)  
(SEE LEGEND SP FOR SPACING)
  - CW6-4** DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT)  
(SEE LEGEND SP FOR SPACING)
  - SP** SPACED @ 30' C-C  
(ALONG WORK ZONE & TAPERS)  
SPACED @ 5' C-C  
(AT INTERSECTIONS & ON RADII)
  - PROPOSED SIGN POST
  - APPROVED CHANNELIZATION DEVICE PLASTIC DRUM (SEE LEGEND FOR SPACING)
  - TYPE III BARRICADE
  - FLASHING ARROW PANEL (SEE LEGEND)
  - WORK AREA
  - EXISTING TRAVEL FLOW
  - PROPOSED TRAFFIC FLOW
  - LOW PROFILE CONCRETE BARRIER

PRESTON RD. : 30 M.P.H.

 10300 Westoffice Dr., Suite 800 Houston, TX 77042 Tel: (713) 975-8769 Fax: (713) 975-9920 www.kuasociates.com Texas Firm Registration No. F-4579	<b>INTERIM REVIEW ONLY</b> *THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RAM GULIANI, P.E. 101094 ON 12/19/2025. IT IS NOT TO BE USED FOR CONSTRUCTION
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
SITE 4 & 5

**TRAFFIC CONTROL PLAN - PHASE 6**  
SHEET 2 OF 2

TCP SHEET: 21 OF 30	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER	
S-000701-0043-4	
DRAWING SCALE	
H : 1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 156 OF 190	

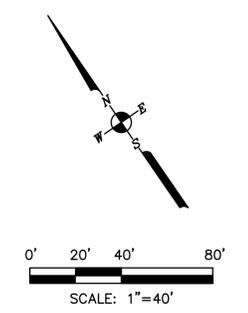
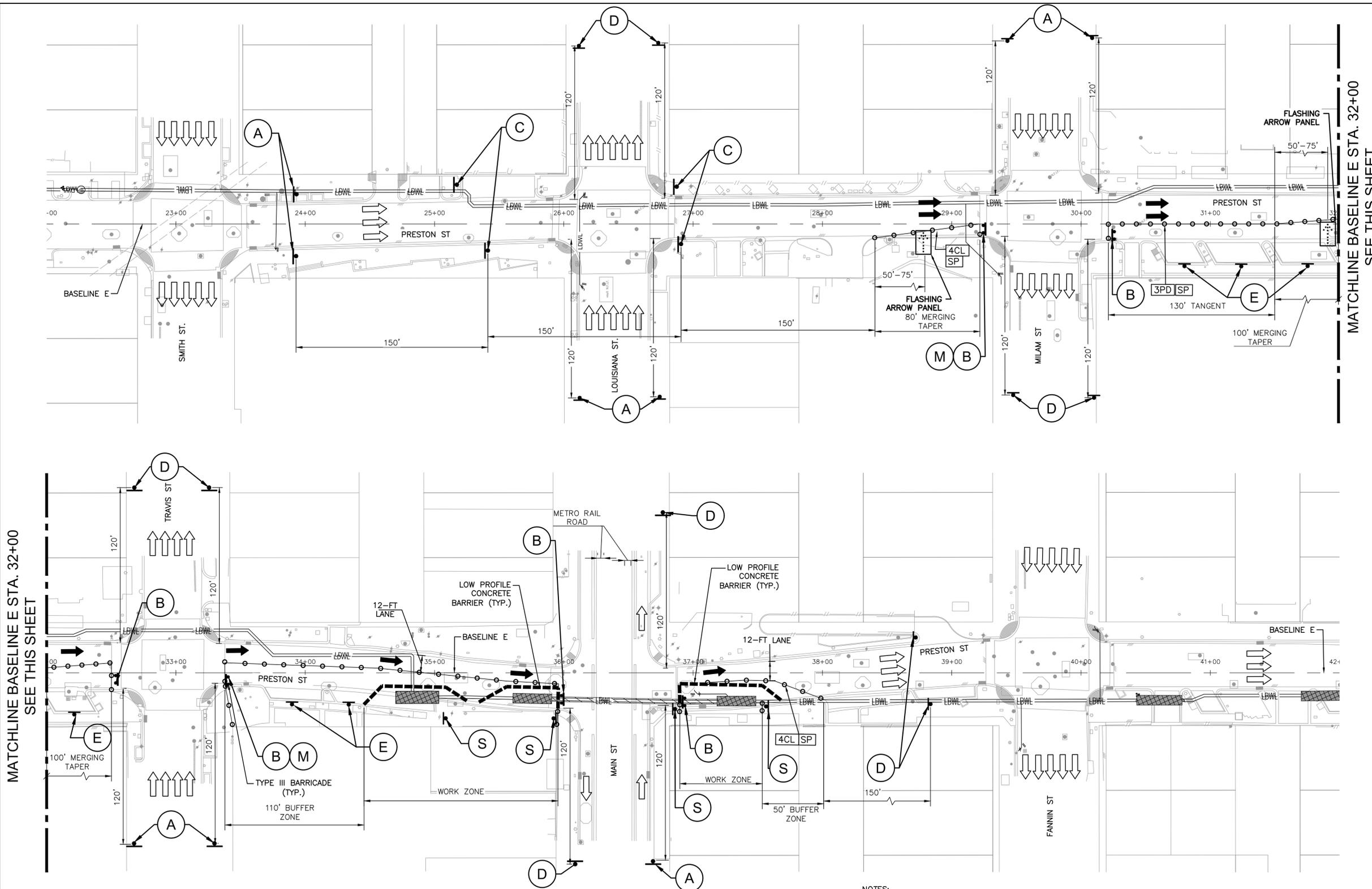
**NOTE:**

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<b>A</b>  CW21-7D 36" X 36"	<b>B</b>  R11-2 36" X 18"	<b>C</b>  CW20-5L 36 X 36 PLAQUE 30 X 12	<b>D</b>  G20-2 36" X 18"	<b>E</b>  R8-3 24" X 30"	<b>M</b>  R5-1 30" X 30"	<b>S</b>  G20-2a 36" X 18"	 CW1-8 18 X 24	 8"-12" VP-1	 MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON PLASTIC DRUM
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**LEGEND:**

	3PD	PLASTIC DRUM (DRUM) (SEE LEGEND SP FOR SPACING)
	4CL	DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (LEFT) (SEE LEGEND SP FOR SPACING)
	4CR	DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
	CW6-4	DRUM WITH CHEVRON (CW1-8) ON EVERY OTHER DRUM (RIGHT) (SEE LEGEND SP FOR SPACING)
	SP	SPACED @ 30' C-C (ALONG WORK ZONE & TAPERS) SPACED @ 5' C-C (AT INTERSECTIONS & ON RADII)
		PROPOSED SIGN POST
		APPROVED CHANNELIZATION DEVICE PLASTIC DRUM (SEE LEGEND FOR SPACING)
		TYPE III BARRICADE
		FLASHING ARROW PANEL (SEE LEGEND)
		WORK AREA
		EXISTING TRAVEL FLOW
		PROPOSED TRAFFIC FLOW
		LOW PROFILE CONCRETE BARRIER

MATCHLINE BASELINE E STA. 32+00  
SEE THIS SHEET

MATCHLINE BASELINE E STA. 32+00  
SEE THIS SHEET

PRESTON RD. : 30 M.P.H.

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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4**  
SITE 4 & 5  
**TRAFFIC CONTROL PLAN - PHASE 7**

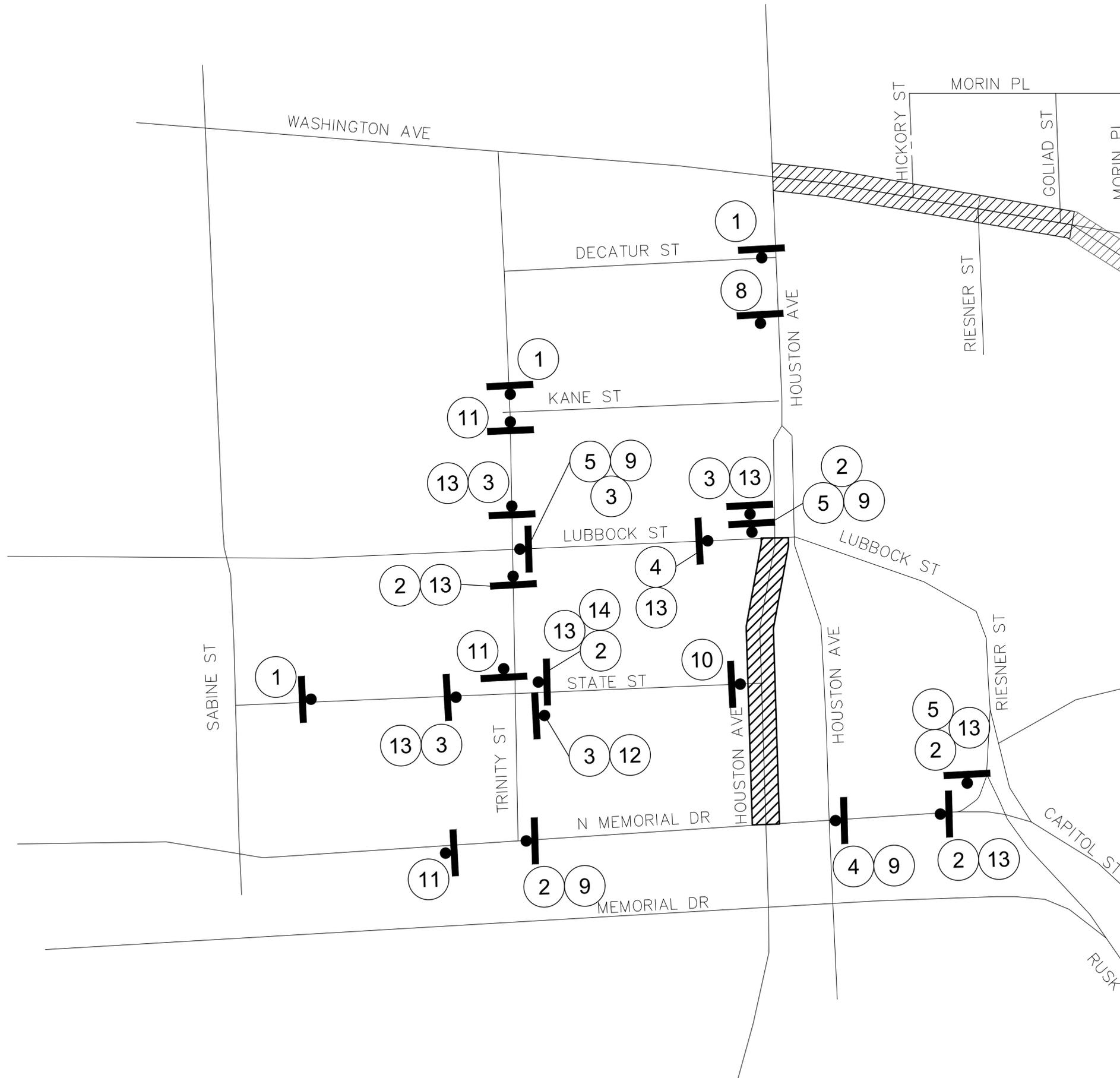
TCP SHEET: 22 OF 30	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER	S-000701-0043-4
DRAWING SCALE	H : 1"=40'
CITY OF HOUSTON PM	MARTIN MATHEW, ENV SP
SHEET NO. 157 OF 190	

**NOTE:**

- CONTRACTOR SHALL LIMIT THE ACTIVE WORK ZONE TO A MAXIMUM OF TWO (2) BLOCK AT A TIME.
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<b>A</b>  CW21-7D 36" X 36"	<b>B</b>  R11-2 36" X 18"	<b>C</b>  CW20-5R 36 X 36 PLAQUE 30 X 12	<b>D</b>  G20-2 36" X 18"	<b>E</b>  R8-3 24" X 30"	<b>M</b>  R5-1 30" X 30"	<b>S</b>  G20-2a 36" X 18"	 CW1-8 18 X 24	 8"-12" VP-1	 PLASTIC DRUM
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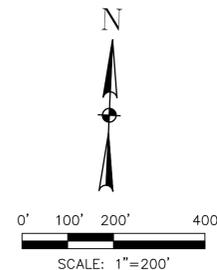


LEGEND:

WORK ZONE

PROPOSED SIGN POST

 CW20-2D 36 X 36	 M4-9R 30 X 24	 M4-9L 30 X 24
 M4-9S 30 X 24	 M4-9N 30 X 12	 M4-8T 24 X 18
 CW20-3 36 X 36	 M4-9N 30 X 12	 R11-2 48 X 30
 M4-8a 30 X 12	 R11-4 12 X 24	 M4-9N 30 X 12
 R11-3 12 X 12		



<b>KUO &amp; ASSOCIATES</b> Consulting Engineers & Surveyors 10300 Westoffice Dr., Suite 800 Houston, TX 77042 Tel: (713) 975-8769 Fax: (713) 975-9929 www.kuasociates.com Texas Firm Registration No. F-4579	<b>ISANI</b> Civil Design Engineers 10449 Westoffice Dr., Houston, TX 77042 Tel: (713) 747-2399 Texas Firm Registration No. F-4575	<b>INTERIM REVIEW ONLY</b> "THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RAM GULIANI, P.E. 101094 ON 12/19/2025. IT IS NOT TO BE USED FOR CONSTRUCTION"
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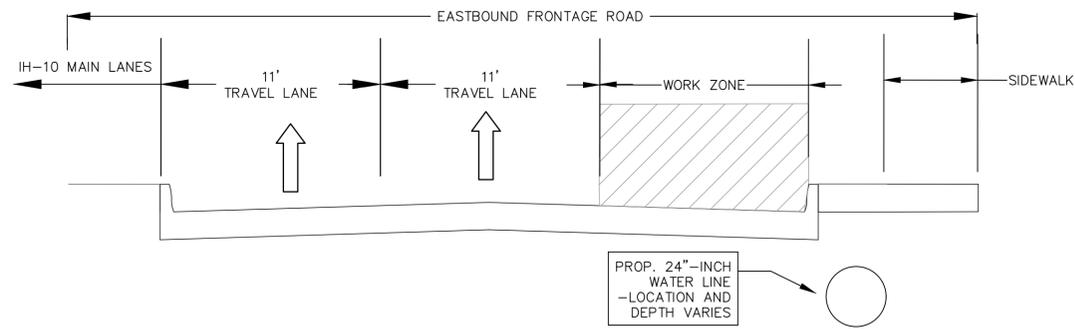
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
SITE 4 & 5  
**DETOUR PLAN**  
PHASE 2 - STEP 2

TCP SHEET: 23 OF 30	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER S-000701-0043-4	
DRAWING SCALE 1"=200'	
CITY OF HOUSTON PM MARTIN MATHEW, ENV SP	
SHEET NO. 158 OF 190	

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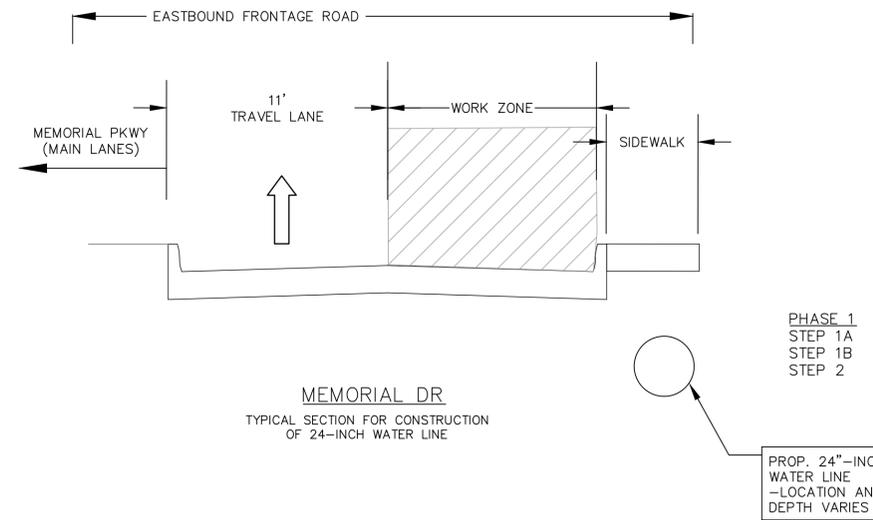
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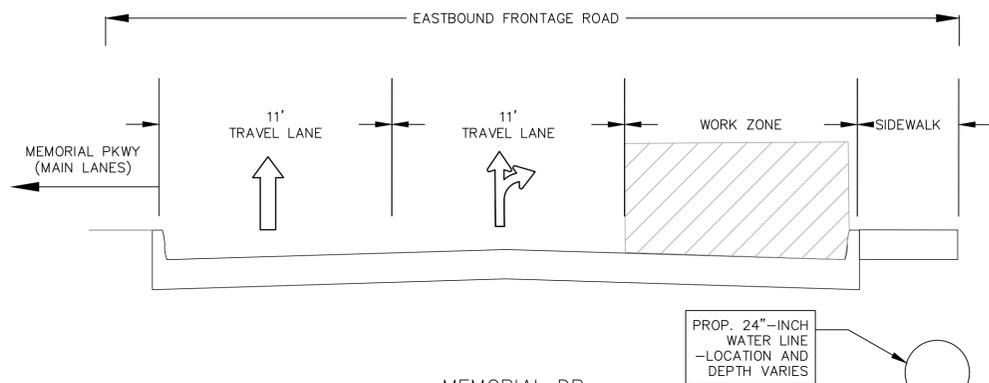
KATY FREEWAY - EAST BOUND FRONTAGE ROAD  
TYPICAL SECTION FOR CONSTRUCTION  
OF 24-INCH WATER LINE

PHASE 1-11  
(SITE 1)



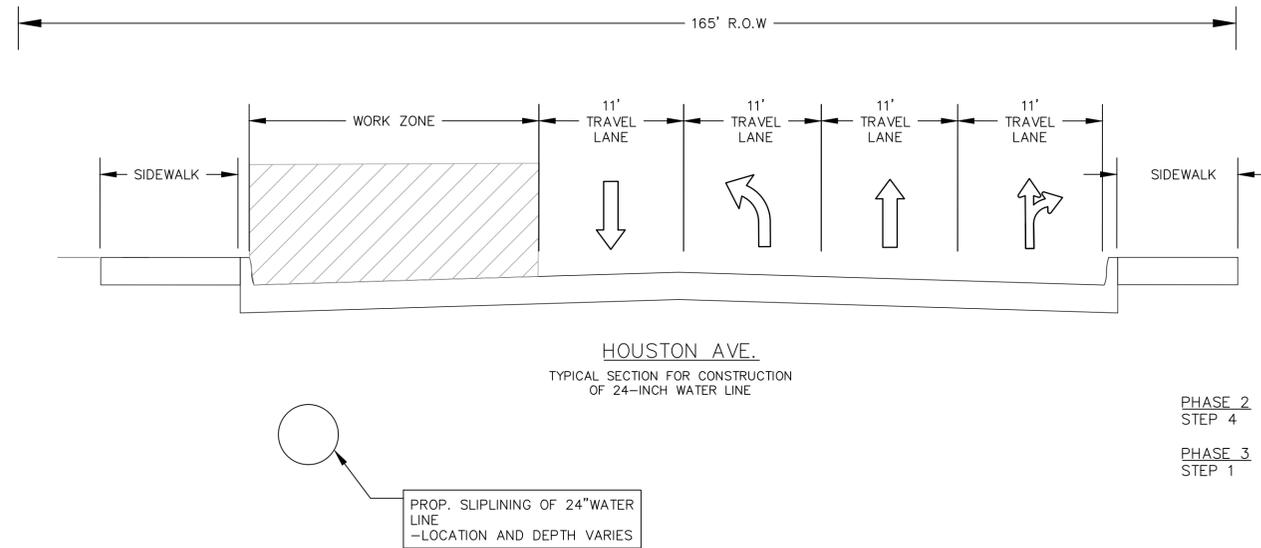
MEMORIAL DR  
TYPICAL SECTION FOR CONSTRUCTION  
OF 24-INCH WATER LINE

PHASE 1  
STEP 1A  
STEP 1B  
STEP 2



MEMORIAL DR  
TYPICAL SECTION FOR CONSTRUCTION  
OF 24-INCH WATER LINE

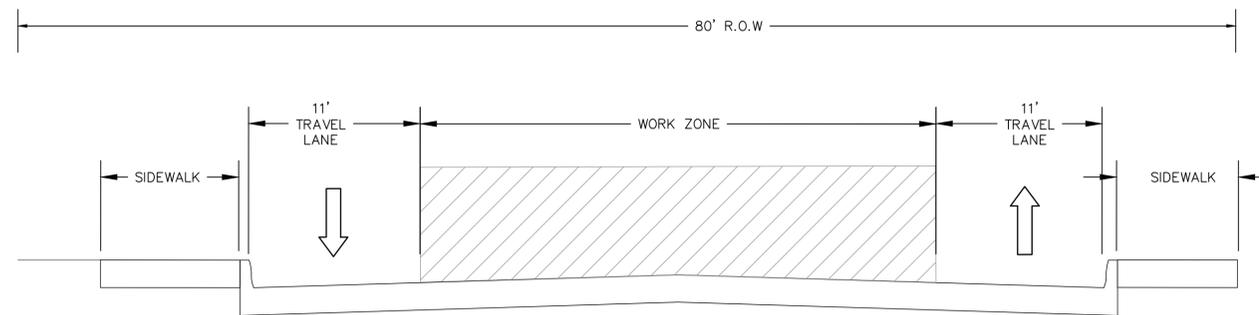
PHASE 1  
STEP 3  
STEP 4  
STEP 5



HOUSTON AVE.  
TYPICAL SECTION FOR CONSTRUCTION  
OF 24-INCH WATER LINE

PHASE 2  
STEP 4

PHASE 3  
STEP 1



WASHINGTON AVE.  
TYPICAL SECTION FOR CONSTRUCTION  
OF 24-INCH WATER LINE

PHASE 3  
STEP 2

PHASE 3  
STEP 3

PROP. SLIPLINING OF 24" WATER  
LINE  
-LOCATION AND  
DEPTH VARIES

**KUO & ASSOCIATES**  
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HOUSTON PUBLIC WORKS STANDARD  
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4

TYPICAL SECTIONS - 1

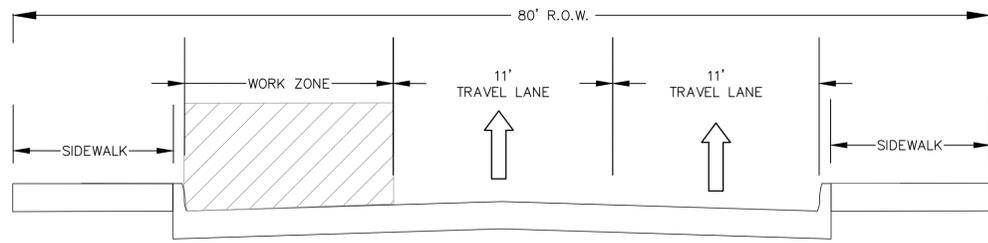
TCP SHEET: 24 OF 30

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 159 OF 190	

PLOTTED: 1/9/2026 11:39 AM

PLOT STYLE: Coh\_ctb\_230809.ctb

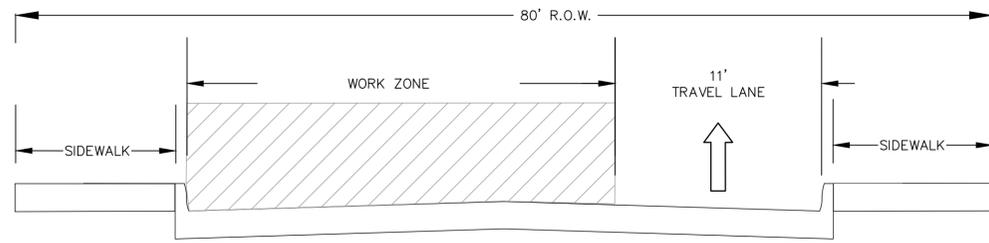
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PROP. 24"-INCH WATER LINE  
-LOCATION AND DEPTH VARIES

