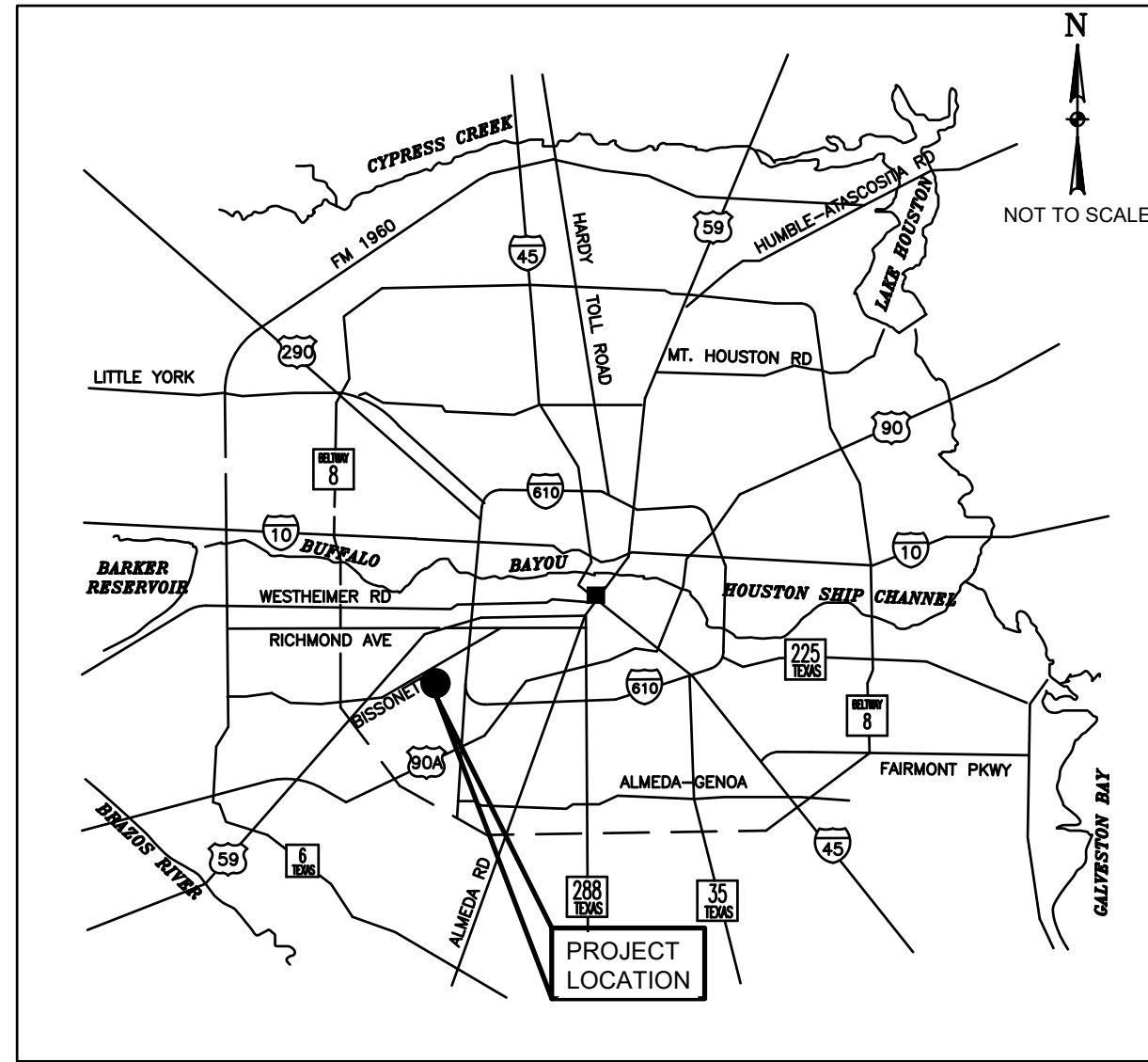


CITY OF HOUSTON HOUSTON PUBLIC WORKS SHARPSTOWN AREA DETENTION

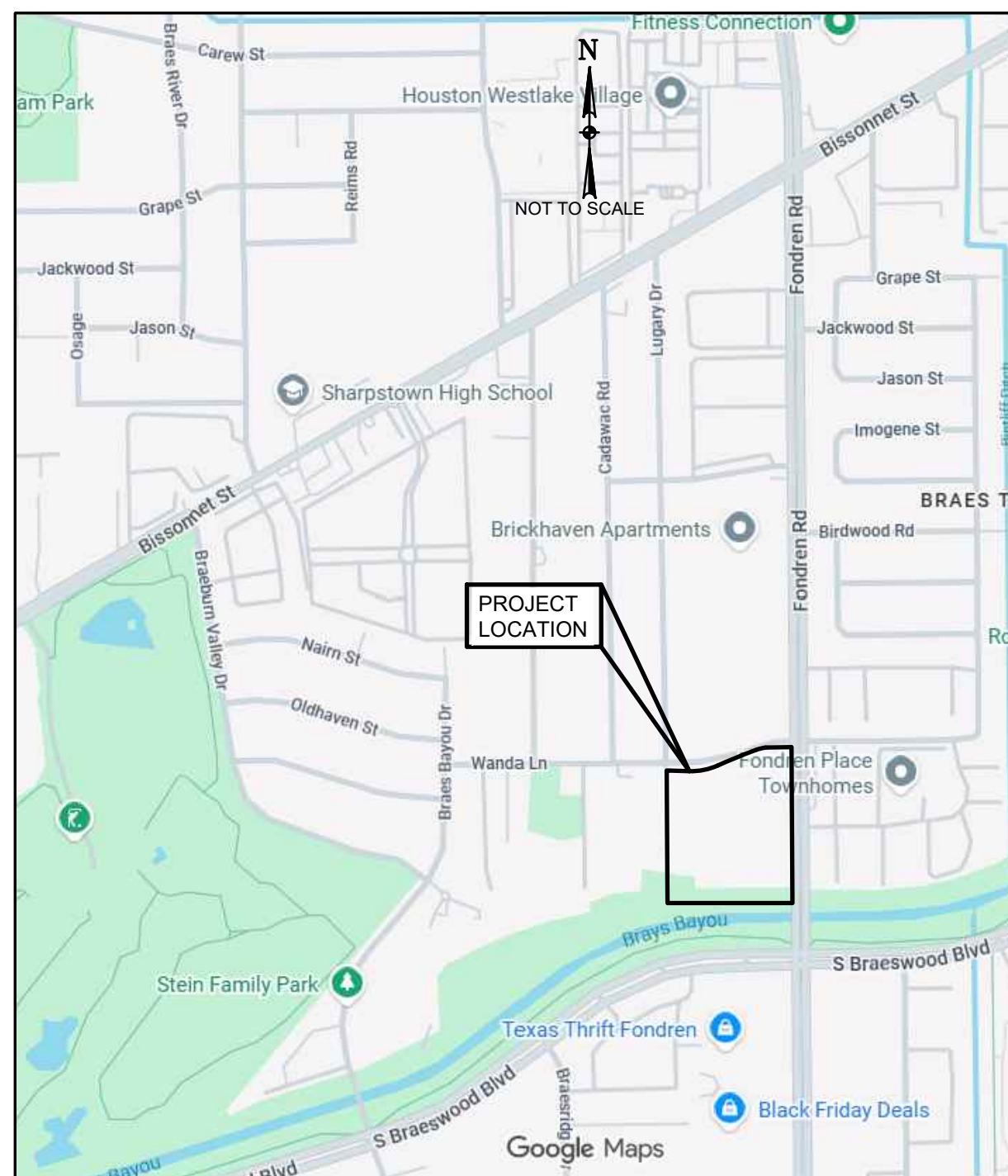
POND A

WBS NO. M-410040-001A-4

CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY REQUIRES:
 1.) HCFCO RIGHT-OF-WAY NOTIFICATION (PERMIT)
 2.) HCFCO 48-HR PRE-CONSTRUCTION NOTICE
 BOTH ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. SITE PLANS MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED HCFCO RIGHT-OF-WAY NOTIFICATION. BE ADVISED THAT THE HCFCO RIGHT-OF-WAY NOTIFICATION IS SEPARATE FROM THE SITE DEVELOPMENT PERMIT PACKAGE.
 TO APPLY FOR THE HCFCO RIGHT-OF-WAY NOTIFICATION PLEASE GO TO [HTTP://APPS.HARRISCOUNTYT.X.GOV/EPERMENTS](http://apps.harriscountytexas.gov/epermits) AND APPLY FOR THE HCFCO ROW UNDER ROW NOTIFICATION.
 FAILURE TO PROVIDE BOTH ITEMS COULD RESULT IN PROJECT DELAYS AND ADDITIONAL CONSTRUCTION COSTS.



LOCATION MAP



VICINITY MAP
KEY MAP NO.: 530U
CITY COUNCIL DISTRICT J



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.
 15021 KATY FREEWAY, STE. 500 HOUSTON, TX. 77094 281-945-0069 TX FIRM NUMBER: F-6932		 9900 Northwest Freeway Houston, Texas 77092	THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 March 11, 2026 IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES
SURVEYED BY: LANDTECH, INC. FB NO. P-6331			
PARKS-FORESTRY DEPT.			
METRO			
HOUSTON WATER			
TRANSPORTATION & DRAINAGE OPERATIONS			
CAPITAL PROJECTS		SURVEY	
CITY ENGINEER		DATE	
DIRECTOR OF HOUSTON PUBLIC WORKS		DATE	
SHEET NO 1 OF 47 SHEETS		FOR CITY OF HOUSTON USE ONLY	

PLOTTED: 3/11/2026 11:41 AM

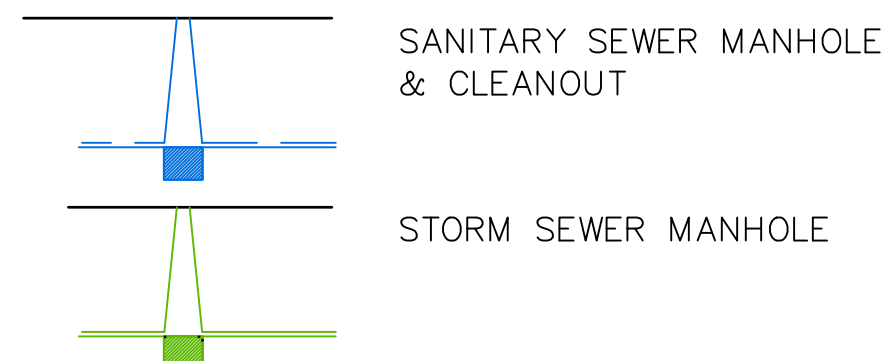
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LEGEND FOR EXISTING UTILITIES (PLAN)

	SANITARY SEWER LINE 30" AND SMALLER		POWER POLE
	SANITARY SEWER LINE 30" AND LARGER		GAS METER
	STORM SEWER LINE LESS THAN 30"		GAS VALVE
	STORM SEWER LINE 30" AND LARGER		BOX (TRAFFIC CONTROL, SWBT, ELEC.)
	WATER LINE 20" AND SMALLER		TRAFFIC SIGNAL BOX
	WATER LINE 24" AND LARGER		STREET SIGN
	GAS LINE		POWER POLE W/GUY
	PROPERTY LINE, R.O.W., MATCHLINE		WATER METER
	EXISTING IRON FENCE		EXIST WATER VALVE
	EXISTING CHAINLINK FENCE		EXIST FIRE HYDRANT
	BASELINE		EXISTING MANHOLE (STORM OR SANITARY)
	DITCH CENTER LINE		S.W.B.T. MANHOLE
	DITCH LINE		CENTER POINT ENERGY MANHOLE
	S.W.B.T. OR WESTERN UNION CONDUIT		INLET (CURB TYPE)
	CENTER POINT ENERGY CONDUIT		INLET (GRATE TYPE)
	LOT LINE (PROPERTY LINE)		TREE (TYPE AS INDICATED)
	EDGE OF ASPHALT		BASELINE P.I.
	EDGE OF CONCRETE		SHRUB/BUSH (TYPE AS INDICATED)
	CURB LINE		INFORMATION OBTAINED FROM RECORD DRAWINGS COULD NOT BE FIELD VERIFIED
	MAILBOX		TRAVERSE POINT
	GUARD POST		GEOTECH BORE LOCATION
	OVERHEAD POWER LINES		GEOTECH/ENVIRONMENTAL BORE LOCATION
	SANITARY SEWER LATERALS		ENVIRONMENTAL BORE LOCATION
	SANITARY SEWER STACK		UTILITY TONE MARKER

LEGEND FOR EXISTING UTILITIES (PROFILE)

	CULVERT
	CULVERT
	WATER LINE 20" AND SMALLER
	WATER LINE 24" AND LARGER
	WATER LINE 24" AND LARGER
	SANITARY SEWER LINE 24" AND SMALLER
	SANITARY SEWER LINE 30" AND LARGER
	SANITARY SEWER LINE 30" AND LARGER
	STORM SEWER LINE 24" AND SMALLER
	STORM SEWER LINE 30" AND LARGER
	STORM SEWER LINE 30" AND LARGER



LEGEND FOR PROPOSED UTILITIES (PLAN)

	PROP WATER LINE 20" AND SMALLER
	PROP WATER LINE 24" AND LARGER
	PROP WATER VALVE
	PROP FIRE HYDRANT
	PROP TAPPING VALVE
	RESTRAINED JOINT SECTION
	DIP W/RESTRAINED JOINTS

ABBREVIATIONS:

&	AND	PC	POINT OF CURVE
@	AT	PCC	POINT OF COMPOUND CURVATURE
AB	ALL BELL	PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
AC	ACRE // ASBESTOS CEMENT	PERM	PERMANENT
AI/VR	AIR INLET / VACUUM RELIEF	PGL	PROFILE GRADE LINE
APPROX	APPROXIMATELY	PI	POINT OF INTERSECTION
ASPH	ASPHALT	PL	PROPERTY LINE
AVE	AVENUE	PNT	POINT
		PPCA	POTENTIALLY PETROLEUM CONTAMINATED AREA
		PRC	POINT OF REVERSE
B/B	BACK TO BACK	PROP	PROPOSED
BC	BACK OF CURB	PSI	POUND PER SQUARE INCH
BFV	BUTTERFLY VALVE	PT	POINT OF TANGENCY
BL	BUILDING LINE	PVC	POLYVINYL CHLORIDE PIPE/POINT OF VERTICAL CURVATURE
BLDG	BUILDING	PVMT	PAVEMENT
BLVD	BOULEVARD	PVI	POINT OF VERTICAL INTERSECTION
		PVT	POINT OF VERTICAL TANGENCY
		R	RADIUS
C/C	CENTER TO CENTER	RCB	REINFORCED CONCRETE BOX
CGMP	CORRUGATED GALVANIZED METAL PIPE	RCP	REINFORCED CONCRETE PIPE
CMP	CORRUGATED METAL PIPE	RD	ROAD
CIP	CAST IRON PIPE	REINF	REINFORCED
CLR	CLEARANCE	REM	REMOVABLE
CO	CLEAN OUT	RJ	RESTRAINED JOINT
COH	CITY OF HOUSTON	ROW	RIGHT OF WAY
CONC	CONCRETE	RR	RAILROAD
CONSTR	CONSTRUCTION	RRPM	REFLECTIVE REMOVABLE PAVEMENT MARKERS
CPEE	CENTERPOINT ENERGY ELECTRIC	RT	RIGHT
CPEG	CENTERPOINT ENERGY GAS		
		S	SOUTH
DIA	DIAMETER	SAN	SANITARY
DIP	DUCTILE IRON PIPE	SCHED	SCHEDULE
DR	DRIVE	SF	SQUARE FEET
DWG	DRAWING	SHT	SHEET
DWY	DRIVEWAY	SSE	SANITARY SEWER EASEMENT
		ST	STREET
E	EAST	STA	STATION
EL	ELEVATION	STD	STANDARD
EP	EDGE OF PAVEMENT	STL	STEEL
E/R	END OF RADIUS	STM	STORM
ESMT	EASEMENT	SWBT	SOUTHWESTERN BELL TELEPHONE
EXST	EXISTING	SWR	SEWER
		SY	SQUARE YARD
FC	FACE OF CURB	TAN	TANGENT
F/F	FACE TO FACE	TBM	TEMPORARY BENCHMARK
FH	FIRE HYDRANT	TEMP	TEMPORARY
FL	FLOW LINE	TOB	TOP OF BANK
FM	FORCE MAIN	TOC	TOP OF CURB
FT	FEET	TOP	TOP OF PAVEMENT
		TOS	TOP OF STACK
GPS	GLOBAL POSITIONING SYSTEM	TS&V	TAPPING SLEEVE AND VALVE
GV	GATE VALVE	TXDOT	TEXAS DEPARTMENT OF TRANSPORTATION
GV&B	GATE VALVE AND BOX	TYP	TYPICAL
		UE	UTILITY EASEMENT
HCFC	HARRIS COUNTY FLOOD CONTROL DISTRICT	UGND	UNDERGROUND
HDPE	HIGH-DENSITY POLYETHYLENE		
HGL	HYDRAULIC GRADE LINE	VC	VERTICAL CURVE
HP	HIGH PRESSURE	VPI	VERTICAL POINT OF INTERSECTION
		W	WEST
INV EL	INVERT ELEVATION	W/	WITH
IP	INTERMEDIATE PRESSURE	WL	WATER LINE
IR	IRON ROD	WLE	WATER LINE EASEMENT
		WM	WATER METER
J-BOX	JUNCTION BOX	WP	WOOD POLE
JT	JOINT	WSEL	WATER SURFACE ELEVATION
JUNCT	JUNCTION	WV	WATER VALVE
		WWTP	WASTE WATER TREATMENT PLANT
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

 15021 KATY FREEWAY, STE. 500 HOUSTON, TX. 77094 281-945-0069 TX FIRM NUMBER: F-6932	THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025
	IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A

LEGENDS & ABBREVIATIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 3 OF 47	

NO.	DATE	REVISION	APP.

1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

A. HARRIS COUNTY COMMISSIONER'S PRECINCT:
B. KEY MAP: 530 U
C. ADDRESS: 9100 FONDREN RD HOUSTON, TX 77074

II. LEGAL DESCRIPTION

A. ACREAGE: 7.71 AC
B. SUBDIVISION: FONDREN VILLAGE PHASE D
C. ADJACENT ROADS: FONDREN RD & WANDA LANE

III. PLATTING

A. SUBDIVISION PLAT
B. STREETS PROPOSED
PLAT NAME: FONDREN VILLAGE PHASE D

IV. JURISDICTIONS

CITY OF HOUSTON
ETJ, CITY OF HOUSTON
NO ETJ
UTILITY DISTRICT (NAME)

V. HCAD ACCOUNT NOS. (ALL)

1107250000004

5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD ROW

A. BOND/NOTIFICATION INFORMATION
HCFCD WATERSHED BRAYS BAYOU
HCFCD UNIT No. D100-00-00
NUMBER OF OUTFALLS 1
UTILITY CROSSING
ROADWAY BRIDGE/CULVERT CROSSING
FILL ACTIVITY
REHABILITATION OF CHANNEL
MAINTENANCE
TEMPORARY CROSSING
TRAIL (LENGTH)
OTHER
COST OF WORK IN HCFCD ROW

II. USACE ENVIRONMENTAL PERMIT

US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER(S)
US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
OTHER
NO PERMITS REQUIRED
EXPLAIN: NO JURISDICTION WETLANDS WILL BE IMPACTED. ALL CONSTRUCTION IS ABOVE THE OHWM. NO FILL IS PLACED BELOW OHWM. NO AQUATIC FEATURES ARE IMPACTED BY CONSTRUCTION.

III. REFERENCE / BASIS OF DETERMINATION

ENVIRONMENTAL CONSULTANT REPORT
OTHER FOLLOWED OHWM DELINEATION FOR SECTION 404 WATERS

NOTES: I. - III. REQUIRED ON PROJECTS WITH WORK IN A HCFCD CHANNEL. PLEASE REFERENCE SECTION 17 OF THE FLOOD CONTROL DISTRICT POLICY, CRITERIA, AND PROCEDURE MANUAL FOR MORE INFORMATION.

IV. HCFCD STANDARD NOTES: SEE SHEET 6-# OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET 23-25 OF THESE PLANS.

VI. HCFCD ACCESS PLAN: SEE SHEET OF THESE PLANS.

VII. REFER TO THE FOLLOWING PLAN SHEETS: 13
FOR EXISTING AND PROPOSED RIGHT(S) OF WAY INCLUDING DELINEATION AND RECORDING INFORMATION PER HCFCD POLICY, CRITERIA, & PROCEDURE MANUAL (I.E., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (E.G. COH, HCFCD, PUBLIC, TXDOT, ETC.)

2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

NEW DEVELOPMENT AREA: REGIONAL DETENTION POND
RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): N/A
LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION N/A

II. METHODOLOGY

HCFCD PCPM DETENTION METHOD USED:
METHOD 1 (LESS THAN 20 ACRES)
METHOD 2 (20 ACRES TO 640 ACRES)
METHOD 3 (GREATER THAN 640 ACRES)
OTHER

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
.65, H.C.F.C.D. CHANNEL, (H.C.F.C.D. UNIT NO.)
.75, EXISTING STORM SEWER (OWNER & OPERATOR)
1.00, ROADSIDE DITCH, (OWNER & ROAD NAME)
OTHER (OWNER & OPERATOR) INTERLOCAL AGREEMENT BETWEEN COH AND HCFCD NO. 2022-181

IV. STORMWATER DETENTION BASIN INFORMATION

A. HCFCD PCPM SUMMARY TABLE SEE SHEET OF THESE PLANS.

Table with columns: DETENTION BASIN SERVICE AREA, STORM EVENT, 50% EXCEEDANCE (2-YEAR), 10% EXCEEDANCE (10-YEAR), 1% EXCEEDANCE (100-YEAR), acres, DESIGN WATER SURFACE ELEVATION, MINIMUM STORAGE REQUIRED (ac-ft), DETENTION STORAGE PROVIDED (ac-ft), STORAGE RATE PROVIDED (ac-ft/ac), OUTFLOW VELOCITY INTO CHANNEL (ft/sec), DRAIN TIME - 1% ONLY (hours), EMERGENCY OVERFLOW (TYPE, SIZE, ELEVATION, ETC.)

B. DETENTION BASIN TO BE MAINTAINED BY HCFCD
C. DETENTION SERVICE AREA MAP ON SHEET
D. ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS
VOLUME OF PUMPED 1% EXCEEDANCE STORAGE VOLUME = ACFT % OF TOTAL VOLUME
MAXIMUM DESIGN OUTFLOW VELOCITY INTO HCFCD CHANNEL = FT/SEC
DRAIN TIME FOR BASIN = HOURS BASED ON HEAD CONDITIONS

V. DETENTION PROVIDED IN OTHER PLANS:

HCFCD PROJECT No. DATE SIGNED BY HCFCD:
PLAN TITLE
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET
ENGINEERING FIRM
DETENTION BASIN MAINTAINED BY:

VI. FLOW RESTRICTOR SIZE

OUTFALL PIPE SIZE: 24" RCP
RESTRICTOR PIPE SIZE: 24" RCP
RESTRICTOR PLATE DIMENSION:

VII. DETENTION PROVIDED BY

REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.):

FOR PROJECTS LOCATED IN ANY FLOODPLAIN
Development constructed or placed in accordance with these plans will comply with all provisions of the designated Floodplain Administrator.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED

TOTAL ACREAGE =
TOTAL DISCHARGE =

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE ARE AS HAVE BEEN ADDRESSED.

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S)
SHEET NO. 27-31
DISTURBS <1AC. N/A

II. APPLICABILITY FOR PERMANENT FEATURES. (Must complete)

EXEMPT NEW DEVELOPMENT:
PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (Must be verified with plat)
EXEMPT REDEVELOPMENT:
PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A,Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)
EXEMPT GRANDFATHERED:
PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001. (FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)
GENERAL:
PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: HCFCD
STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: N/A
HARRIS COUNTY PROJECT No & SWQ PERMIT No.
STORMWATER QUALITY MANAGEMENT PLAN:
SITE PLAN ON SHEET(S)

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)

VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY DETAILS AND CALCULATIONS APPEAR ON SHEET(S))
POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) 12-15
HYDRODYNAMIC TYPE SEPARATOR MODEL:
OTHER(S):

6. REPORTS/AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

STORMWATER DRAINAGE DESIGN REPORT
REPORT TITLE BRAEBURN GLEN DRAINAGE IMPROVEMENTS
HCFCD PROJECT #M-410040-001A-4
ENGINEERING FIRM ENTECH CIVIL ENGINEERS, INC
REPORT ACCEPTANCE DATE MARCH 11, 2025
GEOTECHNICAL INVESTIGATION REPORT
REPORT TITLE GEOTECHNICAL INVESTIGATION-SHARPTOWN AREA DETENTION BASIN
HCFCD PROJECT #M-410040-001A-4
ENGINEERING FIRM AVILES ENGINEERING CORPORATION
REPORT ACCEPTANCE DATE JANUARY 2025
HCFCD APPROVED VARIANCE
DESCRIPTION OF VARIANCE
DOCUMENT ID #
VARIANCE ACCEPTANCE DATE

II. AGREEMENT TYPE & No.:

INTERLOCAL (ILA): INTERLOCAL AGREEMENT BETWEEN COH AND HCFCD NO. 2022-181
HCFCD MAINTENANCE
TURF ESTABLISHMENT
OTHER

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: 48201C0845M
FIRM PANEL(S) DATE: MAY 2, 2019
STATUS OF PROPERTY ON MAP
ENTIRELY LOCATED IN UNSHADED ZONE "X"
LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO.) (1% BASE FLOOD LEVEL 65.30) (0.2% BASE FLOOD LEVEL)
SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO. REVISED FLOODPLAIN IS SHOWN ON SHEET
ELEVATION INFORMATION
BENCHMARK USED
HARRIS COUNTY FLOODPLAIN REFERENCE MARK
HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT (2024 ADJ.) CITY OF HOUSTON CITY SURVEY 50538115 SITE CONTROL MONUMENT

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION

PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY

(APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.): BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN: BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) CUBIC YARDS INCLUDING CALCULATIONS)
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET

HCFCD SIGNATURE BLOCK

PROJECT NAME: SHARPTOWN AREA DETENTION POND A
ADDRESS: 9100 FONDREN RD
WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION
BY FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY
APPROVED:
BY FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY
APPROVED:
BY FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY
NO REVIEW REQUIRED:
BY FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:
THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, RODRIGO GUADARRAMA, A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE.

ANY VIOLATIONS WILL BE FORWARDED TO THE HARRIS COUNTY DISTRICT ATTORNEY'S OFFICE FOR PROSECUTION.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 47
SIGNATURE DATE 10/17/2025

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY FLOOD CONTROL.

Table with columns: DATE, SHEET NO., DESCRIPTION, P.E. INITIAL, H.C.F.C.D. APPROVED DATE

HARRIS COUNTY FLOOD CONTROL DISTRICT REVIEW SHEET

GENERAL

1. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE BEGINNING CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SECURITY TO PROTECT THE PROJECT SITE, CONTRACTOR PROPERTY, EQUIPMENT, AND WORK.
3. THE CONTRACTOR IS RESPONSIBLE FOR CLEANING STREETS OF CONSTRUCTION DIRT AND DEBRIS AT CLOSE OF EACH WORK DAY.
4. THE CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF THE JOB SHALL BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK.
5. PRIOR TO CONSTRUCTION, THE CONTRACTOR, ALONG WITH CONCURRENCE FROM THE FIELD ENGINEER, SHALL DETERMINE HIS/HER LAY-DOWN AND/OR STAGING AREA LOCATIONS.
6. THE CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS A MINIMUM OF 24 HOURS PRIOR TO BLOCKING DRIVEWAYS OR ENTERING UTILITY EASEMENTS.
7. TRAFFIC INGRESS AND EGRESS FOR DRIVEWAYS AND PEDESTRIAN ACCESS FACILITIES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
8. THE CONTRACTOR SHALL REMOVE ANY FENCES, POSTS, MAILBOXES, PLANTERS, PERMANENT TRASH CONTAINERS, CULVERTS, ETC. OR SECTIONS THEREOF, THAT ENCROACH WITHIN THE COUNTY'S RIGHT-OF-WAY. NOTE: PRIOR TO CONSTRUCTION, THE PROPERTY OWNER WAS PAID TO RELOCATE OR REPLACE THESE ITEMS OUTSIDE OF THE COUNTY'S RIGHT-OF-WAY. IF THE OWNER HAS FAILED TO DO SO, THE CONTRACTOR WILL REPLACE THEM WITH THE MINIMUM LEVEL OF QUALITY NEEDED TO SECURE THE PROPERTY AND/OR MAINTAIN MAIL DELIVERY. IN THAT CASE, PAYMENT FOR THESE INSTALLATIONS WILL BE INCLUDED AS EXTRA WORK ITEMS OR AS OVERRUNS TO EXISTING PAY ITEMS.

ANY DAMAGE CAUSED BY THE CONTRACTOR TO SUCH ITEMS LOCATED OUTSIDE OF THE COUNTY'S RIGHT-OF-WAY, SHALL BE REPLACED WITH LIKE-KIND OR BETTER AT THE CONTRACTOR'S EXPENSE.

ALSO, IF THESE ITEMS ARE LOCATED WITHIN THE PROJECT RIGHT-OF-WAY AND ARE DESIGNATED TO REMAIN, ANY DAMAGE CAUSED BY THE CONTRACTOR TO SUCH ITEMS, SHALL BE REPLACED WITH LIKE-KIND OR BETTER AT THE CONTRACTOR'S EXPENSE.

TREES, BUSHES, SHRUBBERY AND OTHER DAMAGED PLANTINGS DESIGNATED TO REMAIN SHALL BE REPLACED WITHIN 72 HOURS OF REMOVAL AND ARE TO BE THOROUGHLY WATERED-IN. NO SEPARATE PAY.
9. PAVED SURFACES, PAVEMENT MARKERS AND MARKINGS SHALL BE PROTECTED FROM DAMAGE BY TRACKED EQUIPMENT.
10. IRON RODS DISTURBED DURING CONSTRUCTION ARE TO BE REPLACED BY A REGISTERED PROFESSIONAL LAND SURVEYOR FOR THE ORIGINAL PROPERTY OWNER AT NO SEPARATE PAY.
11. CONSTRUCTION STAKING WILL BE PROVIDED BY THE CONTRACTOR. TWO COPIES OF STAKING NOTES TO BE PROVIDED TO THE ENGINEER PRIOR TO CONSTRUCTION.
12. THE COUNTY OR THE COUNTY'S SURVEYOR SHALL PROVIDE A BENCHMARK OR TEMPORARY BENCHMARK AND SURVEY CONTROLS.
13. THE CONTRACTOR SHALL MAINTAIN UPDATED RED-LINED RECORD DRAWINGS ON SITE FOR INSPECTION BY THE ENGINEER.
14. MOWING, MAINTENANCE, AND CLEAN-UP OF THE PROJECT SHALL MEET THE REQUIREMENT OF STANDARD SPECIFICATION ITEM 560 (NO SEPARATE PAY). MOWING, MAINTENANCE, AND CLEAN-UP IS REQUIRED FOR THE PROJECT LIMITS AND DURATION, REGARDLESS OF THE CONTRACTOR'S SCOPE OF ACTIVITIES WITHIN THE PROJECT LIMITS.
15. THE REMOVAL OF ANY ABANDONED UTILITIES REQUIRED TO COMPLETE THE WORK SHALL BE INCIDENTAL AND NO SEPARATE PAYMENT SHALL BE MADE.
16. IT IS THE CONTRACTOR'S RESPONSIBILITY TO STOCKPILE NECESSARY MATERIAL ON-SITE OR AT A SECURED OFF-SITE LOCATION AT NO ADDITIONAL EXPENSE TO HARRIS COUNTY. ANY SUITABLE EXCAVATED MATERIAL ON THE PROJECT WHICH IS AVAILABLE AT THE TIME OF NEED; WHETHER FROM STORM SEWER, ROADWAY, AND/OR CHANNEL EXCAVATION, SHALL BE USED BEFORE BORROW IS BROUGHT ON-SITE.
17. MANHOLES, JUNCTION BOXES, INLETS, AND RISERS ARE TO BE PRECAST OR CAST-IN-PLACE.

TRAFFIC SIGNAL

1. ALL ITEMS RELATING TO THE CONSTRUCTION OF TRAFFIC SIGNAL INSTALLATIONS, EXCEPT FOR PUNCHLIST ITEMS, SHALL BE COMPLETED PRIOR TO THE ACTIVATION OF THE SIGNAL SYSTEM(S), UNLESS OTHERWISE REQUIRED BY THE CONTRACT.
2. THE CONTRACTOR SHALL MEET WITH THE HARRIS COUNTY TRAFFIC SIGNAL MAINTENANCE GROUPS FIELD INSPECTOR, HEREAFTER REFERRED TO AS THE TRAFFIC INSPECTOR, ONE-WEEK PRIOR TO THE DESIRED ACTIVATION OF ANY NEW TRAFFIC SIGNALS. THE CONTRACTOR SHALL OBTAIN VERBAL CONCURRENCE FROM THE TRAFFIC INSPECTOR THAT ADEQUATE PROGRESS HAS BEEN ACHIEVED AND THAT ADEQUATE PREPARATIONS ARE IN PLACE TO SCHEDULE A PRE-"TURN ON" WALK-THROUGH INSPECTION MEETING. IF IN THE OPINION OF THE TRAFFIC INSPECTOR, REQUIRED PROGRESS AND ADEQUATE PREPARATIONS ARE NOT COMPLETE, THE PRE-"TURN ON" WALK-THROUGH INSPECTION MEETING WILL BE POSTPONED TO ALLOW ADEQUATE TIME FOR INCOMPLETE CONSTRUCTION ITEMS AND PREPARATIONS TO BE COMPLETED. AFTER THE CONTRACTOR HAS COMPLETED ALL INCOMPLETE ITEMS AND PREPARATIONS, THE CONTRACTOR SHALL REQUEST THE TRAFFIC INSPECTOR REVIEW AND APPROVE ITEMS PREVIOUSLY IDENTIFIED. IF, IN THE OPINION OF THE TRAFFIC INSPECTOR, ALL ITEMS HAVE BEEN ADDRESSED SATISFACTORILY, THE DATE OF THE PRE-"TURN ON" WALK-THROUGH INSPECTION SHALL BE ESTABLISHED. TIME EXTENSIONS TO THE CONTRACT TIME WILL NOT BE GRANTED FOR DELAYS CAUSED BY INCOMPLETE CONSTRUCTION OR INADEQUATE CONTRACTOR PREPARATIONS REQUIRED TO COMPLETE TRAFFIC SIGNAL SYSTEM WITHIN THE TIMEFRAME SET FORTH IN THE CONTRACT.
3. PRIOR TO ACTIVATING A NEW TRAFFIC SIGNAL, THE CONTRACTOR SHALL REQUEST A PRE-TURN ON WALK-THROUGH INSPECTION MEETING, IN ACCORDANCE WITH ITEM 2. THE PURPOSE OF THE MEETING WILL BE TO ESTABLISH THAT THE TRAFFIC SIGNAL SYSTEM HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT, AND IN A MANNER THAT DOES NOT ADVERSELY IMPACT PUBLIC SAFETY. THIS MEETING SHALL BE ATTENDED BY THE TRAFFIC INSPECTOR, THE ENGINEER OF RECORD, AND THE CONTRACTOR. AS A MINIMUM, ANY DEFICIENCIES THAT ADVERSELY IMPACT PUBLIC SAFETY WILL BE IDENTIFIED FOR CORRECTION PRIOR TO ESTABLISHING THE "TURN ON" DATE FOR THE TRAFFIC SIGNAL SYSTEM. ITEMS THAT HAVE AN IMPACT ON PUBLIC SAFETY INCLUDE, BUT ARE NOT LIMITED TO: PAVEMENT MARKINGS AND SIGNAGE, PROPER AND ACCEPTABLE BONDING OF EARTH GROUNDS, PROPERLY ALIGNED TRAFFIC SIGNALS, FULLY OPERATIONAL VEHICULAR AND PEDESTRIAN DETECTION, COMPLETED CABINET-TO-FIELD WIRING, AND PROPERLY TERMINATED ELECTRICAL SERVICE CONDUCTORS. FAILURE TO ADDRESS THE PUNCHLIST ITEMS IDENTIFIED AS BEING CRITICAL TO PUBLIC SAFETY PRIOR TO THE PRE-TURN ON WALK-THROUGH MEETING WILL RESULT IN THE "TURN ON" BEING POSTPONED TO ALLOW ADEQUATE TIME FOR THE INCOMPLETE ITEMS TO BE COMPLETED. AT SUCH TIME AS MEETING ATTENDEES AGREE THAT THE TRAFFIC SIGNAL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT, AND THAT THE TRAFFIC SIGNAL, AS IT EXISTS, IS NOT A THREAT TO PUBLIC SAFETY, A "TURN ON" DATE WILL BE ESTABLISHED.
4. THE CONTRACTOR SHALL HAVE 10 DAYS FROM THE DATE THE TRAFFIC SIGNAL SYSTEM IS TURNED ON TO COMPLETE ANY PUNCHLIST ITEMS IDENTIFIED AT THE PRE-"TURN ON" WALK-THROUGH MEETING OR AT THE TIME THE SIGNAL SYSTEM IS ACTIVATED THAT ARE NOT OTHERWISE ADDRESSED PRIOR TO ACTIVATION OF THE TRAFFIC SIGNAL SYSTEM.
5. THE CONTRACTOR'S ATTENTION IS DIRECTED TO STANDARD SPECIFICATION ITEM 690, TRAFFIC SIGNAL INSTALLATION AND MODIFICATION, WHICH INCLUDES PROCEDURES AND REQUIREMENTS REGARDING ACTIVATION OF TRAFFIC SIGNAL CONTROL SYSTEMS. THE PROJECT MANUAL MAY INCLUDE SPECIAL SPECIFICATIONS AND/OR SPECIAL PROVISIONS RELATED TO PROPOSED TRAFFIC CONTROL SIGNAL SYSTEM INSTALLATION(S) AND MODIFICATION(S) REQUIRING THE CONTRACTOR'S ADHERENCE TO DEFINED CHECKLISTS, PROCEDURES AND/OR REPORTS AT NO ADDITIONAL COST TO THE COUNTY BEYOND THE ESTABLISHED BID ITEMS OF THE CONTRACT.


TRAFFIC CONTROL

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE MOST RECENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE APPROVED TRAFFIC CONTROL PLAN.
2. THE CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS EXCEPT DURING FLAGGING OPERATION OR PROVIDE DETOURS AROUND THE CONSTRUCTION SITE AND PROVIDE PUBLIC NOTIFICATION.
3. LANE CLOSURES SHALL BE DURING OFF-PEAK HOURS ONLY (MONDAY THROUGH FRIDAY 9 A.M. TO 4 P.M.) UNIFORMED PEACE OFFICERS OR FLAGGERS IN RADIO CONTACT ARE REQUIRED TO DIRECT TRAFFIC DURING LANE CLOSURES.
4. DETOURS REQUIRE PRIOR APPROVAL OF THE FIELD ENGINEER AND PRECINCT. DETOUR PLANS, IF ALLOWED, MUST INCLUDE APPROPRIATE DETOUR SIGNAGE, PUBLIC NOTICE VIA SIGNAGE TWO WEEKS IN ADVANCE STATING THE DATES OF THE AGREED UPON DATE OF CLOSURE AND DATE THE ROAD WILL RE-OPEN TO TRAFFIC. CONTRACTOR TO USE (WITH PRIOR APPROVAL OF THE FIELD ENGINEER) HIGH EARLY STRENGTH CONCRETE AND OTHER RELATED CONSTRUCTION METHODS TO MINIMIZE THE DURATION OF THE DETOUR AND TO ENSURE THAT THE ROADWAY IS OPEN ON, OR PRIOR TO, THE AGREED UPON DATE.
5. ONE DAY PRIOR TO THE IMPLEMENTATION OF A TRAFFIC CONTROL PLAN PHASE OR STEP, OR THE IMPLEMENTATION OF AN ADDITIONAL, REVISED, OR NEW TRAFFIC CONTROL ELEMENT, THE CONTRACTOR SHALL MEET WITH THE ENGINEER TO GIVE A DETAILED DESCRIPTION OF THE CONTRACTOR'S PLAN AND PREPARATIONS. THE CONTRACTOR SHALL OBTAIN WRITTEN CONCURRENCE FROM THE ENGINEER THAT ADEQUATE PROJECT PROGRESS HAS BEEN ACHIEVED AND THAT ADEQUATE PREPARATIONS ARE IN PLACE PRIOR TO SWITCHING TRAFFIC. IF, IN THE OPINION OF THE ENGINEER, REQUIRED PROGRESS AND ADEQUATE PREPARATIONS ARE NOT COMPLETE, THE CONTRACTOR SHALL NOT IMPLEMENT THE NEXT PHASE, STEP, OR ELEMENT OF TRAFFIC CONTROL UNTIL INCOMPLETE CONSTRUCTION ITEMS OR PREPARATIONS ARE COMPLETED. TIME EXTENSIONS WILL NOT BE GRANTED FOR DELAYS CAUSED BY THE INCOMPLETE CONSTRUCTION ITEMS OR INADEQUATE CONTRACTOR PREPARATIONS REQUIRED TO IMPLEMENT TRAFFIC CONTROL.
6. TRAFFIC CONTROL PER THE CONTRACT IS REQUIRED FOR THE ENTIRE DURATION OF THE PROJECT, INCLUDING THE PUNCHLIST PERIOD. PAYMENT FOR TRAFFIC CONTROL THAT IS PROPERLY INSTALLED FOR LESS THAN A FULL MONTH SHALL BE BASED ON A PERCENTAGE BASIS OF THE TIME INSTALLED. TRAFFIC CONTROL PAYMENTS TO THE CONTRACTOR SHALL END 10 DAYS AFTER SUBSTANTIAL COMPLETION, ALTHOUGH PROPER TRAFFIC CONTROL MUST BE MAINTAINED UNTIL PUNCHLIST COMPLETION.
7. THE PURPOSE OF THE CONSTRUCTION SEQUENCE AND TRAFFIC HANDLING OUTLINED HEREIN IS TO DOCUMENT A VIABLE TCP THAT CAN BE UTILIZED TO CONSTRUCT THE PROJECT. IT IS THE BASIS OF ESTIMATION FOR THE TRAFFIC CONTROL BID ITEMS, AND IS TO BE UTILIZED AND IMPLEMENTED, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT TCP, HE/SHE SHALL PREPARE AND SUBMIT THE ALTERNATIVE TCP TO THE COUNTY FOR APPROVAL NO LESS THAN 10 WORKING DAYS PRIOR TO THE PROPOSED IMPLEMENTATION DATE. THE TCP SHALL BE DRAWN TO SCALE AND SIGNED & SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS. UPON APPROVAL BY HARRIS COUNTY, THE ALTERNATIVE PLAN SHALL BECOME THE BASIS FOR A "CHANGE IN CONTRACT" TO REVISE THE TRAFFIC CONTROL BID ITEMS ACCORDINGLY AND BECOME PART OF THE CONTRACT DOCUMENTS.

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 <p>15021 KATY FREEWAY, STE. 500 HOUSTON, TX. 77094 281-945-0069 TX FIRM NUMBER: F-6932</p>		<p>THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025</p>
<p>SURVEYED BY: LANDTECH, INC. FB NO. P-6331</p>		<p>IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES</p>
<p>CITY OF HOUSTON HOUSTON PUBLIC WORKS</p>		
<p>SHARPSTOWN AREA DETENTION POND A</p>		
<p>GENERAL NOTES</p>		
<p>WBS NUMBER</p>	<p>FOR CITY OF HOUSTON USE ONLY</p>	
<p>M-410040-001A-4</p>		
<p>DRAWING SCALE</p>		
<p>CITY OF HOUSTON PM</p>		
<p>SUPUN ILANGAMUDALIGE P.E.</p>		
<p>SHEET NO.</p>	<p>5</p>	<p>OF 47</p>

HCFC GENERAL NOTES:

FENCES AND/OR OTHER ENCROACHMENTS IN THE HCFC RIGHT-OF-WAY ARE NOT TO BE REMOVED UNLESS OTHERWISE STATED ON THE PLANS. IN CASES WHERE FENCE REMOVAL IS INDICATED ON THE PLANS, THE FENCE SHALL BE REMOVED AND PLACED NEATLY ON THE ADJACENT PROPERTY AT THE START OF CONSTRUCTION. WHERE THERE IS NOT A SEPARATE ITEM LISTED ON THE UNIT PRICE SCHEDULE, THE ENCROACHMENT REMOVAL IS INCIDENTAL TO SITE PREPARATION AND RESTORATION.

DO NOT ENTER PRIVATE PROPERTY WITHOUT PROPER WRITTEN AUTHORIZATION FROM THE OWNER. PROVIDE COPY OF WRITTEN PERMISSION TO HCFC.

STRIP VEGETATION AND TOPSOIL AND STOCKPILE FOR REUSE ONSITE. MATERIAL FOUND UNACCEPTABLE BY THE ENGINEER WILL BE REMOVED AND PAID AS EXCAVATION AND OFFSITE DISPOSAL. NO SEPARATE MEASUREMENT AND PAYMENT WILL BE MADE FOR STRIPPING, STOCKPILING AND PLACING ON-SITE TOPSOIL. THE COST FOR THIS WORK WILL BE INCIDENTAL TO RELATED PAY ITEMS UNDER SPECIFICATION SECTION NUMBER 02315 LISTED ON THE UNIT PRICE SCHEDULE.

RIPRAP AND GRANULAR FILL MATERIAL REMOVED DURING EXCAVATION, MEETING SPECIFICATION SECTION NUMBER 02378, SHALL BE REUSED AS DIRECTED BY THE ENGINEER. REUSED MATERIAL WILL BE MEASURED AND PAID FOR AS EXCAVATION AND ON-SITE FILL UNDER SPECIFICATION NUMBER 02315. NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR PROCESSING, HANDLING, STOCKPILING, AND PLACING MATERIAL FOUND TO BE ACCEPTABLE FOR REUSE. UPON APPROVAL OF THE ENGINEER, DISPOSAL OF NONCONFORMING RIPRAP AND GRANULAR FILL MATERIAL WILL BE MEASURED AND PAID FOR AS REMOVE AND DISPOSE OF CONCRETE RUBBLE UNDER SPECIFICATION SECTION NUMBER 02120, MATERIAL DISPOSAL.

THE LOCATION AND GRADE OF THE BACKSLOPE INTERCEPTOR STRUCTURES AND SWALES MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER AT THE TIME OF CONSTRUCTION. UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, THE BACKSLOPE INTERCEPTOR STRUCTURE SHALL BE SET AT A MAXIMUM DEPTH OF 2.5 FEET AND THE MINIMUM GRADE FOR BACKSLOPE SWALES SHALL BE 0.2%.

ADJUST YARD DRAINS AS DIRECTED IN THE FIELD AT THE TIME OF CONSTRUCTION. PAYMENT WILL BE INCIDENTAL TO SITE PREPARATION AND RESTORATION.

COMPLETED SECTIONS OF THE CHANNEL WILL BE TURNED OVER FOR VEGETATION ESTABLISHMENT IN MAXIMUM 1500 LINEAR FOOT SEGMENTS. CONTRACTOR MAY NOT DISTURB GREATER THAN 1500 LF OF CHANNEL AT A TIME.

CLEAR AND REMOVE ALL SILT FROM CULVERTS, PIPES AND UNDER BRIDGES TO THE PROPOSED DESIGN GRADES TO PROVIDE POSITIVE FLOW.

LENGTHS AND DIAMETERS REPRESENTED ON PLANS ARE APPROXIMATE. CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFICATION PRIOR TO ORDERING MATERIALS.

ACTIVITIES THAT DISTURB BIRD HABITAT, INCLUDING BUT NOT LIMITED TO CLEARING, GRUBBING, AND IMPACTS TO STRUCTURES WHERE MIGRATORY BIRDS AND BALD EAGLES MIGHT NEST, REQUIRE A NEST HABITAT SURVEY. DO NOT PROCEED UNTIL HARRIS COUNTY FLOOD CONTROL DISTRICT HAS CONDUCTED A NEST HABITAT SURVEY TO VERIFY ACTIVE MIGRATORY BIRD NESTS AND BALD EAGLE NESTS ARE NOT PRESENT. THE HARRIS COUNTY FLOOD CONTROL DISTRICT MUST PROVIDE WRITTEN AUTHORIZATION TO PROCEED.

WHEN BANK EROSION REPAIRS CALL FOR THE PLACEMENT OF 3"x5" GRANULAR FILL IN THE CHANNEL BOTTOM TO ESTABLISH A BASE FOR REBUILDING THE SLOPE. THE 3"x5" GRANULAR FILL SHALL BE LIMITED TO AN ELEVATION 6-INCHES ABOVE THE NORMAL WATER SURFACE ELEVATION LEVEL.

THE CONTRACT CONTAINS UNIT ITEMS FOR THE ESTABLISHMENT OF BEST MANAGEMENT PRACTICES FOR STORM WATER QUALITY PURPOSES. WHEN NOT CALLED FOR IN THE PROJECT PLANS, COORDINATE THE NEED AND LOCATION OF THESE UNIT ITEMS WITH THE DISTRICT REPRESENTATIVE ON SITE PRIOR TO PLACEMENT. THESE UNIT ITEMS INCLUDE, BUT ARE NOT LIMITED TO, REINFORCED SILT FENCE FOR MATERIAL STOCKPILES, ANCHORED SODDING FOR DISTURBED EARTHEN AREAS OR AROUND CONCRETE AND CONCRETE INTERCEPTOR, AND STABILIZED CONSTRUCTION ACCESS FOR PROJECT SITE INGRESS/EGRESS.

WHEN INCLUDED IN THE SCOPE OF WORK, THE PURPOSE OF DEEP PLOWING THE SLOPE OR BERM OF A CHANNEL IS TO BREAK UP THE DESICCATED SOILS AND TO ELIMINATE ANY VOIDS, OR RILLING CLOSE TO THE SURFACE OF THE SLOPE OR BERM. THE CONTRACTOR WILL DEEP PLOW THE SLOPE OR BERM TO A MINIMUM DEPTH OF 2 FEET IN AREAS CONTAINING VOIDS AND/OR RILLING. IN AREAS OF VOIDS ONLY, THE SURFACE FROM WHICH THE 2 FEET DEPTH IS MEASURED WILL BE THE LEVEL OF THE SURROUNDING UNDISTURBED SOIL. IN AREAS OF RILLING, THE RILLS WILL FIRST BE KNOCKED DOWN AND LEVELED OFF. THE 2 FEET DEPTH WILL THEN BE MEASURED FROM THIS NEW SURFACE. THE CONTRACTOR WILL DETERMINE THE MEANS AND METHODS FOR DEEP PLOWING.)

TREES AND PLANTS LOCATED WITHIN A DESIGNATED TREE PROTECTION ZONE (TPZ) SHALL BE PRESERVED. REFER TO SPECIFICATION SECTION 01566 - TREE AND PLANT PROTECTION, FOR DETAILED INFORMATION ON TREE AND PLANT PRESERVATION PRACTICES AND PROCEDURES INCLUDING, BUT NOT LIMITED TO, ROOT PRUNING, VEGETATION TRIMMING, FENCING AND OTHER PRESERVATION OPERATIONS.

IF APPLICABLE, CONTRACTOR SHALL AVOID ANY WETLAND AREAS BEYOND THE LIMITS OF EXCAVATION AND CLEARING. AS THE FIRST WORK ITEM CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING FENCING OR OTHER MATERIAL TO IDENTIFY AND PROTECT THE IDENTIFIED WETLAND AREAS, UNLESS WETLANDS HAVE BEEN IDENTIFIED AND FENCED BY HCFC PRIOR TO CONSTRUCTION AND CONTRACTOR HAS WRITTEN EVIDENCE OF SUCH.

UTILITY NOTES

CAUTION: UNDERGROUND GAS FACILITIES CENTERPOINT ENERGY ID: 1406247323

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 (713-945-8037 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.

- WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
- WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
- FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-2111 OR (713) 207-4200.

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

WARNING: OVERHEAD ELECTRICAL FACILITIES

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

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

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

ACTIVITIES ON/OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

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

WARNING: UNDERGROUND ELECTRICAL UTILITIES

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 LOG NO: 010824KTCF02

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 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.
6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER ROOSEVELT LEE JR. AT (713)614-1983 OR E-MAIL HIM AT KR7896@ATT.COM, IF CABLE LOCATE REQUEST(S) ARE NOT COMPLETED FOR OUR AT&T TEXAS/SWBT FACILITIES.

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

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FILE PATH: N:\0030-23-101\3 - Design\Plan Set\14 AUTOCAD SHEETS\PLAN & PROFILE\Detention Pond\SANI WTR STM GENERAL NOTES.dwg

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	SURVEYED BY: LANDTECH, INC. FB NO. P-6331

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A


HCFC GENERAL NOTES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 6 OF 47	

SANITARY SEWERS CONSTRUCTION NOTES

1. ALL SEWERS SHALL BE SUBJECT TO A STANDARD EXFILTRATION TEST. TESTS ARE TO BE PERFORMED ON THE TOTAL FOOTAGE OF SEWER LINE INCLUDED IN THE PROJECT. REQUIREMENTS OF TEXAS ADMINISTRATIVE CODE, TITLE 30 CHAPTER 217, "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS" SHALL GOVERN WHERE CONFLICTS EXIST EXCEPT WHERE CITY REQUIREMENTS ARE MORE STRINGENT.
2. ALL MANHOLES ARE TO BE PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBERS 02082-01, 02082-02, 02082N-02, 02082-03, AND 02082N-03 UNLESS OTHERWISE NOTED. USE THE LATEST VERSION AS APPLICABLE.
3. SANITARY SEWER MANHOLES WILL HAVE BEDDING AND BACKFILL PER CITY OF HOUSTON STANDARD DETAILS DRAWING NO. 02317-08 UNLESS OTHERWISE NOTED.
4. THE SANITARY SEWER PVC PIPE SHALL BE ASTM D 3034 TYPE PSM SDR 26 GRAVITY SEWER PIPE, ASTM D2241 SDR 26 PRESSURE RATED SEWER PIPE OR AWWA C-900 DR-18 GREEN PVC PRESSURE RATED SEWER PIPE BASED ON CONSTRUCTION CONDITION REQUIREMENT AND CONFORMING TO ASTM D1784 AND CITY OF HOUSTON STANDARD SPECIFICATION SECTION 02506 POLYVINYL CHLORIDE PIPE.
5. WHEN SS PRESSURE RATED PVC PIPE IS USED ON WATERLINE (WL) CROSSING UNDER CONDITION 1 OF COH IDM TABLE 7.3, THE SAME TYPE OF D2241 SDR 26 PVC PIPE OR C-900 GREEN DR-18 PVC GREEN PRESSURED TO BE UTILIZING IN-BETWEEN TWO SS MH'S. OR TO UTILIZE A DI TRANSITION ADAPTER FOR THE CONNECTING OF ASTM D-3034 PVC GRAVITY PIPE TO DI-OD AWWA C-900 PVC PIPE CENTERED AT WL WHEN CONNECTING TWO DIFFERENT TYPES OF PVC PIPES FOR SEWER CONSTRUCTION.
6. AWWA C-900 DR-18 PVC PIPE USES EITHER AWWA C900 DR-18 PVC FITTINGS OR DIP FITTINGS.
7. ALL SANITARY SEWER LINES UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL HAVE BEDDING PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBERS 02317-01, 02317-02, OR 02317-03 AS APPLICABLE, WITH 1 1/2 SACK CEMENT/CY STABILIZED SAND BACKFILL UP TO THE BOTTOM OF THE PAVEMENT SUBGRADE. 100 PSI PERFORMANCE RESULTS ARE STILL REQUIRED.
8. ALL NEW SANITARY SEWERS CROSSING WATER LINES WITH A CLEARANCE BETWEEN 12 INCHES AND 9 FEET SHALL HAVE A MINIMUM OF ONE 18' JOINT OF DUCTILE IRON OR (GREEN) C900 PVC PIPE MEETING ASTM SPECIFICATION D2241 CENTERED ON WATER LINE. WHEN WATER LINE IS BELOW SANITARY SEWER, PROVIDE MINIMUM 2 FOOT SEPARATION.
9. CONTRACTOR SHALL PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 9' FEET BETWEEN WATER LINES AND SANITARY SEWER MANHOLES AND LINES.
10. SANITARY SEWER MANHOLE RIMS OUTSIDE OF PROPOSED PAVING WILL BE SET 3" - 6" ABOVE THE SURROUNDING LEVEL FINISHED GRADE AFTER PAVING WITH SLOPED BACKFILL ADDED FOR STORM WATER TO DRAIN AWAY FROM MANHOLE RIM.
11. IN WET STABLE TRENCH AREAS USE BEDDING PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBER 02317-02.
12. DEFLECTION TEST: DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE AND SEMI-RIGID SEWER PIPE. THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5% IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID MANDREL. IT SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED AS PER 30 TAC 217.57 LATEST AMENDMENT AND WITHOUT MECHANICAL PULLING DEVICES. NO BALL-TYPE MANDREL IS ALLOWED.
13. INFILTRATION, EXFILTRATION OR LOW-PRESSURE AIR TEST: EITHER OF THE FOLLOWING TESTS SHALL BE PERFORMED AS PER TAC, TITLE 30 217.57 WITHIN THE SPECIFIED TOLERANCES ON ALL GRAVITY SEWERS.
 - A. INFILTRATION OR EXFILTRATION TEST: TOTAL LEAKAGE AS DETERMINED BY A HYDROSTATIC HEAD TEST SHALL NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO (2) FEET.
 - B. LOW-PRESSURE AIR TEST: PERFORM TEST ACCORDING TO UNI-B-6-90 OR OTHER APPROPRIATE PROCEDURES. FOR SECTIONS OF PIPE LESS THAN 36" (INCH) AVERAGE INSIDE DIAMETER, THE MINIMUM ALLOWABLE TIME FOR PRESSURE DROP FROM 3.5 P.S.I.G. TO 2.5 P.S.I.G. SHALL BE AS FOLLOWS:
 - 6" 340 SECONDS OR 0.855(L) FOR TEST LENGTHS GREATER THAN 398'
 - 8" 454 SECONDS OR 1.520(L) FOR TEST LENGTHS GREATER THAN 298'
 - 10" 567 SECONDS OR 2.374(L) FOR TEST LENGTHS GREATER THAN 239'
 - 12" 680 SECONDS OR 3.419(L) FOR TEST LENGTHS GREATER THAN 199'
 - 15" 850 SECONDS OR 5.342(L) FOR TEST LENGTHS GREATER THAN 159'
 - 18" 1020 SECONDS OR 7.693(L) FOR TEST LENGTHS GREATER THAN 133'
 WHERE L = LENGTH OF LINE OF SAME PIPE SIZE IN FEET.
14. "SAN. S. E." INDICATES "SANITARY SEWER EASEMENT"

15. FOR SANITARY MANHOLE (MH) RIMS SET INSIDE OF OR @ CURB & GUTTER PAVEMENT AND/OR BELOW T.C., MH RIMS WILL BE SET FLUSHED WITH AN ABUTTING PAVED SURFACE. THE (VALCUN, NEENAH OR EQUAL) HEAVY DUTY BOLTED SOLID MH COVER SHALL BE PROPERLY (AND SECURELY) ATTACHED AND SEALED TO ITS COMPATIBLE GASKETED FRAME BY USING BOTH A NEOPRENE GASKET AND (AT LEAST) 4 COUNTER-SUNK HEX-HEAD COARSE THREADED 1/2"-13 UNC STAINLESS STEEL BOLTS. THE HEAVY DUTY FRAME MH COVER SHALL BE SOLID (NO AIR HOLES). SAID FRAME SHALL BE BOTH EMBEDDED INTO THE MH'S TOP ALSO SECURELY ANCHORED TO THE UNDERLYING MH STRUCTURE WITH EITHER SECURELY ATTACHED EMBEDDED ANCHOR BOLTS OR THE CONCRETE MH'S EXPOSED REBARS WELDED TO THE FRAME OR OTHER EQUALLY SECURED METHODS TO PREVENT MH COVER/FRAME BLOW-OFFS/EJECTIONS.

