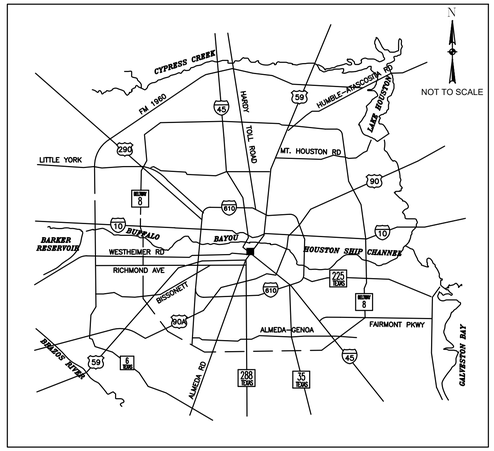
CITY OF HOUSTON
HOUSTON PUBLIC WORKS
CAPITAL PROJECTS

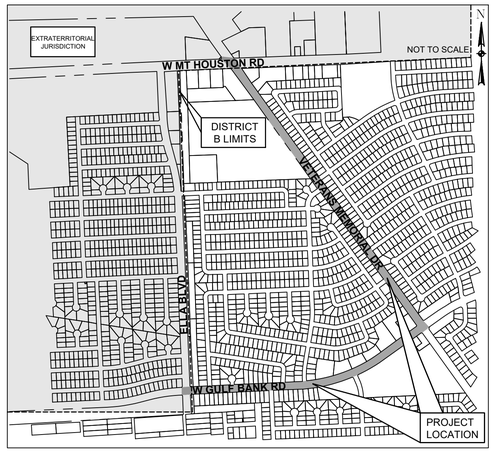
66-INCH WATERLINE ALONG VETERAN MEMORIAL DRIVE AND WEST GULF BANK RD, FROM TX-249 TO ELLA BLVD

WBS NO. S-000900-182-3

60% SUBMITTAL



LOCATION MAP



VICINITY MAP
KEY MAP NO 410K, 412L, 412P, 412Q

TDLR EABPR _____

MAYOR
JOHN WHITMIRE

CONTROLLER
CHRIS HOLLINS

DISTRICT COUNCIL MEMBERS

AMY PECK, DISTRICT A
TARSHA JACKSON, DISTRICT B
ABBIE KAMIN, DISTRICT C
CAROLYN EVANS-SHABAZZ, DISTRICT D
FRED FLICKINGER, DISTRICT E
TIFFANY D. THOMAS, DISTRICT F
MARY NAN HUFFMAN, DISTRICT G
MARIO CASTILLO, DISTRICT H
JOAQUIN MARTINEZ, DISTRICT I
EDWARD POLLARD, DISTRICT J
MARTHA CASTEX-TATUM, DISTRICT K

COUNCIL MEMBERS AT-LARGE

JULIAN RAMIREZ, POSITION 1
WILLIE DAVIS, POSITION 2
TWILA CARTER, POSITION 3
LETITIA PLUMMER, POSITION 4
SALLIE ALCORN, POSITION 5

NO.	DATE	REVISION	APP.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY SUITE 800
HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

PARKS-FORESTRY DEPT.

METRO

HOUSTON WATER

TRANSPORTATION & DRAINAGE OPERATIONS

CAPITAL PROJECTS

SURVEY

CITY ENGINEER DATE

DIRECTOR OF HOUSTON PUBLIC WORKS DATE

FOR CITY OF HOUSTON USE ONLY

SHEET NO.	SHEET TITLE
GENERAL	
1	COVER
2	SHEET INDEX
3	STANDARD SYMBOLS
4	STANDARD ABBREVIATIONS
5	GENERAL NOTES
6	SURVEY CONTROL MAP 1
7	SURVEY CONTROL MAP 2
8	SURVEY CONTROL MAP 3
9	SURVEY CONTROL MAP 4
10	SURVEY CONTROL MAP 5
11	SURVEY CONTROL MAP 6
SHEET LAYOUT	
12	OVERALL WATER SHEET 1
13	OVERALL WATER SHEET 2
PLAN AND PROFILE	
14	BEGIN TO STA 5+00 – PLAN
15	BEGIN TO STA 5+00 – PROFILE
16	STA 5+00 TO STA 10+00
17	STA 10+00 TO STA 15+00
18	STA 15+00 TO STA 20+00
19	STA 20+00 TO STA 25+00
20	STA 25+00 TO STA 30+00 – PLAN
21	STA 25+00 TO STA 30+00 – PROFILE
22	STA 30+00 TO STA 35+00
23	STA 35+00 TO STA 40+00
24	STA 40+00 TO STA 45+00
25	STA 45+00 TO STA 50+00
26	STA 50+00 TO STA 55+00
27	STA 55+00 TO STA 60+00
28	STA 60+00 TO STA 65+00
29	STA 65+00 TO STA 70+00
30	STA 70+00 TO STA 75+00
31	STA 75+00 TO STA 78+00
32	STA 78+00 TO END
33	EX. WATER RELOCATIONS
34	EX. STORM LATERALS 1 AND 2
COH STANDARD DETAILS	
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37	STEEL PIPE DETAIL 2 OF 2
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39	COMBO AIR VALVE MANHOLE
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80	TPP STA 40+00 TO STA 50+00
81	TPP STA 50+00 TO STA 60+00
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SWPPP	
84	SWPPP GENERAL NOTES
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86	STA 20+50 TO 30+50
87	STA 30+50 TO STA 38+50
88	STA 38+50 TO STA 58+50
89	STA 58+50 TO STA 74+50
90	STA 74+50 TO END
91	SWPPP STANDARD DETAILS

NO.	DATE	REVISION	APP.

KIMLEY–HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
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(281) 597–9300
TBPE FIRM REGISTRATION F–928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352–007

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Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

SHEET INDEX

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 2 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:08 AM
FILE PATH: K:\HOU_Utilities\064402850_COH S–00900–0182–3 66in WL\09_CAD\03_Plan Sheets\C–Index.dwg

EXISTING PLAN VIEW

- WATER METER
- WATER VALVE (GATE)
- WATER VALVE (BUTTERFLY)
- FIRE HYDRANT/FLUSHING VALVE
- TAPPING SLEEVE & VALVE
- REDUCER
- ROUND CONNECTION
- SANITARY SEWER CLEANOUT & MANHOLE
- STORM SEWER MANHOLE
- STORM SEWER INLETS
- CULVERT PIPE AND HEADWALL
- TOP OF CURB ELEVATION
- GUTTER ELEVATION
- TOP OF PAVEMENT ELEVATION
- CONTOUR LINE
- ROW LINE
- PROPERTY LINE
- LOT LINES
- EASEMENT LINE
- CENTER LINE OF ROW
- TRANSIT LINE
- EDGE OF DITCHES
- CENTER LINE OF DITCHES
- EDGE OF DITCHES
- FENCE LINE, WOOD
- FENCE LINE, CHAIN LINK
- FENCE LINE, BARBED WIRE
- FENCE LINE, HOG WIRE
- EDGE OF CONCRETE
- CURB LINE
- CONCRETE WALK
- EDGE OF ASPHALT
- EDGE OF SHELL OR GRAVEL
- DIMENSION LINE
- AERIAL POWER LINE
- UNDERGROUND POWER LINE
- GAS LINE
- UNKNOWN UNDERGROUND LINE
- OIL PIPELINE
- UNDERGROUND TELECOMM LINE W/VAULT
- AERIAL TELECOMM LINE
- RAILROAD LINE
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- SANITARY SEWER FORCE MAIN
- RECLAIMED WATER LINE
- NON–POTABLE WATER LINE
- GAS METER
- GAS VALVE
- PROPANE LINE
- STEAM LINE
- MISC UNDERGROUND PIPELINE LABLE

PROPOSED PLAN VIEW

- WATER METER
- WATER VALVE (GATE)
- WATER VALVE (BUTTERFLY)
- FIRE HYDRANT/FLUSHING VALVE
- TAPPING SLEEVE & VALVE
- REDUCER
- ROUND CONNECTION
- SANITARY SEWER CLEANOUT & MANHOLE
- STORM SEWER MANHOLE
- STORM SEWER INLETS
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- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- SANITARY SEWER FORCE MAIN
- RECLAIMED WATER LINE
- NON–POTABLE WATER LINE
- GAS METER
- GAS VALVE
- PROPANE LINE
- STEAM LINE
- MISC UNDERGROUND PIPELINE LABLE
- MATCH LINE

EXISTING PLAN VIEW

- PAVING HEADER
- BUILDING, RESIDENTIAL
- BUILDING, COMMERCIAL
- TREE
- HEDGE
- IRON PIPE OR IRON ROD MONUMENT
- POINT OF INTERSECTION (PI)
- POINT OF CURVE (PC)
- POINT OF TANGENCY (PT)
- POWER POLE
- POWER POLE W/DOWN GUY

EXISTING PROFILE VIEW

- NORTH OR EAST PROPERTY LINE
- SOUTH OR WEST PROPERTY LINE
- NORTH OR EAST CURB
- SOUTH OR WEST CURB
- NORTH OR EAST DITCH
- SOUTH OR WEST DITCH
- NORTH OR EAST NATURAL GROUND
- SOUTH OR WEST NATURAL GROUND
- NORTH OR EAST CULVERT
- SOUTH OR WEST CULVERT
- CENTERLINE OF ROW
- CENTERPOINT ENERGY CONDUIT
- GAS LINE
- WESTERN UNION
- AT&T CONDUIT
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- SANITARY SEWER FORCE MAIN
- RECLAIMED WATER LINE
- NON–POTABLE WATER LINE
- CENTERPOINT ENERGY MANHOLE
- AT&T MANHOLE
- WATER LINE MANHOLE
- SANITARY SEWER MANHOLE & CLEANOUT
- STORM SEWER MANHOLE
- STORM SEWER INLET

PROPOSED PLAN VIEW

- PAVING HEADER
- BUILDING, RESIDENTIAL
- BUILDING, COMMERCIAL
- TREE
- HEDGE
- IRON PIPE OR IRON ROD MONUMENT
- POINT OF INTERSECTION (PI)
- POINT OF CURVE (PC)
- POINT OF TANGENCY (PT)
- POWER POLE
- POWER POLE W/DOWN GUY

PROPOSED PROFILE VIEW

- NORTH OR EAST PROPERTY LINE
- SOUTH OR WEST PROPERTY LINE
- NORTH OR EAST CURB
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- SOUTH OR WEST DITCH
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- SOUTH OR WEST NATURAL GROUND
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- NON–POTABLE WATER LINE
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- AT&T MANHOLE
- WATER LINE MANHOLE
- SANITARY SEWER MANHOLE & CLEANOUT
- STORM SEWER MANHOLE
- STORM SEWER INLET

MISC STANDARD ELEMENTS

- COH NORTH ARROW
- COH BAR SCALE
- REVISION CLOUD/DELTA
- DETAIL/SECTION TITLE
- SECTION CALLOUT
- DETAIL CALLOUT

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Kimley»Horn

Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

SYMBOLS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. OF	

ABBREVIATIONS:

&	AND
@	AT
AB	ALL BELL
AC	ACRE / ASBESTOS CEMENT
AI/VR	AIR INLET / VACUUM RELIEF
APPROX	APPROXIMATELY
ASPH	ASPHALT
AVE	AVENUE
℄	BASELINE
B/B	BACK TO BACK
BC	BACK OF CURB
BFV	BUTTERFLY VALVE
BL	BUILDING LINE
BLDG	BUILDING
BLVD	BOULEVARD
℄	CENTER LINE
C/C	CENTER TO CENTER
CGMP	CORRUGATED GALVANIZED METAL PIPE
CMP	CORRUGATED METAL PIPE
CIP	CAST IRON PIPE
CLR	CLEARANCE
CO	CLEAN OUT
COH	CITY OF HOUSTON
CONC	CONCRETE
CONSTR	CONSTRUCTION
CPEE	CENTERPOINT ENERGY ELECTRIC
CPEG	CENTERPOINT ENERGY GAS
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DRIVE
DWG	DRAWING
DWY	DRIVEWAY
E	EAST
EL	ELEVATION
EP	EDGE OF PAVEMENT
E/R	END OF RADIUS
ESMT	EASEMENT
EXST	EXISTING
FC	FACE OF CURB
F/F	FACE TO FACE
FH	FIRE HYDRANT
℄	FLOW LINE
FM	FORCE MAIN
FT	FEET
GPS	GLOBAL POSITIONING SYSTEM
GV	GATE VALVE
GV&B	GATE VALVE AND BOX
HCFCD	HARRIS COUNTY FLOOD CONTROL DISTRICT
HDPE	HIGH-DENSITY POLYETHYLENE
HGL	HYDRAULIC GRADE LINE
HP	HIGH PRESSURE
INV EL	INVERT ELEVATION
IP	INTERMEDIATE PRESSURE
IR	IRON ROD

ABBREVIATIONS:

J-BOX	JUNCTION BOX
JT	JOINT
JUNCT	JUNCTION
LF	LINEAR FEET
LN	LANE
LPT	LOW POINT
LT	LEFT
LS	LIFT STATION
MAX	MAXIMUM
METRO	METROPOLITAN TRANSIT AUTHORITY
MH	MANHOLE
MIN	MINIMUM
MON	MONUMENT
N	NORTH
NA	NOT APPLICABLE
NAVD	NORTH AMERICAN VERTICAL DATUM
NG	NATURAL GROUND
NO	NUMBER
NTS	NOT TO SCALE
OCC	ZERO CURB CUT
OS	OFFSET
OH	OVERHEAD
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVATURE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PERM	PERMANENT
PGL	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PNT	POINT
PPCA	POTENTIALLY PETROLEUM CONTAMINATED AREA
PRC	POINT OF REVERSE
PROP	PROPOSED
PSI	POUND PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE PIPE / POINT OF VERTICAL CURVATURE
PVMT	PAVEMENT
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY

ABBREVIATIONS:

Ⓡ	RECORD DRAWING
R	RADIUS
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REINF	REINFORCED
REM	REMOVABLE
RJ	RESTRAINED JOINT
ROW	RIGHT OF WAY
RR	RAILROAD
RRPM	REFLECTIVE REMOVABLE PAVEMENT MARKERS
RT	RIGHT
S	SOUTH
SAN	SANITARY
SCHED	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SSE	SANITARY SEWER EASEMENT
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STM	STORM
SWBT	SOUTHWESTERN BELL TELEPHONE
SWR	SEWER
SY	SQUARE YARD
TAN	TANGENT
TBM	TEMPORARY BENCHMARK
TEMP	TEMPORARY
TOB	TOP OF BANK
TOC	TOP OF CURB
TOP	TOP OF PAVEMENT
TOS	TOP OF STACK
TS&V	TAPPING SLEEVE AND VALVE
TXDOT	TEXAS DEPARTMENT OF TRANSPORTATION
TYP	TYPICAL
UE	UTILITY EASEMENT
UGND	UNDERGROUND
VC	VERTICAL CURVE
VPI	VERTICAL POINT OF INTERSECTION
W	WEST
W/	WITH
WL	WATER LINE
WLE	WATER LINE EASEMENT
WM	WATER METER
WP	WOOD POLE
WSEL	WATER SURFACE ELEVATION
WV	WATER VALVE
WWTP	WASTE WATER TREATMENT PLANT

NO.	DATE	REVISION	APP.

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.

KIMLEY-HORN AND ASSOCIATES, INC
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

ABBREVIATIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 4 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:09 AM
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GENERAL CONSTRUCTION NOTES

1. THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE PLANS UNLESS OTHERWISE SPECIFICALLY ESTABLISHED IN BID SECTION OF CONTRACT DOCUMENTS. INCLUDE COST OF THIS WORK IN CONTRACT UNIT PRICE FOR ITEMS OF WHICH THIS WORK IS A COMPONENT OR INCIDENTAL TO.
2. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED AT CONTRACTOR'S EXPENSE.
3. CONTRACTOR SHALL REMAIN FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE TO EXISTING PUBLIC OR PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATER MAINS, WASTEWATER COLLECTION SYSTEMS, AND STORM SEWERS, DURING CONSTRUCTION.
4. REMOVE EXISTING PLUGS AND CONNECT PROPOSED UTILITY LINES AS INDICATED ON PLANS.
5. CALL 811 OR 800-545-6005 TO VERIFY LOCATION OF UNDERGROUND UTILITIES 48-HRS PRIOR TO ANY EXCAVATION
6. COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND ALL REGULATIONS OF UTILITY COMPANIES CONCERNING SAFETY AND HEALTH PRACTICES.
7. INCLUDE PRICE OF ALL BEDDING AND BACKFILL OF TYPE REQUIRED IN PRICE BID PER LINEAR FOOT OF PIPE.
8. ALL SEWER TRENCHES UNDER OR WITHIN 1-FT OF PROPOSED AND/OR FUTURE PAVEMENT OR CURB SHALL BE BACKFILLED WITH 1-1/2 SACKS OF CEMENT PER CUBIC YARD CEMENT-STABILIZED SAND TO A POINT 1-FT BELOW PAVEMENT SUBGRADE. REMAINING BACKFILL SHALL BE MADE WITH COMPACTED SUITABLE MATERIAL PER SPECIFICATIONS.
9. OWNER WILL FURNISH INITIAL LABORATORY TESTS. SUBSEQUENT TESTING DUE TO FAILED TESTS SHALL BE AT CONTRACTOR'S EXPENSE. COPY OF ALL TEST RESULTS SHALL BE SUBMITTED TO ENGINEER.
10. DAILY REMOVE ALL MUD, DIRT, AND DEBRIS DEPOSITED OR DROPPED ON EXISTING PAVEMENT DUE TO CONSTRUCTION ACTIVITY. MATERIAL THAT IS HAZARDOUS TO TRAFFIC SHALL BE REMOVED IMMEDIATELY.
11. ALL TRAFFIC CONTROL AND WARNING SIGNS SHALL BE IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
12. WHEN TRENCH CONDITION WARRANTS USE OF DEWATERING SYSTEMS, THEIR USE SHALL BE REQUESTED BY CONTRACTOR AND APPROVED BY OWNER.
13. THESE PLANS DO NOT EXTEND OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THESE PLANS. CONTRACTOR SHALL INDEPENDENTLY PREPARE AND/OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS.
14. PROTECT ALL TREES DURING CONSTRUCTION. NO TREES SHALL BE REMOVED WITHOUT OWNER'S PERMISSION, UNLESS OTHERWISE SPECIFIED IN PLANS.
15. GIVE NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES OR RAILROADS AFFECTED BY OPERATIONS PRIOR TO COMMENCEMENT OF WORK. OBTAIN ALL NECESSARY CONSTRUCTION PERMITS PRIOR TO STARTING CONSTRUCTION.
16. OBTAIN ALL PERMITS REQUIRED BY REGULATION OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT PRIOR TO STARTING CONSTRUCTION.
17. OBTAIN ALL PERMITS REQUIRED BY CITY OF HOUSTON, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITIES AND/OR CULVERTS WITHIN CITY OF HOUSTON ROAD RIGHTS-OF-WAY, IF APPLICABLE.
18. NOTIFY CITY OF HOUSTON ENGINEERING DEPARTMENT BY WRITTEN NOTIFICATION 48-HRS IN ADVANCE OF STARTING CONSTRUCTION, FOLLOWED BY TELEPHONE NOTIFICATION AT (832) 394 - 9100 24-HRS IN ADVANCE OF STARTING CONSTRUCTION. A COPY OF WRITTEN NOTIFICATION SHALL BE SENT TO ENGINEER.
19. ALL DISTURBED AREAS OR AREAS AFFECTED BY CONSTRUCTION IN BOTH PRIVATE AND PUBLIC PROPERTIES SHALL BE CLEANED AND RETURNED TO EXISTING OR BETTER CONDITIONS. DISTURBED VEGETATED AREAS SHALL BE HYDRO-MULCHED UNLESS OTHERWISE NOTED ON THE PLANS. DISTURBED SWALES AND OTHER DRAINAGE FACILITIES SHALL BE RESTORED AND REMAIN FUNCTIONAL AFTER CONSTRUCTION. DISTURBED AREAS WITHIN HCFCD RIGHTS-OF-WAY AND/OR EASEMENTS SHALL BE FULLY RESTORED IN ACCORDANCE WITH APPLICABLE HCFCD STANDARD CONSTRUCTION SPECIFICATIONS.
20. ALL OPEN TRENCHES, TUNNEL SHAFTS, OR OTHER EXCAVATIONS SHALL BE SECURED IN ACCORDANCE WITH OSHA REQUIREMENTS AND SPECIFICATIONS.
21. ALL OPEN CUTS ON PAVEMENTS SHALL BE REPLACED AND REPAIRED PER DETAILS. STEEL PLATES SHALL BE USED AS WARRANTED TO PROVIDE A CONTINUOUS TRAFFIC FLOW AFTER WORKING HOURS.
22. ALL HIKE AND BIKE TRAILS SHALL BE REPLACED IF DAMAGED OR REMOVED DURING CONSTRUCTION.
23. RESTORE ALL SPRINKLER AND/OR IRRIGATION SYSTEMS DISTURBED DURING CONSTRUCTION TO ORIGINAL CONDITION OR BETTER, NO SEPARATE PAY.
24. RESTORE ALL CONCRETE PAVEMENT TO ORIGINAL CONDITION OR BETTER. INFORMATION PROVIDED BELOW IS PER RECORD DRAWINGS.

	THICKNESS (IN)	BASE (IN)	SUBGRADE (IN)
W GULF BANK RD	8"	-	6" CEMENT STABILIZED SAND
W MT HOUSTON RD OR 249	10"	6" CEMENT STABILIZED SAND	6" LIME TREATED
VETERANS MEMORIAL DR	-	-	-

WATER MAIN CONSTRUCTION NOTES

1. ALL NEWLY INSTALLED PIPES, COATINGS, AND RELATED PRODUCTS SHALL CONFORM TO ANSI/NSF STANDARDS AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI.
2. UNLESS OTHERWISE INDICATED ON THE PLANS, ALL WATER MAIN TRENCHES SHALL BE BACKFILLED WITH BANK-RUN SAND TO A POINT 1-FT OVER TOP OF PIPE. REMAINING BACKFILL SHALL BE MADE WITH COMPACTED SUITABLE MATERIAL PER SPECIFICATIONS. ALL TRENCHES WITHIN HCFCD RIGHTS-OF-WAY AND/OR EASEMENTS SHALL BE BACKFILLED AND RESTORED IN ACCORDANCE WITH APPLICABLE HCFCD STANDARD CONSTRUCTION SPECIFICATIONS.
3. CONTACT DISTRICT OPERATOR PRIOR TO MAKING ANY CONNECTION(S) TO EXISTING WATER MAINS IN OPERATION AND/OR ANYTIME A VALVE ON AN EXISTING WATER MAIN IS TO BE OPENED OR CLOSED.
   DISTRICT NAME: DISTRICT B
   OPERATOR COMPANY: XXX
   OPERATOR CONTACT: XXX
   CONTACT PHONE #: XXX-XXX-XXXX
4. WHEN A WATER MAIN IS PLACED NEAR A SANITARY SEWER MANHOLE, IT SHALL HAVE A MINIMUM OF 9-FT WALL TO WALL SEPARATION. WHERE A WATER MAIN PARALLELS A SANITARY SEWER, 9-FT SEPARATION SHALL BE MAINTAINED IN ALL DIRECTIONS. IF THE 9-FT SEPARATION CANNOT BE ACHIEVED, BOTH SEWER PIPE AND JOINTS SHALL HAVE A MINIMUM PRESSURE RATING OF 150-PSI AND MANHOLES SHALL BE WATER TIGHT. VERTICAL SEPARATION SHALL BE A MINIMUM OF 2-FT BETWEEN OUTSIDE DIAMETERS AND HORIZONTAL SEPARATION SHALL BE A MINIMUM OF 4-FT BETWEEN OUTSIDE DIAMETERS.
5. ALL WATER MAINS WITHIN DEDICATED EASEMENTS SHALL HAVE A MINIMUM 6.0-FT OF COVER FOR WATER MAINS LESS THAN 36-INCHES AND 9.0-FT OF COVER FOR 36-INCH AND GREATER WATER MAINS. ALL WATER MAINS WITHIN RIGHTS-OF-WAY WITH IMPROVED ROADWAY SHALL HAVE A MINIMUM 7.0-FT OF COVER FROM EXISTING OR PROPOSED TOP OF CURB (TOC).
6. UNLESS OTHERWISE SHOWN ON PLANS, CONSTRUCT WATER MAINS WITH ONE JOINT OF PIPE BEYOND PROPOSED VALVES AND PLUGS FOR FUTURE LINES.
7. VALVES SHALL BE EQUIPPED WITH OPERATING NUT EXTENSIONS TO WITHIN 3-FT OF NATURAL GROUND IN ACCORDANCE WITH SPECIFICATIONS.
8. RESTRAINED JOINT LIMITS SHOWN ON DRAWINGS ARE A MINIMUM. PROVIDE RESTRAINED JOINTS TO ENSURE INTEGRITY OF THE WATER MAIN AT TEST PRESSURE. THIS WORK IS INCIDENTAL TO WATER MAIN INSTALLATION, NO SEPARATE PAY.
9. ALL WATER MAINS SHALL BE INSTALLED BY OPEN CUT METHODS UNLESS OTHERWISE INDICATED ON PLANS OR DIRECTED BY ENGINEER.
10. PROVIDE DETECTABLE WARNING TAPE FOR NON-METALLIC PIPING.
11. ALL WATER MAINS 66-IN IN DIAMETER SHALL BE PCCP OR SPIRAL WELDED STEEL PIPE UNLESS OTHERWISE INDICATED ON PLANS.
12. FOR LARGE DIAMETER WATER LINES ALLOW A MINIMUM OF 5-FT VERTICAL AND 5-FT HORIZONTAL CLEARANCE WHEN CROSSING UNDER PROPOSED WATER MAINS AND OTHER EXISTING OR PROPOSED UTILITIES. WHEN CROSSING ABOVE EXISTING OR PROPOSED UTILITIES ALLOW A MINIMUM OF 6-FT VERTICAL AND 5-FT HORIZONTAL CLEARANCE.

STORM SEWER CONSTRUCTION NOTES

1. ALL STORM SEWERS AND LEADS SHALL BE REINFORCED CONCRETE PIPE (RCP), CLASS III (ASTM C76), WITH RUBBER GASKET JOINTS (ASTM C443), 24-IN DIAMETER MINIMUM, UNLESS OTHERWISE NOTED ON PLANS.
2. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE STORM WATER MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES AS PREPARED BY HARRIS COUNTY, HCFCD, AND THE CITY OF HOUSTON AND SHALL BE IN COMPLIANCE WITH THE NPDES REQUIREMENTS.

GENERAL NOTES - METRO

1. CONTRACTOR SHALL NOTIFY METRO AT 713-615-6195 TWO WEEKS PRIOR TO DISTURBING EXISTING BUS STOPS.
2. CONTRACTOR SHALL COORDINATE WITH METRO TO REMOVE EXISTING AMENITIES.
3. BUS STOPS SHALL CONSTRUCTED PER CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL AND MEET CURRENT ADA REQUIREMENTS

CONTRACTOR TRAFFIC CONTROL WORK ZONE NOTES:

1. MAINTAIN TWO LANES OPEN WHEN WORKING IN BOULEVARD SECTIONS. RESIDENTIAL SECTIONS WILL MAINTAIN ONE LANE OPEN WITH ADEQUATE SIGNAGE AND/OR FLAGMEN TO FACILITATE USE OF LANE.
2. DRIVEWAY ACCESS SHALL BE MAINTAINED OPEN AFTER WORKING HOURS. A MINIMUM OF ONE DRIVEWAY ACCESS SHALL BE MAINTAINED OPEN AT ALL TIMES TO COMMERCIAL, APARTMENT, AND/OR NON-RESIDENTIAL DEVELOPMENTS. SCHOOL DRIVEWAYS SHALL BE MAINTAINED OPEN WHERE PRACTICAL WHEN SCHOOL IS SESSION. IN THE EVENT THAT SCHOOL DRIVEWAYS WILL BE IMPACTED IN ANY WAY, COORDINATE ALL WORK WITH SCHOOL.
3. THE LENGTH OF WORK ZONE SHALL BE MINIMIZED WITHIN CITY OF HOUSTON RIGHTS-OF-WAY AND/OR EASEMENTS. THERE SHALL NOT BE MORE THAN 200-FT OF TRENCH OPEN AT ANY ONE TIME. CONSTRUCTION ZONE SHALL BE A ROLLING CONSTRUCTION ZONE WITH APPROPRIATE TRANSITIONS ON EACH END.
4. LANES SHALL NOT BE CLOSED AT A SIGNALIZED INTERSECTION UNLESS APPROVED BY CITY OF HOUSTON ENGINEER. AN APPROPRIATE TRANSITION AS DEFINED IN TRAFFIC CONTROL PLAN SHALL BE PROVIDED AT SIGNALIZED INTERSECTIONS.
5. SEPARATION DISTANCES FOR INSTALLATION OF POTABLE WATER DISTRIBUTION LINES AND WASTEWATER COLLECTION LINES, WASTEWATER FORCE MAINS AND OTHER CONVEYANCES/APPURTENANCES IDENTIFIED AS POTENTIAL SOURCES OF CONTAMINATION MUST CONFORM TO TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES AND REGULATIONS.
6. TEMPORARY EPOXY-GLUED PAVEMENT BUTTONS OR "CONSTRUCTION GRADE" TAPE PAVEMENT MARKERS SHALL BE USED ON PERMANENT PAVEMENT TO REMAIN IN-PLACE TO ELIMINATE GRINDING AND SCARRING OF SURFACE.
7. CARE SHALL BE TAKEN TO PROVIDE FOR TEMPORARY PEDESTRIAN TRAFFIC AND CROSSING AT AREAS SUCH AS SCHOOLS, PARKS, AND SHOPPING AREAS.
8. WORK SHALL BE CONFINED TO CITY OF HOUSTON WATER MAIN OR CONSTRUCTION EASEMENTS OR TO AREAS IDENTIFIED ON PLANS.
9. CONTRACTOR TO LIMIT EQUIPMENT TRAFFIC WITHIN NEIGHBORHOOD AREAS.

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 PROPERTY MANAGEMENT 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, IF APPLICABLE, TO HCFCD, 9900 NORTHWEST FREEWAY, HOUSTON, TEXAS 77092, ATTN: PROPERTY MANAGEMENT DEPT. BY HAND DELIVERY, 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 PROPERTY MANAGEMENT DEPARTMENT 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. BACKFILL IN ACCORDANCE WITH THE HARRIS COUNTY FLOOD CONTROL DISTRICT STANDARD SPECIFICATION, SECTION 02315 - EXCAVATING AND BACKFILLING, OR EQUIVALENT.
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.

PRIVATE UTILITY NOTES:

CAUTION: **UNDERGROUND GAS FACILITIES**

1. 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 PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 207-5463 OR (713) 967-8037 (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.
2. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: **OVERHEAD ELECTRICAL LINES**

1. 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 & SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:
   - ANY ACTIVITY WHERE PERSON OR THINGS MAY COME WITHIN SIX FEET (6') OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND
   - OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN TEN FEET (10') OF LIVE OVERHEAD HIGH VOLTAGE LINES.
2. 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 ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

1. 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 & RIGHT OF WAY DIVISION AT (713) 207-6348 OR (713) 207-5769.

WARNING: **UNDERGROUND ELECTRICAL UTILITIES**

1. 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.

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 ANY AND 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 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN 18-IN 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/SBWT 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. ROOSEVELT LEE JR. AT (713) 567-4552 OR EMAIL HIM AT RL7259@ATT.COM. IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATING NEAR OUR AT&T TEXAS/SWBT FACILITIES.
7. PLEASE CONTACT CHRIS CARRASCO AT (832) 396-4217 OR EMAIL AT CC1255@ATT.COM FOR RELOCATION OF AT&T TEXAS/SWBT FACILITIES.

NO.	DATE	REVISION	APP.

KIMLEY–HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597–9300
TBPE FIRM REGISTRATION F–928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352–007

PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

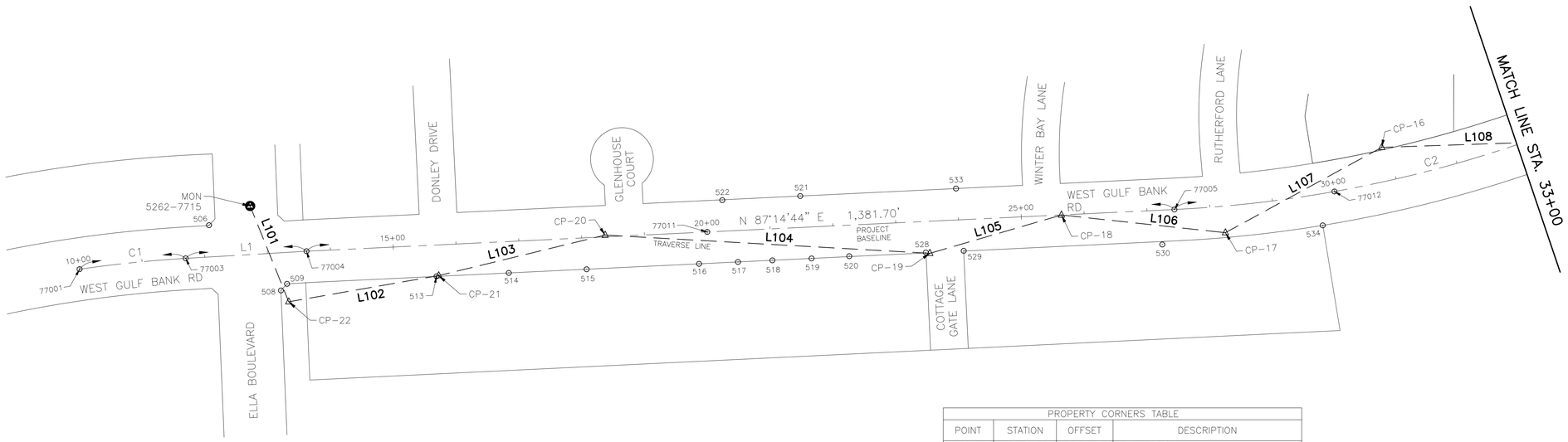
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

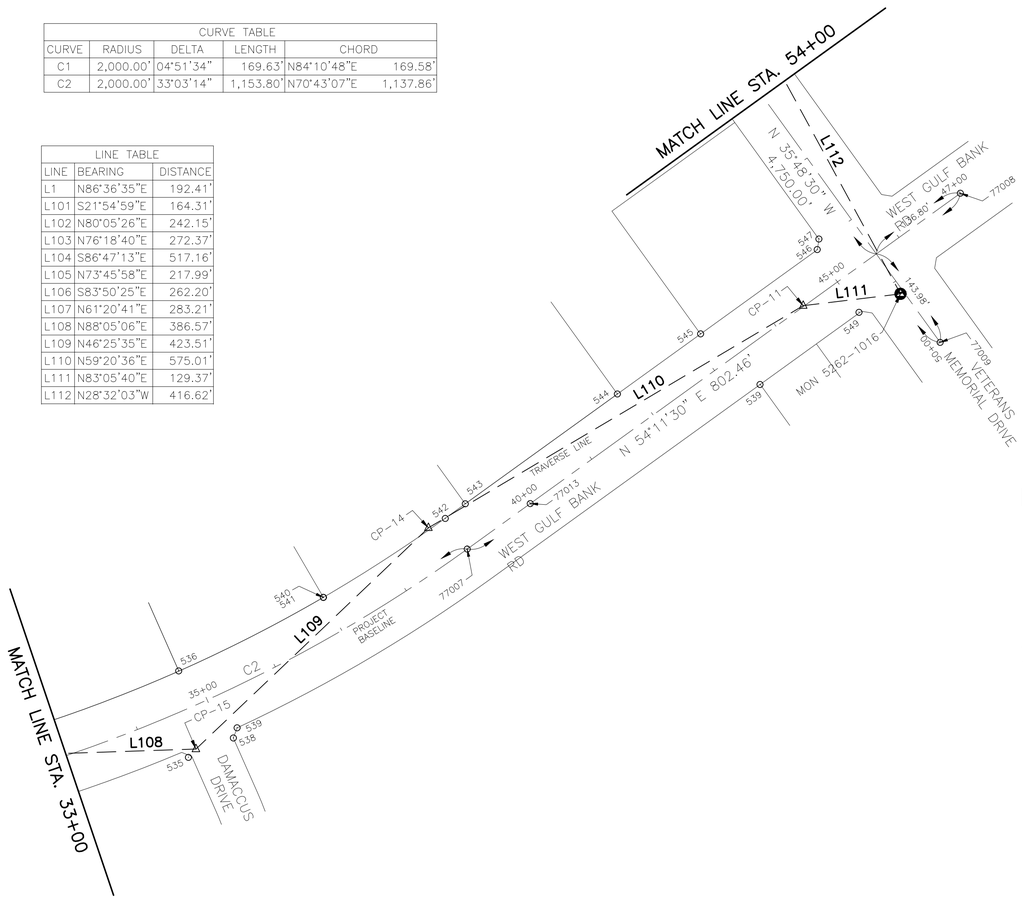
66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

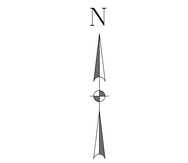
GENERAL NOTES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 5 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:09 AM
FILE PATH: K:\HOU_Utilities\064402850_COH S–00900–0182–3 66in WL\09_CAD\03_Plan Sheets\C–General Notes.dwg







0 100' 200'

SCALE:
1"=200' (17"X11")
1"=100' (34"X22")

NO.	DATE	REVISION	APP.

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD	
C1	2,000.00'	04°51'34"	169.63'	N84°10'48"E	169.58'
C2	2,000.00'	33°03'14"	1,153.80'	N70°43'07"E	1,137.86'

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N86°36'35"E	192.41'
L101	S21°54'59"E	164.31'
L102	N80°05'26"E	242.15'
L103	N76°18'40"E	272.37'
L104	S86°47'13"E	517.16'
L105	N73°45'58"E	217.99'
L106	S83°50'25"E	262.20'
L107	N61°20'41"E	283.21'
L108	N88°05'06"E	386.57'
L109	N46°25'35"E	423.51'
L110	N59°20'36"E	575.01'
L111	N83°05'40"E	129.37'
L112	N28°32'03"W	416.62'

PROPERTY CORNERS TABLE			
POINT	STATION	OFFSET	DESCRIPTION
506	12+09.82	50.51 LT	FND 5/8"IR
508	13+17.90	60.00 RT	FND 5/8"IRw/CAP (ILLEGIBLE)
509	13+28.04	50.10 RT	FND 5/8"IRw/ATKINSON RPLS 58
513	15+66.67	49.79 RT	FND 5/8"IR (BENT)
514	16+81.68	50.04 RT	FND 5/8"IR
515	18+05.64	50.15 RT	FND 5/8"IR
516	19+84.61	50.03 RT	FND 1/2"IRw/CBG SURVEYING CA
517	20+46.58	50.03 RT	FND 1/2"IR
518	21+01.25	50.06 RT	FND 1/2"IR (BENT)
519	21+63.72	50.07 RT	FND 5/8"IR
520	22+23.68	49.41 RT	FND 1/2"IR
521	21+50.48	49.99 LT	FND 1/2"IR
522	20+26.30	49.37 LT	FND 1"IR
528	23+45.58	49.43 RT	FND 5/8"IR
529	24+05.90	49.53 RT	FND 5/8"IR
530	27+21.75	54.77 RT	FND 5/8"IR (BENT)
533	23+98.41	50.02 LT	FND 5/8"IR
534	29+72.81	50.01 RT	FND 5/8"IRw/CAP (ILLEGIBLE)
535	34+47.66	59.54 RT	FND 1/2"IR (BENT)
536	34+81.19	50.25 LT	FND 1/2"IR
538	35+10.48	60.08 RT	FND 1/2"IR (BENT)
539	35+20.28	50.02 RT	FND 1/2"IR (BENT)
540	37+00.98	49.93 LT	FND 1/2"IRw/CAP (ILLEGIBLE)
541	37+00.89	49.99 LT	FND 1/2"IR
542	38+97.61	49.69 LT	FND 1/2"IR (BENT)
543	39+30.37	49.94 LT	FND 5/8"IRw/CAP WEST BELT SU
544	41+77.95	50.02 LT	FND 5/8"IRw/CAP WEST BELT SU
545	43+13.38	50.11 LT	FND 1/2"IR (BENT)
546	45+03.34	50.23 LT	FND 1/2"IRw/CAP AEI
547	45+13.32	60.24 LT	FND 1/2"IRw/CAP AEI
548	43+37.92	50.01 RT	FND 1/2"IR
549	44+99.59	49.14 RT	FND 1"IP (BENT)

SURVEY CONTROL TABLE								
POINT	STATION	OFFSET	SURFACE NORTH	SURFACE EAST	GRID NORTH	GRID EAST	ELEV.	DESCRIPTION
CP-11	44+45.04	1.07 LT	13,889,621.47	3,102,509.33	13,887,816.06	3,102,106.06	85.11	SET 3/8" IR W/ CAP "LANDTECH"
CP-14	38+71.67	52.54 LT	13,889,328.28	3,102,014.68	13,887,522.90	3,101,611.47	84.96	SET 3/8" IR W/ CAP "LANDTECH"
CP-15	34+60.80	53.28 RT	13,889,036.36	3,101,707.86	13,887,231.02	3,101,304.69	84.03	SET 3/8" IR W/ CAP "LANDTECH"
CP-16	30+88.70	54.08 LT	13,889,023.45	3,101,321.51	13,887,218.11	3,100,918.39	85.29	SET 3/8" IR W/ CAP "LANDTECH"
CP-17	28+21.33	42.30 RT	13,888,887.64	3,101,072.98	13,887,082.31	3,100,669.90	84.44	SET 3/8" IR W/ CAP "LANDTECH"
CP-18	25+63.91	0.13 RT	13,888,915.77	3,100,812.30	13,887,110.45	3,100,409.24	85.15	SET 3/8" IR W/ CAP "LANDTECH"
CP-19	23+51.93	50.94 RT	13,888,854.83	3,100,603.00	13,887,049.51	3,100,199.98	84.19	SET 3/8" IR W/ CAP "LANDTECH"
CP-20	18+37.58	2.82 LT	13,888,883.82	3,100,086.66	13,887,078.50	3,099,683.70	85.62	SET 3/8" IR W/ CAP "LANDTECH"
CP-21	15+70.15	48.84 RT	13,888,819.36	3,099,822.03	13,887,014.05	3,099,419.10	84.56	SET 3/8" IR W/ CAP "LANDTECH"
CP-22	13+29.02	78.64 RT	13,888,777.69	3,099,583.49	13,886,972.38	3,099,180.60	86.83	SET 3/8" IR W/ CAP "LANDTECH"
MON 5262-1016	50+82.52	4.91 LT	13,889,637.03	3,102,637.76	13,887,831.61	3,102,234.47	85.43	FND COH MON DISK IN CONC
MON 5262-7715	12+76.81	77.15 LT	13,888,930.12	3,099,522.16	13,887,124.80	3,099,119.27	84.97	FND COH MON DISK IN CONC

PROJECT BASELINE TABLE						
POINT	STATION	SURFACE NORTH	SURFACE EAST	GRID NORTH	GRID EAST	DESCRIPTION
77001	10+00.00	13,888,829.57	3,099,251.03	13,887,024.26	3,098,848.18	SET 3/8" IR W/ CAP "LANDTECH"
77003	11+69.63	13,888,846.77	3,099,419.73	13,887,041.45	3,099,016.86	SET 3/8" IR W/ CAP "LANDTECH"
77004	13+62.04	13,888,858.15	3,099,611.80	13,887,052.83	3,099,208.90	SET 3/8" IR W/ CAP "LANDTECH"
77005	27+43.74	13,888,924.54	3,100,991.91	13,887,119.22	3,100,588.83	SET 3/8" IR W/ CAP "LANDTECH"
77007	38+97.54	13,889,300.27	3,102,065.95	13,887,494.90	3,101,662.73	SET 3/8" IR W/ CAP "LANDTECH"
77008	47+00.00	13,889,769.77	3,102,716.73	13,887,964.34	3,102,313.43	SET 3/8" IR W/ CAP "LANDTECH"
77009	50+00.00	13,889,572.97	3,102,690.02	13,887,767.56	3,102,286.73	SET 3/8" IR W/ CAP "LANDTECH"
77011	20+00.00	13,888,888.80	3,100,249.03	13,887,083.48	3,099,846.05	SET 3/8" IR W/ CAP "LANDTECH"
77012	30+00.00	13,888,953.20	3,101,246.38	13,887,147.87	3,100,843.27	SET 3/8" IR W/ CAP "LANDTECH"
77013	40+00.00	13,889,360.22	3,102,149.04	13,887,554.84	3,101,745.82	SET 3/8" IR W/ CAP "LANDTECH"

LANDTECH
1315 W SAM HOUSTON PKWY N
STE 100
HOUSTON, TEXAS 77043
T: 713-861-7068 F: 713-861-4131
TBPELS REGISTRATION NO. 10019100

RELEASED BY: NHUY NGUYEN
TX RPLS #6409
DATE: 8/1/2025

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SURVEYED BY: LANDTECH, INC.
FB NO. TBD

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

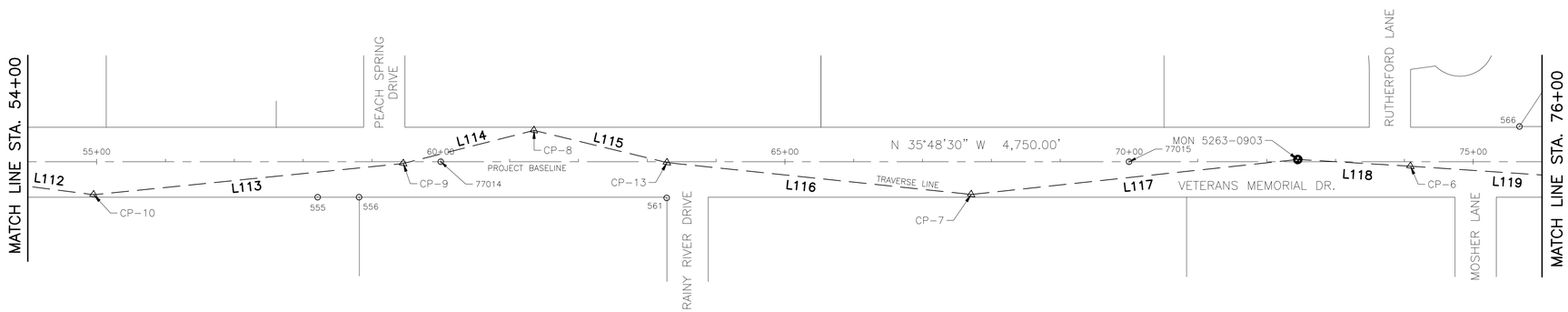
SURVEY CONTROL MAP
SHEET 1 OF 2

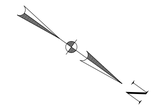
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S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 6 OF 91	

PLOTTED: 8/1/2025 12:01 PM

PLOT STYLE: COH.ctb

FILE PATH: S:\2025\2520001\CADD\COH S-0009000-182-3 Water Line SCM.dwg



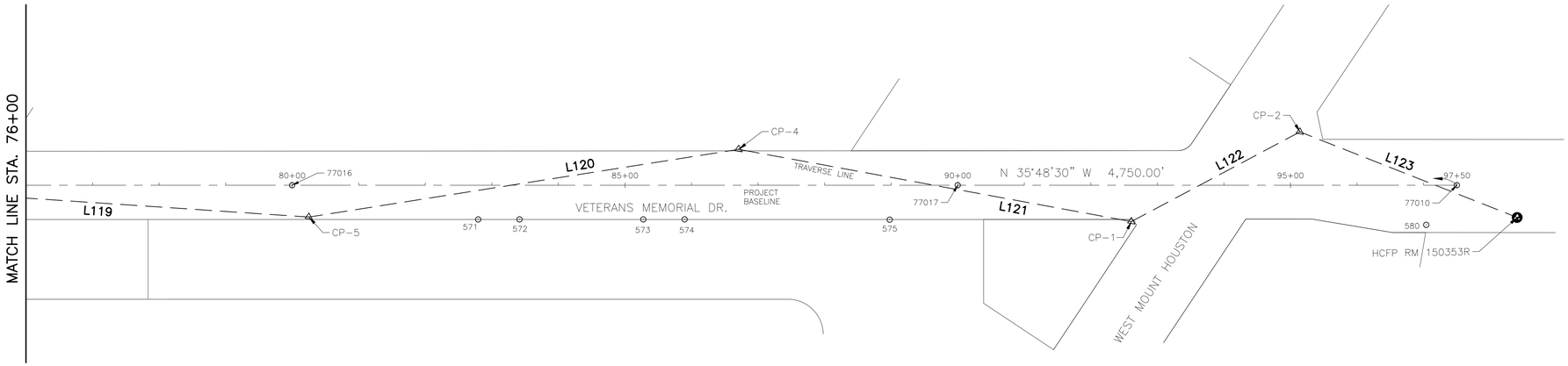


NO.	DATE	REVISION	APP.

SURVEY CONTROL TABLE								
POINT	STATION	OFFSET	SURFACE NORTH	SURFACE EAST	GRID NORTH	GRID EAST	ELEV.	DESCRIPTION
CP-1	92+60.96	54.59 RT	13,893,060.46	3,100,241.31	13,891,254.60	3,099,838.33	85.05	SET 3/8" IR W/ CAP "LANDTECH"
CP-2	95+14.26	80.24 LT	13,893,187.00	3,099,983.77	13,891,381.12	3,099,580.82	84.96	SET 3/8" IR W/ CAP "LANDTECH"
CP-4	86+70.97	53.97 LT	13,892,518.47	3,100,498.47	13,890,712.68	3,100,095.45	84.76	SET 3/8" IR W/ CAP "LANDTECH"
CP-5	80+25.24	47.81 RT	13,892,054.35	3,100,958.80	13,890,248.62	3,100,555.73	85.86	SET 3/8" IR W/ CAP "LANDTECH"
CP-7	67+70.75	47.47 RT	13,891,036.78	3,101,692.50	13,889,231.18	3,101,289.33	85.54	SET 3/8" IR W/ CAP "LANDTECH"
CP-8	61+35.55	45.43 LT	13,890,467.30	3,101,988.80	13,888,661.77	3,101,585.59	85.71	SET 3/8" IR W/ CAP "LANDTECH"
CP-9	59+45.65	2.51 RT	13,890,341.34	3,102,138.79	13,888,535.83	3,101,735.56	85.25	SET 3/8" IR W/ CAP "LANDTECH"
CP-10	54+95.79	47.85 RT	13,890,003.04	3,102,438.75	13,888,197.57	3,102,035.49	85.60	SET 3/8" IR W/ CAP "LANDTECH"
CP-13	63+28.77	1.25 RT	13,890,651.31	3,101,913.61	13,888,845.76	3,101,510.41	85.94	SET 3/8" IR W/ CAP "LANDTECH"
MON 5263-0903	72+45.11	3.31 LT	13,891,391.78	3,101,373.78	13,889,586.13	3,100,970.66	85.89	FND COH MON DISK IN CONC
RM150353R			13,893,526.89	3,099,897.21	13,891,720.97	3,099,494.27	87.22	FND HC RM DISK IN CONC

LINE TABLE		
LINE	BEARING	DISTANCE
L113	N41°33'47"W	452.14'
L114	N49°58'37"W	195.86'
L115	N22°13'34"W	198.78'
L116	N29°50'20"W	444.38'
L117	N41°55'03"W	477.08'
L118	N32°24'16"W	164.12'
L119	N31°58'04"W	617.68'
L120	N44°45'56"W	653.70'
L121	N25°22'57"W	599.90'
L122	N63°50'03"W	286.95'
L123	N14°17'18"W	350.74'

PROJECT BASELINE TABLE						
POINT	STATION	SURFACE NORTH	SURFACE EAST	GRID NORTH	GRID EAST	DESCRIPTION
77010	97+50.00	13,893,425.12	3,099,910.92	13,891,619.21	3,099,507.98	SET 3/8" IR W/ CAP "LANDTECH"
77014	60+00.00	13,890,383.95	3,102,104.95	13,888,578.44	3,101,701.73	SET 3/8" IR W/ CAP "LANDTECH"
77015	70+00.00	13,891,194.93	3,101,519.87	13,889,389.31	3,101,116.73	SET 3/8" IR W/ CAP "LANDTECH"
77016	80+00.00	13,892,005.91	3,100,934.80	13,890,200.18	3,100,531.73	SET 3/8" IR W/ CAP "LANDTECH"
77017	90+00.00	13,892,816.89	3,100,349.72	13,891,011.06	3,099,946.73	SET 3/8" IR W/ CAP "LANDTECH"



PROPERTY CORNERS TABLE			
POINT	STATION	OFFSET	DESCRIPTION
555	58+21.17	51.49 RT	FND 1/2"IR (BENT)
556	58+81.34	51.47 RT	FND 1/2"IR (BENT)
561	63+28.23	52.44 RT	FND 1"IR
566	75+67.25	51.11 LT	FND 1"IP
571	82+79.52	51.45 RT	FND 5/8"IR
572	83+41.62	51.39 RT	FND 5/8"IR
573	85+27.60	51.35 RT	FND 1/2"IR
574	85+89.66	51.28 RT	FND 1/2"IR
575	88+97.80	51.76 RT	FND 1/2"IR
580	97+04.01	59.62 RT	FND 3/8"IR

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FB NO. TBD

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

SURVEY CONTROL MAP
SHEET 2 OF 2

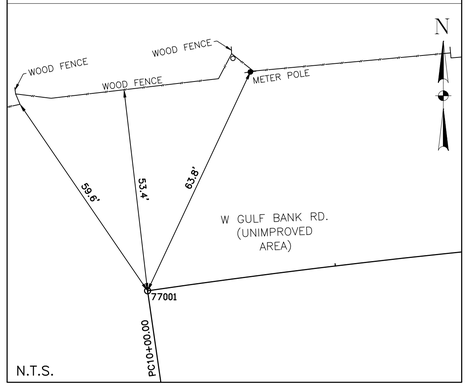
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CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 7 OF 91	

PLOTTED: 8/1/2025 12:01 PM
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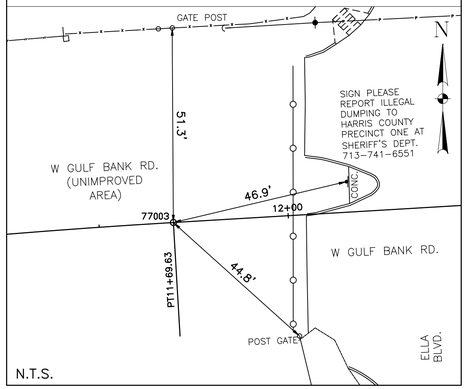
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NO.	DATE	REVISION	APP.

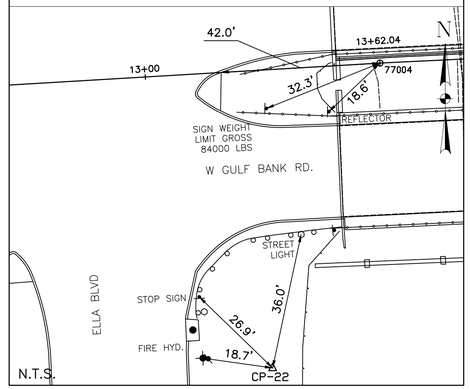
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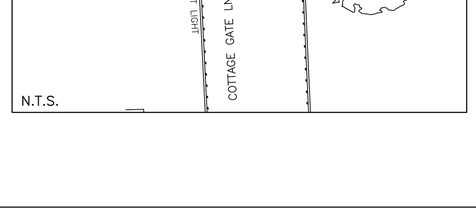
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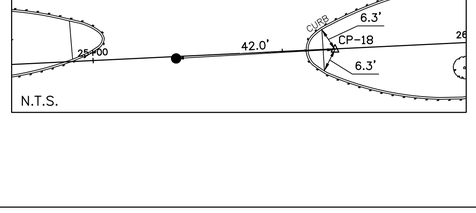
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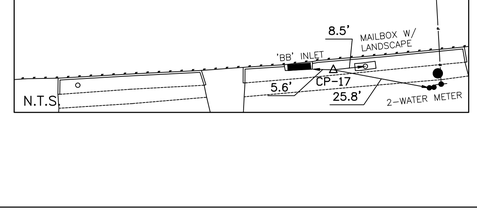
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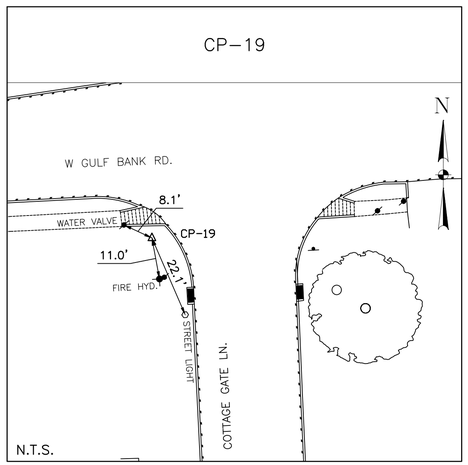
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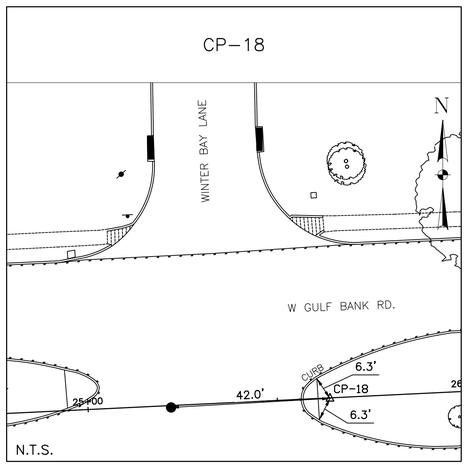
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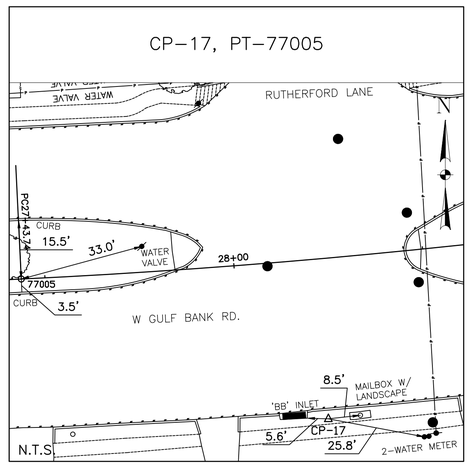
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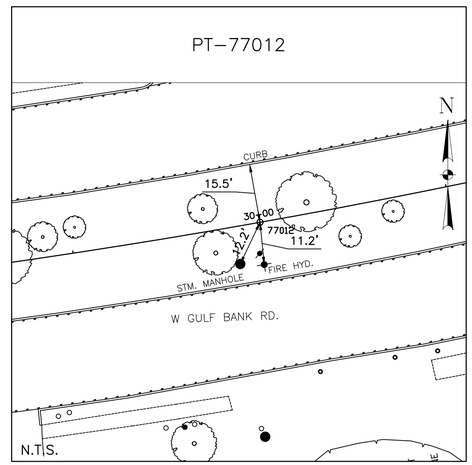
CP-18



CP-17, PT-77005



PT-77012



LANDTECH
1315 W SAM HOUSTON PKWY N
STE 100
HOUSTON, TEXAS 77043
T: 713-861-7068 F: 713-861-4131
TBPELS REGISTRATION NO. 10019100

SURVEYED BY: LANDTECH, INC.
FB NO. TBD

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

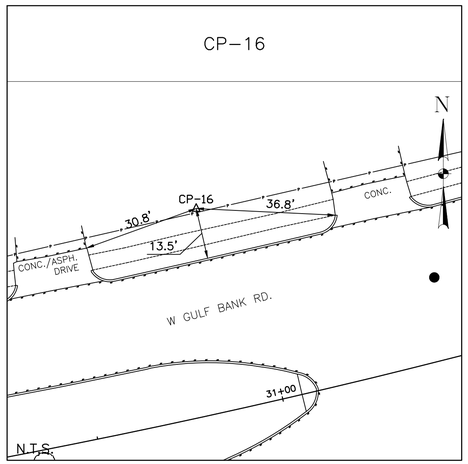
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
SWING TIES
SHEET 1 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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HIMAL PANGENI, P.E.	
SHEET NO. 8 OF 91	

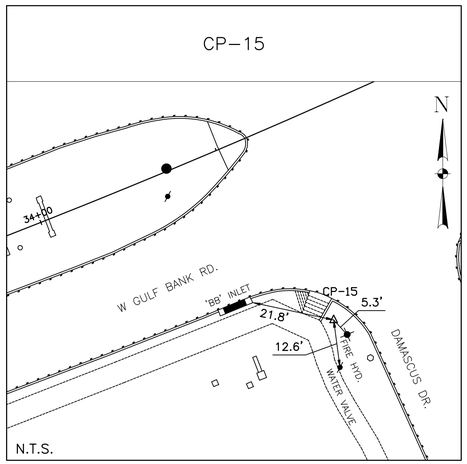
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NO.	DATE	REVISION	APP.

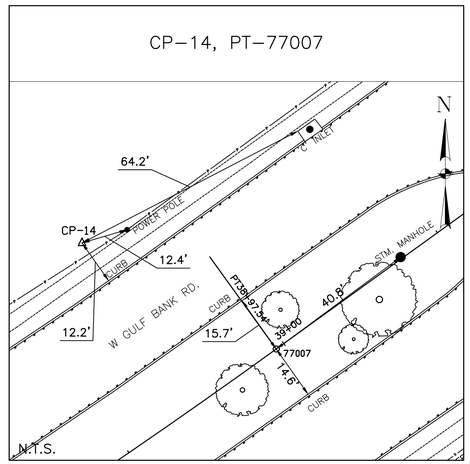
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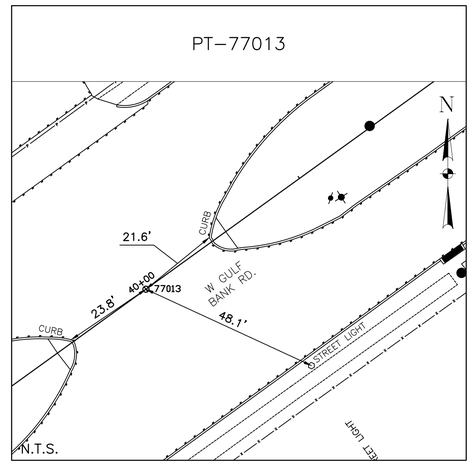
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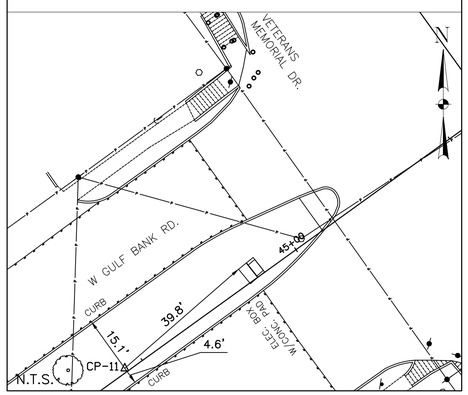
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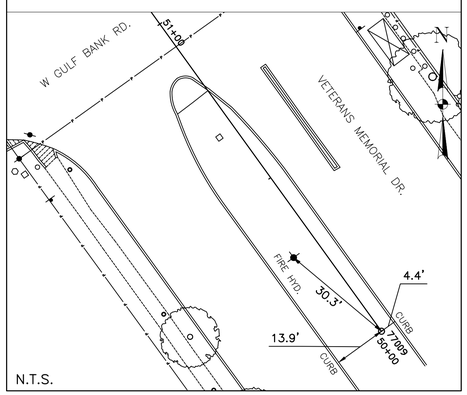
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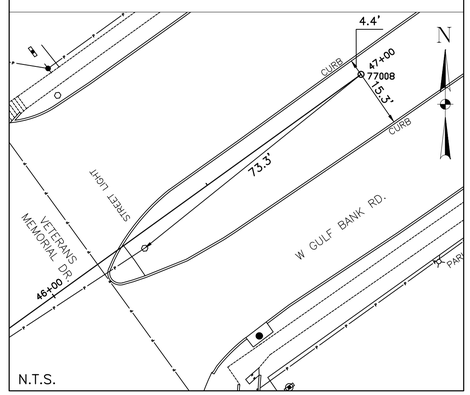
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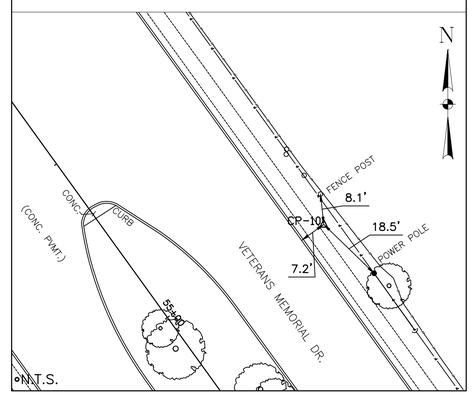
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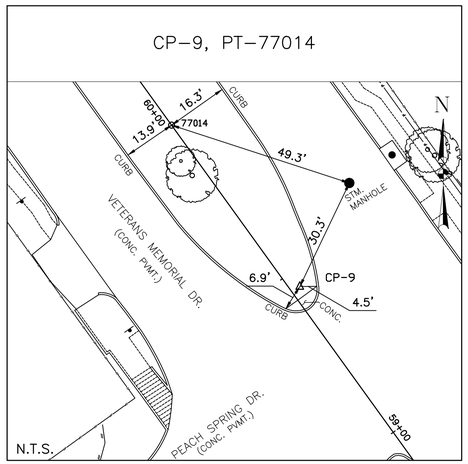
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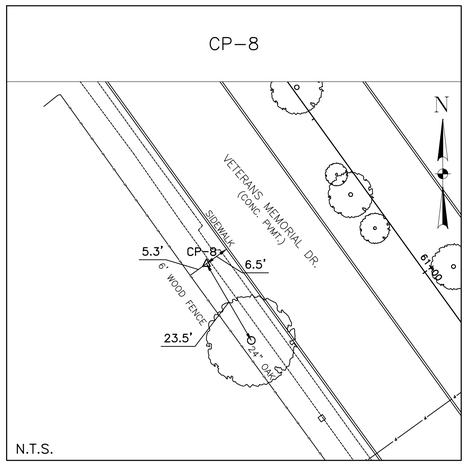
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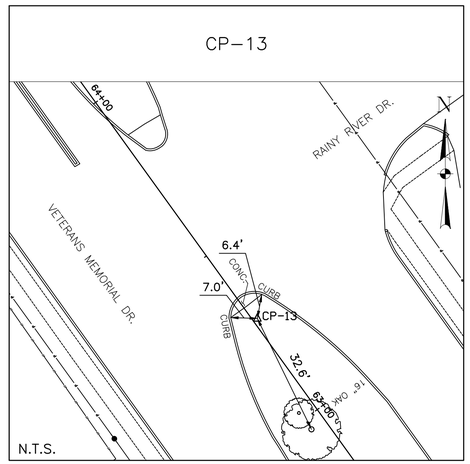
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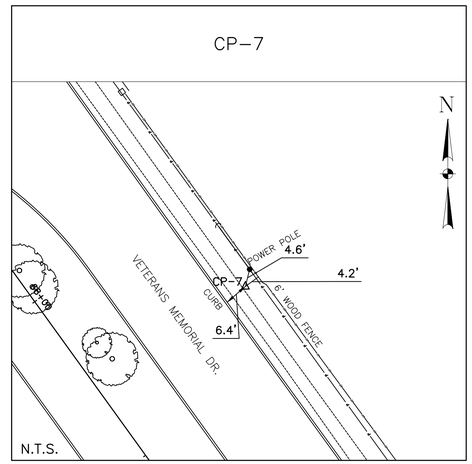
CP-8



CP-13



CP-7



LANDTECH
1315 W SAM HOUSTON PKWY N
STE 100
HOUSTON, TEXAS 77043
T: 713-861-7068 F: 713-861-4131
TBPELS REGISTRATION NO. 10019100

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HOUSTON PUBLIC WORKS

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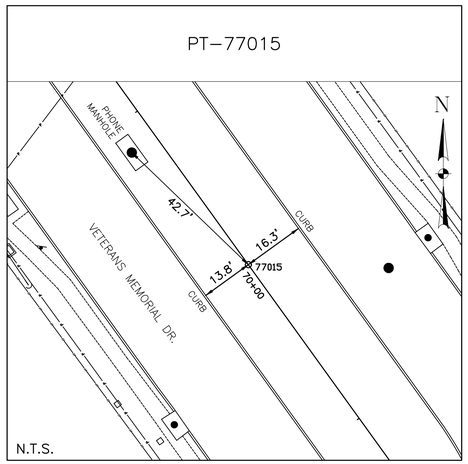
SWING TIES

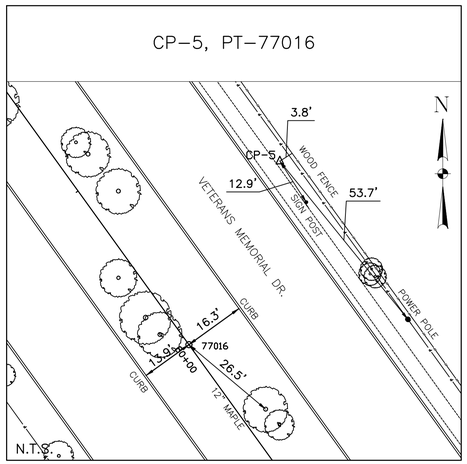
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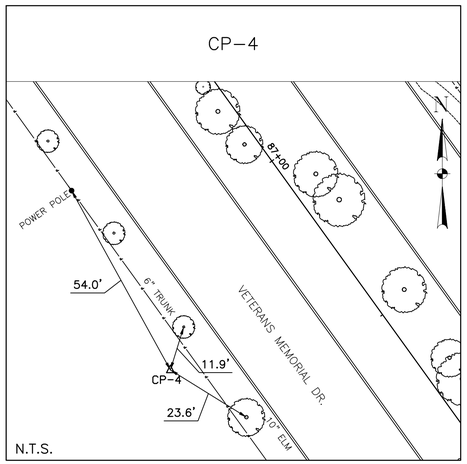
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SHEET NO. 9 OF 91	

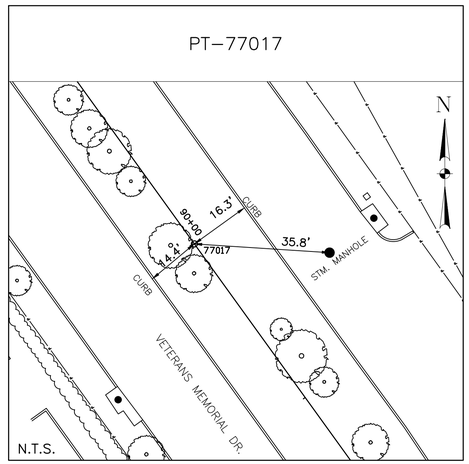
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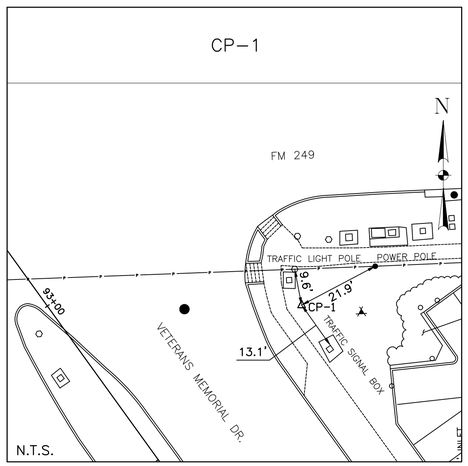
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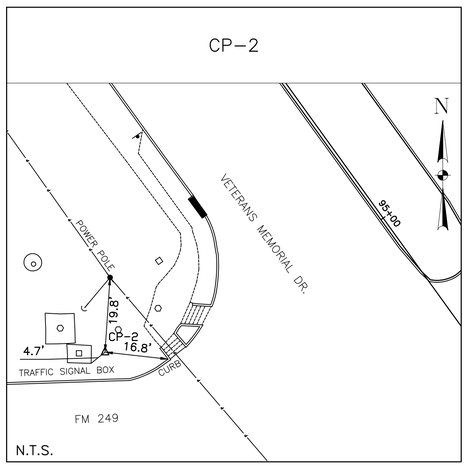


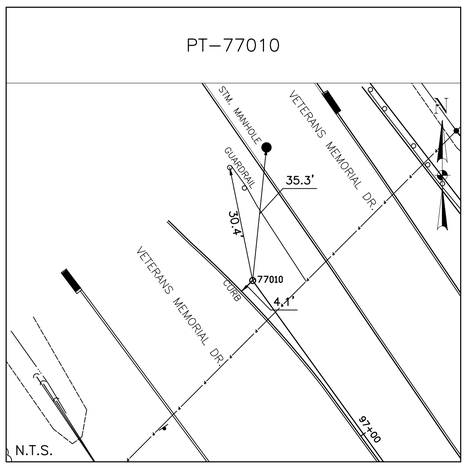












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LANDTECH
1315 W SAM HOUSTON PKWY N
STE 100
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

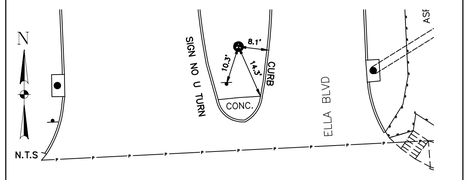
SWING TIES

SHEET 3 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 10 OF 91	

CITY OF HOUSTON

CITY SURVEY 5262 7715
SITE CONTROL MONUMENT



Project WBS# S-000900-0182-3
Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet
X= 3,099,119.2752
Y= 13,887,124.7987

Lat.= 29°53'11.32902" N
Lon.= 95°25'53.56219" W

Reference Frame Used: NAD 83 (GRS 80)
Vertical Adjustment used: NAVD '88(CORS '96)
General Location: W GULF BANK RD. AND ELLA BLVD
Date Set: 01/29/2025 Type of Mark: 4A

Keymap Page: 412 K,L,Q,P
Orthometric Elevation = 84.97
Ellipsoid Height= N/A
Geoid: 12A
Datum Source & Adjustment: GPS OBS & DIGITAL LEVELING

3 Nearest project control points (bearings and distances stated below):
CP-20: S85°18'38"E 566.32
CP-21: S69°43'38"E 319.63
CP-22: S21°54'59"E 164.29

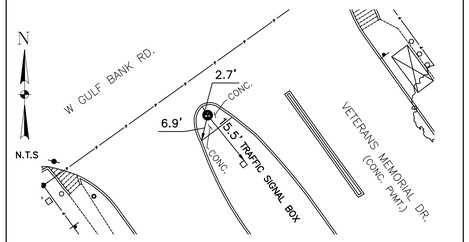
NOTE:
1. Bearings & distances are grid.
2. Scale Factor = (S.F. 0.999870017).
3. Surface= Grid S.F.