PRESTON STREET  
TYPICAL SECTION FOR CONSTRUCTION  
OF 24-INCH WATER LINE

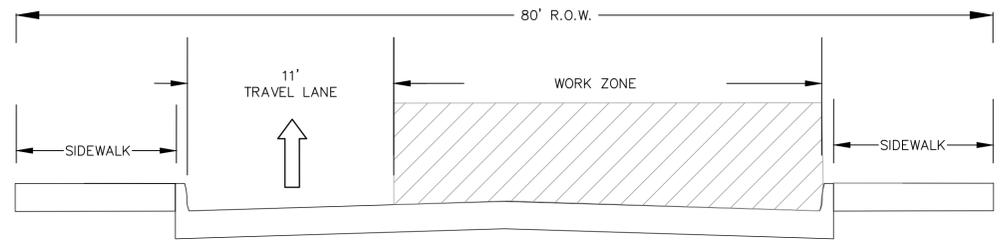
PHASE 5  
STEP 1-5



PROP. 24"-INCH WATER LINE  
-LOCATION AND DEPTH VARIES

PRESTON STREET  
TYPICAL SECTION FOR CONSTRUCTION  
OF 24-INCH WATER LINE

PHASE 6  
STEP 1-10



PROP. 24"-INCH WATER LINE  
-LOCATION AND DEPTH VARIES

PRESTON STREET  
TYPICAL SECTION FOR CONSTRUCTION  
OF 24-INCH WATER LINE

PHASE 7  
STEP 1-2

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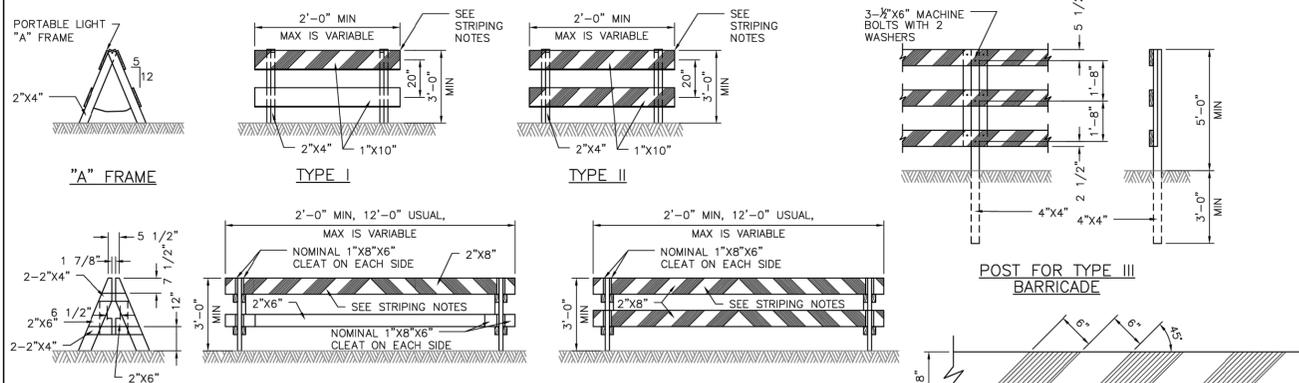
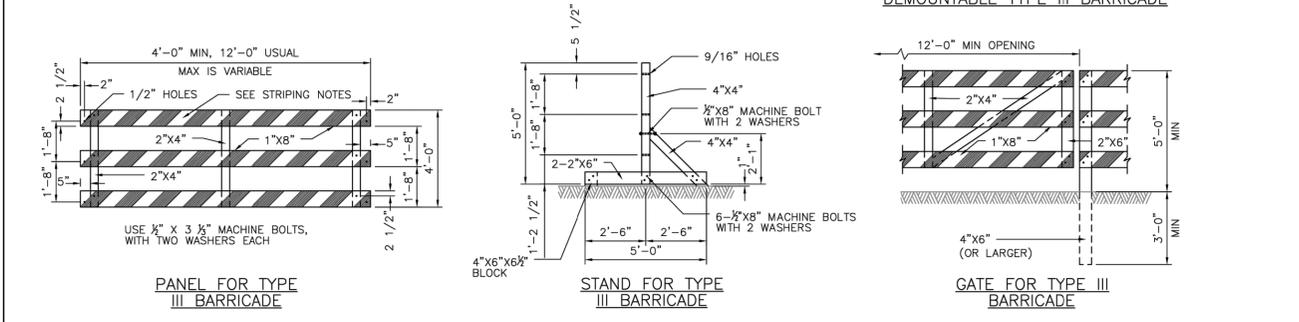
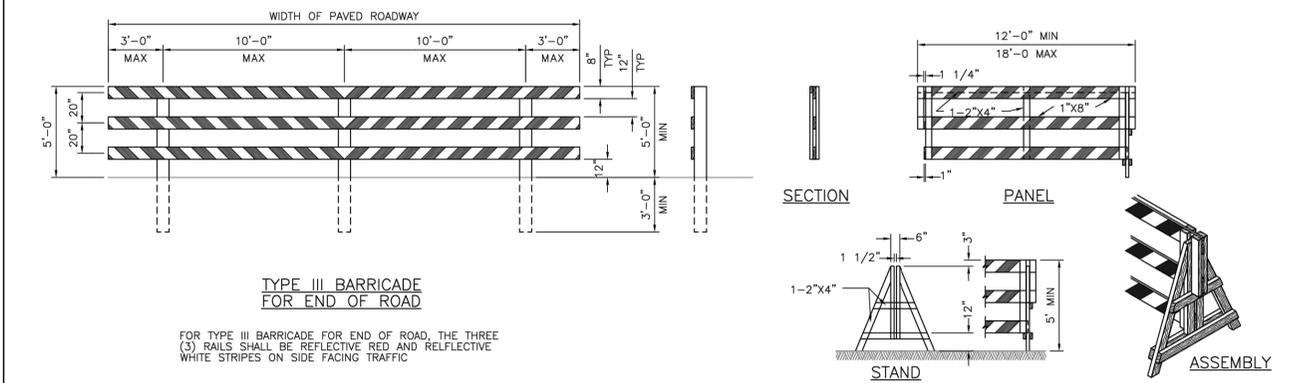
MISCELLANEOUS LARGE DIAMETER  
WATER LINE IMPROVEMENTS -  
PACKAGE 4

TYPICAL SECTIONS - 2

TCP SHEET: 25 OF 30

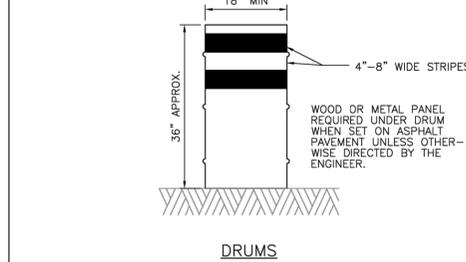
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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 160 OF 190	

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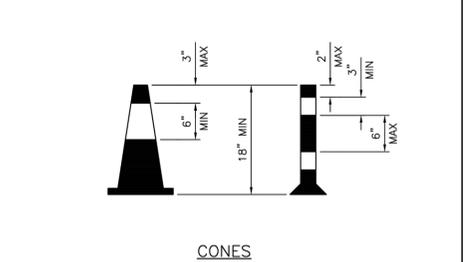


**BARRICADE NOTES:**

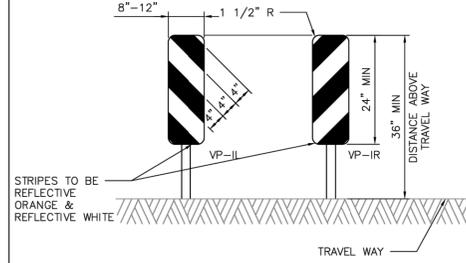
- THE MOST RECENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND IT'S REVISIONS, SHALL GOVERN THE CONSTRUCTION AND USE OF ALL ITEMS HEREIN DESCRIBED.
- CHANNELIZATION DEVICES OTHER THAN BARRICADES SHOULD NORMALLY BE USED FOR CHANNELIZATION PURPOSES.
- BARRICADES SHOULD NORMALLY BE PLACED PERPENDICULAR TO THE TRAFFIC FLOW. OTHER CHANNELIZING DEVICES, SUCH AS DRUMS, VERTICAL PANELS OR PORTABLE BARRIERS, SHOULD BE USED WHERE NEEDED TO SEPARATE TRAFFIC FROM THE WORK AREA. IN ALL CASES, THE BARRICADES SHOULD BE SO LOCATED AS TO MOST ADVANTAGEOUSLY WARN AND DIRECT TRAFFIC.
- BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL APPROVED BY THE TMTUCD. THE CONSTRUCTION DETAILS SHOWN HEREON ARE TYPICAL AND ARE SUGGESTED DETAILS FOR WOOD SUPPORT SYSTEMS FOR BARRICADES. THE DETAILS OF RAIL WIDTH AND STRIPING, NUMBER AND SPACING OF RAILS, MINIMUM LENGTH AND HEIGHT (ABOVE PAVEMENT) OF RAILS MUST BE ADHERED TO WHEN ALTERNATE DESIGNS ARE USED.
- BARRICADES ARE TO BE CONSTRUCTED OF CLEAN SOUND MATERIAL. ALL SURFACES ABOVE GROUND, WHICH ARE NOT STRIPED, SHALL BE WHITE EXCEPT THE UNPAINTED GALVANIZED METAL OR ALUMINUM COMPONENTS MAY BE USED. COMPONENTS MADE OF LUMBER SHALL BE PAINTED WITH A MINIMUM OF TWO COATS OF AN APPROVED BRAND OF WHITE PAINT TO SECURE THOROUGH COVERAGE AND A UNIFORM WHITE COLOR.
- THE REFLECTORIZED WHITE AND REFLECTORIZED ORANGE (REFLECTORIZED RED) STRIPES FOR BARRICADES, DRUMS AND VERTICAL PANELS SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING AND SHALL BE MAINTAINED TO MEET THE APPEARANCE, COLOR AND REFLECTIVITY REQUIREMENTS SET BY DOT.
- THE CONTRACTOR SHALL MAINTAIN EACH BARRICADE IN A CLEAN AND GOOD CONDITION.
- BARRICADES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND/OR THE ELIMINATION OF THE HAZARD ON ANY SECTION.



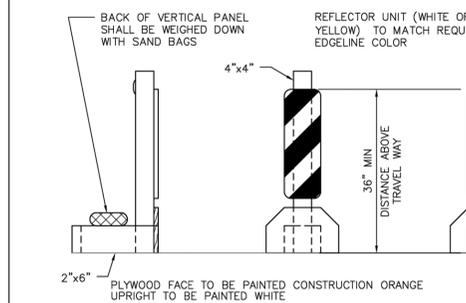
- DRUMS, SET ON END, AND USED FOR TRAFFIC WARNING OR CHANNELIZATION SHALL BE APPROX 36" IN HEIGHT AND A MIN OF 18" IN DIAMETER. THE CONTRACTOR, AT HIS OPTION, MAY USE DRUMS MADE FROM STEEL BARRELS OR BLACK POLYETHYLENE PLASTIC DRUM LINERS WEIGHING APPROX EIGHT POUNDS EACH. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL, CIRCUMFERENTIAL, REFLECTORIZED ORANGE AND REFLECTORIZED WHITE STRIPES, 4 TO 8 INCHES WIDE. THE FIRST REFLECTORIZED STRIPE SHOULD START WITHIN TWO (2) INCHES OF THE TOP OF THE DRUM. THERE SHALL BE AT LEAST TWO ORANGE AND TWO WHITE STRIPES ON EACH DRUM. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE HORIZONTAL ORANGE AND WHITE STRIPES, THEY SHALL BE NO MORE THAN 2 INCHES WIDE. METAL DRUMS SHALL BE PAINTED BLACK OR ORANGE BEFORE REFLECTORIZED STRIPES ARE ADDED. ALL DRUMS ON PROJECT WILL BE THE SAME COLOR. WHEN DRUMS ARE PLACED IN THE ROADWAY, APPROPRIATE WARNING SIGNS SHOULD BE USED. DURING HOURS OF DARKNESS, A FLASHING WARNING LIGHT SHOULD BE PLACED ON DRUMS USED SINGLY AS A WARNING DEVICE. STEADY BURN ELECTRIC LIGHTS OR DELINEATORS SHOULD BE PLACED ON DRUMS USED IN SERIES FOR TRAFFIC CHANNELIZATION. DRUMS SHALL BE WEIGHED WITH SAND TO THE EXTENT INDICATED IN THE PLANS.
- CW-8 CHEVRON SIGNS, CW-6A ARROW SIGNS OR VP-1 VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.



- TRAFFIC CONES AND TUBULAR MARKERS SHALL BE A MIN OF 18" INCHES IN HEIGHT WITH A BROADENED BASE AND MAY BE MADE OF VARIOUS MATERIALS TO WITHSTAND IMPACT WITHOUT DAMAGE TO THEMSELVES OR TO VEHICLES. LARGER SIZES SHOULD BE USED ON FREEWAYS AND OTHER ROADWAYS WHERE SPEED ARE RELATIVELY HIGH OR WHERE EVER MORE CONSPICUOUS GUIDANCE IS NEEDED. ORANGE SHALL BE THE PREDOMINANT COLOR ON CONES AND TUBULAR MARKERS. THEY SHOULD BE KEPT CLEAN AND BRIGHT FOR MAX TARGET VALUE. FOR NIGHT TIME USE THEY SHALL BE REFLECTORIZED OR EQUIPPED WITH LIGHTING DEVICES FOR MAX VISIBILITY. REFLECTORIZED MATERIAL SHALL HAVE A SMOOTH, SEALED OUTER SURFACE WHICH WILL DISPLAY THE SAME APPROX COLOR DAY AND NIGHT.
- REFLECTORIZATION OF TUBULAR MARKERS SHALL BE A MIN OF TWO THREE-INCH BANDS PLACED A MAX OF 2" FROM THE TOP WITH A MAX OF 6" BETWEEN THE BANDS. REFLECTORIZATION OF CONES SHALL BE PROVIDED BY A MIN 6" BAND PLACED A MAX OF 3" FROM THE TOP.
- CONES OR TUBULAR MARKERS ARE GENERALLY ONLY SUITABLE FOR TEMPORARY USAGE (UP TO 8 HOURS) WITH OTHER CHANNELIZATION DEVICES SUCH AS VERTICAL PANELS OR BARRICADES PREFERRED FOR LONGER TERM USAGE. CARE SHOULD BE TAKEN TO INSURE THAT THEY REMAIN IN THEIR PROPER LOCATION AND IN AN UPRIGHT POSITION.



VERTICAL PANELS ARE NORMALLY USED AS CHANNELIZING DEVICES TO INDICATE TANGENT OR NEARLY TANGENT ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME. IN ADDITION, VERTICAL PANELS SHOULD BE USED AT THE EDGE OF SHOULDER DROP-OFFS AND OTHER SUN AREAS. LANE TRANSITIONS WHERE POSITIVE DAY AND NIGHT DELINEATION MAY BE REQUIRED, VERTICAL PANELS SHOULD BE MOUNTED BACK TO BACK IF USED AT THE EDGE OF CUTS ADJACENT TO TWO-WAY TWO LANE ROADWAYS. STRIPES SHOULD ALWAYS SLOPE DOWNWARD TOWARD THE TRAVELED WAY.



OTHER SIMILAR SUPPORTS MAY BE USED WHEN APPROVED BY TMTUCD AND DIRECTED BY THE CITY OF HOUSTON.

APPROVED BY: <i>Sulrat Banwar</i> CITY ENGINEER	APPROVED BY: <i>THANG NGUYEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Haddock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-14

<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
<b>BARRICADE AND CHANNELIZING DEVICES</b>	
FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE	NOT TO SCALE

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10300 Westoffice Dr., Suite 800  
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**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**

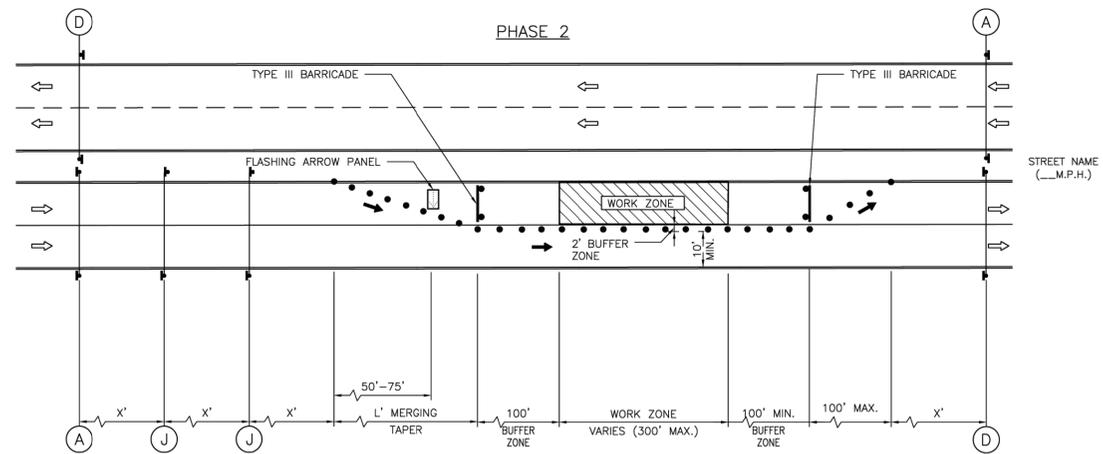
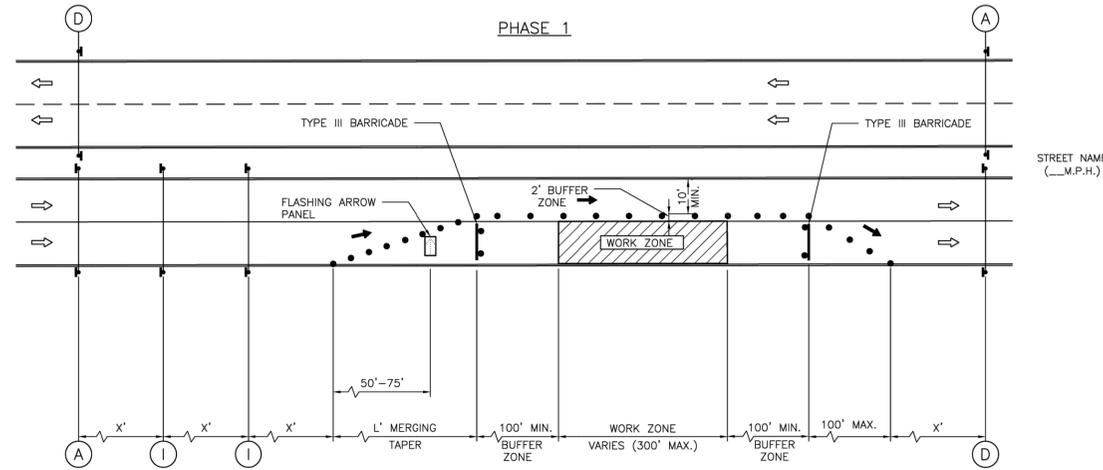
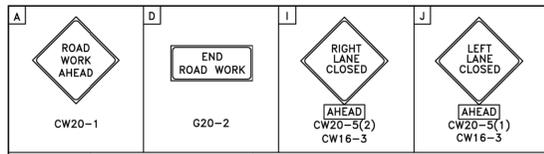
**BARRICADE AND CHANNELIZING DEVICES**

TCP SHEET: 26 OF 30

WBS NUMBER	S-000701-0043-4
DRAWING SCALE	N/A
CITY OF HOUSTON PM	MARTIN MATHEW, ENV SP
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LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NOTES:

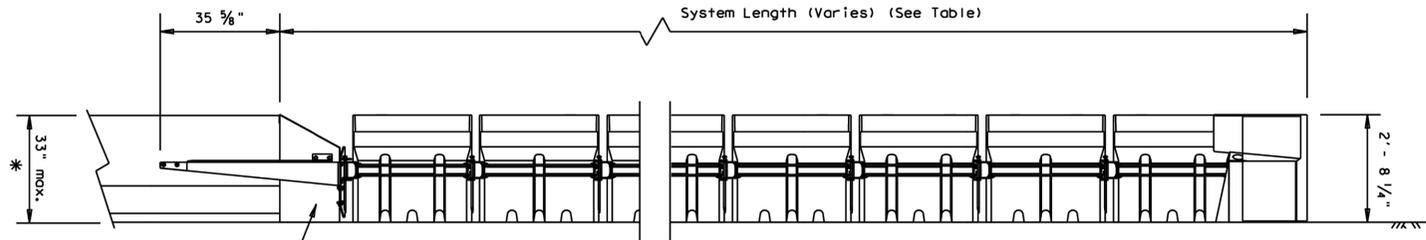
1. RETURN TAPERS AND DOWNSTREAM BARRICADES ARE OPTIONAL ON A DIVIDED ROADWAY SECTION.
2. DOUBLE SIGNS SHALL BE USED ONLY ON ROADWAYS WITH MEDIANS.
3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.

APPROVED BY: <i>Sulal Ibrahim</i> CITY ENGINEER	APPROVED BY: <i>BRAND MATHEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hubbard</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-04
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
TCP ONE LANE CLOSURE PHASE 1 & 2	
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<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD <b>MISCELLANEOUS LARGE DIAMETER                  WATER LINE IMPROVEMENTS -                  PACKAGE 4</b> <b>ONE LANE CLOSURE                  PHASE 1 &amp; 2</b>		
TCP SHEET: 27 OF 30		
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DRAWING SCALE		
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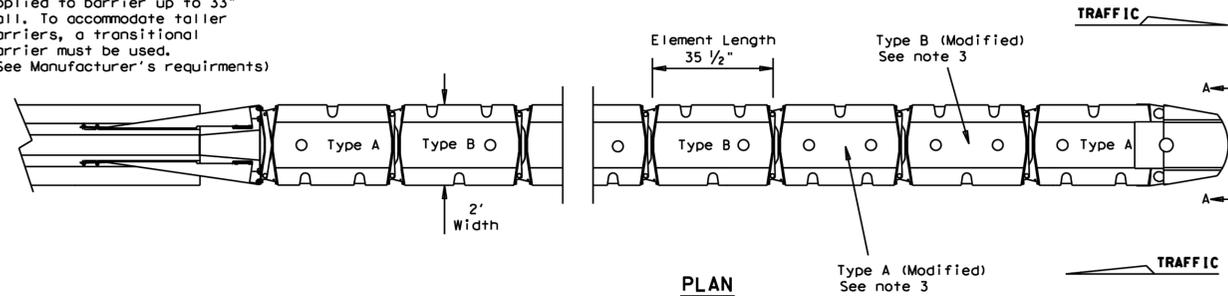
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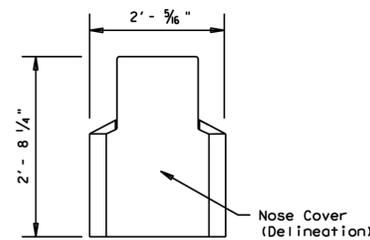
Steel Backup (Attach to Precast or Cast-in-Place Concrete Barriers)

\* The ABSORB 350 is design be applied to barrier up to 33" tall. To accommodate taller barriers, a transitional barrier must be used. (See Manufacturer's requirements)

**ELEVATION**  
See Manufacturer's Product Manual for Additional Details



**PLAN**



**SECTION A-A**  
Nose Piece delineation orientation, is shown elsewhere on the plans.

TEST LEVEL	NUMBER OF ELEMENTS	SYSTEM LENGTH (approx.)
TL-2	5	20' - 0"
TL-3	10	35' - 0"

The ABSORB 350 is only to be used in temporary (Work Zone) locations.

BACKUP SUPPORT
Steel Backup (Attach to Concrete Barriers, Precast or Cast-in-Place)

TRANSITION OPTIONS
Steel Backup to Vertical Wall
Steel Backup to Concrete Traffic Barriers

Backup and Transition types are shown elsewhere on the plans (i.e. Attenuator location details or in the general notes).

**GENERAL NOTES**

1. Refer to Installation manual and configuration chart for specific system assembly and element orientation. For additional information, Contact Interstate Steel Inc. at (432)263-3725.
2. The ABSORB 350 system is approved for use in temporary (Work Zone) locations. The ABSORB 350 is a water filled non-redirective, gating crash cushion that does not need to be attached to a foundation and can be installed on top of concrete, asphalt, or any surface capable of bearing the weight of the system.
3. Modified Type A and Type B elements require drilling of an additional 3" Dia. hole (as shown). See Manufacturers installation manual for details.
4. Maximum permissible cross-slope is 8%.
5. The installation area should be free from curbs, elevated objects, or depressions.
6. The ABSORB 350 should be approximately parallel with the barrier or  $\frac{1}{2}$  of merging barrier.

**BILL OF MATERIAL**

PRODUCT CODE	QTY	DESCRIPTION
B010825	1	Replacement Nose Assembly
B010830	1	Nose Piece Cover
B000303	TBD	Type A Element Assembly
B000708	TBD	Type B Element Assembly
B000706	TBD	Replacement Element Type A
B000708	TBD	Replacement Element Type B
B000520	1	Replacement Transition to PCB
A010420	TBD	Pin Link Hinge Locking
B000520	1	Transition Adapter Assembly
B000209	TBD	Strap Left Adapter
B000207	TBD	Strap Right Adapter
B000611	TBD	Adapter Hinge Plate
A000521	TBD	Anchor Bolt (U-Bolt)
B000518	1	Tapered Adapter
B020421	TBD	I Beam Adapter Female
B020420	TBD	I Beam Adapter Male
C021212	1	Transition to Link

(TBD) = To Be Determined, depending on System Length. (See manufacturer's product manual)

**Required Information**

The use of the ABSORB 350 is restricted to a maximum barrier height of 33 inches.



