CITY OF HOUSTON

HOUSTON PUBLIC WORKS
CAPITAL PROJECTS
COTTAGE GROVE EAST - PHASE II
DRAINAGE AND PAVING IMPROVEMENTS
WBS No. M-410039-0002-4

NOTICE:

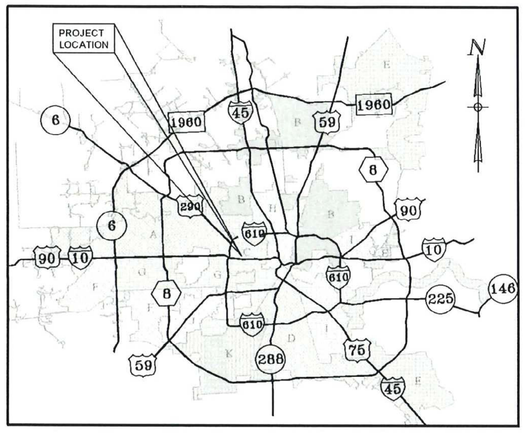
*Construction adjacent to or within Harris County Flood Control District Right-of-Way requires:

HCFCD 48-hr Pre-Construction Notice

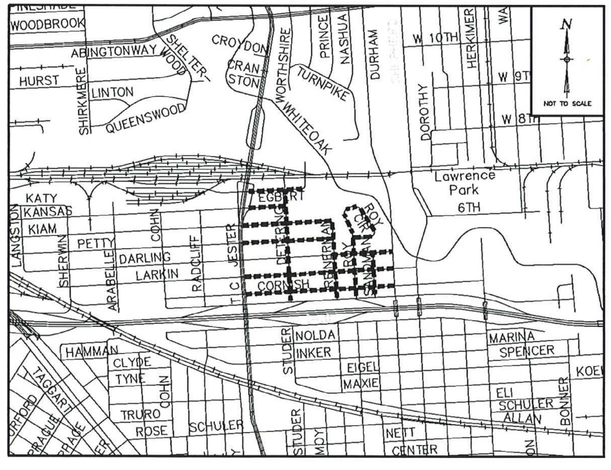
The 48-hour Pre-Construction form must be completed and provided to HCFCD at dcid@hcfcd.net

FLOODPLAIN MANAGEMENT OFFICE
ILMS 25118391
APPROVED
Development Permit #: 25-5059
Date: 12/17/2025 By:

COTTAGE GROVE EAST - PHASE II
DRAINAGE AND PAVING IMPROVEMENTS
WBS No.M-410039-0002-4



LOCATION MAP



VICINITY MAP
KEY MAP NO 492 C & 492 G
GIMS MAP NO 5258B & 5258D

▬▬▬ PROJECT LIMITS

TDLR TABS2023008605

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.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOCIATES, INC.

FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
06/02/2025

PARKS–FORESTRY DEPT.

METRO

HOUSTON WATER

TRANSPORTATION & DRAINAGE OPERATIONS

CAPITAL PROJECTS — SURVEY

CITY ENGINEER — DATE

DIRECTOR OF PUBLIC WORKS AND ENGINEERING — DATE

SHEET NO 1 OF 345 SHEETS

ILMS NO:

LOG NO:

CivilTech Engineering, Inc.
G:\2019\38001\Drawings\SHEETS\01-Cover.dwg Jun 02, 2025

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327	TRAFFIC CONTROL PLAN – DETOUR KANSAS PH2 ST2
328	TRAFFIC CONTROL PLAN – DETOUR KIAM PH2 ST2
329	TRAFFIC CONTROL PLAN – DETOUR PETTY PH2 ST2
330	TRAFFIC CONTROL PLAN – DETOUR DARLING PH2 ST2
331	TRAFFIC CONTROL PLAN – DETOUR LARKIN PH2 ST2 SHEET 1
332	TRAFFIC CONTROL PLAN – DETOUR LARKIN PH2 ST2 SHEET 2
333	TRAFFIC CONTROL PLAN – DETOUR CORNISH PH2 ST2 SHEET 1
334	TRAFFIC CONTROL PLAN – DETOUR CORNISH PH2 ST2 SHEET 2
335	TRAFFIC CONTROL PLAN – DETOUR ROY CIR PH2 ST2
	STORM WATER POLLUTION PREVENTION PLAN
336	STORMWATER POLLUTION PREVENTION PLAN (SHEET 1 OF 8)
337	STORMWATER POLLUTION PREVENTION PLAN (SHEET 2 OF 8)
338	STORMWATER POLLUTION PREVENTION PLAN (SHEET 3 OF 8)
339	STORMWATER POLLUTION PREVENTION PLAN (SHEET 4 OF 8)
340	STORMWATER POLLUTION PREVENTION PLAN (SHEET 5 OF 8)
341	STORMWATER POLLUTION PREVENTION PLAN (SHEET 6 OF 8)
342	STORMWATER POLLUTION PREVENTION PLAN (SHEET 7 OF 8)
343	STORMWATER POLLUTION PREVENTION PLAN (SHEET 8 OF 8)
344	STORMWATER POLLUTION PREVENTION PLAN DETAIL (SHEET 1 OF 2)
345	STORMWATER POLLUTION PREVENTION PLAN DETAIL (SHEET 2 OF 2)

REV	DESCRIPTION	BY	DATE

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3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SHEET INDEX

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 2 OF 345	

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REV	DESCRIPTION	BY	DATE

PLAN & PROFILE KEY NOTES

1. THE EXISTING CONCRETE PAVEMENT SHALL BE SAW CUT AND EXISTING CONCRETE REMOVED TO EXPOSE A MINIMUM OF 15–INCHES OF REINFORCED STEEL. IF NO REINFORCING STEEL EXISTS, USE HORZONTAL DOWELS, SEE NOTE 4.
2. PROPOSED 6" REINFORCED CONCRETE CURB AS SHOWN ON STANDARD DETAIL 02771–01 – CURB, CURB AND GUTTER AND HEADER DETAILS.
3. REMOVE EXISTING GRAVEL AND DISPOSE OF PIPE PROPERLY OFF–SITE, AS DETERMINED BY THE ENGINEER, AND CONNECT TO REINFORCED CONCRETE PIPE OF LIKE DIAMETER.
4. WHEN MEETING EXISTING CONCRETE PAVEMENT. HORIZONITAL DOWELS SHALL BE USED IF NO EXPOSED REINFORCED STEEL EXISTS. HORIZONTAL DOWELS SHALL BE #6 BARS, 24–INCHES LONG, DRILLED AND EMBEDDED 12–INCHES INTO THE CENTER OF THE EXISTING SLAB WITH PO ROC, OR APPROVED EQUAL. DOWELS SHALL BE 12–INCHES CENTER–TO–CENTER UNLESS OTHERWISE SPECIFICED.
5. REMOVE EXISTING CULVERTS AND PROPERLY DISPOSE OF OFF–SITE.
6. REMOVE EXISTING ASPHALT CONCRETE PAVEMENT, GRAVEL BASE MATERIAL AND SUBGRADE (ALL DEPTHS), PROPERLY DISPOSE OF MATERIALS OFF–SITE.
7. MEET EXISTING CURB OR CURB AND GUTTER GRADE AND ALIGNMENT, TO INCLUDE EXPANSION JOINT.
8. PROPOSED WHEEL CHAIR RAMP PER COH STANDARDS DETAIL.
9. ADJUST EXISTING MANHOLE FRAMES AND COVERS WITHIN THE LIMITS OF THE PROPOSED PAVEMENT TO MEET THE PROPOSED TOP–OF–PAVEMENT ELEVATION.
10. REMOVE CURB OR CURB AND GUTTER, AS APPLICABLE.
11. ADJUST EXISTING WATER VALVE BOXES TO NEW GRADED ELEVATION OR PROPOSED TO–OF–SLAB ELEVATION. REPLACE MISSING OR DAMAGED VALVE BOXES AND COVERS.
12. PROPOSED CONCRETE PAVING HEADER.
13. PLUG EXISTING STORM SEWER PIPE WITH BRICKS AND GROUT TO SEAL PIPE. NO SEPRATE PAYMENT FOR PLUGGING, TO BE INCLUDED IN THE RELATED WORK.
14. REMOVE EXISTING STORM SEWER PIPE, TO INCLUDE PROPERLY DISPOSING OF MATERIAL OFF–SITE.
15. REMOVE & DISPOSE OF EXISTING INLET AND JUNCTION BOX INLET.
16. REMOVE EXISTING MANHOLE OR JUNCTION BOX TO FULL DEPTH, PROPERLY DISPOSE OF MATERIALS OFF–SITE.
17. ABANDON EXISTING MANHOLE IN ACCORDANCE WITH SPECIFICATION SECTION 02222.
18. ABANDON EXISTING SEWER IN ACCORDANCE WITH SPECIFICATION SECTION 02222.
19. EXISTING STORM SEWER RCP TO REMAIN IN PLACE.
20. REMOVE EXISTING RAMP, PROPERLY DISPOSE OF MATERIALS OFF–SITE.
21. CUT AND REMOVE EXISTING WATER LINE PIPE.
22. REMOVE EXISTING SANITARY SEWER MH (II148028), CONNECT AND EXTEND AN 8–INCH SANITARY SEWER PIPE TO THE PROP SANITARY SEWER MH (19B).
23. CUT, PLUG, AND ABANDON EXISTING WATER LINE PIPE IN PLACE.
24. REMOVE EXISTING SANITARY SEWER PIPE, PROPERLY DISPOSE OF MATERIALS OFF–SITE.
25. ABANDON EXISTING SANITARY SEWER IN ACCORDANCE WITH SPECIFICATION SECTION 02222.
26. CONTRACTOR SHALL REMOVE AND REPLACE THE PAVEMENT AND CURB AT THE INTERSECTIONS OF DARLING AT DETERING AND REINERMAN STREET.
27. CUT & PLUG EXISTING SANITARY SEWER PIPE. NO SEPRATE PAYMENT FOR PLUGGING, INCIDENTAL TO RELATED WORK.
28. REMOVE AND SALVAGE EXISTING FIRE HYDRANT, LEAD, VALVE AND BOX. PLUG TEE IF WATER LINE IS TO REMAIN IN SERVICE.
29. SAWCUT EXISTING CONCRETE DRIVEWAY AT THE ROW, (OR AS INDICATED ON DRIVEWAY SCHEDULE FOR ROW ENCROACHMENT) AND MATCH EXISTING DRIVEWAY ELEVATION OR AS DIRECTED BY THE ENGINEER. (SEE SUMMARY OF WORK, I.02 WORK COVERED BY CONTRACT DOCUMENTS, PAGE: 01110–3, LETTER I.)
30. REMOVE EXISTING SIDEWALK IF APPLICABLE, AND REPLACE WITH A PROPOSED 5–FOOT WIDE CONCRETE (MIN.) "SEE CONCRETE SIDEWALK DETAILS–02775–01"
31. CONNECT EXISTING STORM PIPE (6" TO 24") DRAINING FROM PRIVATE PROPERTY, CONTRACTOR TO CUT PIPE NEAR RIGHT OF WAY CONNECT TO PROPOSED TYPE "A" INLET WITH SOLID LID IF LOCATED IN SIDEWALK.
32. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNER WHEN RELOCATING THE "PUSH BUTTON" TO ACCESS THEIR PROPERTY AND ANY LOOP SYSTEM DESIGN WITHIN THE RIGHT–OF–WAY.
33. MATCH EXISTING PAVEMENT AND SIDEWALK.
34. PROPOSED 6" CONCRETE PAVEMENT WITH 6" CONCRETE CURB AND 8" STABILIZED SUBGRADE. 6% LIME BY DRY WEIGHT OF SOIL.
35. PROPOSED 7" CONCRETE PAVEMENT WITH 6" CONCRETE CURB AND 8" STABILIZED SUBGRADE WITH MIN. SUBGRADE TO BE STABILIZED WITH 6% LIME BY DRY WEIGHT OF SOIL.
36. PROPOSED TYPE III BARRICADE
37. CONSTRUCT PROPOSED MANHOLE ON EXIST STORM SEWER PIPE, TO INCLUDE CUTTING AND REMOVING EXISTING PIPE, GROUT AND SEAL CONNECTION.
38. CONSTRUCT PROPOSED MANHOLE ON EXIST SANITARY SEWER PIPE.
39. REMOVE EXISTING SIDEWALK – NO REPLACEMENT
40. CONNECT EXISTING STORM SEWER TO PROPOSED MANHOLE OR INLET.
41. CONNECT PROPOSED STORM SEWER TO EXISTING MANHOLE OR INLET.
42. CONNECT PROPOSED STORM SEWER IN–TO THE SIDE OF A EXISTING RCB STORM SEWER.
43. PROPOSED 5–FOOT WIDE CONCRETE (MIN.) "SEE CONCRETE SIDEWALK DETAILS–02775–01"
44. EXISTING POWER POLE TO BE RELOCATED BY OTHERS.
45. EXISTING WATER METER BOX IN PROPOSED SIDEWALK SHALL HAVE CONCRETE TOP, CONSTRUCTED LEVEL TO SIDEWALK.
46. REMOVE EXISTING REINFORCED CONCRETE PAVEMENT WITH CURBING.
47. RELOCATE EXISTING WATER METER AND BOX TO INCLUDE SERVICE LINE.
48. IF R.O.W. ENCROACHMENTS ARE REMOVED PRIOR TO THE CONTRACTOR MOBILIZATION ON TO SITE, NO ACTION WILL BE REQUIRED. IF R.O.W. ENCROACHMENT EXIST WHEN THE CONTRACTOR MOBILIZES ONTO THE SITE, THEN THE CONTRACTOR SHALL REMOVE THE ENCROACHMENT ITEMS PER THEIR ITEM DESCRIPTION AND PLACE IT ON PROPERTY THE ENCROACHMENT ITEMS BELONG TO.
49. CONTRACTOR SHALL WET CONNECTION TO EXISTING W.L. IF UNABLE TO WET CONNECT DUE FIELD CONDITIONS CONTRACTOR SHALL USE T.S&V.
50. CUT EXISTING STORM PIPE AND INSTALL JUNCTION BOX WITH GRATE TOP FOR MAXIMUM 24–INCH PIPE AND EXTEND PROPOSED PIPE TO STORM MANHOLE.
51. CUT EXISTING STORM PIPE AND INSTALL JUNCTION BOX WITH GRATE TOP FOR MAXIMUM 24–INCH PIPE AND EXTEND PROPOSED PIPE TO STORM MANHOLE.
52. REMOVE AND REPLACE SIDEWALK AS NEEDED. (SEE SUMMARY OF WORK, I.02 WORK COVERED BY CONTRACT DOCUMENTS, PAGE: 01110–2, LETTER I.)
53. CONTRACTOR SHALL CLEAR THE 50–FT RIGHT–OF–WAY ALONG KANSAS AND MOY STREET. REMOVE TREES, BRUSH AND DEBRIS AND DISPOSE OF OFF–SITE. CONTRACTOR SHALL GRADE THIS AREA AS SHOWN ON CONSTRUCTION PLANS.
54. CONTRACTOR SHALL CLEAR THE 28–FT RIGHT–OF–WAY STRIP FOR THE OUTFALL STARTING AT KIAM AND REINERMAN STREET. REMOVE TREES, BRUSH AND DEBRIS AND DISPOSE OF OFF–SITE. CONTRACTOR SHALL GRADE THIS AREA AS SHOWN ON CONSTRUCTION PLANS.
55. CONTRACTOR TO REPLACE PAVEMENT MARKINGS AND OR BUTTONS AT THE INTERSECTION OF TC JESTER BLVD, DUE TO PAVEMENT REMOVAL AND REPLACEMENT.
56. CONTRACTOR SHALL TEMPORARILY RELOCATE MAIL BOX DURING CONSTRUCTION WHERE RESIDENTS CAN HAVE ACCESS TO THEIR MAIL AND RETURN TO ORIGINAL LOCATION OR NEAR IT'S ORIGINAL LOCATION.
57. CONTRACTOR TO MATCH EXISTING YARD DRAIN AND PROVIDE ADAPTER TO 3" PVC FOR EXISTING PVC YARD DRAINS. PROP 3" PVC TO BE TIED INTO PROPOSED 6" CONCRETE CURB, CUT PIPE END FLUSH AND FORM INTO CURB.
58. PROP. 3" ASPHALT WITH 12" BLACK BASE AND 6" STABILZED SUBGRADE WITH 6% LIME BY DRY WEIGHT. THE INTEND IS TO UTILIZE AND TIE INTO EXISTING ASPHALT TO INCLUDE SAWCUT AND REMOVING OF EXISTING MATERIAL TO SUBGRADE ELEVATION AND CONSTRUCTING A "T" INTERSECTION. THE EXISTING DRIVE TO GAINS BOUROUGH WASTE COMPANY SHALL REMAIN.
59. REMOVE EXISTING TYPE III BARRICADE AND DISPOSE OF OFF SITE.
60. REMOVE AND DISPOSE OF BOTH THE EXISTING BURIED WET AND DRY WELLS TO A MINIMUM OF 3–FT BELOW THE PROPOSED 12'x10' RCB, THE WELLS HAVE REINFORCED CONCRETE WALLS FILLED WITH SELECT FILL.
61. CONTRACTOR TO CONNECT EXISTING YARN DRAIN AT ROW (4" TO 6"), PROVIDE ADAPTER TO CONNECT SAME SIZE PVC PIPE TO DRAIN TO AN INLET, NOT THROUGH THE CURB.
62. CONTRACTOR TO CLEAN EXISTING LIFT STATION WET WELL PER CITY REQUIREMENTS PRIOR TO WORKING IN WET WELL.
63. REINFORCED CONCRETE SLOPE PROTECTION WITH 1–FT PERIMETER FOOTING, CONCRETE 3,000 PSI AND 6x6#6 WWM OR #4 @ 24–IN C–C.
64. CONTRACTOR TO VERIFY EXISTING SANITARY SEWER SERVICE LEADS AND POTABLE WATER LEADS AT THE RIGHT–OF–WAY LINE. BASE ON SURVEY THE EXISTING FACILITIES ARE WITHIN 9–FT OF EACH OTHER, CONTRACTOR SHALL CONSTRUCTION ACCORDING TO COH AND TCEQ REQUIREMENTS.
65. CONTRACTOR SHALL ADJUST EXISTING WATER METER AND BOX (CONCRETE TOP REQUIRED IN SIDEWALK) CONSTRUCT NEW SERVICE LEAD AND TRANSFER WATER SERVICE TO PROPOSED WATER LINE.

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02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

KEY NOTES
(1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 3 OF 345	

PLAN & PROFILE KEY NOTES

(66) EXISTING MANHOLE TO REMAIN

(67) PROPOSED 6" & 7" HIGH EARLY STRENGTH CONCRETE PAVEMENT WITH 6" CONCRETE CURB AND 8" STABILIZED SUBGRADE WITH 6% LIME BY DRY WEIGHT OF SOIL THROUGH ALL INTERSECTIONS.

(68) EXISTING ASPHALT TO REMAIN AND TIE INTO PROPOSED ASPHALT.

(69) PLACE 1 FULL SECTION (MIN. 18–FT) OF WL CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL.

(70) PLACE 1 FULL SECTION (MIN. 18–FT) OF SS CENTERED AT WL CROSSING. PROVIDE RESTRAINED JOINTS ON SS.

(71) PLACE 1 FULL SECTION (MIN. 18–FT) OF PRESSURE RATED SS CENTERED AT WL CROSSING. PROVIDE RESTRAINED JOINTS ON SS. SPACED AT LEAST 9–FT HORIZONTALLY FROM THE CENTERLINE OF WL. EMBED SS WITH CSS FOR THE TOTAL LENGTH OF 1 PIPE SEGMENT PLUS 1 FOOT BEYOND THE JOINTS ON EACH END.

(72) SAWCUT EXISTING SIDEWALK, PROVIDE REINFORCED CONCRETE HEADER, DEFORMED BAR EMBEDDED IN EXISTING CONCRETE PER COH DWG. 02752–02.

(73) SS MANHOLES LOCATED WITHIN THE 100–YR FLOODPLAIN SHALL BE SEALED AND VENTED PER TCEG REQUIREMENTS.

(74) PROPOSED 4" 2–WAY REFLECTORIZED BLUE PAVEMENT MARKER. SHALL BE PLACED 6–INCHES OFFSET OF THE CENTERLINE AT ALL FIRE HYDRANT LOCATIONS. FIRE HYDRANTS LOCATED AT INTERSECTIONS SHALL HAVE A BUTTON PLACED ON EACH STREET.

(75) CONTRACTOR TO PROVIDE BRACE/TIEBACK FOR POWER POLES SUPPORT, INCIDENTAL TO INSTALLATION OF WATER LINE, NO ADDITIONAL PAY ITEM.

(76) CONTRACTOR SHALL NOTIFY CENTERPOINT ENERGY SIX (6) IN ADVANCE AFTER RELOCATING EXISTING WATER LINE IN CONFLICT WITH PROPOSED CNP POWER POLES, TO INLCUDE TESTING AND SERVICE LEAD TRANSFERS.

(77) CONTRACTORS TO REMOVE SPRINKLER HEADS AND CONDUIT WITHIN RIGHT–OF–WAY, CUT AND PLUG CONDUIT AT RIGHT–OF–WAY.

(78) REMOVE AND REPLACE SPEED CUSHION PER DWG NO. 13501–01

(79) CONTRACTOR SHALL USE A PRECAST TRANSITION PIECE FORTERRA (OR APPROVED EQUAL) TO CONNECT REINFORCED CONCRETE PIPE TO REINFORCED CONCRETE BOX. (TRANSITION PIECE COST IS INCIDENTAL TO COST OF REINFORCED CONCRETE BOX)

(80) ENCASE 8" EXISTING SANITARY SEWER PIPE (PVC) IN A 20–IN SPLIT STEEL CASING, PER DETAIL, SEE SHEET 172 NO EXTRA, INCIDENTAL TO PIPE INSTALLATION.

(81) ENCASE 8" PROPOSED SANITARY SEWER PIPE (PVC) IN A 20–IN STEEL CASING, PER DETAIL, SEE SHEET 172 NO EXTRA PAY, INCIDENTAL TO PIPE INSTALLATION.

(82) ENCASE 10" PROPOSED SANITARY SEWER PIPE (PVC) IN A 20–IN STEEL CASING, PER DETAIL, SEE SHEET 172 NO EXTRA PAY, INCIDENTAL TO PIPE INSTALLTION.

(83) ENCASE 8" EXISTING WATERLINE PIPE (PVC) IN A 20–IN SPLIT STEEL CASING, PER DETAIL, SEE SHEET 172 NO EXTRA PAY, INCLIDENTAL TO PIPE INSTALLATION.

(84) ENCASE 8" PROPOSED WATERLINE PIPE (PVC) IN A 20–IN STEEL CASING, PER DETAIL, SEE SHEET 172 NO EXTRA PAY, INCIDENTAL TO PIPE INSTALLATION.

(85) ENCASE 12" EXISTING WATERLINE PIPE (PVC) IN A 20–IN SPLIT STEEL CASING, PER DETAIL, SEE SHEET 172 NO EXTRA PAY, INCIDENTAL TO PIPE INSTALLATION.

(86) SAWCUT ASPHALT

(87) PROPOSED TEMPORARY ASPHALT PAVEMENT 8" TYPE B BASE WITH 2" TYPE C HMAC.

(88) PROPOSED TEMPORARY PAVEMENT MARKING (WS4)

(89) PROPOSED TEMPORARY CURB (SEE DETAIL SHEET 183)

(90) PROVIDE VENT AT SANITARY SEWER MANHOLE PER DETAIL 02082–06 TO INCLUDE TWO(2) CONCRETE FILLED STEEL BOLLARDS, 2–FT BEHIND BACK OF CURB.

(91) PROP. 5–FT SIDEWALK AT BACK OF CURB TO INCLUDE EXPANSION JOINT BETWEEN THE CURB AND SIDEWALK.

(92) PLACE 1 FULL SECTION (MIN. 18–FT) OF DIP WL CENTERED AT SS CROSSING. PROVIDE RESTRAINED JOINTS ON WL.

(93) PLACE 1 FULL SECTION (MIN. 18–FT) OF DIP SS CENTERED AT WL CROSSING. PROVIDE RESTRAINED JOINTS ON SS.

(94) EMBED SS WITH CEMENT STABILIZED SAND FOR THE TOTAL LENGTH OF 20' PIPE SEGMENT PLUS 1 FOOT BEYOND THE JOINTS ON EACH END.

(95) PROPOSED REINFORCED CONCRETE COLLAR TIES, NO EXTRA PAY, INCIDENTAL TO 24" RCP PIPE INSTALLATION.

(96) CONTRACTOR TO REMOVED EXISTING JOINT OF WATER LINE CENTERED OVER STORM SEWER PIPE, TO BE REPLACED WITH 1 FULL–SECTION (MIN. 18–FT) OF DUCTILE IRON PIPE (DIP).

(97) PROP. RESTRAINT JOINTS PLACED ON EXISTING WATER LINE, INCIDENTAL TO PROPOSED STRUCTURE, NO SEPARATE PAY.

(98) PROPOSED AUGER AND RECEIVING PITS REQUIRING PAVEMENT REMOVAL AND REPLACEMENT INCLUDING TEMPORARY SIGN RELOCATION, INCIDENTAL TO PROPOSED WATER LINE INSTALLATION, NO ADDITIONAL PAY ITEM.

(99) ENCASE 18" PROP. SANITARY (PVC) IN A 30–IN STEEL CASING, PER DETAIL, SEE SHEET 172, NO EXTRA PAY, INCIDENTAL TO PIPE INSTALLATION.

(100) ENCASE 6" PROP. SANITARY SEWER PIPE (PVC) IN A 18–IN STEEL CASING, PER DETAIL, SEE SHEET 172, NO EXTRA PAY, INCIDENTAL TO PIPE INSTALLATION.

(101) CONSTRUCT PROPOSED JUNCTION BOX ON EXIST MRC STORM SEWER PIPE, TO INCLUDE CUTTING AND REMOVING EXISTING PIPE, GROUT AND SEAL CONNECTION.

REV	DESCRIPTION	BY	DATE

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02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

KEY NOTES
(2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 4 OF 345	

CivilTech Engineering, Inc.
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1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

A. HARRIS COUNTY COMMISSIONER'S PRECINCT:
☐ 1 ☐ 2 ☐ 3 ☒ 4

B. KEY MAP: 492 C & 492 G

C. ADDRESS: _____

II. LEGAL DESCRIPTION

A. ACREAGE: 79.80 AC.

B. ☒ SUBDIMISION: COTTAGE GROVE, COTTAGE OAKS & BRUNNER

☒ SURVEY & ABSTRACT: J. REINERMAN SURVEY–ABSTRACT NO.642 ; J. AUSTIN SURVEY–ABSTRACT NO.1; J. AUSTIN SURVEY–ABSTRACT NO.1

C. ADJACENT ROADS: TC JESTER BLVD, N. DURHAM & IH-10 FRONTAGE

III. PLATTING

A. SUBDIVISION PLAT
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT

PLAT NAME: _____

B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☒ NONE

IV. JURISDICTIONS

☒ CITY OF HOUSTON
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ
☐ UTILITY DISTRICT (NAME)_____

V. HCAD ACCOUNT NOS. (ALL)

_____

2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION _____

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 DETAIL STUDY

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
☒ .65, H.C.F.C.D. CHANNEL, (H.C.F.C.D. UNIT NO.) E-100-00-00
☐ .75, EXISTING STORM SEWER (OWNER & OPERATOR) _____
☐ 1.00, ROADSIDE DITCH, (OWNER & ROAD NAME) _____
☐ OTHER (OWNER & OPERATOR) _____

IV. STORMWATER DETENTION BASIN INFORMATION NO BASIN PROPOSAL

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

DETENTION BASIN SERVICE AREA		acres	
STORM EVENT	50% EXCEEDANCE (2-YEAR)	10% EXCEEDANCE (10-YEAR)	1% EXCEEDANCE (100-YEAR)
MAXIMUM ALLOWABLE OUTFLOW (PRE-DEVELOPMENT PEAK FLOW)			
MAXIMUM OUTFLOW PROVIDED (PEAK FLOW FROM BASIN)			
LOWEST NATURAL/FINISHED GROUND OR FINISHED FLOOR ELEVATION ESTIMATE			
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 _____

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: _____
RESTRICTOR PIPE SIZE: _____
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 DETENTION 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 AREAS HAVE BEEN ADDRESSED.

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

☒ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) 336-345
☐ 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: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
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) _____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: 48201C0670M (670 OF 1150)
FIRM PANEL(S) DATE: JUNE 9, 2014
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. 21-22) (1% BASE FLOOD LEVEL 49.88)
(0.2% BASE FLOOD LEVEL 52.36)
☐ 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 (2001 ADJ.) CITY OF HOUSTON MONUMENT 5258-8507 A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING ST AND REINERMAN ST ELEV. 52.44 FT AND NAVD 1988 (CORS96)(GEO'12A)

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 52.36 (2001 ADJ.) 1,770 CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN: BELOW 0.2% BASE FLOOD ELEVATION 52.36 (2001 ADJ.) 5,497 CUBIC YARDS INCLUDING CALCULATIONS)
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET 100-111

5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD HCFCD ROW

A. BOND/NOTIFICATION INFORMATION
☒ HCFCD WATERSHED WHITE OAK BAYOU
☒ HCFCD UNIT No. E100-00-00
☒ 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 $45,000.00

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:
REPLACING THE SAME SIZE PIPE AND NOT WORKING IN THE PRIMARY CHANNEL

III. REFERENCE / BASIS OF DETERMINATION

☐ ENVIRONMENTAL CONSULTANT REPORT
BY _____
REPORT TITLE _____
REPORT DATE _____
☒ OTHER VERIFIED WITH WATERSHED COORDINATOR

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 7 OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET 126 OF THESE PLANS.

VI. HCFCD ACCESS PLAN: SEE SHEET N/A OF THESE PLANS.

VII. REFER TO THE FOLLOWING PLAN SHEETS: 85-86, 123-123A & 206
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.)

6. REPORTS / AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

DRAINAGE REPORT
REPORT TITLE COTTAGE GROVE EAST DRAINAGE IMPACT ANALYSIS
HCFCD PROJECT # 19GB220127
ENGINEERING FIRM CIVILTECH ENGINEERING, INC.
REPORT ACCEPTANCE DATE APRIL 21, 2022

REPORT TITLE _____
HCFCD PROJECT # _____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

HCFCD APPROVED VARIANCE
DESCRIPTION OF VARIANCE _____
DOCUMENT ID # _____
VARIANCE ACCEPTANCE DATE _____

II. AGREEMENT TYPE & No.:

☐ INTERLOCAL (ILA): _____
☐ HCFCD MAINTENANCE _____
☐ TURF ESTABLISHMENT _____
☐ OTHER _____

HARRIS COUNTY FLOOD MANAGEMENT OFFICE
APPROVED
Development Permit #: 25-5059
Date: 8/28/25 By: Juan Rodriguez

HCFCD SIGNATURE BLOCK

PROJECT NAME: COTTAGE GROVE EAST PHASE II

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

BY _____ DATE: 2025.09.11 16:02:12-05'00' PMM
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, ROBERT A. HILL, 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 345

SIGNATURE _____ DATE 08/19/2025

SEAL: STATE OF TEXAS · ROBERT A. HILL · 100681 · LICENSED PROFESSIONAL ENGINEER

REVISIONS

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

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C.F.C.D APPROVED DATE

HARRIS COUNTY
FLOOD CONTROL DISTRICT
REVIEW SHEET

VERSION 1.0 OCTOBER 2019

HARRIS COUNTY FLOOD CONTROL PROJECT NO. 2503050191

GENERAL NOTES

1. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING, AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING PUBLISHED BY HOUSTON PUBLIC WORKS.

2. THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT WAS CONDUCTED IN ACCORDANCE WITH CHAPTER 11 OF THE LATEST EDITION OF THE PUBLICATION INFRASTRUCTURE DESIGN MANUAL, PUBLISHED BY HOUSTON PUBLIC WORKS. SOILS REPORT WAS PREPARED BY (ASTER LP Engineering and Environmental) REPORT NO. (02-18-22472), DATED (JUNE 18, 2019).

3. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. UTILITIES MARKED WITHIN THE PUBLIC RIGHT OF WAY OR IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, RULE §18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.

4. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE HOUSTON PUBLIC WORKS, STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEM, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING, REFERENCED ABOVE, AT NO ADDITIONAL COST.

5. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, HOUSTON PUBLIC WORKS @ 832-394-9098 OR VIA FAX AT 832-395-4424 FOR INSPECTION AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.

6. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER.

7. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG THE AREA OF EXCAVATION.

8. CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.

9. CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS AND RECORD AS-BUILT CONDITIONS DURING CONSTRUCTION. THESE REDLINE MARKED UP DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.

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

3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FORM THE EXCAVATED AREA.

4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN(14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

- DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
- AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
- STRUCTURAL CONTROL MEASURES.
- LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

STREET & BRIDGE NOTES

1. PRIOR TO STREET CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE DEPARTMENT OF PUBLIC WORKS AND ENGINEERING AT (PHONE) 832-394-9098 AND COMPLY WITH ALL REQUIREMENTS FOR THE ISSUANCE OF NECESSARY PERMITS/WORK ORDERS FOR STREET CONSTRUCTION.

2. DOUBLE REFLECTORIZED BLUE TRAFFIC MARKERS SHALL BE PLACED 6-INCHES OFFSET OF THE CENTERLINE OF ALL FIRE HYDRANT LOCATIONS BY THE PAVING CONTRACTOR. HYDRANTS LOCATED AT INTERSECTIONS SHALL HAVE A BUTTON PLACED ON EACH STREET.

STORM CONSTRUCTION NOTES

1. STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 2317-02, 02317-3, 02317-05, 02317-06, AND 02317-07 (JULY 2019) AS APPLICABLE UNLESS OTHERWISW SHOWN ON THE DRAWINGS.

2. ALL STORM SEWER CONSTRUCTED IN SIDELOT EASMENT SHALL BE R.C.P (C-76, CLASSIII) AND SHALL BE EMBEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 AS APPLICABLE.

3. ALL SEWER UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT/C.Y. STABLIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL.

4. ALL TRENCH BACKFILL SHALL BE IN 8" LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN EACH LIFT, AND MECHNICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMACTION TEST (ASTM D-698/AASHTO T99).

5. CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.

6. ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24" AND LARGER R.C.P. (C-76, CLASSIII).

7. ALL PRPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.

8. MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 48-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES. MINIMUM VERTICAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 24-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES.

9. ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02086-ADJUSTING MANHOLES, INLETS, AND VALAVE BOXES TO GRADE.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK.

10. 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.

11. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

CENTERPOINT ENERGY NOTES

CAUTION: UNDERGROUND GAS FACILITIES

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

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

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

WARNING: OVERHEAD ELECTRICAL FACILITIES

OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR 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: OVERHEAD ELECTRICAL FACILITIES

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

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

AT&T TEXAS/SWBT FACILITIES NOTES

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 KEVIN RAY. AT (713) 614-1983 OR E-MAIL HIM AT kr7896@att.com, IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATING NEAR OUR AT&T TEXAS/SWBT FACILITIES.

SANITARY SEWERS CONSTRUCTION NOTES

1. ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON "STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC" AND ALL CURRENT AMENDMENTS THERETO AND 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 SEWERAGE 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 2010 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 ½ SACK CEMENT/CY STABILIZED SAND BACKFILL UP TO THE BOTTOM OF THE PAVEMENT SUBGRADE. 100 PSI PERFORMANCE RESULTS ARE STILL REQUIRED.

8. ALL SANITARY SEWERS CROSSING WATER LINES WITH A CLEARANCE BETWEEN 12 INCHES AND 9 FEET SHALL HAVE A MINIMUM OF ONE 18' JOINT OF 150 PSI 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 (2002).

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 317.2 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 30 317.2 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'

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 ½"-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.

