

CITY OF HOUSTON

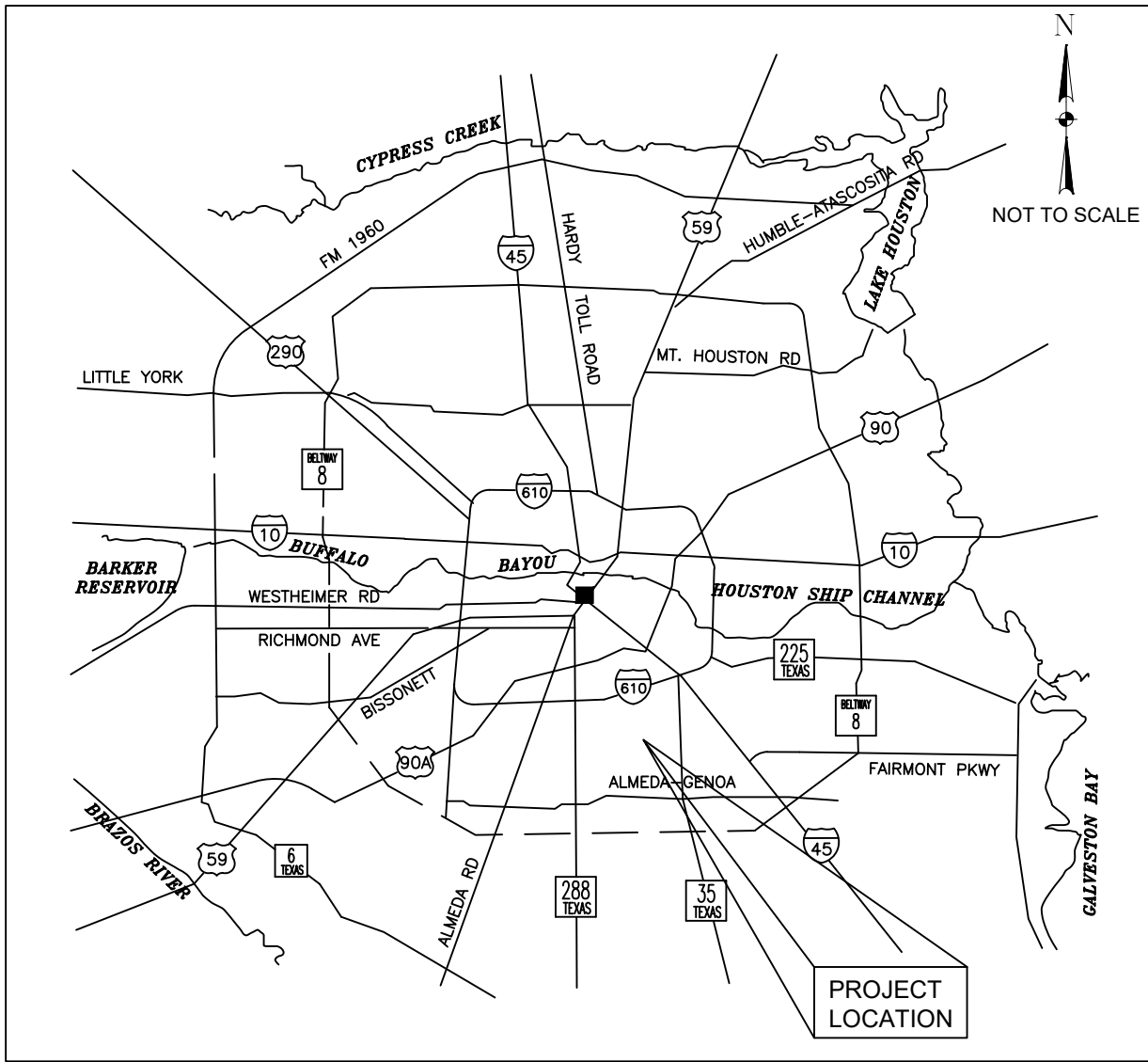
HOUSTON PUBLIC WORKS / CAPITAL PROJECTS

24-INCH WATER LINE

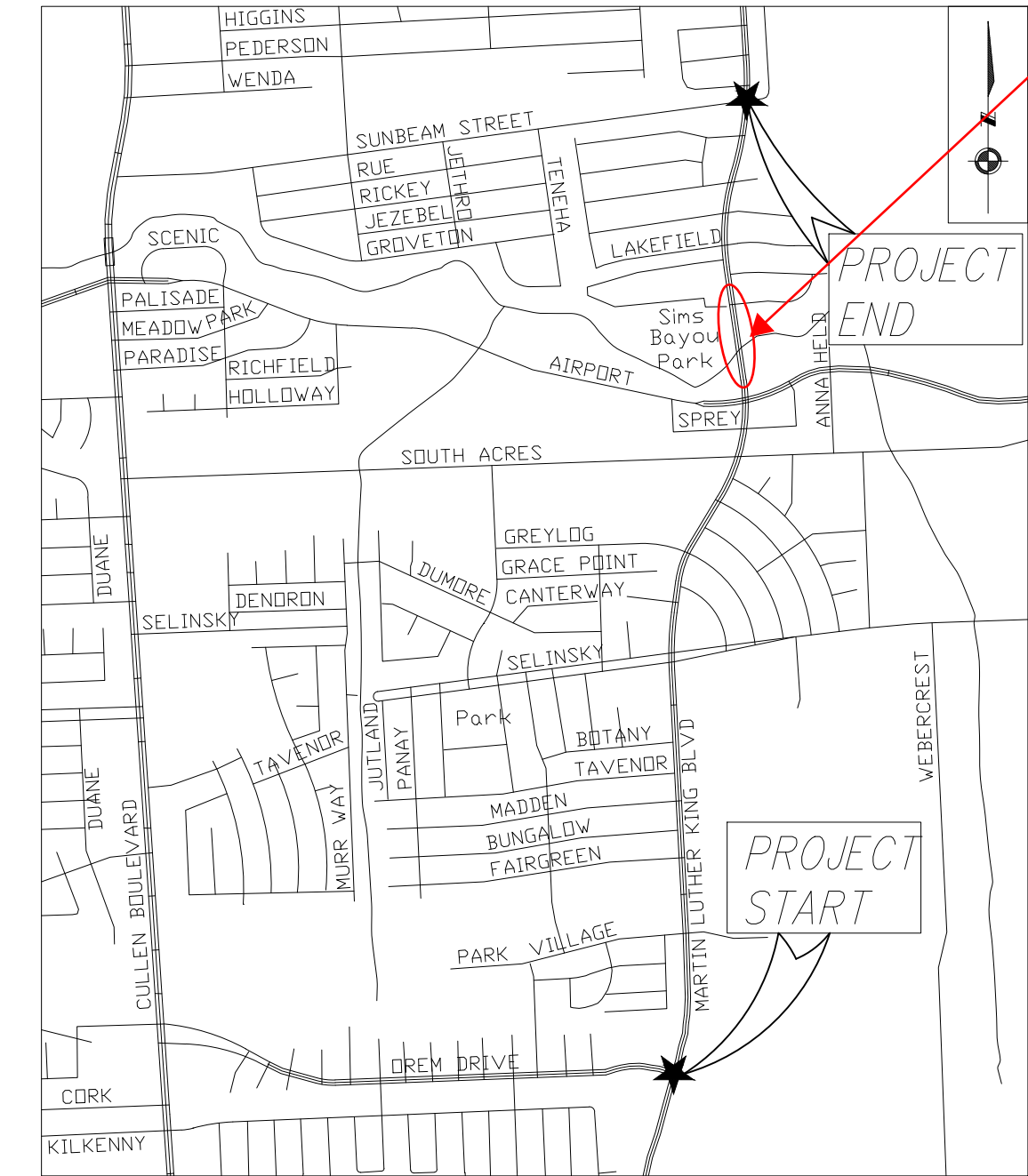
FROM SUNBEAM ST. TO EAST OREM DR.

ALONG MARTIN LUTHER KING BLVD.

WBS NO. S-000900-0139-3



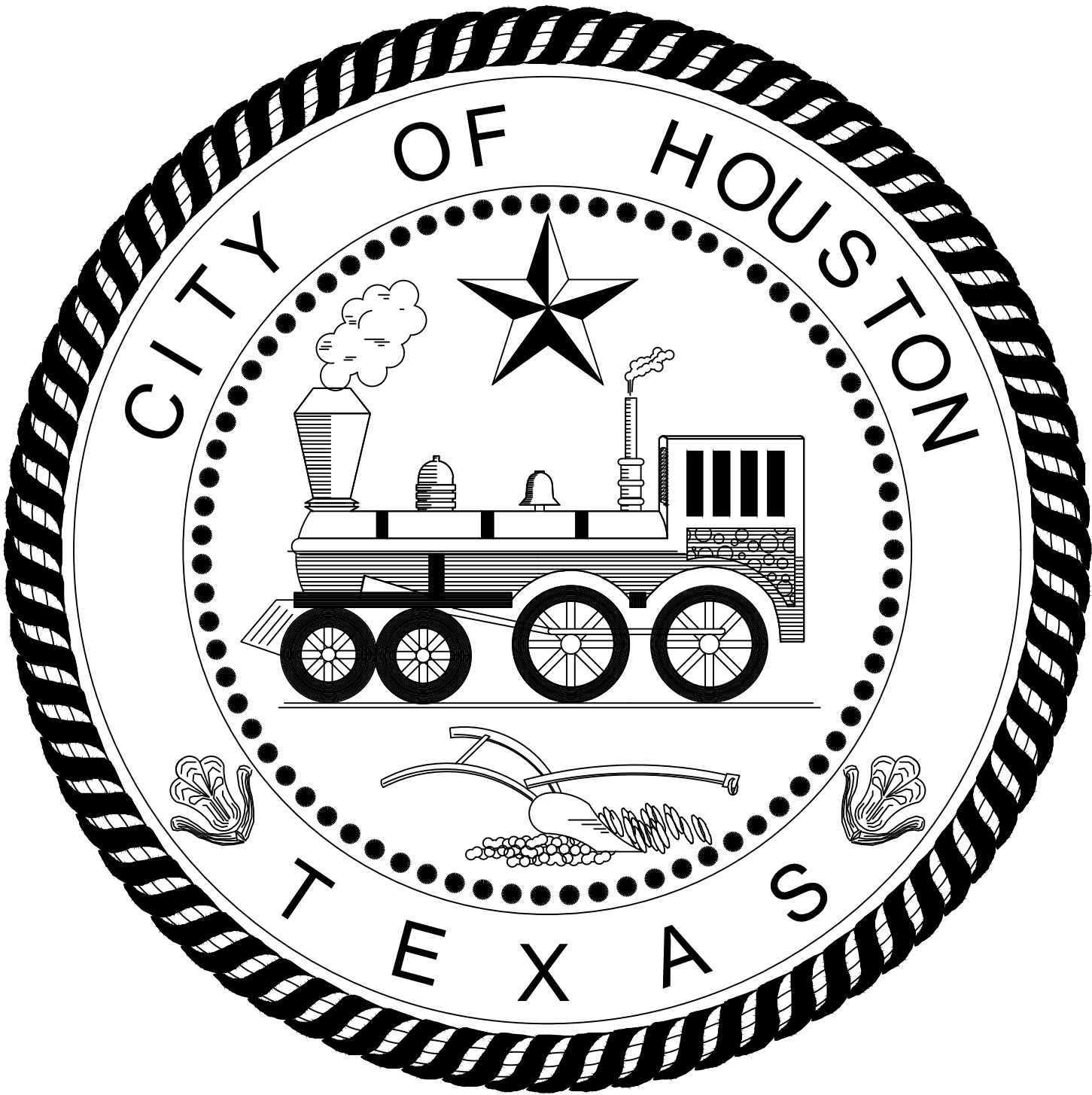
LOCATION MAP



VICINITY MAP  
NTS

KEY MAP NO 573M, 573R, 574N, 574P  
COUNCIL DISTRICT D

TDLR EABPR NA



MAYOR  
SYLVESTER TURNER

CONTROLLER  
CHRIS BROWN

DISTRICT  
COUNCIL MEMBERS

AMY PECK DISTRICT A	TARSHA JACKSON DISTRICT B	ABBIE KAMIN DISTRICT C	CAROLYN EVANS-SHABAZZ DISTRICT D
DAVID MARTIN DISTRICT E	TIFFANY D. THOMAS DISTRICT F	MARY NAN HUFFMAN DISTRICT G	KARLA CISNEROS DISTRICT H
ROBERT GALLEGOS DISTRICT I	EDWARD POLLARD DISTRICT J	MARTHA CASTEX-TATUM DISTRICT K	

THIS PROJECT CONTAINS  
A TOTAL OF 207 PAGES

COUNCIL MEMBERS  
AT-LARGE

MIKE KNOX POSITION 1	DAVID ROBINSON POSITION 2
MICHAEL KUBOSH POSITION 3	LETITIA PLUMMER POSITION 4
SALLIE ALCORN POSITION 5	

NO.	DATE	REVISION	APP.
DESIGN ENGINEER NAME KCI TECHNOLOGIES		DENIS ATWOOD	
ADDRESS		801 TRAVIS STREET, SUITE 2000	
TELEPHONE NUMBER		713-237-9800	
TX FIRM NUMBER		TBPE 10573	
SURVEYED BY: UNITED ENGINEERS, INC			
FB NO.			
PARKS-FORESTRY DEPT.			
METRO			
HOUSTON WATER			
TRANSPORTATION & DRAINAGE OPERATIONS			
CAPITAL PROJECTS		SURVEY	
CITY ENGINEER		DATE	
DIRECTOR OF HOUSTON PUBLIC WORKS		DATE	
SHEET NO 01 OF 194 SHEETS		FOR CITY OF HOUSTON USE ONLY	



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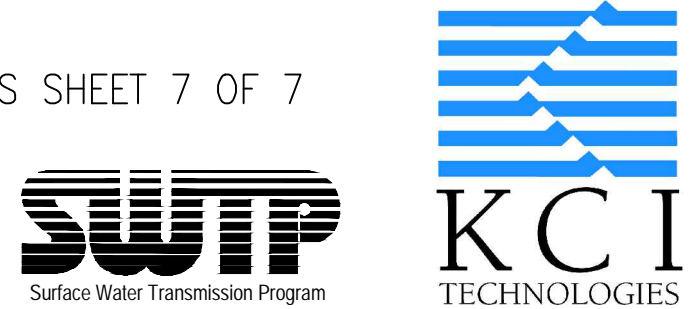
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THIS PROJECT CONTAINS  
A TOTAL OF 207 PAGES



DENIS ATWOOD

 KCI TECHNOLOGIES

KCI ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS

801 TRAVIS STREET, SUITE 2000

HOUSTON, TEXAS 77002

713-237-9800


TBPE REGISTRATION NO. F-10573

www.kci.com

SURVEYED BY:

UNITED ENGINEERS, INC.

C.O.H. FIELD BOOK



JULY 7, 2023

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST. TO EAST OREM DR. ALONG MARTIN LUTHER KING BOULEVARD

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WBS NO.  
S-000900-0139-3

DRAWING SCALE

NONE

CITY OF HOUSTON PM

SINGARPAL SEKHON, P.E.

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No.	Date	Revisions	App.	

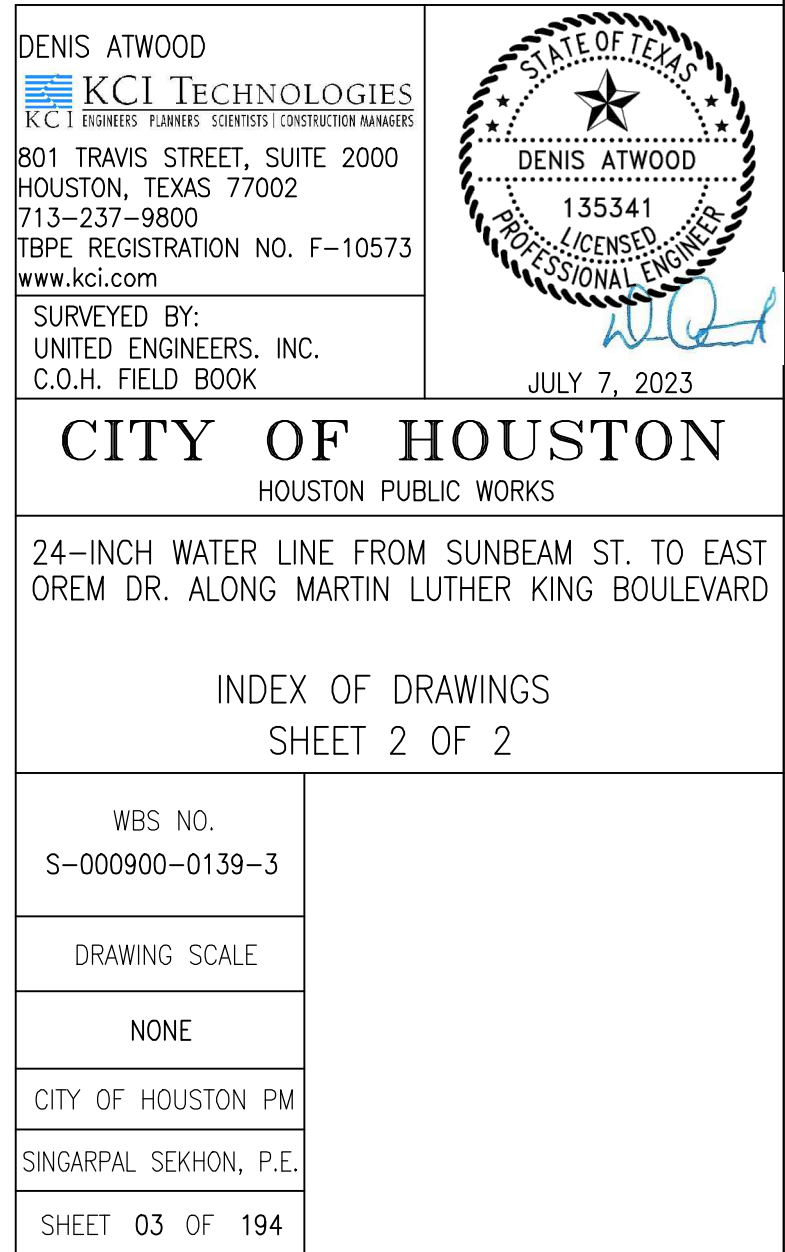
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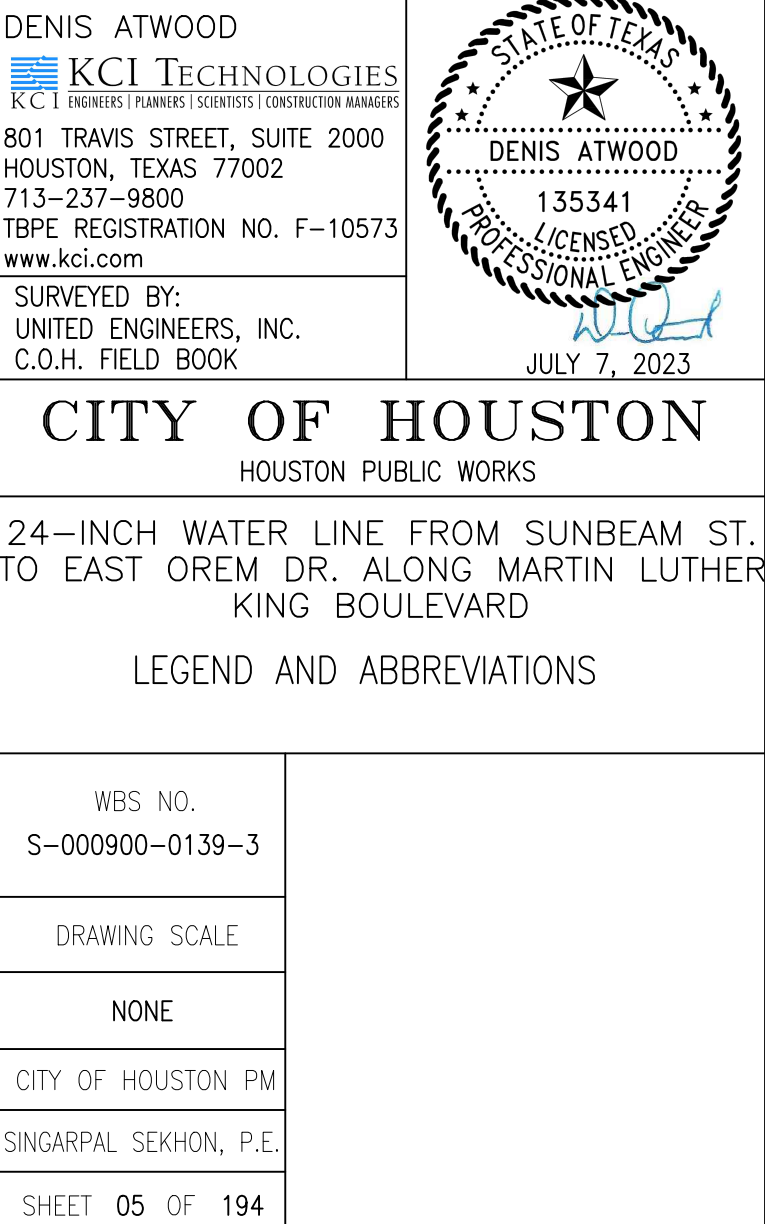
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No.	Date	Revisions	App.		





GENERAL NOTES

1. LARGE DIAMETER WATER LINE SHALL BE STEEL PIPE UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
2. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING, AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTIONS SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING PUBLISHED BY THE CITY OF HOUSTON, HOUSTON PUBLIC WORKS.
3. THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT WAS CONDUCTED IN ACCORDANCE WITH CHAPTER 11 OF THE LATEST EDITION OF THE PUBLICATION INFRASTRUCTURE DESIGN MANUAL, PUBLISHED BY THE CITY OF HOUSTON, HOUSTON PUBLIC WORKS. SOILS REPORT WAS PREPARED BY GEOTEST ENGINEERING REPORT NO. 1140266901, DATED FEB 8, 2022.
4. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 800-245-4545/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-545-6005 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. UTILITIES MARKED WITHIN THE PUBLIC RIGHT-OF-WAY OR IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, SECTION 18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF HOUSTON, HOUSTON PUBLIC WORKS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEM, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING, REFERENCED ABOVE, AT NO ADDITIONAL COST.
6. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, HOUSTON PUBLIC WORKS AT 832-394-9098 OR 832-394-9137 FOR INSPECTION AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
7. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER.
8. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG AREAS OF EXCAVATION.
9. CONTRACTOR SHALL COMPLY WITH THE LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.
10. CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS RECORDING AS-BUILT CONDITIONS DURING CONSTRUCTION, THESE REDLINE MARKED UP DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.
11. THIS PROJECT SHALL BE BUILT BY MEANS OF OPEN CUT EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATION OF BORE PITS IN FIELD FOR TRENCHLESS CONSTRUCTION. LOCATION OF BORE PITS ARE SUBJECT TO THE CITY ENGINEER'S APPROVAL.
12. THE SIZES OF WATER METERS SHOWN BUT NOT SPECIFICALLY CALLED OUT IN THE PROJECT ARE LESS THAN 2.0 INCH OR SMALLER STANDARD CITY OF HOUSTON WATER METERS. ALL OTHER SIZES ARE SPECIFICALLY CALLED OUT ON THESE DRAWINGS.
13. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, PARKS AND RECREATION DEPARTMENT AT LEAST 48 HOURS PRIOR TO COMMENCING, IN ORDER FOR THEM TO SUSPEND OR RESCHEDULE MOWING OPERATION IN THE MEDIAN OF THE CONSTRUCTION ZONE AREA.