Surveyed By: LANDTECH, INC.
1315 W SAM HOUSTON PKWY N, SUITE 100
HOUSTON, TEXAS 77043
T: 713-861-7068 TBPELS REG. NO. 10019100

City of Houston, Harris County, Texas

CITY OF HOUSTON

CITY SURVEY 5262 1016
SITE CONTROL MONUMENT



Project WBS# S-000900-0182-3
Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet
X= 3,102,234.4738
Y= 13,887,831.6111

Lat.= 29°53'17.38080" N
Lon.= 95°25'17.94278" W

Reference Frame Used: NAD 83 (GRS 80)
Vertical Adjustment used: NAVD '88(CORS '96)
General Location: VETERANS MEMORIAL DR. AND W GULF BANK RD.
Date Set: 01/23/2025 Type of Mark: 4A

Keymap Page: 412 K,L,Q,P
Orthometric Elevation = 85.43
Ellipsoid Height= N/A
Geoid: 12A
Datum Source & Adjustment: GPS OBS & DIGITAL LEVELING

3 Nearest project control points (bearings and distances stated below):
CP-10: N28°32'03"W 416.56
CP-11: S83°05'40"W 129.35
CP-13: N35°31'31"W 1246.10

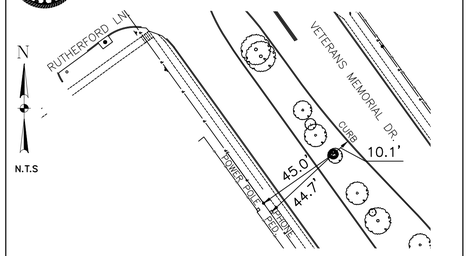
NOTE:
1. Bearings & distances are grid.
2. Scale Factor = (S.F. 0.999870017).
3. Surface= Grid S.F.

Surveyed By: LANDTECH, INC.
1315 W SAM HOUSTON PKWY N, SUITE 100
HOUSTON, TEXAS 77043
T: 713-861-7068 TBPELS REG. NO. 10019100

City of Houston, Harris County, Texas

CITY OF HOUSTON

CITY SURVEY 5263 0903
SITE CONTROL MONUMENT



Project WBS# S-000900-0182-3
Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet
X= 3,100,970.6574
Y= 13,889,586.1338

Lat.= 29°53'35.12437" N
Lon.= 95°25'31.68481" W

Reference Frame Used: NAD 83 (GRS 80)
Vertical Adjustment used: NAVD '88(CORS '96)
General Location: VETERANS MEMORIAL DR. AND RUTHERFORD LANE
Date Set: 01/23/2025 Type of Mark: 4A

Keymap Page: 412 K,L,Q,P
Orthometric Elevation = 85.89
Ellipsoid Height= N/A
Geoid: 12A
Datum Source & Adjustment: GPS OBS & DIGITAL LEVELING

3 Nearest project control points (bearings and distances stated below):
CP-5: N32°03'34"W 781.70
CP-6: N32°24'16"W 164.10
CP-7: S41°55'03"E 477.02

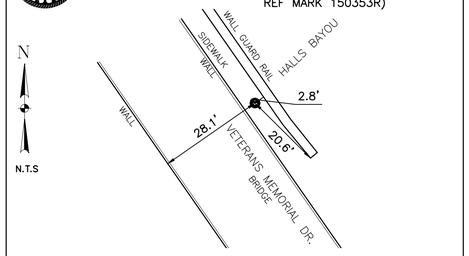
NOTE:
1. Bearings & distances are grid.
2. Scale Factor = (S.F. 0.999870017).
3. Surface= Grid S.F.

Surveyed By: LANDTECH, INC.
1315 W SAM HOUSTON PKWY N, SUITE 100
HOUSTON, TEXAS 77043
T: 713-861-7068 TBPELS REG. NO. 10019100

City of Houston, Harris County, Texas

CITY OF HOUSTON

CITY SURVEY ____ ____
SITE CONTROL MONUMENT
(HARRIS COUNTY FLOODPLAIN
REF MARK 150353R)



Project WBS# S-000900-0182-3
Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet
X= 3,099,494.2726
Y= 13,891,720.9694

Lat.= 29°53'56.69493" N
Lon.= 95°25'47.71033" W

Reference Frame Used: NAD 83 (GRS 80)
Vertical Adjustment used: NAVD '88(CORS '96)
General Location: VETERANS MEMORIAL DR. AND HALLS BAYOU
Date Set: 7/3/2023 Type of Mark: ALUM DISK STAMPED HARRIS COUNTY REFERENCE MARK 150353R

Keymap Page: 412 K,L,Q,P
Orthometric Elevation = 87.22
Ellipsoid Height= N/A
Geoid: 12A
Datum Source & Adjustment: GPS OBS & DIGITAL LEVELING

3 Nearest project control points (bearings and distances stated below):
CP-2: S14°17'18"E 350.70'
CP-1: S36°25'04"E 579.55'
CP-4: S30°48'18"E 1,173.91'

NOTE:
1. Bearings & distances are grid.
2. Scale Factor = (S.F. 0.999870017).
3. Surface= Grid S.F.

Surveyed By: LANDTECH, INC.
1315 W SAM HOUSTON PKWY N, SUITE 100
HOUSTON, TEXAS 77043
T: 713-861-7068 TBPELS REG. NO. 10019100

City of Houston, Harris County, Texas

NO.	DATE	REVISION	APP.

LANDTECH
1315 W SAM HOUSTON PKWY N
STE 100
HOUSTON, TEXAS 77043
T: 713-861-7068 F: 713-861-4131
TBPELS REGISTRATION NO. 10019100

RELEASED BY: NHUY NGUYEN
TX RPLS #6409
DATE: 8/1/2025

FOR INTERIM REVIEW ONLY

PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT

SURVEYED BY: LANDTECH, INC.
FB NO. TBD

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

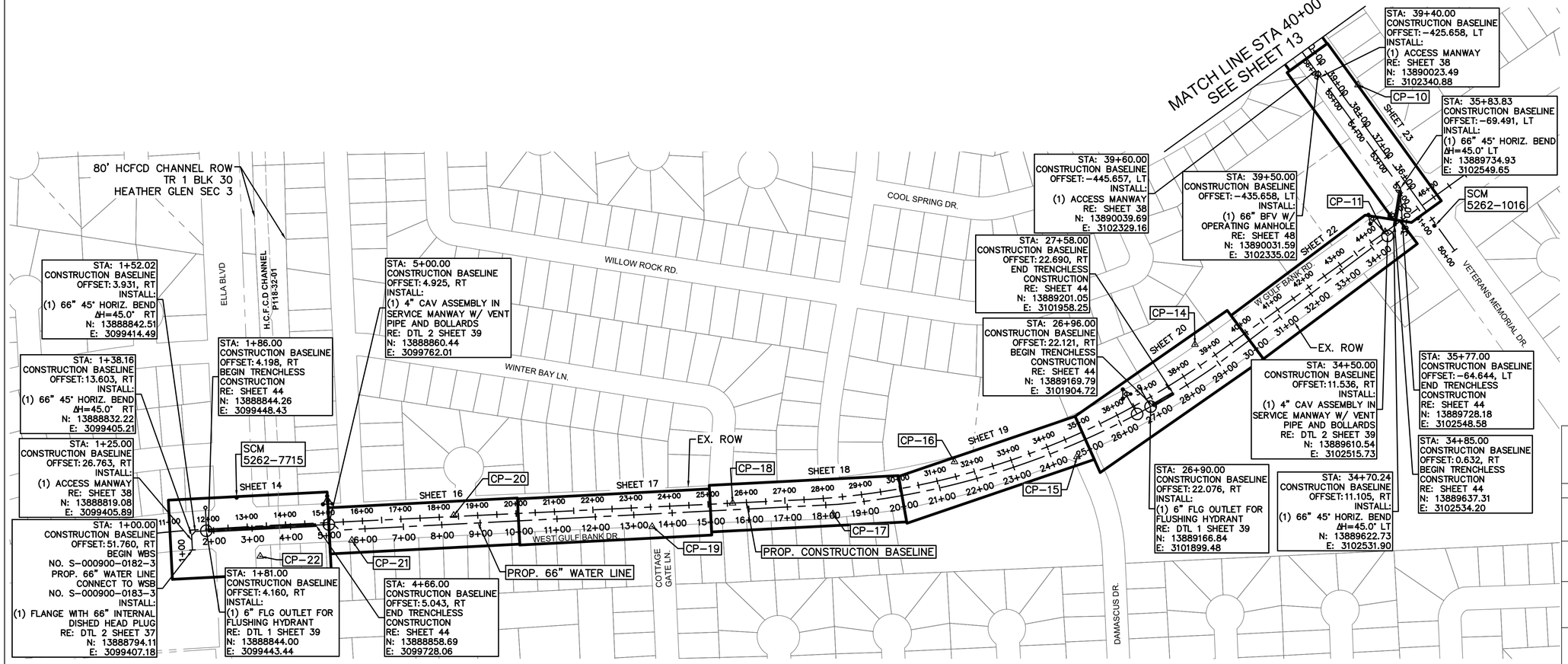
SWING TIES

SHEET 4 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 11 OF 91	

PLOT STYLE: Dj_AutoCAD14.ctb PLOTTED: 8/1/2025 12:02 PM

FILE PATH: S:\2025\2520001\CADD\COH S-0009000-182-3 Water Line Swing Ties.dwg



SURVEY GENERAL NOTES

1. ORIENTATION IS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD 83). ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES AND MAY BE BROUGHT TO GRID BY APPLYING THE FOLLOWING SCALE FACTOR: 0.999870017.
2. ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM) FOR HARRIS COUNTY, TEXAS, MAP NO. 48201C0470L REVISED/DATED JUNE 18, 2007, THE SUBJECT TRACT APPEARS TO NOT LIE WITHIN ANY FLOODWAY ZONE. THIS DETERMINATION WAS DONE BY GRAPHIC PLOTTING AND IS APPROXIMATE ONLY, AND HAS NOT BEEN FIELD VERIFIED. THIS FLOOD STATEMENT DOES NOT IMPLY THAT THE PROPERTY OR STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. ON RARE OCCASIONS FLOODS CAN AND WILL OCCUR AND FLOOD HEIGHTS MAY BE INCREASED BY MAN-MADE OR NATURAL CAUSES. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF LANDTECH, INC.
3. READILY VISIBLE IMPROVEMENTS AND UTILITIES WERE LOCATED WITH THIS SURVEY, SUBSURFACE PROBING, EXCAVATION AND EXPLORATION WAS PERFORMED BY LANDTECH, INC.
4. ENVIRONMENTAL AND DRAINAGE ISSUES ARE BEYOND THE SCOPE OF THIS SURVEY.
5. GAS, SANITARY, STORM, AND WATER LINES SHOWN HEREON ARE BASED ON UTILITY PLANS ACQUIRED FROM CITY OF HOUSTON AND WERE FIELD VERIFIED WHERE POSSIBLE. OTHER UTILITY PLANS OR INFORMATION MAY EXIST NOT KNOWN TO THIS COMPANY.
6. SURVEYOR DID NOT PHYSICALLY ENTER MANHOLES. UNDERGROUND PIPE SIZES WERE DETERMINED BY A "MEASURE DOWN" METHOD FROM TOP OF MANHOLE RIM OR TOP OF GRATE OR TOP OF CURB AND WERE COMPARED WITH UTILITY PLANS WHERE POSSIBLE.

SITE CONTROL MONUMENT 5262-7715 ORTHOMETRIC ELEVATION = 84.97'

CITY OF HOUSTON SITE CONTROL MONUMENT NO. 5262-7715, BEING LOCATED NEAR W GULF BANK RD. AND ELLA BLVD, APPROXIMATELY 77 FT. NORTH OF THE PROPOSED W GULF BANK RD. CONSTRUCTION BASELINE (NAVD88, 2001 ADJ.). IT IS 566.32 FT. EAST OF CP-20, 319.63 FT. NORTHEAST OF CP-21, AND 164.29 FT. NORTHEAST OF CP-22.

SITE CONTROL MONUMENT 5262-1016 ORTHOMETRIC ELEVATION = 85.43'

CITY OF HOUSTON SITE CONTROL MONUMENT NO. 5262-1016, BEING LOCATED NEAR W GULF BANK RD. AND VETERANS MEMORIAL DR., APPROXIMATELY 62 FT. SOUTHWEST OF THE PROPOSED W GULF BANK RD. CONSTRUCTION BASELINE (NAVD88, 2001 ADJ.) IT IS 416.56 FT. SOUTHEAST OF CP-10, 129.35 FT. EAST OF CP-11, AND 1246.10 FT. SOUTHEAST OF CP-13.

NO.	DATE	REVISION	APP.

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.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS
77009
(281) 597-9300
TBPE FIRM REGISTRATION
F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

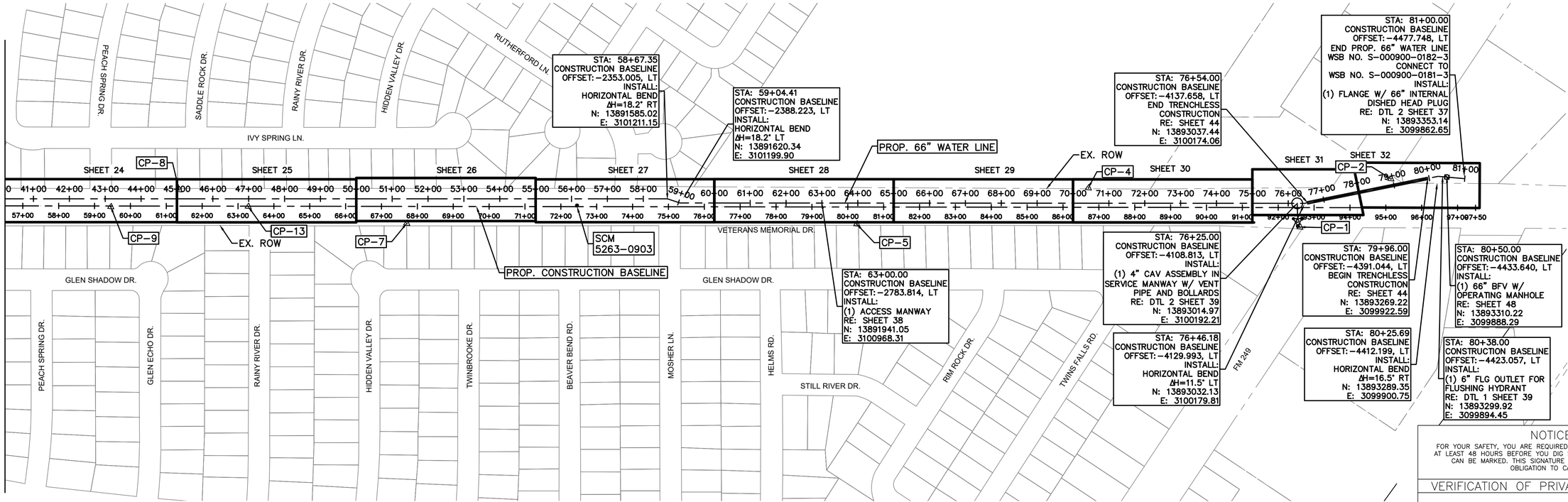
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
OVERALL PROJECT LAYOUT SHEET 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 150' H	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 12 OF 91	

PLOTTED: 8/1/2025 11:09 AM
PLOT STYLE: Coh_ctb_230809.ctb
FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-Overall-Sheets.dwg



SURVEY GENERAL NOTES

1. ORIENTATION IS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD 83). ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES AND MAY BE BROUGHT TO GRID BY APPLYING THE FOLLOWING SCALE FACTOR: 0.999870017.
2. ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM) FOR HARRIS COUNTY, TEXAS, MAP NO. 48201C0470L REVISED/DATED JUNE 18, 2007, THE SUBJECT TRACT APPEARS TO NOT LIE WITHIN ANY FLOODWAY ZONE. THIS DETERMINATION WAS DONE BY GRAPHIC PLOTTING AND IS APPROXIMATE ONLY, AND HAS NOT BEEN FIELD VERIFIED. THIS FLOOD STATEMENT DOES NOT IMPLY THAT THE PROPERTY OR STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. ON RARE OCCASIONS FLOODS CAN AND WILL OCCUR AND FLOOD HEIGHTS MAY BE INCREASED BY MAN-MADE OR NATURAL CAUSES. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF LANDTECH, INC.
3. READILY VISIBLE IMPROVEMENTS AND UTILITIES WERE LOCATED WITH THIS SURVEY, SUBSURFACE PROBING, EXCAVATION AND EXPLORATION WAS PERFORMED BY LANDTECH, INC.
4. ENVIRONMENTAL AND DRAINAGE ISSUES ARE BEYOND THE SCOPE OF THIS SURVEY.
5. GAS, SANITARY, STORM, AND WATER LINES SHOWN HEREON ARE BASED ON UTILITY PLANS ACQUIRED FROM CITY OF HOUSTON AND WERE FIELD VERIFIED WHERE POSSIBLE. OTHER UTILITY PLANS OR INFORMATION MAY EXIST NOT KNOWN TO THIS COMPANY.
6. SURVEYOR DID NOT PHYSICALLY ENTER MANHOLES. UNDERGROUND PIPE SIZES WERE DETERMINED BY A "MEASURE DOWN" METHOD FROM TOP OF MANHOLE RIM OR TOP OF GRATE OR TOP OF CURB AND WERE COMPARED WITH UTILITY PLANS WHERE POSSIBLE.

SITE CONTROL MONUMENT 5263-0903 ORTHOMETRIC ELEVATION = 85.89'

CITY OF HOUSTON SITE CONTROL MONUMENT NO. 5263-0903, BEING LOCATED NEAR VETERANS MEMORIAL DR. AND RUTHERFORD LANE, APPROXIMATELY 3 FT. SOUTHWEST OF THE PROPOSED W VETERANS MEMORIAL DR. CONSTRUCTION BASELINE (NAVD88, 2001 ADJ.). IT IS 781.70 FT. SOUTHEAST OF CP-5 AND 477.02 FT. NORTHWEST OF CP-7.

NO.	DATE	REVISION	APP.

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.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

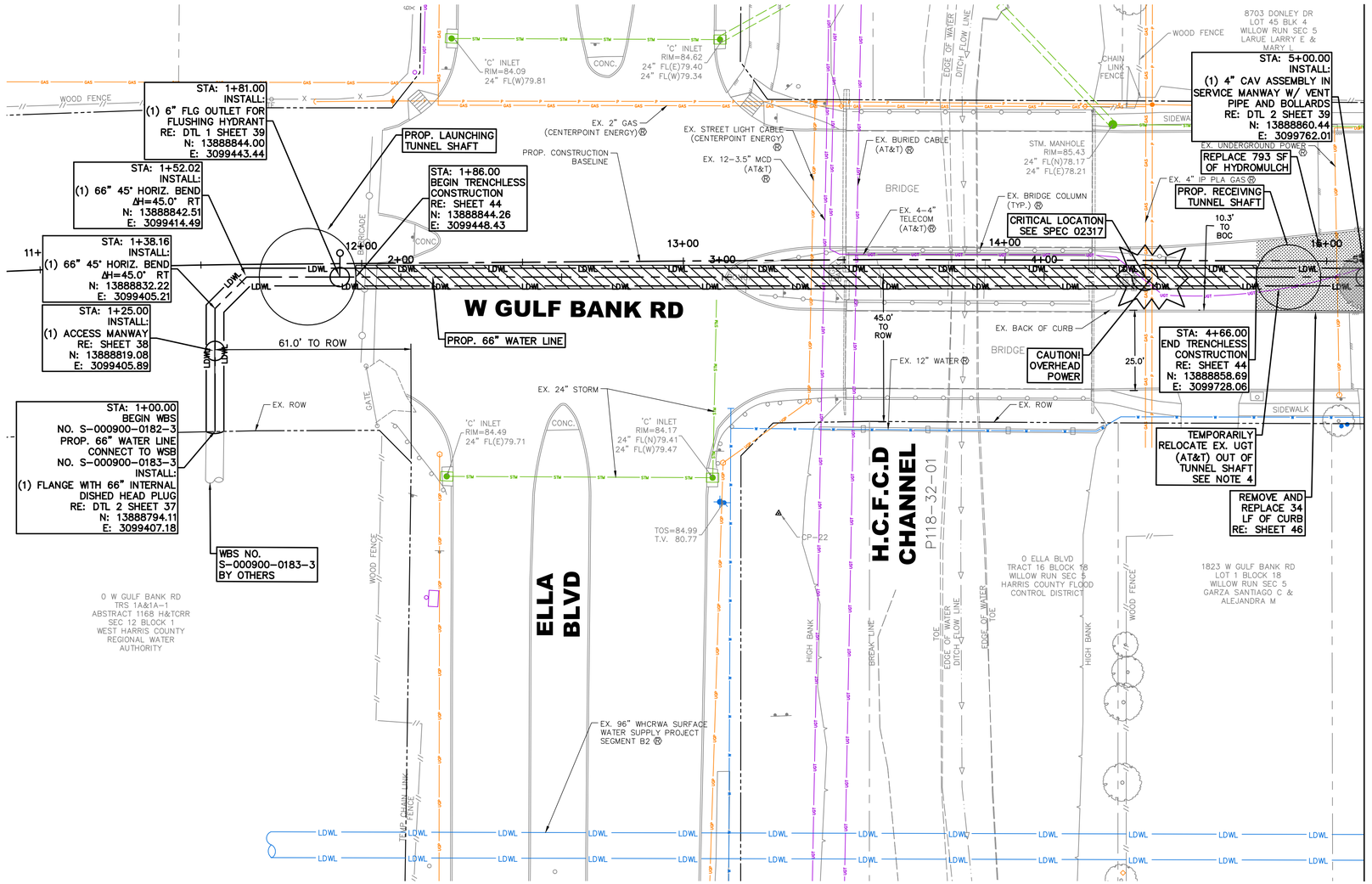
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
OVERALL PROJECT LAYOUT SHEET 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 150' H	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 13 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:09 AM
FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-Overall-Sheets.dwg



GRAPHIC SCALE IN FEET
0 10 20 40 (HORIZONTAL)
0 1 2 4 (VERTICAL)

N

CONTROL POINTS:
1. CONTROL POINT #21
N: 13888819.36
E: 3099822.03
ELEV: 84.56
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

2. CONTROL POINT #22
N: 13888777.69
E: 3099583.49
ELEV: 86.83
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

NOTES:
1) CONTRACTOR TO BRACE AND SUPPORT EXISTING UTILITIES. NO SEPARATE PAY ITEM.

2) TREES CROSSING THE TRENCH ARE NOTED TO BE PROTECTED OR REMOVED. REFER TO TREE PROTECTION PLAN. CONTRACTOR SHALL NOT DISTURB TREES OUTSIDE OF CONSTRUCTION LIMITS.

3) RESTORE LANDSCAPING, PAVEMENT, STRIPING, AND OTHER SURFACE CONDITIONS, AND ALL OTHER EXISTING FEATURES TO ORIGINAL CONDITION. DOCUMENT EXISTING CONDITIONS ALONG THE PROPOSED ALIGNMENT DURING PRE-CONSTRUCTION SURVEY. REFERENCE SPECIFICATION 02201.

4) CONTRACTOR TO CONTACT CHRIS CARRSCO AT (832) 396-4217 OR EMAIL CC1255@ATT.COM BEFORE RELOCATING EXISTING AT&T UTILITIES.

5) CONTACT HARRIS COUNTY FLOOD CONTROL 48 HOURS BEFORE CONSTRUCTION AT (713) 684 4129. SEE GENERAL NOTES.

HYDROMULCH TOTAL (THIS SHEET)	793 SF	0.02 AC
PAVEMENT TOTAL (THIS SHEET)		

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.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

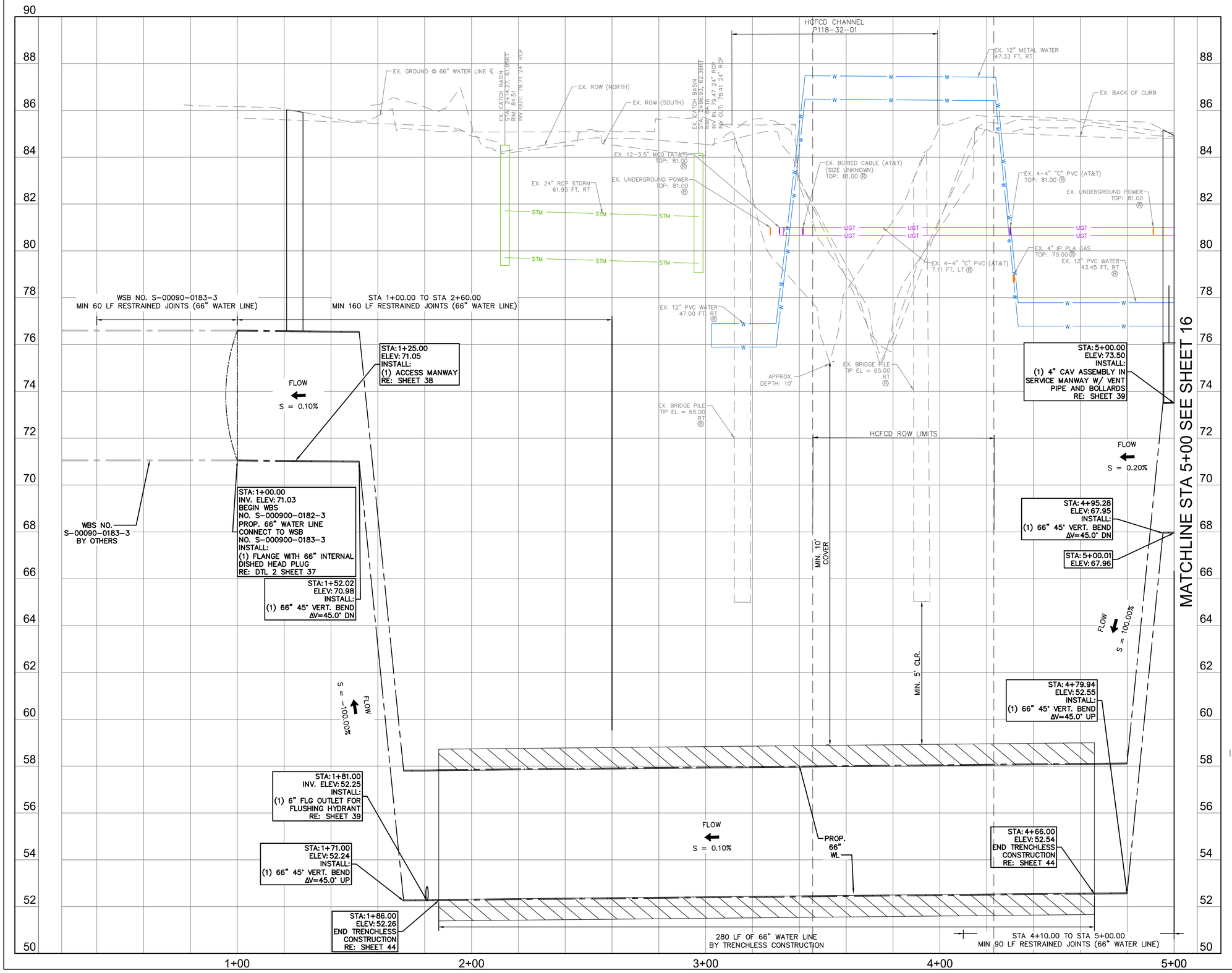
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
BEGIN TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 14 OF 91	

NO.	DATE	REVISION	APP.

FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-BEGIN-TO-STA-20+00.dwg PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:09 AM

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N

GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

NOTES:
1) CONTRACTOR TO BRACE AND SUPPORT EXISTING UTILITIES. NO SEPARATE PAY ITEM.
2) TREES CROSSING THE TRENCH ARE NOTED TO BE PROTECTED OR REMOVED. REFER TO TREE PROTECTION PLAN. CONTRACTOR SHALL NOT DISTURB TREES OUTSIDE OF CONSTRUCTION LIMITS.
3) RESTORE LANDSCAPING, PAVEMENT, STRIPING, AND OTHER SURFACE CONDITIONS, AND ALL OTHER EXISTING FEATURES TO ORIGINAL CONDITION. DOCUMENT EXISTING CONDITIONS ALONG THE PROPOSED ALIGNMENT DURING PRE-CONSTRUCTION SURVEY. REFERENCE SPECIFICATION 02201.

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.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

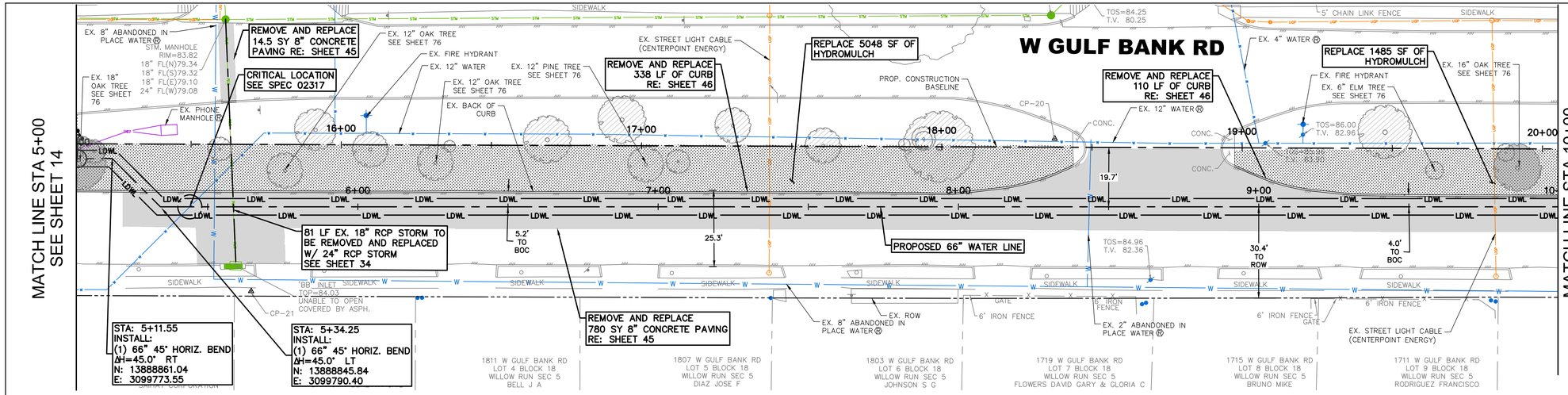
SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

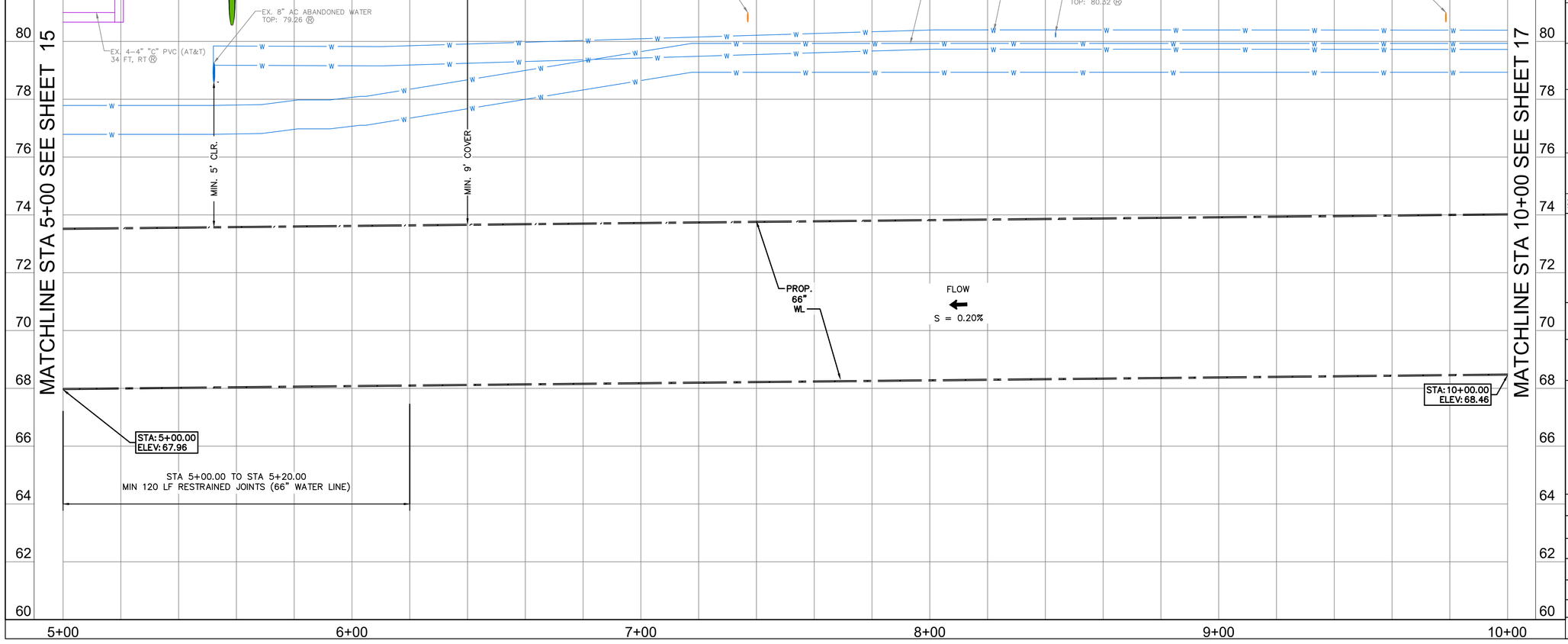
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
BEGIN TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 15 OF 91	





PLOTTED: 8/1/2025 11:10 AM
PLOT STYLE: Coh_ctb_230809.ctb
FILE PATH: K:\HOU_Utilities\064402850_COH S-000900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-BEGIN-TO-STA-20+00.dwg

N

GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #19
N: 13888854.83
E: 3100603.00
ELEV: 84.19
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

2. CONTROL POINT #20
N: 13888883.82
E: 3100086.66
ELEV: 85.62
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

NOTES:
1) CONTRACTOR TO BRACE AND SUPPORT EXISTING UTILITIES. NO SEPARATE PAY ITEM.
2) TREES CROSSING THE TRENCH ARE NOTED TO BE PROTECTED OR REMOVED. REFER TO TREE PROTECTION PLAN. CONTRACTOR SHALL NOT DISTURB TREES OUTSIDE OF CONSTRUCTION LIMITS.
3) RESTORE LANDSCAPING, PAVEMENT, STRIPING, AND OTHER SURFACE CONDITIONS, AND ALL OTHER EXISTING FEATURES TO ORIGINAL CONDITION. DOCUMENT EXISTING CONDITIONS ALONG THE PROPOSED ALIGNMENT DURING PRE-CONSTRUCTION SURVEY. REFERENCE SPECIFICATION 02201.

HYDROMULCH TOTAL (THIS SHEET)	6533 SF	0.15 AC
PAVEMENT TOTAL (THIS SHEET)	795 SY	0.17 AC

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Date

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Signature valid for six months.

Date

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Date

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

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

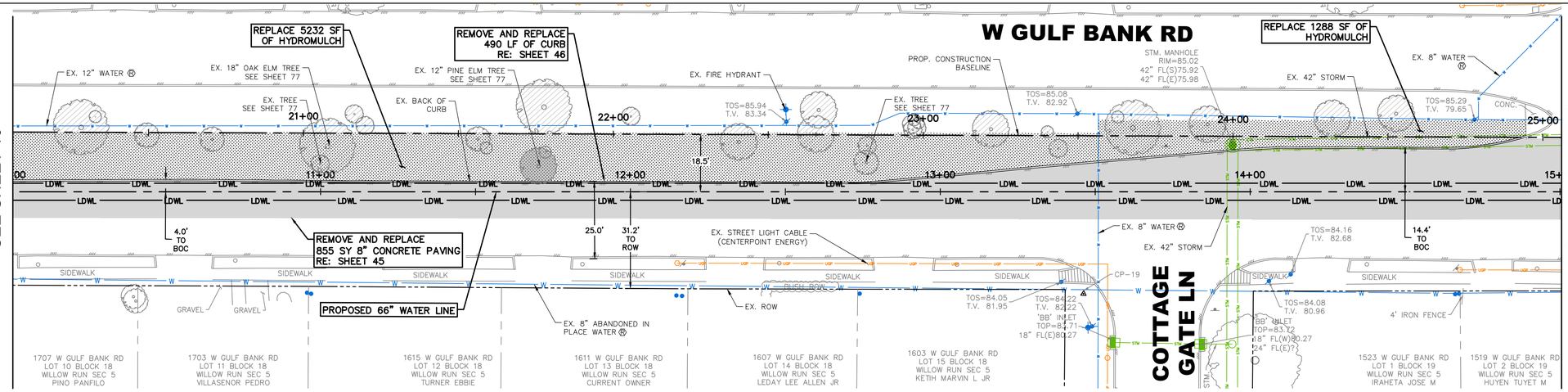
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

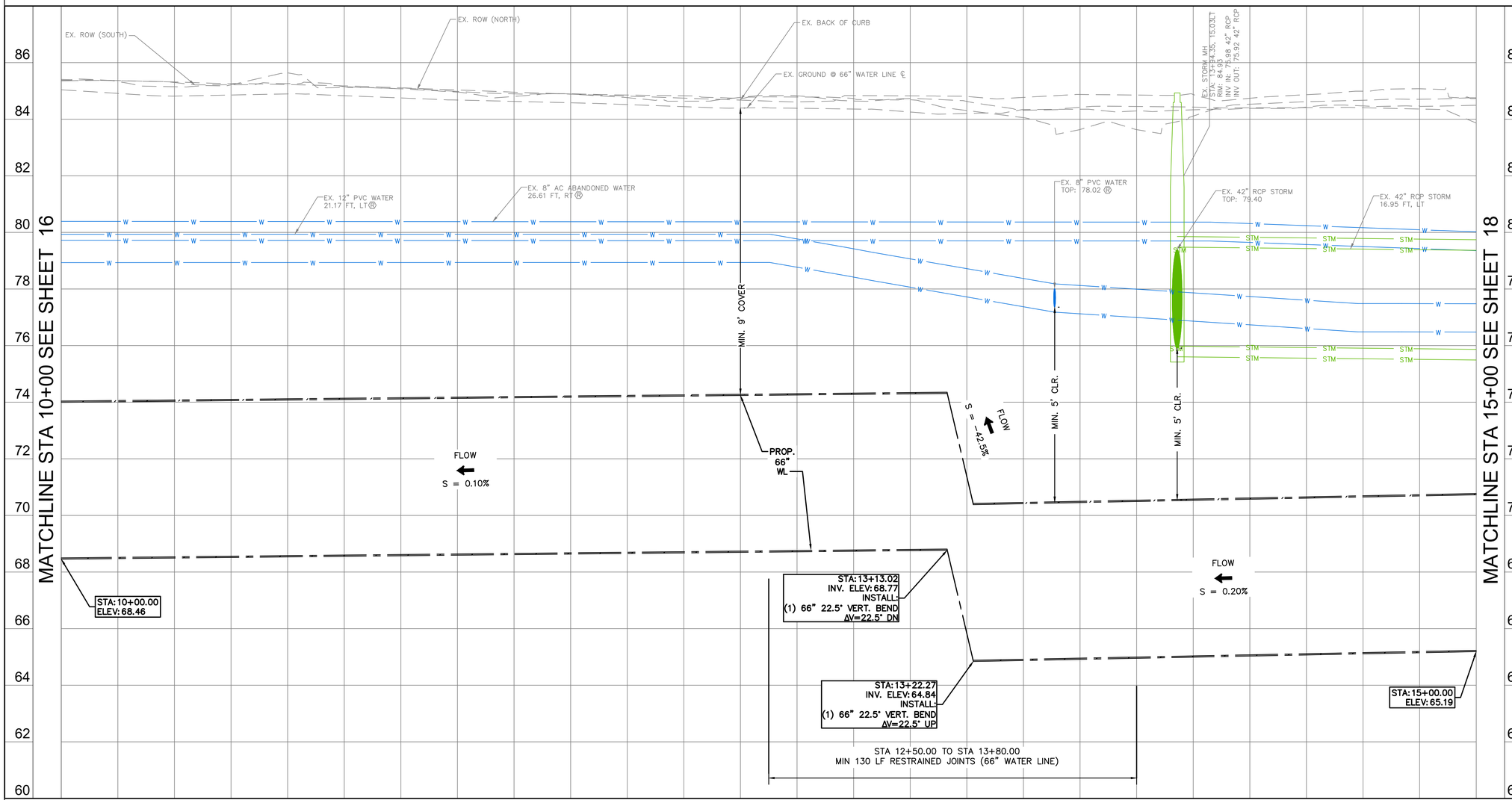
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

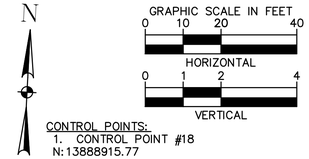
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 5+00 TO STA 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 16 OF 91	

PLOTTED: 8/1/2025 11:10 AM
PLOT STYLE: Coh_ctb_230809.ctb
FILE PATH: K:\HOU_Utilities\064402850_COH S-000900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-BEGIN-TO-STA-20+00.dwg







NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #18
N: 13888915.77
E: 3100812.30
ELEV: 85.15
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

2. CONTROL POINT #19
N: 13888854.83
E: 3100603.00
ELEV: 84.19
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

NOTES:
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HYDROMULCH TOTAL (THIS SHEET)	6520 SF	0.15 AC
PAVEMENT TOTAL (THIS SHEET)	855 SY	0.18 AC

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SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

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Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 10+00 TO STA 15+00

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CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 17 OF 91	

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MATCH LINE STA 15+00 SEE SHEET 17

W GULF BANK RD

REPLACE 1604 SF OF HYDROMULCH

REMOVE AND REPLACE 226 LF OF CURB RE: SHEET 46

EX. 24" STORM

STM. MANHOLE RIM=84.77 24" FL(N)78.95 36" FL(E)75.91 36" FL(W)75.85

EX. 6" PINE TREE SEE SHEET 17

EX. FIRE HYDRANT

EX. 16" COTTON TREE SEE SHEET 77

EX. 2" IP COATED STEEL GAS Ⓡ

EX. 12" WATER Ⓡ

PROP. CONSTRUCTION BASELINE

EX. 8" ABANDONED IN PLACE WATER Ⓡ

TOS=84.28 T.V. 81.74

TOS=84.77 T.V. 80.07

SAN. MANHOLE RIM=84.28 24" FL(N)63.54 24" FL(E)63.52

SAN. MANHOLE RIM=84.74 18" FL(N)75.50 18" FL(S)75.62 SAN. MANHOLE RIM=84.65 TOP OF DIRT=76.65 NO TO SEE PIPE

REMOVE AND REPLACE 157 LF OF CURB RE: SHEET 46

REPLACE 2644 SF OF HYDROMULCH

EX. FIRE HYDRANT TO BE TEMPORARILY RELOCATED OUTSIDE OF CONSTRUCTION LIMITS. NO SEPARATE PAY ITEM.

EX. 36" STORM

EX. 10" STORM

EX. TREE SEE SHEET 77

TOS=85.01 T.V. 82.01

CONC.

CP-18

26+00 27+00 28+00 29+00 30+00

EX. 36" STORM

EX. 24" STORM

C1

16+00 17+00 18+00 19+00 20+00

16.7'

25.8'

3.7' TO BOC

33.4' TO ROW

3.5' TO BOC

CRITICAL LOCATION SEE SPEC 02317

PROPOSED 66" WATER LINE

EX. 6" ABANDONED IN PLACE WATER Ⓡ

EX. STREET LIGHT CABLE (CENTERPOINT ENERGY)

REMOVE AND REPLACE 997 SY 8" CONCRETE PAVING RE: SHEET 45

CAUTION! OVERHEAD POWER

STM. MANHOLE RIM=84.79 24" FL(N)79.77

SIDEWALK

CP-17

'BB' INLET TOP=84.13 UNABLE TO OPEN COVERED BY ASPH

EX. ROW

1511 W GULF BANK RD LOT 4 BLOCK 19 WILLOW RUN SEC 5 ORTIZ FERMIN

1507 W GULF BANK RD LOT 5 BLOCK 19 WILLOW RUN SEC 5 HUCKABY AUDRIA R

1503 W GULF BANK LOT 6 BLOCK 19 WILLOW RUN SEC 5 ROMAN SALVADOR

STA: 18+30.80 HORIZ. PC SEE CURVE TABLE N: 13888912.64 E: 3101085.23

1495 W GULF BANK RD LOT 7 BLOCK 19 WILLOW RUN SEC 5 REVEN HOUSING TEXAS LLC

EX. 18" SANITARY SEWER

SAN. MANHOLE RIM=84.56 10" FL(E)76.52 18" FL(S)77.52 18" FL(N)75.68

EX. 10" SANITARY SEWER

1491 W GULF BANK RD LOT 8 BLOCK 19 WILLOW RUN SEC 5 LACOUR LINDA A

STM. MANHOLE RIM=85.07 10" FL(N)79.47 24" FL(S)79.25

EX. 24" STORM

1487 W GULF BANK RD LOT 9 BLOCK 19 WILLOW RUN SEC 5 SALAZAR FLORENCIA

STM. MANHOLE RIM=85.25

MATCH LINE STA 20+00 SEE SHEET 19

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	2063.92'	1047.15'	N70°03'14"E	1035.95'	29°04'10"	535.10'

GRAPHIC SCALE IN FEET
0 10 20 40 (HORIZONTAL)
0 1 2 4 (VERTICAL)

N

CONTROL POINTS:
1. CONTROL POINT #17
N: 13888887.64
E: 3101072.98
ELEV: 84.44
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

2. CONTROL POINT #18
N: 13888915.77
E: 3100812.30
ELEV: 85.15
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

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NO.	DATE	REVISION	APP.

MATCHLINE STA 15+00 SEE SHEET 17

EX. ROW (SOUTH)

EX. BACK OF CURB

EX. ROW (NORTH)

EX. GROUND @ 66" WATER LINE ℄

EX. 8" AC ABANDONED WATER TOP: 79.86 Ⓡ

EX. STORM MH STA: 18+03.30, 16.72LT RIM: 84.69 INV IN: 78.77 36" RCP INV IN: 78.77 24" RCP INV IN: 79.77 24" RCP INV OUT: 78.77 36" RCP

EX. SANITARY SEWER MH STA: 18+43.45, 27.33RT RIM: 84.52 INV IN: 75.52 10" PVC INV IN: 75.68 18" PVC INV OUT: 75.68 18" PVC

EX. STORM MH STA: 19+58.37, 37.42RT RIM: 85.39 INV IN: 80.21 24" RCP INV OUT: 79.21 24" RCP

EX. STORM MH STA: 20+19.64', 8.63LT RIM: 85.49 INV IN: 80.42 10" PVC INV OUT: 79.25 24" RCP

EX. 6" ABANDONED WATER TOP: 79.91 Ⓡ

EX. 36" RCP STORM 16.72 FT, LT

EX. 8" AC ABANDONED WATER 32.01 FT, RT Ⓡ

EX. 2" IP COATED STEEL GAS TOP: 79.00 Ⓡ

EX. 28" STORM TOP: 81.78

EX. 36" RCP STORM 21.52 FT, LT

EX. 24" STORM TOP: 81.24

EX. 10" PVC SANITARY SEWER 27.37 FT, RT

EX. 18" SANITARY SEWER TOP: 77.15

EX. 12" PVC WATER 23.99 FT, LT Ⓡ

MIN. 9' COVER

MIN. 2' CLR.

MIN. 5' CLR.

PROP. 66" WL

FLOW
S = 0.20%

STA: 14+99.99 ELEV: 65.19

STA: 20+00.00 ELEV: 66.18

88 86 84 82 80 78 76 74 72 70 68 66 64 62

15+00 16+00 17+00 18+00 19+00 20+00

MATCHLINE STA 20+00 SEE SHEET 19

HYDROMULCH TOTAL (THIS SHEET)	4248 SF	0.10 AC
PAVEMENT TOTAL (THIS SHEET)	997 SY	0.21 AC

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TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

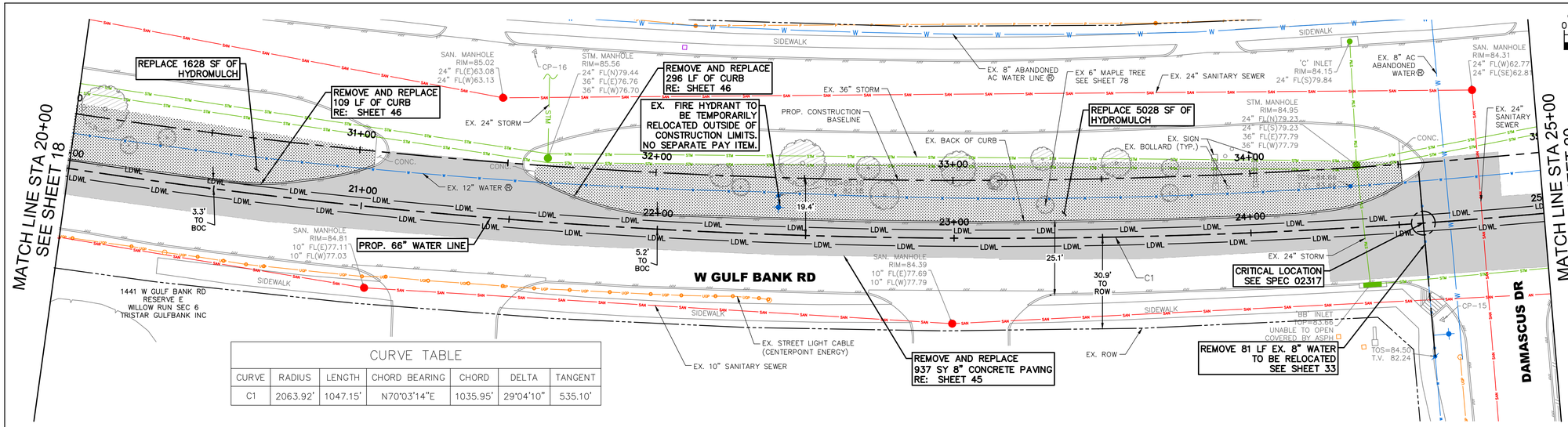
PRELIMINARY
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Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 15+00 TO STA 20+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 18 OF 91	

FILE PATH: K:\HOU_Utilities\064402850_COH S-000900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-20+00-TO-STA-40+00.dwg PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:11 AM



CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	2063.92'	1047.15'	N70°03'14"E	1035.95'	29°04'10"	535.10'

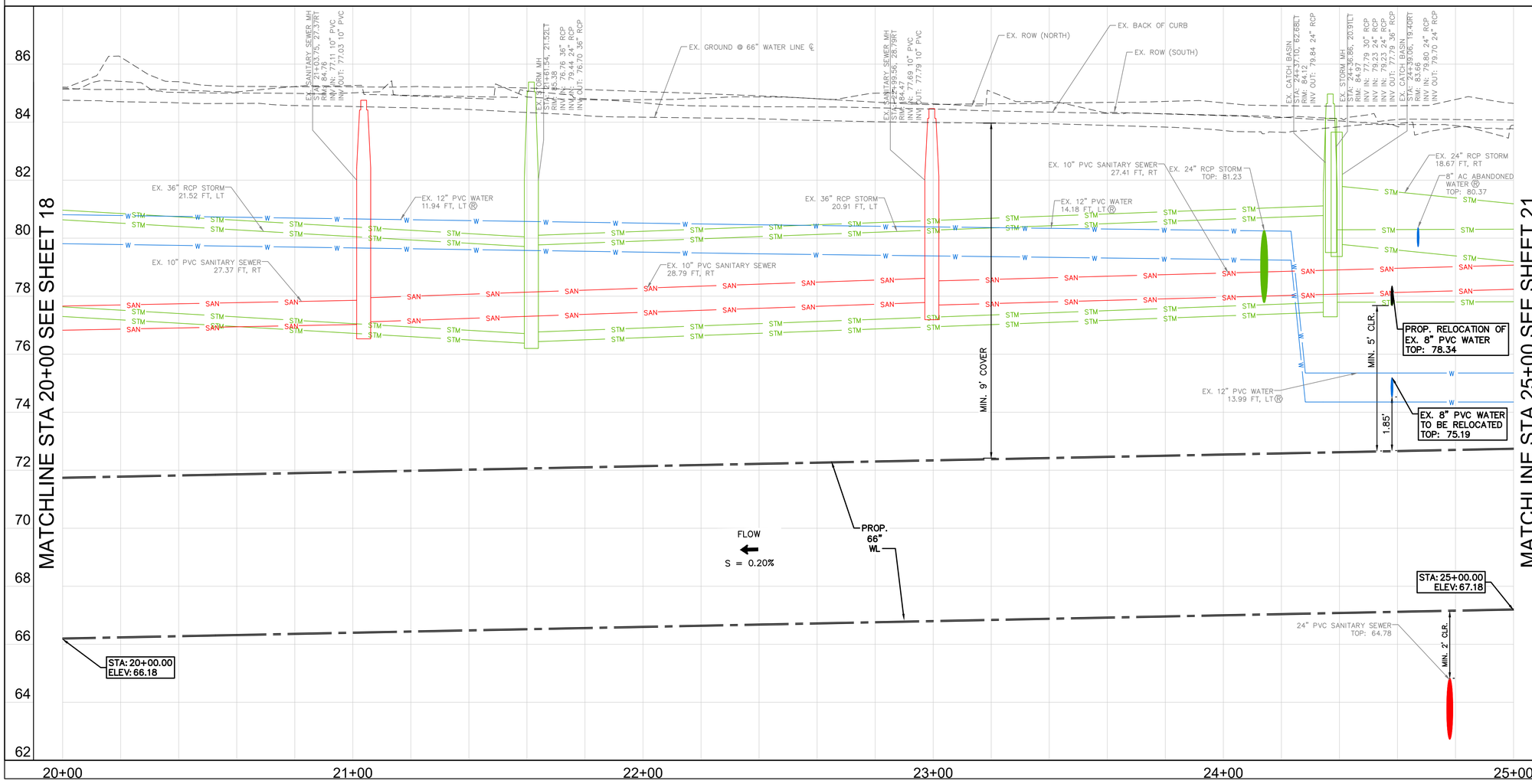
GRAPHIC SCALE IN FEET
0 10 20 40 (HORIZONTAL)
0 1 2 4 (VERTICAL)

CONTROL POINTS:
1. CONTROL POINT #15
N: 13889036.36
E: 3101707.86
ELEV: 84.03
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

2. CONTROL POINT #16
N: 13889023.45
E: 3101321.51
ELEV: 85.29
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

NOTES:
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HYDROMULCH TOTAL (THIS SHEET)	6656 SF	0.15 AC
PAVEMENT TOTAL (THIS SHEET)	937 SY	0.20 AC

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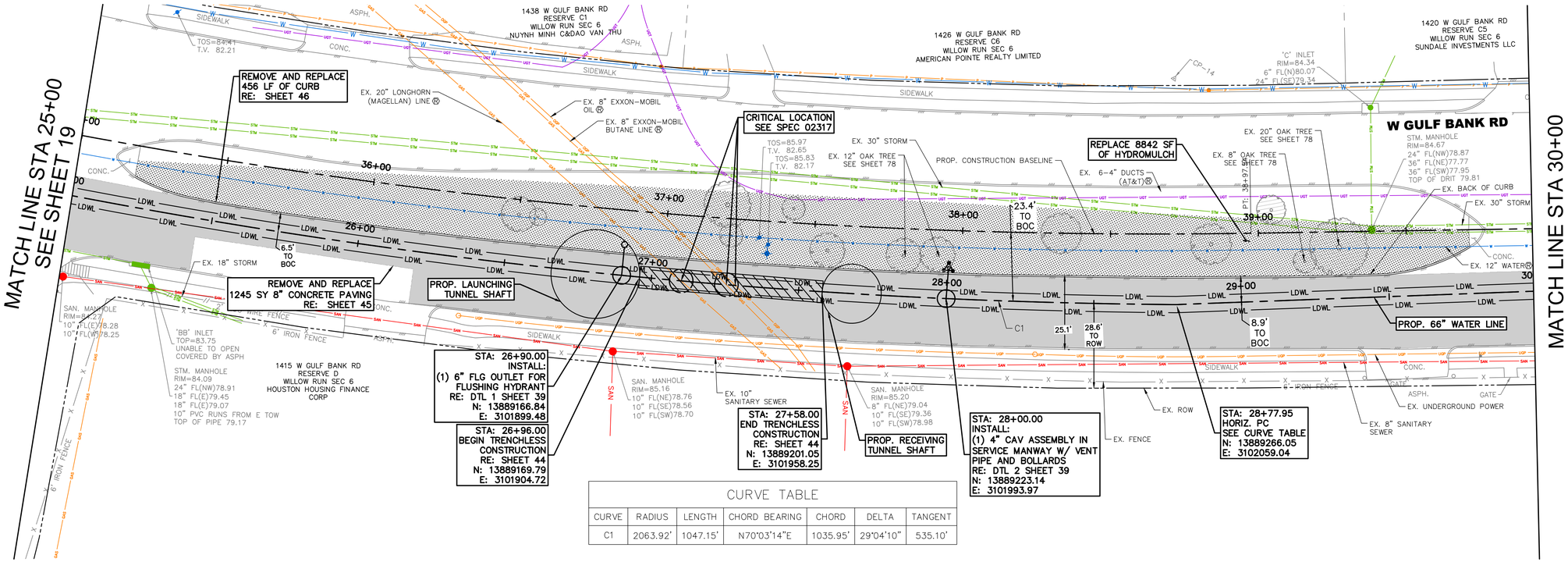
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P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
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STA 20+00 TO STA 25+00

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CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 19 OF 91	



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C1	2063.92'	1047.15'	N70°03'14"E	1035.95'	29°04'10"	535.10'

GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

CONTROL POINTS:
1. CONTROL POINT #14
N: 13889328.28
E: 3102014.68
ELEV: 84.96
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

2. CONTROL POINT #15
N: 13889036.36
E: 3101707.86
ELEV: 84.03
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

NOTES:
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4) EXXON MOBIL CONTACT NUMBER: 1-800-537-5200

5) MAGELLAN CONTACT NUMBER: 1-800-720-2417

HYDROMULCH TOTAL (THIS SHEET)	8842 SF	0.20 AC
PAVEMENT TOTAL (THIS SHEET)	1245 SY	0.26 AC

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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PLAN STA 25+00 TO STA 30+00

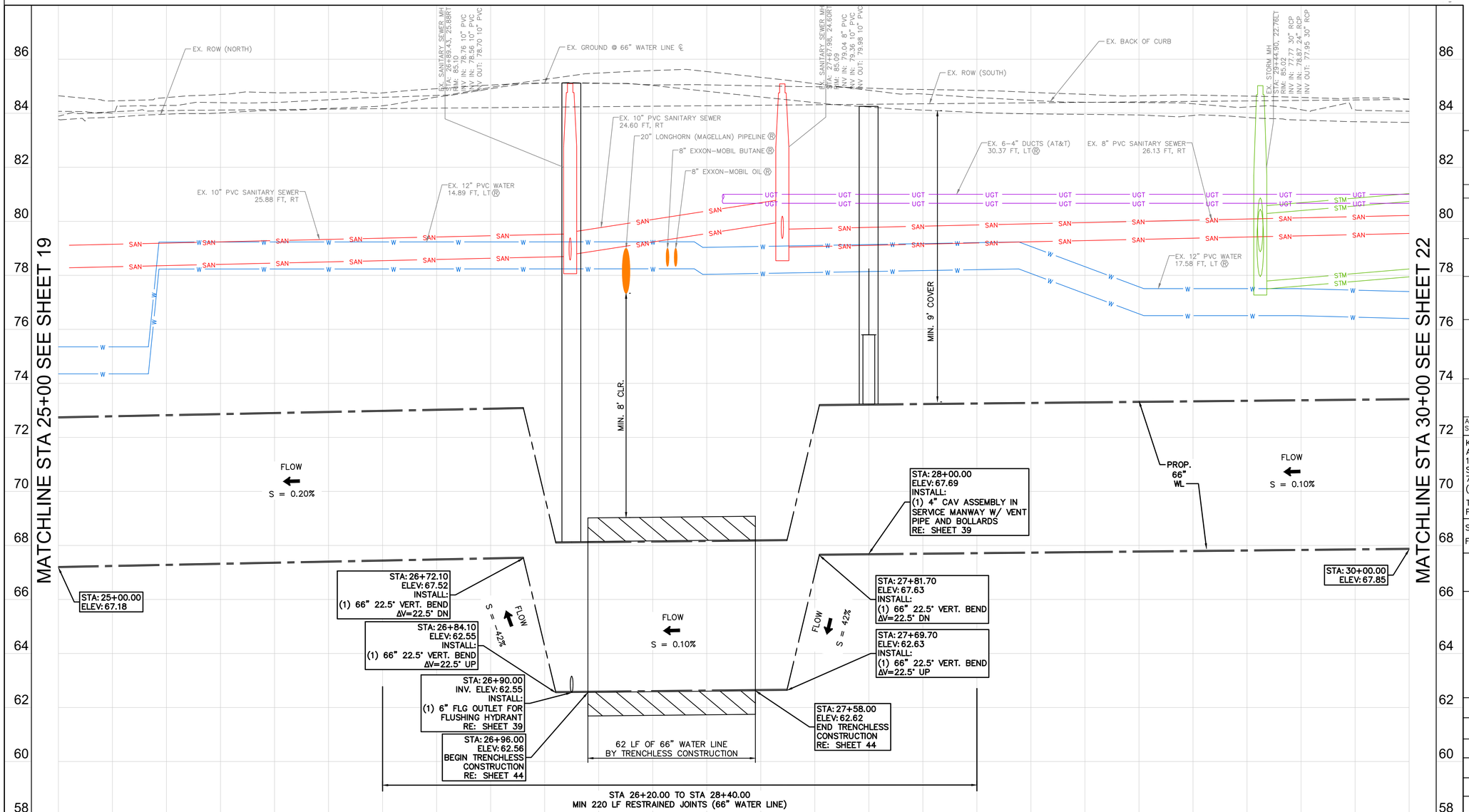
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CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 20 OF 91	

NO.	DATE	REVISION	APP.

FILE PATH: K:\HOU_Utilities\064402850_COH S-000900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-20+00-TO-STA-40+00.dwg PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:11 AM

8905 SF

FILE PATH: K:\HOU_Utilities\064402850_COH S-000900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-20+00-TO-STA-40+00.dwg PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:11 AM



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0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

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SET 3/8" IR W/ CAP STAMPED "LANDTECH"

2. CONTROL POINT #15
N: 13889036.36
E: 3101707.86
ELEV: 84.03
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

NOTES:
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Signature valid for six months.