16. SUBMIT CCTV OF ALL NEW AND REHABILITATED SANITARY SEWERS INCLUDING VIDEOS OF SANITARY SEWER LATERALS AND MANHOLES ACCORDING TO CITY OF HOUSTON DOCUMENT 02258.

REV	DESCRIPTION	BY	DATE

Texas 811

ONE CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
CALL 811 OR
(NEW STATEWIDE NUMBER OUTSIDE HOUSTON)
1-800-344-8377

BENCHMARK:
CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:
THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:
THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06-09-2014.

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

Mike Brower 03/18/26
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.

Mike Brower 03/18/26
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.

Brian L Hill 03/24/26
Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
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Houston, TX 77079
800.414.1045

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

GENERAL NOTES
(1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 6 OF 345	

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GENERAL NOTES (HCFCD)

1. THESE PLANS WERE PREPARED TO MEET OR EXCEED TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, HARRIS COUNTY AND CITY OF HOUSTON RULES AND REGULATIONS AS CURRENTLY AMENDED.
2. WATER LINES, WASTEWATER COLLECTION SYSTEMS, AND DRAINAGE SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING'S "STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING", DATED JULY 1, XXX AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING", DATED JULY, 2019, UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN IS CONSISTENT WITH THE MINIMUM STANDARDS ESTABLISHED IN THE "INFRASTRUCTURE DESIGN MANUAL", DATED JULY, 2019. CONTRACTOR SHALL USE CURRENT COPIES OF DESIGN MANUAL, STANDARD CONSTRUCTION SPECIFICATIONS AND STANDARD CONSTRUCTION DETAILS ISSUED BY THE CITY OF HOUSTON. COPIES CAN BE OBTAINED AT THE CITY OF HOUSTON FILE ROOM, 611 WALKER, BASEMENT.
3. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE TO THE EXISTING PUBLIC UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATER LINES, WASTEWATER COLLECTION SYSTEMS AND STORM SEWERS, DURING CONSTRUCTION. ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THERETO WITH NO COST TO THE PUBLIC. (NO ADDITIONAL PAY TO CONTRACTOR).
4. UNLESS SPECIFICALLY INDICATED OTHERWISE ON THE PLANS, UTILITIES WITHIN EASEMENTS SHALL BE LOCATED IN ACCORDANCE WITH STANDARDS OUTLINED BY THE MOST CURRENT UTILITY COORDINATING COMMITTEE DRAWINGS.
5. THIS PROJECT IS TIED INTO THE SURVEY MONUMENT SYSTEM ESTABLISHED BY HARRIS COUNTY FLOOD CONTROL DISTRICT. HORIZONTAL DATA ARE REFERENCED TO THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD 83, 1993 ADJUSTMENT. ELEVATION VALUES ARE REFERENCED TO THE NORTH VERTICAL DATUM OF 1988, 2001 ADJUSTMENT. ALL DISTANCES AND COORDINATES SHOWN ARE SURFACE VALUES.
6. CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, CONSTRUCTION DIVISION AT 713-837-7000 48 HOURS BEFORE STARTING WORK ON THE PART OF THIS PROJECT, LOCATED IN COH ROW.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES AND OTHER FACILITIES.
8. CONTRACTOR SHALL COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS AND ANY OTHER FEDERAL, STATE AND LOCAL REGULATIONS REGARDING TRENCH SAFETY SYSTEMS FOR TRENCH EXCAVATION.
9. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB, SHALL BE AS GOOD OR BETTER THAN CONDITION PRIOR TO STARTING WORK.
10. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF TRAFFIC CONTROL PLANS DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, (S)HE SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT AN ALTERNATE SET OF PLANS TO THE ENGINEER FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION.
11. THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. PLANS WILL BECOME A PART OF THE CONTRACT DRAWINGS.
12. APPROVED COPIES OF "TRAFFIC CONTROL PLANS" AND LANE/SIDEWALK CLOSURE PERMITS SHALL BE AVAILABLE FOR INSPECTION AT JOB SITE AT ALL TIMES.
13. CONTRACTOR MUST SECURE "LANE/SIDEWALK CLOSURE PERMITS" FROM CITY'S TRAFFIC MANAGEMENT AND MAINTENANCE BRANCH BEFORE CLOSING A LANE/SIDEWALK. THE REQUEST MUST BE MADE AT LEAST THREE BUSINESS DAYS PRIOR TO THE DATE FOR WHICH THE CLOSURE IS SOUGHT. NOTE THAT WORKING HOURS MAY BE RESTRICTED OR THE REQUEST MAY BE DENIED. CALL 713-837-7280 FOR AN APPLICATION
14. CONTRCATOR SHALL COMPLY WITH H.C.F.D. TECHINCALL SPECIFICATION 01566 "TREE AND PLANT PROTECTION" WHILE WORKING IN H.CF.C.D. ROW.
15. THE GEOTECHNICAL REPORT WAS PREPARED BY ASTER LP ENGINEERING AND ENVIRONMENTAL REPORT NO. (02-18-22472), DATED JUNE 18, 2019.

WATERLINE NOTES

1. WATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL, STANDARD SPECIFICATION, AND CONSTRUCTION DETAILS.
2. 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.
3. CONCRETE THRUST BLOCKS SHALL BE PROVIDED AS NECESSARY TO PREVENT PIPE MOVEMENT. USE RESTRAINED JOINTS WHERE PREVENTING MOVEMENT OF 16" OR GREATER PIPE IS NECESSARY DUE TO THRUST.
4. 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.
5. ALL WATER LINE AND SEWER LINE CROSSINGS SHALL BE CONSTRUCTED PER CITY OF HOUSTON AND TCEQ REGULATIONS.
6. 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.
7. 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.
8. ALL BELOW GRADE VALVES SHALL BE GASKETED, HUB-END GATE VALVE WITH A CAST IRON BOX, EXCEPT WHERE FLANGES ARE CALLED OUT ON THE PLANS.
9. 4" THRU 12" FITTINGS SHALL BE CEMENT MORTAR LINED COMPACT DUCTILE IRON PRESSURE FITTINGS PER ANSI A21.53, OR PUSH ON FITTING PER ANSI 121.10 PRESSURE RATED AT 250 PSIG.
10. HYDROSTATIC TESTING: ALL WATER PIPE SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON STANDARD CONSTRUCTION SPECIFICATIONS. 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 LINE INCLUDED IN THE PROJECT.
11. 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.
12. 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 PIPE LINES AT TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.
13. ALL PROPOSED WATER LINE BENDS AND FITTINGS SHOULD BE RESTRAINED JOINTS.

CONSTRUCTION NOTES FOR WORK IN EXISTING OR PROPOSED HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY

1. OBTAIN AND COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE, AND FEDERAL PERMITS.
2. NOTIFY THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S DEVELOPMENT COORDINATION AND INSPECTION DEPARTMENT AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. PLEASE SUBMIT THE HCFCD 48 HOUR PRE-CONSTRUCTION NOTIFICATION FORM, A COPY OF THE APPROVED CONSTRUCTION DRAWINGS, AND A COPY OF THE PLANS BY EMAIL DCID@hcfcd.hctx.net.
3. FOR WORK IN FLOOD CONTROL DISTRICT RIGHT-OF-WAY, CONTACT THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S DEVELOPMENT COORDINATION AND INSPECTION DEPARTMENT REQUESTING INSPECTION OF APPLICABLE ITEMS. PRIOR TO REQUESTING, THE DRAINAGE RIGHT-OF WAY SHALL BE STAKED AND FLAGGED.
4. TO SCHEDULE A FINAL INSPECTION, THE ENGINEER SHALL SUBMIT A CONSTRUCTION CERTIFICATION LETTER TO HARRIS COUNTY FLOOD CONTROL DISTRICT'S DEVELOPMENT COORDINATION AND INSPECTION DEPARTMENT UPON THE COMPLETION OF CONSTRUCTION.
5. PROTECT, MAINTAIN, AND RESTORE EXISTING BACKSLOPE DRAINAGE SYSTEMS.
6. 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.
7. ESTABLISH TURF GRASS ON ALL DISTURBED AREAS WITHIN THE CHANNEL AND DETENTION BASIN RIGHT-OF-WAY, EXCEPT THE CHANNEL BOTTOM AND WHERE CONCRETE PAVING IS USED. THE MINIMUM ACCEPTANCE CRITERIA ARE 75% COVERAGE OF LIVE BERMUDA GRASS AND NO EROSION OR RILLS DEEPER THAN 4".
8. 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.
9. EXCAVATE CHANNEL FLOWLINE TO DESIGN ELEVATION AS SHOWN ON PLANS AND DOWNSTREAM, AS NECESSARY, TO ENSURE NO WATER REMAINS IN THE FACILITY (e.g, STORM SEWER, LATERAL CHANNEL, OR DRY BOTTOM DETENTION BASIN) DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL. IN ORDER THAT 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.
10. MAINTAIN FLOW IN THE CHANNEL DURING CONSTRUCTION AND RESTORE AREAS DISTURBED BY CONSTRUCTION ACTIVITY.
11. REMOVE ALL EXCAVATED MATERIAL FROM THE HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. NO FILL IS TO BE PLACED WITHIN A DESIGNATED FLOOD PLAIN UNLESS SPECIFIED IN THE DESIGN PLANS.

STREET & BRIDGE CONSTRUCTION NOTES

1. FILL AREAS ON PLANS SHALL BE FILLED IN LAYERS NOT EXCEEDING 8" IN DEPTH AND EACH COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY PRIOR TO INSTALLATION OF WATER LINE AND FILL AREA SHALL BE SEEDED AND FERTILIZED WITHIN 10 WORKING DAYS.
2. UTILITY CONTRACTOR SHALL PROVIDE TEMPORARY SILT BARRIER FENCE ON ALL NON-CURBED INLETS WHICH WILL REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.
3. CONTRACTOR SHALL PROVIDE SILT BARRIER FENCE ON ALL STAGE 1 CURB INLETS.
4. EXISTING PAVEMENTS, CURBS, DRIVEWAYS, AND SIDEWALKS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO CITY OF HOUSTON STANDARDS, WITH LATEST ADDENDA AND AMENDMENTS THERETO.
5. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY UPON COMPLETION OF JOB SHALL BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK.
6. EXPOSED 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BARS 24" LONG 24" C-C DRILLED AND EMBEDDED 8" INTO THE CENTER OF THE EXISTING SLAB WITH "PO ROC" OR EQUAL.
7. WHEELCHAIR RAMPS SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF HOUSTON STANDARDS AT ALL INTERSECTIONS WHERE SIDEWALKS EXIST AND THE EXISTING CURB OR SIDEWALK IS DAMAGED OR REMOVED DURING CONSTRUCTION.
8. PRIOR TO STREET CONSTRUCTION, THE CONTRACTOR SHALL CONTACT HOUSTON PUBLIC WORKS AT (PHONE) 832-394-9578 AND COMPLY WITH ALL REQUIREMENTS FOR THE ISSUANCE OF NECESSARY PERMITS/WORK ORDERS FOR STREET CONSTRUCTION.
9. DOUBLE REFLECTORIZED BLUE TRAFFIC MARKERS SHALL BE PLACED 6-INCHES OFFSET OF THE CENTERLINE OF ALL FIRE HYDRANT LOCATIONS BY THE PAVING CONTRACTOR. HYDRANTS LOCATED AT INTERSECTIONS SHALL HAVE A BUTTON PLACED ON EACH STREET.

TRAFFIC NOTES

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) LATEST EDITION WITH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
2. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00PM TO 7:00AM.
3. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS. TRAFFIC CONTROL PLANS SHALL INCLUDE ONE-WAY AND/OR DETOUR PLANS. CONTRACTOR SHALL MAINTAIN ADA COMPLAINT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO THE BUS STOP.
4. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.
5. CONTRACTOR SHALL SECURE ROADWAY/SIDEWALK/STREET/BICYCLE FACILITY PERMITS AS DESCRIBED IN CITY OF HOUSTON ORDINANCE, CHAPTER 40 - STREETS & SIDEWALKS, SECTION 40-361 FROM HOUSTON PERMITTING CENTER (MOBILITY PERMIT SECTION AT HTTPS://GEOHUB.HOUSTONTX.GOV) BEFORE IMPLEMENTING THE TRAFFIC CONTROL PLAN. THE APPLICATION MUST BE SUBMITTED AT LEAST TEN BUSINESS DAYS PRIOR TO THE IMPLEMENTATION OF THE TRAFFIC CONTROL PLAN AND/OR BEGINNING CONSTRUCTION WORK. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS, CONSTRUCTION SEQUENCING, AND CONSTRUCTION SCHEDULE WITH THE APPLICATION.
6. CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES
7. ACCESS TO DRIVEWAYS ADJACENT TO THE CONSTRUCTION WORK ZONE SHALL BE MAINTAINED AT ALL TIMES AS MUCH AS POSSIBLE. ADDITIONAL CONES AND/OR DELINEATORS MAY BE REQUIRED TO DELINEATE THE DRIVEWAY ACCESS ROUTE THROUGH THE CONSTRUCTION WORK ZONE. A MINIMUM OF ONE TRAVEL LANE SHALL BE MAINTAINED ACROSS THE DRIVEWAY, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE CITY OF HOUSTON.
8. ADDITIONAL OFF DUTY POLICE OFFICERS/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED AT THE DIRECTION OF THE CITY EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS.

REV	DESCRIPTION	BY	DATE

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STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED
PROFESSIONAL ENGINEER
3/10/2026

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

GENERAL NOTES
(2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
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SHEET NO. 7 OF 345	

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LEGEND

SYMBOL	DESCRIPTION
EXISTING PLAN VIEW	
▲	SURVEY MONUMENT
0+00	TRANSIT LINE (BASE LINE)
	EXISTING RIGHT–OF–WAY LINE
	PROPERTY LINE
	LOT LINE
	EASEMENT LINE
28'	DIMENSION LINE
	EDGE CONCRETE PAVING
	CURB LINE
	EDGE OF ASPHALT
	SIDEWALK
	TREE
	TREE TO BE REMOVED
	HEDGE
	BUILDING
	POST
16" WL	WATER LINE
	WATER VALVE
FH	FIRE HYDRANT
	ROUND CONNECTIONS
	WATER METER
O OR 2" LINE STL	CENTER POINT ENERGY PRESSURE GAS LINE
	GAS VALVE
O OR GM	GAS METER
	GAS LINE MARKER
24" (& SMALLER) SAN	SANITARY SEWER LINE
30" (& LARGER) SAN	
	SANITARY SEWER LINE MANHOLE & CLEANOUT
24" (& SMALLER) STM	STORM SEWER LINE
30" (& LARGER) STM	
	STORM SEWER LINE & MANHOLE
	CURB INLET
	CULVERT
	GRATE INLET
	STORM INLET
	DITCHES, LEFT AND RIGHT
(R)	COH RECORD DRAWING INFORMATION (UNABLE TO FIED VERIFY)
(NR)	NO COH RECORD DRAWING INFORMATION (UNABLE TO FIED VERIFY)

SYMBOL	DESCRIPTION
EXISTING PLAN VIEW	
HL&P CABLE 9 MTD — MH	HOUSTON LIGHTING & POWER CO. CONDUIT & MANHOLE
P	POWER POLE W/ OVERHEAD LINES
	POWER POLE DOWN GUY
	SWBT CONTROLLER BOX
SBC 6 MTD — MH	SOUTHWESTERN BELL MANHOLE & CONDUIT
	TELEPHONE BOX
	STREET LIGHT (NON–CANTILEVERED)
	STREET LIGHT (CANTILEVERED)
	YARD LIGHT
	ELECTRICAL JUNCTION BOX OR TRAFFIC LIGHT POLE
	SIGN POST
	MAILBOX
//—	FENCE LINE (CHAIN LINK OR OTHER)
—X—	FENCE LINE (BARBED WIRE)
B–H	SOIL BORING
	UTILITY LOCATION TEST HOLE
—X——X—	REMOVE EXISTING UTILITY
	ABANDON EXISTING UTILITY

SYMBOL	DESCRIPTION
EXISTING PROFILE VIEW	
	CENTER LINE EXISTING RIGHT–OF–WAY
	NORTH OR EAST PROPERTY LINE
	SOUTH OR WEST PROPERTY LINE
	NORTH OR EAST DITCH OR CURB
	SOUTH OR WEST DITCH OR CURB
CENTER POINT ENERGY MTD	CENTER POINT ENERGY CONDUIT
8" GAS LINE STL	CENTER POINT ENERGY GAS LINE
SBC C MCD	SBC CONDUIT
EXIST 12" WATER MAIN	WATER LINE
EXIST 21" SAN SWR	SANITARY SEWER LINE (24" AND SMALLER)
EXIST 30" SAN SWR	SANITARY SEWER LINE (30" AND LARGER)
EXIST 24" STM SWR	STORM SEWER LINE (24" AND SMALLER)
EXIST 30" STM SWR	STORM SEWER LINE (30" AND LARGER
	HOUSTON LIGHTING & POWER CO. MANHOLE
	SOUTHWESTERN BELL TELEPHONE MANHOLE
	SANITARY SEWER MANHOLE AND CLEANOUT
	STORM SEWER MANHOLE
	STORM SEWER INLET

SYMBOL	DESCRIPTION
PROPOSED PLAN VIEW	
PI #	POINT OF INTERSECTION (PI)
PC OR PT	POINT OF CURVE (PC) OR POINT OF TANGENCY (PT)
4" – 16" WL / 24" WL	WATER LINE
24" (& SMALLER) SAN SWR / 30" (& LARGER) SAN SWR	SANITARY SEWER LINE
	WL & SAN CROSSING PROTECTION
	AUGER PIPE
	SANITARY SEWER MANHOLE
24" (& SMALLER) STM SWR / 30" (& LARGER) STM SWR	STORM SEWER LINE
	STORM SEWER MANHOLE
	FACE OF CURB
	PROPOSED PAVEMENT FLOW DIRECTION
	PROPOSED SIDEWALK
	PROPOSED CURB RAMP WITH TRUNCATED DOMES
	PROPOSED ASPHALT TRANSITION TO EXISTING ASPHALT PAVEMENT.

SYMBOL	DESCRIPTION
PROPOSED PROFILE VIEW	
	WATER LINE (4" & LARGER)
	WATER LINE (PROP & RJ)
	SANITARY SEWER LINE (24" AND SMALLER)
	SANITARY SEWER LINE (30" AND LARGER
	STORM SEWER LINE 24" AND SMALLLER)
	STORM SEWER LINE (30" AND LARGER)
	SANITARY SEWER MANHOLE
	STORM SEWER JUNCTION BOX
	STORM SEWER MANHOLE
	STORM SEWER INLET
	2 & 100 YR HGL

ABBREVIATIONS

&	AND
@	AT
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ACI	AMERICAN CONCRETE INSTITUTE
ABAND	ABANDONED
ACP	ASPHALT CONCRETE PAVEMENT
ADJ	ADJUSTMENT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
APTS	APARTMENTS
ASB	ASPHALT STABILIZED BASE
ASPH	ASPHALT
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATTY	ATTORNEY
AWWA	AMERICAN WATER WORKS ASSOCIATION
AVE	AVENUE
B	BORING
B/C	BACK OF CURB
BL	BASE LINE
BEG	BEGINNING
BLDG	BUILDING
BLVD	BOULIVARD
BND	BOUND
BOTT	BOTTOM
BR	BRICK
C	CUT, CONDUIT
C TO C, C–C OR C. C.	CENTER TO CENTER
CA	CONTROL AIR
CCW	COUNTER CLOCKWISE
CEM	CEMENT
C.O.	CLEAN OUT
CI	CAST IRON
CIP	CAST IRON PIPE
CITY	CITY OF HOUSTON
CL OR ℄	CENTERLINE
CLEAR OR CLR	CLEARANCE
CMP	CORRUGATED METAL PIPE
CNTRL	CONTROL
CO	COMPANY
COH	CITY OF HOUSTON
CONC	CONCRETE
COND	CONDUIT
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
C.R.S.I.	CONCRETE REINFORCING STEEL INSTITUTE
CSB	CEMENT STABILIZED BASE
CTB	CONCRETE TRAFFIC BARRIER
CV	CHECK VALVE
CW	CLOCKWISE
D	DEGREE OF CURVE (ARC) DEFINITION
DEF	DEFORMED
DEP	DEPTH
DET.	DETAIL
DIA OR ø	DIAMETER
DIP	DUCTILE IRON PIPE
DIST	DISTANCE
DMJ	DOUBLE MECHANICAL JOINT
DOTT	DIRECTOR OF TRAFFIC & TRANSPORTATION
DR	DRAIN LINE
DR	DRIVE
DS	DRILLED SHAFT
D/W	DRIVEWAY
DWG	DRAWING
E	EAST
EA	EACH
EDB	ELECTRIC DUCT BANK
EFF	EFFLUENT
ELEC	ELECTRIC
ELEV OR EL	ELEVATION
EMB	EMBANKMENT
E.O.P.	EDGE OF PAVEMENT
E.R.	END OF RETURN
EWEF	EACH WAY EACH FACE
EXC	EXCAVATION
EX	EXISTING
EP	EXPANSION
EQ	EQUAL(LY)
F	FRIDAY
F.B.	FIELD BOOK
F.F. OR F–F	FACE TO FACE
FH	FIRE HYDRANT
FJ	FLEXIBLE JOINTS
FL	FLOW LINE
FLG	FLANGE(ED)
FM	FORCE MAIN
FT	FEET
FTG	FOOTING
FWY	FREEWAY
GA	GAUGE
GAL.	GALLON
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
GPS	GLOBAL POSITIONING SYSTEM
GV	GATE VALVE
H.C.F.C.D.	HARRIS COUNTY FLOOD CONTROL DISTRICT
H.C.M.R.	HARRIS COUNTY MAP RECORD
HMAC	HOT MIX ASPHALT CONCRETE
HP	HIGH PRESSURE (GAS LINE), HORSE POWER
H.P.	HIGH POINT
HP	HORSE POWER
HL&P OR HLP	HOUSTON LIGHTING & POWER CO.
HORIZ	HORIZONTAL
HWY	HIGHWAY
I	TOTAL INTERSECTION ANGLE
ID	INSIDE DIAMETER
INC	INCORPORATED
INV OR IE	INVERT ELEVATION
IP	IRON PIPE OR INTERMEDIATE PRESSURE
IR	IRON ROD
I.R.	INSIDE RADIUS
JT	JOINT
LBS	POUNDS
LN	LANE
LD	LEAD
L.P.	LOW POINT
LS	LUMP SUM
L OR LC	LENGTH OF CIRCULAR CURVE
LF	LINEAL FEET
LRST	LEAKING REGISTERED STORAGE TANK
LT	LEFT OR LIGHT
M	MONDAY
MAT'L	MATERIAL
MAX	MAXIMUM
M.C.C.	MOTOR CONTROL CENTER
MFG	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
MON	MONUMENT
MP	MILE POST
MRC	MONOLITHIC REINFORCED CONCRETE SEWER
MTD	MULTI TILE DUCT
MTL	MATERIAL
MTP	MATCH TOP PAVEMENT
MW	MONITORING WELL
N	NORTH
NA	NOT APPLICABLE
N.E.R.	NORTH END OF RETURN
NG	NATURAL GROUND
N.T.S.	NOT TO SCALE
NIC	NOT IN CONTRACT
NO OR #	NUMBER
NW	NORTH WEST
OC	ON CENTER
OD	OUTSIDE DIAMETER
O/E	OVERHEAD ELECTRIC
OH	OVERHEAD
OPNG	OPENING
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PG	PAGE
P/L	PROPERTY LINE OR PIPE LINE
PC	POINT OF CURVATURE
PC OR POC	POINT ON CURVE
PCC	PORTLAND CEMENT CONCRETE OR POINT OF COMPOUND
PGL	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POT	POINT ON TANGENT
PP	POWER POLE
PL	PROPERTY LINE OR PLACES
PROP	PROPOSED
PRP	PRESSURE RATED PIPE
PS	PUMP STATION
PSI	POUNDS PER SQUARE INCH
PT	POINT OR POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE OR POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PW	PLANT WATER OR POTABLE WATER
(R)	INFORMATION FROM RECORD DRAWINGS
R	RADIUS OF CIRCULAR CURVE
RCP	REINFORCED CONCRETE PIPE
RCB	REINFORCED CONCRETE BOX
RD	ROAD
RE OR REF	REFERENCE
REINF OR REIN	REINFORCED, REINFORCING OR REINFORCEMENT
REM	REMOVABLE
REQD	REQUIRED
RJ	RESTRAINED JOINTS
ROW	RIGHT OF WAY
RPM	ROTATIONS PER MINUTE
RR	RAIL ROAD
R/R	RAILROAD
RT	RIGHT
S	SLOPE, SOUGH
SAN	SANITARY
SC	SCUM LINE
SCH	SCHEDULE
SD	STORM DRAIN
S.E.R.	SOUTH END OF RETURN
SEW	SEWER
SF	SQUARE FEET
SG	SLUICE GRATE OR SLIDE GRATE
SH	STATE HIGHWAY
SIG	SIGNAL
SL	SLUDGE
SPC	SPACED OR SPACING
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL OR SANITARY SEWER
ST	SAINT OR STREET
STA	STATION ALONG BASELINE OR CENTERLINE
STAL	STABILIZED
STD	STANDARD
STL	STEEL
STM	STORM
SWBT	SOUTHWESTERN BELL TELEPHONE COMPANY
S/W	SIDEWALK
SY	SQUARE YARD
SYMM	SYMMETRICAL
T	TANGENT
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TEMP	TEMPORARY
TDOT	TEXAS DEPARTMENT OF TRANSPORTATION
TG	TOP OF GRATE
THK.	THICK
T.M.U.T.C.D.	TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
TOC	TOP OF CONCRETE
TRAF OR TRF	TRAFFIC
TRV OR TRAV	TRAVERSE
TY	TYPE
TYP	TYPICAL
USC&GS	UNITED STATES COASTAL & GEODETIC SURVEY
UTIL	UTILITY
V	VERTICAL
VAR	VARIABLE
VCP	VITRIFIED CLAY PIPE
VOL	VOLUME
VP	VERTICAL PANEL
W	WEST
W/	WITH
WL	WATER LINE
SW	WATER STOP
W.S. LINE	WASTE SLUDGE LINE
WWF	WOVEN WIRE FABRIC
WWTP	WASTEWATER TREATMENT PLANT
XING OR X–ING	CROSSING
YELL	YELLOW

REV	DESCRIPTION	BY	DATE

1. 24" ARCH = 18"X28.5" CONCRETE ARCH PIPE
2. 30" ARCH = 22.5"X36.25" CONCRETE ARCH PIPE

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 02/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

LEGEND AND ABBREVIATIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 8 OF 345	

CivilTech Engineering, Inc.
O:\2018\J38013\Drawings\SHEETS\LEGEND AND ABBREV – LEGEND.dwg Mar 31, 2025



SCALE: 1" = 100'

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN AVENUE.

ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION
= NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83 (CORS96). ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

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

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

KUO & associates, Inc.
Consulting Engineers & Surveyors
10700 Richmond Ave., Suite 113, Houston, Texas 77042
Tel: 713-975-8765, Fax: 713-975-0920, www.kuoassociates.com
TBPELS Firm Registration No. F-4578
TBPELS Firm Registration No. 1007560

STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
03/21/2023

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SURVEY CONTROL MAP
SHEET 1 OF 7

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=100'	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 9 OF 345	

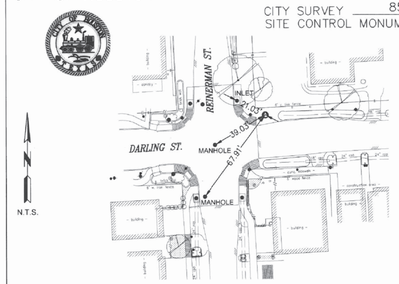
SURVEY BASELINE: LINE TABLE		
LINE #	BEARING	LENGTH
L62	N87° 15' 00.74"E	721.44
L63	S85° 26' 08.17"E	282.78
L64	N80° 28' 42.09"E	264.58
L65	N85° 21' 40.44"E	351.74
L66	N87° 06' 17.65"E	326.25
L67	N84° 53' 11.82"E	514.62
L68	S86° 11' 32.76"E	213.44
L69	N83° 19' 07.11"E	306.30
L70	S88° 48' 57.36"E	323.53
L71	S85° 30' 03.53"E	274.67
L72	N82° 11' 55.31"E	193.55
L73	S88° 08' 33.79"E	240.11
L74	N83° 24' 37.21"E	268.67
L75	S88° 11' 50.54"E	226.32
L76	N87° 32' 10.05"E	211.34
L77	N82° 55' 31.96"E	323.74
L78	S86° 51' 46.24"E	283.15
L79	N84° 50' 11.34"E	751.05
L80	S87° 31' 43.67"E	299.68
L81	N87° 41' 58.57"E	280.37
L82	N83° 55' 35.28"E	341.98
L83	S84° 46' 15.08"E	278.47
L84	N80° 07' 22.94"E	151.46
L85	S88° 28' 18.52"E	283.68

SURVEY BASELINE: LINE TABLE		
LINE #	BEARING	LENGTH
L86	N83° 06' 04.93"E	263.68
L87	N86° 46' 30.30"E	439.40
L88	S86° 42' 12.96"E	261.79
L89	N86° 24' 45.83"E	194.52
L90	N87° 44' 23.74"E	189.52
L91	N87° 10' 25.75"E	186.04
L92	N81° 52' 10.79"E	200.13
L93	S89° 20' 44.42"E	350.70
L94	N2° 20' 32.62"W	76.52
L95	N0° 47' 43.61"W	344.49
L96	N68° 15' 30.38"E	127.02
L97	N89° 32' 46.36"E	329.67
L98	N88° 21' 21.27"E	269.24
L99	N82° 33' 03.48"E	201.91
L100	N86° 31' 50.58"E	338.30
L101	N87° 04' 20.41"E	197.12
L102	N88° 56' 16.43"E	341.59
L103	N82° 25' 28.38"E	371.37
L104	N2° 27' 19.97"W	277.50
L105	N24° 09' 43.43"W	378.43
L106	N70° 09' 21.96"E	249.08
L107	S54° 12' 37.29"E	204.72
L108	S21° 01' 23.43"E	304.40

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-11	13,849,739.03	3,104,996.44	13,847,938.80	3,104,592.84	54.80'	1+27.29	24.71R	SET 'X' IN CONC.
B-12	13,850,052.02	3,104,975.31	13,848,251.75	3,104,571.72	54.24'	1+25.28	23.92L	SET 'X' IN CONC.
B-14	13,850,585.77	3,104,945.98	13,848,785.43	3,104,542.39	54.17'	1+15.44	28.45L	SET 'X' IN CON.
B-15	13,850,838.06	3,104,978.96	13,849,037.68	3,104,575.36	54.06'	1+17.09	13.97L	SET 1/2" I.R.
B-16	13,851,097.19	3,105,033.02	13,849,296.78	3,104,629.42	53.78'	1+08.85	5.37L	SET 1/2" I.R.
B-17	13,851,364.65	3,105,069.11	13,849,564.21	3,104,665.50	53.01'	1+11.64	5.92L	SET MAG NAIL
B-23	13,849,706.41	3,106,981.83	13,847,906.18	3,106,577.98	52.51'	0+93.49	38+76L	SET 'X' IN CON.
B-24	13,849,662.64	3,106,720.90	13,847,862.42	3,106,317.08	53.19'	0+60.00	2.47R	SET 1/2" I.R.
B-25	13,849,685.15	3,106,439.02	13,847,884.92	3,106,035.23	53.73'	0+98.18	25.80R	SET 'X' IN CON.
B-26	13,849,650.54	3,105,718.40	13,847,850.32	3,105,314.71	52.72'	1+03.01	29.36R	SET 'X' IN CON.
B-27	13,849,767.47	3,105,347.02	13,847,967.24	3,104,943.38	55.01'	4+78.80	12.26R	SET 1/2" I.R.
B-28	13,849,783.95	3,105,672.86	13,847,983.72	3,105,269.18	55.39'	8+05.05	10.64R	SET MAG NAIL
B-30	13,849,829.82	3,106,185.43	13,848,029.58	3,105,781.68	54.11'	13+19.18	11.83L	SET 1/2" I.R.
B-31	13,849,815.64	3,106,398.40	13,848,015.40	3,105,994.62	54.13'	15+31.28	12.03R	SET MAG NAIL
B-32	13,849,851.28	3,106,702.62	13,848,051.04	3,106,298.80	53.48'	18+36.81	9.72L	SET MAG NAIL
B-33	13,849,844.60	3,107,026.08	13,848,044.35	3,106,622.22	54.32'	21+59.63	11.69R	SET MAG NAIL
B-38	13,850,106.14	3,106,989.13	13,848,305.86	3,106,585.27	52.23'	21+39.48	13.74R	SET 1/2" I.R.
B-39	13,850,121.63	3,106,706.41	13,848,321.35	3,106,302.59	53.32'	18+57.75	14.62L	SET MAG NAIL
B-40	13,850,081.76	3,106,385.13	13,848,281.49	3,105,981.35	54.29'	15+34.99	10.58R	SET MAG NAIL
B-41	13,850,072.68	3,106,173.99	13,848,272.40	3,105,770.24	54.62'	13+23.66	10.04R	SET 'X' IN CON.
B-42	13,850,079.80	3,105,947.78	13,848,279.52	3,105,544.06	54.98'	10+98.01	7.37L	SET MAG NAIL
B-43	13,850,048.96	3,105,680.88	13,848,248.69	3,105,277.20	55.30'	8+29.98	11.27R	SET MAG NAIL
B-44	13,850,056.75	3,105,440.89	13,848,256.47	3,105,037.24	55.48'	5+90.60	7.43L	SET MAG NAIL
B-45	13,850,030.47	3,105,249.14	13,848,230.20	3,104,845.51	55.28'	3+97.84	10.08R	SET MAG NAIL
B-46	13,850,306.39	3,105,648.75	13,848,506.08	3,105,245.07	53.22'	7+61.35	10.35L	SET 'X' IN CON.
B-47	13,850,373.98	3,106,396.75	13,848,573.67	3,105,992.97	52.44'	1+75.53	15.84L	SET 'X' IN CON.
B-48	13,850,361.06	3,106,696.15	13,848,560.75	3,106,292.33	51.71'	4+74.04	10.70R	SET MAG NAIL
B-49	13,850,372.31	3,106,976.29	13,848,572.00	3,106,572.44	51.60'	7+54.40	12.22R	SET MAG NAIL
B-50	13,850,408.50	3,107,316.36	13,848,608.18	3,106,912.46	46.29'	10+95.76	8.44L	SET 'X' IN CON.
B-51	13,850,638.31	3,106,684.26	13,848,837.96	3,106,280.44	49.60'	3+66.80	12.92R	SET 'X' IN CON.
B-52	13,850,983.58	3,106,529.36	13,849,183.19	3,106,125.57	49.35'	7+40.19	17.86L	SET 1/2" I.R.
B-53	13,851,068.13	3,106,763.65	13,849,267.73	3,106,359.82	45.40'	10+08.81	7.43L	SET 1/2" I.R.
B-54	13,850,948.41	3,106,929.71	13,849,148.02	3,106,525.86	49.04'	12+06.16	24.55L	SET 1/2" I.R.
B-55	13,850,664.27	3,107,038.91	13,848,863.92	3,106,635.05	49.08'	23+64.61	17.80R	SET 1/2" I.R.
B-56	13,850,635.20	3,106,356.56	13,848,834.85	3,105,952.79	50.85'	15+26.81	13.58L	SET MAG NAIL
B-58	13,850,610.48	3,105,917.86	13,848,810.14	3,105,514.14	53.53'	10+87.43	8.87L	SET MAG NAIL
B-59	13,850,578.81	3,105,656.08	13,848,778.47	3,105,252.40	54.25'	8+24.49	10.85R	SET MAG NAIL
B-60	13,850,586.37	3,105,372.51	13,848,786.03	3,104,968.86	54.13'	5+41.55	9.63L	SET 'X' IN CON.
B-61	13,850,560.39	3,105,223.30	13,848,760.06	3,104,819.67	54.40'	3+91.31	9.53R	SET MAG NAIL
B-62	13,850,823.00	3,105,240.31	13,849,022.63	3,104,836.68	53.50'	3+77.48	12.97R	SET MAG NAIL
B-63	13,850,835.17	3,105,434.44	13,849,034.80	3,105,030.79	52.98'	5+71.97	9.65R	SET 1/2" I.R.
B-64	13,850,842.65	3,105,623.82	13,849,042.27	3,105,220.14	52.45'	7+61.49	10.81R	SET MAG NAIL
B-65	13,850,851.82	3,105,809.63	13,849,051.44	3,105,405.93	50.92'	9+47.53	10.11R	SET 1/2" I.R.
B-66	13,850,880.12	3,106,007.75	13,849,079.74	3,105,604.02	50.81'	11+46.72	9.14L	SET MAG NAIL
B-67	13,850,876.12	3,106,358.43	13,849,075.74	3,105,954.65	47.95'	14+96.86	10.83R	SET MAG NAIL
B-68	13,851,133.70	3,105,832.02	13,849,333.29	3,105,428.31	51.22'	9+08.69	5.46L	SET MAG NAIL
B-69	13,851,107.52	3,105,631.81	13,849,307.12	3,105,228.13	51.26'	7+07.49	11.57R	SET MAG NAIL
B-70	13,851,099.80	3,105,362.68	13,849,299.39	3,104,959.03	52.79'	4+38.29	7.03R	SET MAG NAIL
B-71	13,851,385.12	3,105,406.79	13,849,584.68	3,105,003.14	51.49'	4+49.90	10.99L	SET MAG NAIL
B-72	13,851,395.19	3,105,603.65	13,849,594.75	3,105,199.97	50.83'	6+47.01	12.08L	SET MAG NAIL
B-73	13,851,401.52	3,105,945.18	13,849,601.08	3,105,541.46	51.65'	9+88.47	2.85L	SET MAG NAIL
B-74	13,851,619.11	3,105,966.51	13,849,818.63	3,105,562.78	54.04'	8+73.47	8.13L	SET 'X' IN CON.
B-76	13,851,344.08	3,106,468.50	13,849,543.64	3,106,064.71	29.20'	18+18.54	29.29L	SET 'X' IN CON.
B-79	13,851,297.03	3,106,350.52	13,849,496.59	3,105,946.75	33.94'	16+92.75	46.89L	SET 1/2" I.R.
B-91	13,850,952.57	3,106,355.30	13,849,152.19	3,105,951.53	47.73'	13+73.56	5.25L	SET 1/2" I.R.
B-93	13,851,570.15	3,105,598.38	13,849,769.68	3,105,194.70	51.08'	20+26.09	3.11L	SET 1/2" I.R.