 15021 KATY FREEWAY, STE. 500 HOUSTON, TX. 77094 281-945-0069 TX FIRM NUMBER: F-6932	THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025
SURVEYED BY: LANDTECH, INC. FB NO. P-6331	IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES
CITY OF HOUSTON HOUSTON PUBLIC WORKS	
SHARPSTOWN AREA DETENTION POND A	
SANITARY SEWER CONSTRUCTION NOTES	
WBS NUMBER M-410040-001A-4	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 7 OF 47	

WATER CONSTRUCTION NOTES


- ALL 4" THROUGH 12" WATER LINE 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 SECTION 02503. ALL 4" THRU 54" DI PIPE WATER LINES SHALL BE AWWA C151 WITH INSIDE LINING WITH AWWA C104 AND DOUBLE WRAPPED WITH 8-MIL POLYETHYLENE SHEETS.
- CONCRETE THRUST BLOCKS SHALL BE PROVIDED AS NECESSARY TO PREVENT PIPE MOVEMENT. USE RESTRAINED JOINTS WHERE PREVENTING PIPE MOVEMENT IS NECESSARY DUE TO THRUST.
- ALL WATER LINES UNDER PROPOSED OR FUTURE PAVING AND TO A POINT OF ONE (1) FOOT BACK OF ALL 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.
- ALL WATER LINE AND SEWER LINE CROSSINGS SHALL BE CONSTRUCTED PER CITY OF HOUSTON AND TCEQ REGULATIONS.
- 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.
- 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.
- 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.
- 4" THRU 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.
- HYDROSTATIC TESTING: ALL WATER PIPE SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON STANDARD CONSTRUCTION SPECIFICATIONS. TESTS ARE TO BE PERFORMED ON THE ENTIRE FOOTAGE OF WATER PIPE INCLUDED IN THE PROJECT.
- 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.
- 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 TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.

GRADING NOTES

- 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 DISCREPANCIES.
- BEFORE STARTING CONSTRUCTION, CONTRACTOR SHALL VERIFY BENCHMARK ELEVATION AND NOTIFY ENGINEER IF ANY DISCREPANCY AND/OR CONFLICT IS FOUND.
- 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.
- 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.
- 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.

STORM CONSTRUCTION NOTES

- STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 2317-02, 02317-3, 02317-05, 02317-06, AND 02317-07 (JULY 2019) AS APPLICABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- ALL STORM SEWER CONSTRUCTED IN SIDELOT EASMENT SHALL BE R.C.P (C-76, CLASSIII) AND SHALL BE EMBEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 AS APPLICABLE.
- 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.
- ALL TRENCH BACKFILL SHALL BE IN 8" LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN EACH LIFT, AND MECHANICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMACTION TEST (ASTM D-698/AASHTO T99).
- CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.
- ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24" AND LARGER R.C.P. (C-76, CLASSIII).
- ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.
- MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 48-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES. MINIMUM VERTICAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 24-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES.
- ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02086-ADJUSTING MANHOLES, INLETS, AND VALVE BOXES TO GRADE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK.
- 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.
- ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

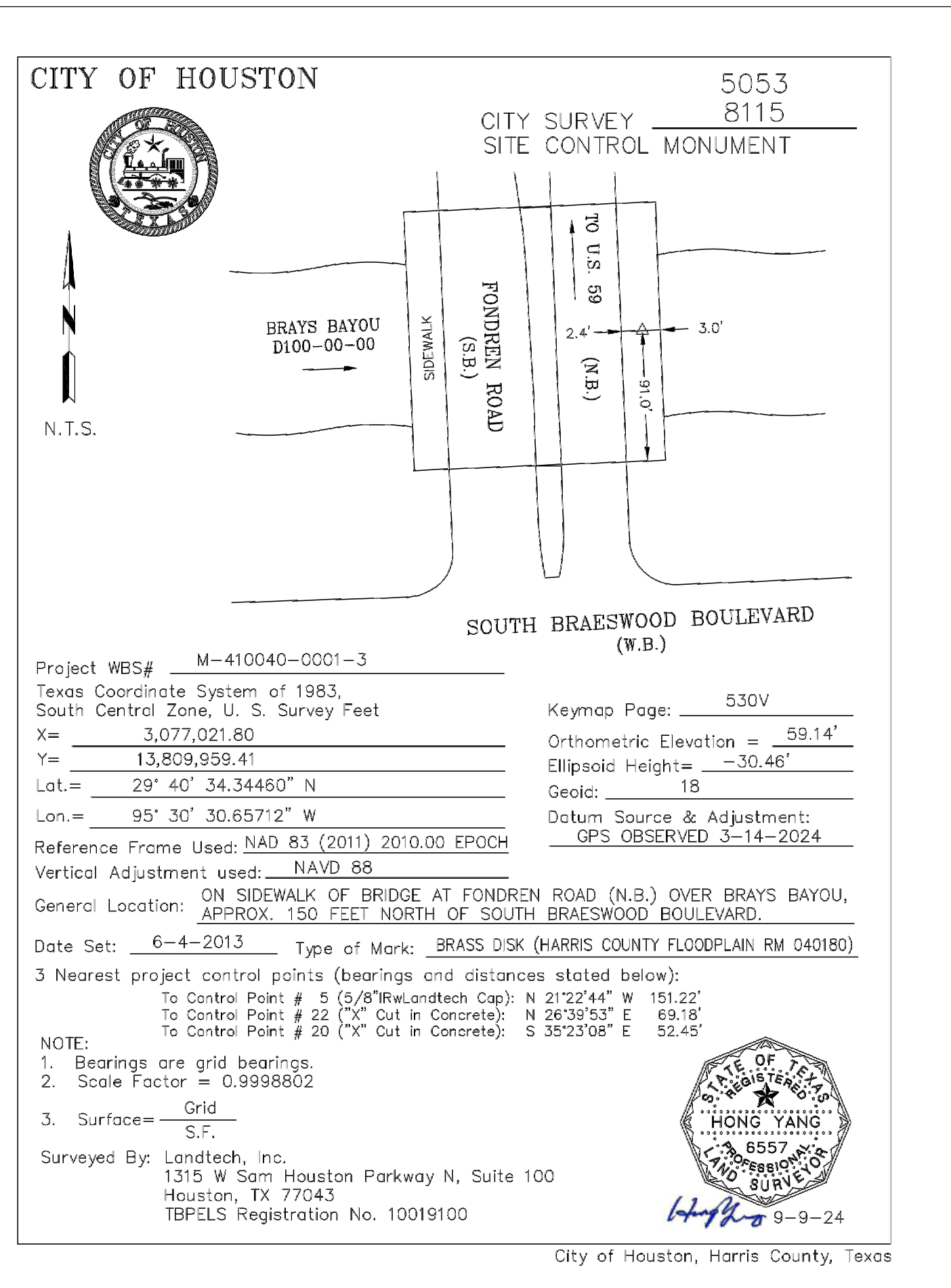
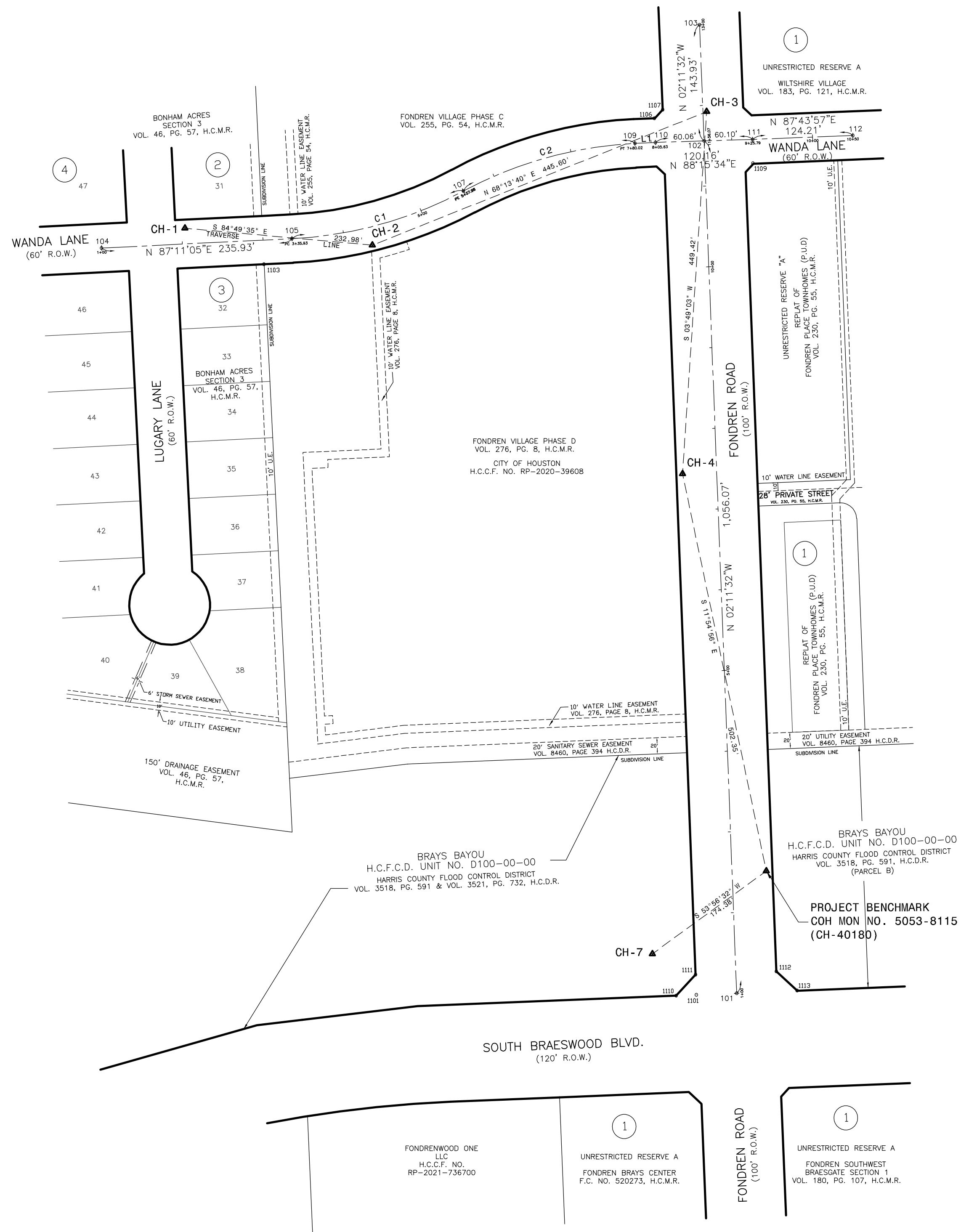
SHARPSTOWN AREA DETENTION POND A

WATER AND STORM GENERAL NOTES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 8 OF 47	

Course	Bearing	Distance
L1	N 87°11'07" E	25.61'

Curve	Radius	Length	Delta	Chord Bear.	Chord
C1	500.00'	222.05'	25°26'41"	N 74°27'47" E	220.23'
C2	500.00'	222.05'	25°26'41"	N 74°27'46" E	220.23'



NOTES:

- ALL COORDINATES AND BEARINGS SHOWN HEREON ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (ADJ.), EPOCH 2010.00. ALL COORDINATES ARE GRID VALUES AND CAN BE CONVERTED TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.9998802.
- ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88/GEOD18).
- THE ELEVATION DIFFERENCE BETWEEN THE FLOODPLAIN REFERENCE MARK NO. 040200 PUBLISHED DATUM (NAVD88; 2001 ADJ.) AND THE PROJECT VERTICAL DATUM (NAVD88/GEOD18) IS 0.14 FEET. PROJECT DATUM + 0.14 FEET = FLOODPLAIN DATUM
- THIS IS NOT A BOUNDARY SURVEY.

PROJECT BENCHMARK:
CITY OF HOUSTON MONUMENT NO. 5053-8115, A BRASS DISK ON SIDEWALK OF BRIDGE AT FONDREN RD. (NORTH BOUND) OVER BRAYS BAYOU, APPROXIMATELY 150 FEET NORTH OF SOUTH BRAESWOOD BLVD.
ELEVATION = 59.14 FEET (NAVD88/GEOD18)

BRAEBURN GLEN AREA DRAINAGE & PAVING IMPROVEMENTS, DETENTION POND A - Survey Control Map Data						
Point ID	Station	Offset	Grid Northing	Grid Easting	Elevation	Description
FONDREN ROAD						
101	1+00.00	0.00	13,809,807.87	3,076,985.13		SET X IN CONC.
1110	1+00.08	-74.93	13,809,805.08	3,076,910.27		FND. 1/2" I.R.
1113	1+00.49	74.99	13,809,811.23	3,077,060.04		FND. 1/2" I.R.
1111	1+25.11	-49.95	13,809,831.04	3,076,934.27		FND. 1/2" I.R.
1112	1+25.43	49.98	13,809,835.18	3,077,034.11		FND. 1/2" I.R.
7	1+52.87	-102.36	13,809,856.78	3,076,880.85	58.39	CH-7 SET 5/8" I.R. w/LANDTECH CAP
40180	2+50.05	42.44	13,809,959.41	3,077,021.80	59.14	COH MON NO. 5053-8115
4	7+45.18	-42.40	13,810,450.87	3,076,918.09	56.00	CH-4 SET 5/8" I.R. w/LANDTECH CAP
1109	11+26.17	59.32	13,810,835.42	3,077,005.15		FND. 5/8" I.R.
111	11+55.59	60.10	13,810,864.86	3,077,004.81		SET X IN CONC.
102	11+56.07	0.00	13,810,863.03	3,076,944.75		SET X IN CONC.
109	11+56.26	-85.66	13,810,859.95	3,076,859.15		SET X IN CONC.
110	11+56.54	-60.06	13,810,861.21	3,076,884.72		SET X IN CONC.
1106	11+86.44	-60.32	13,810,891.08	3,076,883.32		FND. 5/8" I.R. w/MILLER SURVEY CO CAP
3	11+92.13	4.65	13,810,899.24	3,076,948.01	57.88	CH-3 SET 5/8" I.R. w/LANDTECH CAP
1107	11+96.79	-49.71	13,810,901.82	3,076,893.52		FND. 5/8" I.R.
103	13+00.00	0.00	13,811,006.84	3,076,939.24		SET 5/8" I.R. w/LANDTECH CAP
WANDA LANE						
104	1+00.00	0	13,810,730.40	3,076,199.22		SET CONC. NAIL
1	2+04.12	-19.5	13,810,754.98	3,076,302.24	58.08	CH-1 SET 5/8" I.R. w/LANDTECH CAP
1103	2+99.72	29.92	13,810,710.32	3,076,400.14		FND. 5/8" I.R.
105	3+35.93	0	13,810,741.98	3,076,434.84		SET X IN CONC.
2	4+31.18	22.33	13,810,733.98	3,076,534.25	58.27	CH-2 SET 5/8" I.R. w/LANDTECH CAP
107	5+57.98	0	13,810,800.97	3,076,646.99		SET X IN CONC.
109	7+80.02	0	13,810,859.95	3,076,859.15		SET X IN CONC.
110	8+05.63	0	13,810,861.21	3,076,884.72		SET X IN CONC.
1107	8+15.66	-40.33	13,810,901.82	3,076,893.52		FND. 5/8" I.R.
102	8+65.69	0	13,810,863.03	3,076,944.75		SET X IN CONC.
3	8+70.06	-36.09	13,810,899.24	3,076,948.01	57.88	CH-3 SET 5/8" I.R. w/LANDTECH CAP
1109	9+25.24	29.43	13,810,835.42	3,077,005.15		FND. 5/8" I.R.
111	9+25.79	0	13,810,864.86	3,077,004.81		SET X IN CONC.
112	10+50.00	0	13,810,869.77	3,077,128.91		SET X IN CONC.

CONSULTANT:
LANDTECH
1315 W Sam Houston Parkway N, Suite 100
Houston, Texas 77043
T: 713-861-7058
F: 713-861-4131
TBPELS No. 10019100

SEAL:
FOR REVIEW
★
SEPTEMBER, 2024
HONG YANG
R.F.L.S. NO. 6557
NOT FOR BIDDING
OR CONSTRUCTION

ENTECH
CIVIL ENGINEERS, INC.
15021 KATY FREEWAY, STE. 500
HOUSTON, TX. 77094
281-945-0069
TX FIRM NUMBER: F-6932

THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF JUAN OLIVAREZ TEXAS REG. NO. 55474 June 12, 2025

IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

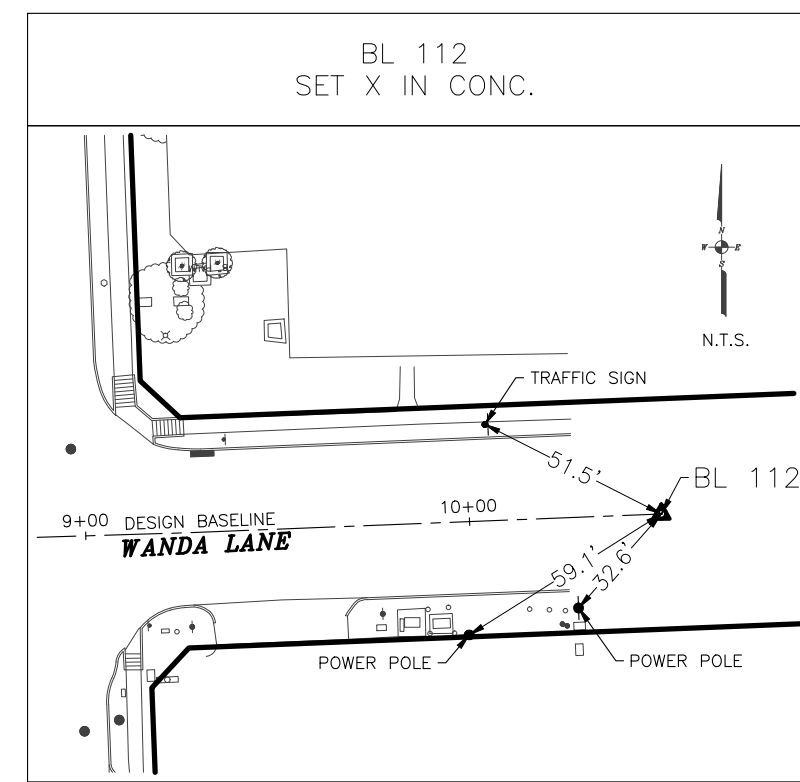
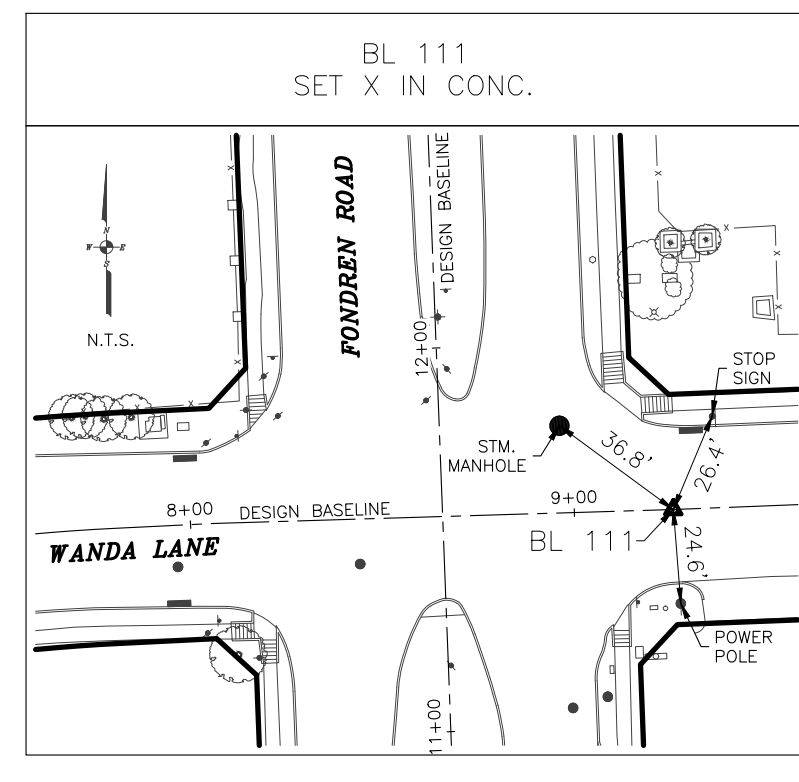
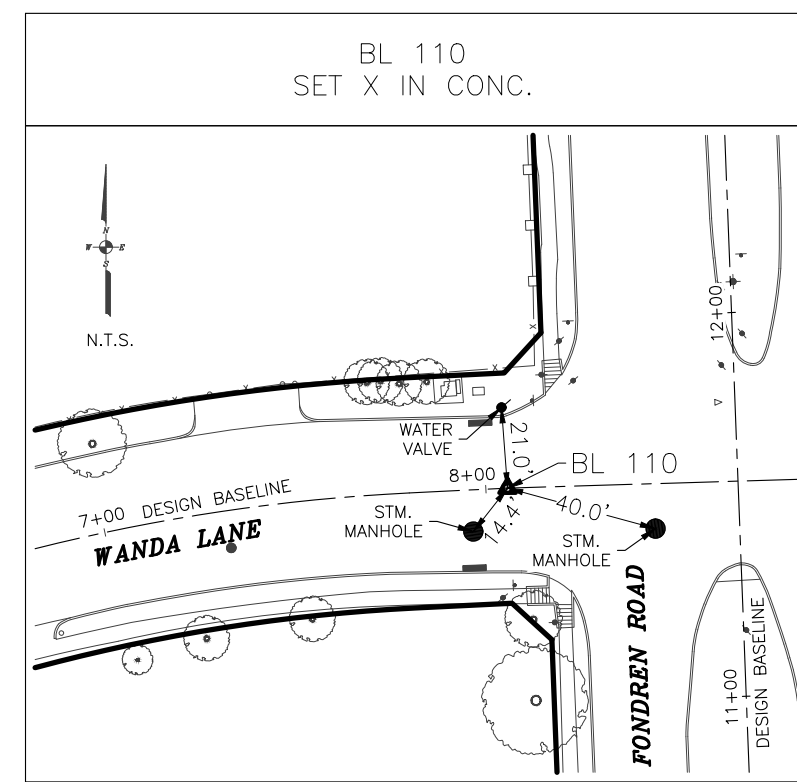
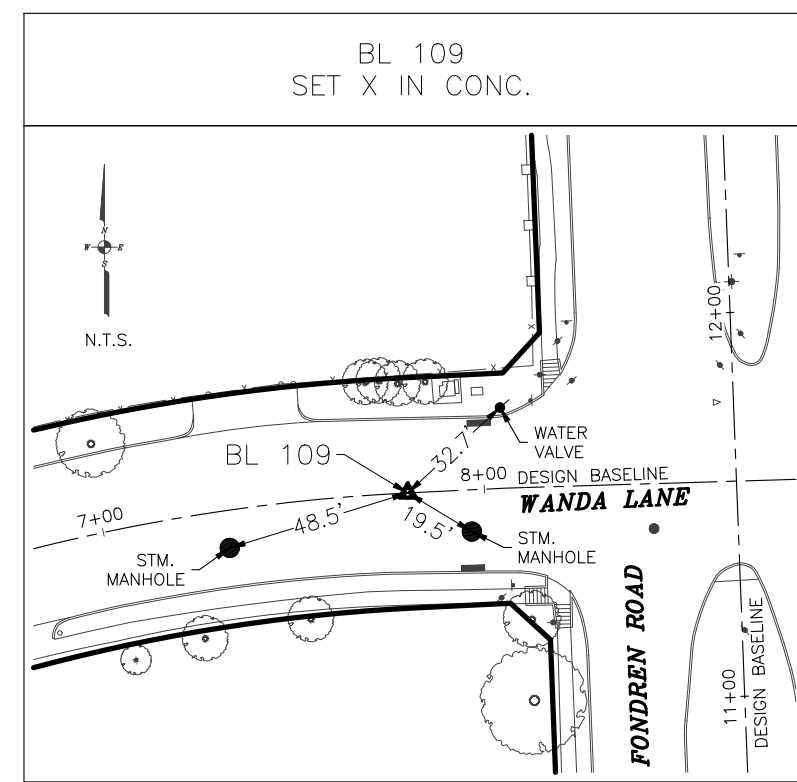
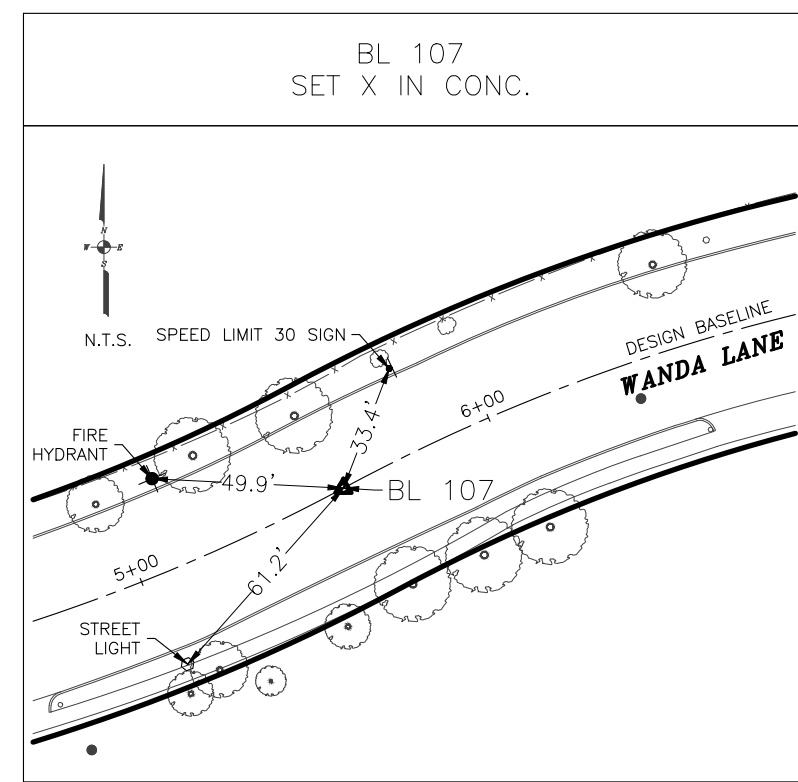
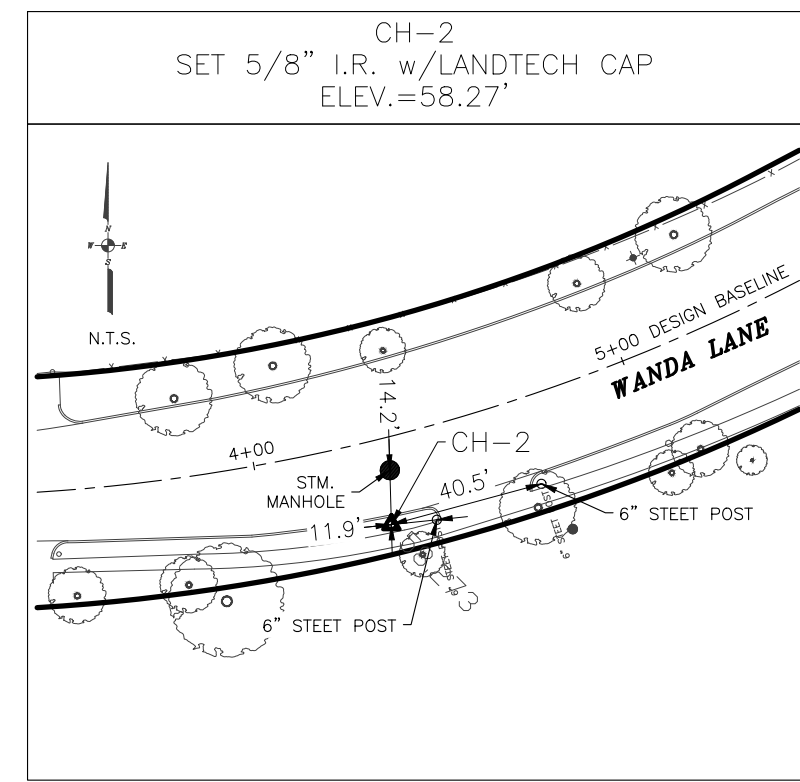
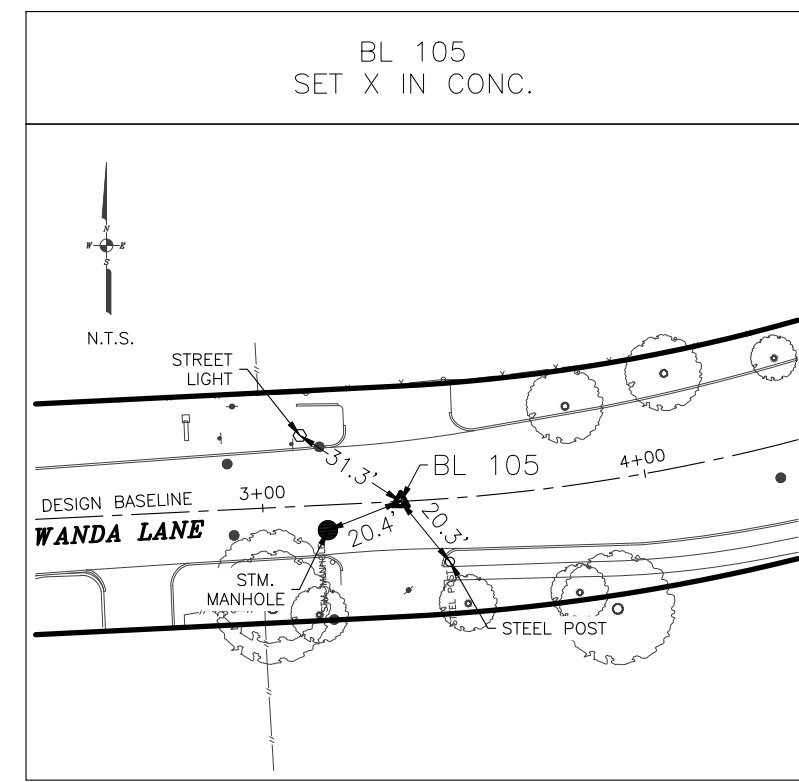
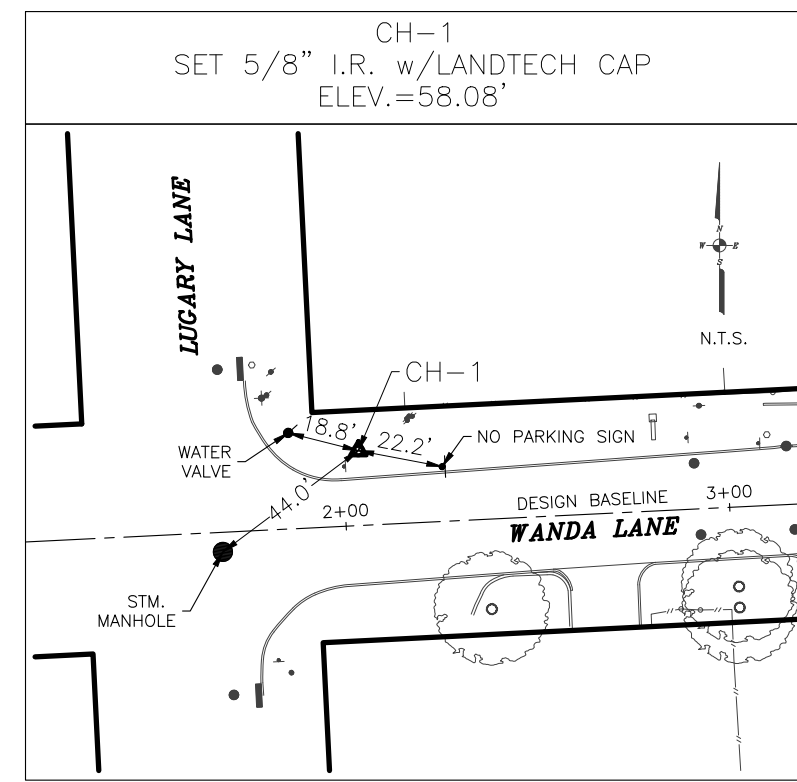
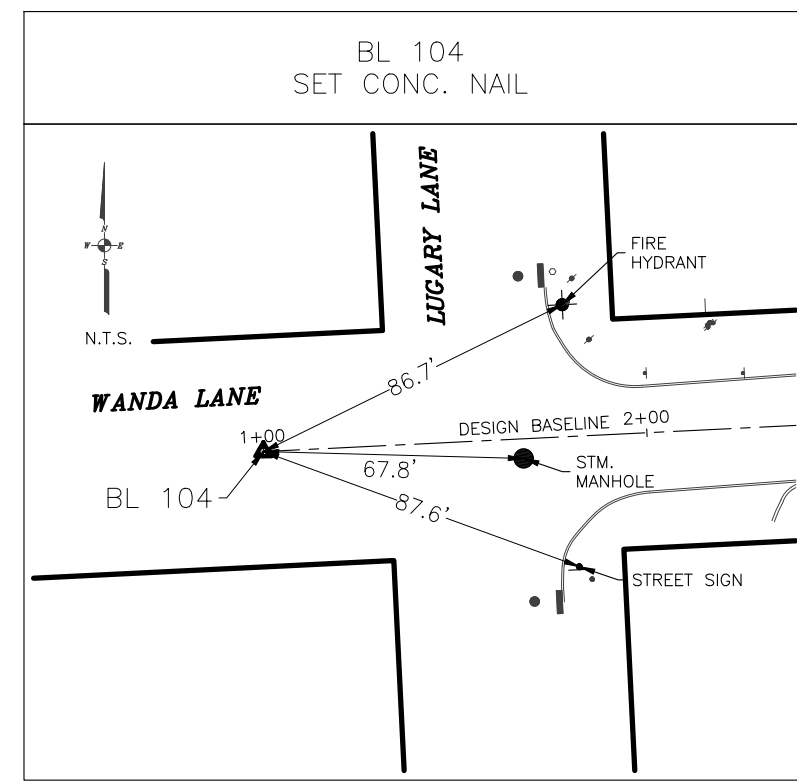
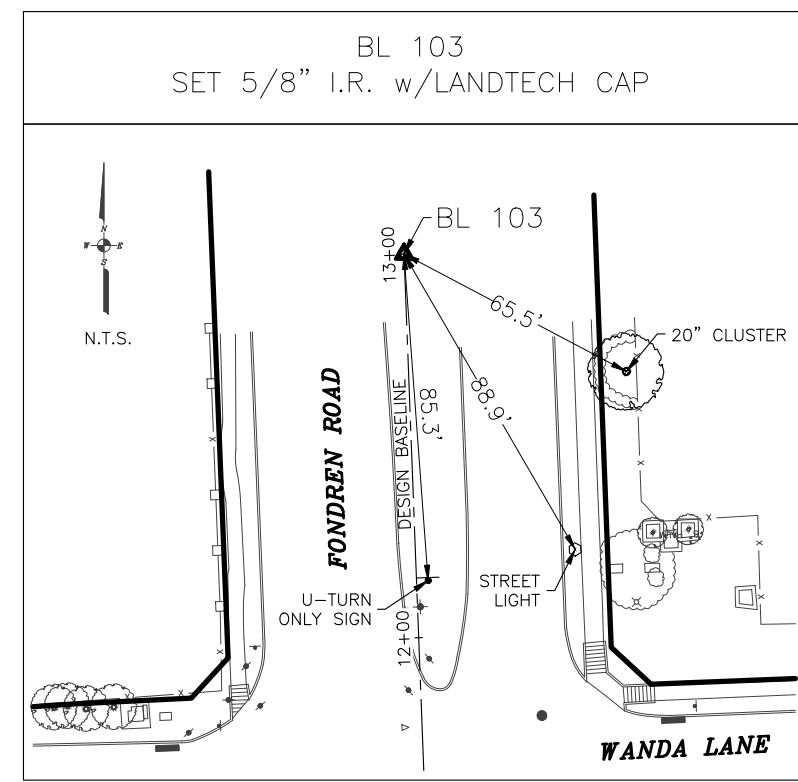
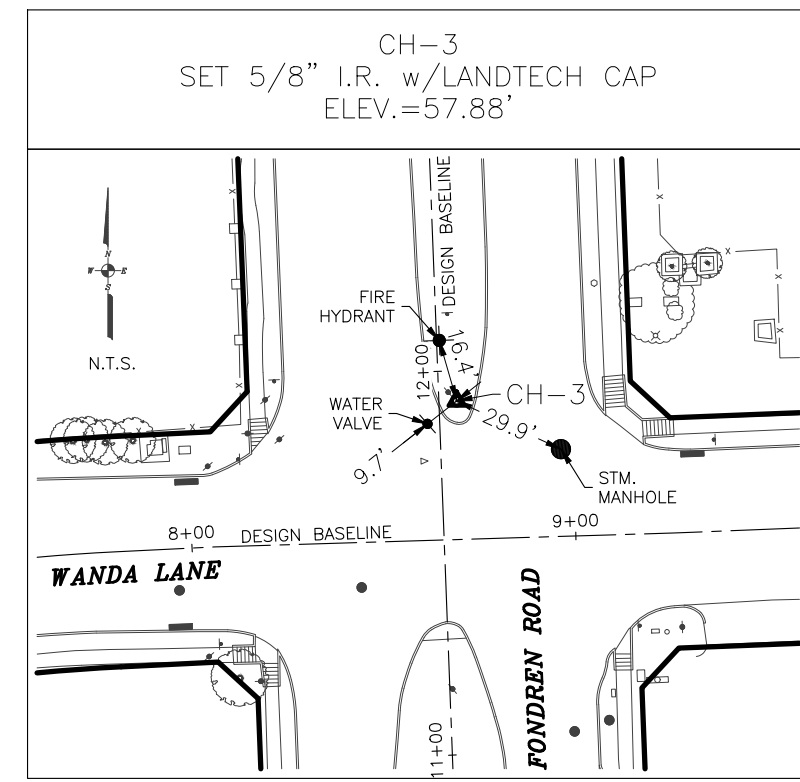
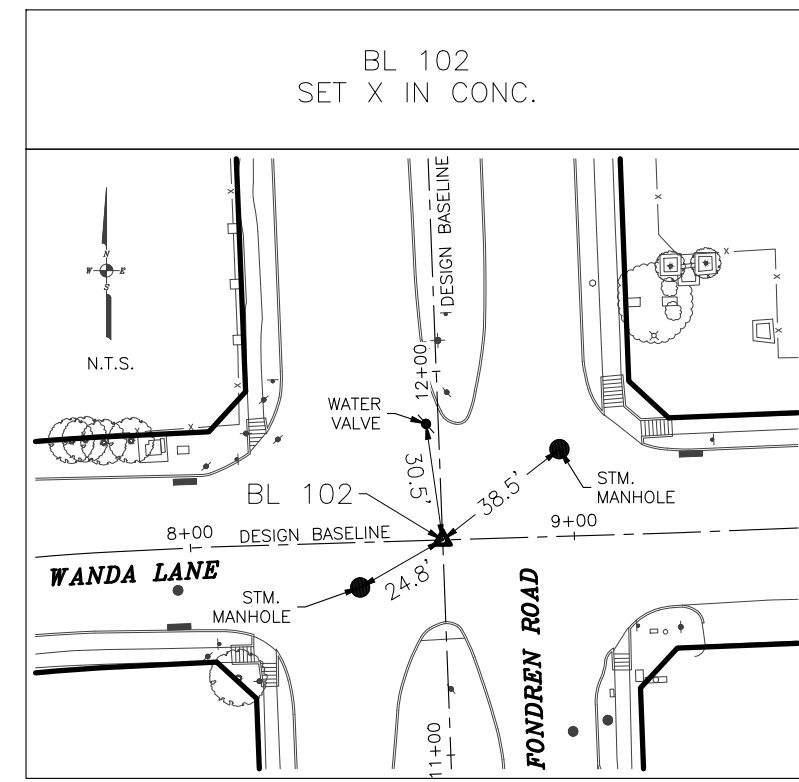
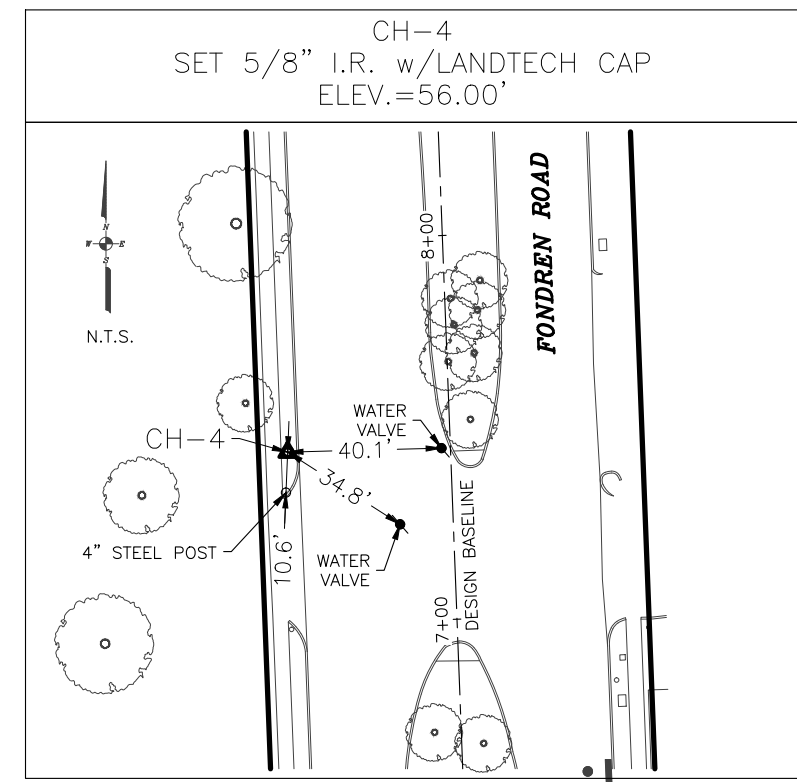
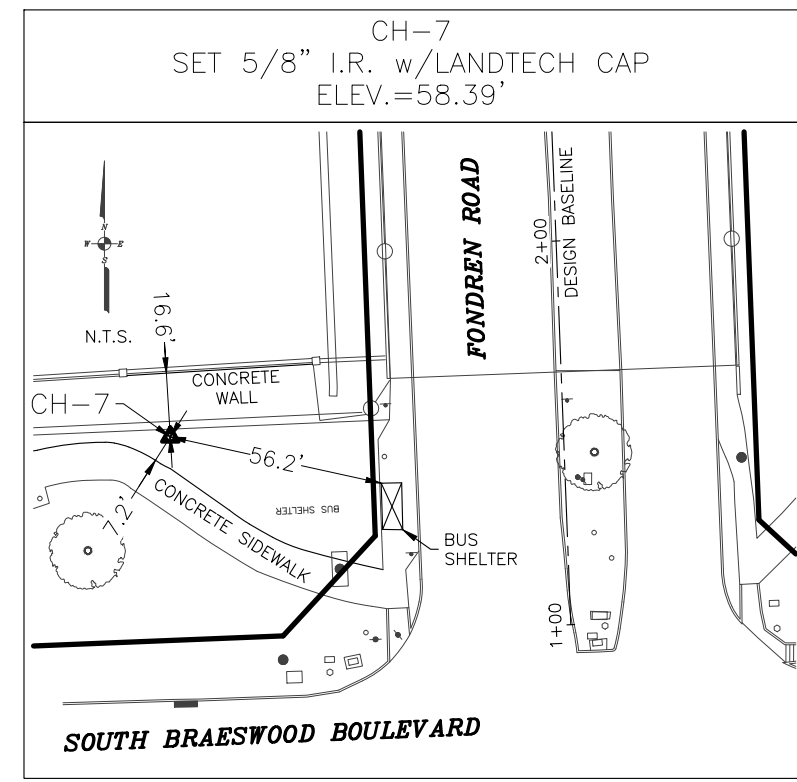
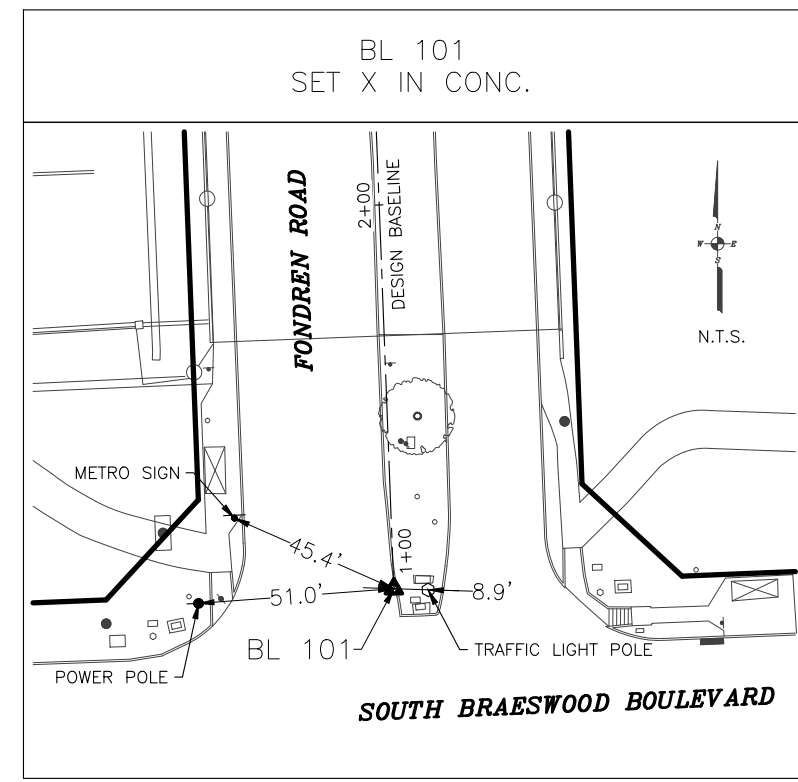
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA
DETENTION POND "A"
SURVEY CONTROL MAP
SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
RICHARD SMITH	
SHEET NO.	OF

PLOTTED: 6/12/2025 1:27 PM
PLOT STYLE: ---
FILE PATH: S:\2023\2320193\CADD\SCM\2320193-SCM.dwg

NO.	DATE	REVISION
XXX		BRIEF DESCRIPTION
XXX		BRIEF DESCRIPTION
XXX		BRIEF DESCRIPTION
APP.		



NOTES:

1. ALL COORDINATES AND BEARINGS SHOWN HEREON ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983(CORS (2011 ADJ.), EPOCH 2010.00. ALL COORDINATES ARE GRID VALUES AND CAN BE CONVERTED TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR OF 0.9998802.
2. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88/GEOID18).
3. THE ELEVATION DIFFERENCE BETWEEN THE FLOODPLAIN REFERENCE MARK NO. 040200 PUBLISHED DATUM (NAVD88, 2001 ADJ.) AND THE PROJECT VERTICAL DATUM (NAVD88/GEOID18) IS 0.14 FEET. PROJECT DATUM + 0.14 FEET = FLOODPLAIN DATUM
4. THIS IS NOT A BOUNDARY SURVEY.

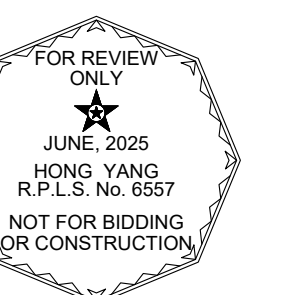
PROJECT BENCHMARK:

CITY OF HOUSTON MONUMENT NO. 5053-8115, A BRASS DISK ON SIDEWALK OF BRIDGE AT FONDREN RD. (NORTH BOUND) OVER BRAYS BAYOU, APPROXIMATELY 150 FEET NORTH OF SOUTH BRAESWOOD BLVD.
ELEVATION = 59.14 FEET (NAVD88/GEOID18)

CONSULTANT:

LANDTECH
1315 W Sam Houston Parkway N, Suite 100
Houston, Texas 77043
T: 713-861-7068
F: 713-861-4131
TBPELS No. 10019100

SEAL



ENTECH
CIVIL ENGINEERS, INC.

15021 KATY FREEWAY, STE. 500
HOUSTON, TX. 77094
281-945-0069
TX FIRM NUMBER: F-6932

SURVEYED BY: LANDTECH, INC.
FB NO. P-6331

THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF JUAN OLIVAREZ TEXAS REG. NO. 55474 June 12, 2025

IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA
DETENTION POND "A"

SWING TIES
SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
RICHARD SMITH	
SHEET NO. OF	

MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO.	DATE	REVISION
		APP.



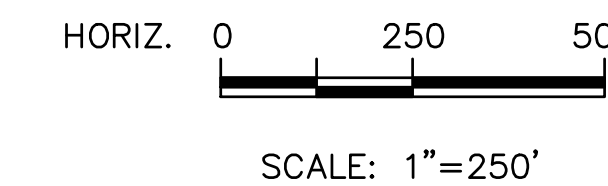
CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY REQUIRES:

- 1.) HCFCD RIGHT-OF-WAY NOTIFICATION (PERMIT)
- 2.) HCFCD 48-HR PRE-CONSTRUCTION NOTICE

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HOUSTON, TX. 77094
281-945-0069
TX FIRM NUMBER: F-6932

SURVEYED BY: LANDTECH, INC.
FB NO. P-6331

THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025

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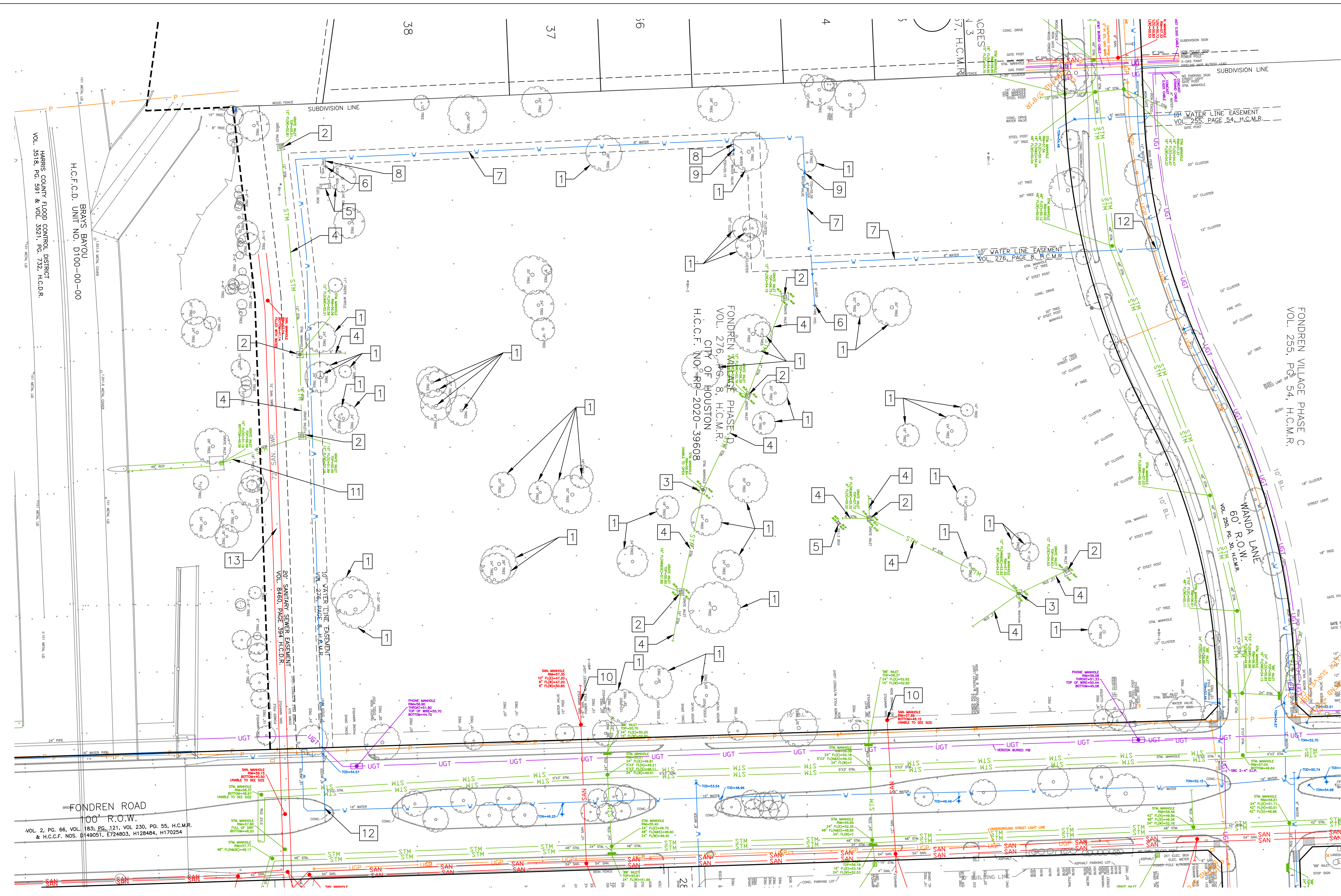
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A

OVERALL LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
1"=250'	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 11 OF 47	

NO.	DATE	REVISION	APP.



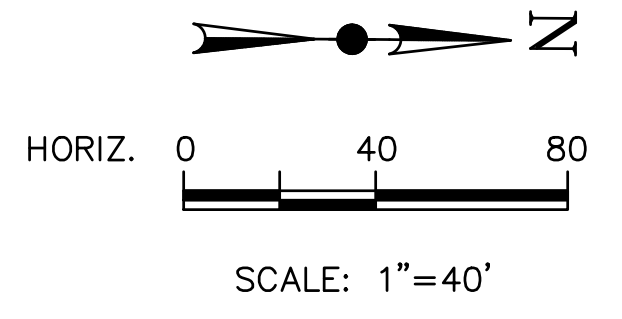
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VERIFICATION OF PRIVATE UTILITY LINES

Date _____
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature valid for conflict verification.
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Date _____
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Date _____
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Signature valid for one year.

 CIVIL ENGINEERS, INC. 15021 KATY FREEWAY, STE. 500 HOUSTON, TX. 77094 281-945-0069 TX FIRM NUMBER: F-6932 SURVEYED BY: LANDTECH, INC. FB NO. P-6331	THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS
SHARPSTOWN AREA DETENTION POND A

DETENTION POND DEMOLITION PLAN

KEY NOTES:

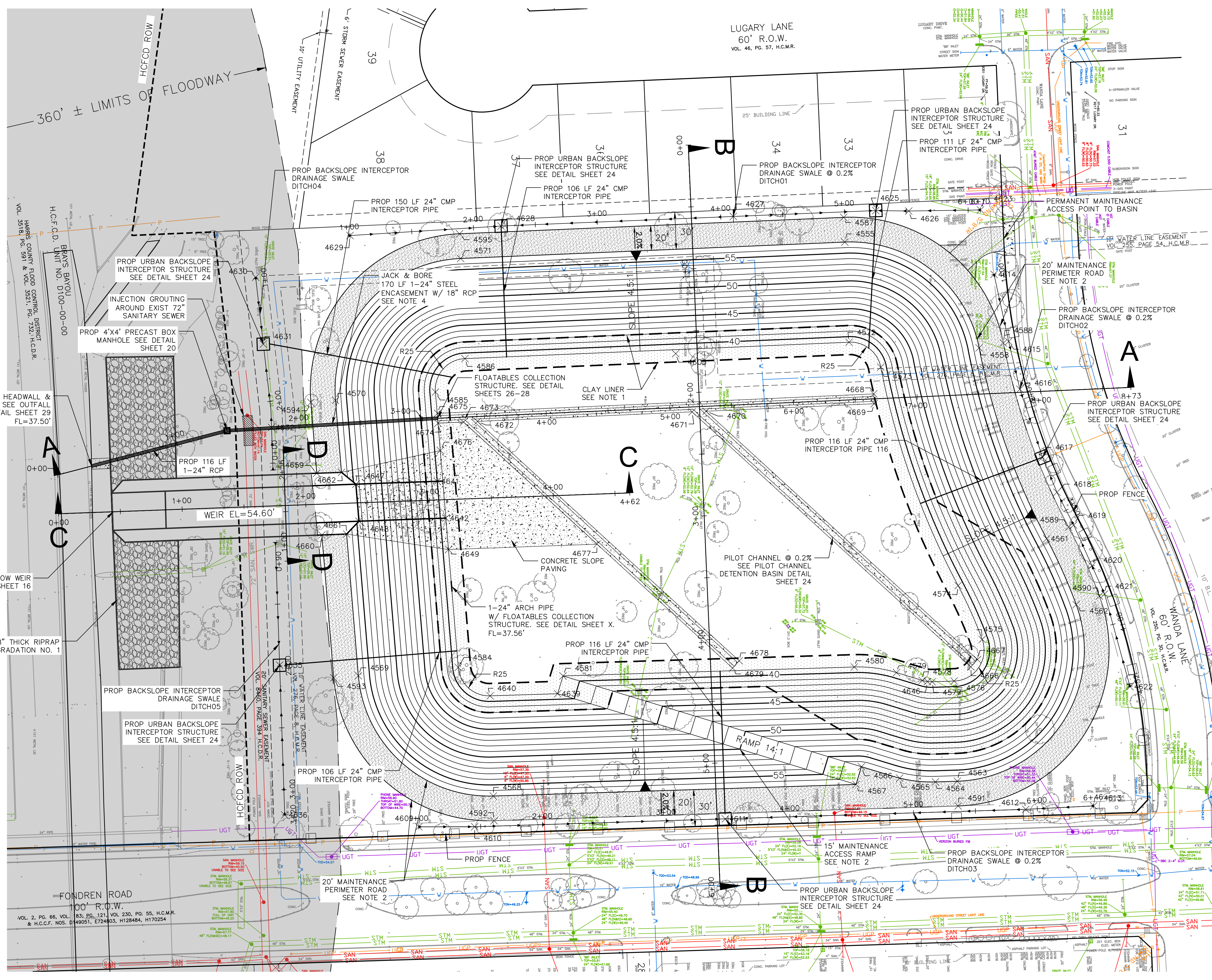
- | | | |
|--------------------------------|--|--|
| 1 REMOVE EXISTING TREE | 7 REMOVE EXISTING 8" WATERLINE WITHIN THE FOOTPRINT OF PROPOSED DETENTION POND | 12 CUT, PLUG AND ABANDON 8" WATERLINE |
| 2 REMOVE EXISTING INLET | 8 REMOVE EXISTING WATERLINE | 13 EXISTING 72" SANITARY SEWER TO REMAIN IN PLACE. CONTRACTOR TO TAKE CAUTION WHEN JACK AND BORING UNDERNEATH. |
| 3 REMOVE EXISTING MANHOLE | 9 REMOVE EXISTING WATER VALVE | |
| 4 REMOVE EXISTING STORM SEWER | 10 CUT, PLUG AND REMOVE EXISTING SANITARY SEWERLINE @ MANHOLE | |
| 5 REMOVE ELECTRICAL BOX | 11 CUT, PLUG, AND REMOVE EXISTING STORM SEWER | |
| 6 REMOVE EXISTING FIRE HYDRANT | | |

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 12 OF 47	

NO.	DATE	REVISION	APP.

PLOTTED: 3/11/2026 11:20 AM

FILE PATH: N:\0030-23-10113 - Design\Plan Set\14 AUTOCAD SHEETS\PLAN & PROFILE\Detention Pond\DETENTION POND PLAN.dwg



- NOTES:
1. DELINEATED AREA SHOWS WHERE 2' THICK CLAY LINER IS REQUIRED. SEE GEOTECH REPORT PREPARED BY AVILES ENGINEERING FOR CLAY LINER SPECIFICATION.
 2. MAINTENANCE ACCESS RAMP AND PERIMETER ROAD TO BE SURFACED WITH 6" RECYCLED CRUSHED CONC BASE OVER 8" CEMENT STABILIZED SAND (TYPICAL).
 3. THE DETENTION POND DRAW DOWN TIME IS 26 HOURS. SEE BRAEBURN GLEN DRAINAGE IMPROVEMENTS REPORT PREPARED BY ENTECH DATED MARCH 11, 2025.
 4. CONTRACTOR TO TAKE PRECAUTION WHILE JACK AND BORE UNDER 72" SANITARY SEWER MAIN.