**BARRIER SYSTEMS  
ABSORB 350  
CRASH CUSHION  
(TEMPORARY, WORK ZONE)  
ABSORB-13**

FILE: absorb13.dgn	DN: TxDOT	CK: AM	DW: BD	CS:
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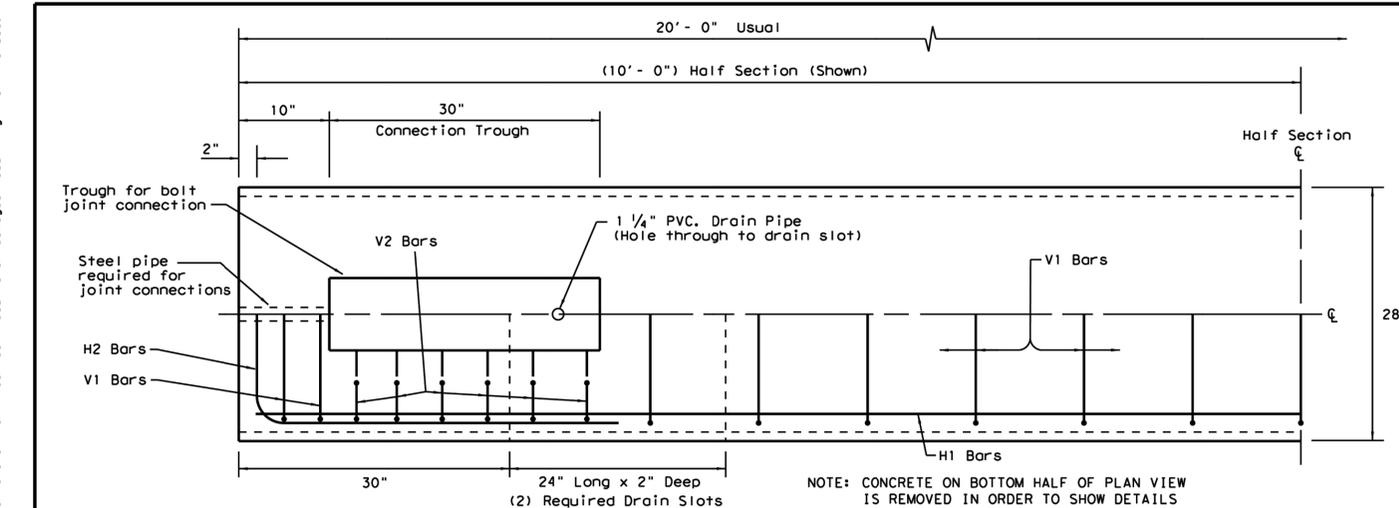
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**

**BARRIER SYSTEM ABSORB 350**

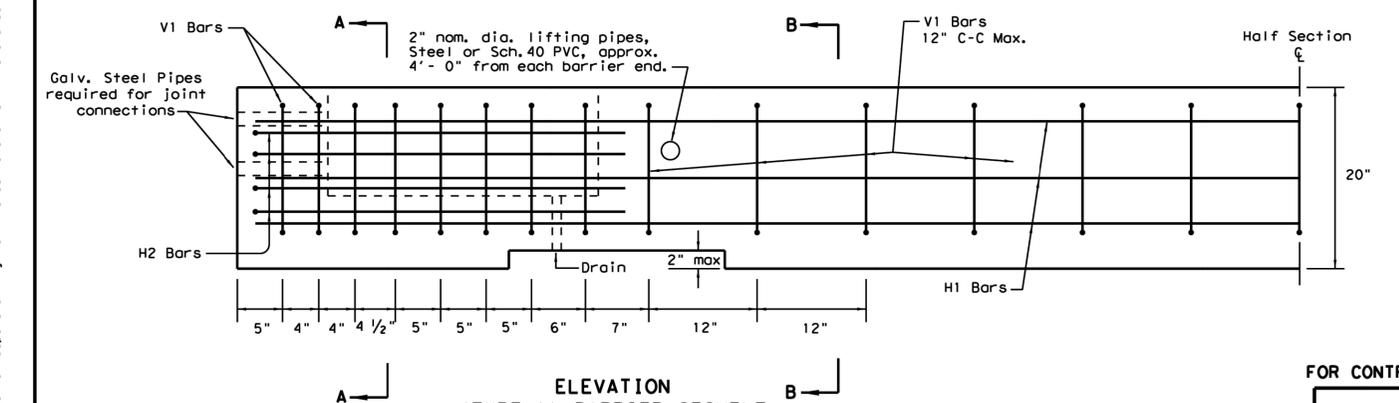
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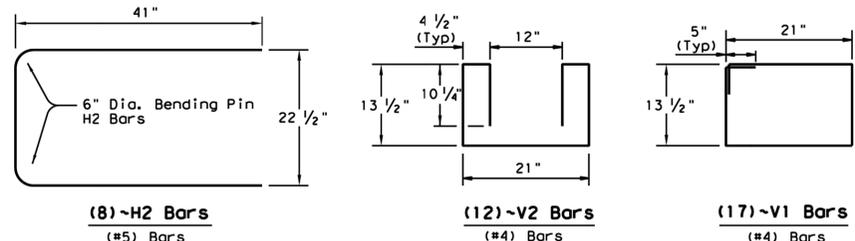
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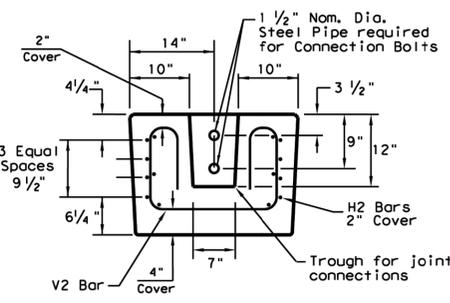
**PLAN**  
**(TYPE 1) BARRIER SEGMENT**  
(SYMMETRICAL ABOUT CENTER LINES)



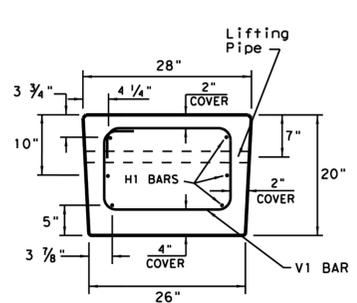
**ELEVATION**  
**(TYPE 1) BARRIER SEGMENT**  
(SYMMETRICAL ABOUT CENTER LINES)



**REINFORCING STEEL DETAILS**  
TYPE 1 - BARRIER SEGMENT  
Note: Use 2" Dia. Bending Pin, unless otherwise shown



**SECTION A-A**

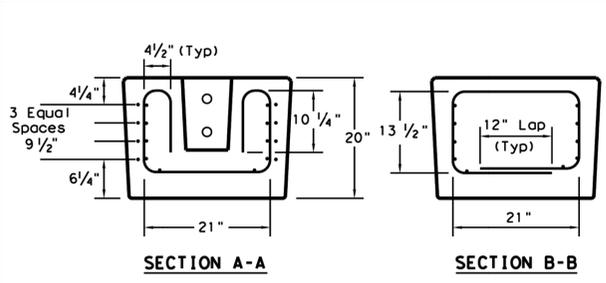


**SECTION B-B**

- GENERAL NOTES**
- Low Profile Concrete Barrier (LPCB), is approved for use in temporary work zone locations, where the posted speed is 45 mph, or less.
  - Concrete shall be Class H for precast barrier with a minimum compressive strength of 3,600 psi.
  - Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
  - Precast LPCB barrier length shall be 20 ft.
  - All barrier edges shall have 3/4" chamfer or a tooling radius.
  - Joint connection hardware shall be in accordance with Item 449, "Anchor Bolts," and is considered subsidiary.
  - Steel pipe required for joint connection bolts shall be galvanized in accordance with Item 445, "Galvanizing."
  - Welded wire reinforcement (WWR) may be used in lieu of conventional reinforcement for Type 1 barrier, and shall meet the requirements shown.

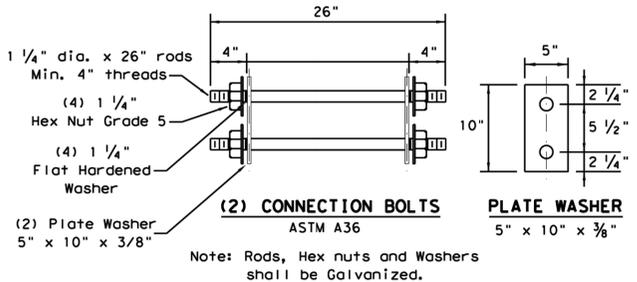
**FOR CONTRACTORS INFORMATION ONLY**

(TYPE 1) APPROX. QUANTITIES 20 FT. SECTION		
CONCRETE	CY	2.6
REINFORCING STEEL	LBS	330
TOTAL BARRIER WT.	LBS	11000



**WELDED WIRE REINFORCEMENT (WWR) - OPTIONAL REINFORCING**

- (WWR) GENERAL NOTES**
- Deformed Welded Wire Reinforcement shall conform to ASTM A497.
  - Welded wire cage may be cut or bent, if necessary, but must be approved by the Engineer.
  - Combinations of reinforcing steel and WWR are permitted, as directed by the Engineer. The dimensions from the end of the barrier section to the first wire shall not exceed 3".
- REQUIRED (WWR) WIRE DESIGN**
- 8 ~ (D31) Horizontal Wires (Equally spaced)
  - 10 ~ (D20) Horizontal Wires (Equally spaced)
  - 29 ~ (D20) Vertical Wires (Spaced as shown in Elevation View)



Note: Rods, Hex nuts and Washers shall be Galvanized.

**SHEET 1 OF 2**

**LOW PROFILE CONCRETE BARRIER PRECAST BARRIER (TYPE 1) LPCB-13**

*Design Division Standard*

FILE: lpcb13.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
© TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY	SHEET NO.	

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SURVEYED BY:  
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C.O.H Field Book P-

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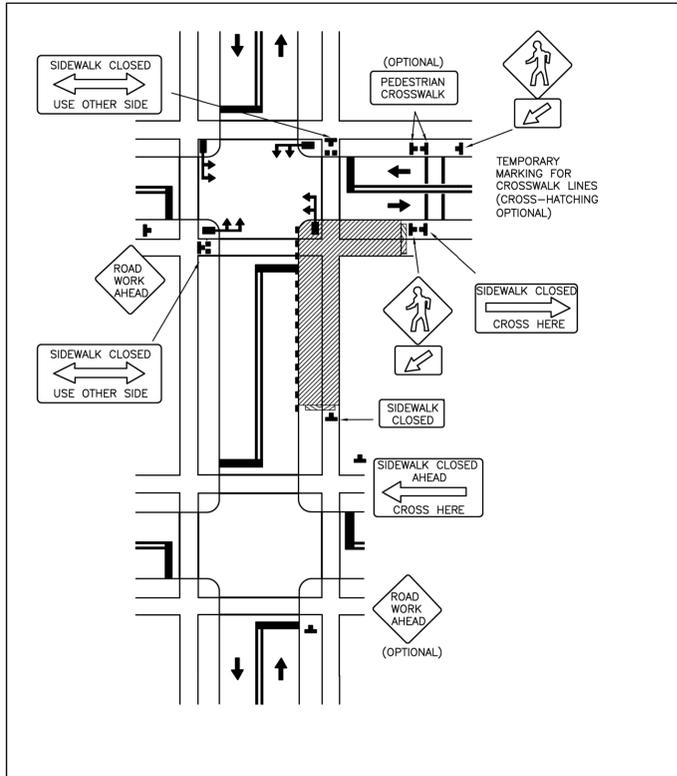
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**

**LOW PROFILE CONCRETE BARRIER**

TCP SHEET: 29 OF 30

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 164 OF 190	



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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

CROSSWALK CLOSURES AND PEDESTRIAN DETOURS

APPROVED BY:

Designed by:  CITY ENGINEER	Designed by:  CITY TRAFFIC ENGINEER	Designed by:  DIRECTOR OF HPW
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(SCALE: NOT TO SCALE)

EFF DATE: NOV-27-2023 | DWG NO: 01555-16

<b>KUO &amp; ASSOCIATES</b> Consulting Engineers & Surveyors 10300 Westoffice Dr., Suite 800 Houston, TX 77042 Tel: (713) 975-8769 Fax: (713) 975-0920 www.kuasocates.com Texas Firm Registration No. F-4579	<b>ISANI</b> civil design engineers 10448 Westoffice Dr., Houston, TX 77042 Tel: (713) 747-2399 Texas Firm Registration No. F-4575	INTERIM REVIEW ONLY *THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RAM GULIANI, P.E. 101094 ON 12/19/2025. IT IS NOT TO BE USED FOR CONSTRUCTION
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<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4 CROSSWALK CLOSURES AND PEDESTRIAN DETOURS		
TCP SHEET: 30 OF 30		
WBS NUMBER S-000701-0043-4	FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE N/A		
CITY OF HOUSTON PM MARTIN MATHEW, ENV SP		
SHEET NO. 165 OF 190		

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HYPER-CHLORINATED WATER NOTES

1. HYPER-CHLORINATED WATER SHALL NOT BE DISCHARGED TO THE STORM SEWER DRAINAGE SYSTEM UNLESS THE CHLORINE CONCENTRATION IS REDUCED TO 4PPM OR LESS BY CHEMICALLY TREATING WITH DECHLORINATE OR BY ON-SITE RETENTION UNTIL NATURAL ATTENUATION OCCUR.
2. DISCHARGE OF HIGH FLOW RATE AND VELOCITIES SHALL BE DIRECTED TO VELOCITY DISSIPATION DEVICES.
3. CHLORINE CAN BURN VEGETATION, SO IT SHOULD NOT BE USED TO WATER VEGETATION THAT IS BEING USED FOR STABILIZATION. VEGETATED FILTERS OR BUFFERS, OR OTHER VEGETATION TO BE PRESERVED.
4. HYPER-CHLORINATED WATER MAY BE DISCHARGED TO AN ON-SITE RETENTION AREA UNTIL DECHLORINATION OCCURS NATURALLY. THE AREA MAY CONSIST OF A DRY RETENTION BASIN, RETENTION POND, TEMPORARY PIT, OR A BERMED/STAGED AREA GRADED ON-SITE.
5. NATURAL ATTENUATION OF CHLORINE MAY BE AIDED BY AERATION. AIR CAN BE ADDED TO THE WATER BY DIRECTING THE DISCHARGE OVER A ROUGH SURFACE BEFORE IT ENTERS THE TEMPORARY RETENTION AREA OR AN AERATION DEVICE CAN BE PLACED IN THE RETENTION AREA.
6. ON-SITE DISCHARGE MAY BE REQUIRED FOR SEVERAL HOURS TO A FEW DAYS BEFORE THE WATER IS SAFE TO RELEASE. THE RATE AT WHICH CHLORINE ATTENUATES DEPENDS ON SOIL AND WEATHER CONDITIONS, WITH ATTENUATION OCCURRING MOST RAPIDLY DURING WARM, SUNNY, AND DRY PERIODS

SPILL AND LEAK RESPONSE NOTES

1. RECORDS OF ANY RELEASES OF OIL OR HAZARDOUS SUBSTANCES THAT EXCEEDS THE REPORTABLE QUANTITY (RQ) SHALL BE MAINTAINED IN ACCORDANCE WITH APPLICABLE FEDERAL AND STATE REGULATIONS.
2. EMERGENCY CONTACT INFORMATION AND SPILL RESPONSE PROCEDURES SHALL BE POSTED IN A READILY AVAILABLE AREA FOR ACCESS BY ALL EMPLOYEES AND SUBCONTRACTORS.
3. SPILL CONTAINMENT KIT SHOULD BE MAINTAINED FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS THAT ARE REGULARLY ONSITE, MATERIALS IN KITS SHOULD BE BASED ON CONTAINMENT GUIDELINES IN THE MATERIALS SAFETY AND DATA SHEETS (MSDS) FOR THE SUBSTANCE MOST FREQUENTLY ONSITE.
4. SPILL KITS ARE INTENDED FOR RESPONSE TO SMALL SPILLS, TYPICALLY LESS THAN 5 GALLONS, OR SUBSTANCES THAT ARE NOT EXTREMELY HAZARDOUS.
5. SIGNIFICANT SPILLS OR OTHER RELEASES WARRANT IMMEDIATE RESPONSE BY TRAINED PROFESSIONALS.
6. SUSPECTED JOB SITE CONTAMINATION SHOULD BE IMMEDIATELY REPORTED TO REGULATORY AUTHORITIES AND PROTECTIVE ACTIONS TAKEN.
7. THE CONTRACTOR SHOULD BE REQUIRED TO DESIGNATE A SITE SUPERINTENDENT, FOREMAN, SAFETY OFFICER, OR OTHER SENIOR PERSON WHO IS ONSITE DAILY TO BE THE SPILL AND LEAK RESPONSE COORDINATOR (SLRC) AND MUST HAVE KNOWLEDGE OF AND BE TRAINED IN CORRECT SPILL AND LEAK RESPONSE PROCEDURES.

SANITARY WASTE NOTES

1. THE CONTRACTOR SHALL PROVIDE AN APPROPRIATE NUMBER OF PORTABLE TOILETS BASED ON THE NUMBER OF EMPLOYEES USING THE TOILETS AND THE HOURS THEY WILL WORK.
2. SANITARY FACILITIES SHALL BE PLACED A MINIMUM OF 50 FEET AWAY FROM STORM DRAIN INLETS, CONVEYANCE CHANNELS OR SURFACE WATERS. IF UNABLE TO MEET THE 50 FEET REQUIREMENT DUE TO SITE CONFIGURATION, PORTABLE TOILETS SHALL BE A MINIMUM OF 20 FEET AWAY FROM STORM DRAIN INLETS, CONVEYANCE CHANNELS OR SURFACE WATER AND SECONDARY CONTAINMENT SHALL BE PROVIDED IN CASE OF SPILLS.
3. THE LOCATION OF THE PORTABLE TOILET SHALL BE ACCESSIBLE TO MAINTENANCE TRUCKS WITHOUT DAMAGING EROSION AND SEDIMENT CONTROLS OR CAUSING EROSIONS OR TRACKING PROBLEMS.
4. SANITARY FACILITIES SHALL BE FULLY ENCLOSED AND DESIGNED IN A MANNER THAT MINIMIZES THE EXPOSURE OF SANITARY WASTE TO PRECIPITATION AND STORMWATER RUNOFF.
5. WHEN HIGH WINDS ARE EXPECTED, PORTABLE TOILET SHALL BE ANCHORED OR OTHERWISE SECURED TO PREVENT THEM FROM BEING BLOWN OVER.
6. THE COMPANY THAT SUPPLIES AND MAINTAINS THE PORTABLE TOILETS SHALL BE NOTIFIED IMMEDIATELY IF A TOILET IS TIPPED OVER OR DAMAGED IN A WAY THAT RESULTS IN A DISCHARGE. DISCHARGED SOLID MATTER SHALL BE VACUUMED INTO A SEPTIC TRUCK BY THE COMPANY THAT MAINTAINS THE TOILETS.
7. SANITARY FACILITIES SHALL NOT BE PERMITTED ON PUBLIC SIDEWALKS, STREETS OR INLETS.

SUBGRADE STABILIZATION NOTES

1. MINIMIZE THE DISCHARGE OF THE CHEMICAL STABILIZERS BY THE CONTRACTOR BY LIMITING THE AMOUNT OF STABILIZING AGENT ONSITE TO THAT WHICH CAN BE THOROUGHLY MIXED AND COMPACTED BY THE END OF EACH WORKDAY.
2. STABILIZERS SHALL BE APPLIED AT RATES THAT RESULT IN NO RUN OFF.
3. STABILIZATION SHALL NOT OCCUR IMMEDIATELY BEFORE AND DURING RAINFALL EVENTS.
4. NO TRAFFIC OTHER THAN WATER TRUCKS, AND MIXING EQUIPMENT SHALL BE ALLOWED TO PASS OVER THE AREA BEING STABILIZED UNTIL AFTER COMPLETION OF MIXING THE CHEMICALS.
5. AREA ADJACENT AND DOWNSTREAM OF STABILIZED AREA SHALL BE ROUGHENED TO INTERCEPT CHEMICAL RUNOFF AND REDUCE RUNOFF VELOCITY.
6. GEOTEXTILE FABRICS SUCH AS THOSE USED FOR SILT FENCE SHOULD NOT BE USED TO TREAT CHEMICAL RUNOFF, BECAUSE THE CHEMICALS ARE DISSOLVED IN THE WATER AND WON'T BE AFFECTED BY A BARRIER AND THE SUSPENDED SOLIDS ARE SIGNIFICANTLY SMALLER THAN THE APPARENT OPENING SIZE OF THE FABRIC.
7. IF SOIL STABILIZERS ARE STORED ONSITE, THEY SHALL BE CONSIDERED HAZARDOUS MATERIAL AND SHALL BE MANAGED ACCORDING TO THE CRITERIA OF CHEMICAL MANAGEMENT TO CAPTURE ANY ACCIDENTAL LIME OR ANY CHEMICAL OVERFLOW.
8. THE CONTRACTOR SHALL INSTALL BMP'S TO ALL INLETS AND OPENINGS CONNECTED TO THE STORM SEWER SYSTEMS TO PREVENT LIME FROM ENTERING THE MS4 SYSTEM.

DEBRIS AND TRASH NOTES

1. ALL WASTE SOURCES AND STORAGE AREAS SHALL BE LOCATED A MINIMUM OF 50 FEET AWAY FROM INLETS, SWALES, DRAINAGE WAYS, CHANNELS, AND OTHER WATERS, IF THE SITE CONFIGURATION PROVIDE SUFFICIENT SPACE TO DO SO. IN NO CASE SHALL MATERIAL AND WASTE SOURCES BE CLOSURE THAN 20 FROM INLETS, SWALES, DRAINAGE WAYS, CHANNELS, AND OTHER WATERS.
2. CONSTRUCTION WASTE AND TRASH SHALL BE STORED IN A MANNER THAT MINIMIZES IT'S EXPOSURE TO PRECIPITATION AND STORM WATER RUN OFF.
3. WHENEVER POSSIBLE MINIMIZE PRODUCTION OF DEBRIS AND TRASH.
4. INSTRUCT CONSTRUCTION WORKERS IN PROPER DEBRIS AND TRASH STORAGE AND HANDLING PROCEDURES.
5. SEGREGATE POTENTIAL HAZARDOUS WASTE FROM NON-HAZARDOUS CONSTRUCTION SITE DEBRIS.
6. PROHIBIT LITTERING BY WORKERS AND VISITORS.
7. POLICE SITE DAILY FOR LITTER AND DEBRIS.
8. ENFORCE SOLID WASTE HANDLING AND STORAGE PROCEDURES.
9. IF FEASIBLE, RECYCLE CONSTRUCTION AND DEMOLITION DEBRIS SUCH AS WOOD, METAL, AND CONCRETE.
10. TRASH AND DEBRIS SHALL BE REMOVED FROM THE SITE AT REGULAR INTERVALS THAT ARE SCHEDULED TO EMPTY CONTAINERS WHEN THEY ARE 90 PERCENT FULL OR MORE FREQUENTLY.
11. GENERAL CONSTRUCTION DEBRIS MAY BE HAULED TO A LICENSED CONSTRUCTION DEBRIS LANDFILL.
12. USE WASTE AND RECYCLING HAULERS/ FACILITIES APPROVED BY THE LOCAL MUNICIPALITY.
13. CHIPPING OF TREES AND BRUSH FOR USE SUCH AS MULCH IS PREFERRED ALTERNATIVE TO OFFSITE DISPOSAL
14. NO WASTE, TRASH OR DEBRIS SHALL BE BURIED, BURNED OR OTHERWISE DISPOSED OF ONSITE.
15. CLEARLY MARK ON ALL DEBRIS AND TRASH CONTAINERS WHICH MATERIALS ARE ACCEPTABLE. FOREMAN AND/OR CONSTRUCTION SUPERVISOR SHALL MONITOR ONSITE SOLID WASTE STORAGE AND DISPOSAL PROCEDURE DAILY.