Date

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

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

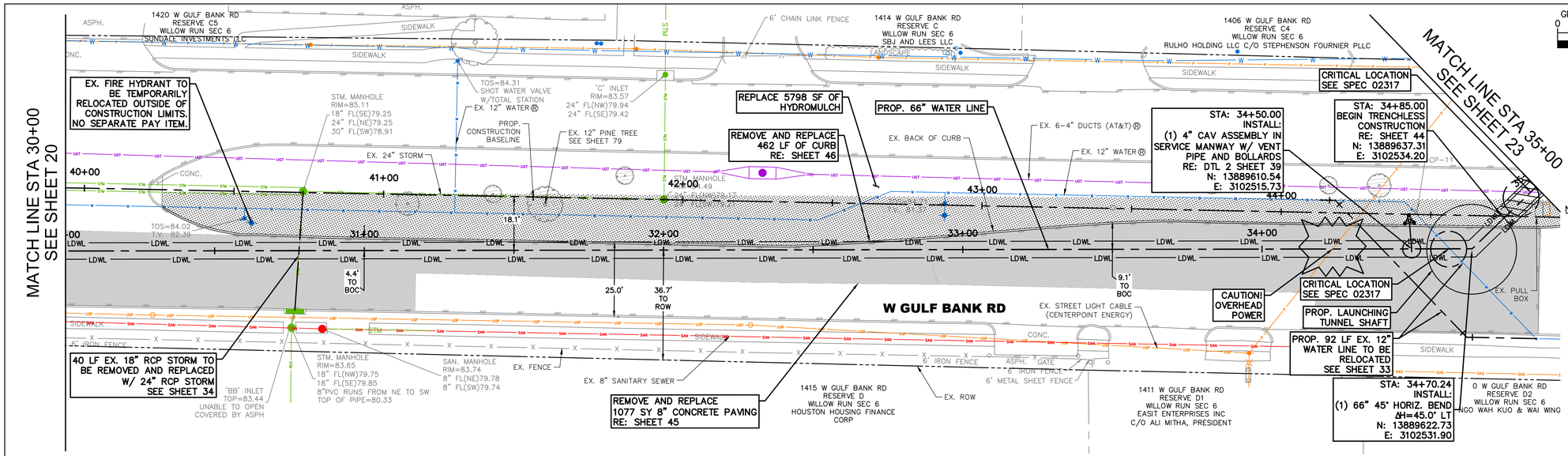
SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

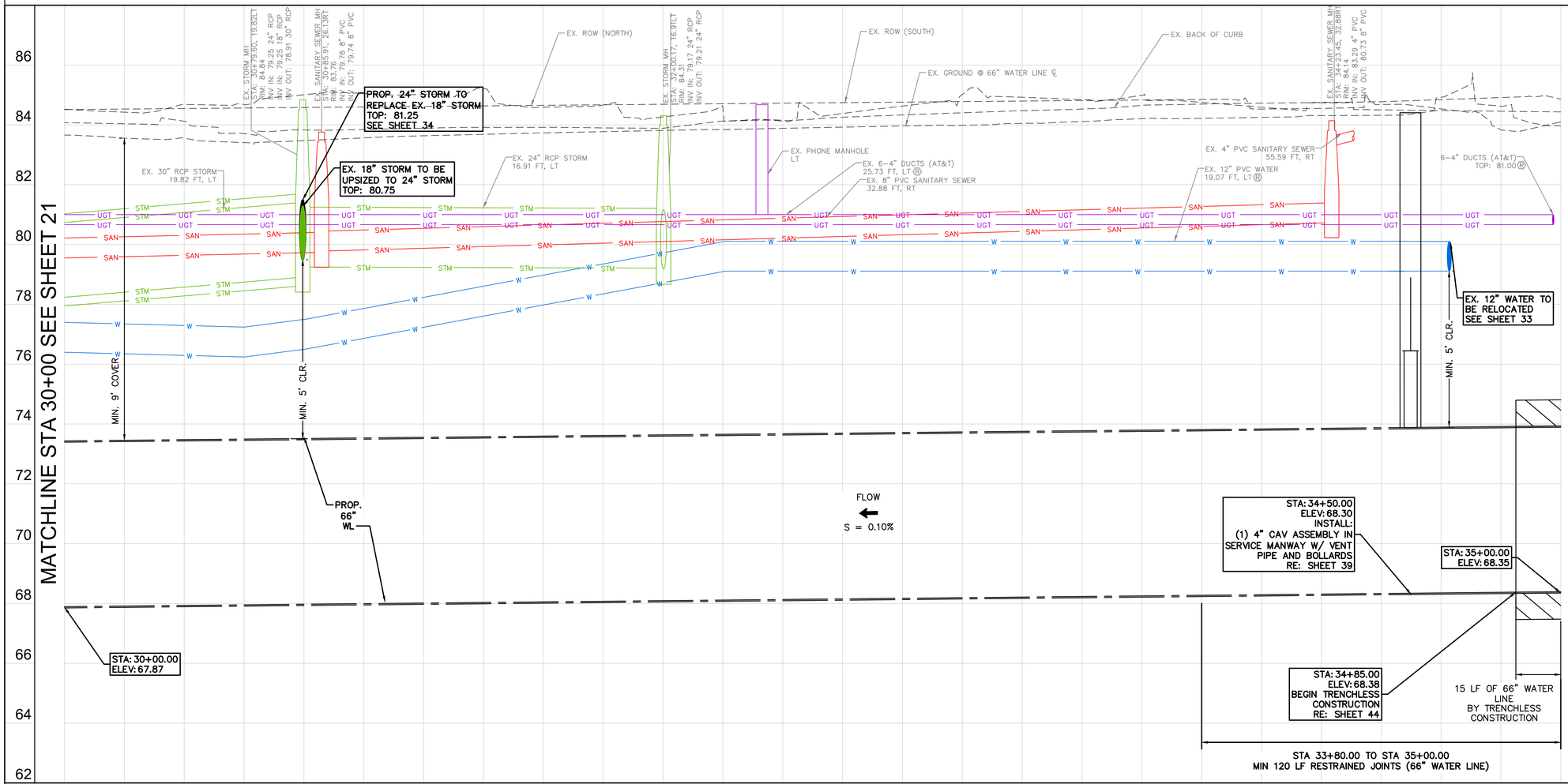
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PROFILE STA 25+00 TO STA 30+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 21 OF 91	





HYDROMULCH TOTAL (THIS SHEET)	5798 SF	0.13 AC
PAVEMENT TOTAL (THIS SHEET)	1077 SY	0.23 AC

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Date

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Date

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SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

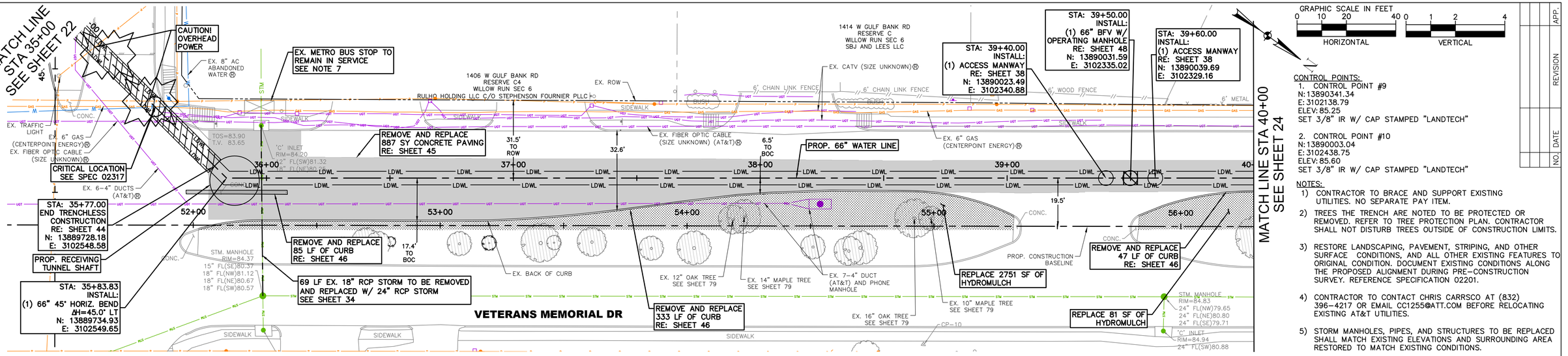
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 30+00 TO STA 35+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 22 OF 91	

APP. | REVISION | NO. | DATE

FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-20+00-TO-STA-40+00.dwg PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:11 AM



GRAPHIC SCALE IN FEET
0 10 20 40 0 1 2 4
HORIZONTAL VERTICAL

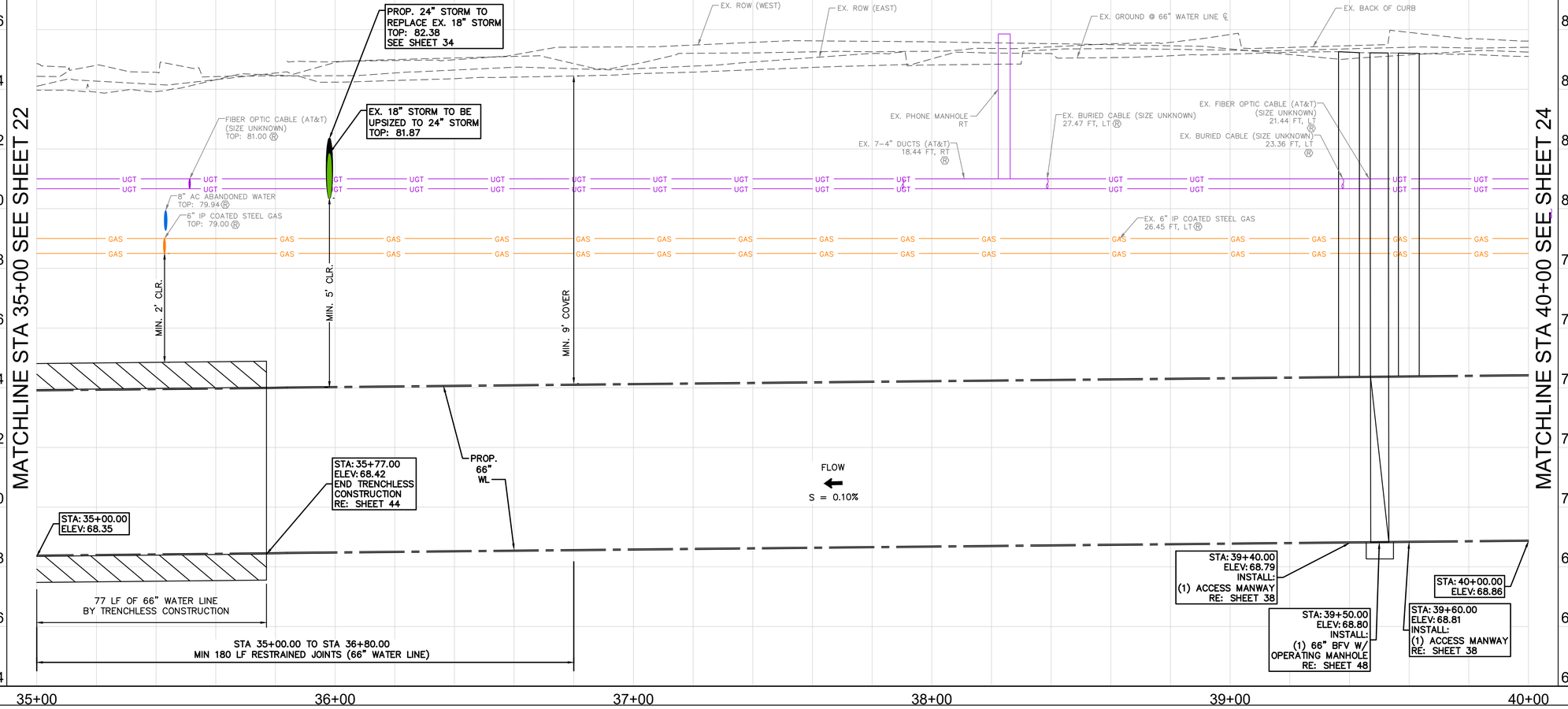
NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #9
N:13890341.34
E:3102138.79
ELEV: 85.25
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

2. CONTROL POINT #10
N:13890003.04
E:3102438.75
ELEV: 85.60
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

NOTES:
1) CONTRACTOR TO BRACE AND SUPPORT EXISTING UTILITIES. NO SEPARATE PAY ITEM.
2) TREES THE TRENCH ARE NOTED TO BE PROTECTED OR REMOVED. REFER TO TREE PROTECTION PLAN. CONTRACTOR SHALL NOT DISTURB TREES OUTSIDE OF CONSTRUCTION LIMITS.
3) RESTORE LANDSCAPING, PAVEMENT, STRIPING, AND OTHER SURFACE CONDITIONS, AND ALL OTHER EXISTING FEATURES TO ORIGINAL CONDITION. DOCUMENT EXISTING CONDITIONS ALONG THE PROPOSED ALIGNMENT DURING PRE-CONSTRUCTION SURVEY. REFERENCE SPECIFICATION 02201.
4) CONTRACTOR TO CONTACT CHRIS CARRSCO AT (832) 396-4217 OR EMAIL CC1255@ATT.COM BEFORE RELOCATING EXISTING AT&T UTILITIES.
5) STORM MANHOLES, PIPES, AND STRUCTURES TO BE REPLACED SHALL MATCH EXISTING ELEVATIONS AND SURROUNDING AREA RESTORED TO MATCH EXISTING CONDITIONS.
6) CONTRACTOR SHALL CONTACT METRO AT (713) 615-6195 TWO WEEKS PRIOR TO DISTURBING EXISTING BUS STOP. SEE GENERAL NOTES.

HYDROMULCH TOTAL (THIS SHEET)	2832 SF	0.06 AC
PAVEMENT TOTAL (THIS SHEET)	887 SY	0.19 AC



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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 be used for conflict verification.

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.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

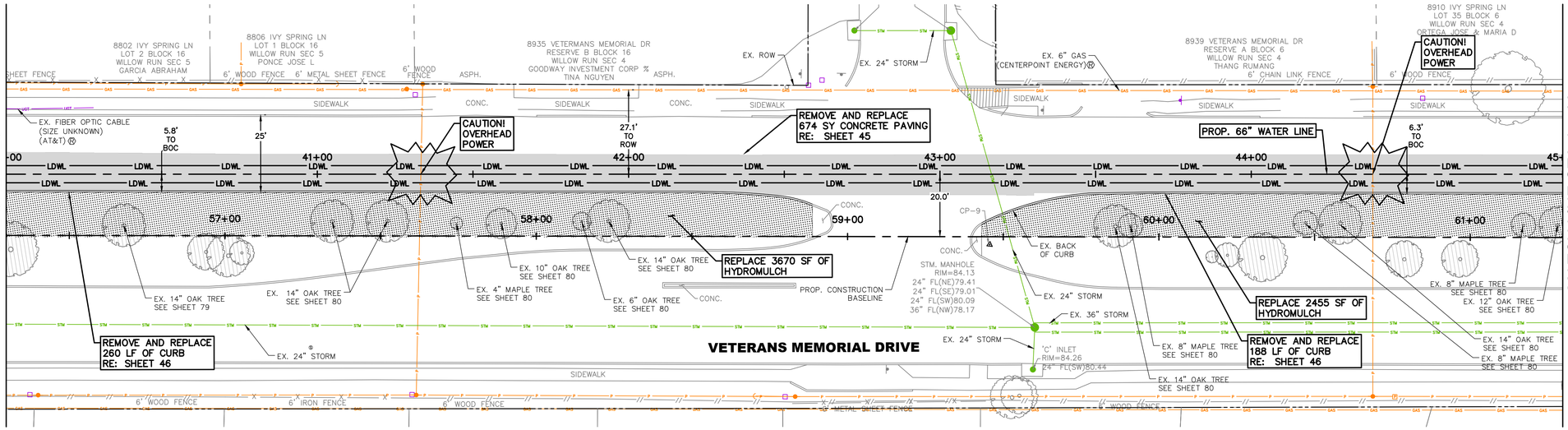
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

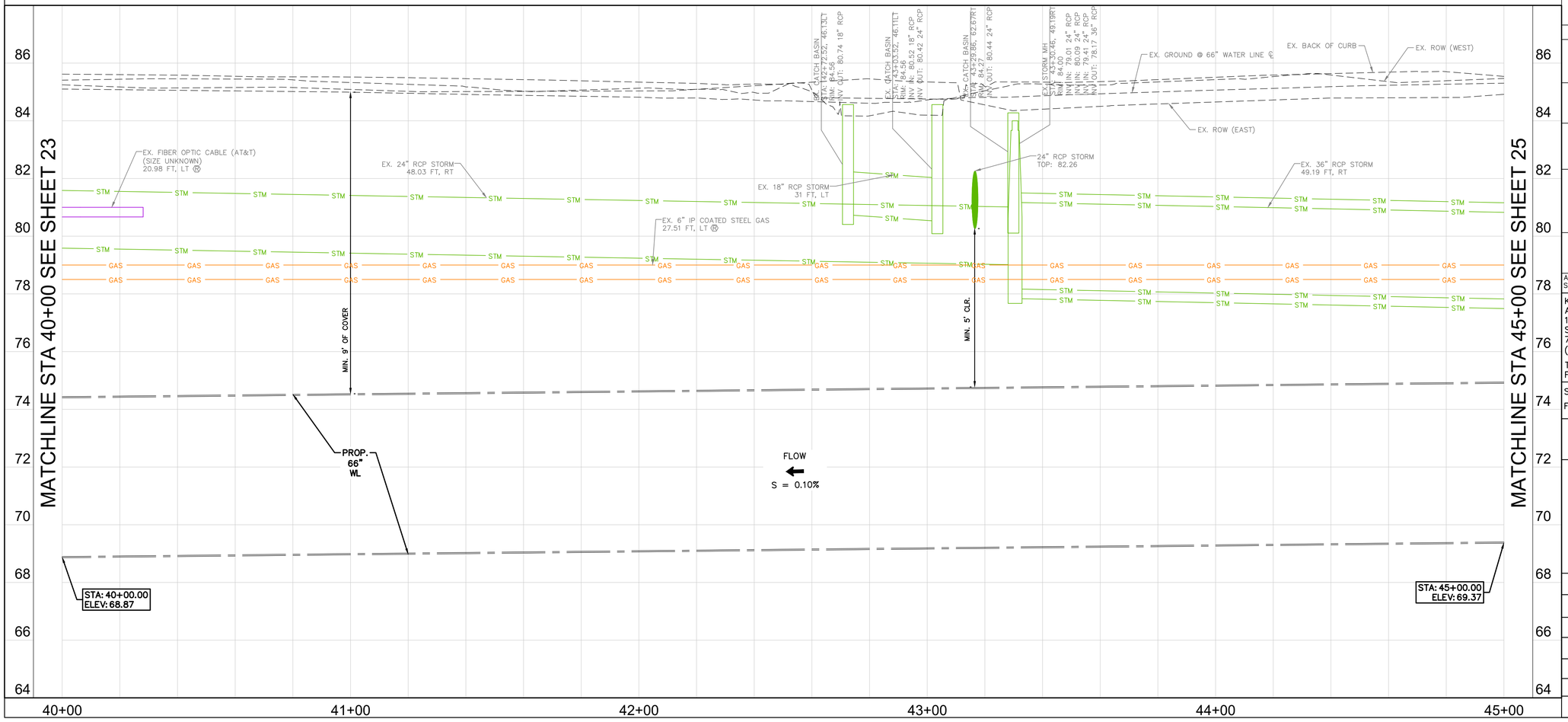
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 35+00 TO STA 40+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 23 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:12 AM
FILE PATH: K:\HOU_Utilities\064402850_COH S-000900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-20+00-TO-STA-40+00.dwg





GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #9
N: 13890341.34
E: 3102138.79
ELEV: 85.25
SET 3/8" IR W/CAP

2. CONTROL POINT #8
N: 13890467.30
E: 3101988.80
ELEV: 85.71
SET 3/8" IR W/CAP

NOTES:
1) CONTRACTOR TO BRACE AND SUPPORT EXISTING UTILITIES. NO SEPARATE PAY ITEM.
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HYDROMULCH TOTAL (THIS SHEET)	6125 SF	0.14 AC
PAVEMENT TOTAL (THIS SHEET)	674 SY	0.14 AC

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TBPE FIRM REGISTRATION F-928

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Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

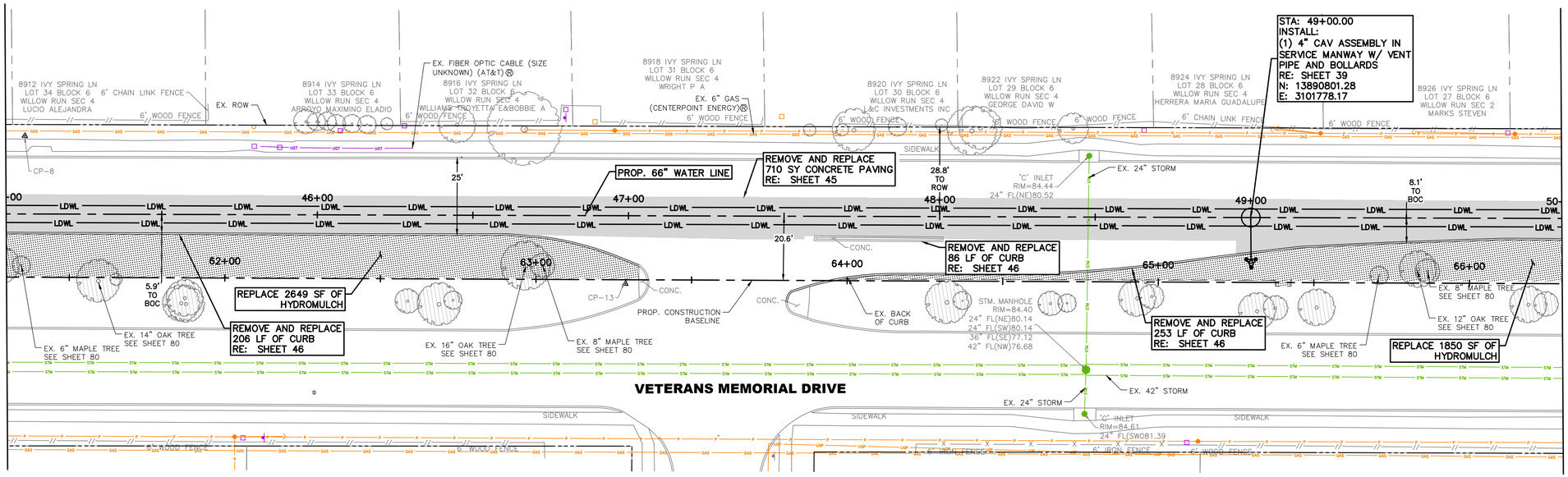
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 40+00 TO STA 45+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 24 OF 91	

FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-40+00-TO-STA-60+00.dwg PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:12 AM

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:12 AM
FILE PATH: K:\HOU_Utilities\064402850_COH S-000900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-40+00-TO-STA-60+00.dwg



GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #8
N: 13890467.30
E: 3101988.80
ELEV: 85.71
SET 3/8" IR W/CAP

2. CONTROL POINT #13
N: 13890651.31
E: 3101913.61
ELEV: 85.94
SET 3/8" IR W/CAP

NOTES:
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HYDROMULCH TOTAL (THIS SHEET)	4499 SF	0.10 AC
PAVEMENT TOTAL (THIS SHEET)	710 SY	0.15 AC

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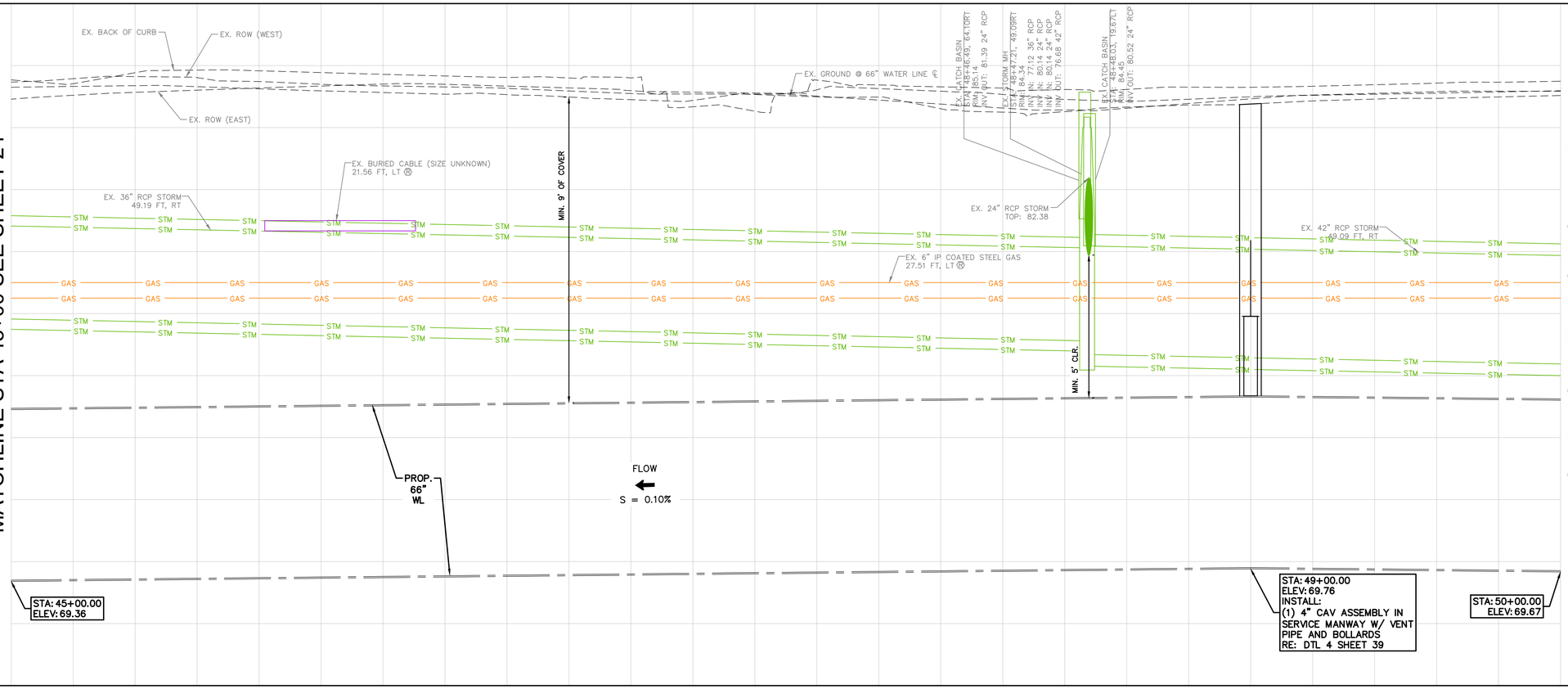
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11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 45+00 TO STA 50+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 25 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:13 AM
FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-40+00-TO-STA-60+00.dwg

MATCH LINE STA 50+00 SEE SHEET 25

MATCH LINE STA 55+00 SEE SHEET 27

8930 IVY SPRING LN LOT 26 BLOCK 6 WILLOW RUN SEC 2 TURCIO JUAN & SOFIA

8934 IVY SPRING LN LOT 25 BLOCK 6 WILLOW RUN SEC 2 DYKES SHARON G ESTATE OF

9002 IVY SPRING LN LOT 24 BLOCK 6 WILLOW RUN SEC 2 SMITH CAROLYN M

9006 IVY SPRING LN LOT 23 BLOCK 6 WILLOW RUN SEC 2 ORTIZ ROBERT&DENISE

9010 IVY SPRING LN LOT 22 BLOCK 6 WILLOW RUN SEC 2 ANTONUCCI E

9014 IVY SPRING LN LOT 12 BLOCK 6 WILLOW RUN SEC 2 FLORES JOSE DANIEL MONTOYA

1403 BEAVER BEND RD LOT 5 BLOCK 6 WILLOW RUN SEC 1 R/P A-NORMAL-HOME LLC

1402 BEAVER BEND RD LOT 4 BLOCK 6 WILLOW RUN SEC 1 R/P VERDUZCO JOSE J

6' WOOD FENCE
GATE
SIDEWALK
EX. OVERHEAD POWER
EX. ROW
EX. 6" GAS (CENTERPOINT ENERGY)
'C' INLET RIM=84.64 24" FL(NE)80.42
EX. 24" STORM
CAUTION! OVERHEAD POWER
WOOD FENCE

PROP. 66" WATER LINE

REMOVE AND REPLACE 688 SY CONCRETE PAVING RE: SHEET 45

REMOVE AND REPLACE 215 LF OF CURB RE: SHEET 46

REPLACE 2640 SF OF HYDROMULCH

REPLACE 2822 SF OF HYDROMULCH

REMOVE AND REPLACE 238 LF OF CURB RE: SHEET 46

25'
7.2' TO BOC
28.9' TO ROW
21.3'
7.7' TO BOC

50+00 51+00 52+00 53+00 54+00 55+00
67+00 68+00 69+00 70+00 71+00

LDWL

EX. BACK OF CURB
PROP. CONSTRUCTION BASELINE
CONC.

EX. 16" OAK TREE SEE SHEET 80
EX. 4" MAPLE TREE SEE SHEET 80
EX. 12" OAK TREE SEE SHEET 80
EX. 6" MAPLE TREE SEE SHEET 81
EX. 16" OAK TREE SEE SHEET 81
EX. 14" OAK TREE SEE SHEET 81
EX. 12" MAPLE TREE SEE SHEET 81
EX. 10" OAK TREE SEE SHEET 81

STM MANHOLE RIM=84.49
24" FL(NE)80.49
24" FL(SW)80.03
42" FL(SE)75.68
42" FL(SW)75.58

EX. 42" STORM
EX. 24" STORM
'C' INLET RIM=84.70 24" FL(SW)80.58

VETERANS MEMORIAL DRIVE

CP-7

SIDEWALK
6' WOOD FENCE
6' CHAIN LINK FENCE

GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

CONTROL POINTS:
1. CONTROL POINT #7
N:13891036.78
E:3101692.50
ELEV: 85.54
SET 3/8" IR W/CAP

2. CONTROL POINT #13
N:13890651.31
E:3101913.61
ELEV: 85.94
SET 3/8" IR W/CAP

NOTES:
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HYDROMULCH TOTAL (THIS SHEET)	5462 SF	0.13 AC
PAVEMENT TOTAL (THIS SHEET)	688 SY	0.15 AC

NO.	DATE	REVISION	APP.

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VERIFICATION OF PRIVATE UTILITY LINES

Date

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TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

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Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 50+00 TO STA 55+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 26 OF 91	

EX. BACK OF CURB
EX. ROW (WEST)
EX. GROUND @ 66" WATER LINE ℄
EX. ROW (EAST)

EX. CATCH BASIN STA: 53+47.57', 19.12LT RIM: 84.70 OUT: 80.42 24" RCP
EX. STORM MH STA: 53+47.93', 50.97RT RIM: 84.40 IN: 75.68 42" RCP OUT: 75.58 42" RCP
EX. CATCH BASIN STA: 53+48.28', 64.11RT RIM: 84.18 OUT: 80.58 24" RCP

MIN. 9' OF COVER
EX. 42" RCP STORM 49.09 FT, RT
EX. 24" RCP STORM TOP: 82.28
MIN. 5' CLR.
EX. 6" IP COATED STEEL GAS 27.51 FT, LT Ⓖ
EX. 42" RCP STORM 50.97 FT, RT

STM GAS

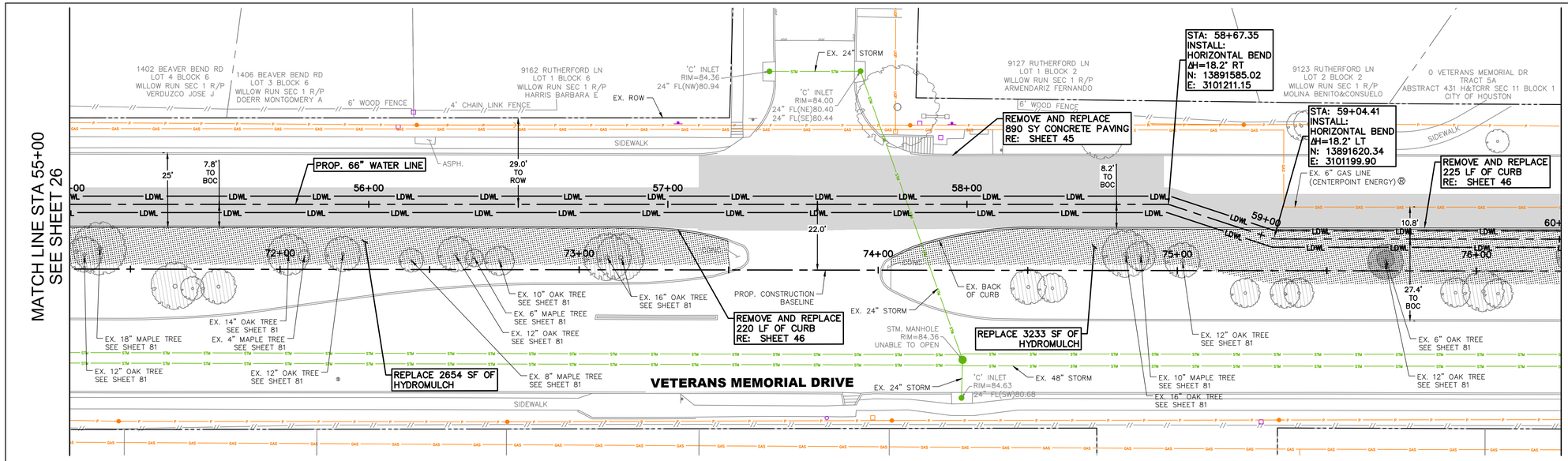
PROP. 66" WL

FLOW
S = -0.10%

STA: 50+00.00 ELEV: 69.67
STA: 55+00.00 ELEV: 69.17

86 84 82 80 78 76 74 72 70 68 66

50+00 51+00 52+00 53+00 54+00 55+00



GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #7
N: 13891036.78
E: 3101692.50
ELEV: 85.54
SET 3/8" IR W/CAP

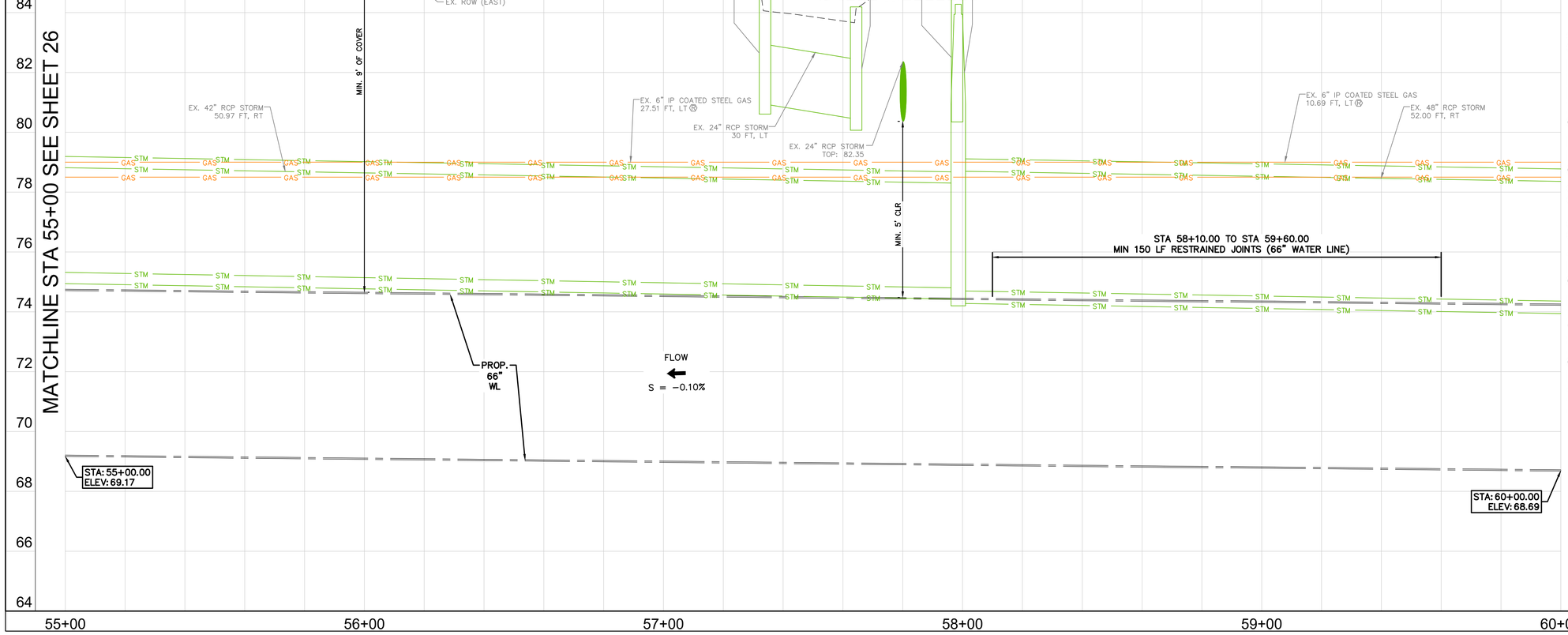
2. CONTROL POINT #5
N: 13892054.35
E: 3100958.80
ELEV: 85.86
SET 3/8" IR W/CAP

NOTES:
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HYDROMULCH TOTAL (THIS SHEET)	5887 SF	0.14 AC
PAVEMENT TOTAL (THIS SHEET)	890 SY	0.19 AC



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ASSOCIATES, INC
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(281) 597-9300
TBPE FIRM REGISTRATION
F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

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P.E. No. 127482
Date 07/18/2025

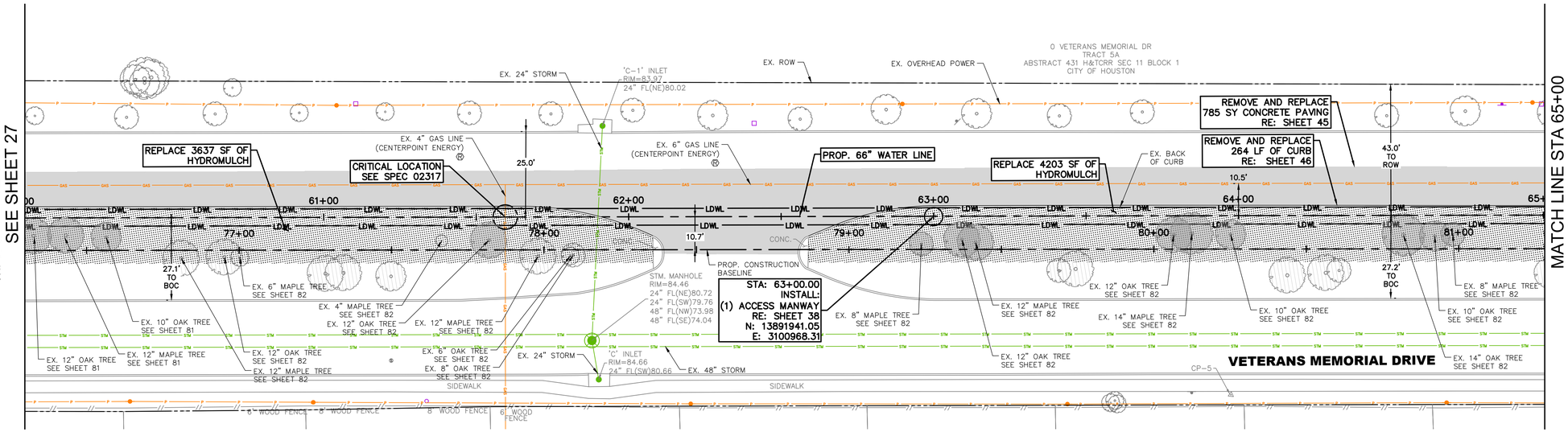
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

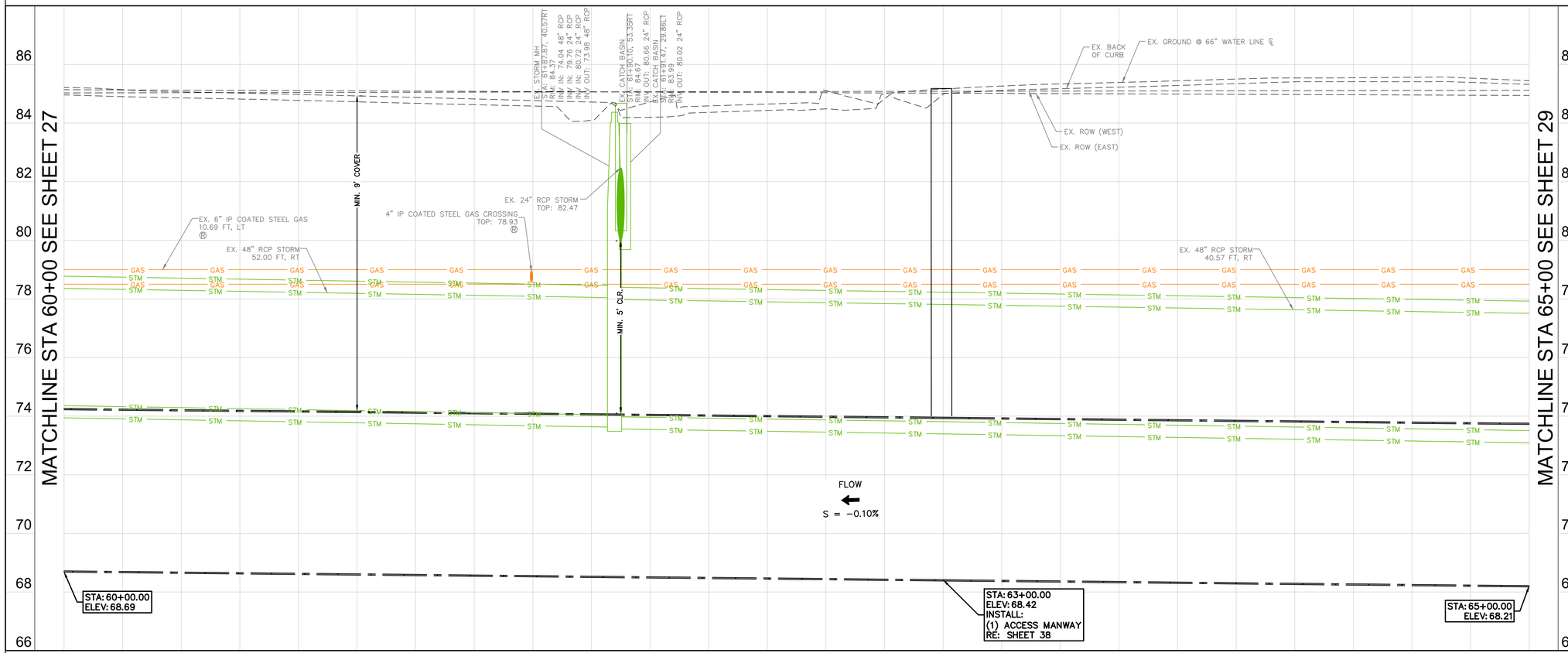
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 55+00 TO STA 60+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 27 OF 91	

FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-40+00-TO-STA-60+00.dwg PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:13 AM

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:13 AM
FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-60+00-TO-END.dwg





GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #4
N: 13892518.47
E: 3100498.47
ELEV: 84.76
SET 3/8" IR W/CAP

2. CONTROL POINT #5
N: 13892054.35
E: 3100958.80
ELEV: 85.86
SET 3/8" IR W/CAP

NOTES:
1) CONTRACTOR TO BRACE AND SUPPORT EXISTING UTILITIES. NO SEPARATE PAY ITEM.
2) TREES CROSSING THE TRENCH ARE NOTED TO BE PROTECTED OR REMOVED. REFER TO TREE PROTECTION PLAN. CONTRACTOR SHALL NOT DISTURB TREES OUTSIDE OF CONSTRUCTION LIMITS.
3) RESTORE LANDSCAPING, PAVEMENT, STRIPING, AND OTHER SURFACE CONDITIONS, AND ALL OTHER EXISTING FEATURES TO ORIGINAL CONDITION. DOCUMENT EXISTING CONDITIONS ALONG THE PROPOSED ALIGNMENT DURING PRE-CONSTRUCTION SURVEY. REFERENCE SPECIFICATION 02201.

HYDROMULCH TOTAL (THIS SHEET)	7840 SF	0.18 AC
PAVEMENT TOTAL (THIS SHEET)	785 SY	0.16 AC

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.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

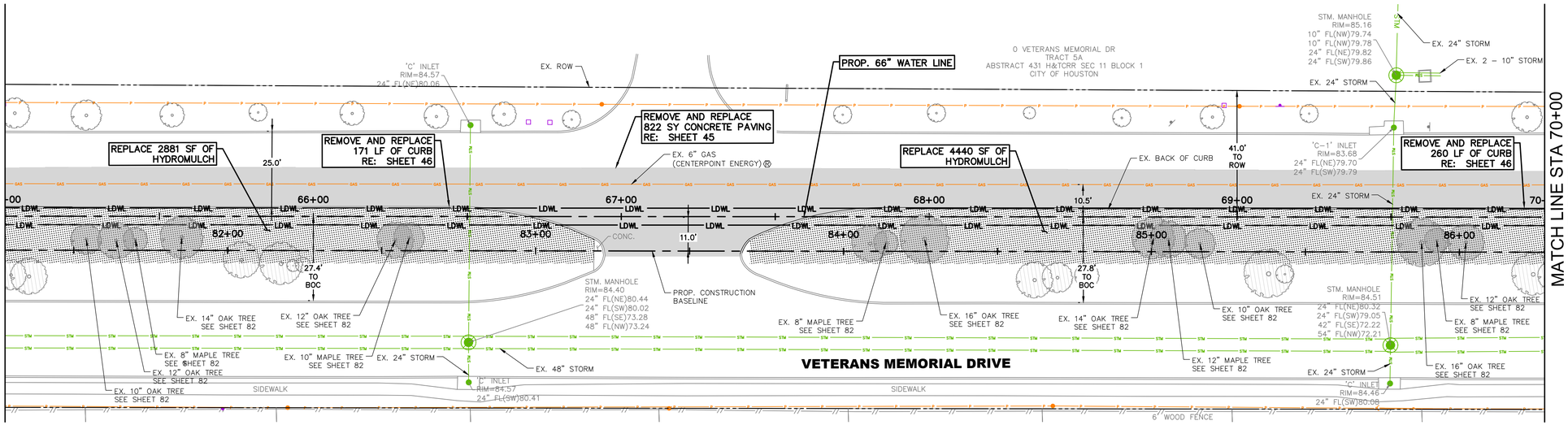
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

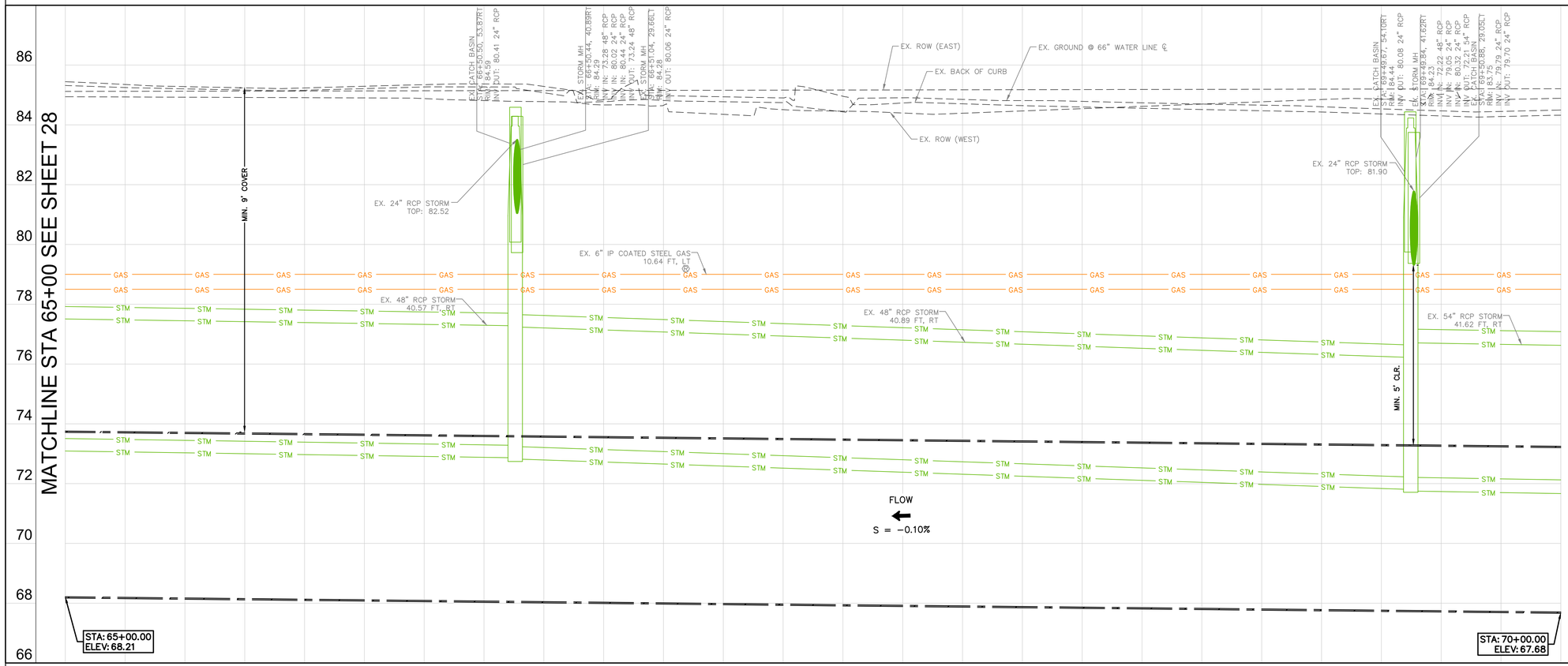
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 60+00 TO STA 65+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 28 OF 91	

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GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #4
N: 13892518.47
E: 3100498.47
ELEV: 84.76
SET 3/8" IR W/CAP

2. CONTROL POINT #5
N: 13892054.35
E: 3100958.80
ELEV: 85.86
SET 3/8" IR W/CAP

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HYDROMULCH TOTAL (THIS SHEET)	7321 SF	0.17 AC
PAVEMENT TOTAL (THIS SHEET)	822 SY	0.17 AC

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11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

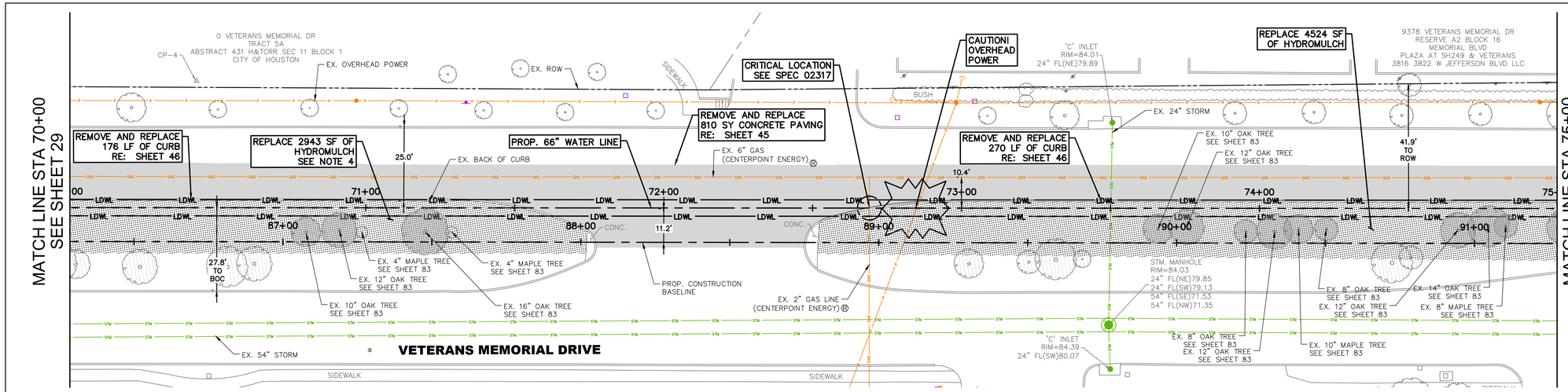
SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 65+00 TO STA 70+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 29 OF 91	



GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #4
N:13892518.47
E:3100498.47
ELEV:84.76
SET 3/8" IR W/CAP

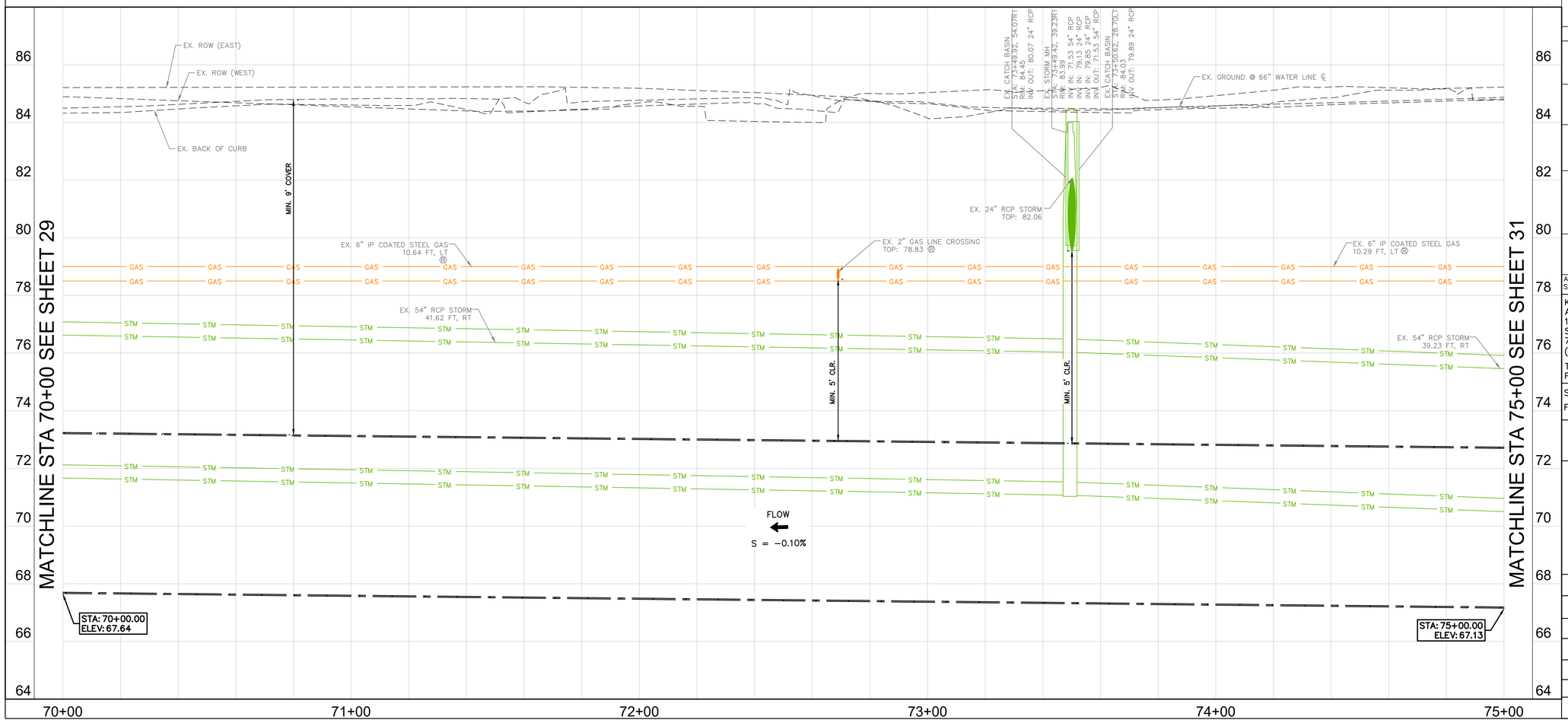
2. CONTROL POINT #1
N:13893060.46
E:3100241.31
ELEV:85.05
SET 3/8" IR W/CAP

NOTES:
1) CONTRACTOR TO BRACE AND SUPPORT EXISTING UTILITIES. NO SEPARATE PAY ITEM.

2) TREES CROSSING THE TRENCH ARE NOTED TO BE PROTECTED OR REMOVED. REFER TO TREE PROTECTION PLAN. CONTRACTOR SHALL NOT DISTURB TREES OUTSIDE OF CONSTRUCTION LIMITS.

3) RESTORE LANDSCAPING, PAVEMENT, STRIPING, AND OTHER SURFACE CONDITIONS, AND ALL OTHER EXISTING FEATURES TO ORIGINAL CONDITION. DOCUMENT EXISTING CONDITIONS ALONG THE PROPOSED ALIGNMENT DURING PRE-CONSTRUCTION SURVEY. REFERENCE SPECIFICATION 02201.

HYDROMULCH TOTAL (THIS SHEET)	7467 SF	0.17 AC
PAVEMENT TOTAL (THIS SHEET)	810 SY	0.17 AC



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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.

KIMLEY-HORN AND
ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS
77009
(281) 597-9300
TBPE FIRM REGISTRATION
F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

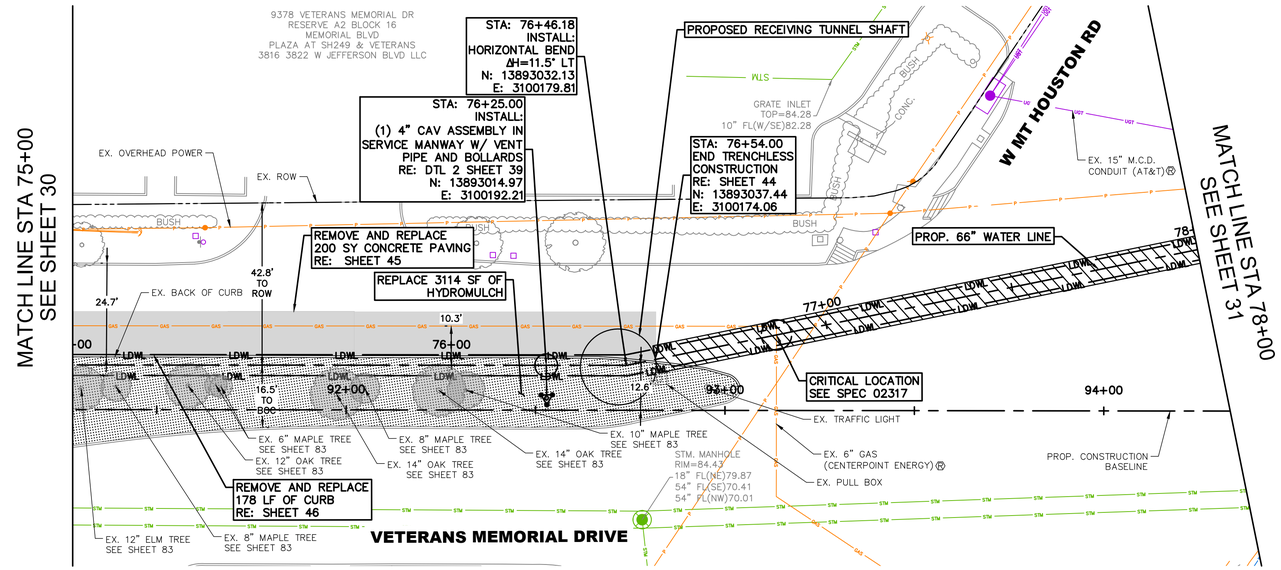
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

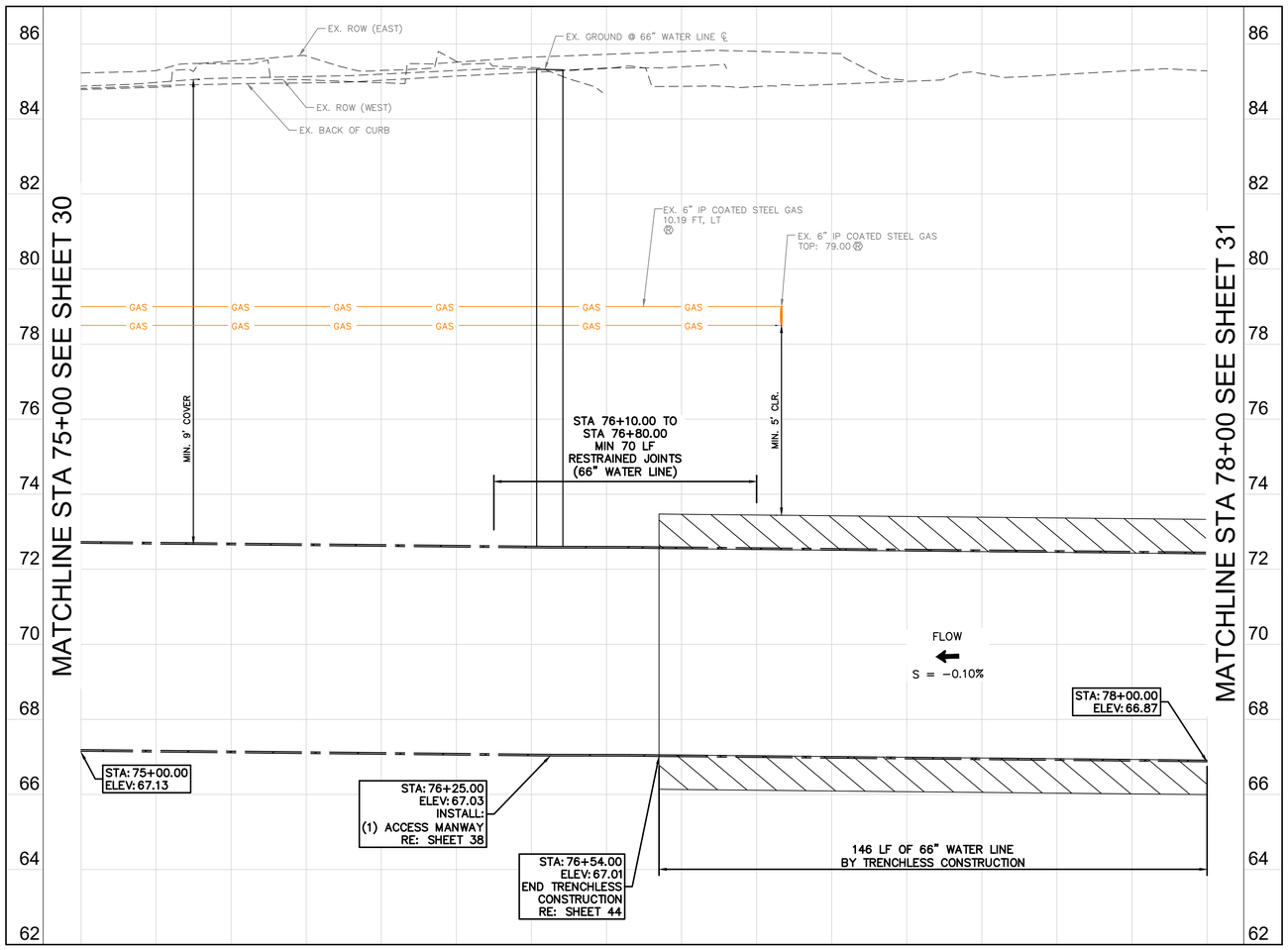
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 70+00 TO STA 75+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 30 OF 91	

FILE PATH: K:\HOU_Utilities\064402850_COH S-000900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-60+00-TO-END.dwg
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PLOTTED: 8/1/2025 11:14 AM





GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #1
N: 13893060.46
E: 3100241.31
ELEV: 85.05
SET 3/8" IR W/CAP

2. CONTROL POINT #2
N: 13893187.00
E: 3099897.21
ELEV: 84.96
SET 3/8" IR W/CAP

NOTES:
1) CONTRACTOR TO BRACE AND SUPPORT EXISTING UTILITIES. NO SEPARATE PAY ITEM.
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3) RESTORE LANDSCAPING, PAVEMENT, STRIPING, AND OTHER SURFACE CONDITIONS, AND ALL OTHER EXISTING FEATURES TO ORIGINAL CONDITION. DOCUMENT EXISTING CONDITIONS ALONG THE PROPOSED ALIGNMENT DURING PRE-CONSTRUCTION SURVEY. REFERENCE SPECIFICATION 02201.

HYDROMULCH TOTAL (THIS SHEET)	3114 SF	0.07 AC
PAVEMENT TOTAL (THIS SHEET)	200 SY	0.04 AC

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VERIFICATION OF PRIVATE UTILITY LINES

Date

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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.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

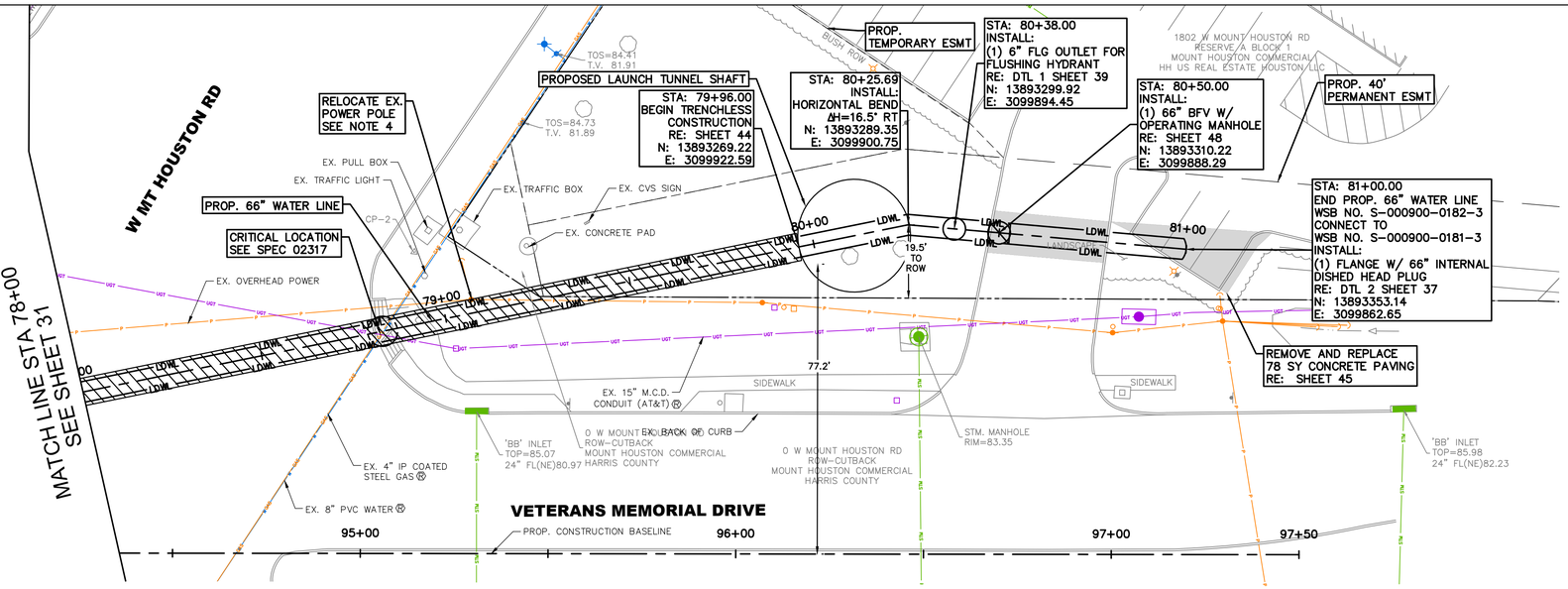
PRELIMINARY
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Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

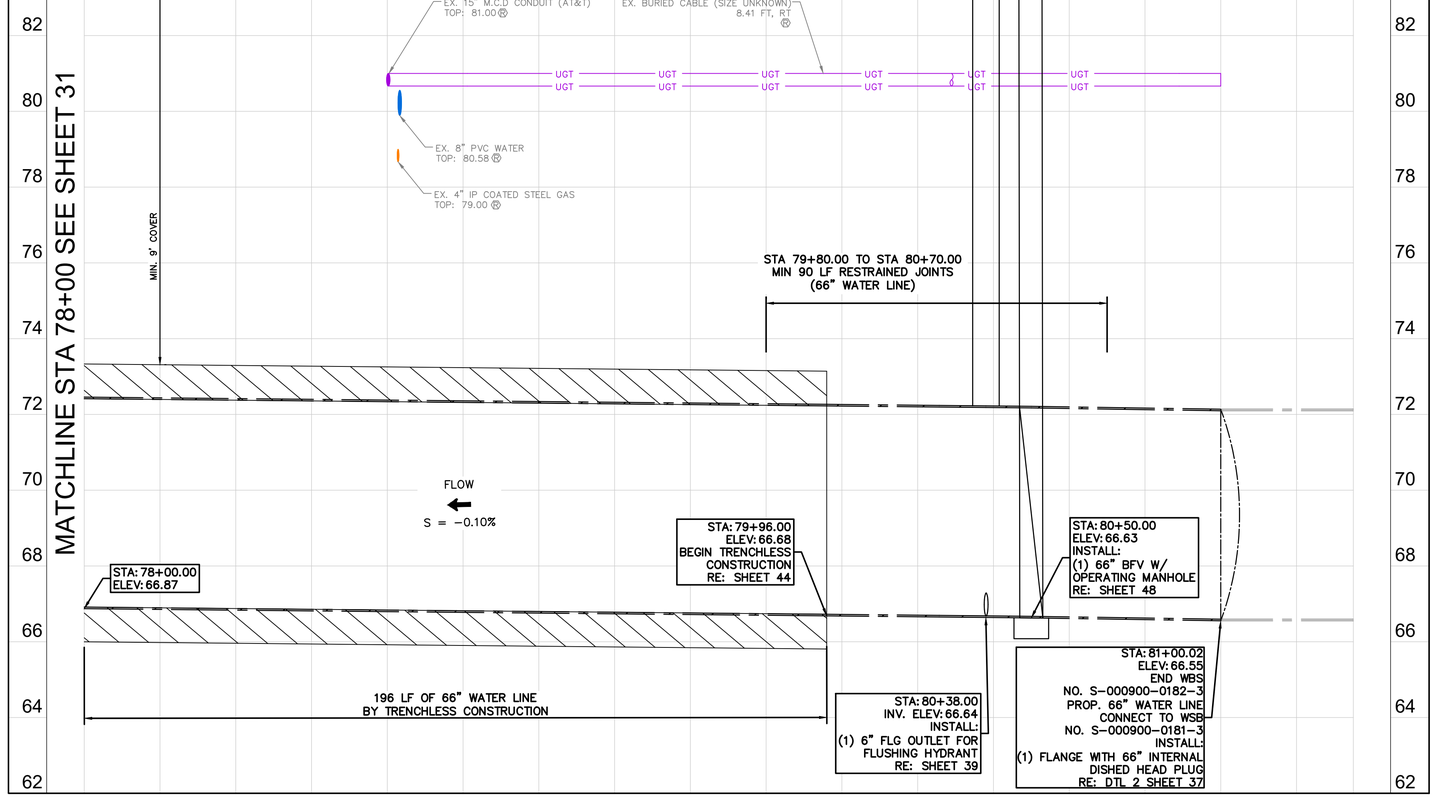
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 75+00 TO STA 78+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 31 OF 91	

FILE PATH: K:\HOU_Utilities\064402850_COH S-000900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-60+00-TO-END.dwg
PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:14 AM





GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

CONTROL POINTS:
1. CONTROL POINT #1
N: 13893060.46
E: 3100241.31
ELEV: 85.05
SET 3/8" IR W/CAP

2. CONTROL POINT #2
N: 13893187.00
E: 3099897.21
ELEV: 84.96
SET 3/8" IR W/CAP

NOTES:
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4) CONTRACTOR TO RELOCATE POWER POLE. CONTACT CENTERPOINT ENERGY AT (713) 207-2222 BEFORE COMMENCING WORK. NO SEPARATE PAY ITEM.