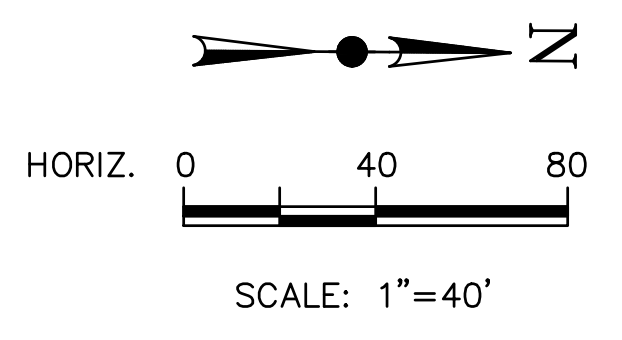
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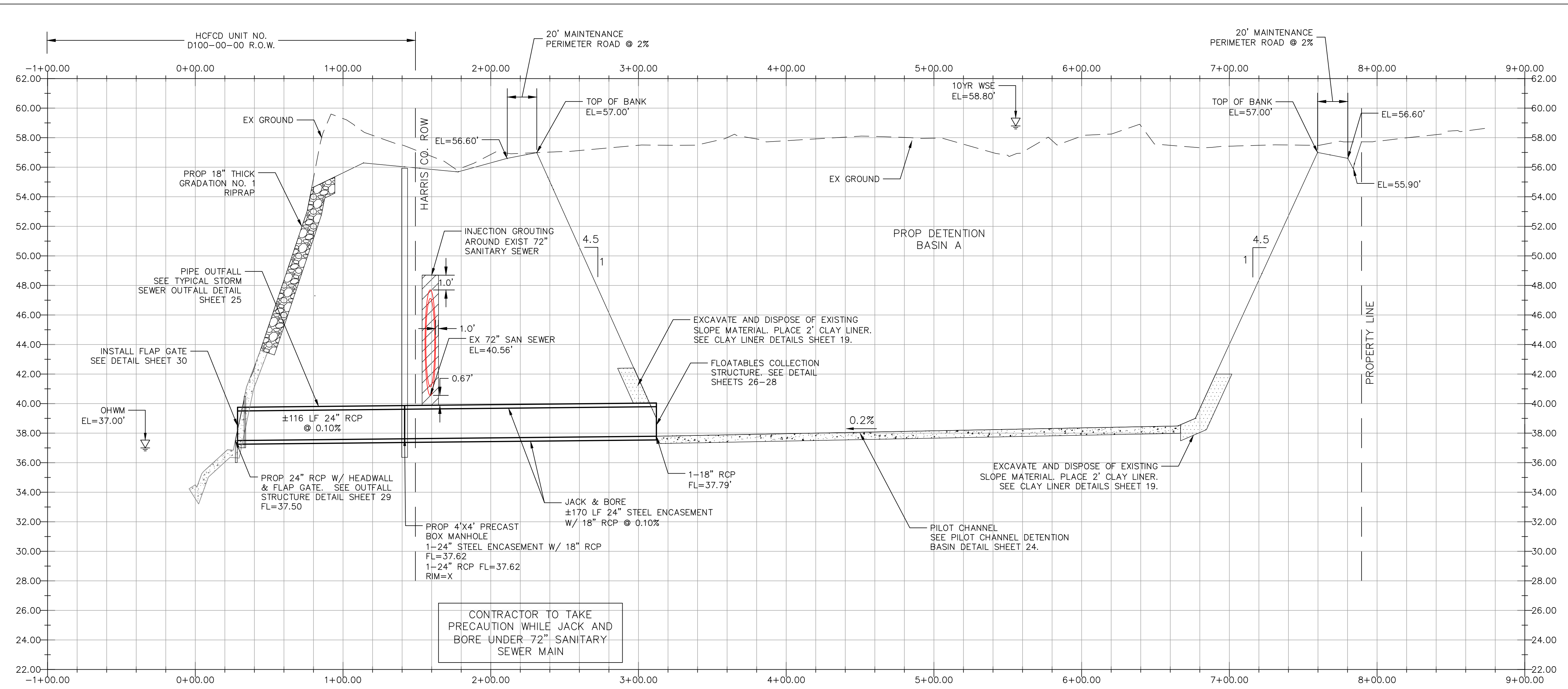
Date _____
Approved for AT&T underground conduit facilities only.
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 15021 KATY FREEWAY, STE. 500 HOUSTON, TX. 77094 281-945-0069 TX FIRM NUMBER: F-6932	THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025
	IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES
	SURVEYED BY: LANDECH, INC. FB NO. P-6331
	DATE: _____

CITY OF HOUSTON
HOUSTON PUBLIC WORKS
SHARPSTOWN AREA DETENTION POND A
DETENTION POND LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 13 OF 47	

FILE PATH: N:\030-23-101\3 - Design\Plan Set\14 AUTOCAD SHEETS\PLAN & PROFILE\Detention Pond\BACKSLOPE INTERCEPTOR SWALE PROFILE.dwg PLOTTED: 3/11/2026 11:20 AM



SECTION A-A
POND OUTFALL
SCALE H: 1"=40', V: 1"=4'

WATER SURFACE ELEVATION (FT)	WATER DEPTH (FT)	TOTAL WATER SURFACE AREA (SF)	WATER VOLUME @1' DEEP (CF)	ACCUMULATIVE STORAGE VOLUME (CF)	ACCUMULATIVE STORAGE VOLUME (AC-FT)
54.6*	15.6	212,829	126,280	2,421,782	55.60
54	15	208,103	204,144	2,295,503	52.70
53	14	200,186	196,291	2,091,358	48.01
52	13	192,397	188,566	1,895,067	43.50
51	12	184,735	180,967	1,706,501	39.18
50	11	177,200	173,496	1,525,534	35.02
49	10	169,792	166,152	1,352,038	31.04
48	9	162,512	158,935	1,185,885	27.22
47	8	155,359	151,846	1,026,950	23.58
46	7	148,333	144,884	875,104	20.09
45	6	141,434	138,049	730,220	16.76
44	5	134,663	131,341	592,171	13.59
43	4	128,019	124,760	460,830	10.58
42	3	121,502	118,307	336,070	7.72
41	2	115,112	111,981	217,763	5.00
40	1	108,850	105,782	105,782	2.43
39	0	102,714	0	0	0.00

* TOTAL POND VOLUME IS CALCULATED UP TO ELEVATION 54.6', CORRESPONDING TO THE WEIR INLET ELEVATION, WHICH IS CONSIDERED THE TOTAL STORAGE ELEVATION. THE TOP OF POND IS AT ELEVATION 57.0'.

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	SURVEYED BY: LANDTECH, INC. FB NO. P-6331 IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

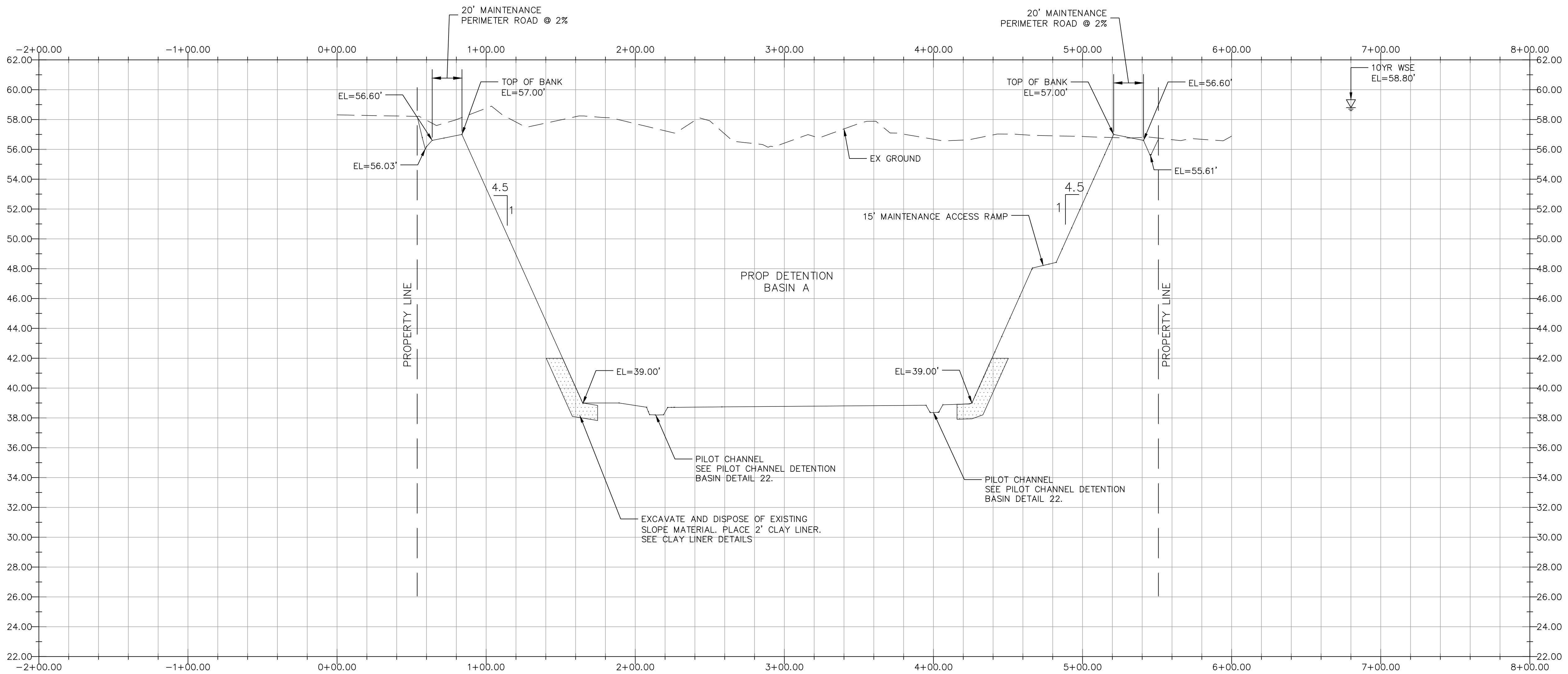
CITY OF HOUSTON
 HOUSTON PUBLIC WORKS
 SHARPSTOWN AREA DETENTION POND A
 POND OUTFALL SECTION A-A

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SUPUN ILANGMUDALIGE P.E.	
SHEET NO. 14 OF 47	

NO.	DATE	REVISION	APP.

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SECTION B-B
POND W-E
SCALE H: 1"=40', V: 1"=4'

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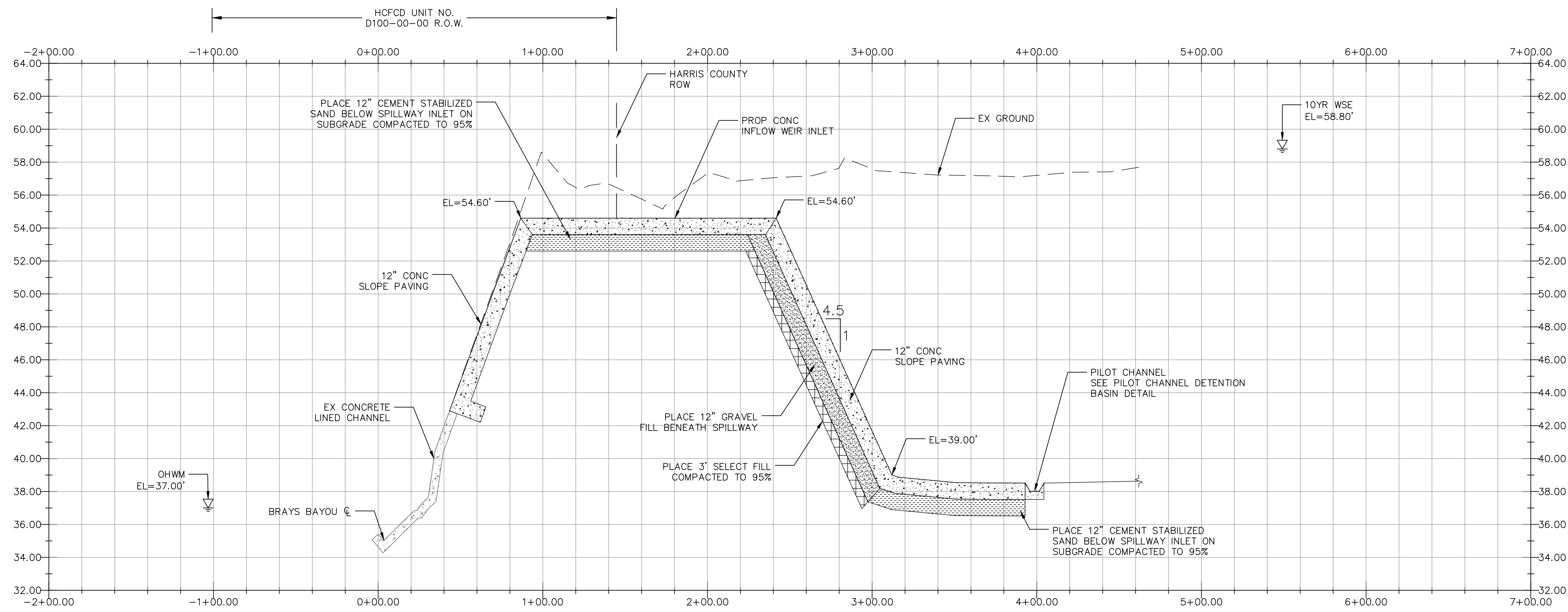
CITY OF HOUSTON
HOUSTON PUBLIC WORKS
SHARPSTOWN AREA DETENTION POND A
POND SECTION B-B

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 15 OF 47	

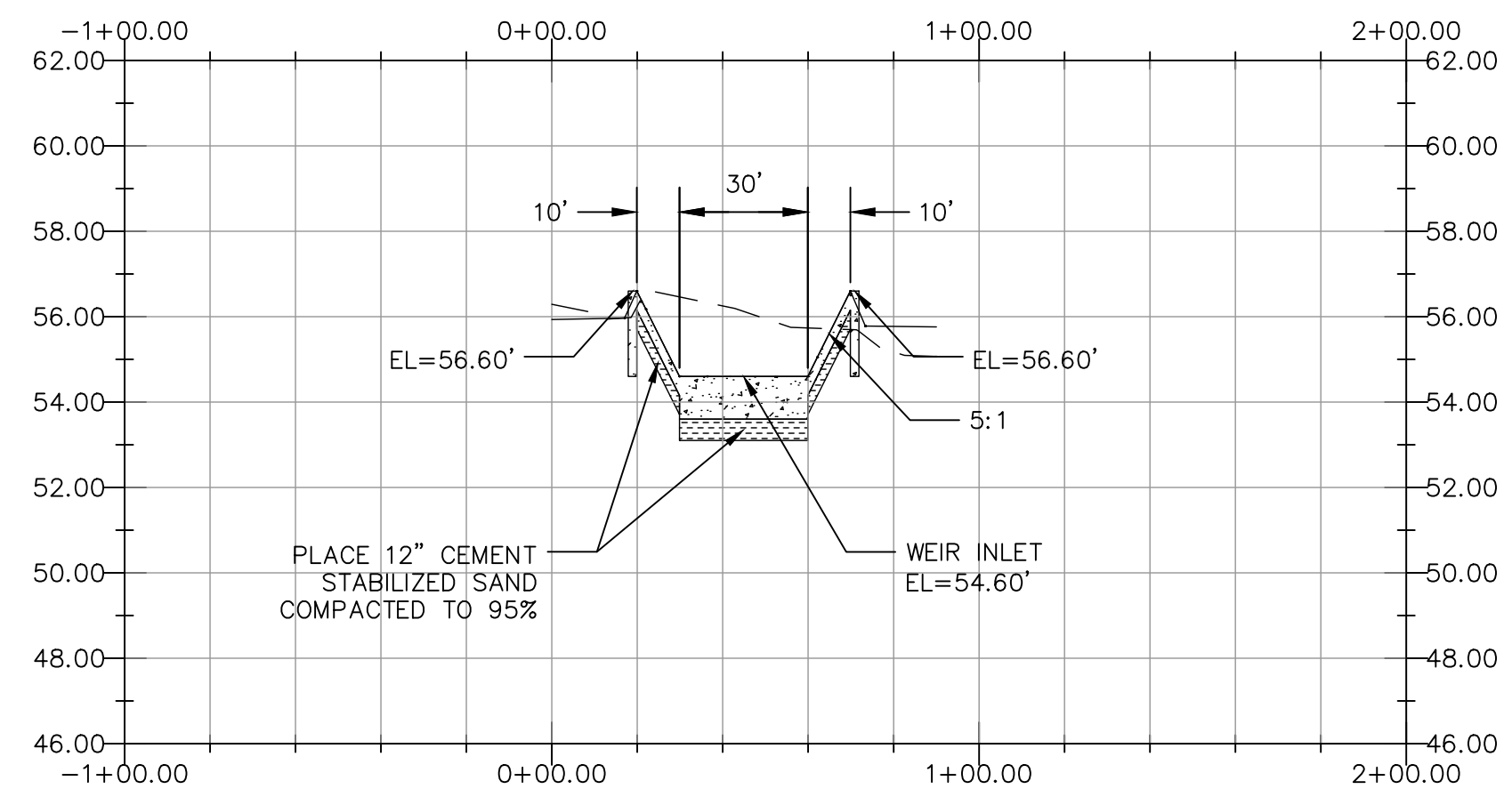
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SECTION C-C
POND INFLOW WEIR
SCALE H: 1"=40', V: 1"=4'



SECTION D-D
POND INFLOW WEIR CONCRETE APRON
SCALE H: 1"=40', V: 1"=4'

NO.	DATE	REVISION	APP.

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Date	Signature valid for six months.
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

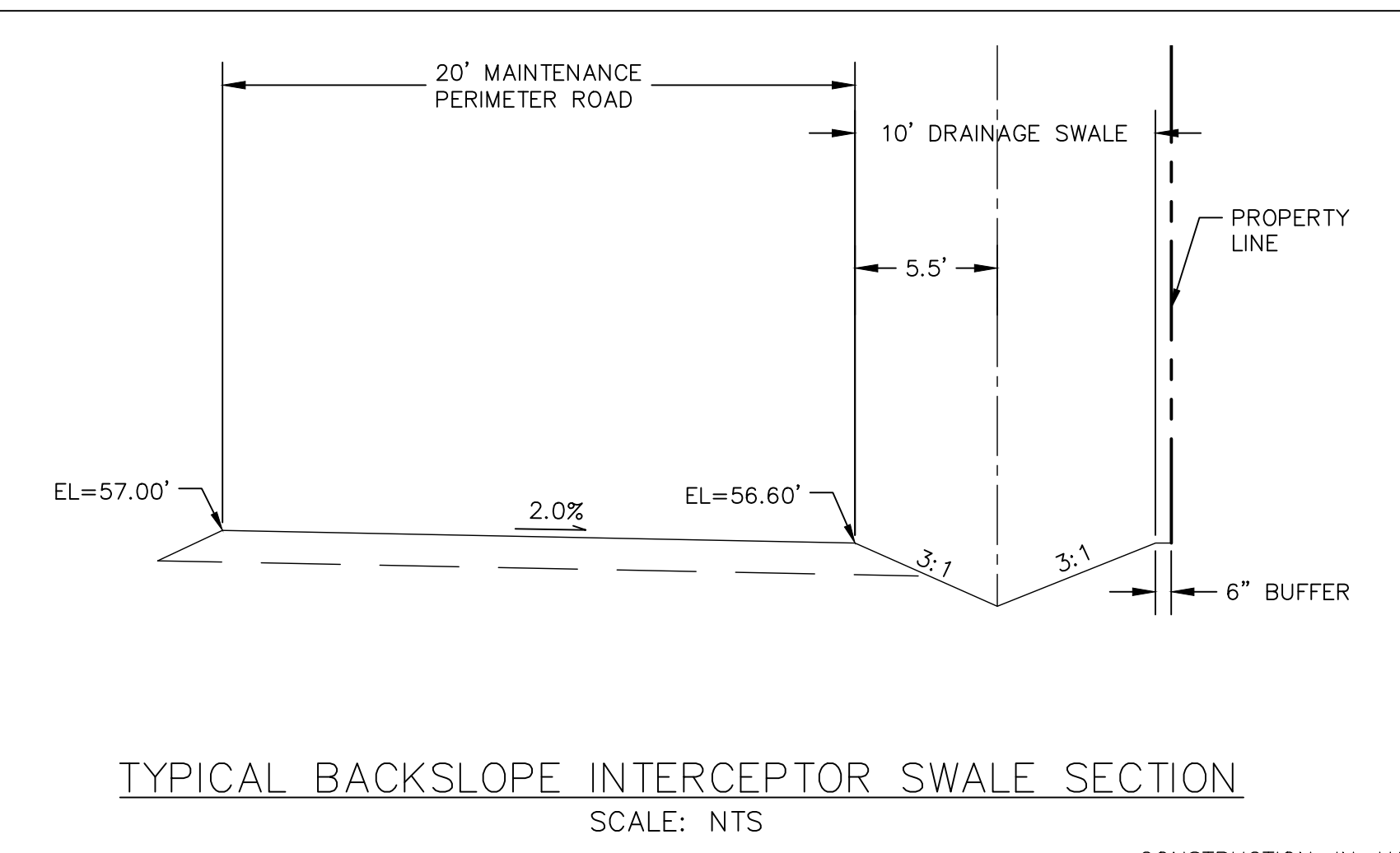
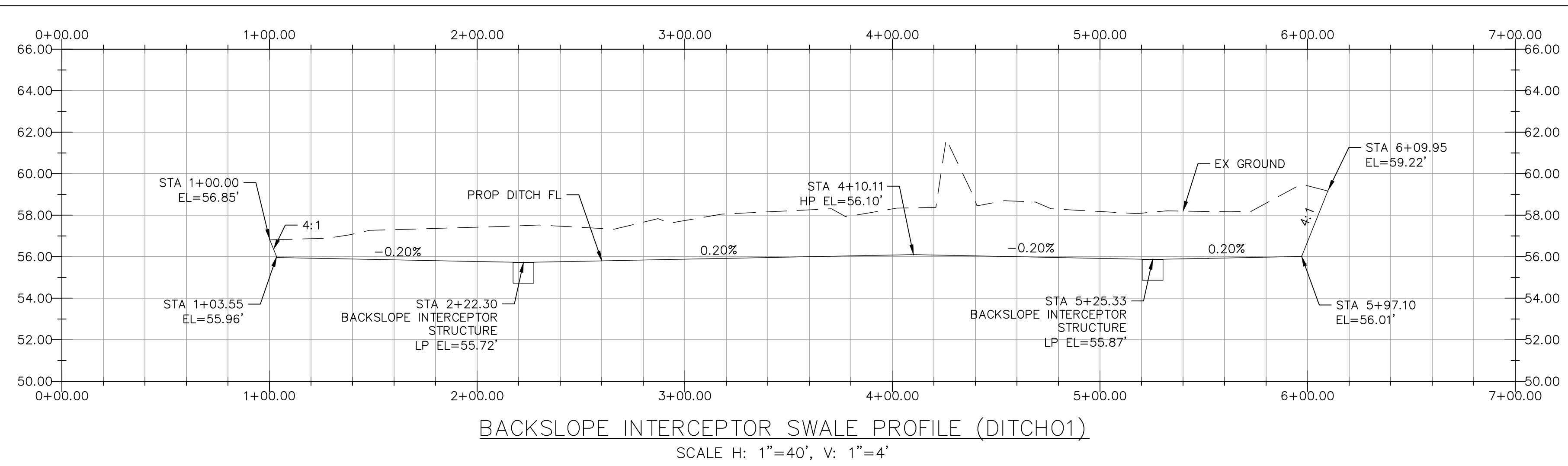
SHARPSTOWN AREA DETENTION POND A

POND INFLOW WEIR SECTIONS C-C & D-D

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 16 OF 47	

PLOTTED: 3/11/2026 11:21 AM

FILE PATH: N:\0030-23-101\3 - Design\Plan Set\14 AUTOCAD SHEETS\PLAN & PROFILE\Detention Pond\BACKSLOPE INTERCEPTOR SWALE PROFILE.dwg



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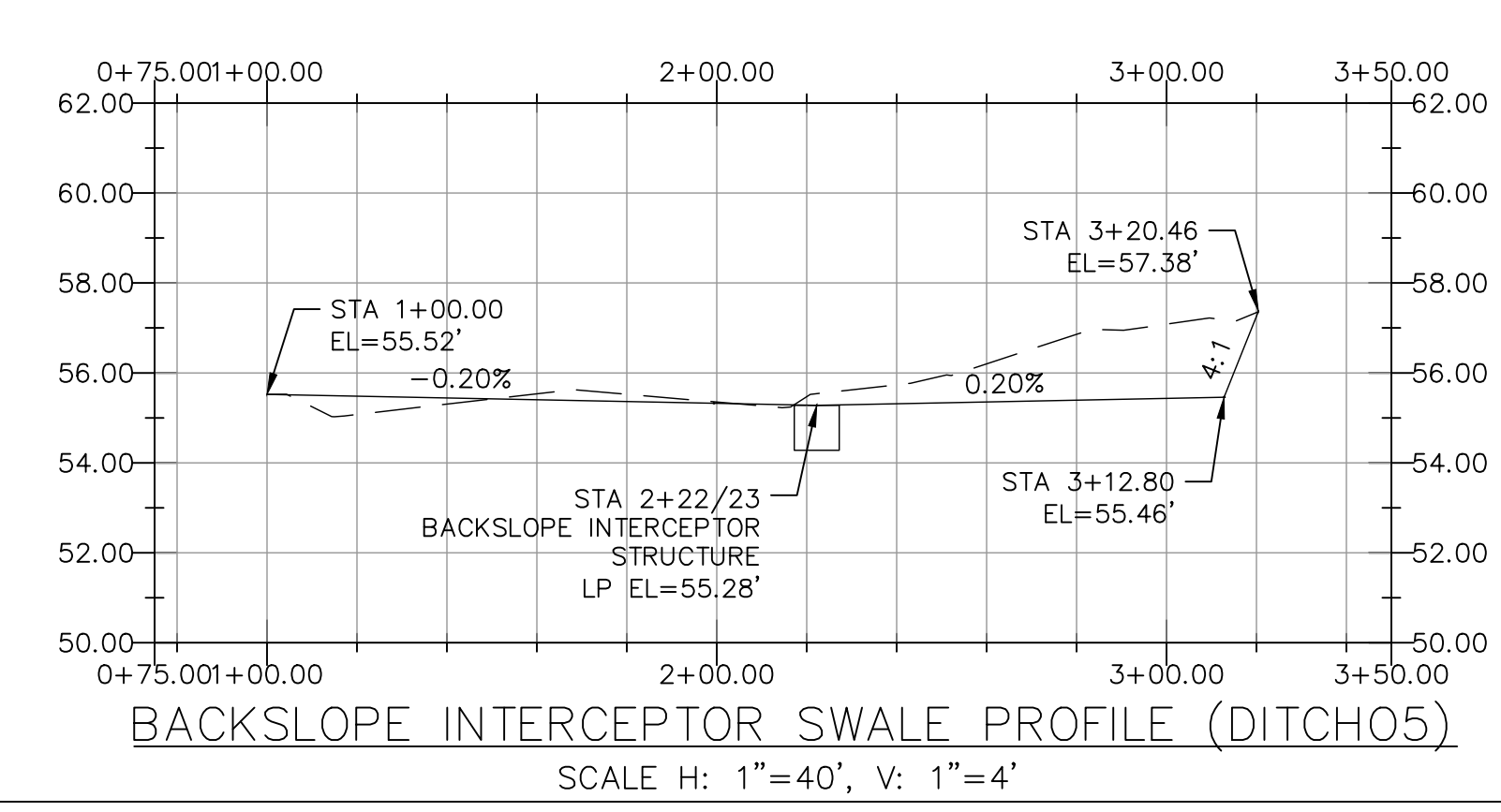
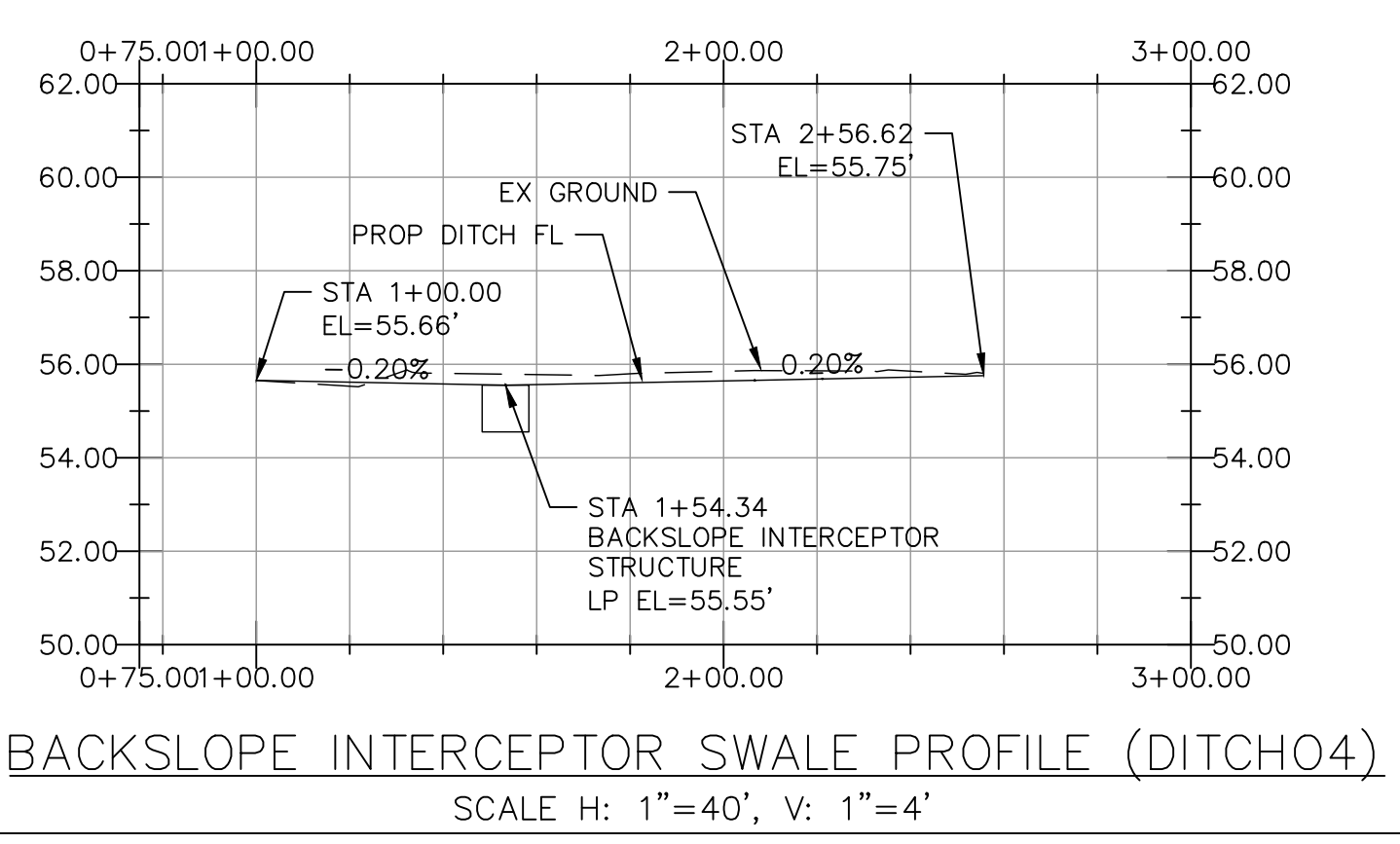
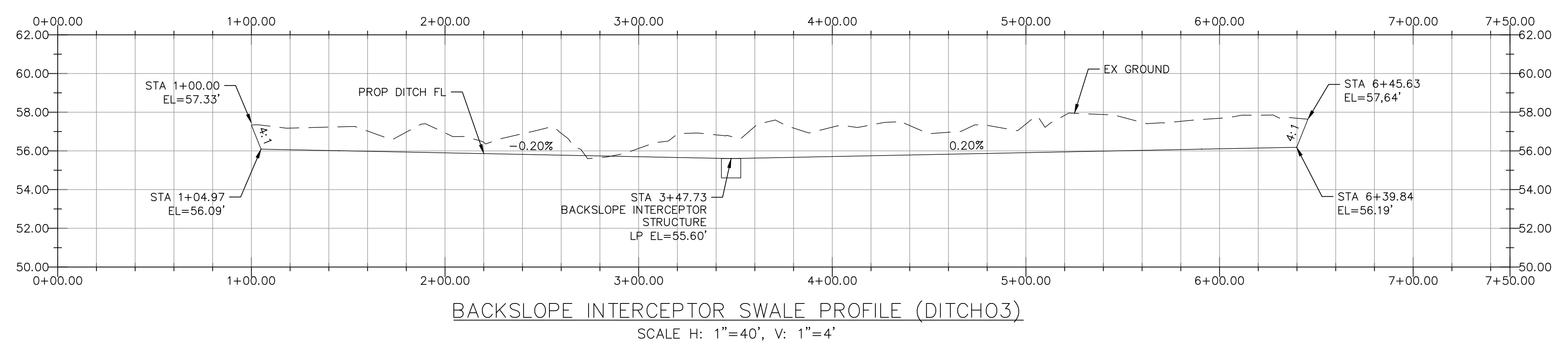
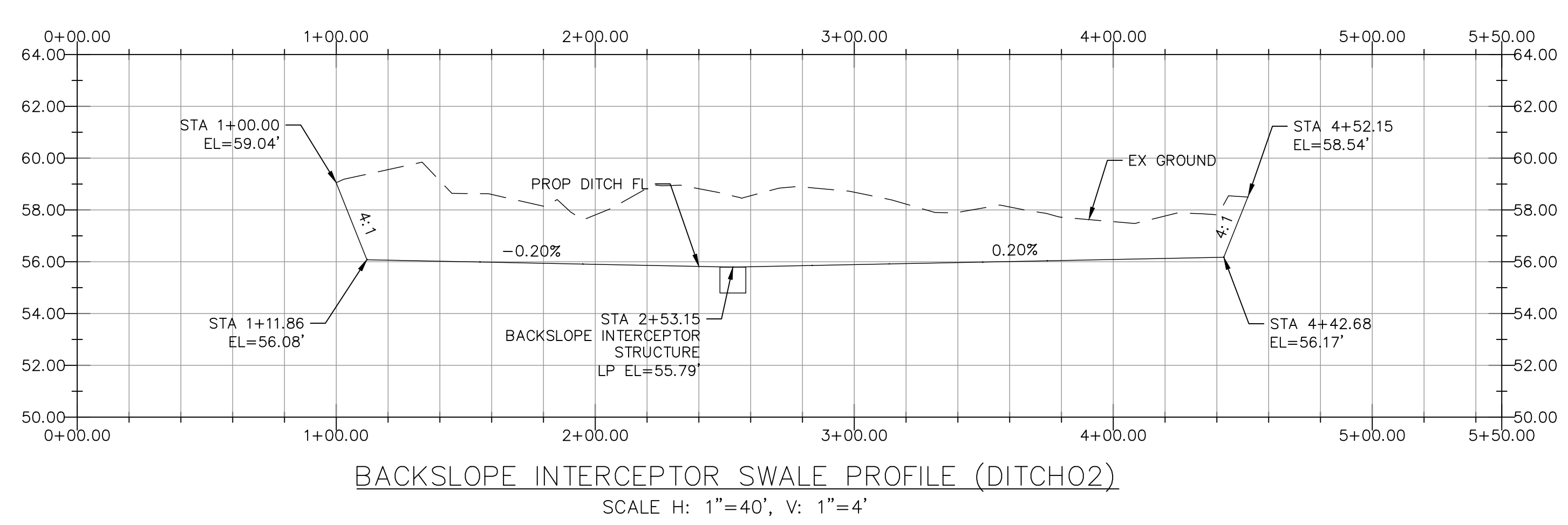
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VERIFICATION OF PRIVATE UTILITY LINES	
Date	
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.	Signature valid for six months.
Date	
CenterPoint Energy/UNDERGROUND 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.	

ENTECH
CIVIL ENGINEERS, INC.
15021 KATY FREEWAY, STE. 500
HOUSTON, TX. 77094
281-945-0069
TX FIRM NUMBER: F-6932

THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025

IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

CITY OF HOUSTON HOUSTON PUBLIC WORKS	
SHARPSTOWN AREA DETENTION POND A	
BACKSLOPE INTERCEPTOR SWALE PROFILES	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SUPUN ILANGMUDALIGE P.E.	
SHEET NO. 16 OF 47	

Point Table				
Point #	Elevation	Northing	Easting	Description
4555	57.00	13812238.17	3076805.30	PR
4558	57.00	13812347.26	3076890.11	PR
4561	57.00	13812402.85	3077044.03	PR
4562	57.00	13812427.01	3077097.15	PR
4563	57.00	13812331.88	3077240.46	PR
4564	57.00	13812314.18	3077241.14	PR
4565	57.00	13812285.27	3077238.26	PR
4566	57.00	13812254.32	3077229.21	PR
4567	57.00	13812250.05	3077243.59	PR
4568	57.00	13811957.01	3077254.81	PR
4569	57.00	13811847.38	3077158.33	PR
4570	57.00	13811827.49	3076935.86	PR
4571	57.00	13811927.87	3076820.55	PR
4572	39.00	13812242.15	3076886.20	PR
4573	39.00	13812267.88	3076906.20	PR
4574	39.00	13812331.51	3077082.38	PR
4575	39.00	13812351.22	3077125.72	PR
4576	39.00	13812328.78	3077159.52	PR
4577	39.00	13812311.08	3077160.20	PR
4578	39.00	13812303.00	3077159.18	PR

Point Table				
Point #	Elevation	Northing	Easting	Description
4579	39.00	13812282.19	3077153.00	PR
4580	39.00	13812248.06	3077148.67	PR
4581	39.00	13812012.77	3077157.41	PR
4584	39.00	13811928.06	3077151.12	PR
4585	39.00	13811908.17	3076928.65	PR
4586	39.00	13811931.84	3076901.46	PR
4587	56.60	13812237.19	3076785.32	PR
4588	56.60	13812366.86	3076886.14	PR
4589	56.60	13812420.47	3077034.56	PR
4590	56.60	13812445.73	3077090.10	PR
4591	56.60	13812332.65	3077260.45	PR
4592	56.60	13811957.78	3077274.80	PR
4593	56.60	13811827.46	3077160.11	PR
4594	56.60	13811807.57	3076937.65	PR
4595	56.60	13811926.88	3076800.58	PR
4605	38.97	13812102.12	3076896.33	PR
4609	56.10	13811896.97	3077280.11	PR
4610	56.01	13811942.13	3077279.75	PR
4611	55.60	13812144.55	3077272.07	PR
4612	56.09	13812387.35	3077262.86	PR

Point Table				
Point #	Elevation	Northing	Easting	Description
4613	56.20	13812442.19	3077259.69	PR
4614	56.10	13812358.94	3076830.62	PR
4615	55.99	13812371.14	3076884.75	PR
4616	55.91	13812380.44	3076923.32	PR
4617	55.79	13812399.09	3076978.23	PR
4618	55.73	13812410.90	3077006.43	PR
4619	55.67	13812424.62	3077032.84	PR
4620	55.60	13812439.57	3077065.69	PR
4621	55.55	13812449.91	3077088.39	PR
4622	55.71	13812470.94	3077163.11	PR
4623	56.04	13812347.63	3076778.62	PR
4625	55.87	13812263.03	3076779.67	PR
4626	55.92	13812289.69	3076779.88	PR
4627	56.10	13812147.95	3076785.16	PR
4628	55.72	13811960.34	3076794.10	PR
4629	55.90	13811838.34	3076802.57	PR
4630	55.66	13811762.32	3076836.77	PR
4631	55.66	13811768.86	3076890.78	PR
4632	55.86	13811775.95	3076958.08	PR
4635	55.36	13811783.70	3077150.16	PR

Point Table				
Point #	Elevation	Northing	Easting	Description
4636	57.79	13811788.58	3077271.19	PR
4639	39.00	13812008.49	3077171.78	PR
4640	39.00	13811953.92	3077173.87	PR
4641	40.00	13811910.10	3077000.74	PR
4642	39.00	13811917.27	3077030.47	PR
4646	39.00	13812307.26	3077160.05	PR
4647	54.60	13811844.37	3077003.49	PR
4648	54.60	13811847.07	3077033.41	PR
4649	39.00	13811919.54	3077055.86	PR
4659	56.60	13811812.68	3076994.84	PR
4660	56.60	13811817.14	3077044.72	PR
4661	57.00	13811837.15	3077043.85	PR
4662	57.00	13811832.69	3076993.98	PR
4666	39.00	13812342.21	3077147.94	PR
4667	39.00	13812347.57	3077142.00	PR
4668	39.00	13812262.38	3076927.85	PR
4669	39.00	13812262.78	3076935.84	PR
4670	38.69	13812126.96	3076942.75	PR
4671	38.69	13812115.66	3076943.33	PR
4672	38.33	13811942.34	3076952.14	PR

Point Table				
Point #	Elevation	Northing	Easting	Description
4673	38.33	13811931.04	3076952.72	PR
4674	38.29	13811910.42	3076953.77	PR
4675	38.29	13811909.96	3076945.78	PR
4676	39.00	13811912.39	3076975.85	PR
4677	38.63	13812039.55	3077050.72	PR
4678	39.00	13812155.04	3077144.25	PR
4679	39.00	13812149.68	3077150.19	PR

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

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

Date
 CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification)
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 15021 KATY FREEWAY, STE. 500 HOUSTON, TX. 77094 281-945-0069 TX FIRM NUMBER: F-6932	THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025
	SURVEYED BY: LANDTECH, INC. FB NO. P-6331

CITY OF HOUSTON
 HOUSTON PUBLIC WORKS

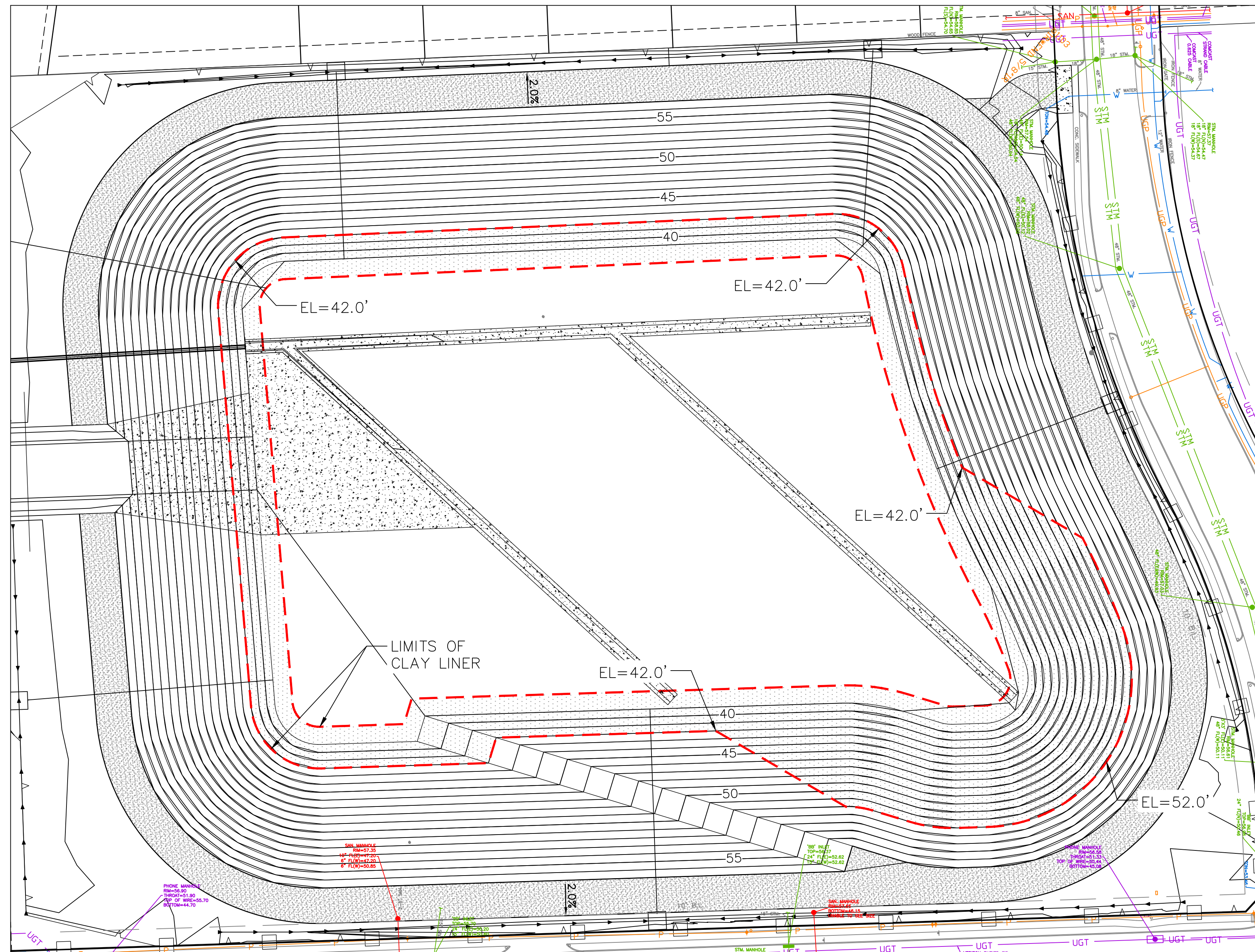
SHARPSTOWN AREA DETENTION POND A

GRADING CONTROL POINT AND CURVE TABLE

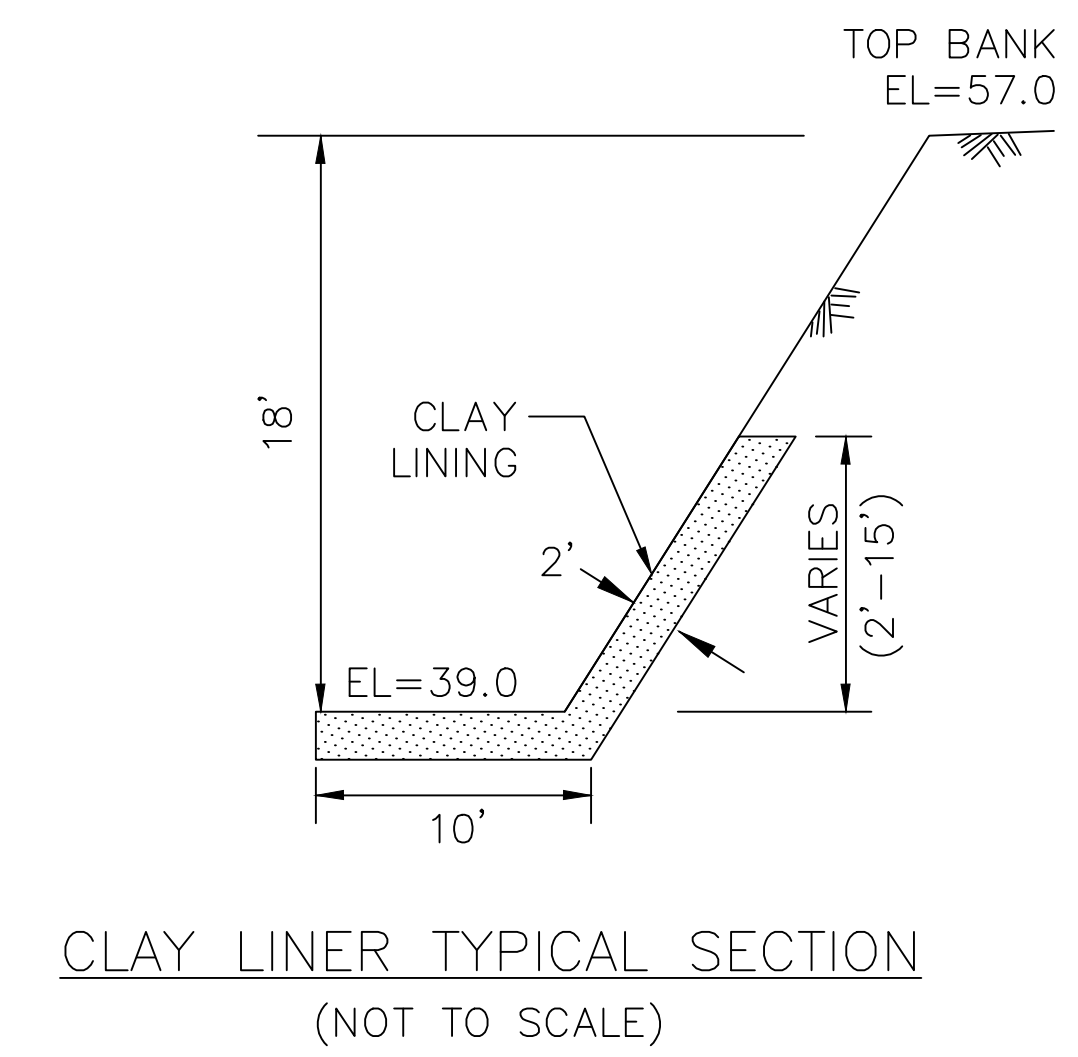
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 18 OF 47	

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FILE PATH: N:\0030-23-101\3 - Design\Plan Set\14 AUTOCAD SHEETS\PLAN & PROFILE\Detention Pond\CLAY LINER DETAILS.dwg



DETENTION POND "A" CLAY LINING LAYOUT
(1"=40' FULL SIZE; 1"=80' HALF SIZE)



- NOTES:
1. DELINEATED AREA SHOWS WHERE 2' THICK CLAY LINER IS REQUIRED. SEE GEOTECH REPORT PREPARED BY AVILES ENGINEERING FOR CLAY LINER SPECIFICATIONS.
 2. CLAY LINER IS TO EXTEND 10 FEET PAST TOE OF SLOPE INTO POND BOTTOM.

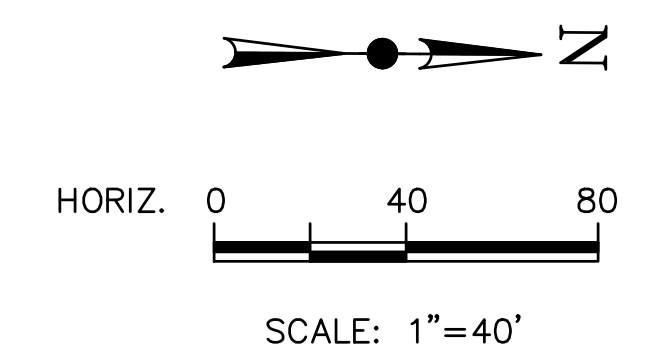
CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY REQUIRES:

- 1.) HCFCD RIGHT-OF-WAY NOTIFICATION (PERMIT)
- 2.) HCFCD 48-HR PRE-CONSTRUCTION NOTICE

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

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

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



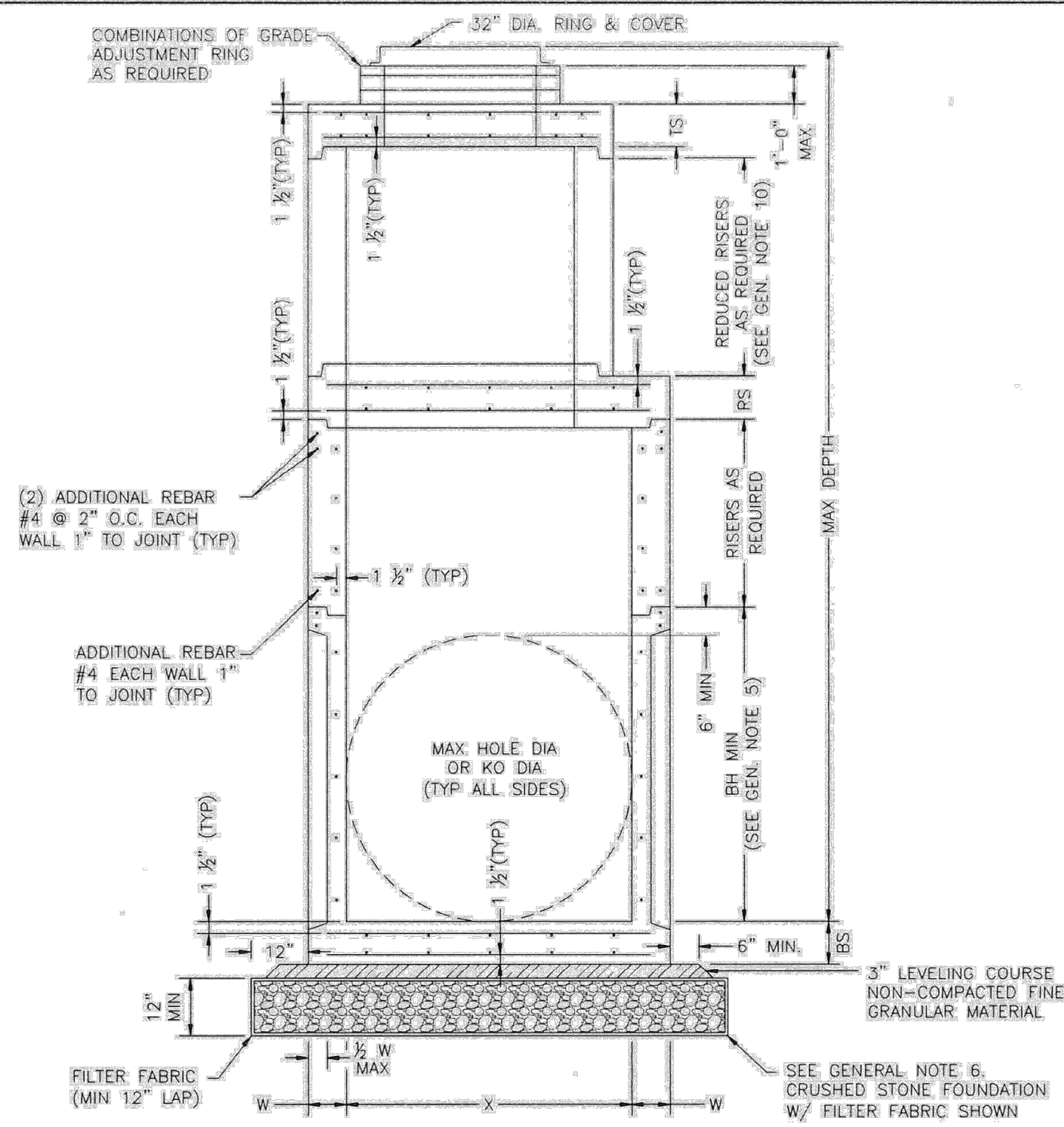
 15021 KATY FREEWAY, STE. 500 HOUSTON, TX. 77094 281-945-0069 TX FIRM NUMBER: F-6932	THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF JUAN OLIVAREZ TEXAS REG. NO. 55474 March 11, 2026
	IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS
SHARPSTOWN AREA DETENTION POND A
CLAY LINING DETAILS

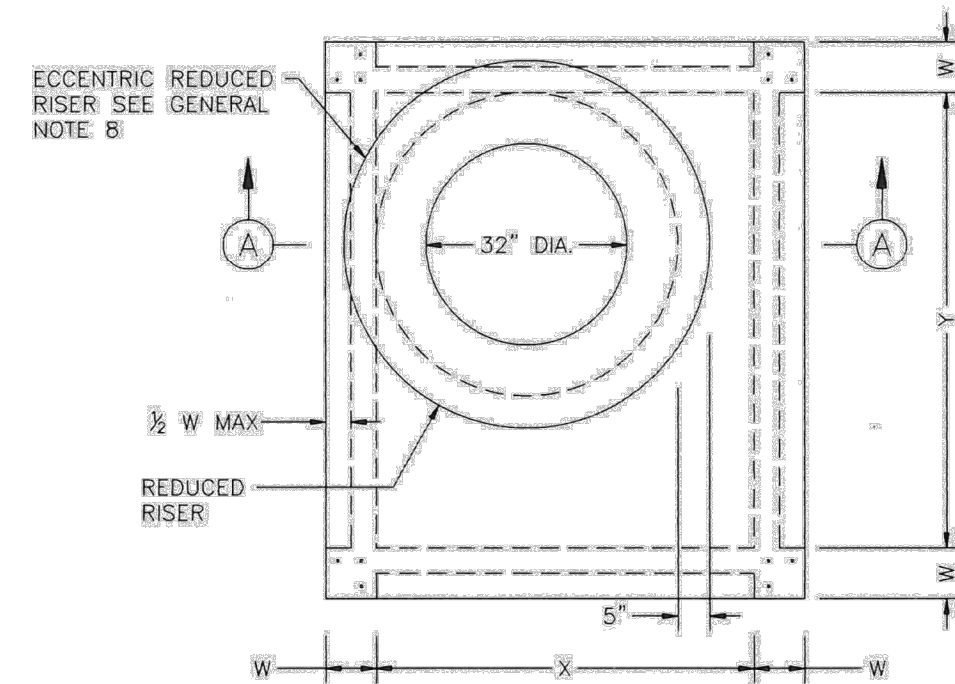
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-3	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE	
SHEET NO. 19 OF 41	

NO.	DATE	REVISION	APP.