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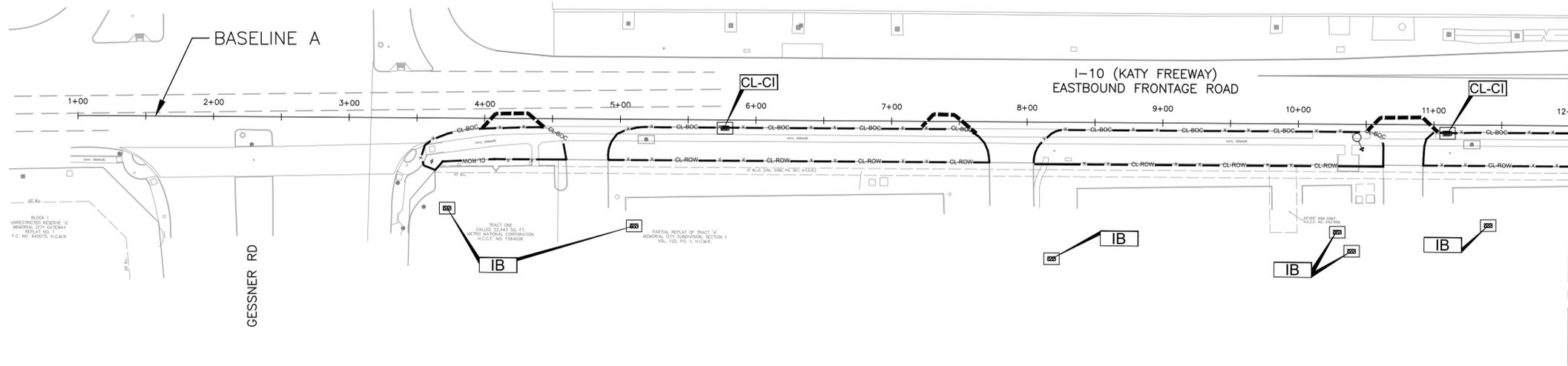
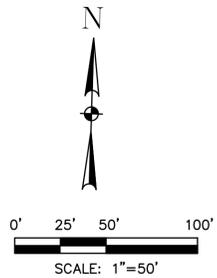
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<b>MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS – PACKAGE 4</b>	
<b>SWPPP GENERAL NOTES</b>	
SWPPP SHEET: 1 OF 14	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 166 OF 190	

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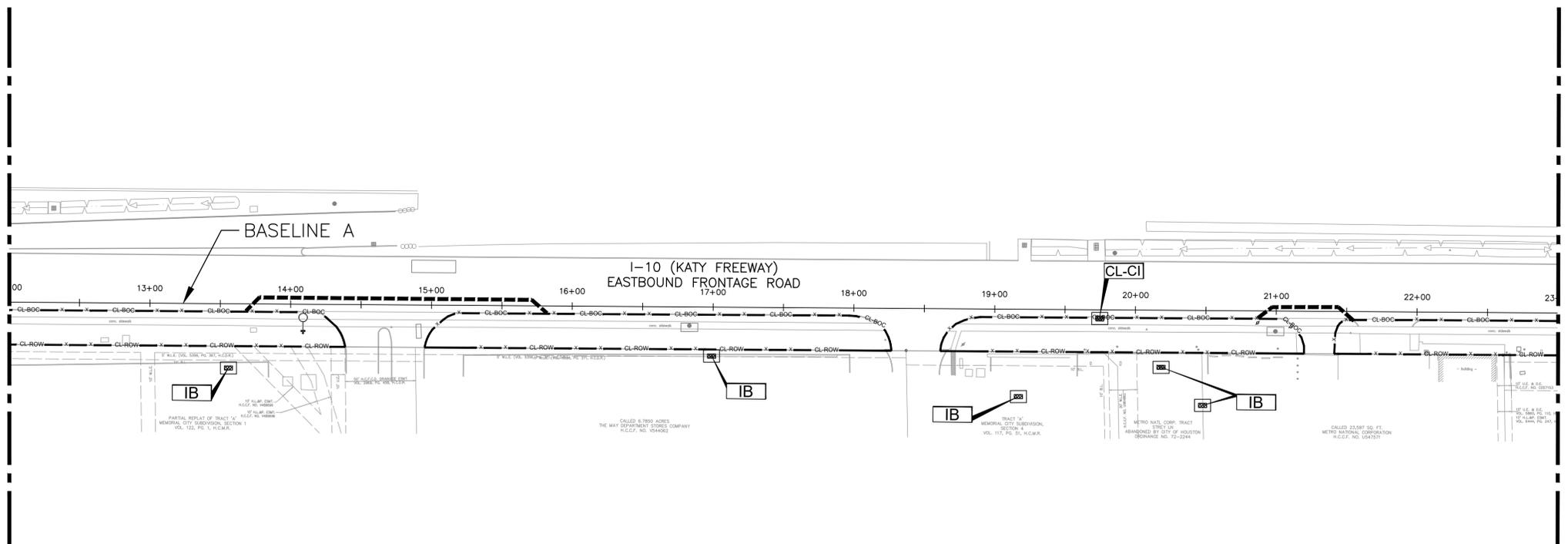
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MATCHLINE BASELINE A STA. 23+00  
SEE SWPPP SHEET 3

LEGEND:

- CL-BOC EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- IB INLET PROTECTION BASKET
- CL-CI EROSION CONTROL LOG AT REFER NOTE 8

NOTES:

1. CONTRACTOR SHALL PROVIDE STABILIZED CONSTRUCTION ACCESS IF NEEDED AT ALL TIMES DURING CONSTRUCTION INCLUDING FOR TRUCK WASHING AREAS, VERIFIED IN THE FIELD AND AUTHORIZED BY ENGINEER. EXACT LOCATION TO BE DETERMINED BY THE CONTRACTOR.
2. PROTECT ALL EXISTING STORM INLETS AND CULVERTS.
3. WATERLINES SHALL BE CONSTRUCTED USING A COMBINATION OF OPEN-CUT, TRENCHLESS, AND SLIP-LINING METHODS, AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROVIDE STABILIZED STAGING/PARKING AREA.
5. ADDITIONAL SWPPP MEASURES MAY BE APPLIED ADJACENT TO THE PROJECT AREA IF APPROPRIATE (EG. DAILY STREET SWEEPING).
6. REFER TO STORM WATER POLLUTION DETAILS FOR NOTES AND DETAIL.
7. THE WATER LINE SHALL BE INSTALLED BY THE OPEN-CUT METHOD AT ALL DRIVEWAYS WHERE THE PROPOSED WATER LINE IS ADJACENT TO THE ROW. DRIVEWAYS SHALL BE CLOSED ONE AT A TIME TO MINIMIZE DISRUPTION AND REOPENED AS SOON AS POSSIBLE.
8. CONTRACTOR SHALL MAINTAIN EROSION CONTROL LOGS FOR INLET AND BACK OF CURB AT ALL TIMES DURING CONSTRUCTION. FOR EROSION CONTROL LOG (ECL) DETAILS, REFER TO SHEET 11. THE CONTRACTOR IS RESPONSIBLE FOR SELECTING AND INSTALLING THE APPROPRIATE ECL MEASURES BASED ON SITE CONDITIONS. IF NECESSARY, INLET PROTECTION BASKETS CAN BE APPLIED FOR INLETS WHICH ARE NOT ON THE TXDOT ROADWAYS (E.G PARKING LOTS).

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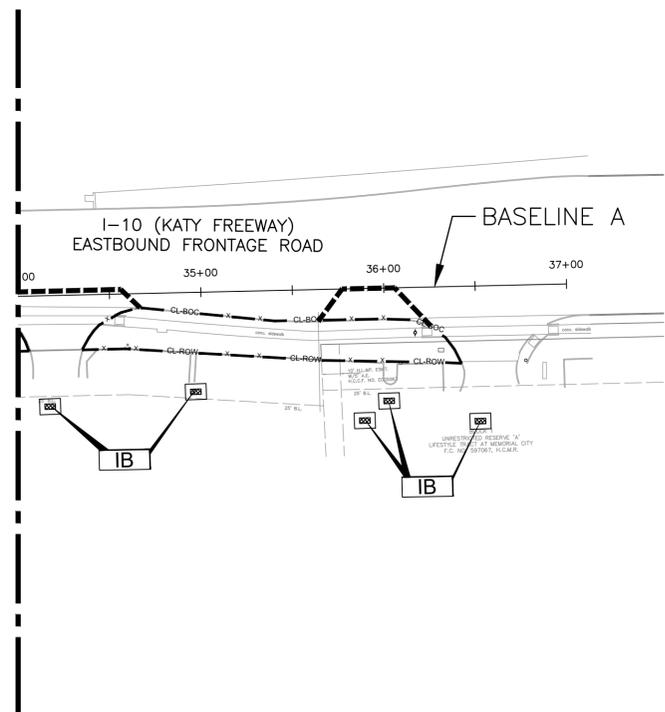
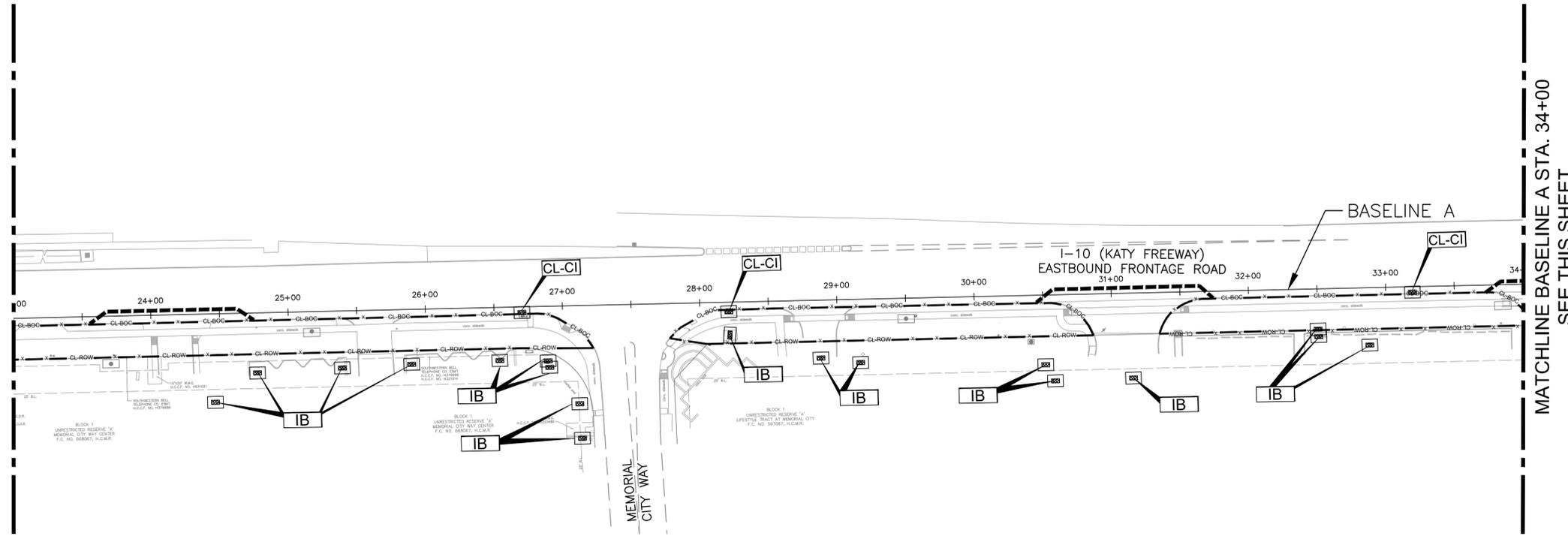
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**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 1 - KATY FREEWAY  
**STORM WATER POLLUTION PREVENTION PLAN -1**

SWPPP SHEET: 2 OF 14	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
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SHEET NO. 167 OF 190	

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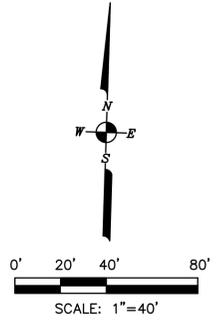
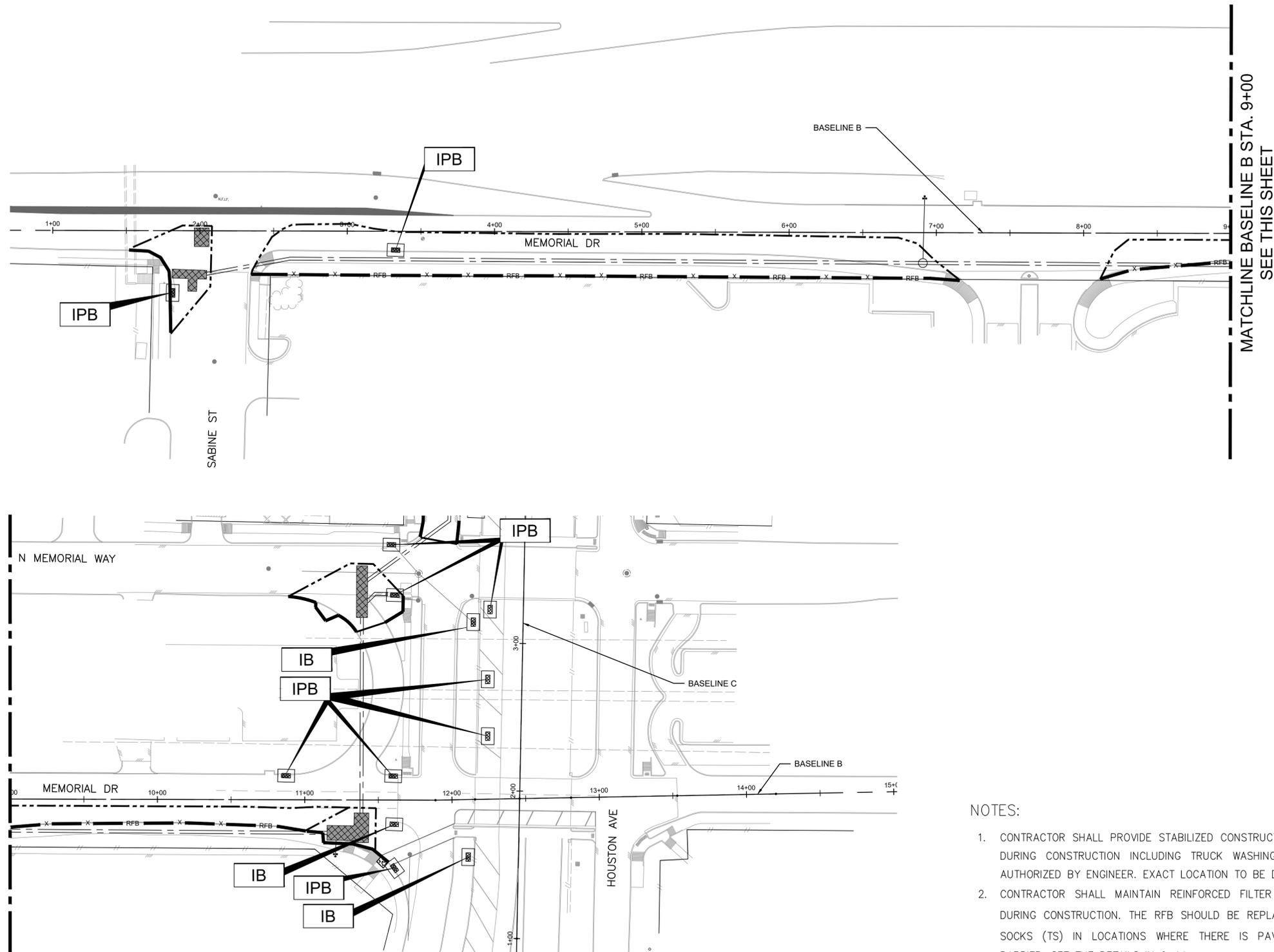
LEGEND:

	EROSION CONTROL LOG AT BACK OF CURB
	EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
	INLET PROTECTION BASKET
	EROSION CONTROL LOG AT REFER NOTE 8

- NOTES:
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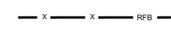
<p><b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD</p>	
<p><b>MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4</b> SITE 1 - KATY FREEWAY <b>STORM WATER POLLUTION PREVENTION PLAN -2</b></p>	
SWPPP SHEET: 3 OF 14	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 168 OF 190	



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LEGEND:

-  HAY/SAND FILLED TUBULAR SOCKS (TS)
-  REINFORCED FILTER FABRIC BARRIER
-  INLET PROTECTION BASKET
-  INLET PROTECTION BARRIER
-  TRENCH DRAIN INLET PROTECTION BASKET

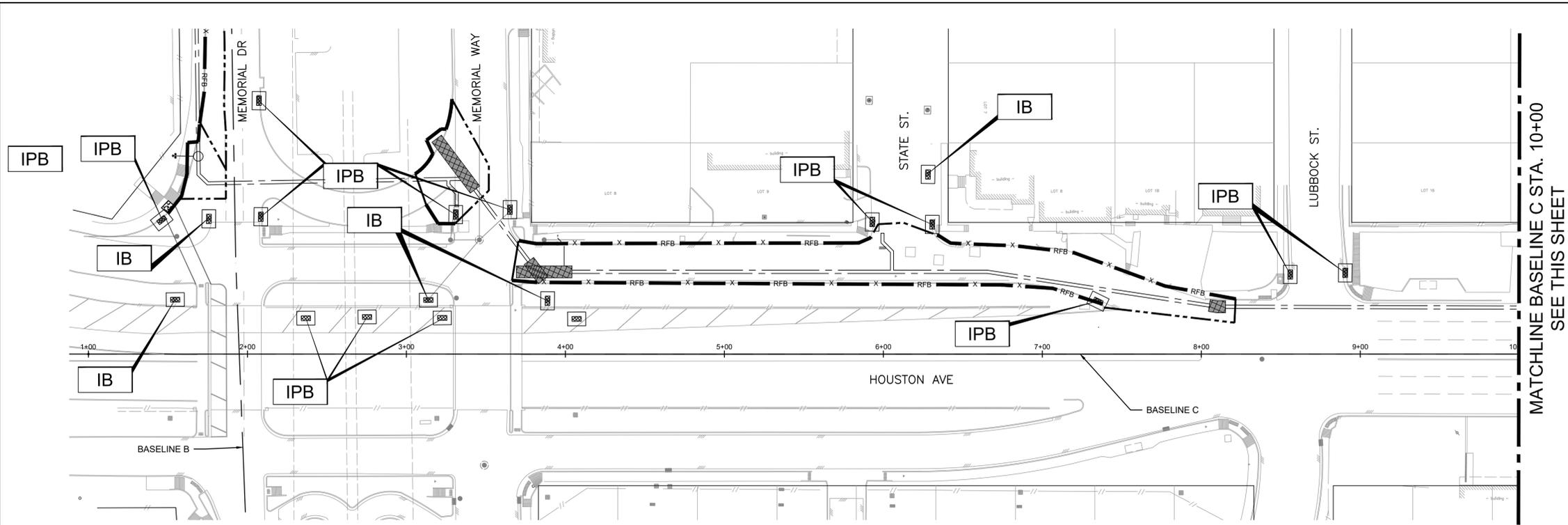
NOTES:

1. CONTRACTOR SHALL PROVIDE STABILIZED CONSTRUCTION ACCESS IF NEEDED ALL THE TIME DURING CONSTRUCTION INCLUDING TRUCK WASHING AREA, VERIFIED IN THE FIELD AND AUTHORIZED BY ENGINEER. EXACT LOCATION TO BE DETERMINED BY THE CONTRACTOR.
2. CONTRACTOR SHALL MAINTAIN REINFORCED FILTER FABRIC (RFB) FENCE AT ALL TIMES DURING CONSTRUCTION. THE RFB SHOULD BE REPLACED WITH HAY/SAND FILLED TUBULAR SOCKS (TS) IN LOCATIONS WHERE THERE IS PAVEMENT AND LOW PROFILE CONCRETE BARRIER. SEE THE DETAILS IN 9-14
3. THE CONTRACTOR SHALL INSTALL GEOTEXTILE-LINED BASKETS OR APPROVED EQUIVALENT AT ALL TRENCH DRAINS TO PREVENT SEDIMENT FROM ENTERING THE STORM SEWER. PROTECTION SHALL EXTEND A MINIMUM OF 5 TO 10 FEET UPSTREAM OF THE TRENCH DRAIN AND BE MAINTAINED AND CLEANED UNTIL PERMANENT STABILIZATION IS COMPLETE.
4. PROTECT ALL EXISTING STORM INLETS AND CULVERTS
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9. FOR INLET PROTECTION BASKET (IB) DETAILS, REFER TO SHEET 10.

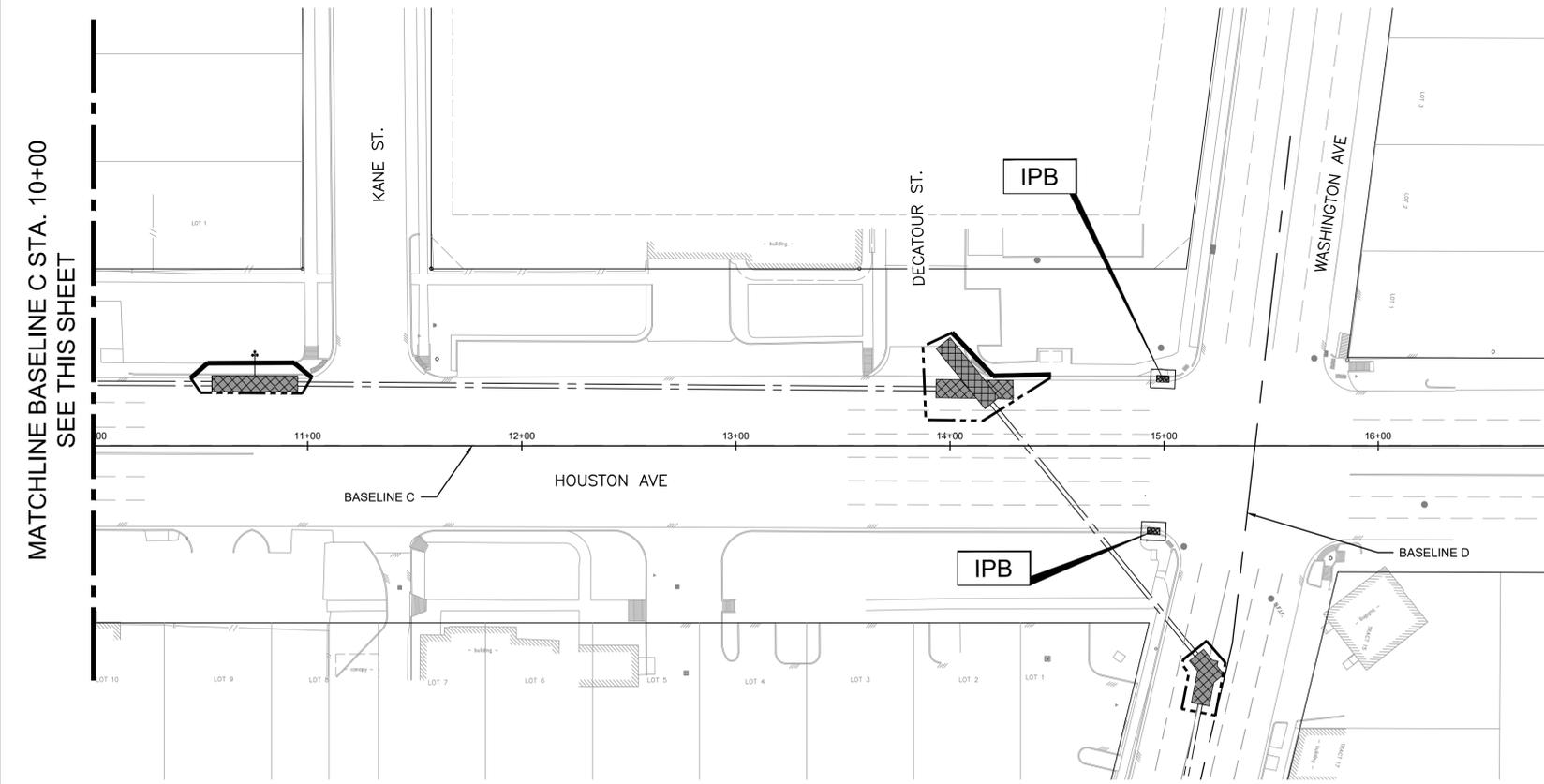
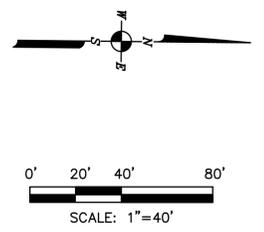
**KUO & ASSOCIATES**  
 Consulting Engineers & Surveyors  
 10300 Westoffice Dr., Suite 800  
 Houston, TX 77042  
 Tel: (713) 747-2399  
 Fax: (713) 975-8769  
 www.kuasociates.com  
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<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS STANDARD	
<b>MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4</b> SITE 4 & 5	
<b>STORM WATER POLLUTION PREVENTION PLAN - 3</b>	
SWPPP SHEET: 4 OF 14	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 169 OF 190	



MATCHLINE BASELINE C STA. 10+00  
SEE THIS SHEET



MATCHLINE BASELINE C STA. 10+00  
SEE THIS SHEET

NOTES:

1. CONTRACTOR SHALL PROVIDE STABILIZED CONSTRUCTION ACCESS IF NEEDED ALL THE TIME DURING CONSTRUCTION INCLUDING TRUCK WASHING AREA, VERIFIED IN THE FIELD AND AUTHORIZED BY ENGINEER. EXACT LOCATION TO BE DETERMINED BY THE CONTRACTOR.
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LEGEND:

- HAY/SAND FILLED TUBULAR SOCKS (TS)
- REINFORCED FILTER FABRIC BARRIER
- IB INLET PROTECTION BASKET
- IPB INLET PROTECTION BARRIER
- TD TRENCH DRAIN INLET PROTECTION BASKET

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 Civil Design Engineers  
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 Tel: (713) 747-2399  
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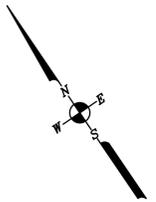
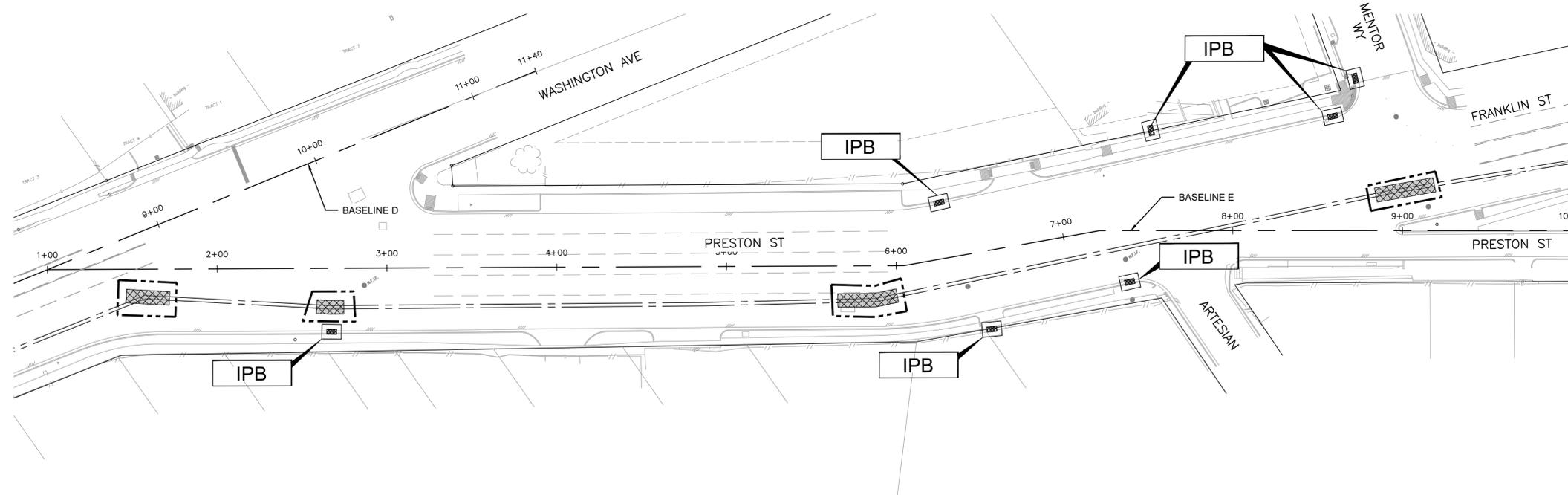
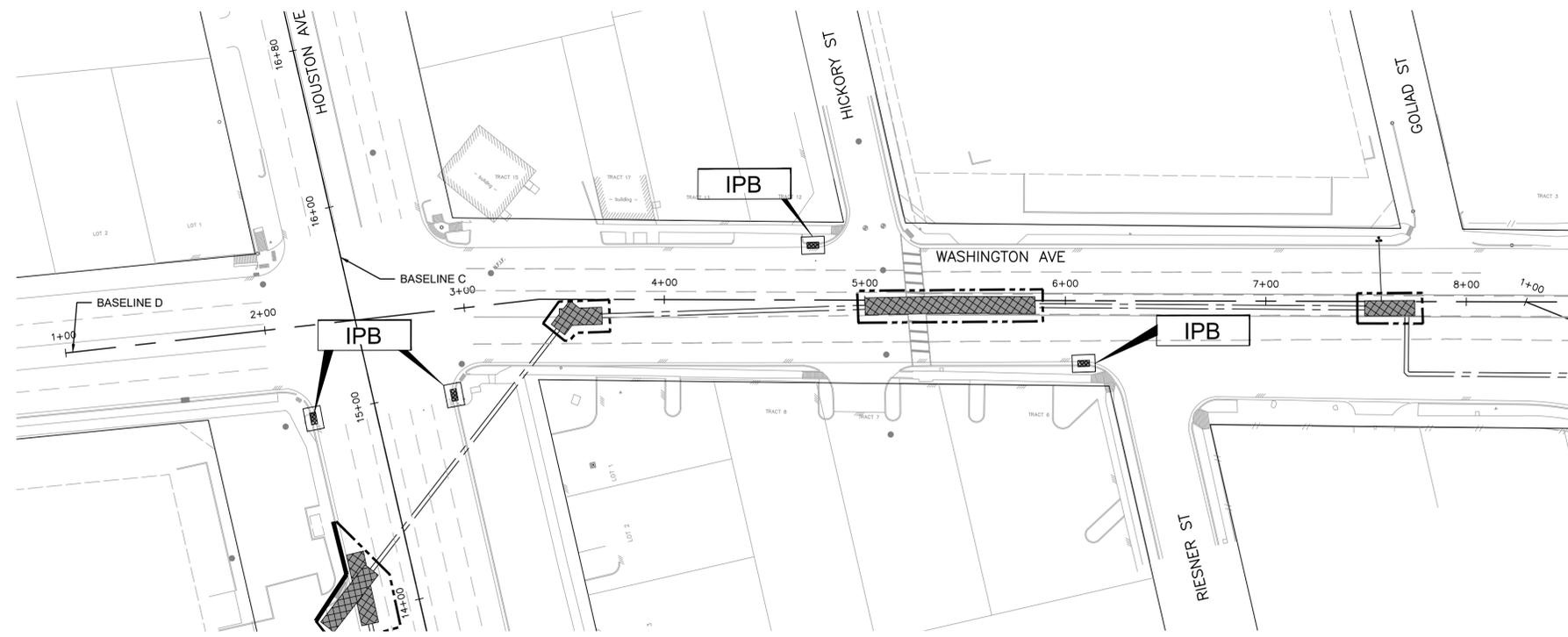
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
 SITE 4 & 5  
**STORM WATER POLLUTION PREVENTION PLAN - 4**