APP.	DATE	REVISION	NO.

PAVEMENT TOTAL (THIS SHEET)	78 SY	0.02 AC

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VERIFICATION OF PRIVATE UTILITY LINES

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KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

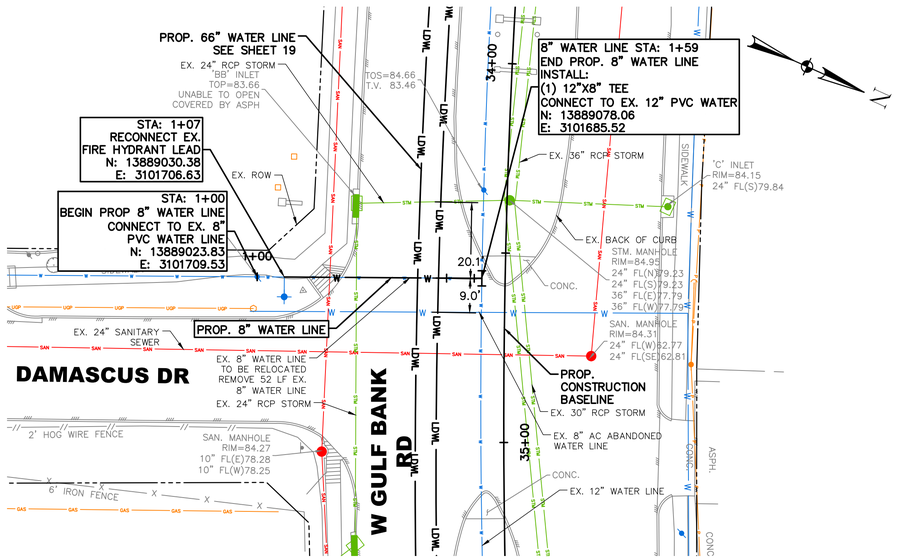
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

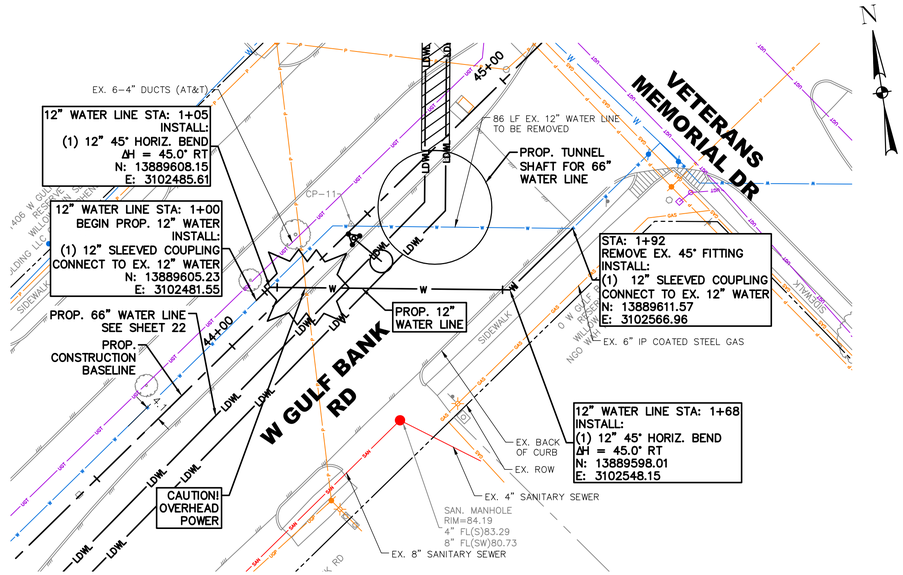
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STA 78+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 32 OF 91	

FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-WL-STA-60+00-TO-END.dwg
PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:14 AM





GRAPHIC SCALE IN FEET
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HORIZONTAL
0 1 2 4
VERTICAL

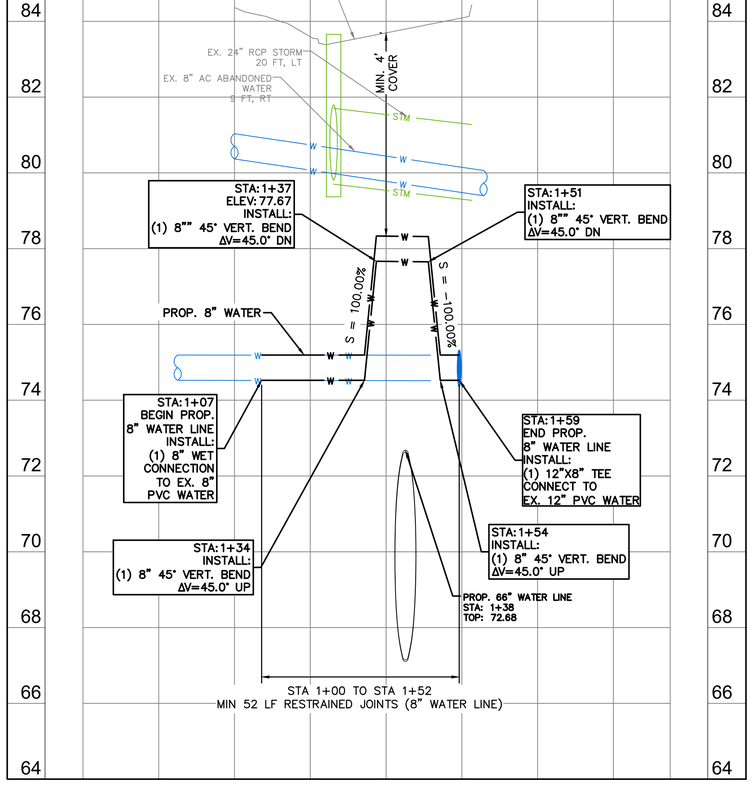
NO.	DATE	REVISION	APP.

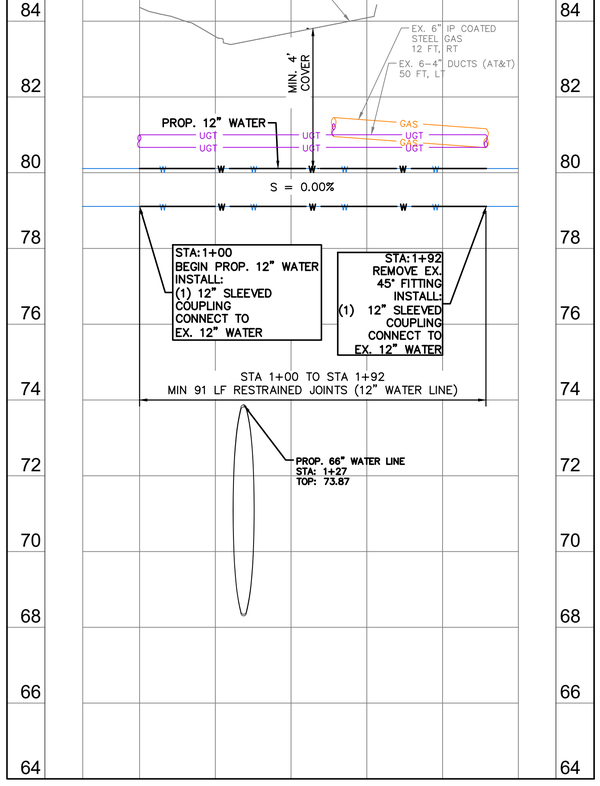
CONTROL POINTS:
1. CONTROL POINT #11
N: 13889621.47
E: 3102509.33
ELEV: 85.11
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

2. CONTROL POINT #15
N: 13889036.36
E: 3101707.86
ELEV: 84.03
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

NOTES:

1) RESTORE LANDSCAPING, PAVEMENT, STRIPING, AND OTHER SURFACE CONDITIONS, AND ALL OTHER EXISTING FEATURES TO ORIGINAL CONDITION. DOCUMENT EXISTING CONDITIONS ALONG THE PROPOSED ALIGNMENT DURING PRE-CONSTRUCTION SURVEY. REFERENCE SPECIFICATION 02201.





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VERIFICATION OF PRIVATE UTILITY LINES

Date

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Date

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KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS
77009
(281) 597-9300
TBPE FIRM REGISTRATION
F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

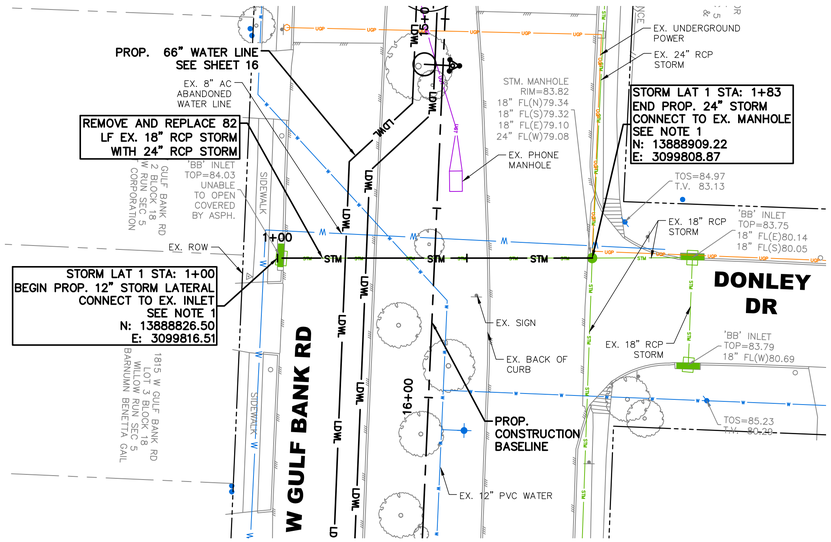
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

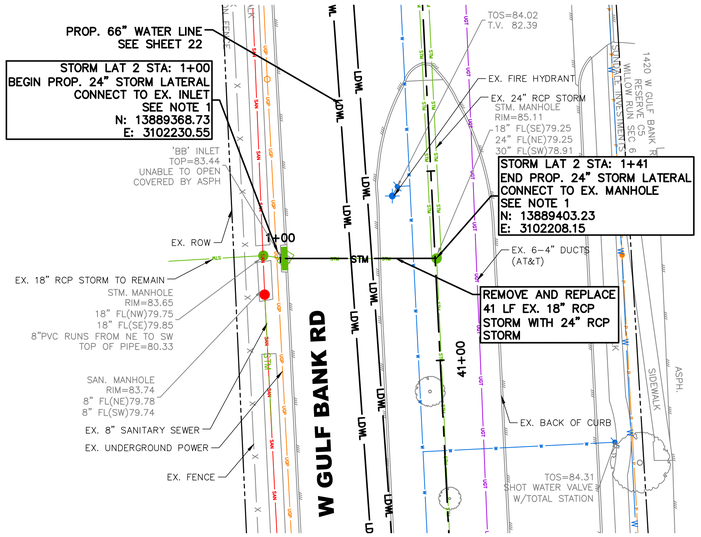
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

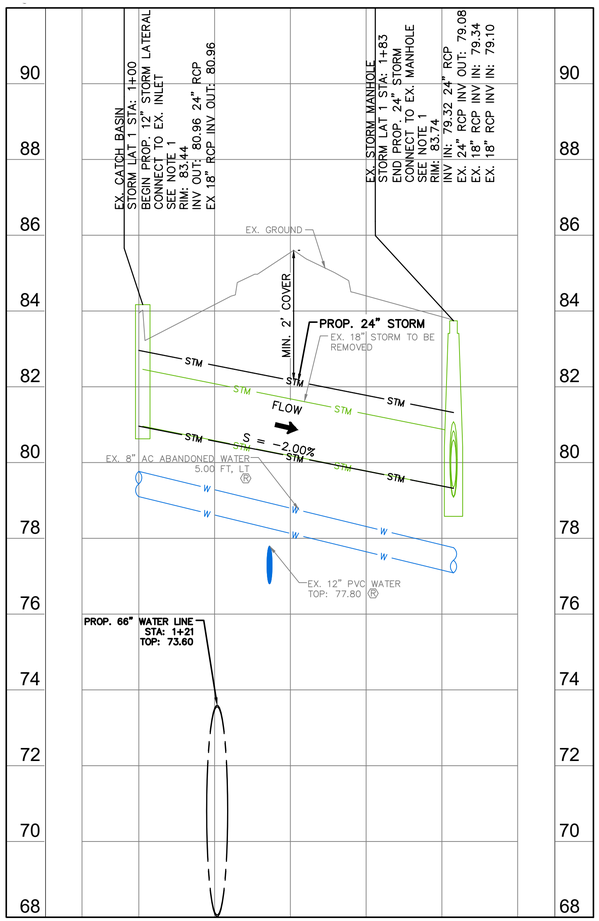
PLAN & PROFILE
EX. WATER RELOCATIONS

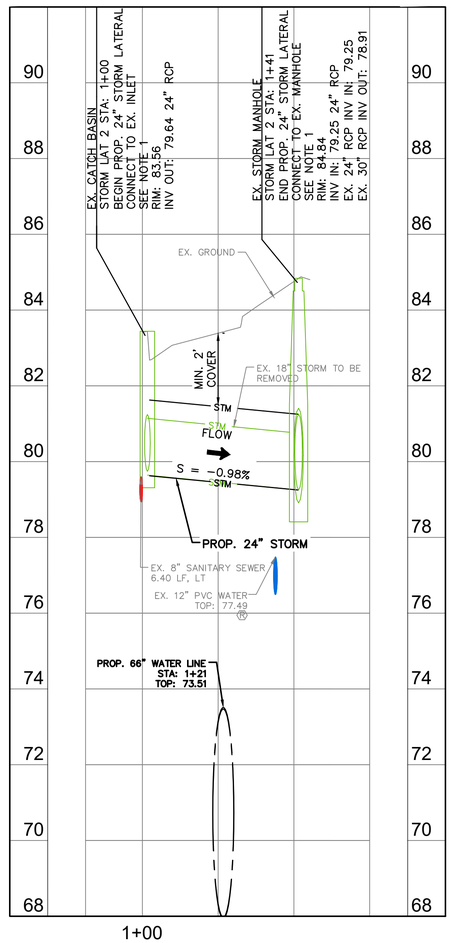
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 33 OF 91	

PLOTTED: 8/4/2025 8:14 AM
PLOT STYLE: COH.ctb
FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-Existing-Utility-Relocations.dwg









GRAPHIC SCALE IN FEET
0 10 20 40
HORIZONTAL
0 1 2 4
VERTICAL

NO.	DATE	REVISION	APP.

CONTROL POINTS:
1. CONTROL POINT #21
N: 13888819.36
E: 3099822.03
ELEV: 84.56
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

2. CONTROL POINT #22
N: 13888777.69
E: 3099583.49
ELEV: 86.83
SET 3/8" IR W/ CAP STAMPED "LANDTECH"

NOTES:
1) STORM MANHOLES, PIPES, AND STRUCTURES TO BE REPLACED SHALL MATCH EXISTING ELEVATIONS AND SURROUNDING AREA RESTORED TO MATCH EXISTING CONDITIONS.

2) RESTORE LANDSCAPING, PAVEMENT, STRIPING, AND OTHER SURFACE CONDITIONS, AND ALL OTHER EXISTING FEATURES TO ORIGINAL CONDITION. DOCUMENT EXISTING CONDITIONS ALONG THE PROPOSED ALIGNMENT DURING PRE-CONSTRUCTION SURVEY. REFERENCE SPECIFICATION 02201.

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.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

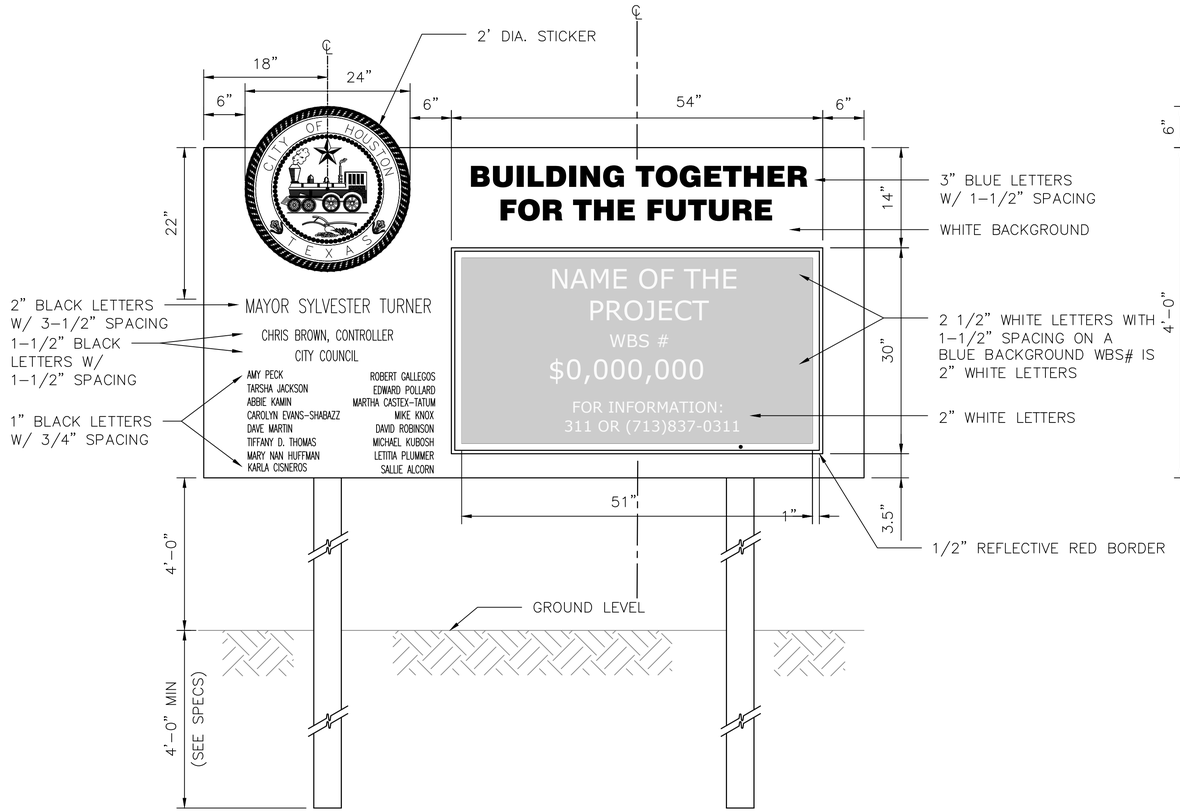
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

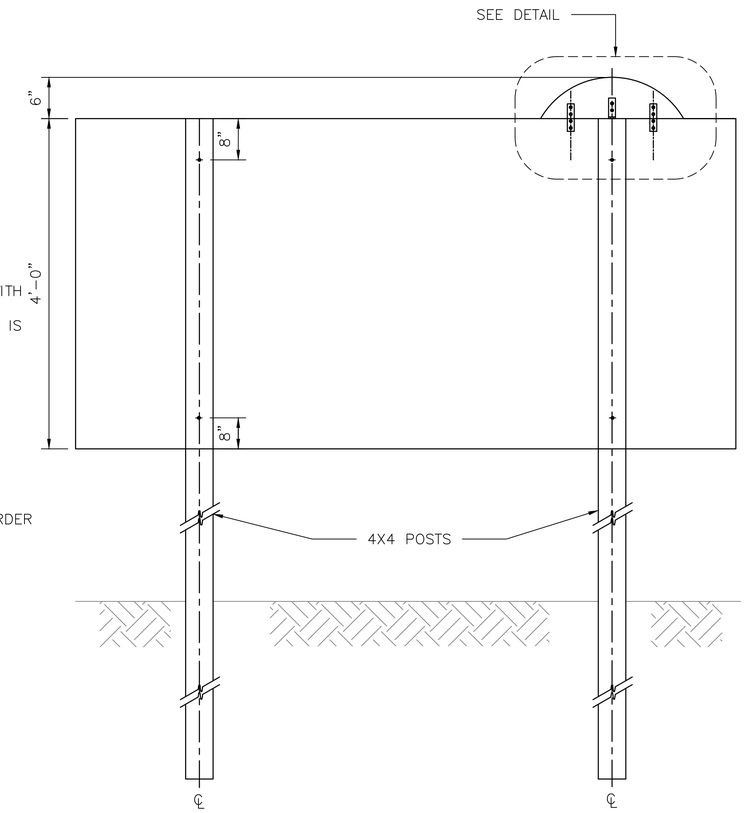
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
PLAN & PROFILE
STORM LATERALS 1 AND 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 20' H 1" = 2' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 34 OF 91	

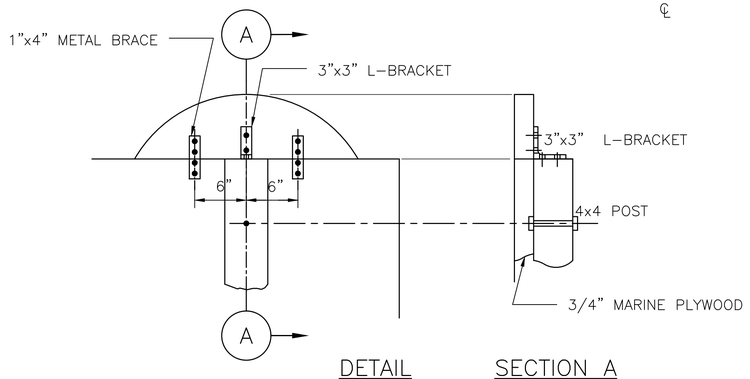
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FRONT VIEW



BACK VIEW



DETAIL SECTION A

NO.	DATE	REVISION	APP.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
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Kimley»Horn
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P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

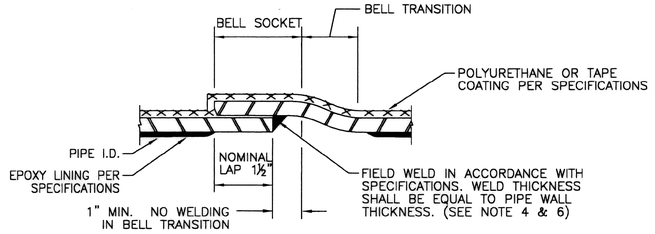
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

CONSTRUCTION SIGN DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 35 OF 91	

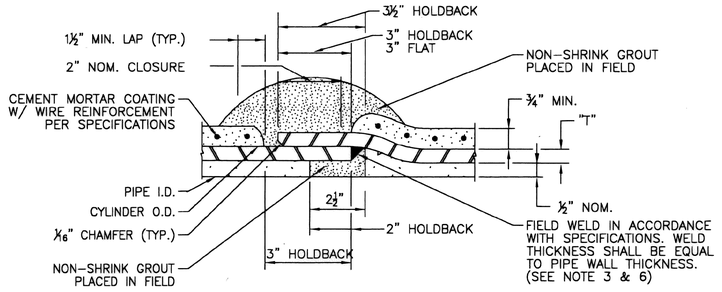
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FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-Water Details.dwg



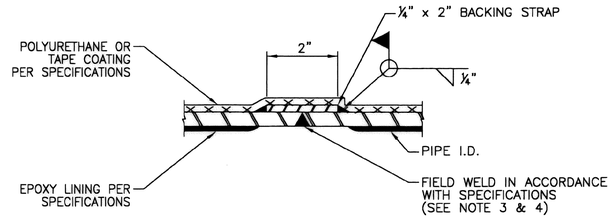
1 LAP–WELD FIELD JOINT – STEEL PIPE JOINT

FLEXIBLE COATING AND LINING



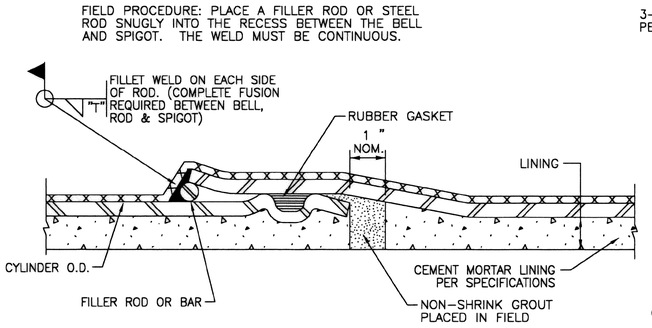
2 LAP–WELD FIELD JOINT – STEEL PIPE JOINT

CEMENT MORTAR LINED & CEMENT MORTAR COATED



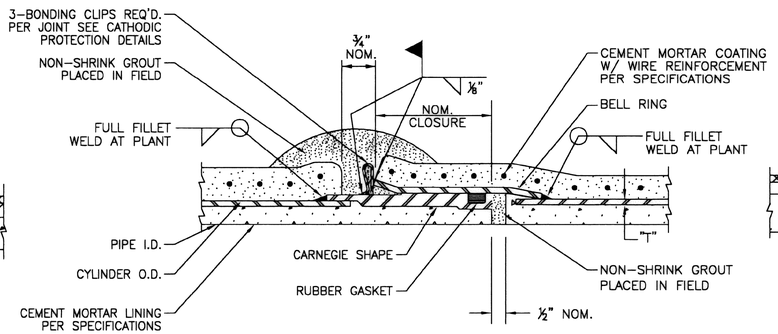
3 BUTT WELD FIELD JOINT – STEEL PIPE JOINT

FLEXIBLE COATING AND LINING



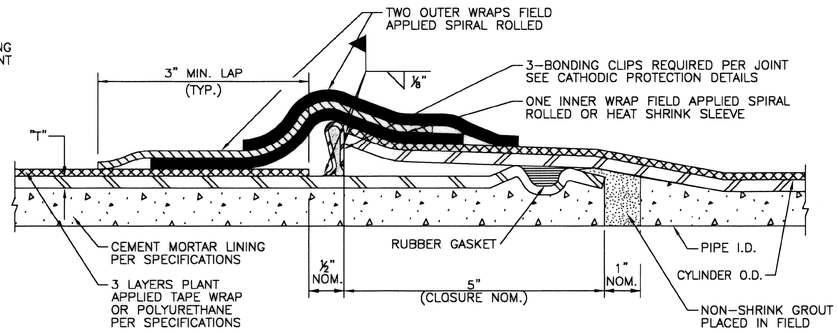
4 FIELD WELDED O–RING – STEEL PIPE JOINT

FLEXIBLE COATING AND CEMENT MORTOR LINING
(FOR ADJUSTMENTS ONLY AS APPROVED BY ENGINEER AND PIPE MANUFACTURER.)



5 CARNEGIE JOINT – STEEL PIPE JOINT

CEMENT MORTAR LINED & CEMENT MORTAR COATED



6 O–RING – STEEL PIPE JOINT

CEMENT MORTAR LINED & FLEXIBLE COATING

NOTES:

1. T = STEEL CYLINDER THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. ALL REFERENCES TO PIPE DIAMETER FOR THIS PROJECT SHALL SIGNIFY SIZE MEASURED TO INSIDE DIAMETER OF THE LINED PIPE.
3. DETAILS 1 AND 3 SHOW EPOXY LINING. CEMENT MORTAR LINING TO BE SIMILAR TO DETAILS ON THIS SHEET SHOWING CEMENT MORTAR LINED PIPE, AS APPROVED BY PROGRAM MANAGER.
4. SEE SPECIFICATIONS FOR REPAIR OF EPOXY LINING.
5. WHEN CEMENT MORTAR COATING IS USED FOR STEEL PIPE, FLEXIBLE MASTIC SEALER SHALL BE APPLIED TO THE EXTERIOR OF THE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN A TUNNEL OR ENCASEMENT PIPE.
6. OUTSIDE WELD MAY BE SUBSTITUTED FOR INSIDE WELD. INTERIOR WELDING IS NOT RECOMMENDED FOR 30" DIAMETER PIPE AND SMALLER.

NO.	DATE	REVISION	APP.

KIMLEY–HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597–9300
TBPE FIRM REGISTRATION F–928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352–007

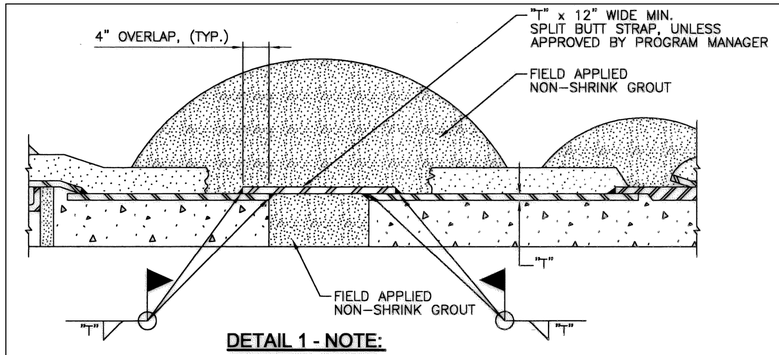
PRELIMINARY
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Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd
STEEL PIPE DETAIL
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 36 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:15 AM
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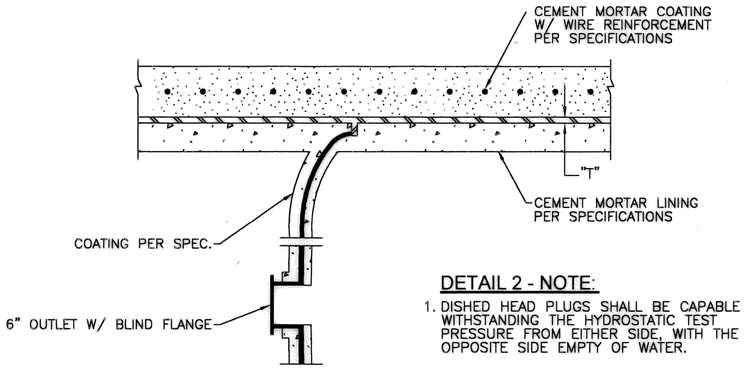


DETAIL 1 - NOTE:

1. WELD SIZE SHALL MATCH THICKNESS OF BUTT STRAP AND CARRIER PIPE, AS RECOMMENDED BY THE PIPE MANUFACTURER.
2. INTERNAL WELD NOT RECOMMENDED FOR 30" DIAMETER PIPE AND SMALLER.
3. NO ANGULAR DEFLECTION ALLOWED.

1 CLOSURE PIECE

FOR STEEL PIPE WITH CEMENT MORTAR LINED AND CEMENT MORTAR COATED (SIMILAR FOR FLEXIBLE COATING AND LINING)

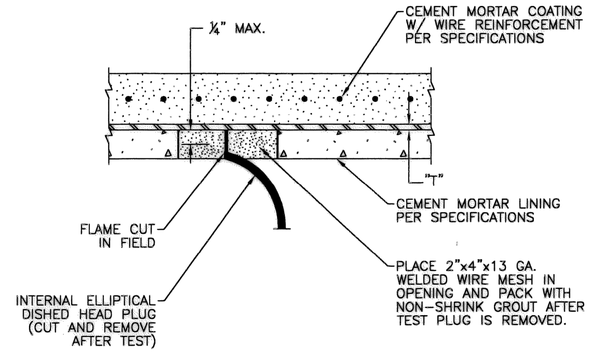


DETAIL 2 - NOTE:

1. DISHED HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING THE HYDROSTATIC TEST PRESSURE FROM EITHER SIDE, WITH THE OPPOSITE SIDE EMPTY OF WATER.

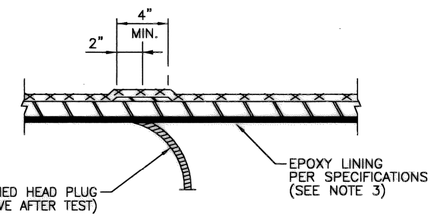
2 INTERNAL ELLIPTICAL DISHED HEAD PLUG

CEMENT MORTAR LINING AND CEMENT MORTAR COATED STEEL PIPE SPECIAL



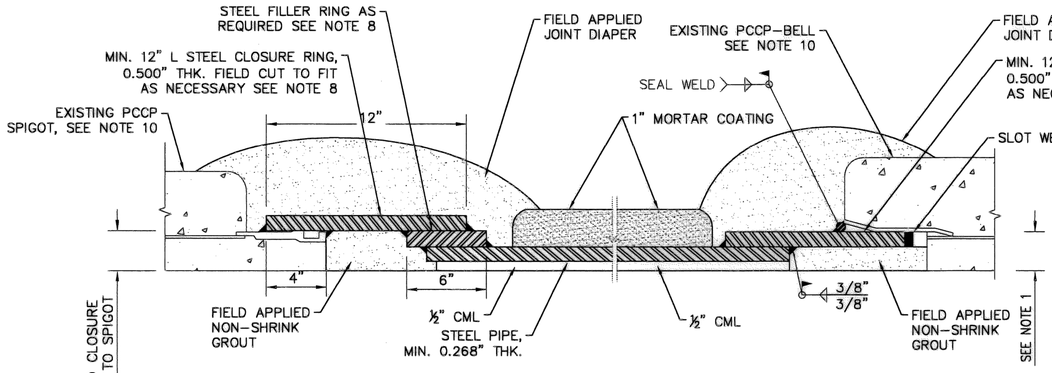
3 INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL

CEMENT MORTAR LINING AND CEMENT MORTAR COATED STEEL PIPE SPECIAL



4 INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL

FOR STEEL PIPE WITH FLEXIBLE COATING AND LINING

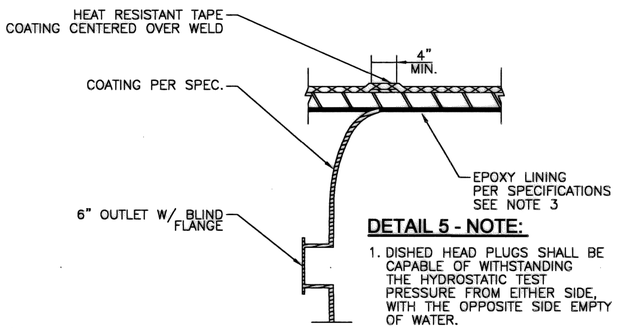


6 CONNECTION PIECE DETAIL STEEL-TO-PCCP BELL/SPIGOT

(OPTION 1: IF EXISTING PIPE JOINT IS NOT WELDED)

NOTES:

1. T = STEEL CYLINDER THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. ALL REFERENCES TO PIPE DIAMETER FOR THIS PROJECT SHALL SIGNIFY SIZE MEASURED TO INSIDE DIAMETER OF THE LINED PIPE.
3. DETAILS 4 AND 5 SHOW EPOXY LINING. CEMENT MORTAR LINING TO BE SIMILAR TO DETAILS ONT HIS SHEET SHOWING CEMENT MORTAR LINED PIPE, AS APPROVED BY PROGRAM MANAGER.
4. SEE SPECIFICATIONS FOR REPAIR OF EPOXY LINING.
5. WHEN CEMENT MORTAR COATING IS USED FOR STEEL PIPE, FLEXIBLE MASTIC SEALER SHALL BE APPLIED TO THE EXTERIOR OF THE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN A TUNNEL OR ENCASEMENT PIPE.
6. OUTSIDE WELD MAY BE SUBSTITUTED FOR INSIDE WELD. INTERIOR WELDING IS NOT RECOMMENDED FOR 30" DIAMETER PIPE OR SMALLER.
7. FIELD VERIFY INSIDE DIAMETER OF JOINT RING.
8. RING THICKNESS TO BE DETERMINED BASED ON FIELD VERIFIED JOINT DIMENSIONS
9. COATINGS ON PROPOSED PIPE TO BE SIMILAR TO EXISTING PIPE
10. PROTECT EXISTING PIPE SECTIONS TO REMAIN IN PLACE. NOTIFY ENGINEER IF ANY SUSPECTED DAMAGE OCCURS.

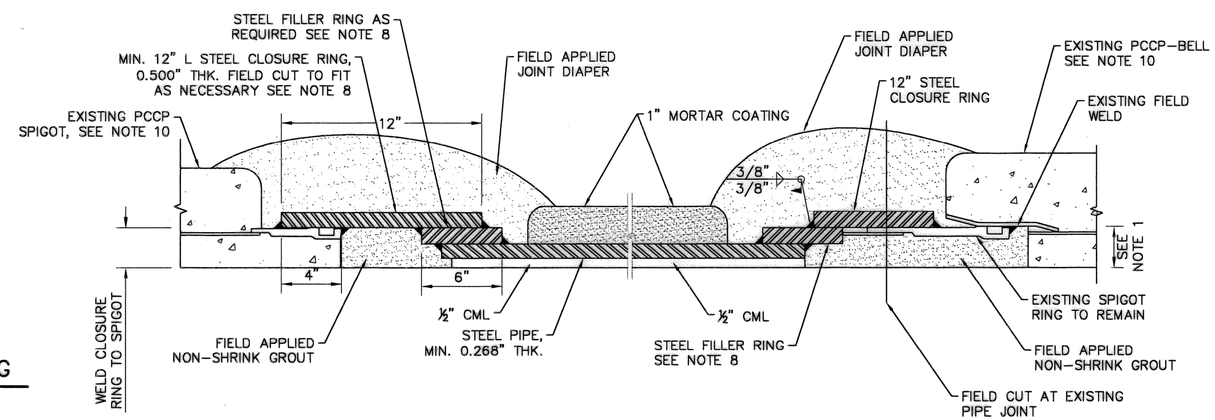


DETAIL 5 - NOTE:

1. DISHED HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING THE HYDROSTATIC TEST PRESSURE FROM EITHER SIDE, WITH THE OPPOSITE SIDE EMPTY OF WATER.

5 INTERNAL ELLIPTICAL DISHED HEAD PLUG

FOR STEEL PIPE WITH FLEXIBLE COATING AND LINING



7 CONNECTION PIECE DETAIL STEEL-TO-PCCP BELL/SPIGOT

(OPTION 2: IF EXISTING PIPE JOINT IS WELDED)

NO.	DATE	REVISION	APP.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

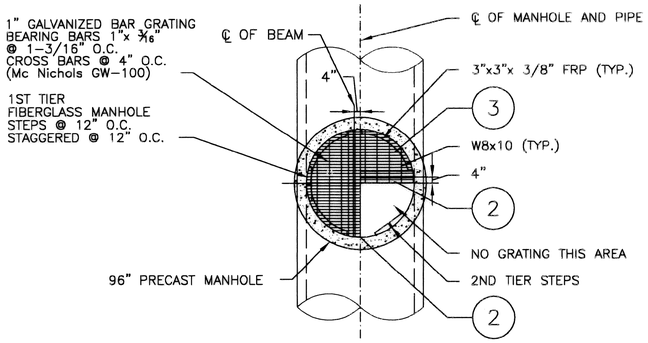
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

STEEL PIPE DETAIL (SHEET 2 OF 2)

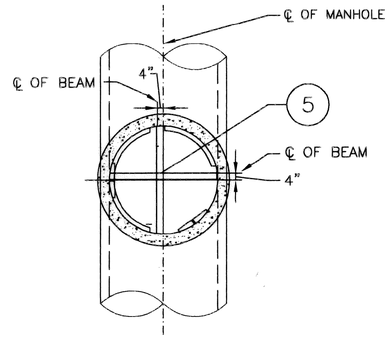
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 37 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:15 AM

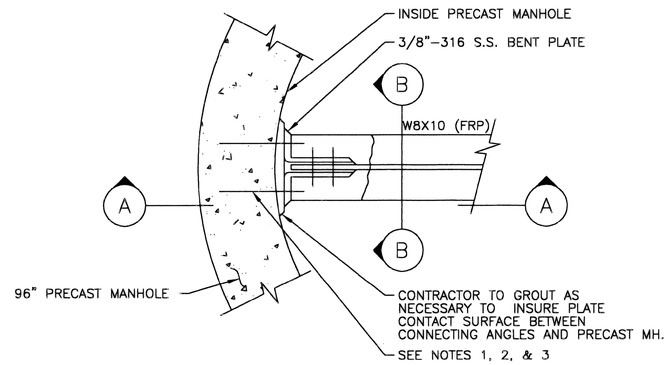
FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-Water Details.dwg



PLAN VIEW OF LANDING
(W/GRATING SHOWN)



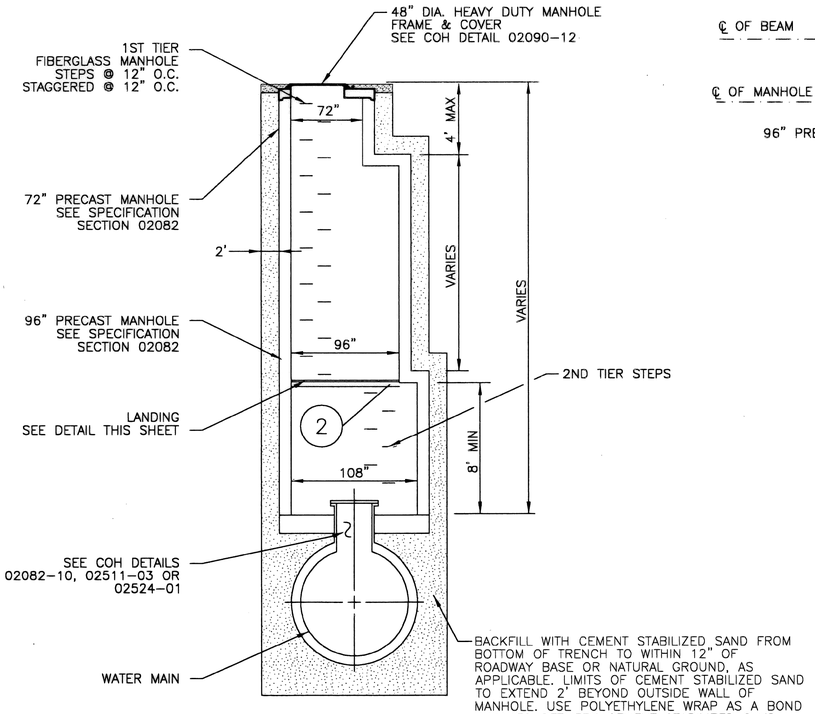
PLAN VIEW OF LANDING
(W/O GRATING SHOWN)



2 BEAM CONNECTION DETAIL
NO SCALE

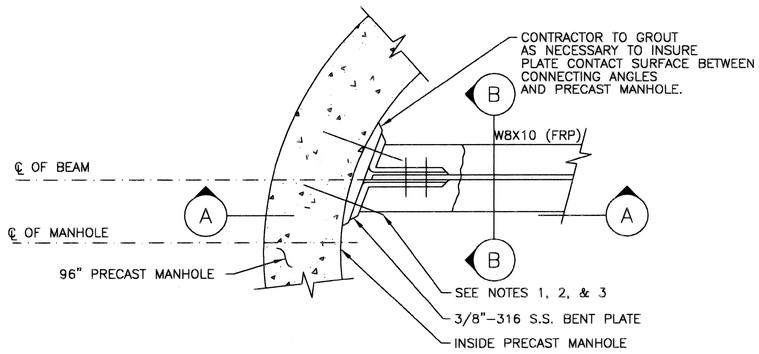
NOTES:

1. CONTRACTOR TO DRILL 1¼" DIAMETER HOLES 4" DEEP, INTO PRECAST MANHOLE FOR ¾" DIAMETER ANCHOR BOLTS.
2. GROUT IN ¾" DIAMETER ANCHOR BOLTS WITH GRUTEM 435 AS MANUFACTURED BY I.W. INDUSTRIES, OR APPROVED EQUAL, MANUFACTURERS INSTRUCTIONS IN THE USE OF ALL MATERIALS SPECIFIED SHALL BE FOLLOWED IN STRICT ACCORDANCE.
3. ANCHOR BOLTS SHALL BE ¾" DIAMETER x 6" LONG 316 S.S. ALL THREAD BOLTS WITH 2" PROJECTION.
4. ALL STEEL TO BE GRADE 40.
5. ALL CONCRETE TO BE CLASS "A".
6. COORDINATE THE LOCATION AND TYPE JOINTS BETWEEN OFFSET BOX AND PRECAST SECTIONS.
7. PROVIDE RAMNEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.

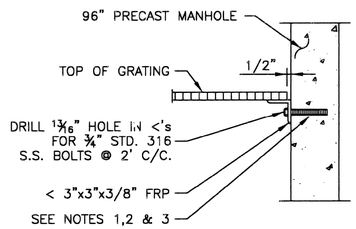


PROFILE

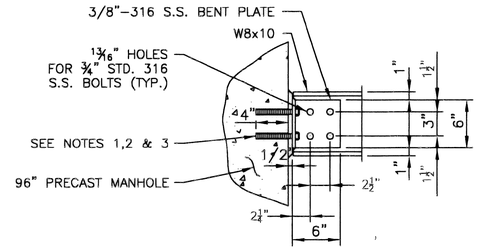
1 EXTRA DEPTH – ACCESS MANHOLE
(SEE PLANS FOR LOCATION)
NO SCALE



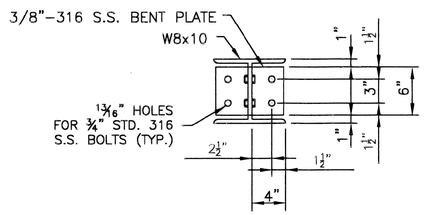
3 BEAM CONNECTION DETAIL
NO SCALE



4 ANGLE CONNECTION DETAIL
NO SCALE



A SECTION
NO SCALE



B SECTION B
NO SCALE

NO.	DATE	REVISION	APP.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
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77009
(281) 597-9300
TBPE FIRM REGISTRATION
F-928

SURVEYED BY: LANDTECH, INC.
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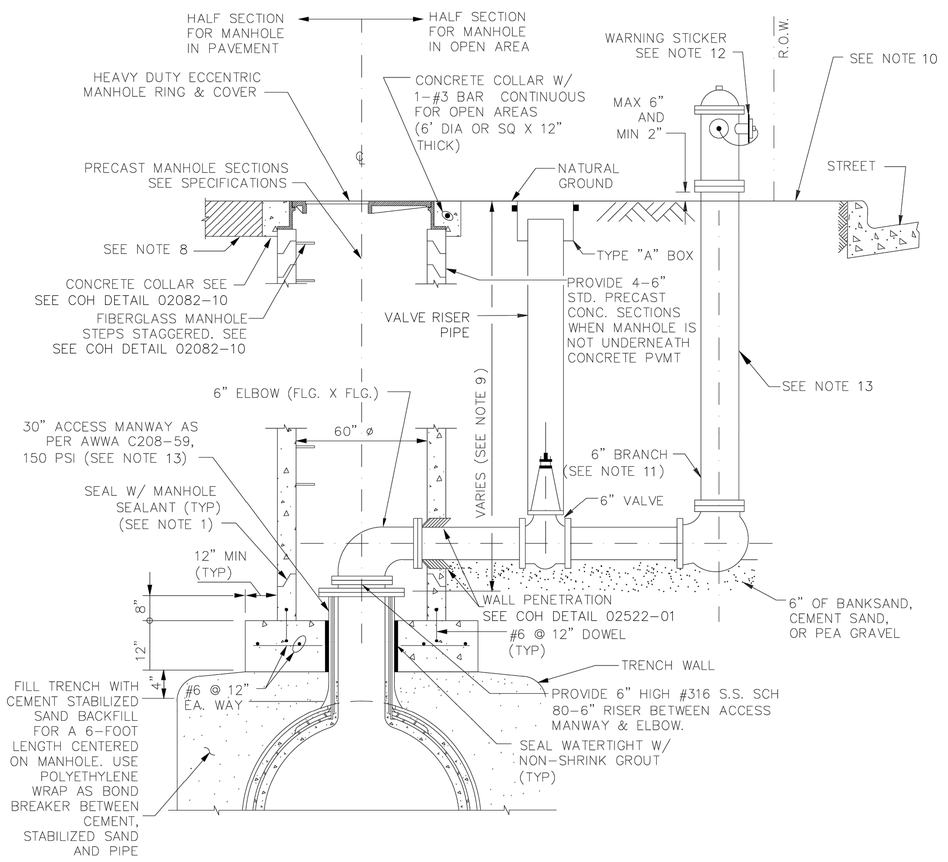
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Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
STANDARD LDWL
SAF-T-CLIMB DETAILS FOR EXTRA DEPTH MANHOLE

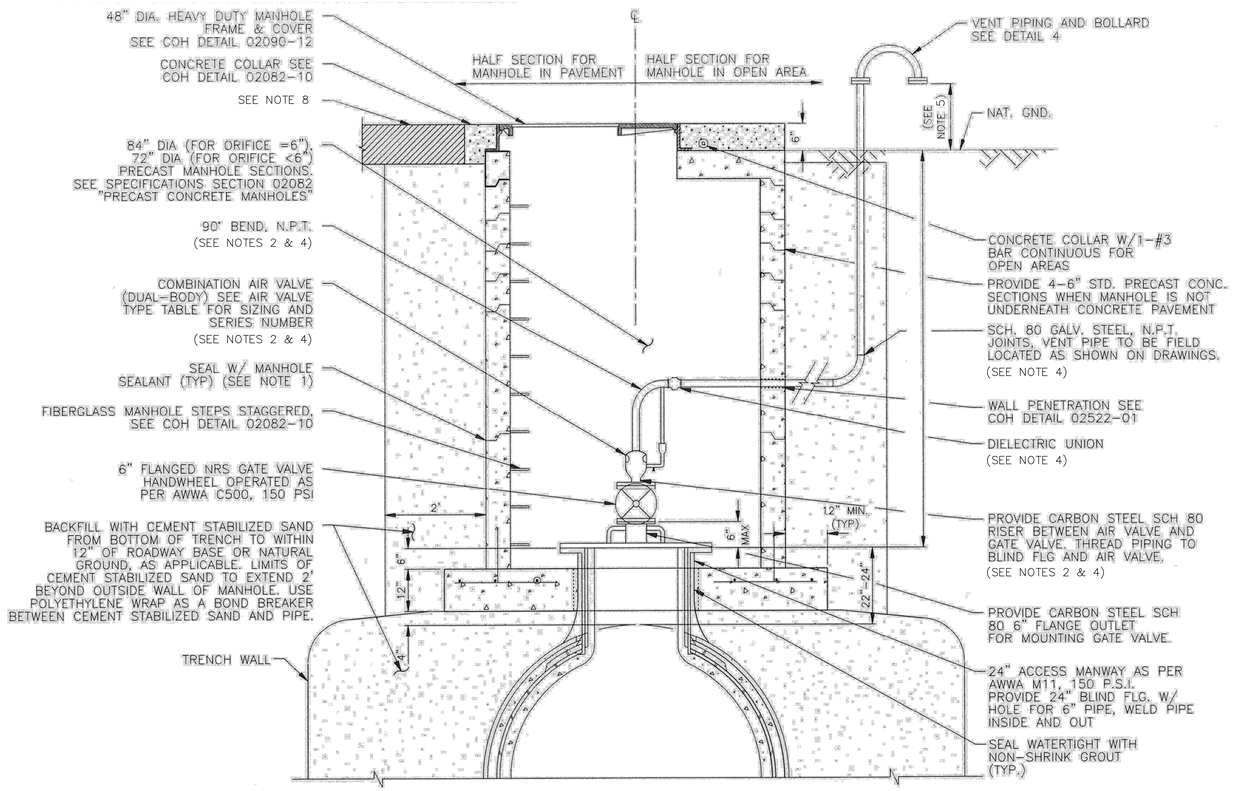
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 38 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:15 AM
FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-Water Details.dwg



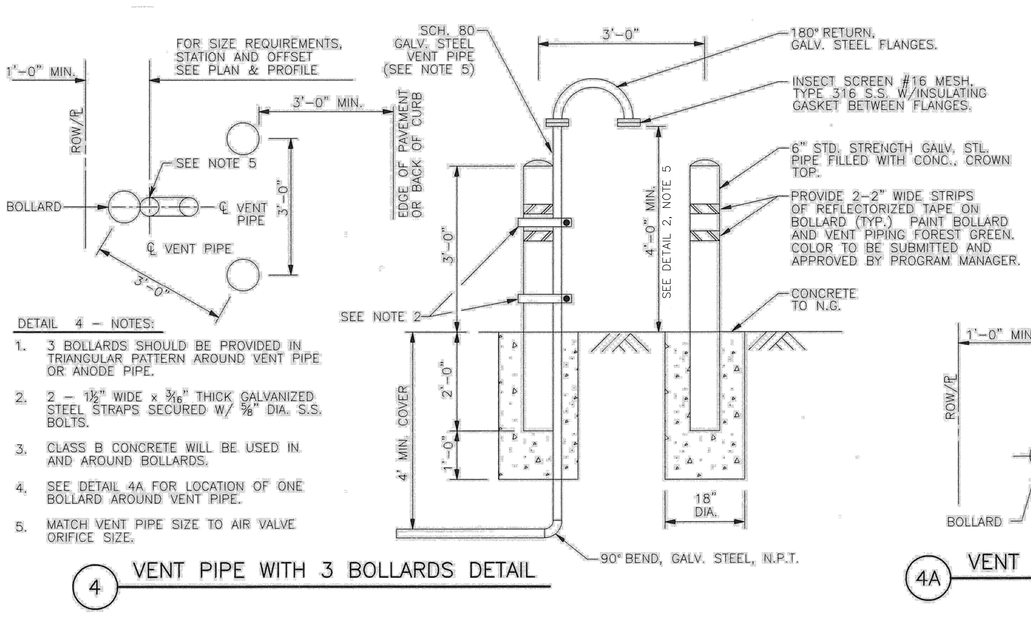
1 FLUSHING HYDRANT ASSEMBLY WITH ACCESSMANWAY IN SERVICE MANHOLE

(FOR WATER LINES 36-INCH TO 96-INCH DIAMETER) Scale: NTS.



2 COMBINATION AIR VALVE ASSEMBLY WITH ACCESS MANWAY IN SERVICE MANHOLE

(FOR WATER LINES 36-INCH TO 96-INCH DIAMETER) Scale: NTS.



DETAIL 4 - NOTES:

1. 3 BOLLARDS SHOULD BE PROVIDED IN TRIANGULAR PATTERN AROUND VENT PIPE OR ANODE PIPE.
2. 2 - 1½" WIDE x 3/16" THICK GALVANIZED STEEL STRAPS SECURED W/ 5/8" DIA. S.S. BOLTS.
3. CLASS B CONCRETE WILL BE USED IN AND AROUND BOLLARDS.
4. SEE DETAIL 4A FOR LOCATION OF ONE BOLLARD AROUND VENT PIPE.
5. MATCH VENT PIPE SIZE TO AIR VALVE ORIFICE SIZE.

4 VENT PIPE WITH 3 BOLLARDS DETAIL

		VACUUM (AI/VR)		AIR RELEASE		
WATER MAIN DIAMETER	MANUFACTURER (1)	SERIES	ORIFICE SIZE	SERIES	INLET SIZE (NPT)	ORIFICE SIZE (2)
>=36" <=96"	APCO	1500C		200A	1"	
	CLAVAL	38VB		34AR-C	1"	
	PRATT	WAVVB		WAR 02	1"	

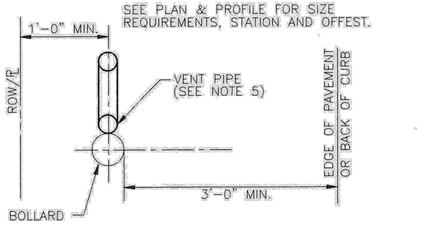
3 AIR VALVE & TYPE TABLE

(FOR WATER LINES 36" TO 96" DIAMETER)

DETAILS 3 - NOTES:

(1) OR APPROVED EQUAL.

(2) MINIMUM ORIFICE SIZE REQUIRED. TO BE UPDATED FOR EACH PROJECT BASED ON TRANSIENT ANALYSIS.



4A VENT PIPE WITH 1 BOLLARD DETAIL

DETAILS 1 & 2 - NOTES:

1. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
2. PROVIDE AN APPROVED PETROLEUM BASED TAPE ENCAPSULATING ALL BOLTS IN MANHOLES AND VAULTS.
3. PROVIDE AIR VALVE AS DIMENSIONED ON THE PLAN AND PROFILE SHEETS.
4. ALL PIPING AND APPURTENANCES SHOWN SHALL MATCH DIAMETER, AND SHALL BE CONSTRUCTED OF THE SAME MATERIAL AND CLASS.
5. VERIFY THAT THE LOCATION OF SCREEN IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND, WHICHEVER IS HIGHER.
6. REFER TO PLAN AND PROFILE SHEETS FOR THE LOCATIONS OF COMBINATION AIR VALVES.
7. 6" MINIMUM INCREASE DIAMETER TO MATCH AIR RELEASE - VACUUM VALVE DIAMETER WHEN GREATER THAN 6".
8. FOR PAVEMENT REPAIR DETAIL, SEE SHEET 45.
9. FOR MANHOLES DEEPER THAN 20 FEET, INCREASE SIZE OF ACCESS MANHOLES TO 72-INCH OR 84-INCH DIAMETER AND PROVIDE SAFETY CLIMBING RAIL (SAF-T-CLIMB OR APPROVED EQUAL).
10. LOCATE FLUSHING HYDRANTS AS SHOWN ON PLANS. PROVIDE TEMPORARY MEANS TO DIFFUSE FLOW FROM HYDRANT AND PREVENT EROSION OF EXISTING GROUND DURING FLUSHING.
11. PROVIDE RESTRAINED JOINTS FOR FLUSHING HYDRANT ASSEMBLY.
12. PAINT FLUSHING HYDRANT BLACK. INSTALL DISK ON PUMPER NOZZLE AND LABEL "CITY OF HOUSTON - FOR FLUSHING ONLY".
13. SEE DETAILS 4A
14. NATIONAL PIPE THREAD IS ABBREVIATED AS N.P.T ON THIS DRAWING.

NO.	DATE	REVISION	APP.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928
SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

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Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

COMBINATION AIR VALVE MANHOLE DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 39 OF 91	

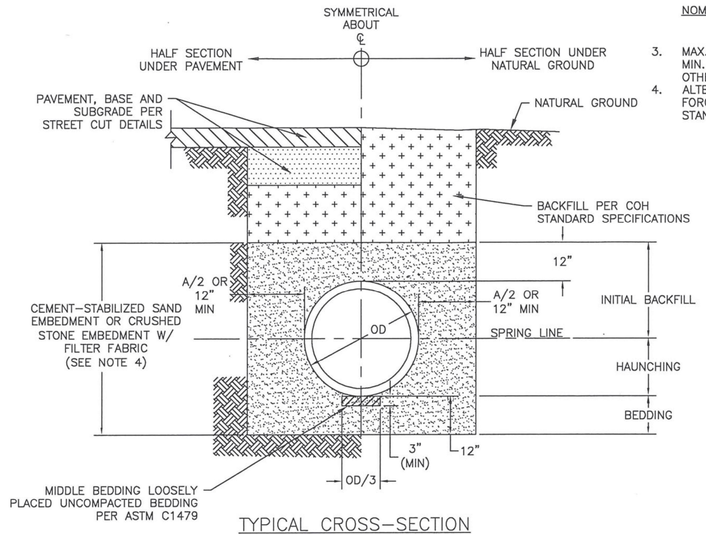
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NOTES:

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 "A" FOR THE NOMINAL PIPE SIZE:

NOMINAL PIPE SIZE	"A"
18" TO 30"	24"
OVER 30"	36"

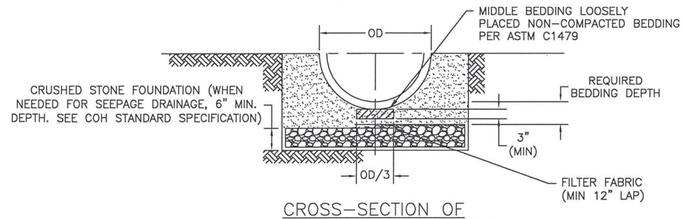
3. MAX. TRENCH WIDTH SHALL BE NOT GREATER THAN MIN. TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
4. ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED. SEE COH STANDARD SPECIFICATIONS.



TYPICAL CROSS-SECTION

1 STORM SEWER BEDDING AND BACKFILL FOR DRY STABLE TRENCH

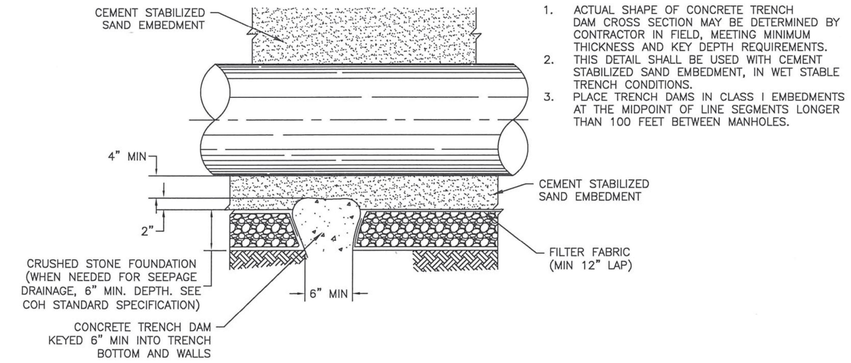
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CROSS-SECTION OF CRUSHED STONE FOUNDATION

NOTES:

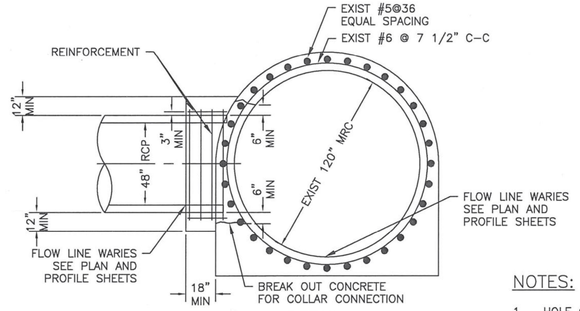
1. ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING MINIMUM THICKNESS AND KEY DEPTH REQUIREMENTS.
2. THIS DETAIL SHALL BE USED WITH CEMENT STABILIZED SAND EMBEDMENT, IN WET STABLE TRENCH CONDITIONS.
3. PLACE TRENCH DAMS IN CLASS I EMBEDMENTS AT THE MIDPOINT OF LINE SEGMENTS LONGER THAN 100 FEET BETWEEN MANHOLES.



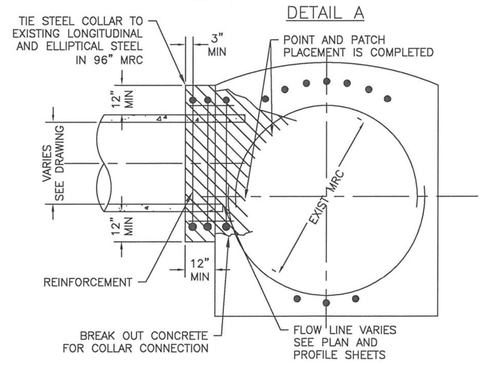
LONGITUDINAL SECTION ALONG PIPE ℄ AT FOUNDATION TRENCH DAM

2 STORM SEWER CRUSHED STONE FOUNDTION FOR WET STABLE TRENCH

Scale: NTS.



DETAIL A



CONCRETE COLLAR DETAIL

NOTES:

1. HOLE CUT IN WALL OF 120" MRC TO BE NEAT AND DONE IN WORKMAN LIKE MANNER.
2. THE STEEL COLLAR TO EXIST LONGITUDINAL AND ELLIPTICAL STEEL WHERE APPLICABLE.
3. CONCRETE COLLAR SHALL BE CONSTRUCTED AT EACH CONNECTION OF A PROPOSED RCP TO AN EXISTING MRC. HOLE CUT IN WALL OF EXISTING 96" MRC TO BE NEAT AND DONE IN WORKMAN LIKE MANNER.

3 LATERAL CONNECTION TO EXISTING MONOLITHIC REINFORCED CONCRETE STORM SEWER

Scale: NTS.

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KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
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P.E. No. 127482
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CITY OF HOUSTON

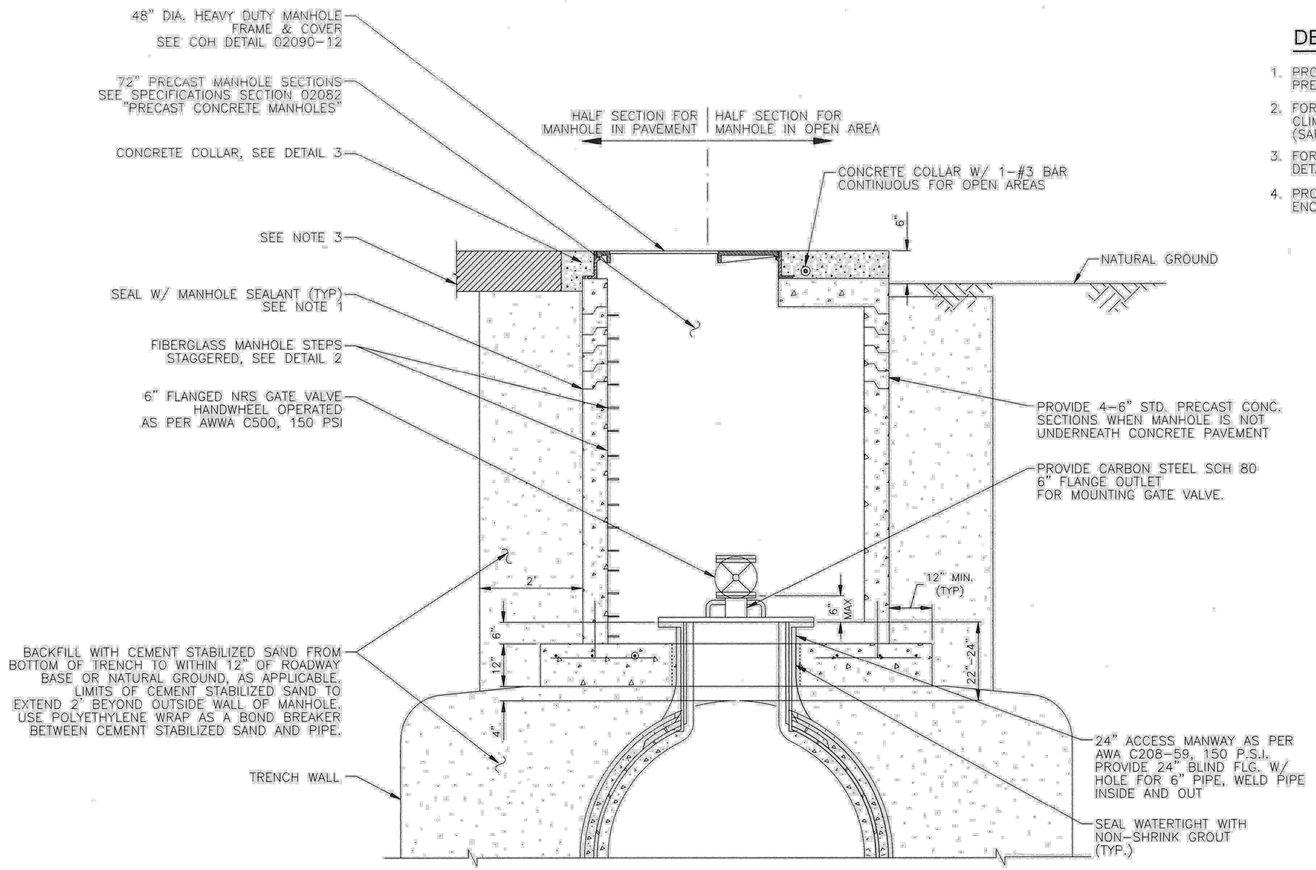
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

STORM REPLACEMENT DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 40 OF 91	

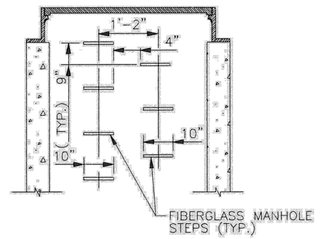
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1 ACCESS MANWAY IN ACCESS MANHOLE
(FOR WATER LINES 36-INCH TO 96-INCH DIAMETER)

DETAIL 1 - NOTES:

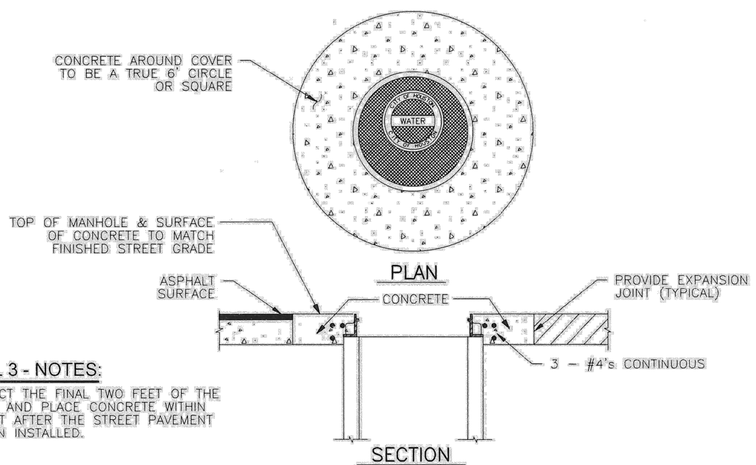
1. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
2. FOR MANHOLES DEEPER THAN 20 FEET, SAFETY CLIMBING RAIL MUST BE PROVIDED (SAF-T-CLIMB OR APPROVED EQUAL).
3. FOR PAVEMENT REPAIR, SEE COH STANDARD DETAILS 02902-01 & 02902-02.
4. PROVIDE AN APPROVED PETROLATUM BASED TAPE ENCAPSULATING ALL BOLTS IN ACCESS MANHOLE.