CITY OF HOUSTON

CITY SURVEY 5258 8507
SITE CONTROL MONUMENT



Project WBS# M-410039-0001-4
Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet
X= 3,106,012.0110
Y= 13,848,577.3027
Lat.= 29° 46' 47.80752" (N)
Lon.= 95° 24' 48.72115" (W)
Reference Frame Used: NAD '83 (2011) (EPOCH: 2010)
Vertical Adjustment used: NAVD '88
General Location: NORTHEAST CORNER OF DARLING ST. AND REINERMAN ST.

Keymap Page: 492 C
Orthometric Elevation = 52.44
Ellipsoid Height= -37.315
Geoid: GEOID '12A
Datum Source & Adjustment:
GPS STATIC
(OBSERVED ON 06-12-2019)

Date Set: 06-12-2019 Type of Mark: 4A

3 Nearest project control points (bearings and distances stated below):
1 N 12° 56' 59" W 264.31'
2 S 86° 37' 13" E 280.85'
3 S 5° 55' 00" W 297.44'

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

Surveyed By: Kuo & Associates, Inc.
10300 Westoffice Drive, Suite 800
Houston, TX 77042

STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN AVENUE.

ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION
= NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83 (CORS96). ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

B-X	SURVEY CONTROL POINT NUMBER
C—X	DESIGN BASELINE POINT NUMBER
⚠	SURVEY CONTROL POINT
•	DESIGN BASELINE POINT
✪	CITY OF HOUSTON MONUMENT
D. BL:	DESIGN BASELINE
S. BL:	SURVEY BASELINE

WOOLPERT
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Tel: 713-975-9769, Fax: 713-975-0920, www.kuoassociates.com
TBPELS Firm Registration No. F-4578
TBPELS Firm Registration No. 1007560

STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
03/21/2023

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SURVEY CONTROL MAP
SHEET 2 OF 7

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S.	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 10 OF 345	

DESIGN BASELINE: LINE TABLE		
LINE #	BEARING	LENGTH
L1	N87° 23' 22.57"E	715.11
L2	N87° 23' 22.57"E	725.00
L3	N87° 23' 22.31"E	303.90
L4	N87° 23' 22.29"E	303.89
L5	N87° 23' 22.57"E	719.96
L6	N87° 23' 22.57"E	725.00
L7	N87° 23' 22.57"E	303.89
L8	N87° 23' 22.57"E	303.89
L9	N87° 23' 22.57"E	60.58
L10	N87° 23' 22.57"E	295.91
L11	N87° 23' 22.57"E	303.89
L12	N87° 23' 22.57"E	297.48
L13	N87° 23' 22.57"E	34.16
L14	N87° 23' 22.57"E	715.10
L15	N87° 23' 22.57"E	730.32
L16	N87° 23' 22.57"E	54.58
L17	N87° 23' 22.57"E	672.32
L18	N87° 23' 22.57"E	375.00
L19	N87° 23' 22.57"E	355.18
L20	N87° 23' 22.57"E	57.50
L21	N87° 23' 22.57"E	598.28
L22	N87° 23' 22.57"E	375.00
L23	N87° 23' 22.57"E	41.73
L24	N87° 23' 22.57"E	552.83
L25	N87° 23' 22.57"E	375.00
L26	N87° 23' 22.57"E	47.17
L27	N2° 36' 37.43"W	149.00
L28	N2° 36' 37.43"W	265.00
L29	N2° 36' 37.43"W	530.00
L30	N2° 36' 37.43"W	265.00
L31	N2° 36' 37.43"W	265.00

DESIGN BASELINE: LINE TABLE		
LINE #	BEARING	LENGTH
L32	N2° 36' 37.43"W	265.00
L33	N2° 36' 37.43"W	271.00
L34	N2° 36' 37.43"W	24.23
L35	N2° 36' 37.43"W	265.00
L36	N2° 36' 37.43"W	265.00
L37	N2° 36' 37.43"W	295.77
L38	N2° 38' 27.94"W	103.48
L39	N2° 36' 37.43"W	142.41
L40	N2° 36' 37.43"W	265.00
L41	N2° 36' 37.43"W	264.97
L42	N87° 23' 22.57"E	5.46
L43	N2° 38' 24.71"W	265.03
L44	N2° 38' 24.71"W	265.00
L45	N2° 38' 24.71"W	354.36
L46	N60° 17' 51.21"E	202.73
L47	N2° 36' 42.61"W	139.27
L48	N2° 36' 42.61"W	265.00
L49	N2° 36' 42.61"W	245.72
L50	N2° 36' 37.43"W	19.24
L51	S87° 23' 22.57"W	2.51
L52	N2° 37' 48.91"W	253.09
L53	N2° 37' 48.91"W	30.00
L54	N34° 20' 31.02"W	63.95
L55	S30° 43' 14.84"E	225.22
L56	S87° 17' 45.16"W	294.30
L57	N2° 36' 41.98"W	141.21
L58	N2° 36' 41.98"W	265.00
L59	N2° 36' 41.98"W	264.97
L60	N2° 36' 41.98"W	20.80
L61	N3° 16' 02.35"W	258.51

DESIGN BASELINE POINTS DATA						
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	MATERIAL SET
C-1	1+00.00	13,849,762.47	3,104,968.05	13,847,962.24	3,104,564.46	SET 'X' CUT
C-2	8+15.11	13,849,795.04	3,105,682.42	13,847,994.80	3,105,278.74	SET MAG NAIL
C-3	15+40.11	13,849,828.06	3,106,406.67	13,848,027.82	3,106,002.89	SET MAG NAIL
C-4	18+44.00	13,849,841.90	3,106,710.25	13,848,041.66	3,106,306.43	SET MAG NAIL
C-5	21+47.89	13,849,855.74	3,107,013.82	13,848,055.50	3,106,609.96	SET MAG NAIL
C-7	1+00.00	13,850,026.98	3,104,951.14	13,848,226.71	3,104,547.55	SET 'X' CUT
C-8	8+19.96	13,850,059.77	3,105,670.35	13,848,259.49	3,105,266.67	NOT SET, ON TOP OF MH
C-9	15+44.96	13,850,092.79	3,106,394.60	13,848,292.51	3,105,990.82	SET MAG NAIL
C-10	18+48.85	13,850,106.63	3,106,698.17	13,848,306.35	3,106,294.36	SET MAG NAIL
C-11	21+52.73	13,850,120.47	3,107,001.75	13,848,320.19	3,106,597.89	SET MAG NAIL
C-13	1+00.00	13,850,354.72	3,106,322.01	13,848,554.41	3,105,918.25	SET 'X' CUT
C-14	1+60.58	13,850,357.48	3,106,382.53	13,848,557.16	3,105,978.76	NOT SET, ON TOP OF MH
C-15	1+66.04	13,850,357.72	3,106,387.99	13,848,557.41	3,105,984.21	SET 'X' CUT
C-16	1+00.00	13,850,371.20	3,106,683.59	13,848,570.89	3,106,279.78	SET MAG NAIL
C-17	7+69.23	13,850,371.32	3,106,686.10	13,848,571.00	3,106,282.28	SET MAG NAIL
C-17A	7+49.99	13,850,352.09	3,106,686.98	13,848,551.78	3,106,283.16	SET MAG NAIL
C-18	7+68.35	13,850,385.16	3,106,989.67	13,848,584.84	3,106,585.82	SET 'X' CUT
C-19	10+99.99	13,850,400.26	3,107,320.97	13,848,599.94	3,106,917.07	SET 'X' CUT
C-20	1+00.00	13,850,556.65	3,104,931.86	13,848,756.31	3,104,528.27	SET 'X' CUT
C-21	8+15.10	13,850,589.22	3,105,646.21	13,848,788.87	3,105,242.53	NOT SET, ON TOP OF MH
C-22	15+45.42	13,850,622.48	3,106,375.78	13,848,822.13	3,105,972.00	SET MAG NAIL
C-23	16+00.00	13,850,624.96	3,106,430.30	13,848,824.62	3,106,026.52	NOT SET, ON TOP OF BLDG
C-24	1+00.00	13,850,823.32	3,104,962.53	13,849,022.95	3,104,558.93	SET 'X' CUT
C-25	7+72.32	13,850,853.94	3,105,634.15	13,849,053.56	3,105,230.47	SET MAG NAIL
C-26	11+47.32	13,850,871.02	3,106,008.76	13,849,070.64	3,105,605.03	SET MAG NAIL
C-27	15+02.50	13,850,887.20	3,106,363.57	13,849,086.82	3,105,959.80	SET 1/2" I.R.
C-28	15+60.00	13,850,889.81	3,106,421.01	13,849,089.43	3,106,017.23	SET 1/2" I.R.
C-29	1+00.00	13,851,091.42	3,105,024.42	13,849,291.01	3,104,620.82	SET 1/2" I.R.
C-30	6+98.28	13,851,118.67	3,105,622.08	13,849,318.26	3,105,218.40	NOT SET, ON TOP OF MH
C-31	10+73.28	13,851,135.74	3,105,996.69	13,849,335.33	3,105,592.96	SET 1/2" I.R.
C-32	11+15.01	13,851,137.65	3,106,038.37	13,849,337.23	3,105,634.64	NOT SET, ON TOP OF BLDG
C-33	1+00.00	13,851,358.21	3,105,057.75	13,849,557.77	3,104,654.15	SET 1/2" I.R.
C-34	6+52.83	13,851,383.39	3,105,610.01	13,849,582.95	3,105,206.33	SET MAG NAIL
C-35	10+27.83	13,851,400.47	3,105,984.62	13,849,600.02	3,105,580.89	SET 1/2" I.R.
C-36	10+75.00	13,851,402.62	3,106,031.74	13,849,602.17	3,105,628.01	SET 1/2" I.R.
C-37	1+00.00	13,849,646.20	3,105,689.21	13,847,845.98	3,105,285.52	SET 'X' CUT
C-38	20+40.00	13,851,654.11	3,105,597.66	13,849,853.63	3,105,193.99	SET 5/8" I.R.
C-39	1+00.00	13,850,846.81	3,106,009.86	13,849,046.44	3,105,606.13	SET 'X' CUT
C-40	8+70.00	13,851,695.93	3,105,971.15	13,849,895.44	3,105,567.42	SET 'X' CUT
C-41	1+00.00	13,849,685.79	3,106,413.16	13,847,885.57	3,106,009.37	SET 'X' CUT
C-42	16+62.24	13,851,241.18	3,106,347.25	13,849,440.76	3,105,943.48	SET 1/2" I.R.
C-43	18+64.97	13,851,341.63	3,106,523.34	13,849,541.20	3,106,119.55	SET 1/2" I.R.
C-44	1+00.00	13,849,702.78	3,106,716.60	13,847,902.55	3,106,312.78	SET 'X' CUT
C-45	3+53.09	13,850,624.02	3,106,671.98	13,848,823.68	3,106,268.17	SET MAG NAIL
C-46	3+83.09	13,850,653.99	3,106,670.60	13,848,853.64	3,106,266.79	SET MAG NAIL
C-47	5+99.00	13,850,855.72	3,106,602.02	13,849,055.34	3,106,198.22	SET MAG NAIL
C-48	6+62.95	13,850,908.52	3,106,565.95	13,849,108.14	3,106,162.15	SET MAG NAIL
C-49	9+02.75	13,851,080.85	3,106,657.33	13,849,280.44	3,106,253.52	SET MAG NAIL
C-50	12+04.61	13,850,937.20	3,106,907.82	13,849,136.81	3,106,503.97	SET MAG NAIL
C-51	14+29.83	13,850,743.58	3,107,022.87	13,848,943.22	3,106,619.01	SET MAG NAIL
C-52	14+98.28	13,850,677.91	3,107,025.97	13,848,877.55	3,106,622.11	SET MAG NAIL
C-53	22+94.30	13,850,637.91	3,106,965.99	13,848,837.56	3,106,562.14	SET MAG NAIL
C-54	1+00.00	13,849,714.68	3,107,020.26	13,847,914.45	3,106,616.40	SET MAG NAIL
C-55	7+91.97	13,850,405.93	3,106,988.73	13,848,605.61	3,106,584.87	SET MAG NAIL
C-59	7+91.49	13,850,398.70	3,107,286.85	13,848,598.39	3,106,882.95	SET 'X' CUT
C-60	10+50.00	13,850,656.79	3,107,272.11	13,848,856.44	3,106,868.22	SET 'X' CUT
C-61	0+00.00	13,850,860.31	3,106,060.10	13,849,059.94	3,105,656.36	SET 1/2" I.R.
C-62	1+03.48	13,850,963.68	3,106,055.33	13,849,163.29	3,105,651.60	SET 'X' CUT

TEMPORARY BENCHMARKS

TBM-11
SET 'X' IN CONC. AT CORNISH ST. AND T.C. JESTER BLVD.
D. BL STA. 1+27.29 OFFSET: 24.71R
ELEV.=54.80 FEET

TBM-12
SET 'X' IN CONC. AT LARKIN ST. AND T.C. JESTER BLVD.
D. BL STA. 1+25.28 OFFSET: 23.92L
ELEV.=54.24 FEET

TBM-14
SET 'X' IN CONC. AT PETTY ST. AND T.C. JESTER BLVD.
D. BL STA. 1+15.44 OFFSET: 28.45L
ELEV.=54.17 FEET

TBM-15
SET 1/2" I.R. AT KIAM ST. AND T.C. JESTER BLVD.
D. BL STA. 1+17.09 OFFSET: 13.97L
ELEV.=54.06 FEET

TBM-16
SET 1/2" I.R. AT KANSAS ST. AND T.C. JESTER BLVD.
D. BL STA. 1+08.85 OFFSET: 5.37L
ELEV.=53.78 FEET

TBM-17
SET MAG NAIL AT EGBERT ST. AND T.C. JESTER BLVD.
D. BL STA. 1+11.64 OFFSET: 5.92L
ELEV.=53.01 FEET

TBM-23
SET 'X' IN CONC. ON THE NORTHWEST CORNER
INTERSECTION OF SAND MAN ST. AND INTERSTATE HIGHWAY
10.
ELEV.=52.51 FEET

TBM-24
SET 1/2" I.R. AT ROY ST. AND INTERSTATE HIGHWAY 10.
D. BL STA. OFFSET:
ELEV.=53.19 FEET

TBM-25
SET 'X' IN CONC. AT THE NORTHEAST CORNER INTERSECTION
OF INTERSTATE HIGHWAY 10 AND REINERMAN ST.
ELEV.=53.73 FEET

TBM-26
SET 'X' IN CONC. AT THE NORTHEAST CORNER INTERSECTION
OF INTERSTATE HIGHWAY 10 AND DETERING ST.
D. BL STA. 1+03.01 OFFSET: 29.36R
ELEV.=52.72 FEET

TBM-27
SET 1/2" I.R. AT CORNISH ST.
D. BL STA. 4+78.80 OFFSET: 12.26R
ELEV.=55.01 FEET

TBM-28
SET MAG NAIL AT CORNISH ST. AND DETERING ST.
D. BL STA. 8+05.05 OFFSET: 10.64R
ELEV.=55.39 FEET

TBM-30
SET 1/2" I.R. AT CORNISH ST.
D. BL STA. 13+19.18 OFFSET: 11.83L
ELEV.=54.11 FEET

TBM-31
SET MAG NAIL AT CORNISH ST. AND REINERMAN ST.
D. BL STA. 15+31.28 OFFSET: 12.03R
ELEV.=54.13 FEET

TBM-32
SET MAG NAIL AT CORNISH ST. AND ROY ST.
D. BL STA. 18+36.81 OFFSET: 9.72L
ELEV.=53.48 FEET

TBM-33
SET MAG NAIL AT CORNISH ST. AND SAND MAN.
D. BL STA. 21+59.63 OFFSET: 11.69R
ELEV.=54.32 FEET

TBM-38
SET 1/2" I.R. AT LARKIN ST. AND SAND MAN ST.
D. BL STA. 21+39.48 OFFSET: 13.74R
ELEV.=52.23 FEET

TBM-39
SET MAG NAIL AT LARKIN ST. AND ROY ST.
D. BL STA. 18+57.75 OFFSET: 14.62L
ELEV.=53.32 FEET

TBM-40
SET MAG NAIL AT LARKIN ST. AND REINERMAN ST.
D. BL STA. 15+34.99 OFFSET: 10.58R
ELEV.=54.29 FEET

TBM-41
SET 'X' IN CONC. AT LARKIN ST.
D. BL STA. 13+23.66 OFFSET: 10.04R
ELEV.=54.62 FEET

TBM-42
SET MAG NAIL AT LARKIN ST.
D. BL STA. 10+98.01 OFFSET: 7.37L
ELEV.=54.98 FEET

TBM-43
SET MAG NAIL AT LARKIN ST. AND DETERING ST.
D. BL STA. 8+29.98 OFFSET: 11.27R
ELEV.=55.30 FEET

TBM-44
SET MAG NAIL AT LARKIN ST.
D. BL STA. 5+90.60 OFFSET: 7.43L
ELEV.=55.48 FEET

TBM-45
SET MAG NAIL AT LARKIN ST.
D. BL STA. 3+97.84 OFFSET: 10.08R
ELEV.=55.28 FEET

TBM-46
SET 'X' IN CONC. AT DETERING ST. AND DARLING ST.
D. BL STA. 7+61.35 OFFSET: 10.35L
ELEV.=53.22 FEET

TBM-47
SET 'X' IN CONC. AT REINERMAN ST. AND DARLING ST.
D. BL STA. 1+75.53 OFFSET: 15.84L
ELEV.=52.44 FEET

TBM-48
SET MAG NAIL AT DARLING ST. AND ROY ST.
D. BL STA. 4+74.04 OFFSET: 10.70R
ELEV.=51.71 FEET

TBM-49
SET MAG NAIL AT DARLING ST. AND SAND MAN ST.
D. BL STA. 7+54.40 OFFSET: 12.22R
ELEV.=51.60 FEET

TBM-50
SET 'X' IN CONC. AT DARLING ST. AND N. DURHAM DR.
D. BL STA. 10+95.76 OFFSET: 8.44L
ELEV.=46.29 FEET

TBM-51
SET 'X' IN CONC. AT ROY ST.
D. BL STA. 3+66.80 OFFSET: 12.92R
ELEV.=49.60 FEET

TBM-52
SET 1/2" I.R. AT ROY ST.
D. BL STA. 7+40.19 OFFSET: 17.86L
ELEV.=49.35 FEET

TBM-53
SET 1/2" I.R. AT ROY ST.
D. BL STA. 10+08.81 OFFSET: 7.43L
ELEV.=45.40 FEET

TBM-54
SET 1/2" I.R. AT ROY ST.
D. BL STA. 12+06.16 OFFSET: 24.55L
ELEV.=49.04 FEET

TBM-55
SET 1/2" I.R. AT ROY ST.
D. BL STA. 3+67.92 OFFSET: 360.60R
ELEV.=49.16 FEET

TBM-56
SET MAG NAIL AT PETTY ST.
D. BL STA. 15+26.81 OFFSET: 13.58L
ELEV.=50.85 FEET

TBM-58
SET MAG NAIL AT PETTY ST. AND REINERMAN ST.
D. BL STA. 10+87.43 OFFSET: 8.87L
ELEV.=53.53 FEET

TBM-59
SET MAG NAIL AT PETTY ST. AND DETERIN ST.
D. BL STA. 8+24.49 OFFSET: 10.85R
ELEV.=54.25 FEET

TBM-60
SET 'X' IN CONC. AT PETTY ST.
D. BL STA. 5+41.55 OFFSET: 9.63L
ELEV.=54.13 FEET

TBM-61
SET MAG NAIL AT PETTY ST.
D. BL STA. 3+91.31 OFFSET: 9.53R
ELEV.=54.40 FEET

TBM-62
SET MAG NAIL AT KIAM ST.
D. BL STA. 3+77.48 OFFSET: 12.97R
ELEV.=53.50 FEET

TBM-63
SET 1/2" I.R. AT KIAM ST.
D. BL STA. 5+71.97 OFFSET: 9.65R
ELEV.=52.98 FEET

TBM-64
SET MAG NAIL AT KIAM ST. AND DETERING ST.
D. BL STA. 7+61.49 OFFSET: 10.81R
ELEV.=52.45 FEET

TBM-65
SET 1/2" I.R. AT KIAM ST.
D. BL STA. 9+47.53 OFFSET: 10.11R
ELEV.=50.92 FEET

TBM-66
SET MAG NAIL AT KIAM ST. AND MOY ST.
D. BL STA. 11+46.72 OFFSET: 9.14L
ELEV.=50.81 FEET

TBM-67
SET MAG NAIL AT KIAM ST. AND REINERMAN ST.
D. BL STA. 14+96.86 OFFSET: 10.83R
ELEV.=47.95 FEET

TBM-68
SET MAG NAIL AT KANSAS ST.
D. BL STA. 9+08.69 OFFSET: 5.46L
ELEV.=51.22 FEET

TBM-69
SET MAG NAIL AT KANSAS ST. AND DETERING ST.
D. BL STA. 7+07.49 OFFSET: 11.57R
ELEV.=51.26 FEET

TBM-70
SET MAG NAIL AT KANSAS ST.
D. BL STA. 4+38.29 OFFSET: 7.03R
ELEV.=52.79 FEET

TBM-71
SET MAG NAIL AT EGBERT ST.
D. BL STA. 4+49.90 OFFSET: 10.99L
ELEV.=51.49 FEET

TBM-72
SET MAG NAIL AT EGBERT ST. AND DETERING ST.
D. BL STA. 6+47.01 OFFSET: 12.08L
ELEV.=50.83 FEET

TBM-73
SET MAG NAIL AT EGBERT ST. AND MOY ST.
D. BL STA. 9+88.47 OFFSET: 2.85L
ELEV.=51.65 FEET

TBM-74
SET 'X' IN CONC. AT MOY ST.
D. BL STA. 8+65.93 OFFSET: 8.88R
ELEV.=54.35 FEET

TBM-76
SET 'X' IN CONC. ON THE SOUTH SIDE OF WHITE OAK
BAYOU AND REINERMAN ST.
D. BL STA. 18+18.54 OFFSET: 29.29L
ELEV.=29.20 FEET

TBM-79
SET 1/2" I.R. ON THE SOUTH SIDE OF WHITE OAK BAYOU
AND REINERMAN ST.
D. BL STA. 16+92.75 OFFSET: 46.89L
ELEV.=33.94 FEET

TBM-91
SET 1/2" I.R. ON THE EAST SIDE OF REINERMAN ST.
D. BL STA. 13+73.56 OFFSET: 5.25L
ELEV.=47.73 FEET

TBM-93
SET 1/2" I.R. AT DETERING ST.
D. BL STA. 20+26.09 OFFSET: 3.11L
ELEV.=51.08 FEET

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TBPELS Firm Registration No. F-4578
TBPELS Firm Registration No. 10075501

STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
03/21/2023

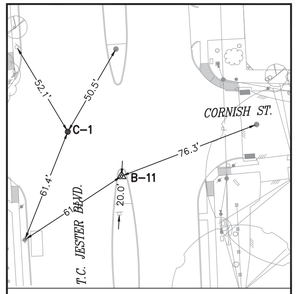
SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

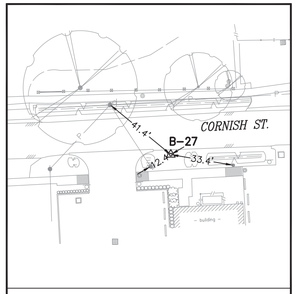
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SURVEY CONTROL MAP
SHEET 3 OF 7

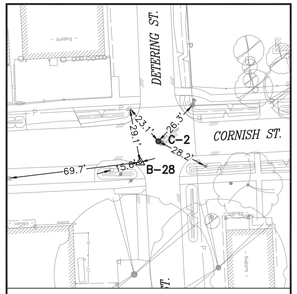
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 11 OF 345	



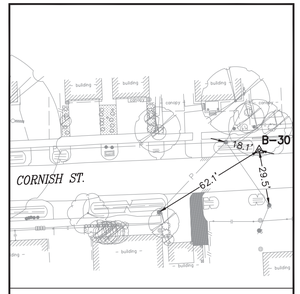
C-1 & T.B.M. B-11



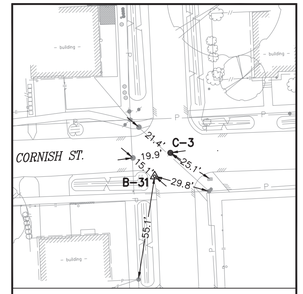
T.B.M. B-27



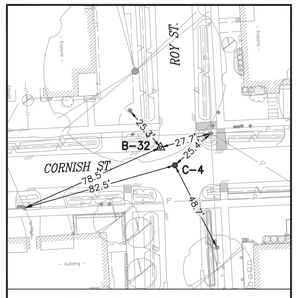
C-2 & T.B.M. B-28



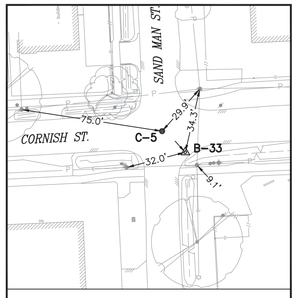
T.B.M. B-30



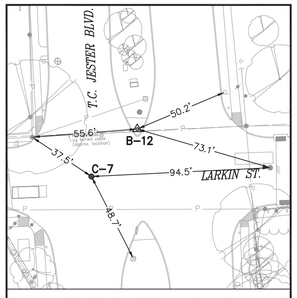
C-3 & T.B.M. B-31



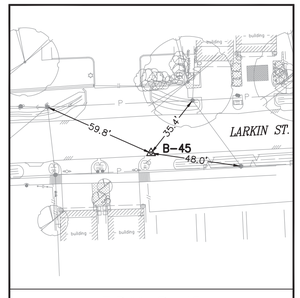
C-4 & T.B.M. B-32



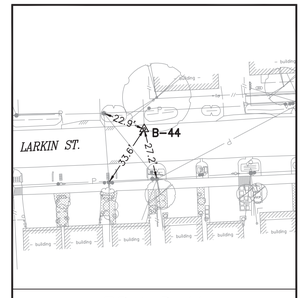
C-5 & T.B.M. B-33



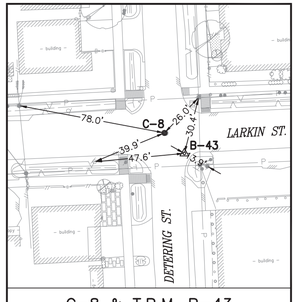
C-7 & T.B.M. B-12



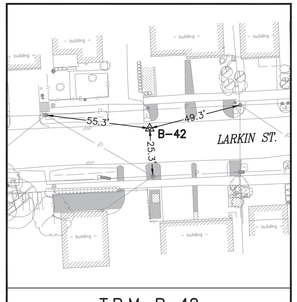
T.B.M. B-45



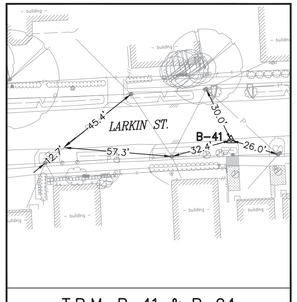
T.B.M. B-44



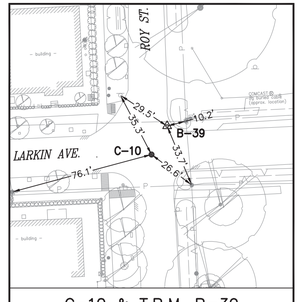
C-8 & T.B.M. B-43



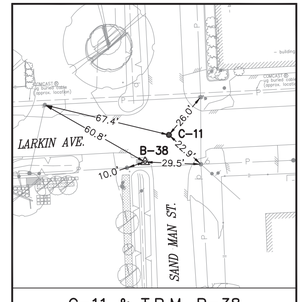
T.B.M. B-42



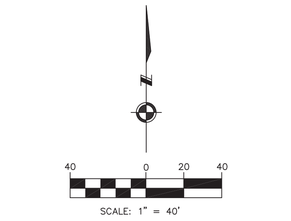
T.B.M. B-41 & B-94



C-10 & T.B.M. B-39



C-11 & T.B.M. B-38



EXIST. TOPOGRAPHIC LEGEND

MANHOLE	LIGHT
GRATE INLET	SIGN
B/BB INLET	POWER POLE
FIRE HYDRANT	POWER POLE W/LIGHT
SIGNAL POLE	DOWN GUY
FENCE	TREE
BUSH	PLANTER
WATER VALVE	BUILDING
HIGH BANK	WATER METER
	HEDGE ROW

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STATE OF TEXAS
REGISTERED
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6404
PROFESSIONAL
LAND SURVEYOR
08/21/2023

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

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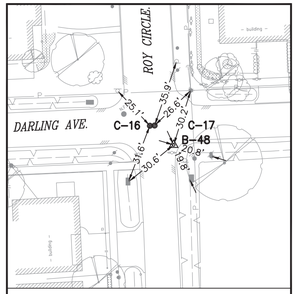
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

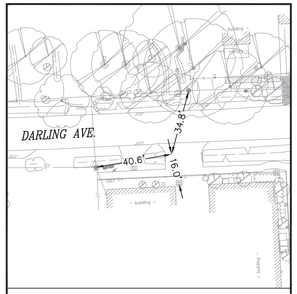
SURVEY CONTROL MAP

SHEET 4 OF 7

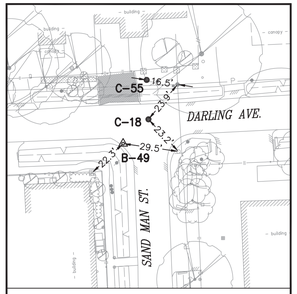
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 12 OF 345	



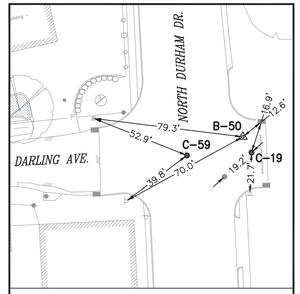
C-16, C-17 & T.B.M. B-48



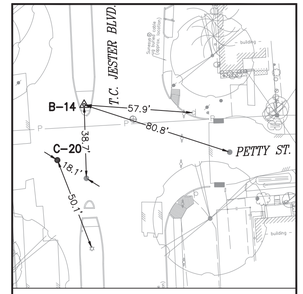
T.B.M. B-111



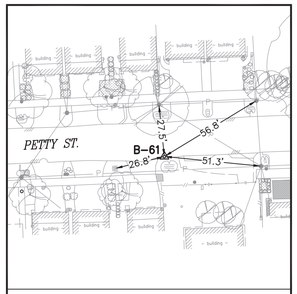
C-18, C-55 & T.B.M. B-49



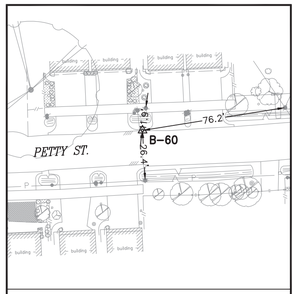
C-19, C-59 & T.B.M. B-50



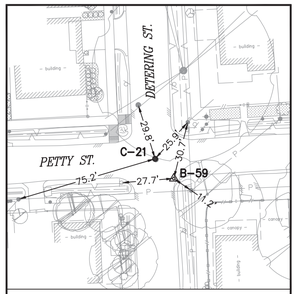
C-20 & T.B.M. B-14



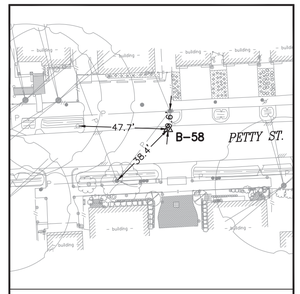
T.B.M. B-61



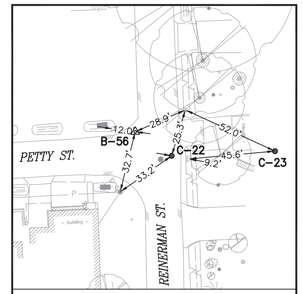
T.B.M. B-60



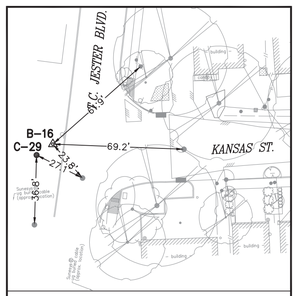
C-21 & T.B.M. B-59



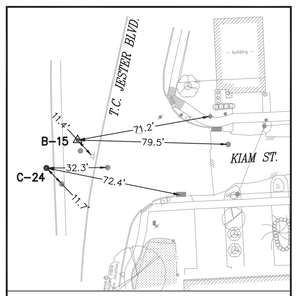
T.B.M. B-58



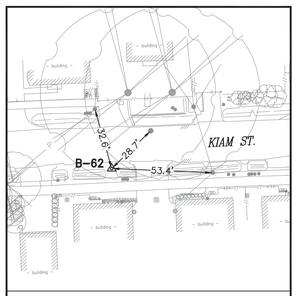
C-22, C-23 & T.B.M. B-56



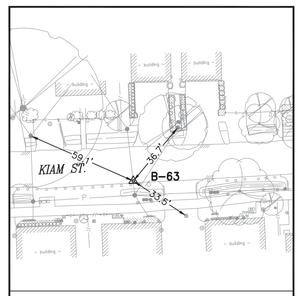
C-29 & T.B.M. B-16



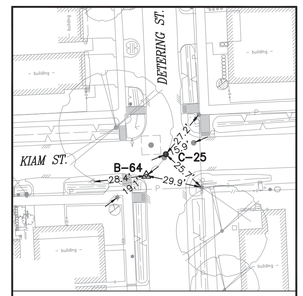
C-24 & T.B.M. B-15



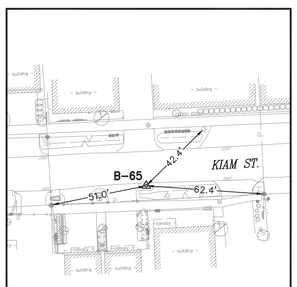
T.B.M. B-62



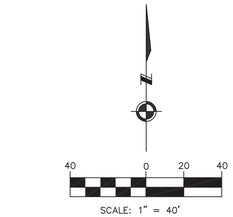
T.B.M. B-63



C-25 & T.B.M. B-64



T.B.M. B-65



EXIST. TOPOGRAPHIC LEGEND

MANHOLE	LIGHT
GRATE INLET	SIGN
B/BB INLET	POWER POLE
FIRE HYDRANT	POWER POLE W/LIGHT
SIGNAL POLE	DOWN GUY
FENCE	TREE
BUSH	PLANTER
WATER VALVE	BUILDING
HIGH BANK	WATER METER
	HEDGE ROW