WATERLINE NOTES

1. ALL 4" THROUGH 12" WATERLINE TO BE AWWA C-900 PVC DR-18 BLUE PRESSURE RATED WATER MAIN WITH 2" AND SMALLER WATER SERVICE LINE TO BE CONTINUOUS TYPE K COPPER TUBING PER COH STANDARD SPECIFICATION 02503. ALL 4" THROUGH 54" DUCTILE IRON PIPE WATER LINES SHALL BE AWWA C151 WITH INSIDE LINING WITH AWWA C104 AND DOUBLE WRAPPED WITH 8-MIL POLYETHYLENE SHEETS.
2. CONCRETE THRUST BLOCKS SHALL BE PROVIDED AS NECESSARY TO PREVENT PIPE MOVEMENT. USE RESTRAINED JOINTS WHERE PREVENTING PIPE MOVEMENT IS NECESSARY DUE TO THRUST.
3. ALL WATER LINES UNDER PROPOSED OR FUTURE PAVING AND TO A POINT OF ONE (1) FOOT BACK OF PROPOSED OR FUTURE CURBS SHALL BE ENCASED IN BANK SAND TO 12" OVER PIPE AND BACKFILLED WITH CEMENT STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE.
4. ALL WATER LINE AND SEWER LINE CROSSINGS SHALL BE CONSTRUCTED PER CITY OF HOUSTON AND TCEQ REGULATIONS.
5. ALL WATER VALVES SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA C-500 AND SHALL BE OF THE RESILIENT SEAT TYPE.
6. ALL WATER LINES TO BE DISINFECTED IN CONFORMANCE WITH AWWA C-651 AND THE TEXAS STATE DEPARTMENT OF HEALTH. AT LEAST ONE BACTERIOLOGICAL SAMPLE SHALL BE COLLECTED FOR EVERY 1,000 LINEAR FEET OF WATER LINE AND SHALL BE REPEATED IF CONTAMINATION PERSISTS.
7. ALL BELOW GRADE VALVES SHALL BE GASKETED, HUB-END GATE VALVES WITH A CAST IRON BOX, EXCEPT WHERE FLANGES ARE CALLED OUT ON THE PLANS.
8. 4" THROUGH 12" FITTINGS SHALL BE CEMENT MORTAR LINED COMPACT DUCTILE IRON PRESSURE FITTINGS PER ANSI A21.53, OR PUSH ON FITTINGS PER ANSI A21.10 PRESSURE RATED AT 250 PSIG.
9. HYDROSTATIC TESTING: ALL WATER PIPE SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON CONSTRUCTION SPECIFICATIONS. TESTS ARE TO BE PERFORMED ON THE ENTIRE FOOTAGE OF WATER PIPE INCLUDED IN THE PROJECT.
10. ALL WATER LINES TO HAVE 4' MINIMUM COVER TO FINISHED GRADE AND MINIMUM 12" CLEARANCE TO OTHER UTILITIES AT CROSSING UNLESS OTHERWISE NOTED ON PLANS. ALL WATER LINE INSTALLED OVER 8' DEEP SHALL UTILIZE RESTRAINED JOINT FITTINGS.
11. CONTRACTOR SHALL KEEP WATER PIPE CLEAN AND CAPPED (OR OTHERWISE EFFECTIVELY COVERED) OPEN PIPE ENDS TO EXCLUDE INSECTS, ANIMALS OR OTHER SOURCES OF CONTAMINATION FROM UNFINISHED LINES AT ALL TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.

STANDARD HCFCD NOTES FOR CONSTRUCTION DRAWINGS

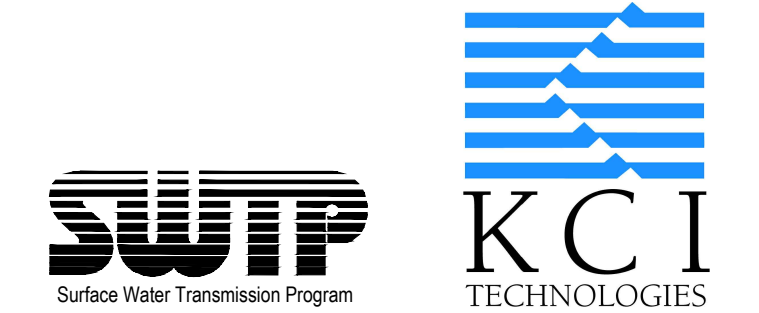
1. OBTAIN AND COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE, AND FEDERAL PERMITS AND APPROVALS. WITH ASSISTANCE FROM ENGINEER, IF NECESSARY, OBTAIN PERMIT (CERTIFICATION) FROM HARRIS COUNTY ENGINEER TO ENTER HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY.
2. NOTIFY THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S DEVELOPMENT COORDINATION AND INSPECTION DEPARTMENT IN WRITING AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. SUBMIT THE HCFCD 48 HOUR PRE-CONSTRUCTION FORM, A COPY OF THE APPROVED CONSTRUCTION DRAWINGS, AND A COPY OF THE CORPS OF ENGINEERS INDIVIDUAL SECTION 404 PERMIT OR COMPLIANCE WITH NATIONWIDE PERMIT, IF APPLICABLE, TO HCFCD, 9900 NORTHWEST FREEWAY, HOUSTON, TEXAS 77092, ATTN: DEVELOPMENT COORDINATION AND INSPECTION DEPT. BY HAND DELIVERY, BY EMAIL [dcid@hcfcfd.org](mailto:dcid@hcfcfd.org), OR FAX TO 713-684-4129 (FAX NUMBER).
3. ENGINEER SHALL SUBMIT CERTIFICATION LETTER AND RECORD DRAWINGS TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S DEVELOPMENT COORDINATION AND INSPECTION SECTION REQUESTING INSPECTION OF ITEMS CONSTRUCTED IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. PRIOR TO REQUESTING INSPECTION, THE DRAINAGE RIGHT-OF-WAY AND/OR EASEMENTS SHALL BE STAKED AND FLAGGED.
4. PROTECT, MAINTAIN, AND RESTORE EXISTING BACKSLOPE DRAINAGE SYSTEMS.
5. BACKSLOPE, SWALE AND INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
6. ESTABLISH TURF GRASS ON ALL DISTURBED AREAS WITHIN THE CHANNEL OR DETENTION RIGHT-OF-WAY, EXCEPT THE CHANNEL BOTTOM AND WHERE STRUCTURAL EROSION MEASURES ARE USED. MINIMUM ACCEPTANCE CRITERIA ARE 75% COVERAGE OF LIVE BERMUDA GRASS AND NO EROSION OR RILLS DEEPER THAN 4".
7. PERFORM ALL ACTIVITIES WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY IN ACCORDANCE WITH THE MOST RECENT HARRIS COUNTY FLOOD CONTROL DISTRICT STANDARD SPECIFICATION BOOK.
8. EXCAVATE CHANNEL FLOWLINE TO DESIGN ELEVATION AS SHOWN ON PLANS AND DOWNSTREAM, AS NECESSARY, TO ENSURE NO WATER REMAINS IN THE FACILITY (STORM SEWER, LATERAL CHANNEL, OR DRY BOTTOM DETENTION BASIN) DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL, SO THE FACILITY WILL FUNCTION AS INTENDED. FOR WET BOTTOM DETENTION BASINS, ENSURE NO WATER IS ABOVE THE DESIGN LEVEL IN THE WET BOTTOM DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL.
9. MAINTAIN FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORE CHANNEL TO ORIGINAL CONDITION.
10. REMOVE ALL EXCAVATED MATERIAL FROM THE HARRIS COUNTY FLOOD 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.

STORM SEWER CONSTRUCTION NOTES

1. STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 (OCT. 2002) AS APPLICABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. ALL STORM SEWER CONSTRUCTED IN SIDE LOT EASEMENT SHALL BE R.C.P. (C-76, CLASS II) AND SHALL BE BEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 2317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 (OCT. 2002) AS APPLICABLE.
3. ALL SEWER UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT/C.Y. STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL.
4. ALL TRENCH BACKFILL SHALL BE IN 8" LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN EACH LIFT, AND MECHANICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST (ASTM D-698/AASOT 199).
5. CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.
6. ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24" AND LARGER R.C.P. (C-76 CLASS III).
7. ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.
8. MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 48-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES. MINIMUM VERTICAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE 18-INCHES FROM THE EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES.
9. ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02066-ADJUSTING MANHOLES, INLETS, AND VALVE BOXES TO GRADE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE DISTURBED AS A RESULT OF THIS WORK.
11. ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.
12. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

CONSTRUCTION NOTES

1. CONSTRUCTION WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING PUBLISHED BY THE CITY OF HOUSTON, HOUSTON PUBLIC WORKS.
  2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE LOCAL AUTHORITY OR GOVERNING AGENCY OF THE BEGINNING DATE OF CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SEE THAT NO WORK IS DONE WITHOUT THE PROPER INSPECTIONS AND PERMITS BY THE LOCAL AUTHORITY OR GOVERNING AGENCY.
  3. THE CONTRACTOR SHALL OBTAIN ALL PERMITS NECESSARY TO ACCOMPLISH THE WORK OF THIS PROJECT.
  4. ANY POWER POLES, SIGNS, MAILBOXES, ETC. LOCATED IN AN AREA DESIGNATED FOR CONSTRUCTION SHALL BE REMOVED OR RELOCATED AS DIRECTED BY AGENCY HAVING JURISDICTION OVER SUCH ITEMS. NO ADDITIONAL COST.
  5. ALL BRUSH, ORGANIC TOPSOIL AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF AT AN OFF-SITE LOCATION. ADDITIONAL SUITABLE FILL MATERIAL SHALL BE BROUGHT ONTO THE SITE, IF NECESSARY. AREAS WHICH ARE TO BE FILLED SHALL BE COMPACTED IN ACCORDANCE WITH THE SOILS REPORT.
  6. UTILITIES PRESENTED ON THE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/800-245-4545 AND LONE STAR ONE CALL AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION.
  7. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL COMPARE THE DIMENSIONS SHOWN ON THE CONSTRUCTION PLANS WITH THOSE MEASURED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
  8. EXISTING UNDERGROUND FACILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORD DRAWINGS. THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. VERIFICATION OF EACH FACILITY SHOWN OR NOT SHOWN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, PRIOR TO COMMENCING CONSTRUCTION.
  9. AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET RIGHT-OF-WAY OR EASEMENTS, CALL UTILITY COORDINATING COMMITTEE (1-800-245-4545) OR DIG-TESS (1-800-344-8377).
  10. CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, ENGINEERING CONSTRUCTION DIVISION (TELEPHONE NO. 832-394-9098) 48 HOURS BEFORE STARTING WORK ON THIS PROJECT.
  11. THE GEOTECHNICAL INVESTIGATION FOR THE PROJECT WAS CONDUCTED IN ACCORDANCE WITH CHAPTER 11 OF THE LATEST EDITION OF THE PUBLICATION INFRASTRUCTURE DESIGN MANUAL, PUBLISHED BY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING. SOILS REPORT WAS PREPARED BY GEOTEST ENGINEERING, DATED FEBRUARY 7, 2020..
- UTILITY NOTES
1. ALL TRENCHES UNDER PROPOSED PAVEMENT SHALL BE BACKFILLED TO SUBGRADE ELEVATION WITH COMPACTED APPROVED GRANULAR MATERIALS. IF USED IN LANDSCAPE OR GRASS AREAS, BACKFILL TO A POINT ONE FOOT BELOW FINISHED GRADE WITH THE REMAINDER BEING HAND TAMPED EXCAVATED SOIL.
  2. IT SHALL BE THE DUTY AND RESPONSIBILITY OF THE CONTRACTOR AND ALL OF ITS SUBCONTRACTORS TO BE FAMILIAR AND COMPLY WITH ALL REQUIREMENTS OF PUBLIC LAW 91-596, 29 U.S.C. SECS. 651 ET. SEQ., THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, (OSHA) AND ALL AMENDMENTS THERETO, AND TO ENFORCE AND COMPLY WITH ALL OF THE PROVISIONS OF THIS ACT.
  3. BEFORE COMMENCING ANY TRENCH EXCAVATION WHICH WILL EXCEED DEPTH OF FIVE (5) FEET, CONTRACTOR WILL PROVIDE OWNER WITH DETAILED PLANS AND SPECIFICATIONS REGARDING THE SAFETY SYSTEMS TO BE UTILIZED. SAID PLANS AND SPECIFICATIONS SHALL INCLUDE A CERTIFICATION FROM A REGISTERED PROFESSIONAL ENGINEER INDICATING FULL COMPLIANCE WITH THE OSHA PROVISIONS NOTED ABOVE.
  4. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING'S STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING, REFERENCED ABOVE AT NO ADDITIONAL COST.
  5. THIS PROJECT IS SUBJECT TO CITY OF HOUSTON STREET CUT ORDINANCE.



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.

AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

NOTICE:  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 OR 713-223-4567 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.

DENIS ATWOOD

KCI TECHNOLOGIES  
K.C. 1 ENGINEER / PLANNER / SCIENTIST / CONSTRUCTION MANAGER

801 TRAVIS STREET, SUITE 2000  
HOUSTON, TEXAS 77002  
713-237-9800  
TBPE REGISTRATION NO. F-10573  
[www.kci.com](http://www.kci.com)

SURVEYED BY:  
UNITED ENGINEERS, INC.  
C.O.H. FIELD BOOK

JULY 7, 2023

CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST. TO EAST OREM DR. ALONG MARTIN LUTHER KING BOULEVARD

GENERAL CONSTRUCTION NOTES  
SHEET 1 OF 3

WBS NO. S-000900-0139-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
SINGARPAL SEKHON, P.E.	
SHEET 06 OF 194	







TRAFFIC NOTES

CONTRACTOR OR OWNER SHALL SUBMIT TRAFFIC CONTROL PLANS WITH THE MOBILITY PERMIT APPLICATION. THE PLANS SHALL BE DRAWN TO SCALE AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS.

THE GENERAL NOTES THAT SHALL BE INCLUDED ON THE TRAFFIC CONTROL PLAN CAN BE FOUND IN CHAPTER 15 (15.12 TRAFFIC CONTROL PLAN) OF THE CITY OF HOUSTON'S (CITY) INFRASTRUCTURE DESIGN MANUAL (IDM). BELOW ARE SEVERAL NOTES FROM THE IDM TO BE AWARE OF:

- 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 EDITIONS WITH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
- 2. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00PM TO 7:00AM..
- 3. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF 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 THE BUS STOP.
- 4. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.
- 5. CONTRACTOR SHALL SECURE ROADWAY/SIDEWALK/STREET/BICYCLE FACILITY PERMITS AS DESCRIBED IN CITY OF HOUSTON ORDINANCE, CHAPTER 40 – STREETS & SIDEWALKS, SECTION 40–361 FROM HOUSTON PERMITTING CENTER (MOBILITY PERMIT SECTION at <https://geohub.houstontx.gov>) BEFORE IMPLEMENTING THE TRAFFIC CONTROL PLAN. THE APPLICATION MUST BE SUBMITTED AT LEAST TEN BUSINESS 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.
- 6. CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES.
- 7. 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 DRIVEWAY, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE CITY OF HOUSTON.
- 8. ADDITIONAL OFF DUTY POLICE/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED AT THE DIRECTION OF THE CITY EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS.

TRAFFIC SIGNAL GENERAL NOTES

- 1. ALL EQUIPMENT/MATERIALS AND CONSTRUCTION SHALL MEET OR EXCEED THE REQUIREMENTS CONTAINED IN THE CURRENT CITY OF HOUSTON STANDARD SPECIFICATIONS AND STANDARD DRAWINGS, THE PROJECT SPECIFIC SPECIFICATIONS AND THE PLANS.
- 2. ALL ELECTRICAL WORK SHALL BE IN CONFORMANCE WITH THE PROVISIONS AND REQUIREMENTS OF THE CITY ELECTRICAL CODE.
- 3. ALL SIGNS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
- 4. THE CONTRACTOR SHALL ARRANGE THE INSTALLATION OF SIGNALS, POLES AND CONDUIT SO AS TO PERMIT THE CONTINUOUS MOVEMENT OF TRAFFIC IN ALL DIRECTIONS AT ALL TIMES. THE CONTRACTOR SHALL NOT CLOSE MORE THAN ONE LANE OF A ROADWAY AT ONE TIME WITHOUT PRIOR APPROVAL OF THE CITY.
- 5. THE CONTRACTOR SHALL CLEAN UP AND REMOVE FROM THE WORK AREA ALL LOOSE MATERIAL RESULTING FROM CONTRACT OPERATIONS EACH DAY PRIOR TO WORK BEING SUSPENDED FOR THAT DAY.
- 6. THE CONTRACTOR SHALL CONTACT THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE TO ARRANGE FOR METER AND ELECTRICAL SERVICE CONNECTION FROM THE POWER COMPANY.
- 7. ALL PEDESTRIAN PUSH BUTTON ASSEMBLIES SHALL MEET ADA REQUIREMENTS. THE SIGNS THAT SHALL BE USED ARE IDENTIFIED IN THE TMUTCD AS R10–3E. CITY OF HOUSTON STANDARDS FOR PEDESTRIAN FACILITIES SHALL BE MET IN ADDITION TO ANY TEXAS ACCESSIBILITY STANDARDS BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR).
- 8. PEDESTRIANS PUSH BUTTONS SHALL BE SEPARATED BY A MINIMUM OF 10 FEET. EXCEPTIONS ONLY AS SPECIFIED BY THE ENGINEER WITH AUTHORIZATION FROM THE APPROVED CITY OF HOUSTON REPRESENTATIVE.
- 9. OVERHEAD STREET NAME SIGNS SHALL BE INSTALLED SUCH THAT THE BOTTOM OF THE SIGN IS NO LESS THAN 17 FEET ABOVE THE ROADWAY PAVEMENT OR NO LESS THAN 16 FEET ABOVE THE FINISHED GRADE BEYOND THE SHOULDER.
- 10. THE LOCATION OF EACH NEW POLE FOUNDATION, PULL BOX, CONTROLLER CABINET FOUNDATION, UPS CABINET FOUNDATION AND ELECTRIC SERVICE PEDESTAL FOUNDATION SHALL BE MARKED IN THE FIELD AS SHOWN ON THE PLANS. THE EXACT LOCATION SHALL BE APPROVED BY THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE PRIOR TO BEGINNING INSTALLATION OF THE FOUNDATION.
- 11. NO POLES SHALL BE LOCATED IN WHEELCHAIR RAMPS OR SUCH THAT THEY ARE AN OBSTRUCTION TO PEDESTRIANS OR WHEELCHAIRS.FINISHED GRADE, THE CONTRACTOR SHALL GRADE AROUND POLE FOUNDATION. THE TOP OF THE FOUNDATION SHALL EXTEND NO MORE THAN 4 INCHES ABOVE SURROUNDING GRADE. GROUTING SHALL BE USED TO FILL ANY GAP BETWEEN THE POLE BASE AND FOUNDATION
- 12. THE TOP OF THE POLE FOUNDATION SHALL BE LEVELED WITH THE FINISHED GRADE. IF THE SLOPE OR SHOULDER DROPS OFF FROM FINISHED GRADE, THE CONTRACTOR SHALL GRADE AROUND POLE FOUNDATION. THE TOP OF THE FOUNDATION SHALL EXTEND NO MORE 4 INCHES ABOVE THE SURROUNDING GRADE. GROUTING SHALL BE USED TO FILL ANY GAP BETWEEN THE POLE BASE AND FOUNDATION.
- 13. POLES SHALL BE LOCATED SUCH THAT ALL PORTIONS OF THE POLES AND ATTACHED EQUIPMENT HAVE CLEARANCES FROM THE OVERHEAD UTILITIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL UTILITY AND THE NATIONAL ELECTRICAL SAFETY CODE (NESC).
- 14. ALL CONCRETE USED FOR TRAFFIC SIGNAL POLE AND CABINET FOUNDATIONS SHALL BE CLASS "A" (REFER TO THE CITY OF HOUSTON SPECIFICATION FOR CONCRETE).
- 15. MAST ARM AND STRAIN POLES SHALL NOT BE INSTALLED ON THE FOUNDATIONS LESS THAN SEVEN DAYS AFTER THE PLACEMENT OF THE CONCRETE FOR THE FOUNDATION.
- 16. ANCHOR BOLTS FOR SIGNAL POLES SHALL BE SET SO THAT TWO ARE IN COMPRESSION AND TWO ARE IN TENSION. PRIOR TO THE INSTALLATION OF THE NUT, THE THREADS OF THE ANCHOR BOLT SHALL BE COATED WITH PIPE JOINT COMPOUND.

TRAFFIC SIGNAL GENERAL NOTES (CON'T)

- 17. ALL UNDERGROUND CONSTRUCTION (CONDUIT, FOUNDATIONS AND PULL BOXES) FOR THE INTERSECTION SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF POLES, SIGNALS AND CABINETS. THE CONTRACTOR SHALL NOT PROCEED TO ABOVE GROUND WORK UNTIL THE ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE HAS CONFIRMED THAT THE MATERIALS FOR A COMPLETE INSTALLATION ARE AVAILABLE
- 18. UNDERGROUND CONDUIT FOR SIGNAL CABLE SHALL BE EITHER RIGID STEEL, HOT-DIPPED GALVANIZED CONDUIT OR SCHEDULE 80 ELECTRICAL PVC CONDUIT OF THE DIAMETER SHOWN ON THE PLANS, UNLESS OTHERWISE NOTED. ALL COUPLINGS AND CONNECTIONS SHALL BE TIGHT AND WATERPROOF.
- 19. ALL ABOVE GROUND CONDUIT FOR SIGNAL CABLE AND INTERCONNECT MEDIA SHALL BE HOT-DIPPED GALVANIZED STEEL RIGID METAL CONDUIT OF THE DIAMETERS SHOWN ON THE PLANS, UNLESS OTHERWISE NOTED. ALL COUPLINGS AND CONNECTIONS SHALL BE TIGHT AND WATERPROOF.
- 20. ONLY NEW CONDUIT AND CABLE SHALL BE INSTALLED.
- 21. CONDUIT INSTALLED UNDER EXISTING PAVED DRIVEWAYS, ROADWAYS OR SIDEWALKS, WHICH ARE NOT SCHEDULED TO BE RECONSTRUCTED AS PART OF THIS PROJECT, SHALL BE INSTALLED BY MEANS OF BORING. THE CONTRACTOR SHALL NOT CUT OPEN ANY STREET OR DRIVEWAY FOR CONDUIT INSTALLATION WITHOUT THE PRIOR APPROVAL OF THE ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE.
- 22. CONDUIT NOT PLACED UNDER PAVED DRIVEWAYS, ROADWAY PAVEMENT OR SIDEWALK MAY BE PLACED BY CUTTING A TRENCH, INSTALLING THE CONDUIT AND BACKFILLING. ANY TRENCHING FOR CONDUIT WIDER THAN THREE (3) INCHES SHALL BE RESODDED.
- 23. PULL BOXES SHALL NOT BE INSTALLED WITHIN CONCRETE CURB ACCESS RAMPS. IN ADDITION, ANY PULL BOXES INSTALLED BEHIND CURBS SHALL BE INSTALLED BETWEEN THE CURB AND THE PROPOSED/FUTURE SIDEWALK. AN EXCEPTION TO THIS NOTE WOULD BE PULL BOXES INSTALLED IN A MEDIAN. ANY PULL BOXES INSTALLED ALONG AN UNCURBED ROADWAY SHALL BE INSTALLED ADJACENT TO, BUT NOT WITHIN, THE SHOULDER. DRAINAGE AREAS SHOULD BE AVOIDED WHEN PLACING JUNCTION BOXES.
- 24. A 5/8 IN. X 10 FT. GROUND ROD SHALL BE INSTALLED IN ALL PULL BOXES. A GROUND ROD CLAMP SHALL BE FURNISHED FOR GROUNDING THE GROUND WIRE.
- 25. ALL CONDUITS SHALL BE CLEANED BY COMPRESSED AIR AND A PROPERLY SIZED CONDUIT PISTON OR MANDREL SHALL BE PULLED THROUGH THE CONDUIT PRIOR TO CABLE INSTALLATION.
- 26. WHEN PULLING TRAFFIC SIGNAL SYSTEM CABLES THROUGH CONDUIT, THE CABLES SHALL BE LUBRICATED WITH A LUBRICANT NORMALLY USED FOR THIS PURPOSE. ANY ABRASION TO ANY CONDUCTOR INSULATION WHICH OCCURS WHILE PULLING CABLE FOR THE TRAFFIC SIGNAL SYSTEM WILL BE CAUSE FOR THE IMMEDIATE REJECTION OF THE CABLE. IF THIS OCCURS, THE CONTRACTOR SHALL REMOVE AND REPLACE THE ENTIRE CABLE RUN AT THEIR EXPENSE.
- 27. A MINIMUM OF THREE (3) FEET OF EACH WIRE AND CABLE MEASURED FROM THE TOP OF THE PULL BOX SHALL BE LEFT IN EACH PULL BOX AND AT EACH POLE BASE.
- 28. ALL CABLES SHALL BE STRIPPED, FORMED AN TERMINATED IN A NEAT AND UNIFORM MANNER WHETHER IN THE SIGNAL HEAD OR CONTROLLER CABINET. ALL CABLE SHALL BE BROUGHT INTO THE TERMINAL HOUSING OF SIGNALS AND/OR CONTROLLER CABINETS AND A SUFFICIENT LENGTH OF CABLE SHALL BE LEFT SO THAT ALL TERMINAL CONNECTIONS MAY BE MADE WITHOUT THE NECESSITY OF SPLICING THE CABLE.
- 29. THE HIGH VOLTAGE CABLES SHOULD BE SEPARATED FROM THE LOW VOLTAGE CABLES EXCEPT IN ENCLOSURES.
- 30. NO LOOP DETECTOR SHALL BE CUT IN A PARALLEL EXPANSION JOINT. LOOPS CUT ACROSS EXPANSION JOINTS SHALL HAVE A SLACK IN THE CABLE FOR EXPANSION.
- 31. ALL VEHICLE ROADWAY DETECTION LOOP CABLES SHALL BE #14 AWG IMSA 51–5–1985 CABLE. LEAD-IN CABLES SHALL BE #16 AWG IMSA 50–2–1984 CABLE. NO SPLICES SHALL BE ALLOWED IN THE ROADWAY DETECTION LOOP CABLE EXCEPT AT THE PULL BOX ADJACENT TO LOOP. THE DETECTOR LEAD-IN CABLE SHALL NOT BE SPLICED.
- 32. DETECTION LOOP SAW CUTS SHALL BE FLUSHED WITH WATER UNDER PRESSURE AND THEN DRIED WITH AIR UNDER PRESSURE.
- 33. THERE SHALL BE NO SPLICING IN CONDUCTORS EXCEPT FOR THE NECESSARY SPLICE BETWEEN ROADWAY LOOP WIRE AND DETECTOR LEAD-IN CABLE IN THE PULL BOX ADJACENT TO THE DETECTOR. THESE SPLICES SHALL BE WATERPROOF AND SHALL BE IN COMPLIANCE WITH THE CITY OF HOUSTON STANDARD DRAWINGS FOR TRAFFIC SIGNAL CONSTRUCTION. THESE SPLICES SHALL BE MADE BY THE CONTRACTOR. DO NOT GROUND THE CABLE SHIELD AT THE PULL BOX.
- 34. TWO #10 AWG-XHHW CONDUCTORS SHALL BE INSTALLED FROM EACH LUMINAIRE TO THE SERVICE PEDESTAL, LEAVING THREE FEET OF SLACK FOR EACH CONDUCTOR (MEASURED FROM THE TOP OF THE PULL BOX) IN EACH PULL BOX. ROUTE FOUR CONDUCTORS TO THE LUMINAIRE WITH THE PHOTOELETRIC CELL. AN IN-LINE FUSE SHALL BE INSTALLED FOR EACH LUMINAIRE IN THE ASSOCIATED PULL BOX.
- 35. THE EMERGENCY VEHICLE PRE-EMPTION SENSOR CABLE SHALL BE OPTICOM DETECTOR CABLE MODEL NO. 138. THE CABLE SHALL NOT BE SPLICED.
- 36. ALL VEHICLE AND PEDESTRIAN INDICATIONS SHALL BE LED.
- 37. THE CONTRACTOR SHALL BAG ALL NEWLY INSTALLED VEHICULAR AND/OR PEDESTRIAN TRAFFIC SIGNAL HEADS WITH BURLAP OR OTHER APPROVED MATERIAL UNTIL THE FINAL INSPECTION AND ACCEPTANCE BY THE CITY TRAFFIC ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE. THE BURLAP OR OTHER APPROVED MATERIAL/DEVICE SHALL COMPLETELY COVER THE TRAFFIC SIGNAL HEAD AND SHALL OBSCURE THE VIEW OF THE TRAFFIC SIGNAL INDICATIONS SO THAT THEY CANNOT BE SEEN UNTIL THE TRAFFIC SIGNAL IS PLACED IN OPERATION. DURING CONSTRUCTION, THE TRAFFIC SIGNAL WILL BE DE-ENERGIZED WHILE NOT IN USE FOR TESTING.
- 38. THE TRAFFIC SIGNAL OPERATION AT EXISTING SIGNALIZED INTERSECTIONS SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT.
- 39. ALL STRIPING AND PAVEMENT MARKINGS ARE TO BE DONE UNDER THIS CONTRACT AND SHALL BE IN PLACE PRIOR TO THE ACTIVATION OF THE TRAFFIC SIGNAL. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL STOP LINES PRIOR TO THE INSTALLATION OF LOOP DETECTORS.
- 40. ALL CROSSWALK MARKINGS SHALL BE 10-FT WIDE, FROM INSIDE OF MARKINGS, FOLLOWING CITY OF HOUSTON STANDARD DETAILS.
- 41. ALL CONSTRUCTION SIGNING AND CONSTRUCTION TRAFFIC CONTROL DEVICES SHALL BE IN CONFORMANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