DETAIL 2 - NOTES:

1. PROVIDE MODEL PS1-PF STEPS AS MANUFACTURED BY M.A. INDUSTRIES INC. OR APPROVED EQUAL.
2. BOTTOM MANHOLE STEP SHALL BE NO HIGHER THAN 12" ABOVE MANHOLE INVERT.

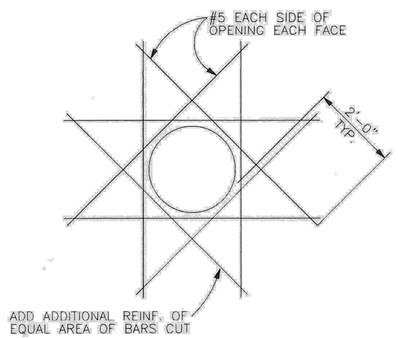
2 MANHOLE STEP DETAIL



DETAIL 3 - NOTES:

1. CONSTRUCT THE FINAL TWO FEET OF THE MANHOLE AND PLACE CONCRETE WITHIN BLOCKOUT AFTER THE STREET PAVEMENT HAS BEEN INSTALLED.

3 MANHOLE CONCRETE COLLAR DETAIL



4 SERVICE MANHOLE REINFORCEMENT DETAIL

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11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
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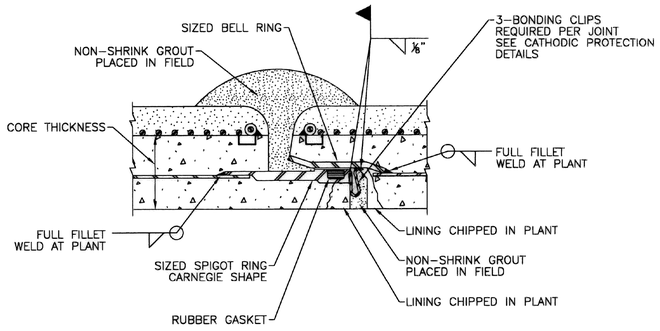
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

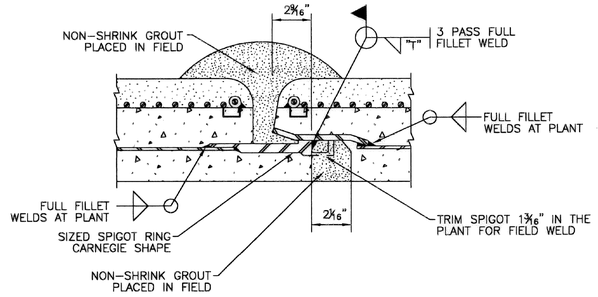
STANDARD LDWL ACCESS MANHOLE DETAILS

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1 JOINT – EMBEDDED CYLINDER PIPE

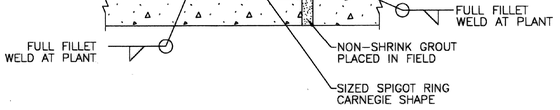


2 WELDED JOINT WITH TRIMMED SPIGOT – EMBEDDED CYLINDER PIPE

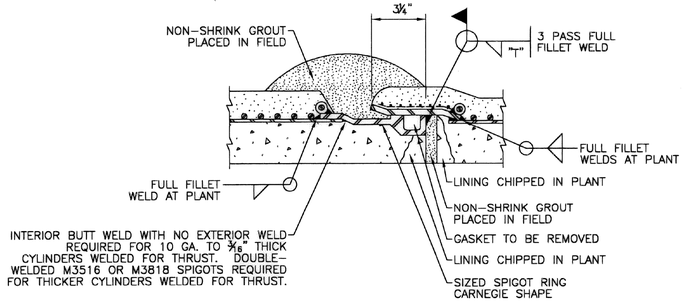
FIELD PROCEDURE: WITH THE JOINT ENGAGED THE INSIDE WELD WILL BE MADE BY ACCESS THROUGH THE PIPE. THE JOINT GROUT SHALL THEN BE PLACED AS SHOWN.

NOTES:

1. T = STEEL CYLINDER THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. FLEXIBLE MASTIC SEALER SHALL BE APPLIED TO THE EXTERIOR OF THE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN A TUNNEL OR ENCASEMENT PIPE.



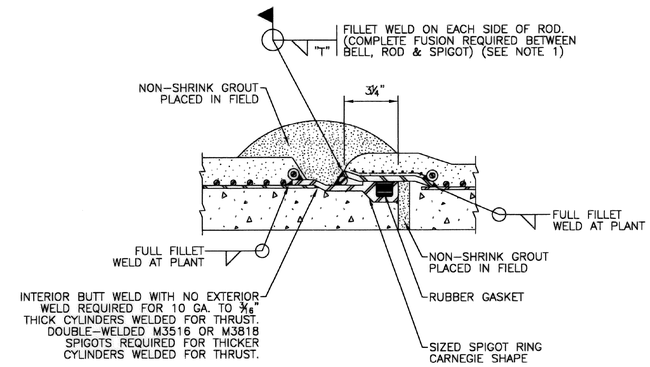
3 JOINT – LINED CYLINDER PIPE



4 WELDED JOINT – LINED CYLINDER PIPE

(INTERIOR WELD FOR WATERLINES 36–INCHES DIAMETER AND LARGER)

FIELD PROCEDURE: WITH THE JOINT ENGAGED THE INSIDE WELD WILL BE MADE BY ACCESS THROUGH THE PIPE. THE JOINT GROUT SHALL THEN BE PLACED AS SHOWN.



5 WELDED JOINT – LINED CYLINDER PIPE

(EXTERIOR WELD FOR WATER LINES LESS THAN 36–INCHES IN DIAMETER)

FIELD PROCEDURE: PLACE STEEL ROD SNUGLY INTO THE RECESS BETWEEN THE BELL AND SPIGOT. THE WELD MUST BE CONTINUOUS.

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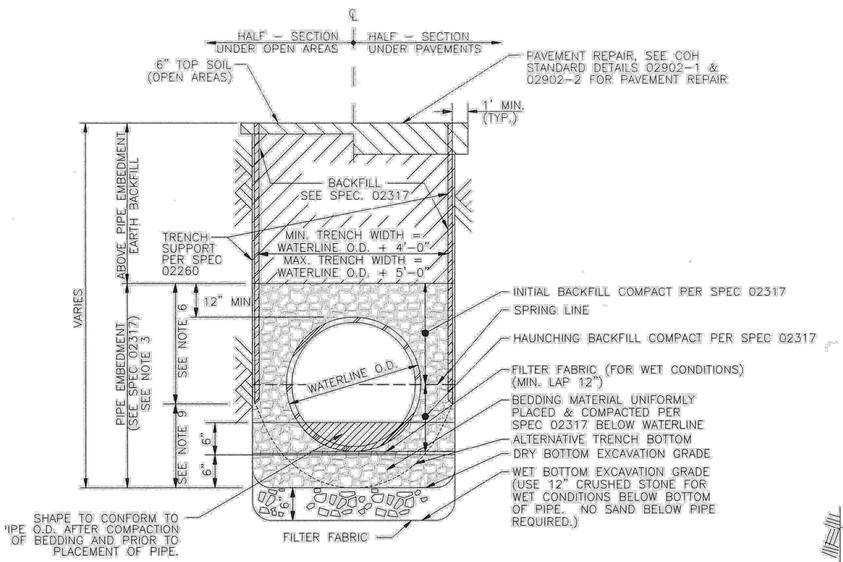
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CONCRETE CYLINDER PIPE DETAIL

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SHEET NO. 42 OF 91	

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1 EXCAVATION & BACKFILL DETAIL

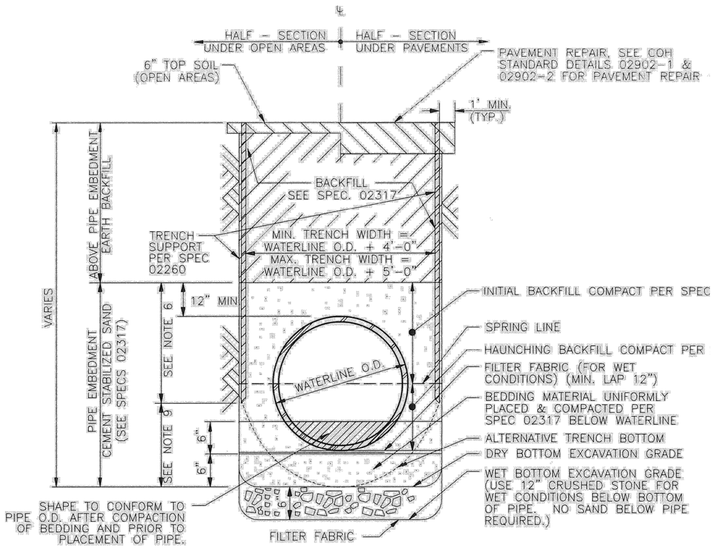
NO SCALE

DETAIL APPLICABLE IN FOLLOWING LIMITS:

– WATER MAIN WITH DEPTH OF COVER LESS THAN 16 FT

DETAILS 1 & 2 – NOTES:

1. SEE TRENCH SAFETY SYSTEM SPECIFICATIONS.
2. FOR WET BOTTOM EXCAVATION LIMITS OF CRUSHED STONE, EXTEND AS SHOWN.
3. PLACEMENT OF TRENCH DAM WITH A MINIMUM OF 12 INCHES INTO TRENCH BOTTOM AND WALLS.
4. TRENCH DAM MAY BE FORMED OR UNFORMED. ACTUAL SHAPE OF TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING 12-INCH MINIMUM THICKNESS AND 12-INCH KEY DEPTH REQUIREMENTS.
5. TRENCH DAM SHALL BE PLACED AT LEAST 5 FT. AWAY FROM ANY PIPELINE STRUCTURE (EACH SIDE). SEE SECTION 02317 FOR OTHER REQUIREMENTS.
6. THIS PORTION OF PIPE EMBEDMENT ZONE MUST BE RECOMPACTED TO PROPER DENSITIES AFTER MOVING SUPPORT SYSTEM FORWARD.
7. USE FILTER FABRIC AS A BOND BREAKER IN PPCA LIMITS AND USE POLYETHYLENE WRAP AS A BOND BREAKER AT OTHER LOCATIONS BETWEEN CEMENT STABILIZED SAND AND PIPE.
8. REFER TO SPEC 02317 FOR GEOTEXTILE REQUIREMENTS AROUND EMBEDMENT.
9. ADJUST HEIGHT OF UNSUPPORTED TRENCH AS NEEDED FOR SAFE CONDITIONS.



2 EXCAVATION & BACKFILL DETAIL

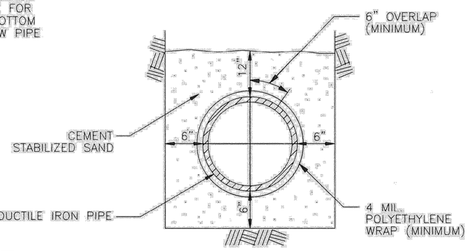
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DETAIL APPLICABLE IN FOLLOWING LIMITS:

– WATER MAIN WITH DEPTH OF COVER GREATER THAN 16 FT

– TUNNEL SHAFT LIMITS

– PPCA LIMITS

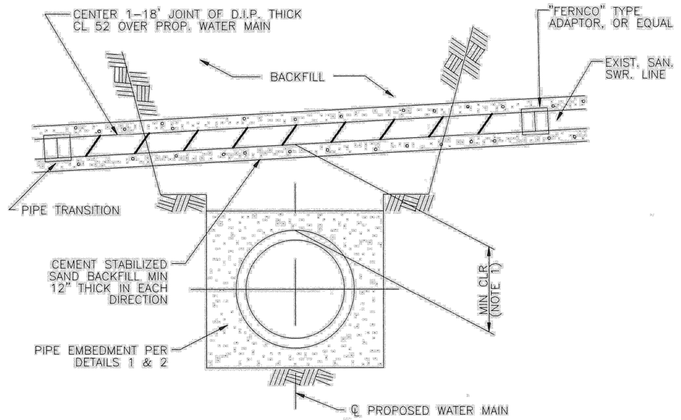


EMBEDMENT AND CORROSION PROTECTION FOR SANITARY SEWER DUCTILE IRON PIPE

4 NO SCALE

DETAIL 4 – NOTES:

1. FOLLOWING EXCAVATION OF TRENCH, PLACE A 6" LAYER OF CEMENT STAB. SAND AT BOTTOM OF TRENCH. LAY POLYETHYLENE WRAP IN TRENCH, AND LAY PIPE ON TOP OF WRAP. FOLD WRAP AROUND PIPE WITH A 6" OVERLAP (MIN.) AND TIE AROUND PIPE WITH HEAVY BINDER TWINE, OR EQUAL, ON 6" CENTERS. PROVIDE A 12" OVERLAP (MIN.) AND TIE WITH HEAVY BINDER TWINE END LAPS. PLACE ADDITIONAL CEMENT SAND UP TO 12" ABOVE.
2. ALL DUCTILE IRON PIPE SHALL HAVE A POLYETHYLENE "WRAP" OF 4 MIL. THICKNESS (MINIMUM) EXCEPT AS NOTED BELOW.
3. WHERE PIPE IS PLACED IN AN AUGER OR TUNNEL OR IN A CASING, PIPE IS TO HAVE A DOUBLE WRAP OF 4 MIL POLYETHYLENE AND SHALL BE BONDED ON 12" CENTERS WITH ½" STAINLESS STEEL BANDS. END LAPS TO BE AS SPECIFIED FOR TRENCH SECTIONS.
4. REFER TO SPECIFICATION SECTION 02528 – POLYETHYLENE ENCASEMENT/WRAP.

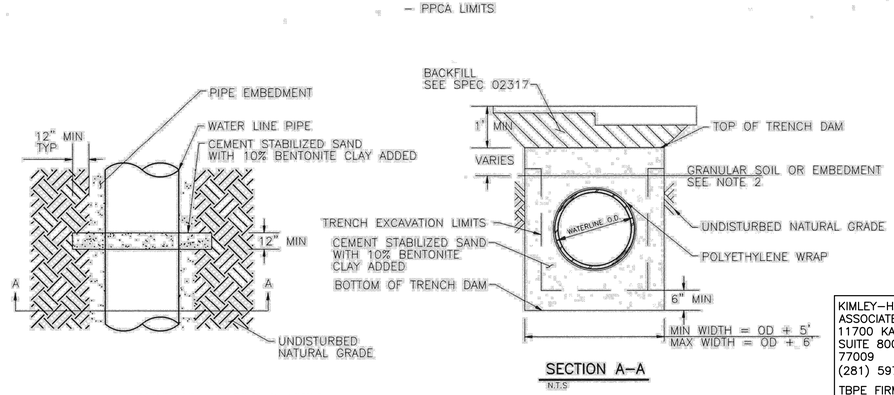


3 EXISTING SANITARY CROSSING OVER/UNDER PROPOSED WATER LINE

NO SCALE

DETAIL 3 – NOTES:

1. REFER TO MINIMUM CLEARANCE REQUIRED IN DRAWINGS.



SECTION A–A

N.T.S.

5 TRENCH DAM DETAIL

NO SCALE

DETAIL 5 – NOTES:

1. REFER TO SPEC 02317 FOR INSTALLATION REQUIREMENTS.
2. EXTEND TRENCH DAM 5 FEET MIN ABOVE TOP OF SURROUNDING GRANULAR SOIL LAYERS OR TOP OF GRANULAR EMBEDMENT MATERIAL, WHICHEVER IS HIGHEST.

NO.	DATE	REVISION	APP.

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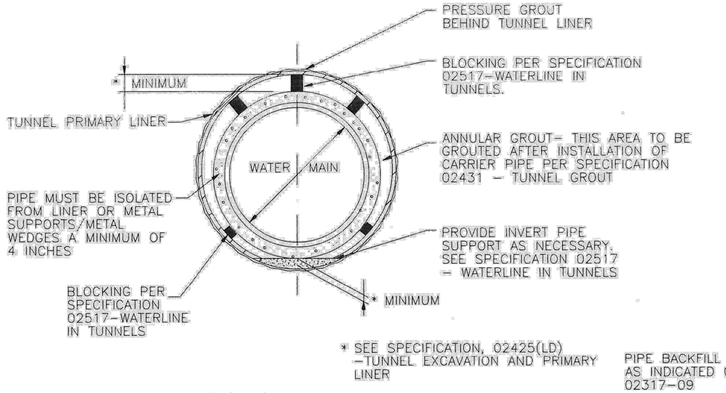
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

EXCAVATION AND BACKFILL DETAIL

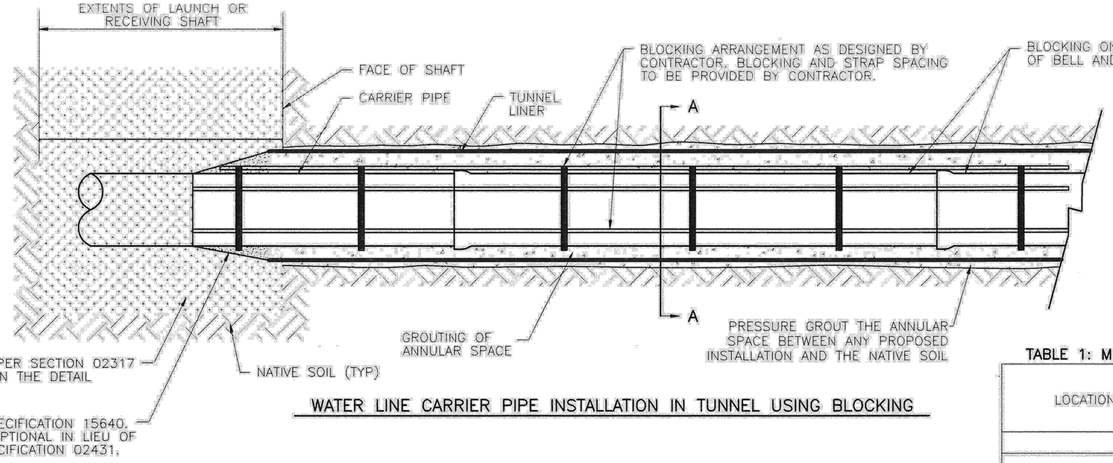
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NTS	
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SECTION A–A

1 WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING BLOCKING



WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING BLOCKING

GENERAL NOTES:

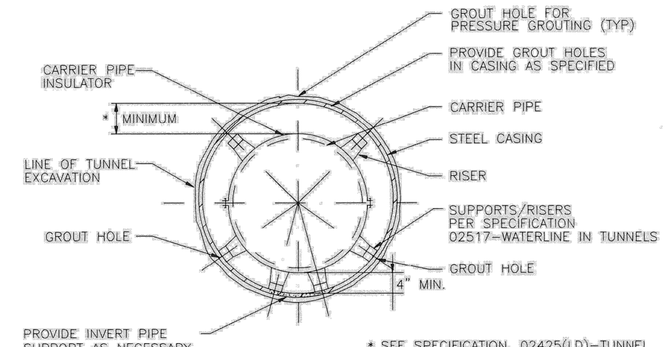
1. DETAIL IS FOR PRESTRESSED CONCRETE CYLINDER PIPE (BAR WRAPPED STEEL CYLINDER PIPE, STEEL PIPE AND D.I.P. ALTERNATE SIMILAR).
2. MINIMUM CLEARANCES SHOWN ON THE PLAN & PROFILE DRAWINGS ARE TO THE O.D. OF TUNNEL LINER. ADJUST PROFILE AS REQUIRED TO MAINTAIN CLEARANCES IDENTIFIED. NO SEPARATE PAY.
3. DIAMETERS INDICATED ON PLANS ARE NOMINAL DIAMETERS.

TABLE 1: MINIMUM TUNNEL LINER / CASING SIZES AND THICKNESS

LOCATION	WATER MAIN DIA.	PIPE MATERIAL	NOMINAL DIA[1](.IN)(CASING O.D.)/ WALL THICKNESS (IN.)		
			2–FLANGE[2] LINER PLATE	4–FLANGE LINER PLATE	STEEL CASING

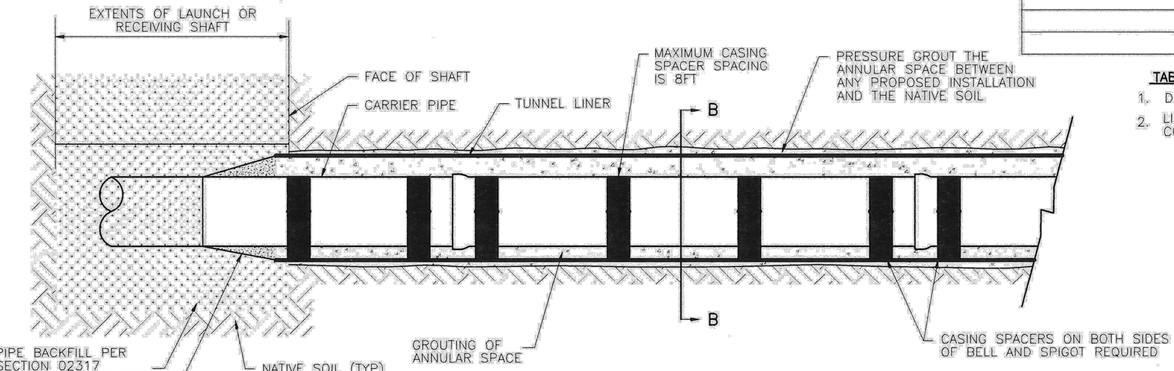
TABLE 1 – NOTES:

1. DIAMETER OF LINER PLATE IS AT NEUTRAL AXIS.
2. LINER PLATE IS TWO FLANGE AND NOMINALLY 2–INCH CORRUGATION BY 6–INCH PROFILE.

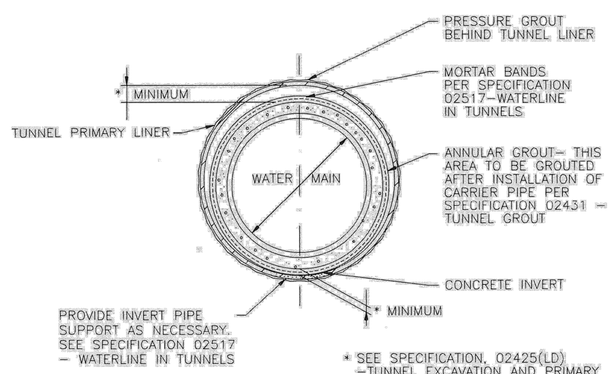


SECTION B–B

2 WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING CASING SPACERS

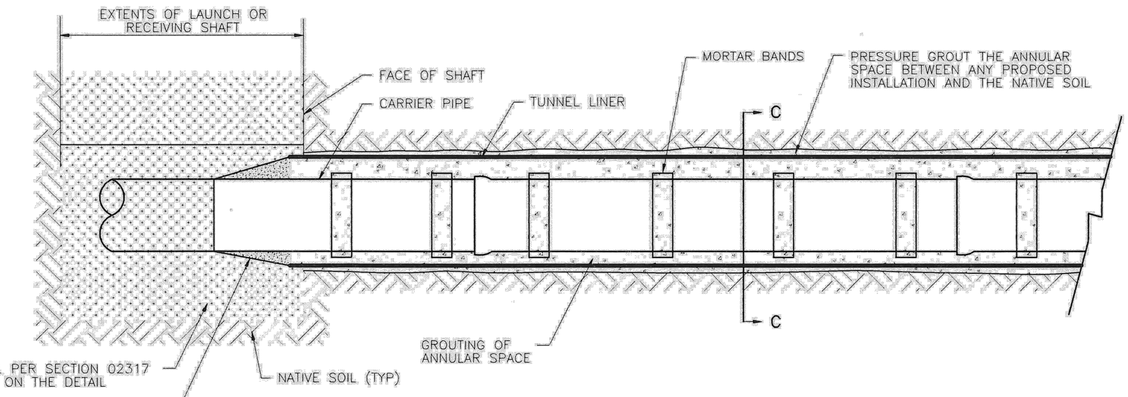


WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING CASING SPACERS



SECTION C–C

3 WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING MORTAR BANDS



WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING MORTAR BANDS

(ONLY APPLICABLE FOR MORTAR COATED CARRIER PIPES)

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(281) 597–9300
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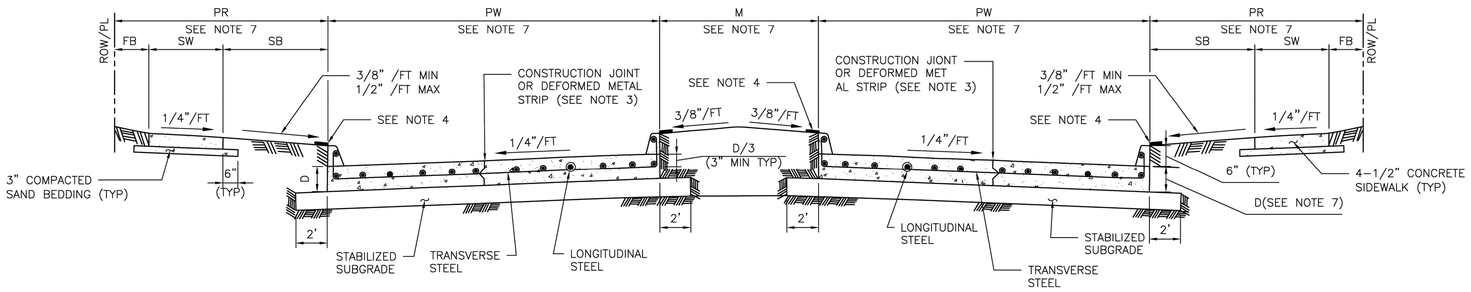
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

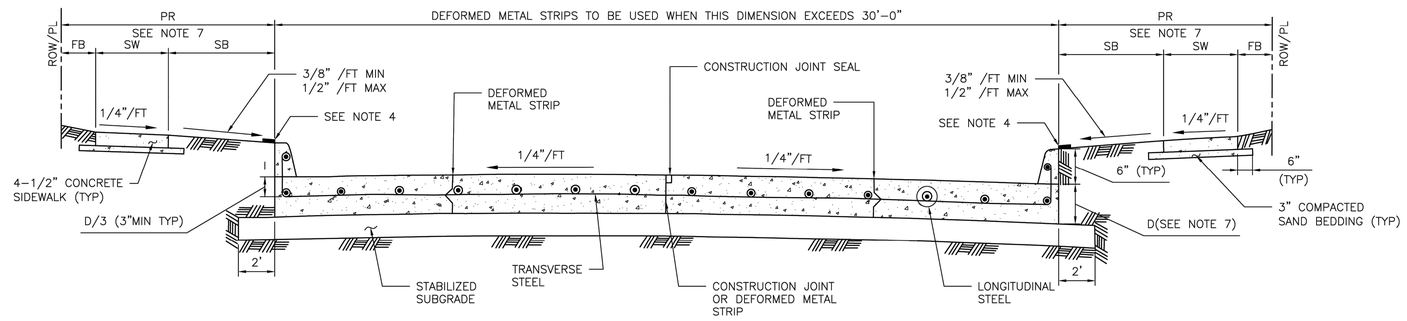
TUNNEL AND CASING DETAIL

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TYPICAL DOUBLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS



TYPICAL SINGLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS

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"
fc' = 4,000 PSI/28 DAYS AND FY = 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

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.

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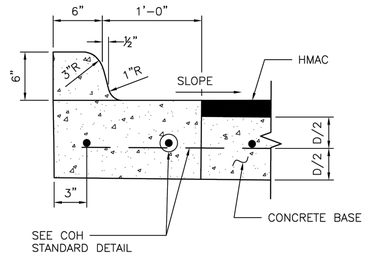
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HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

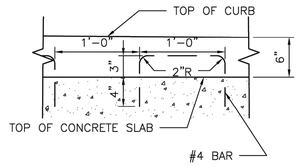
CONCRETE PAVEMENT DETAILS

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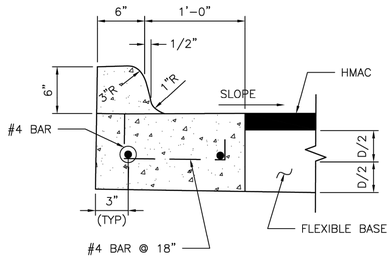
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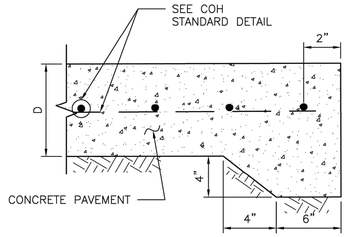
ESPLANADE CURB CONNECTED TO CONCRETE BASE



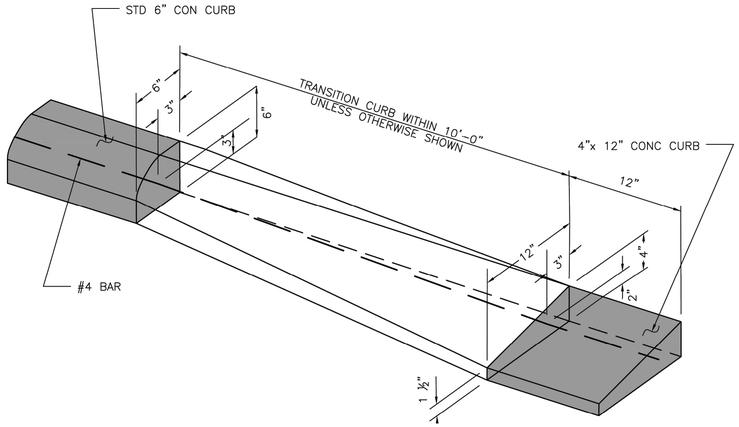
ALTERNATE CONCRETE CURB REINFORCEMENT



ESPLANADE CURB CONNECTED TO FLEXIBLE BASE

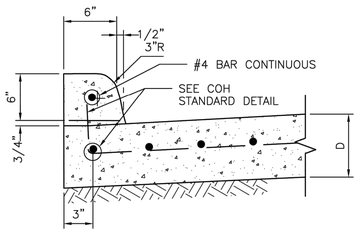


STANDARD CONCRETE PAVING HEADER

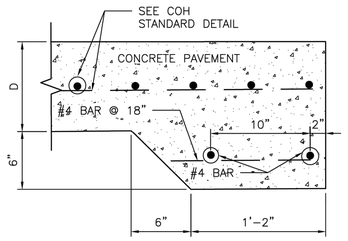


CURB TRANSITION

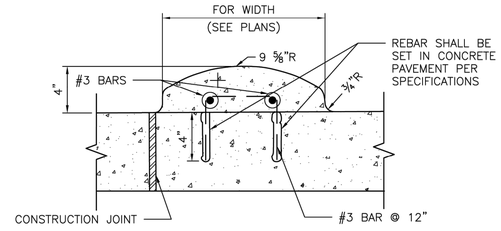
(SEE NOTES)



CONCRETE CURB

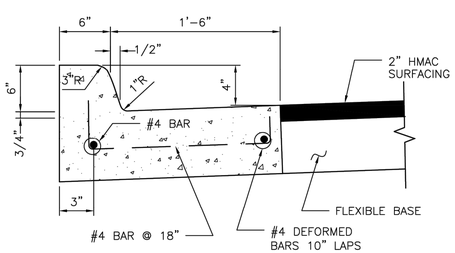


STANDARD RAILROAD HEADER

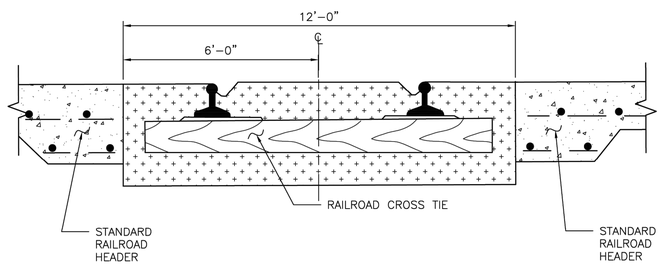


MOUNTABLE CURB

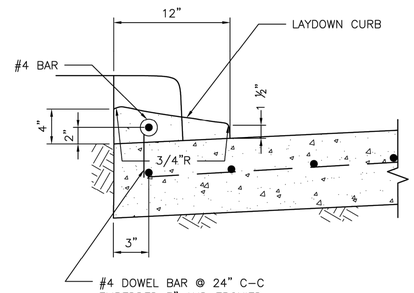
WHEN CONCRETE CURB IS TO BE PLACED EXISTING CONCRETE USE BASE #4 BAR @ 18x10" LONG, DOWELED AND SET IN EPOXY GROUT. SET #4 DOWEL BARS, 25" LONG AT 12" C–C WHEN PAVEMENT SECTION POURED.



MONOLITHIC CURB AND GUTTER

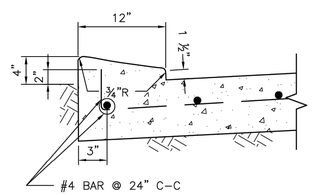


STANDARD RAILROAD CROSSING – SINGLE TRACK



4–INCH x 12–INCH TRANSITION CURB

(SEE NOTES)



4–INCH x 12–INCH MONOLITHIC CURB

(SEE NOTES)

4"x12" MONOLITHIC AND TRANSITION CURB NOTES:

1. 6–INCH CONCRETE CURB TO BE CONSTRUCTED ON ALL ESPLANADES, ISLANDS, NON–RESIDENTIAL STREETS, AND RESIDENTIAL STREETS.
2. 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–FEET 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.

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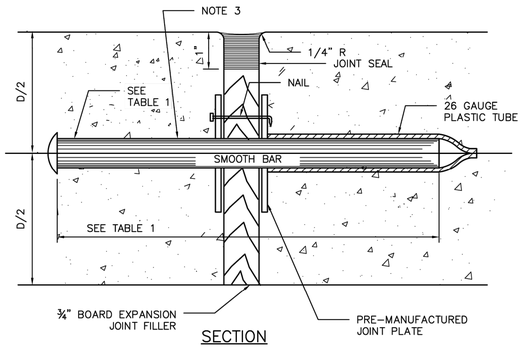
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CURB, CURB & GUTTER AND HEADER DETAILS

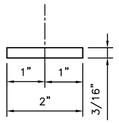
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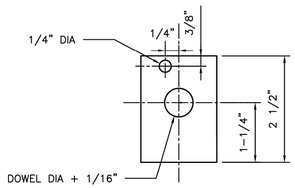
SECTION

DOWEL TYPE EXPANSION JOINT



PLAN VIEW

JOINT PLATE

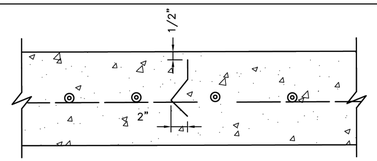


ELEVATION VIEW

JOINT PLATE

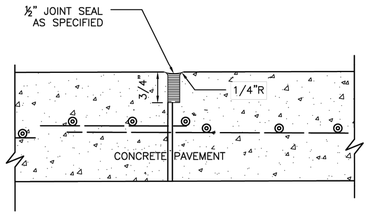
1 PAVEMENT EXPANSION AND CONSTRUCTION JOINT DETAILS

Scale: NTS.



SECTION

DEFORMED METAL STRIP



SECTION

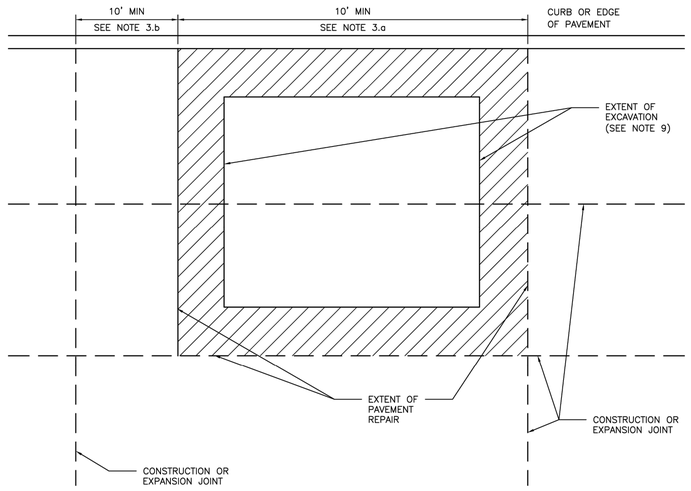
CONSTRUCTION JOINT SEAL

TABLE 1

PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS		
	DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
6	3/4	18	12
7	1	18	12
8	1	18	12
9	1 1/4	18	12
10	1 1/4	18	12
11	1 1/4	18	12
12	1 1/4	18	12

NOTES:

1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS. UNITS TO BE SPACED 12" CENTER ON CENTER.
2. EXPANSION JOINT TO BE PLACED AT THE END OF EACH CURB RADIUS.
3. CENTER DOWEL HORIZONTALLY ON JOINT.
4. CENTER DOWEL VERTICALLY IN CONCRETE BASE. EXTEND THICKENED CONCRETE AS NEEDED TO MAINTAIN 3" MIN COVER.
5. CITY OF HOUSTON APPROVED PRODUCTS MAY BE USED AS JOINT PLATE ALTERNATIVE.



2 STREET CUT FOR CONCRETE PAVEMENT REPLACEMENT

Scale: NTS.

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).

NO.	DATE	REVISION	APP.

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS
77009
(281) 597-9300
TBPE FIRM REGISTRATION
F-928

SURVEYED BY: LANDTECH, INC.

FB NO. 2352-007

PRELIMINARY

FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.

Kimley»Horn

Engineer STEPHEN J. KELLY, P.E.

P.E. No. 127482

Date 07/18/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

CONSTRUCTION DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 47 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:17 AM
FILE PATH: K:\HOU_Utilities\064402850_COH S-00900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-Water Details.dwg

S T R U C T U R A L N O T E S

COORDINATION:

A. THE CONTRACTOR SHALL COMPARE THE STRUCTURAL, MECHANICAL, ELECTRICAL, AND OTHER SERIES DRAWINGS AND REPORT ANY DISCREPANCIES BETWEEN EACH SET OF DRAWINGS AND WITHIN EACH SET OF DRAWINGS PRIOR TO FABRICATION AND INSTALLATION OF ANY STRUCTURAL MEMBERS.

B. ONLY LARGER SLEEVE OPENINGS AND FRAMED OPENINGS IN STRUCTURAL FRAMING COMPONENT MEMBERS ARE INDICATED ON THE STRUCTURAL DRAWINGS. HOWEVER, ALL SLEEVES, INSERTS AND OPENINGS, INCLUDING FRAMES AND/OR SLEEVES SHALL BE PROVIDED FOR PASSAGE, PROVISION AND/OR INCORPORATION OF THE WORK OF THE CONTRACT, INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL AND PLUMBING WORK. THIS WORK SHALL INCLUDE THE COORDINATION OF SIZES, ALIGNMENT, DIMENSIONS, POSITION, LOCATIONS, ELEVATIONS AND GRADES AS REQUIRED TO SERVE THE INTENDED PURPOSE. OPENINGS NOT INDICATED ON THE STRUCTURAL DRAWINGS, BUT REQUIRED AS NOTED ABOVE, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

C. REFER TO MECHANICAL, AND ELECTRICAL DRAWINGS FOR FLOOR ELEVATIONS, SLOPES, DRAINS AND LOCATION OF DEPRESSED AND ELEVATED FLOOR AREAS.

D. COMPATIBILITY OF THE STRUCTURE AND PROVISIONS FOR BUILDING EQUIPMENT SUPPORTED ON OR FROM STRUCTURAL COMPONENTS SHALL BE VERIFIED AS TO SIZE, DIMENSIONS, CLEARANCES, ACCESSIBILITY, WEIGHTS AND REACTION WITH THE EQUIPMENT FOR WHICH THE STRUCTURE HAS BEEN DESIGNED PRIOR TO SUBMISSION OF SHOP DRAWINGS AND DATA FOR EACH PIECE OF EQUIPMENT AND FOR STRUCTURAL COMPONENTS. DIFFERENCES SHALL BE NOTED ON THE SUBMITTALS.

E. SHOP DRAWINGS SHALL BE PREPARED FOR ALL STRUCTURAL ITEMS AND SUBMITTED FOR REVIEW BY THE ENGINEER. STRUCTURAL DRAWINGS SHALL NOT BE REPRODUCED AND USED AS SHOP DRAWINGS. ALL ITEMS DEVIATING FROM THE STRUCTURAL DRAWINGS OR FROM PREVIOUSLY SUBMITTED SHOP DRAWINGS SHALL BE CLOUDED.

F. THE DETAILS DESIGNATED AS "TYPICAL DETAILS" APPLY GENERALLY TO THE STRUCTURAL DRAWINGS IN ALL AREAS WHERE CONDITIONS ARE SIMILAR TO THOSE DESCRIBED IN THE DETAILS.

G. ALL DIMENSIONS AND CONDITIONS OF EXISTING CONSTRUCTION SHALL BE VERIFIED AT THE JOB SITE PRIOR TO THE PREPARATION OF SHOP DRAWINGS. DIFFERENCES BETWEEN EXISTING CONSTRUCTION AND THAT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE REFERRED TO THE ENGINEER. DIFFERENCES SHALL ALSO BE CLOUDED ON THE SHOP DRAWINGS.

H. ALL STRUCTURAL ELEMENTS OF THE PROJECT HAVE BEEN DESIGNED BY THE ENGINEER TO RESIST THE REQUIRED CODE VERTICAL AND LATERAL FORCES THAT COULD OCCUR IN THE FINAL COMPLETED STRUCTURE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL REQUIRED BRACING DURING CONSTRUCTION TO MAINTAIN THE STABILITY AND SAFETY OF ALL STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PROCESS UNTIL THE LATERAL-LOAD RESISTING OR STABILITY-PROVIDING SYSTEM IS COMPLETELY INSTALLED AND THE STRUCTURE IS COMPLETELY TIED TOGETHER. TEMPORARY SUPPORTS SHALL NOT RESULT IN THE OVERSTRESS OR DAMAGE OF THE ELEMENTS TO BE BRACED NOR ANY ELEMENTS USED AS BRACE SUPPORTS.

I. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR AND THEIR SUB-CONTRACTORS SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SEQUENCES AND SAFETY MEASURES INCLUDING, BUT NOT LIMITED TO, ADHERENCES TO ALL OSHA GUIDELINES. THE ENGINEER SHALL NOT HAVE CONTROL OF, AND SHALL NOT BE RESPONSIBLE FOR, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, OR ANY OTHER PERSON PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THESE PERSONS TO CARRY OUT THE WORK IN ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS.

J. WHERE CONFLICT EXISTS AMONG THE VARIOUS PARTS OF THE STRUCTURAL CONTRACT DOCUMENTS, STRUCTURAL DRAWINGS, GENERAL NOTES, AND SPECIFICATIONS, THE STRICTEST REQUIREMENTS, AS INDICATED BY THE ENGINEER, SHALL GOVERN.

K. PERIODIC SITE OBSERVATION BY FIELD REPRESENTATIVES OF JQ IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK IS PROCEEDING IN ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION IS NOT INTENDED TO BE A CHECK OF THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER A PERIODIC CHECK IN AN EFFORT TO INFORM THE OWNER AGAINST DEFECTS AND DEFICIENCIES IN THE WORK OF THE CONTRACTOR.

CODES:

A. THE GENERAL BUILDING CODE USED AS THE BASIS FOR THE STRUCTURAL DESIGN IS AS FOLLOWS:
   1. 2021 INTERNATIONAL BUILDING CODE WITH CITY OF HOUSTON AMENDMENTS.

B. STRUCTURAL CONCRETE: BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, AMERICAN CONCRETE INSTITUTE, ACI 318, AS REFERENCED BY THE GENERAL BUILDING CODE.

C. STRUCTURAL CONCRETE: CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES, AMERICAN CONCRETE INSTITUTE, ACI 350.

D. STRUCTURAL STEEL: MANUAL OF STEEL CONSTRUCTION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION INC., ANSI/AISC 360, AS REFERENCED BY THE GENERAL BUILDING CODE.

E. CODE OF FEDERAL REGULATIONS, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, LATEST EDITION.

F. ALUMINUM: 2005 ALUMINUM DESIGN MANUAL - SPECIFICATIONS AND GUIDELINES FOR ALUMINUM STRUCTURES, THE ALUMINUM ASSOCIATION.

G. GEOTECHNICAL REPORT: FOUNDATION ELEMENTS HAVE BEEN DESIGNED IN ACCORDANCE WITH INFORMATION PROVIDED IN THE FOLLOWING GEOTECHNICAL REPORT:

GEOTECHNICAL ENGINEER:	((_____))
REPORT NUMBER:	((_____))
DATE:	XX.XX.XXXX

DESIGN LOADS:

A. DEAD LOADS INCLUDE THE SELF-WEIGHT OF THE STRUCTURAL ELEMENTS AND THE FOLLOWING SUPERIMPOSED LOADS:
   1. MECH/ELEC AT UPPER SLAB — 10 PSF

B. LIVE LOADS

OCCUPANCY OR USE	UNIFORM (PSF)	CONCENTRATED (LBS)
SOIL ABOVE UPPER SLAB	500±	
TRAFFIC	HS25	20,000 WHEEL LOAD
STAIRS AND EXITS	100	300

C. LIVE LOAD REDUCTION
   1. FLOOR OR ROOF LIVE LOAD HAVE NOT BEEN REDUCED.

D. WIND LOADS
   1. WIND LATERAL LOAD ON STRUCTURAL FRAME IS BASED ON ASCE 7 USING THE FOLLOWING:
      a. BASIC WIND SPEED — 140 MPH
      b. EXPOSURE — C
      c. INTERNAL PRESSURE COEFFICIENT, GCPI — ± 0.18
      d. OCCUPANCY CATEGORY — III

E. SEISMIC LOADS
   1. THE STRUCTURE AND STRUCTURAL COMPONENTS OF THE BUILDING HAVE BEEN DESIGNED IN ACCORDANCE WITH GENERAL BUILDING CODE WITH THE FOLLOWING CRITERIA:
      a. SEISMIC IMPORTANCE FACTOR, IE — 1.25
      b. RISK CATEGORY — III
      c. MAPPED SPECTRAL RESPONSE ACCELERATIONS
         - S_S (%g) — 0.068
         - S_1 (%g) — 0.040
      d. SITE CLASS — D
      e. SPECTRAL RESPONSE COEFFICIENTS
         - S_{DS} — 0.073
         - S_{D1} — 0.063
      f. SEISMIC DESIGN CATEGORY — A

EXCAVATION PROTECTION:

A. THE SIDES OF ALL EXCAVATIONS GREATER THAN 5'-0" IN DEPTH SHALL BE LAID BACK TO A SLOPE OF 1.5 HORIZONTAL TO 1 VERTICAL, UNLESS THE FOLLOWING APPLIES:
   1. A STEEPER SLOPE IS ALLOWED BY THE GEOTECHNICAL ENGINEER FOR THE PARTICULAR LOCATION AND SITE CONDITIONS IN QUESTION.
   2. A TEMPORARY RETENTION SYSTEM IS INDICATED ON THE STRUCTURAL DRAWINGS.
   3. AN ALTERNATIVE PROTECTIVE SYSTEM IS SUBMITTED BY THE CONTRACTOR AND ALLOWED BY THE OWNER.

B. CONTRACTOR SHALL SUBMIT DRAWINGS AND CALCULATIONS SEALED BY A REGISTERED ENGINEER LICENSED IN THE STATE HAVING JURISDICTION AT THE PROJECT SITE FOR THE DESIGN OF ANY TEMPORARY RETENTION OR ALTERNATIVE PROTECTIVE SYSTEMS. TEMPORARY RETENTION OR ALTERNATIVE PROTECTIVE SYSTEMS SHALL BE DESIGNED TO RESIST THE SOIL PRESSURES STIPULATED IN THE REFERENCED GEOTECHNICAL REPORT. IN ADDITION, THE DESIGN SHALL CONSIDER SURCHARGES CREATED BY CONSTRUCTION EQUIPMENT, EXCAVATION SPOIL, AND OTHER SURFACE ENCUMBRANCES.

C. CONTRACTOR SHALL COMPLY WITH ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS AND ALL OTHER REGULATORY AGENCY STANDARDS REGARDING EXCAVATION SAFETY.

CAST-IN-PLACE CONCRETE:

A. CLASSES OF CONCRETE
   1. ALL CONCRETE SHALL CONFORM TO THE REQUIREMENTS AS SPECIFIED IN THE TABLE BELOW, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS:

CLASS	28 DAY STRENGTH	USE
A	4,000 PSI	TYPICAL STRUCTURE, SEE SPEC 03315

B. HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE PLACEMENTS SHALL BE PERMITTED ONLY WHERE INDICATED ON THE STRUCTURAL DRAWINGS. ALL VERTICAL CONSTRUCTION JOINTS SHALL BE MADE IN THE CENTER OF SPANS IN ACCORDANCE WITH THE TYPICAL DETAILS. CONTRACTOR SHALL SUBMIT PROPOSED LOCATIONS FOR CONSTRUCTION JOINTS NOT SHOWN ON THE STRUCTURAL DRAWINGS FOR REVIEW BY THE ARCHITECT AND ENGINEER. ADDITIONAL CONSTRUCTION JOINTS MAY REQUIRE ADDITIONAL REINFORCING AS SPECIFIED BY THE ENGINEER WHICH SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

C. EMBEDDED CONDUITS, PIPES, AND SLEEVES SHALL MEET THE REQUIREMENTS OF ACI 318, INCLUDING THE FOLLOWING:
   1. CONDUITS AND PIPES EMBEDDED WITHIN A SLAB, WALL, OR BEAM (OTHER THAN THOSE PASSING THROUGH) SHALL NOT BE LARGER IN OUTSIDE DIMENSION THAN 1/3 THE OVERALL THICKNESS OF THE SLAB, WALL OR BEAM IN WHICH THEY ARE EMBEDDED.
   2. CONDUITS, PIPES AND SLEEVES SHALL NOT BE SPACED CLOSER THAN THREE DIAMETERS OR WIDTHS ON CENTER.

D. CONCRETE PLACEMENTS SHALL NOT EXCEED 5,000 SQUARE FEET OR 100 LINEAR FEET ON EACH SIDE WITHOUT PRIOR APPROVAL BY THE ARCHITECT FOR EACH PLACEMENT.

E. GRADE BEAMS IN CONTACT WITH EARTH SHALL BE FORMED BOTH SIDES UNLESS NOTED OTHERWISE IN DETAILS.

F. REFER TO SPECIFICATION SECTION 03315 FOR ADDITIONAL INFORMATION.

CONCRETE REINFORCING:

A. CONCRETE REINFORCEMENT FOR THE PROJECT SHALL CONFORM TO THE FOLLOWING:
   1. ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL IN ACCORDANCE WITH ASTM A615, GRADE 60, UNLESS NOTED OTHERWISE IN THE STRUCTURAL DRAWINGS OR THESE NOTES.
   2. WELDED REINFORCING STEEL. PROVIDE REINFORCING STEEL CONFORMING TO ASTM A706.
   3. DEFORMED BAR ANCHORS. ASTM A496 MINIMUM YIELD STRENGTH 70,000 PSI AS NOTED ON THE STRUCTURAL DRAWINGS. REINFORCING BARS SHALL NOT BE SUBSTITUTED FOR DEFORMED BAR ANCHORS.

B. DETAILING OF REINFORCING STEEL SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE 315 DETAILING MANUAL AND ALL HOOKS AND BENDS IN REINFORCING BARS SHALL CONFORM TO ACI DETAILING STANDARDS, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.

C. IN UNSCHEDULED GRADE BEAMS, WALLS, AND SLABS, DETAIL REINFORCING AS FOLLOWS:
   1. CLASS A LAP BEAM TOP REINFORCING BARS AT MID SPAN.
   2. CLASS A LAP BEAM BOTTOM REINFORCING BARS AT THE SUPPORTS.
   3. PROVIDE CLASS B LAP AT OTHER LOCATION PENDING ENGINEER'S APPROVAL.
   4. PROVIDE STANDARD HOOKS IN TOP BARS AT CANTILEVER AND DISCONTINUOUS ENDS OF BEAMS, WALLS AND SLABS.
   5. PROVIDE CORNER BARS FOR ALL HORIZONTAL BARS AT THE INSIDE AND OUTSIDE FACES OF INTERSECTING BEAMS OR WALLS. CORNER BARS ARE NOT REQUIRED IF HORIZONTAL BARS ARE HOOKED.
   6. PROVIDE 2-#4 DIAGONAL BARS AT ALL SLAB RE-ENTRANT CORNERS PLACED UNDER THE TOP MAT OF STEEL.

D. WELDING OF REINFORCING STEEL WILL NOT BE PERMITTED UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS.

E. HEAT SHALL NOT BE USED IN THE FABRICATION OR INSTALLATION OF REINFORCEMENT.

F. REINFORCING STEEL CLEAR COVER SHALL BE AS FOLLOWS:
   1. WALLS — 2" TYP
   2. BEAMS — 1 1/2" INT, 2" EXT EXPOSURE
   3. FOOTINGS — 3"
   4. FORMED GRADE BEAMS — 1 1/2" TOP, 3" SIDES, 3" BOTTOM
   5. SLAB-ON-GRADE — 2" TOP, 2" BOTTOM, 2" SIDES
      a. "EXTERIOR EXPOSURE" REFERS TO CONCRETE EXPOSED TO EARTH OR WEATHER

G. SUBMITTAL: SUBMIT SHOP DRAWINGS FOR FABRICATION, BENDING, AND PLACEMENT OF CONCRETE REINFORCEMENT. COMPLY WITH ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT". DO NOT REPRODUCE THE STRUCTURAL DRAWINGS FOR USE AS SHOP DRAWINGS.

H. REFER TO SPECIFICATION SECTION 03315 FOR ADDITIONAL INFORMATION.

NO.	DATE	REVISION	APP.

KIMLEY–HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
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TBPE FIRM REGISTRATION F–928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352–007

INTERIM REVIEW DOCUMENTS
(NOT INTENDED FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES)
JOHN D. MISCHKOT
TEXAS REGISTRATION No: 107866
DATE: 07/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

STRUCTURAL NOTES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
NO SCALE	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 48 OF 91	

shaping the built environment
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225
832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4230178
TBPE FIRM F-7986

DATE: 8/1/2025 4:05:45 PM
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S T R U C T U R A L N O T E S

DESIGN BY OTHERS:

A. IN ACCORDANCE WITH THE SPECIFICATIONS THE ITEMS LISTED BELOW ARE NOT INCLUDED IN THE CONTRACT DOCUMENTS. DESIGN OF THESE ELEMENTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE DESIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE HAVING JURISDICTION AT THE PROJECT SITE.
   1. STEEL CONNECTIONS
   2. METAL LADDERS
   3. GUARDRAIL AND HANDRAIL SYSTEM
   4. EMBEDDED ASSEMBLIES AND INSERTS, CLAMPS, HANGERS, TRAPEZES, UNISTRUT, ETC. FOR THE SUPPORT OF MEP SYSTEMS.
   5. EXCAVATION SUPPORT AND PROTECTION
   6. SPECIALTY RETENTION SYSTEMS

B. DESIGN OF THE ITEMS LISTED ABOVE SHALL BE IN ACCORDANCE WITH THE GENERAL BUILDING CODE, AND SHALL INCLUDE ALL ATTACHMENTS TO THE STRUCTURE.

CEMENT STABILIZED SAND

A. PROVIDE A SAND-CEMENT MIXTURE TO PRODUCE A MINIMUM COMPRESSIVE STRENGTH OF 100 PSI IN 48 HOURS WHEN COMPACTED TO 95 PERCENT IN ACCORDANCE WITH ASTM D558 AND WHEN CURED IN ACCORDANCE WITH ASTM D1632, AND TESTED IN ACCORDANCE WITH ASTM D1633. COMPACT MIX WITH MOISTURE CONTENT ON THE DRY SIDE OF OPTIMUM.

B. MIX SHALL CONTAIN A MINIMUM OF 1-1/2 SACKS OF CEMENT PER CUBIC YARD.

C. CEMENT: TYPE I PORTLAND CEMENT CONFORMING TO ASTM C-150.

D. SAND: CLEAN, DURABLE SAND MEETING GRADING REQUIREMENTS FOR FINE AGGREGATES OF ASTM C33, AND THE FOLLOWING REQUIREMENTS:
   1. CLASSIFIED AS SW, SP, OR SM BY UNITED SOIL CLASSIFICATION SYSTEM OF ASTM D2487.
   2. DELETERIOUS MATERIALS:
      a. CLAY LUMPS, ASTM C142; LESS THAN 0.5 PERCENT
      b. LIGHTWEIGHT PIECES, ASTM C123; LESS THAN 0.5 PERCENT
      c. ORGANIC IMPURITIES, ASTM C40; COLOR NO DARKER THAN THE STANDARD COLOR.
   3. PLASTICITY INDEX OF 4 OR LESS WHEN TESTED IN ACCORDANCE WITH ASTM D4318.

E. WATER: POTABLE WATER, FREE OF OILS, ACIDS, ALKALIS, ORGANIC MATTER OR OTHER DELETERIOUS SUBSTANCES, MEETING THE REQUIREMENTS OF ASTM C94.

F. PLACE SAND-CEMENT MIXTURE IN 8-INCH THICK LOOSE LIFTS AND COMPACT TO 95 PERCENT OF ASTM D558. THE MOISTURE CONTENT DURING COMPACTION SHALL BE ON THE DRY SIDE OF OPTIMUM BUT SUFFICIENT FOR HYDRATION. PERFORM COMPLETE COMPACTION OF THE SAND-CEMENT MIXTURE WITHIN 4 HOURS AFTER ADDITION OF WATER TO THE MIX AT THE PLANT. MATERIAL NOT PLACED AND COMPACTED WITH 4 HOURS SHALL BE REJECTED.

G. DO NOT PLACE OR COMPACT SAND-CEMENT MIXTURE IN STANDING OR FREE WATER.

H. SUBMITTAL: SUBMIT PROPOSED MIX DESIGN ACCOMPANIED BY A RECORD OF PAST PERFORMANCE BASED ON AT LEAST 30 CONSECUTIVE STRENGTH TEST, OR BY THREE LABORATORY TRIAL MIXTURES WITH CONFIRMATION TESTS.

CONTROLLED LOW STRENGTH MATERIAL (CLSM)

A. CLSM FILL SHALL BE OF THE EXCAVATABLE TYPE WHICH MUST ALLOW THE MATERIAL TO BE RE-EXCAVATED WITH CONVENTIONAL EXCAVATION EQUIPMENT.

B. CLSM MIX DESIGN SHALL HAVE THE FOLLOWING CHARACTERISTICS:
   a. COMPRESSIVE STRENGTH SHALL NOT EXCEED 300 PSI AT 90 DAYS.
   b. A SLUMP BETWEEN 6" AND 9"
   c. A MINIMUM CEMENT CONTENT OF 40 LB/CY AND A MAXIMUM OF 100 LB/CY.
   d. FLY ASH, IF USED, DOES NOT NEED TO CONFORM TO CLASS F OR C AS DESCRIBED IN ASTM C618.
   e. COARSE AGGREGATE SHALL NOT BE USED IN EXCAVATABLE CLSM.

C. SUBMIT PROPOSED MIX DESIGN FOR ENGINEER'S REVIEW A MINIMUM OF TWO WEEKS PRIOR TO STARTING CLSM MOCK-UP WORK.

D. MOCK-UP: CONTRACTOR SHALL PROVIDE A 4'-0" x 4'-0" MOCK TRIAL BATCH MOCK-UP TO DEMONSTRATE THE FLOWABILITY DURING PLACEMENT AND EXCAVATABILITY OF THE CLSM MATERIAL AFTER THE CURE. MOCK-UP SHALL BE CAST A MINIMUM OF 120 DAYS PRIOR TO ACTUAL PLACEMENT TO ALLOW CONCRETE CORES FOR VERIFICATION OF SPECIFIED MAXIMUM COMPRESSIVE STRENGTHS AND TO DEMONSTRATE EXCAVATABILITY.

E. MAKE ONE STRENGTH TEST (FOUR CYLINDERS) FOR THE APPROVED MIX DESIGN.
   a. FINAL APPROVAL OF MIX DESIGN IS CONTINGENT ON THE DEMONSTRATION OF EXCAVATABILITY AT 90-DAYS AFTER MOCK-UP IS CAST.

F. CLSM BACKFILL SHALL BE PLACED IN MAXIMUM 4'-0" LIFTS. EACH LIFT SHALL BE ALLOWED TO CURE PRIOR TO THE NEXT LIFT PLACEMENT. WHERE BACKFILL IS REQUIRED ON BOTH SIDES OF THE STRUCTURE, BACKFILL SHALL BE PLACED SIMULTANEOUSLY ON BOTH SIDES SO THAT BACKFILL HEIGHT ON ONE SIDE DOES NOT EXCEED THE HEIGHT ON THE OPPOSITE SIDE BY MORE THAN 4'-0".

G. CLSM BACKFILL SHALL NOT BE PLACED AGAINST FOUNDATION WALLS UNTIL ALL SUPPORTING WALLS, SLABS, BEAMS, STRUTS, AND OTHER UPPER-LEVEL FLOOR OR ROOF MEMBERS HAVE ATTAINED THEIR 28-DAY STRENGTH UNLESS PROPER BRACING IS DESIGNED AND INSTALLED BY THE CONTRACTOR.

H. REFER TO ACI COMMITTEE 229R-99 REPORT "CONTROLLED LOW STRENGTH MATERIALS" FOR ADDITIONAL INFORMATION.

I. CLSM SHALL BE PLACED BENEATH THE PIPE SUPPORT PAD.

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INTERIM REVIEW DOCUMENTS
(NOT INTENDED FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES)
JOHN D. MISCHKOT
TEXAS REGISTRATION No: 107566
DATE: 07/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

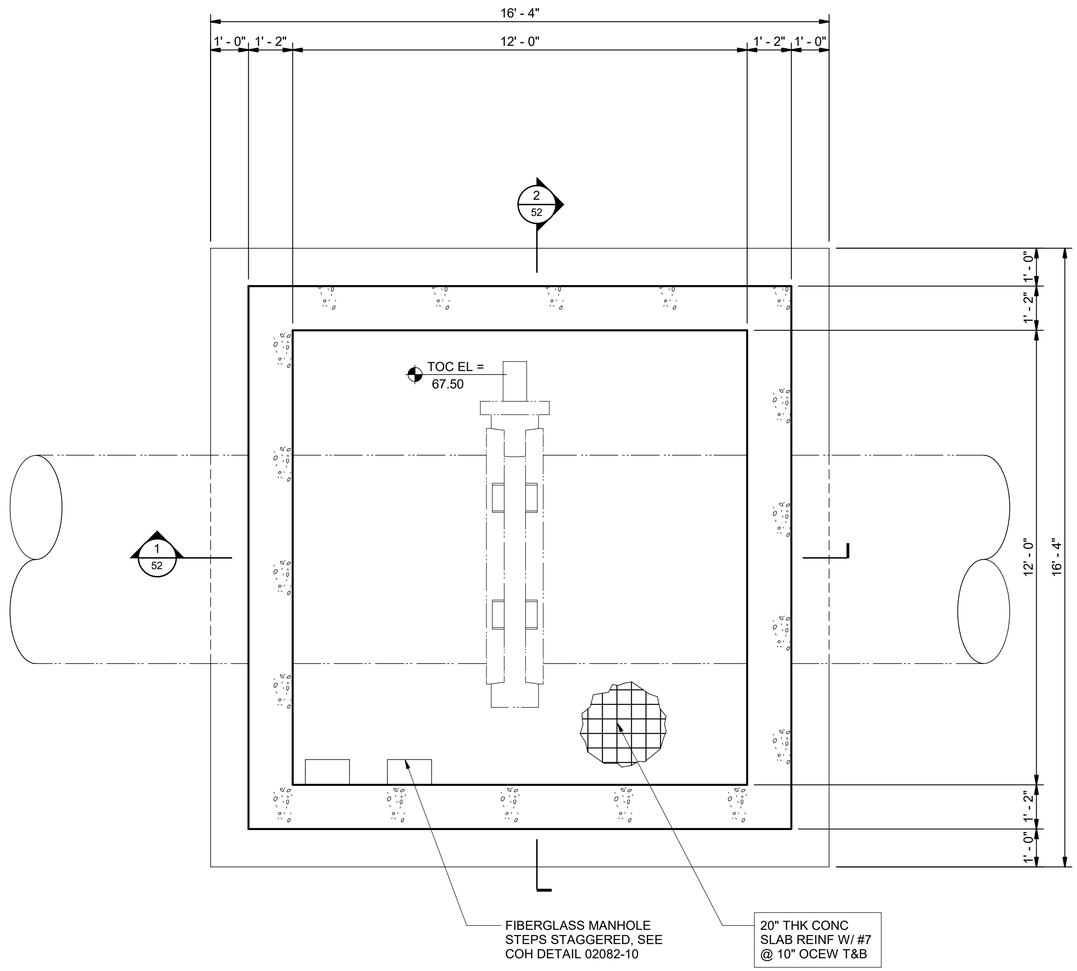
66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

STRUCTURAL NOTES

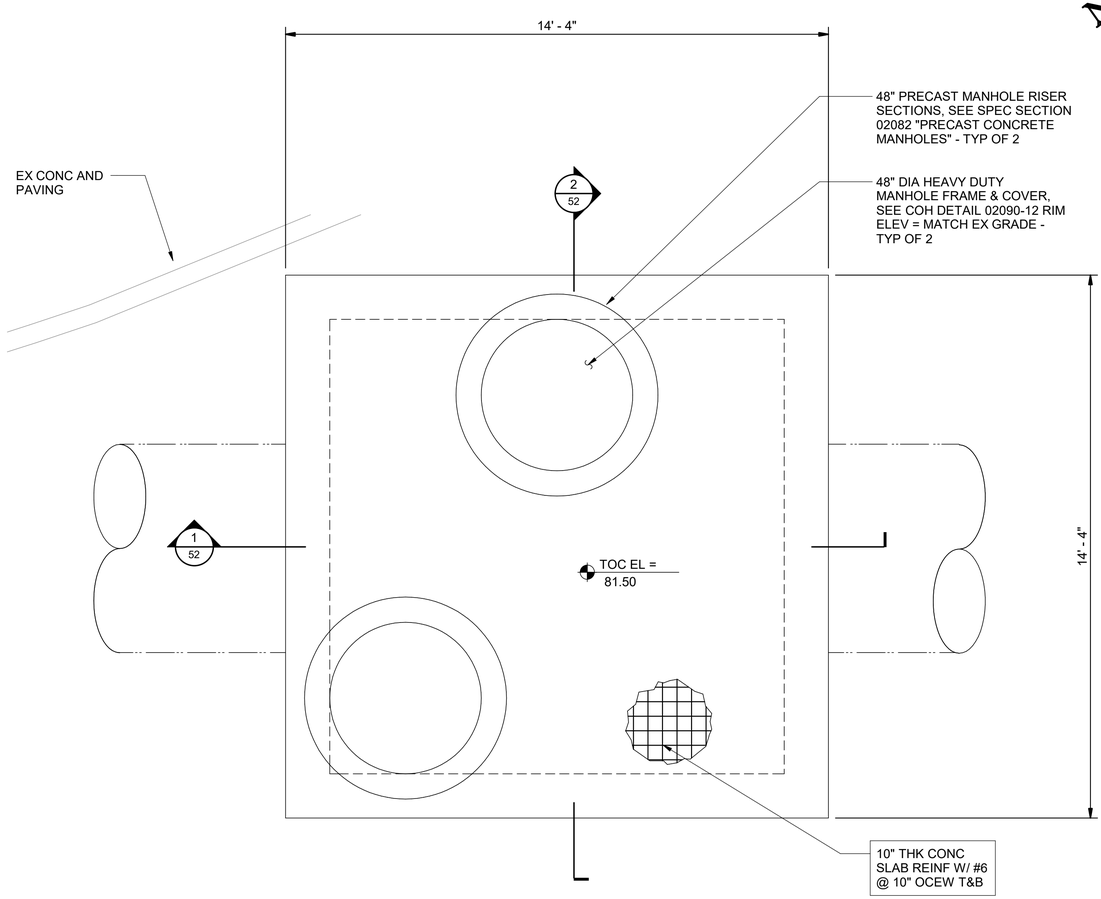
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
NO SCALE	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 49 OF 91	

shaping the built environment
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225 HOUSTON, TEXAS 77084
832.941.5233 JQENG.COM
PROJECT NO: 4230178 TBPE FIRM F-7986

DATE: 8/1/2025 4:05:45 PM
FILE PATH: Autodesk Docs://25020827.00 CoH 66" WL Valve Vaults/25020827.00 CoH 66-Inch WL Valve Vaults_RVT25.rvt



1 50 VAULT 1 LOWER PLAN AT STA: 80+19.00
1/2" = 1'-0"



2 50 VAULT 1 UPPER PLAN AT STA 80+19.00
1/2" = 1'-0"

N

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

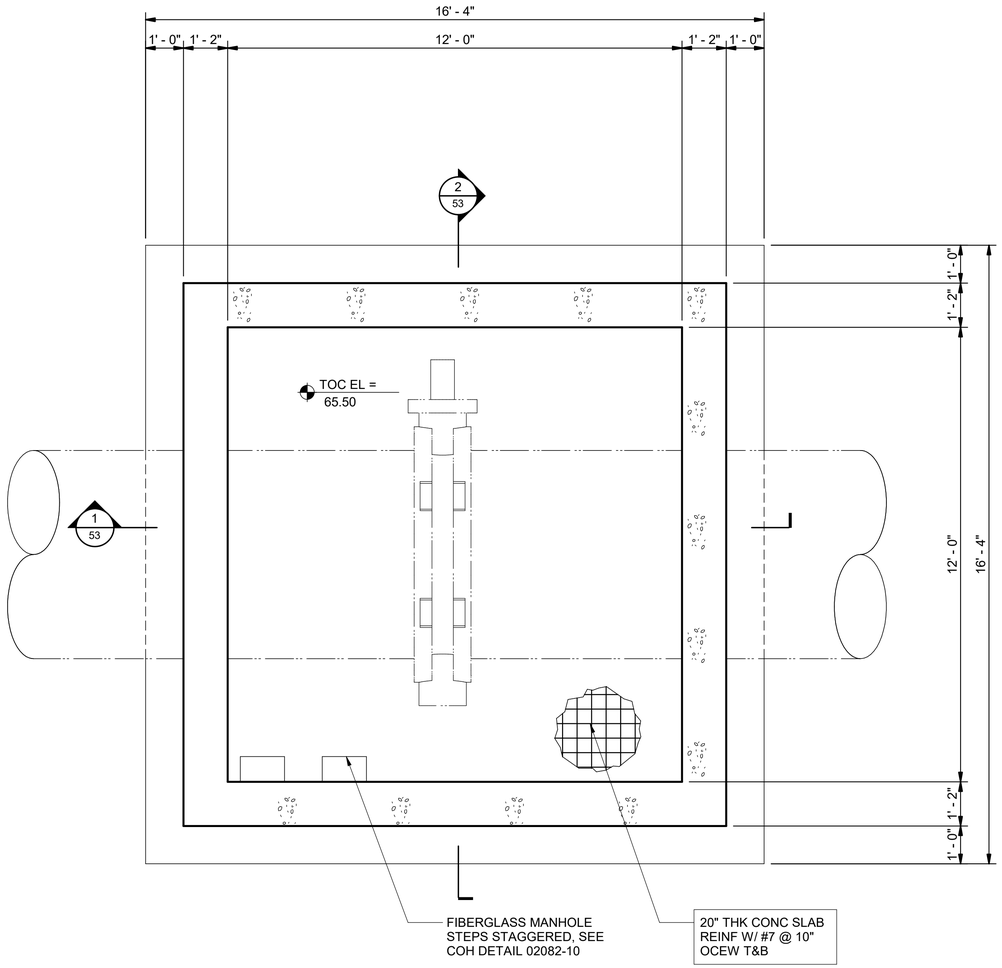
66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

VAULT 1 PLAN

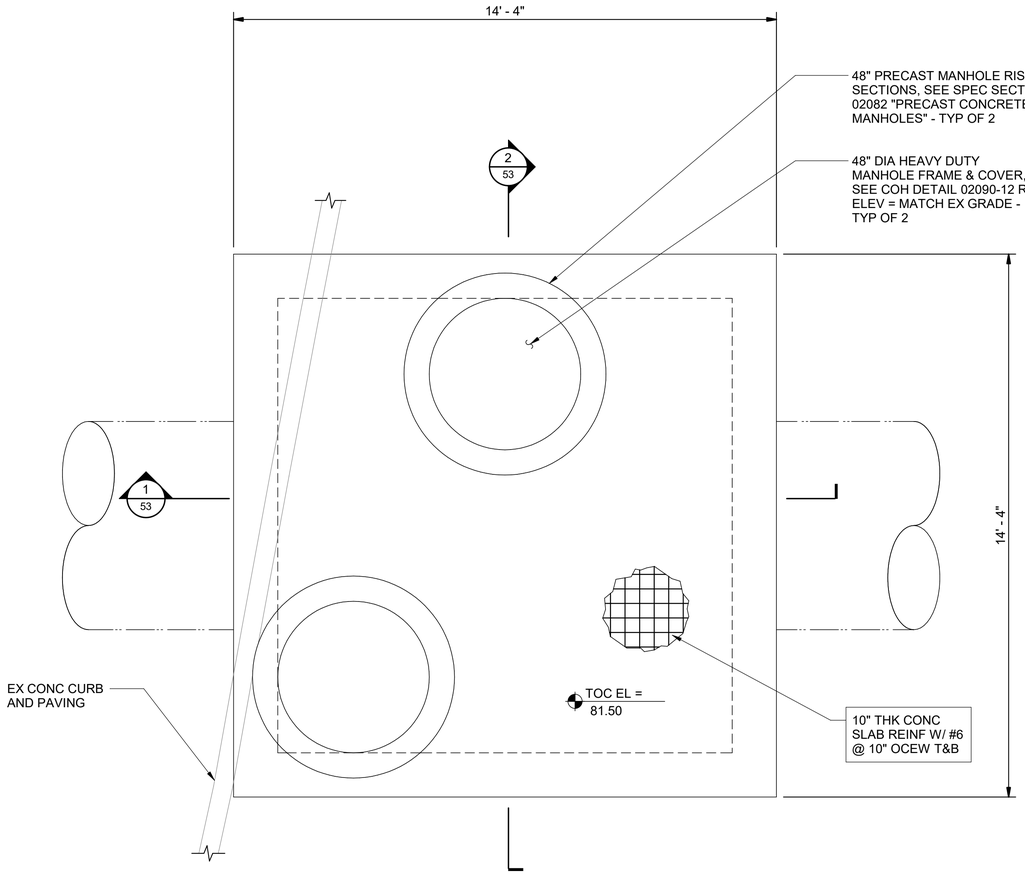
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
1/2" = 1'–0"	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 50 OF 91	

shaping the built environment
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225
832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4230178
TBPE FIRM F-7986

DATE: 8/1/2025 4:05:45 PM
FILE PATH: Autodesk Docs://25020827.00 CoH 66" WL Valve Vaults/25020827.00 CoH 66-Inch WL Valve Vaults_RVT25.rvt



1 / 51 VAULT 2 LOWER PLAN AT STA: 39+30.00
1/2" = 1'-0"



2 / 51 VAULT 2 UPPER PLAN AT STA: 39+30.00
1/2" = 1'-0"

NO.	DATE	REVISION	APP.