SWPPP SHEET: 5 OF 14	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 170 OF 190	

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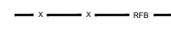
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0' 20' 40' 80'  
SCALE: 1"=40'

LEGEND:

-  HAY/SAND FILLED TUBULAR SOCKS (TS)
-  REINFORCED FILTER FABRIC BARRIER (RFB)
-  INLET PROTECTION BASKET
-  INLET PROTECTION BARRIER
-  TRENCH DRAIN INLET PROTECTION BASKET

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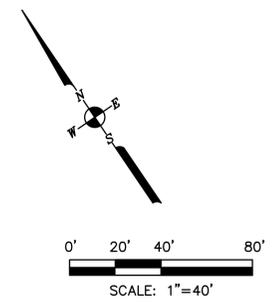
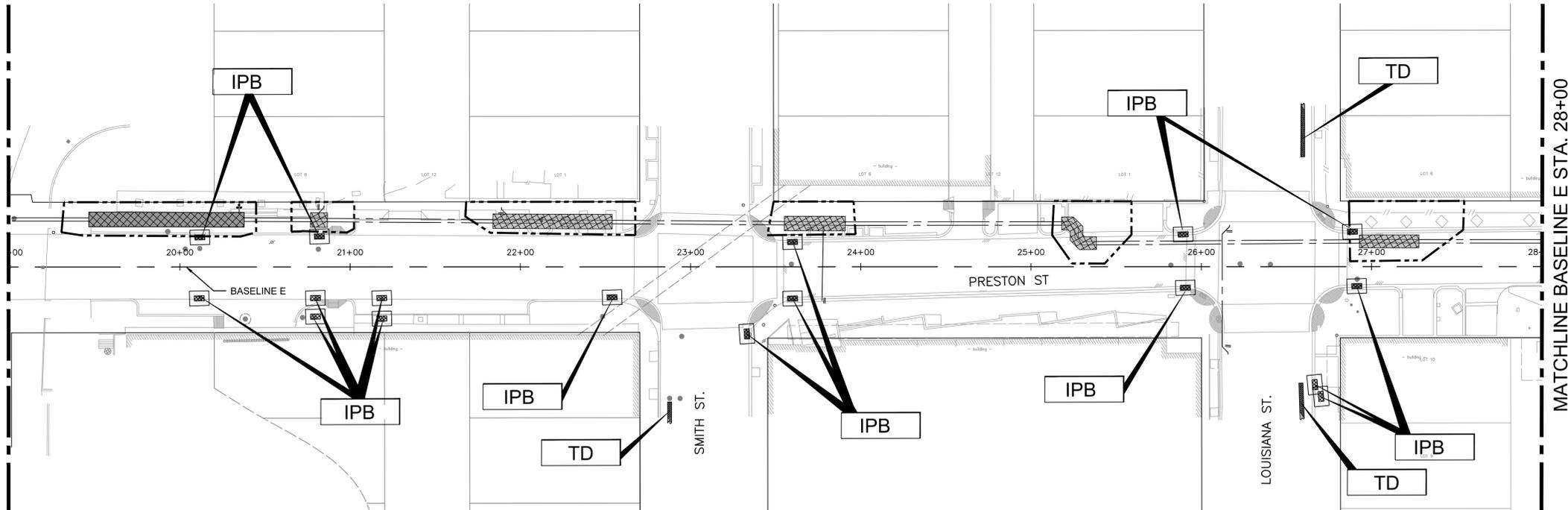
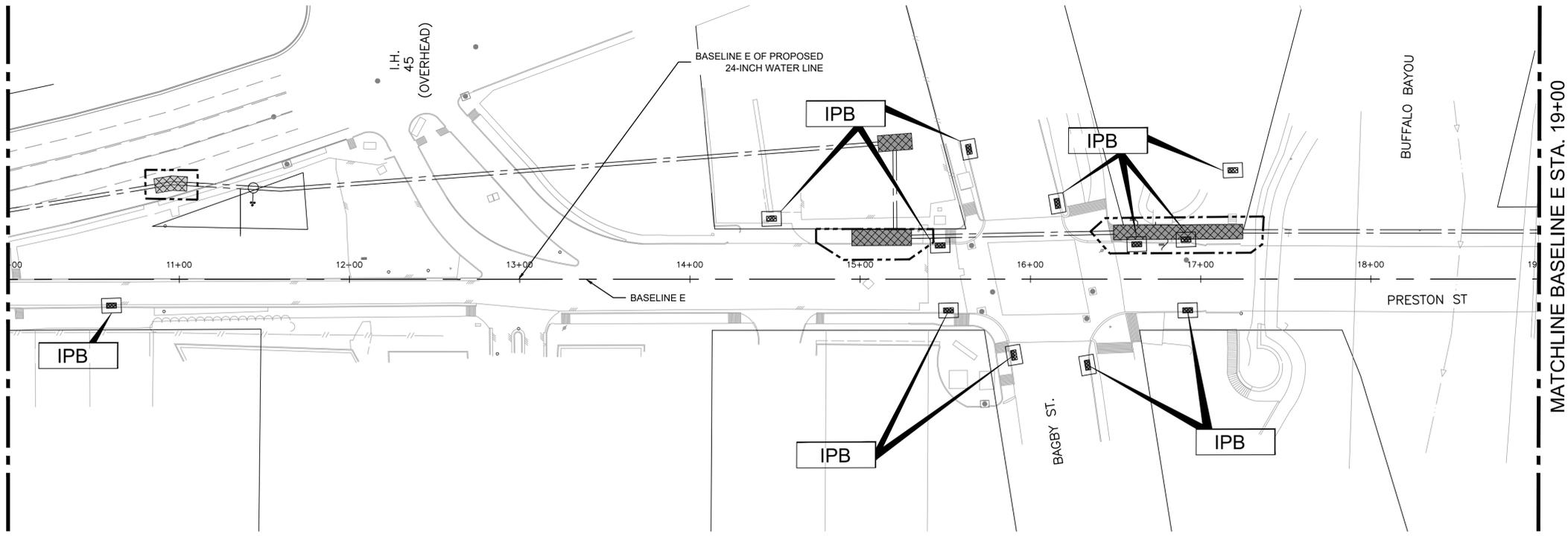
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
SITE 4 & 5  
**STORM WATER POLLUTION PREVENTION PLAN - 5**

SWPPP SHEET: 6 OF 14	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER	
S-000701-0043-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 171 OF 190	

MATCHLINE BASELINE E STA. 10+00  
SEE SWPPP SHEET 6

MATCHLINE BASELINE E STA. 19+00  
SEE THIS SHEET



LEGEND:

	HAY/SAND FILLED TUBULAR SOCKS (TS)
	REINFORCED FILTER FABRIC BARRIER
	INLET PROTECTION BASKET
	INLET PROTECTION BARRIER
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<p><b>KUO &amp; ASSOCIATES</b> 10300 Westoffice Dr., Suite 800 Houston, TX 77042 Tel: (713) 975-8769 Fax: (713) 975-9929 www.kuoassociates.com Texas Firm Registration No. F-4579</p>	<p><b>ISANI</b> 10449 Westoffice Dr., Houston, TX 77042 Tel: (713) 747-2399 Texas Firm Registration No. F- 4575</p>
	<p>SURVEYED BY: Kuo &amp; Associates, LLC. C.O.H Field Book P-</p>

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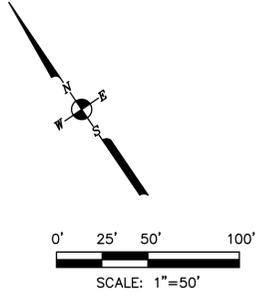
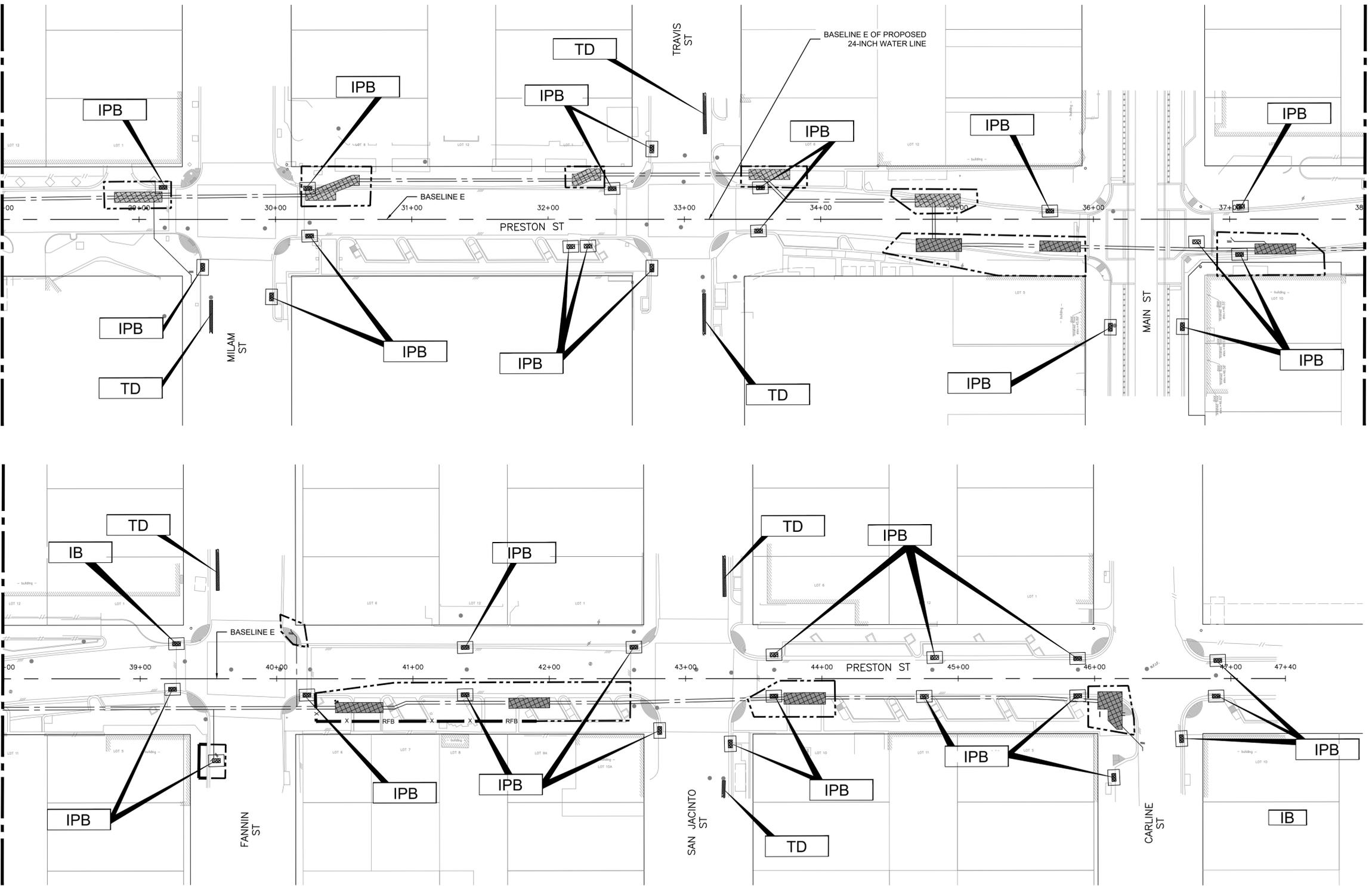
**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD  
**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**  
SITE 4 & 5  
**STORM WATER POLLUTION PREVENTION PLAN - 6**

SWPPP SHEET: 7 OF 14	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER	
S-000701-0043-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 172 OF 190	

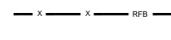
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SEE SWPPP SHEET 7

MATCHLINE BASELINE E STA. 38+00  
SEE THIS SHEET

MATCHLINE BASELINE E STA. 38+00  
SEE THIS SHEET



LEGEND:

-  HAY/SAND FILLED TUBULAR SOCKS (TS)
-  REINFORCED FILTER FABRIC BARRIER
-  INLET PROTECTION BASKET
-  INLET PROTECTION BARRIER
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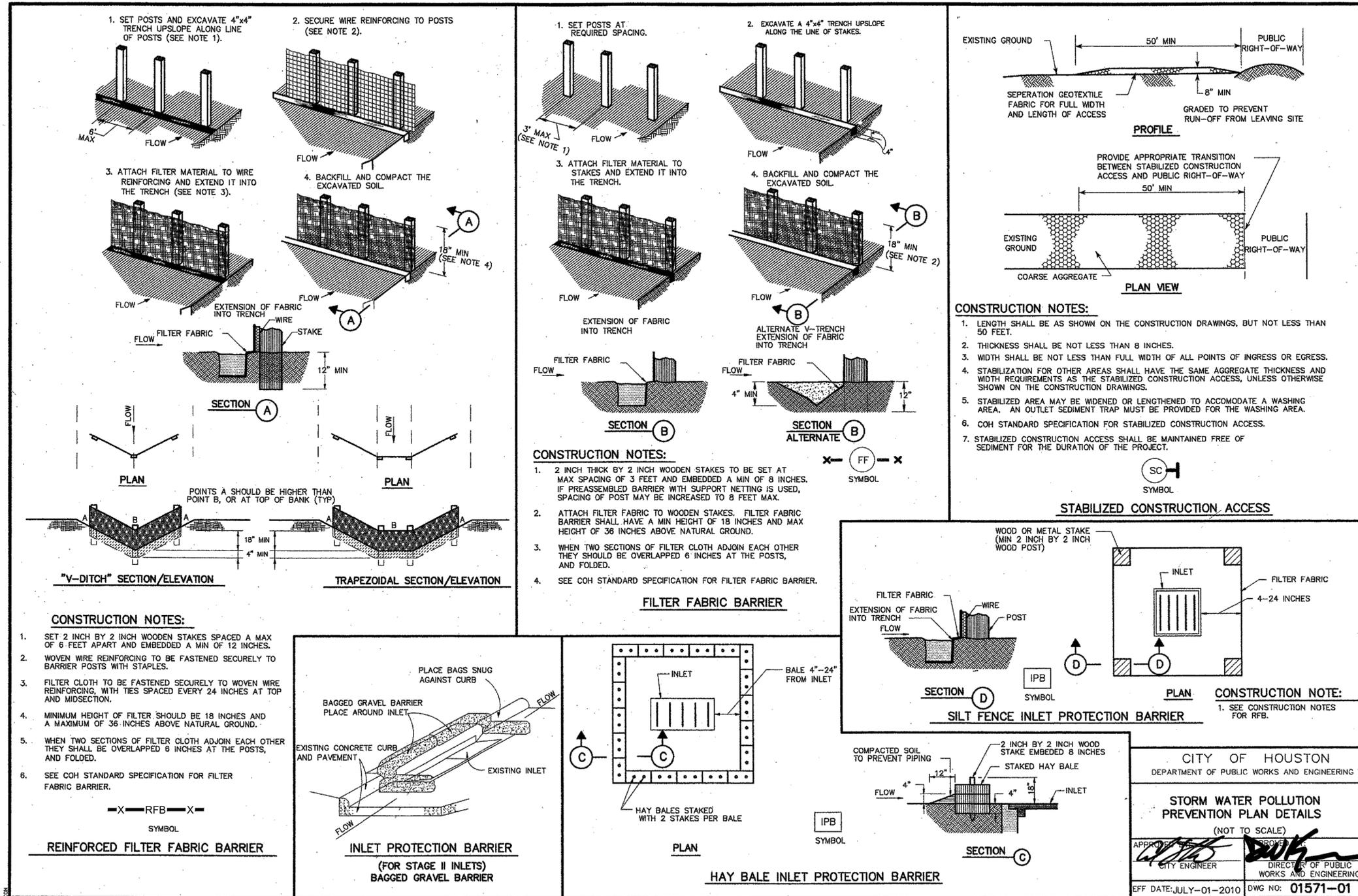
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SWPPP SHEET: 8 OF 14	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 173 OF 190	



CITY OF HOUSTON  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS  
(NOT TO SCALE)

APPROVED: [Signature] CITY ENGINEER  
APPROVED: [Signature] DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY-01-2010 DWG NO: 01571-01

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HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4

SWPPP DETAIL - 1

SWPPP SHEET: 9 OF 14

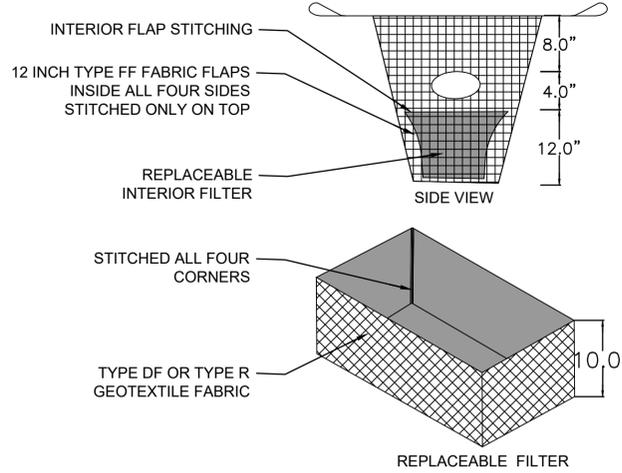
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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 174 OF 190	

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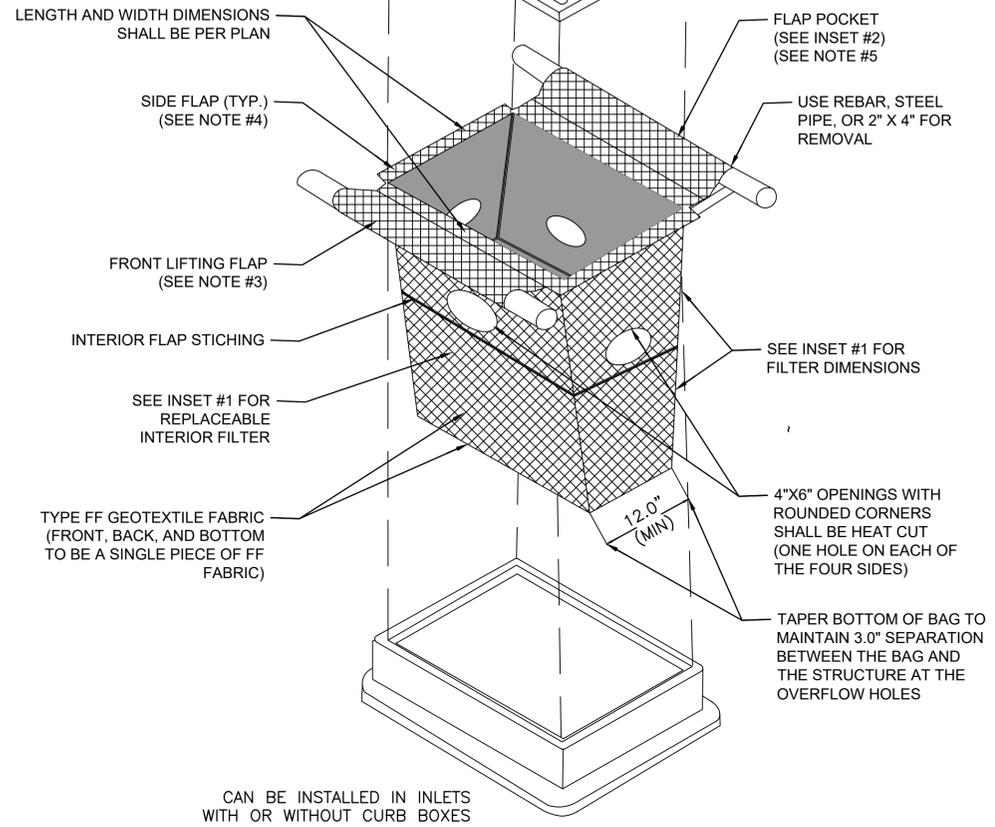
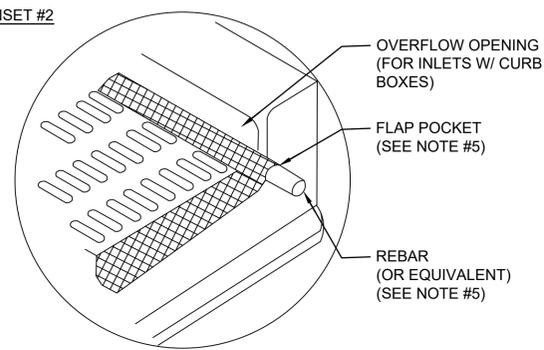
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**INSET #1**



**INSET #2**



CAN BE INSTALLED IN INLETS WITH OR WITHOUT CURB BOXES

**NOTES:**

1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE. MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENING TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC TYPE FF FOR FLAPS, TOP AND BOTTOM OF OUTSIDE OF FILTER BAG, FRONT, BACK AND BOTTOM OF FILTER BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGER ENOUGH TO ACCEPT WOOD 2"x4". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.

**MAINTENANCE NOTES:**

1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.

**1 INLET PROTECTION BASKET DETAILS (IB)**  
SCALE: NTS

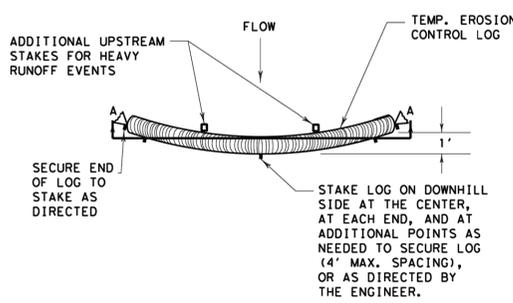
**STORM WATER POLLUTION PREVENTION NOTES:**

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG PROJECT LIMITS AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND ENVIRONMENTAL CLEAN OUTS EVENTUALLY POLLUTING THE RECEIVING STORM. CONTRACTOR TO MAKE SURE APPROPRIATE STORM QUALITY MEASURES ARE TAKEN.
2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON APRON PAVEMENTS SHALL BE SWEEPED BACK INTO THE EXCAVATED AREA.
3. CONTRACTOR SHALL CLEAN UP THE EXISTING PAVEMENT, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FROM THE EXCAVATED AREA.
4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.
5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.
  - DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
  - AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
  - STRUCTURAL CONTROL MEASURES.
  - LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.
6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING BOX CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES.
7. EROSION CONTROL MEASURES NEED TO BE COORDINATED WITH PHASING. ADDITIONAL EROSION CONTROL MEASURES BEYOND WHAT IS SHOWN ON THE PLANS WILL BE REQUIRED ON THE CONTRACTORS OPERATIONAL NEEDS AND BASED ON WORK AREA.