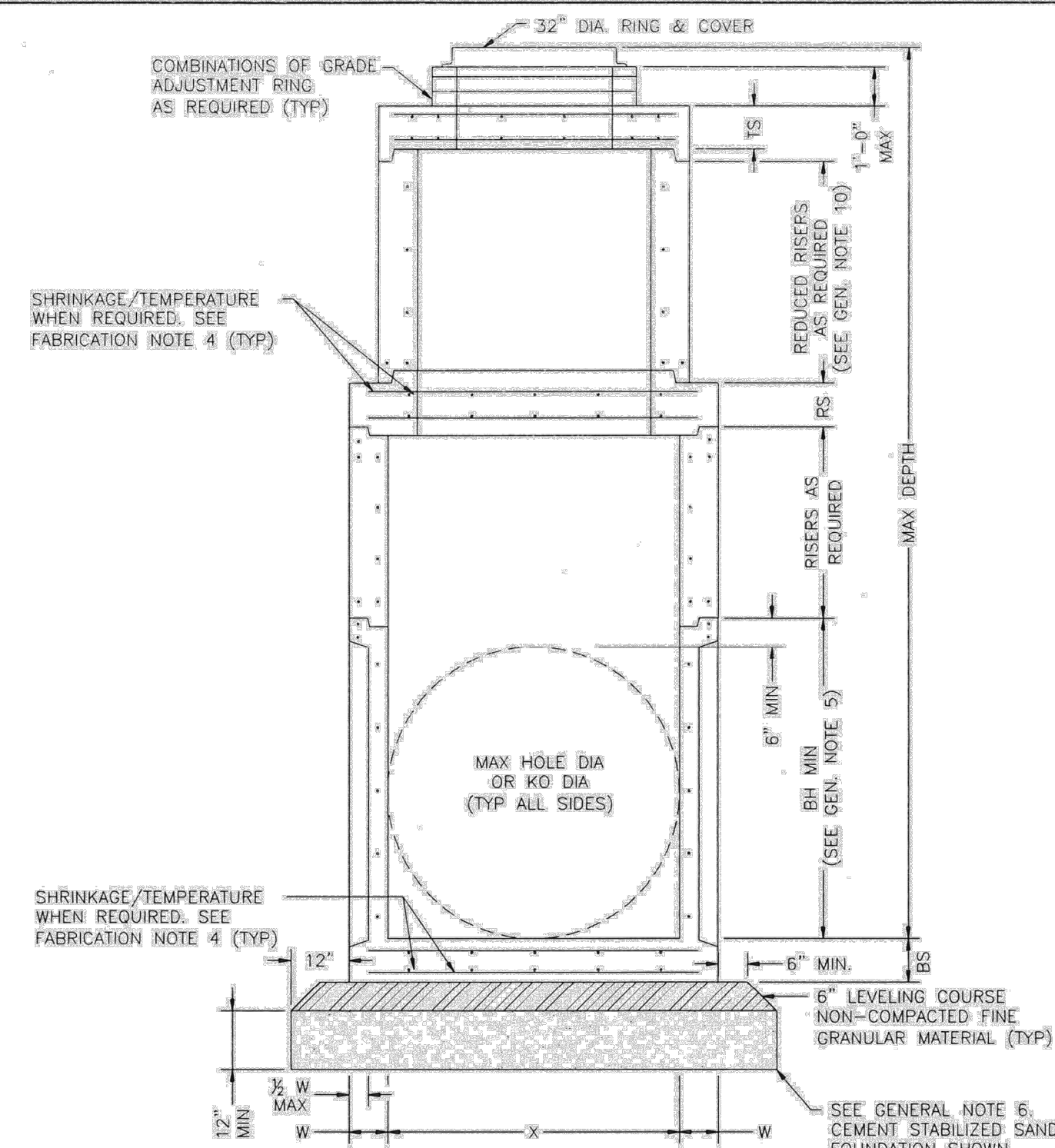
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS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



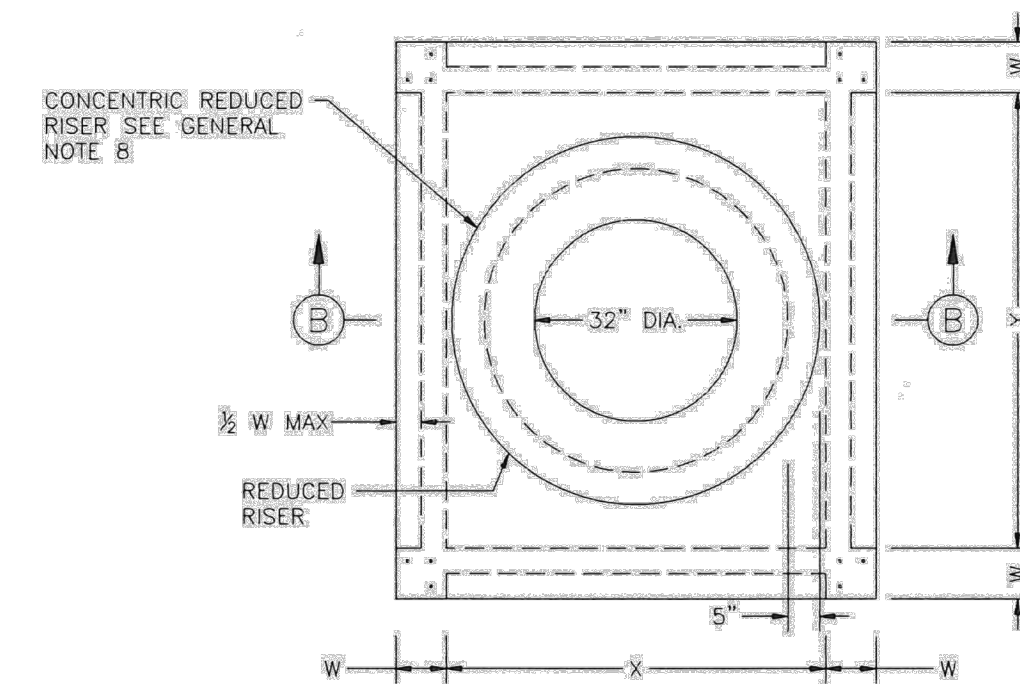
ELEVATION A-A
FLAT SLAB TOP WITH SHIP
LOOSE RING & COVER OPTION



PLAN VIEW A
COVER NOT SHOWN
ECCENTRIC MANHOLE
(PREFERRED CONFIGURATION)



ELEVATION B-B
FLAT SLAB TOP WITH SHIP
LOOSE RING & COVER OPTION



PLAN VIEW B
COVER NOT SHOWN
CONCENTRIC MANHOLE
(ALTERNATE CONFIGURATION)

FABRICATION NOTES:

1. PROVIDE CLASS "H" CONCRETE IN ACCORDANCE WITH TEXAS DEPARTMENT OF TRANSPORTATION ITEM 421 AND HAVING A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI.
2. PROVIDE GRADE 60 REINFORCING STEEL OR EQUIVALENT AREA OF WWR. PROVIDE CIRCUMFERENTIAL REINFORCING STEEL IN VERTICAL WALLS OF RISER AND CONE IN ACCORDANCE WITH ASTM C478.
3. PROVIDE TYPICAL MINIMUM CONCRETE CLEAR COVER OF 1 1/2" TO REINFORCING STEEL AT INTERIOR OR EXTERIOR WALLS.
4. SLABS WITH A THICKNESS OF 8" OR GREATER REQUIRE SHRINKAGE AND TEMPERATURE REINFORCING STEEL. PROVIDE STEEL AREA = 0.11 IN²/FT EACH WAY.
5. MANUFACTURE BASE AND RISERS TO NEAREST 3" INCREMENT.
6. DESIGN TONGUE AND GROOVE JOINTS FOR FULL CLOSURE ON BOTH SHOULDERS. MINIMUM SPIGOT DEPTH IS 3/4".
7. PROVIDE LIFTING DEVICES IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS.
8. PROVIDE CAST IRON SOLID COVER, UNLESS NOTED OTHERWISE ELSEWHERE IN THE PLANS.
9. MAXIMUM SPACING OF REINFORCEMENT IS 8".
10. AT MANUFACTURER'S OPTION, PROVIDE CAST OR CORED HOLES OR THIN WALL PANELS (KO) TO THE MAXIMUM DIA SHOWN FOR EACH. WHEN NO PENETRATION IS REQUIRED, IT IS ACCEPTABLE TO PROVIDE A WALL WITH NO SECTIONAL REDUCTION.
11. THREE DIFFERENT OPTIONS FOR CAPPING THE MANHOLE RISER NEAR THE FINISHED GRADE ARE ALLOWED. CONES CAN BE USED WHEN COVER IS SUFFICIENT TO ALLOW FOR PROPER PLACEMENT. FLAT LIDS ARE TO BE USED WHERE COVER IS LIMITED. REFER TO 02082-12 FOR OPTIONS.
12. BASES AND RISERS MAY HAVE CAST, CUT OR THIN WALL PANEL (KO) THAT ARE ROUND AND DO NOT EXTEND INTO THE FLOOR, INTO WALLS, OR WITHIN 6" OF THE JOINT ABOVE OR BELOW.

INSTALLATION NOTES:

1. IF REQUIRED ELSEWHERE, INVERTS (BENCHING) TO BE PROVIDED BY CONTRACTOR. CONCRETE OR MORTAR USED FOR INVERT IS SUBSIDIARY TO MANHOLE. REFER TO CITY OF HOUSTON SPECIFICATION SECTION 02082 FOR INVERT (BENCHING) REQUIREMENTS.
2. SEAL TONGUE AND GROOVE JOINTS WITH PREFORMED OR BULK MASTIC IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS. TONGUE AND GROOVE JOINTS MAY BE GROUTED NO MORE THAN 1" BETWEEN EACH SECTION, OR 1/2 THE JOINT DEPTH, WHICHEVER IS GREATER.
3. DO NOT GROUT RUBBER GASKET JOINTS WITHOUT MANUFACTURER'S RECOMMENDATION.
4. FOR RIGID PIPE, CUT HOLE IN THIN WALL PANEL (KO) #4 MAX, 2" MIN (LARGER THAN PIPE OD).
5. FOR FLEXIBLE PIPE, CONSULT BOOT/SEAL MANUFACTURER'S SPECIFICATION FOR PLACEMENT TOLERANCE AND HOLE SIZE. CENTER PIPE IN HOLE AND INSTALL BOOT/SEAL PER MANUFACTURER'S SPECIFICATION.
6. INITIAL INSTALLATION OF GRADE ADJUSTMENT RINGS IS LIMITED TO 1'-0" MAX AS SHOWN.
7. GRADE ADJUSTMENT RINGS MAY BE INCREASED TO 1'-6" MAX WHEN FUTURE CONSTRUCTION AFFECTS FINAL GRADE OF STRUCTURE. MAKE ADJUSTMENTS GREATER THAN 1'-6" WITH ADDITIONAL RISERS. ADJUSTMENTS MAY BE MADE UP TO THE MAX DEPTH OF 25'-0". STRUCTURE MUST BE EVALUATED IF MAX DEPTH WILL BE EXCEEDED.

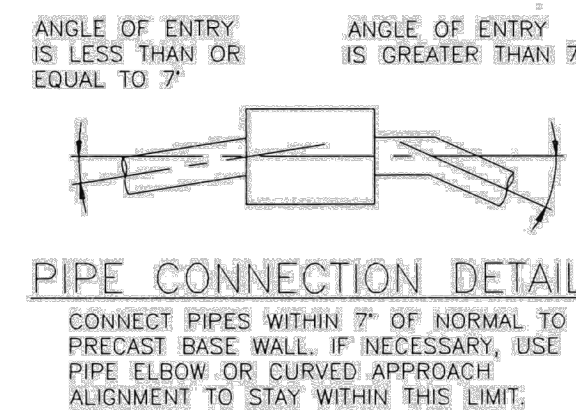
GENERAL NOTES:

1. SEE TABLE 1 FOR MINIMUM DESIGN REQUIREMENTS. CONCENTRIC RISER WITH RESPECT TO BASE (ALTERNATIVE CONFIGURATION) FALLS OUTSIDE THE SCOPE OF REQUIREMENTS PROVIDED. ENGINEER OF RECORD ACCEPTS RESPONSIBILITY FOR SAFETY AND ADEQUACY OF MANHOLE IF THE ALTERNATIVE CONFIGURATION IS USED.
2. DESIGN ACCORDING TO ASTM C478 AND/OR ASTM C913.
3. PAYMENT FOR PRECAST MANHOLE PER SECTION 02082 "PRECAST CONCRETE MANHOLES."
4. PRECAST BASE CONSISTS OF BASE SLAB, BASE UNIT, RISERS (AS REQUIRED), REDUCING SLAB (AS REQUIRED), AND REDUCED RISERS (AS REQUIRED).
5. MIN HEIGHT SHOWN FOR STOCK BASE UNITS. USE STOCK BASE UNITS WHENEVER PRACTICAL. SMALLER HEIGHT BASE UNITS CAN BE USED IN SPECIAL INSTALLATION CIRCUMSTANCES, WHEN NOTED ELSEWHERE IN THE PLANS. ABSOLUTE MINIMUM HEIGHT OF BASE UNITS IS 2'-6".
6. FOUNDATION/SUBGRADE TO BE DESIGNED BY ENGINEER AND MEET MINIMUM REQUIREMENTS ACCORDING TO SECTION 02082.
7. ALL STORM WATER MANHOLES ARE TO BE PRECAST CONCRETE, UNLESS OTHERWISE NOTED ELSEWHERE IN THE PLANS.
8. ECCENTRIC REDUCED RISER WITH RESPECT TO BASE IS THE PREFERRED MANHOLE CONFIGURATION. CONCENTRIC REDUCED RISER WITH RESPECT TO BASE MANHOLE CONFIGURATION IS AN ALTERNATIVE DESIGN THAT WILL BE ACCEPTED BASED ON THE NEEDS OF THE CITY OF HOUSTON.
9. MANHOLE SIZE SHALL CONSIDER ENGINEERING ECONOMY. THIS DETAIL IS NOT APPLICABLE TO BOX MANHOLES LARGER THAN 8-FOOT BY 8-FOOT.
10. REFER TO STORM SEWER TYPE "C" PRECAST ROUND MANHOLE DETAIL (02082-12) FOR REDUCED RISER DESIGN REQUIREMENTS.

TABLE 1

PRECAST BOX MANHOLE (PBM) MINIMUM REQUIREMENTS FOR 24 IN. TO 78 IN. INTERNAL DIA STORM SEWER PIPES									
SIZE	BASE SLAB THICKNESS	BASE UNIT OR RISER THICKNESS	REDUCED RISER DIA	REDUCING SLAB THICKNESS	TOP SLAB THICKNESS	MAX DEPTH TO TOP OF BASE SLAB	MIN HEIGHT (SEE GEN. NOTE 5)	MAX HOLE DIA (SEE FAB. NOTE 11)	MAX KO DIA (SEE FAB. NOTE 11)
3x3	6	6	N/A	N/A	9	25	3.50	36	36
4x4	6	6	N/A	N/A	9	25	4.50	48	48
3x5	6	6	N/A	N/A	9	25	3.50	36/60	36/60
4x5	6	6	48 IN.	9	9	25	4.50	48/60	48/60
5x5	6	6	48 IN.	9	9	25	5.50	60	60
5x6	9	8	48 IN.	9	9	25	5.50	60/72	60/72
6x6	9	8	48 IN.	9	9	25	6.50	72	72
8x8	9	10	48 IN.	12	9	25	8.50	96	96

TABLE 1 NOTES:
 1. (●) ROUND MANHOLES ARE PREFERRED FOR THESE SIZES.
 2. (*) UNLESS OTHERWISE INDICATED.
 3. TABLE IS VALID FOR UP TO 25 FT OF INSTALLATION DEPTH.



 15021 KATY FREEMWAY, STE. 500 HOUSTON, TX. 77094 281-945-0069 TX FIRM NUMBER: F-6932	THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A

STORM SEWER PRECAST BOX MANHOLE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 20 OF 47	

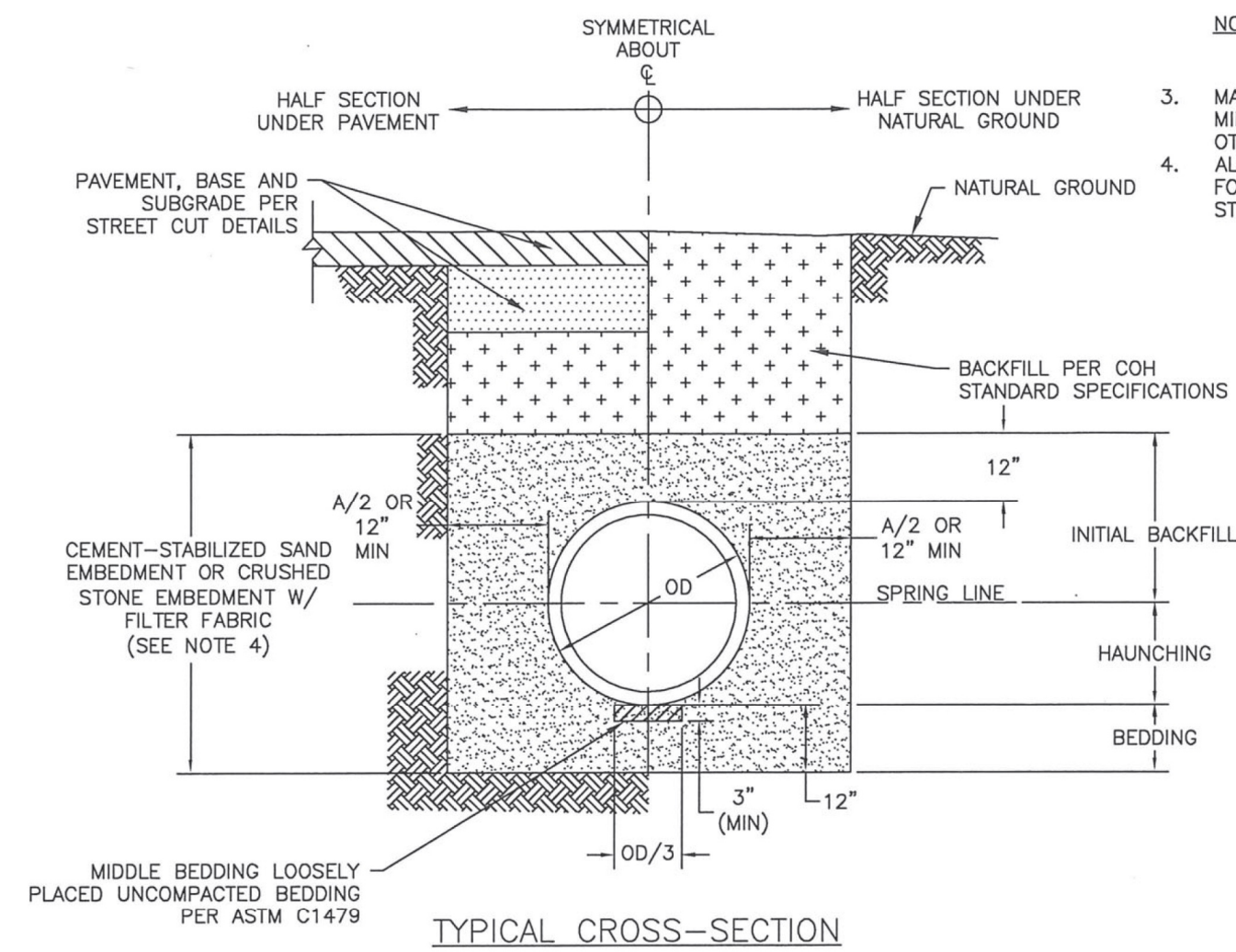
NO.	DATE	REVISION	APP.

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NO.	DATE	REVISION	APP.

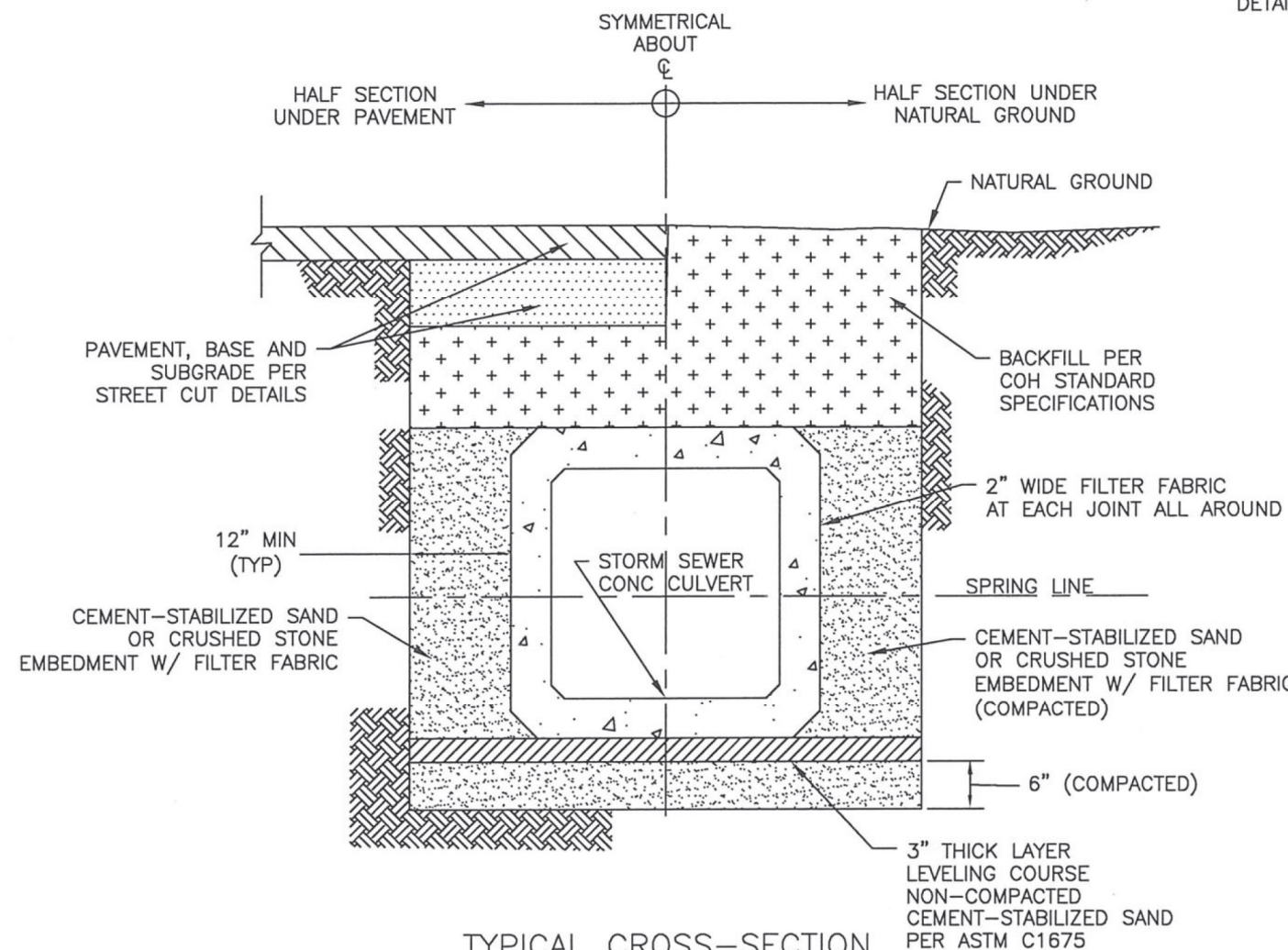
02317-03



- NOTES:**
- THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARD. SEE COH STANDARD SPECIFICATION FOR REQUIREMENTS IN OTHER CONDITIONS.
 - MIN. TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE.
- | | |
|-------------------|-----|
| NOMINAL PIPE SIZE | "A" |
| 16" TO 30" | 24" |
| OVER 30" | 36" |
- MAX. TRENCH WIDTH SHALL BE NOT GREATER THAN MIN. TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
 - ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED. SEE COH STANDARD SPECIFICATIONS.

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

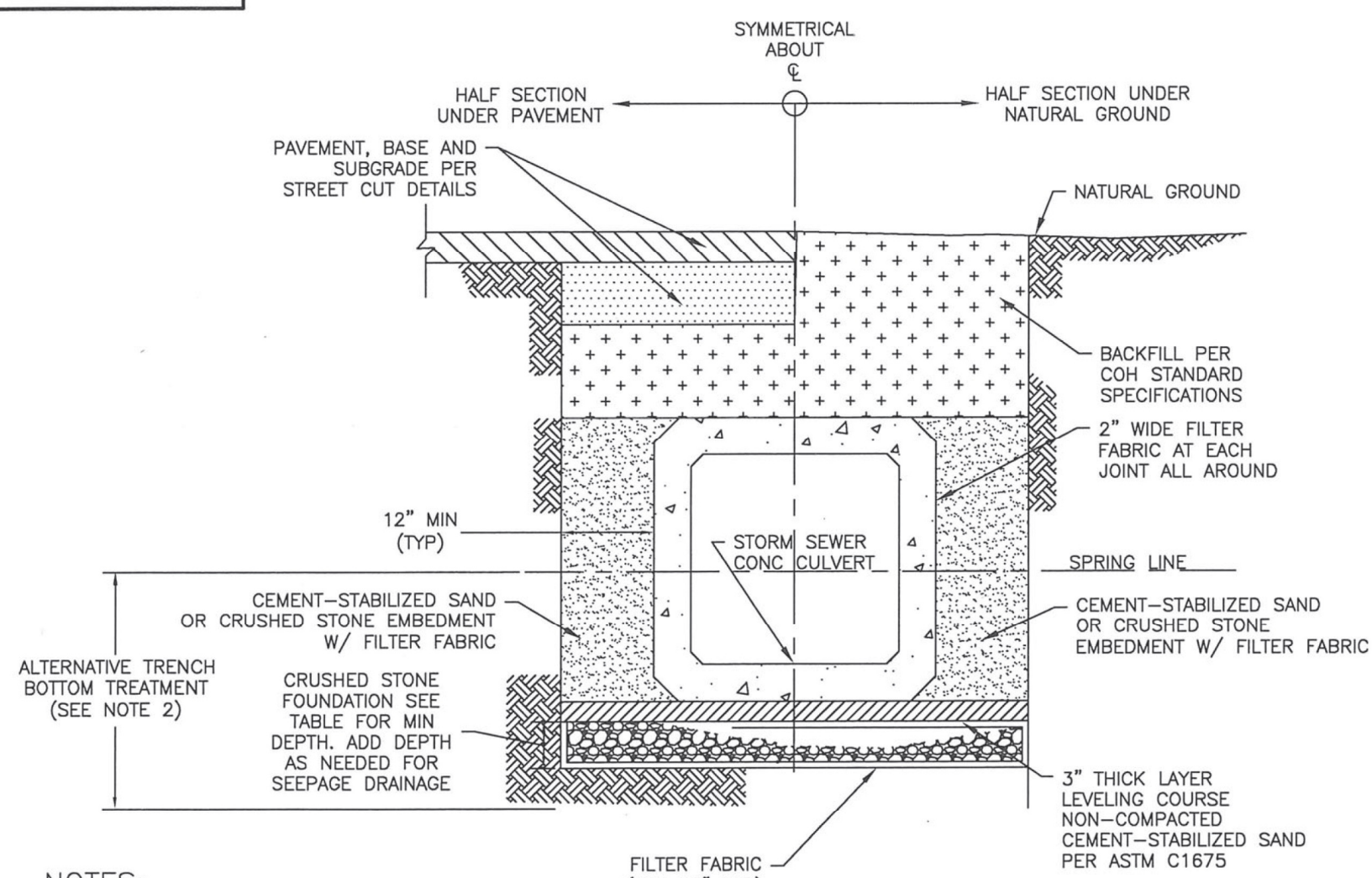
02317-05



- NOTES:**
- WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
 - SUBGRADE AND PAVEMENT FOR STREET CUT DETAILS - 02951.

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

02317-06

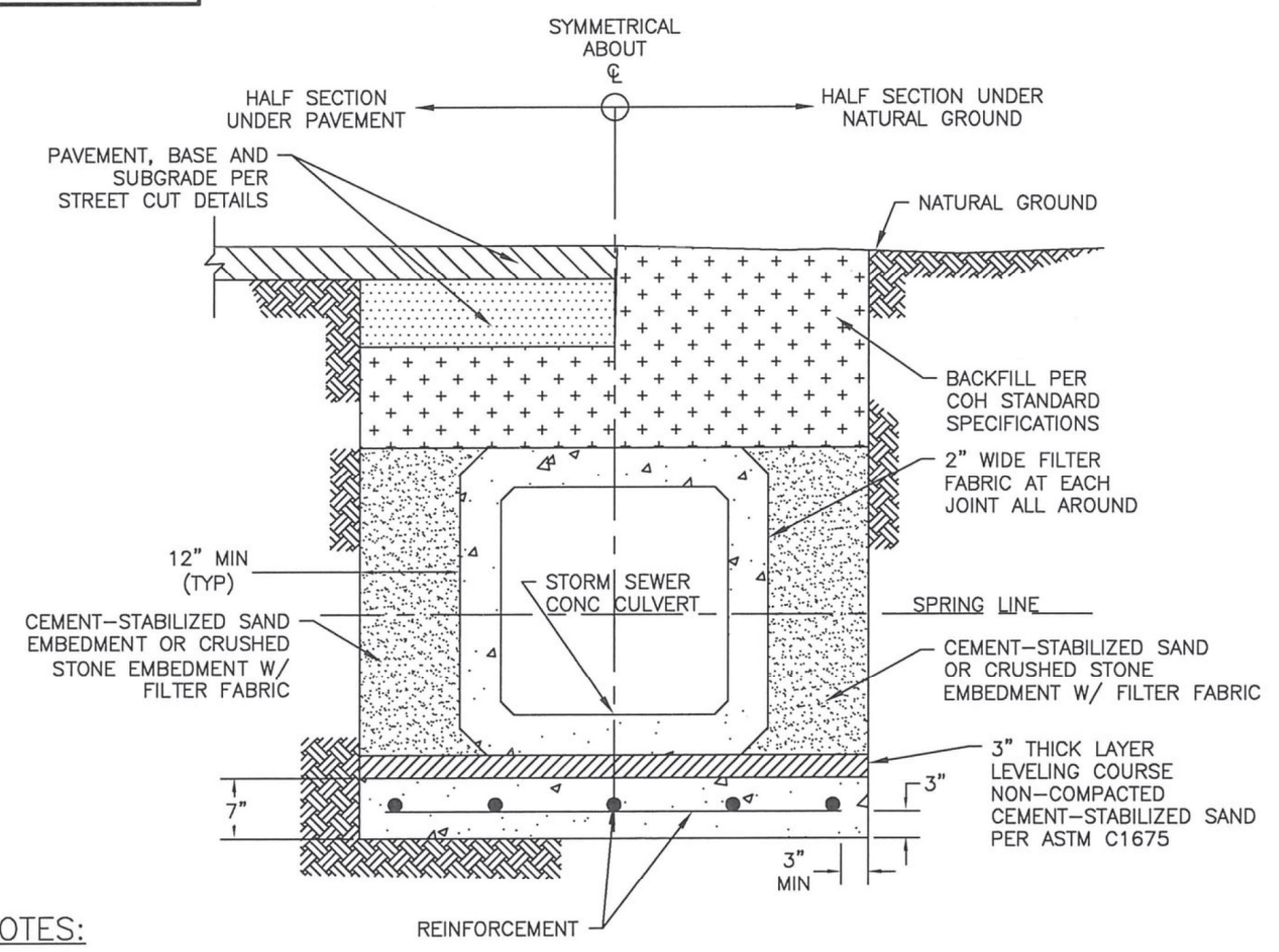


- NOTES:**
- WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
 - ALTERNATIVE TRENCH BOTTOM TREATMENT MAY BE USED AS APPROVED BY THE CITY OF ENGINEERS AND AS PAID FOR IN THE PROPOSAL.

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

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

02317-07



- NOTES:**
- WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
 - REINFORCED CONCRETE SLAB PIPE BEDDING TO BE PLACED IN DRY TRENCH ONLY.
 - CONCRETE IN SLAB TO REACH MIN COMPRESSIVE STRENGTH OF 1000 PSI BASED ON MAX DESIGN BEFORE PIPE IS LAID.
 - PRECAST SEAL SLAB MAYBE USED AS APPROVED BY CITY ENGINEER.

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

ENTECH
CIVIL ENGINEERS, INC.
15021 KATY FREEWAY, STE. 500
HOUSTON, TX. 77094
281-945-0069
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

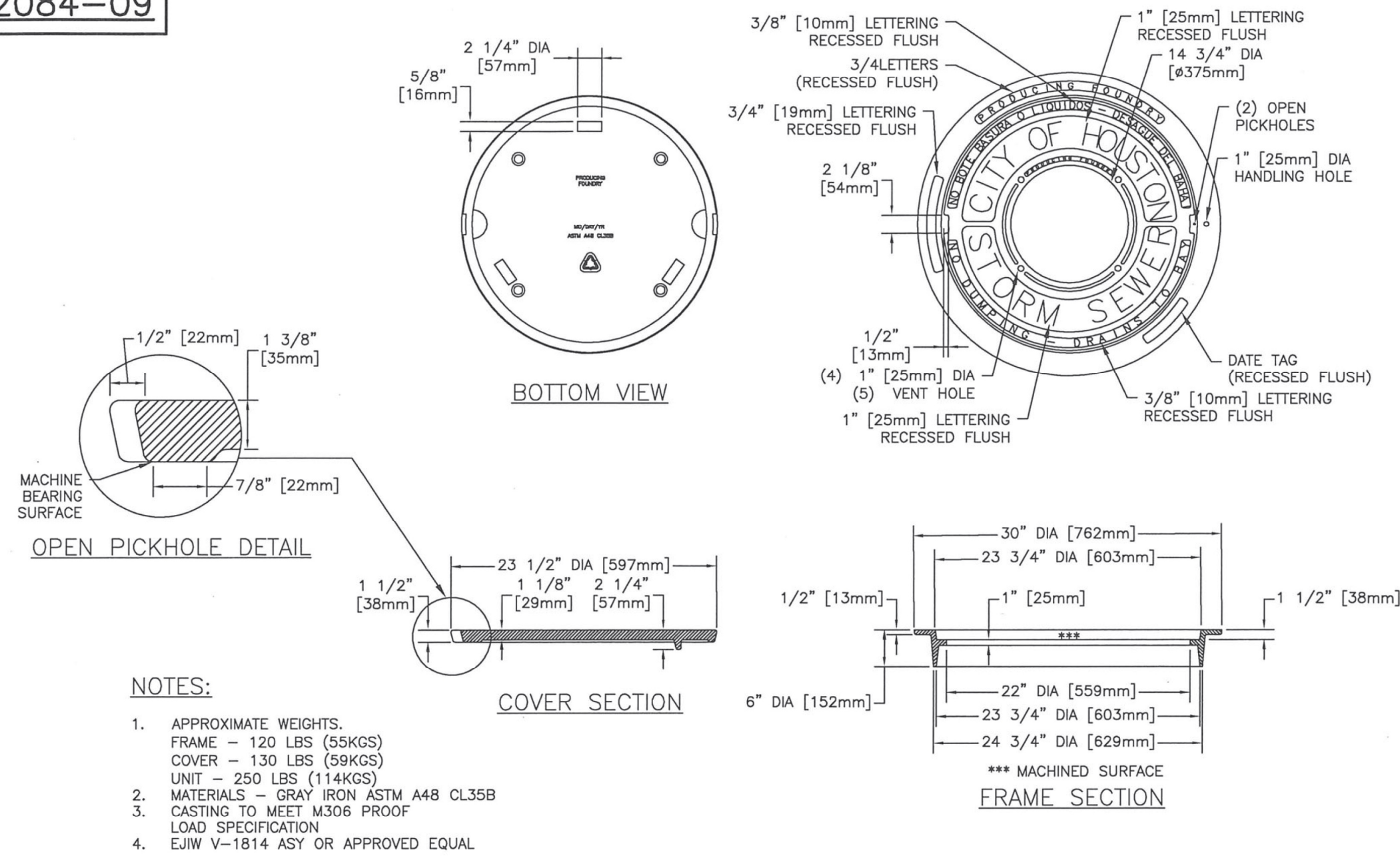
SHARPSTOWN AREA DETENTION POND A

STORM SEWER DETAILS (1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGMUDALIGE P.E.	
SHEET NO. 21 OF 47	

NO.	DATE	REVISION	APP.

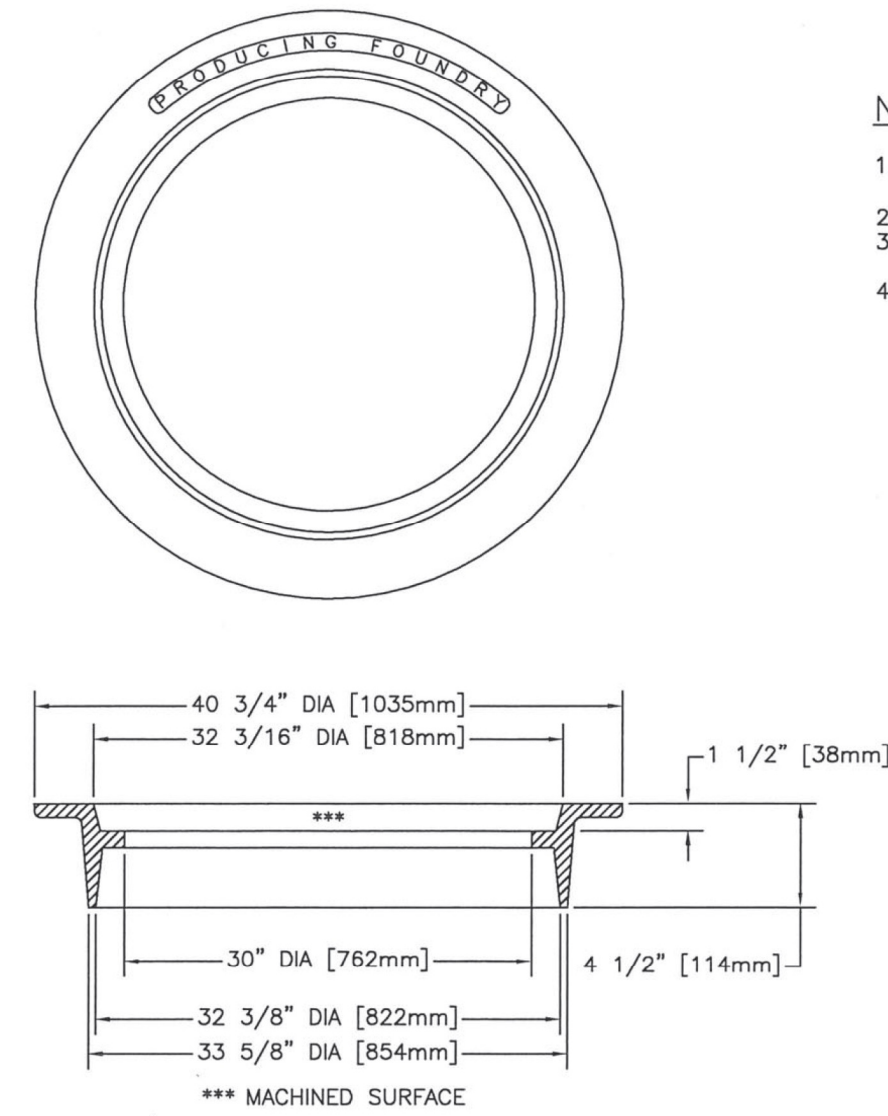
02084-09



- NOTES:**
- APPROXIMATE WEIGHTS.
FRAME - 120 LBS (55KGS)
COVER - 130 LBS (59KGS)
UNIT - 250 LBS (114KGS)
 - MATERIALS - GRAY IRON ASTM A48 CL35B
 - CASTING TO MEET M306 PROOF LOAD SPECIFICATION
 - EJW V-1814 ASY OR APPROVED EQUAL

STORM SEWER TYPE "C-1, C-2, C-2A" AND "H-2" INLET FRAME AND COVER NTS

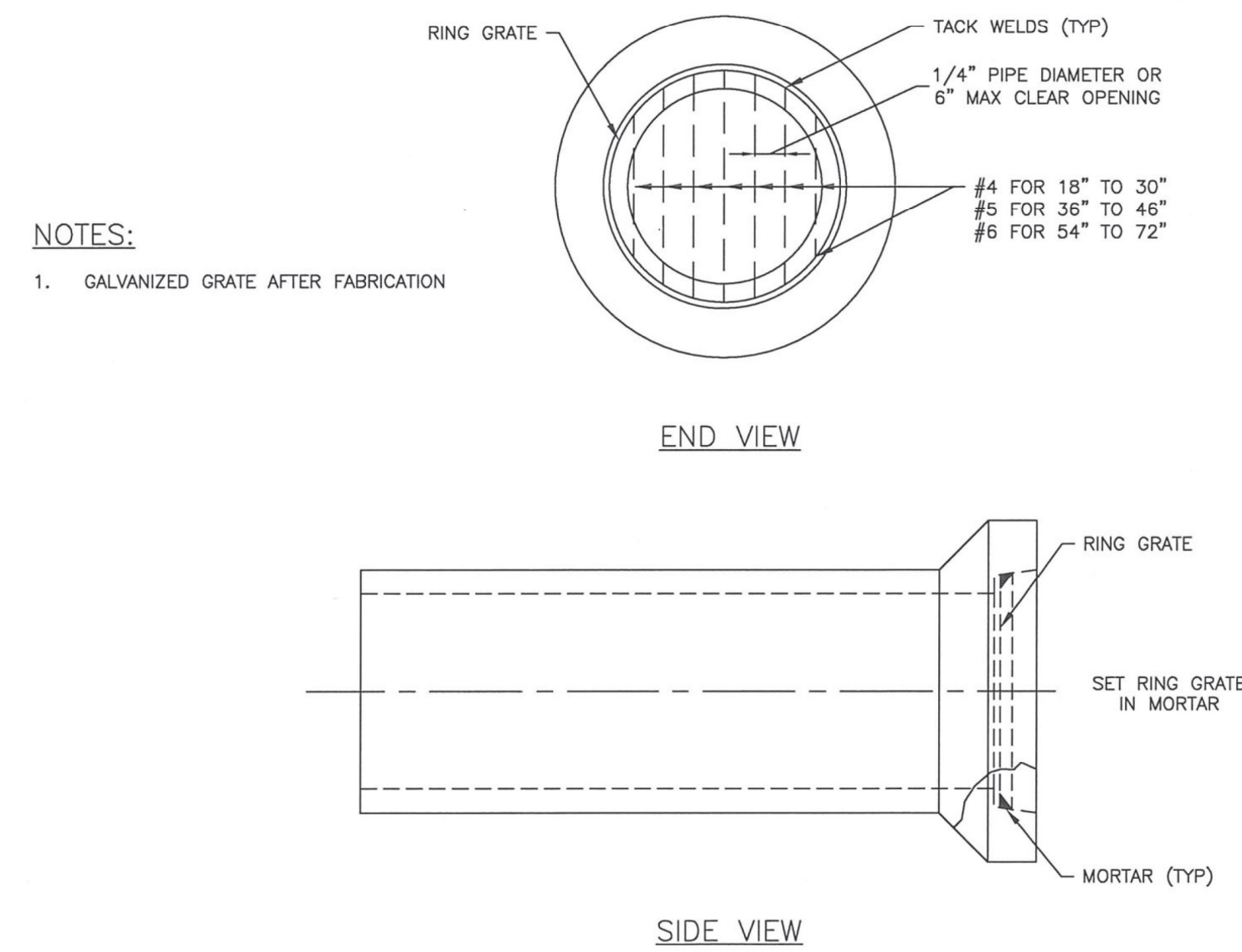
02084-10



- NOTES:**
- APPROXIMATE WEIGHTS.
FRAME - 190 LBS (86KGS)
 - MATERIALS - GRAY IRON ASTM A48 CL35B
 - CASTING TO MEET M306 PROOF LOAD SPECIFICATION
 - EJW V-1816 ASY OR APPROVED EQUAL

32" INVERTED MANHOLE FRAME NTS

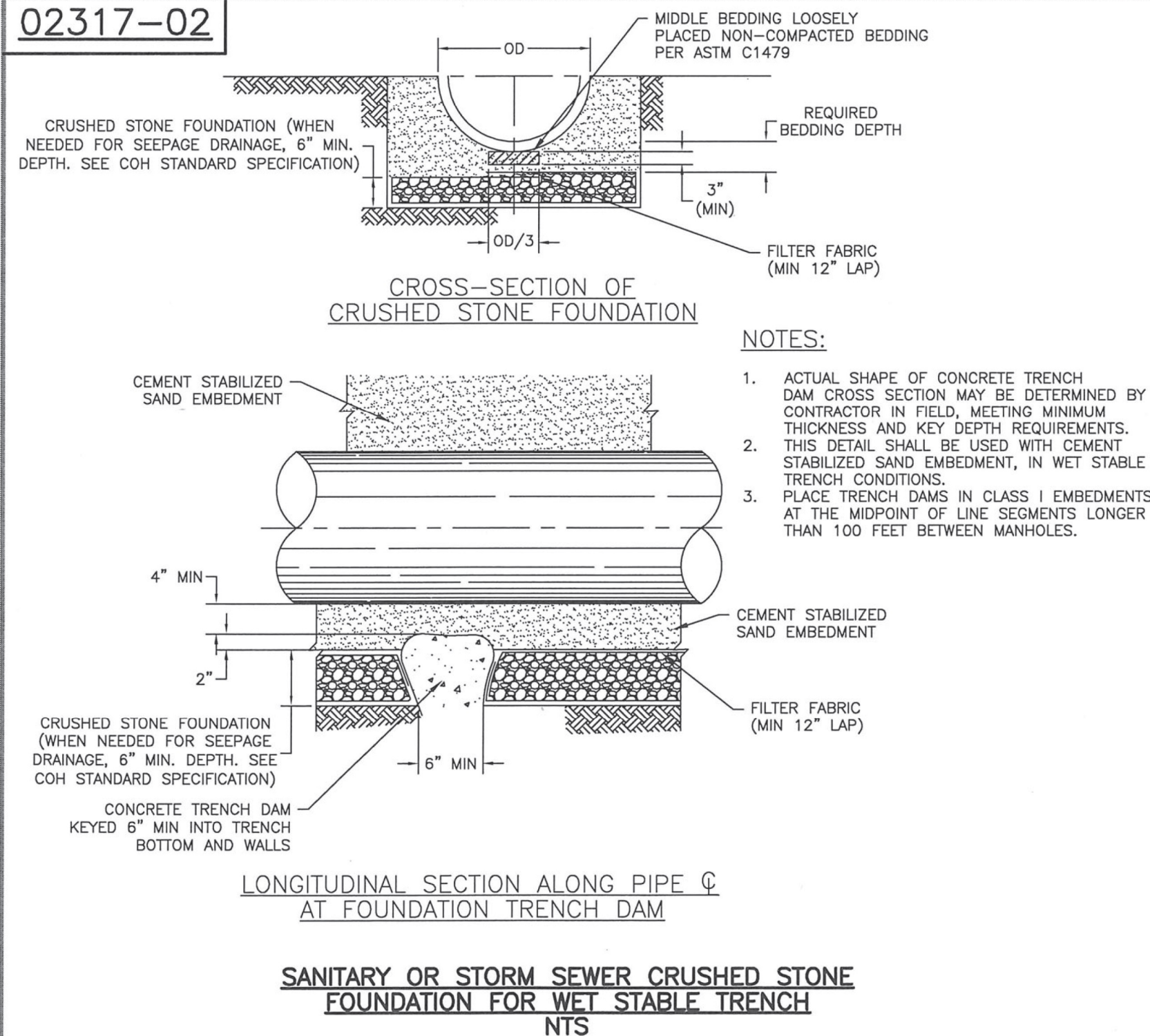
02084-11



- NOTES:**
- GALVANIZED GRATE AFTER FABRICATION

STORM SEWER RING GRATE FOR OPEN END OF 18 IN TO 72 IN RCP STUBS TO DITCH NTS

02317-02



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

SANITARY OR STORM SEWER CRUSHED STONE FOUNDATION FOR WET STABLE TRENCH NTS

ENTECH
CIVIL ENGINEERS, INC.
15021 KATY FREEWAY, STE. 500
HOUSTON, TX. 77094
281-945-0069
TX FIRM NUMBER: F-6932
SURVEYED BY: LANDTECH, INC.
FB NO. P-6331