KIMLEY–HORN AND
ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS
77009
(281) 597–9300
TBPE FIRM REGISTRATION
F–928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352–007

INTERIM
REVIEW
DOCUMENTS
(NOT INTENDED FOR BIDDING,
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PURPOSES)
JOHN D. MISCHKOT
TEXAS REGISTRATION No: 107566
DATE: 07/11/2025

CITY OF HOUSTON
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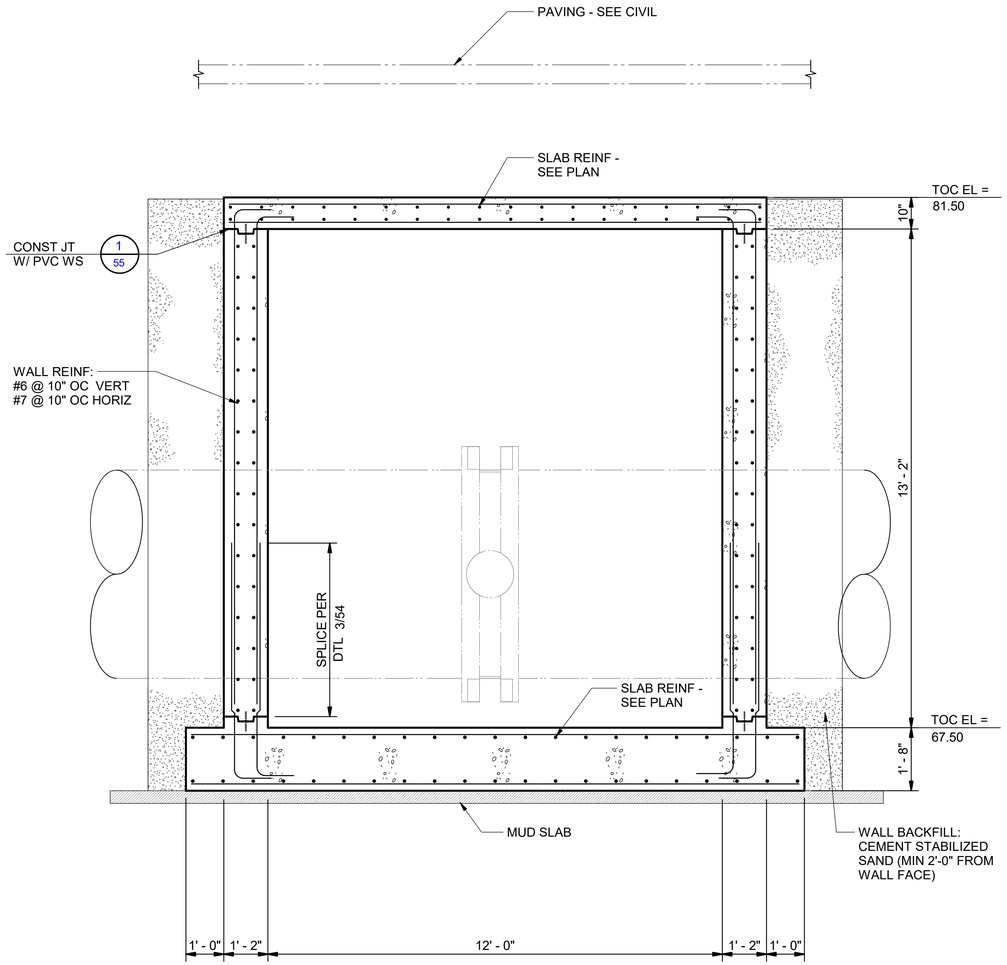
66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

VAULT 2 PLAN

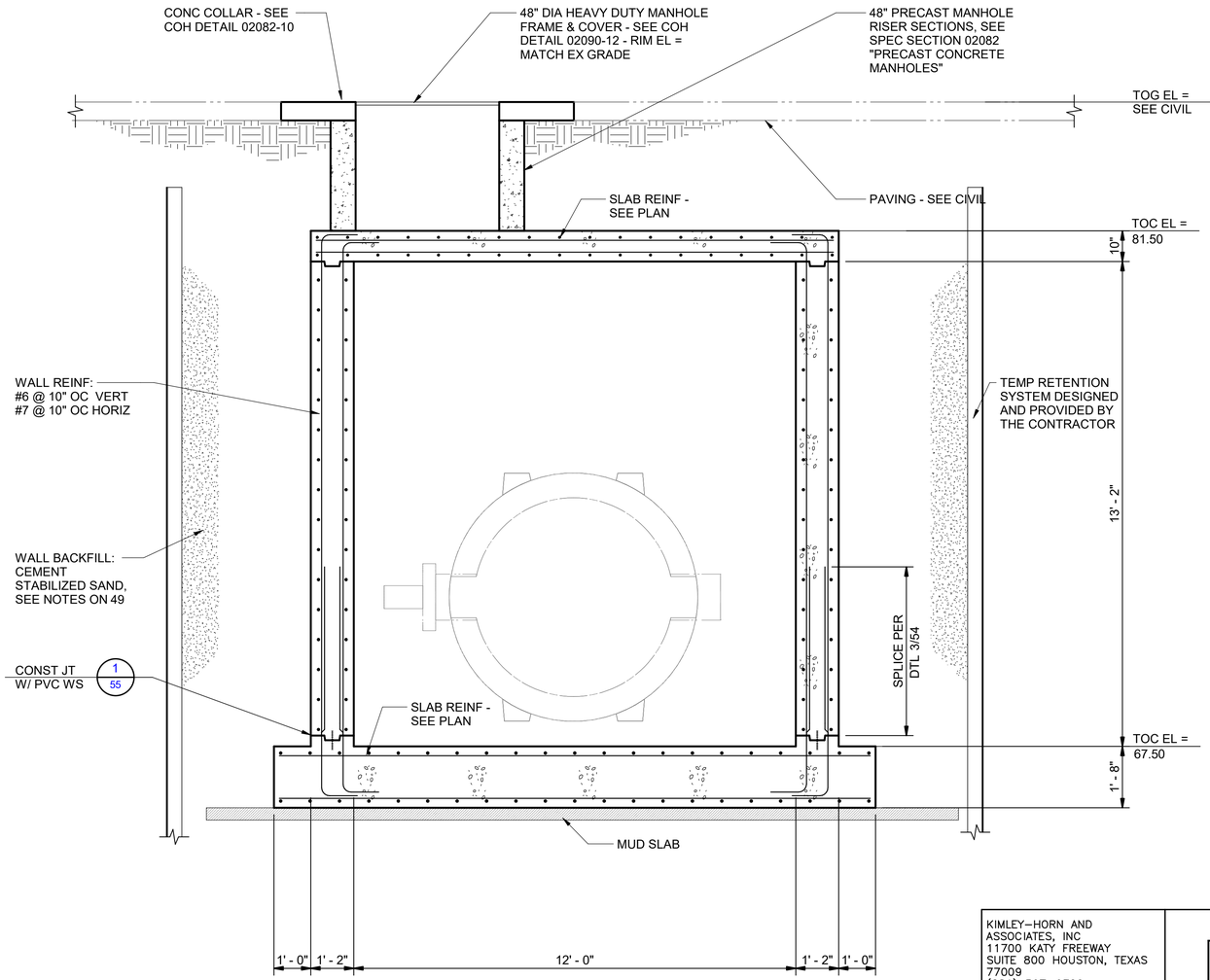
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DRAWING SCALE	
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1 / 52 VAULT 1 OVERALL SECTION
1/2" = 1'-0"



2 / 52 VAULT 1 OVERALL SECTION
1/2" = 1'-0"

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TEXAS REGISTRATION No: 107666
DATE: 07/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

VAULT 1 OVERALL SECTIONS

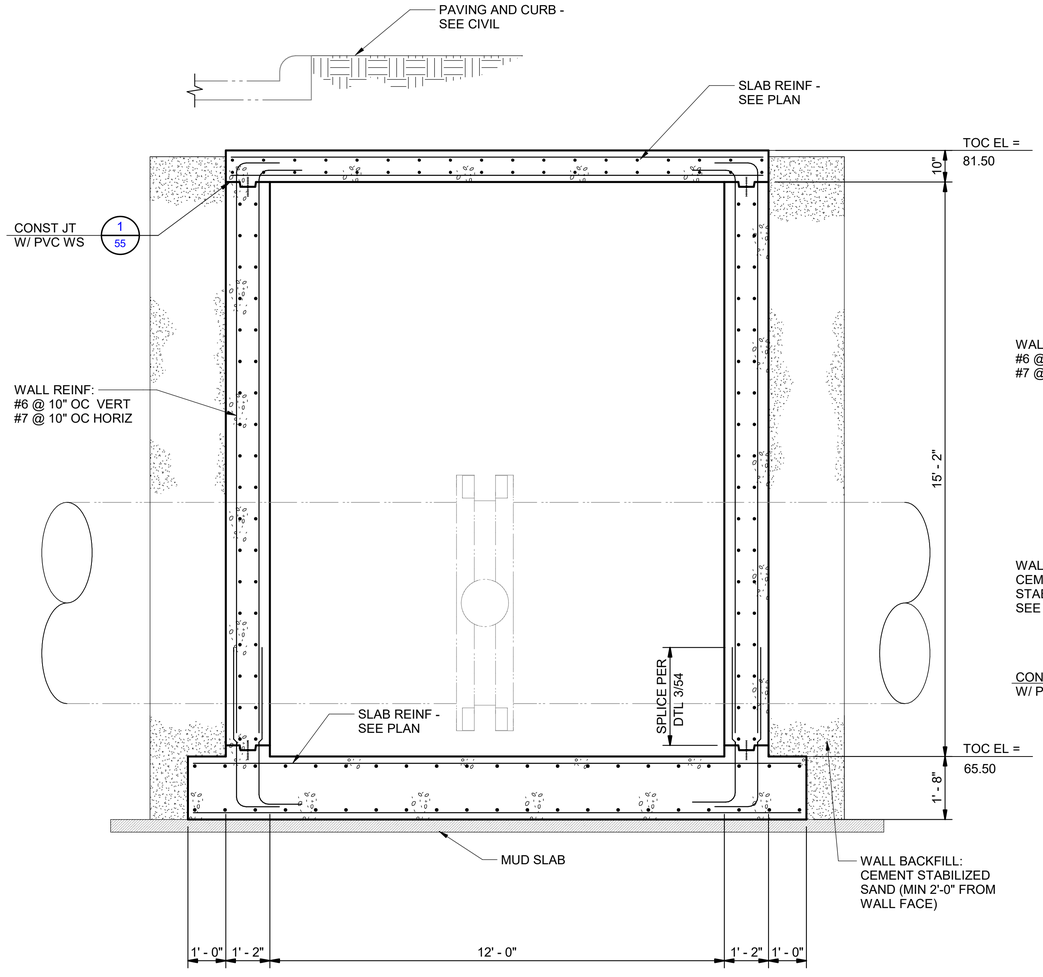
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DRAWING SCALE
1/2" = 1'–0"
CITY OF HOUSTON PM
HIMAL PANGENI, P.E.
SHEET NO. 52 OF 91

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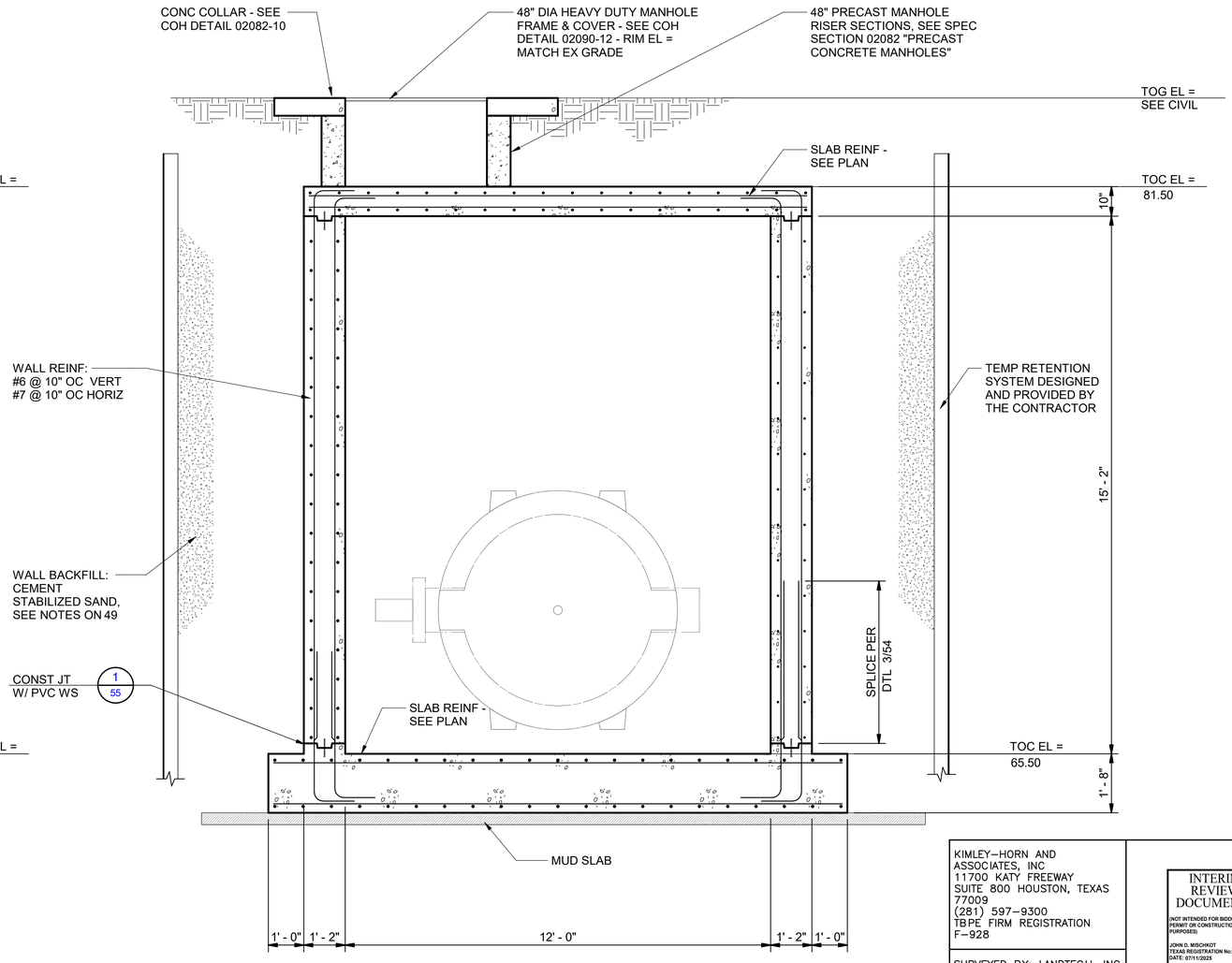
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1 / 53 VAULT 2 OVERALL SECTION
1/2" = 1'-0"



2 / 53 VAULT 2 OVERALL SECTION
1/2" = 1'-0"

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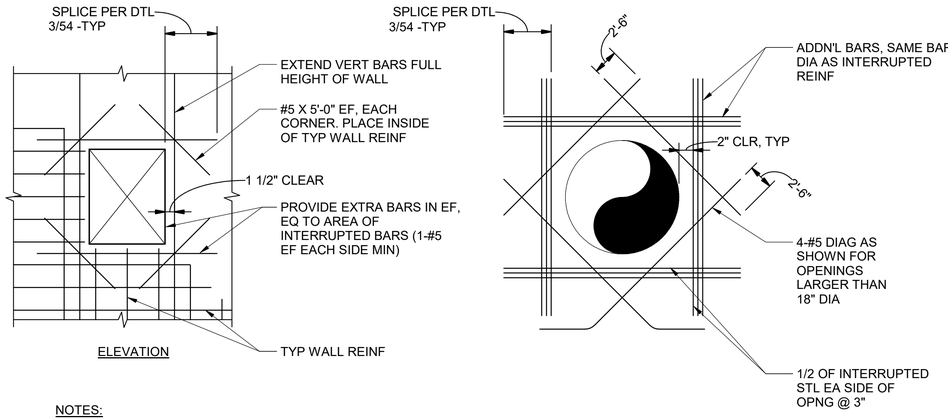
66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

VAULT 2 OVERALL SECTIONS

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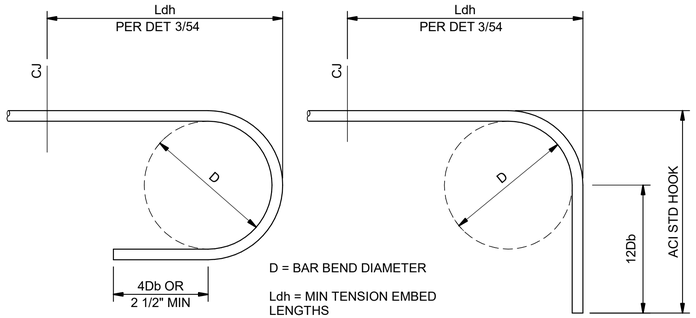
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FILE PATH: Autodesk Docs://25020827.00 CoH 66" WL Valve Vaults/25020827.00 CoH 66-inch WL Valve Vaults_RVT25.rvt



NOTES:

1. TYP FOR ALL OPNGS IN CONC WALLS AND SLABS UNO ON PLANS.
2. DO NOT WELD REINF TO PIPE SLEEVES AND INSERTS.
3. FOR OPNGS LARGER THAN 4'-0", REINF SAME AS FOR 4'-0" OPNGS.
4. SPA @ 3 BAR DIAMETERS (OR 3" MIN) OC.
5. SPLICE PER TENSION LAP SPLICE DTL 3/54.
6. INCREASE SIZE OF ADDN'L BARS TO PROVIDE EQ AREA AS NEEDED TO FIT WITHIN A DISTANCE OF 2 X WALL/SLAB THICKNESS FROM OPNG. PROVIDE 2" MIN CLR BTWN BARS.
7. WHERE A SLAB OR INTERSECTING WALL CONNECTS WITHIN ONE WALL THICKNESS OF THE OPNGS ADDN'L BARS ON THAT SIDE MAY BE OMITTED.

1 / 54 TYPICAL WALL AND SLAB OPENING REINFORCING
NTS



D = BAR BEND DIAMETER

Ldh = MIN TENSION EMBED LENGTHS

Db = BAR DIA

D=6 Db #3 THROUGH #8

D=8 Db #9, #10, AND #11

D=10 Db #14 AND 18

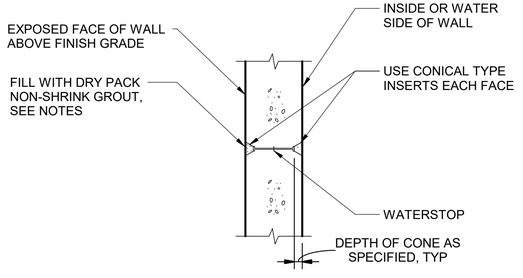
2 / 54 TYPICAL HOOKED BAR
NTS

BAR SIZE	MIN EMBEDMENT LENGTH		MIN LAP SPLICE LENGTHS		TENSION EMBEDMENT LENGTHS Ldh FOR STANDARD END HOOK (INCHES)
	** TOP BARS (INCHES)	OTHER BARS (INCHES)	* TOP BARS (INCHES)	OTHER BARS (INCHES)	
#3	14	12	18	16	7
#4	18	15	25	20	8
#5	23	18	32	24	12
#6	28	22	40	31	14
#7	40	29	54	42	16
#8	46	33	63	45	18
#9	57	41	76	54	20
#10	70	49	84	66	24

FOOTNOTES:

1. TOP BARS ARE HORIZ BARS SO THAT MORE THAN 12" OF CONC IS CAST IN THE MEMBER BELOW THE BAR. HORIZ BARS IN WALLS ARE TO BE PROVIDED WITH LAPS AS REQ'D FOR TOP BARS.
2. EXCEPT AS OTHERWISE INDICATED ON THE DWGS, TENSION LAP SPLICE LENGTHS AND TENSION EMBEDMENT LENGTHS LDH FOR STANDARD AND END HOOKS SHALL BE NO LESS THAN (NO MINUS TOLERANCE) SHOWN ON THIS SHEET.
3. LAP SPLICES SHALL NOT BE MADE AT POINTS OF MAX STRESS AS DETERMINED BY THE ENGR AND SHALL NOT BE SPACED CLOSER THAN 6" OC.
4. FOR COVERS LESS THAN 2" INCREASE TABULATED DIMENSIONS BY 100%.

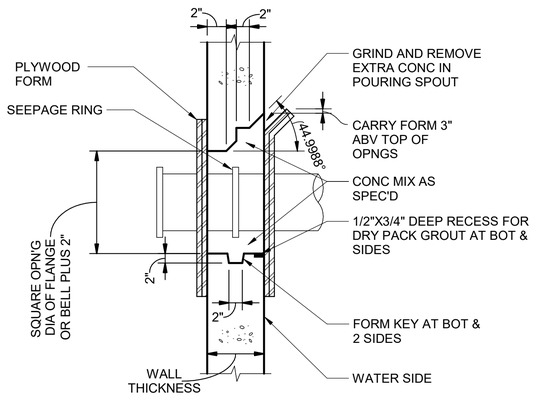
3 / 54 TYPICAL TENSION LAP SPLICE AND EMBEDMENT LENGTH
NTS



NOTES:

1. THE SPACING OF FORM TIES ON EXPOSED PORTIONS OF WALLS SHALL BE APPROXIMATELY EQUAL HORIZONTALLY AND VERTICALLY AND SHALL BE UNIFORM IN EACH DIRECTION.
2. DRY PACK METHOD SHALL BE AS SPECIFIED USING STEEL TOOLS.

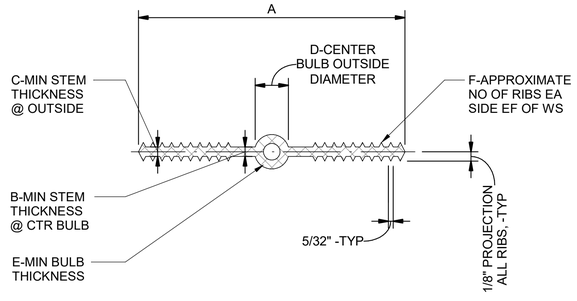
4 / 54 TYPICAL FORM SNAP-TIE HOLE
NTS



NOTES:

1. PIPE BLOCKOUT NOT TO BE USED WITHOUT PERMISSION OF ENGR UNO ON PLANS.
2. COAT CONC ENCASED PORTION OF PIPE PER MECH SPECS.

5 / 54 TYPICAL PIPE BLOCKOUT
NTS



SIZE	A	B	C	D	E	F
6"X3/8"	6"	3/8"	3/8"	7/8"	1/4"	6
9"X3/8"	9"	3/8"	3/8"	1"	1/4"	8

NOTES:

1. MATERIAL QUALITY PER SPECIFICATIONS SECTION 03251.
2. DIM REQUIREMENTS INDICATED SHOULD BE GIVEN TO SUPPLIERS PRIOR TO PLACING ORDERS.
3. NON-ROUND CENTER BULBS SHALL HAVE A MIN OUTSIDE DIM OF "D".
4. SPLICING AT CORNERS AND INTERSECTIONS SHALL BE MADE PER MANUFACTURER RECOMMENDATIONS TO PROVIDE CONTINUOUS WATERTIGHT SEAL.
5. WHERE WATERSTOP IS PLACED ACROSS AN EXPANSION JOINT, WATERSTOP SHALL BE PROVIDED WITH CENTER BULB CAPABLE OF MOVING WITH THE EXPANSION JOINT MOVEMENT.
6. 6" WATERSTOPS SHALL BE USED IN TYPICAL CONDITIONS UNLESS NOTED OTHERWISE. 9" WATERSTOPS SHALL BE USED AT EXPANSION JOINTS IN WALLS AND SLABS.

6 / 54 TYPICAL WATERSTOP
NTS

NO.	DATE	REVISION	APP.

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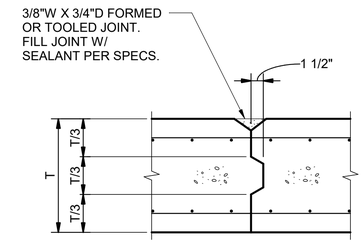
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

TYPICAL DETAILS I

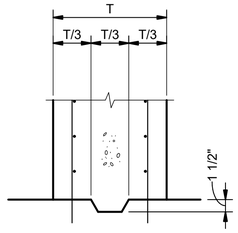
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DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
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SHEET NO. 54 OF 91	

shaping the built environment
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JQENG.COM
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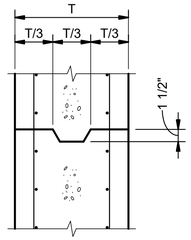
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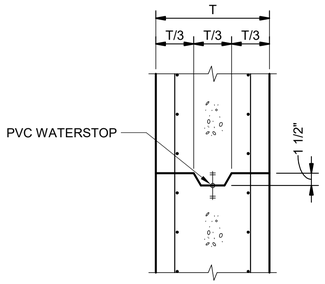
SLABS (VERT)



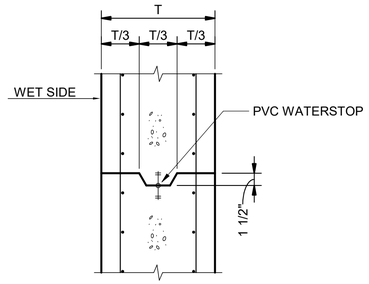
BASE OF WALLS (HORIZ)
JOINTS WITHOUT WATERSTOPS



WALLS (HORIZ & VERT)

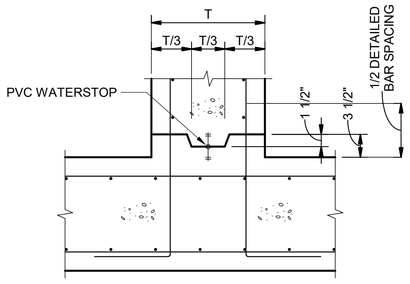


T ≤ 12"

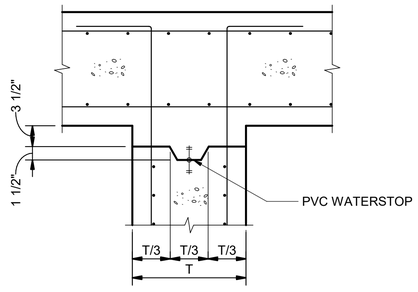


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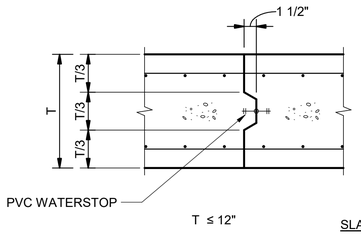
WALLS (HORIZ & VERT)



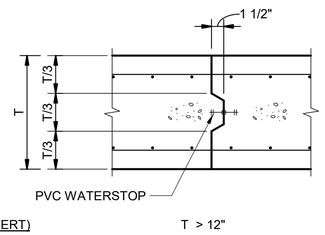
BASE OF WALLS (HORIZ)



WALLS TO SOFFIT (HORIZ)



T ≤ 12"



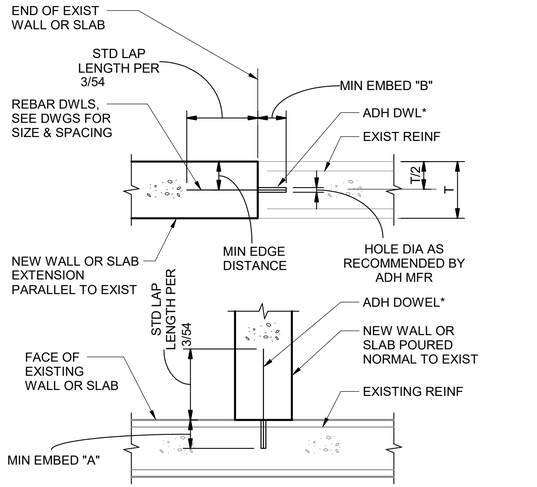
T > 12"

SLABS (VERT)
WATERTIGHT JOINTS

NOTES:

1. REINFORCING STEEL IS TO BE CONTINUOUS ACROSS ALL CONSTRUCTION JOINTS. ALL WATERSTOPS SHALL BE AS INDICATED ON STRUCTURAL DRAWINGS. MATERIALS AS DESCRIBED IN SPECIFICATIONS.
2. WATERSTOPS SHALL BE 6" PVC WS UNO.

1 / 55 TYPICAL CONSTRUCTION JOINTS
NTS

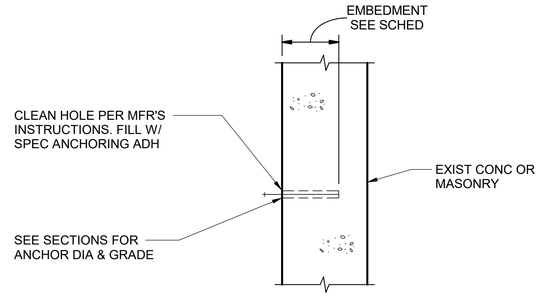


DOWEL SIZE	MIN EDGE DIST	MIN EMBEDMENT "A"	MIN EMBEDMENT "B"
#3	2"	3 1/2"	6"
#4	2 1/2"	5"	8"
#5	3"	6 1/2"	10"
#6	4"	9"	13"
#7	5"	10 1/2"	16"
#8	6"	12"	19"

NOTE:

1. CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 03200, CONCRETE REINFORCEMENT.
2. FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
3. USE MIN EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MIN RECOMMENDED EMBEDMENT IF GREATER.
4. "*" LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.

2 / 55 TYPICAL ADHESIVE DOWELS
NTS

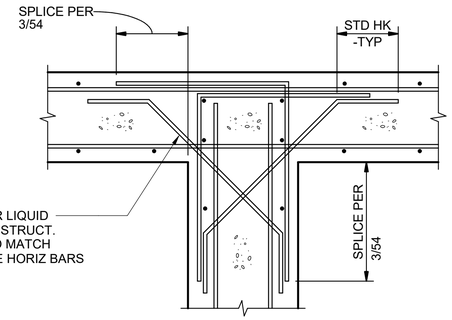


ADHESIVE ANCHOR NOTES

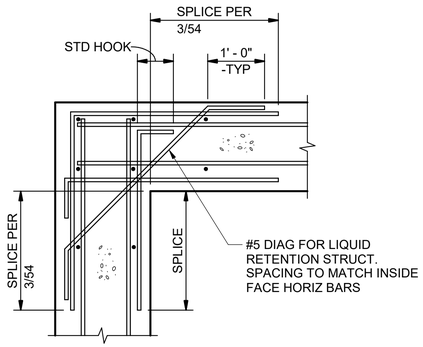
1. ADHESIVE ANCHORS SHALL BE ONE OF THE FOLLOWING:
   - HILTI "HIT HY 200" ADHESIVE
   - SIMPSON "ACRYLIC-TIE" ADHESIVE
2. LOCATE EXISTING REINFORCING STEEL IN THE CONCRETE USING NON-DESTRUCTIVE METHODS AND POSITION ANCHOR LOCATIONS TO AVOID CONFLICTS WITH EXISTING REINFORCING. ANCHOR LOCATIONS CAN BE ADJUSTED BY A MAXIMUM OF 1 1/2" FROM DETAILED LOCATIONS TO AVOID CONFLICTS, UNLESS NOTED OTHERWISE.
3. BASED ON FIELD VERIFIED LOCATIONS OF REINFORCING STEEL AND EMBEDDED ITEMS, THE CONTRACTOR SHALL CREATE TEMPLATES FOR EACH ANCHOR GROUP.
4. ALL DEBRIS SHALL BE BLOWN OUT OF THE HOLES WITH COMPRESSED AIR AFTER DRILLING. (NOT REQUIRED FOR "HIT-TZ" ANCHORS).
5. ALL ABANDONED HOLES SHALL BE FILLED WITH NONSHRINK GROUT.
6. HOLES IN CONNECTION PLATES SHALL BE NO MORE THAN 1/16" LARGER THAN THE ANCHOR DIAMETER. IF LARGER HOLES ARE REQUIRED FOR ERECTION PURPOSES, PROVIDE 1/4" X 3" X 3" PLATE WASHERS CONTINUOUSLY WELDED TO THE CONNECTION PLATE.

ANCHOR INSTALLATION INFORMATION			
ANCHOR DIAMETER	1/2"	5/8"	3/4"
HOLE DIAMETER	9/16"	11/16"	13/16"
EMBEDMENT FOR SS, A307 OR A36 THIRD ROD HIT-TZ	 4 1/4" 3 1/2"	 5 1/2" 4"	 6 3/4" 5 1/4"
MAX TORQUE (FT LBS) SS, A307, A36 THIRD ROD HIT-TZ	 30 20	 75 50	 150 105

3 / 55 TYPICAL ADHESIVE ANCHOR FOR SOLID & GROUTED MASONRY AND CONCRETE
NTS



INTERSECTION



CORNER

NOTES:

1. CORNER AND INTERSECTING REINF SHALL MATCH SIZE AND SPACING OF WALL REINF
2. HORIZ BARS ARE IN SAME PLANE

4 / 55 TYPCAL WALL/BEAM CORNER AND INTERSECTING REINFORCING
NTS

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JOHN D. MISCHKOT
TEXAS REGISTRATION No: 107666
DATE: 07/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

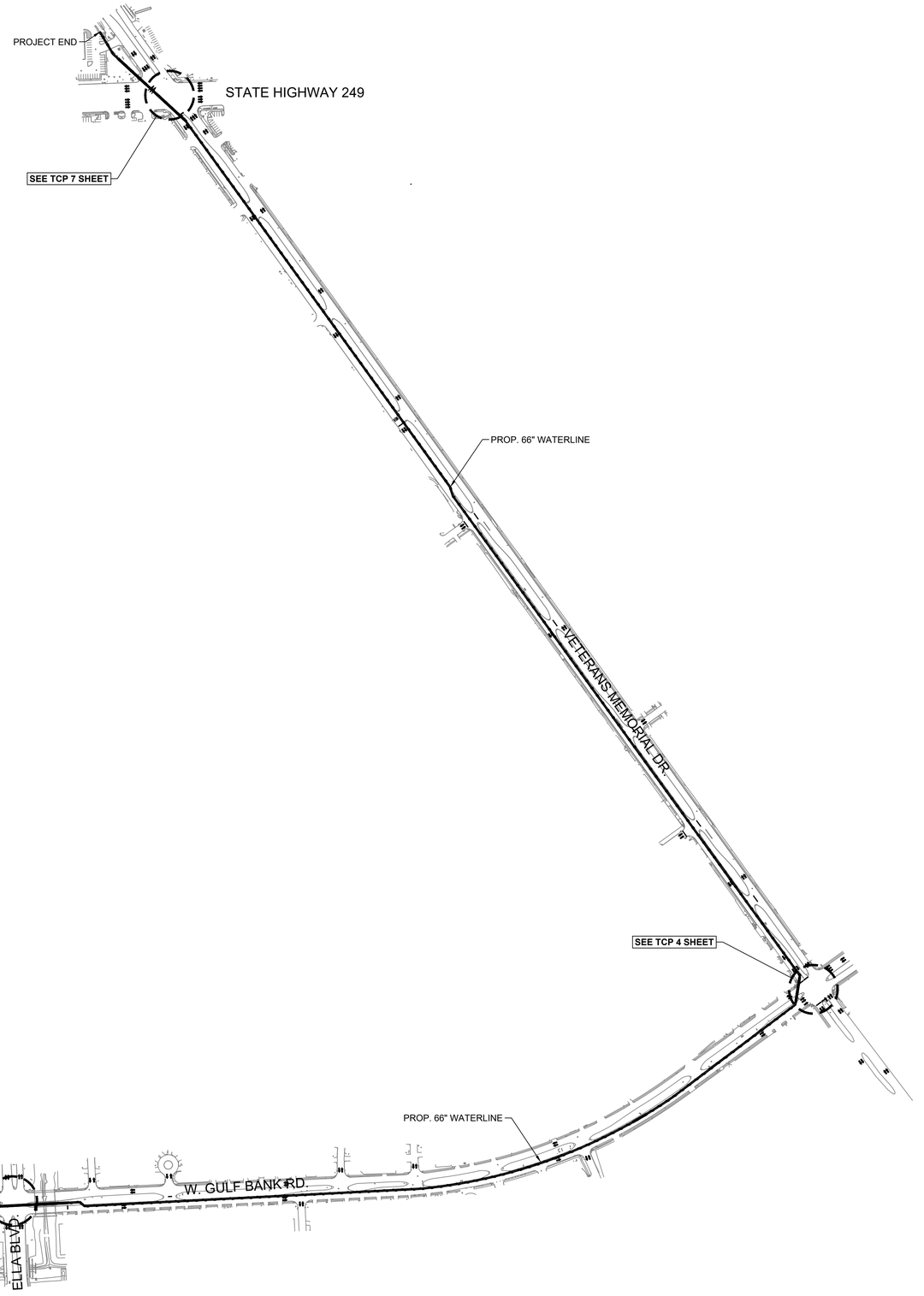
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

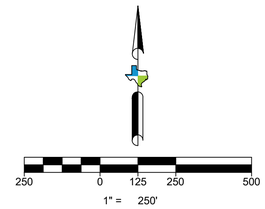
TYPICAL DETAILS II

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 55 OF 91	

shaping the built environment
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225
832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4230178
TBPE FIRM F-7986

DATE: 8/1/2025 4:05:46 PM
FILE PATH: Autodesk Docs://25020827.00 CoH 66" WL Valve Vaults/25020827.00 CoH 66-inch WL Valve Vaults_RVT25.rvt





NO.	DATE	REVISION	APP.

NOTES:

1. FOR DIMENSIONS AND SIGNS SPACING REFER TO COH DWG 01512-01
2. CONSTRUCTION SHALL BE CONSTRUCTED AND CLOSED SIMULTANEOUSLY.
3. DURING ONE LANE CLOSURE, CONTRACTOR'S WORK SHALL BE LIMITED TO 800FT OF CONSTRUCTION ZONE.
4. NO CONSECUTIVE MEDIANS CLOSED AT SAME TIME.
5. NO CONSECUTIVE STREETS SHALL BE CONSTRUCTED AND CLOSED SIMULTANEOUSLY.
6. CONTRACTOR SHALL MAINTAIN ACCESS TO PROPERTIES AT ALL TIMES.
7. ALL OPEN-PITS TO BE PROTECTED BY LOW PROFILE CONCRETE BARRIERS AND SHALL BE COVERED W/ STEEL PLATES AFTER CONSTRUCTION HOURS, LPCTB SET ASIDE AND OPEN THE STREET TO NORMAL TRAFFIC.
8. LANE CLOSURES SHALL BE PERMITTED ONLY DURING OFF PEAK HOURS M-F 9.00 AM TO 4.00 PM.
9. WHEN NECESSARY COORDINATE RELOCATIONS OF METRO BUS STOPS WITH METRO BUS CONTROL AT 713-864-22264/2272 PRIOR TO BEGINNING CONSTRUCTION.
10. LANE CLOSURES SHALL BE IMPLEMENTED DURING NIGHT, WEEKENDS, AND NON-WORKING DAYS OF SCHOOL.

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KIMLEY–HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597–9300
TBPE FIRM REGISTRATION F–928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352–007

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TEXAS P.E. NO 145241
DATE: 08/01/2025

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CITY OF HOUSTON

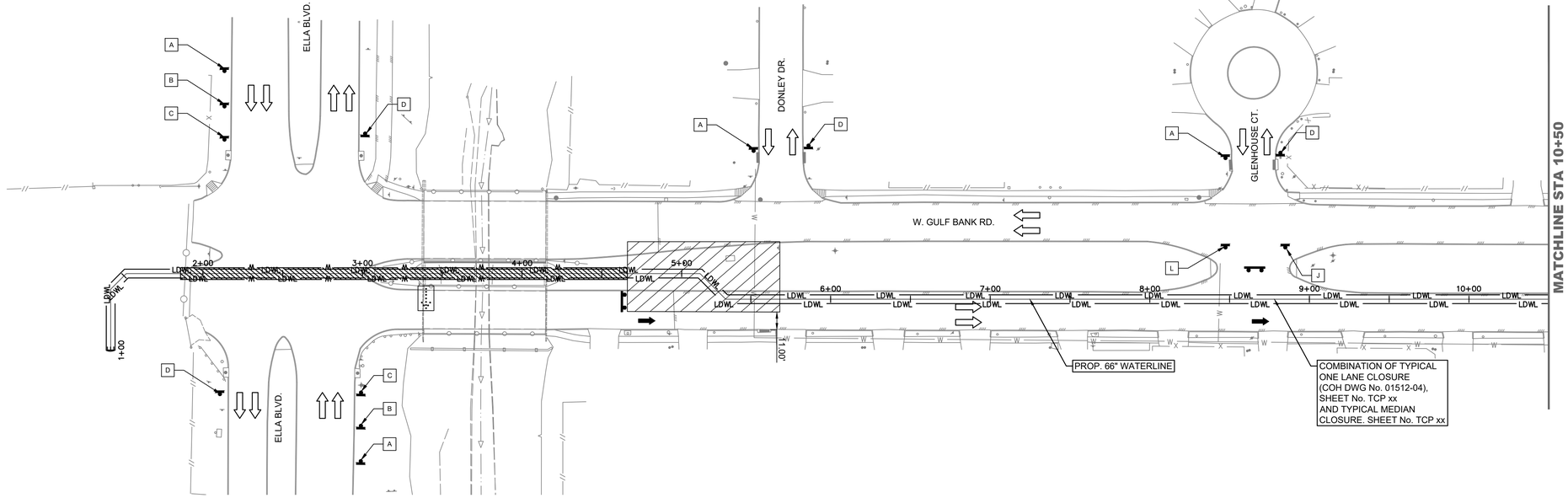
HOUSTON PUBLIC WORKS

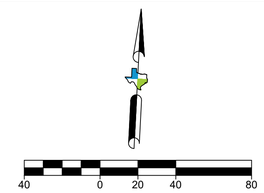
66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

OVERALL TCP LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
1" = 250' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 56 OF 91	

PLOTTED: 8/1/2025 8:04 AM
PLOT STYLE: COH.ctb
FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\pTCP.dwg





NO.	DATE	REVISION	APP.

LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

W. GULF BANK RD. STREET NAME	30 MPH SPEED LIMIT
ELLA BLVD. STREET NAME	30 MPH SPEED LIMIT

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T						
UTILITY WORK AHEAD	LEFT LANE CLOSED AHEAD	LEFT LANE CLOSED	END UTILITY WORK	ROAD CLOSED	DO NOT ENTER		BEGIN ONE WAY	ONE WAY	ONE WAY					CHEVRON	CHEVRON	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON			4.00' MIN. 5.00' MIN.						
CW21-7 36 X 36	CW20-5LD 48 X 48 CW16-3 24 X 12	CW20-5LD 48 X 48 CW16-3 24 X 12	G20-2 36 X 36	R11-2 48 X 30	R5-1 36 X 36	W4-2R W4-2L	R6-6 24 X 30	R6-2R	R6-2L	R3-1 24 X 24	R3-2 24 X 24	CW1-4L 36 X 36	CW1-4R 36 X 36	CW1-8 18 X 24	CW1-8 18 X 24	PLASTIC DRUM	VP-1L 8"-12"	VP-1R 8"-12"	TYPE III BARRICADE						

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

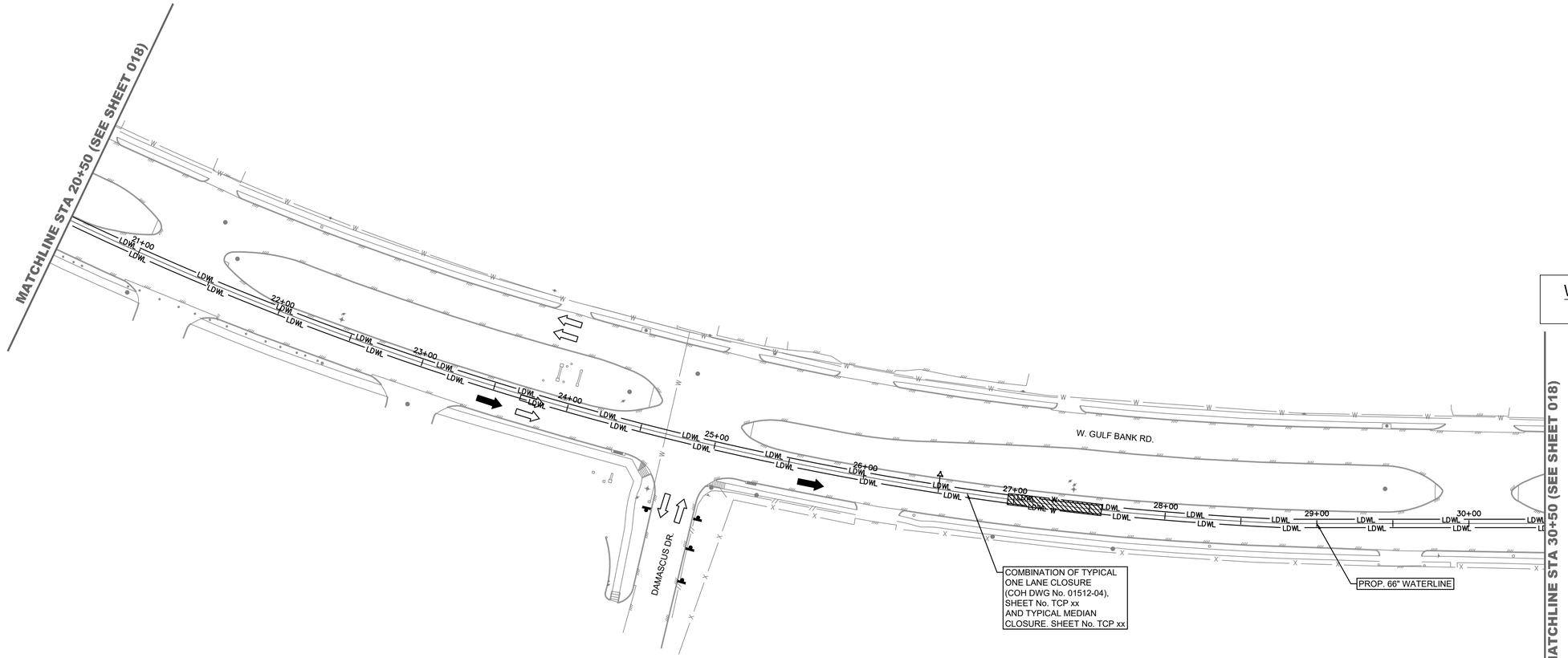
STA 1+00 to STA 20+50

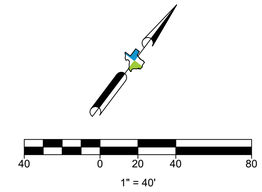
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WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
1" = 40' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 57 OF 91	

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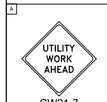
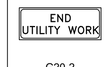
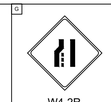
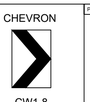
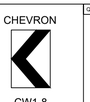
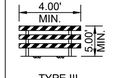


NO.	DATE	REVISION	APP.

LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

W. GULF BANK RD.	30 MPH
STREET NAME	SPEED LIMIT

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
																			
UTILITY WORK AHEAD	RIGHT LANE CLOSED AHEAD	RIGHT LANE CLOSED	END UTILITY WORK	ROAD CLOSED	DO NOT ENTER		BEGIN ONE WAY	ONE WAY	ONE WAY					CHEVRON	CHEVRON	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON			4.00' MIN. 5.00' MIN.
CW21-7 36 X 36	CW20-5RD 48 X 48 CW16-3 24 X 12	CW20-5RD 48 X 48 CW16-3 24 X 12	G20-2 36 X 36	R11-2 48 X 30	R5-1 36 X 36	W4-2R W4-2L	R6-6 24 X 30	R6-2R	R6-2L	R3-1 24 X 24	R3-2 24 X 24	CW1-4L 36 X 36	CW1-4R 36 X 36	CW1-8 18 X 24	CW1-8 18 X 24	PLASTIC DRUM	VP-1L 8"-12"	VP-1R 8"-12"	TYPE III BARRICADE

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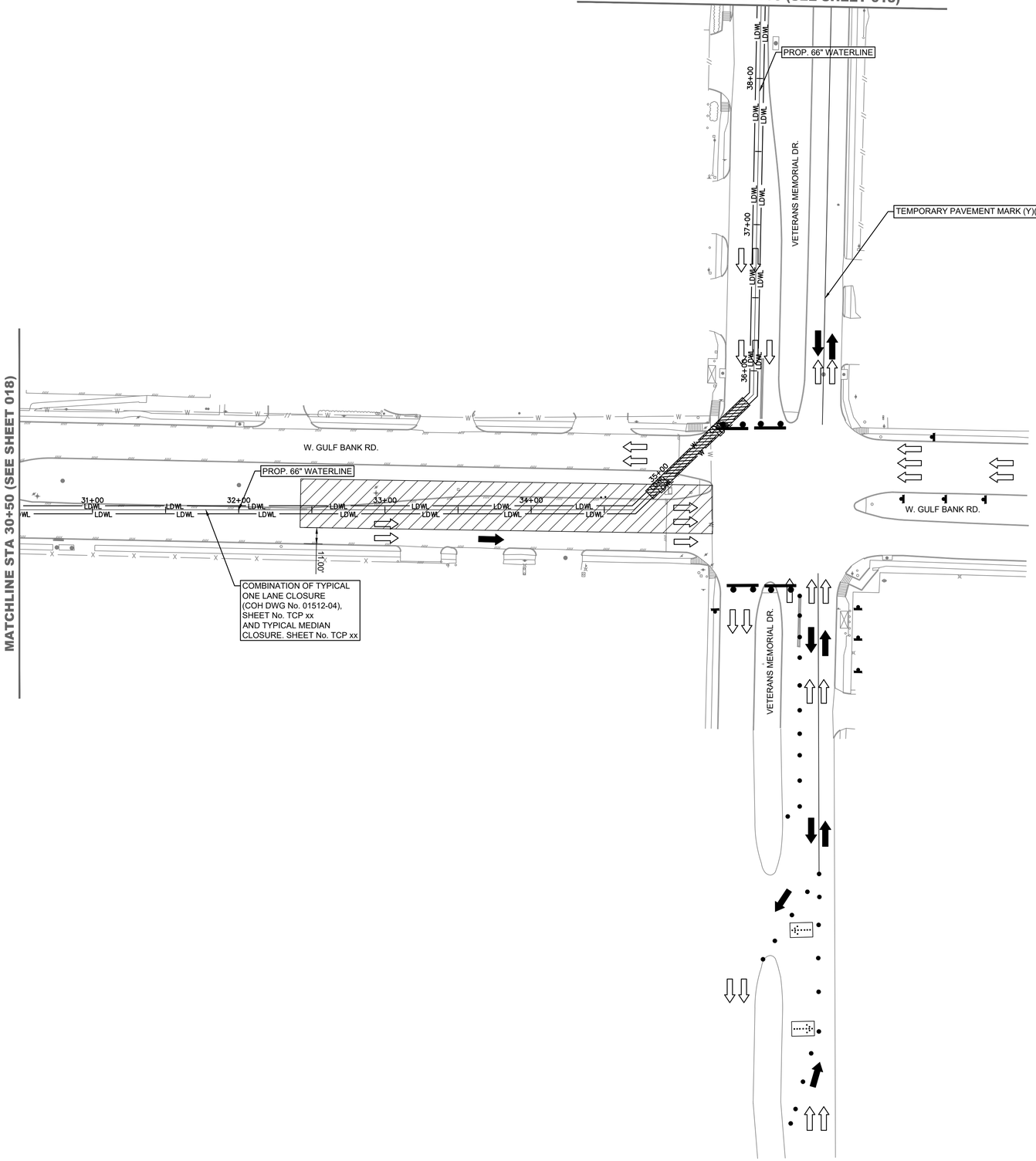
JUAN A. RAMIREZ HERNANDEZ, P.E.
TEXAS P.E. NO 145241
DATE: 08/01/2025

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
STA 20+50 to STA 30+50
TCP - 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 40' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 58 OF 91	



20 0 10 20 40

1" = 20'

NO.	DATE	REVISION	APP.

LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

W. GULF BANK RD. STREET NAME	30 MPH SPEED LIMIT
VETERANS MEMORIAL DR. STREET NAME	45 MPH SPEED LIMIT

A — CW21-7, 36 X 36 — UTILITY WORK AHEAD

K — R3-1, 24 X 24

R — CW20-5RD, 48 X 48, CW16-3, 24 X 12 — RIGHT LANE CLOSED AHEAD

L — R3-2, 24 X 24

C — CW20-5RD, 48 X 48, CW16-3, 24 X 12 — RIGHT LANE CLOSED

M — CW1-4L, 36 X 36

D — G20-2, 36 X 36 — END UTILITY WORK

N — CW1-4R, 36 X 36

E — R11-2, 48 X 30 — ROAD CLOSED

O — CW1-8, 18 X 24 — CHEVRON

F — R5-1, 36 X 36 — DO NOT ENTER

P — CW1-8, 18 X 24 — CHEVRON

G — W4-2R, W4-2L

Q — PLASTIC DRUM — MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON

H — R6-6, 24 X 30 — BEGIN ONE WAY

T — TYPE III BARRICADE — 4.00' MIN., 5.00' MIN.

I — R6-2R — ONE WAY

J — R6-2L — ONE WAY

R — VP-1L, 8"-12"

S — VP-1R, 8"-12"

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SUITE 800 HOUSTON, TEXAS 77009
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TBPE FIRM REGISTRATION F-928

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

STA 30+50 to STA 38+50

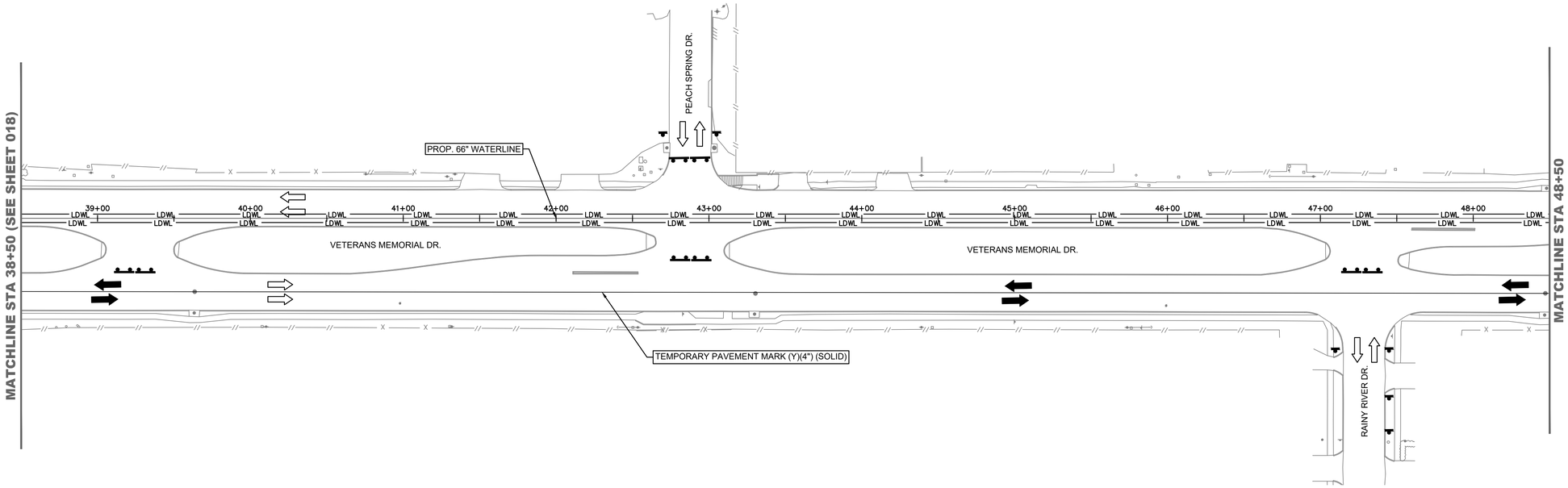
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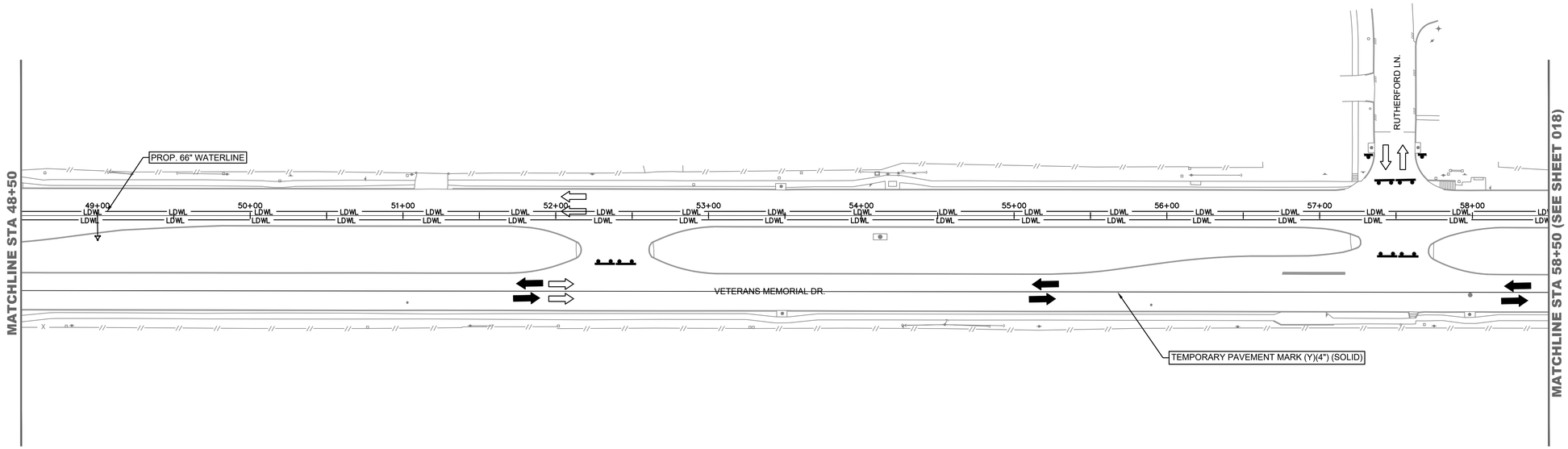
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S-000900-0182-3	
DRAWING SCALE	
1" = 40' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 59 OF 91	

PLOTTED: 8/1/2025 8:05 AM

PLOT STYLE: COH.ctb

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40 0 20 40 80

1" = 40'

NO.	DATE	REVISION	APP.

LEGEND:

- SIGN
- FLAGGER
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- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

VETERANS MEMORIAL DR. — STREET NAME
45 MPH — SPEED LIMIT

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
UTILITY WORK AHEAD	RIGHT LANE CLOSED / AHEAD	RIGHT LANE CLOSED	END UTILITY WORK	ROAD CLOSED	DO NOT ENTER		BEGIN ONE WAY	ONE WAY	ONE WAY					CHEVRON	CHEVRON	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON			4.00' MIN. / 5.00' MIN.
CW21-7 36 X 36	CW20-5RD 48 X 48 CW16-3 24 X 12	CW20-5RD 48 X 48 CW16-3 24 X 12	G20-2 36 X 36	R11-2 48 X 30	R5-1 36 X 36	W4-2R W4-2L	R6-6 24 X 30	R6-2R	R6-2L	R3-1 24 X 24	R3-2 24 X 24	CW1-4L 36 X 36	CW1-4R 36 X 36	CW1-8 18 X 24	CW1-8 18 X 24	PLASTIC DRUM	VP-1L 8"-12"	VP-1R 8"-12"	TYPE III BARRICADE

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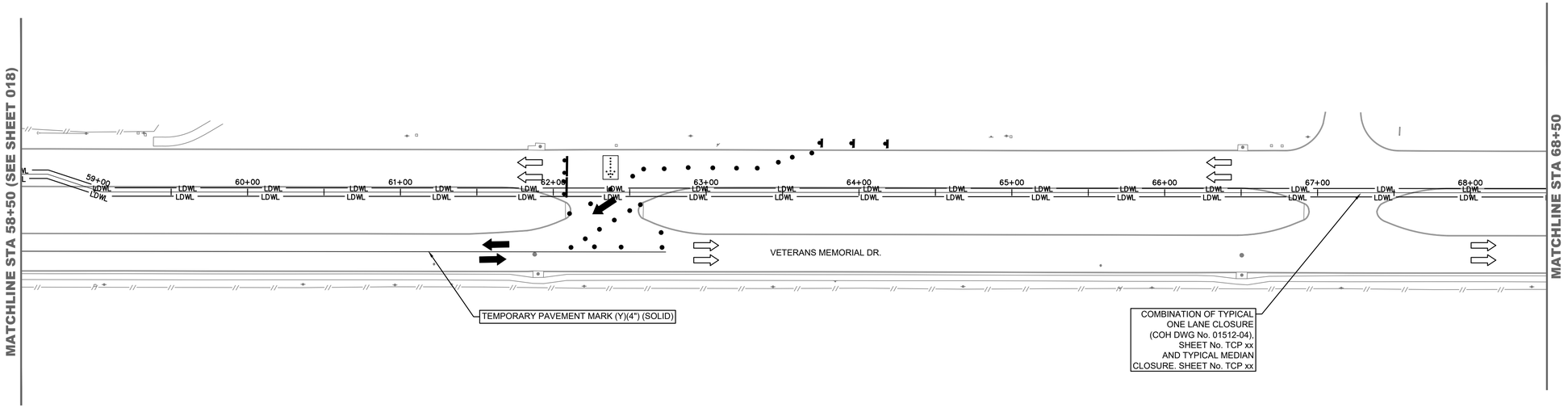
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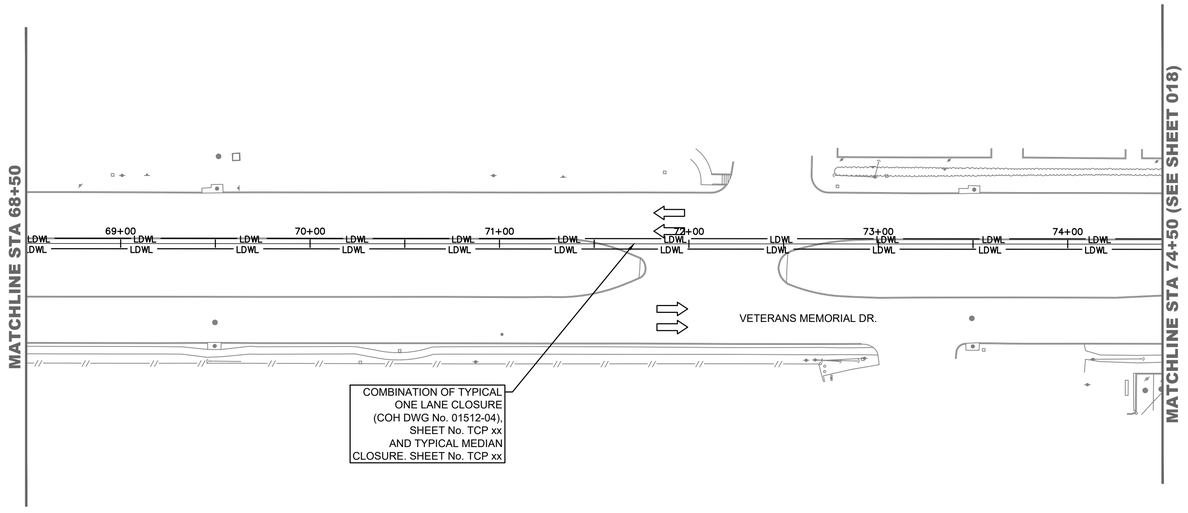
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd
STA 38+50 to STA 58+50
TCP - 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
1" = 40' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 60 OF 91	

PLOTTED: 8/1/2025 8:05 AM
PLOT STYLE: COH.ctb
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40 0 20 40 80

1" = 40'

NO.	DATE	REVISION	APP.

LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

VETERANS MEMORIAL DR. (STREET NAME) — 45 MPH (SPEED LIMIT)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
UTILITY WORK AHEAD	RIGHT LANE CLOSED / AHEAD	RIGHT LANE CLOSED	END UTILITY WORK	ROAD CLOSED	DO NOT ENTER		BEGIN ONE WAY	ONE WAY	ONE WAY					CHEVRON	CHEVRON	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON			4.00' MIN. / 5.00' MIN.
CW21-7 36 X 36	CW20-5RD 48 X 48 CW16-3 24 X 12	CW20-5RD 48 X 48 CW16-3 24 X 12	G20-2 36 X 36	R11-2 48 X 30	R5-1 36 X 36	W4-2R W4-2L	R6-6 24 X 30	R6-2R	R6-2L	R3-1 24 X 24	R3-2 24 X 24	CW1-4L 36 X 36	CW1-4R 36 X 36	CW1-8 18 X 24	CW1-8 18 X 24	PLASTIC DRUM	VP-1L 8"-12"	VP-1R 8"-12"	TYPE III BARRICADE

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

STA 58+50 to STA 74+50

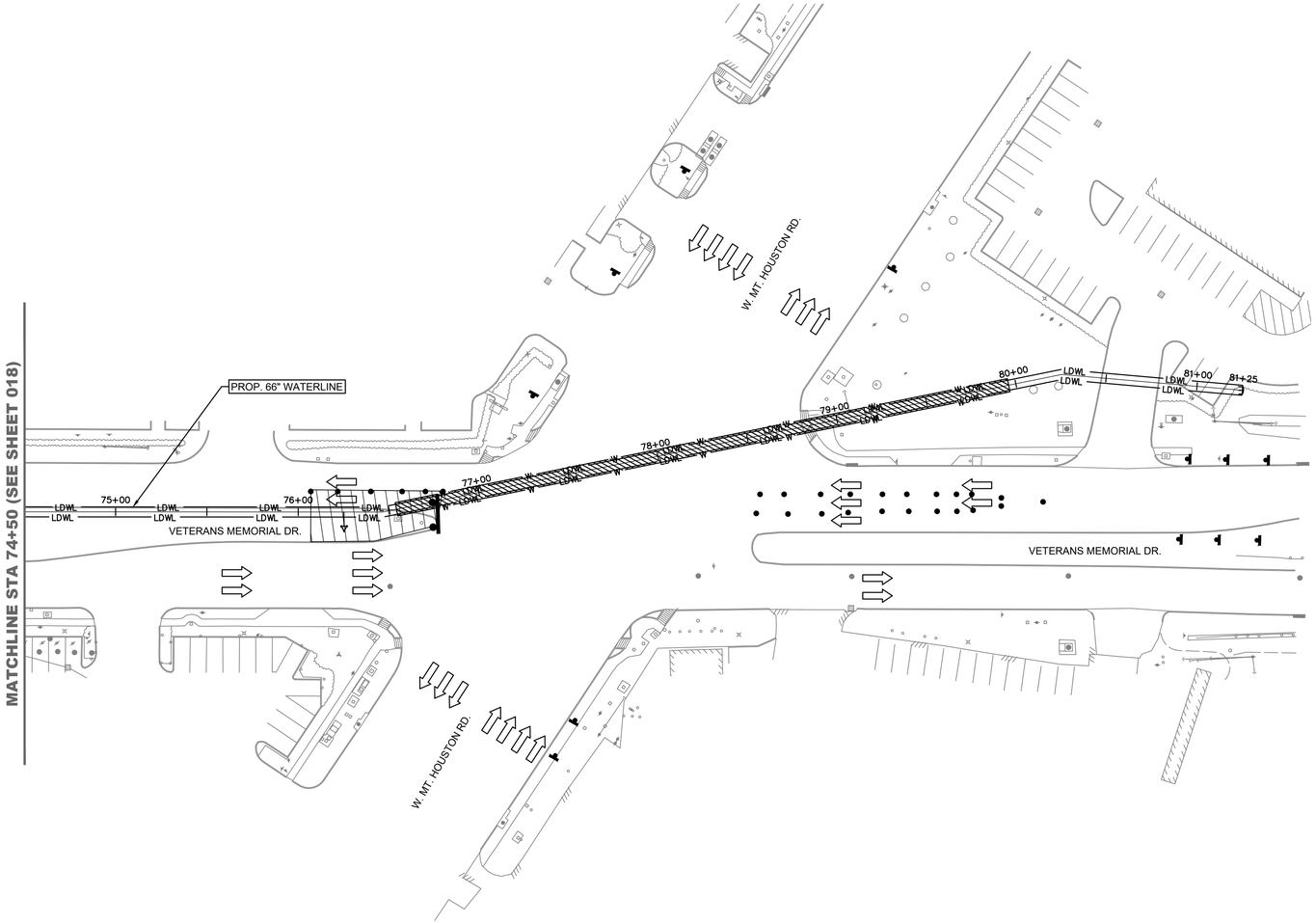
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WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 40' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 61 OF 91	

PLOTTED: 8/1/2025 8:05 AM

PLOT STYLE: COH.ctb

FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\pTCP.dwg





NO.	DATE	REVISION	APP.

LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

VETERANS MEMORIAL DR. (STREET NAME)	45 MPH (SPEED LIMIT)
STATE HIGHWAY 249 (STREET NAME)	50 MPH (SPEED LIMIT)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
UTILITY WORK AHEAD	RIGHT LANE CLOSED / AHEAD	RIGHT LANE CLOSED	END UTILITY WORK	ROAD CLOSED	DO NOT ENTER		BEGIN ONE WAY	ONE WAY	ONE WAY					CHEVRON	CHEVRON	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON			4.00' MIN. / 5.00' MIN.
CW21-7 36 X 36	CW20-5RD 48 X 48 CW16-3 24 X 12	CW20-5RD 48 X 48 CW16-3 24 X 12	G20-2 36 X 36	R11-2 48 X 30	R5-1 36 X 36	W4-2R W4-2L	R6-6 24 X 30	R6-2R	R6-2L	R3-1 24 X 24	R3-2 24 X 24	CW1-4L 36 X 36	CW1-4R 36 X 36	CW1-8 18 X 24	CW1-8 18 X 24	PLASTIC DRUM	VP-1L 8"-12"	VP-1R 8"-12"	TYPE III BARRICADE

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SUITE 800 HOUSTON, TEXAS 77009
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TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

FOR INTERIM REVIEW ONLY

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JUAN A. RAMIREZ HERNANDEZ, P.E.
TEXAS P.E. NO 145241
DATE: 08/01/2025

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

STA 74+50 to END

TCP - 6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 40' V	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 62 OF 91	

PLOTTED: 8/1/2025 8:05 AM
PLOT STYLE: COH.ctb
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PLOTTED: 8/1/2025 8:05 AM
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GENERAL NOTES

1. 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 WITIH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
2. ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM THE LATEST VERSION OF THE TMUTCD.
3. 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.
4. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00 PM TO 7:00 AM.
5. 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.
6. CONTRACTOR SHALL MAINTAIN TRAFFIC LANES AND DETOURS ACCORDING TO TRAFFIC CONTROL PLANS DURING WORKING HOURS.
7. 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.
8. 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.
9. CONTRACTOR SHALL SECURE LANE/SIDEWALK/BICYCLE FACILITY CLOSURE PERMITS FROM OFFICE OF CITY ENGINEER (MOBILITY PERMIT SECTION AT https://geohub.houstontx.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.
10. CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. 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).
17. 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.
18. 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.
19. SPILLAGE RESULTING FROM HAULING OPERATIONS ALONG OR ACROSS ANY PUBLIC TRAVELED WAY SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
20. 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.
21. 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.
22. THE CONTRACTOR SHALL REPLACE WITHIN 72 HOURS, ALL TRAFFIC SIGNAL LOOP DETECTORS DAMAGED DURING CONSTRUCTION.
23. 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.
24. APPROVED TRAFFIC CONTROL PLAN SHALL BE IN PLACE BEFORE STARTING ANY EXCAVATION.
25. 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.
26. WATER FILLED BARRIERS MUST BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S REQUIREMENTS AND ROUTINELY INSPECTED FOR DEFECTS.
27. 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.
28. DISPOSE OF WATER AND AGENT PROPERLY. DO NOT DRAIN WATER FILLED BARRIER INTO OR ACROSS AN EXISTING TRAVEL LANE.
29. PROVIDE BARRIER UNITS THAT ARE CAPABLE OF BEING LIFTED AND MOVED WHEN FILLED IF DRAINING IS NOT POSSIBLE.
30. PROVIDE WATER FILLED BARRIER THAT ACTS AS ITS OWN FREE STANDING, NON-REDIRECTIVE END TREATMENT.
31. 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.
32. 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

A. PLASTIC DRUMS ON MERGING TAPER @ 30' C – C WITH CHEVRON SIGN @ 60' C – C AND WARNING LIGHTS FOR OVERNIGHT CLOSURE.

B. PLASTIC DRUMS ON DOWNSTREAM TAPER @ 30' C – C (RETURN TAPER AND BARRICADE ARE OPTIONAL AND DIVIDED ROADWAY SECTION)

C. PLASTIC DRUMS ON RADII @ 35' C –C.

D. PLASTIC DRUMS ON TANGENT @ 35' C – C WITH VERTICAL PANEL AT 70' C – C AND APPROVED WARNING LIGHT @ 70' C – C (FOR OVERNIGHT CLOSURE).

E. 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).

F. 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.

G. PLASTIC DRUMS W/GUARD RAIL MOUNTED.

H. 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.

I. SPACING SHOWN ON TRAFFIC CONTROL SHALL SUPERSEDE THE ABOVE SPACING.

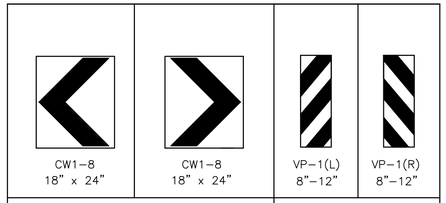
J. SPACING MAY BE ADJUSTED TO PROVIDE DRIVEWAYS, INTERSECTIONS AND /OR MEDIAN OPENINGS.

TABLE C3 – TYPICAL SIGN SPACING, TAPER LENGTHS, AND SUGGESTED SPACING OF CHANNELIZATION DEVICES

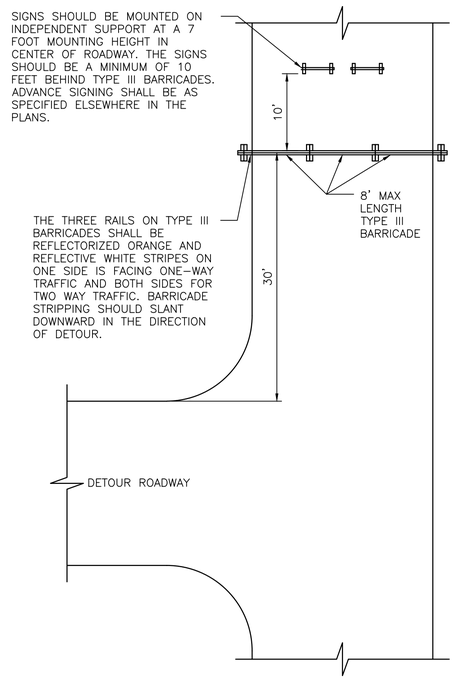
POSTED SPEED (MPH)	SIGN SPACING "X" (FEET)	MIN. DESIRABLE TAPER LENGTH "L"			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	120'	150'	165'	180'	30'	60'-75'
35	160'	205'	225'	245'	35'	70'-90'
40	240'	265'	295'	320'	40'	80'-100'
45	320'	450'	495'	540'	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



PLAN VIEW
TYPE III BARRICADE (POST AND SKID)
TYPICAL APPLICATION

LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NO.	DATE	REVISION	APP.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukad Kanwar SEF8B0C641F5478...	DocuSigned by: HANG NGUYEN 95A29EFFDA758AC0...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A93C41667283453...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-01

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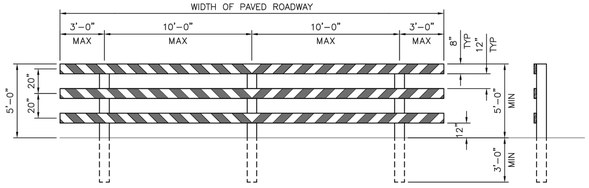
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
TCP CHANNELIZING DEVICES AND BARRICADES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 63 OF 91	

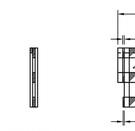
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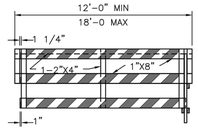
DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR 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.



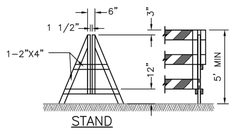
TYPE III BARRICADE
FOR END OF ROAD

FOR TYPE III BARRICADE FOR END OF ROAD, THE THREE (3) RAILS SHALL BE REFLECTIVE RED AND RELFLECTIVE WHITE STRIPES ON SIDE FACING TRAFFIC





PANEL

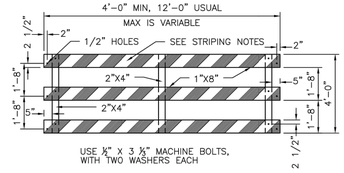


STAND

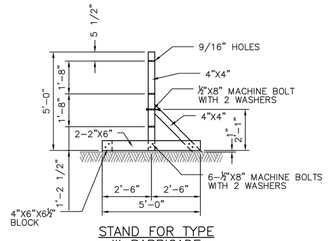


ASSEMBLY

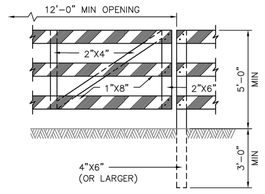
DEMOUNTABLE TYPE III BARRICADE



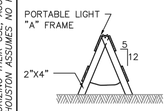
PANEL FOR TYPE III BARRICADE



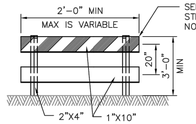
STAND FOR TYPE III BARRICADE



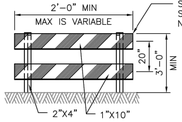
GATE FOR TYPE III BARRICADE



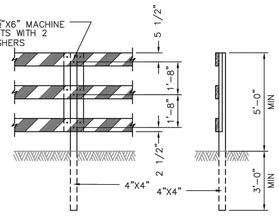
"A" FRAME



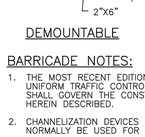
TYPE I



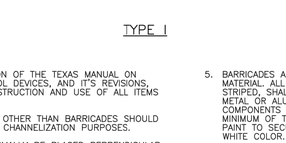
TYPE II



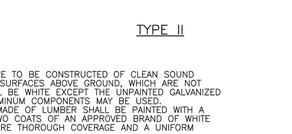
POST FOR TYPE III BARRICADE



DEMOUNTABLE



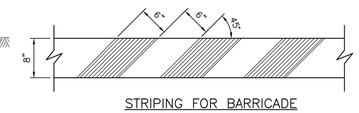
TYPE I



TYPE II

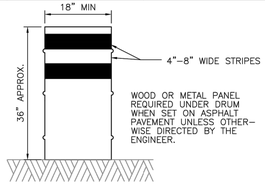
BARRICADE NOTES:

1. 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.
2. CHANNELIZATION DEVICES OTHER THAN BARRICADES SHOULD NORMALLY BE USED FOR CHANNELIZATION PURPOSES.
3. 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.
4. BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL APPROVED BY THE TMUTCD. 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.
5. 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.
6. THE REFLECTORIZED WHITE AND REFLECTORIZED ORANGE (REFLECTORIZED RED) STRIPES FOR BARRICADES, DRUMS AND VERTICAL PANELS SHALL BE CONSTRUCTED OF HIGH INTESITY SHEETING AND SHALL BE MAINTAINED TO MEET THE APPEARANCE, COLOR AND REFLECTIVITY REQUIREMENTS SET BY DOTT.
7. THE CONTRACTOR SHALL MAINTAIN EACH BARRICADE IN A CLEAN AND GOOD CONDITION.
8. BARRICADES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND/OR THE ELIMINATION OF THE HAZARD ON ANY SECTION.



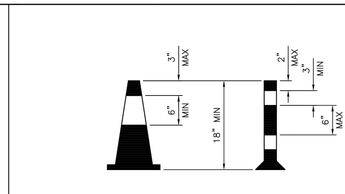
STRIPING FOR BARRICADE

1. FOR ALL TYPES OF BARRICADES WITH RAILS LESS THAN 3'-0" LONG, STRIPES 4" WIDE SHALL BE USED. IDENTIFICATION MARKINGS MAY BE SHOWN ONLY ON BACK SIDE OF BARRICADE RAILS.
2. STRIPING SHOULD COVER THE FULL WIDTH OF THE RAIL. STRIPING OF RAILS, PANELS, ETC. SHOULD SLOPE DOWNWARD AT AN ANGLE OF 45° DEGREES IN DIRECTIONS TRAFFIC IS TO PASS.
3. WHERE A BARRICADE EXTENDS ENTIRELY ACROSS A ROADWAY, IT IS DESIRABLE THAT THE STRIPES SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING. WHEN BOTH RIGHT AND LEFT TURNS ARE PROVIDED FOR, THE CHEVRON STRIPING MAY SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE.



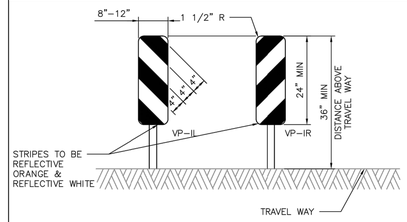
DRUMS

1. 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, APPROPIATE 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 WEIGHTED WITH SAND TO THE EXTENT INDICATED IN THE PLANS.
2. CWI-8 CHEVRON SIGNS, CWI-6A ARROW SIGNS OR VP-I VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.



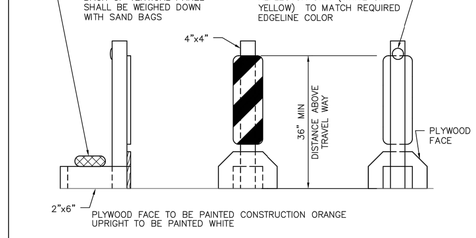
CONES

1. 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.
2. 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.
3. 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 (VP)

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 SUCH AREAS AS 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.



TYPICAL PORTABLE VERTICAL PANEL OR DELINEATOR

OTHER SIMILAR SUPPORTS MAY BE USED WHEN APPROVED BY TMUTCD AND DIRECTED BY THE CITY OF HOUSTON.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sulad Kanwar 8D7B5DC4F1F54F5...	DocuSigned by: Hailing Nguyen 89A3B5F0A7894CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A3DC4105728D403...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-14

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

BARRICADE AND CHANNELIZING DEVICES

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

NO.	DATE	REVISION	APP.

5engineering
11200 WESTHEIMER ROAD, SUITE 353
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TBPE FIRM NO. F-13748

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
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(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

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JUAN A. RAMIREZ HERNANDEZ, P.E.
TEXAS P.E. NO 145241
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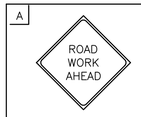
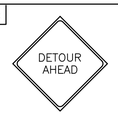
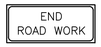
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

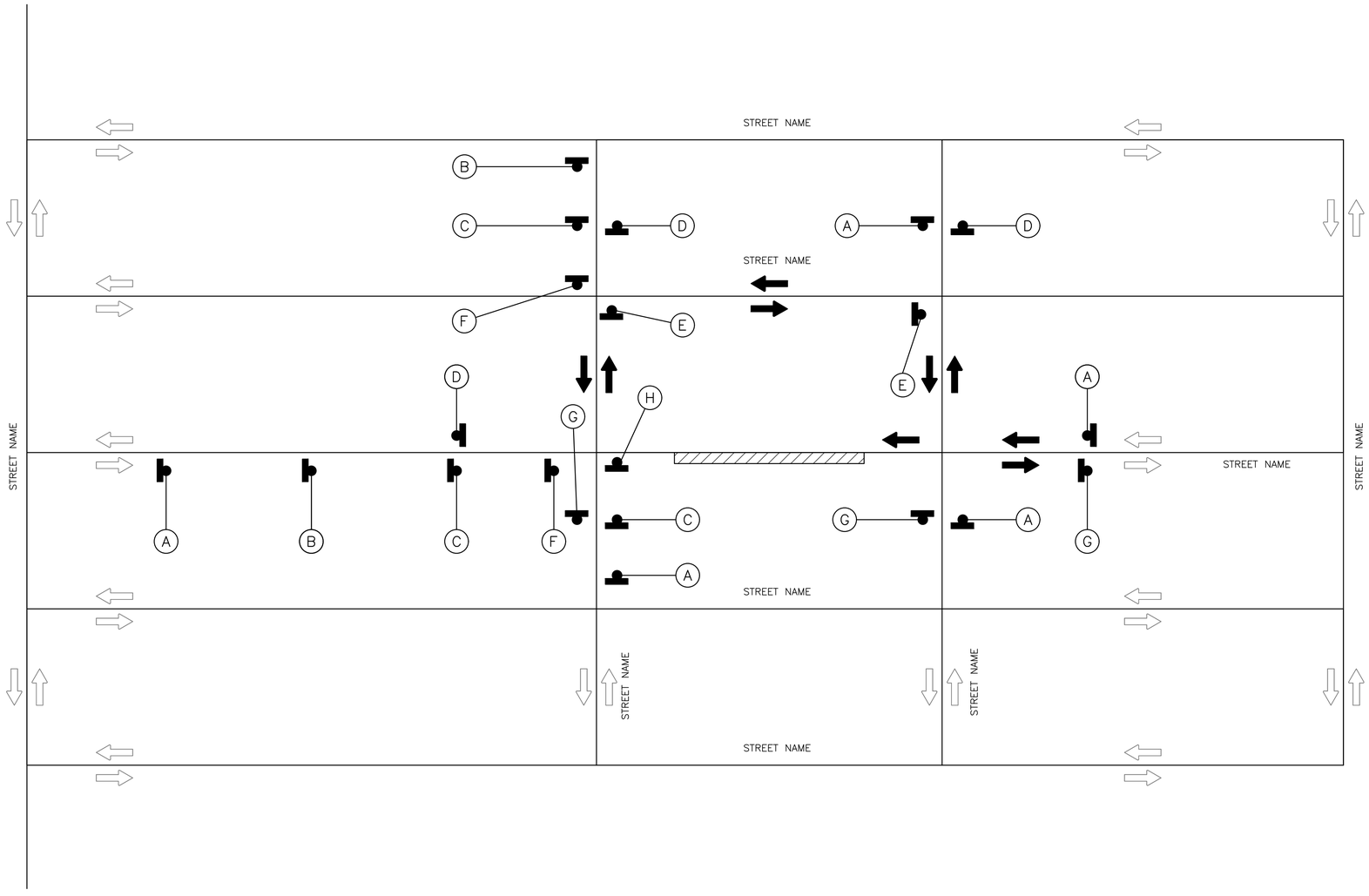
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

BARRICADE AND CHANNELIZING DEVICES DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 64 OF 91	

PLOT STYLE: COH.ctb
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A	B	C	D	E	F	G	H
							
CW20-1	CW20-3	CW20-2	G20-2	M4-9R	M4-9L	M4-8a	M4-9T



LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NO.	DATE	REVISION	APP.

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DocuSigned by: Sukait kanwar 9EF8B0C641F5478...	DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:
DocuSigned by: Carl Haddock A93C410B72B3453...
DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023 | DWG NO: 01555-03

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TBPE FIRM NO. F-13748

KIMLEY-HORN AND ASSOCIATES, INC
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TEXAS P.E. NO 145241
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

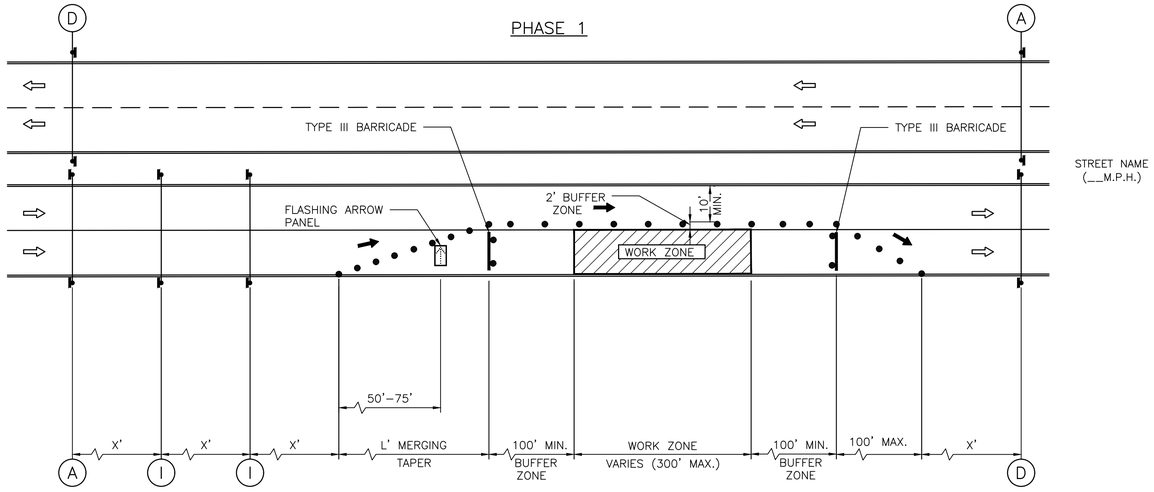
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
TCP OVERALL
TRAFFIC CONTROL LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 65 OF 91	

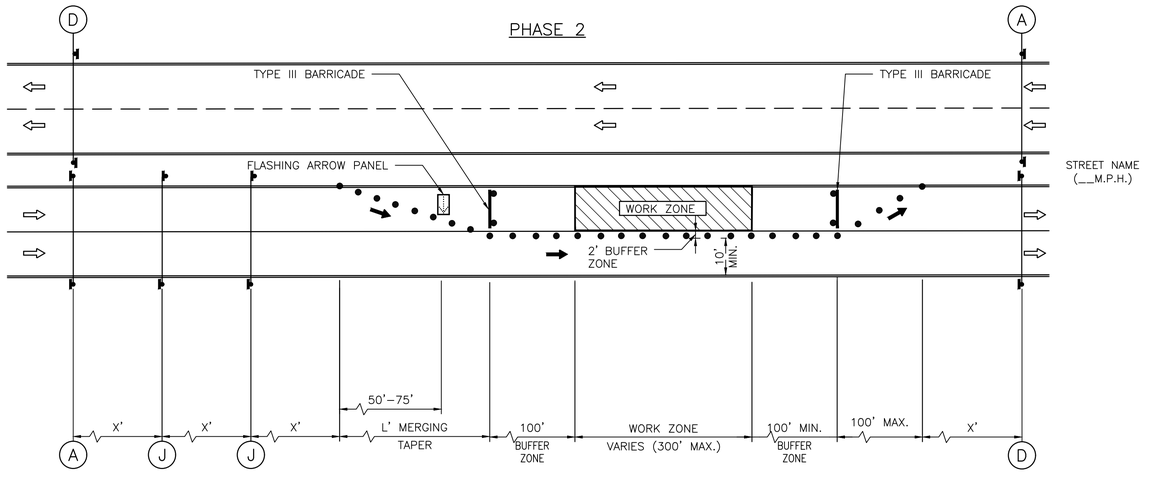
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A	D	I	J
ROAD WORK AHEAD	END ROAD WORK	RIGHT LANE CLOSED	LEFT LANE CLOSED
CW20-1	G20-2	AHEAD CW20-5(2) CW16-3	AHEAD CW20-5(1) CW16-3

PHASE 1



PHASE 2



LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NO.	DATE	REVISION	APP.

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.

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DocuSigned by: Sukait kanwar 9EFBB0C641F5478...	DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock A93C4108728B453...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

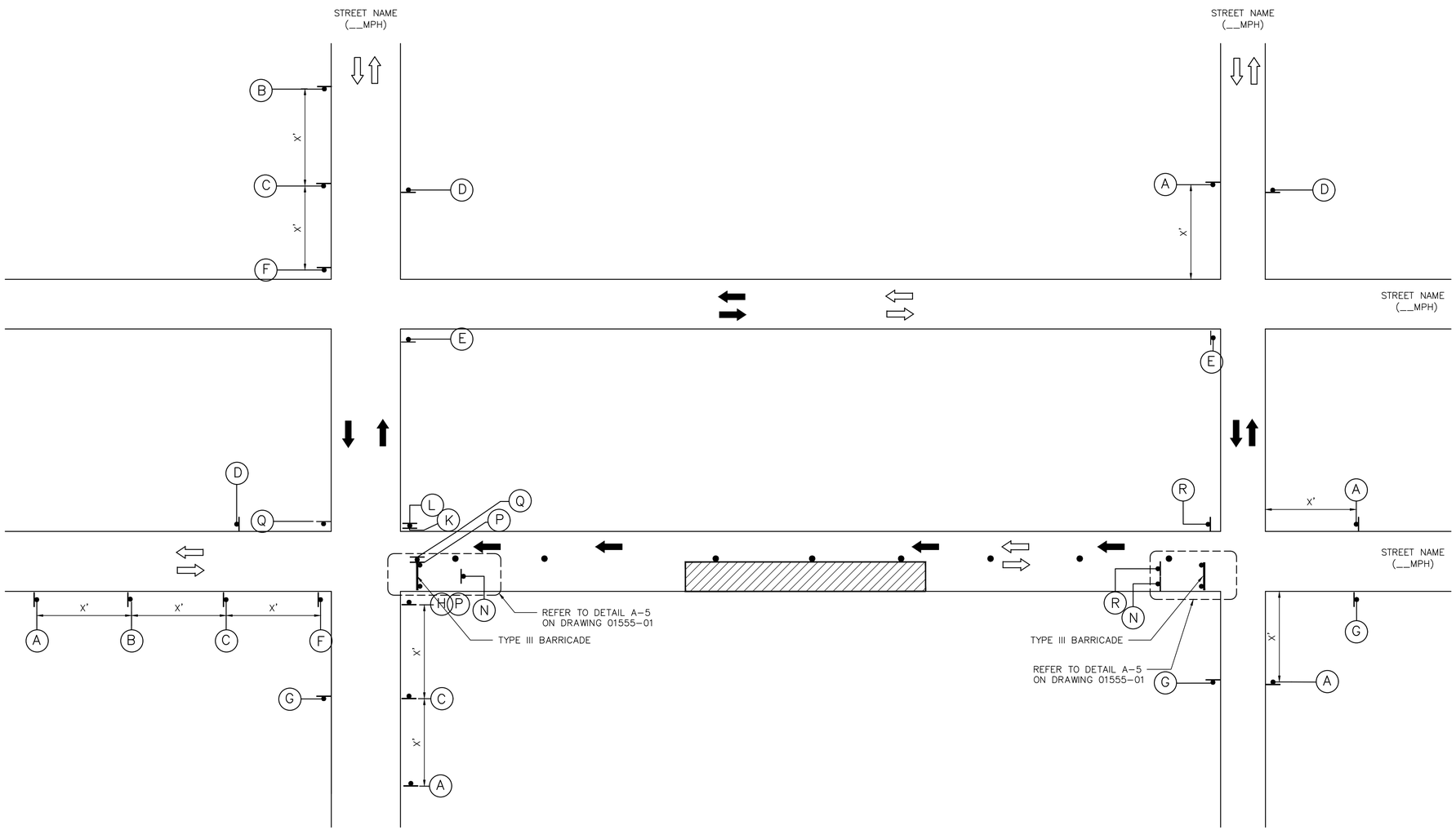
TCP ONE LANE CLOSURE PHASE 1&2

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DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
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SHEET NO. 66 OF 91	

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A	B	C	D	E	F	G	H	I	J
ROAD WORK AHEAD CW20–1	ROAD CLOSED AHEAD CW20–3	DETOUR AHEAD CW20–2	END ROAD WORK G20–2	STREET NAME DETOUR → M4–9R	STREET NAME DETOUR ← M4–9L	END DETOUR M4–8a	STREET NAME DETOUR ↑ M4–9T	RIGHT LANE CLOSED AHEAD CW20–5(2) CW16–3	LEFT LANE CLOSED AHEAD CW20–5(1) CW16–3

K	L	M	N	O	P	Q	R
ONE WAY ← R6–2(L)	ONE WAY → R6–2(R)	DO NOT ENTER R5–1	ROAD CLOSED R11–2	DETOUR M4–10(L)	 R3–1	 R3–2	BEGIN ONE WAY R6–6



LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NO.	DATE	REVISION	APP.

NOTES:

1. A 10' MINIMUM LANE WIDTH FOR EMERGENCY SHALL BE MADE AVAILABLE AND MAINTAINED BY THE CONTRACTOR AT ALL TIMES.
2. FOR DIMENSIONS REFER TO SHEET 01555–01.
3. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.

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DocuSigned by: Sukut Kanwar 8EF8B0C641F5478...	DocuSigned by: HANG NGUYEN 95A29EFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A93C4105728345 3...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
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CITY OF HOUSTON

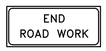
HOUSTON PUBLIC WORKS

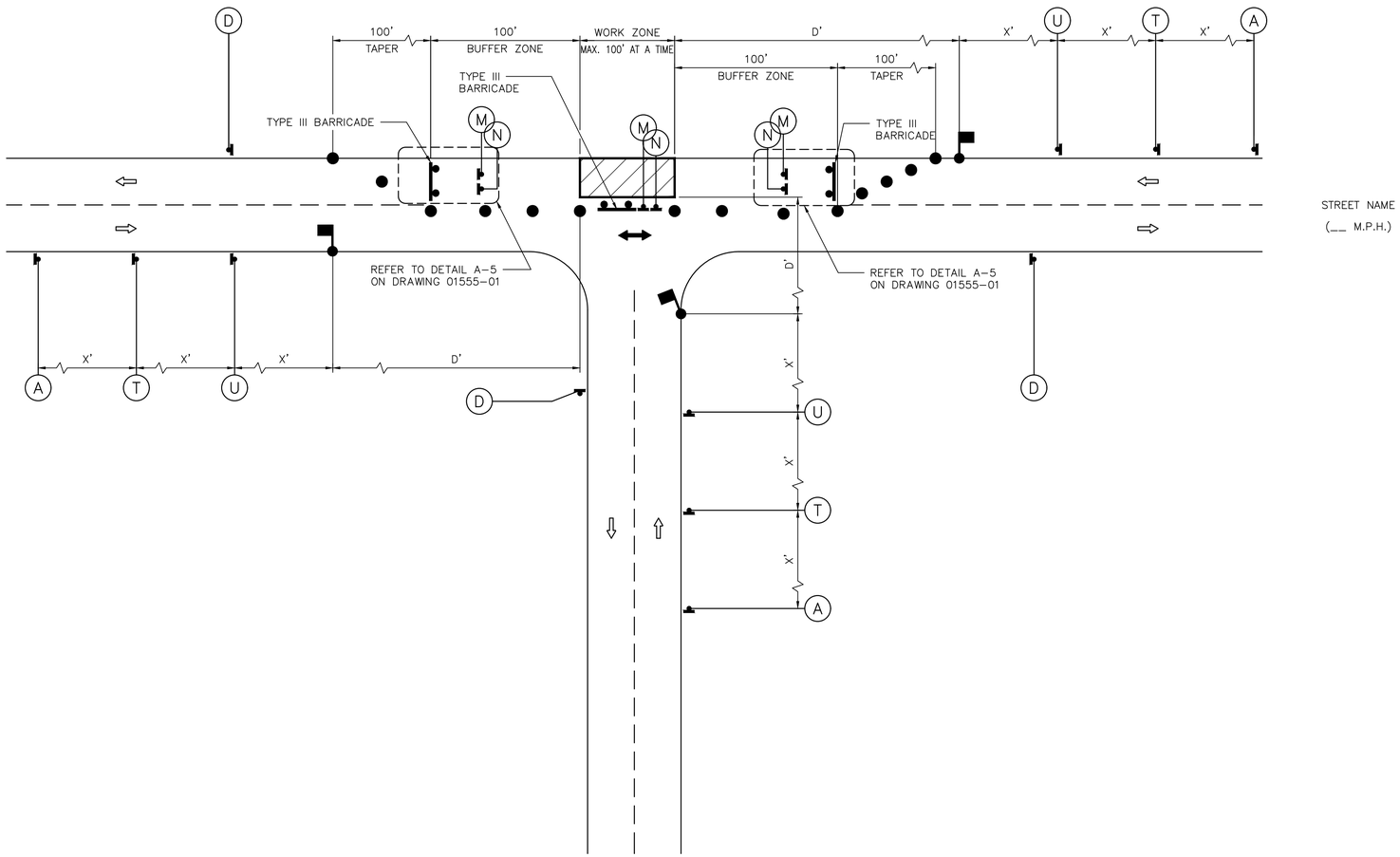
66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

TCP ONE LANE CLOSURE

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DRAWING SCALE	
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CITY OF HOUSTON PM	
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SHEET NO. 67 OF 91	

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CW20-1	CW20-4	CW20-7	G20-2	R5-1	R11-2



LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NO.	DATE	REVISION	APP.

NOTES:

1. MINOR WORK AND DAYTIME OPERATIONS ONLY.
2. REFER TO PROJECT SPECIFIC TRAFFIC CONTROL PLANS FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.
5. MAX. 100' WORK ZONE AT A TIME.

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DocuSigned by: Sulaiman Kanwar 9EFBB0C641F5478...	DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A83C410B72B3453...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-03

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CITY OF HOUSTON

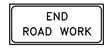
HOUSTON PUBLIC WORKS

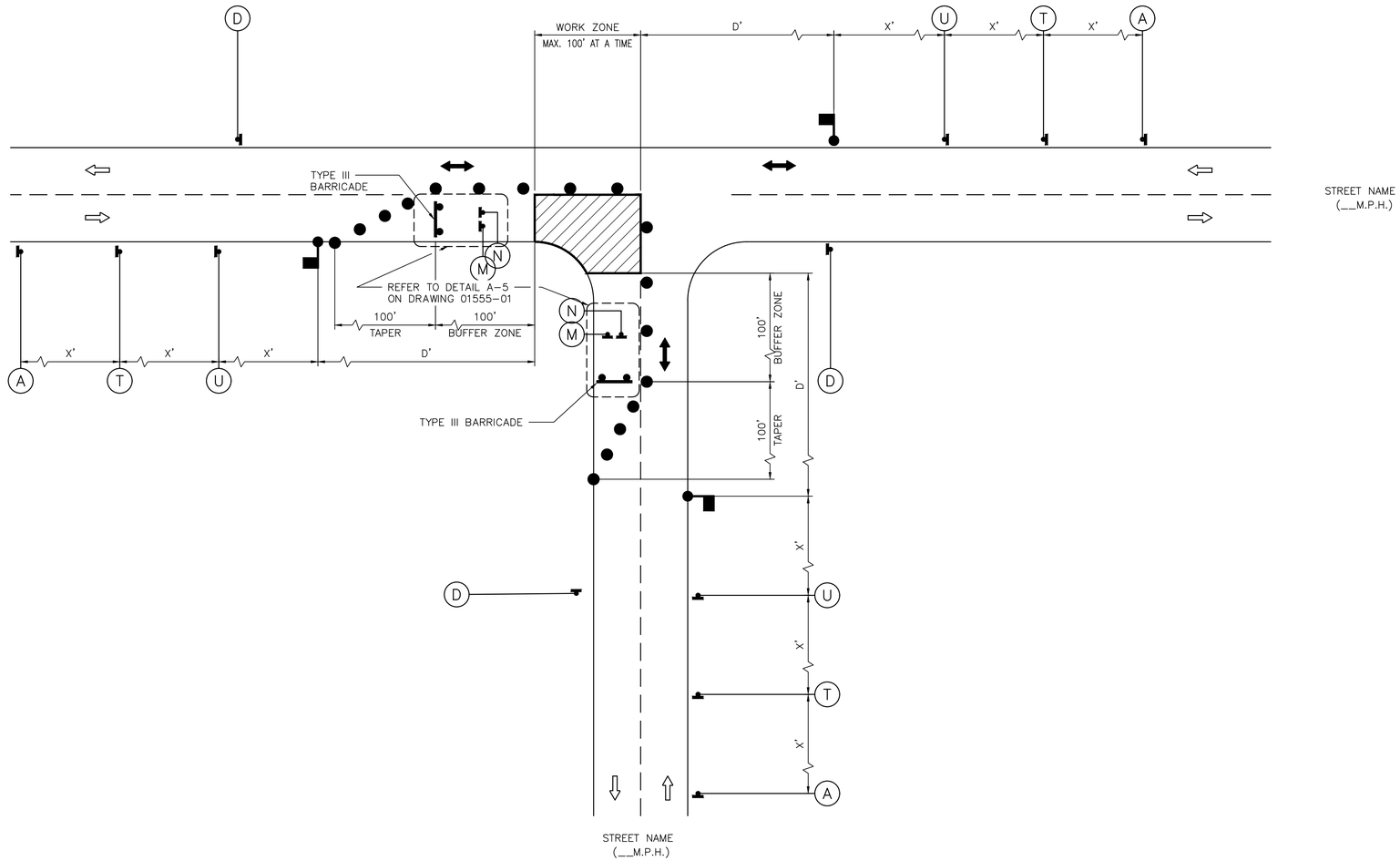
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

TCP TYPICAL
3-WAY INTERSECTION (1)

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DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
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A	T	U	D	M	N
					
CW20-1	CW20-4	CW20-7	G20-2	R5-1	R11-2



LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NO.	DATE	REVISION	APP.

NOTES:

1. MINOR WORK AND DAYTIME OPERATIONS ONLY.
2. REFER TO PROJECT SPECIFIC TRAFFIC CONTROL PLANS FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.
5. MAX. 100' WORK ZONE AT A TIME.

APPROVED BY:	APPROVED BY:
DocuSigned by: Suhail Kanwar 9EF880C841F5478...	DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A93C410B72B3453...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-03

5engineering
11200 WESTHEIMER ROAD, SUITE 353
HOUSTON, TEXAS 77042
(832) 800-3483 | www.5engineering.com
TBPE FIRM NO. F-13748

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

FOR INTERIM REVIEW ONLY

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JUAN A. RAMIREZ HERNANDEZ, P.E.
TEXAS P.E. NO 145241
DATE: 08/01/2025

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CITY OF HOUSTON

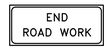
HOUSTON PUBLIC WORKS

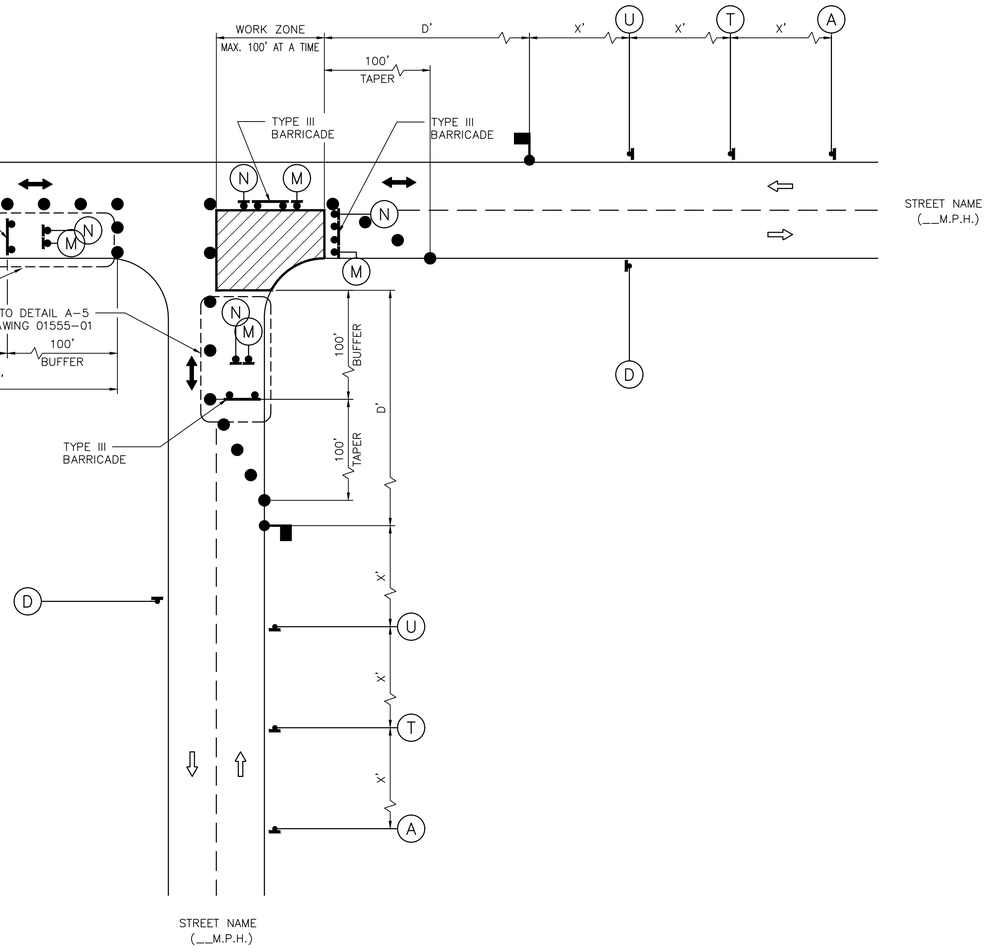
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

TCP TYPICAL
3-WAY INTERSECTION (2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 69 OF 91	

PLOTTED: 8/1/2025 8:06 AM
PLOT STYLE: COH.ctb
FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\TCP DETAILS.dwg

A	T	U	D	M	N
					
CW20-1	CW20-4	CW20-7	G20-2	R5-1	R11-2



LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NO.	DATE	REVISION	APP.

NOTES:

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5. MAX. 100' WORK ZONE AT A TIME.

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DocuSigned by: Sukut Kanwar 8EF8B0C641F5478...	DocuSigned by: HHNG NGUYEN 95A29EFDFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock A3DC4158728345D...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
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CITY OF HOUSTON

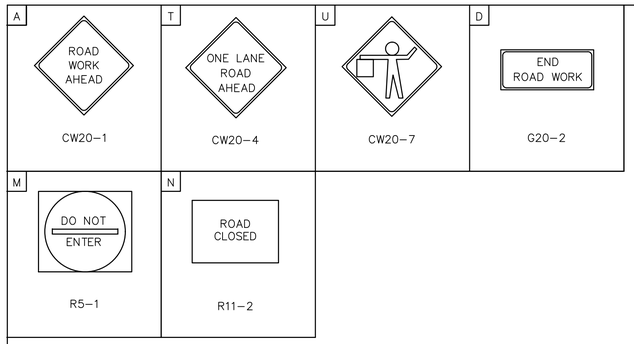
HOUSTON PUBLIC WORKS

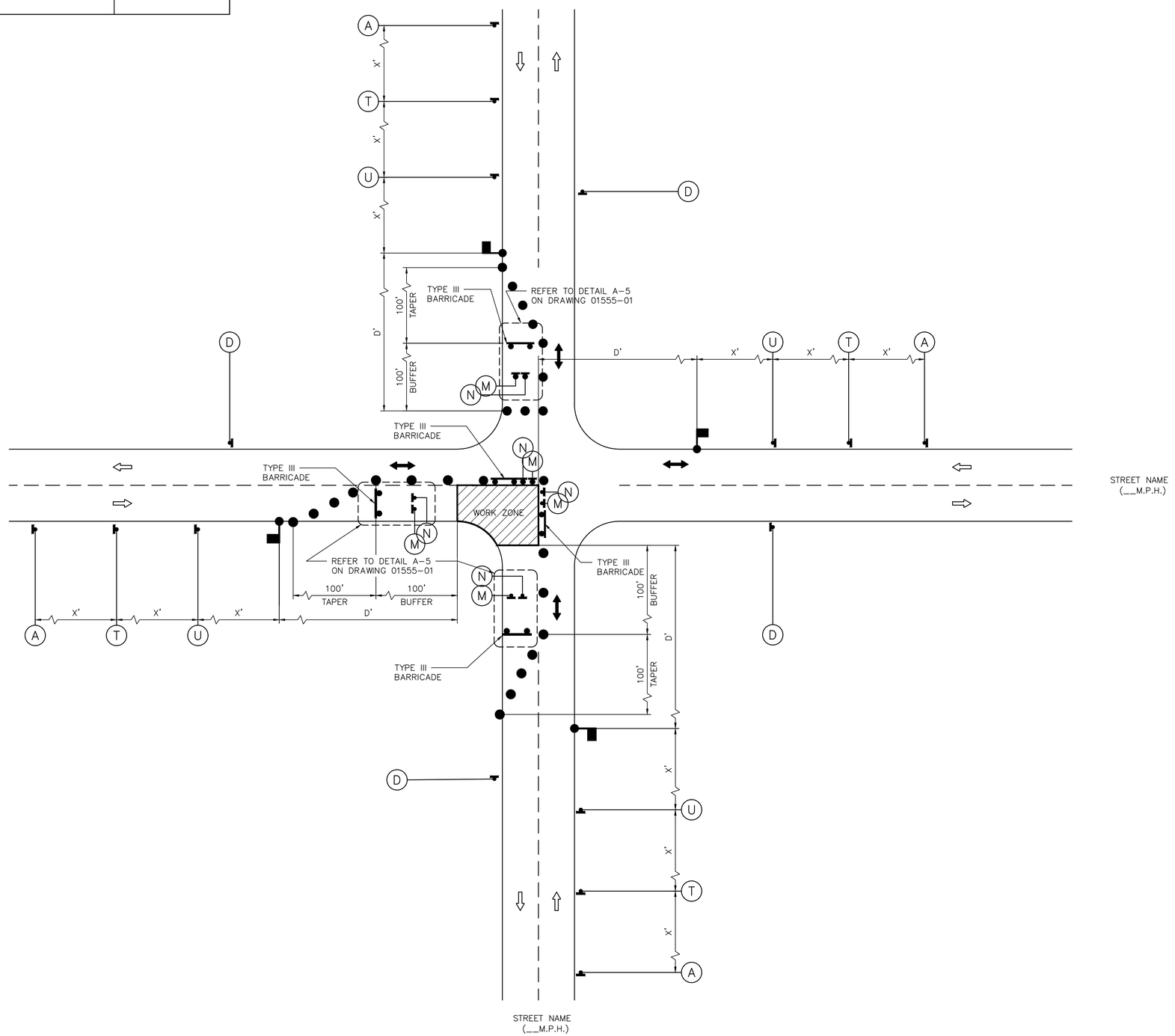
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

TCP TYPICAL
3-WAY INTERSECTION (3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 70 OF 91	

PLOTTED: 8/1/2025 8:06 AM
PLOT STYLE: COH.ctb
FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\TCP DETAILS.dwg





LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

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5. MAX. 100' WORK ZONE AT A TIME.

NO.	DATE	REVISION	APP.

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CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A93C410B7283453...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-03

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11700 KATY FREEWAY
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(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

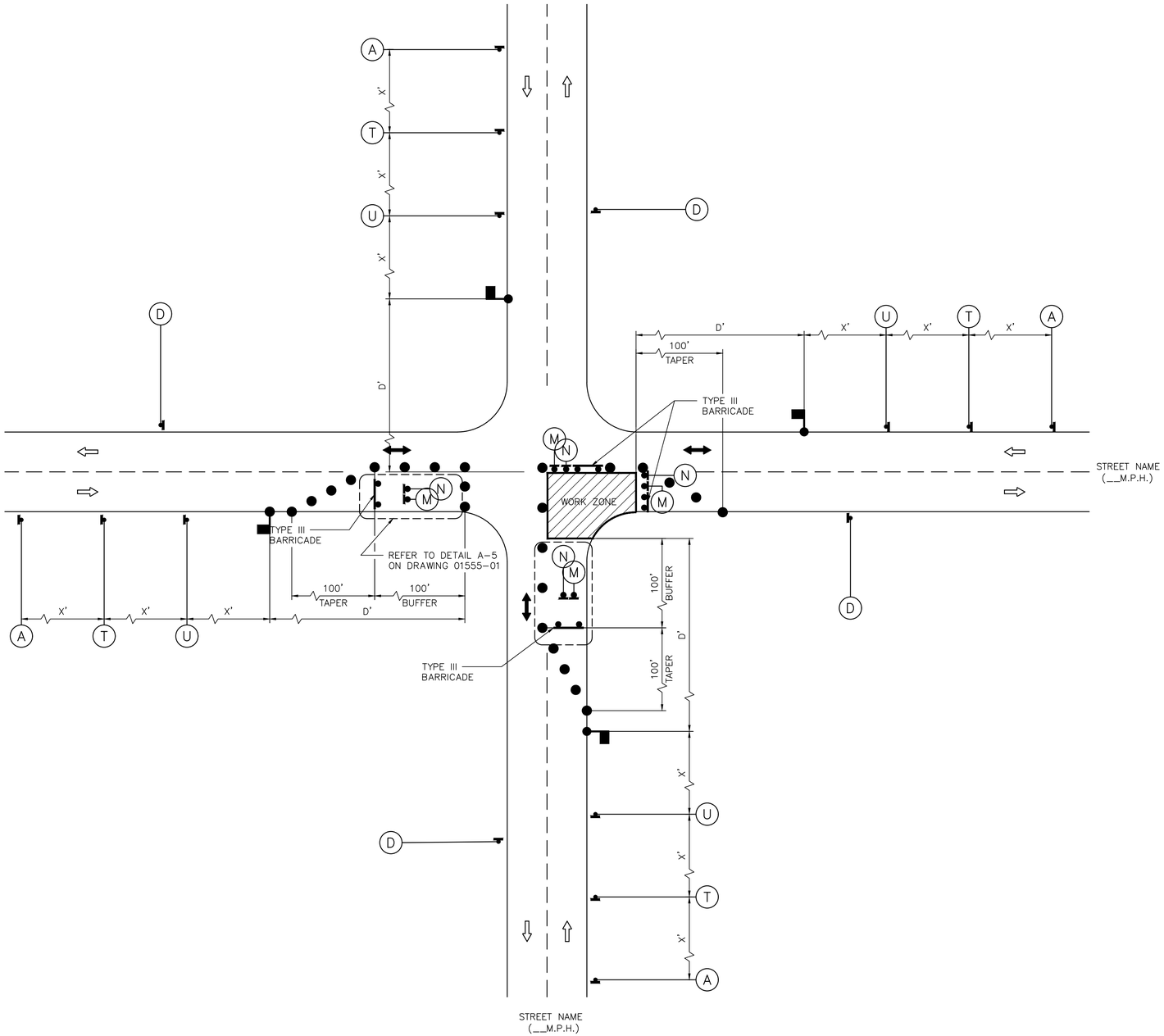
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
TCP TYPICAL
4-WAY INTERSECTION (1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 71 OF 91	

PLOTTED: 8/1/2025 8:06 AM
PLOT STYLE: COH.ctb
FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\TCP DETAILS.dwg

A	T	U	D
ROAD WORK AHEAD	ONE LANE ROAD AHEAD		END ROAD WORK
CW20–1	CW20–4	CW20–7	G20–2

M	N
DO NOT ENTER	ROAD CLOSED
R5–1	R11–2



LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
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NO.	DATE	REVISION	APP.

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DocuSigned by: Suhail Kanwar 9EFB80C841F5478...	DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A93C4105728345S...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 01555–03

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11200 WESTHEIMER ROAD, SUITE 353
HOUSTON, TEXAS 77042
(832) 800-3483 | www.5engineering.com
TBPE FIRM NO. F-13748

KIMLEY–HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597–9300
TBPE FIRM REGISTRATION F–928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352–007

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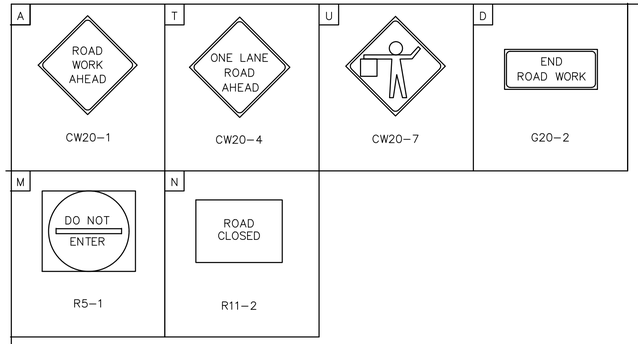
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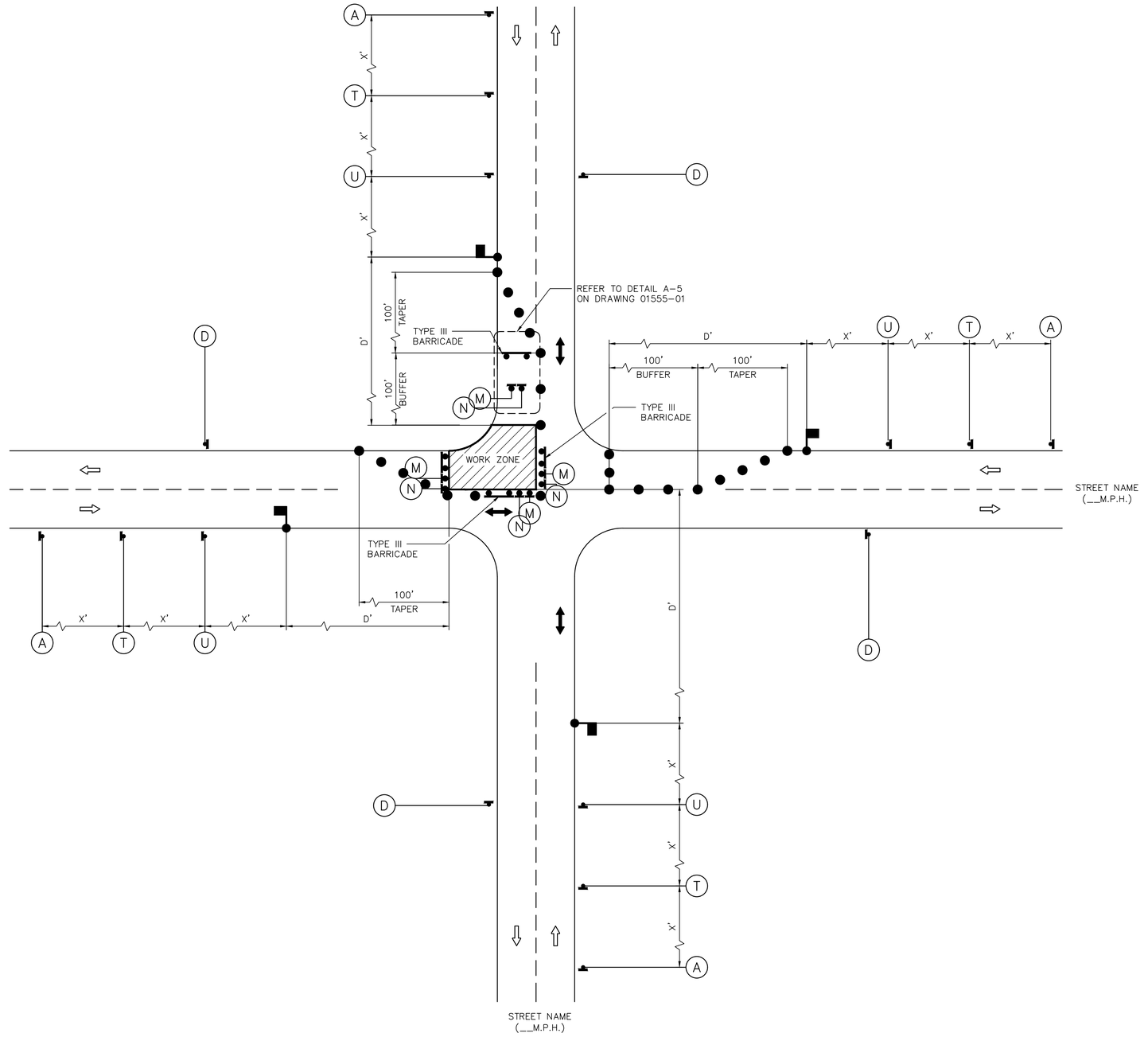
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd
TCP TYPICAL
4–WAY INTERSECTION (2)

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S–000900–0182–3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 72 OF 91	

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PLOT STYLE: COH.ctb
FILE PATH: P:\0104\001 66–inch\02 Design\Drawings\DWG\SHEETS\TCP DETAILS.dwg





LEGEND:

- SIGN
- FLAGGER
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- BARRICADE
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- EXISTING TRAVEL WAY
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CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A93C410972B3453...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
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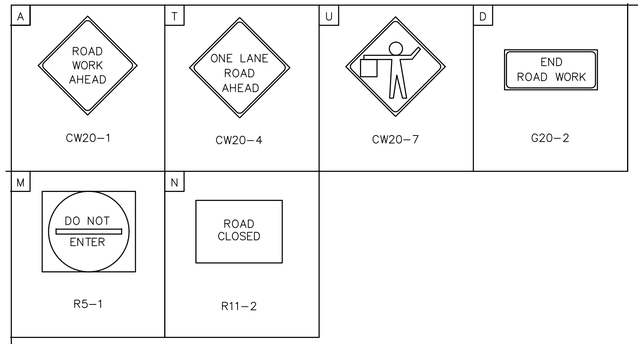
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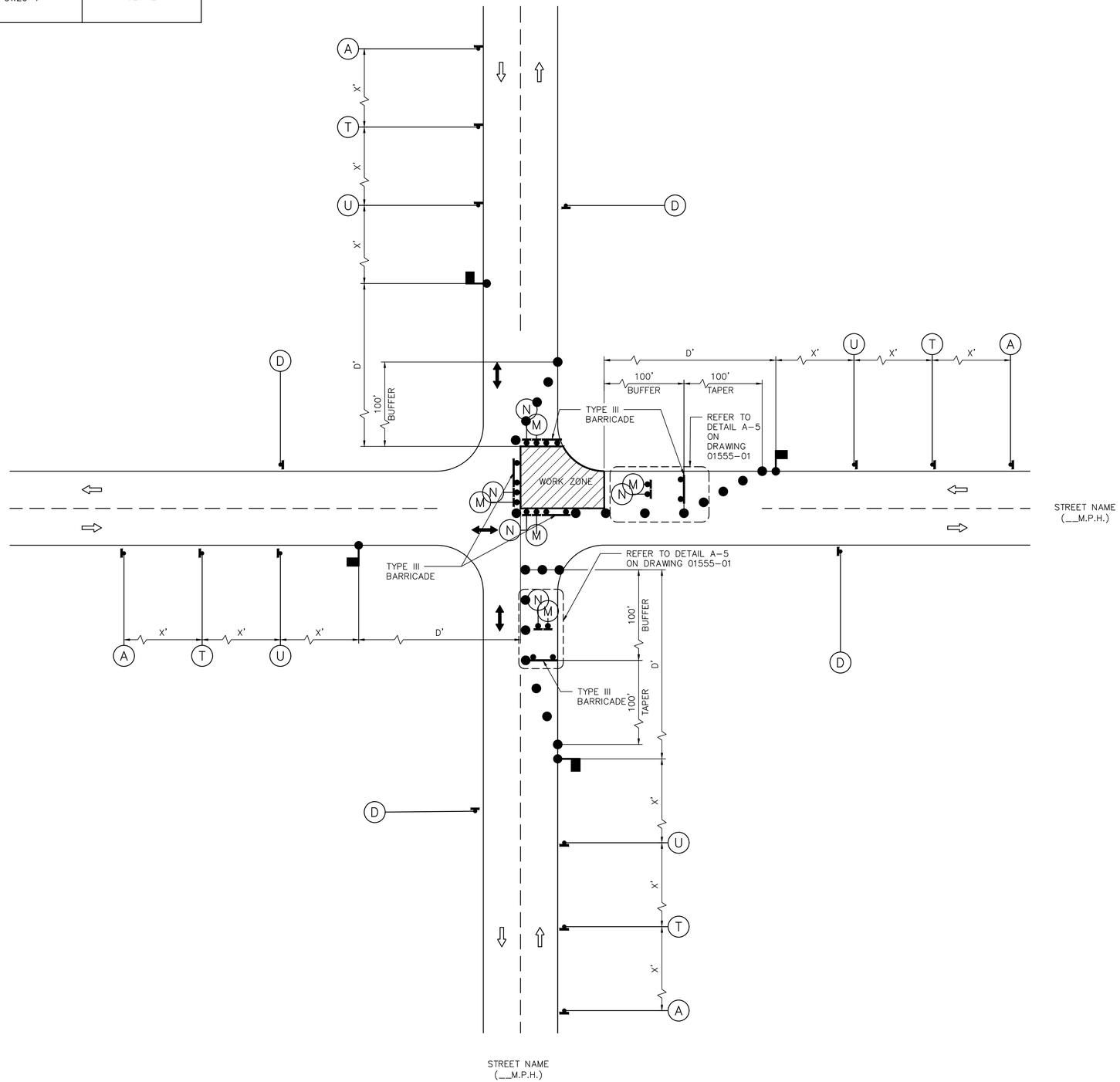
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd
TCP TYPICAL
4-WAY INTERSECTION (3)

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S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 73 OF 91	

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LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
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- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NO.	DATE	REVISION	APP.

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DIRECTOR OF HOUSTON PUBLIC WORKS	
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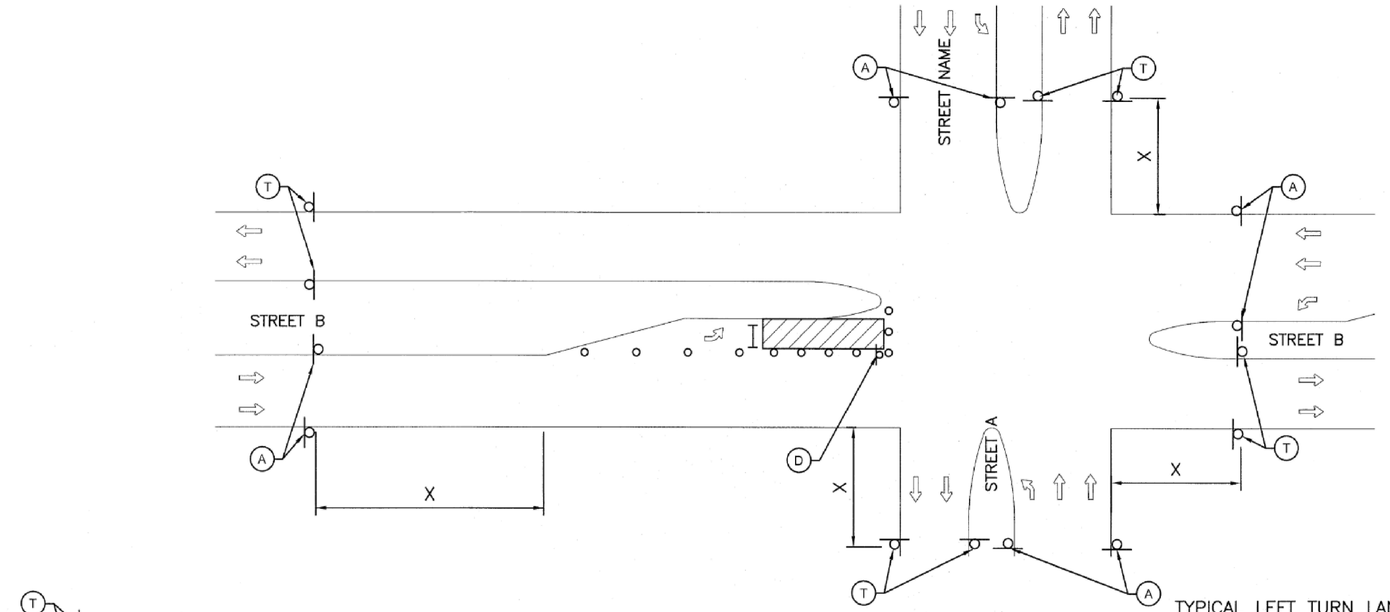
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

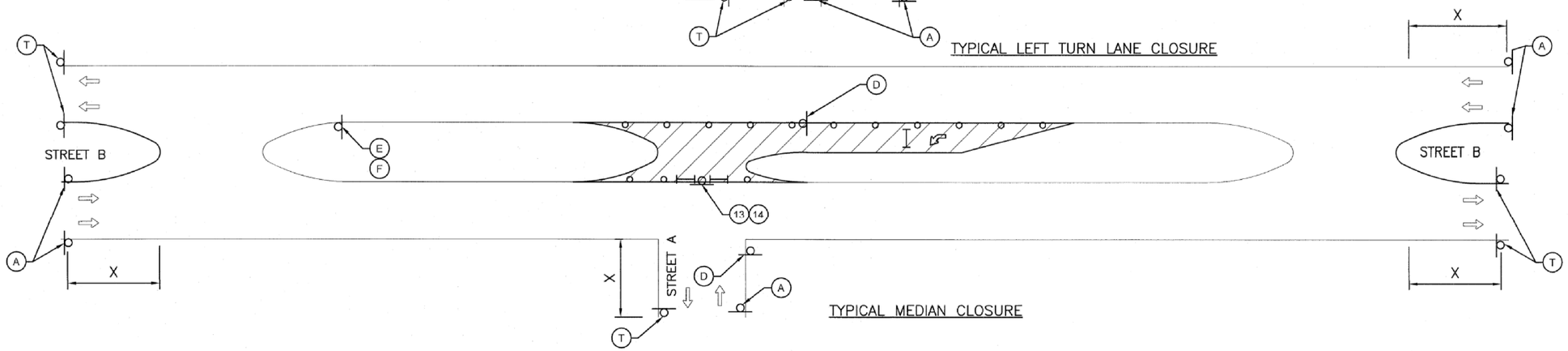
TCP TYPICAL
4-WAY INTERSECTION (4)

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S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 74 OF 91	

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TYPICAL LEFT TURN LANE CLOSURE



TYPICAL MEDIAN CLOSURE

NO.	DATE	REVISION	APP.