<p><b>KUO &amp; ASSOCIATES</b> 10300 Westoffice Dr., Suite 800 Houston, TX 77042 Tel: (713) 975-8769 Fax: (713) 975-9929 www.kuasociates.com Texas Firm Registration No. F-4579</p>	<p>INTERIM REVIEW ONLY "THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RAM GULIANI, P.E. 101094 ON 12/19/2025. IT IS NOT TO BE USED FOR CONSTRUCTION"</p>
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<p>MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4</p>	
<p>SWPPP DETAIL - 2</p>	
<p>SWPPP SHEET: 10 OF 14</p>	
<p>WBS NUMBER S-000701-0043-4</p>	<p>FOR CITY OF HOUSTON USE ONLY</p>
<p>DRAWING SCALE N/A</p>	
<p>CITY OF HOUSTON PM MARTIN MATHEW, ENV SP</p>	
<p>SHEET NO. 175 OF 190</p>	

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DATE: FILE:



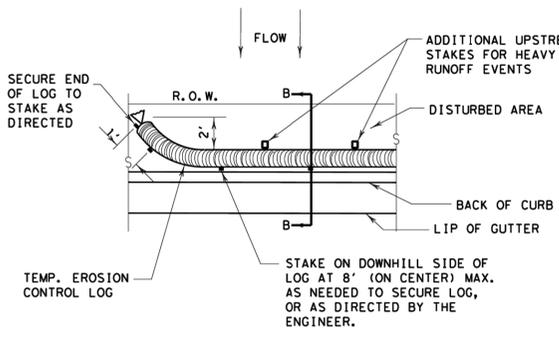
**PLAN VIEW**

ADDITIONAL UPSTREAM STAKES FOR HEAVY RUNOFF EVENTS

TEMP. EROSION CONTROL LOG

SECURE END OF LOG TO STAKE AS DIRECTED

STAKE LOG ON DOWNHILL SIDE AT THE CENTER, AT EACH END, AND AT ADDITIONAL POINTS AS NEEDED TO SECURE LOG (4' MAX. SPACING), OR AS DIRECTED BY THE ENGINEER.



**PLAN VIEW**

ADDITIONAL UPSTREAM STAKES FOR HEAVY RUNOFF EVENTS

SECURE END OF LOG TO STAKE AS DIRECTED

R. O. W.

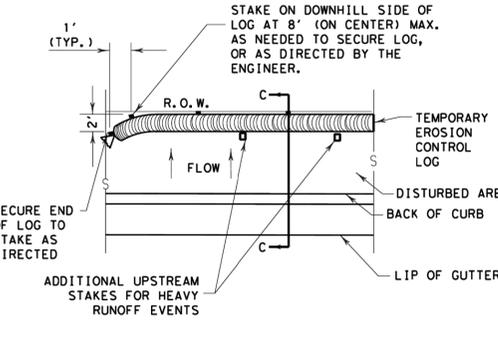
DISTURBED AREA

BACK OF CURB

LIP OF GUTTER

TEMP. EROSION CONTROL LOG

STAKE ON DOWNHILL SIDE OF LOG AT 8' (ON CENTER) MAX. AS NEEDED TO SECURE LOG, OR AS DIRECTED BY THE ENGINEER.



**PLAN VIEW**

STAKE ON DOWNHILL SIDE OF LOG AT 8' (ON CENTER) MAX. AS NEEDED TO SECURE LOG, OR AS DIRECTED BY THE ENGINEER.

1' (TYP.)

R. O. W.

TEMPORARY EROSION CONTROL LOG

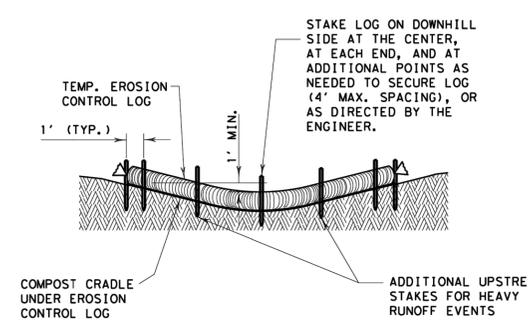
DISTURBED AREA

BACK OF CURB

LIP OF GUTTER

SECURE END OF LOG TO STAKE AS DIRECTED

ADDITIONAL UPSTREAM STAKES FOR HEAVY RUNOFF EVENTS



**SECTION A-A**

EROSION CONTROL LOG DAM

CL-D

TEMP. EROSION CONTROL LOG

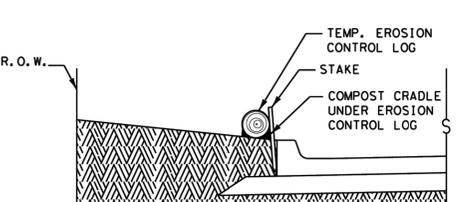
1' (TYP.)

1' MIN.

STAKE LOG ON DOWNHILL SIDE AT THE CENTER, AT EACH END, AND AT ADDITIONAL POINTS AS NEEDED TO SECURE LOG (4' MAX. SPACING), OR AS DIRECTED BY THE ENGINEER.

COMPOST CRADLE UNDER EROSION CONTROL LOG

ADDITIONAL UPSTREAM STAKES FOR HEAVY RUNOFF EVENTS



**SECTION B-B**

EROSION CONTROL LOG AT BACK OF CURB

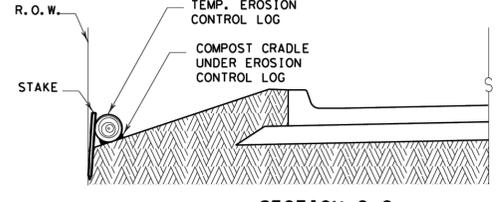
CL-BOC

R. O. W.

TEMP. EROSION CONTROL LOG

STAKE

COMPOST CRADLE UNDER EROSION CONTROL LOG



**SECTION C-C**

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

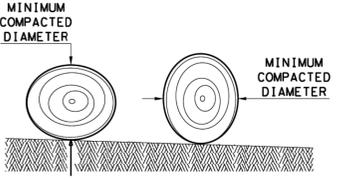
CL-ROW

R. O. W.

TEMP. EROSION CONTROL LOG

COMPOST CRADLE UNDER EROSION CONTROL LOG

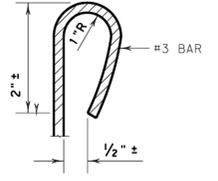
STAKE



**DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS**

MINIMUM COMPACTED DIAMETER

MINIMUM COMPACTED DIAMETER



**REBAR STAKE DETAIL**

#3 BAR

2" ±

1" R

1/2" ±

**SEDIMENT BASIN & TRAP USAGE GUIDELINES**

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

**Log Traps:** The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

**GENERAL NOTES:**

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

- LEGEND**
- CL-D EROSION CONTROL LOG DAM
  - CL-BOC EROSION CONTROL LOG AT BACK OF CURB
  - CL-ROW EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
  - CL-SST EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
  - CL-SSL EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
  - CL-DI EROSION CONTROL LOG AT DROP INLET
  - CL-CI EROSION CONTROL LOG AT CURB INLET
  - CL-GI EROSION CONTROL LOG AT CURB & GRATE INLET

SHEET 1 OF 3

**TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES**

**EROSION CONTROL LOG**

**EC(9)-16**

FILE: ec916	DN: TxDOT	CK: KM	DR: LS/PT	EX: LS
TXDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY	SHEET NO.

**KUO & ASSOCIATES**  
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**CITY OF HOUSTON**

HOUSTON PUBLIC WORKS STANDARD

**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**

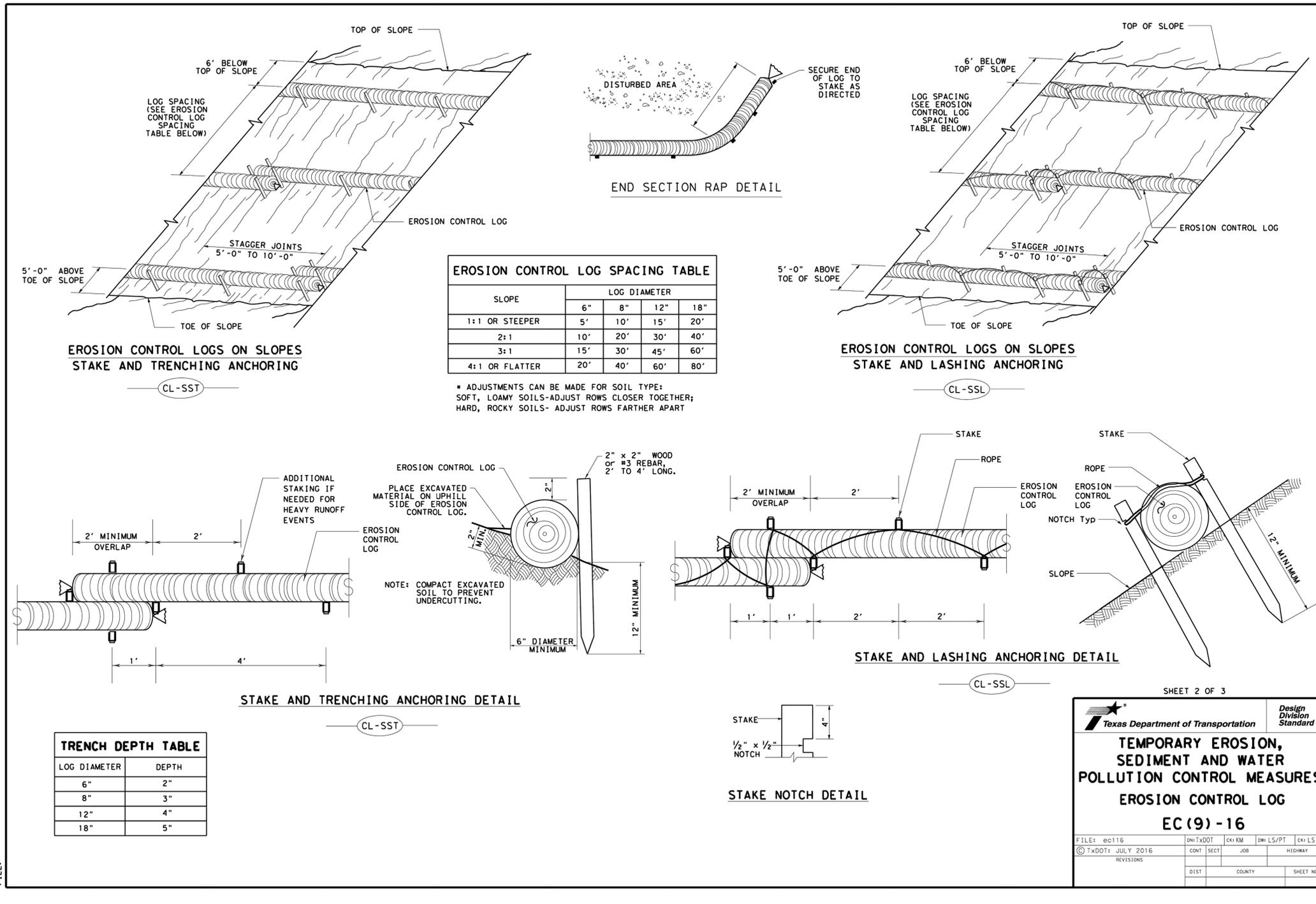
**SWPPP DETAIL - 3**

SWPPP SHEET: 11 OF 14

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 176 OF 190	

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DATE:  
FILE:



SHEET 2 OF 3

Design Division Standard

**TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES**

**EROSION CONTROL LOG**

**EC(9)-16**

FILE: ec116	DN: TxDOT	CK: KM	DN: LS/PT	CK: LS
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REVISIONS	DIST	COUNTY	SHEET NO.	

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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**

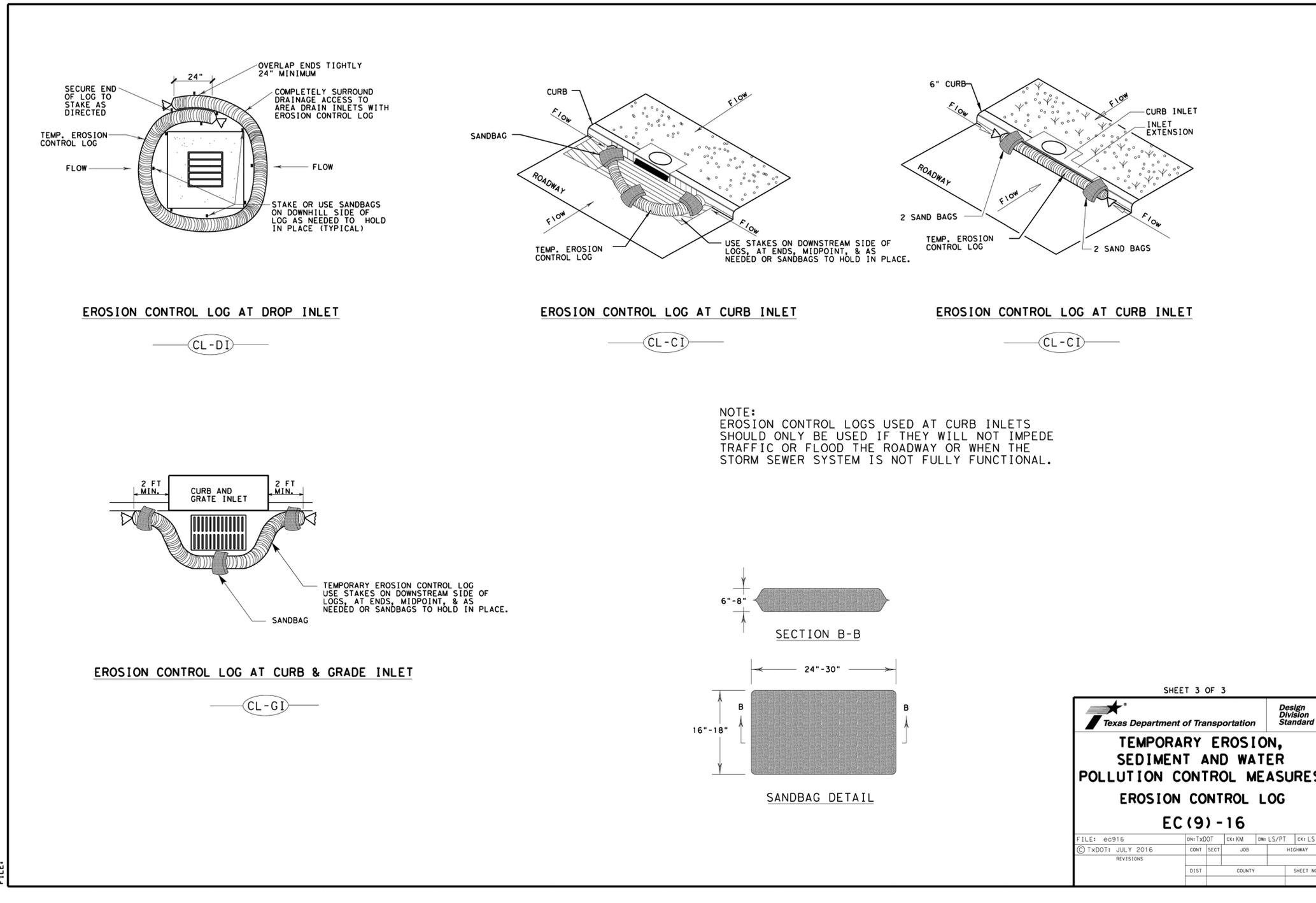
**SWPPP DETAIL - 4**

SWPPP SHEET: 12 OF 14

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S-000701-0043-4	
DRAWING SCALE	
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CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 177 OF 190	

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DATE:  
FILE:



SHEET 3 OF 3

		Design Division Standard
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b>		
<b>EROSION CONTROL LOG</b>		
<b>EC (9) - 16</b>		
FILE: ec916	DN: TxDOT	CK: KM
© TxDOT: JULY 2016	CONT	SECT
REVISIONS	JOB	HIGHWAY
DIST	COUNTY	SHEET NO.

<b>KUO &amp; ASSOCIATES</b> Consulting Engineers & Surveyors 10300 Westoffice Dr., Suite 800 Houston, TX 77042 Tel: (713) 975-8769 Fax: (713) 975-9920 www.kuasociates.com Texas Firm Registration No. F-4579	<b>ISANI</b> Civil Design Engineers 10448 Westoffice Dr., Houston, TX 77042 Tel: (713) 747-2399 Texas Firm Registration No. F-4575	INTERIM REVIEW ONLY "THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RAM GULIANI, P.E. 101094 ON 12/19/2025. IT IS NOT TO BE USED FOR CONSTRUCTION."
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS STANDARD

**MISCELLANEOUS LARGE DIAMETER WATER LINE IMPROVEMENTS - PACKAGE 4**

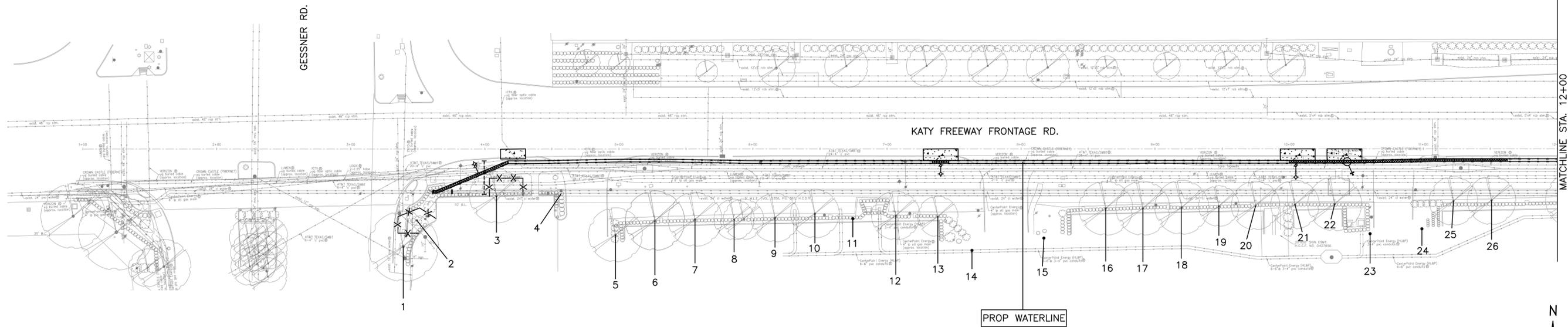
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DETAIL - 5**

SWPPP SHEET: 13 OF 14

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 178 OF 190	



NO.	DATE	REVISION	APP.

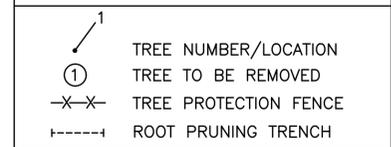


Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
<b>Trees on Katy Freeway Frontage Road</b>					
1	984 Gessner	16" Bald Cypress	Protected	Not impacted	
2	984 Gessner	6" Holly	Protected		Fence
3	984 Gessner	14" Bald Cypress	Not protected	Private tree	Root prune for fire hydrant, Fence, Bore waterline
4	984 Gessner	5" Holly	Not protected	Private tree, Not impacted	
5	984 Gessner	15" Crepe Myrtle	Not protected	Private tree, Not impacted	
6	984 Gessner	14" Holly	Not protected	Hedged, Private, Not impacted	
7	984 Gessner	13" Holly	Not protected	Hedged, Private, Not impacted	
8	984 Gessner	13" Holly	Not protected	Hedged, Private, Not impacted	
9	984 Gessner	13" Holly	Not protected	Hedged, Private, Not impacted	
10	984 Gessner	13" Holly	Not protected	Hedged, Private, Not impacted	
11	984 Gessner	13" Holly	Not protected	Hedged, Private, Not impacted	
12	984 Gessner	13" Holly	Not protected	Hedged, Private, Not impacted	
13	984 Gessner	13" Holly	Not protected	Hedged, Private, Not impacted	
14	984 Gessner	19" Magnolia	Not protected	Private tree, Not impacted	
15	984 Gessner	16" Magnolia	Not protected	Private tree, Not impacted	
16	984 Gessner	13" Holly	Not protected	Hedged, Trunk scars, Private, Not impacted	
17	984 Gessner	14" Holly	Not protected	Hedged, Private, Not impacted	
18	984 Gessner	15" Holly	Not protected	Hedged, Private, Not impacted	
19	984 Gessner	13" Holly	Not protected	Hedged, Private, Not impacted	
20	984 Gessner	12" Holly	Not protected	Hedged, Private, Not impacted	
21	984 Gessner	14" Holly	Not protected	Hedged, Private, Not impacted	
22	984 Gessner	14" Holly	Not protected	Hedged, Private, Not impacted	
23	984 Gessner	11" Crepe Myrtle	Not protected	Private tree, Not impacted	
24	984 Gessner	9" Crepe Myrtle	Not protected	Private tree, Not impacted	
25	984 Gessner	19" Holly	Not protected	Hedged, Private, Not impacted	
26	984 Gessner	15" Holly	Not protected	Hedged, Private, Not impacted	

**NOTE:**

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**TREE PRESERVATION PLAN LEGEND**



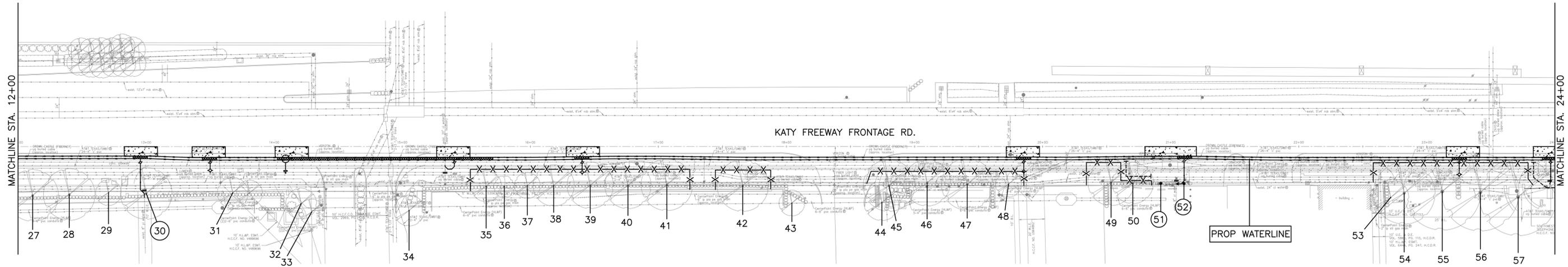
**C.N. Koehl**  
 Urban Forestry, Inc.  
 210 Stone Bush Ct. • Katy, Texas 77493  
 281-391-0022 ckoehl@koehlorbanforestry.com

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 TX FIRM NO.: F-4578

SURVEYED BY:  
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 FB NO. 000000

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4  
 TREE PROTECTION PLAN  
 SHEET 1 OF 11

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 180 OF 190	

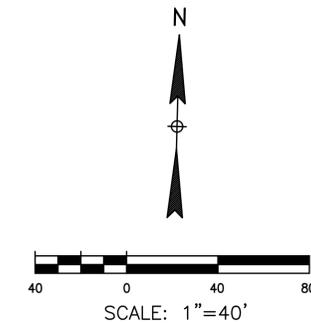
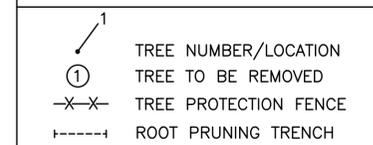


Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
<b>Trees on Katy Freeway Frontage Road</b>					
27	984 Gessner	15" Holly	Not protected	Hedged, Private, Not impacted	
28	984 Gessner	15" Holly	Not protected	Hedged, Private, Not impacted	
29	984 Gessner	15" Holly	Not protected	Hedged, Private, Not impacted	
30	984 Gessner	15" Holly	Not protected	Remove for wet connection	Remove no replacement required
31	984 Gessner	7" Crepe Myrtle	Not protected	Private tree, Not impacted	
32	984 Gessner	8" Crepe Myrtle	Not protected	Private tree, Not impacted	
33	984 Gessner	6" Crepe Myrtle	Not protected	Private tree, Not impacted	
34	900 Memorial City Mall	7" Crepe Myrtle	Not protected	Private tree, Not impacted	
35	900 Memorial City Mall	8" Crepe Myrtle	Not protected	Private tree	Fence, Bore waterline
36	900 Memorial City Mall	6" Crepe Myrtle	Not protected	Private tree	Fence, Bore waterline
37	900 Memorial City Mall	8" Crepe Myrtle	Not protected	Private tree	Fence, Bore waterline
38	900 Memorial City Mall	13" Holly	Not protected	Private tree	Fence, Bore waterline
39	900 Memorial City Mall	15" Holly	Not protected	Private tree	Fence, Bore waterline
40	900 Memorial City Mall	13" Holly	Not protected	Private tree	Fence, Bore waterline
41	900 Memorial City Mall	15" Holly	Not protected	Private tree	Fence, Bore waterline
42	900 Memorial City Mall	16" Holly	Not protected	TXDOT ROW	Fence, Bore waterline
43	900 Memorial City Mall	6" Crepe Myrtle	Not protected	Private tree, Not impacted	
44	900 Memorial City Mall	9" Crepe Myrtle	Not protected	Private tree, Not impacted	
45	900 Memorial City Mall	13" Holly	Not protected	TXDOT ROW	Fence, Bore waterline
46	900 Memorial City Mall	13" Holly	Not protected	TXDOT ROW	Fence, Bore waterline
47	900 Memorial City Mall	15" Holly	Not protected	TXDOT ROW	Fence, Bore waterline
48	900 Memorial City Mall	7" Holly	Not protected	TXDOT ROW	Fence, Bore waterline
49	9829 Katy Fwy	11" Holly	Not protected	TXDOT ROW	Fence, Bore waterline
50	9829 Katy Fwy	10" Holly	Not protected	TXDOT ROW	Root prune for fire hydrant, Clearance prune, Fence
51	9829 Katy Fwy	7" Holly	Not protected	TXDOT ROW, Remove for ts&v	Remove no replacement required
52	9829 Katy Fwy	7" Holly	Not protected	TXDOT ROW, Remove for ts&v	Remove no replacement required
53	9821 Katy Fwy	11" Holly	Not protected	Private tree	Fence, Bore waterline
54	9821 Katy Fwy	21" Live Oak	Not protected	Private tree	Fence, Bore waterline
55	9821 Katy Fwy	20" Live Oak	Not protected	Private tree	Fence, Bore waterline
56	9821 Katy Fwy	22" Live Oak	Not protected	Private tree	Fence, Bore waterline
57	9821 Katy Fwy	27" Live Oak	Not protected	Private tree	Root prune for fire hydrant, Fence, Bore waterline, Clearance prune