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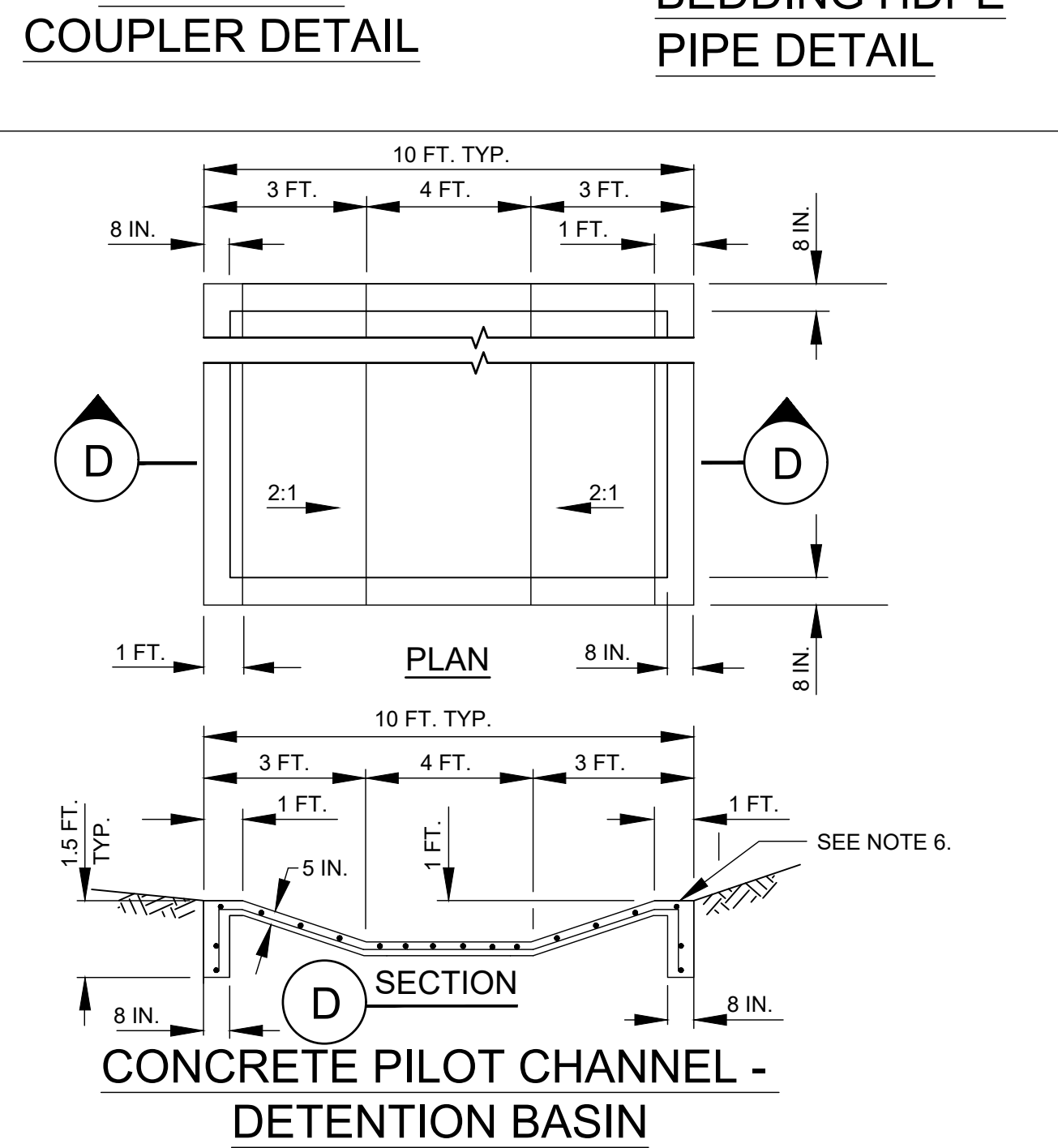
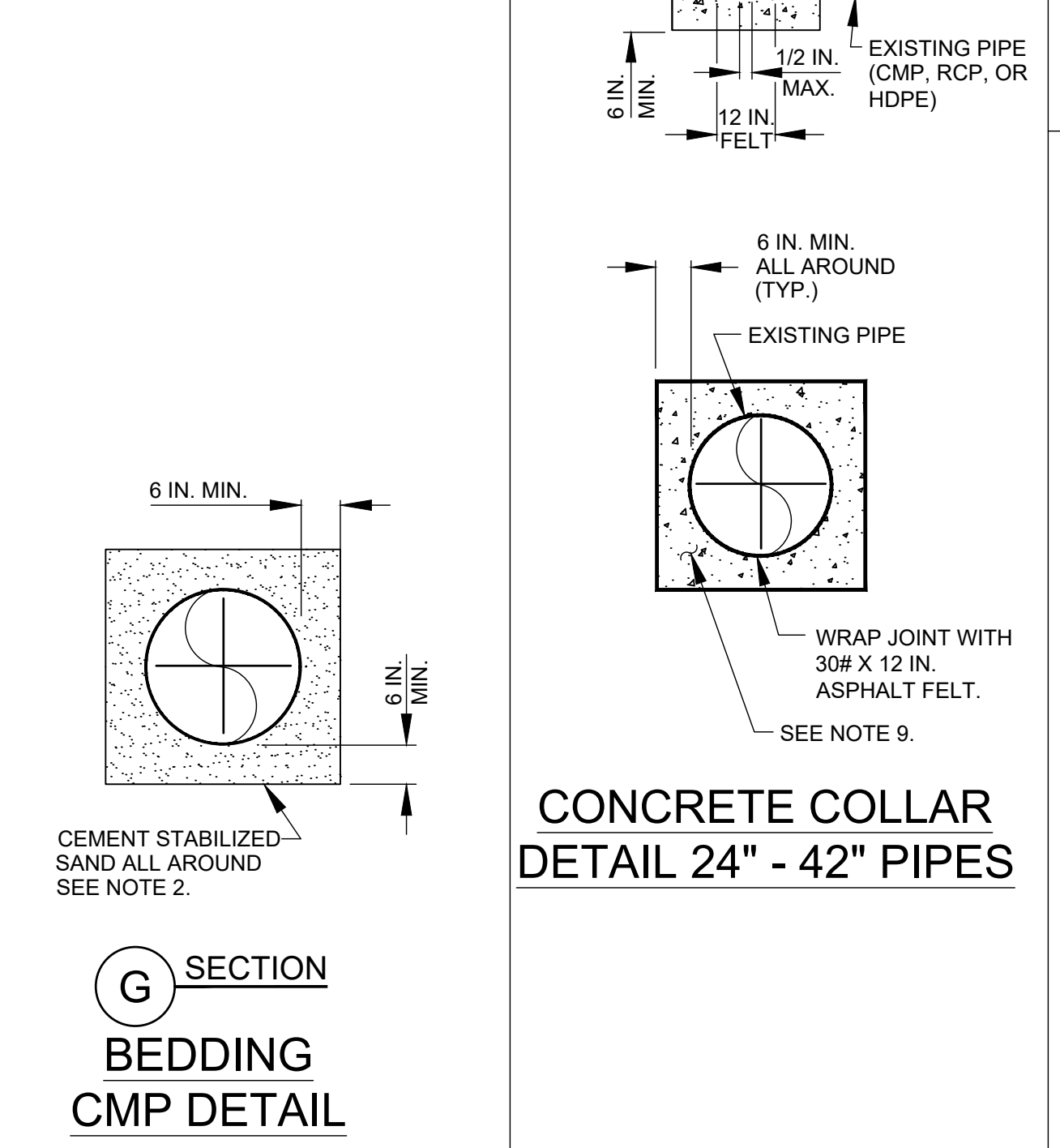
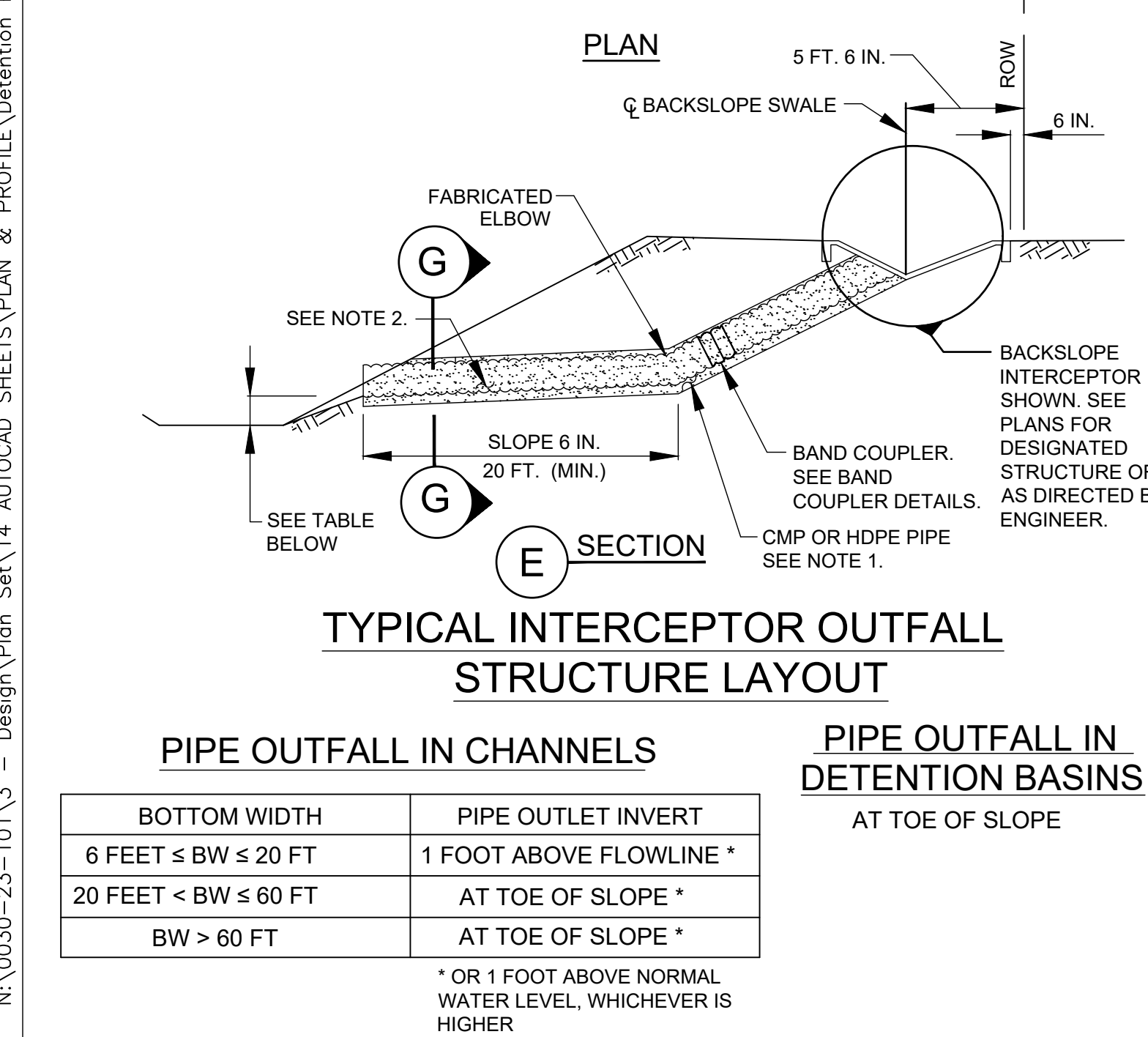
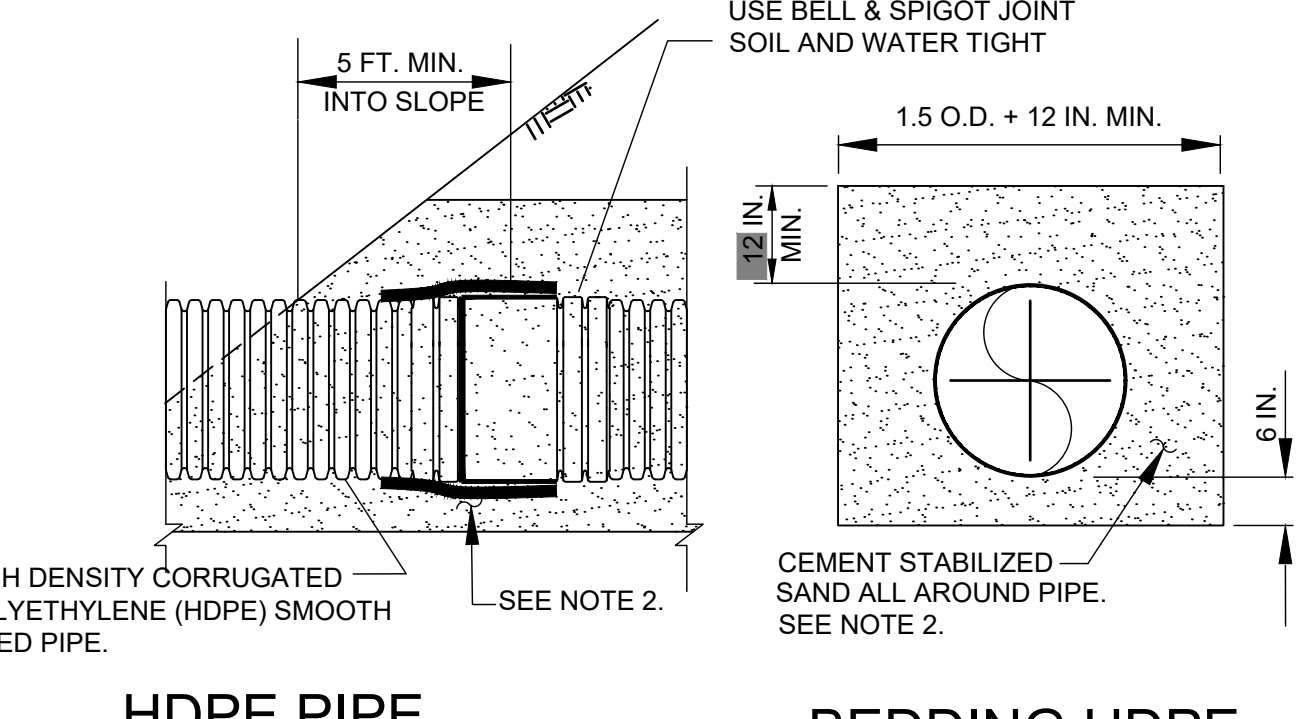
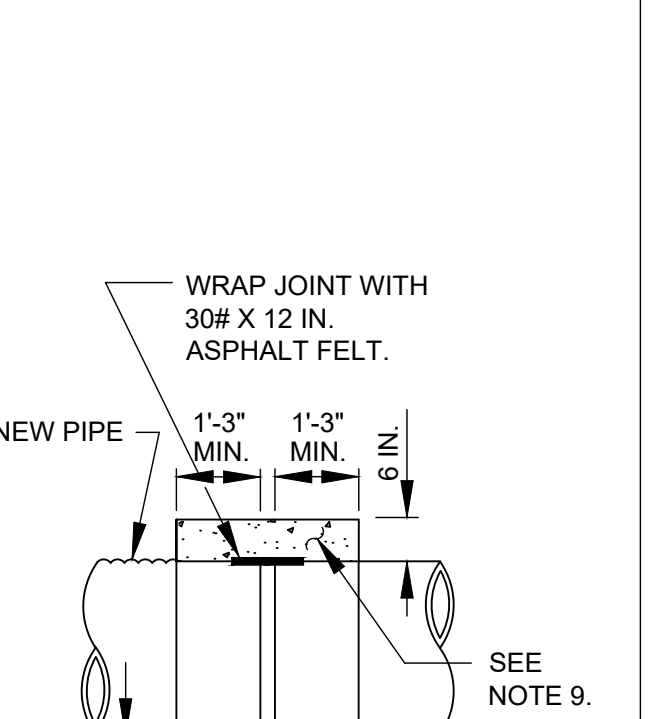
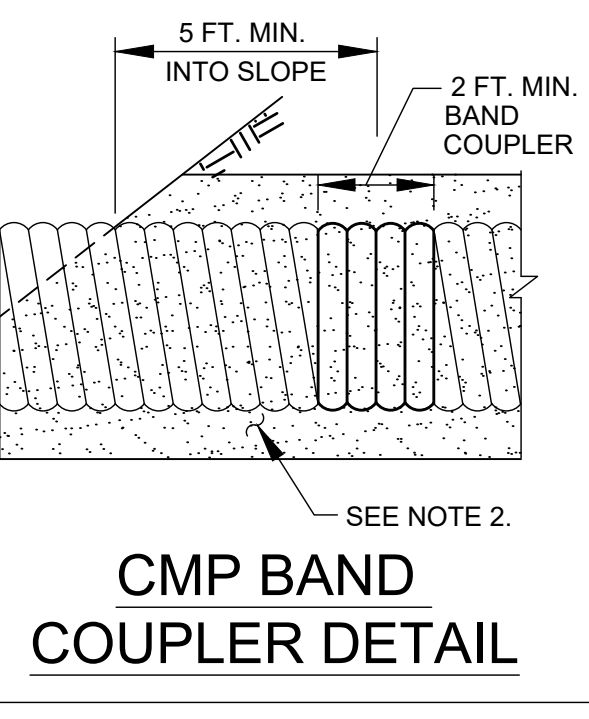
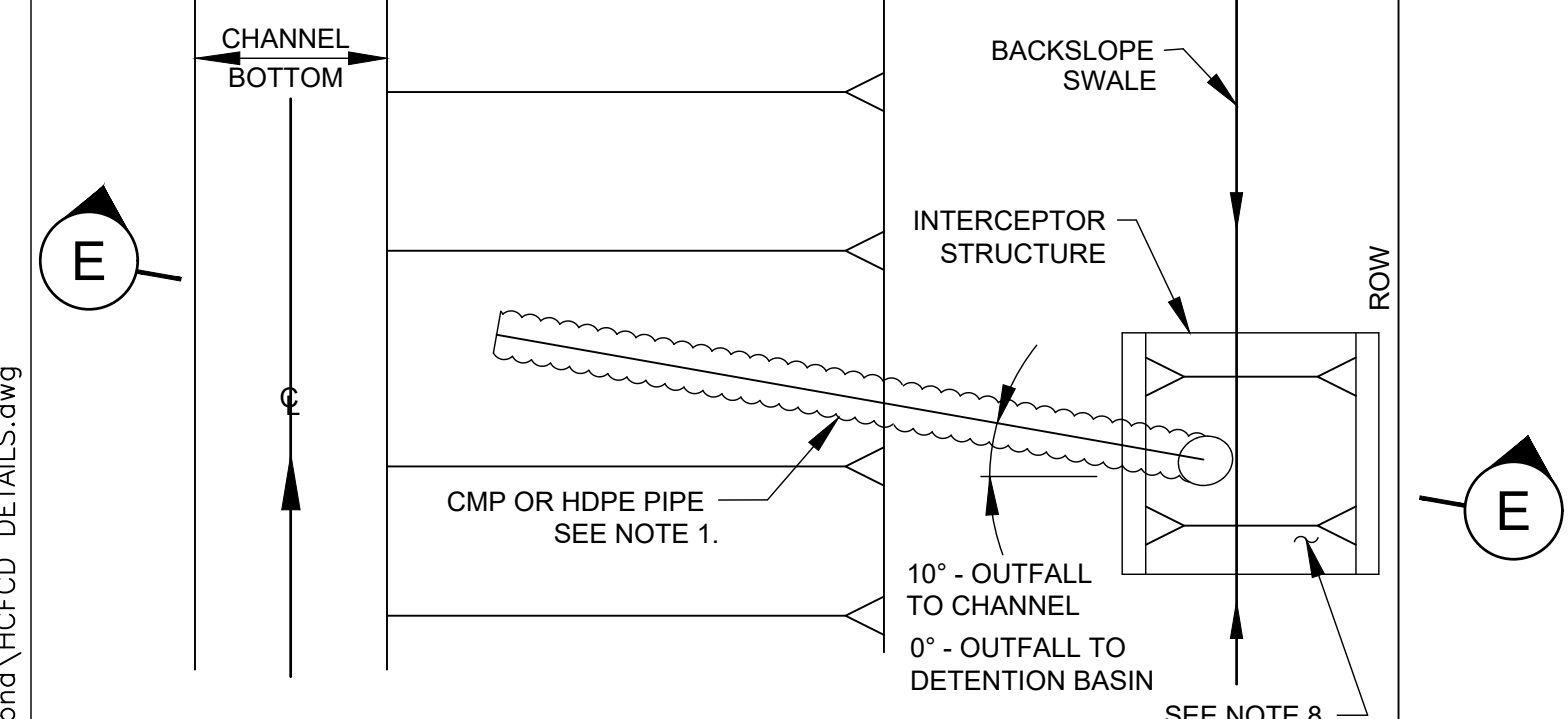
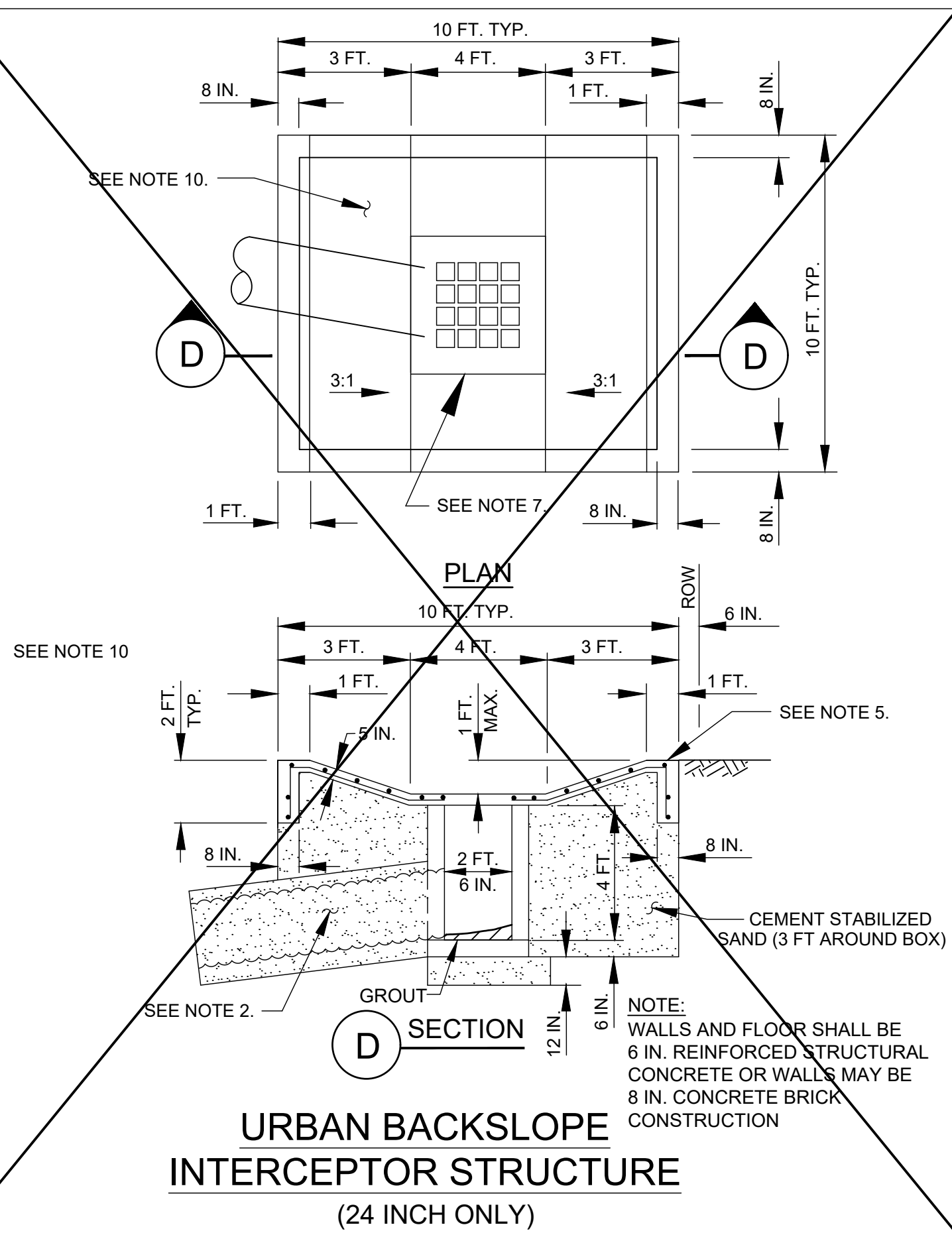
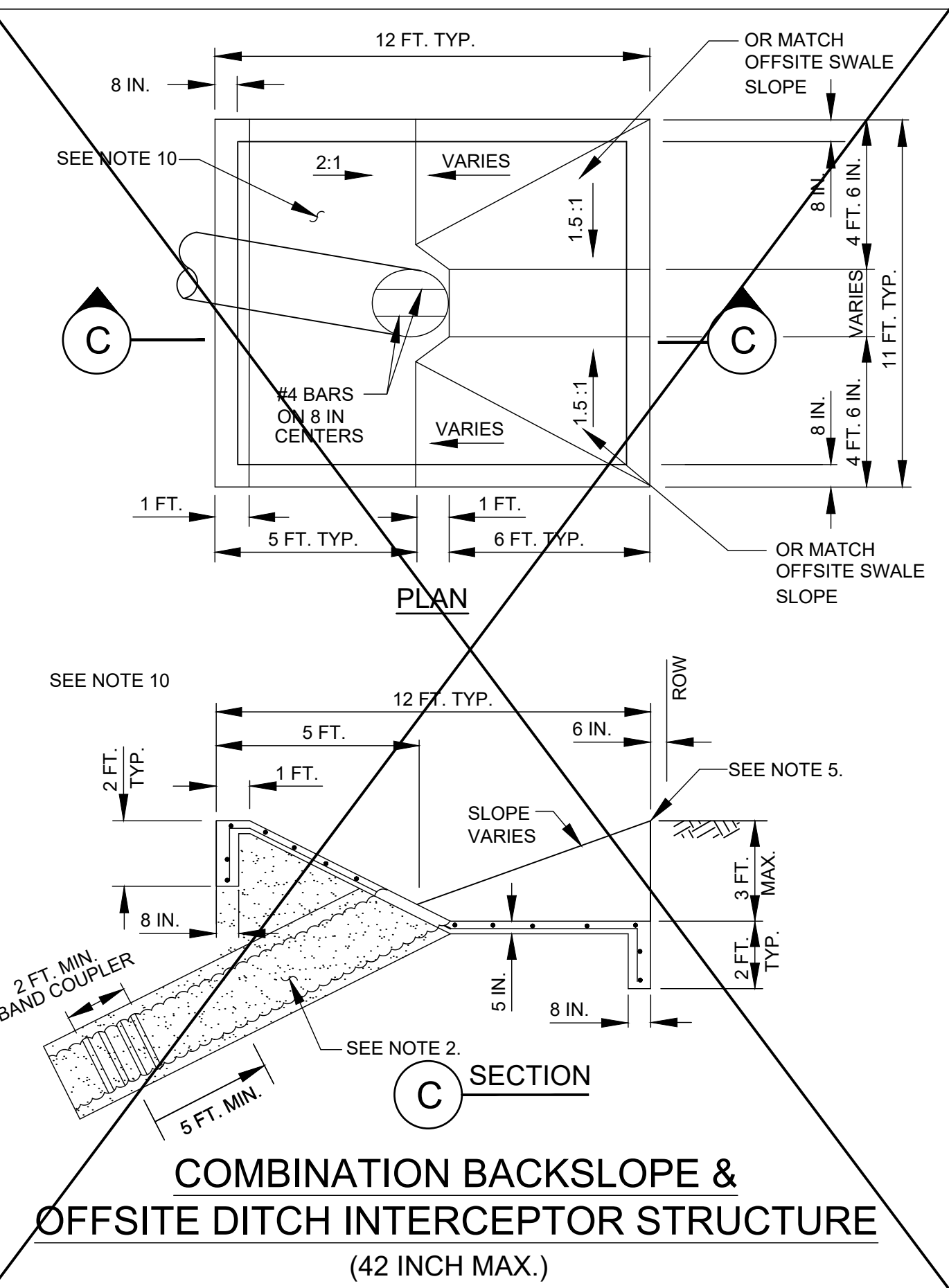
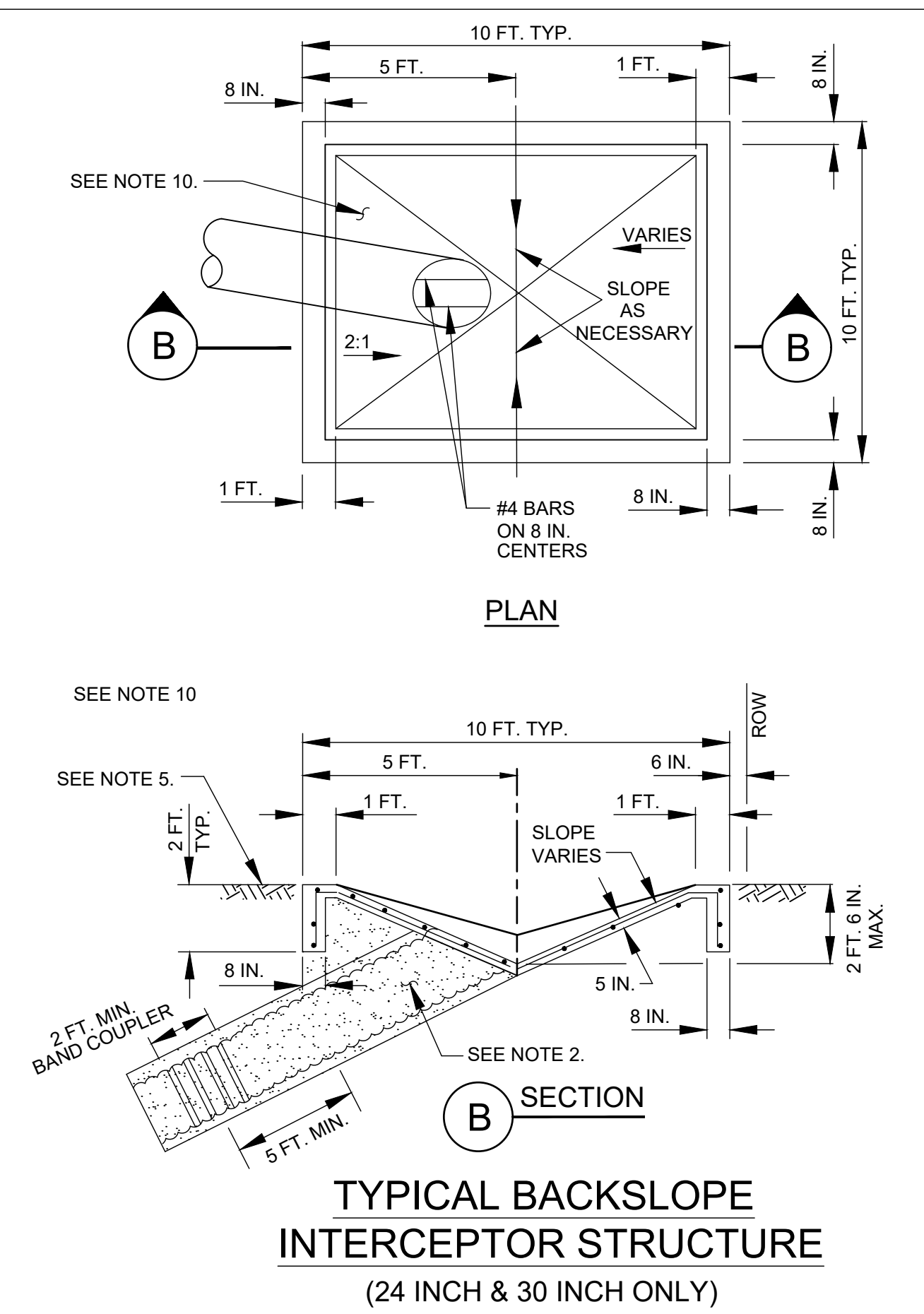
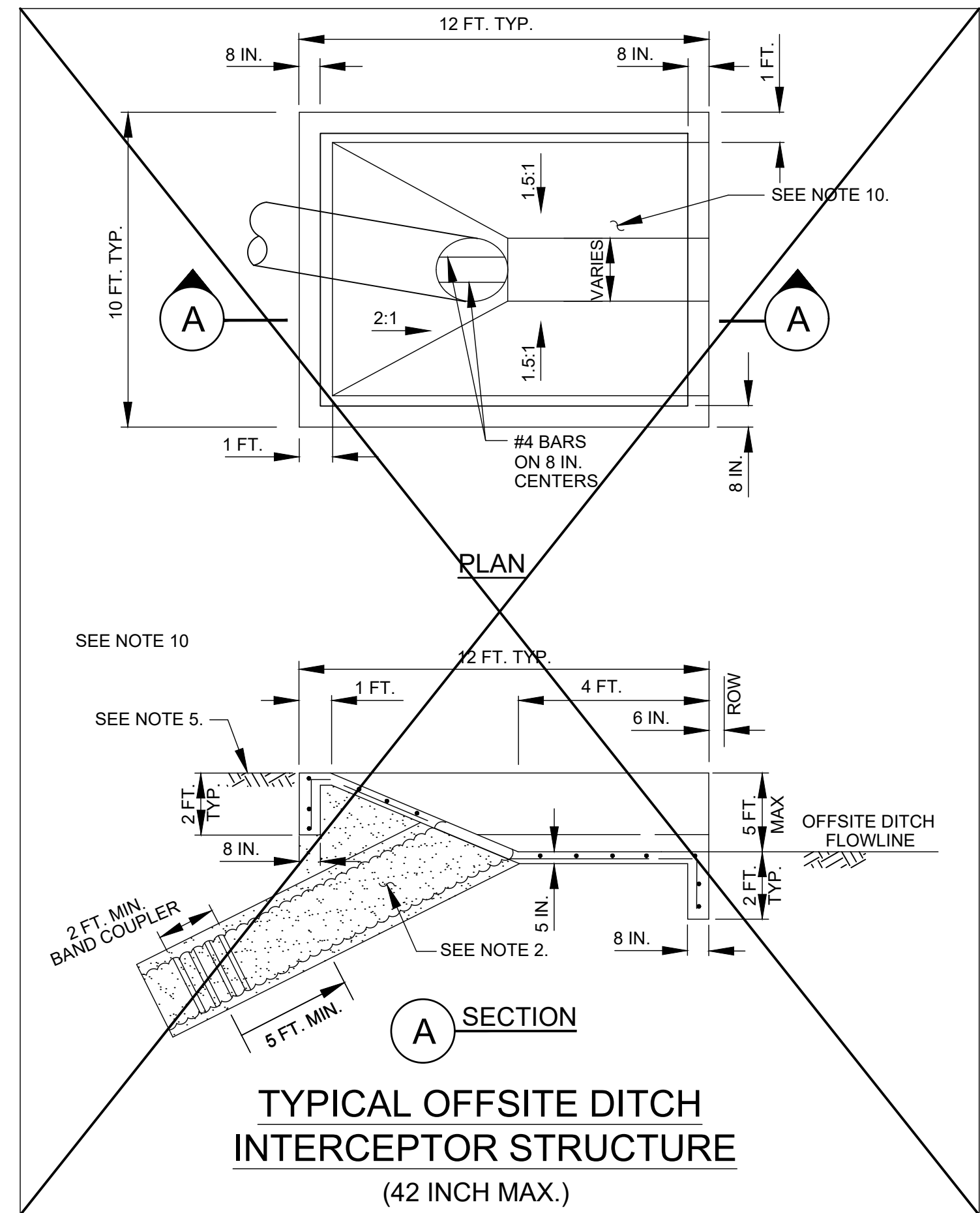
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A

STORM SEWER DETAILS (2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 22 OF 47	

N:\0030-23-101\3 - Design\Plan Set\14. AUTOCAD SHEETS\PLAN & PROFILE\Detention Pond\HCFCD DETAILS.dwg



- NOTES:**
- INTERCEPTOR OUTFALL PIPES WITHIN THE HCFCD RIGHT-OF-WAY SHALL BE CMP OR HDPE PIPE IN ACCORDANCE WITH SPECIFICATION SECTION 02642- CORRUGATED METAL PIPE, HIGH DENSITY POLYETHYLENE (HDPE) PIPE IN ACCORDANCE WITH SPECIFICATION SECTION 2505-HIGH DENSITY POLYETHYLENE, OR APPROVED EQUAL. USE TABLE ON STORM SEWER AND RIPRAP DETAILS SHEET FOR CORRUGATED GALVANIZED STEEL PIPE THICKNESS.
 - PROVIDE AND PLACE CEMENT STABILIZED SAND IN ACCORDANCE WITH SPECIFICATION SECTION 02321-CEMENT STABILIZED SAND AND SECTION 02316 - STRUCTURAL EXCAVATING.
 - EXCAVATION, FILL AND BACKFILL FOR INTERCEPTOR OUTFALLS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02316-STRUCTURAL EXCAVATING AND BACKFILLING.
 - CONCRETE SHALL BE STRUCTURAL CONCRETE IN ACCORDANCE WITH SPECIFICATION SECTION 03310-CONCRETE.
 - INTERCEPTOR STRUCTURES:
 - ADJUST LENGTH AND WIDTH IN FIELD AS NECESSARY.
 - 2-FEET DEEP X 8-INCH WIDE TOE ALL AROUND THE STRUCTURE.
 - STEEL REINFORCING-#4 BARS (GRADE 60) AT 12 INCHES ON CENTER EACH WAY.
 - ANY INTERCEPTOR OUTFALL PIPE LARGER THAN MAXIMUM SIZE INDICATED REQUIRES A SEPARATE DETAIL.
 - MATCH TOP OF CONCRETE WITH NATURAL GROUND.
 - CONCRETE PILOT CHANNEL
 - 1.5 FEET DEEP X 8-INCH WIDE TOE ALL AROUND THE STRUCTURE.
 - STEEL REINFORCING - #4 BARS (GRADE 60) AT 12 INCHES ON CENTER EACH WAY.
 - MATCH TOP OF CONCRETE WITH BOTTOM OF DETENTION BASIN.
 - URBAN BACKSLOPE INTERCEPTOR STRUCTURE: CONCRETE PAD, INLET, AND GRATE PAID FOR AS URBAN INTERCEPTOR STRUCTURE 02632-05. GRATE TOP, EAST JORDAN IRON WORKS, V-4880-1, OR APPROVED EQUAL, APPROX. 489 SQ. IN. OPENING.
 - BACKSLOPE SWALE AND INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
 - STRUCTURAL CONCRETE WITH #4 BARS (GRADE 60) 12 INCH O.C. EACH WAY, 3 ROWS MIN. EACH WAY. FOR COLLARS ONLY, WAIT A MINIMUM OF 24 HOURS AFTER PLACING CONCRETE TO BACKFILL.
 - EPOXY "CLEAN WATER CLEAR CHOICE" LOGO BUTTON ON INTERCEPTORS. LOCATION TO BE DETERMINED BY THE ENGINEER.

DATE	APPR	DESCRIPTION	REV

HCFCD PROJECT ID# M-410040-001A-4
 GENERAL DRAINAGE SYSTEM REPAIRS
 INTERCEPTOR STRUCTURE DETAILS

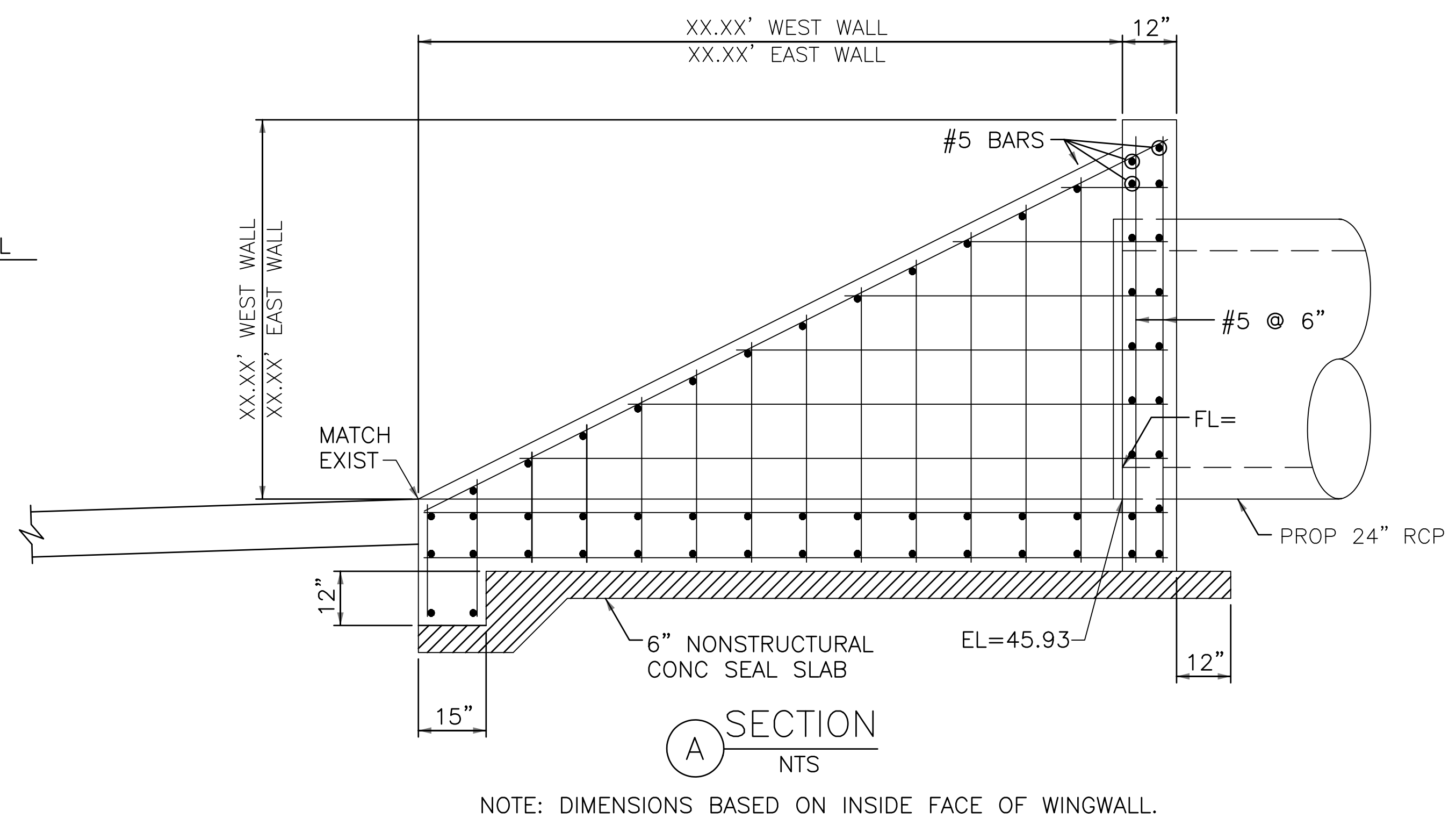
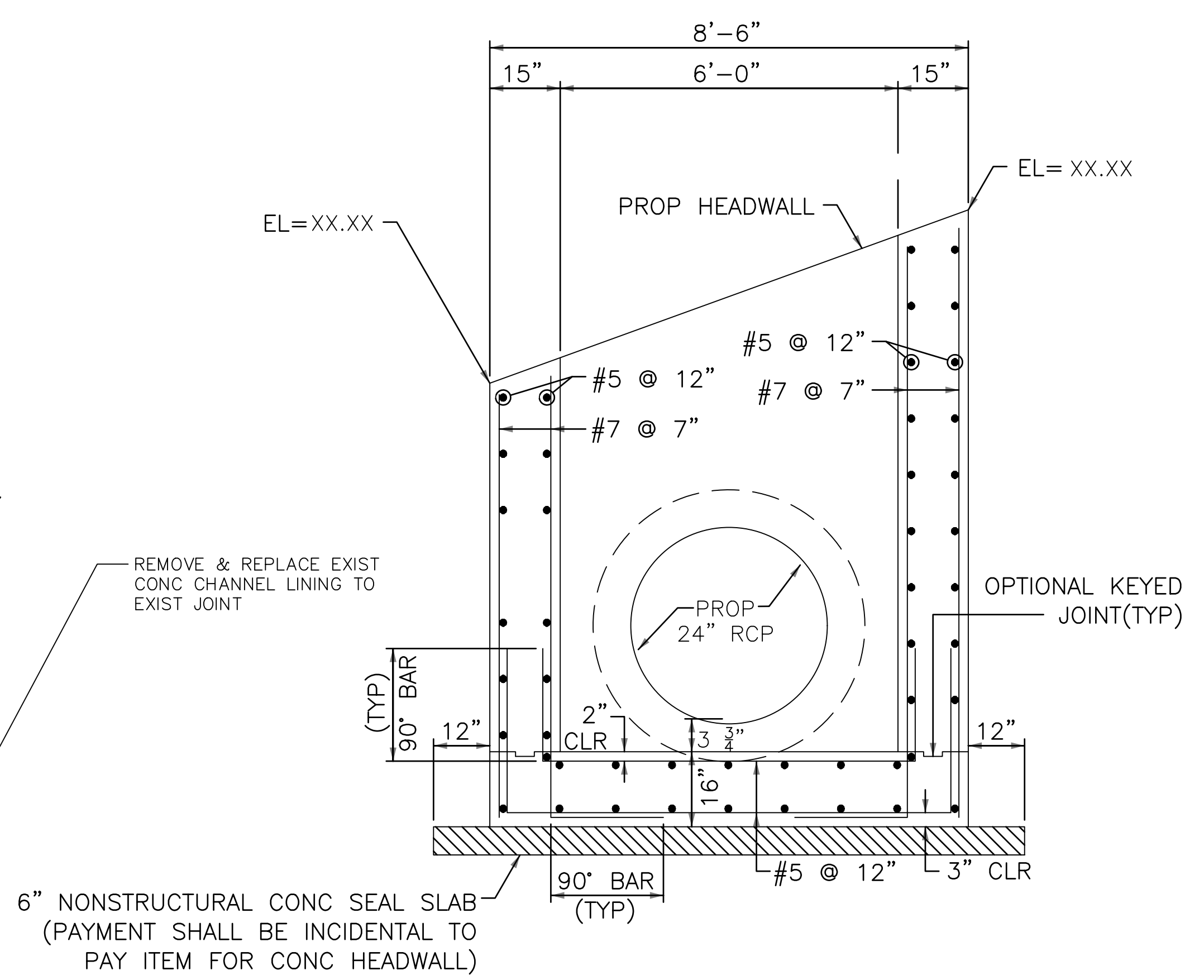
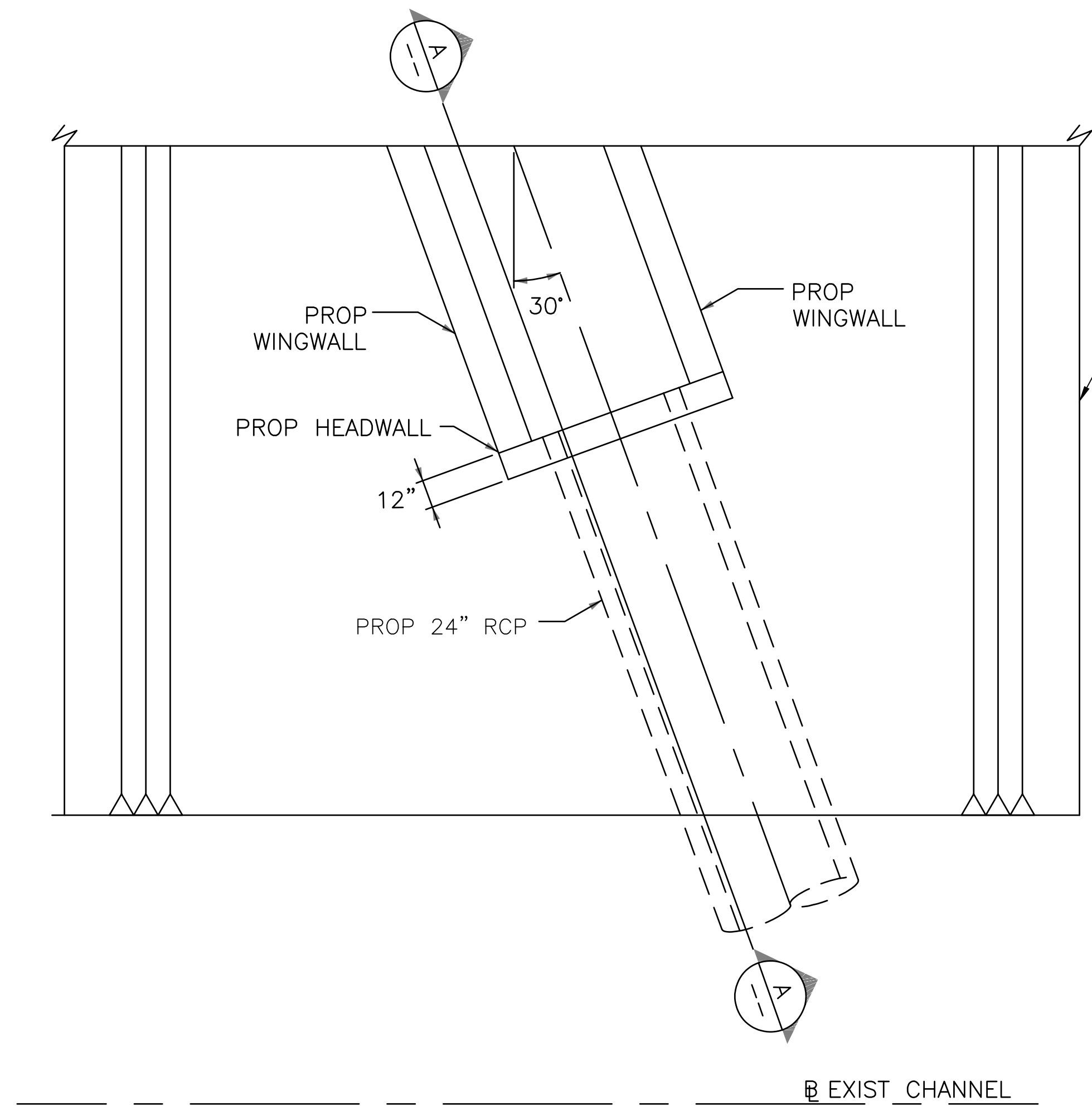
PREPARED: KN
 CHECKED: JCS
 APPROVED: JMB

ENTECH
 CIVIL ENGINEERS, INC.
 15021 KATY FREEWAY, STE. 500
 HOUSTON, TX. 77094
 281-945-0069
 TX FIRM NUMBER: F-6932

DATE: NOVEMBER 2023
 SCALE: NTS

SHEET NUMBER
 24 OF 47

NO.	DATE	REVISION	APP.



- NOTES:
- CONTRACTOR IS RESPONSIBLE FOR THE CARE AND CONTROL OF GROUND WATER AND BASE FLOWS WITHIN BRAYS BAYOU NECESSARY TO CONSTRUCT PROPOSED IMPROVEMENTS. NO SEPARATE PAY.
 - FIELD VERIFY ELEVATIONS.
 - PROP. 24 RCP, C76 CLASS III WALL C.

REMOVE & REPLACE EXIST CONC CHANNEL LINING TO EXIST JOINT

6" NONSTRUCTURAL CONC SEAL SLAB (PAYMENT SHALL BE INCIDENTAL TO PAY ITEM FOR CONC HEADWALL)

NOTE: DIMENSIONS BASED ON INSIDE FACE OF WINGWALL.

ENTECH
CIVIL ENGINEERS, INC.
15021 KATY FREEWAY, STE. 500
HOUSTON, TX. 77094
281-945-0069
TX FIRM NUMBER: F-6932

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SURVEYED BY: LANDTECH, INC.
FB NO. P-6331

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A

OUTFALL STRUCTURE DETAIL

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M-410040-001A-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. ## OF 47	

F-25 MEDIUM DUTY DRAINAGE GATE

- CAST IRON CONSTRUCTION
- AUTOMATIC OPERATION
- FULLY ADJUSTABLE HINGE LINKS
- 25 FOOT SEATING HEAD MAXIMUM

The Waterman Model F-25 Drainage Gate features a high strength, fully adjustable linkage, providing for sensitive adjustment of the flap cover after installation. The design of this gate prevents jamming and assures proper seating through the use of built-in safety stops and a 2½" to 5" seating angle.

Flatback and Spigotback models are available.

A choice of seat facings is available and includes machined or ground iron, bronze or neoprene cover gasket which is available with either iron or bronze mating frame seats.

The use of the Waterman neoprene cover seal provides a long life tight seal, which can be easily renewed. The heavy seal also provides a moderate cushioning of shock loads where some slamming may occur.

This model is **not** recommended for pump discharges where violent slamming can occur.

- Cast Iron Frame and Cover
- High Strength Ductile Iron or Steel Links
- Stainless Steel Studs, Bolts and Pins, Standard. Brass or Monel, Optional.
- Bronze Bushings Standard. Permanently Lubricated Bronze or Teflon, Optional.
- Minimum 2½" Seating Angle, 24" Diameter and over.
- Minimum 5" Seating Angle, 21" Diameter and smaller.
- Optional 25 lb. and 125 lb. ANSI Flange Drilling.

CAST IRON SEAT - Standard. Used for moderate conditions where costs must be minimized.

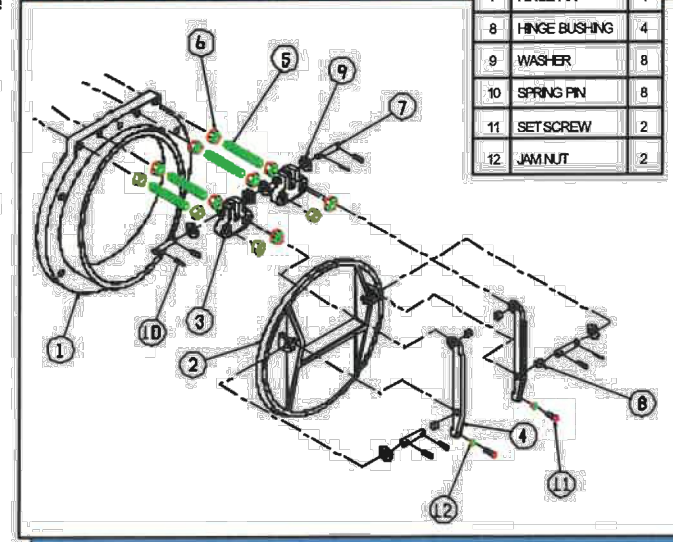
BRASS SEAT - Optional. Used for corrosive conditions where long service is important.

NEOPRENE SEAT (with iron or bronze) - Optional. Replaceable in flap cover. Cushions "slam" on closing and provides tighter seal.



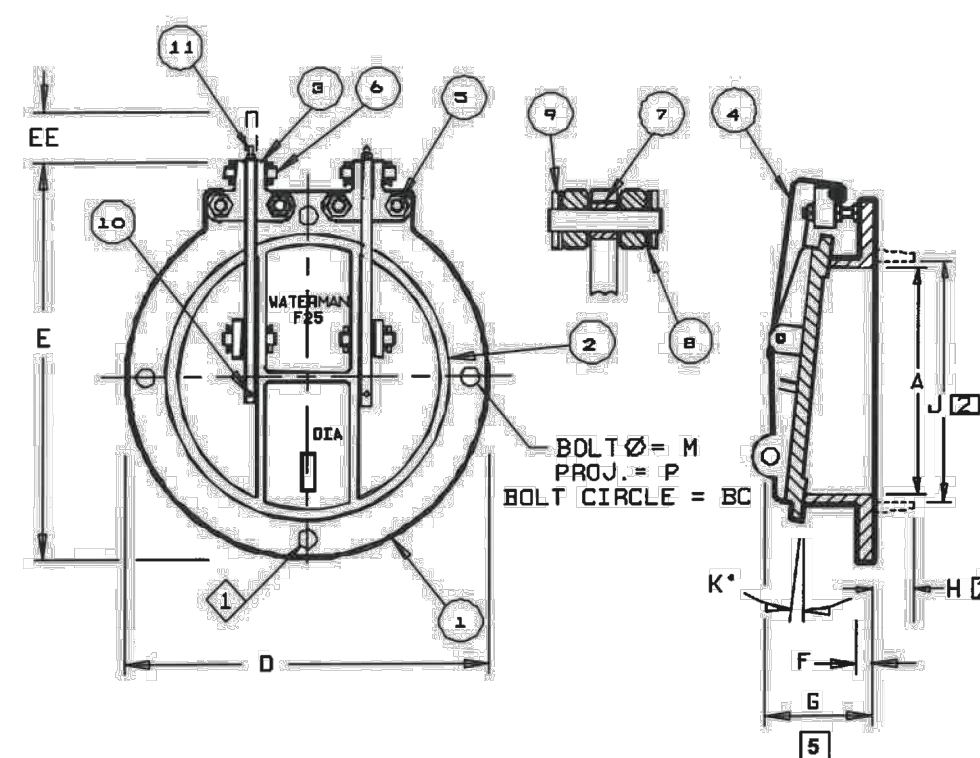
Model F-25f - Flatback
Model F-25sb - Spigotback

PARTS LIST		
No.	Name	Qty.
1	FRAME	1
2	COVER	1
3	PIVOT LUG	2
4	HINGE LINK	2
5	HINGE STUDS & NUTS	4
6	HINGE PIN	4
7	HINGE BUSHING	4
8	WASHERS	4
9	SPRING PIN	2
10	SET SCREW	2
11	NEOPRENE	1
12	BRASS KIT	2

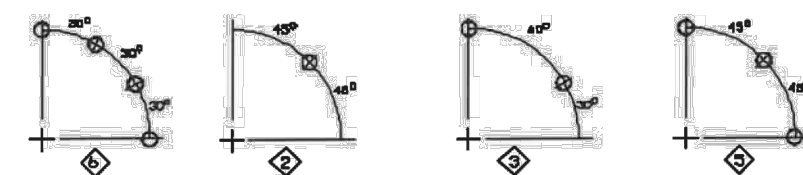


F-25 DRAINAGE GATE

PARTS LIST		
No.	Name	Qty.
1	FRAME	1
2	COVER	1
3	PIVOT LUG	2
4	HINGE LINK	2
5	HINGE STUDS & NUTS	4
6	HINGE PIN	4
7	HINGE BUSHING	4
8	WASHERS	4
9	SPRING PIN	2
10	SET SCREW	2
11	LUBE FITTING optional	1



- 12 Bolt pattern per ϕ available on 42" & 48" only on request.
- Applies to spigotback gate only. Optional spigot shown in phantom.
- 25 lb. & 125 lb. Standard drilling available on request for all gates except 12" & 21".
- Except 4" & 6" gates.
- If gasket mounting is used add gasket thickness to dimension.
- Not available on 4" & 6" gates - use permeable bushings.



GATE DIMENSIONS IN INCHES

GATE SIZE	4	6	8	10	12	14	15	16	18	19	20	21	24	30	36	42	48	54	60
BC	7½	9½	11½	14½	17	18½	20	21½	22½	25	25	29½	36	42½	49½	56	62½	69½	
D	9	11	13½	16	19	22½	22½	23½	25	27½	32	38½	46	53	60½	68½	76	84	93
E	9½	12	14½	16	19	22	25	24	28½	28	30	35	40½	46½	54½	62	72	78	
EE	1½	2	2½	3	3½	3½	3	3½	3½	3½	2½	3	3½	4½	4½	6	6	6	
F	½	¾	¾	¾	¾	1	1	1	1	1	1	1	1½	1½	1½	1½	1½	1½	
G	3/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	
H	2	2	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	
J	5	7	9	11	13	15	16	17	19	21	22	25	31	37	43½	49½	55½	61½	
K	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
M	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	
P	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	
No. of Bolts	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Ø	2	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	

* Degrees

NOTE: FOR PRELIMINARY DESIGN PURPOSES ONLY
DO NOT USE FOR INSTALLATION
UNLESS PART OF CERTIFIED & APPROVED SUBMITTAL

TYPICAL SPECIFICATIONS F-25 MEDIUM DUTY AUTOMATIC DRAINAGE (FLAP) (TIDE) GATES

General
The drainage gate shall be designed to allow free outflow and prevent backflow for maximum seating heads up to 25 feet. Gates shall be Waterman Model F-25 or equal.

Construction
The frame shall be cast iron of flatback or spigotback design, with machined seating surface inclined from vertical at minimum of 2½", to assure positive closure. For flatback gates mounted to thimbles or flanges, the gate flange shall be machined and drilled to match.

The cover shall be cast iron, cast in one piece, with reinforcing ribs, designed to withstand the seating head specified. An integral cast on lifting eye shall be provided for manual operation.

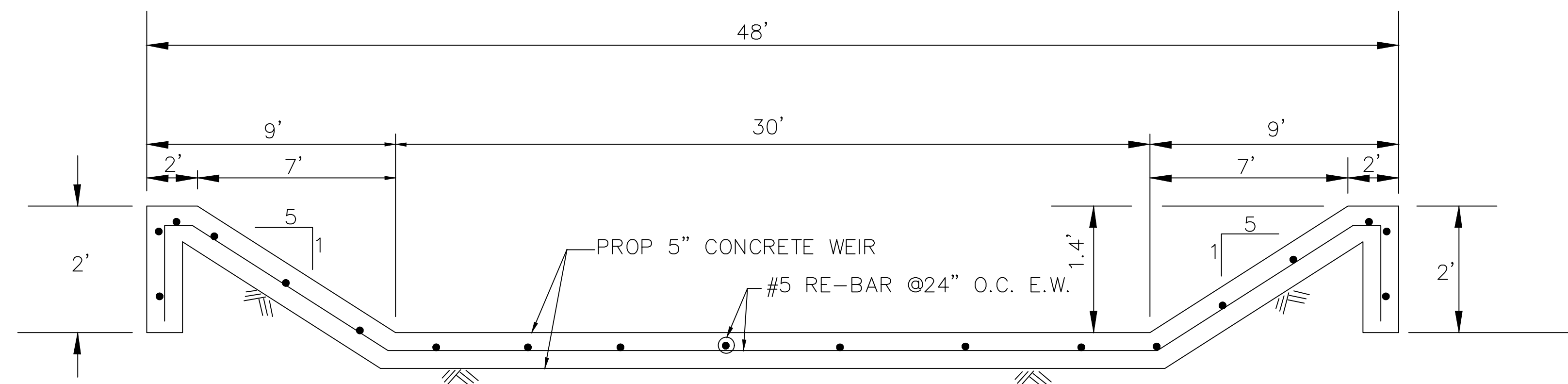
Seating surfaces for frame and cover shall be:
(bronze on seat and cover) (machined iron on frame, neoprene on cover) (bronze on frame, neoprene on cover)

All machined seats shall have a minimum 63 microinch finish.

The gate shall be provided with adjustable, double pivoted hinge links so designed to permit complete seating, full opening, and with stops or other arrangement to prevent cover from rotating sufficiently to become wedged in the open position. Pivot lugs mounted to frame shall be adjustable to allow adjustment of hinge links without having to remove cover from gate. The hinge links shall be bronze-bushed, structural steel (or high strength ductile iron, cast manganese bronze, or wrought stainless steel). All assembly hardware shall be type 18-8 stainless steel.

Finish
All cast iron shall be painted with manufacturer's standard shopcoat paint (or special paint). Structural steel hinge links shall be galvanized. All bronze and stainless steel parts do not require further finish.

Materials
Frame and Cover - Cast Iron per ASTM A-126, Class B.
Pivot Lug - Ductile Iron per ASTM A-536, Gr. 65-45-12.
Hinge Link - Structural Steel per ASTM A-36, galvanized per ASTM A-123.
Bronze Bushings and Washers - Commercial Bronze.
Assembly Hardware and Pins - 18-8 Stainless Steel (Type 304).



SECTION B-B
(NOT TO SCALE)

 15021 KATY FREEWAY, STE. 500 HOUSTON, TX. 77094 281-945-0069 TX FIRM NUMBER: F-6932	THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION
POND A

MISCELLANEOUS DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGMUDALIGE P.E.	
SHEET NO. 30 OF 47	

NO.	DATE	REVISION	APP.

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

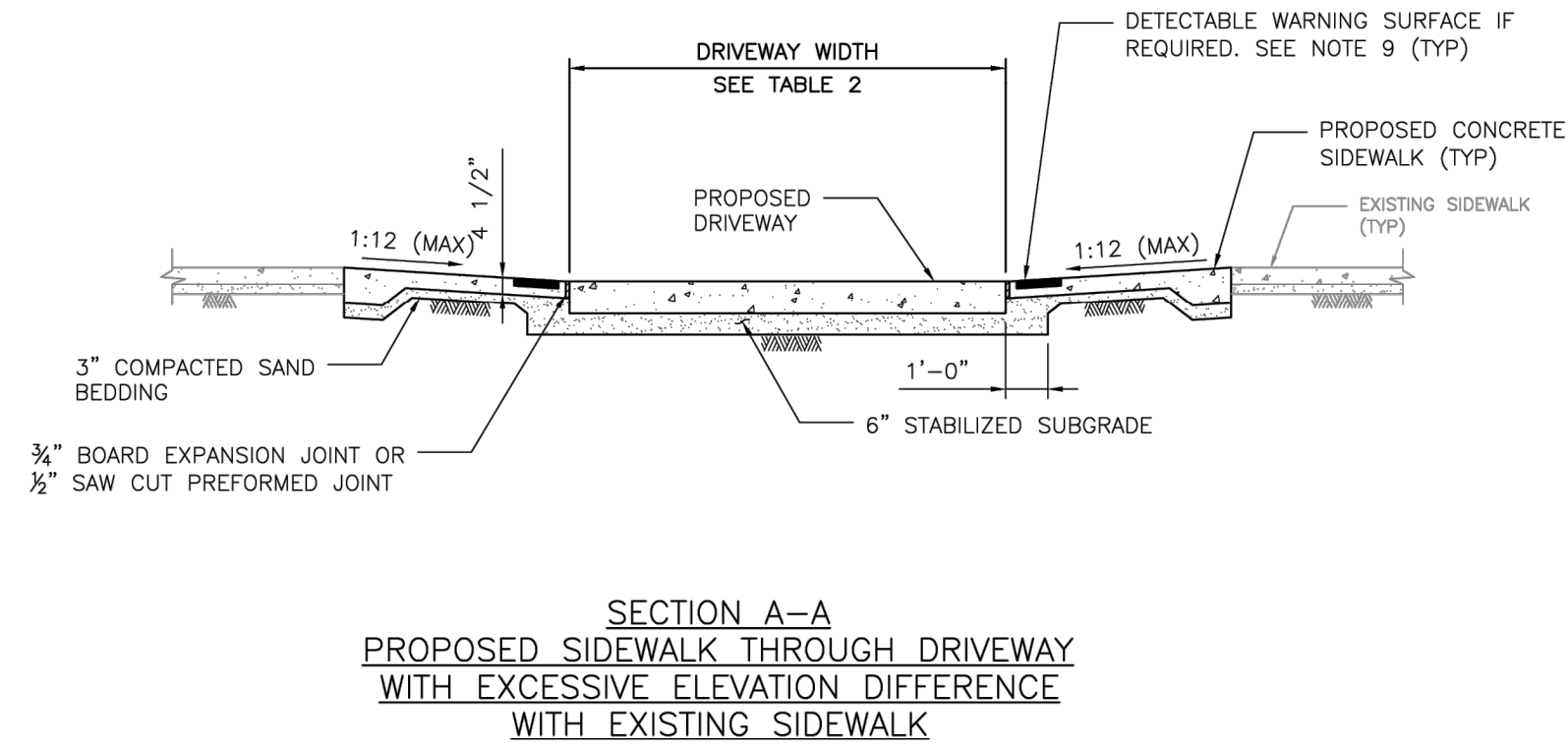
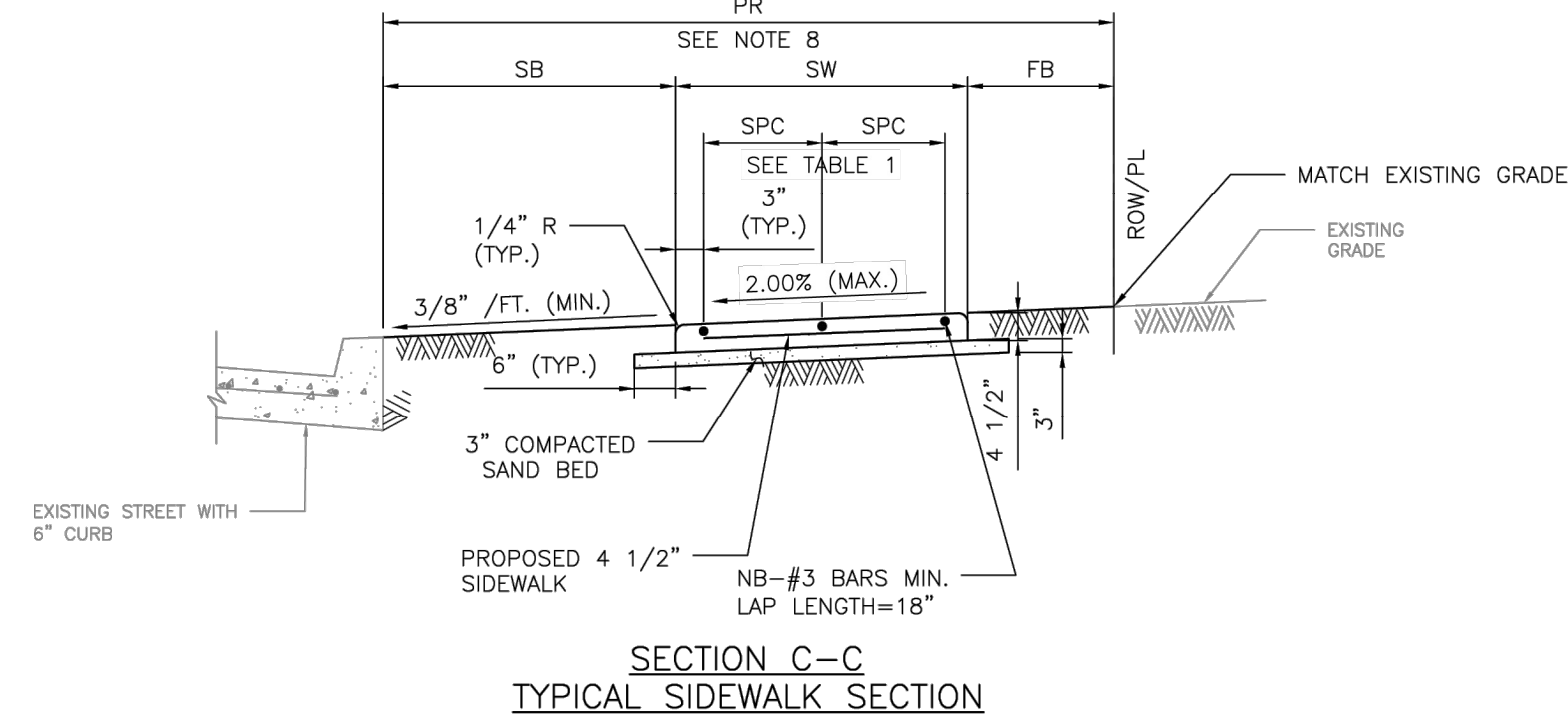
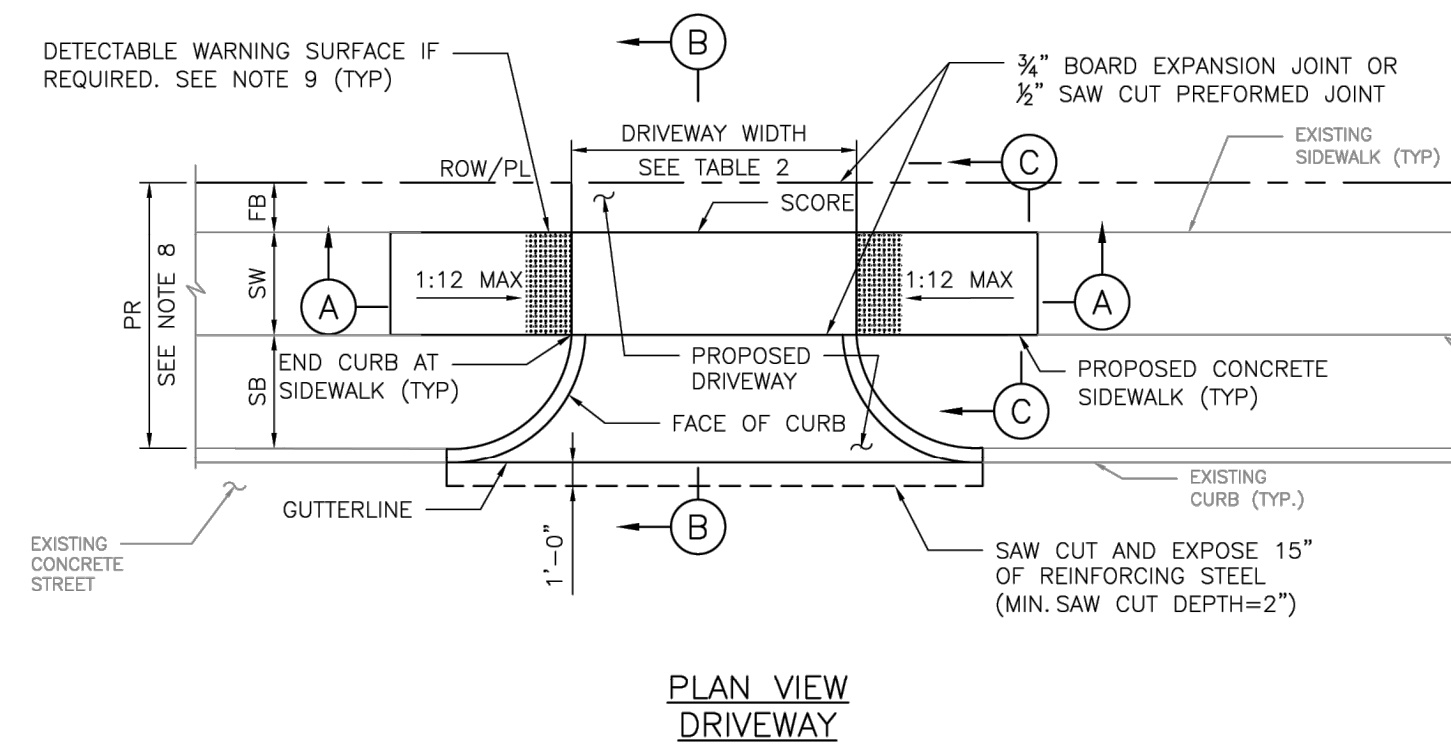


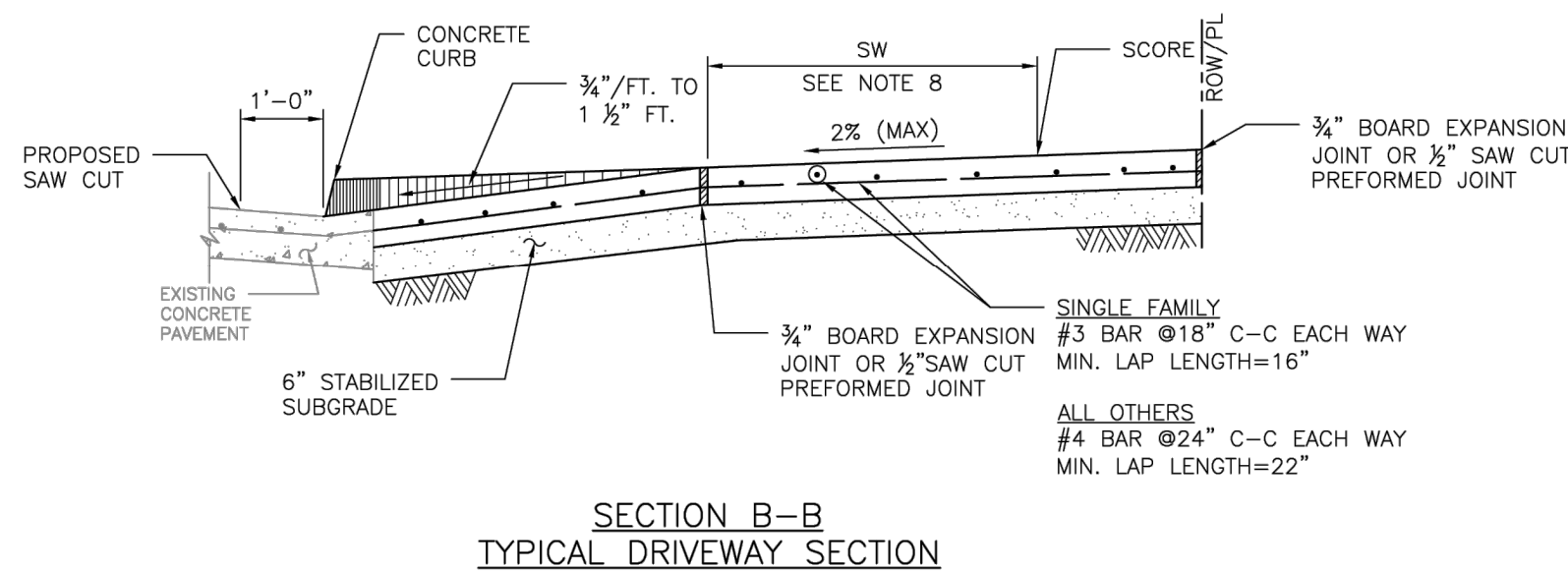
TABLE 1
REINFORCING STEEL INFORMATION
FOR 4 1/2" THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
f_c' = 3,500 PSI AND f_y = 60,000 PSI
REFER TO CONTRACT DRAWINGS FOR SIDEWALKS WIDER THAN 6 FEET.

SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL #3 BARS			TRANSVERSE STEEL #3 BARS SPACING (IN)
		NO. OF BARS "NB"	SPACING "SPC" (IN)	END BAR SPACING (IN)	
4.5	5	3	27	3	48
4.5	6	4	22	3	48

TABLE 2
DRIVEWAY DESIGN CRITERIA (1)(2)

TRAFFIC TYPE	TYPE A DRIVEWAY (FOR SINGLE FAMILY RESIDENTIAL HOUSES OR DUPLEXES)				TYPE B DRIVEWAY (SHARED ACCESS/SHARED DRIVEWAY)				TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY)			
	WIDTH (FT)		RADIUS (FT)		WIDTH (FT)		RADIUS (FT)		WIDTH (FT)		RADIUS (FT)	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
ONE-WAY	10	12	4	10	12 ⁽⁵⁾	16 ⁽⁵⁾	4 ⁽⁵⁾	10 ⁽⁵⁾	15	20	10	20
TWO-WAY	10 ⁽³⁾	24 ⁽⁴⁾	4	10	16 ⁽⁶⁾	24	4	10	24	35	10	20

(1) REFER TO INFRASTRUCTURE DESIGN MANUAL ARTICLE 15.2.07.C.1.F FOR DRIVEWAYS THAT REQUIRE A VEHICLE SWEEP PATH ANALYSIS.
 (2) REFER TO INFRASTRUCTURE DESIGN MANUAL ARTICLES 15.2.07.C.1.G.(1) AND 15.2.07.C.1.G.(2) FOR TYPE 1 PAE AND TYPE 2 PAE REQUIREMENTS.
 (3) THE MINIMUM WIDTH FOR JOINT ACCESS DRIVEWAY IS 12 FT.
 (4) REFER TO CHAPTER 42 OF THE CODE OF ORDINANCES FOR DRIVEWAY WIDTHS FOR NARROW LOTS.
 (5) ONLY MURS AND COURTYARD STYLE DEVELOPMENTS ON CORNER LOTS CAN HAVE ONE-WAY DRIVEWAYS.
 (6) REFER TO CHAPTER 42, SECTION 42-146 OF THE CODE OF ORDINANCES FOR EXCEPTIONS TO THE MINIMUM DRIVEWAY WIDTH FOR SHARED DRIVEWAYS.



NOTES:

- REPAIR, RECONSTRUCTION OR REPLACEMENT OF SIDEWALKS SHALL MEET PERMITTING REQUIREMENTS OF CODE OF ORDINANCES SECTION 40-552.
- FOR REPAIR, RECONSTRUCTION, OR REPLACEMENT OF EXISTING SIDEWALKS:
 - EXISTING SIDEWALKS LESS THAN OR EQUAL TO 20 FEET IN TOTAL LENGTH:
 - THE PROPOSED SIDEWALK WIDTH WILL BE ALLOWED TO MATCH THE EXISTING SIDEWALK.
 - EXISTING SIDEWALKS GREATER THAN 20 FEET IN TOTAL LENGTH:
 - THE SIDEWALK WIDTH FOR THE ENTIRE PROPERTY WIDTH SHALL BE IMPROVED TO MEET WIDTH REQUIREMENTS ACCORDING TO THE LATEST INFRASTRUCTURE DESIGN MANUAL.
 - 20 FOOT TOTAL LENGTH IS DEFINED AS:
 - UP TO 10 FEET ON BOTH SIDES OF THE DRIVEWAY; OR
 - UP TO 20 FEET WHEN SIDEWALK AFFECTED IS LOCATED ONLY ON ONE SIDE OF THE DRIVEWAY.
- ALL JOINTS ALONG THE SIDEWALK SHALL BE CONSTRUCTED ACCORDING TO DRAWING 02752-02 AND SPECIFICATION 02752.
- DRIVEWAYS SHALL BE MINIMUM 6" THICK FOR SINGLE FAMILY AND DUPLEXES. DRIVEWAYS SHALL BE MINIMUM 7" THICK FOR ALL OTHERS (I.E. COMMERCIAL, INDUSTRIAL, ETC.)
- DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5 1/2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.
- ALL RAMP AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
- CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
- REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.
- DETECTABLE WARNING SURFACES:
 - SIDEWALK SHALL HAVE A DETECTABLE WARNING SURFACE WHERE:
 - SIDEWALK INTERSECTS TYPE C DRIVEWAYS (COMMERCIAL DRIVEWAYS) THAT ARE STOP, YIELD, OR TRAFFIC SIGNAL CONTROLLED; OR
 - SIDEWALK SLOPE IS GREATER THAN 1:20 AND INTERSECTS A TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY)
 - DETECTABLE WARNING SURFACES ARE OPTIONAL WHERE SIDEWALKS INTERSECT TYPE A DRIVEWAYS (SINGLE FAMILY RESIDENTIAL HOUSES OR DUPLEXES) OR TYPE B DRIVEWAYS (SHARED ACCESS/SHARED DRIVEWAYS).
 - REFER TO STANDARD DETAILS 02775-06 TO 02775-07 FOR DETECTABLE WARNING SURFACE STANDARDS.

APPROVED BY: <i>Sudal Kanwar</i> CITY ENGINEER	APPROVED BY: <i>BRANG NEUEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hallock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02754-01B
CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
DRIVEWAY DETAIL WITH 6" CURBED STREETS	
FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE	
NOT TO SCALE	

ENTECH
CIVIL ENGINEERS, INC.
15021 KATY FREEWAY, STE. 500
HOUSTON, TX. 77094
281-945-0069
TX FIRM NUMBER: F-6932
SURVEYED BY: LANDTECH, INC.
FB NO. P-6331

THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF RODRIGO GUADARRAMA TEXAS REG. NO. 111437 OCTOBER 15, 2025

IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

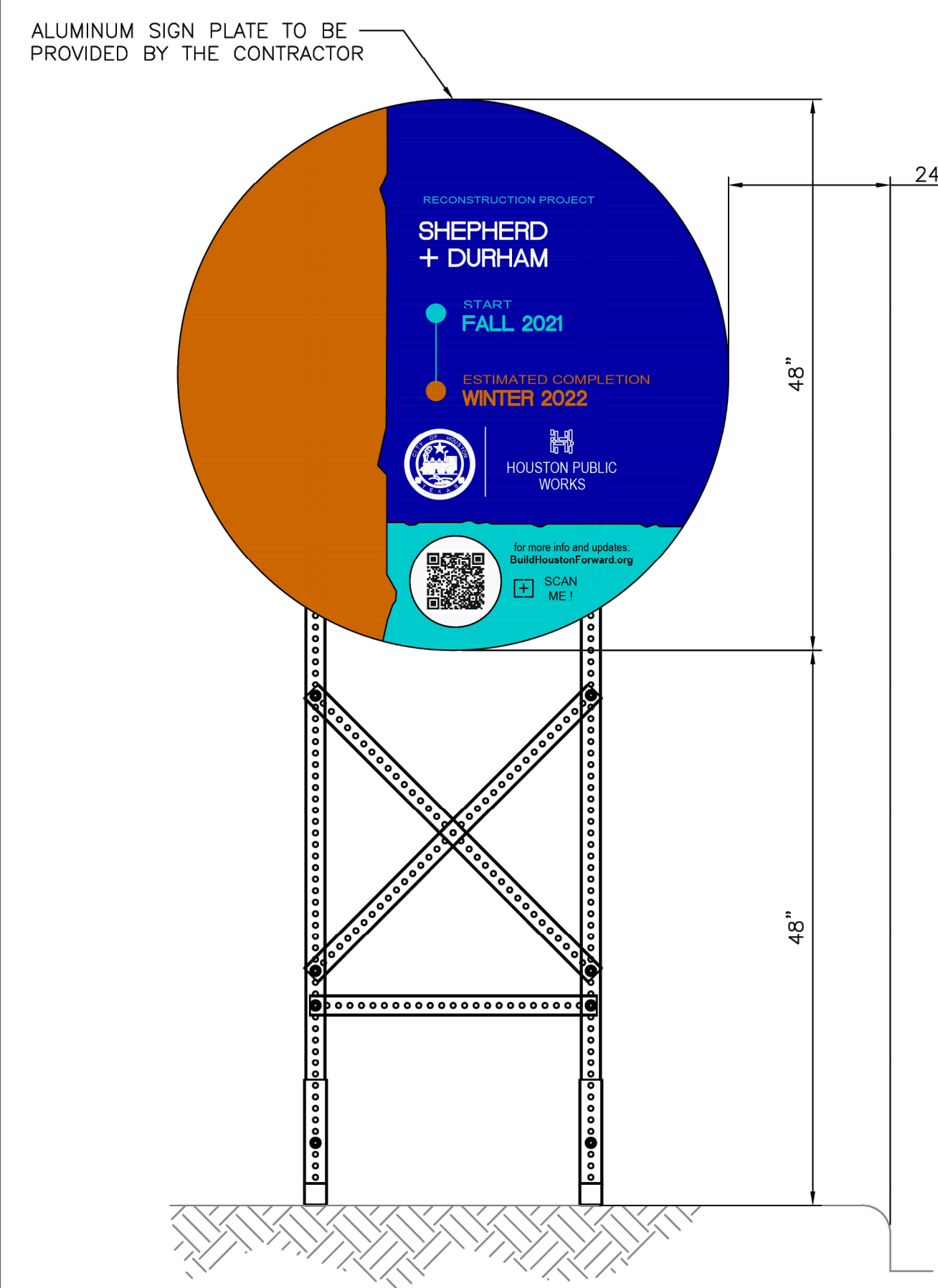
SHARPSTOWN AREA DETENTION POND A

DRIVEWAY DETAIL WITH 6 INCH CURBED STREETS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE P.E.	
SHEET NO. 31 OF 47	

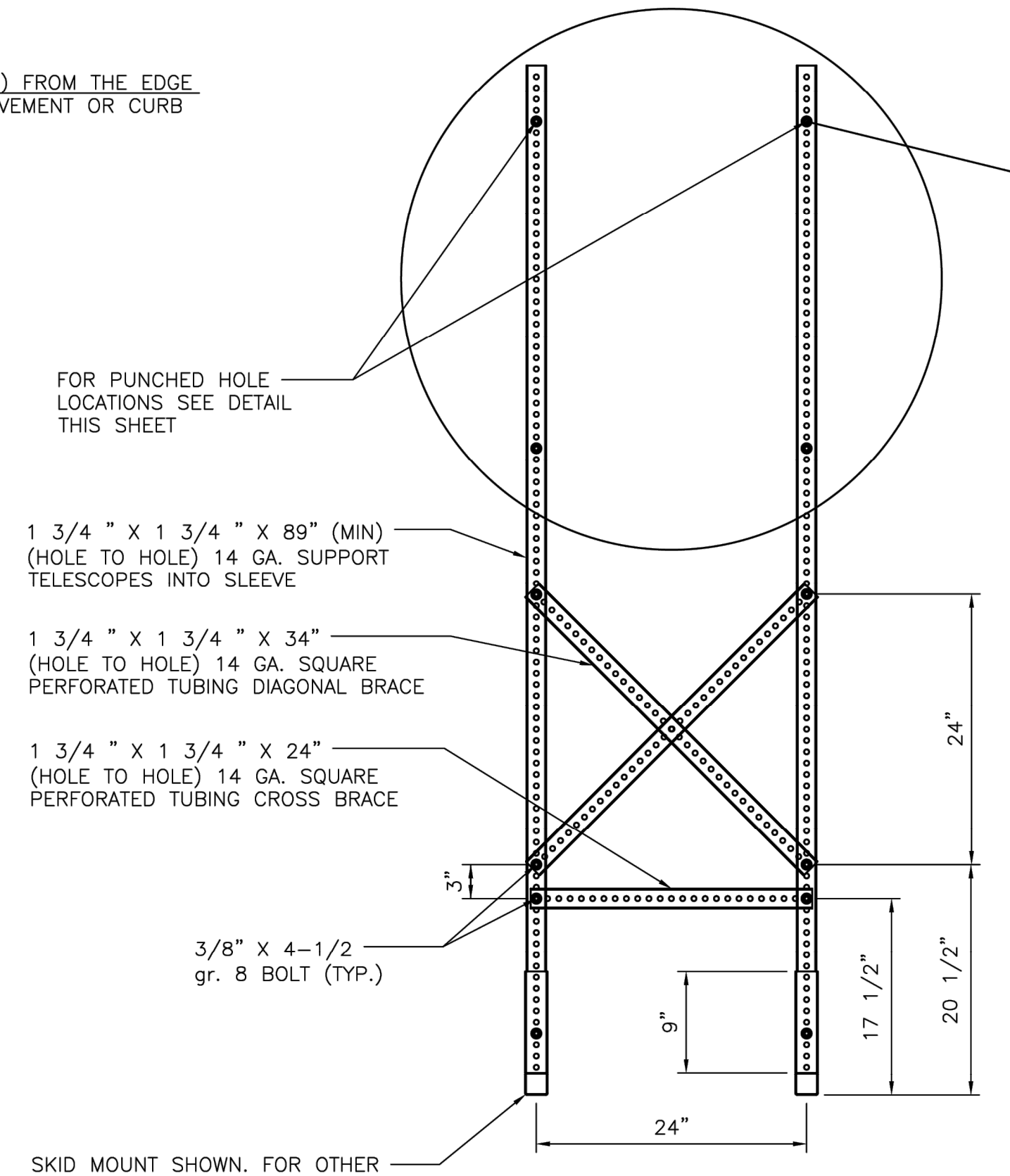
NO.	DATE	REVISION	APP.

DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THE USE OF 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.



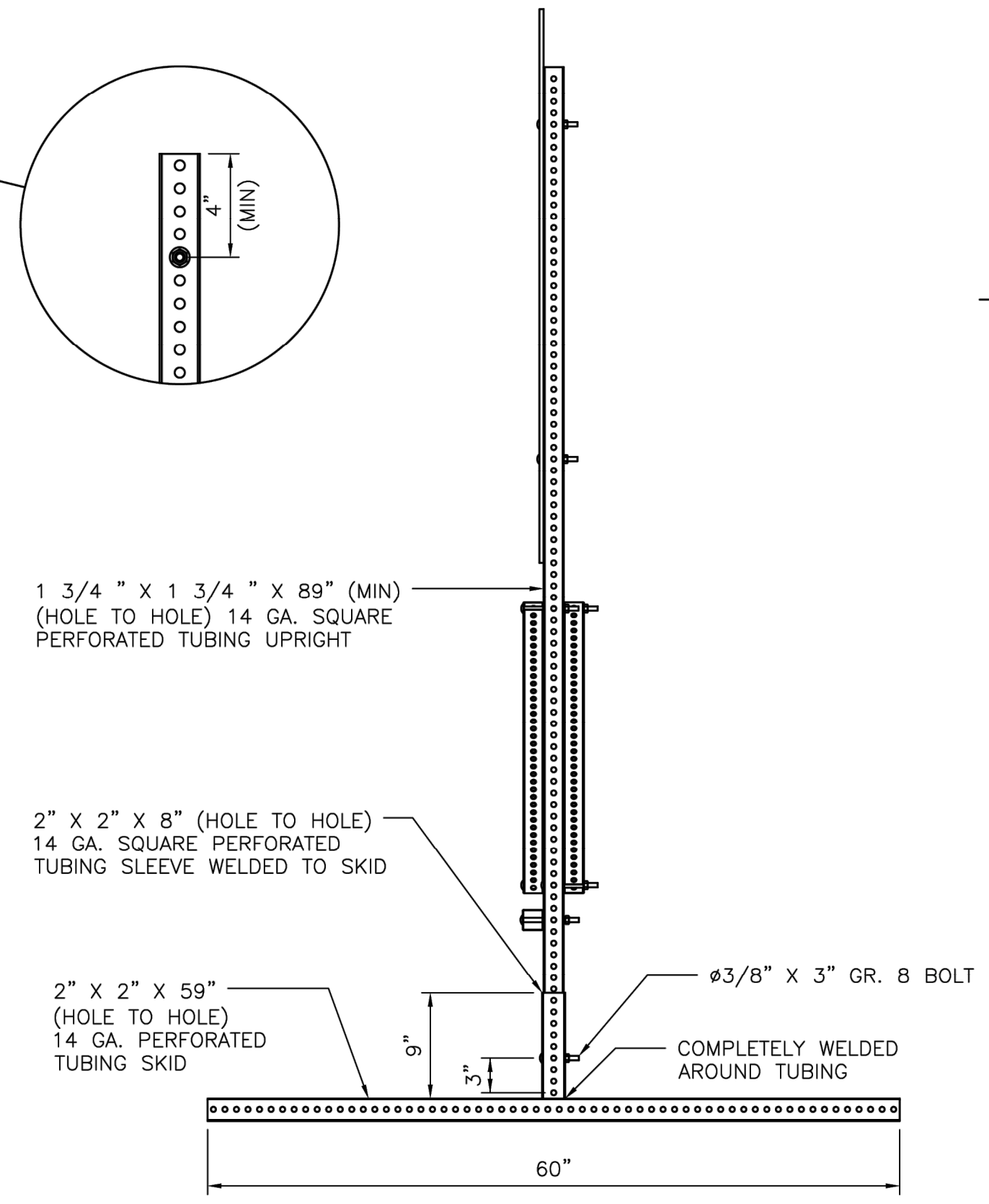
FRONT VIEW

PROJECT SIGN - 48"

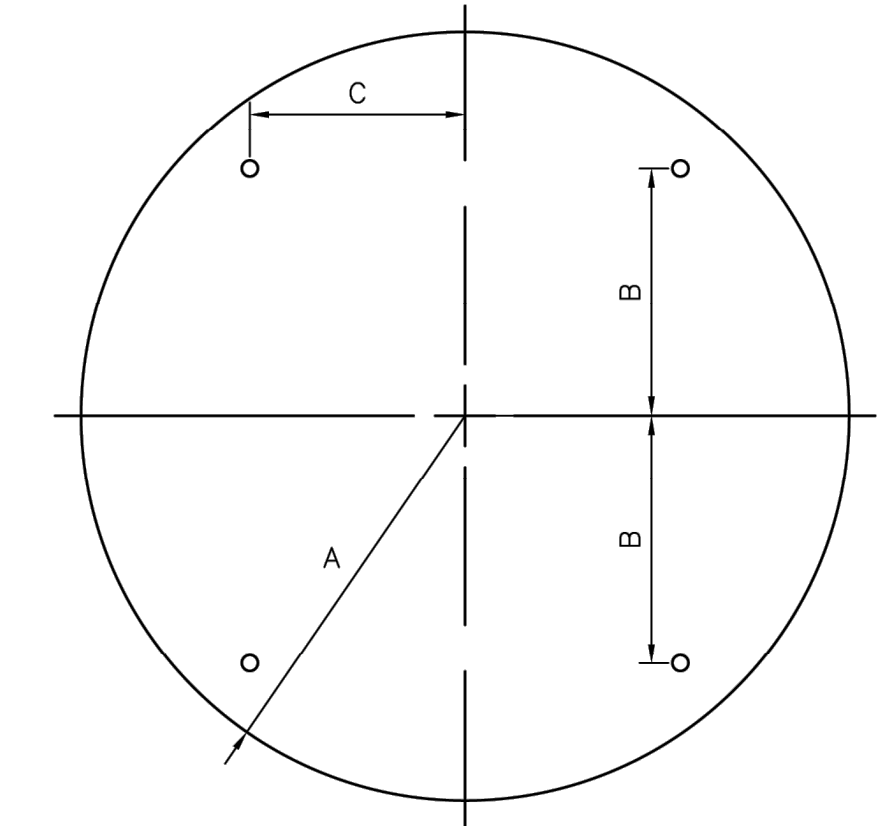


FRONT VIEW

SKID MOUNTED SUPPORTS FOR 48" PROJECT SIGN



SIDE VIEW

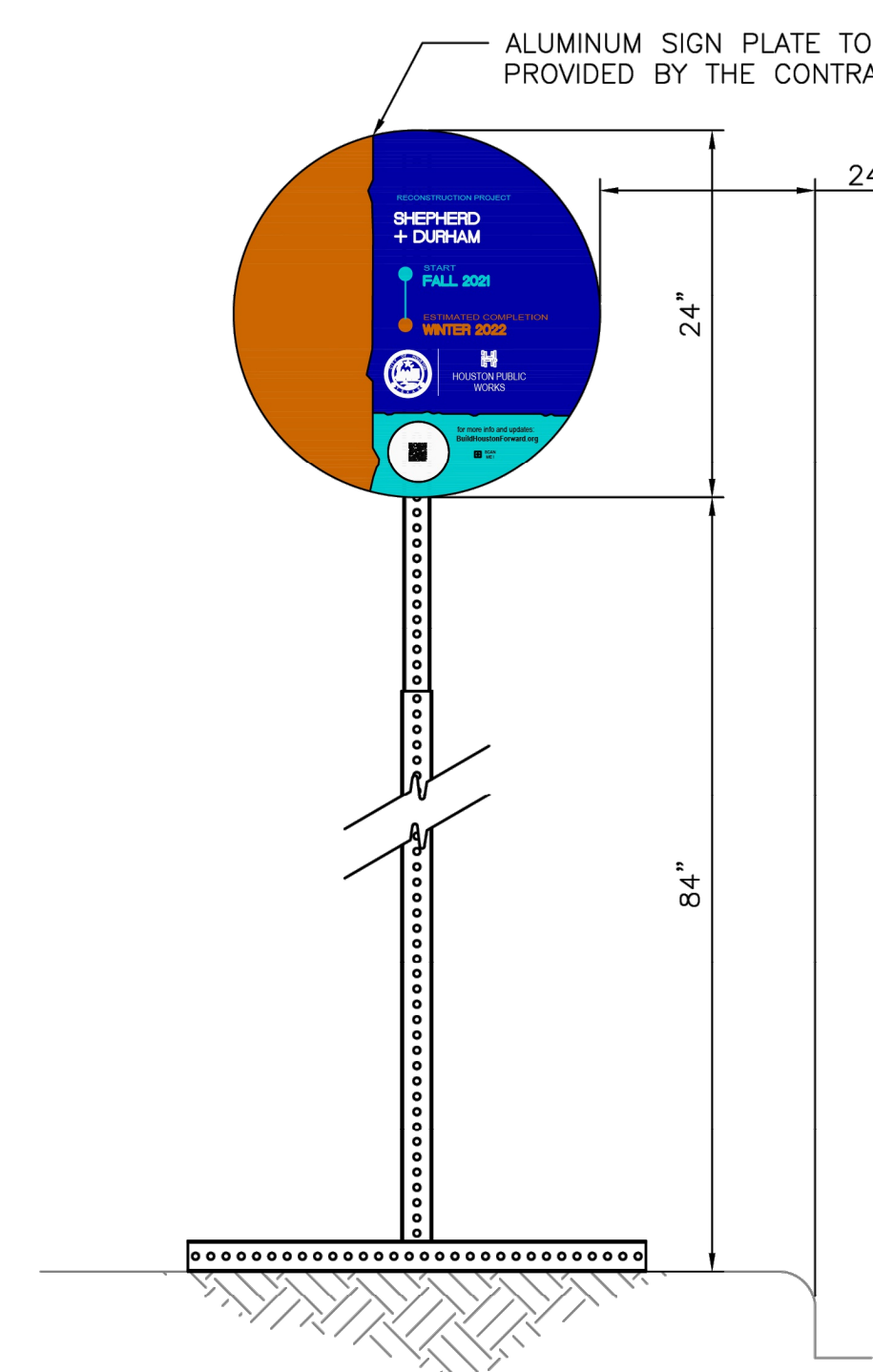


A	B	C	T
24"	15"	12"	0.080"

48" SIGN PLATE HOLE DETAIL

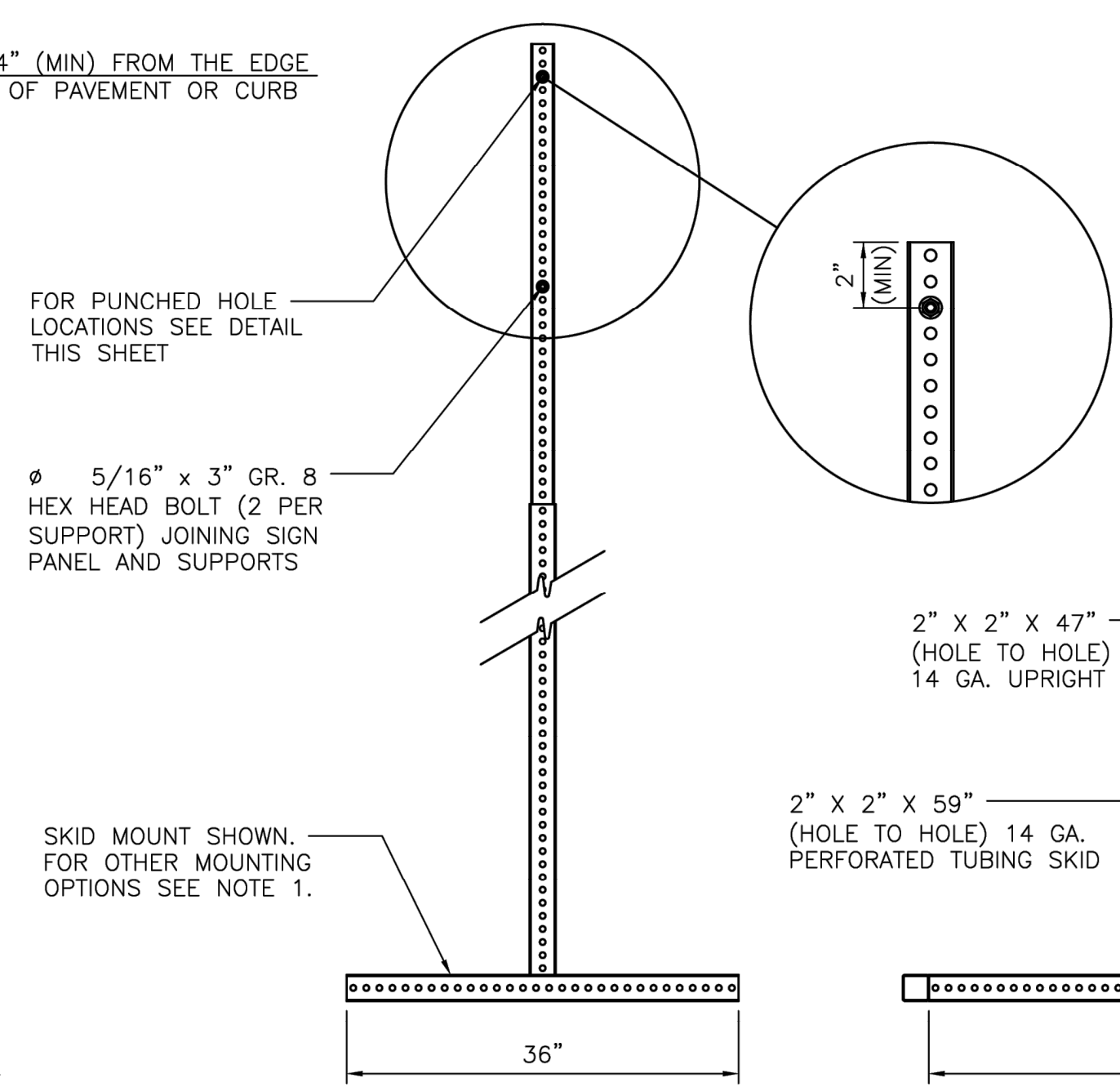
NOTES:

1. ALLOWABLE POST INSTALLATION METHODS ARE: CONCRETE FOOTING, SURFACE MOUNTING, SKID MOUNTING AND PILE DRIVEN POSTS.
2. FOR POST INSTALLATION WITH CONCRETE FOOTING, REFER TO DETAIL 01554-01.
3. FOR SURFACE MOUNTED POST INSTALLATION, REFER TO DETAIL 01554-02.
4. FOR SKID MOUNTING REQUIREMENTS REFER TO SPECIFICATION 01582.
5. PILE DRIVEN POSTS MUST BE DRIVEN TO A MINIMUM DEPTH OF 4- FEET INTO EXISTING GROUND.
6. LAYOUT, TEXT SIZE, AND OVERALL DESIGN OF THE SIGN WILL BE THE RESPONSIBILITY OF THE BUILD HOUSTON COORDINATOR.
7. ALL SIGN POSTS, SIGN TUBING, AND SIGN FASTENERS SHALL BE GALVANIZED STEEL PER SPECIFICATION 01582.



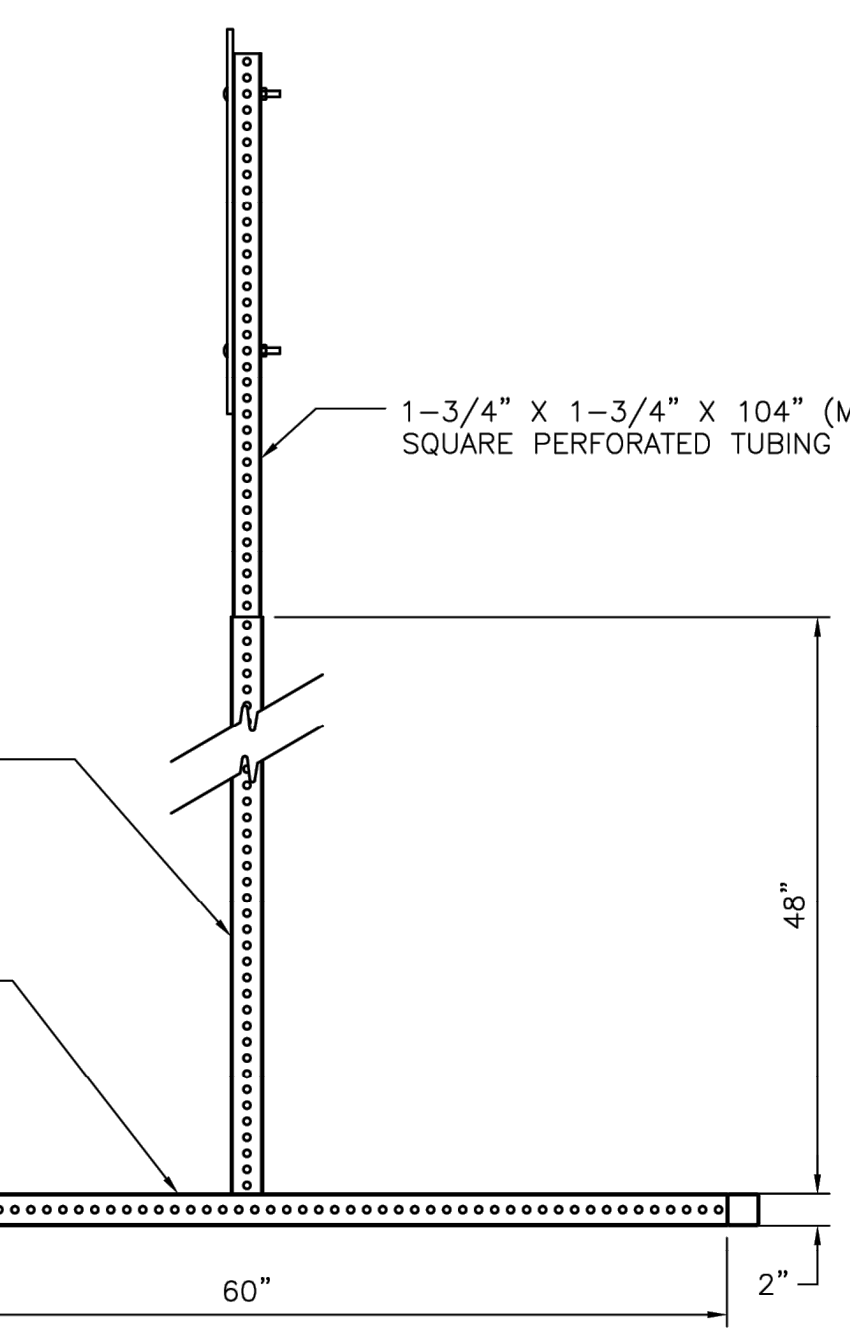
FRONT VIEW

PROJECT SIGN - 24"

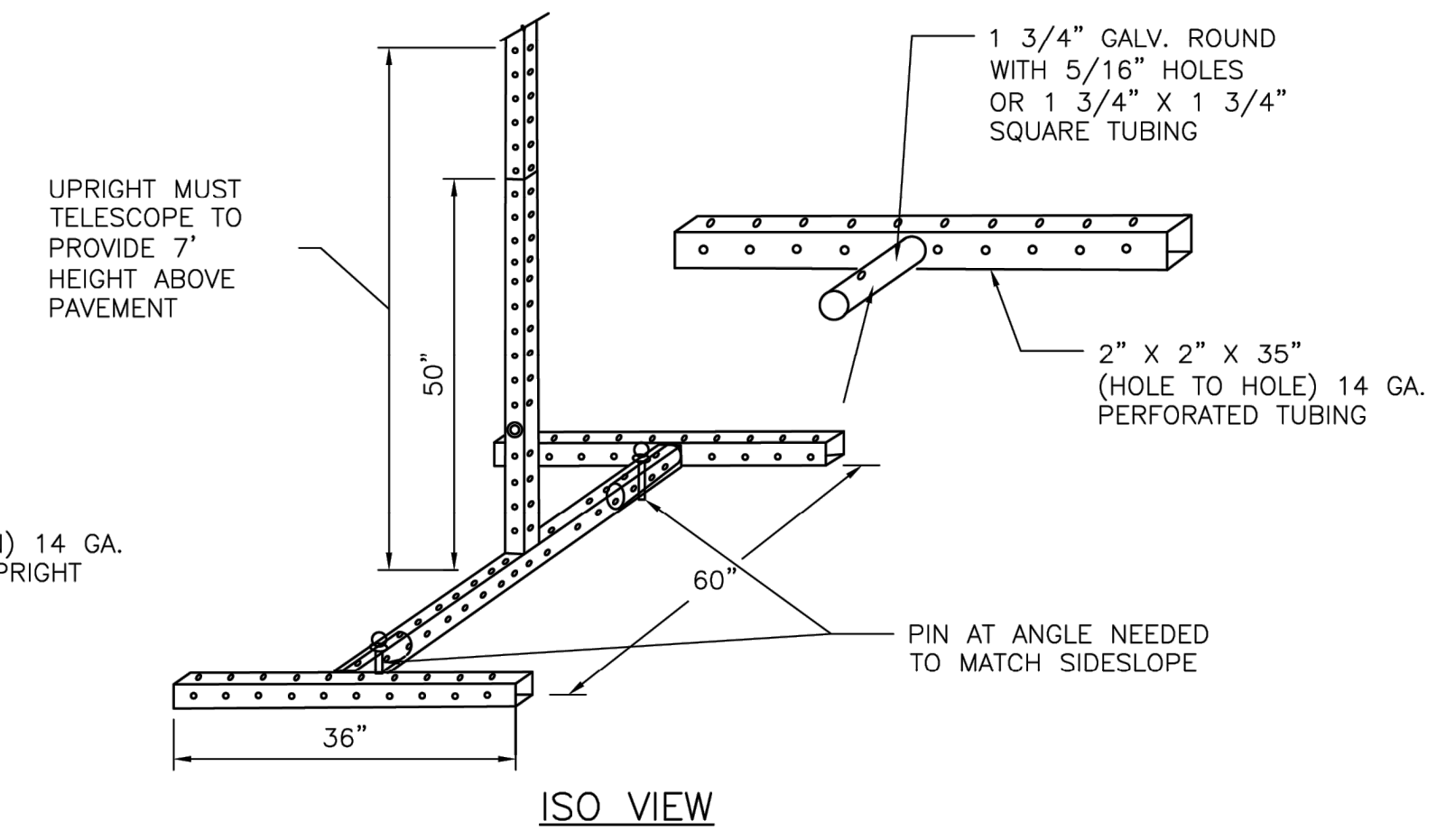


FRONT VIEW

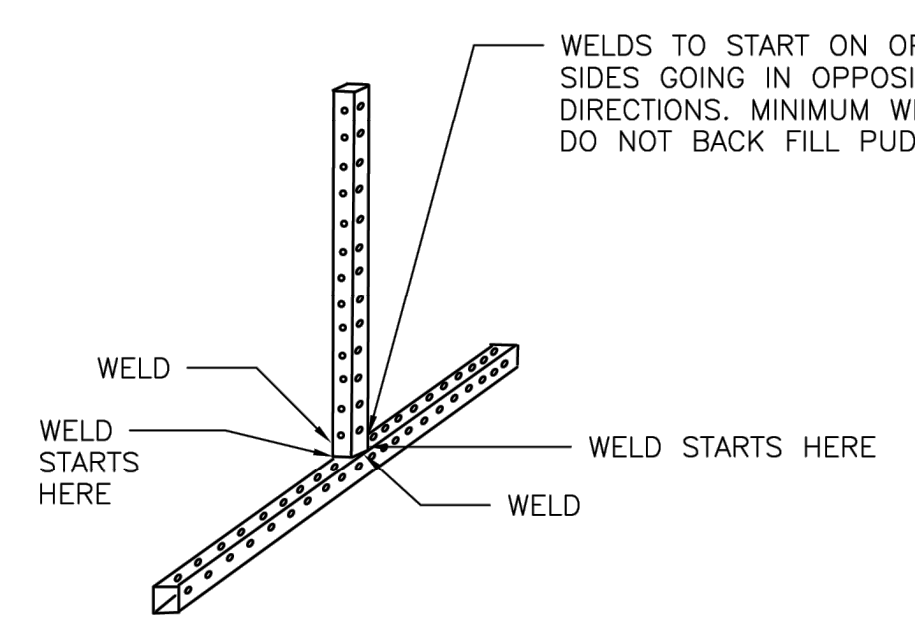
SKID MOUNTED SUPPORTS FOR 24" PROJECT SIGN



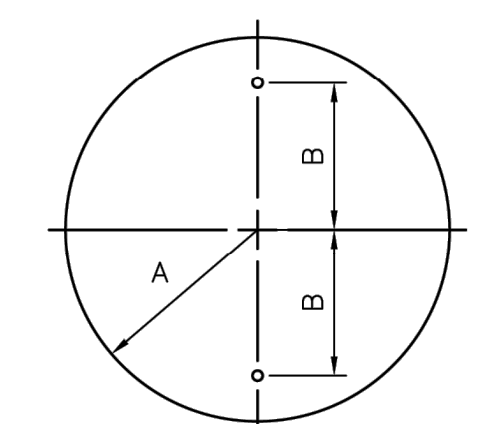
SIDE VIEW



ISO VIEW



ISO VIEW



A	B	C
12"	8"	0.080"

24" SIGN PLATE HOLE DETAIL

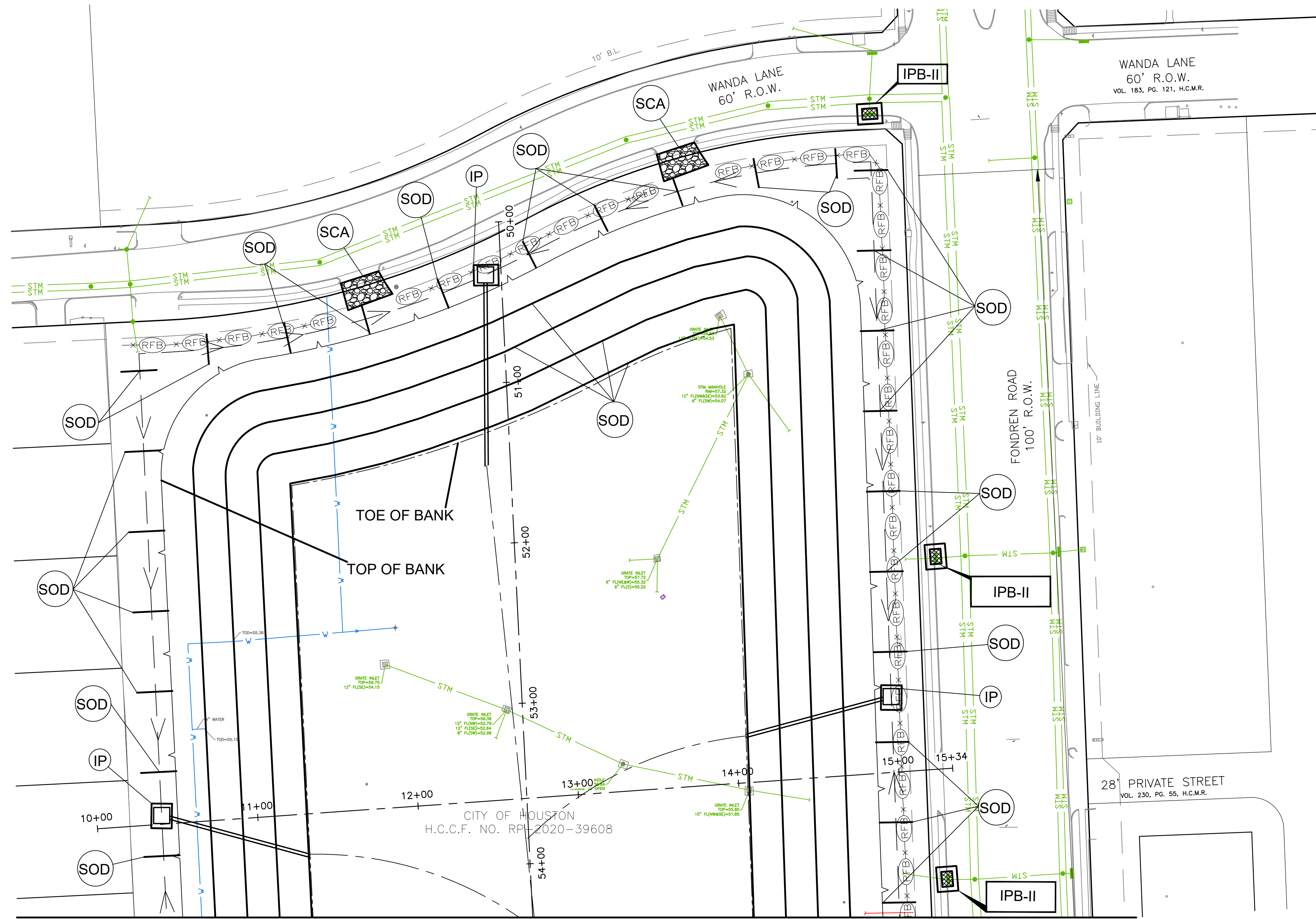
APPROVED BY: DocuSigned by: <i>Sulail Kanwar</i> SEF880C041F547B	APPROVED BY: DocuSigned by: <i>Carl Stalder</i> A83C4167253453
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: NOV-27-2023	DWG NO: 01582-01

ENTECH
CIVIL ENGINEERS, INC.
15021 KATY FREEWAY, STE. 500
HOUSTON, TX. 77094
281-945-0069
TX FIRM NUMBER: F-6932

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONSTRUCTION SIGN BUILD
HOUSTON FORWARD

DRAWING SCALE	FOR CITY OF HOUSTON USE ONLY
NOT TO SCALE	
SHEET NO. 32 OF 47	



- LEGEND**
- IPB-I INLET PROTECTION BARRIER STAGE I
 - IPB-II INLET PROTECTION BARRIER STAGE II
 - SCA STABILIZED CONSTRUCTION ACCESS
 - IP INTERCEPTOR STRUCTURE & INLET PROTECTION
 - SOD SODDING
 - FD-2 ROCK FILTER DAM
 - FLOW DIRECTION
 - FLOATING TURBIDITY CURTAINS
 - RFB REINFORCED FILTER FABRIC BARRIER

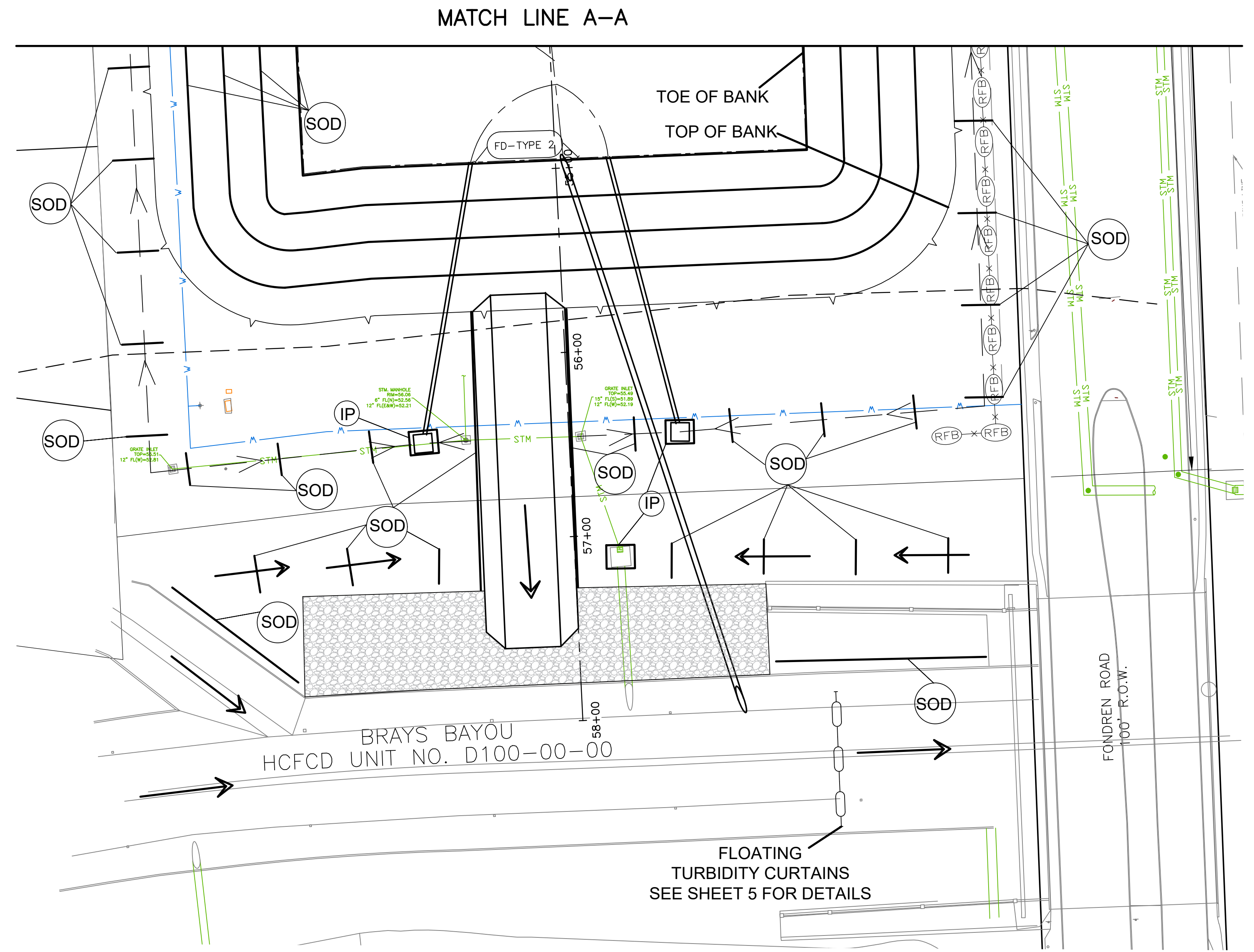
MATCH LINE A-A

NOTE



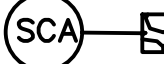
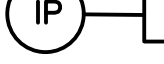





1. INSTALLATION OF STORM POLLUTION PREVENTION STRUCTURES FOR BACKSLOPE SWALES MUST BE COMPLETE BEFORE CONSTRUCTION OPERATIONS TAKE PLACE. (CLEARING AND GRUBBING OPERATIONS MAY TAKE PLACE CONCURRENTLY WITH THE INSTALLATION OF POLLUTION PREVENTION STRUCTURES)
2. STORM POLLUTION PREVENTION STRUCTURES SHOWN WILL REMAIN IN PLACE UNTIL ENGINEER ACCEPTS CONSTRUCTION IS COMPLETED. CERTAIN CIRCUMSTANCES MAY REQUIRE STORM POLLUTION PREVENTION MEASURES TO REMAIN IN PLACE UNTIL SITE HAS BEEN PERMANENTLY STABILIZED WITH VEGETATION. CONCRETE PAVING, RIPRAP, OR ARTICULATED CONCRETE BLOCK.
3. ONLY TYPICAL EROSION AND SEDIMENTATION CONTROL STRUCTURES AND LOCATIONS ARE SHOWN. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL REQUIREMENTS OF TPDES CONSTRUCTION GENERAL PERMIT. IF WASHING IS DONE AT CONSTRUCTION ACCESS POINT, CONTRACTOR WILL INSTALL SEDIMENT TRAPS TO CONTROL WASH WATER SEDIMENT. COST OF SEDIMENT TRAPS ARE INCIDENTAL TO STABILIZED CONSTRUCTION ACCESS.
4. OFF-SITE TRACKING OF SEDIMENT SHALL BE MINIMIZED. SEDIMENT TRACKED OFF-SITE SHALL BE REMOVED IMMEDIATELY AND DISPOSED OF BY CONTRACTOR AT HIS EXPENSE AT AN APPROVED LOCATION.
5. REINFORCED SILT FENCE SHALL BE USED AROUND ALL STOCKPILES, DISTURBED AREAS, AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION AND HAVE THE POTENTIAL FOR STORM POLLUTION ENTERING THE DRAINAGE SYSTEM.
6. INSTALL SOD AROUND THE BACKSLOPE INTERCEPTOR, ACROSS THE SWALES AND ALONG THE SLOPES OF THE CHANNEL.
7. SCAs NEED TO BE PROVIDED AT ALL ACCESS POINTS. ALTERNATE ACCESS POINTS NEED TO BE APPROVED BY THE HCFCD ENGINEER.

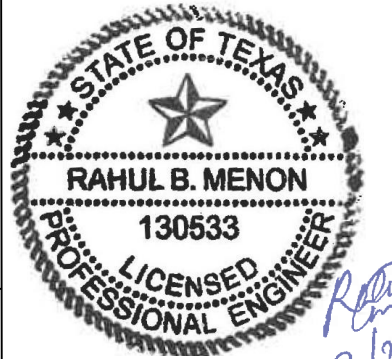
<p>civil \ design \ engineers 10448 Westoffice Drive Houston, Texas 77042 P 713 747 2399 F 713 748 3748 TBPE Firm Reg. #4575</p>		<p>RAHUL B. MENON 130633 LICENSED PROFESSIONAL ENGINEER</p>
<p>SURVEYED BY: LANDTECH, INC. FB NO. P-6331</p>		<p>2/20/26</p>
<p>CITY OF HOUSTON HOUSTON PUBLIC WORKS</p> <p>SHARPSTOWN AREA DETENTION POND A</p> <p>STORMWATER POLLUTION PREVENTION PLAN LAYOUT SHEET 1 OF 2</p>		
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY	
M-410040-001A-3		
DRAWING SCALE		
1"=40'		
CITY OF HOUSTON PM		
SUPUN ILANGAMUDALIGE		
SHEET NO. 33 OF 47		

NO.	DATE	REVISION	APP.