RESPONSIBILITIES

- 1. THE CONTRACTOR SHALL SUPPLY AND INSTALL THE FOLLOWING EQUIPMENT AND MATERIALS AS SPECIFIED IN THE PLANS: STEEL POLE ANCHOR BOLTS (WITH NUTS AND WASHERS), CONCRETE POLE FOUNDATIONS WITH REINFORCEMENT (WHERE SPECIFIED), TRAFFIC SIGNAL CONTROLLER CABINETS(S) WITH CONTROLLER(S) AND ALL AUXILIARY EQUIPMENT, CONTROLLER CABINET CONCRETE FOUNDATION(S), CONCRETE PULL BOXES, ELECTRICAL CONDUIT, GROUND RODS AND CONNECTORS, BARE BOND WIRE AND ALL OTHER CONDUCTORS, POLES, MAST ARMS TRAFFIC SIGNALS AND MOUNTING ASSEMBLIES, PEDESTRIAN SIGNALS AND MOUNTING ASSEMBLIES, PEDESTRIAN PUSH BUTTON STATIONS WITH SIGNS LUMINARIES, PHOTOCELLS, ELECTRIC SERVICE PEDESTAL(S) AND CONCRETE FOUNDATION(S), VEHICLE DETECTION LOOPS, AND ALL OTHER APPURTENANCES NECESSARY FOR THE OPERATION OF THE TRAFFIC SIGNAL INSTALLATION(S), EXCEPT AS MODIFIED IN THE PLANS. (MODIFY THE LIST OF MATERIALS AS APPROPRIATE)

GRADING NOTES

- 1. GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE STARTING CONSTRUCTION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY CITY OF HOUSTON HOUSTON PUBLIC WORKS CONSTRUCTION NOTES DISCREPANCIES.
- 2. BEFORE STARTING CONSTRUCTION, CONTRACTOR SHALL VERIFY BENCHMARK ELEVATION AND NOTIFY ENGINEER IF ANY DISCREPANCY AND/OR CONFLICT IS FOUND.
- 3. CONTRACTOR SHALL ENSURE THERE IS POSITIVE DRAINAGE FROM THE PROPOSED BUILDINGS AND NO PONDING IN PAVED AREAS AND SHALL NOTIFY ENGINEER IF ANY GRADING DISCREPANCIES ARE FOUND IN THE EXISTING AND PROPOSED GRADES PRIOR TO PLACEMENT OF PAVEMENT OR UTILITIES.
- 4. CONTRACTOR SHALL PROTECT ALL MANHOLE COVERS, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, POWER POLES, GUY WIRES, AND TELEPHONE BOXES THAT ARE TO REMAIN IN PLACE AND UNDISTURBED DURING CONSTRUCTION.
- 5. ALL EXISTING CONCRETE PAVING, SIDEWALK, AND CURB DEMOLITION SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. DISPOSAL SHALL BE AT AN APPROVED OFF-SITE, LAWFUL LOCATION, UNLESS DIRECTED OTHERWISE BY THE OWNER.

SWPPP CONSTRUCTION NOTES

- 1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIAL FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.
- 2. DURING THE EXCAVATION PHASE OF THE PROJECT. CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEEPED BACK INTO THE EXCAVATED AREA.
- 3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FORM THE EXCAVATED AREA.
- 4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.
- 5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDER DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.
  - \* DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
  - \* AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
  - \* STRUCTURAL CONTROL MEASURES.
  - \* LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.
- 6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

WETLAND NOTES

- 1. TO ENSURE COMPLIANCE WITH SECTION 404 OF THE CLEAN WATER ACT, ALL WORK WITHIN POTENTIAL WATERS OF THE U.S. INCLUDING WETLANDS, WILL BE PERFORMED TO COMPLY WITH THE TERMS AND CONDITIONS OF NATIONWIDE PERMIT 12 FOR UTILITY LINE ACTIVITIES AS PER AGREEMENT WITH THE US ARMY CORPS OF ENGINEERS–GALVESTON DISTRICT OFFICE (USACE PROJECT NO. SWG–2016–00011). REFER TO SECTION 01110 FOR ADDITIONAL INFORMATION.
- 2. COMPLY WITH THE REQUIREMENTS OF THE MIGRATORY BIRD TREATY AND THE BALD EAGLE PROTECTION ACT. REFER TO SECTION 01565 FOR ADDITIONAL INFORMATION.
- 3. STRIP AND STOCKPILE 6" OF TOPSOIL FROM THE WETLANDS AREAS WHEN OPEN CUT CONSTRUCTION IS WITHIN LIMITS OF WETLAND AREAS. RESTORE TOPSOIL AFTER BACKFILLING AREA. RESTORED GROUND PROFILE SHALL MATCH PRE-CONSTRUCTION CONDITION. REFER TO PLANS FOR DELINEATED WETLANDS AND EXISTING ELEVATION CONTOURS.

OTHER NOTES

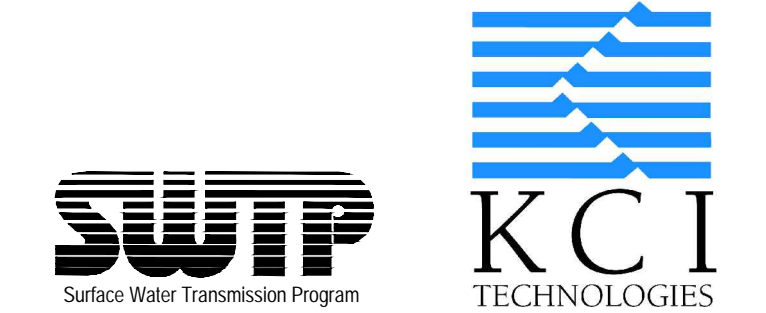
COMPLY WITH REQUIREMENTS OF THE MIGRATORY BIRD TREATY ACT AND THE BALD AND GOLDEN EAGLE PROTECTION ACT. REFER TO SPEC 01565 FOR ADDITIONAL INFORMATION.

DETAILS

CITY OF HOUSTON STANDARD DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATERLINES, STORM DRAINAGE, AND STREET PAVING ARE INCORPORATED IN PLANS BY REFERENCE AS IF COPIED VERBATIM. STANDARD DETAILS ARE AVAILABLE FOR DOWN LOAD AT THE FOLLOWING WEB ADDRESS:

<http://edocs.publicworks.houstontx.gov/engineering-and-construction/drawings>

DETAILS INCLUDED IN PLAN SET SUPERSEDE RELATED COH STANDARD DETAILS.



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713–207–2222.

AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713–223–4567.

NOTICE:  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 OR 713–223–4567 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.

801 TRAVIS STREET, SUITE 2000  
HOUSTON, TEXAS 77002  
713–237–9800  
TBPE REGISTRATION NO. F–10573  
[www.kci.com](http://www.kci.com)

SURVEYED BY:  
UNITED ENGINEERS, INC.  
C.O.H. FIELD BOOK

CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST. TO EAST OREM DR. ALONG MARTIN LUTHER KING BOULEVARD

GENERAL CONSTRUCTION NOTES  
SHEET 3 OF 3

WBS NO. S-000900–0139–3
DRAWING SCALE
NONE
CITY OF HOUSTON PM
SINGARPAL SEKHON, P.E.
SHEET 07B OF 194







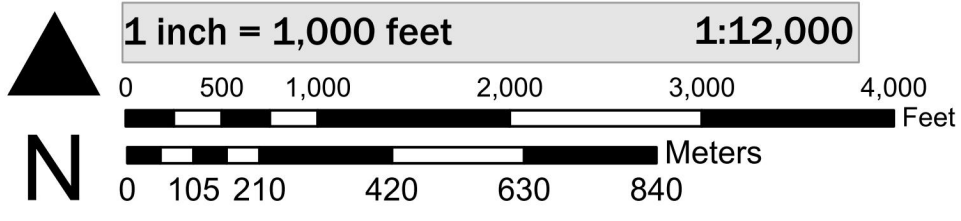
FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP  
FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee See Notes <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

SCALE

Map Projection:  
GCS, Geodetic Reference System 1980;  
Vertical Datum: NAVD88  
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at <https://msc.fema.gov>



NATIONAL FLOOD INSURANCE PROGRAM  
FLOOD INSURANCE RATE MAP

PANEL 890 OF 1105

Panel Contains:

COMMUNITY  
CITY OF HOUSTON

NUMBER  
480296

PANEL  
0890

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at <https://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map. Orthorectified, Last refreshed October, 2020.

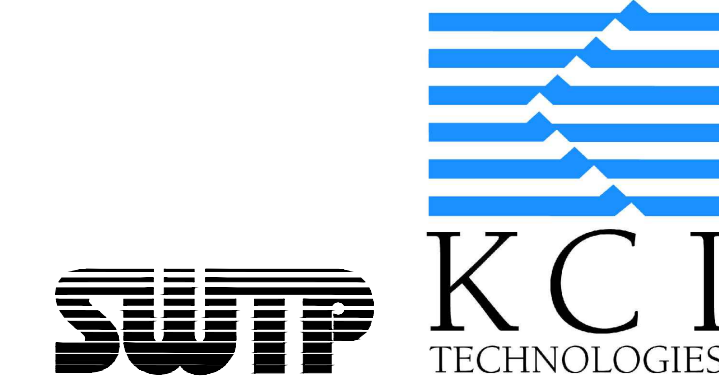
This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 7/22/2023 3:21 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at <https://www.fema.gov/media-library/assets/documents/118418>

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

NOTE:

THIS PROJECT WILL NOT RESULT IN ANY ALTERATIONS TO THE EXISTING GROUND ELEVATIONS WITHIN THE 500-YR. FLOOD PLAIN AND THEREFORE WILL NOT CAUSE ANY ALTERATION TO THE WATER SURFACE ELEVATIONS.

MITIGATION TABLE			
Sample Line No.	Station	Cut Volume (Cu. Yd.)	Fill Volume (Cu Yd.)
1	42+00	274.97	274.97
2	43+00	272.98	272.98
3	44+00	259.63	259.63
4	45+00	254.52	254.52
5	46+00	248.57	248.57
6	47+00	243.66	243.66
7	48+00	241.26	241.26
8	49+00	236.33	236.33
9	50+00	233.15	233.15
10	51+00	227	227
11	52+00	226.81	226.81
12	53+00	229.44	229.44
13	54+00	222.44	222.44
14	55+00	216.52	216.52
15	56+00	214.42	214.42
16	57+00	212.28	212.28
17	58+00	212.81	212.81
18	59+00	208.6	208.6
19	60+00	199.58	199.58
20	61+00	232.14	232.14
21	62+00	269.34	269.34
22	63+00	280.28	280.28
23	64+00	286.62	286.62
24	65+00	278.66	278.66
25	66+00	330.8	330.8
26	67+00	385.79	385.79
27	68+00	380.59	380.59
28	69+00	377.99	377.99
29	70+00	592.75	592.75
30	71+00	812.79	812.79
31	72+00	670.23	670.23
32	73+00	488.88	488.88
33	74+00	471.86	471.86
34	75+00	653.39	653.39
35	76+00	821.07	821.07
36	77+00	544.26	544.26
37	78+00	253.13	253.13
38	79+00	246.12	246.12
39	80+00	256.88	256.88
40	81+00	264.75	264.75
41	82+00	271.61	271.61
42	83+00	238.92	238.92
43	84+00	187.78	187.78
44	85+00	177.52	177.52
45	86+00	181.55	181.55
46	87+00	183.46	183.46
47	88+00	189.57	189.57
48	89+00	195.11	195.11
49	90+00	198.5	198.5
50	91+00	202.1	202.1
51	92+00	204.06	204.06
52	93+00	204.6	204.6
53	94+00	203.81	203.81
54	95+00	200.95	200.95
55	96+00	195.01	195.01
56	END		
TOTAL CUT VOLUME		16446.44	
TOTAL FILL VOLUME		16446.44	
NET FILL VOLUME		0	



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.

PRIVATE UTILITY LINES SHOWN

AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

Date: \_\_\_\_\_  
CenterPoint Energy/Electric Facilities  
Signature indicates underground electric lines are properly shown. No approval for construction is given.  
SIGNATURE VALID FOR SIX MONTHS.

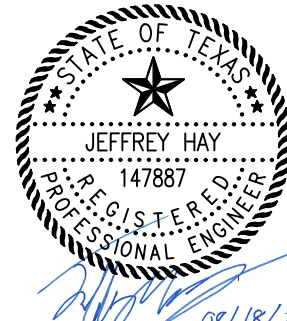
Date: \_\_\_\_\_  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.  
SIGNATURE VALID FOR ONE YEAR.

Date: \_\_\_\_\_  
CenterPoint Energy/Gas Facilities/ENTEX Incorporated  
(Gas service lines are not shown)  
SIGNATURE VALID FOR SIX MONTHS.

CABLE COMPANY



SURVEYED BY:  
SURVEYOR  
C.O.H. FIELD BOOK FLD6K#



CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST. TO EAST OREM DR. ALONG MARTIN LUTHER KING BOULEVARD

FLOODPLAIN  
MITIGATION PLAN

WBS NO.  
S-000900-0139-3

DRAWING SCALE  
1" = 1000'

CITY OF HOUSTON PM  
SINGARPAL SEKHON, P.E.

SHEET 015 OF 194



SEE SHEET 44 FOR CONTINUATION  
MATCH LINE STA 70+00

AIRPORT BLVD  
(100' R.O.W.)

MATCH LINE STA 75+00  
SEE SHEET 48 FOR CONTINUATION

**\*Construction in Harris County Flood Control District Right-of-Way requires:**

Site plans must be approved prior to obtaining the required HCFCF Right-of-Way Notification. Be advised that the HCFCF Right-of-Way Notification is separate from the site development permit package

1.) HCFCF Right-of-Way Notification (permit)  
2.) HCFCF 48-hr Pre-Construction Notice

Both are required prior to entering or working within Harris County Flood Control District right-of-way. The HCFCF Right-of-Way Notification and 48-hour notice must be provided to HCFCF at [dcid@hcfcd.hctx.net](mailto:dcid@hcfcd.hctx.net).

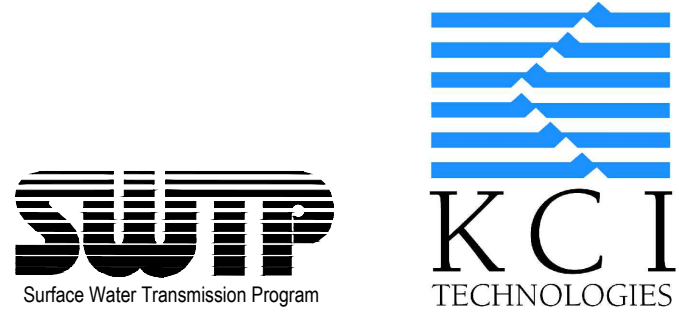
To apply for the HCFCF Right-of-Way Notification please go to <http://apps.harriscountytexas.gov/EPermits> and apply for the HCFCF ROW under ROW Notification. Failure to provide both items could result in project delays.

TSARP CONVERSION REFERENCE MONUMENT  
(TSARP) HARRIS COUNTY FLOODPLAIN REFERENCE MARK NUMBER 030445:  
FLOOD PLAIN REFERENCE MARK, BRASS DISK STAMPED RM 030445 FROM THE INTERSECTION OF WEBERCREST ROAD AND EAST OREM DR., TRAVEL EAST ON EAST OREM DR. 500 FEET TO BRIDGE. MONUMENT IS LOCATED ON NORTHWEST CORNER OF BRIDGE. PUBLISHED ELEV= 44.41 (NAVD 1988, 2001 ADJ.)  
OBSERVED ELEV= 44.05 (NAVD 1988, (CORS '96) COMPUTED USING GEOD 12A)

PROJECT SITE MONUMENT:  
SITE MONUMENT #5452-8413  
FOUND BRASS DISK IN CONCRETE LOCATED APPROX. 500 FEET NORTH FROM THE CENTERLINE OF AIRPORT BLVD. ON EAST SIDEWALK AT CENTERLINE OF NORTH BOUND BRIDGE.  
ELEV= 40.89" (NAVD 1988, (2001 ADJ.) GEOD 99)

SITE MONUMENT #5452-8407  
SET BRASS DISK IN CONCRETE LOCATED ON THE EAST SIDE OF MLK BLVD. AND APPROXIMATELY 350 FEET SOUTH FROM THE INTERSECTION OF SELINSKY DRIVE AND MLK BLVD.  
ELEV= 39.32 (NAVD 1988, (2001 ADJ.) GEOD 99)

SITE MONUMENT #5451-8416  
SET BRASS DISK IN CONCRETE LOCATED ON THE NORTH SIDE OF EAST OREM DRIE AND APPROXIMATELY 588 FEET EAST FROM THE INTERSECTION OF EAST OREM DRIVE AND MARTIN LUTHER KING BLVD.  
ELEV= 41.64" (NAVD 1988, (2001 ADJ.) GEOD 99)



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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  
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.

JEFFREY HAY  
Aurora Technical Services, LLC  
2121 Sage Road  
Suite 100  
Houston, TX 77056  
Tel: 281-493-7700  
www.auroratechservices.com

STATE OF TEXAS  
JEFFREY HAY  
147887  
Professional Engineer  
Professional Seal

SURVEYED BY:  
UNITED ENGINEERS, INC.  
C.O.H. FIELD BOOK

CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST. TO EAST OREM DR. ALONG MARTIN LUTHER KING BOULEVARD

PLAN  
STA. 70+00 TO STA. 75+00

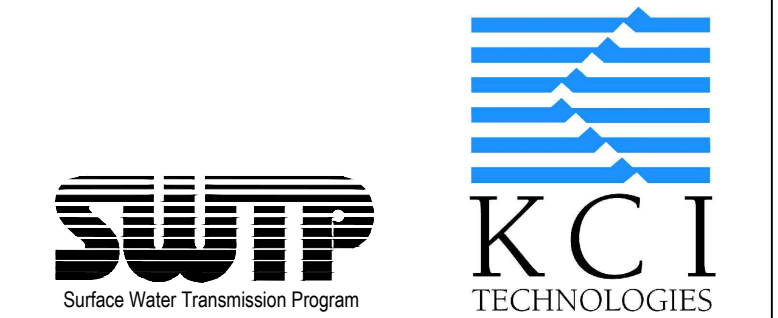
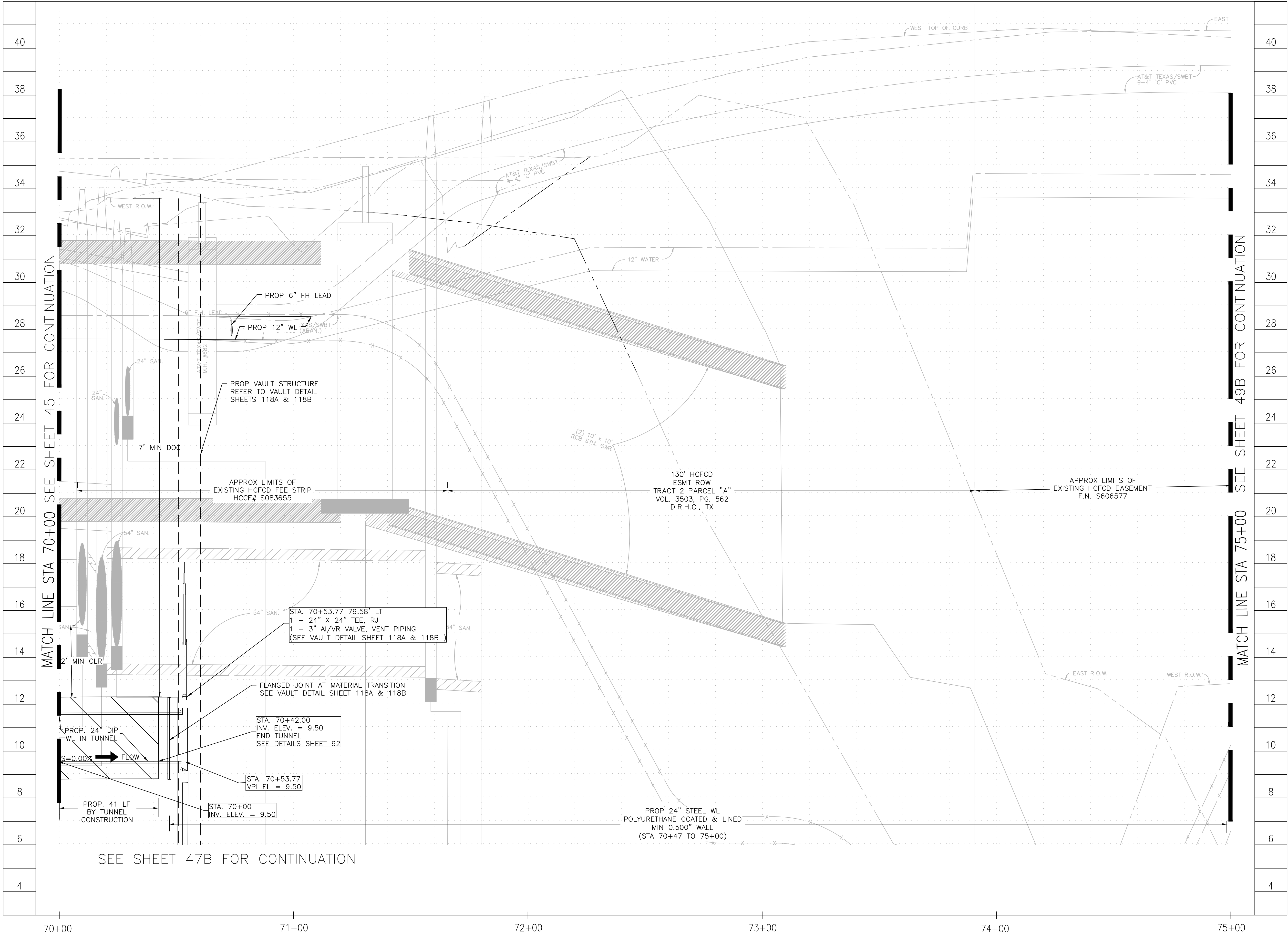
WBS NO. S-000900-0139-3	
DRAWING SCALE	
1" = 20'	
CITY OF HOUSTON PM	
SINGARPAL SEKHON, P.E.	
SHEET 46 OF 194	

NOTES:

- PROPOSED 24-INCH WATER LINE SHALL BE CONSTRUCTED NY MEANS OF OPEN-CUT UNLESS OTHERWISE STATED.
- REFER TO STORM DRAIN PLAN SHEET 058 TO 061 FOR DESIGN DETAILS.
- REFER TO CATHODIC PROTECTION SHEETS 119 TO 134 FOR DESIGN DETAILS.
- REFER TO STREET REPAIR SHEETS 135 TO 144 FOR DESIGN DETAILS.
- REFER TO TREE PROTECTION PLAN SHEETS 168 TO 189 FOR DESIGN DETAILS.
- PROPOSED 12-INCH AND SMALLER WATER LINES SHALL BE CONSTRUCTED BY MEANS OF OPEN-CUT CONSTRUCTION UNLESS OTHERWISE NOTED. WHEN TRENCHLESS CONSTRUCTION LOCATIONS ARE NOTED CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN THE FIELD, SUBJECT TO THE CITY ENGINEER'S APPROVAL.
- EXISTING POWER POLE OR STREET LIGHT TO BE BRACED AS NECESSARY DURING CONSTRUCTION, WITH NO SEPARATE PAY. IF ADJUSTMENT OR RELOCATION IS NECESSARY, THE UTILITY OWNER SHALL BE NOTIFIED.
- C-SAND TO BE 12" OVER THE PIPE AND 12" ON ALL SIDES AT 24-INCH STORM LATERAL CONNECTIONS.