**NOTE:**

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**TREE PRESERVATION PLAN LEGEND**



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 281-391-0022 ckoehl@koehlurbanforestry.com

APPROVED:

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 TX FIRM NO.: F-4578

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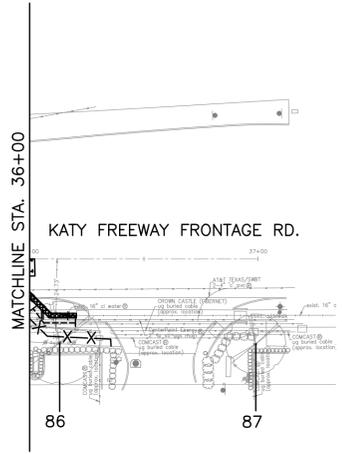
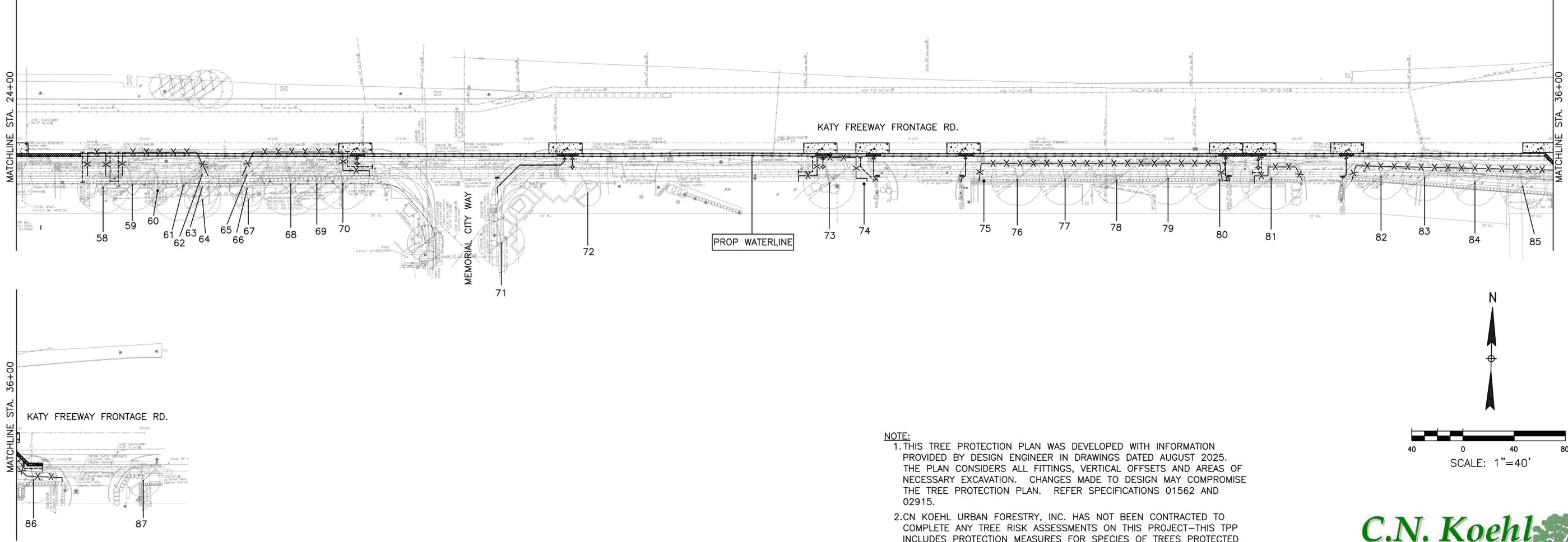
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4

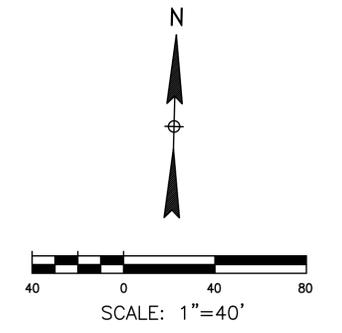
TREE PROTECTION PLAN

SHEET 2 OF 11

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 181 OF 190	



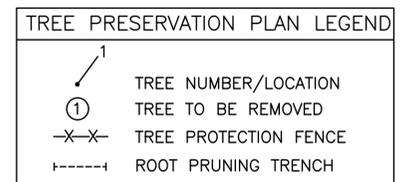
NO.	DATE	REVISION	APP.



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  4. THE CONTRACTOR'S ARBORIST WILL MARK LOCATIONS OF TREES TO BE PLANTED AND OBTAIN APPROVAL BY CITY ENGINEER AND CITY FORESTER BEFORE PURCHASING OR EXCAVATING PLANTING HOLE OF EACH TREE.

**C.N. Koehl**  
 Urban Forestry, Inc.  
 210 Stone Bush Ct. • Katy, Texas 77493  
 281-391-0022 ckoehl@koehlorbanforestry.com

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
<b>Trees on Katy Freeway Frontage Road</b>					
58	9811 Katy Fwy	21" Live Oak	Not protected	Private tree	Root prune for fire hydrant, Fence, Bore waterline, Clearance prune
59	9811 Katy Fwy	18" Live Oak	Not protected	Private tree	Root prune for fire hydrant, Fence, Bore waterline
60	9811 Katy Fwy	17" Live Oak	Not protected	Private tree	Fence, Bore waterline
61	9811 Katy Fwy	21" Live Oak	Not protected	Private tree	Fence, Bore waterline
62	9811 Katy Fwy	11" Crepe Myrtle	Not protected	TXDOT ROW	Fence, Bore waterline
63	9811 Katy Fwy	11" Crepe Myrtle	Not protected	Private tree	Fence, Bore waterline
64	9811 Katy Fwy	11" Crepe Myrtle	Not protected	Private tree	Fence, Bore waterline
65	9811 Katy Fwy	11" Crepe Myrtle	Not protected	TXDOT ROW	Fence, Bore waterline
66	9811 Katy Fwy	11" Crepe Myrtle	Not protected	Private tree	Fence, Bore waterline
67	9811 Katy Fwy	11" Crepe Myrtle	Not protected	Private tree	Fence, Bore waterline
68	9811 Katy Fwy	23" Live oak	Not protected	Private tree	Fence, Bore waterline
69	9811 Katy Fwy	18" Live Oak	Not protected	Private tree	Fence, Bore waterline
70	9811 Katy Fwy	16" Live Oak	Not protected	Private tree	Root prune for fire hydrant, Fence, Bore waterline
71	9805 Katy Fwy	13" Live Oak	Protected	Not impacted	
72	9805 Katy Fwy	13" Live Oak	Not protected	Private tree, Not impacted	
73	9805 Katy Fwy	16" Live Oak	Not protected	Private tree	Root prune for fire hydrant, Fence, Bore waterline, Clearance prune
74	9805 Katy Fwy	15" Live Oak	Not protected	Private tree	Root prune for fire hydrant, Fence, Bore waterline, Clearance prune
75	9799 Katy Fwy	8' Palm	Not protected	TXDOT ROW	Fence, Bore waterline
76	9799 Katy Fwy	18" Live Oak	Not protected	TXDOT ROW	Fence, Bore waterline
77	9799 Katy Fwy	16" Live Oak	Not protected	TXDOT ROW	Fence, Bore waterline
78	9799 Katy Fwy	15" Live Oak	Not protected	TXDOT ROW	Fence, Bore waterline
79	9799 Katy Fwy	15" Live Oak	Not protected	TXDOT ROW	Fence, Bore waterline
80	9799 Katy Fwy	18" Live Oak	Not protected	TXDOT ROW	Root prune for fire hydrant, Fence, Bore waterline, Clearance prune
81	9799 Katy Fwy	17" Live Oak	Not protected	TXDOT ROW	Root prune for fire hydrant, Fence, Bore waterline, Clearance prune
82	9799 Katy Fwy	12" Live Oak	Not protected	TXDOT ROW	Fence, Bore waterline
83	9799 Katy Fwy	11" Live Oak	Not protected	TXDOT ROW	Fence, Bore waterline
84	9799 Katy Fwy	11" Live Oak	Not protected	TXDOT ROW	Fence, Bore waterline
85	9799 Katy Fwy	11" Live Oak	Not protected	Private tree	Fence, Bore waterline
86	9799 Katy Fwy	10" Live Oak	Not protected	Private tree	Root prune, Fence, Clearance prune
87	9753 Katy Fwy	10" Live Oak	Not protected	Private tree, Not impacted	



APPROVED:

10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578

SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. 000000

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

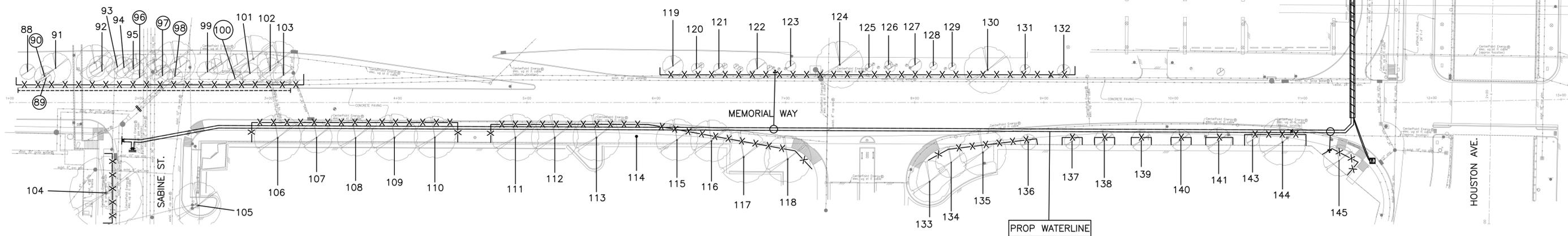
MISCELLANEOUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4

TREE PROTECTION PLAN

SHEET 3 OF 11

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 182 OF 190	

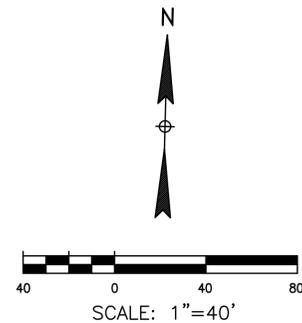
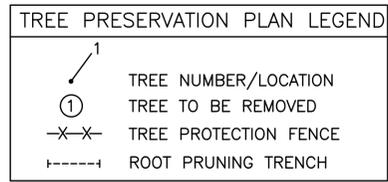
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Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
<b>Trees on Memorial Way</b>					
88	Median	6" Sweetgum	Protected	60% dieback	Root prune for TCP, Fence, Clearance prune
89	Median	6" Sweetgum	Protected	Remove for TCP	Remove tree, Provide 6" in replacement/mitigation
90	Median	11" Sweetgum	Protected	Remove for TCP	Remove tree, Provide 11" in replacement/mitigation
91	Median	12" Sweetgum	Protected		Root prune for TCP, Fence, Clearance prune
92	Median	10" Bald Cypress	Protected		Root prune for TCP, Fence, Clearance prune
93	Median	8" Bald Cypress	Protected		Root prune for TCP, Fence, Clearance prune
94	Median	8" Bald Cypress	Protected		Root prune for TCP, Fence, Clearance prune
95	Median	6" Sweetgum	Protected		Root prune for TCP, Fence, Clearance prune
96	Median	10" Pine	Protected	Remove for TCP	Remove tree, Provide 10" in replacement/mitigation
97	Median	8" Pine	Protected	Remove for TCP	Remove tree, Provide 8" in replacement/mitigation
98	Median	7" Pine	Protected	Remove for TCP	Remove tree, Provide 7" in replacement/mitigation
99	Median	9" Pine	Protected		Root prune for TCP, Fence, Clearance prune
100	Median	5" Sweetgum	Protected	Remove for TCP	Remove tree, Provide 5" in replacement/mitigation
101	Median	9" Bald Cypress	Protected		Root prune for TCP, Fence, Clearance prune
102	Median	6" Bald Cypress	Protected		Root prune for TCP, Fence, Clearance prune
103	Median	7" Sweetgum	Protected		Root prune for TCP, Fence, Clearance prune
104	105 Sabine	28" Live Oak	Protected		Fence, Clearance prune
105	110 Sabine	10" Vitex	Not protected		
106	110 Sabine	18" Sweetgum	Protected	15% dieback	Fence, Bore waterline
107	110 Sabine	13" Sweetgum	Protected	30% dieback	Fence, Bore waterline
108	110 Sabine	17" Sweetgum	Protected	40% dieback	Fence, Bore waterline
109	110 Sabine	20" Sweetgum	Protected		Fence, Bore waterline
110	110 Sabine	14" Sweetgum	Protected	40% dieback	Fence, Bore waterline
111	110 Sabine	18" Sweetgum	Protected	60% dieback	Fence, Bore waterline
112	110 Sabine	17" Sweetgum	Protected	50% dieback	Fence, Bore waterline
113	110 Sabine	18" Sweetgum	Protected	30% dieback	Fence, Bore waterline
114	110 Sabine	14" Sweetgum	Protected	20% dieback	Fence, Bore waterline
115	110 Sabine	14" Sweetgum	Protected	20% dieback	Fence, Bore waterline
116	110 Sabine	15" Sweetgum	Protected	30% dieback	Fence, Bore waterline
117	110 Sabine	24" Sweetgum	Protected		Fence, Bore waterline
118	110 Sabine	22" Sweetgum	Protected	50% dieback	Fence, Bore waterline
119	Median	9" Sweetgum	Protected		Fence
120	Median	6" Sweetgum	Protected		Fence
121	Median	6" Sweetgum	Protected		Fence
122	Median	10" Bald Cypress	Protected		Fence
123	Median	6" Sweetgum	Protected		Fence
124	Median	12" Bald Cypress	Protected		Fence
125	Median	5" Sweetgum	Protected		Fence
126	Median	5" Sweetgum	Protected		Fence
127	Median	5" Sweetgum	Protected		Fence
128	Median	5" Sweetgum	Protected		Fence
129	Median	5" Sweetgum	Protected		Fence
130	Median	13" Bald Cypress	Protected		Fence
131	Median	6" Sweetgum	Protected		Fence
132	Median	6" Sweetgum	Protected		Fence
133	110 Sabine	15" Sweetgum	Protected	40% dieback	Fence, Bore waterline
134	110 Sabine	14" Sweetgum	Protected	40% dieback	Fence, Bore waterline
135	110 Sabine	21" Sweetgum	Protected		Fence, Bore waterline
136	110 Sabine	6" Bur Oak	Protected		Fence, Bore waterline
137	110 Sabine	7" Bur Oak	Protected		Fence, Bore waterline
138	110 Sabine	12" Bald Cypress	Protected		Fence, Bore waterline
139	110 Sabine	11" Bald Cypress	Protected		Fence, Bore waterline
140	110 Sabine	9" Bald Cypress	Protected		Fence, Bore waterline
141	110 Sabine	10" Bur Oak	Protected		Fence, Bore waterline
142	Not used				
143	110 Sabine	8" Bur Oak	Protected		Fence, Bore waterline
144	110 Sabine	17" Bald Cypress	Protected		Fence, Bore waterline
145	110 Sabine	12" Cald Cypress	Protected		Fence, Bore waterline

**NOTE:**

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**APPROVED:**

**KUO & ASSOCIATES**  
 ENGINEERING + SURVEYING  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578

SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. 000000

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

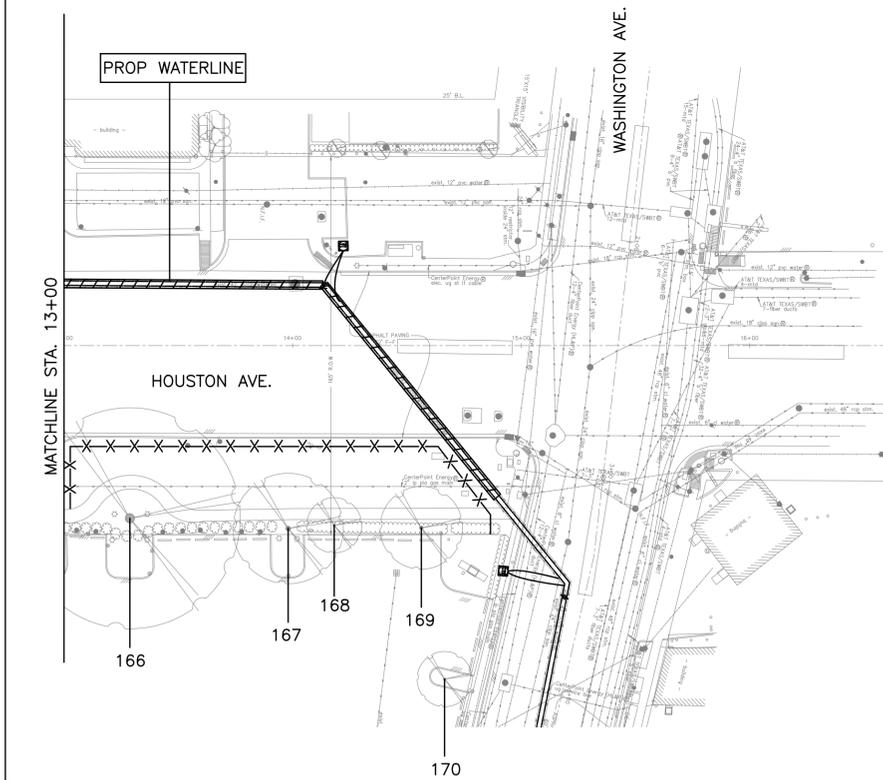
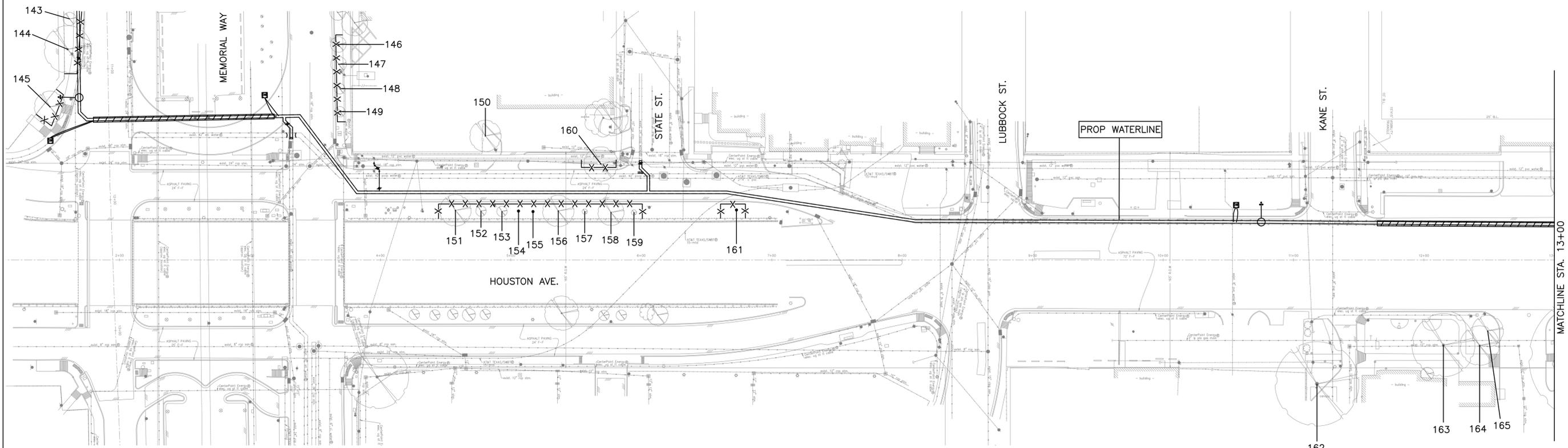
MISCELLANEOUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4

**TREE PROTECTION PLAN**

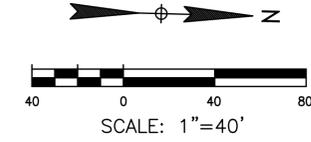
SHEET 4 OF 11

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 183 OF 190	

NO.	DATE	REVISION	APP.

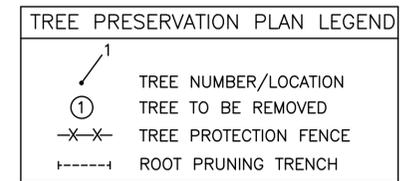


Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
<b>Trees on Houston Avenue</b>					
146	1550 N Memorial Way	6" Live Oak	Protected		Fence
147	1550 N Memorial Way	7" Live Oak	Protected		Fence
148	1550 N Memorial Way	5" Live Oak	Protected		Fence
149	1550 N Memorial Way	5" Live Oak	Protected		Fence
150	1550 N Memorial Way	27" Pecan	Corridor Tree		Clearance prune
151	Median	13" Sweetgum	Protected		Fence
152	Median	5" Cedar Elm	Protected		Fence
153	Median	5" Pine	Protected	Dead, Not impacted	
154	Median	3" Bald Cypress	Protected		Fence
155	Median	2" American Elm	Protected		Fence
156	Median	12" Sweetgum	Protected	30% dieback	Fence
157	Median	2" Live Oak	Protected	Stump Sprouts	Fence
158	Median	13" Sweetgum	Protected	70% dieback	Fence
159	Median	3" Bald Cypress	Protected		Fence
160	515 Houston	13" Sycamore	Protected	Topped by CPE	Clearance prune, Fence
161	Median	2" American Elm	Protected		Fence
162	800 Houston	32" Live Oak	Protected	Corridor tree, not impacted	
163	800 Houston	25" Live Oak	Protected	Not impacted	
164	800 Houston	18" Live Oak	Protected	Not impacted	
165	800 Houston	11" Live Oak	Protected	Not impacted	
166	800 Houston	54" Live Oak	Protected		Fence
167	800 Houston	28" Live Oak	Protected		Fence
168	800 Houston	16" Live Oak	Protected		Fence
169	800 Houston	20" Live Oak	Protected		Fence



**NOTE:**

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 281-391-0022 ckoehl@koehlurbanforestry.com

APPROVED:  
  
 10300 WESTOFFICE DR. SUITE 800  
 HOUSTON, TX 77042  
 713-975-8769  
 TX FIRM NO.: F-4578

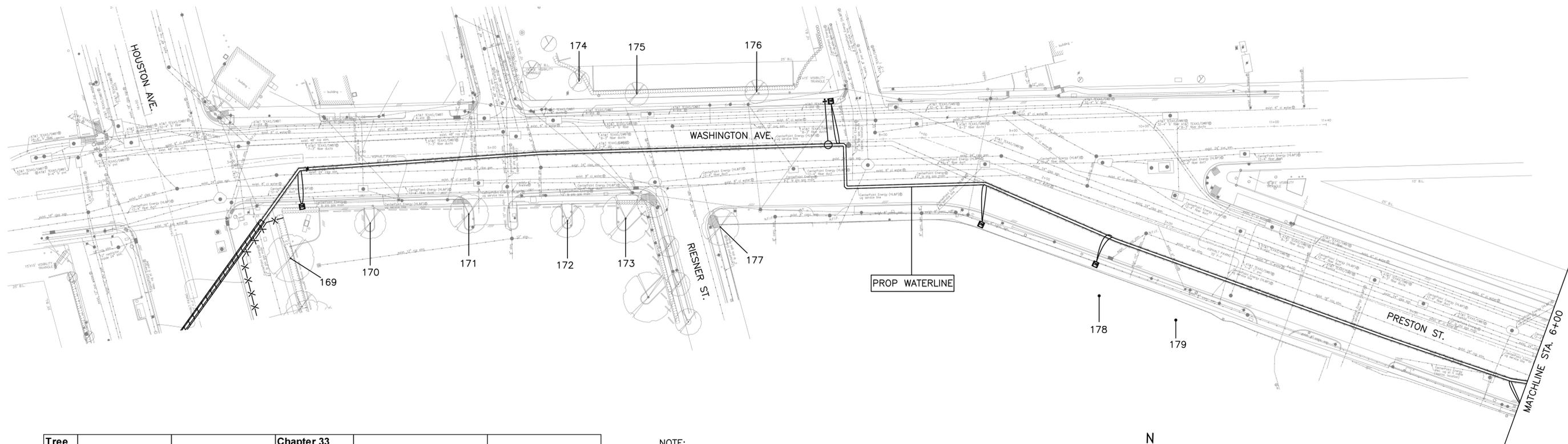
SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. 000000

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4  
**TREE PROTECTION PLAN**

SHEET 5 OF 11

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 184 OF 190	

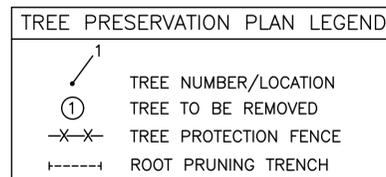
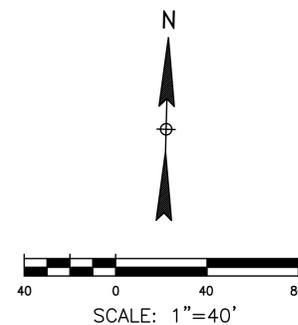
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NO.	DATE	REVISION	APP.