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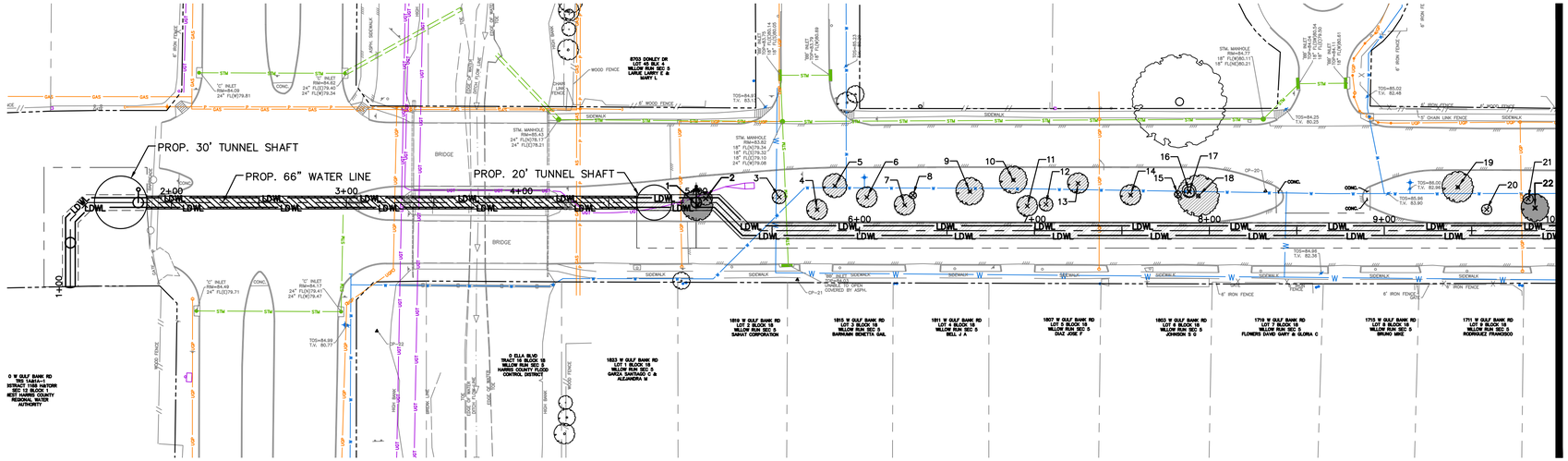
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

TCP TYPICAL MEDIAN CLOSURE

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HIMAL PANGENI, P.E.	
SHEET NO. 75 OF 91	

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FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\TCP-12_23.10.10.dwg



LEGEND:

EX. TREE TO BE PROTECTED

EX. TREE TO BE REMOVED

PROP. WORK ZONE

NOTES:

1. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING TREES AND PLANTS TO REMAIN FROM FOLIAGE, BRANCH, TRUNK, OR ROOT DAMAGE THAT COULD RESULT FROM CONSTRUCTION OPERATIONS.
2. SITE PREPARATION WORK AND/OR CONSTRUCTION WORK SHALL NOT BEGIN IN ANY AREA WHERE TREE PRESERVATION MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.
3. REFER TO SPECIFICATION 01562 FOR TYPES OF TREE AND PLANT DAMAGE TO PREVENT.
4. WHEN TREES OTHER THAN THOSE DESIGNATED FOR REMOVAL ARE DESTROYED OR DAMAGED AS A RESULT OF CONSTRUCTION OPERATIONS, REMOVE AND REPLACE WITH SAME SIZE, SPECIES, AND VARIETY UP TO AND INCLUDING 8" IN TRUNK DIAMETER. FOR TREES LARGER THAN 8", REFER TO SPECIFICATION 01562.
5. CONTRACTOR SHALL APPLY FOR PERMIT FROM THE CITY OF HOUSTON, URBAN FORESTRY DIVISION AND RECEIVE APPROVAL PRIOR TO REMOVAL OF ANY TREE NOT SCHEDULED FOR REMOVAL IN THE TREE TREATMENT SCHEDULE.

TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
1	18" OAK	ORINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, RELOCATE OR CREDIT
2	8" OAK	ORINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, RELOCATE OR CREDIT
3	8" SWEETGUM	ORDINANCE TREE, TO BE PROTECTED	
4	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
5	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
6	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
7	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
8	4" SWEETGUM	ORDINANCE TREE, TO BE PROTECTED	
9	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
10	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
11	12" PINE	ORDINANCE TREE, TO BE PROTECTED	
12	8" OAK	ORDINANCE TREE, TO BE PROTECTED	
13	12" PINE	ORDINANCE TREE, TO BE PROTECTED	
14	12" TREE	ORDINANCE TREE, TO BE PROTECTED	
15	4" TREE	ORDINANCE TREE, TO BE PROTECTED	
16	8" TREE	ORDINANCE TREE, TO BE PROTECTED	
17	6" ELM	ORDINANCE TREE, TO BE PROTECTED	
18	24" OAK	ORDINANCE TREE, TO BE PROTECTED	
19	18" OAK	ORDINANCE TREE, TO BE PROTECTED	
20	6" ELM	ORDINANCE TREE, TO BE PROTECTED	
21	6" ELM	ORDINANCE TREE, TO BE PROTECTED	
22	18" OAK	ORINANCE TREE, REMOVE FOR WORK ZONE	ROOT PRUNING

NORTH

GRAPHIC SCALE IN FEET
0 20 40 80

SCALE: 1"=40'

NO.	DATE	REVISION	APP.

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.

KIMLEY–HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597–9300
TBPE FIRM REGISTRATION F–928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352–007

PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

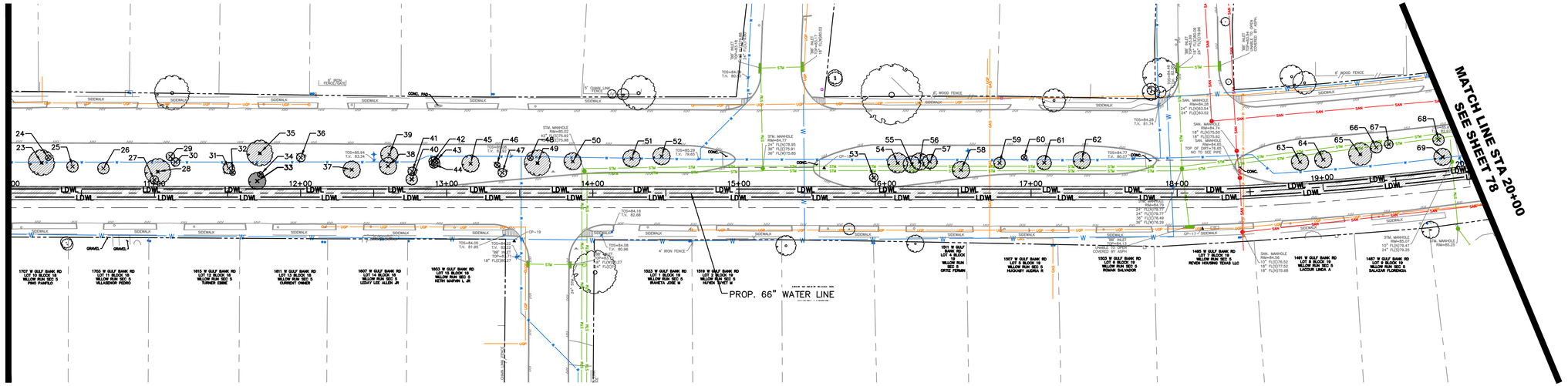
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd
TREE PROTECTION PLAN
BEGIN TO STA 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
1" = 40' H	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 76 OF 91	

PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:17 AM

FILE PATH: K:\HOU_Utilities\0644402850_COH S–00900–0182–3 66in WL\09_CAD\03_Plan Sheets\C–Tree–Protection–Plan.dwg



NORTH

GRAPHIC SCALE IN FEET
0 20 40 80

SCALE: 1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

EX. TREE TO BE PROTECTED

EX. TREE TO BE REMOVED

PROP. WORK ZONE

NOTES:

1. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING TREES AND PLANTS TO REMAIN FROM FOLIAGE, BRANCH, TRUNK, OR ROOT DAMAGE THAT COULD RESULT FROM CONSTRUCTION OPERATIONS.
2. SITE PREPARATION WORK AND/OR CONSTRUCTION WORK SHALL NOT BEGIN IN ANY AREA WHERE TREE PRESERVATION MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.
3. REFER TO SPECIFICATION 01562 FOR TYPES OF TREE AND PLANT DAMAGE TO PREVENT.
4. WHEN TREES OTHER THAN THOSE DESIGNATED FOR REMOVAL ARE DESTROYED OR DAMAGED AS A RESULT OF CONSTRUCTION OPERATIONS, REMOVE AND REPLACE WITH SAME SIZE, SPECIES, AND VARIETY UP TO AND INCLUDING 8" IN TRUNK DIAMETER. FOR TREES LARGER THAN 8", REFER TO SPECIFICATION 01562.
5. CONTRACTOR SHALL APPLY FOR PERMIT FROM THE CITY OF HOUSTON, URBAN FORESTRY DIVISION AND RECEIVE APPROVAL PRIOR TO REMOVAL OF ANY TREE NOT SCHEDULED FOR REMOVAL IN THE TREE TREATMENT SCHEDULE.

TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
23	18" OAK	ORDINANCE TREE, TO BE PROTECTED	
24	4" OAK	ORDINANCE TREE, TO BE PROTECTED	
25	8" PINE	ORDINANCE TREE, TO BE PROTECTED	
26	8" ELM	ORDINANCE TREE, TO BE PROTECTED	
27	6" TREE	ORDINANCE TREE, TO BE PROTECTED	
28	18" OAK	ORDINANCE TREE, TO BE PROTECTED	
29	6" ELM	ORDINANCE TREE, TO BE PROTECTED	
30	6" TREE	ORDINANCE TREE, TO BE PROTECTED	
31	8" TREE	ORDINANCE TREE, TO BE PROTECTED	
32	4" OAK	ORDINANCE TREE, TO BE PROTECTED	
33	12" PINE	ORINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
34	4" OAK	ORDINANCE TREE, TO BE PROTECTED	
35	12" PINE	ORDINANCE TREE, TO BE PROTECTED	
36	6" TREE	ORDINANCE TREE, TO BE PROTECTED	
37	12" PINE	ORDINANCE TREE, TO BE PROTECTED	ROOT PRUNING
38	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
39	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
40	8" TREE	ORDINANCE TREE, TO BE PROTECTED	
41	6" TREE	ORDINANCE TREE, TO BE PROTECTED	
42	6" OAK	ORDINANCE TREE, TO BE PROTECTED	
43	6" OAK	ORDINANCE TREE, TO BE PROTECTED	
44	6"OAK	ORDINANCE TREE, TO BE PROTECTED	
45	12" CYPRESS	ORDINANCE TREE, TO BE PROTECTED	
46	4" TREE	ORDINANCE TREE, TO BE PROTECTED	

TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
47	6" TREE	ORDINANCE TREE, TO BE PROTECTED	
48	4" TREE	ORDINANCE TREE, TO BE PROTECTED	
49	18" OAK	ORDINANCE TREE, TO BE PROTECTED	
50	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
51	12" PINE	ORDINANCE TREE, TO BE PROTECTED	
52	12" ELM	ORDINANCE TREE, TO BE PROTECTED	
53	6" PINE	ORDINANCE TREE, TO BE PROTECTED	
54	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
55	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
56	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
57	10" TREE	ORDINANCE TREE, TO BE PROTECTED	
58	12" COTTONWOOD	ORDINANCE TREE, TO BE PROTECTED	
59	8" OAK	ORDINANCE TREE, TO BE PROTECTED	
60	4" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
61	10" OAK	ORDINANCE TREE, TO BE PROTECTED	
62	12" PINE	ORDINANCE TREE, TO BE PROTECTED	
63	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
64	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
65	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
66	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
67	6" COTTONWOOD	ORDINANCE TREE, TO BE PROTECTED	
68	8" OAK	ORDINANCE TREE, TO BE PROTECTED	
69	12" TREE	ORDINANCE TREE, TO BE PROTECTED	

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VERIFICATION OF PRIVATE UTILITY LINES

Date

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Signature valid for six months.

Date

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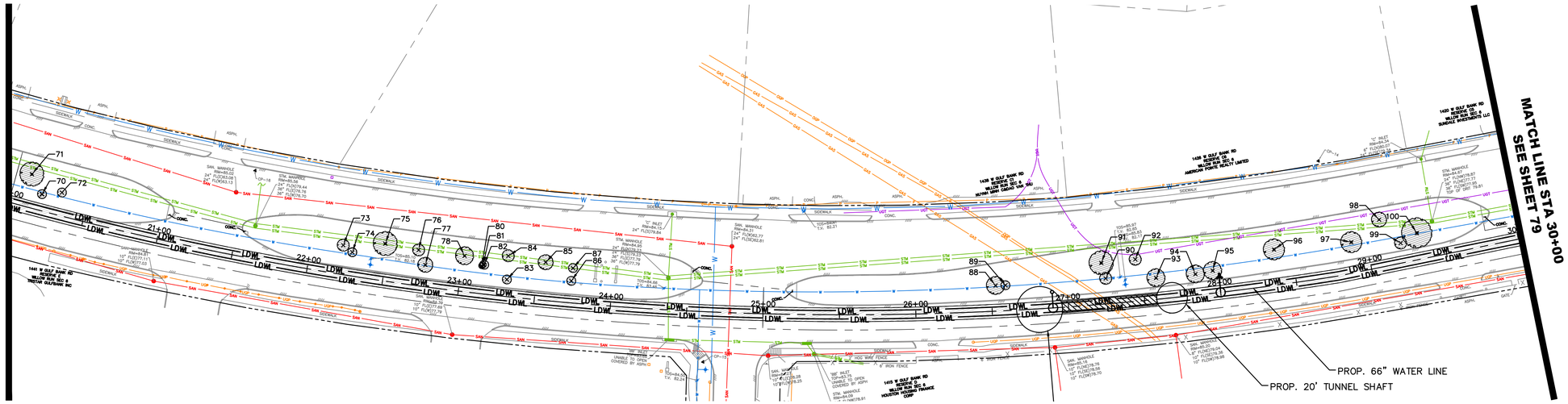
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd
TREE PROTECTION PLAN
STA 10+00 TO STA 20+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
1" = 40' H	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 77 OF 91	

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NORTH

GRAPHIC SCALE IN FEET
0 20 40 80

SCALE: 1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

EX. TREE TO BE PROTECTED

EX. TREE TO BE REMOVED

PROP. WORK ZONE

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TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
70	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
71	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
72	6" PINE	ORDINANCE TREE, TO BE PROTECTED	
73	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	ROOT PRUNING
74	6" SWEETGUM	ORDINANCE TREE, TO BE PROTECTED	
75	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
76	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
77	10" RED MAPLE	ORDINANCE TREE, TO BE PROTECTED	
78	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
80	4" SWEETGUM	ORDINANCE TREE, TO BE PROTECTED	
81	4" SWEETGUM	ORDINANCE TREE, TO BE PROTECTED	
82	6" SWEETGUM	ORDINANCE TREE, TO BE PROTECTED	
83	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
84	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
85	10" PINE	ORDINANCE TREE, TO BE PROTECTED	
86	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
87	6" SWEETGUM	ORDINANCE TREE, TO BE PROTECTED	
88	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
89	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
90	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	ROOT PRUNING
91	16" OAK	ORDINANCE TREE, TO BE PROTECTED	ROOT PRUNING
92	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	

TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
93	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
94	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
95	12" OAK	ORDINANCE TREE, TO BE PROTECTED	ROOT PRUNING
96	14" OAK	ORDINANCE TREE, TO BE PROTECTED	ROOT PRUNING
97	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
98	10" PINE	ORDINANCE TREE, TO BE PROTECTED	
99	8" OAK	ORDINANCE TREE, TO BE PROTECTED	
100	20" OAK	ORDINANCE TREE, TO BE PROTECTED	

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KIMLEY–HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597–9300
TBPE FIRM REGISTRATION F–928

SURVEYED BY: LANDTECH, INC.
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CITY OF HOUSTON

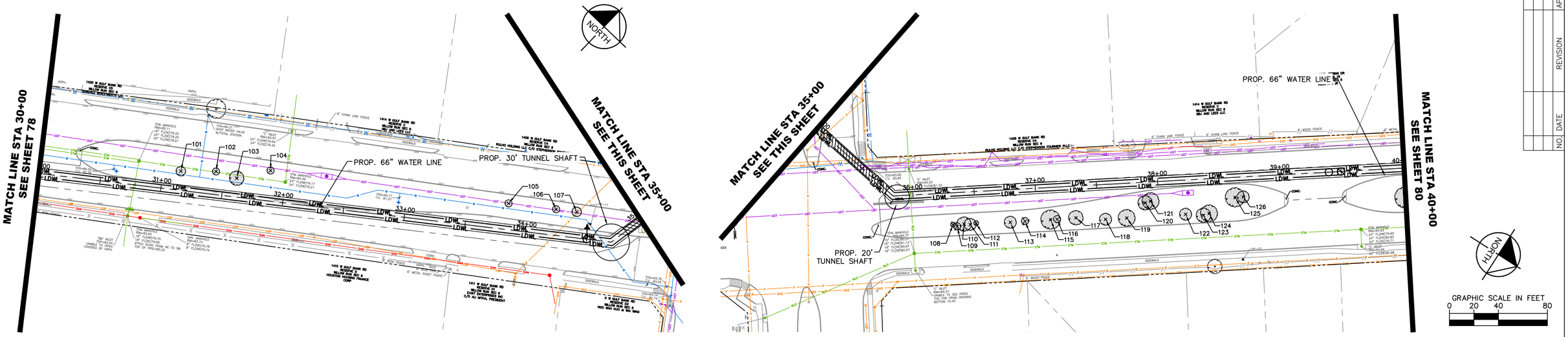
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

TREE PROTECTION PLAN
STA 20+00 TO STA 30+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
1" = 40' H	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 78 OF 91	

PLOTTED: 8/1/2025 11:18 AM
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LEGEND:

EX. TREE TO BE PROTECTED

EX. TREE TO BE REMOVED

PROP. WORK ZONE

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TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
101	8" OAK	ORDINANCE TREE, TO BE PROTECTED	
102	6" SWEETGUM	ORDINANCE TREE, TO BE PROTECTED	
103	12" PINE	ORDINANCE TREE, TO BE PROTECTED	ROOT PRUNING
104	6" OAK	ORDINANCE TREE, TO BE PROTECTED	
105	6" ELM	ORDINANCE TREE, TO BE PROTECTED	
106	6" SWEETGUM	ORDINANCE TREE, TO BE PROTECTED	
107	8" ELM	ORDINANCE TREE, TO BE PROTECTED	
108	4" TREE	ORDINANCE TREE, TO BE PROTECTED	
109	6" TREE	ORDINANCE TREE, TO BE PROTECTED	
110	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
111	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
112	4" TREE	ORDINANCE TREE, TO BE PROTECTED	
113	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
114	6" TREE	ORDINANCE TREE, TO BE PROTECTED	
115	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
116	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
117	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
118	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
119	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
120	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
121	14" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
122	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
123	12" OAK	ORDINANCE TREE, TO BE PROTECTED	

TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
124	14" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
125	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
126	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	

NO.	DATE	REVISION	APP.

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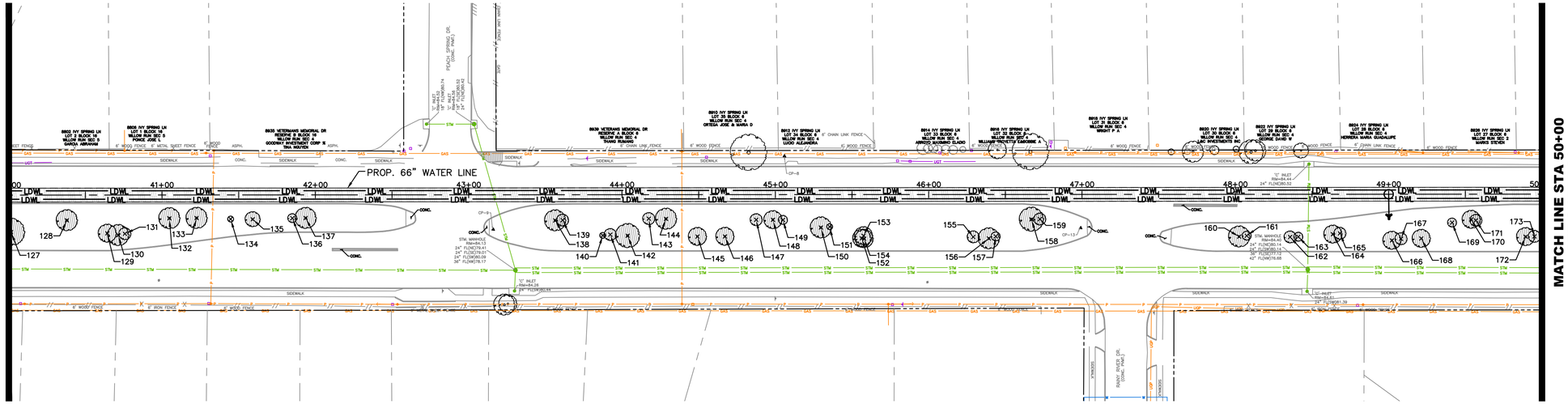
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HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd
TREE PROTECTION PLAN
STA 30+00 TO STA 40+00

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CITY OF HOUSTON PM	
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NO.	DATE	REVISION	APP.

LEGEND:

EX. TREE TO BE PROTECTED

EX. TREE TO BE REMOVED

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TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
127	18" OAK	ORDINANCE TREE, TO BE PROTECTED	
128	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
129	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
130	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
131	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
132	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
133	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
134	4" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
135	10" OAK	ORDINANCE TREE, TO BE PROTECTED	
136	6" OAK	ORDINANCE TREE, TO BE PROTECTED	
137	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
138	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
139	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
140	(3) 4" OAK	ORDINANCE TREE, TO BE PROTECTED	
141	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
142	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
143	8" OAK	ORDINANCE TREE, TO BE PROTECTED	
144	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
145	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
146	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
147	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
148	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
149	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
150	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
151	4" MAPLE	ORDINANCE TREE, TO BE PROTECTED	

TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
152	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
153	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
154	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
155	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
156	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
157	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
158	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
159	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
160	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
161	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
162	8" OAK	ORDINANCE TREE, TO BE PROTECTED	
163	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
164	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
165	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
166	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
167	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
168	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
169	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
170	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
171	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
172	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
173	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	

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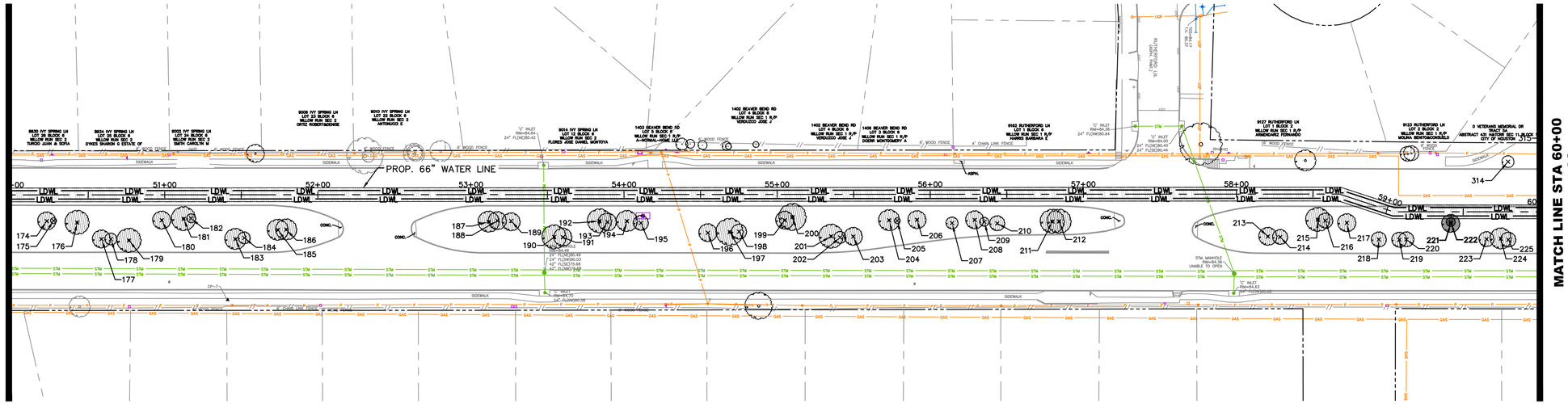
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66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd
TREE PROTECTION PLAN
STA 40+00 TO STA 50+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000900–0182–3	
DRAWING SCALE	
1" = 40' H	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 80 OF 91	

FILE PATH: K:\HOU_Utilities\0644028850_COH S–00900–0182–3 66in WL\09_CAD\03_Plan Sheets\C–Tree–Protection–Plan–2.dwg
PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:18 AM



GRAPHIC SCALE IN FEET
0 20 40 80

SCALE: 1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

EX. TREE TO BE PROTECTED

EX. TREE TO BE REMOVED

PROP. WORK ZONE

NOTES:

1. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING TREES AND PLANTS TO REMAIN FROM FOLIAGE, BRANCH, TRUNK, OR ROOT DAMAGE THAT COULD RESULT FROM CONSTRUCTION OPERATIONS.
2. SITE PREPARATION WORK AND/OR CONSTRUCTION WORK SHALL NOT BEGIN IN ANY AREA WHERE TREE PRESERVATION MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.
3. REFER TO SPECIFICATION 01562 FOR TYPES OF TREE AND PLANT DAMAGE TO PREVENT.
4. WHEN TREES OTHER THAN THOSE DESIGNATED FOR REMOVAL ARE DESTROYED OR DAMAGED AS A RESULT OF CONSTRUCTION OPERATIONS, REMOVE AND REPLACE WITH SAME SIZE, SPECIES, AND VARIETY UP TO AND INCLUDING 8" IN TRUNK DIAMETER. FOR TREES LARGER THAN 8", REFER TO SPECIFICATION 01562.
5. CONTRACTOR SHALL APPLY FOR PERMIT FROM THE CITY OF HOUSTON, URBAN FORESTRY DIVISION AND RECEIVE APPROVAL PRIOR TO REMOVAL OF ANY TREE NOT SCHEDULED FOR REMOVAL IN THE TREE TREATMENT SCHEDULE.

TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
174	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
175	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
176	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
177	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
178	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
179	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
180	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
181	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
182	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
183	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
184	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
185	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
186	14" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
187	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
188	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
189	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
190	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
191	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
192	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
193	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
194	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
195	10" OAK	ORDINANCE TREE, TO BE PROTECTED	
196	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
197	18" OAK	ORDINANCE TREE, TO BE PROTECTED	
198	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
199	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
200	18" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
201	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
202	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
203	12" OAK	ORDINANCE TREE, TO BE PROTECTED	

TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
204	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
205	4" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
206	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
207	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
208	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
209	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
210	10" OAK	ORDINANCE TREE, TO BE PROTECTED	
211	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
212	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
213	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
214	10" OAK	ORDINANCE TREE, TO BE PROTECTED	
215	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
216	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
217	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
218	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
219	10" OAK	ORDINANCE TREE, TO BE PROTECTED	
220	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
221	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
222	6" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
223	10" OAK	ORDINANCE TREE, TO BE PROTECTED	
224	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
225	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
314	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	

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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.

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SUITE 800 HOUSTON, TEXAS
77079
(281) 597–9300
TBPE FIRM REGISTRATION
F–928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352–007

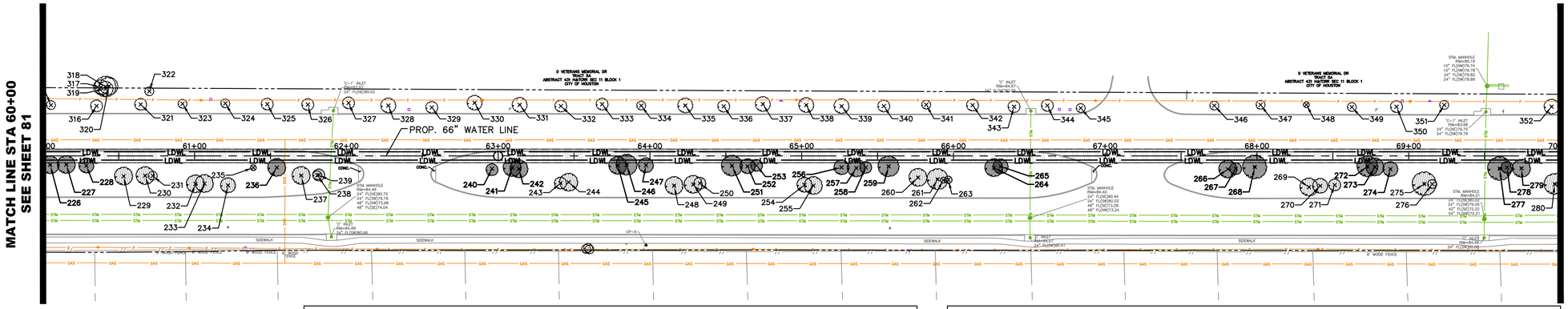
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FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd
TREE PROTECTION PLAN
STA 50+00 TO STA 60+00

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5. CONTRACTOR SHALL APPLY FOR PERMIT FROM THE CITY OF HOUSTON, URBAN FORESTRY DIVISION AND RECEIVE APPROVAL PRIOR TO REMOVAL OF ANY TREE NOT SCHEDULED FOR REMOVAL IN THE TREE TREATMENT SCHEDULE.

TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
226	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
227	12" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
228	10" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
229	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
230	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
231	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
232	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
233	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
234	10" OAK	ORDINANCE TREE, TO BE PROTECTED	
235	(3) 4" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
236	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
237	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
238	(2) 6" OAK	ORDINANCE TREE, TO BE PROTECTED	
239	8" OAK	ORDINANCE TREE, TO BE PROTECTED	
240	8" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
241	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
242	12" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
243	8" OAK	ORDINANCE TREE, TO BE PROTECTED	
244	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
245	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
246	14" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
247	10" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
248	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
249	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
250	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
251	14" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
252	10" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
253	8" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
254	10" OAK	ORDINANCE TREE, TO BE PROTECTED	
255	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
256	10" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
257	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
258	8" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
259	14" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
260	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	ROOT PRUNING
261	14" OAK	ORDINANCE TREE, TO BE PROTECTED	ROOT PRUNING
262	4" OAK	ORDINANCE TREE, TO BE PROTECTED	
263	5" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
264	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
265	10" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
266	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
267	8" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
268	16" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
269	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
270	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
271	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
272	14" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT

TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
273	12" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
274	10" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
275	16" OAK	ORDINANCE TREE, TO BE PROTECTED	
276	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
277	16" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
278	8" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
279	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
280	10" ELM	ORDINANCE TREE, TO BE PROTECTED	
315	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
316	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
317	10" SWEETGUM	ORDINANCE TREE, NOT IN WORK ZONE	
318	14" SWEETGUM	ORDINANCE TREE, NOT IN WORK ZONE	
319	10" SWEETGUM	ORDINANCE TREE, NOT IN WORK ZONE	
320	12" SWEETGUM	ORDINANCE TREE, NOT IN WORK ZONE	
321	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
322	6" SWEETGUM	ORDINANCE TREE, NOT IN WORK ZONE	
323	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
324	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
325	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
326	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
327	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
328	10" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
329	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
330	10" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
331	10" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
332	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
333	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
334	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
335	10" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
336	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
337	10" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
338	10" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
339	10" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
340	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
341	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
342	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
343	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
344	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
345	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
346	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
347	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
348	4" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
349	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
350	8" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
351	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
352	10" ELM	ORDINANCE TREE, NOT IN WORK ZONE	

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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 be used for conflict verification.

Signature valid for six months.

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

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SUITE 800 HOUSTON, TEXAS 77009
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TBPE FIRM REGISTRATION F–928

SURVEYED BY: LANDTECH, INC.
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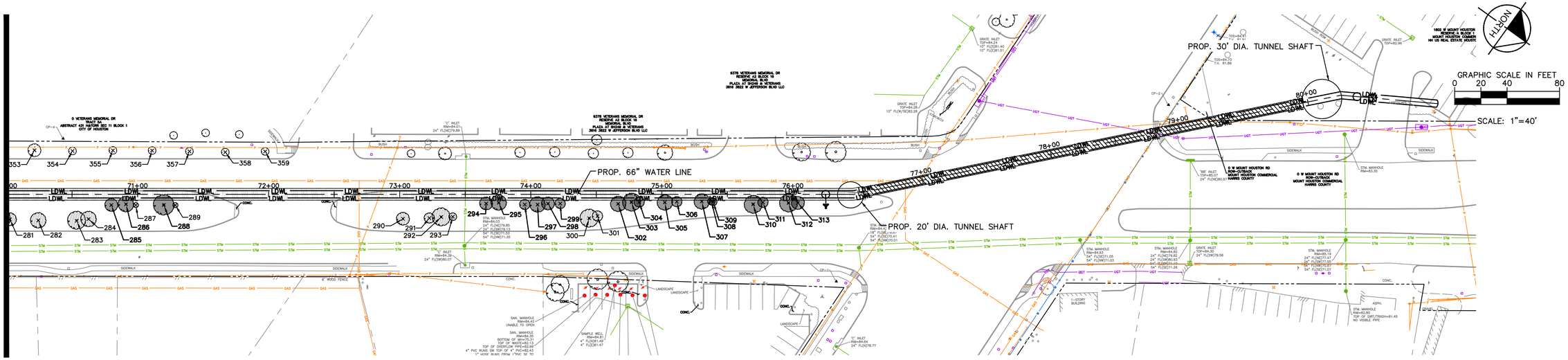
PRELIMINARY
FOR REVIEW ONLY NOT FOR CONSTRUCTION OR PERMIT PURPOSES.
Kimley»Horn
Engineer STEPHEN J. KELLY, P.E.
P.E. No. 127482
Date 07/18/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd
TREE PROTECTION PLAN
STA 60+00 TO STA 70+00

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PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:19 AM
FILE PATH: K:\HOU_Utilities\064402850_COH S-000900-0182-3 66in WL\09_CAD\03_Plan Sheets\C-Tree-Protection-Plan-2.dwg



LEGEND:

EX. TREE TO BE PROTECTED

EX. TREE TO BE REMOVED

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TREE PROTECTION PLAN

TREE NO.	DESCRIPTION	COMMENTS	TREATMENT
281	10" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
282	12" OAK	ORDINANCE TREE, TO BE PROTECTED	
283	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
284	12" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
285	10" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
286	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
287	4" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
288	16" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
289	4" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
290	10" OAK	ORDINANCE TREE, TO BE PROTECTED	
291	8" OAK	ORDINANCE TREE, TO BE PROTECTED	
292	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
293	6" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
294	10" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
295	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
296	8" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
297	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
298	10" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
299	8" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
300	14" OAK	ORDINANCE TREE, TO BE PROTECTED	
301	8" MAPLE	ORDINANCE TREE, TO BE PROTECTED	
302	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
303	14" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
304	8" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
305	12" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT

TREE PROTECTION PLAN

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308	6" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
309	6" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
310	14" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
311	8" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
312	14" OAK	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
313	10" MAPLE	ORDINANCE TREE, REMOVE FOR WORK ZONE	REMOVE TREE, REPLACE OR CREDIT
353	10" ELM	ORDINANCE TREE, NOT IN WORK ZONE	
354	6" TRUNK	ORDINANCE TREE, NOT IN WORK ZONE	
355	6" ELM	ORDINANCE TREE, NOT IN WORK ZONE	

NO.	DATE	REVISION	APP.

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PLOT STYLE: Coh_ctb_230809.ctb PLOTTED: 8/1/2025 11:19 AM

STANDARD SWPPP GENERAL NOTES:

1. CONTRACTOR SHALL IMPLEMENT PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND ROADSIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION PLAN (SWPPP) TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND THEN POLLUTING THE RECEIVING STORM SEWER SYSTEM.

2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACT SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENT OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.

3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTION AND DRIVEWAYS DAILY 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 EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS AT THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

   - DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN PERMANENTLY 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 RESPONSIBLE FOR MAINTAINING UNOBSTRUCTED DRAINAGE TO EXISTING DITCHES AND CULVERTS AT ALL TIMES. DISTURBED AREAS BY EXCAVATION AND OR BACKFILLING OPERATIONS SHALL BE PERMANENTLY STABILIZED BY HYDRO-MULCH OR BLOCK SODDING. ROADSIDE DITCH SLOPES STEEPER THAN 4:1 SHALL BE REPLACED BY BLOCK SODDING.

7. SETTLEMENT TANKS SHALL BE PROVIDED FOR ALL DISCHARGE WATER.

8. CONTRACTOR SHALL ONLY USE DESIGNATED CONSTRUCTION ACCESS AND EXIT POINTS FOR ALL THEIR EQUIPMENT.

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5engineering
11200 WESTHEIMER ROAD, SUITE 353
HOUSTON, TEXAS 77042
(832) 800-3483 | www.5engineering.com
TBPE FIRM NO. F-13748

KIMLEY-HORN AND ASSOCIATES, INC
11700 KATY FREEWAY
SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

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JUAN A. RAMIREZ HERNANDEZ, P.E.
TEXAS P.E. NO 145241
DATE: 08/01/2025

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CITY OF HOUSTON

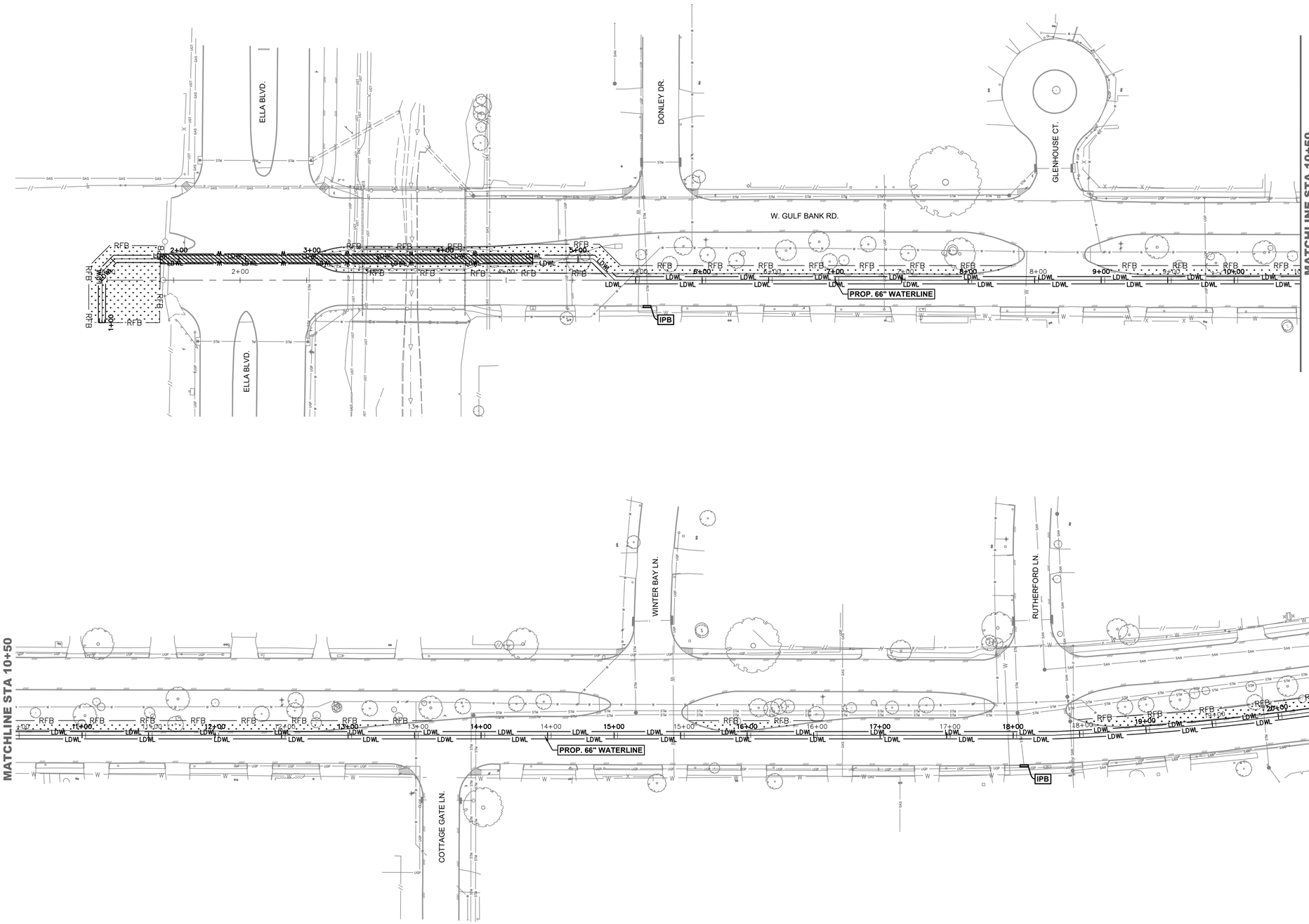
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

SWPPP GENERAL NOTES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 84 OF 91	

PLOTTED: 8/1/2025 8:08 AM
PLOT STYLE: COH.ctb
FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\SWPPP Notes Sheet.dwg



40 0 20 40 80

1" = 40'

NO.	DATE	REVISION	APP.

LEGEND:

RFB — REINFORCED FILTER FABRIC BARRIER (RFB)

HYDROMULCH SEEDING

NOTES:

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CAUTION!!!
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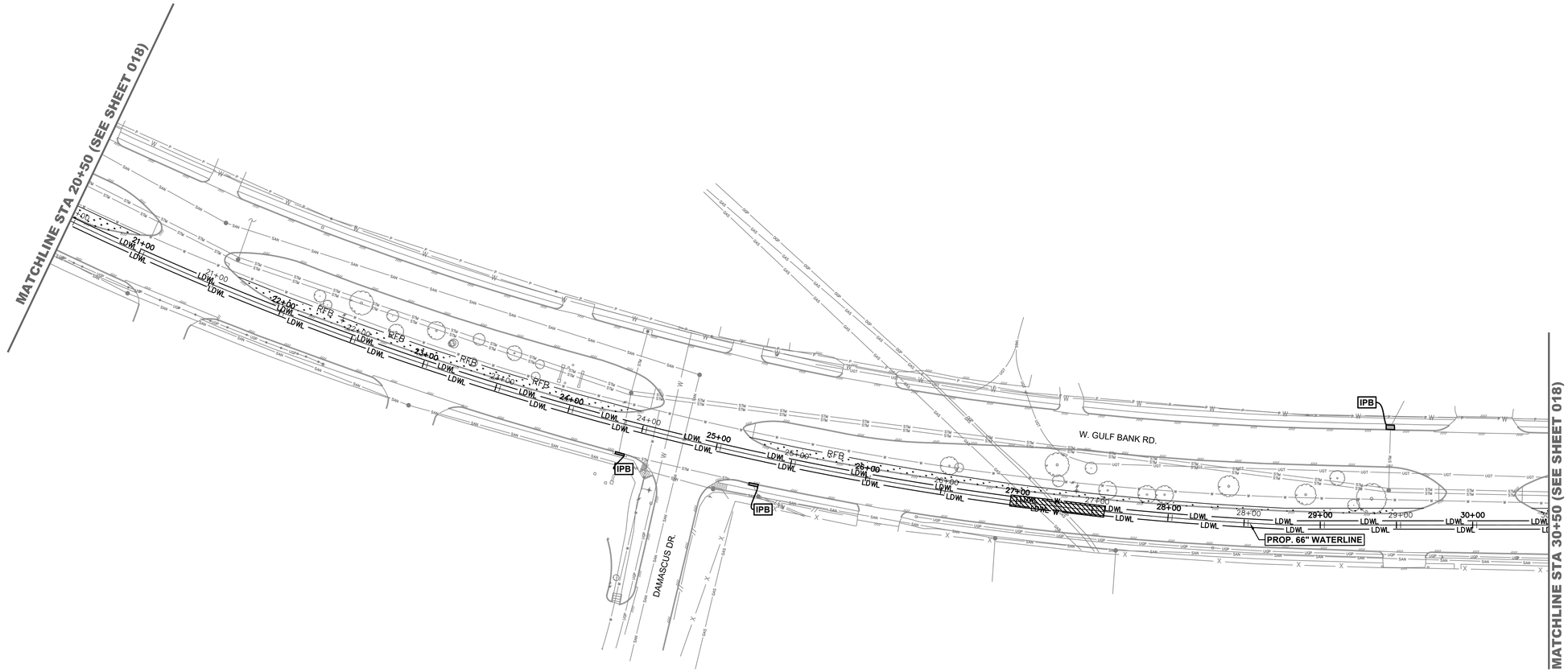
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

STA 1+00 to STA 20+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
1" = 40' H	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 85 OF 91	

PLOTTED: 8/1/2025 8:03 AM
PLOT STYLE: COH.ctb
FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\SWPPP.dwg



40 0 20 40 80

1" = 40'

NO.	DATE	REVISION	APP.

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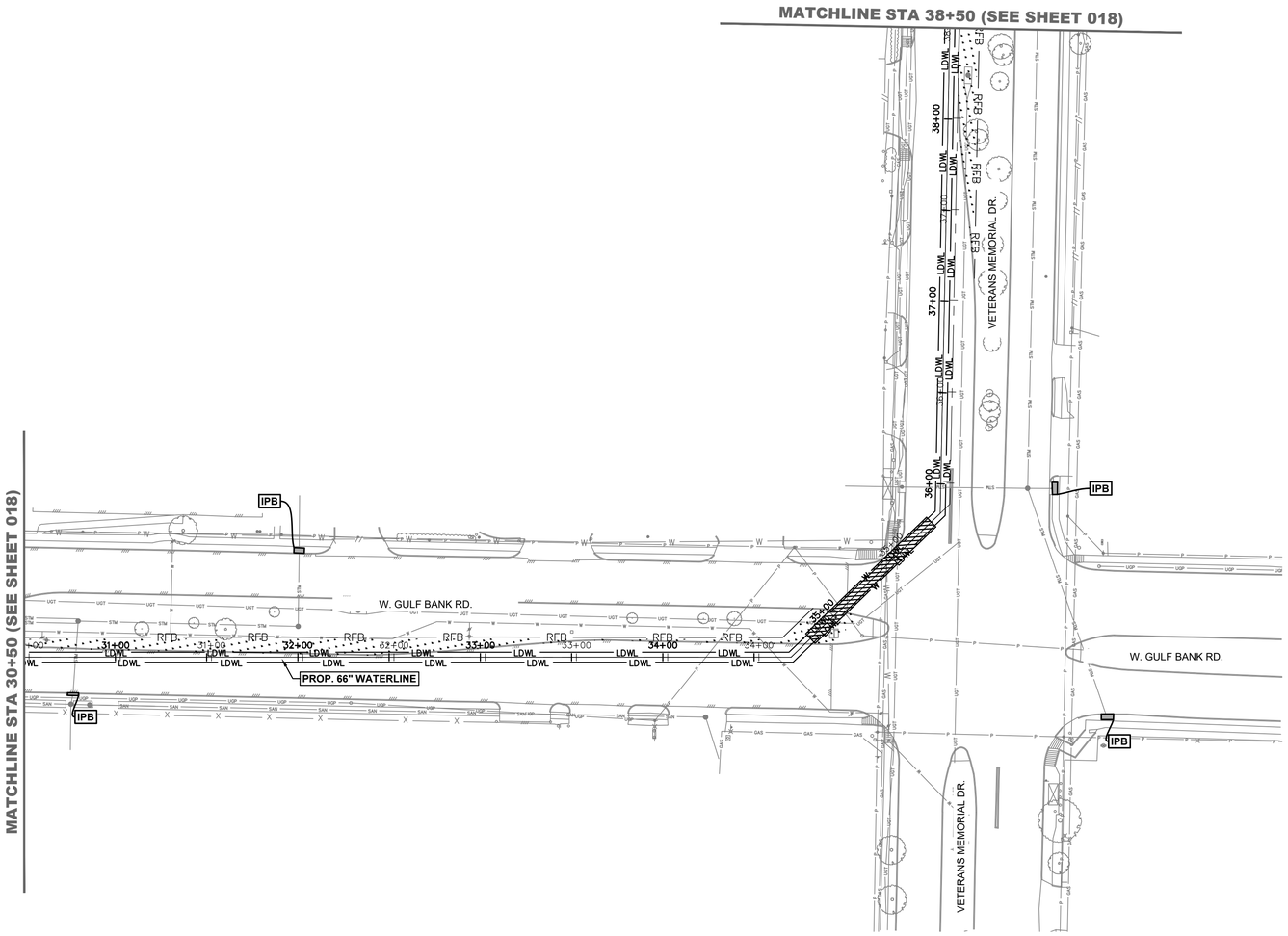
HOUSTON PUBLIC WORKS

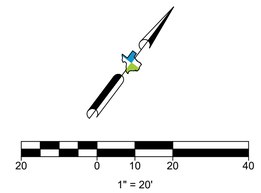
66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

STA 20+50 to STA 30+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
1" = 40' H	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 86 OF 91	

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HYDROMULCH SEEDING

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CITY OF HOUSTON

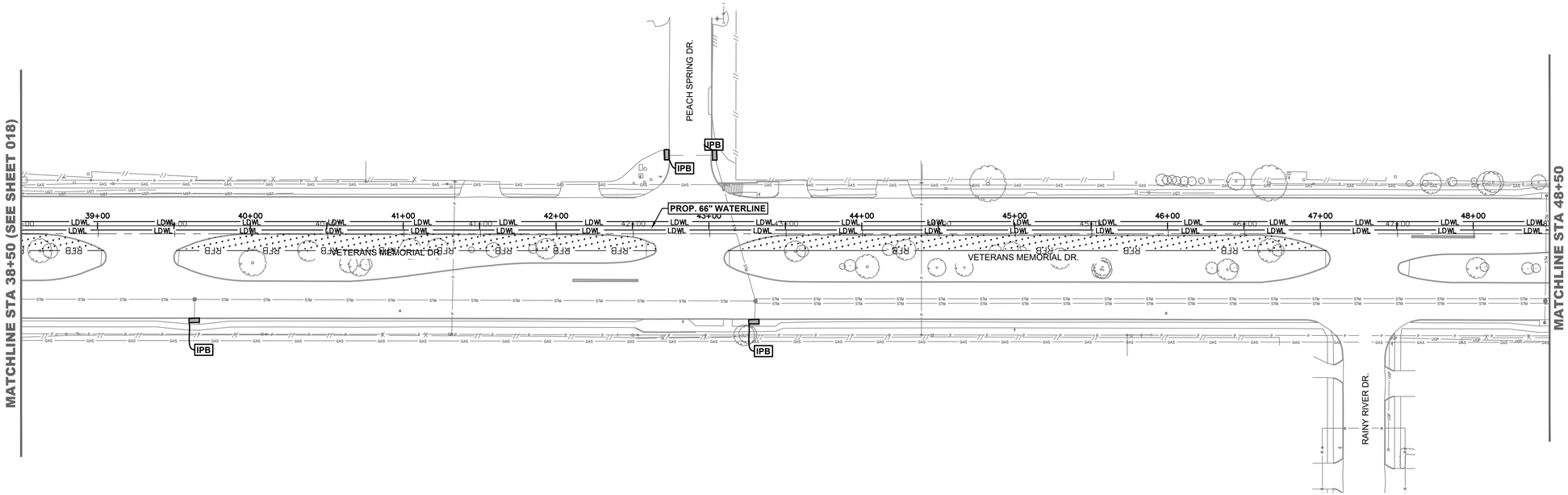
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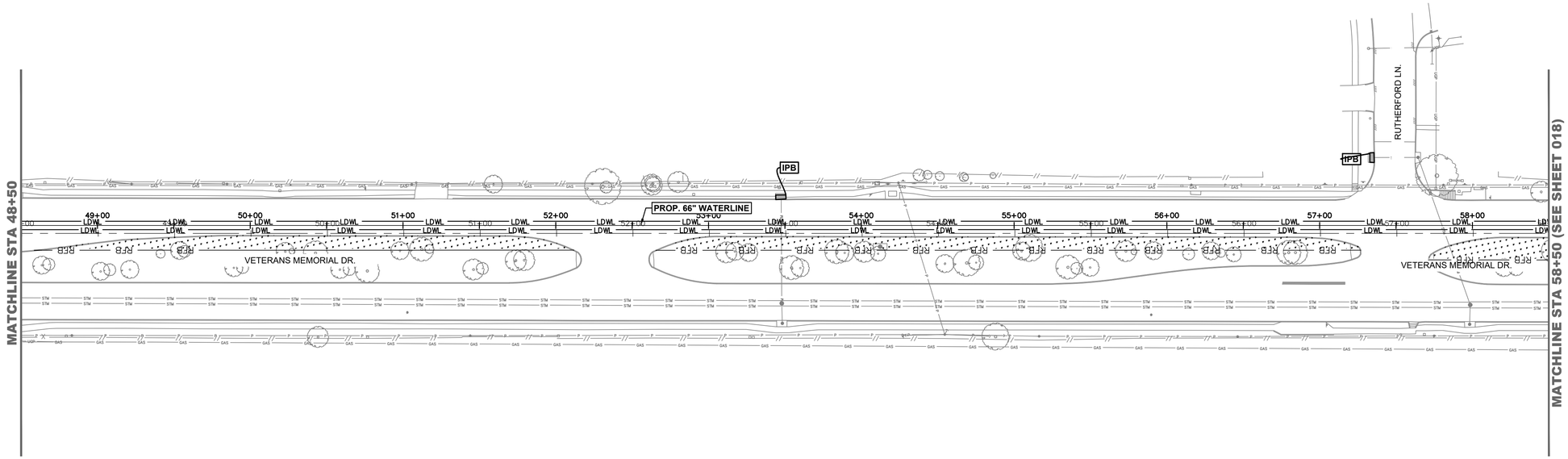
66–Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX–249 to Ella Blvd

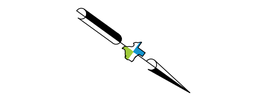
STA 30+50 to STA 38+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 87 OF 91	

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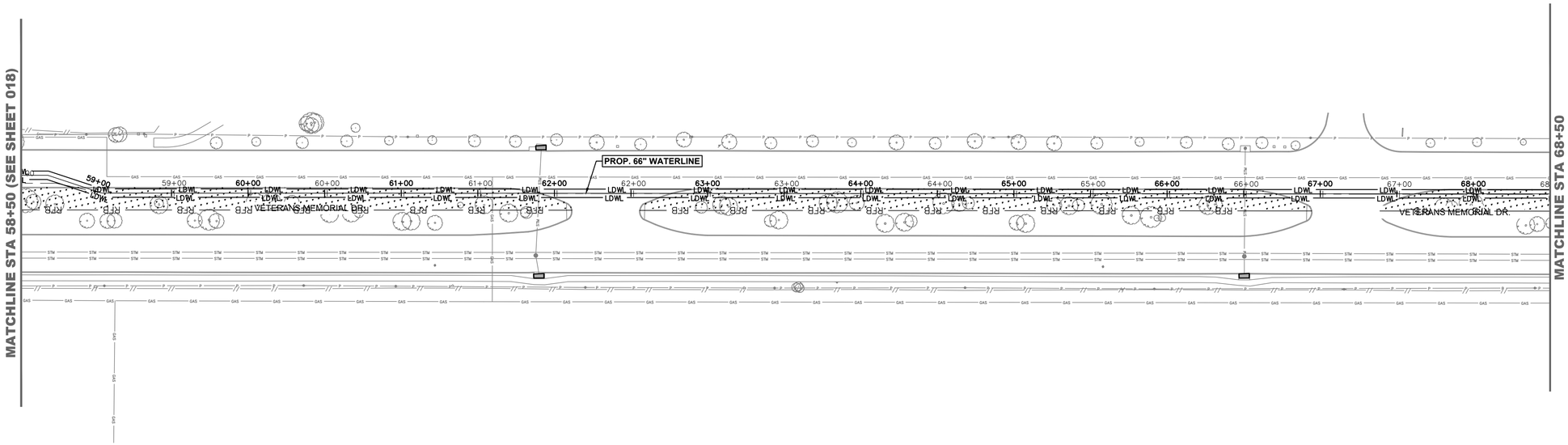
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

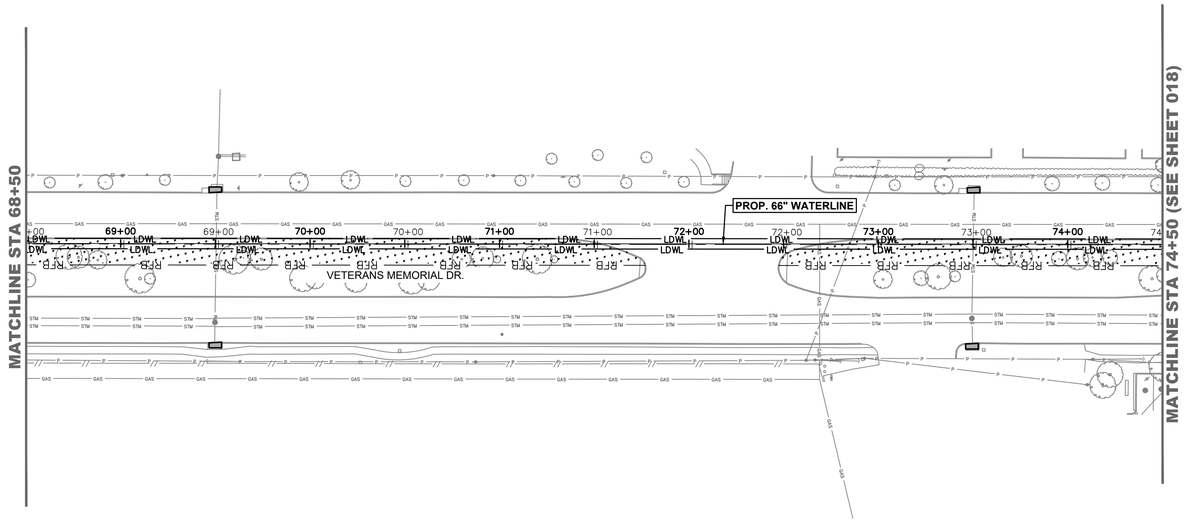
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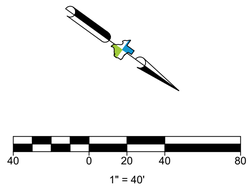
STA 38+50 to STA 58+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
1" = 40' H	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 88 OF 91	

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FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\SWPPP.dwg







NO.	DATE	REVISION	APP.

RFB —— REINFORCED FILTER FABRIC BARRIER (RFB)

HYDROMULCH SEEDING

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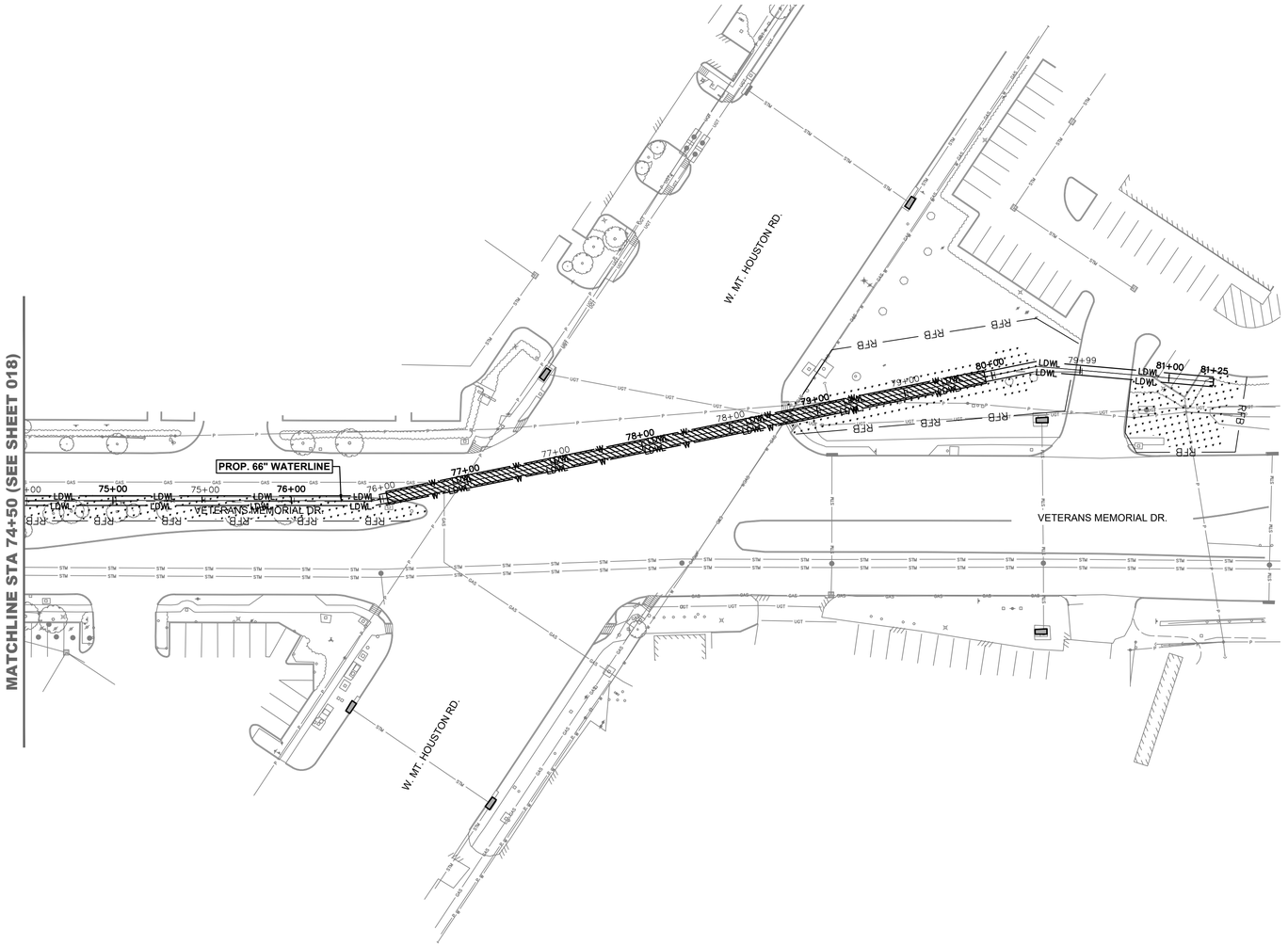
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

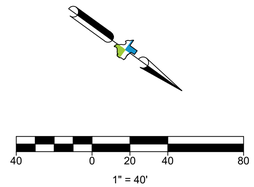
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STA 58+50 to STA 74+50

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DRAWING SCALE	
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CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 89 OF 91	

PLOTTED: 8/1/2025 8:04 AM
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FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\SWPPP.dwg





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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

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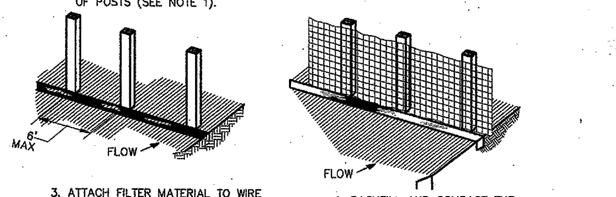
STA 74+50 to END

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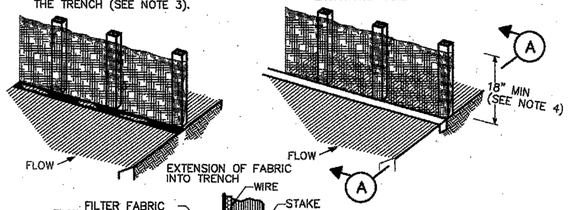
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PLOT STYLE: COH.ctb

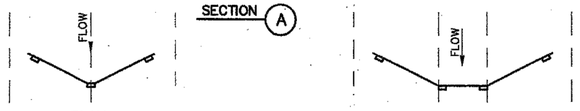
1. SET POSTS AND EXCAVATE 4"x4" TRENCH UPSLOPE ALONG LINE OF POSTS (SEE NOTE 1).
2. SECURE WIRE REINFORCING TO POSTS (SEE NOTE 2).



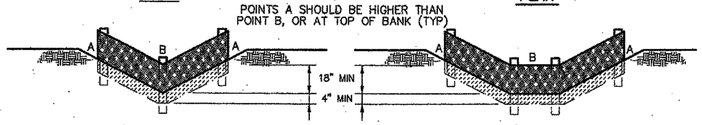
3. ATTACH FILTER MATERIAL TO WIRE REINFORCING AND EXTEND IT INTO THE TRENCH (SEE NOTE 3).
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



SECTION (A)



POINTS A SHOULD BE HIGHER THAN POINT B, OR AT TOP OF BANK (TYP)



"V-DITCH" SECTION/ELEVATION — TRAPEZOIDAL SECTION/ELEVATION

CONSTRUCTION NOTES:

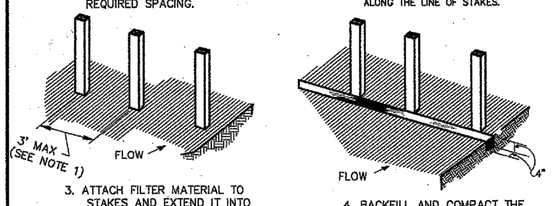
1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.



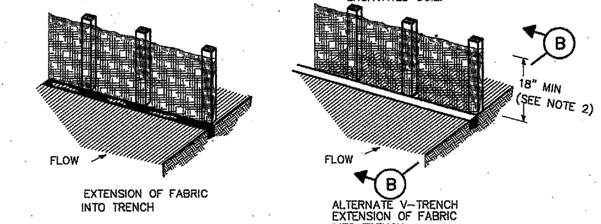
SYMBOL

REINFORCED FILTER FABRIC BARRIER

1. SET POSTS AT REQUIRED SPACING.
2. EXCAVATE A 4"x4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.



3. ATTACH FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



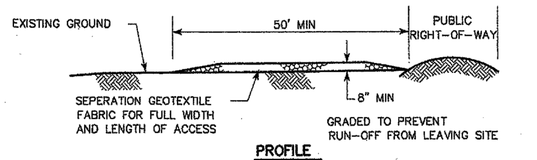
CONSTRUCTION NOTES:

1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

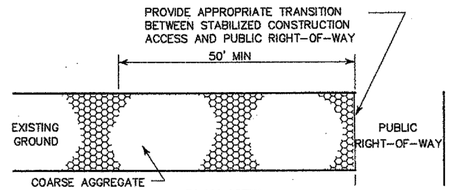


SYMBOL

FILTER FABRIC BARRIER



PROFILE



PLAN VIEW

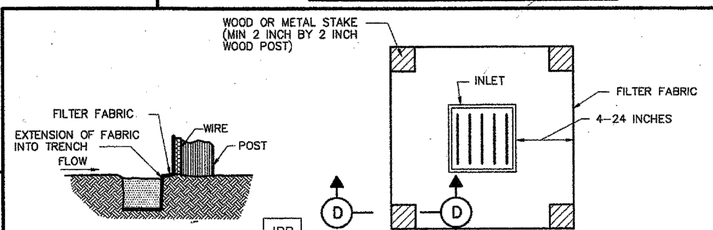
CONSTRUCTION NOTES:

1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION ACCESS, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE WASHING AREA.
6. COH STANDARD SPECIFICATION FOR STABILIZED CONSTRUCTION ACCESS.
7. STABILIZED CONSTRUCTION ACCESS SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.



SYMBOL

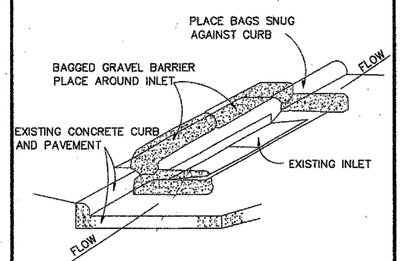
STABILIZED CONSTRUCTION ACCESS



SILT FENCE INLET PROTECTION BARRIER

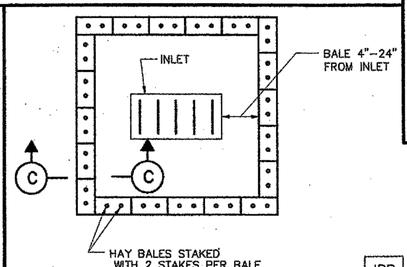
CONSTRUCTION NOTE:

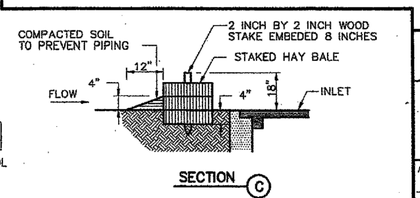
1. SEE CONSTRUCTION NOTES FOR RFB.



INLET PROTECTION BARRIER

(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER





HAY BALE INLET PROTECTION BARRIER

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS

(NOT TO SCALE)

APPROVED	APPROVED
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 01571-01

NO.	DATE	REVISION	APP.

5engineering
11200 WESTHEIMER ROAD, SUITE 353
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(832) 800-3483 | www.5engineering.com
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SUITE 800 HOUSTON, TEXAS 77009
(281) 597-9300
TBPE FIRM REGISTRATION F-928

SURVEYED BY: LANDTECH, INC.
FB NO. 2352-007

FOR INTERIM REVIEW ONLY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF
JUAN A. RAMIREZ HERNANDEZ, P.E.
TEXAS P.E. NO 145241
DATE: 08/01/2025
IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

66-Inch Waterline Along Veteran Memorial Drive and West Gulf Bank Rd, From TX-249 to Ella Blvd

SWPPP STANDARD DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000900-0182-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
HIMAL PANGENI, P.E.	
SHEET NO. 91 OF 91	

FILE PATH: P:\0104\001 66-inch\02 Design\Drawings\DWG\SHEETS\SWPPP Details.dwg