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STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
03/21/2023

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

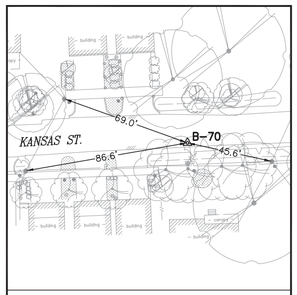
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

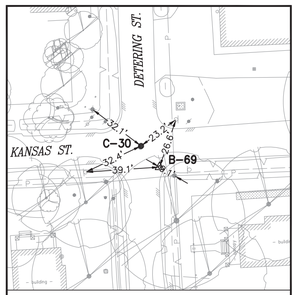
SURVEY CONTROL MAP

SHEET 5 OF 7

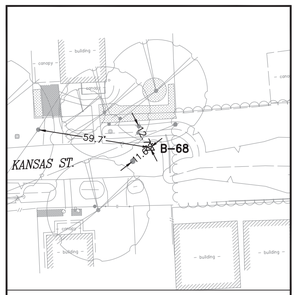
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 13 OF 345	



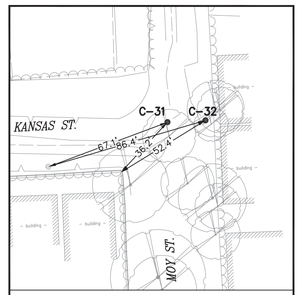
T.B.M. B-70



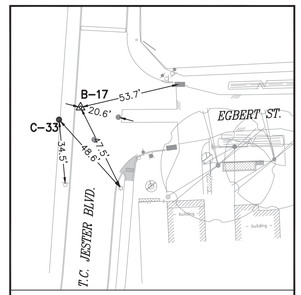
C-30 & T.B.M. B-69



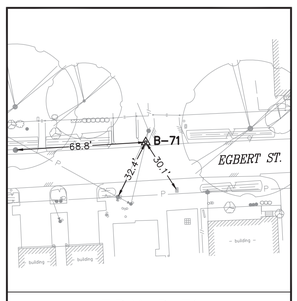
T.B.M. B-68



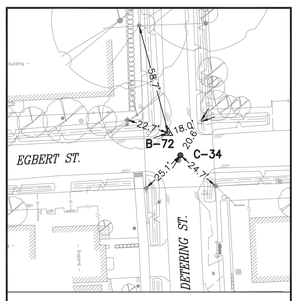
C-31 & C-32



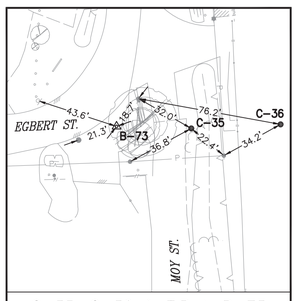
C-33 & T.B.M. B-17



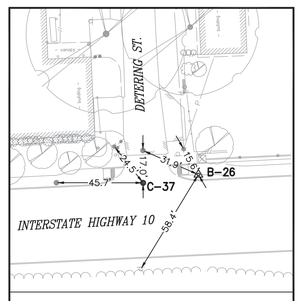
T.B.M. B-71



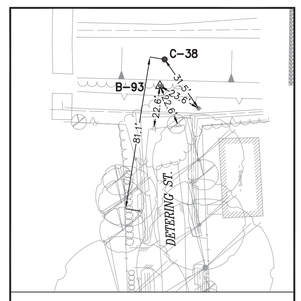
C-34 & T.B.M. B-72



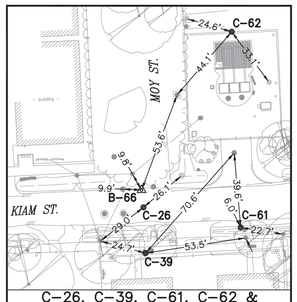
C-35, C-36 & T.B.M. B-73



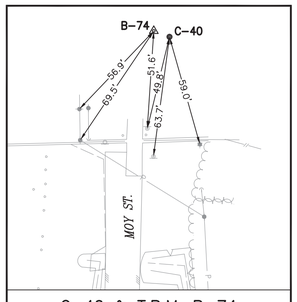
C-37 & T.B.M. B-26



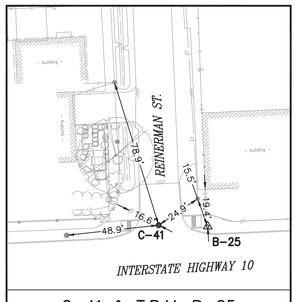
C-38 & T.B.M. B-93



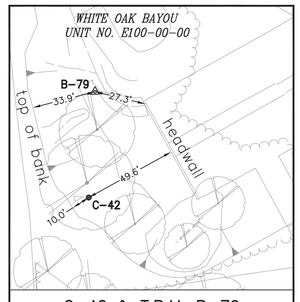
C-26, C-39, C-61, C-62 & T.B.M. B-66



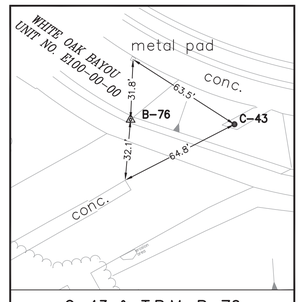
C-40 & T.B.M. B-74



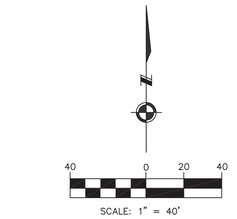
C-41 & T.B.M. B-25



C-42 & T.B.M. B-79



C-43 & T.B.M. B-76



EXIST. TOPOGRAPHIC LEGEND

MANHOLE	LIGHT
GRATE INLET	SIGN
B/BB INLET	POWER POLE
FIRE HYDRANT	POWER POLE W/LIGHT
SIGNAL POLE	DOWN GUY
FENCE	TREE
BUSH	PLANTER
WATER VALVE	BUILDING
HIGH BANK	WATER METER
	HEDGE ROW

WOOLPERT
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Houston, TX 77079
800.414.1045

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Consulting Engineers & Surveyors
10700 Richmond Ave., Suite 113, Houston, Texas 77042
Tel: 713-975-8769, Fax: 713-975-0920, www.kuoassociates.com
TBPELS Firm Registration No. F-4578
TBPELS Firm Registration No. 1007560

STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
08/21/2023

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

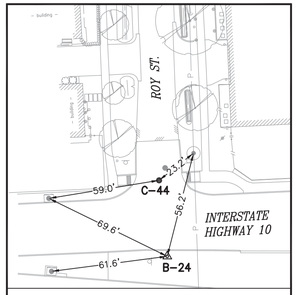
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

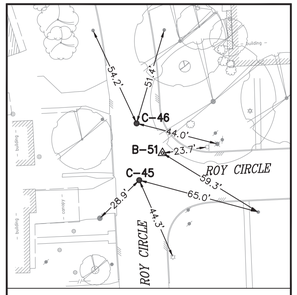
SURVEY CONTROL MAP

SHEET 6 OF 7

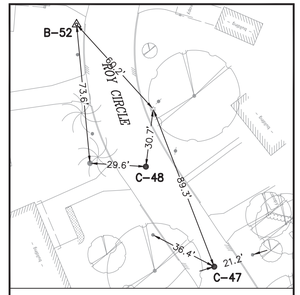
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 14 OF 345	



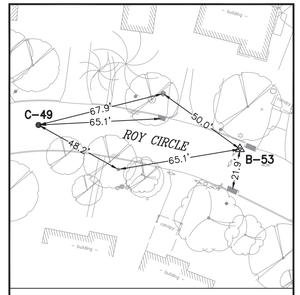
C-44 & T.B.M. B-24



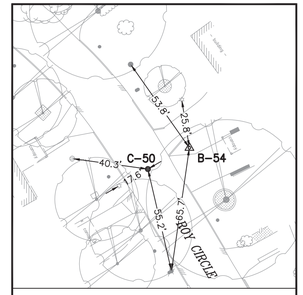
C-45, C-46 & T.B.M. B-51



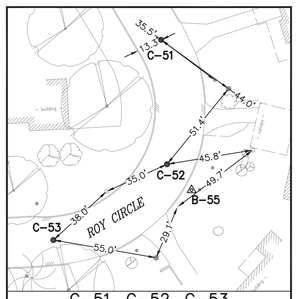
C-47, C-48 & T.B.M. B-52



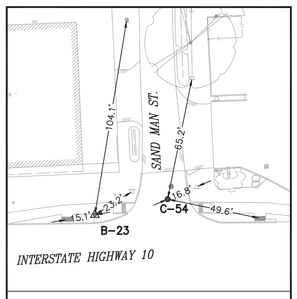
C-49 & T.B.M. B-53



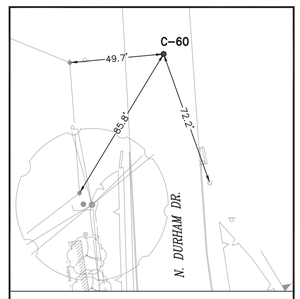
C-50 & T.B.M. B-54



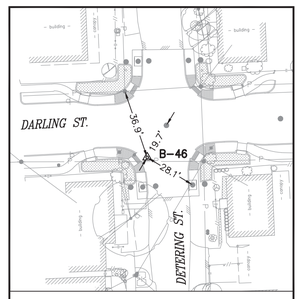
C-51, C-52, C-53 & T.B.M. B-55



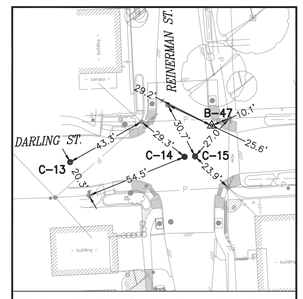
C-54 & T.B.M. B-23



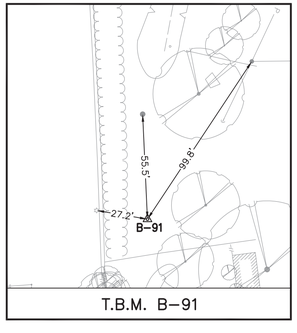
C-60



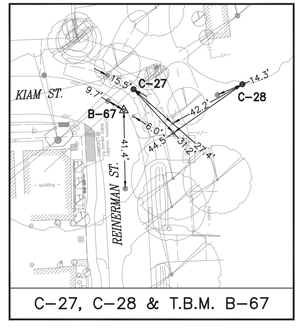
T.B.M. B-46



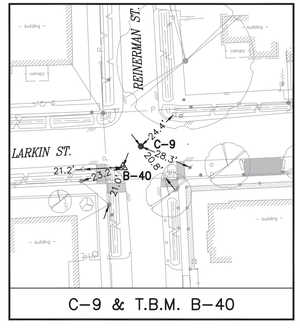
C-13, C-14 & C-15, TBM B-47



T.B.M. B-91



C-27, C-28 & T.B.M. B-67



C-9 & T.B.M. B-40

EXIST. TOPOGRAPHIC LEGEND

MANHOLE	LIGHT
GRATE INLET	SIGN
B/BB INLET	POWER POLE
FIRE HYDRANT	POWER POLE W/LIGHT
SIGNAL POLE	DOWN GUY
FENCE	TREE
BUSH	PLANTER
WATER VALVE	BUILDING
HIGH BANK	WATER METER
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TBPELS Firm Registration No. F-4578
TBPELS Firm Registration No. 10075600

STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
08/21/2023

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

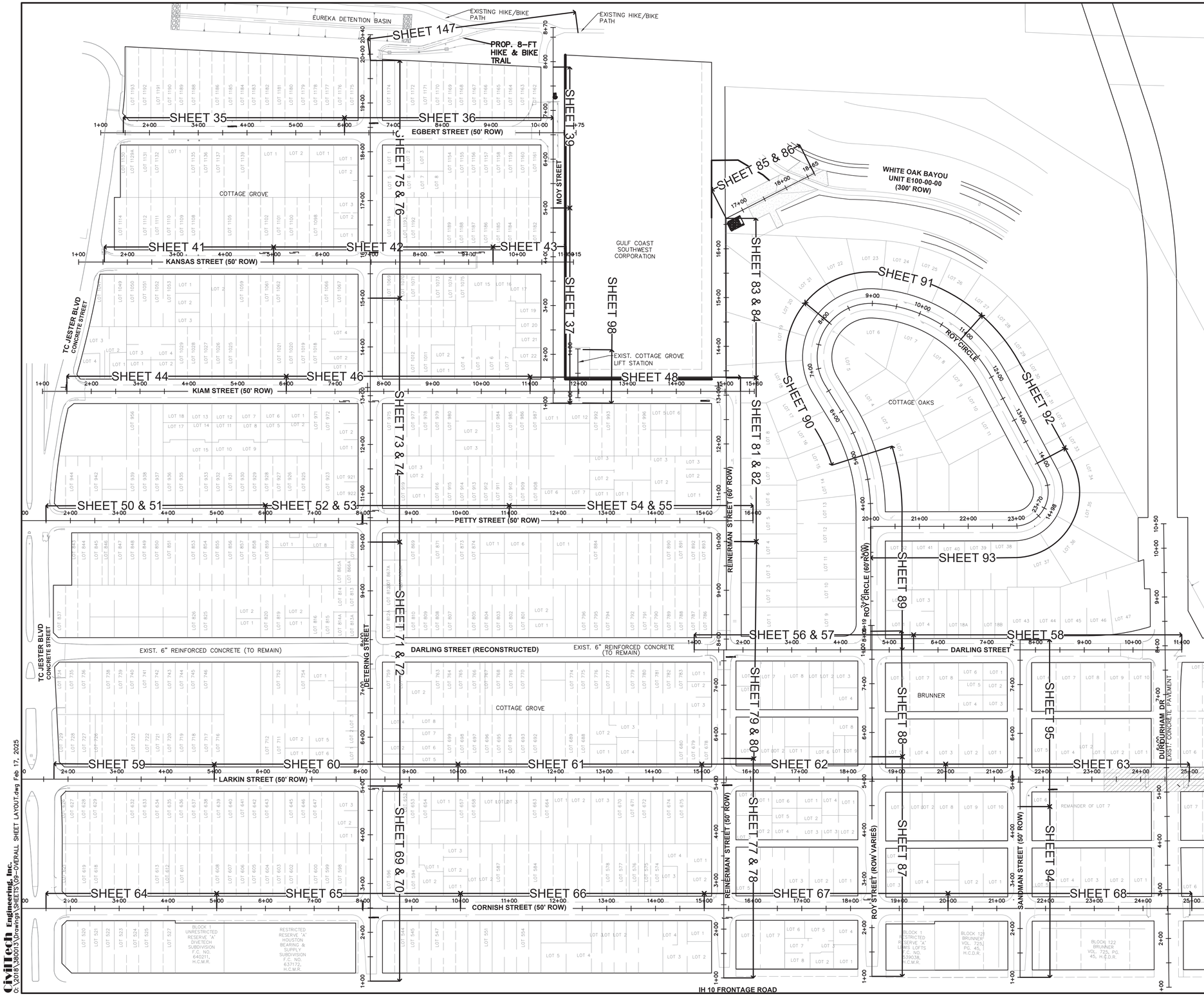
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SURVEY CONTROL MAP

SHEET 7 OF 7

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 15 OF 345	



REV	DESCRIPTION	BY	DATE

LEGEND

SHEET 16 — PLAN & PROFILE SHEET NUMBER

POTENTIALLY PETROLEUM CONTAMINATED AREA (PPCA)

SCALE IN FEET

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

OVERALL SHEET LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=100'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 16 OF 345	

CivilTech Engineering, Inc.
O:\2018\380013\Drawings\SHEETS\09-OVERALL SHEET LAYOUT.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

LEGEND

← SHEET 16 → PLAN & PROFILE SHEET NUMBER

⊕ BH #21 BOREHOLE LOCATION AND ID NUMBER

PETROLEUM CONTAMINATED AREA (PPCA)

NOTE:
1. PROP 6" REINFORCED CONCRETE PAVEMENT (DETERING ST, KANSAS ST, KIAM ST, PETTY ST, CORNISH ST, REINERMAN ST,ROY ST, ROY CIRCLE, SANDMAN ST)
2. PROP 7" REINFORCED CONCRETE PAVEMENT (EGBERT ST AND LARKIN ST)

SCALE IN FEET: 100 0 50 100

EUREKA DETENTION BASIN
EXISTING HIKE/BIKE PATH
PROP. 5-FT SIDEWALK CONNECTION TO HIKE & BIKE TRAIL
PROP. 8-FT HIKE & BIKE TRAIL
PROP. BIKE RAMP
PROP. 6-FT SIDEWALK
PROP. 5-FT SIDEWALK
PROP. WHEEL CHAIR RAMP (TYP)
PROP. 5-FT SIDEWALK
PROP. SHALLOW DITCH
PROP. 5-FT SIDEWALK
PROP. 5-FT SIDEWALK
PROP. WHEEL CHAIR RAMP (TYP)
PROP. 5-FT SIDEWALK
PROP. WHEEL CHAIR RAMP (TYP)
PROP. 5-FT SIDEWALK
PROP. 5-FT SIDEWALK
PROP. WHEEL CHAIR RAMP (TYP)
PROP. 5-FT SIDEWALK
PROP. WHEEL CHAIR RAMP (TYP)
PROP. 5-FT SIDEWALK
PROP. 5-FT SIDEWALK
PROP. WHEEL CHAIR RAMP (TYP)
PROP. 5-FT SIDEWALK

REV	DESCRIPTION	BY	DATE

EUREKA DETENTION BASIN

WHITE OAK BAYOU TRAIL TO MEMORIAL PARK

WHITE OAK BAYOU (E100-00-00)

EX. 72" OUTFALL PIPE

EGBERT STREET

KANSAS STREET

KIAM STREET

PETTY STREET

CORNISH STREET

LARKIN STREET

DARLING STREET (RECONSTRUCTED)

IH 10 FRONTAGE ROAD

MOY STREET

DETERING STREET

REINERMAN STREET

ROY CIRCLE

ROY STREET

SANDMAN STREET

DURHAM DR

TC JESTER BLVD

GULF COAST SOUTHWEST CORPORATION

28-FT WIDE R.O.W.

55' DRAINAGE EASEMENT

EXIST. COTTAGE GROVE LIFT STATION

COTTAGE GROVE EAST SUBDIVISION

COTTAGE OAKS SUBDIVISION

EX. 24" RCP STM

EX. 30" RCP STM

EX. 54" RCP STM

EX. 30" RCP STM (TO REMAIN)

PROP. 30" RCP.
PROP MH DE1
PROP. 24" RCP.
PROP. 36" RCP.
PROP MH DE1A
PROP. 36" RCP.
PROP MH EG5
PROP. 30" RCP.
PROP. 36" RCP.
PROP MH EE2
PROP MH EG6
PROP. 48" RCP.
PROP MH EG1
PROP. 24" RCP.
PROP MH EE3
PROP MH EG2
PROP. 24" RCP.
PROP MH EG3
PROP MH EE1
PROP MH EG4
PROP. 36" RCP.
PROP MH KA2
PROP MH DE2
PROP MH DE3
PROP. 48" RCP.
PROP MH EKA2
PROP. 24" RCP.
PROP. 36" RCP.
PROP MH KA3
PROP MH KA4
PROP. 24" RCP.
PROP MH EKA3
PROP MH KA1
PROP MH EKA1
PROP MH KA5
PROP. 54" ARCH RCP.
PROP. 36" RCP.
PROP. 54" ARCH RCP.
PROP MH KI4A
PROP. 24" RCP.
PROP. JB W/ TYPE "C" MH TOP E4
PROP. 6'X5' RCB.
PROP MH TOP KI3
PROP MH TOP E6
PROP MH TOP E8
PROP MH TOP KI2
PROP. 8'X5' RCB.
PROP MH TOP E7
PROP MH TOP KI1
PROP MH TOP E5
PROP. 6'X5' RCB.
PROP. 36" RCP.
PROP MH KI4
PROP MH KI5
PROP MH KI6
PROP. JB W/ TYPE "C" MH TOP KI7
PROP MH KI8
PROP. JB W/ TYPE "C" MH TOP KI9 W/ 24" RCP RESTRICTOR
PROP. JB W/ TYPE "C" MH TOP RE7
PROP. 30" RCP.
PROP. 24" RCP.
PROP MH EPT2
PROP. 24" RCP.
PROP MH EPT3
PROP. 24" RCP.
PROP MH PT3A
PROP MH PT3
PROP. 30" RCP.
PROP MH PT5
PROP MH PT6
PROP MH PT8
PROP MH EPT1
PROP MH PT1
PROP MH PT2
PROP. 24" RCP.
PROP MH DE4
PROP MH PT4
PROP. 30" RCP.
PROP MH PT7
PROP. JB W/ TYPE "C" MH TOP RE6
PROP MH PT9
PROP MH RE5
PROP MH RE4
PROP. 7'x4' RCB
PROP MH RE2
PROP. 5'X3' RCB.
PROP. 36" RCP.
PROP MH RE1 W/ 24" RCP RESTRICTOR
PROP. 36" RCP.
PROP MH ELA1
PROP. 24" RCP.
PROP MH ELA2
PROP. 24" RCP.
PROP MH LA1
PROP MH LA3
PROP MH LA6
PROP MH LA4
PROP MH LA2
PROP. 24" RCP.
PROP MH LA5
PROP. 30" RCP.
PROP MH ECO1
PROP. 24" RCP.
PROP MH ECO2
PROP MH CO1
PROP MH CO1B
PROP MH CO2
PROP MH CO3
PROP. 30" RCP.
PROP MH CO4
PROP MH CO6
PROP MH CO5
PROP. 24" RCP.
PROP. 30" RCP.
PROP MH E16
PROP MH CO1A
PROP. 24" RCP.
PROP. 24" RCP.
PROP. 30" RCP.
PROP MH CO8
PROP. 24" RCP.
PROP MH RO1
PROP MH CO9
PROP MH CO7
PROP MH CO10
PROP MH CO11
PROP MH CO12
PROP MH RO2
PROP MH LA8
PROP MH LA7
PROP MH LA9
PROP MH LA10
PROP MH LA11
PROP MH DA1
PROP. 8'X5' RCB.
PROP MH DA4
PROP. 24" RCP.
PROP MH SA2
PROP MH DA2
PROP MH DA3
PROP. 5'X3' RCB.
PROP MH SA1
PROP MH DA5
PROP. 24" RCP.
PROP MH SA3
PROP MH LA12
PROP. 24" RCP.
PROP MH CO13
PROP. 24" RCP.
PROP. 24" RCP.
PROP MH RC1
PROP MH RC2
PROP. 5'X3' RCB.
PROP MH RC3
PROP. 5'X3' RCB.
PROP MH RC4
PROP. 6'X2' RCB.
PROP MH RC5
PROP. 7'x4' RCB
PROP MH RC6
PROP. 5'X3' RCB.
PROP. JB W/ TYPE "C" MH TOP RC7
PROP. 6'X2' RCB.
PROP MH RC8
PROP MH RC9
PROP. JB W/ TYPE "C" MH TOP RC10
PROP. JB W/ TYPE "C" MH TOP KI11
PROP. JB W/ TYPE "C" MH TOP KI10
PROP. 8'X5' RCB.
PROP. 6'X5' RCB.
PROP. 24" RCP. TO DRAIN SWALE
PROP. 30" RCP.
PROP MH MO5
PROP. 30" RCP.
PROP MH MO6
PROP. 8'X5' RCB.
PROP. JB W/ TYPE "C" MH TOP KI12
PROP. JB W/ TYPE "C" MH TOP KI13 W/ 30" RCP RESTRICTOR
PROP MH MO1
PROP. 54" ARCH RCP.
PROP MH DE2
PROP MH DE3
PROP. 48" RCP.
PROP CHANNEL
PROP MH TYPE "E" MO4
PROP. 48" RCP.
PROP MH MO2
PROP. 48" RCP.
PROP MH TOP MO3
PROP. 6'X5' RCB.
PROP. 5'X3' RCB.
PROP. 6'X3' RCB.
PROP MH RC19
PROP. 6'X3' RCB.
PROP MH RC17
PROP MH RC18
PROP MH RC20
PROP. 6'X3' RCB.
PROP. JB W/ TYPE "C" MH TOP RC15
PROP MH RC16
PROP MH RC14
PROP MH RC13
PROP MH RC12
PROP. 5'X3' RCB.
PROP. 6'X2' RCB.

LEGEND

POTENTIALLY PETROLEUM CONTAMINATED AREA (PPCA)

100 0 50 100
SCALE IN FEET

WOOLPERT
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Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

OVERALL STORM SEWER LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=100'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 18 OF 345	

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O:\2018\358013\Drawings\SHEETS\01-OVERALL STORM LAYOUT.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

LEGEND

SHEET 16 — PLAN & PROFILE SHEET NUMBER

PETROLEUM CONTAMINATED AREA (PPCA)

EXISTING SANITARY SEWER TO BE ABANDONED

EXISTING SANITARY SEWER TO BE REMOVED

EXISTING SANITARY SEWER MANHOLE TO BE REMOVED

EXISTING SANITARY SEWER MANHOLE TO BE ABANDON

EXISTING SANITARY SEWER MANHOLE

EXISTING SANITARY SEWER STUB FOR CONNECTION

SCALE IN FEET: 100 0 50 100

SHEET 35 SHEET 36 SHEET 39 SHEET 75 & 76 SHEET 41 SHEET 42 SHEET 43 SHEET 37 SHEET 98 SHEET 44 SHEET 46 SHEET 48 SHEET 73 & 74 SHEET 81 & 82 SHEET 50 & 51 SHEET 52 & 53 SHEET 54 & 55 SHEET 71 & 72 SHEET 56 & 57 SHEET 58 SHEET 79 & 80 SHEET 88 SHEET 95 SHEET 59 SHEET 60 SHEET 61 SHEET 62 SHEET 63 SHEET 69 & 70 SHEET 77 & 78 SHEET 87 SHEET 94 SHEET 64 SHEET 65 SHEET 66 SHEET 67 SHEET 68 SHEET 91 SHEET 90 SHEET 92 SHEET 93 SHEET 89

MH1 MH2 MH3 MH3B MH4 MH5 MH6 MH7 MH8 MH9 MH10 MH11 MH12 MH13 MH14 MH15 MH17 MH18 MH19 MH20 MH21 MH43 MH22 MH23 MH24 MH25 MH25A MH26 MH27 MH28 MH29 MH30 MH32 MH34 MH35 MH36 MH37 MH38 MH39 MH40 MH41 MH44 MH44B MH44C MH45 MH45A MH46 MH46A MH47 MH48 MH49 MH50 MH51 MH52 MH53 MH54 MH55 MH56 MH57 MH58 MH59 MH60 MH61 MH61A MH62

EX. MH 1148072 (TO BE REMOVED)

EX. MH 1148063

EX. MH 11P29106 (TO REMAIN)

EX. MH 11P29104 (TO REMAIN)

EX. MH 11P2905 (TO REMAIN)

EX. MH 11P29097

EX. MH 11P29095

EX. 8" SAN

EX. 8" CONC. SAN

EX. 6" CONC. SAN

EX. 12" PVC SAN

EX. 10" CONC. SAN

EX. 10" SAN

EX. 10" FORCE MAIN

EX. 12" SAN SWR

EX. 8" DIP SAN SWR

PROP 8" SAN

PROP 10" SAN

PROP 12" SAN

PROP 18" SAN

PROP. ASPHALT ROAD

WHITE OAK BAYOU (E100-00-00)

EGBERT STREET

MOY STREET

KANSAS STREET

KIAM STREET

PETTY STREET

REINERMAN STREET

DARLING STREET (RECONSTRUCTED)

DARLING STREET

DETERING STREET

LARKIN STREET

CORNISH STREET

ROY CIRCLE

SANDMAN STREET

DURHAM DR

TC JESTER BLVD

I-10 FRONTAGE ROAD

CONNECT TO EXIST LIFT STATION

EXISTING COTTAGE GROVE LIFT STATION
24" SAN
18" SAN

CONNECT TO EXIST SANITARY SEWER

CONNECT TO EXIST 10" DIP SAN

CONNECT TO EXIST 8" PVC SAN

WOOLPERT
ARCHITECTURE | ENGINEERING | CONSULTING
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
02/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

OVERALL SANITARY SEWER LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=100'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 19 OF 345	

CivilTech Engineering, Inc.
C:\2018\18001\Drawings\SHEETS\C-2-OVERALL SAN LAYOUT.dwg Apr 10, 2025

REV	DESCRIPTION	BY	DATE

LEGEND

SHEET 16 — PLAN & PROFILE SHEET NUMBER

EXISTING SANITARY SEWER TO BE ABANDONED

EXISTING SANITARY SEWER TO BE REMOVED

SCALE IN FEET: 100 0 50 100

SHEET 35
SHEET 36
SHEET 39
SHEET 75 & 76
SHEET 41
SHEET 42
SHEET 43
SHEET 37
SHEET 98
SHEET 85 & 86
SHEET 83 & 84
SHEET 91
SHEET 90
SHEET 92
SHEET 44
SHEET 46
SHEET 48
SHEET 81 & 82
SHEET 50 & 51
SHEET 52 & 53
SHEET 73 & 74
SHEET 54 & 55
SHEET 93
SHEET 89
SHEET 56 & 57
SHEET 58
SHEET 71 & 72
SHEET 79 & 80
SHEET 88
SHEET 95
SHEET 59
SHEET 60
SHEET 61
SHEET 62
SHEET 63
SHEET 69 & 70
SHEET 77 & 78
SHEET 87
SHEET 94
SHEET 64
SHEET 65
SHEET 66
SHEET 67
SHEET 68

EGBERT STREET
KANSAS STREET
MOY STREET
KIAM STREET
PETTY STREET
REINERMAN STREET
TC JESTER BLVD
DETERING STREET
DARLING STREET (RECONSTRUCTED)
DARLING STREET
ROY CIRCLE
ROY STREET
SANDMAN STREET
DURHAM DR
LARKIN STREET
CORNISH STREET
IH 10 FRONTAGE ROAD
WHITE OAK BAYOU UNIT E100-00-00 (300' ROW)
GULF COAST SOUTHWEST CORPORATION
EXIST. COTTAGE GROVE LIFT STATION

CONNECT TO EXIST. 8" WL
CONNECT TO EXIST 8" WL
PROP 8" WL
PROP 8" WL OFFSET
PROP 6" WL
EXIST. 8" PVC W.L. TO REMAIN
EXIST. 6" PVC W.L. TO REMAIN
EXIST. 4" PVC W.L. TO BE REMOVED
EXIST. 8" PVC W.L. TO BE REMOVED
EXIST. 12" AC W.L.
EX. 8" CONC. SAN
EX. 8" PVC WL
EX. FH 4123388 (TO BE RELOCATED)
EX. FH 4123382 (TO BE RELOCATED)
EX. FH 3415301 (TO BE RELOCATED)
EX. FH 3419988
EX. FH 4123447 (TO BE RELOCATED)
EX. FH 4123459
EX. FH 3420019 (TO BE RELOCATED)
EX. FH 4123485
EX. FH 4123491
EX. FH 3420022 (TO BE RELOCATED)
EX. FH 4129019 (TO BE RELOCATED)
EX. FH 4129005
EX. FH 4129025
EX. FH 3420005
EX. FH 3420008
EX. FH 3420052
EX. FH 4129181
EX. FH 4129166
EX. FH 4129089
EX. FH 4129202
EX. FH 4129109
EX. FH 4129055
EX. FH 4129115
EX. FH 4129212
EX. FH 4129077
EX. FH 4129148
EX. FH 4129136
EX. FH 3420168
EX. FH 3420224
EX. FH 3420184
FH

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STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 02/17/2025

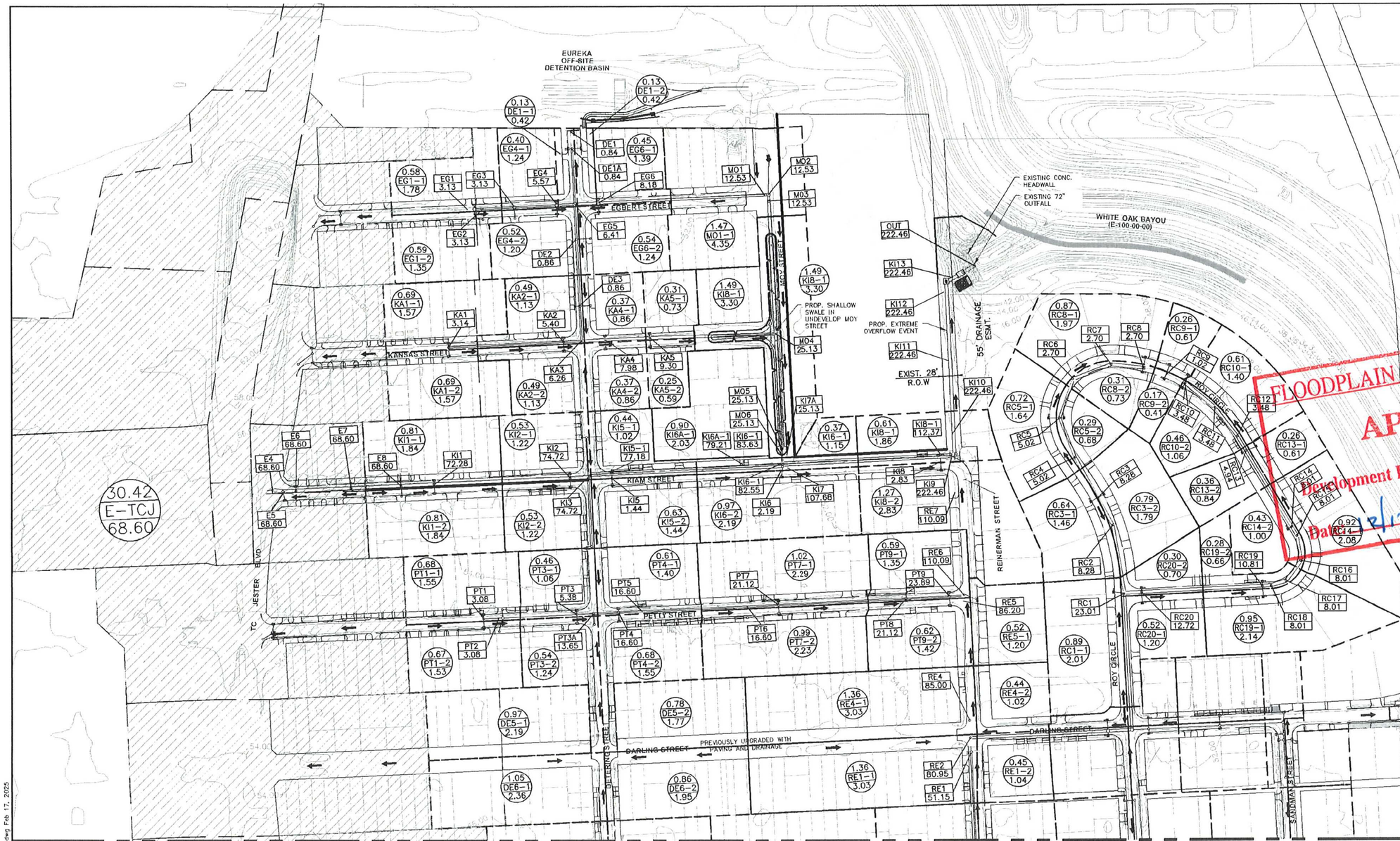
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II DRAINAGE AND PAVING IMPROVEMENTS