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USERNAME: Sylvia Vazquez  
PEN TABLE: KCI - STB.stb



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Date  
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JEFFREY HAY  
**Aurora Technical Services, LLC**  
engineering • construction management  
2121 Sage Road  
Suite 150  
Houston, TX 77056  
Tel: 281-453-7700  
www.auroratechservices.com  
SURVEYED BY:  
UNITED ENGINEERS, INC.  
C.O.H. FIELD BOOK  
147887  
JEFFREY HAY  
Professional Engineer  
Texas Registered Engineering Firm  
F-20059

**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST.  
TO EAST OREM DR. ALONG MARTIN LUTHER  
KING BOULEVARD

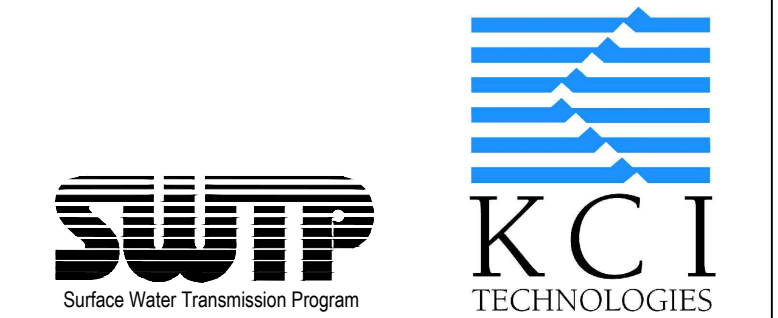
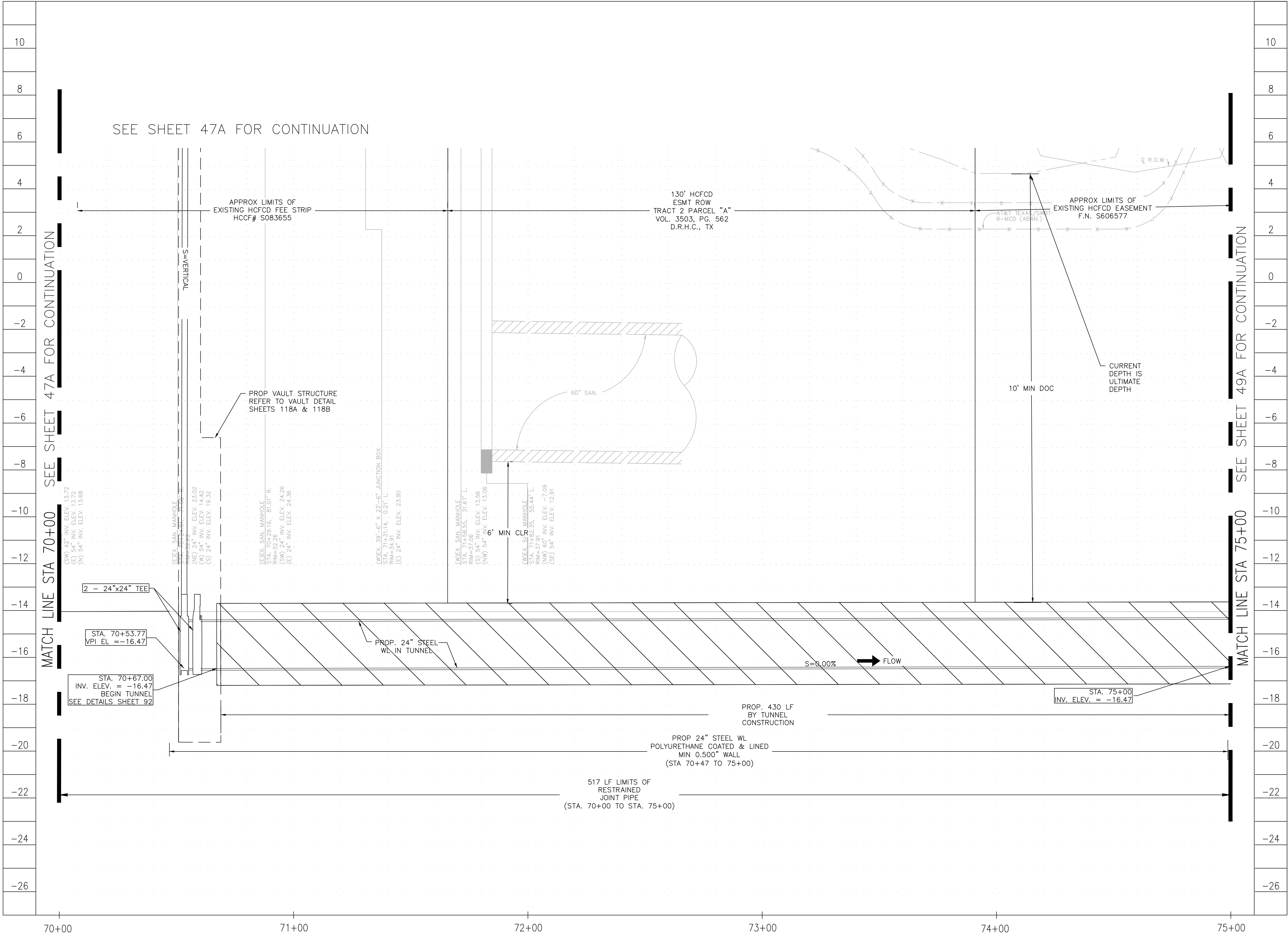
TOP PROFILE  
STA. 70+00 TO STA. 75+00

WBS NO. S-000900-0139-3	
DRAWING SCALE H:1"=20'; V:1"=2'	
CITY OF HOUSTON PM SINGARPAL SEKHON, P.E.	
SHEET 47A OF 194	

No.	Date	Revisions	App.



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USER:NAME: Sylvia Vazquez  
PEN TABLE: KCI - STB.rtb



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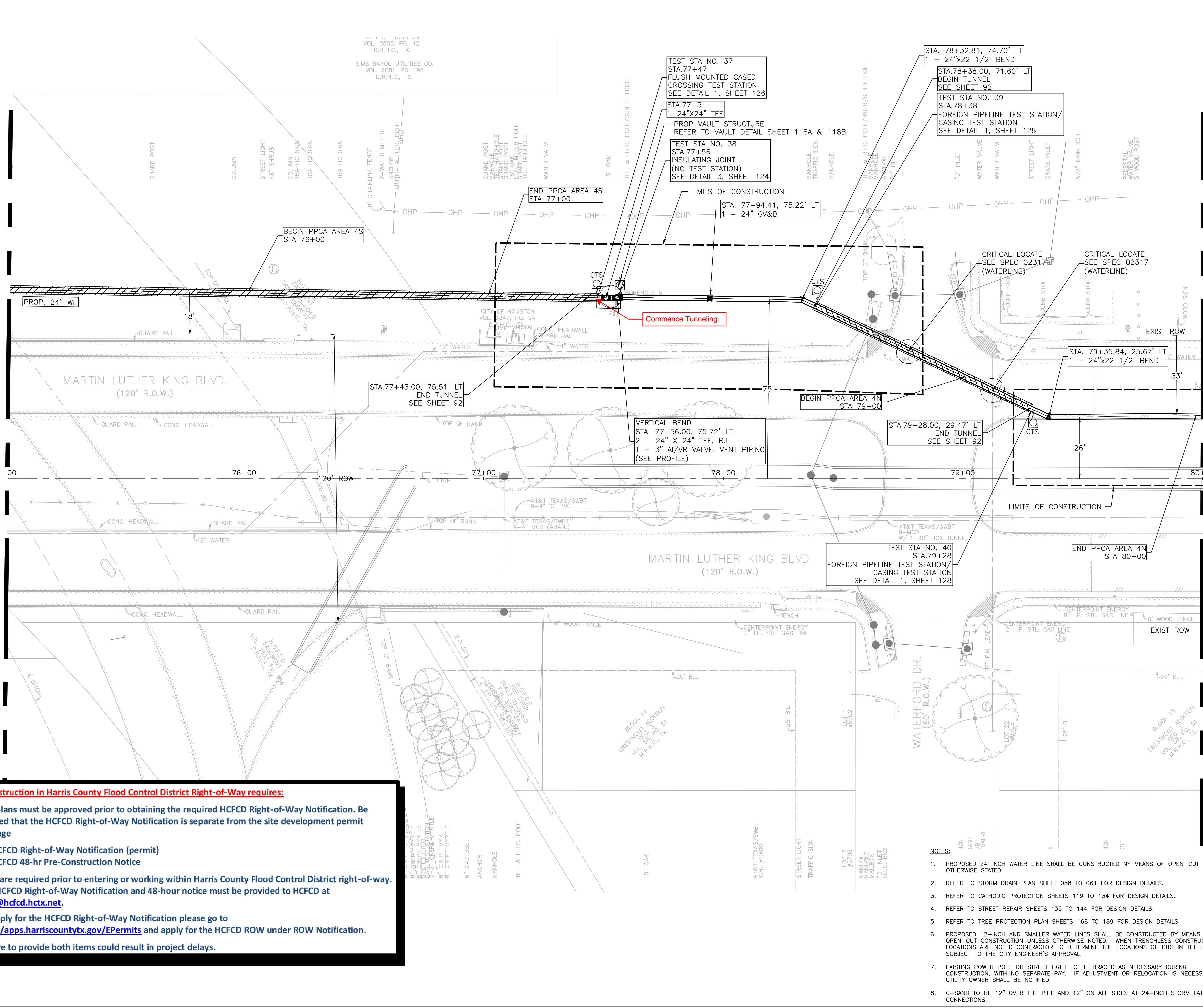
BOTTOM PROFILE  
STA. 70+00 TO STA. 75+00

WBS NO. S-000900-0139-3	
DRAWING SCALE	
H:1"=20'; V:1"=2'	
CITY OF HOUSTON PM SINGARPAL SEKHON, P.E.	
SHEET 47B OF 194	

No.	Date	Revisors	App.



SEE SHEET 46 FOR CONTINUATION  
MATCH LINE STA 75+00



MATCH LINE STA 80+00  
SEE SHEET 50 FOR CONTINUATION

**\*Construction in Harris County Flood Control District Right-of-Way requires:**

Site plans must be approved prior to obtaining the required HCFCF Right-of-Way Notification. Be advised that the HCFCF Right-of-Way Notification is separate from the site development permit package

1.) HCFCF Right-of-Way Notification (permit)  
2.) HCFCF 48-hr Pre-Construction Notice

Both are required prior to entering or working within Harris County Flood Control District right-of-way. The HCFCF Right-of-Way Notification and 48-hour notice must be provided to HCFCF at [dcid@hcfcd.hctx.net](mailto:dcid@hcfcd.hctx.net).

To apply for the HCFCF Right-of-Way Notification please go to <http://apps.harriscountytexas.gov/EPermits> and apply for the HCFCF ROW under ROW Notification.

Failure to provide both items could result in project delays.

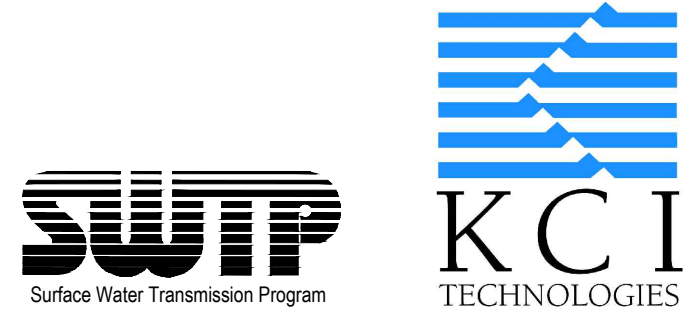
- NOTES:
1. PROPOSED 24-INCH WATER LINE SHALL BE CONSTRUCTED BY MEANS OF OPEN-CUT UNLESS OTHERWISE STATED.
  2. REFER TO STORM DRAIN PLAN SHEET 058 TO 061 FOR DESIGN DETAILS.
  3. REFER TO CATHODIC PROTECTION SHEETS 119 TO 134 FOR DESIGN DETAILS.
  4. REFER TO STREET REPAIR SHEETS 135 TO 144 FOR DESIGN DETAILS.
  5. REFER TO TREE PROTECTION PLAN SHEETS 168 TO 189 FOR DESIGN DETAILS.
  6. PROPOSED 12-INCH AND SMALLER WATER LINES SHALL BE CONSTRUCTED BY MEANS OF OPEN-CUT CONSTRUCTION UNLESS OTHERWISE NOTED. WHEN TRENCHLESS CONSTRUCTION LOCATIONS ARE NOTED CONTRACTOR TO DETERMINE THE LOCATIONS OF PITS IN THE FIELD, SUBJECT TO THE CITY ENGINEER'S APPROVAL.
  7. EXISTING POWER POLE OR STREET LIGHT TO BE BRACED AS NECESSARY DURING CONSTRUCTION, WITH NO SEPARATE PAY. IF ADJUSTMENT OR RELOCATION IS NECESSARY, THE UTILITY OWNER SHALL BE NOTIFIED.
  8. C-SAND TO BE 12" OVER THE PIPE AND 12" ON ALL SIDES AT 24-INCH STORM LATERAL CONNECTIONS.

**TSARP CONVERSION REFERENCE MONUMENT**  
(TSARP) HARRIS COUNTY FLOODPLAIN REFERENCE MARK NUMBER 030445:  
FLOOD PLAIN REFERENCE MARK, BRASS DISK STAMPED RM 030445 FROM THE INTERSECTION OF WEBERCREST ROAD AND EAST OREM DR., TRAVEL EAST ON EAST OREM DR. 500 FEET TO BRIDGE. MONUMENT IS LOCATED ON NORTHWEST CORNER OF BRIDGE. PUBLISHED ELEV= 44.41 (NAVD 1988, 2001 ADJ.) OBSERVED ELEV= 44.05 (NAVD 1988, (CORS '96) COMPUTED USING GEOID 12A)

**PROJECT SITE MONUMENT:**  
SITE MONUMENT #5452-8413  
FOUND BRASS DISK IN CONCRETE LOCATED APPROX. 500 FEET NORTH FROM THE CENTERLINE OF AIRPORT BLVD. ON EAST SIDEWALK AT CENTERLINE OF NORTH BOUND BRIDGE. ELEV= 40.89" (NAVD 1988, (2001 ADJ.) GEOID 99)

**SITE MONUMENT #5452-8407**  
SET BRASS DISK IN CONCRETE LOCATED ON THE EAST SIDE OF MLK BLVD. AND APPROXIMATELY 350 FEET SOUTH FROM THE INTERSECTION OF SELINSKY DRIVE AND MLK BLVD. ELEV= 39.32 (NAVD 1988, (2001 ADJ.) GEOID 99)

**SITE MONUMENT #5451-8416**  
SET BRASS DISK IN CONCRETE LOCATED ON THE NORTH SIDE OF EAST OREM DRIE AND APPROXIMATELY 588 FEET EAST FROM THE INTERSECTION OF EAST OREM DRIVE AND MARTIN LUTHER KING BLVD. ELEV= 41.64" (NAVD 1988, (2001 ADJ.) GEOID 99)



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.  
AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 OR 713-223-4567 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.  
JEFFREY HAY  
**Aurora Technical Services, LLC**  
2121 Sage Road  
Suite 150  
Houston, TX 77056  
Tel: 281-493-7700  
www.auroratechnicalservices.com  
SURVEYED BY:  
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C.O.H. FIELD BOOK

CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

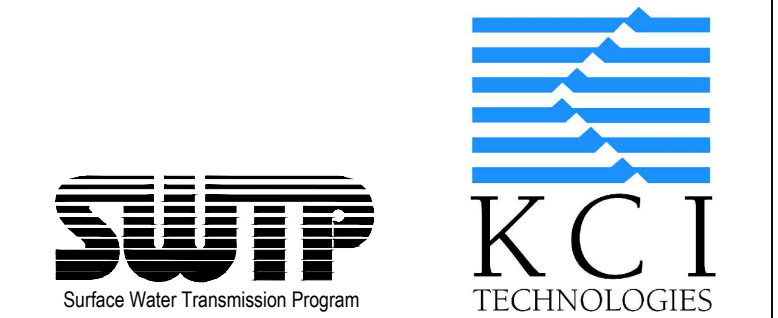
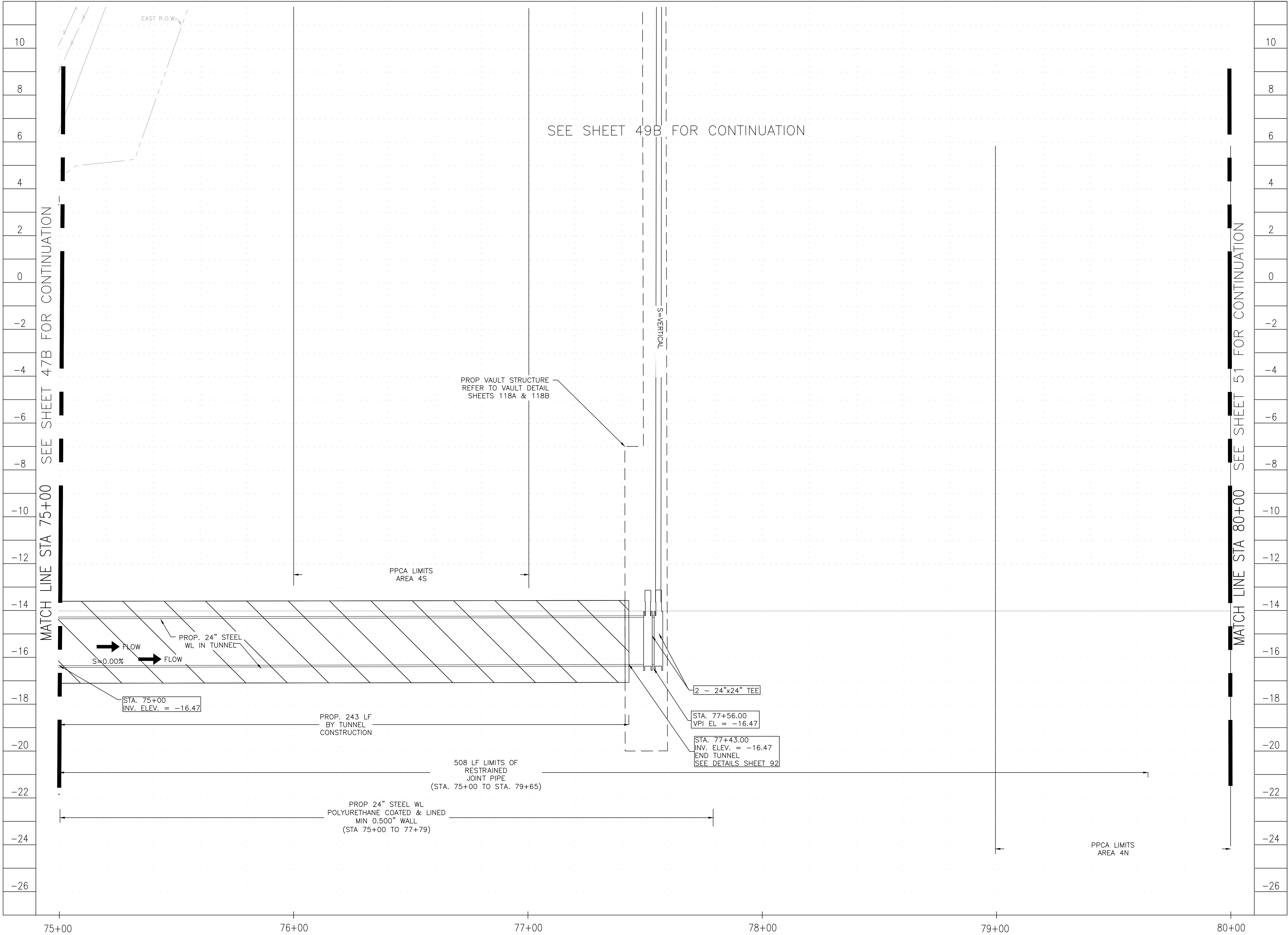
24-INCH WATER LINE FROM SUNBEAM ST. TO EAST OREM DR. ALONG MARTIN LUTHER KING BOULEVARD

PLAN  
STA. 75+00 TO STA. 80+00

WBS NO. S-000900-0139-3
DRAWING SCALE 1" = 20'
CITY OF HOUSTON PM SINGARPAL SEKHON, P.E.
SHEET 48 OF 194



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USERNAME: Sydie Vazquez  
PEN TABLE: KCI - STB.rtb



TO ARRANGE FOR LINES TO BE TURNED OFF OR  
MOVED, CALL CENTERPOINT AT 713-207-2222.  
AT LEAST 48 HOURS BEFORE EXCAVATING IN  
STREET R.O.W. OR EASEMENTS CALL THE LONE  
STAR NOTIFICATION 713-223-4567.