LEGEND

-  IPB-I INLET PROTECTION BARRIER STAGE I
-  IPB-II INLET PROTECTION BARRIER STAGE II
-  SCA STABILIZED CONSTRUCTION ACCESS
-  IP INTERCEPTOR STRUCTURE & INLET PROTECTION
-  SOD SODDING
-  FD-2 ROCK FILTER DAM
-  FLOW DIRECTION
-  FLOATING TURBIDITY CURTAINS
-  RFB REINFORCED FILTER FABRIC BARRIER

<p>ISANI civil \ design \ engineers 10448 Westoffice Drive Houston, Texas 77042 P 713 747 2399 F 713 748 3748 TBPE Firm Reg. #4575</p>	

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A

STORMWATER POLLUTION PREVENTION PLAN LAYOUT
SHEET 2 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-3	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE	
SHEET NO. 34 OF 47	

NOTE

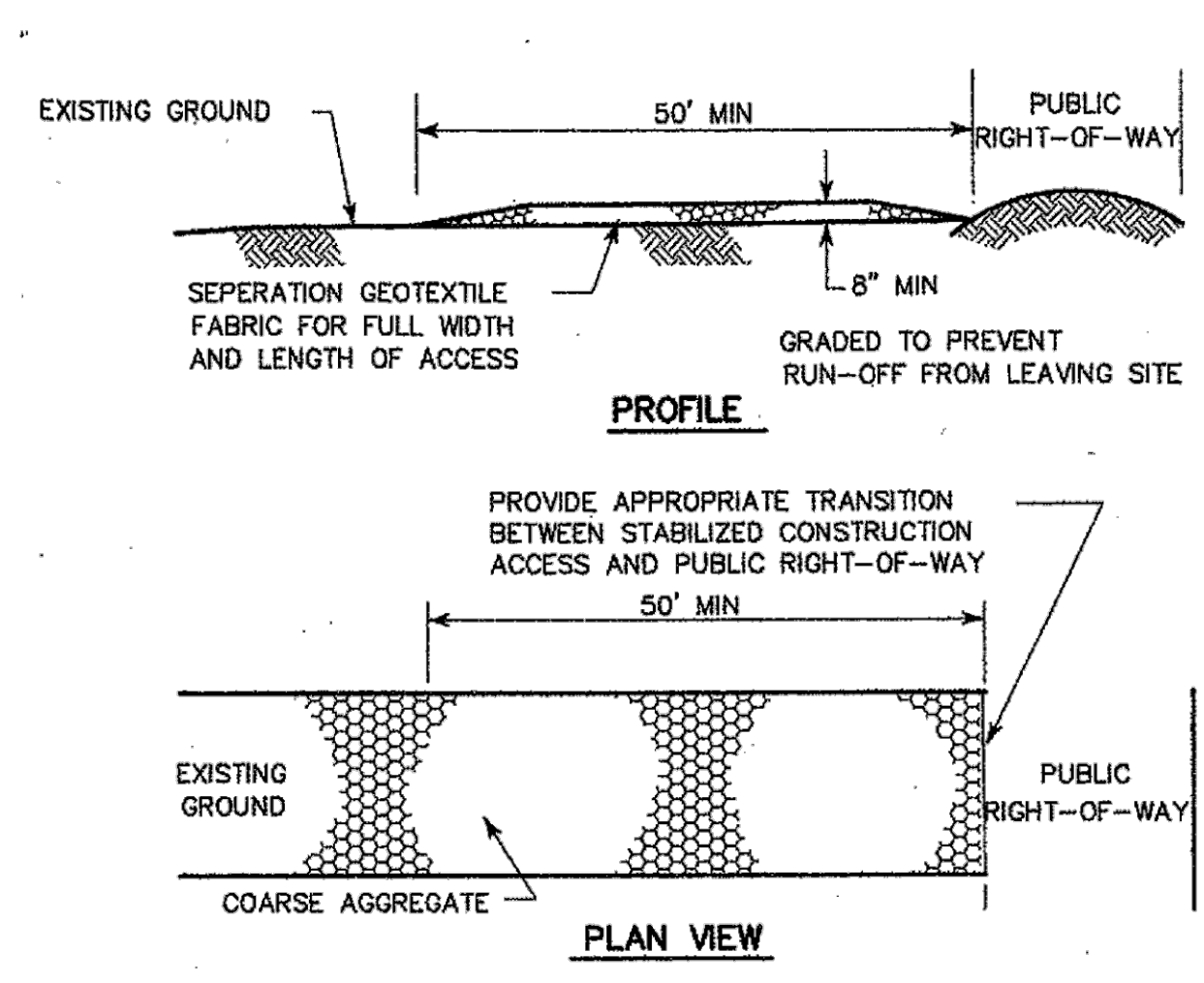
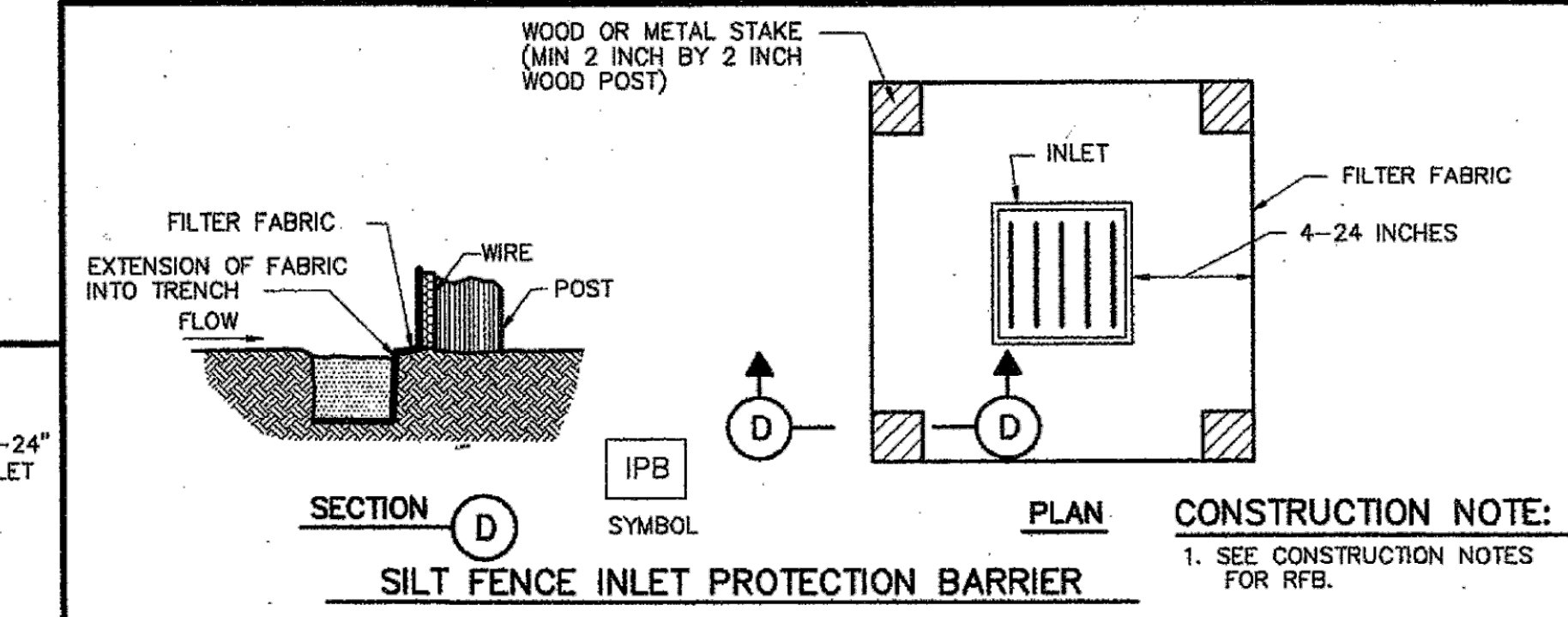
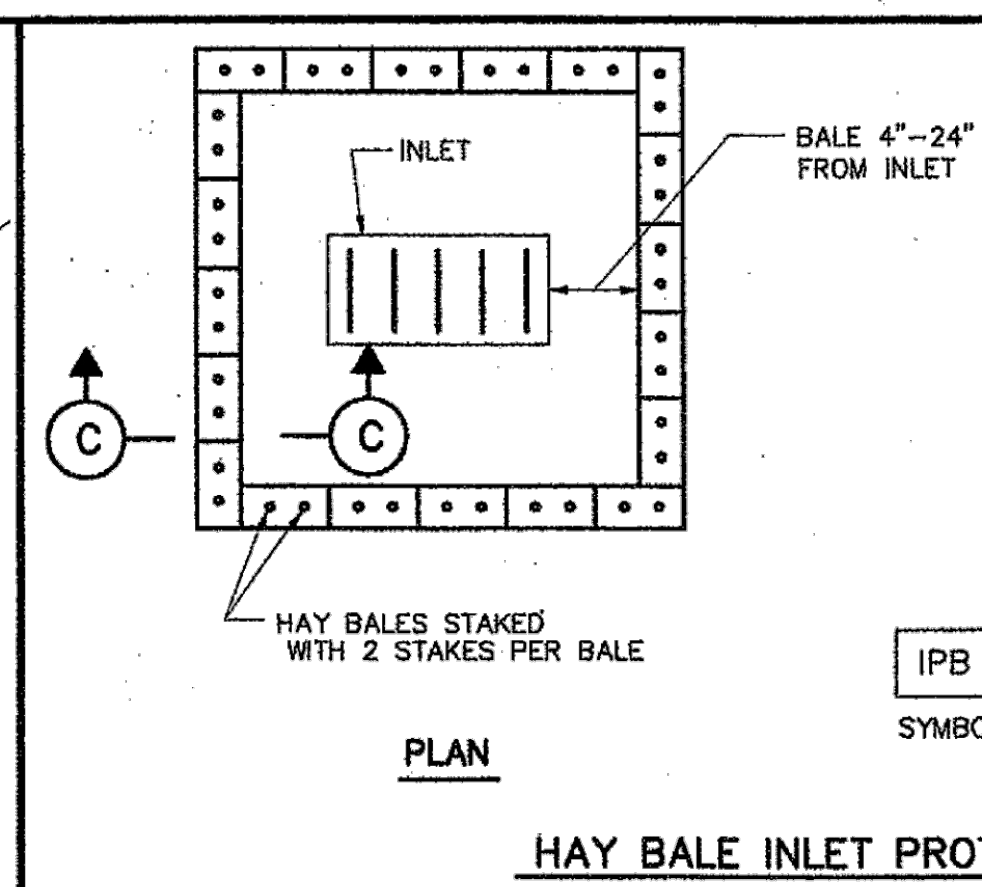
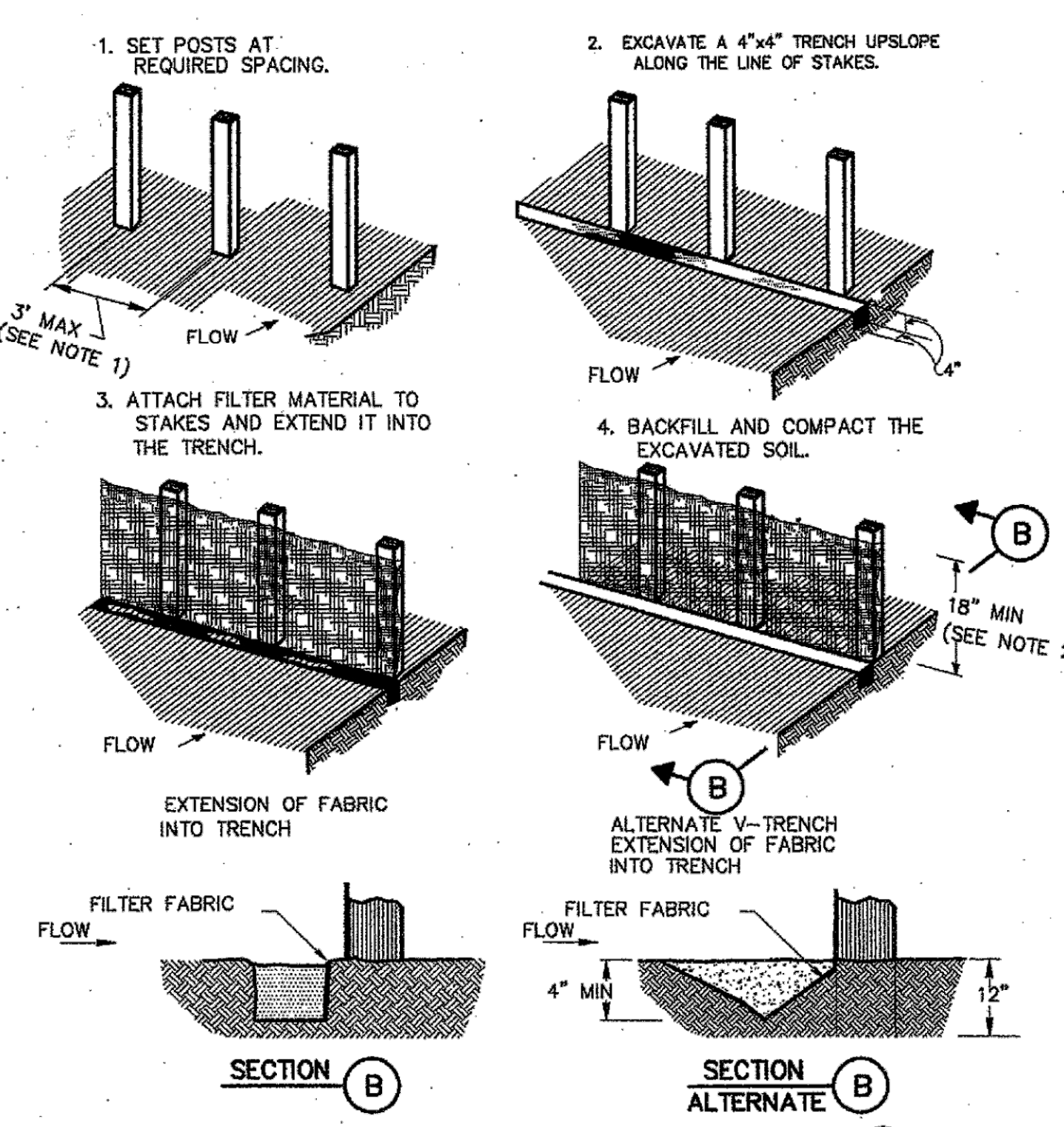
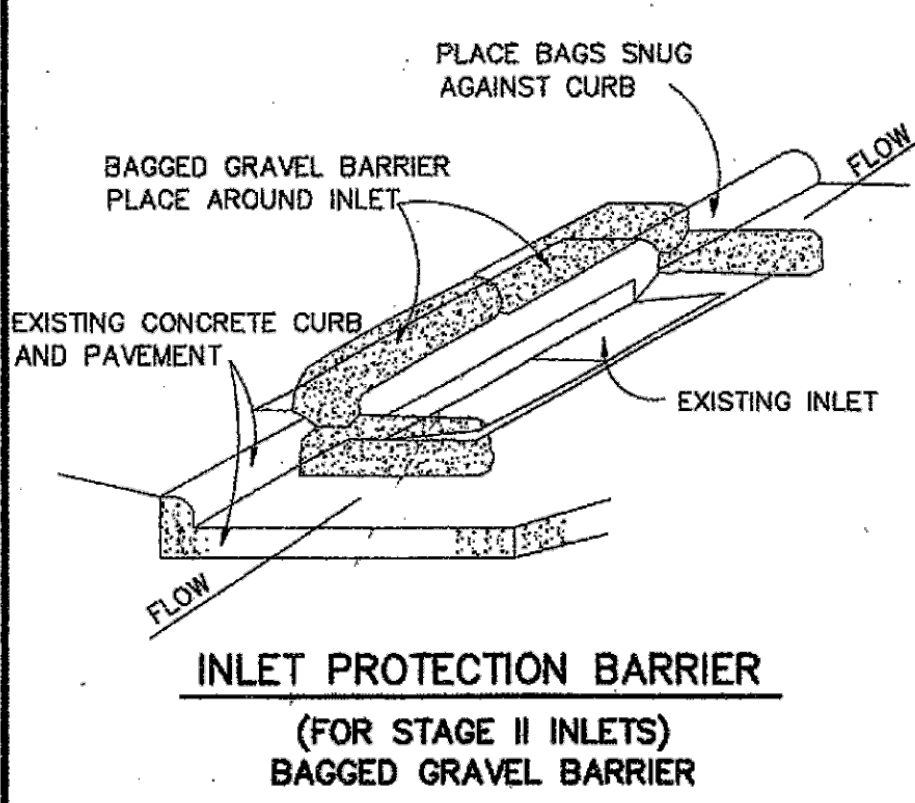
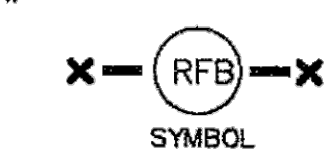
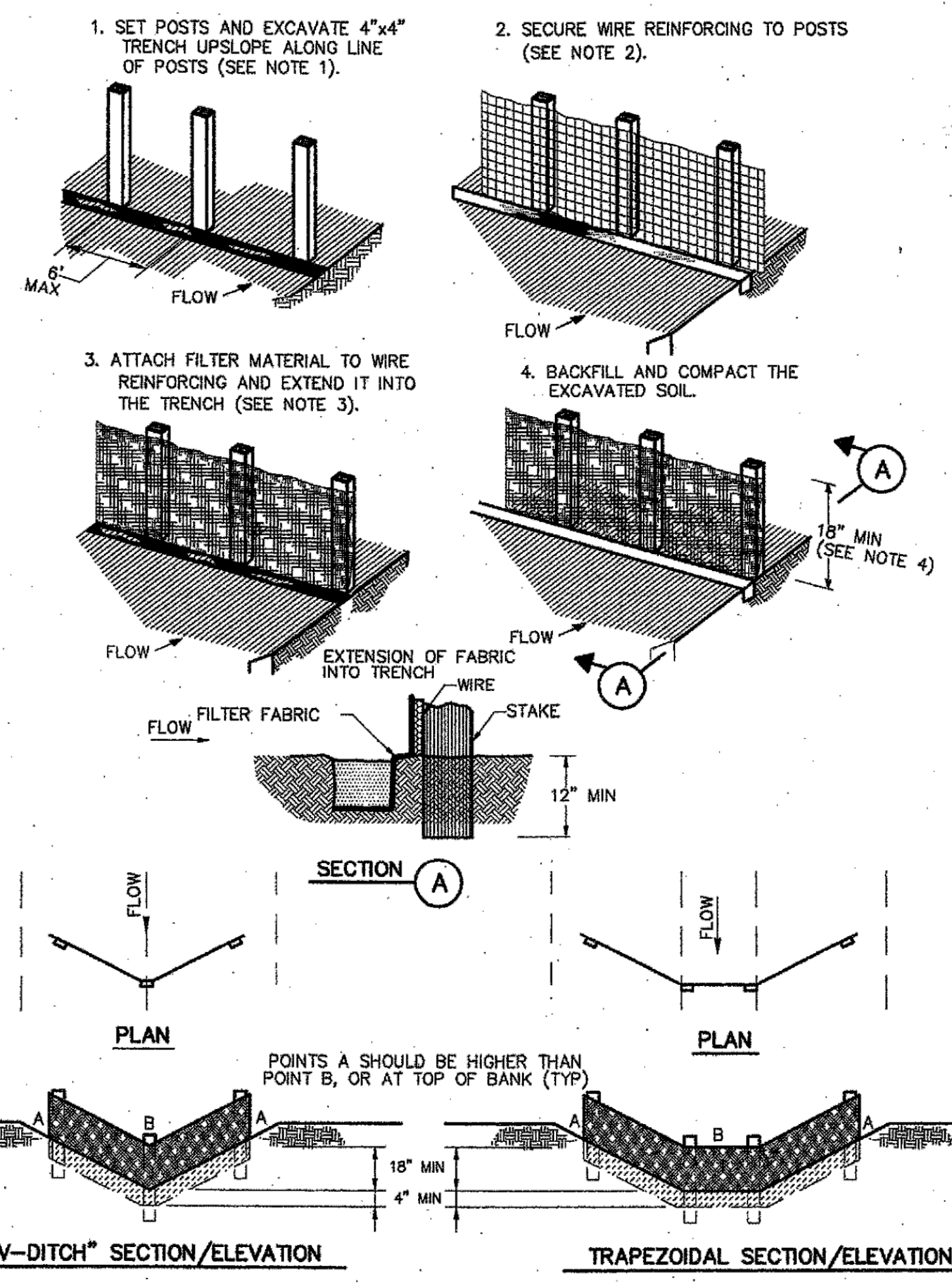
1. INSTALLATION OF STORM POLLUTION PREVENTION STRUCTURES FOR BACKSLOPE SWALES MUST BE COMPLETE BEFORE CONSTRUCTION OPERATIONS TAKE PLACE. (CLEARING AND GRUBBING OPERATIONS MAY TAKE PLACE CONCURRENTLY WITH THE INSTALLATION OF POLLUTION PREVENTION STRUCTURES)
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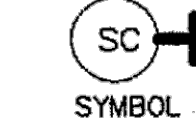
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NO.	DATE	REVISION	APP.



- 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 ACCOMMODATE 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.



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

ISANI
civil design engineers
10448 Westoffice Drive
Houston, Texas 77042
P 713 747 2399
F 713 748 3748
TBPE Firm Reg. #4575

SURVEYED BY: LANDTECH, INC.
FB NO. P-6331

STATE OF TEXAS
RAHUL B. MENON
130633
LICENSED PROFESSIONAL ENGINEER

2/20/26

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A
STORMWATER POLLUTION PREVENTION PLAN DETAILS
CITY OF HOUSTON

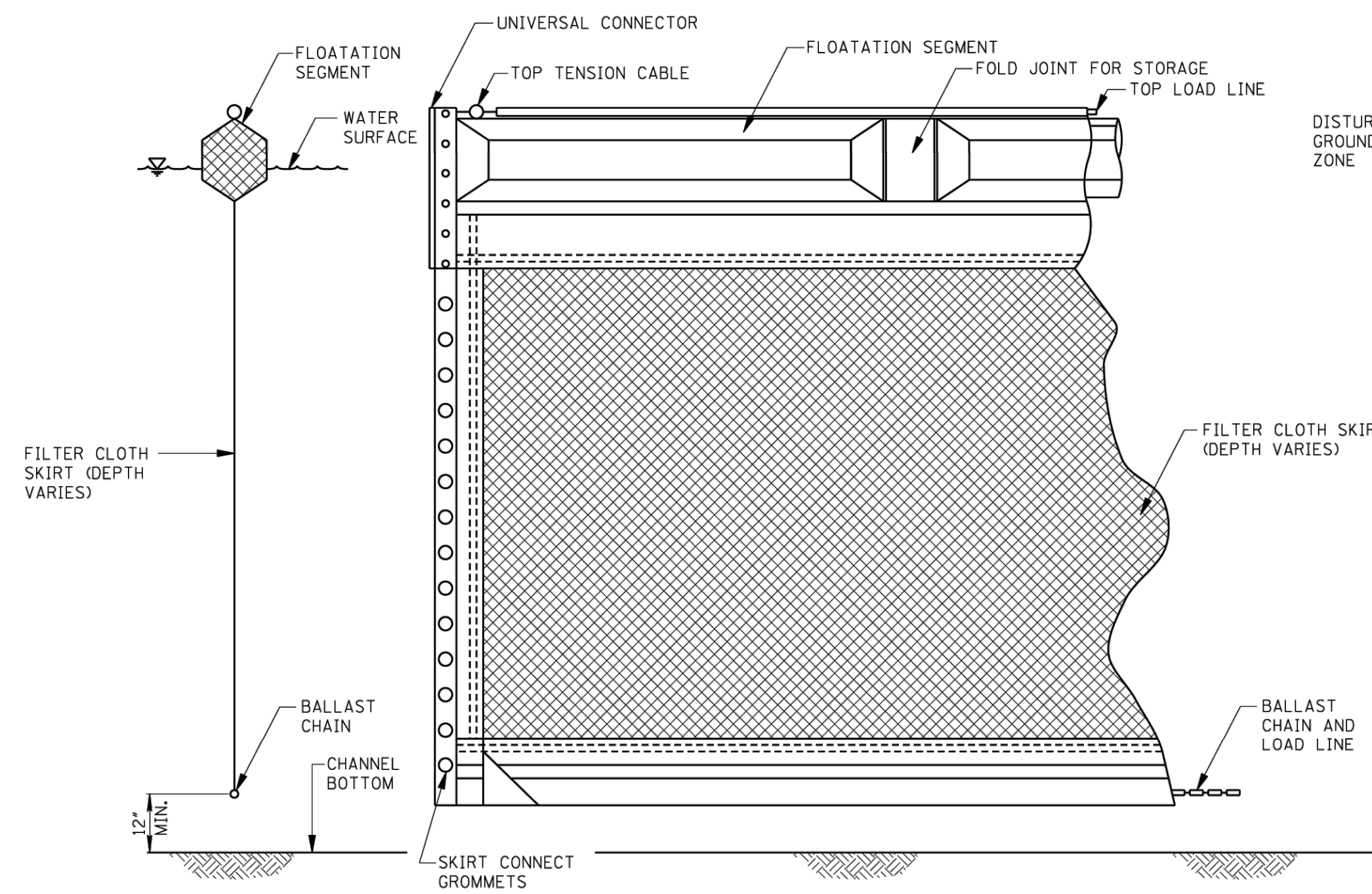
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CITY OF HOUSTON PM	
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SHEET NO. 35 OF 47	

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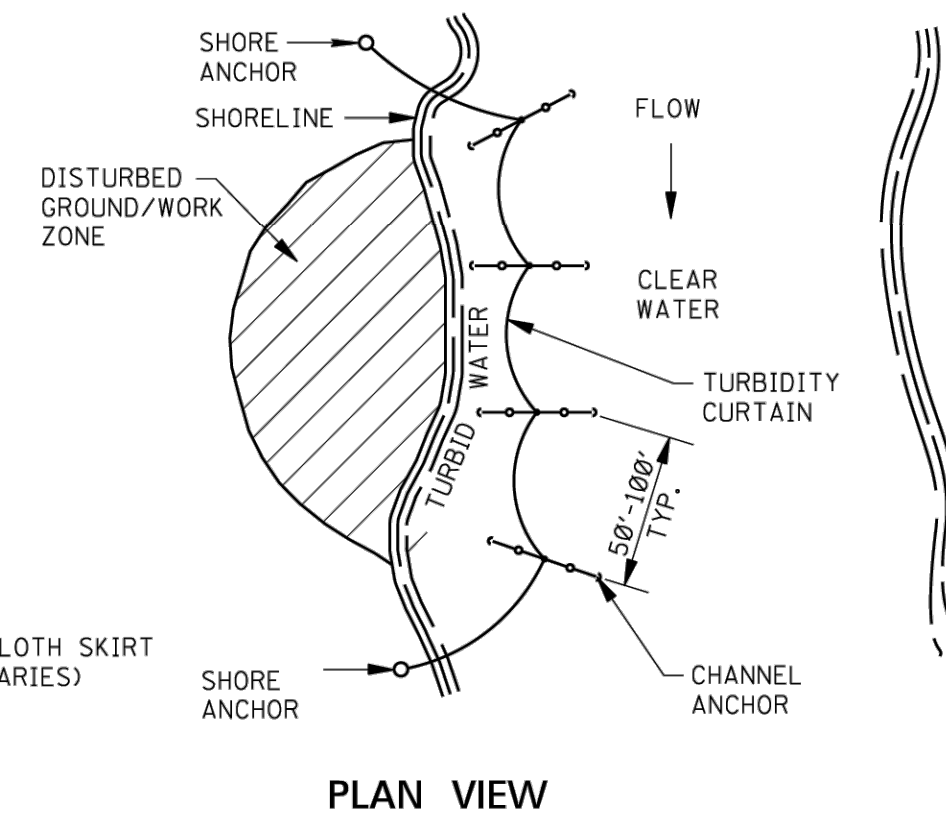
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STATE	PROJECT NO.
MISS.	

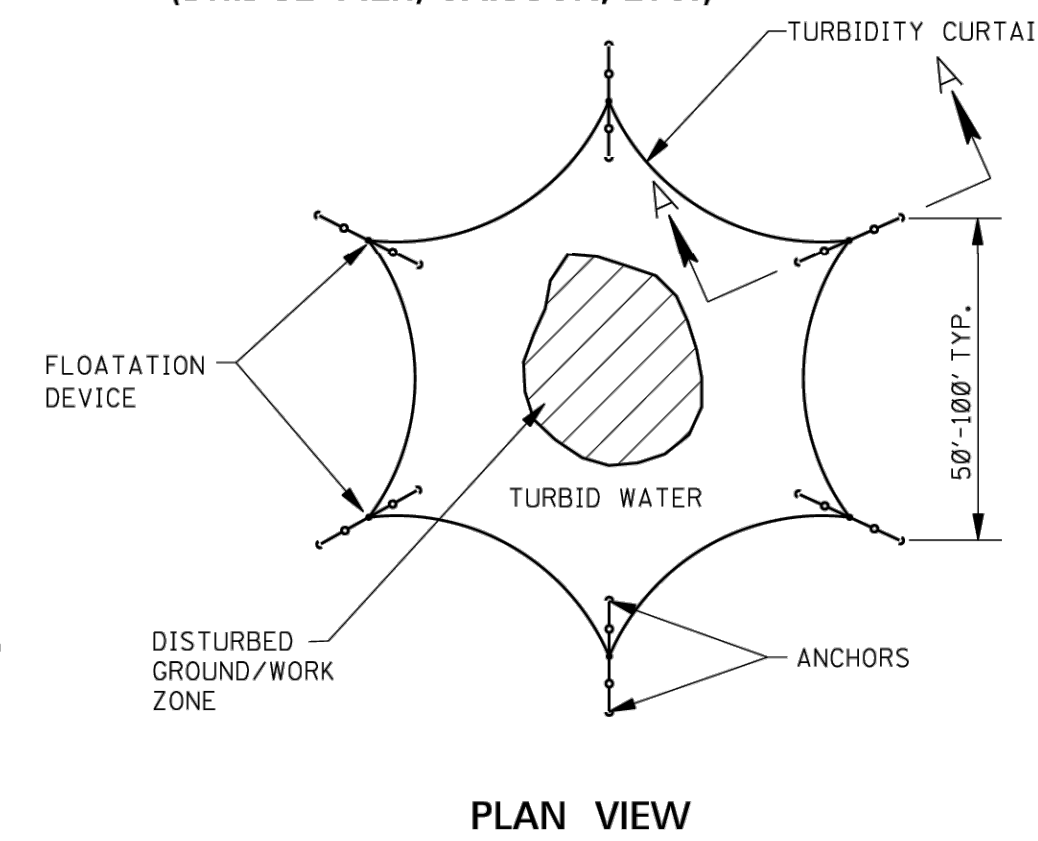
FLOATING TURBIDITY CURTAIN



TYPICAL ANCHORING PLAN FOR SHORELINE/RIVER EDGE WORK



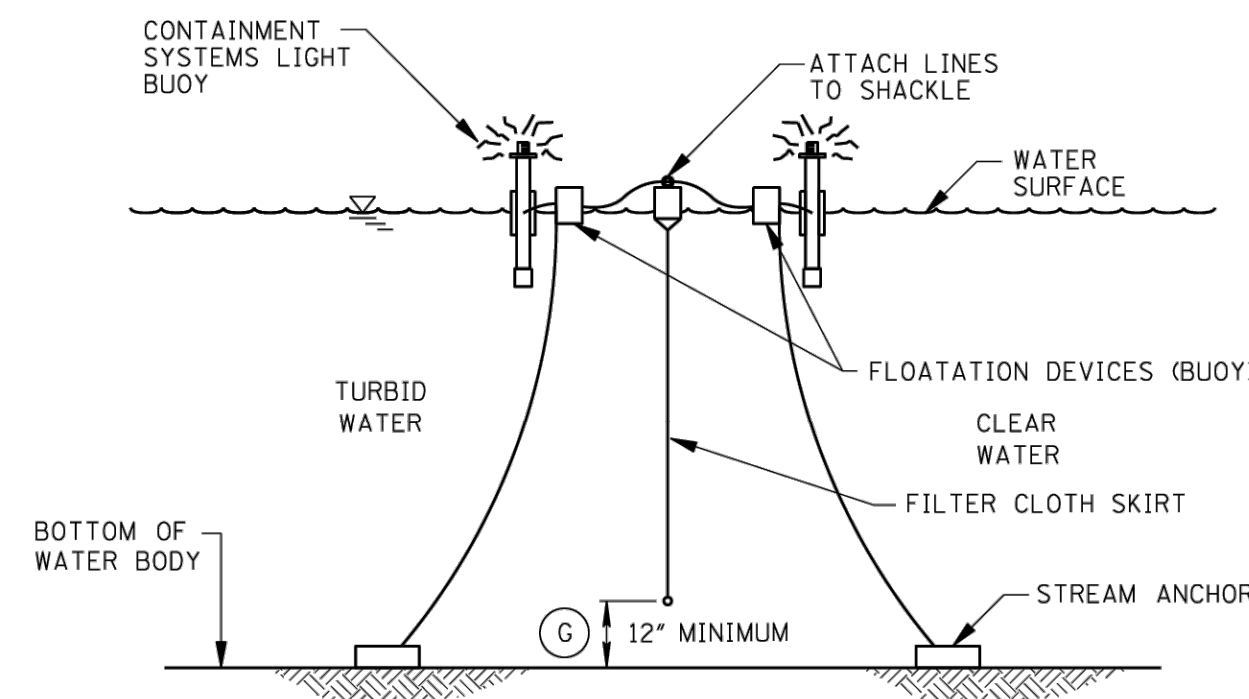
TYPICAL ANCHORING PLAN FOR MID CHANNEL WORK (BRIDGE PIER, CAISSON, ETC.)



GENERAL NOTES:

- FLOATING TURBIDITY CURTAINS (ALSO KNOWN AS TURBIDITY BARRIERS OR SILT CURTAINS) CREATE A BARRIER TO PREVENT TURBID WATER FROM ENTERING CLEAR WATER. FLOATING TURBIDITY CURTAINS SHOULD BE USED TO ISOLATE ACTIVE CONSTRUCTION AREAS WITHIN OR ADJACENT TO A BODY OF WATER TO MINIMIZE THE MIGRATION OF SILT LADEN WATER OUT OF THE CONSTRUCTION ZONE.
- TURBIDITY CURTAINS SHALL NOT BE INSTALLED PERPENDICULAR ACROSS THE MAIN FLOW OF A SIGNIFICANT BODY OF MOVING WATER.
- FLOATING TURBIDITY CURTAINS SHOULD NOT BE USED WHERE THE ANTICIPATED FLOW VELOCITIES WILL EXCEED 5 FT/SEC.
- TURBIDITY CURTAINS SHALL BE ANCHORED TO PREVENT DRIFT SHOREWARD OR DOWNSTREAM. ANCHORAGE SHALL BE INSTALLED ON BOTH SHORE AND STREAM SIDE. CURTAINS SHOULD BE INSTALLED AS CLOSE TO PROJECT SITE AS POSSIBLE. BARRIERS SHOULD BE A BRIGHT COLOR (YELLOW OR "INTERNATIONAL" ORANGE ARE RECOMMENDED) THAT WILL ATTRACT THE ATTENTION OF NEARBY BOATERS.
- SHORE ANCHORS SHALL CONSIST OF A POST WITH DEADMAN OR APPROVED EQUAL. STREAM ANCHORS SHALL BE OF SUFFICIENT SIZE TO STABILIZE THE BARRIER WITH NUMBER AND SPACING DEPENDENT ON WATERWAY VELOCITIES AND MANUFACTURER'S RECOMMENDATIONS.
- IN SHALLOW WATER (2 FEET OF DEPTH OR LESS) A TURBIDITY CURTAIN MAY BE INSTALLED ON STAKES DRIVEN INTO THE BED OF THE WATER BODY.
- FABRIC SECTIONS SHALL BE CONNECTED END TO END WITH MINIMUM 5/8" DIAMETER POLYPROPYLENE ROPE. FABRIC SHALL BE SEAMED TOGETHER IN A MANNER THAT RETAINS THE OVERALL TENSILE STRENGTH.
- DESIGN OF CURTAIN AND ANCHORAGE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. FILTER CLOTH SKIRT SHOULD BE ABLE TO WITHSTAND THE FORCES IMPARTED ON IT DUE TO THE EXPECTED WIND VELOCITY OR STREAM VELOCITY. FABRIC SHALL BE MADE OF A NON-DETERIORATING MATERIAL, SUCH AS PLASTIC OR NYLON, WHICH WILL ALLOW WATER TO PASS THROUGH WHILE STILL RETAINING SEDIMENT.
- THE TURBIDITY CURTAIN AND ADJACENT WORK AREAS SHALL NOT BE DISTURBED 12 HOURS PRIOR TO REMOVAL FROM THE WATER BODY. MAINTENANCE SHALL BE PERFORMED AS NEEDED. CONTRACTOR SHALL REMOVE THE CURTAIN AT COMPLETION OF WORK IN A MANNER THAT WILL PREVENT SILTATION OF THE WATERWAY. DURING REMOVAL, EXTREME CARE SHOULD BE TAKEN NOT TO DISTURB ANY SEDIMENT DEPOSITS.
- MAINTAIN 12" MINIMUM GAP BETWEEN SKIRT BOTTOM AND CHANNEL BOTTOM TO PREVENT ACCUMULATED SEDIMENT FROM PULLING TOP OF CURTAIN BELOW WATER SURFACE.
- IN WIND OR WAVE ACTION SITUATIONS, THE MAXIMUM DEPTH OF THE CURTAIN SHALL BE 12 FEET.
- CONCENTRATED FLOWS SHALL NOT DISCHARGE BEYOND FLOATING TURBIDITY CURTAIN. CURTAINS ARE NOT TO BE INSTALLED ACROSS FLOWING BODY OF WATER.
- WHEN INSTALLED IN A NAVIGABLE WATERWAY, BUOYS SHOULD BE LIT ACCORDING TO REGULATORY AGENCY STANDARDS.
- WHEN ESTIMATING THE LENGTH OF THE TURBIDITY CURTAIN, ALLOW 10 TO 20 PERCENT VARIANCE IN STRAIGHT LINE MEASUREMENT.
- PAYMENT FOR FLOATING TURBIDITY CURTAIN SHALL INCLUDE ALL MATERIAL AND ALL LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TURBIDITY CURTAIN.
- ONLY FLOATING TURBIDITY CURTAINS LISTED ON THE APPROVED PRODUCTS LIST MAY BE USED.

TYPICAL ANCHORING SECTION



SECTION A-A

AUTOMATIC FLASHING LIGHT BUOY (ON AT DUSK-OFF AT DAWN) 100' ON CENTER SHALL BE USED IN NAVIGABLE CHANNELS ONLY

EROSION CONTROL PLAN LEGEND: FLOATING TURBIDITY CURTAIN

MISSISSIPPI DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN DIVISION STANDARD PLAN	
FLOATING TURBIDITY CURTAIN	
DATE	ISSUE DATE: AUGUST 01, 2017
WORKING NUMBER	ECD-20
SHEET NUMBER	6120

ISANI
civil design engineers
10448 Westoffice Drive
Houston, Texas 77042
P 713 747 2399
F 713 748 3748
TBPE Firm Reg. #4575

SURVEYED BY: LANDTECH, INC.
FB NO. P-6331

STATE OF TEXAS
RAHUL B. MENON
130633
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A
STORMWATER POLLUTION PREVENTION PLAN DETAILS
FLOATING TURBIDITY CURTAIN

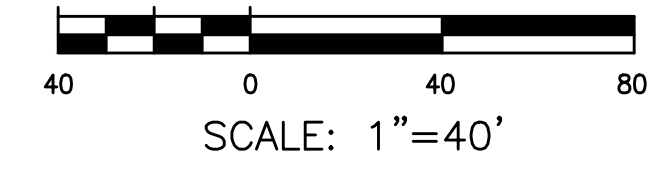
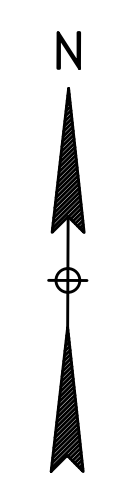
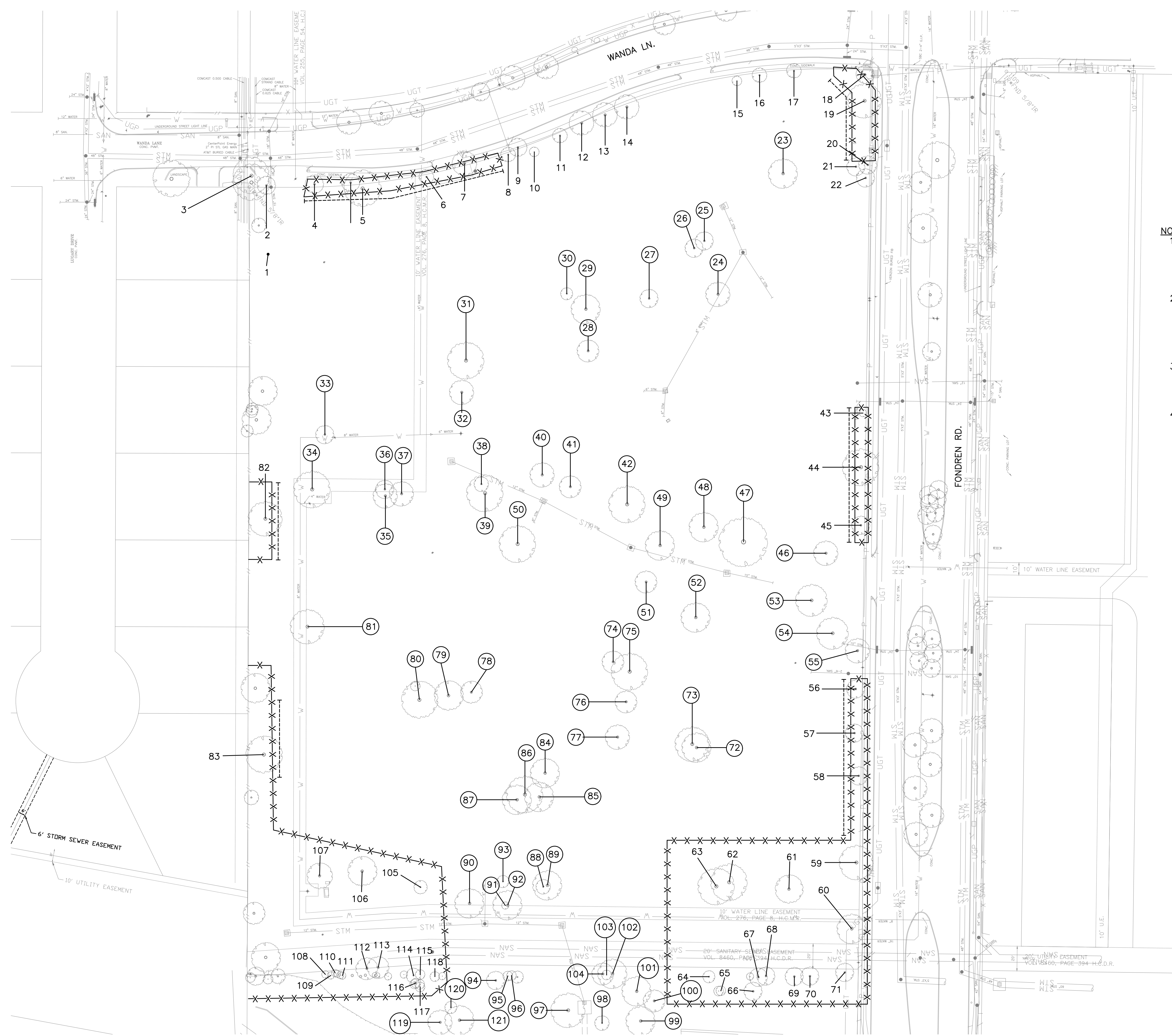
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-3	
DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE	
SHEET NO. 37 OF 47	

NO.	DATE	REVISION	APP.

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PLOT STYLE: ---

PLOTTED: 10/11/2025 7:50 AM



- NOTE:**
1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED JUNE 2025. THE PLAN CONSIDERS ALL FITTINGS, VERTICAL OFFSETS AND AREAS OF NECESSARY EXCAVATION. CHANGES MADE TO DESIGN MAY COMPROMISE THE TREE PROTECTION PLAN. REFER SPECIFICATIONS 01562 AND 02915.
 2. CN KOEHL URBAN FORESTRY, INC. HAS NOT BEEN CONTRACTED TO COMPLETE ANY TREE RISK ASSESSMENTS ON THIS PROJECT—THIS TPP INCLUDES PROTECTION MEASURES FOR SPECIES OF TREES PROTECTED BY APPLICABLE ORDINANCE ONLY. CN KOEHL URBAN FORESTRY, INC. DOES NOT GUARANTEE CONDITION OR STRUCTURAL INTEGRITY OF ANY TREE LOCATED ON OR ADJACENT TO THIS PROJECT.
 3. IN AREAS WHERE INDIVIDUAL TREES HAVE NOT BEEN TIED IN BY SURVEY, APPROXIMATE LOCATION IS INDICATED ON TPP WITH A DOT AND TREE NUMBER. ACCURACY OF REPRESENTED LOCATION IS NOT GUARANTEED BY CN KOEHL URBAN FORESTRY, INC.
 4. THE CONTRACTOR'S ARBORIST WILL MARK LOCATIONS OF TREES TO BE PLANTED AND OBTAIN APPROVAL BY CITY ENGINEER AND CITY FORESTER BEFORE PURCHASING OR EXCAVATING PLANTING HOLE OF EACH TREE.

TREE PRESERVATION PLAN LEGEND	
	TREE NUMBER/LOCATION
	TREE TO BE REMOVED
	TREE PROTECTION FENCE
	ROOT PRUNING TRENCH

C.N. Koehl
 Urban Forestry, Inc.
 210 Stone Bush Ct. • Katy, Texas 77493
 281-391-0022 ckoehl@koehlurbanforestry.com

APPROVED:

 CIVIL ENGINEERS, INC.
 15021 KATY FREEWAY, STE. 500
 HOUSTON, TX. 77094
 281-945-0069
 TX FIRM NUMBER: F-6932
 SURVEYED BY: LANDTECH, INC.
 FB NO. P-6331

CITY OF HOUSTON
 HOUSTON PUBLIC WORKS
 SHARPSTOWN AREA DETENTION
 POND A

TREE PROTECTION PLAN

SHEET 1 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
SUPUN ILANGMUDALIGE	
SHEET NO. 38 OF 47	

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PLOT STYLE: CNKoeht.ctb


PLOTTED: 10/11/2025 7:50 AM

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
1	9100 Fondren Road	12" Sugarberry	Not Protected		
2	9100 Fondren Road	13" Ligustrum	Not Protected		
3	9100 Fondren Road	16" Ligustrum	Not Protected		
4	9100 Fondren Road	19" Cedar Elm	Protected		Fence, Root prune for ditch
5	9100 Fondren Road	37" Arizona Ash	Protected		Fence, Root prune for ditch
6	9100 Fondren Road	14" Cedar Elm	Protected		Fence, Root prune for ditch
7	9100 Fondren Road	22" Cedar Elm	Protected		Fence, Root prune for ditch
8	9100 Fondren Road	8" Crepe Myrtle	Not Protected		
9	9100 Fondren Road	8" Crepe Myrtle	Not Protected		
10	9100 Fondren Road	8" Crepe Myrtle	Not Protected		
11	9100 Fondren Road	11" Crepe Myrtle	Not Protected		
12	9100 Fondren Road	11" Crepe Myrtle	Not Protected		
13	9100 Fondren Road	11" Crepe Myrtle	Not Protected		
14	9100 Fondren Road	11" Crepe Myrtle	Not Protected		
15	9100 Fondren Road	11" Crepe Myrtle	Not Protected		
16	9100 Fondren Road	11" Crepe Myrtle	Not Protected		
17	9100 Fondren Road	11" Crepe Myrtle	Not Protected		
18	9100 Fondren Road	16" Cedar Elm	Protected		Fence, Root prune for ditch
19	9100 Fondren Road	37" Live Oak	Protected	Topped by Center Point Energy	Fence, Root prune for ditch, Clearance
20	9100 Fondren Road	9" Crepe Myrtle	Not Protected		
21	9100 Fondren Road	9" Crepe Myrtle	Not Protected		
22	9100 Fondren Road	9" Crepe Myrtle	Not Protected		
23	9100 Fondren Road	22" Arizona Ash	Protected		Remove tree, No replacement required
24	9100 Fondren Road	15" Bradford Pear	Not Protected		Remove tree, No replacement required
25	9100 Fondren Road	10" Holly	Protected		Remove tree, No replacement required
26	9100 Fondren Road	9" Holly	Protected	Dead	Remove tree, No replacement required
27	9100 Fondren Road	8" Arizona Ash	Not Protected		Remove tree, No replacement required
28	9100 Fondren Road	21" Cedar Elm	Protected		Remove tree, No replacement required
29	9100 Fondren Road	25" Arizona Ash	Not Protected	80% Dieback	Remove tree, No replacement required
30	9100 Fondren Road	12" Arizona Ash	Not Protected	Dead	Remove tree, No replacement required
31	9100 Fondren Road	39" Arizona Ash	Protected		Remove tree, No replacement required
32	9100 Fondren Road	24" Arizona Ash	Protected		Remove tree, No replacement required
33	9100 Fondren Road	21" Cedar Elm	Protected		Remove tree, No replacement required
34	9100 Fondren Road	34" Live Oak	Protected		Remove tree, No replacement required
35	9100 Fondren Road	14" Crepe Myrtle	Not Protected		Remove tree, No replacement required
36	9100 Fondren Road	14" Crepe Myrtle	Not Protected		Remove tree, No replacement required
37	9100 Fondren Road	14" Crepe Myrtle	Not Protected		Remove tree, No replacement required
38	9100 Fondren Road	17" Water Oak	Protected		Remove tree, No replacement required
39	9100 Fondren Road	28" Live Oak	Protected		Remove tree, No replacement required
40	9100 Fondren Road	21" Arizona Ash	Protected		Remove tree, No replacement required
41	9100 Fondren Road	13" Cedar Elm	Protected		Remove tree, No replacement required
42	9100 Fondren Road	31" Live Oak	Protected		Remove tree, No replacement required
43	9100 Fondren Road	9" Live Oak	Protected		Fence, Root prune for ditch, Clearance
44	9100 Fondren Road	26" Live Oak	Protected		Fence, Root prune for ditch
45	9100 Fondren Road	18" Live Oak	Protected		Fence, Root prune for ditch
46	9100 Fondren Road	21" Live Oak	Protected		Remove tree, No replacement required
47	9100 Fondren Road	39" Live Oak	Protected		Remove tree, No replacement required
48	9100 Fondren Road	21" Arizona Ash	Protected		Remove tree, No replacement required
49	9100 Fondren Road	28" Live Oak	Protected		Remove tree, No replacement required
50	9100 Fondren Road	43" Live Oak	Protected		Remove tree, No replacement required
51	9100 Fondren Road	38" Live Oak	Protected		Remove tree, No replacement required
52	9100 Fondren Road	27" Live Oak	Protected		Remove tree, No replacement required
53	9100 Fondren Road	34" Live Oak	Protected		Remove tree, No replacement required
54	9100 Fondren Road	38" Cottonwood	Protected	Dead	Remove tree, No replacement required
55	9100 Fondren Road	24" Live Oak	Protected	Remove for storm	Remove tree, No replacement required
56	9100 Fondren Road	19" Live Oak	Protected		Fence, Root prune for ditch, Clearance
57	9100 Fondren Road	22" Live Oak	Protected		Fence, Root prune for ditch, Clearance
58	9100 Fondren Road	23" Live Oak	Protected		Fence, Root prune for ditch, Clearance
59	9100 Fondren Road	25" Live Oak	Protected		Fence
60	9100 Fondren Road	26" Live Oak	Protected		Fence

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
61	9100 Fondren Road	23" Live Oak	Protected		Fence
62	9100 Fondren Road	28" Arizona Ash	Protected	90% Dieback	Fence
63	9100 Fondren Road	28" Arizona Ash	Protected	90% Dieback	Fence
64	9100 Fondren Road	12" Sugarberry	Not Protected		Fence
65	9100 Fondren Road	9" Sugarberry	Not Protected		Fence
66	9100 Fondren Road	15" Sugarberry	Not Protected		Fence
67	9100 Fondren Road	17" Sugarberry	Not Protected		Fence
68	9100 Fondren Road	18" Sugarberry	Not Protected		Fence
69	9100 Fondren Road	14" Sugarberry	Not Protected		Fence
70	9100 Fondren Road	16" Sugarberry	Not Protected		Fence
71	9100 Fondren Road	15" Sugarberry	Not Protected		Fence
72	9100 Fondren Road	20" Green Ash	Protected		Remove tree, No replacement required
73	9100 Fondren Road	25" Green Ash	Protected		Remove tree, No replacement required
74	9100 Fondren Road	25" Arizona Ash	Protected	Dead	Remove tree, No replacement required
75	9100 Fondren Road	34" Arizona Ash	Protected		Remove tree, No replacement required
76	9100 Fondren Road	23" Arizona Ash	Protected		Remove tree, No replacement required
77	9100 Fondren Road	25" Green Ash	Protected		Remove tree, No replacement required
78	9100 Fondren Road	24" Arizona Ash	Protected	Dead	Remove tree, No replacement required
79	9100 Fondren Road	28" Arizona Ash	Protected		Remove tree, No replacement required
80	9100 Fondren Road	32" Arizona Ash	Protected		Remove tree, No replacement required
81	9100 Fondren Road	33" Live Oak	Protected		Remove tree, No replacement required
82	9100 Fondren Road	27" Live Oak	Protected		Fence, Root prune for ditch, Clearance
83	9100 Fondren Road	25" Live Oak	Protected		Fence, Root prune for ditch, Clearance
84	9100 Fondren Road	23" Arizona Ash	Protected		Remove tree, No replacement required
85	9100 Fondren Road	31" Arizona Ash	Protected		Remove tree, No replacement required
86	9100 Fondren Road	35" Arizona Ash	Protected		Remove tree, No replacement required
87	9100 Fondren Road	22" Arizona Ash	Protected		Remove tree, No replacement required
88	9100 Fondren Road	14" Cedar Elm	Protected		Remove tree, No replacement required
89	9100 Fondren Road	31" Willow Oak	Protected		Remove tree, No replacement required
90	9100 Fondren Road	22" Live Oak	Protected		Remove tree, No replacement required
91	9100 Fondren Road	9" Cedar Elm	Protected		Remove tree, No replacement required
92	9100 Fondren Road	25" Live Oak	Protected		Remove tree, No replacement required
93	9100 Fondren Road	11" Cedar Elm	Protected		Remove tree, No replacement required
94	9100 Fondren Road	16" Sugarberry	Not Protected		Remove tree, No replacement required
95	9100 Fondren Road	13" Sugarberry	Not Protected		Remove tree, No replacement required
96	9100 Fondren Road	11" Sugarberry	Not Protected		Remove tree, No replacement required
97	9100 Fondren Road	18" Sugarberry	Not Protected		Remove tree, No replacement required
98	9100 Fondren Road	9" Sugarberry	Not Protected		Remove tree, No replacement required
99	9100 Fondren Road	17" Arizona Ash	Not Protected		Remove tree, No replacement required
100	9100 Fondren Road	14" Arizona Ash	Not Protected		Remove tree, No replacement required
101	9100 Fondren Road	13" Arizona Ash	Not Protected		Remove tree, No replacement required
102	9100 Fondren Road	18" Arizona Ash	Not Protected		Remove tree, No replacement required
103	9100 Fondren Road	12" Sugarberry	Not Protected		Remove tree, No replacement required
104	9100 Fondren Road	11" Sugarberry	Not Protected		Remove tree, No replacement required
105	9100 Fondren Road	11" Crepe Myrtle	Not Protected		Fence
106	9100 Fondren Road	16" Arizona Ash	Not Protected		Fence
107	9100 Fondren Road	21" Live Oak	Protected		Fence
108	9100 Fondren Road	7" Sugarberry	Not Protected		Fence
109	9100 Fondren Road	6" Sugarberry	Not Protected		Fence
110	9100 Fondren Road	13" Arizona Ash	Not Protected		Fence
111	9100 Fondren Road	13" Arizona Ash	Not Protected		Fence
112	9100 Fondren Road	11" Arizona Ash	Not Protected		Fence
113	9100 Fondren Road	15" Arizona Ash	Not Protected		Fence
114	9100 Fondren Road	10" Arizona Ash	Not Protected		Fence
115	9100 Fondren Road	7" Arizona Ash	Not Protected		Fence
116	9100 Fondren Road	8" Arizona Ash	Not Protected		Fence
117	9100 Fondren Road	6" Arizona Ash	Not Protected		Fence
118	9100 Fondren Road	5" Arizona Ash	Not Protected		Fence
119	9100 Fondren Road	17" Arizona Ash	Not Protected		Remove tree, No replacement required
120	9100 Fondren Road	9" Arizona Ash	Not Protected		Remove tree, No replacement required
121	9100 Fondren Road	11" Arizona Ash	Not Protected		Remove tree, No replacement required

MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO. DATE	REVISION	APP.

C.N. Koehl
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281-391-0022 ckoehl@koehlurbanforestry.com

APPROVED:

15021 KATY FREEWAY, STE. 500
HOUSTON, TX. 77094
281-945-0069
TX FIRM NUMBER: F-6932
SURVEYED BY: LANDECH, INC.
FB NO. P-6331

CITY OF HOUSTON
HOUSTON PUBLIC WORKS
SHARPSTOWN AREA DETENTION
POND A

TREE PROTECTION PLAN
SHEET 2 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
SUPUN ILANGMUDALIGE	
SHEET NO. 39 OF 47	

PLOTTED: 10/11/2025 7:50 AM

PLOT STYLE: CNKoechl.ctb

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Tree Removal List			
Tree No.	Location	Description	Replacement requirement
23	9100 Fondren Road	22" Arizona Ash	0
24	9100 Fondren Road	15" Bradford Pear	0
25	9100 Fondren Road	10" Holly	0
26	9100 Fondren Road	9" Holly	0
27	9100 Fondren Road	8" Arizona Ash	0
28	9100 Fondren Road	21" Cedar Elm	0
29	9100 Fondren Road	25" Arizona Ash	0
30	9100 Fondren Road	12" Arizona Ash	0
31	9100 Fondren Road	39" Arizona Ash	0
32	9100 Fondren Road	24" Arizona Ash	0
33	9100 Fondren Road	21" Cedar Elm	0
34	9100 Fondren Road	34" Live Oak	0
35	9100 Fondren Road	14" Crepe Myrtle	0
36	9100 Fondren Road	14" Crepe Myrtle	0
37	9100 Fondren Road	14" Crepe Myrtle	0
38	9100 Fondren Road	17" Water Oak	0
39	9100 Fondren Road	28" Live Oak	0
40	9100 Fondren Road	21" Arizona Ash	0
41	9100 Fondren Road	13" Cedar Elm	0
42	9100 Fondren Road	31" Live Oak	0
46	9100 Fondren Road	21" Live Oak	0
47	9100 Fondren Road	39" Live Oak	0
48	9100 Fondren Road	21" Arizona Ash	0
49	9100 Fondren Road	28" Live Oak	0
50	9100 Fondren Road	43" Live Oak	0
51	9100 Fondren Road	38" Live Oak	0
52	9100 Fondren Road	27" Live Oak	0
53	9100 Fondren Road	34" Live Oak	0
54	9100 Fondren Road	38" Cottonwood	0
55	9100 Fondren Road	24" Live Oak	0
72	9100 Fondren Road	20" Green Ash	0
73	9100 Fondren Road	25" Green Ash	0
74	9100 Fondren Road	25" Arizona Ash	0
75	9100 Fondren Road	34" Arizona Ash	0
76	9100 Fondren Road	23" Arizona Ash	0
77	9100 Fondren Road	25" Green Ash	0
78	9100 Fondren Road	24" Arizona Ash	0
79	9100 Fondren Road	28" Arizona Ash	0
80	9100 Fondren Road	32" Arizona Ash	0
81	9100 Fondren Road	33" Live Oak	0
84	9100 Fondren Road	23" Arizona Ash	0
85	9100 Fondren Road	31" Arizona Ash	0
86	9100 Fondren Road	35" Arizona Ash	0
87	9100 Fondren Road	22" Arizona Ash	0
88	9100 Fondren Road	14" Cedar Elm	0
89	9100 Fondren Road	31" Willow Oak	0
90	9100 Fondren Road	22" Live Oak	0
91	9100 Fondren Road	9" Cedar Elm	0
92	9100 Fondren Road	25" Live Oak	0
93	9100 Fondren Road	11" Cedar Elm	0
94	9100 Fondren Road	16" Sugarberry	0
95	9100 Fondren Road	13" Sugarberry	0
96	9100 Fondren Road	11" Sugarberry	0
97	9100 Fondren Road	18" Sugarberry	0
98	9100 Fondren Road	9" Sugarberry	0
99	9100 Fondren Road	17" Arizona Ash	0
100	9100 Fondren Road	14" Arizona Ash	0
101	9100 Fondren Road	13" Arizona Ash	0
102	9100 Fondren Road	18" Arizona Ash	0
103	9100 Fondren Road	12" Sugarberry	0
104	9100 Fondren Road	11" Sugarberry	0
119	9100 Fondren Road	17" Arizona Ash	0
120	9100 Fondren Road	9" Arizona Ash	0
121	9100 Fondren Road	11" Arizona Ash	0
TOTAL REPLACEMENT INCHES REQUIRED			0

Tree Replacement List			
Quantity	Caliper Size	Species	Container/Tree Spade size
TOTAL REPLACEMENT INCHES INCLUDED IN PLAN			0

NOTE: Tree replacement locations are not shown on plans. Contractor must coordinate with City of Houston Urban Forestry and Houston Public Works prior to PURCHASING trees. This project may not have adequate room for all required replacement trees without creating regulatory sign or traffic/pedestrian visibility issues. Number of trees and planting locations will be determined by City of Houston Urban Forestry in construction phase. Trees that are planted are to be maintained and watered for 2 years following planting per standard spec 02915. Timing of planting may be delayed in periods of drought with mandatory water restrictions in place-timing to be coordinated with City of Houston Urban Forestry. Trees in esplanade groupings to be planted in common bed with 4" of hardwood mulch between trees.

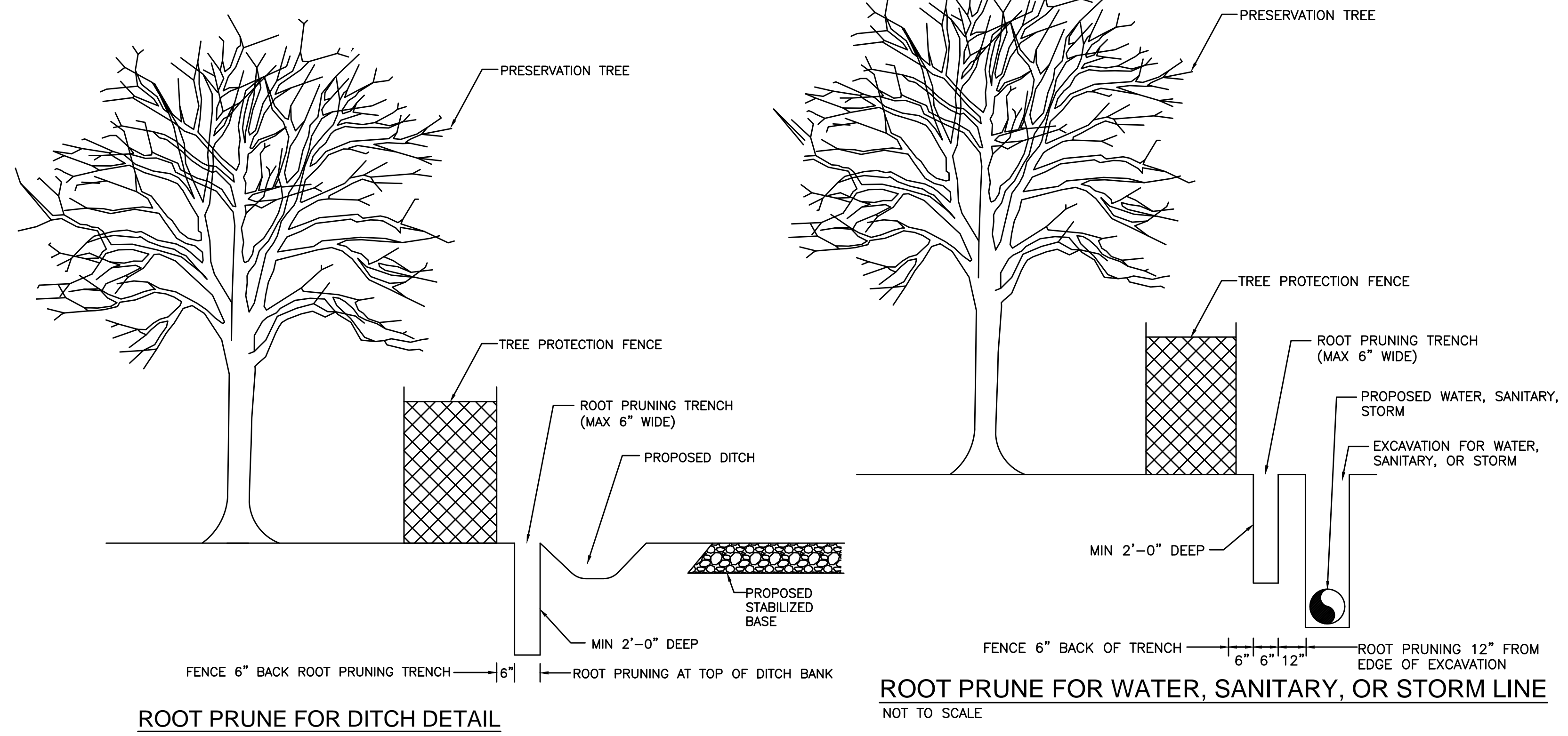
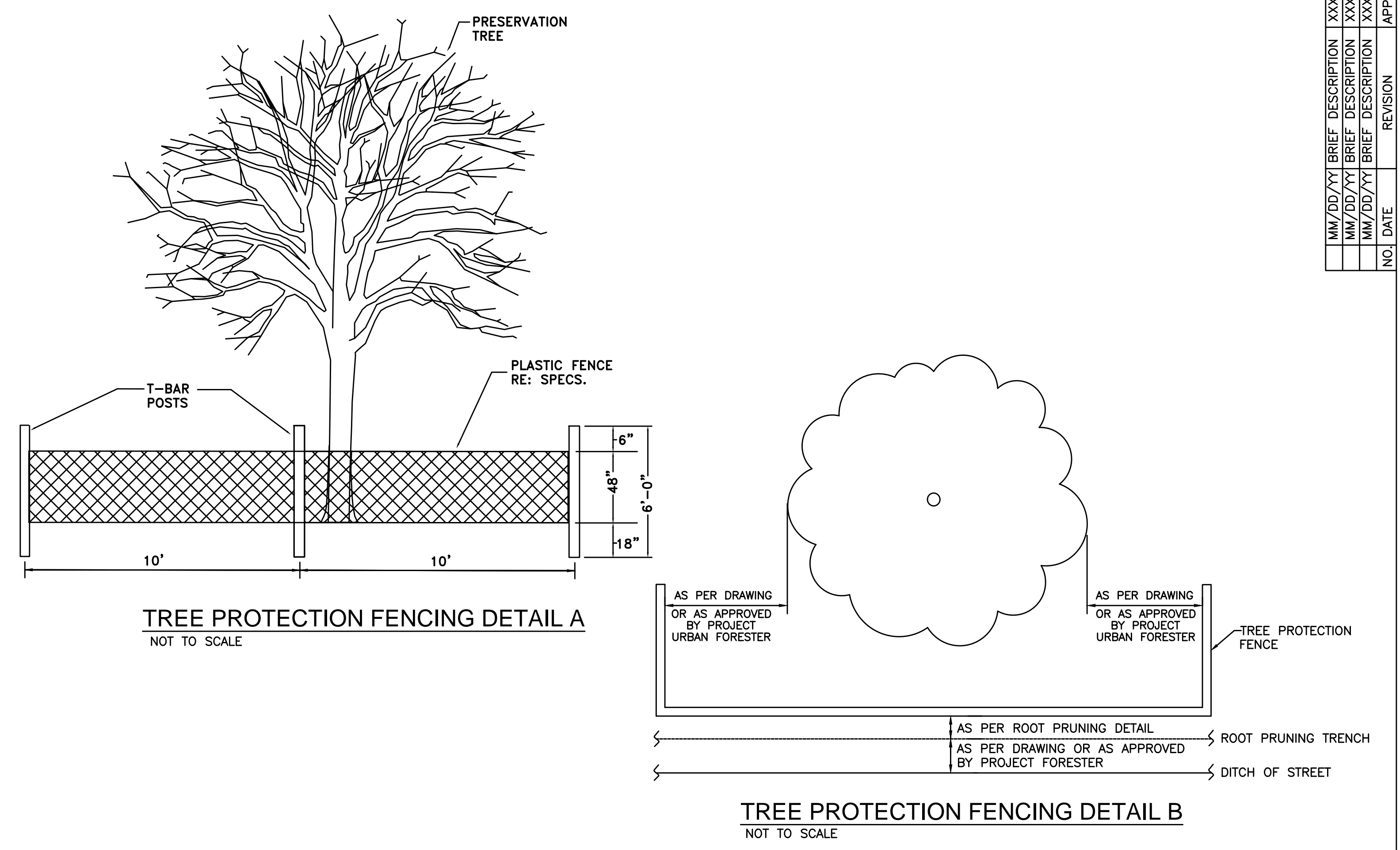
Trees are to be maintained and watered for 2 years following planting per standard spec 02915. Timing of planting may be delayed in periods of drought with mandatory water restrictions in place-timing to be coordinated with City of Houston Forestry.