OVERALL WATER LINE LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=100'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 20 OF 345	

CivilTech Engineering, Inc.
O:\2018\438010\Drawings\SHEETS\12-OVERALL WATER LAYOUT.dwg Feb 17, 2025



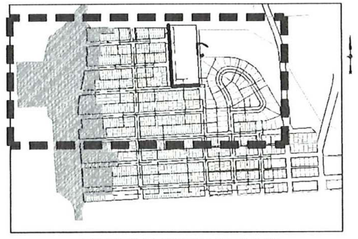
REV	DESCRIPTION	BY	DATE

LEGEND

- DRAINAGE AREA BOUNDARY
- SHEET FLOW (100 – YEAR EVENT)
- EX. CONTOURS
- DRAINAGE AREA IN ACRES
- DRAINAGE AREA (INLET) NO.
- 2-YEAR RUNOFF IN CFS
- MANHOLE ID
- CUMULATIVE FLOW IN CFS
- EXTREME EVENT OVERFLOW
- TC JESTER BLVD DRAINAGE AREA

FLOODPLAIN MANAGEMENT OFFICE
APPROVED
Development Permit #: 25-5059
Date: 2/17/2025 By:

MATCH SHEET 22



OVERALL DRAINAGE AREA MAP

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
PROPOSED DRAINAGE AREA MAP
(1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=100'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 21 OF 345	

Civilech Engineering, Inc.
O:\2018\380013\Drawings\SHEETS\06-07-DRAINAGE AREA MAP.dwg Feb 17, 2025

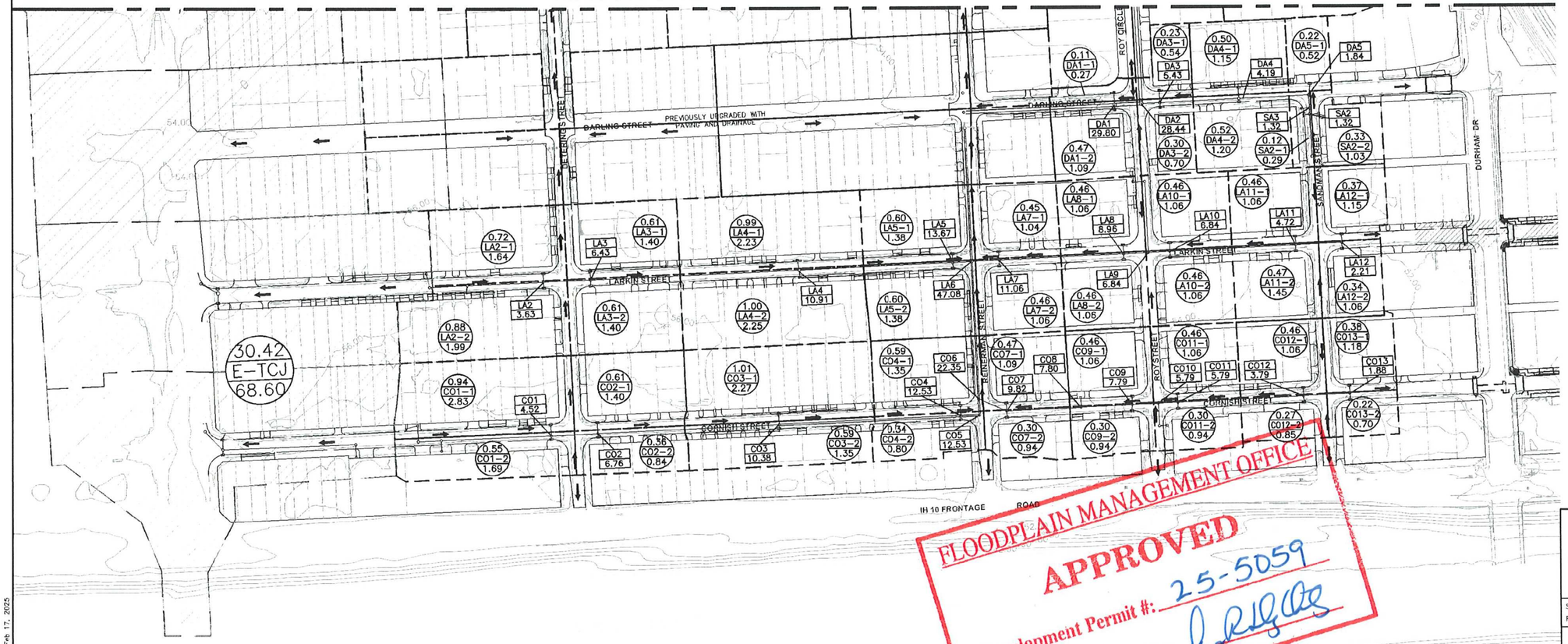
REV	DESCRIPTION	BY	DATE

LEGEND

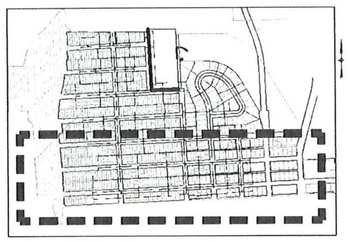
- DRAINAGE AREA BOUNDARY
- SHEET FLOW (100 – YEAR EVENT)
- EX. CONTOURS
- XXX / EXXX / XXX — DRAINAGE AREA IN ACRES / DRAINAGE AREA (INLET) NO. / 2–YEAR RUNOFF IN CFS
- EXX / XX.XX — MANHOLE ID / CUMULATIVE FLOW IN CFS
- EXTREME EVENT OVERFLOW
- TC JESTER BLVD DRAINAGE AREA

SCALE in FEET: 100 0 50 100

MATCH SHEET 21



FLOODPLAIN MANAGEMENT OFFICE
APPROVED
Development Permit #: 25-5059
Date: 12/17/2025 By:



OVERALL DRAINAGE AREA MAP

WOOLPERT
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Houston, TX 77079
800.414.1045

STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 12/17/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PROPOSED DRAINAGE AREA MAP
(2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=100'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 22 OF 345	

Civilcad Engineering, Inc.
G:\2018\380013\Drawings\SHEETS\06-07-DRAINAGE AREA MAP.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

City of Houston Storm Sewer Calculation Form

Project:	Cottage Grove East Phase II		HGL Starting Elevation 24.53
Job No:	380013		Design storm = 2-YR Storm Atlas 14 Region 2
System:	2-YR Storm Sewer		b = 48.35
By:	HT	Date: 11/8/2022	d = 9.07
Checked by:	AP	Date:	e = 0.7244

MH From	MH To	Area (Acres)	Runoff Coefficient C	Sum of C*A	Intenty i (in/hr)	Sum of Flows (cfs)	Time of Conc. (min)	Reach Length (ft)	Diam or Rise (in)	Span (ft)	Slope (%)	Manning's "n"	Design Capacity (cfs)	Design Velocicy V (fps)	Fall (ft)	MH Drop (ft)	Flowline Elevation Upstream (ft)	Flowline Elevation Downstream (ft)	Actual Velocity V (fps)	Hydraulic Grad (%)	Change in Head (ft)	Elev. of HGL Upstream (ft)	Elev. of HGL. Downstream (ft)	Natural Ground Upstream (ft)	Natural Ground Downstream (ft)
EG1-1	EG 1	0.58	0.8	0.46	3.83	1.78	24.09	8.45	2	0	0.59	0.013	17.45	5.55	0.05	0.53	46.46	46.41	0.57	0.01	0.00	47.10	47.10	51.04	
EG1-2	EG 1	0.59	0.6	0.35	3.83	1.35	24.11	17.55	2	0	1.03	0.013	22.97	7.31	0.18	0.35	46.41	46.23	0.43	0.00	0.00	47.10	47.10	51.04	
EG 1	EG 2	1.17	0.8	0.94	3.73	3.13	25.28	30.82	2.5	0	0.32	0.013	23.43	4.77	0.10	1.34	45.88	45.78	0.64	0.01	0.00	47.10	47.05	51.54	
EG 2	EG 3	1.17	0.8	0.94	3.73	3.13	25.28	61.25	3	0	0.39	0.013	41.86	5.92	0.24	0.00	44.44	44.20	0.44	0.00	0.00	47.05	47.03	50.90	
EG 3	EG 4	1.17	0.8	0.94	3.73	3.13	25.28	83.49	3	0	0.40	0.013	42.05	5.95	0.33	0.00	44.20	43.87	0.44	0.00	0.00	47.03	47.03	51.11	
EG4-1	EG 4	0.40	0.8	0.32	3.88	1.24	23.51	8.45	2	0	0.59	0.013	17.45	5.55	0.05	2.93	46.85	46.80	0.39	0.00	0.00	47.03	47.03	49.90	
EG4-2	EG 4	0.52	0.6	0.31	3.84	1.20	23.91	17.55	2	0	1.03	0.013	22.97	7.31	0.18	2.80	46.85	46.67	0.38	0.00	0.00	47.03	47.03	49.10	
EG 4	EG 5	2.09	0.8	1.67	3.65	5.57	26.39	35.56	3	0	0.28	0.013	35.47	5.02	0.10	0.00	43.87	43.77	0.79	0.01	0.00	47.03	47.04	50.40	
EG 5	DE 2	0.31	0.8	0.25	3.91	0.86	23.15	67.44	3	0	0.13	0.013	24.43	3.46	0.09	0.00	43.77	43.68	0.12	0.00	0.00	47.04	0.00	50.53	
EG 5	EG 6	2.04	0.8	1.63	3.65	5.55	26.33	46.56	4	0	0.32	0.013	81.48	6.48	0.15	2.40	43.30	43.15	0.44	0.00	0.00	47.04	47.04	0.00	
EG6-1	EG 6	0.45	0.8	0.36	3.86	1.39	23.69	8.50	2	0	1.06	0.013	23.34	7.43	0.09	4.92	45.76	45.67	0.44	0.00	0.00	47.04	47.04	49.90	
EG6-2	EG 6	0.54	0.6	0.32	3.84	1.24	23.97	17.50	2	0	1.03	0.013	23.01	7.32	0.18	4.83	45.76	45.58	0.40	0.00	0.00	47.04	47.04	49.90	
EG 6	MO 1	3.03	0.8	2.42	3.59	8.18	27.15	325.69	4	0	0.33	0.013	82.55	6.57	1.07	1.00	40.75	39.68	0.65	0.00	0.01	47.04	47.00	50.24	
MO1-1	MO 1	1.47	0.8	1.18	3.70	4.35	25.70	92.58	2	0	1.02	0.013	22.86	7.28	0.94	7.82	47.44	46.50	1.38	0.04	0.03	48.06	47.00	50.94	
MO 1	MO 2	4.50	0.6	2.70	3.53	12.53	28.03	8.25	4	0	0.36	0.013	86.85	6.91	0.03	0.00	38.68	38.65	1.00	0.01	0.00	47.00	47.00	50.36	
MO 2	MO 3	4.50	0.6	2.70	3.53	12.53	28.03	12.00	4	0	0.33	0.013	83.16	6.62	0.04	1.11	38.65	38.61	1.00	0.01	0.00	47.00	47.00	50.36	
MO 3	MO 4	4.50	0.6	2.70	3.53	12.53	28.03	257.66	5	6	0.10	0.013	134.32	4.48	0.26	0.00	37.50	37.24	0.42	0.00	0.00	47.00	47.00	50.28	
KA1-1	KA 1	0.69	0.6	0.41	3.80	1.57	24.37	8.45	2	0	0.95	0.013	22.07	7.03	0.08	0.29	46.87	46.79	0.50	0.00	0.00	47.10	47.10	51.72	
KA1-2	KA 1	0.69	0.6	0.41	3.80	1.57	24.37	17.55	2	0	1.03	0.013	22.97	7.31	0.18	0.16	46.84	46.66	0.50	0.00	0.00	47.10	47.10	52.01	
KA 1	KA 2	1.38	0.6	0.83	3.85	3.14	23.82	225.90	3	0	0.39	0.013	41.50	5.87	0.87	0.00	46.50	45.63	0.44	0.00	0.00	47.10	47.02	52.22	
KA2-1	KA 2	0.49	0.6	0.29	3.85	1.13	23.82	8.42	2	0	0.95	0.013	22.11	7.04	0.08	0.00	45.71	45.63	0.36	0.00	0.00	47.02	47.02	50.28	
KA2-2	KA 2	0.49	0.6	0.29	3.85	1.13	23.82	17.58	2	0	1.02	0.013	22.95	7.31	0.18	0.00	45.81	45.63	0.36	0.00	0.00	47.02	47.02	50.28	
KA 2	KA 3	2.36	0.6	1.42	3.89	5.40	23.39	35.56	3	0	0.51	0.013	47.58	6.73	0.18	2.60	45.63	45.45	0.76	0.01	0.00	47.02	47.02	50.78	
KA 3	KA 4	2.67	0.6	1.60	3.89	6.26	23.39	46.56	4	0	0.34	0.013	84.43	6.72	0.16	0.62	42.85	42.69	0.50	0.00	0.00	47.02	47.02	50.93	
KA4-1	KA 4	0.37	0.6	0.22	3.89	0.86	23.39	8.42	2	0	0.95	0.013	22.11	7.04	0.08	3.24	45.39	45.31	0.27	0.00	0.00	47.02	47.02	50.28	
KA4-2	KA 4	0.37	0.6	0.22	3.89	0.86	23.39	17.58	2	0	1.02	0.013	22.95	7.31	0.18	3.24	45.49	45.31	0.27	0.00	0.00	47.02	47.02	50.28	
KA 4	KA 5	3.41	0.6	2.05	3.57	7.98	27.41	87.28	4	0	0.33	0.013	83.02	6.61	0.29	1.47	42.07	41.78	0.64	0.00	0.00	47.02	47.02	50.78	
KA5-1	KA 5	0.31	0.6	0.19	3.91	0.73	23.14	8.38	2	0	0.95	0.013	22.16	7.05	0.08	6.28	46.67	46.59	0.23	0.00	0.00	47.02	47.02	50.54	
KA5-2	KA 5	0.25	0.6	0.15	3.94	0.59	22.83	17.62	2	0	1.02	0.013	22.93	7.30	0.18	6.15	46.64	46.46	0.19	0.00	0.00	47.02	47.02	50.64	
KA 5	MO 4	3.97	0.6	2.38	3.55	9.30	27.75	246.72	4	0	0.33	0.013	82.53	6.57	0.81	2.26	40.31	39.50	0.74	0.00	0.01	47.02	47.00	51.06	
MO 4	MO 5	9.96	0.6	5.98	3.40	25.13	29.99	222.26	5	6	0.10	0.013	133.03	4.43	0.22	0.00	37.24	37.02	0.84	0.00	0.01	47.00	47.00	47.55	
MO 5	MO 6	9.96	0.6	5.98	3.40	25.13	29.99	12.86	2.5	0	0.23	0.013	19.86	4.05	0.03	0.00	37.02	36.99	5.12	0.37	0.05	47.00	46.95	48.60	
E 4	E 5	0.00	0.6	0.00	4.83	68.60	15.00	23.41	5	6	0.09	0.013	123.59	4.12	0.02	0.00	37.30	37.28	2.29	0.03	0.01	47.10	47.10	0.00	
E 5	E 6	0.00	0.6	0.00	4.83	68.60	15.00	22.56	5	6	0.08	0.013	119.59	3.99	0.02	0.00	37.28	37.26	2.29	0.03	0.01	47.10	47.09	0.00	
E 6	E 7	0.00	0.6	0.00	4.83	68.60	15.00	108.09	5	6	0.08	0.013	119.59	3.99	0.09	0.00	37.26	37.18	2.29	0.03	0.03	47.09	47.07	0.00	
E 7	E 8	0.00	0.6	0.00	4.83	68.60	15.00	98.44	5	6	0.08	0.013	119.59	3.99	0.08	0.00	37.18	37.10	2.29	0.03	0.03	47.07	47.04	0.00	
E 8	KI 1	0.00	0.6	0.00	4.83	68.60	15.00	63.86	5	6	0.08	0.013	119.59	3.99	0.05	0.00	37.10	37.05	2.29	0.03	0.02	47.04	47.03	0.00	
KI1-1	KI 1	0.81	0.6	0.49	3.78	1.84	24.64	8.44	2	0	1.07	0.013	23.42	7.46	0.09	9.69	46.83	46.74	0.59	0.01	0.00	47.03	47.03	51.41	
KI1-2	KI 1	0.81	0.6	0.49	3.78	1.84	24.64	17.56	2	0	1.03	0.013	22.97	7.31	0.18	9.82	47.05	46.87	0.59	0.01	0.00	47.03	47.03	51.41	
KI 1	KI 2	1.62	0.6	0.97	3.68	72.28	25.89	267.28	5	6	0.08	0.013	119.59	3.99	0.21	0.00	37.05	36.83	2.41	0.03	0.08	47.03	46.96	51.91	
KI2-1	KI 2	0.53	0.6	0.32	3.84	1.22	23.94	8.41	2	0	0.95	0.013	22.12	7.04	0.08	9.59	46.50	46.42	0.39	0.00	0.00	46.96	46.96	50.28	
KI2-2	KI 2	0.53	0.6	0.32	3.84	1.22	23.94	17.59	2	0	1.02	0.013	22.95	7.30	0.18	9.49	46.50	46.32	0.39	0.00	0.00	46.96	46.96	50.28	
KI 2	KI 3	2.68	0.6	1.61	3.61	74.72	26.90	32.55	5	6	0.08	0.013	119.59	3.99	0.03	0.00	36.83	36.81	2.49	0.03	0.01	46.96	46.94	50.78	
KI 3	KI 5-1	2.68	0.6	1.61	3.61	74.72	26.90	43.56	5	8	0.08	0.013	172.81	4.32	0.03	0.00	36.81	36.77	1.87	0.01	0.01	46.94	46.94	50.96	
KI5-1	KI 5	0.44	0.6	0.26	3.86	1.02	23.65	6.42	2	0	3.12	0.013	40.04	12.74	0.20	0.00	46.10	45.90	9.56	0.00	0.00	0.00	0.00	50.28	
KI5-2	KI 5	0.63	0.6	0.38	3.82	1.44	24.22	13.04	2	0	1.15	0.013	24.33	7.74	0.15	8.10	46.40	46.25	0.46	0.00	0.00	46.94	46.94	50.28	
KI 5	KI 5-1	0.63	0.6	0.38	3.82	1.44	24.22	5.96	2	0	1.68	0.013	29.38	9.35	0.10	0.00	38.15	38.05	0.46	0.00	0.00	46.94	46.94	0.00	
KI 5-1	KI 6A-1	3.75	0.6	2.25	3.56	77.18	27.62	258.46	5	8	0.08	0.013	172.81	4.32	0.21	0.00	36.77	36.56	1.93	0.02	0.04	46.94	46.91	50.78	
KI 6A-1	KI 6-1	4.65	0.6	2.79	3.52	79.21	28.11	72.61	5	8	0.08	0.013	172.81	4.32	0.06	0.00	36.56	36.51	1.98	0.02	0.01	46.91	46.90	0.00	
KI6-1	KI 6	0.37	0.8	0.30	3.89	1.15	23.39	28.50	2	0	0.98	0.013	22.48	7.16	0.28	0.00	46.18	45.90	5.37	0.00	0.00	0.00	0.00	50.93	
KI6-2	KI 6	0.97	0.6	0.58	3.76	2.19	24.95	13.41	2	0	1.49	0.013	27.70	8.82	0.20	6.95	45.35	45.15	0.70	0.01	0.00	46.90	46.90	0.00	

NOTE:

TAIL WATER ELEVATION WERE DETERMINED PER IDM CHAPTER 9.
2-YR TAIL WATER ELEVATION IS TOP OF PIPE.
100-YR TAIL WATER ELEVATION IS 2 FEET BELOW WHITE OAK BAYOU'S BANK.

WOOLPERT
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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
DRAINAGE AREA CALCULATIONS
(1 OF 5)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 23 OF 345	

REV	DESCRIPTION	BY	DATE

City of Houston Storm Sewer Calculation Form

Project:	Cottage Grove East Phase II		HGL Starting Elevation 24.53
Job No:	380013		Design storm = 2-YR Storm Atlas 14 Region 2
System:	2-YR Storm Sewer		b = 48.35
By:	HT	Date: 11/8/2022	d = 9.07
Checked by:	AP	Date:	e = 0.7244

MH From	MH To	Area (Acres)	Runoff Coefficient C	Sum of C*A	Intenty i (in/hr)	Sum of Flows (cfs)	Time of Conc. (min)	Reach Length (ft)	Diam or Rise (in)	Span (ft)	Slope (%)	Manning's "n"	Design Capacity (cfs)	Design Velocicy V (fps)	Fall (ft)	MH Drop (ft)	Flowline Elevation Upstream (ft)	Flowline Elevation Downstream (ft)	Actual Velocity V (fps)	Hydraulic Grad (%)	Change in Head (ft)	Elev. of HGL Upstream (ft)	Elev. of HGL. Downstream (ft)	Natural Ground Upstream (ft)	Natural Ground Downstream (ft)
KI 6	KI6-1	0.97	0.6	0.58	3.76	2.19	24.95	5.55	2	0	1.80	0.013	30.45	9.69	0.10	0.00	38.20	38.10	0.70	0.01	0.00	46.90	46.90	0.00	
KI6-1	KI 7	5.99	0.6	3.59	3.48	82.55	28.71	9.87	5	8	0.08	0.013	172.81	4.32	0.01	0.00	36.51	36.50	2.06	0.02	0.00	46.90	46.90	50.45	
KI 7	KI 8-1	15.95	0.8	12.76	3.32	107.68	31.29	298.75	5	8	0.08	0.013	172.81	4.32	0.24	0.00	36.50	36.26	2.69	0.03	0.09	46.90	46.89	49.81	
MO 6	KI 7A	9.96	0.6	5.98	3.40	25.13	29.99	10.02	2.5	0	0.20	0.013	18.37	3.74	0.02	0.00	36.99	36.97	5.12	0.37	0.04	0.00	0.00	47.00	
KI 7A	KI 7	9.96	0.6	5.98	3.40	25.13	29.99	12.35	2.5	0	0.24	0.013	20.27	4.13	0.03	0.44	36.97	36.94	5.12	0.37	0.05	0.00	46.90	50.99	
KI8-1	KI 9	17.83	0.6	10.70	3.30	112.37	31.61	20.09	5	8	0.08	0.013	172.81	4.32	0.02	5.42	36.26	36.24	2.81	0.03	0.01	46.89	46.88	49.80	
KI8-2	KI 8	1.27	0.6	0.76	3.72	2.83	25.43	13.95	2	0	1.08	0.013	23.52	7.49	0.15	4.65	42.00	41.85	0.90	0.02	0.00	46.89	46.89	48.21	
KI 8	KI8-1	1.27	0.6	0.76	3.72	2.83	25.43	8.05	2	0	1.24	0.013	25.28	8.05	0.10	0.00	37.20	37.10	0.90	0.02	0.00	46.89	46.89	48.21	
KI 9	KI 10	64.32	0.6	38.59	3.07	222.46	35.82	35.87	6	0	0.25	0.013	212.71	7.52	0.09	2.17	30.82	30.73	7.87	0.27	0.10	46.88	39.59	48.78	
KI 10	KI 11	64.32	0.6	38.59	3.07	222.46	35.82	143.29	6	0	0.24	0.013	206.85	7.32	0.34	4.88	28.56	28.22	7.87	0.27	0.39	39.59	39.30	46.31	
KI 11	KI 12	64.32	0.6	38.59	3.07	222.46	35.82	143.37	6	0	0.24	0.013	206.79	7.31	0.34	3.48	23.34	23.00	7.87	0.27	0.39	39.30	39.02	44.78	
KI 12	KI 13	64.32	0.6	38.59	3.07	222.46	35.82	24.63	6	0	0.24	0.013	209.59	7.41	0.06	0.82	19.52	19.46	7.87	0.27	0.07	39.02	26.47	42.97	
KI 13	OUT	64.32	0.6	38.59	3.07	222.46	35.82	47.81	6	0	0.23	0.013	203.69	7.20	0.11	-	18.64	18.53	7.87	0.27	0.13	26.47	24.65	39.53	
PT1-1	PT 1	0.68	0.6	0.41	3.81	1.55	24.34	8.42	2	0	1.07	0.013	23.45	7.46	0.09	0.95	48.91	48.82	0.49	0.00	0.00	46.66	46.66	53.02	
PT1-2	PT 1	0.67	0.6	0.40	3.81	1.53	24.32	17.58	2	0	1.02	0.013	22.95	7.31	0.18	0.93	48.98	48.80	0.49	0.00	0.00	46.66	46.66	53.02	
PT 1	PT 2	1.35	0.6	0.81	3.71	3.08	25.54	29.58	2	0	0.20	0.013	10.22	3.25	0.06	0.00	47.87	47.81	0.98	0.02	0.01	46.66	46.58	53.52	
PT 2	PT 3	1.35	0.6	0.81	3.71	3.08	25.54	153.20	2	0	0.20	0.013	10.20	3.25	0.31	2.93	47.81	47.50	0.98	0.02	0.03	46.58	46.49	54.57	
PT3-1	PT 3	0.46	0.6	0.28	3.86	1.06	23.72	8.41	2	0	0.71	0.013	19.16	6.10	0.06	3.64	48.27	48.21	0.34	0.00	0.00	46.49	46.49	51.76	
PT3-2	PT 3	0.54	0.6	0.32	3.84	1.24	23.97	17.59	2	0	1.02	0.013	22.95	7.30	0.18	3.64	48.39	48.21	0.40	0.00	0.00	46.49	46.49	51.76	
PT 3	PT 3A	2.35	0.6	1.41	3.63	5.38	26.62	33.53	2	0	0.21	0.013	10.36	3.30	0.07	0.01	44.57	44.50	1.71	0.06	0.02	46.49	46.22	52.26	
PT 3A	PT 4	6.01	0.6	3.61	3.48	13.65	28.71	48.59	2.5	0	0.27	0.013	21.27	4.33	0.13	0.00	44.49	44.36	2.78	0.11	0.05	46.22	45.82	53.26	
PT4-1	PT 4	0.61	0.6	0.37	3.82	1.40	24.17	8.42	2	0	0.95	0.013	22.11	7.04	0.08	3.32	47.76	47.68	0.45	0.00	0.00	45.82	45.82	51.93	
PT4-2	PT 4	0.68	0.6	0.41	3.81	1.55	24.34	17.58	2	0	1.02	0.013	22.95	7.31	0.18	3.32	47.86	47.68	0.49	0.00	0.00	45.82	45.82	51.93	
PT 4	PT 5	7.30	0.6	4.38	3.45	16.60	29.19	45.99	2.5	0	0.26	0.013	21.01	4.28	0.12	0.00	44.36	44.24	3.38	0.16	0.07	45.82	45.70	52.43	
PT 5	PT 6	7.30	0.6	4.38	3.45	16.60	29.19	204.69	2.5	0	0.27	0.013	21.32	4.34	0.55	0.00	44.24	43.69	3.38	0.16	0.33	45.70	45.18	52.74	
PT 6	PT 7	7.30	0.6	4.38	3.45	16.60	29.19	61.87	2.5	0	0.27	0.013	21.56	4.39	0.17	0.00	43.69	43.52	3.38	0.16	0.10	45.18	45.04	52.95	
PT7-1	PT 7	1.02	0.6	0.61	3.75	2.29	25.03	8.42	2	0	1.90	0.013	31.27	9.95	0.16	4.43	48.11	47.95	0.73	0.01	0.00	45.04	45.04	52.05	
PT7-2	PT 7	0.99	0.6	0.59	3.75	2.23	24.98	17.58	2	0	0.51	0.013	16.23	5.17	0.09	4.50	48.11	48.02	0.71	0.01	0.00	45.04	45.04	52.05	
PT 7	PT 8	9.31	0.6	5.59	3.41	21.12	29.81	252.04	2.5	0	0.27	0.013	21.36	4.35	0.68	0.00	43.52	42.84	4.30	0.26	0.66	45.04	44.08	52.55	
PT 8	PT 9	9.31	0.6	5.59	3.41	21.12	29.81	84.43	2.5	0	0.27	0.013	21.47	4.37	0.23	0.56	42.84	42.61	4.30	0.26	0.22	44.08	43.75	51.52	
PT9-1	PT 9	0.59	0.6	0.35	3.83	1.35	24.11	8.41	2	0	0.59	0.013	17.49	5.57	0.05	3.27	45.37	45.32	0.43	0.00	0.00	43.75	43.75	50.42	
PT9-2	PT 9	0.62	0.6	0.37	3.82	1.42	24.19	17.59	2	0	1.02	0.013	22.95	7.30	0.18	3.27	45.50	45.32	0.45	0.00	0.00	43.75	43.75	50.42	
PT 9	RE 6	10.52	0.6	6.31	3.39	23.89	30.13	19.44	2.5	0	0.26	0.013	20.86	4.25	0.05	5.66	42.05	42.00	4.87	0.34	0.07	43.75	39.82	50.92	
DA1-1	DA 1	0.11	0.6	0.07	4.03	0.27	21.78	20.02	2	0	1.00	0.013	22.67	7.22	0.20	6.92	46.29	46.09	0.08	0.00	0.00	40.73	40.73	50.89	
DA1-2	DA 1	0.47	0.6	0.28	3.86	1.09	23.76	6.98	2	0	1.15	0.013	24.28	7.73	0.08	7.04	46.29	46.21	0.35	0.00	0.00	40.73	40.73	50.89	
DA 1	RE 2	12.83	0.6	7.70	3.36	29.80	30.67	268.91	3	5	0.28	0.013	86.97	5.80	0.75	1.42	39.17	38.42	1.99	0.03	0.09	40.73	0.00	51.21	
DA 2	DA 1	12.25	0.6	7.35	3.36	28.44	30.55	47.36	3	5	0.27	0.013	86.28	5.75	0.13	0.00	39.30	39.17	1.90	0.03	0.01	40.82	40.73	51.34	
DA3-1	DA 3	0.23	0.6	0.14	3.95	0.54	22.72	20.13	2	0	1.04	0.013	23.17	7.37	0.21	1.00	46.11	45.90	0.17	0.00	0.00	45.72	45.72	50.89	
DA3-2	DA 3	0.30	0.6	0.18	3.91	0.70	23.09	6.87	2	0	1.16	0.013	24.48	7.79	0.08	1.13	46.11	46.03	0.22	0.00	0.00	45.72	45.72	50.89	
DA 3	DA 2	2.22	0.6	1.33	3.64	5.43	26.51	33.06	2	0	0.21	0.013	10.44	3.32	0.07	5.53	44.90	44.83	1.73	0.06	0.02	45.72	40.82	51.21	
DA4-1	DA 4	0.50	0.6	0.30	3.85	1.15	23.85	19.77	2	0	1.01	0.013	22.81	7.26	0.20	0.55	46.02	45.82	0.37	0.00	0.00	46.14	46.14	50.52	
DA4-2	DA 4	0.52	0.6	0.31	3.84	1.20	23.91	6.23	2	0	0.96	0.013	22.26	7.09	0.06	0.69	46.02	45.96	0.38	0.00	0.00	46.14	46.14	50.52	
DA 4	DA 3	1.69	0.6	1.01	3.68	4.19	25.97	147.03	2	0	0.25	0.013	11.38	3.62	0.37	0.00	45.27	44.90	1.33	0.03	0.05	46.14	45.72	51.02	
DA5-1	DA 5	0.22	0.6	0.13	3.95	0.52	22.66	20.19	2	0	0.99	0.013	22.58	7.19	0.20	0.50	46.25	46.05	0.17	0.00	0.00	46.21	46.21	50.58	
DA 5	DA 4	0.67	0.6	0.40	3.81	1.84	24.32	115.86	2	0	0.24	0.013	11.15	3.55	0.28	0.00	45.55	45.27	0.59	0.01	0.01	46.21	46.14	51.09	
LA2-1	LA 2	0.72	0.6	0.43	3.80	1.64	24.44	15.51	2	0	0.97	0.013	22.31	7.10	0.15	0.32	50.01	49.86	0.52	0.01	0.00	50.63	50.63	53.28	
LA2-2	LA 2	0.88	0.6	0.53	3.77	1.99	24.78	10.49	2	0	1.05	0.013	23.23	7.39	0.11	0.37	50.02	49.91	0.63	0.01	0.00	50.63	50.63	53.28	
LA 2	LA 3	1.60	0.6	0.96	3.69	3.63	25.86	82.12	2	0	0.19	0.013	10.01	3.19	0.16	0.00	49.54	49.38	1.16	0.03	0.02	50.63	50.29	53.78	
LA3-1	LA 3	0.61	0.6	0.37	3.82	1.40	24.17	15.51	2	0	0.97	0.013	22.31	7.10	0.15	0.48	50.01	49.86	0.45	0.00	0.00	50.29	50.29	53.28	
LA3-2	LA 3	0.61	0.6	0.37	3.82	1.40	24.17	10.49	2	0	1.05	0.013	23.23	7.39	0.11	0.53	50.02	49.91	0.45	0.00	0.00	50.29	50.29	53.28	

NOTE:

TAIL WATER ELEVATION WERE DETERMINED PER IDM CHAPTER 9.
2-YR TAIL WATER ELEVATION IS TOP OF PIPE.
100-YR TAIL WATER ELEVATION IS 2 FEET BELOW WHITE OAK BAYOU'S BANK.