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BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE  
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OBLIGATION TO CALL 811

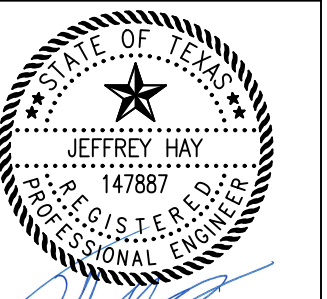
#### VERIFICATION OF PRIVATE UTILITY LINES

Date  
CenterPoint Energy natural gas utilities shown. (Gas  
service lines are not shown). This signature not be used  
for conflict verification.  
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Verification ONLY.  
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Services, LLC  
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www.auroratechservices.com



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#### CITY OF HOUSTON HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST.  
TO EAST OREM DR. ALONG MARTIN LUTHER  
KING BOULEVARD

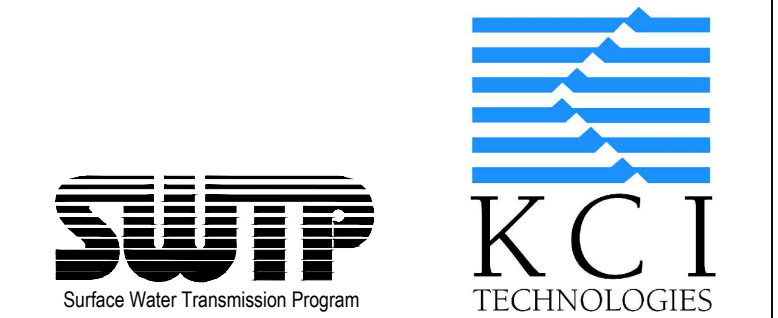
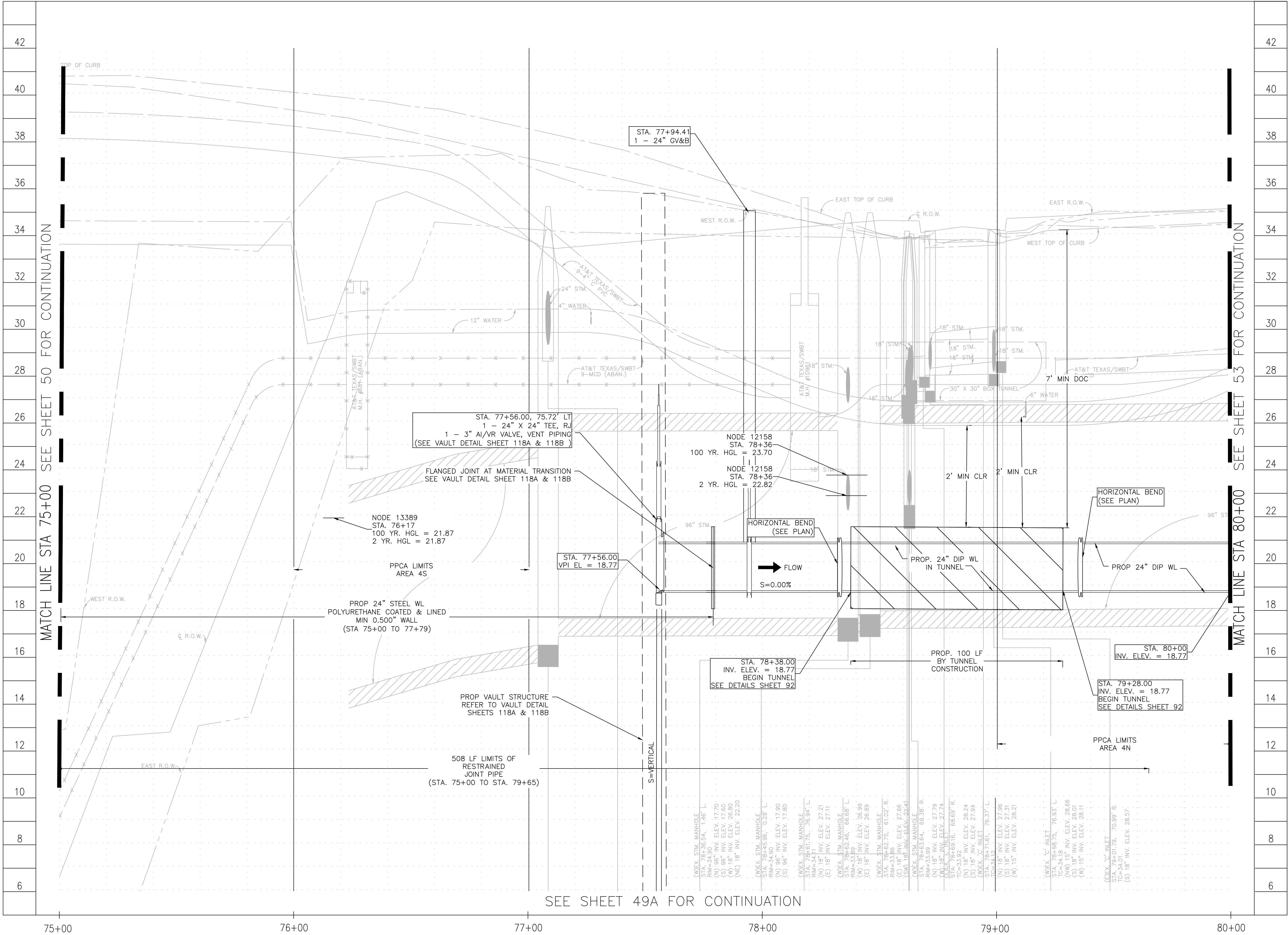
BOTTOM PROFILE  
STA. 75+00 TO STA. 80+00

WBS NO. S-000900-0139-3	
DRAWING SCALE H:1"=20'; V:1"=2'	
CITY OF HOUSTON PM SINGARPAL SEKHON, P.E.	
SHEET 49A OF 194	

No.	Date	Revisions	App.



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TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.  
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www.auroratechservices.com

**JEFFREY HAY**  
Professional Engineer  
No. 147887  
Exp. 06-26-2023

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CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST. TO EAST OREM DR. ALONG MARTIN LUTHER KING BOULEVARD

TOP PROFILE  
STA. 75+00 TO STA. 80+00

WBS NO. S-000900-0139-3	
DRAWING SCALE H:1"=20'; V:1"=2'	
CITY OF HOUSTON PM SINGARPAL SEKHON, P.E.	
SHEET 49B OF 194	

No.	Date	Revisions	App.





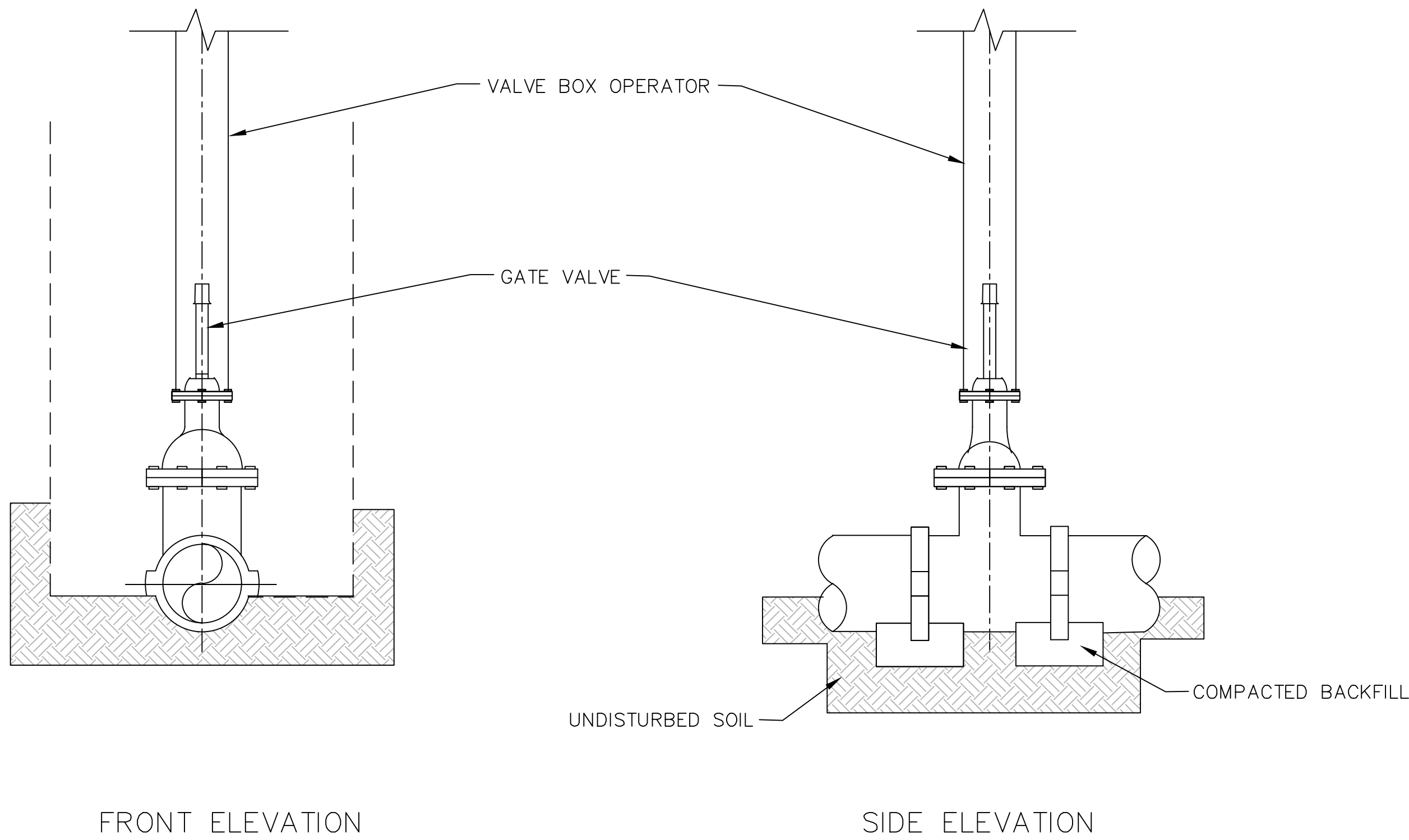


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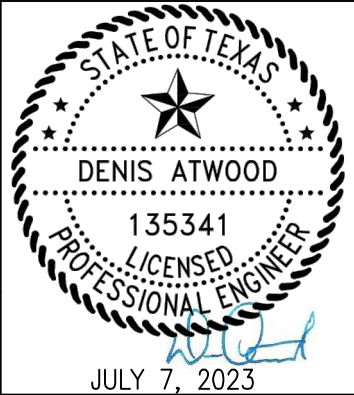
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GATE VALVE DETAIL  
NTS



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KCI TECHNOLOGIES  
KCI ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS  
801 TRAVIS STREET, SUITE 2000  
HOUSTON, TEXAS 77002  
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HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST.  
TO EAST OREM DR. ALONG MARTIN LUTHER  
KING BOULEVARD

STANDARD WATER LINE DETAILS  
SHEET 2 OF 10

WBS NO.  
S-000900-0139-3

DRAWING SCALE

NONE

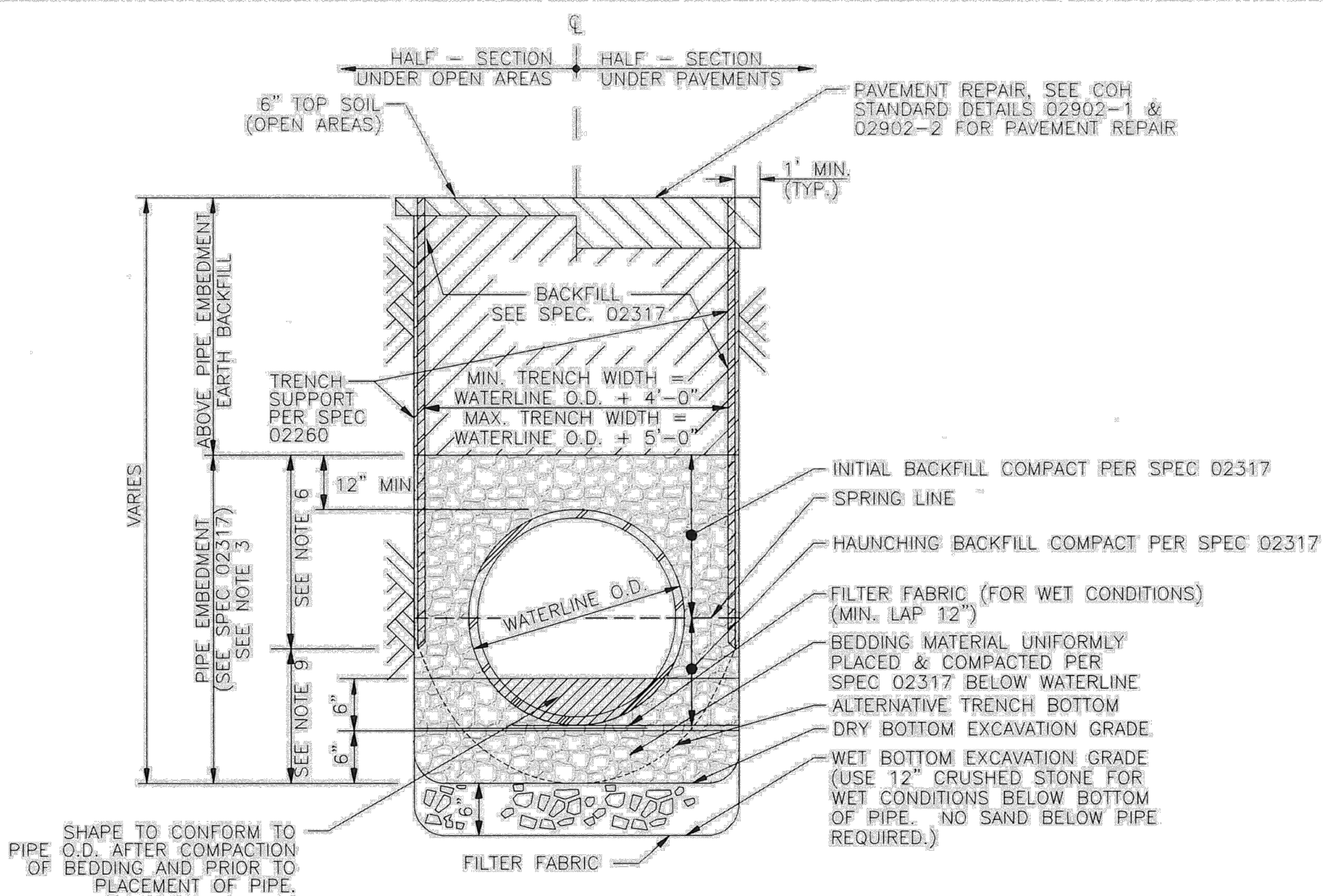
CITY OF HOUSTON PM  
SINGARPAL SEKHON, P.E.

SHEET 90 OF 194

No.	Date	Revisions	App.

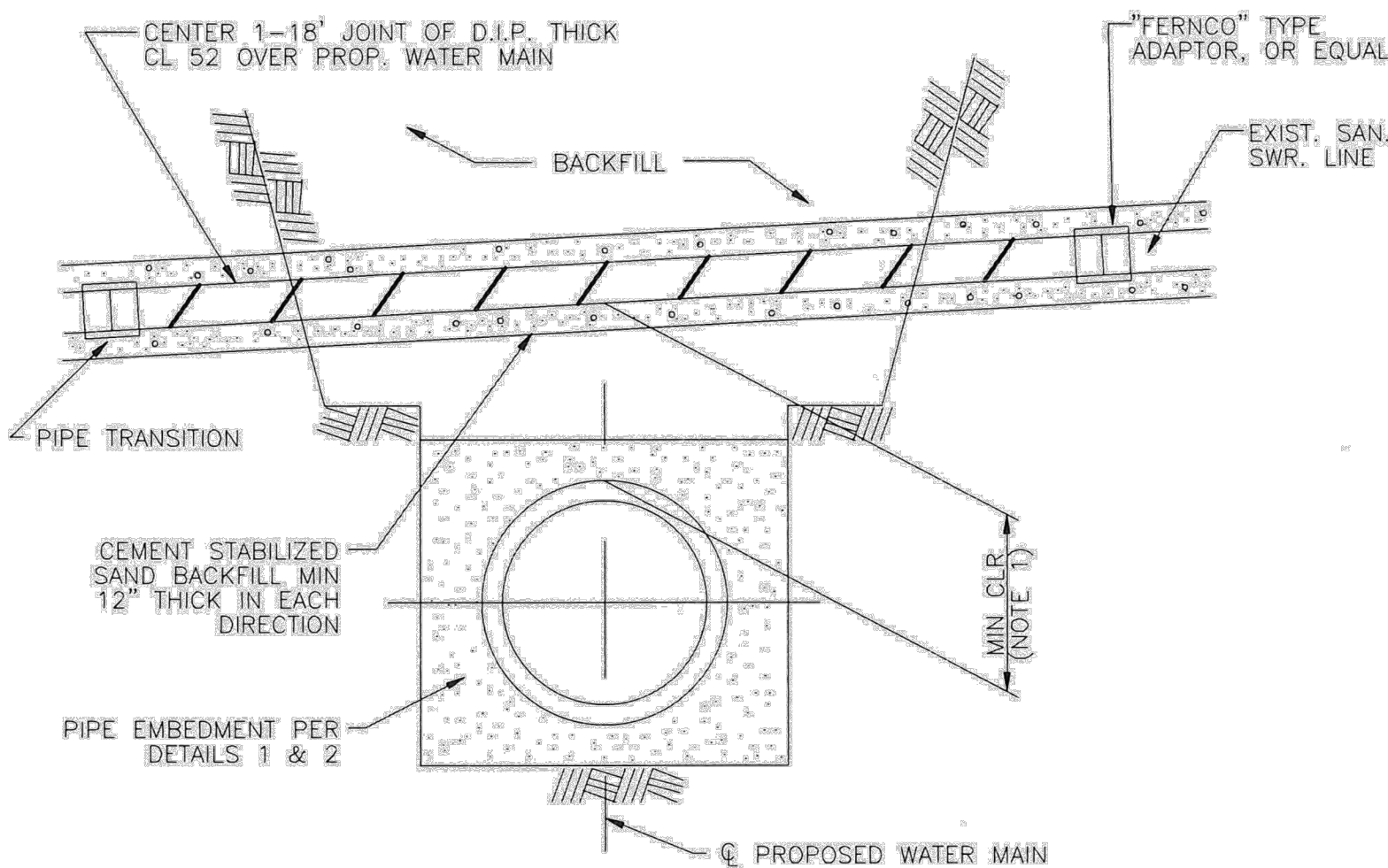


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1 EXCAVATION & BACKFILL DETAIL  
NO SCALE

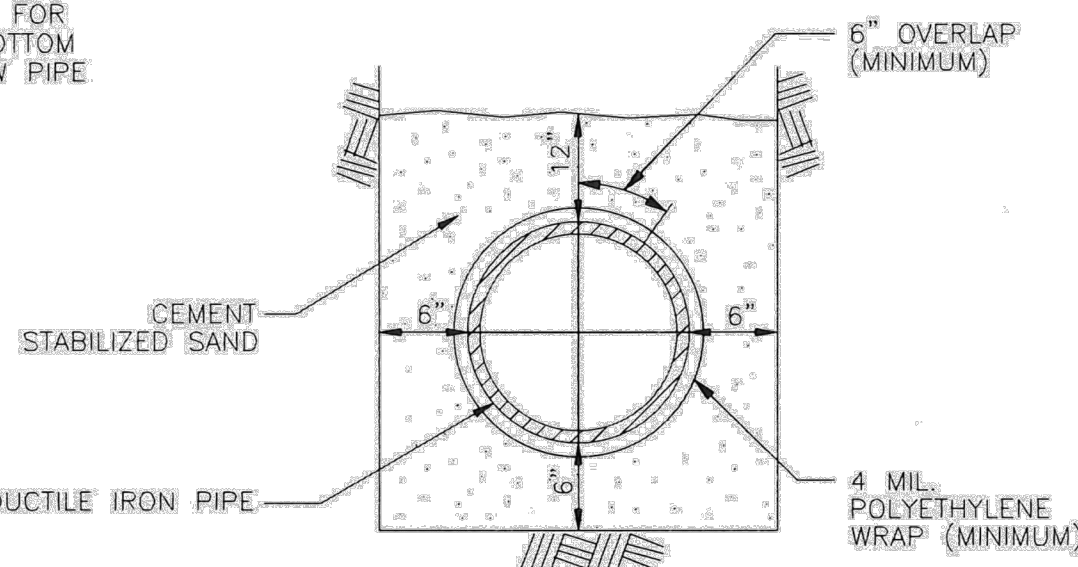
DETAIL APPLICABLE IN FOLLOWING LIMITS:  
- WATER MAIN WITH DEPTH OF COVER LESS THAN 16 FT



3 EXISTING SANITARY CROSSING OVER/UNDER PROPOSED WATER LINE  
NO SCALE

DETAIL 3 - NOTES:

1. REFER TO MINIMUM CLEARANCE REQUIRED IN DRAWINGS.



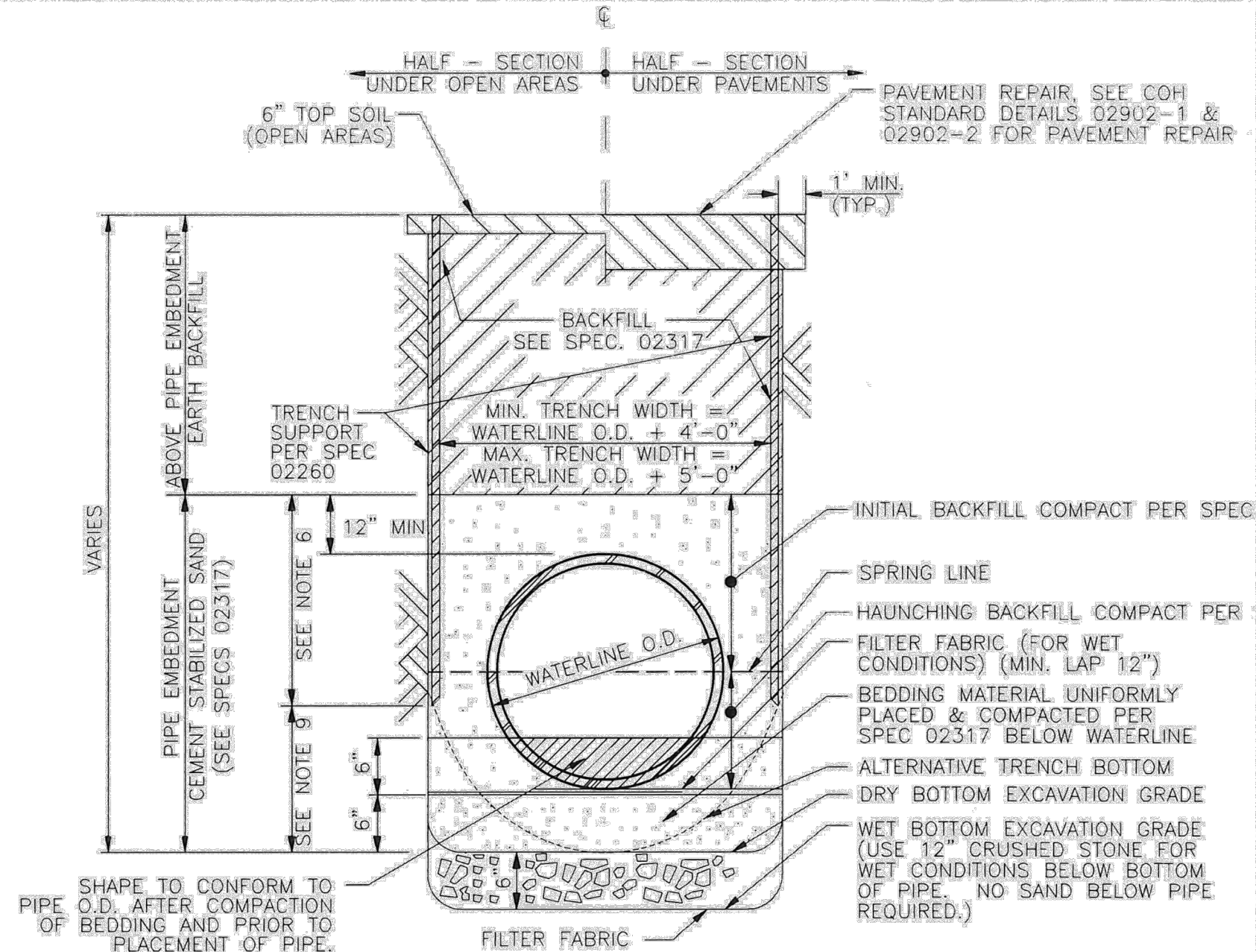
4 EMBEDMENT AND CORROSION PROTECTION FOR SANITARY SEWER DUCTILE IRON PIPE  
NO SCALE

DETAIL 4 - NOTES:

1. FOLLOWING EXCAVATION OF TRENCH, PLACE A 6" LAYER OF CEMENT STABILIZED 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 1/2" STAINLESS STEEL BANDS. END LAPS TO BE AS SPECIFIED FOR TRENCH SECTIONS.
4. REFER TO SPECIFICATION SECTION 02528 - POLYETHYLENE ENCASMENT/WRAP.