Tree replacement locations shall comply with Houston Public Works spec sections 02811, 02911, 02912, 02915, 02921 & 02922. In general trees along sides of street right of ways shall be no closer than 3' to back of curb or 20' from another tree. Trees in medians shall be no closer than 6' back of curb, 75' from an intersection, 50' to a median cut, or 20' from another tree. Contractor to coordinate locations with City Forestry and HPW prior to PURCHASING trees. All replacement trees called out on plans may not be planted on project relative to coordination with listed parties.

Cash Allowance Due Parks from HPW for Balance of Mitigation Not Planted on Project			
	Required Mitigation total	Mitigation rate/inch	
0-5.99"		297.98	\$ -
6-11.99"		496.64	\$ -
12" +		662.19	\$ -
TOTAL REQUIRED MITIGATION FEE			\$ -

Arboriculturally Significant Tree List		
Tree No.	Location	Description
5	9100 Fondren Road	37" Arizona Ash
19	9100 Fondren Road	37" Live Oak
29	9100 Fondren Road	25" Arizona Ash
31	9100 Fondren Road	39" Arizona Ash
32	9100 Fondren Road	24" Arizona Ash
34	9100 Fondren Road	34" Live Oak
39	9100 Fondren Road	28" Live Oak
42	9100 Fondren Road	31" Live Oak
44	9100 Fondren Road	26" Live Oak
47	9100 Fondren Road	35" Live Oak
49	9100 Fondren Road	28" Live Oak
50	9100 Fondren Road	43" Live Oak
51	9100 Fondren Road	38" Live Oak
52	9100 Fondren Road	27" Live Oak
53	9100 Fondren Road	34" Live Oak
54	9100 Fondren Road	38" Cottonwood
55	9100 Fondren Road	24" Live Oak
59	9100 Fondren Road	25" Live Oak
60	9100 Fondren Road	26" Live Oak
62	9100 Fondren Road	28" Arizona Ash
63	9100 Fondren Road	28" Arizona Ash
73	9100 Fondren Road	25" Green Ash
74	9100 Fondren Road	25" Arizona Ash
75	9100 Fondren Road	34" Arizona Ash
77	9100 Fondren Road	25" Green Ash
78	9100 Fondren Road	24" Arizona Ash
79	9100 Fondren Road	28" Arizona Ash
80	9100 Fondren Road	32" Arizona Ash
81	9100 Fondren Road	33" Live Oak
82	9100 Fondren Road	27" Live Oak
83	9100 Fondren Road	25" Live Oak
85	9100 Fondren Road	31" Arizona Ash
86	9100 Fondren Road	35" Arizona Ash
89	9100 Fondren Road	31" Willow Oak
92	9100 Fondren Road	25" Live Oak

Trees Identified by City of Houston Forestry/Parks & Recreation Department as Arboriculturally Significant are identified here and/or in treatment schedule included on TPP sheets. Arboriculturally Significant trees are to be pruned under direct supervision of City of Houston Forestry. Minimal pruning will be allowed for construction equipment access, and in some cases no pruning will be allowed. Contractor must review conditions around and/or under the canopy of Arboriculturally Significant trees and consider restrictions when preparing cost estimate and planning construction equipment that will be necessary to accomplish design installation with minimal to no tree pruning.



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281-391-0022 ckoehl@koehlurbanforestry.com

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A

TREE PROTECTION PLAN

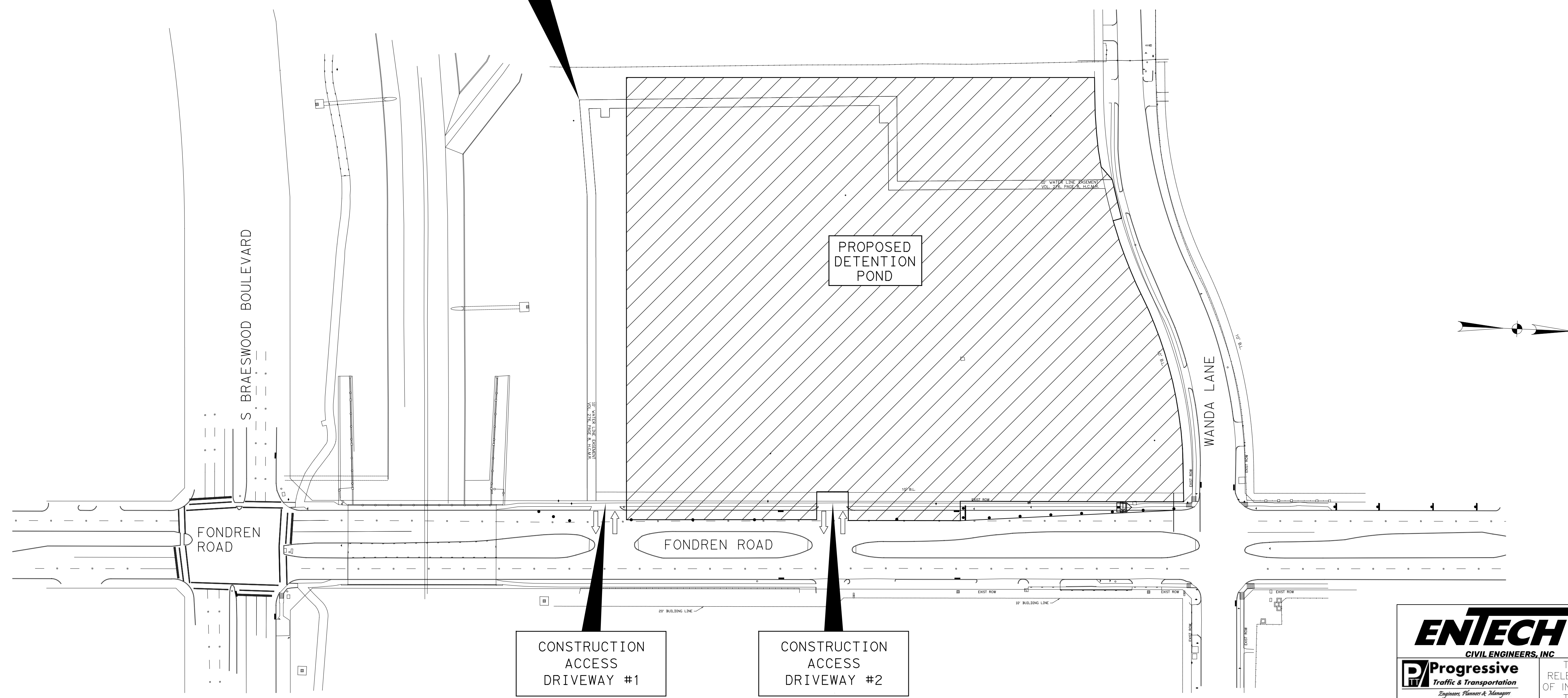
SHEET 3 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
SUPUN ILANGMUDALIGE	
SHEET NO. 40 OF 47	

MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO.	DATE	REVISION
		APP.

MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO.	DATE	REVISION
		APP.

**DRAINAGE IMPROVEMENT AREA FONDREN ROAD DETENTION POND
TRAFFIC CONTROL PLAN (TCP) OVERALL VIEW**



TCP GENERAL NOTES:

1. THE CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE CURRENT TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
2. NO CONSTRUCTION IS ALLOWED BETWEEN 4PM AND 9AM MONDAY THROUGH SUNDAY.
3. THE CONTRACTOR SHALL MAINTAIN ALL BUSINESS & RESIDENTIAL DRIVEWAYS, TRAFFIC CONTROL DEVICES, STREET NAME SIGNS, STOP SIGNS, WARNING SIGNS, TEMPORARY AND EXISTING SIGNS DURING THE ENTIRE PERIOD OF CONSTRUCTION. EXISTING SIGN OR STRIPING IN CONFLICT WITH TEMPORARY TRAFFIC CONTROL SIGNS SHALL BE COVERED OR REMOVED.
4. CONTRACTOR TO ENSURE PROPER DRAINAGE TO EXISTING DRAINAGE DITCHES AT ALL TIMES.
5. WHERE PROJECT REQUIREMENTS ARE NOT FULLY SATISFIED BY THE DETAILS SHOWN HEREIN, THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (THE MOST RECENT EDITION) SHALL GOVERN.
6. ALL TEMPORARY SIGNS AND PAVEMENT MARKINGS INSTALLED DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE T.M.U.T.C.D., UNLESS SPECIFICALLY DIRECTED BY THE CITY AUTHORIZED OFFICIAL/ENGINEER.
7. THE CONTRACTOR SHALL PROVIDE CERTIFIED FLAGGERS OR AN OFF DUTY POLICE OFFICER TO DIRECT TRAFFIC. THIS DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR TAKING ANY ADDITIONAL MEASURES OR PROVIDING PERSONNEL NECESSARY TO PROTECT THE WORK AND THE PUBLIC.

8. CONTRACTOR SHALL ENSURE THAT ALL BARRICADES, SIGNS, CHANNELIZING DEVICES, WARNING LIGHTS, AND TRAFFIC CONTROL DEVICES ARE MAINTAINED IN A CLEAN FUNCTIONAL CONDITION AT ALL TIMES.
9. ALL SIGNS, WARNING DEVICES, AND BARRICADES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, INCLUDING ACTS OF VANDALISM OR ACCIDENTS.
10. THE CONTRACTOR SHALL MAINTAIN ALL TEMPORARY AND EXISTING PAVEMENT MARKINGS IN GOOD CONDITION THROUGHOUT THE DURATION OF THE CONTRACT.
11. THE CONTRACTOR SHALL MAINTAIN BARRICADES AND SAFETY FENCES AT EACH SITE WHERE PEDESTRIAN TRAFFIC IS EVIDENT.
12. THE CONTRACTOR SHALL CONDUCT HIS OPERATION IN A MANNER SUCH THAT TRUCKS AND OTHER CONSTRUCTION VEHICLES DO NOT CREATE A DIRT NUISANCE OR SAFETY HAZARD IN ANY PUBLIC OR PRIVATE STREET.
13. ALL BARRICADES, SIGNS, STRIPING, CHANNELIZING DEVICES, AND ALL EQUIPMENT INCIDENTALS, AND ALL LABOR REQUIRED FOR TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR TRAFFIC HANDLING.
14. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE EXISTING SIDEWALK AND/OR PROVIDING A TEMPORARY SIDEWALK.

CONSTRUCTION SEQUENCE:

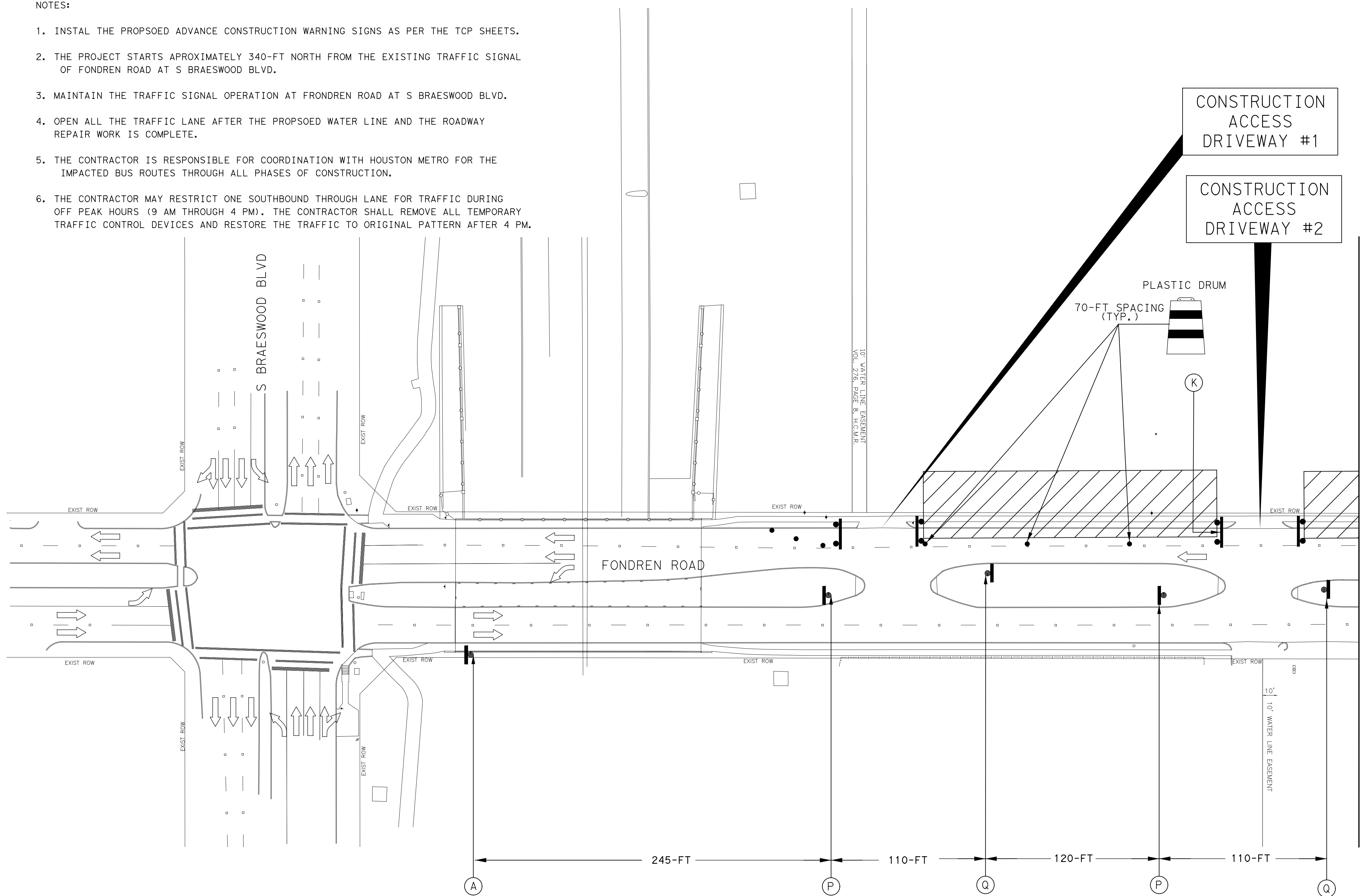
PROPOSED DETENTION POND CONSTRUCTION ALONG FONDREN ROAD

1. INSTALL THE PROPOSED ADVANCE CONSTRUCTION WARNING SIGNS AS SHOWN ON THE TRAFFIC CONTROL PLAN (TCP) SHEETS.
2. THE PROJECT STARTS AT APPROXIMATELY 340-FT NORTH OF THE SIGNALIZED INTERSECTION OF FONDREN ROAD AT S BRAESWOOD BOULEVARD AND IS ACTIVE THROUGH THE INTERSECTION OF FONDREN ROAD AT WANDA LANE.
3. CONTRACTOR SHALL BLOCK THE OUTSIDE LANE ALONG THE SOUTHBOUND FONDREN ROAD AND ALLOW THE INSIDE LANE FOR SOUTHBOUND FONDREN ROAD THROUGH TRAFFIC DURING OFF PEAK HOURS (9 AM THROUGH 4 PM). THE CONTRACTOR SHALL REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AND RESTORE THE TRAFFIC TO ORIGINAL PATTERN AFTER 4 PM.
4. THE CONSTRUCTION WORK ZONE WILL OCCUPY THE OUTSIDE SOUTHBOUND OF FONDREN ROAD. CONSTRUCTION VEHICLES AND EQUIPMENT SHALL ACCESS THE WORK ZONE VIA THE EXISTING ACCESS DRIVEWAYS ALONG SOUTHBOUND FONDREN ROAD, IDENTIFIED AS CONSTRUCTION ACCESS DRIVEWAY #1 AND #2 RESPECTIVELY ON SHEET 2 OF 2.
5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING COORDINATION WITH THE HOUSTON METRO FOR ALL AFFECTED BUS ROUTES THROUGH ALL PHASES OF CONSTRUCTION.

ENTECH CIVIL ENGINEERS, INC.		F-6932 15021 Katy Freeway, Suite 500 Houston, Texas, 77094 281-945-0089 PH 281-945-0081 FX
Progressive Traffic & Transportation <i>Engineers, Planners & Managers</i>		THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF MOHAMMAD IRFAN TEXAS REG. NO. 89333 FEBRUARY 06, 2026
TBPE FIRM REGISTRATION #F-9492 16360 Park Ten Place, Suite 106 Houston, Texas, 77084 281-206-7495 281-206-7494 FX		IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES
SURVEYED BY: LANDTECH, INC. FB NO. P-6331		
CITY OF HOUSTON HOUSTON PUBLIC WORKS		
SHARPSTOWN AREA DETENTION POND A		
TRAFFIC CONTROL PLAN (TCP) FONDREN ROAD OVERALL PLAN VIEW		
SHEET 1 OF 1		
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY	
M-410040-001A-3		
DRAWING SCALE		
AS NOTED		
CITY OF HOUSTON PM		
SUPUN ILANGAMUDALIGE		
SHEET NO. 41 OF 47		

NOTES:

1. INSTAL THE PROPSOED ADVANCE CONSTRUCTION WARNING SIGNS AS PER THE TCP SHEETS.
2. THE PROJECT STARTS APROXIMATELY 340-FT NORTH FROM THE EXISTING TRAFFIC SIGNAL OF FONDREN ROAD AT S BRAESWOOD BLVD.
3. MAINTAIN THE TRAFFIC SIGNAL OPERATION AT FRONDREN ROAD AT S BRAESWOOD BLVD.
4. OPEN ALL THE TRAFFIC LANE AFTER THE PROPSOED WATER LINE AND THE ROADWAY REPAIR WORK IS COMPLETE.
5. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH HOUSTON METRO FOR THE IMPACTED BUS ROUTES THROUGH ALL PHASES OF CONSTRUCTION.
6. THE CONTRACTOR MAY RESTRICT ONE SOUTHBOUND THROUGH LANE FOR TRAFFIC DURING OFF PEAK HOURS (9 AM THROUGH 4 PM). THE CONTRACTOR SHALL REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AND RESTORE THE TRAFFIC TO ORIGINAL PATTERN AFTER 4 PM.



TCP LEGEND:

- CONSTRUCTION AREA
- TY III TRAFFIC BARRIER
- TEMP. GROUND MOUNTED SIGNS
- PLASTIC DRUM
- 36-INCH TRAFFIC CONTROL DELINEATOR
- FLASHING ARROW PANEL
- CERTIFIED FLAGGER/OFF-DUTY OFFICER
- DIRECTION OF TRAVEL

TYPICAL SIGN SPACING & TAPER LENGTH

Fondren Road Posted Speed (mph)	Sign Spacing (X)	Min. Desirable Taper Length (LF)		
		10' Offset	11' Offset	12' Offset
35	160'	205'	225'	245'



MM/DD/YY	BRIEF DESCRIPTION	REVISION
XXX	XXX	XXX
XXX	XXX	XXX
XXX	XXX	XXX
NO.	DATE	NO.

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Houston, Texas, 77094
281-945-0089 PH
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Traffic & Transportation
Engineers, Planners & Managers
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281-206-7495
281-206-7494 FX

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FEBRUARY 06, 2026

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A
FONDREN ROAD DETENTION POND
TRAFFIC CONTROL PLAN (TCP)

SHEET 1 OF 2

 CW20-1D (36x36)	 M4-12T (VAR X 12)	 M4-9S (30x24)	 M4-9R (30x24)	 M4-9L (30x24)	 G20-2a (36 X 18)	 R3-2 (24x24)	 R3-1 (24x24)	 R5-1 (30x30)	 R11-2 (48x30)	 CW20-3D (36x36)	 CW20-5DR (36x36)	 CW20-5DL (36x36)	 CW27-1T (48x48) CW16-5PL (24x18)	 CW27-1T (48x48) CW16-5PR (24x18)
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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
SUPUN ILANGAMUDALIGE	
SHEET NO. 42 OF 47	

TCP LEGEND:

- CONSTRUCTION AREA
- TY III TRAFFIC BARRIER
- TEMP. GROUND MOUNTED SIGNS
- PLASTIC DRUM
- 36-INCH TRAFFIC CONTROL DELINEATOR
- FLASHING ARROW PANEL
- CERTIFIED FLAGGER/OFF-DUTY OFFICER
- DIRECTION OF TRAVEL

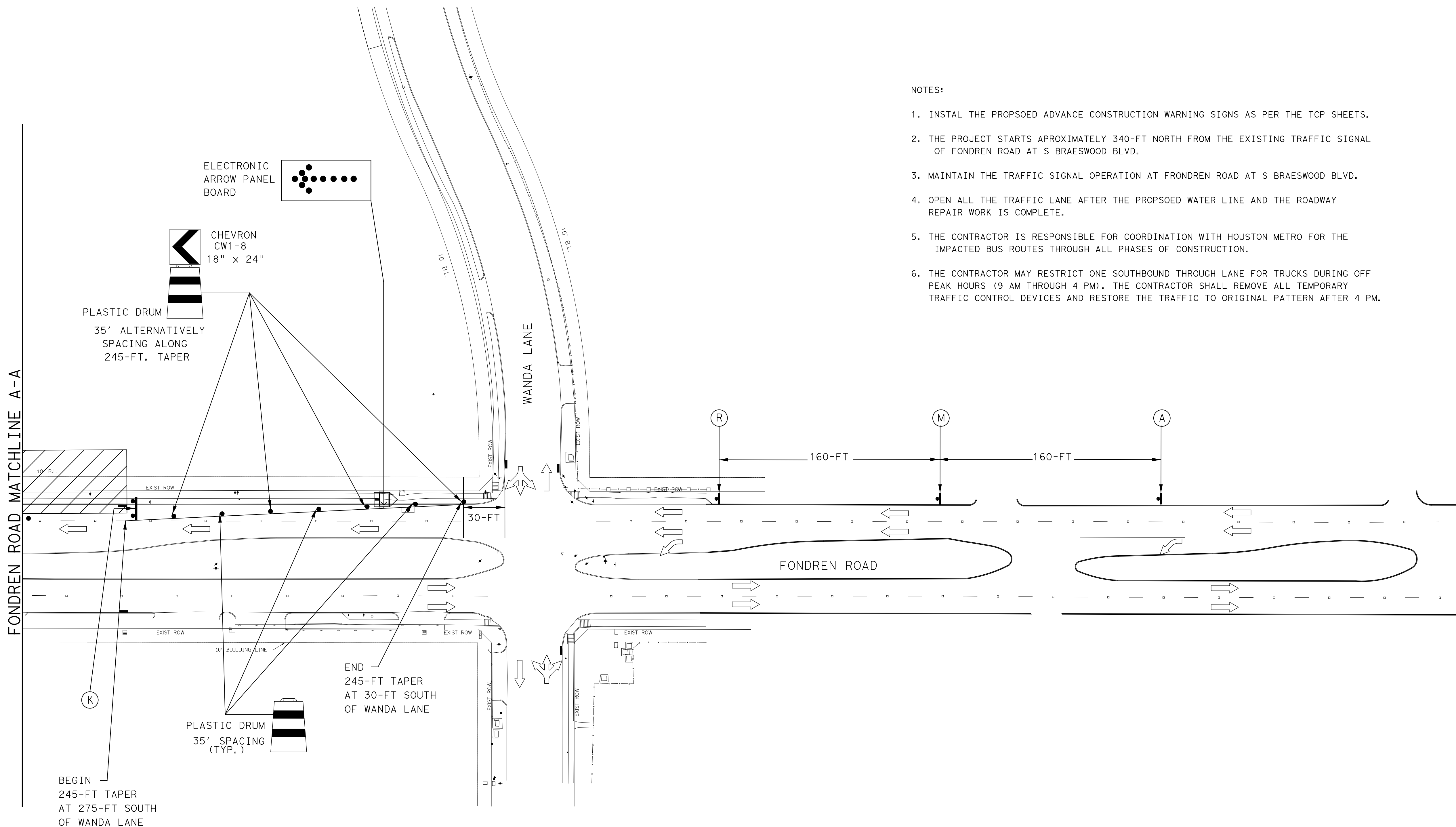
MM/DD/YY	BRIEF DESCRIPTION	NO.	DATE	REVISION	APP.
XXX	XXX	XXX			
XXX	XXX	XXX			

NOTES:

1. INSTAL THE PROPSOED ADVANCE CONSTRUCTION WARNING SIGNS AS PER THE TCP SHEETS.
2. THE PROJECT STARTS APROXIMATELY 340-FT NORTH FROM THE EXISTING TRAFFIC SIGNAL OF FONDREN ROAD AT S BRAESWOOD BLVD.
3. MAINTAIN THE TRAFFIC SIGNAL OPERATION AT FRONDREN ROAD AT S BRAESWOOD BLVD.
4. OPEN ALL THE TRAFFIC LANE AFTER THE PROPSOED WATER LINE AND THE ROADWAY REPAIR WORK IS COMPLETE.
5. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH HOUSTON METRO FOR THE IMPACTED BUS ROUTES THROUGH ALL PHASES OF CONSTRUCTION.
6. THE CONTRACTOR MAY RESTRICT ONE SOUTHBOUND THROUGH LANE FOR TRUCKS DURING OFF PEAK HOURS (9 AM THROUGH 4 PM). THE CONTRACTOR SHALL REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AND RESTORE THE TRAFFIC TO ORIGINAL PATTERN AFTER 4 PM.

TYPICAL SIGN SPACING & TAPER LENGTH

Fondren Road Posted Speed (mph)	Sign Spacing (X)	Min. Desirable Taper Length (LF)		
		10' Offset	11' Offset	12' Offset
35	160'	205'	225'	245'



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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A
FONDREN ROAD
DETENTION POND
TRAFFIC CONTROL PLAN (TCP)
SHEET 2 OF 2

(A)	ORANGE FLAG (TYPICAL) ROAD WORK AHEAD CW20-1D (36x36)	(B)	FONDREN RD M4-12T (VAR X 12)	(C)	DETOUR M4-9S (30x24)	(D)	DETOUR M4-9R (30x24)	(E)	DETOUR M4-9L (30x24)	(F)	END ROAD WORK G20-2a (36 X 18)	(G)	NO RIGHT TURN R3-2 (24x24)	(H)	NO LEFT TURN R3-1 (24x24)	(J)	DO NOT ENTER R5-1 (30x30)	(K)	ROAD CLOSED R11-2 (48x30)	(L)	ORANGE FLAG (TYPICAL) ROAD CLOSED AHEAD CW20-3D (36x36)	(M)	RIGHT LANE CLOSED AHEAD CW20-5DR (36x36)	(N)	LEFT LANE CLOSED AHEAD CW20-5DL (36x36)	(P)	TRUCKS ENTERING ROADWAY CW27-1T (48x48) CW16-5PL (24x18)	(Q)	TRUCKS ENTERING ROADWAY CW27-1T (48x48) CW16-5PR (24x18)	(R)	THRU TRAFFIC MERGE LEFT CW4-1gTL (36x36)
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CITY OF HOUSTON PM	
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SHEET NO. 43 OF 47	

MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO.	DATE	REVISION
		APP.

GENERAL NOTES

- THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) LATEST EDITION WITH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
- ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST VERSION OF THE TMUTCD.
- NO LANES SHALL BE CLOSED DURING THE HOURS OF 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM MONDAY THRU FRIDAY WITHOUT APPROVAL OF THE CITY TRAFFIC ENGINEER.
- NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00 PM TO 7:00 AM.
- CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF THROUGH LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS. TRAFFIC CONTROL PLANS SHALL INCLUDE ONE-WAY AND/OR DETOUR PLANS. CONTRACTOR SHALL MAINTAIN ADA COMPLIANT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO ALL THE BUS STOPS.
- CONTRACTOR SHALL MAINTAIN TRAFFIC LANES AND DETOURS ACCORDING TO TRAFFIC CONTROL PLANS DURING WORKING HOURS.
- CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, AND OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.
- IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT AN ALTERNATE SET OF TRAFFIC CONTROL PLANS TO THE CITY OF HOUSTON PROJECT MANAGER FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION. THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SHALL BE SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. OFFICE OF CITY ENGINEER, MOBILITY PERMITS SECTION REPRESENTATIVE APPROVAL IS REQUIRED TO ACCEPT THE PROPOSED CHANGES.
- CONTRACTOR SHALL SECURE LANE/SIDEWALK/BICYCLE FACILITY CLOSURE PERMITS FROM OFFICE OF CITY ENGINEER (MOBILITY PERMIT SECTION AT <https://getsub.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.
- CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES.
- DURING PAVEMENT SURFACE RESTORATION PROJECTS; THE CONTRACTOR SHALL NOT OPEN CLOSED LANES UNTIL THE PAVEMENT SURFACE HAS CURED ENOUGH TO ALLOW VEHICULAR TRAFFIC ACCORDING TO CITY OF HOUSTON STANDARD SPECIFICATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND COORDINATING ALL CONSTRUCTION ACTIVITIES WITH STAKE HOLDERS IN THE VICINITY INCLUDING EMERGENCY RESPONSE AGENCIES SUCH AS HOUSTON POLICE DEPARTMENT, HOUSTON FIRE DEPARTMENT, AND METROPOLITAN TRANSIT AUTHORITY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ISSUING ALL WORK DIRECTIVES TO ALL SUB-CONTRACTORS, UTILITY COMPANIES, AND ALL OTHER ENTITIES PERFORMING CONSTRUCTION WORK ASSOCIATED WITH THE PROJECT.
- NOTHING IN THESE NOTES OR PLANS SHALL RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL MODES OF TRANSPORTATION, PERSONS, AND PROPERTY, AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO WORKING HOURS.
- THE OFFICE OF CITY ENGINEER (MOBILITY PERMITS GROUP) PER THE DIRECTION OF THE CITY TRAFFIC ENGINEER HAVE THE RIGHT TO DEMAND THE INSTALLATION OF ADDITIONAL TRAFFIC CONTROL DEVICES OR MODIFICATIONS OF THESE PLANS AND NOTES, AS DEEMED NECESSARY TO PROMOTE THE SAFE AND ORDERLY FLOW OF TRAFFIC, INCLUDING PEDESTRIANS AND BICYCLES, THROUGH THE CONSTRUCTION WORK ZONE. THE CONTRACTOR SHALL COMPLY WITH THESE ADDITIONAL REQUESTS OR MODIFICATIONS WITH DUE DILIGENCE.
- ALL EXISTING TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE MAINTAINED IN VISIBLE LOCATIONS DURING CONSTRUCTION UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER. THE CONTRACTOR SHALL RESTORE OR REPLACE (AT THE DISCRETION OF THE CITY TRAFFIC ENGINEER) ANY PAVEMENT MARKINGS OR SIGNING DAMAGE DURING CONSTRUCTION OPERATIONS, INCLUDING RAISED PAVEMENT MARKERS (RPMs).
- WHEN ENTERING OR LEAVING ROADWAYS CARRYING PUBLIC TRAFFIC, THE CONTRACTOR'S EQUIPMENT, WHETHER EMPTY OR LOADED SHALL IN ALL CASES YIELD TO PUBLIC TRAFFIC WITH THE ASSISTANCE OF CONTRACTOR PROVIDED CERTIFIED FLAGGER/PEACE OFFICER.
- ACCESS TO DRIVEWAYS ADJACENT TO THE CONSTRUCTION WORK ZONE SHALL BE MAINTAINED AT ALL TIMES AS MUCH AS POSSIBLE. ADDITIONAL CONES AND/OR DELINEATORS MAY BE REQUIRED TO DELINEATE THE DRIVEWAY ACCESS ROUTE THROUGH THE CONSTRUCTION WORK ZONE. A MINIMUM OF ONE TRAVEL LANE SHALL BE MAINTAINED ACROSS THE DRIVEWAYS, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER.
- SPILLAGE RESULTING FROM HAULING OPERATIONS ALONG OR ACROSS ANY PUBLIC TRAVELED WAY SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
- THE CONTRACTOR SHALL SUBMIT AN APPLICATION FOR TEMPORARY PARKING RESTRICTIONS IF THERE ARE PARKING METERS LOCATED AT THE PROPOSED LANE CLOSURES FROM PARKING MANAGEMENT DIVISION (832-393-8690) AT LEAST TEN BUSINESS DAYS BEFORE IMPLEMENTATION OF LANE CLOSURES. IN ADDITION, TEMPORARY NO PARKING SIGNS SHALL BE POSTED 24 HOURS PRIOR TO COMMENCEMENT OF WORK.
- ADDITIONAL OFF DUTY OFFICERS/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED AT THE DISCRETION OF THE CITY PROJECT MANAGER EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS.
- THE CONTRACTOR SHALL REPLACE WITHIN 72 HOURS, ALL TRAFFIC SIGNAL LOOP DETECTORS DAMAGED DURING CONSTRUCTION.
- IN GENERAL, A SOLAR POWERED FLASHING ARROW BOARD SHALL BE REQUIRED ON ALL MAJOR THOROUGHFARE LANES CLOSURES. EXCEPTIONS TO FLASHING ARROW BOARDS AND/OR IMPLEMENTATION ON RESIDENTIAL LANE CLOSURES SHALL BE APPROVED BY CITY TRAFFIC ENGINEER.
- APPROVED TRAFFIC CONTROL PLAN SHALL BE IN PLACE BEFORE STARTING ANY EXCAVATION.
- WATER FILLED BARRIERS CAN BE USED AS INSTRUCTED BY THE ENGINEER AND APPROVED BY THE CITY FOR PROJECTS WHERE SPACE IS LIMITED AND HEAVY EQUIPMENT TO PLACE CONCRETE BARRIERS IS NOT FEASIBLE. WATER FILLED BARRIERS SHALL NOT BE USED ON ROADWAYS WITH A POSTED SPEED LIMIT MORE THAN 45 MPH.
- WATER FILLED BARRIERS MUST BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S REQUIREMENTS AND ROUTINELY INSPECTED FOR DEFECTS.
- IF WATER FILLED BARRIER IS PROVIDED, USE ENVIRONMENTALLY SAFE ANTI-FREEZING AGENT IN THE WATER WHEN IT IS APPLICABLE PER MANUFACTURER SPECIFICATIONS AND RECOVER AGENT WHEN THE BARRIER IS DRAINED.

- DISPOSE OF WATER AND AGENT PROPERLY. DO NOT DRAIN WATER FILLED BARRIER INTO OR ACROSS AN EXISTING TRAVEL LANE.
- PROVIDE BARRIER UNITS THAT ARE CAPABLE OF BEING LIFTED AND MOVED WHEN FILLED IF DRAINING IS NOT POSSIBLE.
- PROVIDE WATER FILLED BARRIER THAT ACTS AS ITS OWN FREE STANDING, NON-REDIRECTIVE END TREATMENT.
- WHEN WATER FILLED BARRIERS ARE USED TO CHANNELIZE PEDESTRIANS, THEY MUST HAVE A CONTINUOUS DETECTABLE BOTTOM FOR USERS OF LONG CANES AND THE TOP OF THE UNIT SHALL NOT BE LESS THAN 32 INCHES IN HEIGHT.
- ANY CLOSURE OF A PEDESTRIAN OR BICYCLE FACILITY SHALL REQUIRE THE SHORTEST DETOUR THAT MAINTAINS THE SAFETY OF PEDESTRIAN AND/OR BICYCLISTS.

SPACING FOR CHANNELIZING DEVICES

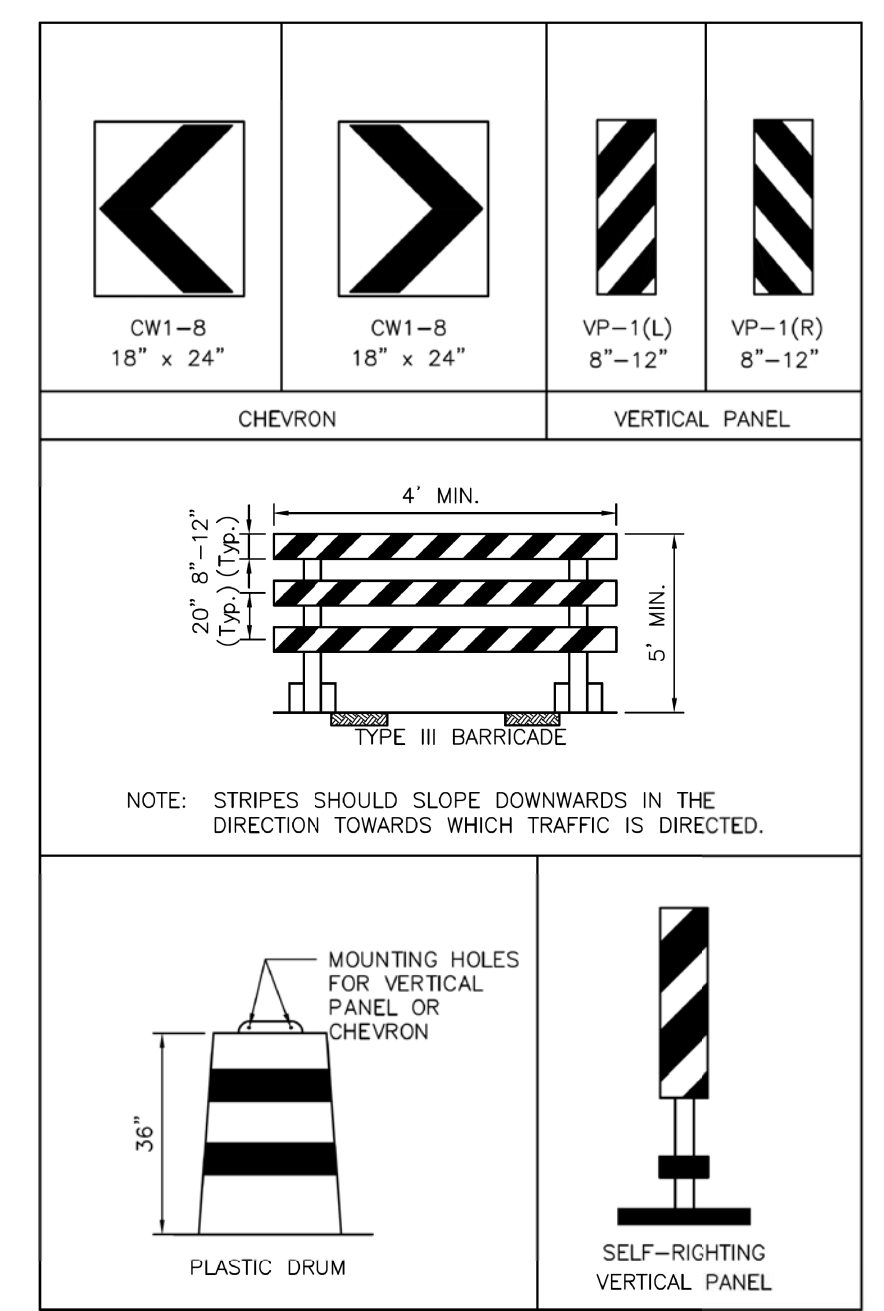
- PLASTIC DRUMS ON MERGING TAPER @ 30' C - C WITH CHEVRON SIGN @ 60' C - C AND WARNING LIGHTS FOR OVERNIGHT CLOSURE.
- PLASTIC DRUMS ON DOWNSTREAM TAPER @ 30' C - C (RETURN TAPER AND BARRICADE ARE OPTIONAL AND DIVIDED ROADWAY SECTION)
- PLASTIC DRUMS ON RADI @ 35' C - C.
- PLASTIC DRUMS ON TANGENT @ 35' C - C WITH VERTICAL PANEL AT 70' C - C AND APPROVED WARNING LIGHT @ 70' C - C (FOR OVERNIGHT CLOSURE).
- PLASTIC DRUMS IN FRONT OF CONSTRUCTION ZONE @ 20' C - C WITH VERTICAL PANEL AT 40' C - C AND APPROVED WARNING LIGHT @ 40' C - C (FOR OVERNIGHT CLOSURE).
- CONCRETE TRAFFIC BARRIER (CTB) OR LOW PROFILE CONCRETE TRAFFIC BARRIER (LPCTB) WITH APPROVED REFLECTORS @ 10' C - C IF PAVEMENT DROP IS GREATER THAN 1 FOOT.
- PLASTIC DRUMS W/GUARD RAIL MOUNTED.
- SELF-RIGHTING VERTICAL PANEL SPACING:
 - 4 LANES TO 2 LANES UNDIVIDED ROADWAY SECTION @ 20' C - C.
 - 4 LANES DIVIDED ROADWAY TO ONE SIDE TWO WAY ROADWAY @ 20' C - C.
 - LEFT LANE AND RIGHT LANE STORAGE BAYS @ 15' C - C.
- SPACING SHOWN ON TRAFFIC CONTROL SHALL SUPERSEDE THE ABOVE SPACING.
- SPACING MAY BE ADJUSTED TO PROVIDE DRIVEWAYS, INTERSECTIONS AND /OR MEDIAN OPENINGS.

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

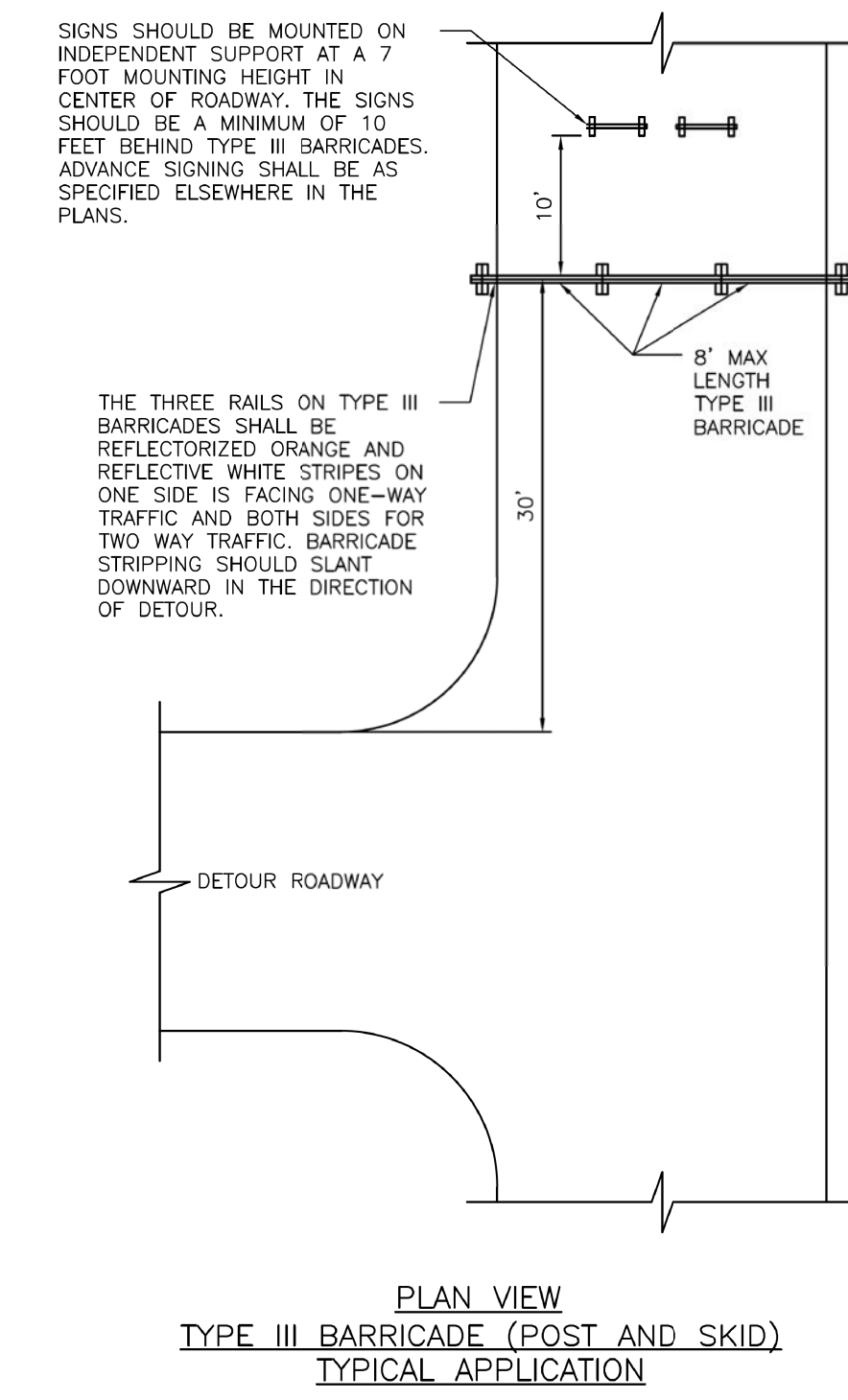
POSTED SPEED (MPH)	SIGN SPACING "X" (FEET)	MIN. DESIRABLE TAPER LENGTH "L"			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	120'	150'	165'	180'	30'	60'-75'
35	160'	205'	225'	245'	35'	70'-90'
40	240'	265'	295'	320'	40'	80'-100'
45	320'	450'	495'	540'	45'	90'-110'
50	400'	500'	550'	600'	50'	100'-125'
55	500'	550'	605'	660'	55'	110'-140'

TABLE C4 - STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

POSTED SPEED (MPH)	DISTANCE "D" (FEET)
30	200
35	250
40	305
45	360
50	425
55	495



CHANNELIZATION AND BARRICADES



LEGEND:

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

APPROVED BY: *Sulaiman* CITY ENGINEER

APPROVED BY: *HAIRING NAUFEN* CITY TRAFFIC ENGINEER

APPROVED BY: *Carroll* DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023 DWG NO: 01555-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP NOTES CHANNELIZING DEVICES AND BARRICADES

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE: NOT TO SCALE

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Progressive Traffic & Transportation
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHARPSTOWN AREA DETENTION POND A

TRAFFIC CONTROL PLAN
STANDARD DETAILS

SHEET 1 OF 3

WBS NUMBER: M-410040-001A-3

DRAWING SCALE: AS NOTED

CITY OF HOUSTON PM: SUPUN ILANGAMUDALIGE

SHEET NO. 44 OF 47

MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO. DATE	REVISION	APP.

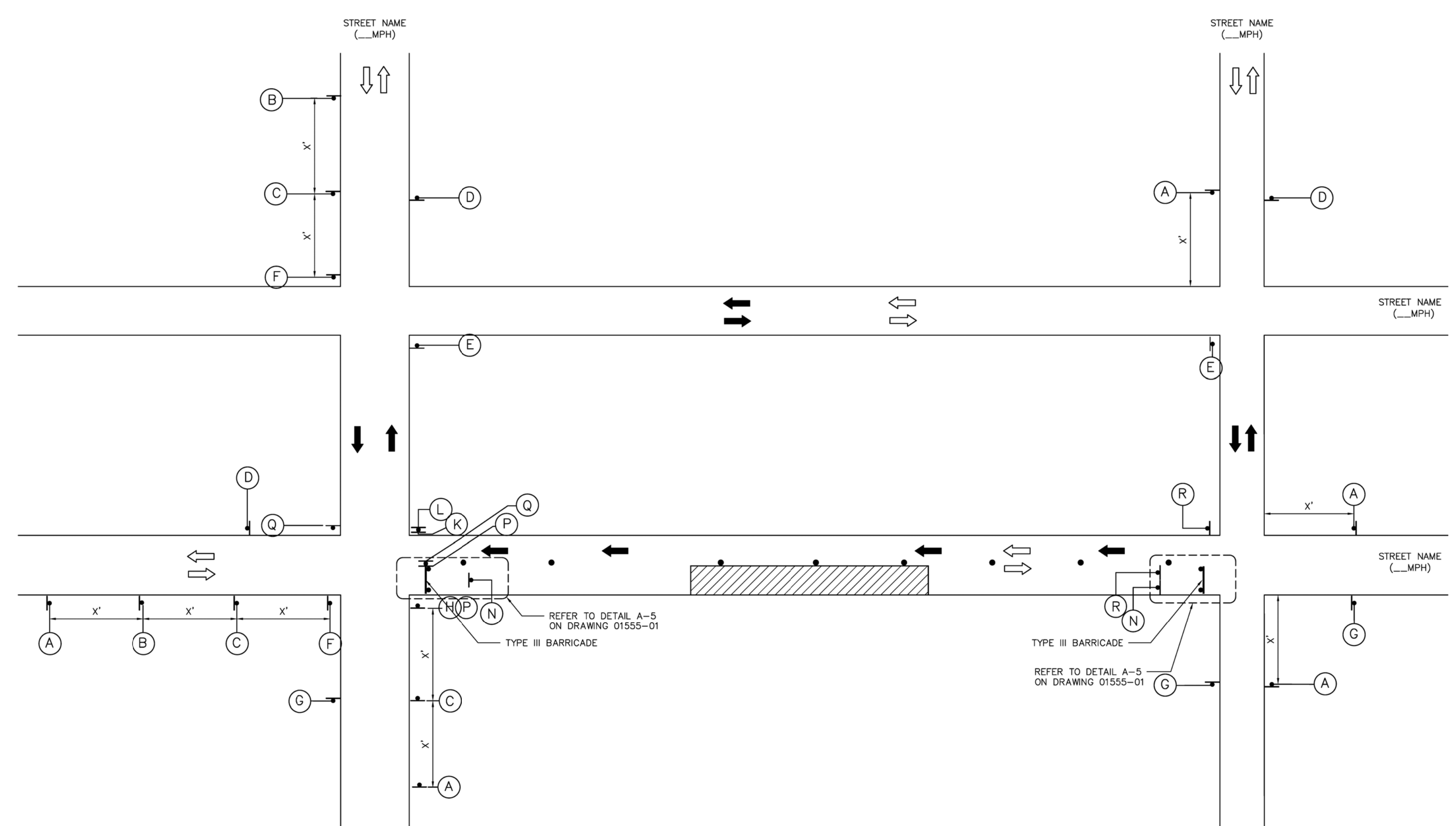
A	ROAD WORK AHEAD CW20-1	B	ROAD CLOSED AHEAD CW20-3	C	DETOUR AHEAD CW20-2	D	END ROAD WORK G20-2	E	STREET NAME DETOUR M4-9R	F	STREET NAME DETOUR M4-9L	G	END DETOUR M4-8a	H	STREET NAME DETOUR M4-9T	I	RIGHT LANE CLOSED [AHEAD] CW20-5(2) CW16-3	J	LEFT LANE CLOSED [AHEAD] CW20-5(1) CW16-3
K	ONE WAY R6-2(L)	L	ONE WAY R6-2(R)	M	DO NOT ENTER R5-1	N	ROAD CLOSED R11-2	O	AREA UNDER CONSTRUCTION M4-10(L)	P	NO RIGHT TURN R3-1	Q	NO LEFT TURN R3-2	R	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

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.

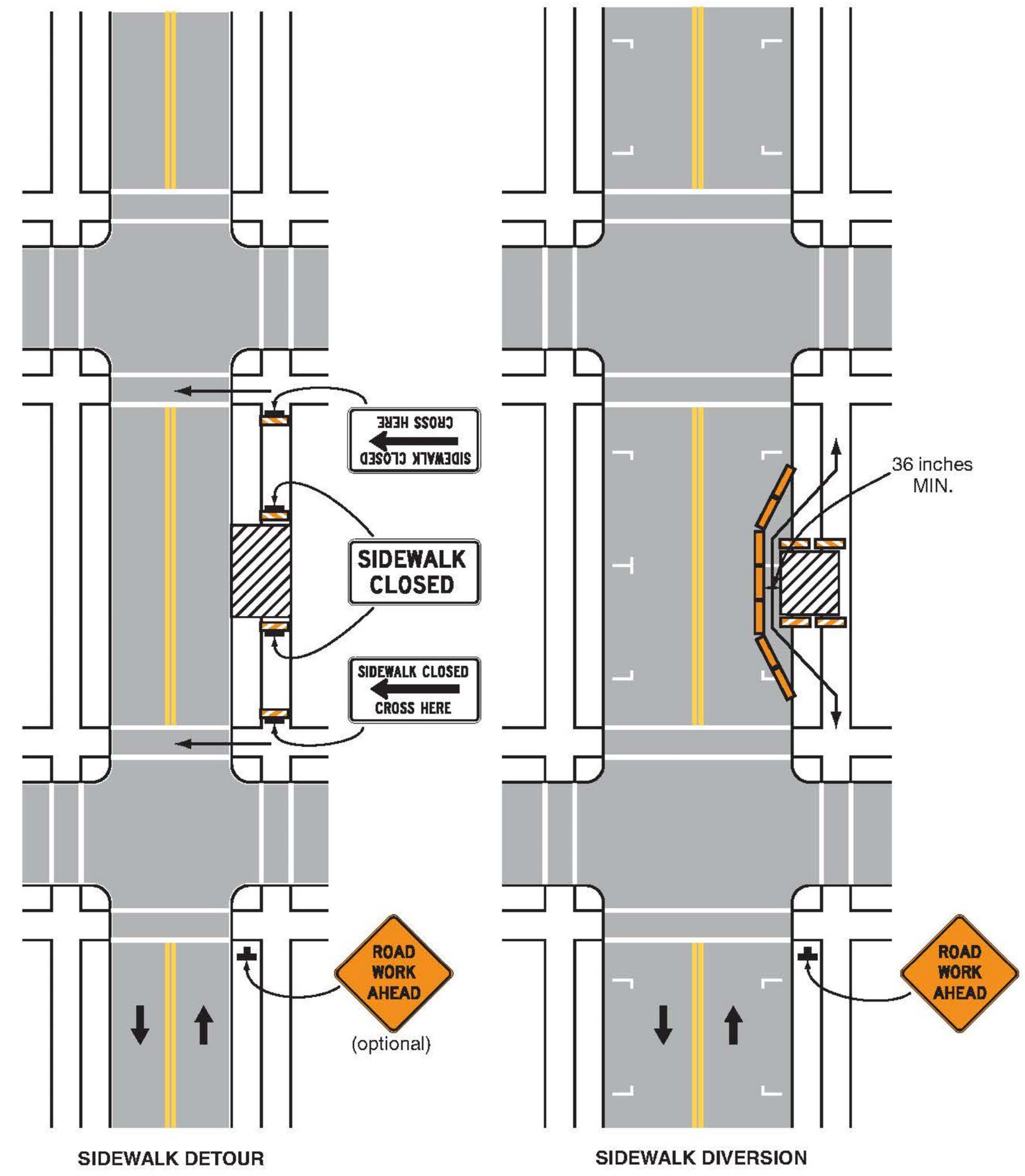


APPROVED BY: Subal Kavar CITY ENGINEER	APPROVED BY: Haining Naufen CITY TRAFFIC ENGINEER
APPROVED BY: Carl Hallock DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-05
CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
TCP TYPICAL DETOUR ROUTING WITH ONE LANE CLOSURE (ONE BLOCK)	
FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE	
NOT TO SCALE	

ENTECH CIVIL ENGINEERS, INC.	F-6932 15021 Katy Freeway, Suite 500 Houston, Texas, 77094 281-945-0089 PH 281-945-0081 FX
Progressive Traffic & Transportation <i>Engineers, Planners & Managers</i> TBPE FIRM REGISTRATION #F-9492	THIS DOCUMENT IS RELEASED FOR PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF MOHAMMAD IRFAN TEXAS REG. NO. 89333 FEBRUARY 06, 2026
CITY OF HOUSTON HOUSTON PUBLIC WORKS	
SHARPSTOWN AREA DETENTION POND A	
TRAFFIC CONTROL PLAN STANDARD DETAILS SHEET 2 OF 3	
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410040-001A-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
SUPUN ILANGMUDALIGE	
SHEET NO. 45 OF 47	

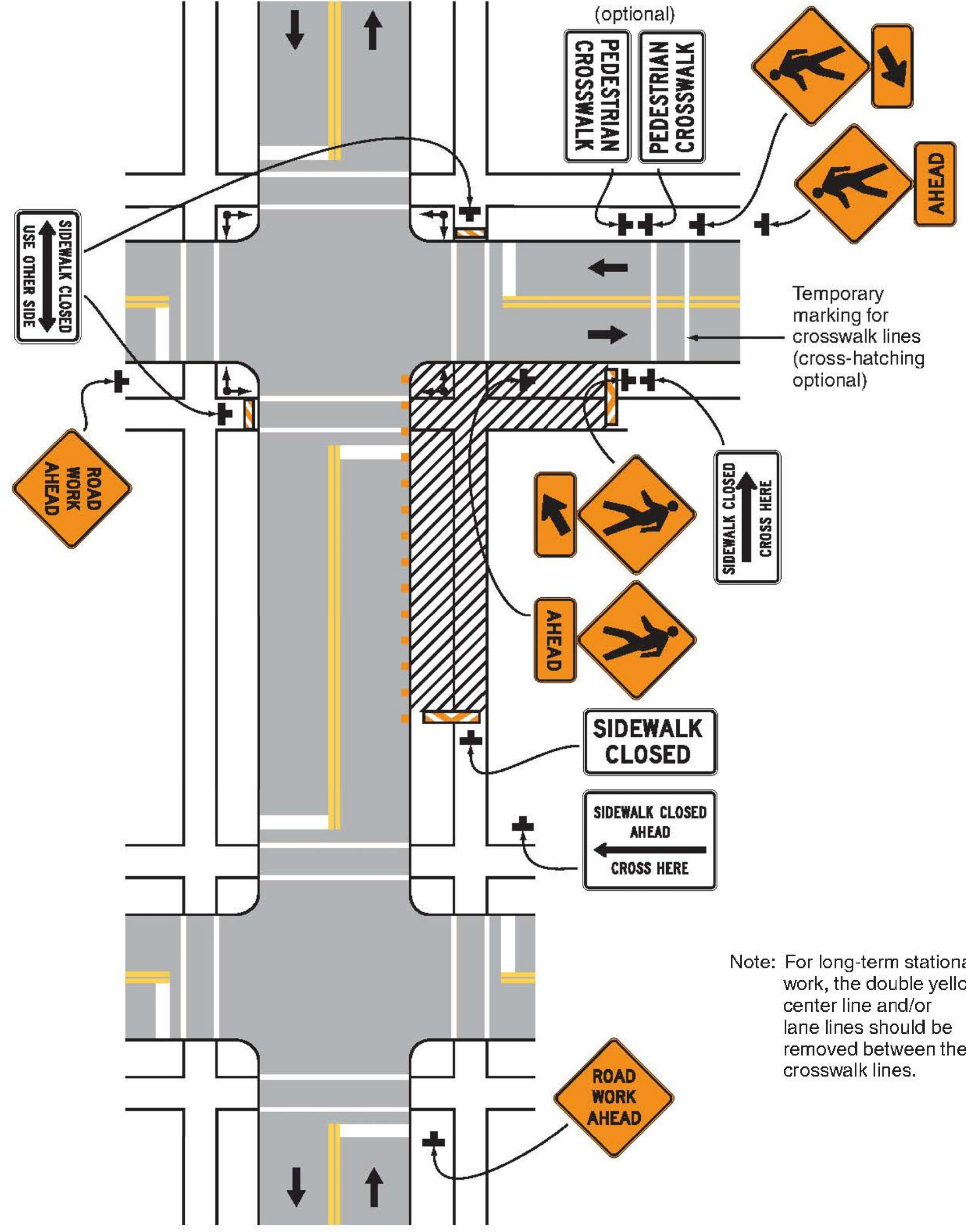
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO.	DATE	REVISION
		APP.

Figure 6H-28. Sidewalk Detour or Diversion (TA-28)



Typical Application 28

Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)



Typical Application 29

Note: For long-term stationary work, the double yellow center line and/or lane lines should be removed between the crosswalk lines.

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TBPE FIRM REGISTRATION #F-9492 16360 Park Ten Place, Suite 106 Houston, Texas, 77064 281-206-7495 281-206-7494 FX		IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES
SURVEYED BY: LANDTECH, INC. FB NO. P-6331		
CITY OF HOUSTON HOUSTON PUBLIC WORKS		
SHARPSTOWN AREA DETENTION POND A		
TRAFFIC CONTROL PLAN STANDARD DETAILS SHEET 3 OF 3		
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY	
M-410040-001A-3		
DRAWING SCALE		
AS NOTED		
CITY OF HOUSTON PM		
SUPUN ILANGAMUDALIGE		
SHEET NO. 46 OF 47		