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SURVEYED BY: KUO & ASSOC.
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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
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02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

DRAINAGE AREA CALCULATIONS
(2 OF 5)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 24 OF 345	

CivilTech Engineering, Inc.
O:\2018\380013\Drawings\SHEETS\15-16-DRAINAGE AREA CALCS.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

City of Houston Storm Sewer Calculation Form

Project: Cottage Grove East Phase II — HGL Starting Elevation 24.53
Job No: 380013 — Design storm = 2-YR Storm Atlas 14 Region 2
System: 2-YR Storm Sewer — b = 48.35
By: HT — Date: 11/8/2022 — d = 9.07
Checked by: AP — Date: — e = 0.7244

MH From	MH To	Area (Acres)	Runoff Coefficient C	Sum of C*A	Intenty i (in/hr)	Sum of Flows (cfs)	Time of Conc. (min)	Reach Length (ft)	Diam or Rise (in)	Span (ft)	Slope (%)	Manning's "n"	Design Capacity (cfs)	Design Velocicy V (fps)	Fall (ft)	MH Drop (ft)	Flowline Elevation Upstream (ft)	Flowline Elevation Downstream (ft)	Actual Velocity V (fps)	Hydraulic Grad (%)	Change in Head (ft)	Elev. of HGL Upstream (ft)	Elev. of HGL. Downstream (ft)	Natural Ground Upstream (ft)	Natural Ground Downstream (ft)
LA 3	LA 4	2.82	0.6	1.69	3.60	6.43	27.00	370.62	2	0	0.20	0.013	10.14	3.23	0.74	0.00	49.38	48.64	2.05	0.08	0.30	50.29	49.87	53.78	
LA4-1	LA 4	0.99	0.6	0.59	3.75	2.23	24.98	16.20	2	0	0.99	0.013	22.54	7.18	0.16	0.70	49.50	49.34	0.71	0.01	0.00	49.87	49.87	53.06	
LA4-2	LA 4	1.00	0.6	0.60	3.75	2.25	25.00	11.03	2	0	1.00	0.013	22.65	7.21	0.11	0.75	49.50	49.39	0.72	0.01	0.00	49.87	49.87	53.06	
LA 4	LA 5	4.81	0.6	2.89	3.52	10.91	28.19	272.25	2	0	0.26	0.013	11.50	3.66	0.70	0.00	48.64	47.94	3.47	0.23	0.63	49.87	49.08	53.56	
LA5-1	LA 5	0.60	0.6	0.36	3.82	1.38	24.14	15.44	2	0	0.97	0.013	22.36	7.12	0.15	-0.08	48.01	47.86	0.44	0.00	0.00	49.08	49.08	51.99	
LA5-2	LA 5	0.60	0.6	0.36	3.82	1.38	24.14	10.56	2	0	1.04	0.013	23.15	7.37	0.11	-0.03	48.02	47.91	0.44	0.00	0.00	49.08	49.08	51.99	
LA 5	LA 6	6.01	0.6	3.61	3.48	13.67	28.71	33.39	2	0	0.42	0.013	14.69	4.68	0.14	5.61	47.94	47.80	4.35	0.36	0.12	49.08	47.41	52.49	
LA 6	RE 1	19.01	0.6	11.41	3.29	47.08	31.80	233.35	3	0	0.60	0.013	51.80	7.33	1.40	0.00	42.19	40.79	6.66	0.50	1.16	47.41	0.00	52.05	
LA7-1	LA 7	0.45	0.6	0.27	3.86	1.04	23.69	15.44	2	0	0.97	0.013	22.36	7.12	0.15	2.06	47.85	47.70	0.33	0.00	0.00	47.46	47.46	51.92	
LA7-2	LA 7	0.46	0.6	0.28	3.86	1.06	23.72	10.56	2	0	1.04	0.013	23.15	7.37	0.11	2.38	48.13	48.02	0.34	0.00	0.00	47.46	47.46	51.92	
LA 7	LA 6	4.39	0.6	2.63	3.53	11.06	27.98	48.73	2	0	0.25	0.013	11.26	3.58	0.12	3.33	45.64	45.52	3.52	0.24	0.12	47.46	47.41	52.42	
LA8-1	LA 8	0.46	0.6	0.28	3.86	1.06	23.72	15.60	2	0	1.03	0.013	22.97	7.31	0.16	0.54	46.87	46.71	0.34	0.00	0.00	47.72	47.72	51.08	
LA8-2	LA 8	0.46	0.6	0.28	3.86	1.06	23.72	10.40	2	0	0.96	0.013	22.24	7.08	0.10	0.59	46.86	46.76	0.34	0.00	0.00	47.72	47.72	51.08	
LA 8	LA 7	3.48	0.6	2.09	3.57	8.96	27.46	221.76	2	0	0.24	0.013	11.09	3.53	0.53	0.00	46.17	45.64	2.85	0.16	0.35	47.72	47.46	51.58	
LA 9	LA 8	2.56	0.6	1.54	3.62	6.84	26.80	43.99	2	0	0.25	0.013	11.34	3.61	0.11	0.00	46.28	46.17	2.18	0.09	0.04	47.78	47.72	51.71	
LA10-1	LA 10	0.46	0.6	0.28	3.86	1.06	23.72	15.40	2	0	0.97	0.013	22.39	7.13	0.15	0.58	47.10	46.95	0.34	0.00	0.00	47.80	47.80	51.08	
LA10-2	LA 10	0.46	0.6	0.28	3.86	1.06	23.72	10.60	2	0	1.04	0.013	23.11	7.36	0.11	0.38	46.86	46.75	0.34	0.00	0.00	47.80	47.80	51.08	
LA 10	LA 9	2.56	0.6	1.54	3.62	6.84	26.80	38.13	2	0	0.24	0.013	11.02	3.51	0.09	0.00	46.37	46.28	2.18	0.09	0.03	47.80	47.78	51.58	
LA11-1	LA 11	0.46	0.6	0.28	3.86	1.06	23.72	15.38	2	0	0.98	0.013	22.40	7.13	0.15	-0.15	46.90	46.75	0.34	0.00	0.00	0.00	0.00	50.68	
LA11-2	LA 11	0.47	0.8	0.38	3.86	1.45	23.76	10.62	2	0	1.04	0.013	23.09	7.35	0.11	-0.15	46.86	46.75	0.46	0.00	0.00	0.00	0.00	50.68	
LA 11	LA 10	1.64	0.8	1.31	3.68	4.72	25.91	221.77	2	0	0.24	0.013	11.09	3.53	0.53	0.00	46.90	46.37	1.50	0.04	0.10	0.00	47.80	51.18	
LA12-1	LA 12	0.37	0.8	0.30	3.89	1.15	23.39	15.37	2	0	0.91	0.013	21.65	6.89	0.14	0.00	47.24	47.10	0.37	0.00	0.00	0.00	0.00	50.62	
LA12-2	LA 12	0.34	0.8	0.27	3.90	1.06	23.27	10.63	2	0	0.85	0.013	20.87	6.64	0.09	0.00	47.19	47.10	0.34	0.00	0.00	0.00	0.00	50.62	
LA 12	LA 11	0.71	0.8	0.57	3.80	2.21	24.41	82.12	2	0	0.24	0.013	11.19	3.56	0.20	0.00	47.10	46.90	0.70	0.01	0.01	0.00	47.94	50.62	
CO1-1	CO 1	0.94	0.8	0.75	3.76	2.83	24.89	19.41	2	0	0.98	0.013	22.44	7.14	0.19	0.00	49.52	49.33	0.90	0.02	0.00	49.68	49.68	53.96	
CO1-2	CO 1	0.55	0.8	0.44	3.83	1.69	24.00	6.59	2	0	1.06	0.013	23.38	7.44	0.07	0.00	49.40	49.33	0.54	0.01	0.00	49.68	49.68	53.96	
CO 1	CO 2	1.49	0.8	1.19	3.70	4.52	25.73	82.13	2	0	0.18	0.013	9.69	3.09	0.15	1.90	49.33	49.18	1.44	0.04	0.03	49.68	49.15	54.46	
CO2-1	CO 2	0.61	0.6	0.37	3.82	1.40	24.17	19.41	2	0	0.98	0.013	22.44	7.14	0.19	1.20	48.67	48.48	0.45	0.00	0.00	49.15	49.15	53.96	
CO2-2	CO 2	0.36	0.6	0.22	3.89	0.84	23.35	6.59	2	0	1.06	0.013	23.38	7.44	0.07	1.19	48.54	48.47	0.27	0.00	0.00	49.15	49.15	53.89	
CO 2	CO 3	2.46	0.6	1.48	3.62	6.76	26.72	321.44	2	0	0.18	0.013	9.64	3.07	0.58	1.70	47.28	46.70	2.15	0.09	0.29	49.15	48.28	54.39	
CO3-1	CO 3	1.01	0.6	0.61	3.75	2.27	25.02	19.37	2	0	0.98	0.013	22.47	7.15	0.19	4.81	50.00	49.81	0.72	0.01	0.00	48.28	48.28	53.60	
CO3-2	CO 3	0.59	0.6	0.35	3.83	1.35	24.11	6.63	2	0	1.06	0.013	23.31	7.42	0.07	4.93	50.00	49.93	0.43	0.00	0.00	48.28	48.28	53.60	
CO 3	CO 4	4.06	0.6	2.44	3.54	10.38	27.80	321.43	2.5	0	0.18	0.013	17.47	3.56	0.58	0.00	45.00	44.42	2.11	0.06	0.20	48.28	48.11	54.10	
CO4-1	CO 4	0.59	0.6	0.35	3.83	1.35	24.11	19.37	2	0	0.98	0.013	22.47	7.15	0.19	4.76	49.37	49.18	0.43	0.00	0.00	48.11	48.11	52.86	
CO4-2	CO 4	0.34	0.6	0.20	3.90	0.80	23.27	6.63	2	0	1.06	0.013	23.31	7.42	0.07	4.89	49.38	49.31	0.25	0.00	0.00	48.11	48.11	52.86	
CO 4	CO 5	4.99	0.6	2.99	3.51	12.53	28.27	33.39	2.5	0	0.18	0.013	17.43	3.55	0.06	0.00	44.42	44.36	2.55	0.09	0.03	48.11	48.09	53.36	
CO 5	CO 6	4.99	0.6	2.99	3.51	12.53	28.27	28.42	2.5	0	0.18	0.013	17.25	3.51	0.05	0.00	44.36	44.31	2.55	0.09	0.03	48.09	0.00	53.56	
CO 6	LA 6	8.61	0.6	5.17	3.42	22.35	29.61	240.47	2.5	0	0.30	0.013	22.50	4.58	0.72	1.40	44.31	43.59	4.55	0.30	0.71	0.00	0.00	53.56	
CO7-1	CO 7	0.47	0.6	0.28	3.86	1.09	23.76	15.01	2	0	1.00	0.013	22.68	7.22	0.15	0.90	48.90	48.75	0.35	0.00	0.00	48.42	48.42	52.86	
CO7-2	CO 7	0.30	0.8	0.24	3.91	0.94	23.09	10.99	2	0	1.00	0.013	22.69	7.22	0.11	0.90	48.86	48.75	0.30	0.00	0.00	48.42	48.42	52.86	
CO 7	CO 6	3.62	0.8	2.90	3.56	9.82	27.54	54.37	2	0	0.20	0.013	10.20	3.25	0.11	3.43	47.85	47.74	3.13	0.19	0.10	48.42	0.00	53.36	
CO 8	CO 7	2.85	0.8	2.28	3.60	7.79	27.03	132.05	2	0	0.20	0.013	10.07	3.20	0.26	0.00	48.11	47.85	2.48	0.12	0.16	48.77	48.42	53.50	
CO9-1	CO 9	0.46	0.6	0.28	3.86	1.06	23.72	15.01	2	0	1.00	0.013	22.68	7.22	0.15	0.21	48.65	48.50	0.34	0.00	0.00	48.98	48.98	52.11	
CO9-2	CO 9	0.30	0.8	0.24	3.91	0.94	23.09	11.10	2	0	1.35	0.013	26.37	8.39	0.15	0.20	48.64	48.49	0.30	0.00	0.00	48.98	48.98	52.11	
CO 9	CO 8	2.85	0.8	2.28	3.60	7.79	27.03	90.94	2	0	0.20	0.013	10.09	3.21	0.18	0.00	48.29	48.11	2.48	0.12	0.11	48.98	48.77	52.61	
CO 10	CO 9	2.09	0.8	1.67	3.65	5.79	26.39	45.96	2	0	0.20	0.013	10.04	3.20	0.09	0.00	48.38	48.29	1.84	0.07	0.03	49.08	48.98	52.74	
CO11-1	CO 11	0.46	0.6	0.28	3.86	1.06	23.72	14.98	2	0	1.00	0.013	22.70	7.23	0.15	0.05	48.65	48.50	0.34	0.00	0.00	49.17	49.17	52.11	
CO11-2	CO 11	0.30	0.8	0.24	3.91	0.94	23.09	11.02	2	0	1.00	0.013	22.66	7.21	0.11	0.05	48.61	48.50	0.30	0.00	0.00	49.17	49.17	52.11	
CO 11	CO 10	2.09	0.8	1.67	3.65	5.79	26.39	34.94	2	0	0.20	0.013	10.15	3.23	0.07	0.00	48.45	48.38	1.84	0.07	0.02	49.17	49.08	52.61	
CO12-1	CO 12	0.46	0.6	0.28	3.86	1.06	23.72	14.96	2	0	1.00	0.013	22.71	7.23	0.15	0.01	49.05	48.90	0.34	0.00	0.00	49.46	49.46	51.55	

NOTE:

TAIL WATER ELEVATION WERE DETERMINED PER IDM CHAPTER 9.
2-YR TAIL WATER ELEVATION IS TOP OF PIPE.
100-YR TAIL WATER ELEVATION IS 2 FEET BELOW WHITE OAK BAYOU'S BANK.

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS
DRAINAGE AREA CALCULATIONS
(3 OF 5)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 25 OF 345	

CivilTech Engineering, Inc.
O:\2018\380013\Drawings\SHEETS\15-15-DRAINAGE AREA CALCS.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

City of Houston Storm Sewer Calculation Form

Project: Cottage Grove East Phase II — HGL Starting Elevation 24.53
Job No: 380013 — Design storm = 2-YR Storm Atlas 14 Region 2
System: 2-YR Storm Sewer — b = 48.35
By: HT — Date: 11/8/2022 — d = 9.07
Checked by: AP — Date: — e = 0.7244

MH From	MH To	Area (Acres)	Runoff Coefficient C	Sum of C*A	Intenty i (in/hr)	Sum of Flows (cfs)	Time of Conc. (min)	Reach Length (ft)	Diam or Rise (in)	Span (ft)	Slope (%)	Manning's "n"	Design Capacity (cfs)	Design Velocicy V (fps)	Fall (ft)	MH Drop (ft)	Flowline Elevation Upstream (ft)	Flowline Elevation Downstream (ft)	Actual Velocity V (fps)	Hydraulic Grad (%)	Change in Head (ft)	Elev. of HGL Upstream (ft)	Elev. of HGL. Downstream (ft)	Natural Ground Upstream (ft)	Natural Ground Downstream (ft)
CO12-2	CO 12	0.27	0.8	0.22	3.93	0.85	22.94	11.04	2	0	1.00	0.013	22.64	7.21	0.11	0.01	49.01	48.90	0.27	0.00	0.00	49.46	49.46	53.49	
CO 12	CO 11	1.33	0.8	1.06	3.71	3.79	25.52	221.76	2	0	0.20	0.013	10.10	3.22	0.44	0.00	48.89	48.45	1.21	0.03	0.06	49.46	49.17	53.06	
CO13-1	CO 13	0.38	0.8	0.30	3.88	1.18	23.43	14.95	2	0	1.00	0.013	22.72	7.23	0.15	0.00	49.20	49.05	0.38	0.00	0.00	49.71	49.71	52.56	
CO13-2	CO 13	0.22	0.8	0.18	3.95	0.70	22.66	11.05	2	0	1.00	0.013	22.63	7.20	0.11	0.00	49.16	49.05	0.22	0.00	0.00	49.71	49.71	52.56	
CO 13	CO 12	0.60	0.8	0.48	3.82	1.88	24.14	81.94	2	0	0.20	0.013	10.02	3.19	0.16	0.00	49.05	48.89	0.60	0.01	0.01	49.71	49.46	52.56	
DE1-1	DE 1	0.13	0.8	0.10	4.01	0.42	21.98	7.50	2	0	0.93	0.013	21.91	6.98	0.07	0.62	46.00	45.93	0.13	0.00	0.00	47.10	47.10	49.54	
DE1-2	DE 1	0.13	0.8	0.10	4.01	0.42	21.98	18.50	2	0	1.03	0.013	22.99	7.32	0.19	0.50	46.00	45.81	0.13	0.00	0.00	47.10	47.10	49.54	
DE 1	DE 1A	0.26	0.8	0.21	3.93	0.84	22.89	33.23	2.5	0	0.18	0.013	17.48	3.56	0.06	0.45	45.31	45.25	0.17	0.00	0.00	47.10	47.10	50.04	
DE 1A	EG 5	0.26	0.8	0.21	3.93	0.84	22.89	107.16	3	0	0.18	0.013	28.16	3.98	0.19	0.84	44.80	44.61	0.12	0.00	0.00	47.10	47.04	50.28	
DE 2	DE 3	0.31	0.8	0.25	3.91	0.86	23.15	129.64	3	0	0.13	0.013	24.22	3.43	0.17	0.00	43.68	43.51	0.12	0.00	0.00	47.03	47.03	50.97	
DE 3	KA 3	0.31	0.8	0.25	3.91	0.86	23.15	67.90	3	0	0.13	0.013	24.35	3.44	0.09	0.57	43.51	43.42	0.12	0.00	0.00	47.03	47.02	51.27	
DE5-1	DE 5	0.97	0.6	0.58	3.76	2.19	24.95	6.00	2	0	1.33	0.013	26.19	8.34	0.08	1.95	46.46	46.38	0.70	0.01	0.00	0.00	0.00	54.34	
DE5-2	DE 5	0.78	0.6	0.47	3.79	1.77	24.57	23.00	2	0	0.74	0.013	19.50	6.21	0.17	1.91	46.51	46.34	0.56	0.01	0.00	0.00	0.00	52.95	
DE 5	DE 4	3.66	0.6	2.20	3.56	8.27	27.57	215.61	2.5	0	0.11	0.013	13.43	2.74	0.23	-0.33	44.43	44.20	1.68	0.04	0.09	0.00	0.00	53.83	
DE6-1	DE 6	1.05	0.6	0.63	3.75	2.36	25.09	4.00	2	0	4.75	0.013	49.44	15.74	0.19	1.83	46.57	46.38	0.75	0.01	0.00	0.00	0.00	54.51	
DE6-2	DE 6	0.86	0.6	0.52	3.77	1.95	24.74	23.00	2	0	0.30	0.013	12.51	3.98	0.07	1.86	46.48	46.41	0.62	0.01	0.00	0.00	0.00	54.51	
DE 6	DE 5	1.91	0.6	1.15	3.66	4.31	26.21	66.21	2.5	0	0.18	0.013	17.51	3.57	0.12	0.00	44.55	44.43	0.88	0.01	0.01	0.00	0.00	53.11	
DE 4	PT 3A	3.66	0.6	2.20	4.13	8.27	20.76	20.76	2.5	0	0.19	0.013	18.05	3.68	0.04	0.00	44.53	44.49	1.68	0.04	0.01	0.00	0.00	53.48	
RE1-1	RE 1	1.36	0.6	0.82	3.71	3.03	25.56	6.00	2	0	2.50	0.013	35.87	11.42	0.15	3.23	44.17	44.02	0.96	0.02	0.00	0.00	0.00	52.51	
RE1-2	RE 1	0.45	0.6	0.27	3.86	1.04	23.69	22.00	2	0	1.00	0.013	22.68	7.22	0.22	4.67	45.68	45.46	0.33	0.00	0.00	0.00	0.00	51.51	
RE 1	RE 2	20.82	0.6	12.49	3.27	51.15	32.07	27.75	3	0	0.61	0.013	52.35	7.41	0.17	3.62	40.79	40.62	7.24	0.58	0.16	0.00	0.00	52.51	
RE 2	RE 4	33.65	0.6	20.19	3.19	80.95	33.57	34.09	6	0	0.23	0.013	205.71	7.28	0.08	0.00	37.00	36.92	2.86	0.04	0.01	0.00	40.26	52.69	
RE4-1	RE 4	1.36	0.6	0.82	3.71	3.03	25.56	7.00	2	0	7.29	0.013	61.23	19.49	0.51	7.78	45.21	44.70	0.96	0.02	0.00	40.26	40.26	52.50	
RE4-2	RE 4	0.44	0.6	0.26	3.86	1.02	23.65	4.00	2	0	5.75	0.013	54.39	17.31	0.23	9.36	46.51	46.28	0.32	0.00	0.00	40.26	40.26	52.11	
RE 4	RE 5	35.45	0.6	21.27	3.18	85.00	33.75	232.38	6	0	0.24	0.013	208.46	7.37	0.56	0.00	36.92	36.36	3.01	0.04	0.09	40.26	39.84	52.74	
RE5-1	RE 5	0.52	0.6	0.31	3.84	1.20	23.91	27.04	2	0	1.00	0.013	22.67	7.21	0.27	9.38	46.01	45.74	0.38	0.00	0.00	39.84	39.84	50.01	
RE 5	RE 6	35.97	0.6	21.58	3.18	86.20	33.79	7.52	6	0	0.27	0.013	219.00	7.75	0.02	0.00	36.36	36.34	3.05	0.04	0.00	39.84	39.82	51.21	
RE 6	RE 7	46.49	0.6	27.89	3.13	110.09	34.66	191.71	6	0	0.25	0.013	210.26	7.44	0.47	0.00	36.34	35.87	3.89	0.07	0.13	39.82	39.10	51.09	
RE 7	KI 9	46.49	0.6	27.89	3.13	110.09	34.66	63.21	6	0	0.24	0.013	206.86	7.32	0.15	4.90	35.87	35.72	3.89	0.07	0.04	39.10	0.00	49.59	
SA2-1	SA 2	0.12	0.6	0.07	4.02	0.29	21.88	9.81	2	0	1.02	0.013	22.90	7.29	0.10	0.95	47.50	47.40	0.09	0.00	0.00	46.82	46.82	50.38	
SA2-2	SA 2	0.33	0.8	0.26	3.90	1.03	23.23	16.20	2	0	0.99	0.013	22.54	7.18	0.16	1.02	47.63	47.47	0.33	0.00	0.00	46.82	46.82	50.38	
SA 2	SA 3	0.45	0.8	0.36	3.86	1.32	23.69	11.42	2	0	0.88	0.013	21.23	6.76	0.10	0.00	46.45	46.35	0.42	0.00	0.00	46.82	46.65	50.88	
SA 3	DA 5	0.45	0.8	0.36	3.86	1.32	23.69	22.75	2	0	0.44	0.013	15.04	4.79	0.10	0.70	46.35	46.25	0.42	0.00	0.00	46.65	46.21	50.96	
RC1-1	RC 1	0.89	0.6	0.53	3.77	2.01	24.80	20.12	2	0	0.99	0.013	22.62	7.20	0.20	4.41	44.34	44.14	0.64	0.01	0.00	41.68	41.68	49.21	
RC 1	DA 2	10.03	0.6	6.02	3.40	23.01	30.01	266.20	3	5	0.16	0.013	66.19	4.41	0.43	0.00	39.73	39.30	1.53	0.02	0.05	41.68	40.82	49.46	
RC 2	RC 1	3.62	0.6	2.17	3.56	8.28	27.54	133.20	3	5	0.29	0.013	89.11	5.94	0.39	0.00	40.12	39.73	0.55	0.00	0.00	41.68	41.68	49.30	
RC3-1	RC 3	0.64	0.6	0.38	3.81	1.46	24.24	14.09	2	0	0.99	0.013	22.61	7.20	0.14	2.55	42.97	42.83	0.47	0.00	0.00	41.69	41.69	48.43	
RC3-2	RC 3	0.79	0.6	0.47	3.79	1.79	24.59	12.89	2	0	1.01	0.013	22.78	7.25	0.13	4.02	44.43	44.30	0.57	0.01	0.00	41.69	41.69	48.43	
RC 3	RC 2	3.62	0.6	2.17	3.56	8.28	27.54	60.43	3	5	0.26	0.013	84.74	5.65	0.16	0.00	40.28	40.12	0.55	0.00	0.00	41.69	41.68	48.93	
RC 4	RC 3	2.19	0.6	1.31	3.64	5.02	26.48	90.84	3	5	0.30	0.013	89.78	5.99	0.27	0.00	40.55	40.28	0.33	0.00	0.00	41.69	41.69	49.05	
RC5-1	RC 5	0.72	0.6	0.43	3.80	1.64	24.44	19.96	2	0	1.00	0.013	22.71	7.23	0.20	1.81	42.81	42.61	0.52	0.01	0.00	41.70	41.70	48.27	
RC5-2	RC 5	0.29	0.6	0.17	3.92	0.68	23.04	7.00	2	0	1.00	0.013	22.68	7.22	0.07	1.78	42.65	42.58	0.22	0.00	0.00	41.70	41.70	48.27	
RC 5	RC 4	2.19	0.6	1.31	3.64	5.02	26.48	82.01	3	5	0.30	0.013	90.93	6.06	0.25	0.00	40.80	40.55	0.33	0.00	0.00	41.70	41.69	48.77	
RC 6	RC 5	1.18	0.6	0.71	3.73	2.70	25.30	80.48	3	5	0.27	0.013	86.10	5.74	0.22	0.00	41.02	40.80	0.18	0.00	0.00	41.72	41.70	48.66	
RC 7	RC 6	1.18	0.6	0.71	3.73	2.70	25.30	79.43	3	5	0.29	0.013	88.62	5.91	0.23	0.00	41.25	41.02	0.18	0.00	0.00	41.78	41.72	47.21	
RC8-1	RC 8	0.87	0.6	0.52	3.77	1.97	24.76	19.97	2	0	1.00	0.013	22.70	7.23	0.20	0.02	41.65	41.45	0.63	0.01	0.00	41.75	41.75	45.62	
RC8-2	RC 8	0.31	0.6	0.19	3.91	0.73	23.14	7.16	2	0	0.98	0.013	22.43	7.14	0.07	0.02	41.52	41.45	0.23	0.00	0.00	41.75	41.75	45.62	
RC 8	RC 7	1.18	0.6	0.71	3.73	2.70	25.30	67.13	2	6	0.27	0.013	58.79	4.90	0.18	0.00	41.43	41.25	0.22	0.00	0.00	41.75	41.78	46.12	
RC9-1	RC 9	0.26	0.6	0.16	3.93	0.61	22.89	19.48	2	0	0.98	0.013	22.40	7.13	0.19	0.03	41.53	41.34	0.20	0.00	0.00	41.75	41.75	45.61	
RC9-2	RC 9	0.17	0.6	0.10	3.98	0.41	22.32	7.50	2	0	1.07	0.013	23.43	7.46	0.08	0.03	41.42	41.34	0.13	0.00	0.00	41.75	41.75	45.61	

NOTE:

TAIL WATER ELEVATION WERE DETERMINED PER IDM CHAPTER 9.
2-YR TAIL WATER ELEVATION IS TOP OF PIPE.
100-YR TAIL WATER ELEVATION IS 2 FEET BELOW WHITE OAK BAYOU'S BANK.

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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
DRAINAGE AREA CALCULATIONS
(4 OF 5)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 26 OF 345	

REV	DESCRIPTION	BY	DATE

City of Houston Storm Sewer Calculation Form

Project:	Cottage Grove East Phase II		HGL Starting Elevation 24.53
Job No:	380013		Design storm = 2-YR Storm Atlas 14 Region 2
System:	2-YR Storm Sewer		b = 48.35
By:	HT	Date: 11/8/2022	d = 9.07
Checked by:	AP	Date:	e = 0.7244

MH From	MH To	Area (Acres)	Runoff Coefficient C	Sum of C*A	Intenty i (in/hr)	Sum of Flows (cfs)	Time of Conc. (min)	Reach Length (ft)	Diam or Rise (in)	Span (ft)	Slope (%)	Manning's "n"	Design Capacity (cfs)	Design Velocicy V (fps)	Fall (ft)	MH Drop (ft)	Flowline Elevation Upstream (ft)	Flowline Elevation Downstream (ft)	Actual Velocity V (fps)	Hydraulic Grad (%)	Change in Head (ft)	Elev. of HGL Upstream (ft)	Elev. of HGL. Downstream (ft)	Natural Ground Upstream (ft)	Natural Ground Downstream (ft)
RC 9	RC 10	0.43	0.6	0.26	3.87	1.02	23.62	45.02	2	6	0.24	0.013	56.12	4.68	0.11	0.00	41.31	41.20	0.08	0.00	0.00	41.75	41.75	46.11	
RC10-1	RC 10	0.61	0.6	0.37	3.82	1.40	24.17	17.42	2	0	0.98	0.013	22.41	7.13	0.17	0.00	41.37	41.20	0.45	0.00	0.00	41.75	41.75	45.93	
RC10-2	RC 10	0.46	0.6	0.28	3.86	1.06	23.72	9.63	2	0	1.04	0.013	23.11	7.36	0.10	0.00	41.30	41.20	0.34	0.00	0.00	41.75	41.75	45.93	
RC 10	RC 11	1.50	0.6	0.90	3.69	3.48	25.74	74.26	2	6	0.32	0.013	64.54	5.38	0.24	0.00	41.20	40.96	0.29	0.00	0.00	41.75	41.72	46.43	
RC 11	RC 12	1.50	0.6	0.90	3.69	3.48	25.74	71.39	3	5	0.31	0.013	91.42	6.09	0.22	0.00	40.96	40.74	0.23	0.00	0.00	41.72	41.72	46.95	
RC 12	RC 13	1.50	0.6	0.90	3.69	3.48	25.74	32.72	3	5	0.31	0.013	91.04	6.07	0.10	0.00	40.74	40.64	0.23	0.00	0.00	41.72	41.72	47.49	
RC13-1	RC 13	0.26	0.6	0.16	3.93	0.61	22.89	20.30	2	0	0.99	0.013	22.52	7.17	0.20	2.16	43.00	42.80	0.20	0.00	0.00	41.72	41.72	47.21	
RC13-2	RC 13	0.36	0.6	0.22	3.89	0.84	23.35	7.00	2	0	1.00	0.013	22.68	7.22	0.07	1.33	42.04	41.97	0.27	0.00	0.00	41.72	41.72	47.21	
RC 13	RC 14	2.12	0.6	1.27	3.64	4.94	26.41	172.50	3	5	0.15	0.013	63.94	4.26	0.26	0.00	40.64	40.38	0.33	0.00	0.00	41.72	41.71	47.71	
RC14-1	RC 14	0.92	0.6	0.55	3.76	2.08	24.85	20.00	2	0	1.00	0.013	22.68	7.22	0.20	2.23	42.81	42.61	0.66	0.01	0.00	41.71	41.71	47.52	
RC14-2	RC 14	0.43	0.6	0.26	3.87	1.00	23.62	7.00	2	0	1.00	0.013	22.68	7.22	0.07	2.18	42.63	42.56	0.32	0.00	0.00	41.71	41.71	47.52	
RC 14	RC 15	3.47	0.6	2.08	3.57	8.01	27.45	20.00	3	5	0.15	0.013	63.78	4.25	0.03	0.00	40.38	40.35	0.53	0.00	0.00	41.71	41.71	48.02	
RC 15	RC 16	3.47	0.6	2.08	3.57	8.01	27.45	48.60	3	6	0.14	0.013	78.30	4.35	0.07	0.00	40.35	40.28	0.45	0.00	0.00	41.71	41.69	48.08	
RC 16	RC 17	3.47	0.6	2.08	3.57	8.01	27.45	48.60	3	6	0.14	0.013	78.30	4.35	0.07	0.00	40.28	40.21	0.45	0.00	0.00	41.69	41.67	48.25	
RC 17	RC 18	3.47	0.6	2.08	3.57	8.01	27.45	30.73	3	6	0.16	0.013	83.22	4.62	0.05	0.00	40.21	40.16	0.45	0.00	0.00	41.67	41.67	48.17	
RC 18	RC 19	3.47	0.6	2.08	3.57	8.01	27.45	16.84	3	6	0.18	0.013	87.08	4.84	0.03	0.00	40.16	40.13	0.45	0.00	0.00	41.67	41.67	48.07	
RC19-1	RC 19	0.95	0.6	0.57	3.76	2.14	24.91	20.00	2	0	1.00	0.013	22.68	7.22	0.20	2.49	42.82	42.62	0.68	0.01	0.00	41.67	41.67	47.50	
RC19-2	RC 19	0.28	0.6	0.17	3.92	0.66	22.99	7.00	2	0	1.00	0.013	22.68	7.22	0.07	3.05	43.25	43.18	0.21	0.00	0.00	41.67	41.67	47.50	
RC 19	RC 20	4.70	0.6	2.82	3.52	10.81	28.13	237.35	3	6	0.14	0.013	76.93	4.27	0.33	0.00	40.13	39.80	0.60	0.00	0.01	41.67	41.69	48.00	
RC20-1	RC 20	0.52	0.6	0.31	3.84	1.20	23.91	20.00	2	0	1.00	0.013	22.68	7.22	0.20	3.49	43.49	43.29	0.38	0.00	0.00	41.69	41.69	49.11	
RC20-2	RC 20	0.30	0.6	0.18	3.91	0.70	23.09	7.00	2	0	1.00	0.013	22.68	7.22	0.07	3.82	43.69	43.62	0.22	0.00	0.00	41.69	41.69	49.11	
RC 20	RC 1	5.52	0.6	3.31	3.50	12.72	28.51	33.58	3	6	0.21	0.013	94.19	5.23	0.07	0.00	39.80	39.73	0.71	0.00	0.00	41.69	41.69	49.61	

XPSWMM NODES		XPSWMM RESULTS				
		1% AEP Event				
From Node	To Node	Maximum Conduit Flow	Maximum HGL Elevation (a)	Ground Elevation	ROW Elevation (b)	100-year HGL vs ROW Elev. (a) - (b)
(-)	(-)	(cfs)	(ft)	(ft)	(ft)	(ft)
EG1	EG2	7.97	50.99	51.54	51.29	-0.30
EG2	EG3	7.99	50.98	50.90	51.06	-0.08
EG3	EG4	7.75	50.97	51.11	50.99	-0.02
EG4	EG5	6.69	50.96	50.40	50.97	-0.01
EG5	DE2	-10.33	50.96	50.53	50.97	-0.01
EG6	MO1	14.40	50.96	50.40	51.10	-0.14
MO1	MO3	20.88	50.97	51.24	51.01	-0.04
MO3	MO4	20.85	50.97	51.25	51.01	-0.04
KA1	KA2	7.54	51.02	52.22	53.00	-1.98
KA2	KA3	7.47	50.99	50.78	51.40	-0.41
KA4	KA5	17.18	50.99	50.78	51.12	-0.13
KA5	MO4	17.16	50.98	51.04	51.36	-0.38
MO4	MO5	23.50	50.97	47.60	51.10	-0.13
KI1	KI2	168.25	52.03	51.91	53.02	-0.99
KI2	KI3	175.91	51.48	51.06	52.02	-0.54
KI3	KI5-1	175.90	51.40	51.28	52.01	-0.61
KI5-1	KI6A-1	179.34	51.35	51.18	52.10	-0.75
KI6A-1	KI6	179.35	51.06	50.45	51.60	-0.54
KI6	KI7	153.02	50.98	49.78	51.01	-0.03
MO5	KI7A	31.07	50.97	48.00	51.00	-0.03
KI7A	KI7	31.07	50.97	50.99	51.00	-0.03
KI7	KI8-1	155.69	50.96	49.80	51.28	-0.31
KI8-1	KI9	94.50	50.70	48.73	51.00	-0.30
KI9	KI10	234.79	47.15	48.79	48.40	-1.25
KI10	KI11	234.72	47.03	49.12	50.44	-3.41
KI11	KI12	234.64	46.75	44.48	50.02	-3.27
KI12	KI13	234.51	46.68	42.11	48.91	-2.23
KI13	Outfall	234.13	44.29	41.37	48.32	-4.03
PT1	PT2	8.07	53.71	52.95	54.18	-0.47
PT2	PT3	8.05	53.62	53.18	54.01	-0.39
PT3	PT4	19.23	53.48	52.26	54.00	-0.52
PT4	PT5	33.98	53.14	52.44	53.51	-0.37
PT5	PT6	33.99	52.84	52.73	53.83	-0.99