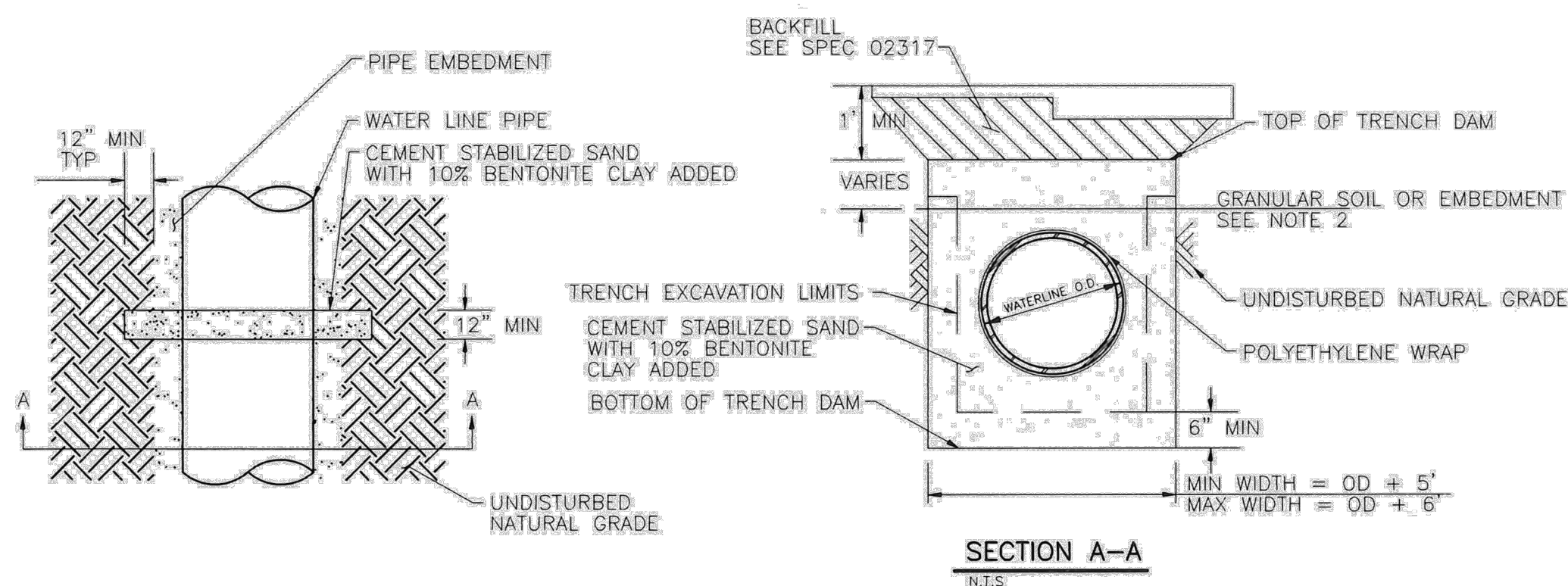
DETAILS 1 & 2 - NOTES:

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  
NO SCALE

DETAIL APPLICABLE IN FOLLOWING LIMITS:  
- WATER MAIN WITH DEPTH OF COVER GREATER THAN 16 FT  
- TUNNEL SHAFT LIMITS  
- PPCA LIMITS

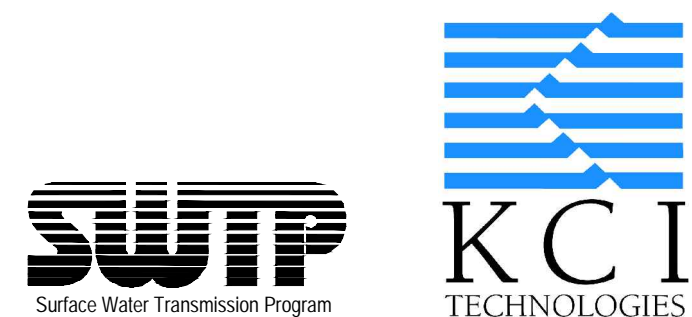


5 TRENCH DAM DETAIL  
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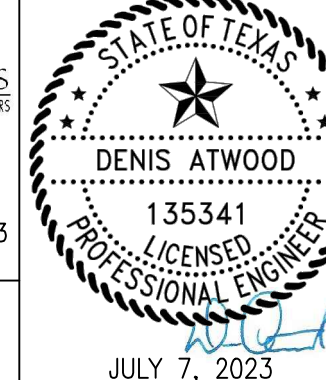
DETAIL 5 - NOTES:

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.

CITY OF HOUSTON HOUSTON PUBLIC WORKS	
STANDARD LDWL EXCAVATION AND BACKFILL DETAIL (NOT TO SCALE)	
APPROVED BY: <i>Suhail Kanwar</i> CITY ENGINEER	APPROVED BY: <i>Paul Haddad</i> DIRECTOR OF HOUSTON PUBLIC WORKS
EFF. DATE: JUL - 01 - 2021	DWG NO: 02317-09



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KCI 1 ENGINEER, PLANNER, SCIENTIST, CONSTRUCTION MANAGER  
801 TRAVIS STREET, SUITE 2000  
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CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST.  
TO EAST OREM DR. ALONG MARTIN LUTHER  
KING BOULEVARD

STANDARD WATER LINE DETAILS  
SHEET 3 OF 10

WBS NO.  
S-000900-0139-3

DRAWING SCALE

NONE

CITY OF HOUSTON PM

SINGARPAL SEKHON, P.E.

SHEET 91 OF 194

Revisions
No.
Date



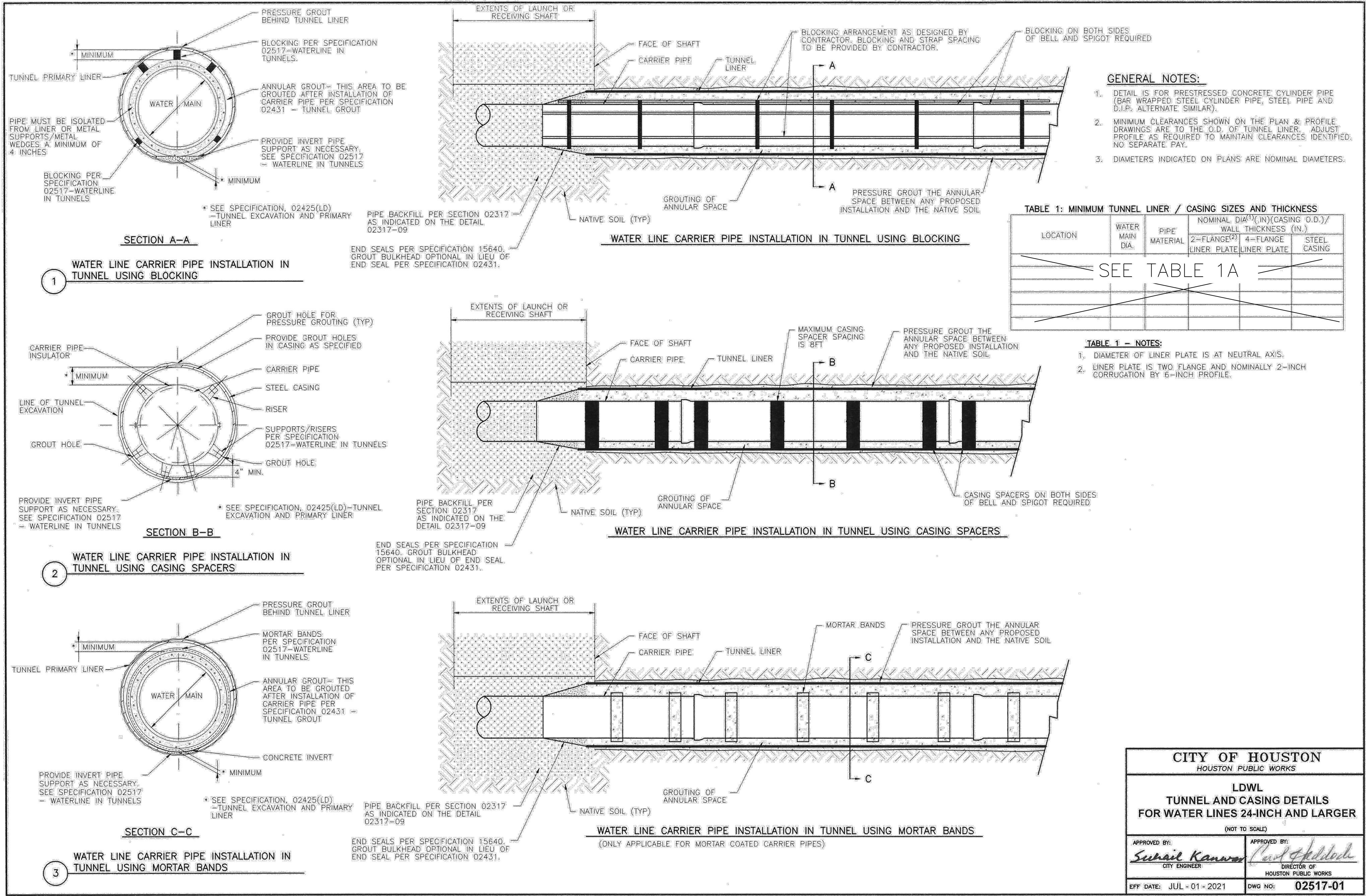
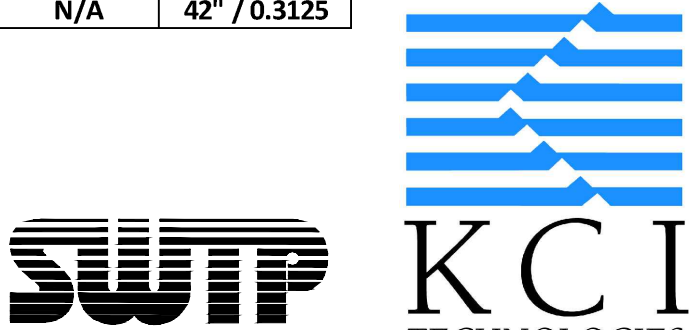


TABLE 1A

LOCATION	WATER MAIN DIA.	PIPE MATERIAL	NOMINAL DIA <sup>(1)</sup> (IN) (CASING OD) / MIN WALL THICKNESS (IN)		
			LINER PLATE	LINER PLATE	STEEL CASING
SANITARY CROSSING					
STA 10+80 - STA 11+41	24-IN	DIP	N/A	N/A	42" / 0.3125
PARKVILLAGE DR					
STA 15+06 - STA 18+16	24-IN	DIP	N/A	N/A	42" / 0.3125
FAIRGREEN LN					
STA 21+60 - STA 23+90	24-IN	DIP	N/A	N/A	42" / 0.3125
PIPELINES					
STA 36+50 TO STA 38+25	24-IN	DIP	N/A	N/A	42" / 0.4375
SELINSKY RD					
STA 41+95 - STA 43+95	24-IN	DIP	N/A	N/A	42" / 0.3125
SOUTH ACRES DR					
STA 53+53 - STA 64+55	24-IN	DIP	N/A	N/A	42" / 0.3125
STORM BOX					
STA 66+91 - STA 67+25	24-IN	DIP	N/A	N/A	42" / 0.3125
AIPORT BLVD					
STA 68+41 - STA 70+42	24-IN	DIP	N/A	N/A	42" / 0.5625
SIM BAYOU					
STA 70+67 - STA 77+43	24-IN	STEEL	N/A	N/A	42" / 0.6875
WATERFORD					
STA 78+38 - STA 79+28	24-IN	DIP	N/A	N/A	42" / 0.3125
RUE ST					
STA 95+32 - STA 96+27	24-IN	DIP	N/A	N/A	42" / 0.3125

\* FOR TUNNEL FROM STA 70+67 - STA 77+43, CASING SIZE SHALL ACCOUNT FOR ANNUAL GROUTING PIPING SIZE REQUIRED FOR PROPER GROUT DISTRIBUTION.



Surface Water Transmission Program  
TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.

PRIVATE UTILITY LINES SHOWN  
AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

Date: \_\_\_\_\_  
CenterPoint Energy/Electric Facilities  
Signature indicates underground electric lines are properly shown. No approval for construction is given.  
SIGNATURE VALID FOR SIX MONTHS.

Date: \_\_\_\_\_  
Approved for AT&T underground conduit facilities only.  
Signature valid for one year.  
SIGNATURE VALID FOR ONE YEAR.

Date: \_\_\_\_\_  
CenterPoint Energy/Gas Facilities/ENTEX Incorporated  
(Gas service lines are not shown)  
SIGNATURE VALID FOR SIX MONTHS.

CABLE COMPANY

**Aurora Technical Services, LLC**  
engineering + construction management  
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Suite 150  
Houston, TX 77056  
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**CITY OF HOUSTON**  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST. TO EAST OREM DR. ALONG MARTIN LUTHER KING JR. BOULEVARD

STANDARD WATER LINE DETAILS  
SHEET 4 OF 10

WBS NO. S-000900-0139-3
DRAWING SCALE NONE
CITY OF HOUSTON PM SINGARPAL SEKHON, P.E.
SHEET 92 OF 198





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HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST.  
TO EAST OREM DR. ALONG MARTIN LUTHER  
KING BOULEVARD

STANDARD WATER LINE DETAILS  
SHEET 5 OF 10

WBS NO.  
S-000900-0139-3


DRAWING SCALE

NONE

CITY OF HOUSTON PM  
SINGARPAL SEKHON, P.E.

SHEET 93 OF 194





**SWTP**  
Surface Water Transmission Program

**KCI**  
TECHNOLOGIES

SURVEYED BY:  
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24-INCH WATER LINE FROM SUNBEAM ST.  
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WBS NO.  
S-000900-0139-3

DRAWING SCALE

NONE

CITY OF HOUSTON P

SINGARPAL SEKHON, P.

SHEET 94 OF 194

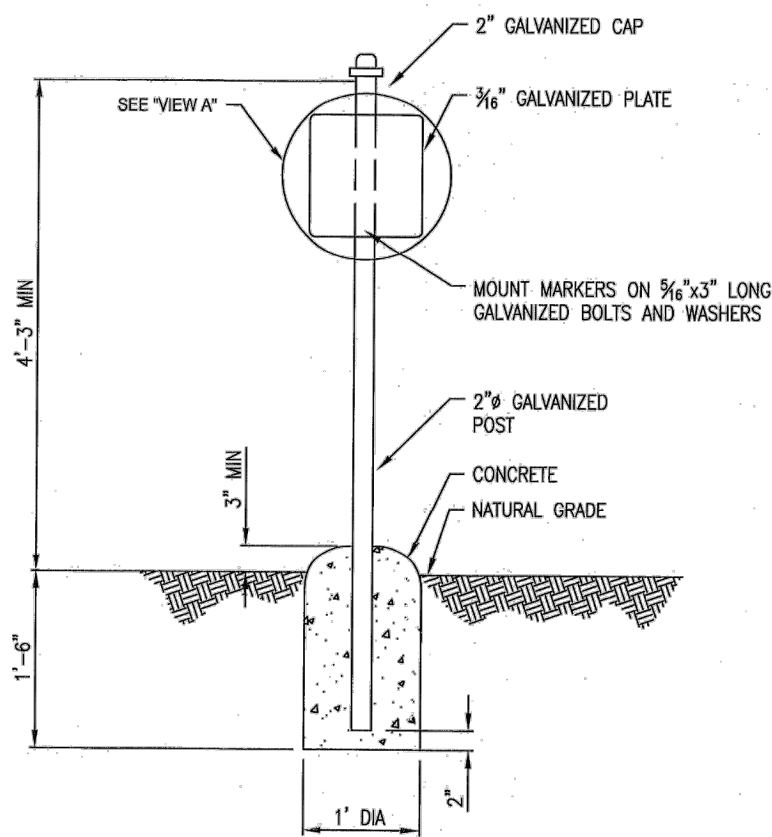
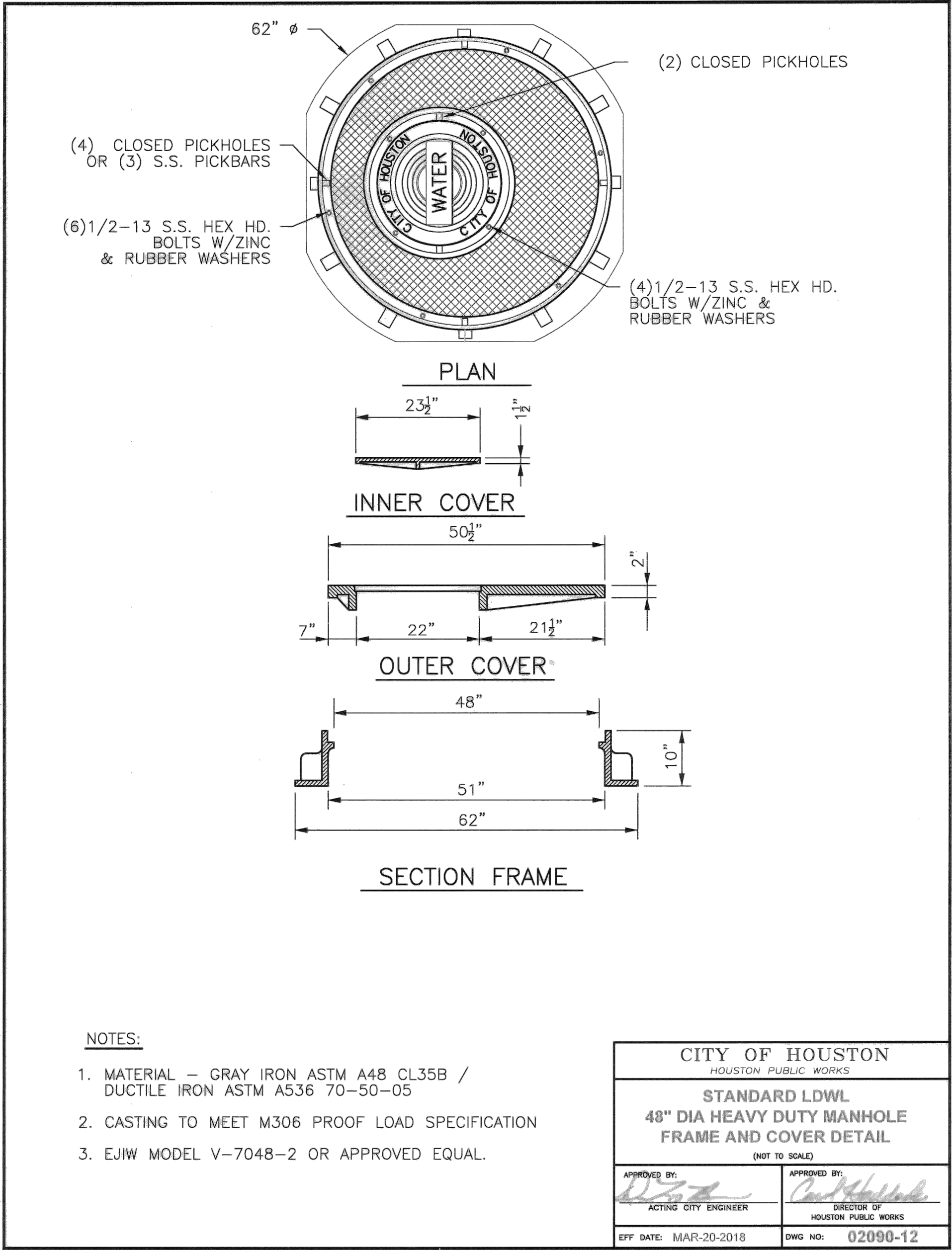


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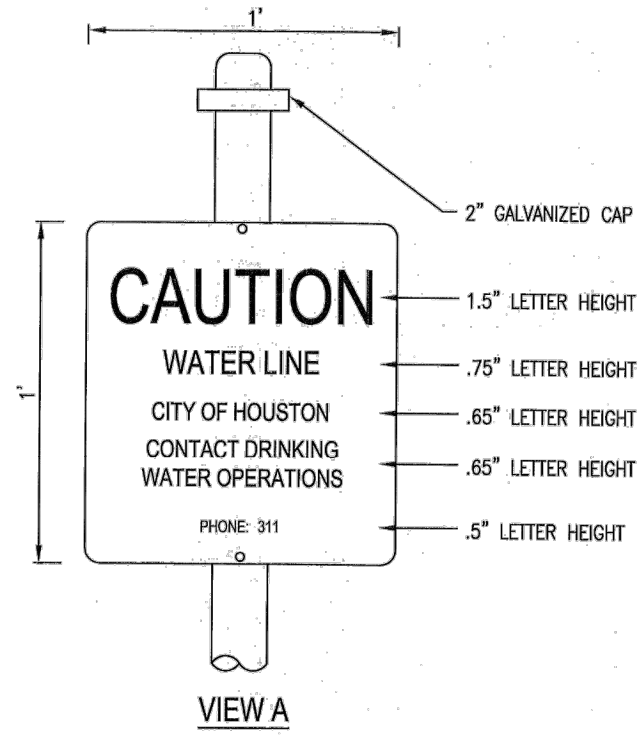
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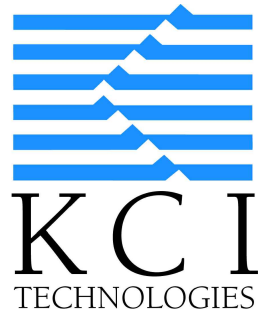
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1 WATER LINE MARKER INSTALLATION  
NOT TO SCALE

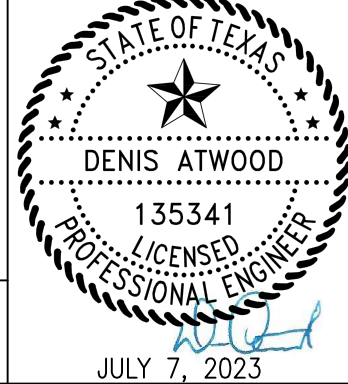


- NOTES:
- WATER LINE MARKER TO BE INSTALLED 1' INSIDE ROW OR EASEMENT OVER THE CENTER OF THE WATER LINE AS IDENTIFIED ON THE PLAN DRAWINGS.
  - VERIFY LABELING ON THE SIGN PRIOR TO MANUFACTURING.
  - SIGN TO BE BLUE BACKGROUND WITH BLACK LETTERING. USE BAKED ENAMEL PAINT.



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KCI TECHNOLOGIES  
K.C. ENGINEERS | PLANNERS | SCIENTISTS | CONSTRUCTION MANAGERS  
801 TRAVIS STREET, SUITE 2000  
HOUSTON, TEXAS 77002  
713-237-9800  
TBPE REGISTRATION NO. F-10573  
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SURVEYED BY:  
UNITED ENGINEERS, INC.  
C.O.H. FIELD BOOK



CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST.  
TO EAST OREM DR. ALONG MARTIN LUTHER  
KING BOULEVARD

STANDARD WATER LINE DETAILS  
SHEET 7 OF 10

WBS NO.  
S-000900-0139-3

DRAWING SCALE

NONE

CITY OF HOUSTON PM  
SINGARPAL SEKHON, P.E.

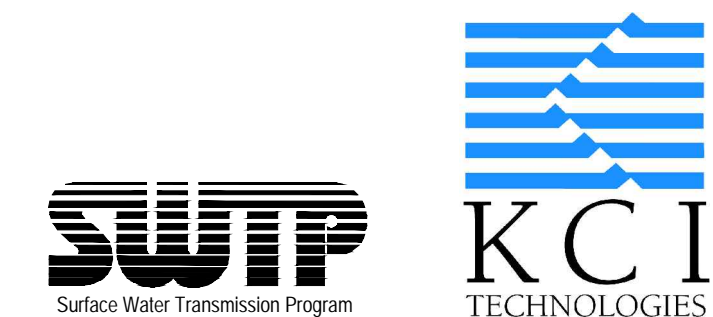
SHEET 95 OF 194

Revisors

No.	Date	App.