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
<b>Trees on Washington Avenue</b>					
170	800 Houston	11" Live Oak	Not protected	Private tree, Not impacted	
171	800 Houston	19" Live Oak	Not protected	Private tree, Not impacted	
172	800 Houston	15" Live Oak	Not protected	Private tree, Not impacted	
173	800 Houston	22" Live Oak	Not protected	Private tree, Not impacted	
174	1302 Washington	7" Lacebark Elm	Not protected	Private tree, Not impacted	
175	1302 Washington	10" Lacebark Elm	Not protected	Private tree, Not impacted	
176	1302 Washington	9" Lacebark Elm	Not protected	Private tree, Not impacted	
177	61 Riesner	7" American Elm	Not protected	Private tree, Not impacted	
<b>Trees on Preston Street</b>					
178	61 Riesner	22" Sycamore	Protected	Corridor tree, 30% dieback, Pruned by CPE, Not impacted	
179	61 Riesner	21" Sycamore	Protected	Corridor tree, 30% dieback, Pruned by CPE, Not impacted	

- NOTE:**
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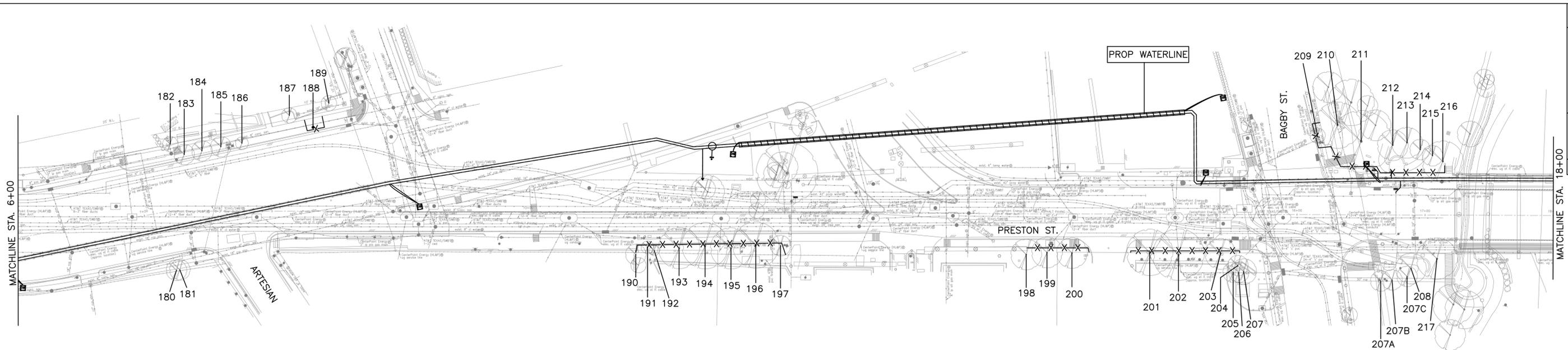
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4

TREE PROTECTION PLAN

SHEET 6 OF 11

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 185 OF 190	

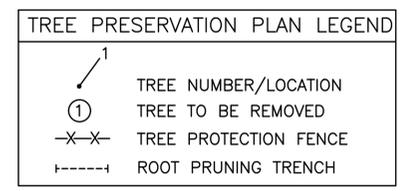


NO.	DATE	REVISION	APP.

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
<b>Trees on Preston Street</b>					
180	1000 Preston	9" Mulberry	Not protected	Private tree, Not impacted	
181	1000 Preston	8" Mulberry	Not protected	Private tree, Not impacted	
182	1002 Washington	7" Nuttal oak	Protected	Not impacted	
183	1002 Washington	5" Vitex	Not protected		
184	1002 Washington	5" Vitex	Not protected		
185	1002 Washington	5" Vitex	Not protected		
186	1002 Washington	5" Vitex	Not protected		
187	1002 Washington	8" Nuttal Oak	Protected	Not impacted	
188	1002 Washington	7" Nuttal oak	Protected		Fence
189	1002 Washington	8" Nuttal Oak	Protected	Not impacted	
190	208 Preston	10" Holly	Not protected	Private tree	
191	208 Preston	7" Pecan	Protected		Fence
192	208 Preston	6" Pecan	Protected		Fence
193	208 Preston	15" Live Oak	Protected		Clearance prune, Fence
194	208 Preston	17" Live Oak	Protected		Clearance prune, Fence
195	208 Preston	19" Live Oak	Protected		Clearance prune, Fence
196	208 Preston	18" Live Oak	Protected		Clearance prune, Fence
197	208 Preston	11" Holly	Protected		Fence
198	410 Bagby	12" Holly	Protected		Fence
199	410 Bagby	18" Live Oak	Protected		Clearance prune, Fence
200	410 Bagby	16" Live Oak	Protected		Clearance prune, Fence
201	410 Bagby	16" Live Oak	Protected		Clearance prune, Fence
202	410 Bagby	18" Live Oak	Not protected	Private tree	Clearance prune, Fence
203	410 Bagby	15" Live Oak	Not protected	Private tree	Clearance prune, Fence
204	410 Bagby	12" Japanese Blueberry	Not protected	Private tree, Not impacted	
205	410 Bagby	12" Japanese Blueberry	Not protected	Private tree, Not impacted	
206	410 Bagby	12" Japanese Blueberry	Not protected	Private tree, Not impacted	
207	410 Bagby	12" Japanese Blueberry	Not protected	Private tree, Not impacted	
207A	409 Bagby	10" Crepe Myrtle	Not protected		
207B	409 Bagby	10" Crepe Myrtle	Not protected		
207C	409 Bagby	10" Crepe Myrtle	Not protected		
208	409 Bagby	11" Crepe Myrtle	Not protected		
209	505 Bagby	9" Baldcypress	Protected		Fence
210	505 Bagby	16" Montezuma Cypress	Protected		Fence
211	505 Bagby	25" Montezuma Cypress	Protected		Fence
212	505 Bagby	9" Crepe Myrtle	Not protected		
213	505 Bagby	9" Crepe Myrtle	Not protected		
214	505 Bagby	9" Crepe Myrtle	Not protected		
215	505 Bagby	10" Crepe Myrtle	Not protected		
216	505 Bagby	14" Crepe Myrtle	Not protected		
217	409 Preston	15" Crepe Myrtle	Not protected		

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 713-975-8769  
 TX FIRM NO.: F-4578

SURVEYED BY:  
 KUO & ASSOCIATES, LLC  
 FB NO. 000000

**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

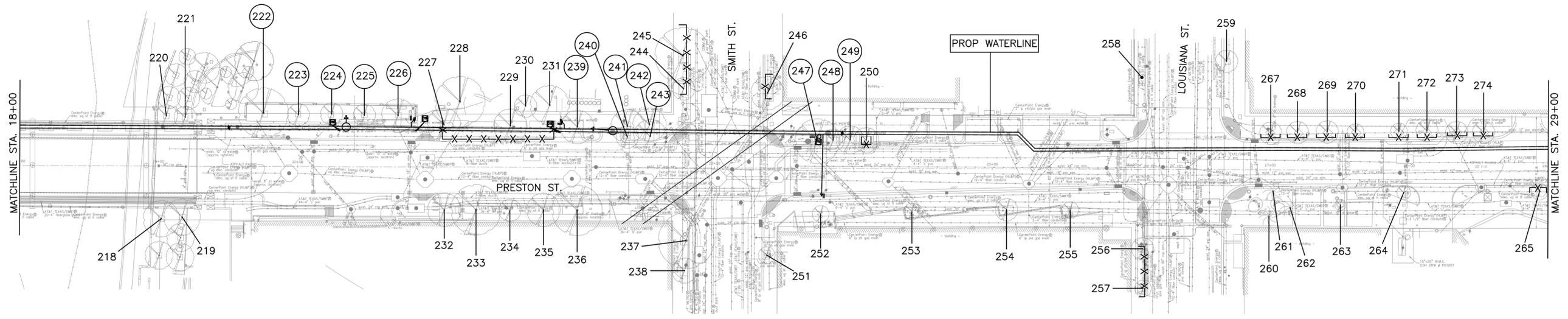
MISCELLANEOUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4

**TREE PROTECTION PLAN**

SHEET 7 OF 11

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
MARTIN MATHIEW, ENV SP	
SHEET NO. 186 OF 190	

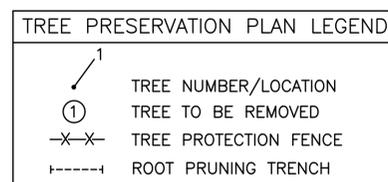
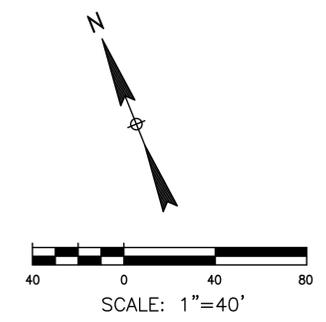
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Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
<b>Trees on Preston Street</b>					
218	510 Preston	10" Baldcypress	Protected	Not impacted	
219	510 Preston	10" Baldcypress	Protected	Not impacted	
220	515 Preston	7" Baldcypress	Protected	Not impacted	
221	515 Preston	7" Baldcypress	Protected	Not impacted	
222	515 Preston	14" Sweetgum	Protected	Remove for open cut	Remove tree, Provide 14" in mitigation
223	515 Preston	Stump			
224	515 Preston	10" Sweetgum	Protected	Remove for open cut	Remove tree, Provide 10" in mitigation
225	515 Preston	11" Sweetgum	Protected	60% dieback, Remove for open cut	Remove tree, No replacement required
226	515 Preston	13" Sweetgum	Protected	Remove for open cut	Remove tree, Provide 13" in mitigation
227	515 Preston	12" Shumard Oak	Protected		Fence, Bore waterline (slipline method)
228	515 Preston	22" Mexican Sycamore	Protected		Fence, Bore waterline (slipline method)
229	515 Preston	12" Shumard Oak	Protected		Fence, Bore waterline (slipline method)
230	515 Preston	10" Sweetgum	Protected		Fence, Bore waterline (slipline method)
231	515 Preston	15" Sweetgum	Protected		Fence, Bore waterline (slipline method)
232	510 Preston	10" Shumard Oak	Protected		Clearance prune
233	510 Preston	17" Shumard Oak	Protected	30% dieback	Clearance prune
234	510 Preston	9" Shumard Oak	Protected	50% dieback	Clearance prune
235	510 Preston	12" Shumard Oak	Protected	30% dieback	Clearance prune
236	510 Preston	16" Shumard Oak	Protected	30% dieback	Clearance prune
237	510 Preston	18" Live Oak	Protected	Not impacted	
238	510 Preston	12" Live Oak	Protected	Not impacted	
239	515 Preston	13" Shumard Oak	Protected	Remove for open cut	Remove tree, Provide 13" in mitigation
240	515 Preston	10" Baldcypress	Protected	Remove for open cut	Remove tree, Provide 10" in mitigation
241	515 Preston	13" Baldcypress	Protected	Remove for open cut	Remove tree, Provide 13" in mitigation
242	515 Preston	12" Baldcypress	Protected	Remove for open cut	Remove tree, Provide 12" in mitigation
243	515 Preston	12" Baldcypress	Protected	Remove for open cut	Remove tree, Provide 12" in mitigation
244	515 Preston	10" Live Oak	Protected		Fence
245	515 Preston	21" Live Oak	Protected		Fence
246	601 Preston	14" Live Oak	Protected	60% dieback	Fence
247	601 Preston	14" Live Oak	Protected	Remove for open cut	Remove tree, Provide 14" in mitigation
248	601 Preston	11" Live Oak	Protected	Remove for open cut	Remove tree, Provide 11" in mitigation
249	601 Preston	12" Live Oak	Protected	Remove for open cut	Remove tree, Provide 12" in mitigation
250	601 Preston	11" Live Oak	Protected		Fence, Bore waterline
251	411 Smith	6" Baldcypress	Protected	Not impacted	
252	411 Smith	8" Baldcypress	Protected	Not impacted	
253	411 Smith	6" Baldcypress	Protected	Not impacted	
254	411 Smith	9" Baldcypress	Protected	Not impacted	
255	411 Smith	8" Baldcypress	Protected	Not impacted	
256	411 Smith	8" Baldcypress	Protected		Fence
257	411 Smith	7" Baldcypress	Protected		Fence
258	601 Preston	15" Baldcypress	Protected	Not impacted	
259	777 Preston	11" Baldcypress	Protected	Not impacted	
260	401 Louisiana	15' Palm	Not protected		
261	401 Louisiana	15' Palm	Not protected		
262	401 Louisiana	15' Palm	Not protected		
263	401 Louisiana	6" Mexican Sycamore	Protected	Not impacted	
264	401 Louisiana	5" Shumard Oak	Protected	Not impacted	
265	401 Louisiana	10" Shumard Oak	Protected		Fence
266	401 Louisiana	7" Shumard Oak	Protected		Fence
267	777 Preston	9" Baldcypress	Protected		Fence
268	777 Preston	10" Baldcypress	Protected		Fence
269	777 Preston	9" Baldcypress	Protected		Fence
270	777 Preston	8" Baldcypress	Protected		Fence
271	777 Preston	9" Baldcypress	Protected		Fence
272	777 Preston	11" Baldcypress	Protected		Fence
273	777 Preston	10" Baldcypress	Protected		Fence
274	777 Preston	9" Baldcypress	Protected		Fence

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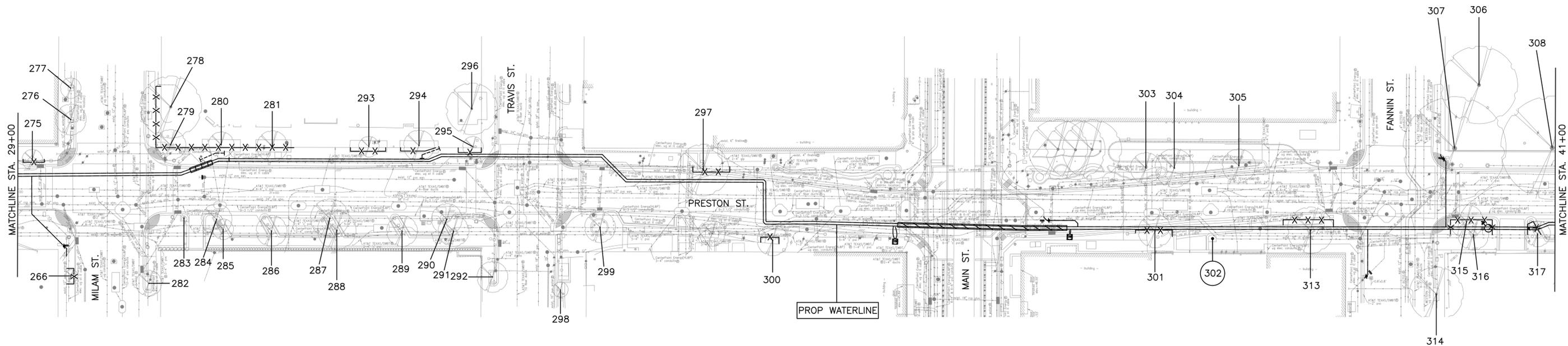
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS  
 MISCELLANEOUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4  
 TREE PROTECTION PLAN

SHEET 8 OF 11  
 FOR CITY OF HOUSTON USE ONLY

WBS NUMBER	S-000701-0043-4
DRAWING SCALE	
CITY OF HOUSTON PM	MARTIN MATHEW, ENV SP
SHEET NO.	187 OF 190

NO.	DATE	REVISION	APP.

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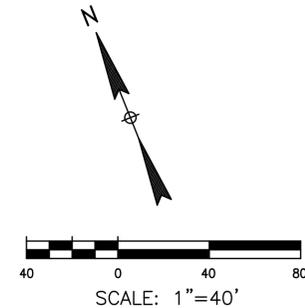
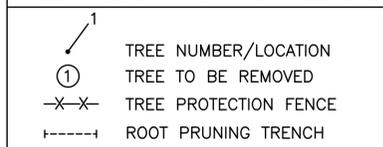


Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
<b>Trees on Preston Street</b>					
266	401 Louisiana	7" Shumard Oak	Protected		Fence
275	777 Preston	7" Baldcypress	Protected		Fence
276	777 Preston	13" Baldcypress	Protected		Fence
277	777 Preston	8" Baldcypress	Protected		Fence
278	301 Milam	28" Live Oak	Protected		Fence
279	301 Milam	11" Live Oak	Protected	40% dieback	Fence
280	301 Milam	10" Live Oak	Protected	30% dieback	Root prune, Fence, Clearance prune
281	301 Milam	14" Live Oak	Protected		Clearance prune, Fence
282	415 Milam	10" Shumard Oak	Protected	Not impacted	
283	415 Milam	3" Sycamore	Protected	Not impacted	
284	415 Milam	12" Sycamore	Protected		Clearance prune
285	415 Milam	9" Sycamore	Protected	Not impacted	
286	415 Milam	12" Sycamore	Protected	Not impacted	
287	415 Milam	14" Sycamore	Protected	Not impacted	
288	415 Milam	13" Sycamore	Protected	Not impacted	
289	420 Travis	12" Sycamore	Protected	Not impacted	
290	420 Travis	16" Sycamore	Protected	Not impacted	
291	420 Travis	15" Sycamore	Protected	Not impacted	
292	420 Travis	14" Shumard Oak	Protected	Not impacted	
293	301 Milam	12" Live Oak	Protected		Fence, Bore waterline
294	301 Milam	14" Live Oak	Protected		Root prune, Fence, Clearance prune
295	301 Milam	10" Live Oak	Protected		Fence, Bore waterline
296	301 Milam	25" Live Oak	Protected	Not impacted	
297	911 Preston	17" Sycamore	Protected		Fence, Bore waterline
298	409 Travis	8" Shumard Oak	Protected	Not impacted	
299	409 Travis	10" Shumard Oak	Protected	Leaning, Not impacted	
300	409 Travis	14" Sycamore	Protected		Clearance prune, Fence
301	407 Main	11" Mexican Sycamore	Protected	30% dieback	Fence, Bore waterline
302	407 Main	29" Mexican Sycamore	Protected	Remove for open cut	Remove tree, provide 29" in mitigation
303	1001 Preston	13" Mexican Sycamore	Protected	Not impacted	
304	1001 Preston	13" Mexican Sycamore	Protected	Not impacted	
305	1001 Preston	12" Mexican Sycamore	Protected	Not impacted	
306	301 Fannin	27" Magnolia	Protected	Corridor Tree, 50% dieback, Not impacted	
307	301 Fannin	34" Live Oak	Protected	Corridor Tree, 20% dieback, Not impacted	
308	301 Fannin	35" Live Oak	Protected	Corridor Tree	Clearance prune
313	1018 Preston	16" Mexican Sycamore	Protected		Fence, Bore waterline
314	1110 Preston	19" Live Oak	Protected	Not impacted	
315	1110 Preston	15" Sycamore	Protected		Fence, Bore waterline
316	1110 Preston	11" Sycamore	Protected		Fence, Bore waterline
317	1110 Preston	11" Mexican Sycamore	Protected		Fence, Bore waterline

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**TREE PRESERVATION PLAN LEGEND**



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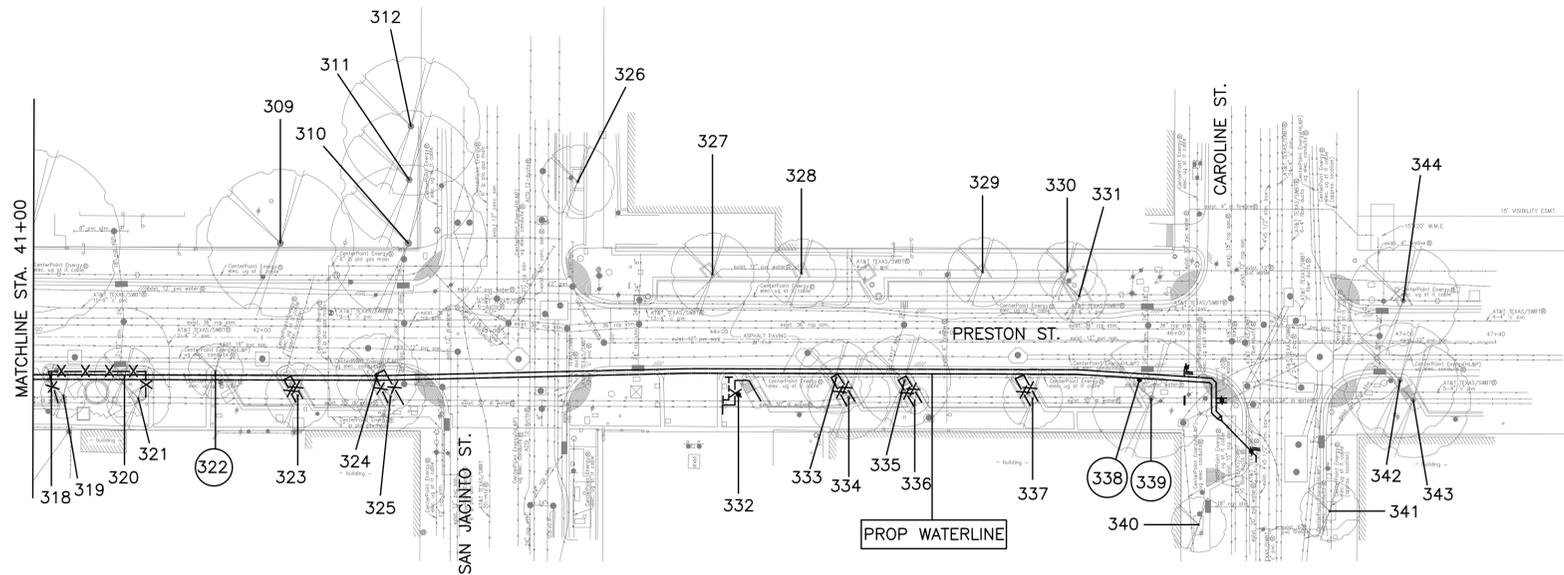
**CITY OF HOUSTON**  
 HOUSTON PUBLIC WORKS

MISCELLANEOUS LARGE DIAMETER  
 WATER LINE IMPROVEMENTS -  
 PACKAGE 4

**TREE PROTECTION PLAN**

SHEET 9 OF 11

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0043-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
MARTIN MATHEW, ENV SP	
SHEET NO. 188 OF 190	

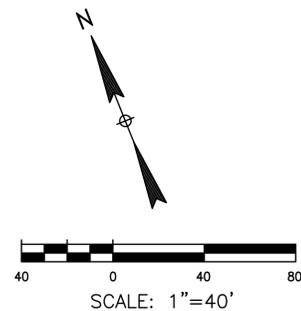
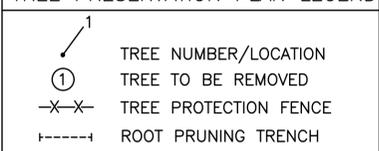


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309	301 Fannin	27" Live Oak	Protected	Corridor Tree	
310	301 Fannin	37" Live Oak	Protected	Corridor Tree, 50% dieback, Not impacted	
311	301 Fannin	28" Live Oak	Protected	Corridor tree, not impacted	
312	301 Fannin	24" Live Oak	Protected	Corridor tree, not impacted	
318	1110 Preston	5" Mexican Sycamore	Protected		Fence, Bore waterline
319	1110 Preston	10" Mexican Sycamore	Protected		Fence, Bore waterline
320	1110 Preston	12" Mexican Sycamore	Protected		Fence, Bore waterline
321	1110 Preston	14" Mexican Sycamore	Protected		Fence, Bore waterline
322	400 San Jacinto	14" Mexican Sycamore	Protected	Remove for open cut	Remove tree, Provide 14" in mitigation
323	400 San Jacinto	11" Mexican Sycamore	Protected		Fence, Bore waterline
324	400 San Jacinto	15" Mexican Sycamore	Protected		Fence, Bore waterline
325	400 San Jacinto	11" Mexican Sycamore	Protected		Fence, Bore waterline
326	301 San Jacinto	14" Mexican Sycamore	Protected	Trunk wounds, Not impacted	
327	301 San Jacinto	15" Mexican Sycamore	Protected	15% dieback, Not impacted	
328	301 San Jacinto	14" Mexican Sycamore	Protected	Not impacted	
329	1200 Congress	15" Mexican Sycamore	Protected	Not impacted	
330	1200 Congress	13" Mexican Sycamore	Protected	Not impacted	
331	1200 Congress	11" Mexican Sycamore	Protected	Not impacted	
332	1106 Preston	14" Mexican Sycamore	Protected		Root prune for open cut, Fence, Clearance prune, Bore waterline
333	1106 Preston	15" Mexican Sycamore	Protected		Fence, Bore waterline
334	1106 Preston	18" Mexican Sycamore	Protected		Fence, Bore waterline
335	1106 Preston	16" Mexican Sycamore	Protected		Fence, Bore waterline
336	1106 Preston	6" Mexican Sycamore	Protected		Fence, Bore waterline
337	1106 Preston	12" Mexican Sycamore	Protected		Fence, Bore waterline
338	1106 Preston	12" Mexican Sycamore	Protected	Remove for open cut	Remove tree, Provide 12" in mitigation
339	1106 Preston	21" Mexican Sycamore	Protected	Remove for open cut	Remove tree, Provide 21" in mitigation
340	1106 Preston	12" Shumard oak	Protected	Not impacted	
341	1302 Preston	12" Shumard oak	Protected	Not impacted	
342	1302 Preston	18" Mexican Sycamore	Protected	Not impacted	
343	1302 Preston	18" Mexican Sycamore	Protected	Not impacted	
344	305 Caroline	17" Mexican Sycamore	Protected	Not impacted	

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 WATER LINE IMPROVEMENTS -  
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TREE PROTECTION PLAN

SHEET 10 OF 11

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