XPSWMM NODES		XPSWMM RESULTS				
		1% AEP Event				
From Node	To Node	Maximum Conduit Flow	Maximum HGL Elevation (a)	Ground Elevation	ROW Elevation (b)	100-year HGL vs ROW Elev. (a) - (b)
(-)	(-)	(cfs)	(ft)	(ft)	(ft)	(ft)
PT6	PT7	34.00	51.48	52.90	53.87	-2.40
PT8	PT9	42.01	48.41	51.49	53.90	-5.49
PT9	RE6	41.95	47.73	50.92	49.40	-1.67
DA1	RE2	34.35	48.11	51.21	51.56	-3.45
DA2	DA1	34.78	48.17	51.78	51.53	-3.36
DA3	DA2	13.98	48.30	51.21	51.84	-3.54
DA4	DA3	10.85	48.63	51.02	50.93	-2.30
DA5	DA4	4.23	48.65	51.09	51.01	-2.36
LA2	LA3	11.27	54.67	53.78	55.00	-0.33
LA3	LA4	11.95	54.64	53.78	55.01	-0.37
LA4	LA5	17.83	54.08	53.56	54.19	-0.11
LA5	LA6	17.73	52.65	52.49	53.92	-1.27
LA6	RE1	68.38	52.49	52.55	53.92	-1.43
LA7	LA6	12.79	52.50	52.42	54.01	-1.52
LA8	LA7	13.42	52.52	51.58	53.00	-0.48
LA9	LA8	13.75	52.53	51.72	53.00	-0.47
LA10	LA9	7.28	52.52	51.58	53.01	-0.49
LA11	LA10	-11.02	52.01	51.18	53.01	-1.00
LA12	LA11	7.88	52.01	51.12	52.78	-0.77
CO1	CO2	12.15	54.89	54.46	55.87	-0.98
CO2	CO3	11.87	54.83	54.46	55.00	-0.17
CO3	CO4	18.56	54.13	53.85	54.21	-0.08
CO4	CO5	18.30	53.53	53.36	54.43	-0.91
CO5	CO6	18.28	53.46	54.08	54.17	-0.71
CO6	LA6	31.79	53.41	53.54	54.07	-0.66
CO7	CO6	10.02	53.41	53.36	54.01	-0.60
CO8	CO7	10.00	53.39	53.60	54.01	-0.62
CO9	CO8	9.98	53.38	52.61	54.00	-0.62
CO10	CO9	9.23	53.38	52.74	53.57	-0.18
CO11	CO10	10.42	53.39	52.61	54.01	-0.62
CO12	CO11	6.78	53.49	53.06	53.98	-0.49
CO13	CO12	7.12	53.51	53.06	54.01	-0.50
DE1	DE1A	-29.08	50.60	50.04	51.00	-0.40

XPSWMM NODES		XPSWMM RESULTS				
		1% AEP Event				
From Node	To Node	Maximum Conduit Flow	Maximum HGL Elevation (a)	Ground Elevation	ROW Elevation (b)	100-year HGL vs ROW Elev. (a) - (b)
(-)	(-)	(cfs)	(ft)	(ft)	(ft)	(ft)
DE1A	EG5	-29.08	50.76	50.28	51.00	-0.24
DE2	DE3	-10.34	50.97	50.97	51.01	-0.04
DE3	KA3	-10.48	50.98	51.27	51.33	-0.35
RE1	RE2	68.36	50.86	52.51	52.83	-1.97
RE2	RE4	114.03	47.63	52.63	52.05	-4.43
RE4	RE5	114.01	47.62	52.68	52.06	-4.45
RE5	RE6	122.77	47.49	50.97	51.20	-3.71
RE6	RE7	156.32	47.48	51.09	49.41	-1.93
RE7	KI9	156.28	47.25	49.12	50.41	-3.16
SA2	SA3	4.18	48.66	50.88	51.57	-2.91
SA3	DA5	4.18	48.66	50.96	51.24	-2.58
RC1	DA2	24.38	48.19	49.96	50.74	-2.56
RC2	RC1	10.61	48.19	49.26	50.25	-2.07
RC3	RC2	10.38	48.19	48.49	50.14	-1.96
RC4	RC3	-10.59	48.18	49.03	50.01	-1.83
RC5	RC4	-10.25	48.18	48.77	50.01	-1.83
RC6	RC5	-13.08	48.18	48.67	49.07	-0.89
RC7	RC6	-13.07	48.17	47.21	48.85	-0.68
RC8	RC7	-13.06	48.16	46.12	47.38	0.78
RC9	RC10	-15.32	48.15	46.11	46.50	1.65
RC10	RC11	-17.82	48.15	46.43	46.80	1.35
RC11	RC12	-17.26	48.16	46.96	48.57	-0.41
RC12	RC13	-16.13	48.16	47.49	49.56	-1.40
RC13	RC14	-14.35	48.16	47.71	49.97	-1.81
RC14	RC15	15.69	48.18	48.02	50.53	-2.35
RC15	RC16	15.80	48.18	48.08	50.19	-2.01
RC16	RC17	15.67	48.18	48.25	50.02	-1.84
RC17	RC18	15.05	48.18	48.17	50.48	-2.30
RC18	RC19	14.04	48.18	48.07	50.49	-2.31
RC19	RC20	17.37	48.18	48.00	50.37	-2.19
RC20	RC1	13.22	48.18	49.61	50.51	-2.33

NOTE:

TAIL WATER ELEVATION WERE DETERMINED PER IDM CHAPTER 9.
2-YR TAIL WATER ELEVATION IS TOP OF PIPE.
100-YR TAIL WATER ELEVATION IS 2 FEET BELOW WHITE OAK BAYOU'S BANK.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

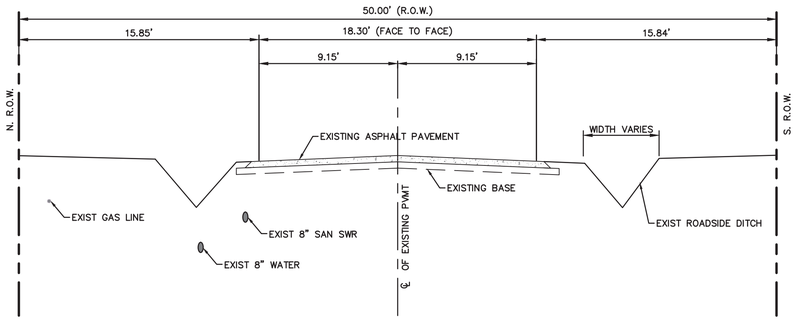
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DRAINAGE AREA CALCULATIONS (5 OF 5)

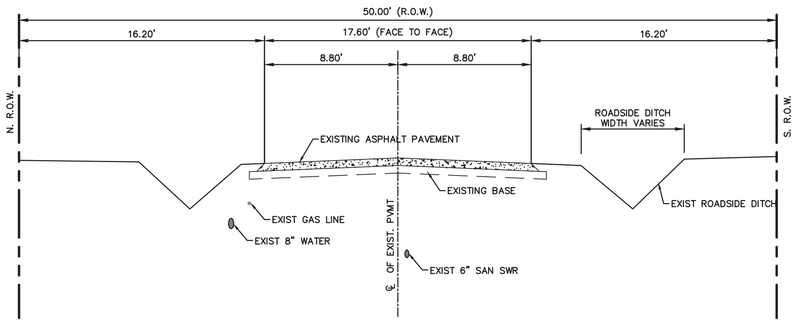
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 27 OF 345	

civilTech Engineering, Inc.
O:\2018\380013\Drawings\SHEETS\15-15-DRAINAGE AREA CALCS.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE



EXISTING TYPICAL SECTION
EGBERT STREET
SCALE 1"=5'



EXISTING TYPICAL SECTION
KANSAS STREET
SCALE 1"=5'

NOTES:
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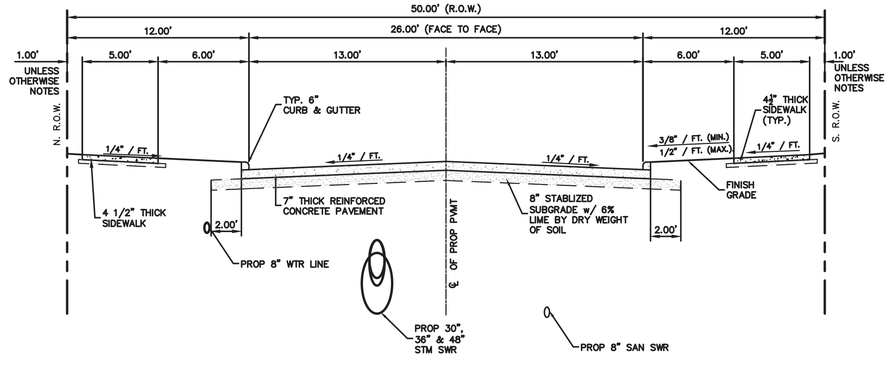
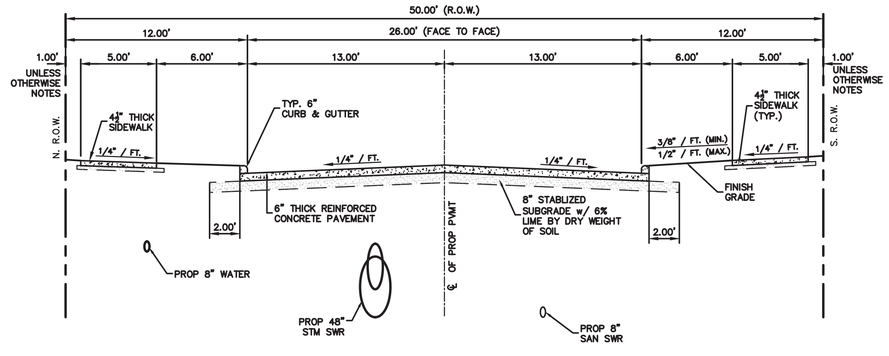


EGBERT ST
SCALE 1"=5'

STA TO STA
1+00.00 TO 10+75.00



KANSAS ST
SCALE 1"=5'

STA TO STA
1+00.00 TO 11+15.01

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

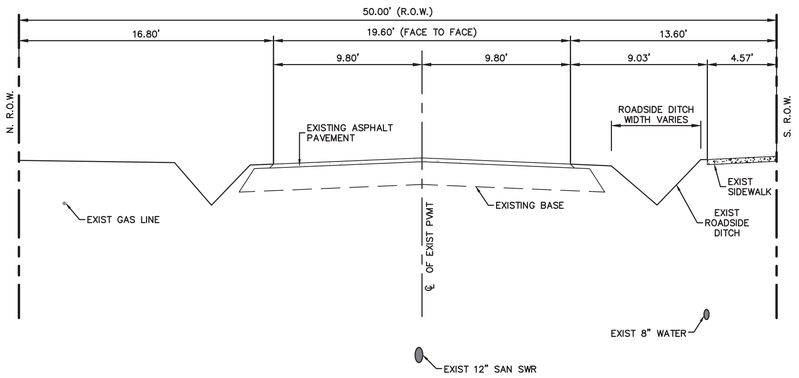
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TYPICAL CROSS SECTION
(1 OF 7)

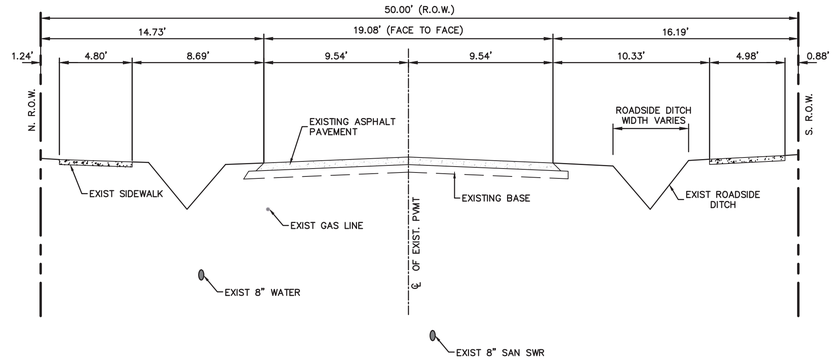
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
SCALE AS SHOWN	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 28 OF 345	

CivilTech Engineering, Inc.
O:\2018\38010\Drawings\SHEETS\17-TYPICAL-CROSS SECTIONS.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE



EXISTING TYPICAL SECTION
KIAM STREET
SCALE 1"=5'



EXISTING TYPICAL SECTION
PETTY STREET
SCALE 1"=5'

NOTES:
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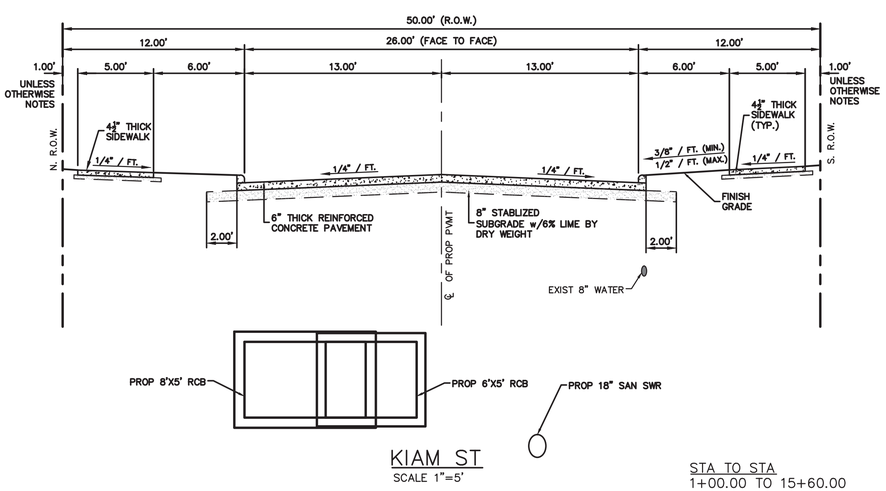
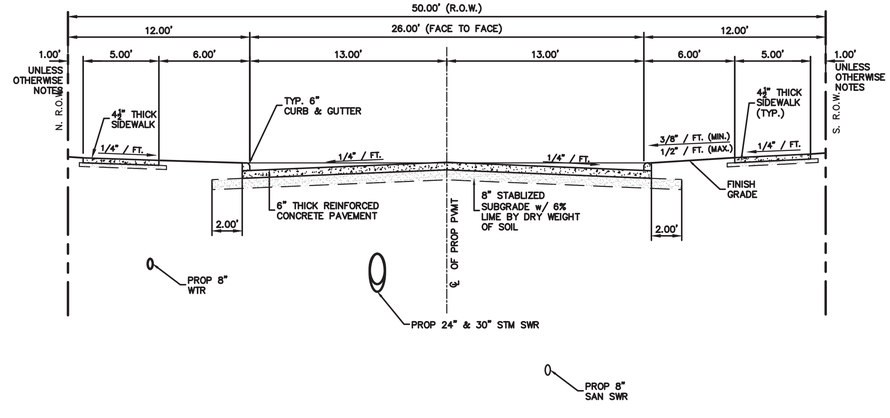


KIAM ST
SCALE 1"=5'

STA TO STA
1+00.00 TO 15+60.00



PETTY ST
SCALE 1"=5'

STA TO STA
1+00.00 TO 16+00.00

WOOLPERT
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Houston, TX 77079
800.414.1045

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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

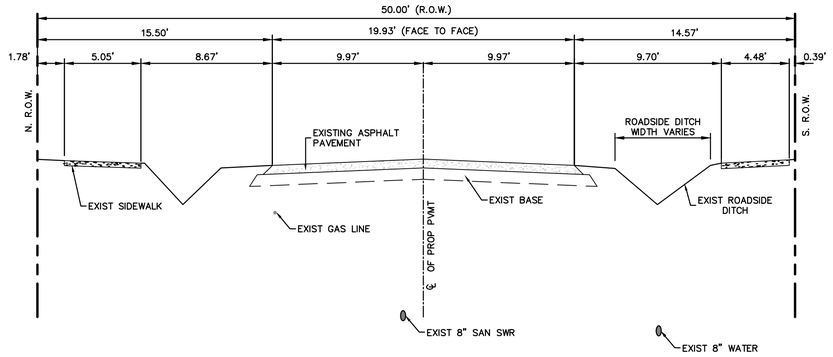
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TYPICAL CROSS SECTION
(2 OF 7)

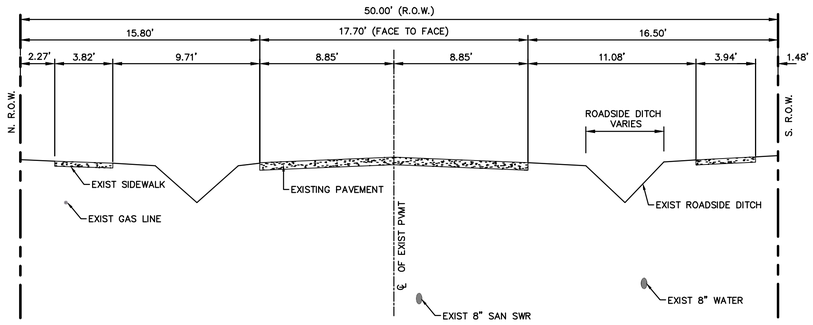
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
SCALE AS SHOWN	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 29 OF 345	

CivilTech Engineering, Inc.
O:\2018\J38010\Drawings\SHEETS\17-TYPICAL-CROSS SECTIONS.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE



EXISTING TYPICAL SECTION
LARKIN STREET
SCALE 1"=5'



EXISTING TYPICAL SECTION
CORNISH STREET
SCALE 1"=5'

NOTES:
1. CONTRACTOR SHALL REFERENCE APPROVED GEOTECHNICAL REPORT, PROJECT No. 02-18-22472R DATED OCTOBER 3, 2019 (REVIEWED MARCH 3, 2022).
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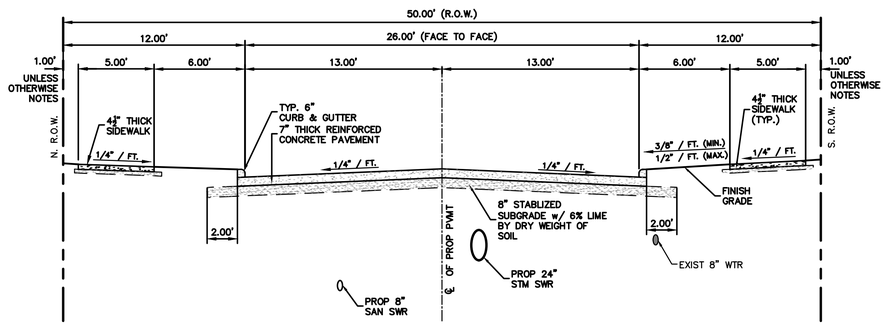
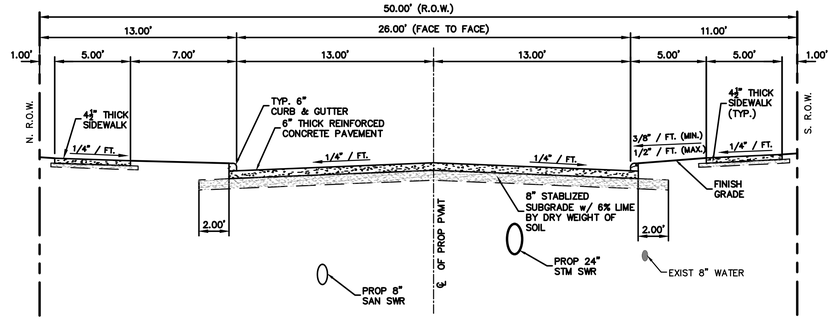


LARKIN ST
SCALE 1"=5'

STA TO STA
1+00.00 TO 24+13.06



CORNISH ST
SCALE 1"=5'

STA TO STA
1+00.00 TO 10+52.22

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

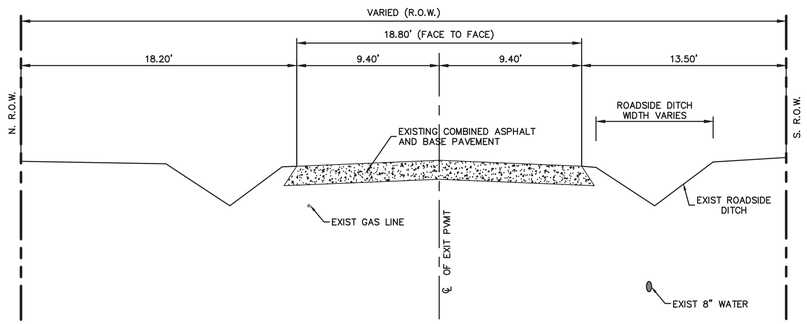
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TYPICAL CROSS SECTION
(3 OF 7)

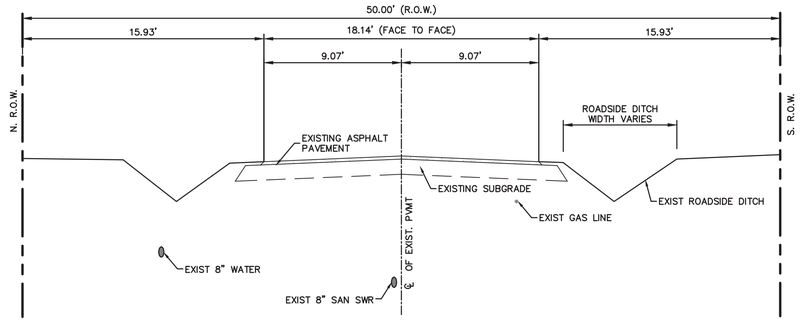
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
SCALE AS SHOWN	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 30 OF 345	

CivilTech Engineering, Inc.
O:\2018\38010\Drawings\SHEETS\7-TYPICAL-CROSS SECTIONS.dwg Mar 05, 2025

REV	DESCRIPTION	BY	DATE



EXISTING TYPICAL SECTION
DARLING STREET
SCALE 1"=5'



EXISTING TYPICAL SECTION
DETERING STREET
SCALE 1"=5'

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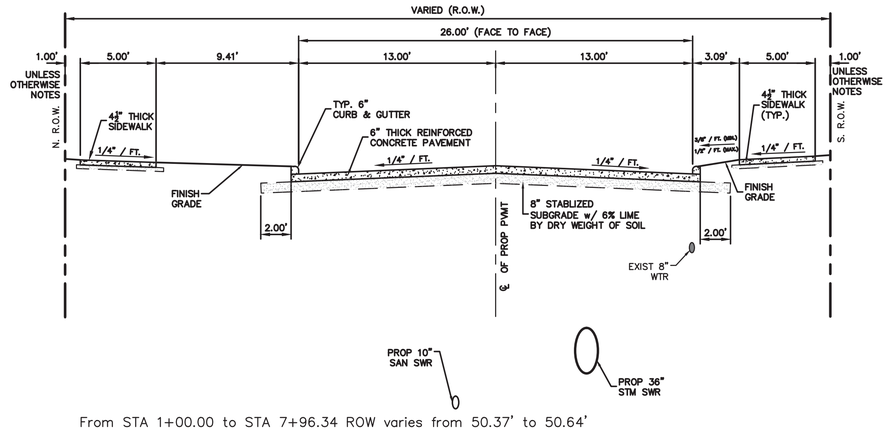
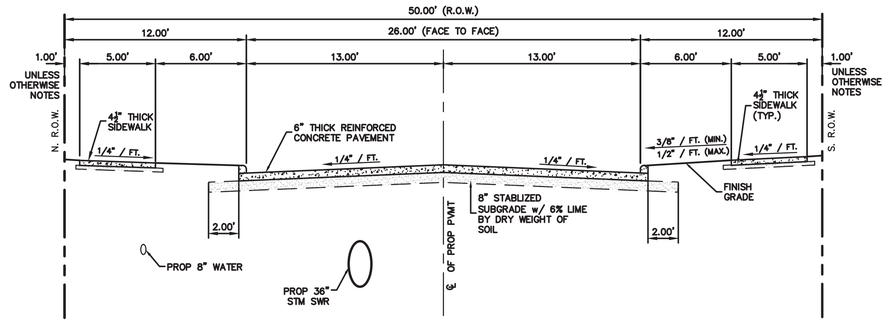


From STA 1+00.00 to STA 7+96.34 ROW varies from 50.37' to 50.64'
From STA 7+96.34 to STA 10+52.55 ROW varies from 54.75' to 60.46'

DARLING ST
SCALE 1"=5'

STA TO STA
1+00.00 TO 10+52.22



DETERING ST
SCALE 1"=5'

STA TO STA
1+00.00 TO 20+40.00

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

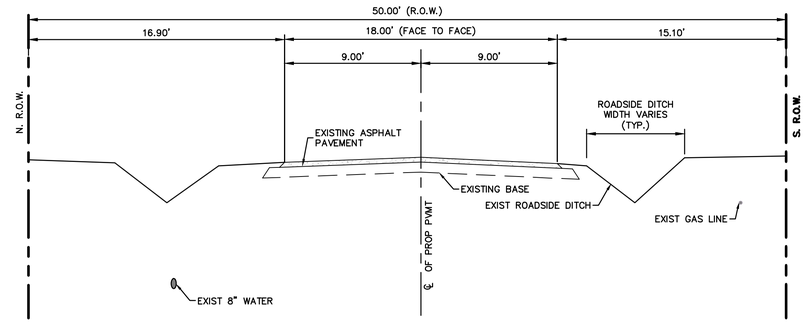
COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

TYPICAL CROSS SECTION
(4 OF 7)

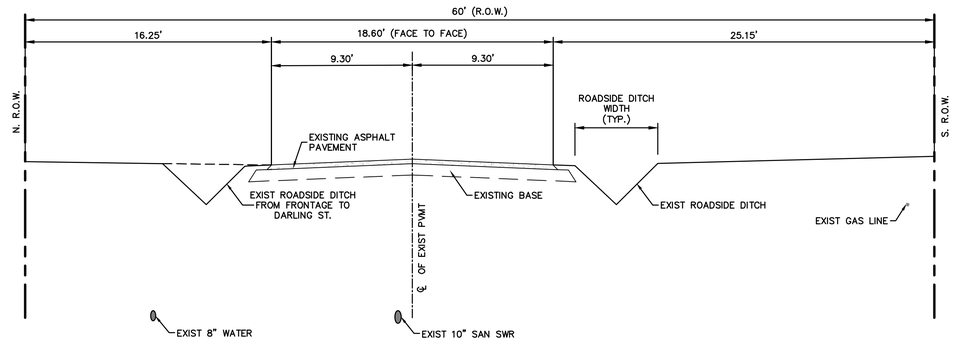
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
SCALE AS SHOWN	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 31 OF 345	

CivilTech Engineering, Inc.
O:\2018\38010\Drawings\SHEETS\7-TYPICAL-CROSS SECTIONS.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE



EXISTING TYPICAL SECTION
REINERMAN STREET
SCALE 1"=5'



EXISTING TYPICAL SECTION
REINERMAN STREET
SCALE 1"=5'

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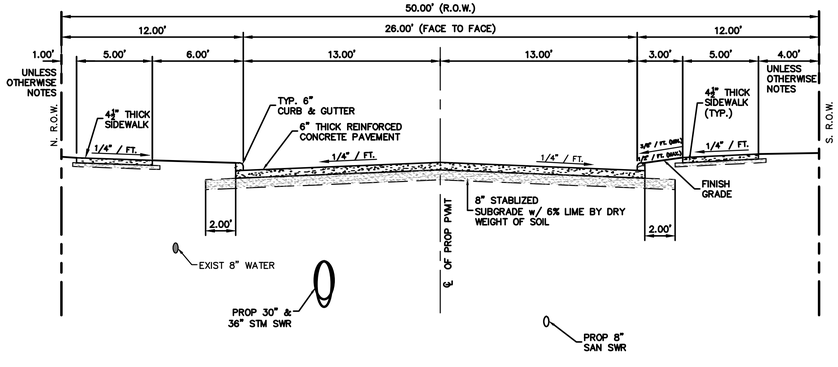
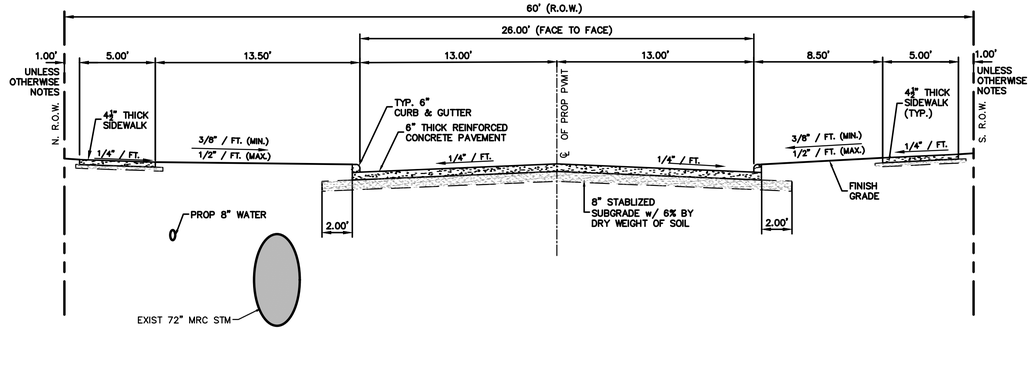


REINERMAN ST
SCALE 1"=5'

STA TO STA
1+00.00 TO 7+00.00
TRANSITION STA 7+00.00 to 7+37.88



REINERMAN ST
SCALE 1"=5'

STA TO STA
7+37.88 TO 13+71.31

WOOLPERT
11750 Katy Freeway, Suite 1260
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ROBERT A. HILL
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02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

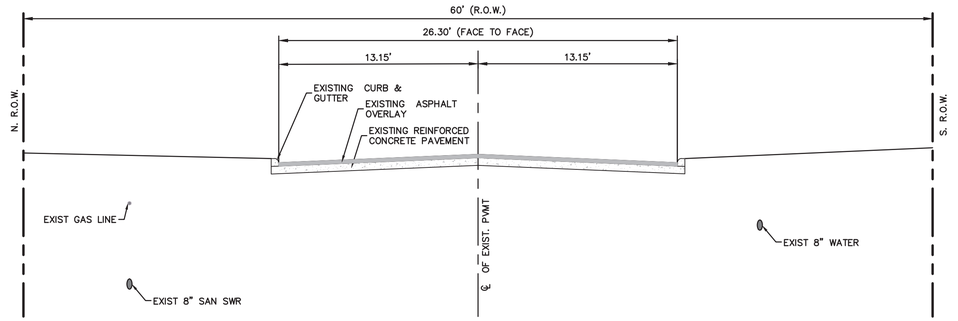
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TYPICAL CROSS SECTION
(5 OF 7)

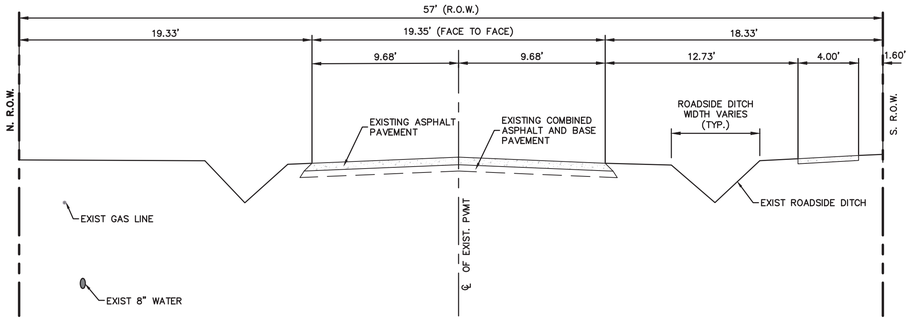
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
SCALE AS SHOWN	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 32 OF 345	

CivilTech Engineering, Inc.
O:\2018\38010\Drawings\SHEETS\7-TYPICAL-CROSS SECTIONS.dwg Mar 05, 2025

REV	DESCRIPTION	BY	DATE



EXISTING TYPICAL SECTION
ROY CIRCLE
SCALE 1"=5'



EXISTING TYPICAL SECTION
ROY STREET
SCALE 1"=5'

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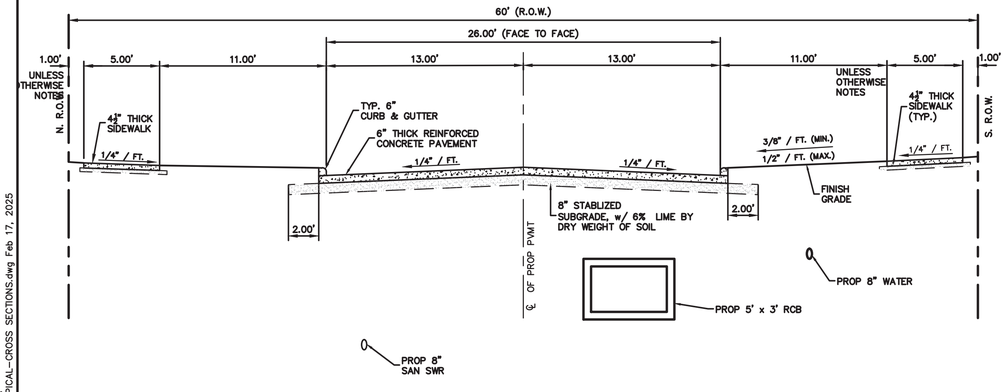
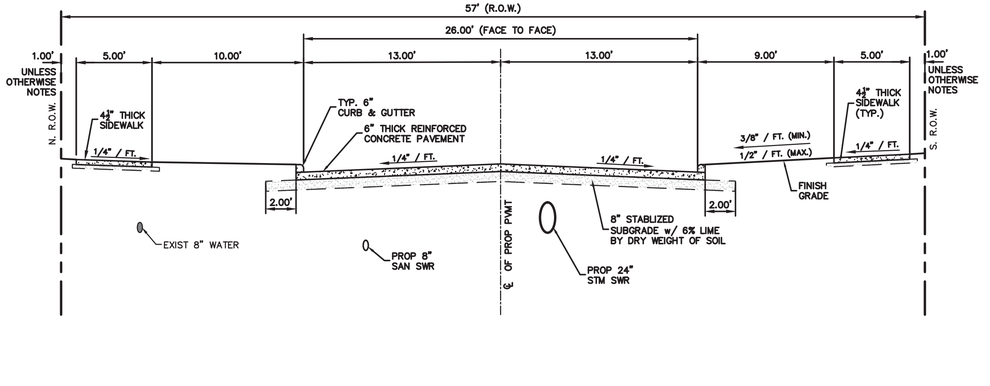


ROY CIRCLE
SCALE 1"=5'

STA TO STA
1+55.50 TO 3+23.14



ROY ST
SCALE 1"=5'

STA TO STA
1+50.00 TO 7+25.15

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02/17/2025

CITY OF HOUSTON
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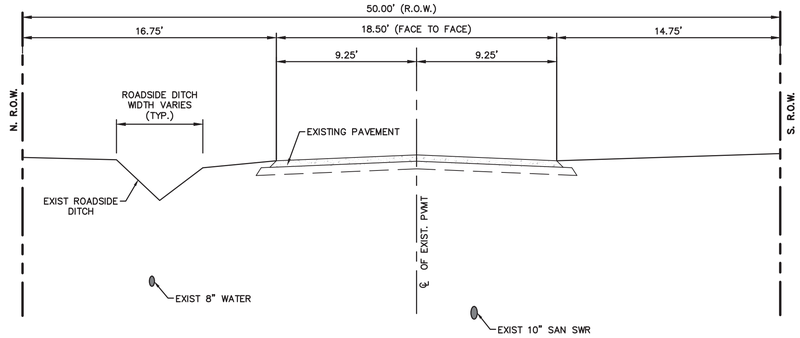
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TYPICAL CROSS SECTION
(6 OF 7)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
SCALE AS SHOWN	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 33 OF 345	

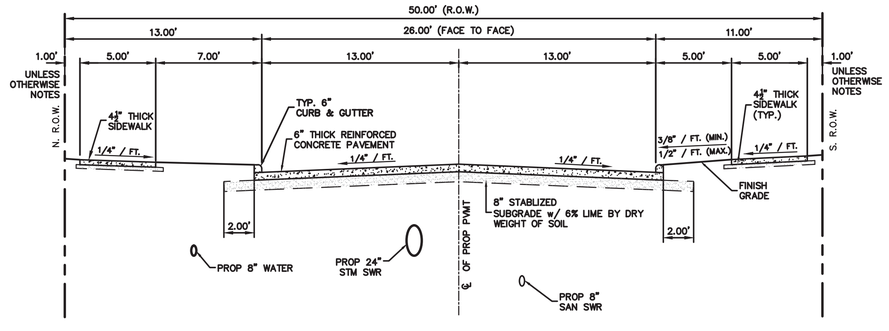
CivilTech Engineering, Inc.
O:\2018\38010\Drawings\SHEETS\17-TYPICAL-CROSS SECTIONS.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE



EXISTING TYPICAL SECTION
SANDMAN STREET

SCALE 1"=5'



SANDMAN ST

SCALE 1"=5'

STA TO STA
1+00.00 TO 7+38.80

NOTES:

1. CONTRACTOR SHALL REFERENCE APPROVED GEOTECHNICAL REPORT, PROJECT No. 02-18-22472R DATED OCTOBER 3, 2019 (REVIEWED MARCH 3, 2022).
2. STABILIZED SUBGRADE – THE HIGH PLASTICITY FAT AND LEAN CLAY SUBGRADES SHOULD BE STABILIZED WITH LIE IN ACCORDANCE WITH CITY OF HOUSTON STANDARD SPECIFICATIONS 02336. THE SUBGRADE SHOULD BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINE BY THE STANDARD MOISTURE-DENSITY RELATION (ASTM D698). THE QUANTITY OF LIME SHOULD BE DETERMINED AFTER THE SITE IS STRIPED OF PAVEMENT AND THE SUBGRADE SOIL EXPOSED. WHILE FINAL LIME REQUIREMENTS SHOULD BE DETERMINED BY LABORATORY TESTING DURING CONSTRUCTION, TESTING FOR THIS INVESTIGATION INDICATED:

FAT CLAYS (CH) COULD BE STABILIZED WITH 6% LIME BY DRY WEIGHT OF SOIL. THIS AMOUNTS TO 37 POUNDS OF LIME PER SQUARE YARD TO STABLIZE AN 8-INCH DEPTH OF SOIL WEIGHTING 101.5 POUNDS PER CUBIC FOOT (DRY WEIGHT).