SHEET NOT USED



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24-INCH WATER LINE FROM SUNBEAM ST.  
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STANDARD WATER LINE DETAILS  
SHEET 8 OF 10

WBS NO.  
S-000900-0139-3

DRAWING SCALE

NONE

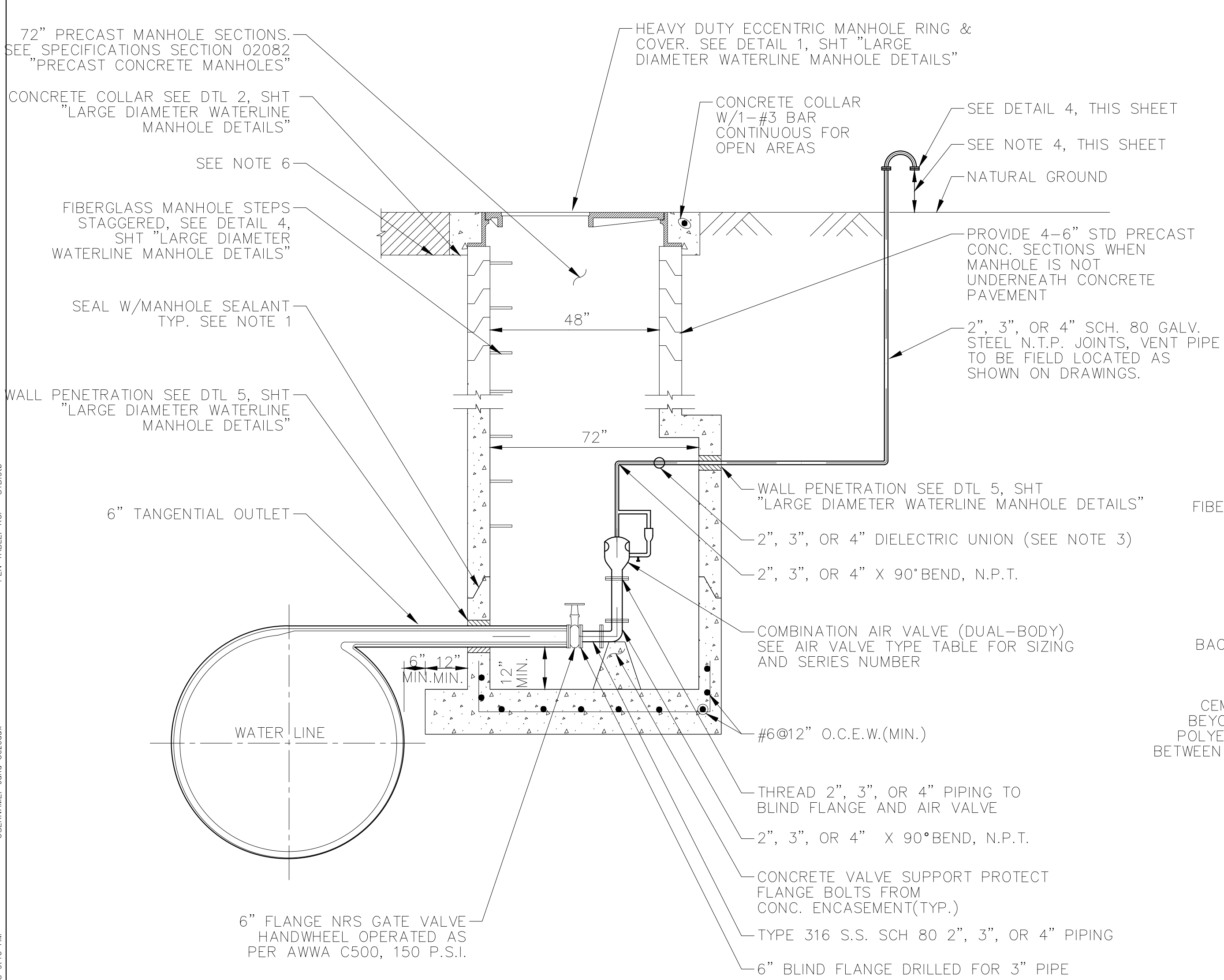
CITY OF HOUSTON PM
SINGARPAL SEKHON, P.E.

SHEET 96 OF 194

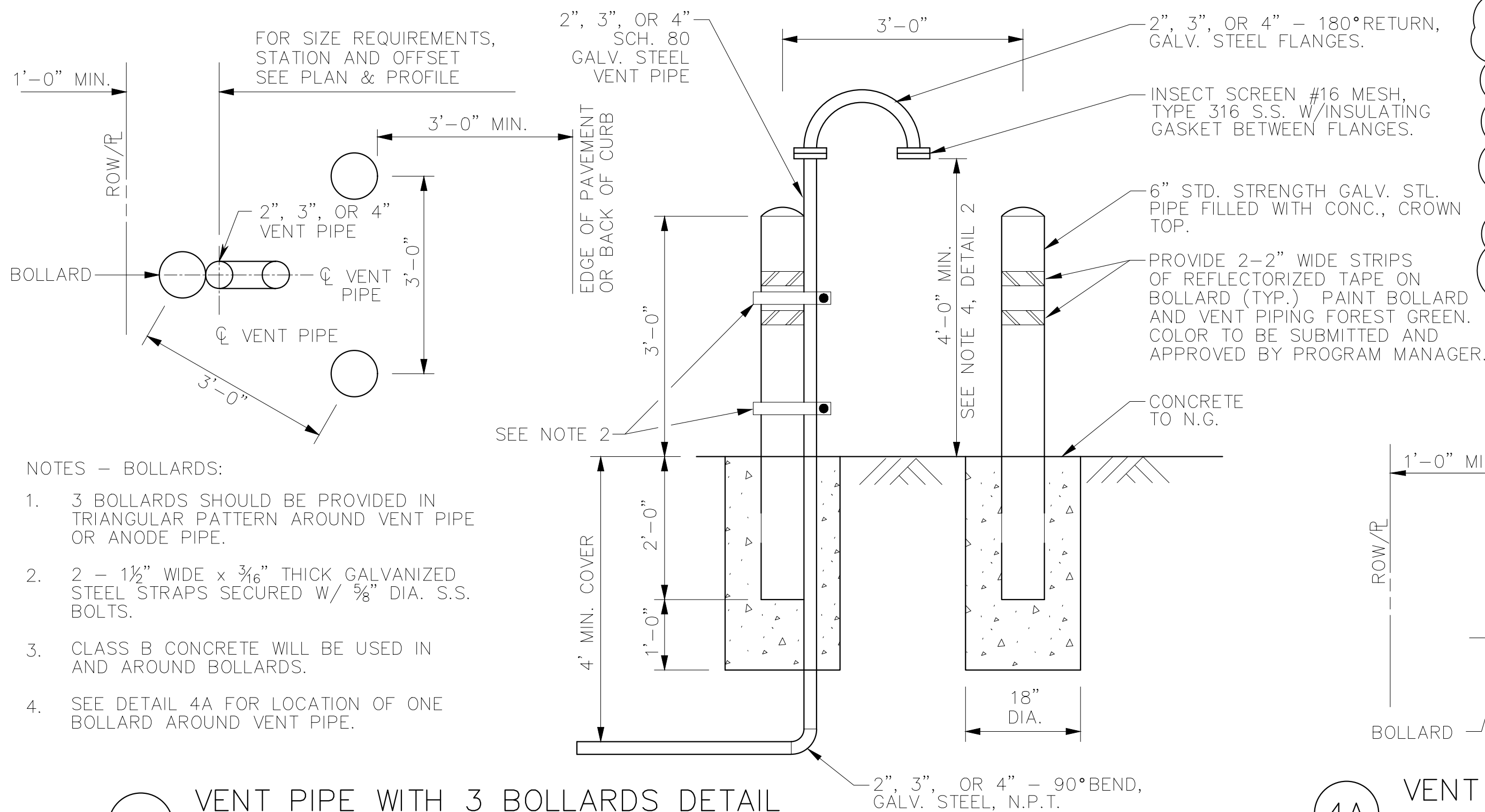
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PLOTED: 8/2/2023 9:16 AM  
USER: jma  
PEN TABLE: KCI - STB.sib



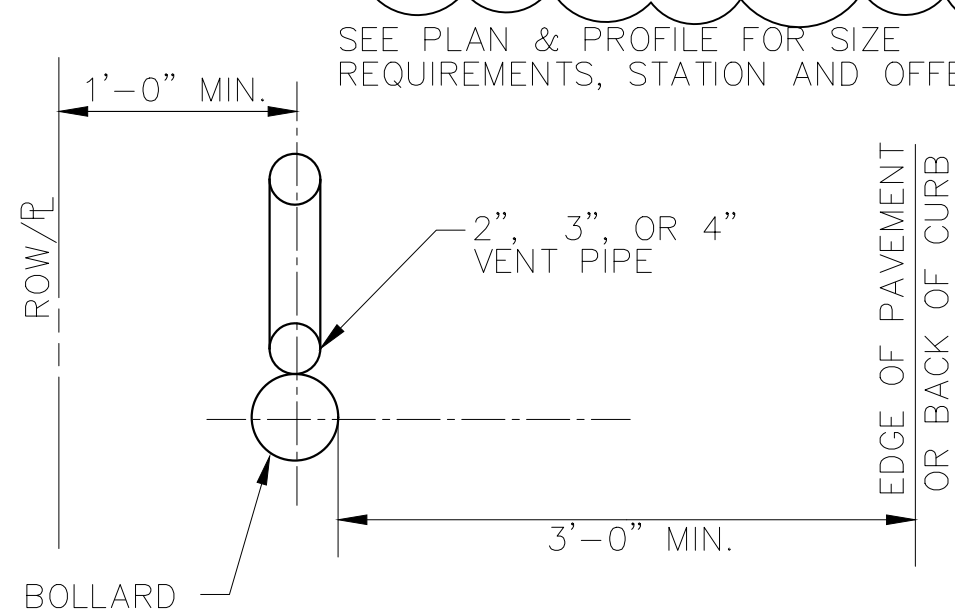
1 LOW PROFILE AIR VALVE ASSEMBLY  
(FOR WATER LINES 36-INCH TO 84-INCH DIAMETER)



2 AIR VALVE ASSEMBLY IN SERVICE MANHOLE  
(FOR WATER LINES UP TO 96-INCH DIAMETER)

WATER MAIN DIAMETER	MANUFACTURER (1)	VACUUM (AI/VR)		AIR RELEASE		COMBINATION
		SERIES	ORIFICE SIZE (2)	SERIES	INLET SIZE (NPT)	
<=96"	APCO	1500C (1500AC)	PER PLAN/SECTION	200	3"	>= 1"
	CLAVAL	38VB	PER PLAN/SECTION	34AR	3"	>= 1"
	PRATT	WAVVB	PER PLAN/SECTION	WAR	3"	>= 1"

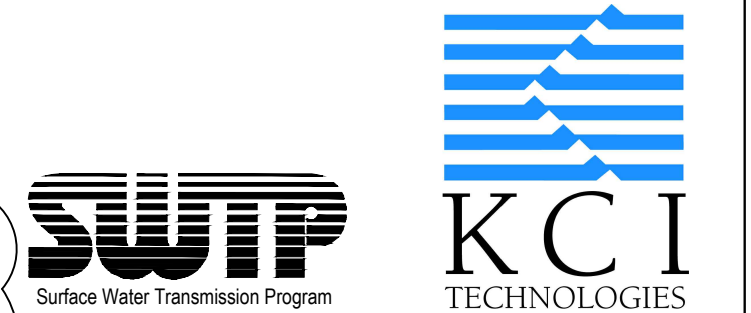
3 AIR VALVE & TYPE TABLE  
(FOR WATER LINES UP TO TO 96" DIAMETER)



4A VENT PIPE WITH 1 BOLLARD DETAIL

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. PIPING AND APPURTENANCES OF THE SAME DIAMETER AND CLASS.
4. VERIFY THAT LOCATION OF VENT PIPE SCREEN IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND WHICHEVER IS HIGHER.
5. REFER TO PLAN AND PROFILE SHEETS FOR LOCATIONS OF AIR VALVES.
6. FOR PAVEMENT REPAIR, SEE SHEET "EXCAVATION, BEDDING, AND BACKFILL DETAILS".
7. PROVIDE AN APPROVED PETROLATUM BASED TAPE ENCAPSULATING ALL BOLTS IN ACCESS MANHOLE.
8. IF DEPTH OF COVER IS LESS THAN 5', USE "LOW PROFILE AIR VALVE ASSEMBLY DETAIL".
9. CONTRACTOR TO CONTACT THE VENDOR FOR MODEL NUMBER.



DENIS ATWOOD  
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SURVEYED BY:  
UNITED ENGINEERS, INC.  
C.O.H. FIELD BOOK

STATE OF TEXAS  
DENIS ATWOOD  
135341  
LICENSED PROFESSIONAL ENGINEER  
JULY 7, 2023

CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST.  
TO EAST OREM DR. ALONG MARTIN LUTHER  
KING BOULEVARD

STANDARD WATER LINE DETAILS (MOD)  
SHEET 9 OF 10

WBS NO. S-000900-0139-3	
DRAWING SCALE NONE	
CITY OF HOUSTON PM SINGARPAL SEKHON, P.E.	
SHEET 97 OF 194	



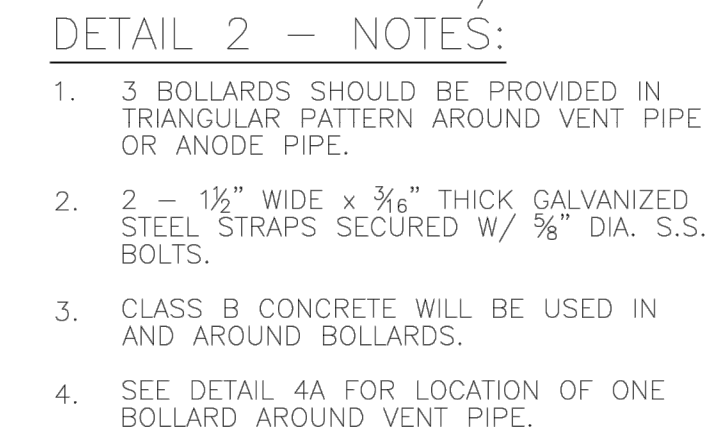


WATER MAIN DIAMETER	MANUFACTURER (1)	SERIES	ORIFICE SIZE
<= 36"	APCO	140C	3"
	CLAVAL	36	3"
	PRATT	WCV 01	3"

### COMBINATION AIR VALVE & TYPE TABLE

(1) OR APPROVED EQUAL.

7. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
8. FOR MANHOLES DEEPER THAN 20 FEET, SAFETY CLIMBING DEVICES MUST BE PROVIDED (SAF-T-1 CLIMB OR APPROVED EQUAL). SEE COH DETAIL 02082-11.
9. PIPING AND APPURTENANCES OF THE SAME DIAMETER AND CONSTRUCTED OF THE SAME MATERIAL AND CLASS.
10. VERIFY THAT LOCATION OF VENT PIPE SCREEN IS NOT LESS THAN 10-FOOT FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND WHICHEVER IS HIGHER.
11. REFER TO PLAN AND PROFILE SHEETS FOR LOCATIONS OF AIR VALVES.
12. FOR PAVEMENT REPAIR, SEE COH DETAILS 02902-01 & 02902-02.
13. PROVIDE AN APPROVED PETROLATUM BASED TAPE ENCAPSULATING ALL BOLTS IN ACCESS MANHOLE.



2



(2)

<p align="center"><b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS</p>		
<p align="center"><b>LDWL</b> <b>COMBINATION AIR VALVE ASSEMBLY</b> <b>IN SERVICE MANHOLE DETAILS</b>  (NOT TO SCALE)</p>		
<p>REVISED ON: _____</p>		
<p>REVISED BY: _____</p>		
<p>EFF DATE: <b>MAR-20-2018</b></p>	<p>DWG NO: <b>02524-02</b></p>	



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HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST.  
TO EAST OREM DR. ALONG MARTIN LUTHER  
KING BOULEVARD

STANDARD WATER LINE DETAILS  
SHEET 10 OF 10

WBS NO.  
S-000900-0139-3

DRAWING SCALE

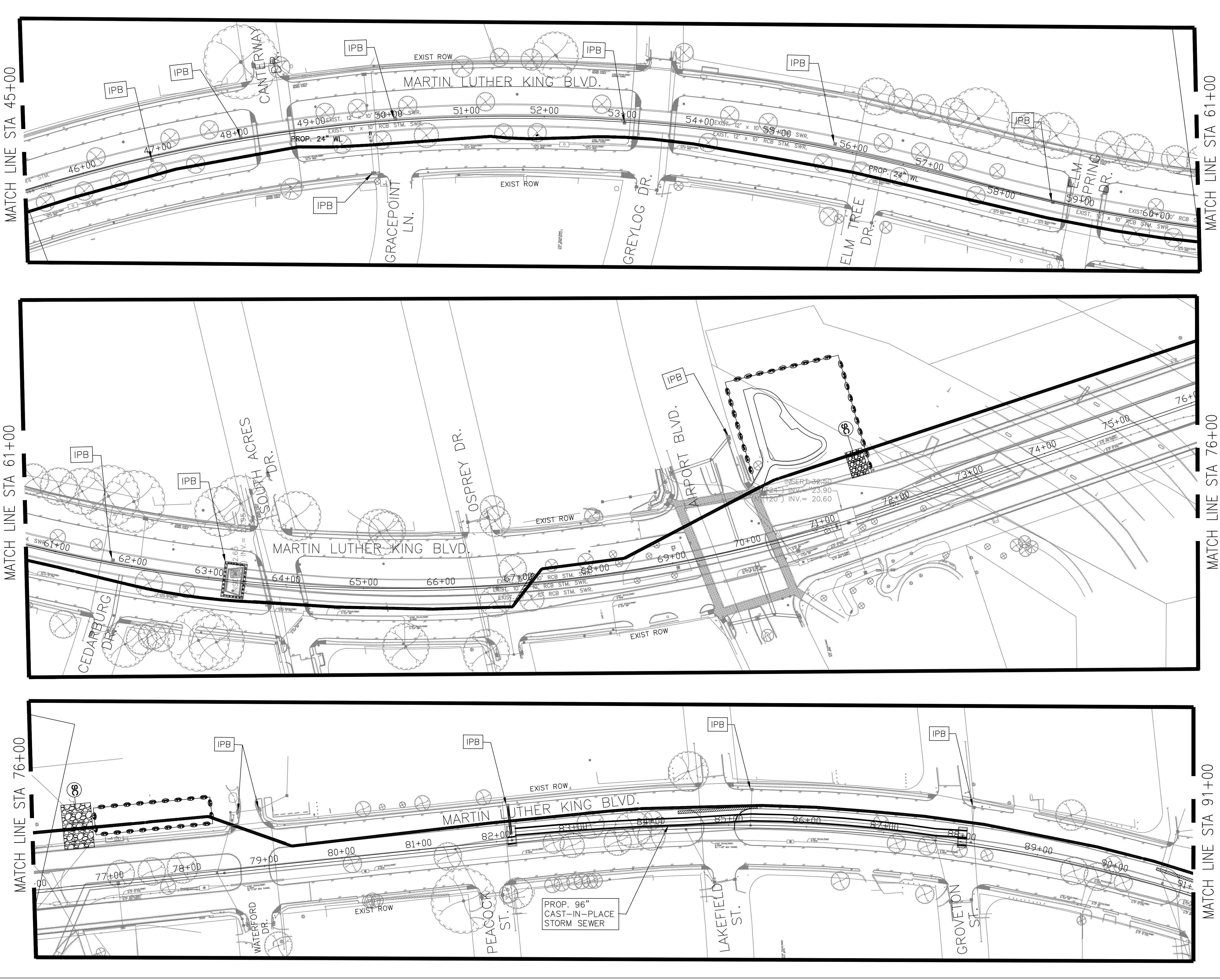
NONE

CITY OF HOUSTON PM

SINGARPAL SEKHON, P.E

SHEET 98 OF 194





0 60 120 Feet

**LEGEND**

- HAY BALE INLET PROTECTION BARRIER-IPB
- REINFORCED FILTER FABRIC BARRIER
- STABILIZED CONSTRUCTION ENTRANCE
- INLET PROTECTION BARRIERS FOR STAGE 1 & 2 INLETS

**NOTES:**

- SEE SHEET NO. 190 FOR STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NOTES & DETAILS.
- CONTRACTOR SHALL PROVIDE A STABILIZED CONSTRUCTION EXIT, INCLUDING TRUCK WASHING AREA, VERIFIED IN THE FIELD AND AUTHORIZED BY THE CITY ENGINEER.

**SWTP**  
Surface Water Transmission Program

**KCI**  
TECHNOLOGIES

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.

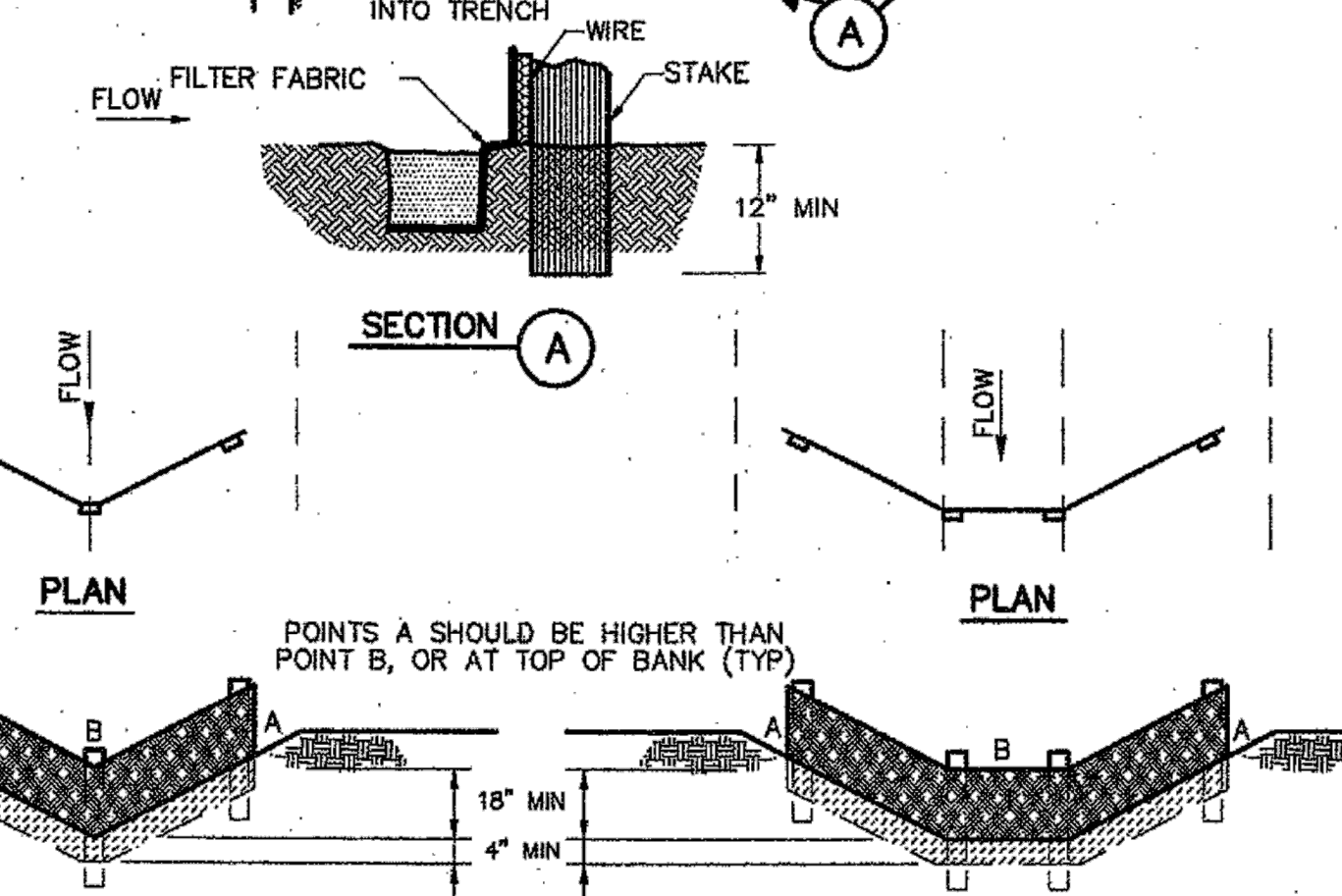
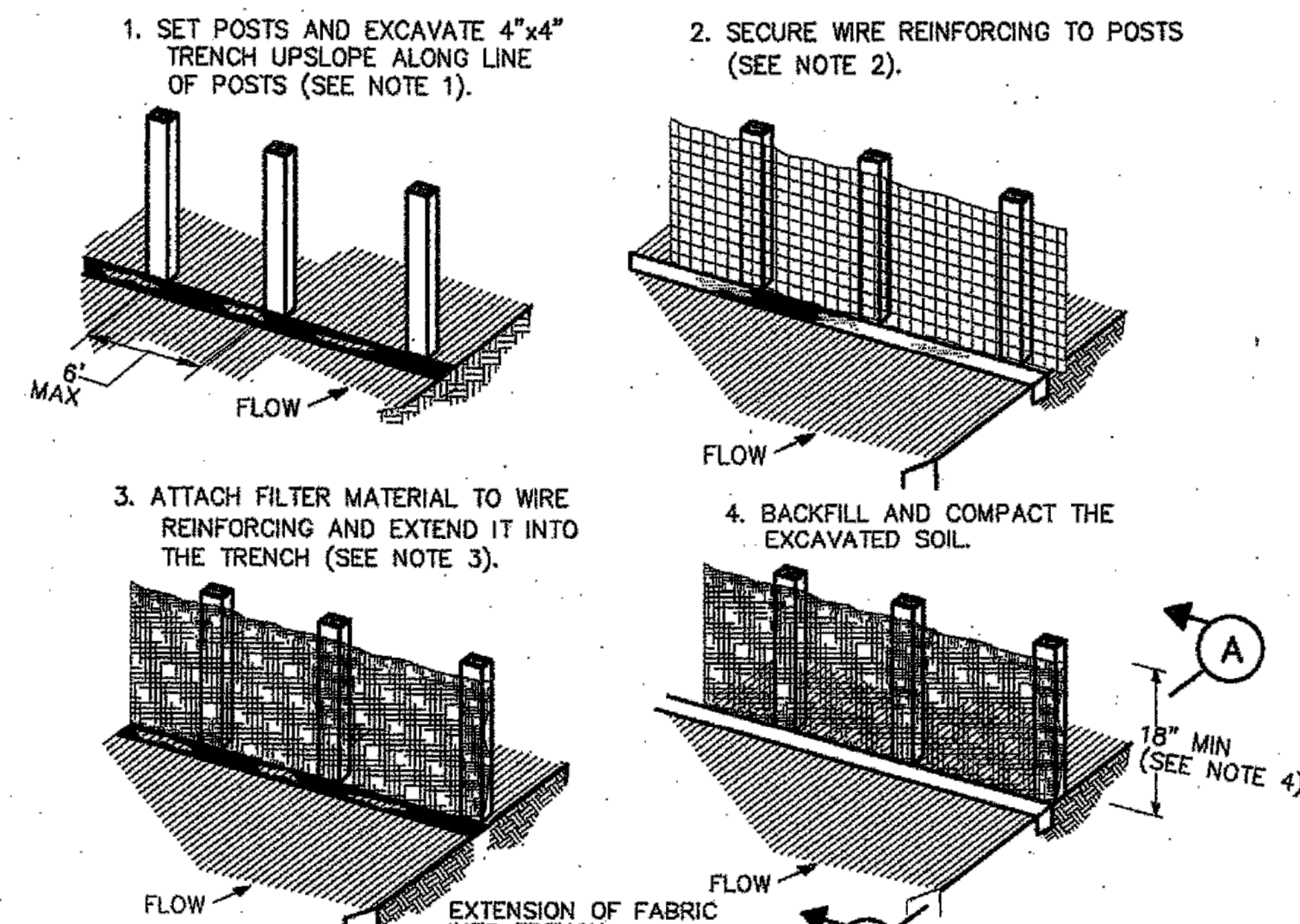
AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 OR 713-223-4567 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

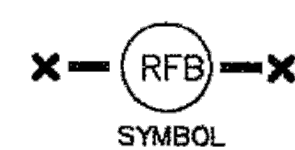
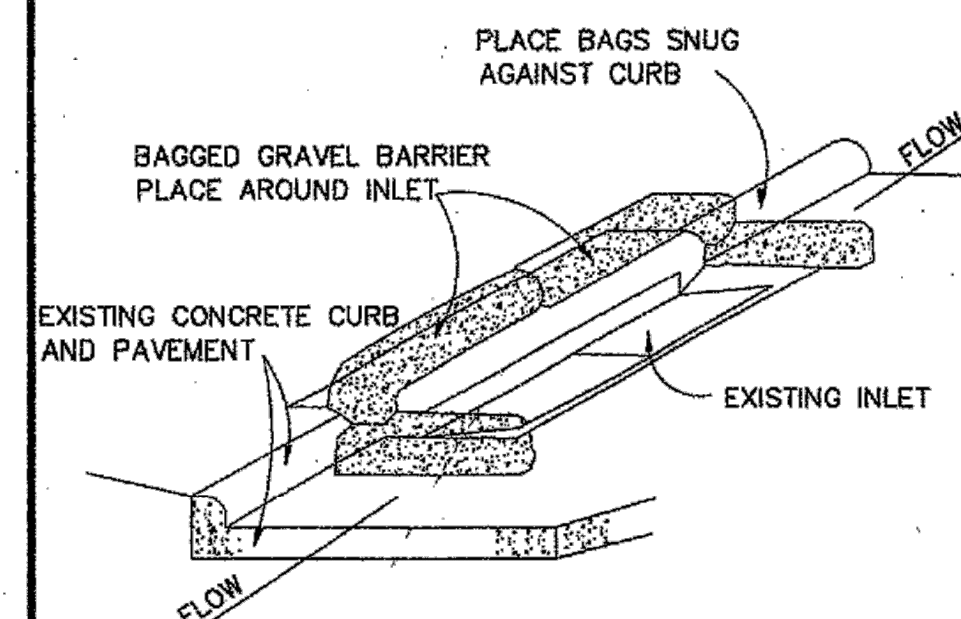
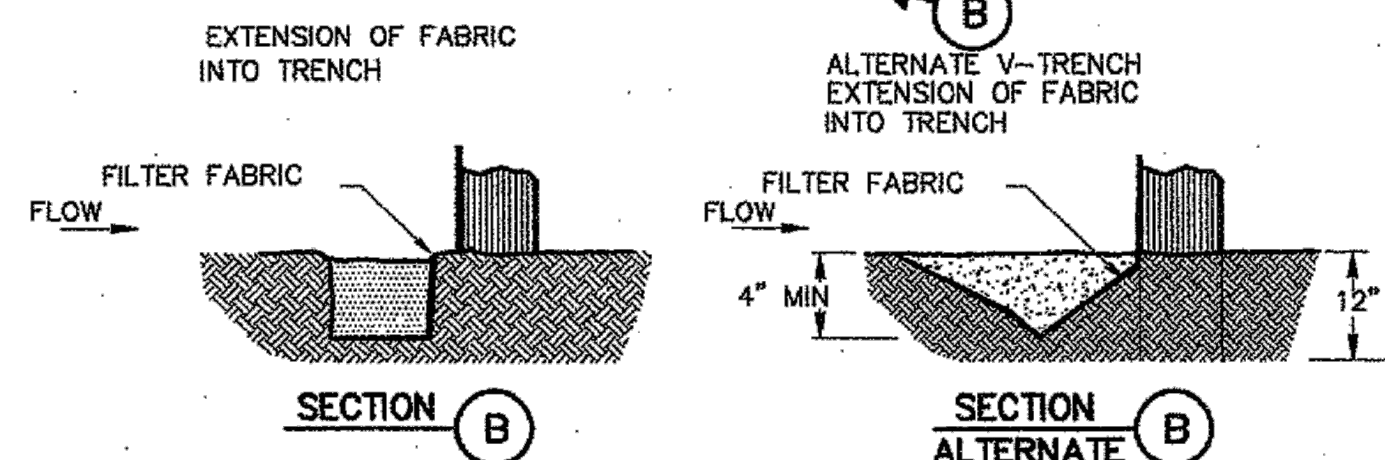
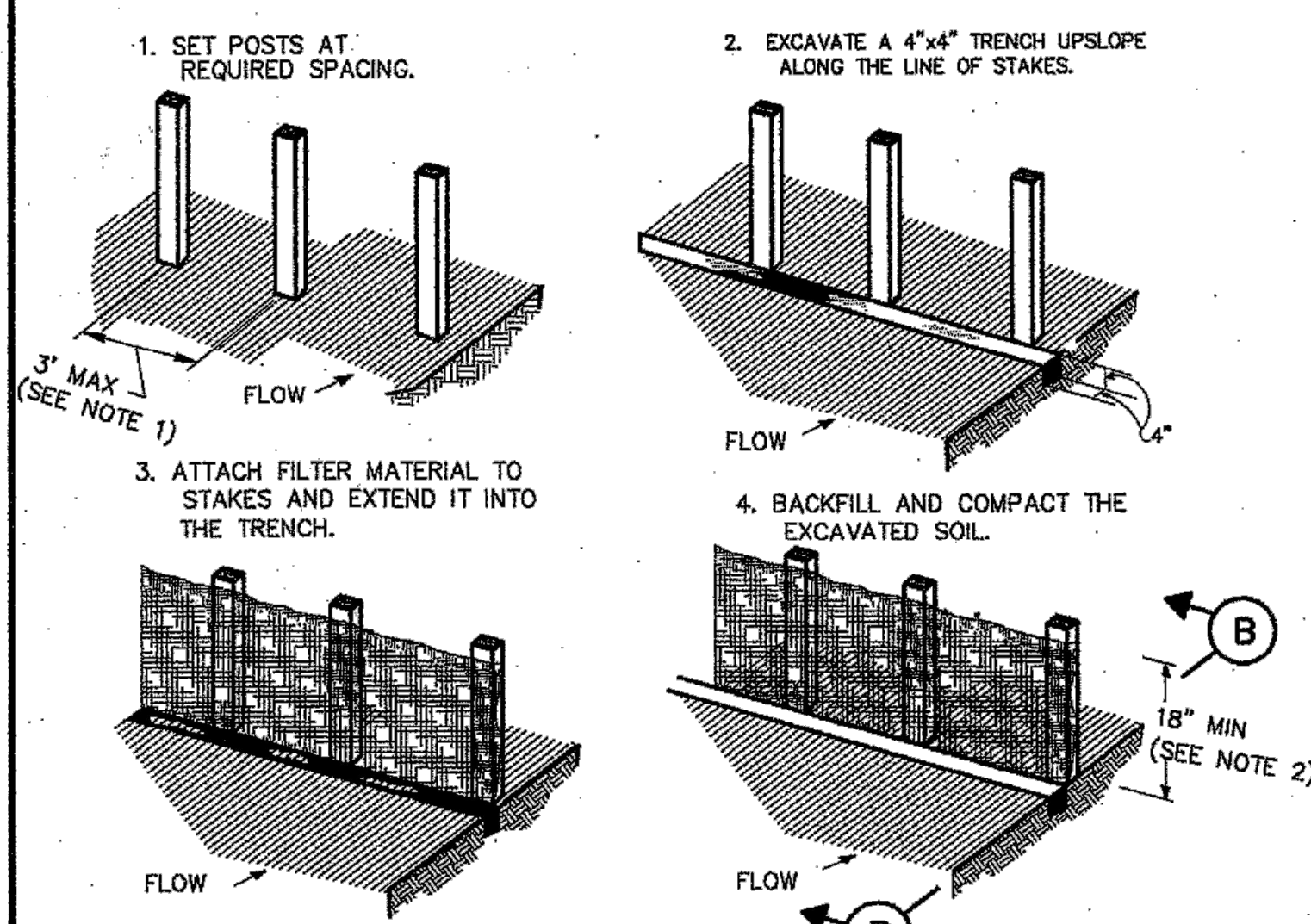
**VERIFICATION OF PRIVATE UTILITY LINES**

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.	
DENIS ATWOOD KCI TECHNOLOGIES KCI ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS 801 TRAVIS STREET, SUITE 2000 HOUSTON, TEXAS 77002 713-237-9800 TBPE REGISTRATION NO. F-10573 www.kci.com	<p>STATE OF TEXAS</p> <p>DENIS ATWOOD</p> <p>135341</p> <p>PROFESSIONAL ENGINEER</p> <p>JULY 7, 2023</p>
<b>CITY OF HOUSTON</b> HOUSTON PUBLIC WORKS	
24-INCH WATER LINE FROM SUNBEAM ST. TO EAST OREM DR. ALONG MARTIN LUTHER KING BOULEVARD	
STORM WATER POLLUTION PROTECTION PLAN STA. 45+00 TO STA. 91+00	
WBS NO. S-000900-0139-3	
DRAWING SCALE 1" = 60'	
CITY OF HOUSTON PM SINGARPAL SEKHON, P.E.	
SHEET 191 OF 194	

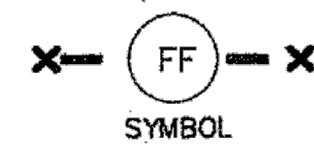
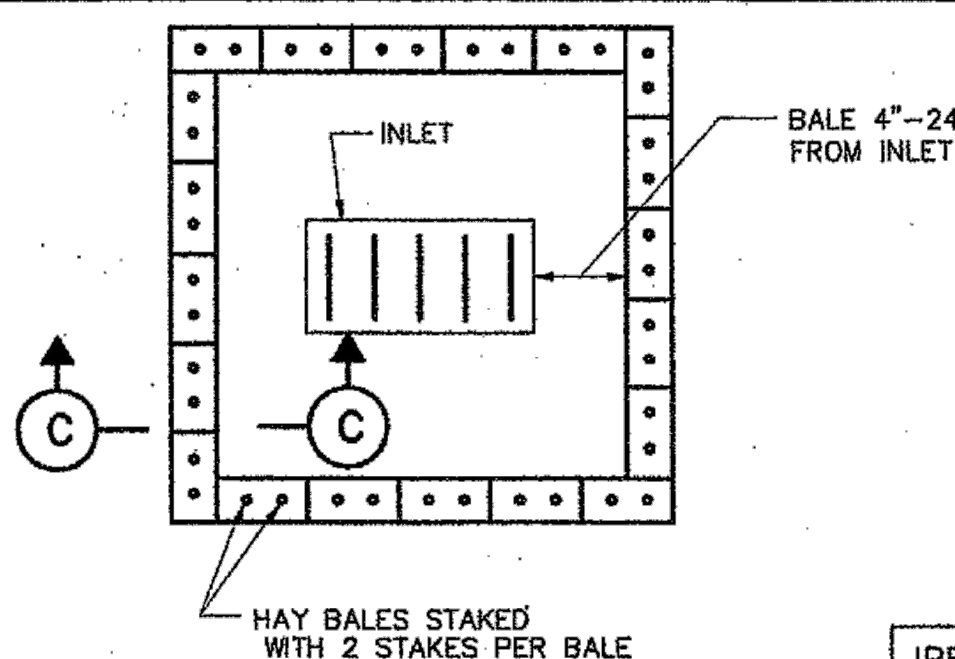
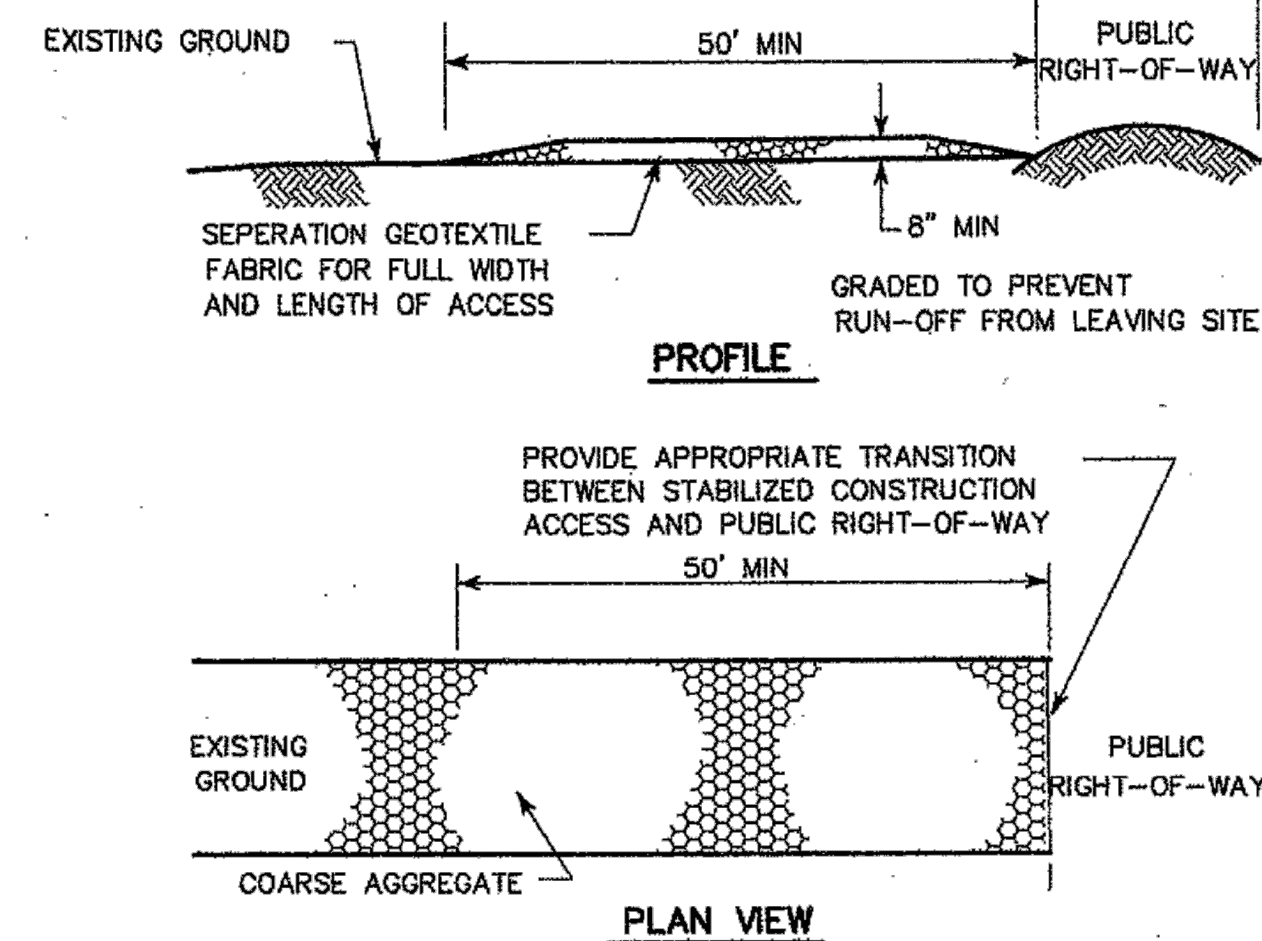


**CONSTRUCTION NOTES:**

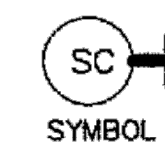
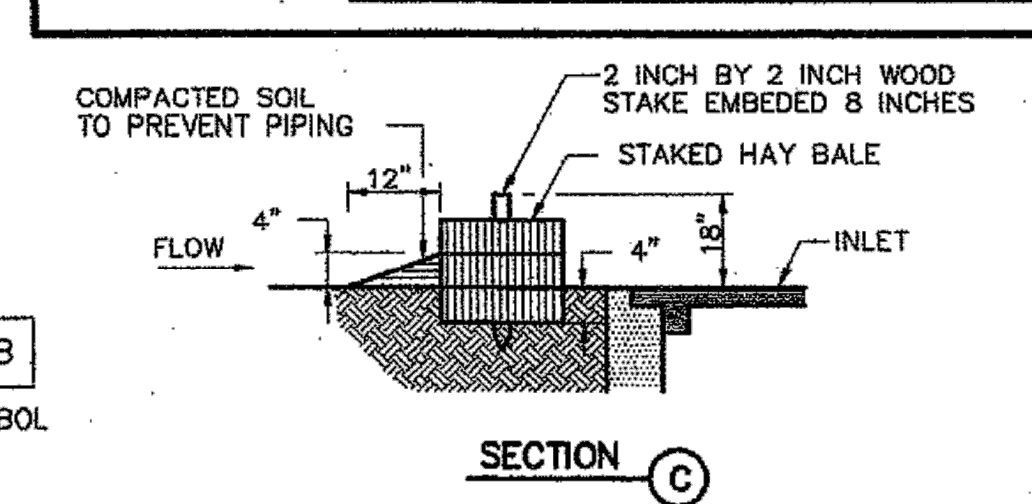
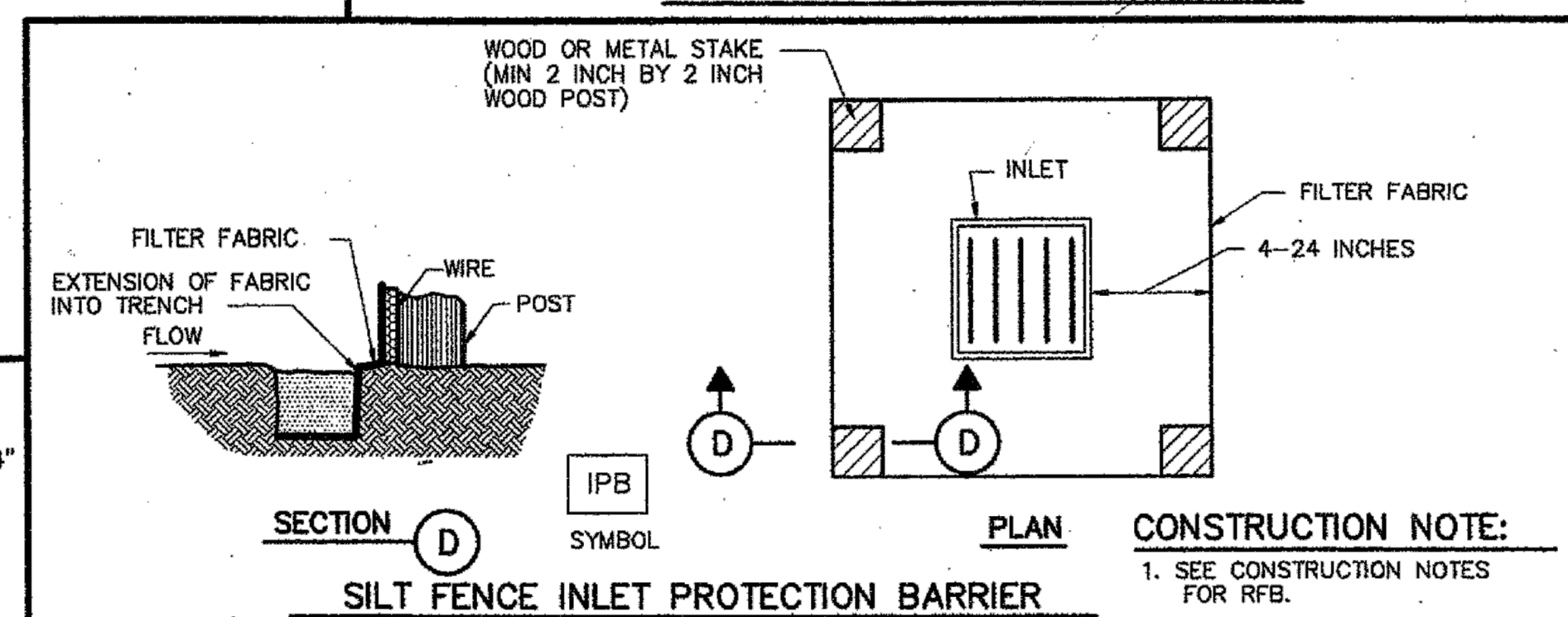
1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
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.

**REINFORCED FILTER FABRIC BARRIER****INLET PROTECTION BARRIER (FOR STAGE II INLETS) BAGGED GRAVEL BARRIER****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.

**FILTER FABRIC BARRIER****HAY BALE INLET PROTECTION BARRIER****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.

**STABILIZED CONSTRUCTION ACCESS**

CITY OF HOUSTON  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

**STORM WATER POLLUTION PREVENTION PLAN DETAILS**

(NOT TO SCALE)

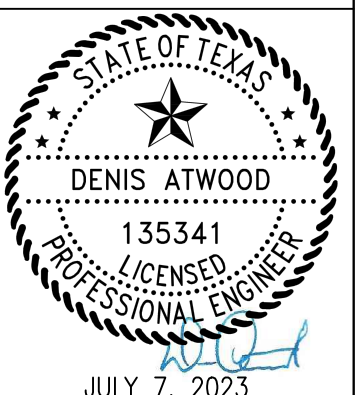
APPROVED: [Signature] CITY ENGINEER

APPROVED: [Signature] DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY-01-2010 DWG NO: 01571-01



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801 TRAVIS STREET, SUITE 2000  
HOUSTON, TEXAS 77002  
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CITY OF HOUSTON  
HOUSTON PUBLIC WORKS

24-INCH WATER LINE FROM SUNBEAM ST. TO EAST OREM DR. ALONG MARTIN LUTHER KING BOULEVARD

STORM WATER POLLUTION PREVENTION PLAN  
DETAILS (CITY OF HOUSTON)

WBS NO:  
S-000900-0139-3

DRAWING SCALE

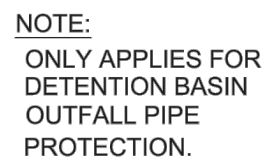
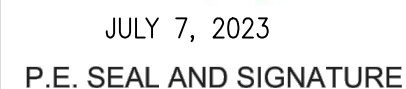
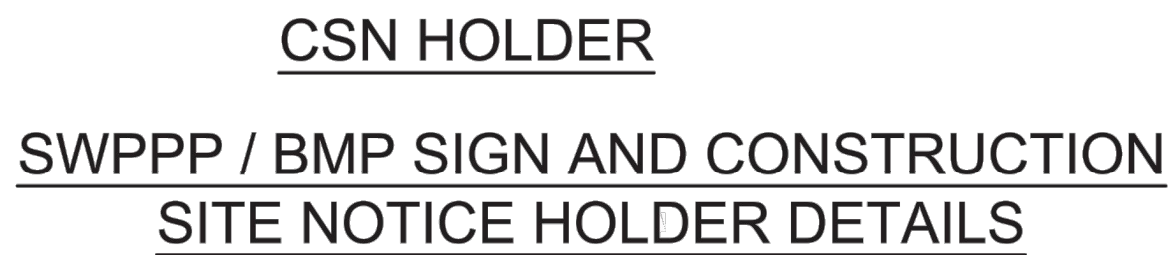
NONE

CITY OF HOUSTON PM

SINGARPAL SEKHON, P.E.

SHEET 193A OF 194





DATE: 10-23-2018 SCALE: NTS
SHEET NUMBER 193B OF 194