LEANS CLAYS (CHLCOULD BE STABILIZED WITH 5% LIME BY DRY WEIGHT OF SOIL. THIS AMOUNTS TO 30 POUNDS OF LIME PER SQUARE YARD TO STABLIZE AN 8-INCH DEPTH OF SOIL WEIGHTING 110.6 POUNDS PER CUBIC FOOT (DRY WEIGHT).

WOOLPERT
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Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TYPICAL CROSS SECTION
(7 OF 7)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
SCALE AS SHOWN	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 34 OF 345	

CivilTech Engineering, Inc.
O:\2018\438010\Drawings\SHEETS\7-TYPICAL-CROSS SECTIONS.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+27.66	40.12' RT
2	1+37.50	46.39' LT
3	1+57.52	13.00' RT
4	1+67.31	13.00' LT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET: 20 0 10 20

MATCHLINE STA: 6+00
SEE SHEET 36

PROP 4'ø TYPE "C" STM MH EE 2
1–FH STA 1+73.93
1–6" GV & BOX
1–8"x6" TEE, AB
41LF–24" RCP @ 0.36%
PROP TYPE "BB" INLET EE 3–1
STA:1+87.56 OFF:–13.00L
TC:52.09
24" FL–47.88
8LF–24" RCP @ 1.01%
PROP 4'ø TYPE "C" STM MH EE 3
PROP. OFFSET SECTION 19LF W/RJ PER COH DTL
2–WET CONNECTION
24LF–24" RCP @ –0.50%
18LF–24" RCP @ 0.99%
PROP 4'ø SAN MH 1
PROP 4'ø TYPE "C" STM MH EE 1 (BUILT ON EXIST STORM PIPE)
ENCROACHMENT
PROP TYPE "BB" INLET EE 3–2
STA:1+87.56 OFF:13.00R
TC:52.09
24" FL–47.65
262LF–8" PVC SAN SWR
ENCROACHMENT CHAIN/LINK FENCE
PROP 8" WL OFFSET
2–8"x45° BEND,AB
1–WET CONNECTION
PROP 6'ø TYPE "C" STM MH EG 1
PROP TYPE "BB" INLET EG 1–1
STA:4+50.08 OFF:–13.00L
TC:50.82
24" FL–46.46
8LF–24" RCP @ 0.59%
20LF–24" RCP @ 0.89%
PROP 4'ø SAN MH 2
PROP TYPE "C–1" INLET EG 1–2
STA:4+50.08 OFF:15.17R
TC:50.82
24" FL–46.03
24" FL–46.03
2–8"x45° BEND,AB
PROP. 8" PVC WATER LINE
78LF–36" RCP @ 0.40%
16LF–24" RCP @ 1.00%
247LF–8" PVC SAN SWR
PROP TYPE "A" INLET W/ SOLID TOP EG 2–1
STA:4+66.04 OFF:16.44R
RIM:MATCH PVMT
24" FL–46.19
PROP 6'ø TYPE "C" STM MH EG 2
TRANSFER SERVICES TO PROPOSED 8" WATER LINE FROM EXISTING WATER LINE
1–8"x22.50° BEND, AB
83LF–36" RCP @ 0.40%
21LF–24" RCP @ 1.21%
PROP TYPE "A" INLET W/ SOLID TOP EG 3–1
STA:5+28.23 OFF:16.42R
RIM:MATCH PVMT
24" FL–45.70
50' ROW (TYP)
26' F–F (TYP)
R30'
T.C. JESTER BLVD.
TIER BLVD.

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–17	13,851,364.65	3,105,069.11	13,849,564.21	3,104,665.50	53.01'	1+11.64	5.92L	SET MAG NAIL
B–71	13,851,385.12	3,105,406.79	13,849,584.68	3,105,003.14	51.49'	4+49.90	10.99L	SET MAG NAIL

EGBERT STREET

DESIGN SPEED = 30 MPH

PVI STA: 2+88.42
PVI ELEV: 52.80
K: 48.95
LVC: 100.00

PVI STA: 4+39.83
PVI ELEV: 50.77
K: 108.64
LVC: 100.00

PROP TC @ 1.78% (RT)
PROP TC @ 1.62% (LT)
PROP TC @ 0.70% (LT&RT)
PROP TC @ 0.44% (LT)
PROP TC @ 0.30% (RT)
PROP TC @ 1.34% (LT/RT)
PROP TC @ 0.42% (LT/RT)
100 YR HGL
TC ELEV.=50.10
PROP 12" DIP WTR
PROP. 6" STACK FL=48.35 (S)
PROP 24" RCP
PROP. 6" STACK FL=48.31 (S)
PROP 6" FH
PROP 41LF 24" RCP STM @ 0.36%
PROP 12" DIP WTR
PROP 24LF 24" RCP STM @ 0.50%
PROP. 6" STACK FL=48.29 (S)
PROP. 6" STACK FL=48.26 (S)
PROP. 6" STACK FL=48.24 (S)
PROP. 6" STACK FL=48.08 (S)
PROP. 6" STACK FL=48.86 (N)
PROP 262LF 8" PVC SAN @ 0.44%
PROP. OFFSET SECTION 12LF W/RJ PER COH DTL
PROP 8" PVC WTR
PROP. 6" STACK FL=47.46 (S)
PROP. 6" STACK FL=47.42 (S)
PROP. 6" STACK FL=43.98 (N)
PROP 24" RCP
PROP. 2 YR HGL
PROP 78LF 36" RCP STM @ 0.40%
PROP. 6" STACK FL=46.49 (S)
PROP. 2 YR HGL
PROP 83LF 36" RCP STM @ 0.40%
PROP. 8" PVC WTR 36" FL=43.92
PROP 185LF 8" PVC SAN @ 0.44%
8" FL=41.26
2' MIN.
MATCHLINE STA: 6+00

PROP TYPE "C" STM MH EE 1
STA: 1+33.15 OFF:14.10R
RIM: MATCH PVMT
24"–FL 47.08–NE

PROP TYPE "C" STM MH EE 2
STA: 1+46.83 OFF:5.07L
RIM: MATCH PVMT
24"–FL 47.20–SW
24"–FL 47.30–E
STA: 1+60.80 OFF:6.67R
RIM: MATCH PVMT
8"–FL 44.29–E

PROP TYPE "C" STM MH EE 3
STA: 1+87.80 OFF:5.09L
RIM: MATCH PVMT
24"–FL 47.47–S
24"–FL 47.80–N
24"–FL 47.45–W

PROP SAN MH 2
STA: 4+12.57 OFF:6.67R
RIM: MATCH PVMT
8"–FL 43.14–W
8"–FL 42.09–E

PROP TYPE "C" STM MH EG 1
STA: 4+50.04 OFF:4.55L
RIM: MATCH PVMT
24"–FL 46.41–N
24"–FL 45.85–S
36"–FL 44.51–E

PROP TYPE "C–1" INLET EG 1–2
STA: 4+50.08 OFF:15.17R
RIM: MATCH PVMT
24"–FL 46.03–E
24"–FL 46.03–N

PROP TYPE "A" INLET EG 2–1
STA: 4+66.04 OFF:16.44R
RIM: MATCH PVMT
24"–FL 46.19–W

PROP TYPE "C" STM MH EG 2
STA: 5+28.27 OFF:4.55L
RIM: MATCH PVMT
36"–FL 44.20–N
24"–FL 45.45–S
36"–FL 44.20–E

1+00 2+00 3+00 4+00 5+00 6+00

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06–09–2014.

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

Mike Brower 03/18/26
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.

Mike Brower 03/18/26
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.

Brian L Hill 03/24/26
Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

WOOLPERT
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800.414.1045

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

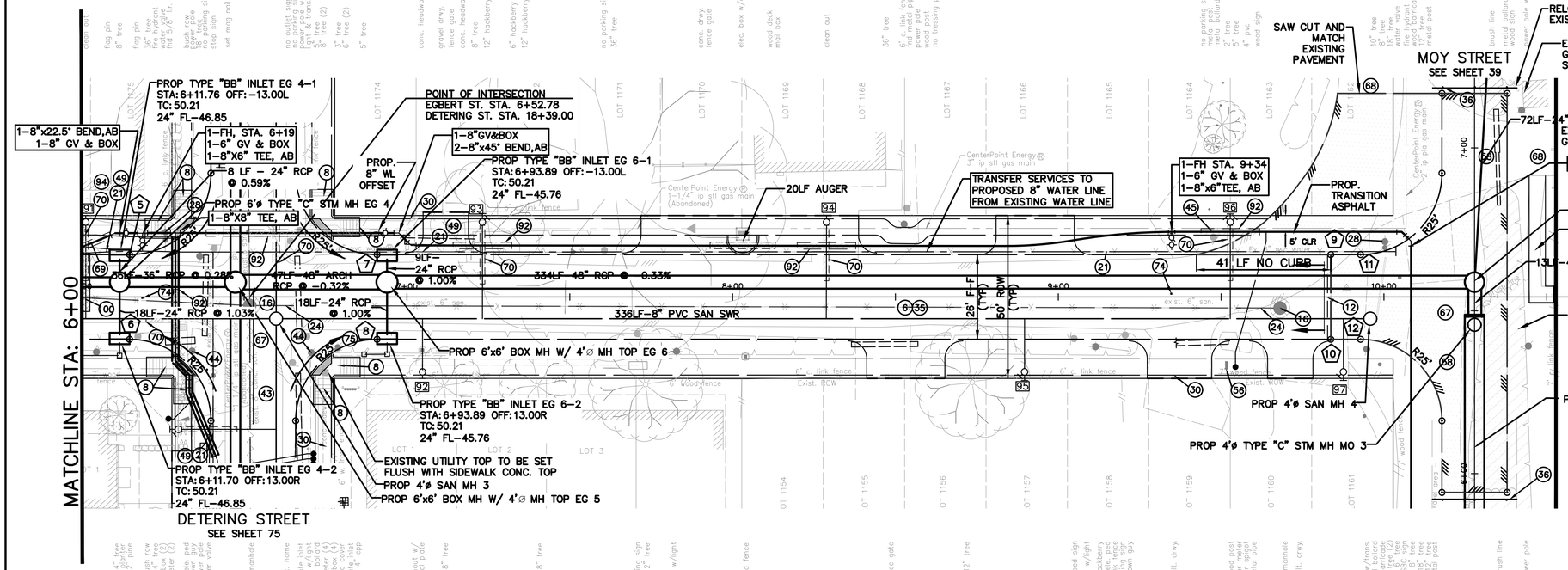
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EGBERT STREET
STA: 1+00 TO 6+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 35 OF 345	

CivilTech Engineering, Inc.
O:\2018\J38013\Drawings\SHEETS\PLT22–EGBERT–P&P.dwg Dec. 12, 2025

REV	DESCRIPTION	BY	DATE



KEYNOTES

(A) ENCASE PROPOSED 6" SANITARY LEAD (PVC) IN 18" STEEL CASING (MIN. 18-FT) CENTERED AT STORM CROSSING, SEE SHEET 172 NO EXTRA PAY FOR CONNECTION JOINTS

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121-122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112-118)
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4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119-120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143-146)

SCALE IN FEET: 20 0 10 20

PAVEMENT GEOMETRICS		
No.	Station	Offset
5	6+14.83	13.00' LT
6	6+14.83	13.00' RT
7	6+90.83	13.00' LT
8	6+90.83	13.00' RT
9	9+83.69	13.00' LT
10	9+83.70	13.00' RT
11	9+92.83	13.00' LT
12	9+92.83	13.00' RT

BENCHMARK:

CITY OF HOUSTON MONUMENT 5256-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION - 0.06 FEET.

FLOODPLAIN:

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower — 03/18/26 — Date

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

Signature valid for six months.

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(This signature verifies existing underground facilities - not to be used for conflict verification)

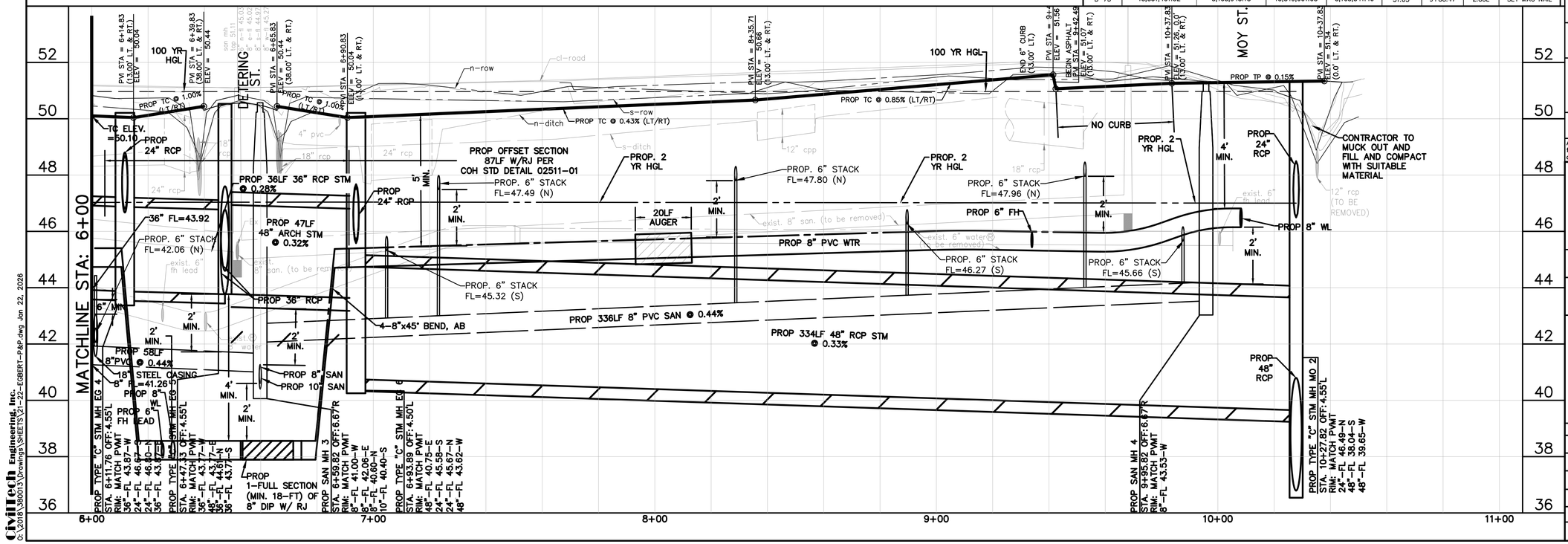
Signature valid for six months.

Brian L Hill — 03/24/26 — Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-72	13,851,395.19	3,105,603.65	13,849,594.75	3,105,199.97	50.83'	6+47.01	12.08L	SET MAG NAIL
B-73	13,851,401.52	3,105,945.18	13,849,601.08	3,105,541.46	51.65'	9+88.47	2.85L	SET MAG NAIL

EGBERT STREET



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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS — PEDRO GONZALEZ — 149716 — LICENSED PROFESSIONAL ENGINEER — 1/22/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II DRAINAGE AND PAVING IMPROVEMENTS

EGBERT STREET

STA: 6+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 36 OF 345	

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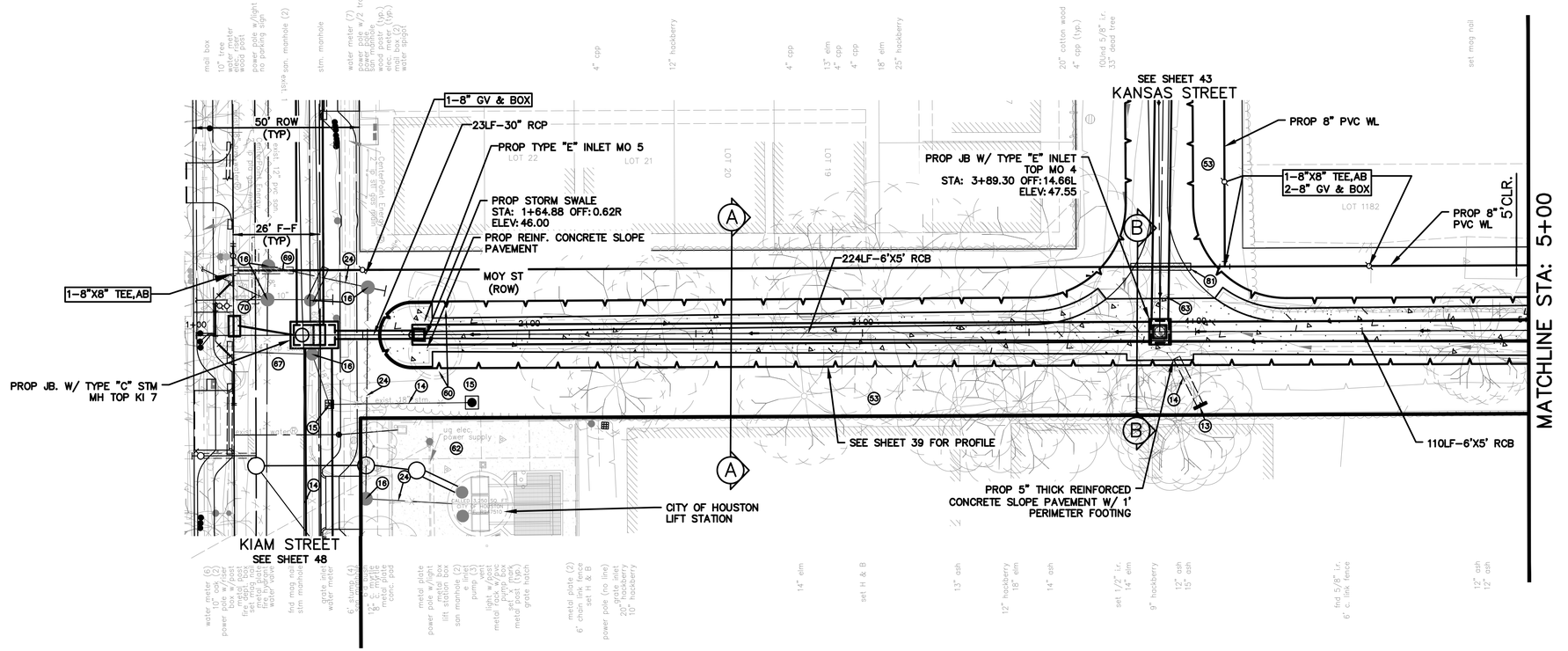
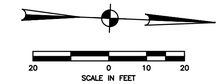


MOY STREET



REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121-122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112-118)
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4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119-120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143-146)

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

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NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION - 0.06 FEET.

FLOODPLAIN:

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NOTICE:

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26
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.

Mike Brower 03/18/26
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.

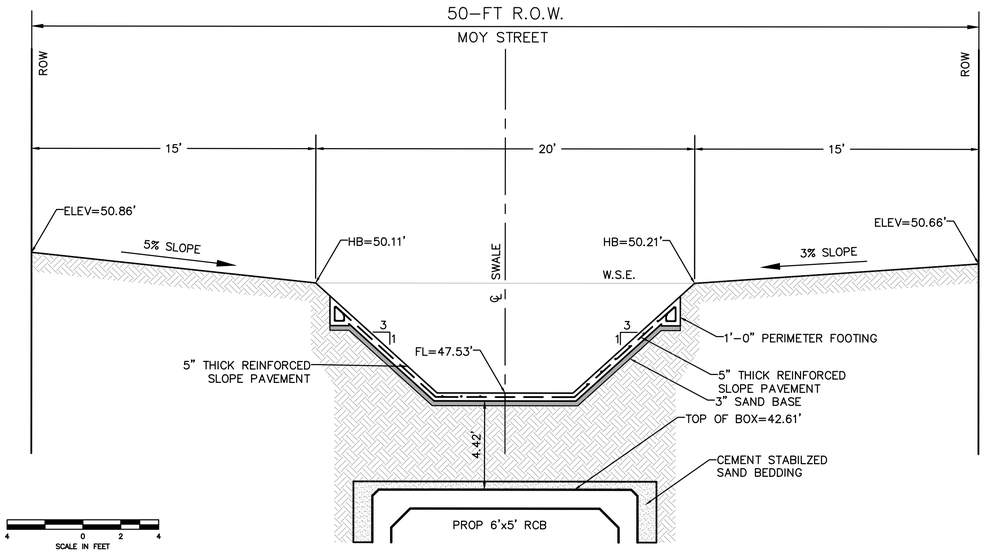
Brian L Hill 03/24/26
Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

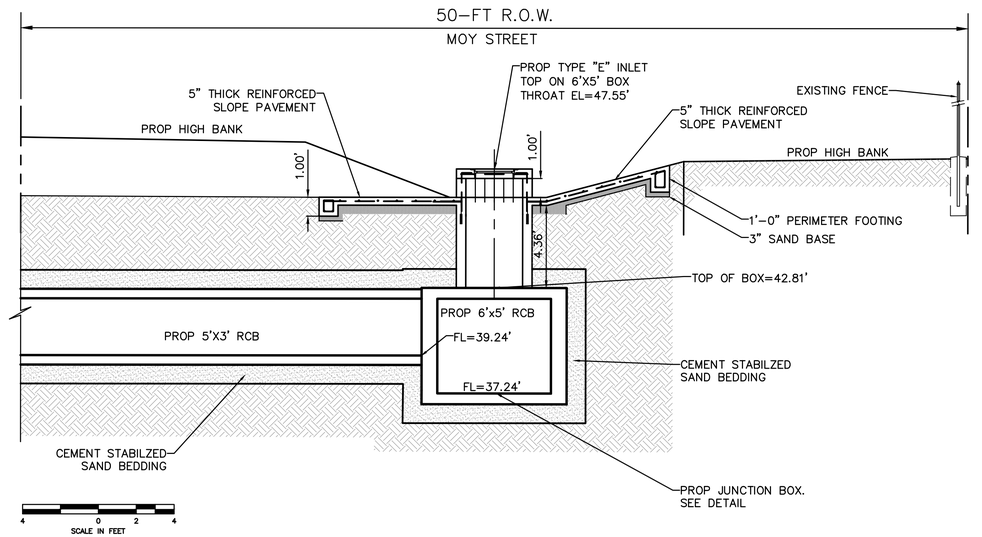
NOTES

1. CONTRACTOR TO CLEAR AND GRUB MOY RIGHT OF AWAY.
2. CONTRACTOR TO GRADE SWALE DITCH PER GRADES AND LINES SHOWN.
3. CONTRACTOR TO HYDRO-MUCH AND SEED PROP SWALE DITCH.

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-66	13,850,880.12	3,106,007.75	13,849,079.74	3,105,604.02	50.81'	11+46.72	9.14L	SET MAG NAIL



SECTION "A-A"



SECTION "B-B"

WOOLPERT
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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

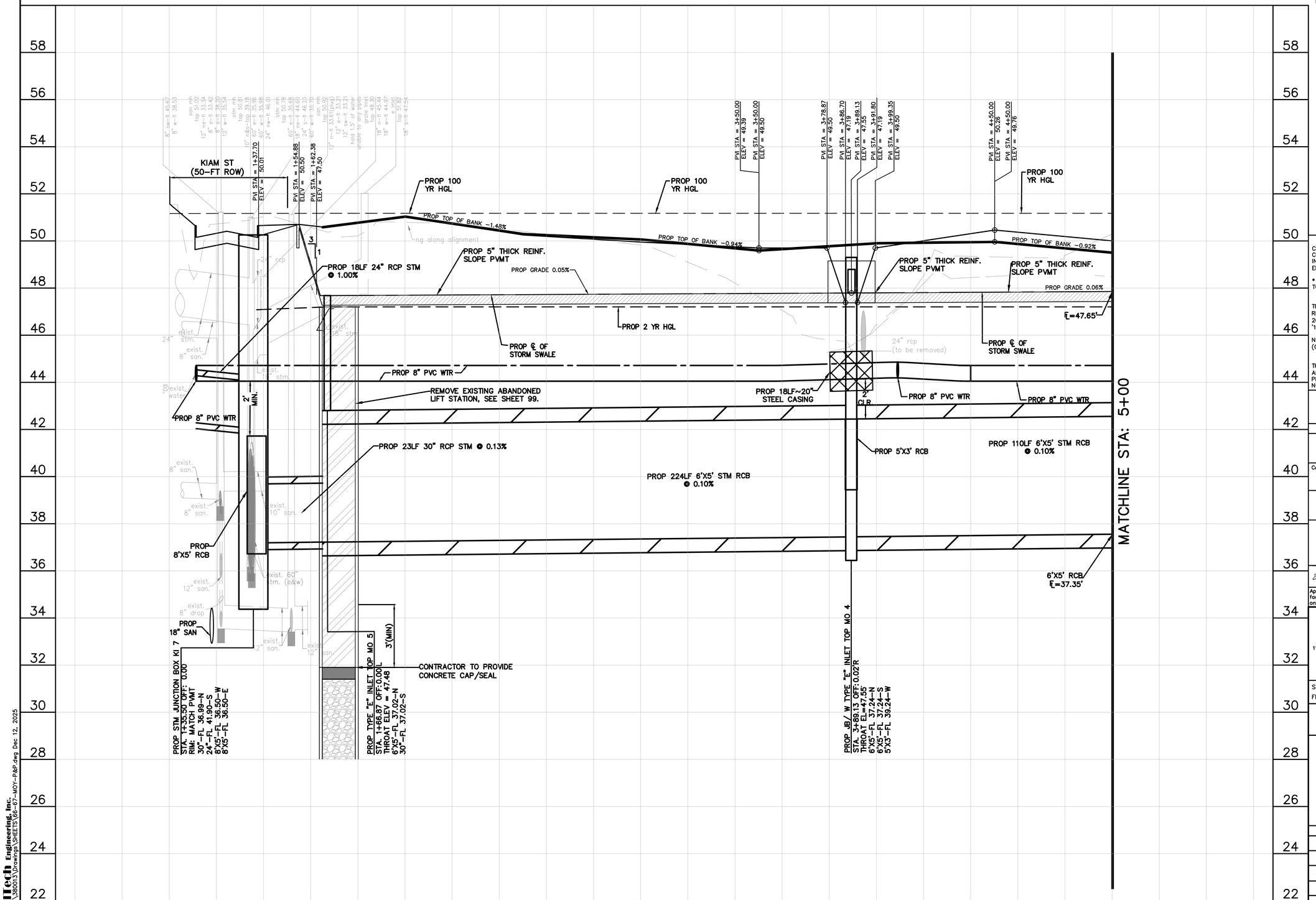
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

MOY STREET PLAN
STA: 1+00 TO 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 37 OF 345	

CivilTech Engineering, Inc.
O:\2018\18001\Drawings\SHEETS\06-07-MOY-P&P.dwg Dec 12, 2025



REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
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4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

BENCHMARK:

CITY OF HOUSTON MONUMENT 5256-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

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FLOODPLAIN:

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NOTICE:

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26
Date

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

Signature valid for six months.

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Date

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WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

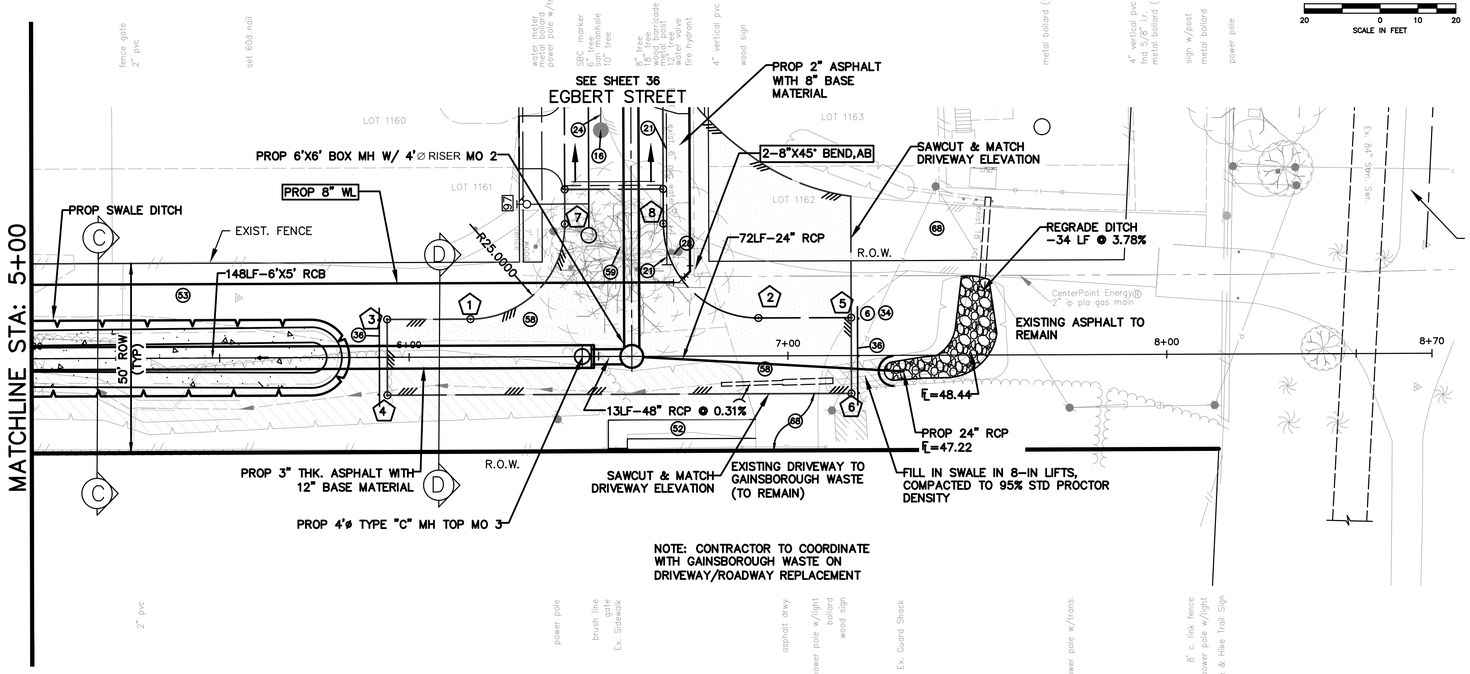
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

MOY STREET PROFILE
STA: 1+00 TO 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 38 OF 345	

CivilTech Engineering, Inc.
O:\2018\380013\Drawings\SHEETS\06-17-MOY-P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE



SCALE IN FEET: 20 0 10 20

EXIST. ASPHALT TO REMAIN

PROP ASPHALT ROAD CONNECTION TO PROP AND EXIST. ROAD AND DRIVEWAY

FILL AND COMPACT TO 95% STD. DENSITY

LEGEND

LEGEND
- (XX) KEY NOTES (SHEET 3 -4)
- (XX) PAVEMENT GEOMETRICS
- [XX] SAN SWR LEAD INFO. (SHEETS 121-122)

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5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143-146)

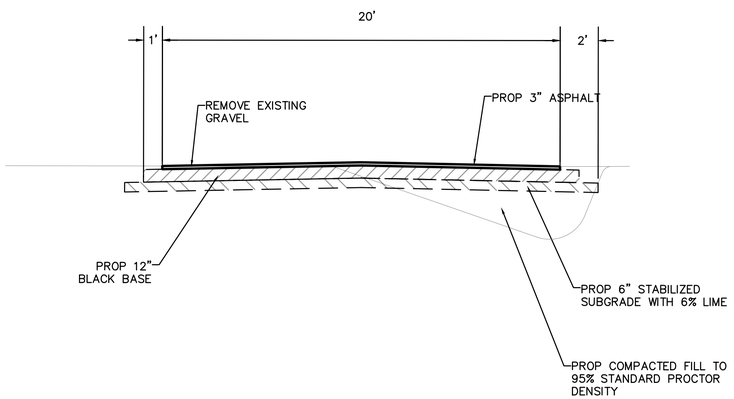
PAVEMENT GEOMETRICS		
No.	Station	Offset
1	6+16.23	10.00' LT
2	6+92.23	10.00' RT
3	5+94.23	10.00' LT
4	5+94.21	10.00' RT
5	7+16.80	10.00' LT
6	7+16.73	10.00' RT

NOTES
1. CONTRACTOR TO CLEAR AND GRUB MOY RIGHT OF AWAY.
2. CONTRACTOR TO GRADE SWALE DITCH PER GRADES AND LINES SHOWN.
3. CONTRACTOR TO HYDRO-MUCH AND SEED PROP SWALE DITCH.

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-73	13,851,401.52	3,105,945.18	13,849,601.08	3,105,541.46	51.65'	9+88.47	2.85L	SET MAG NAIL
B-74	13,851,612.35	3,105,983.85	13,849,811.88	3,105,580.12	54.35'	8+65.93	8.88R	SET 'X' IN CON.

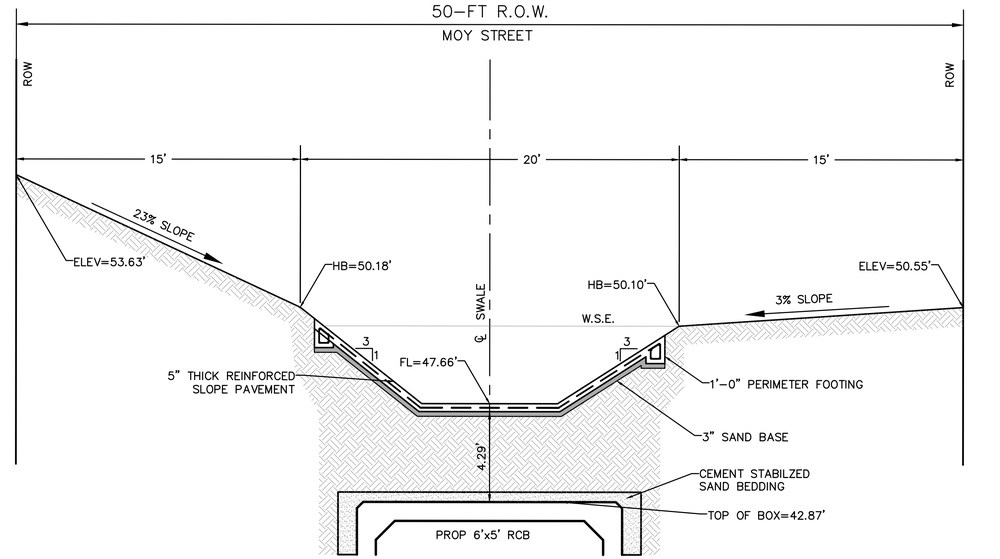
MOY STREET

SEE SHEET 40 FOR PROFILE



SCALE IN FEET: 4 0 2 4

SECTION "C-C"



SECTION "D-D"

SCALE IN FEET: 4 0 2 4

BENCHMARK:
CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
11/14/2025

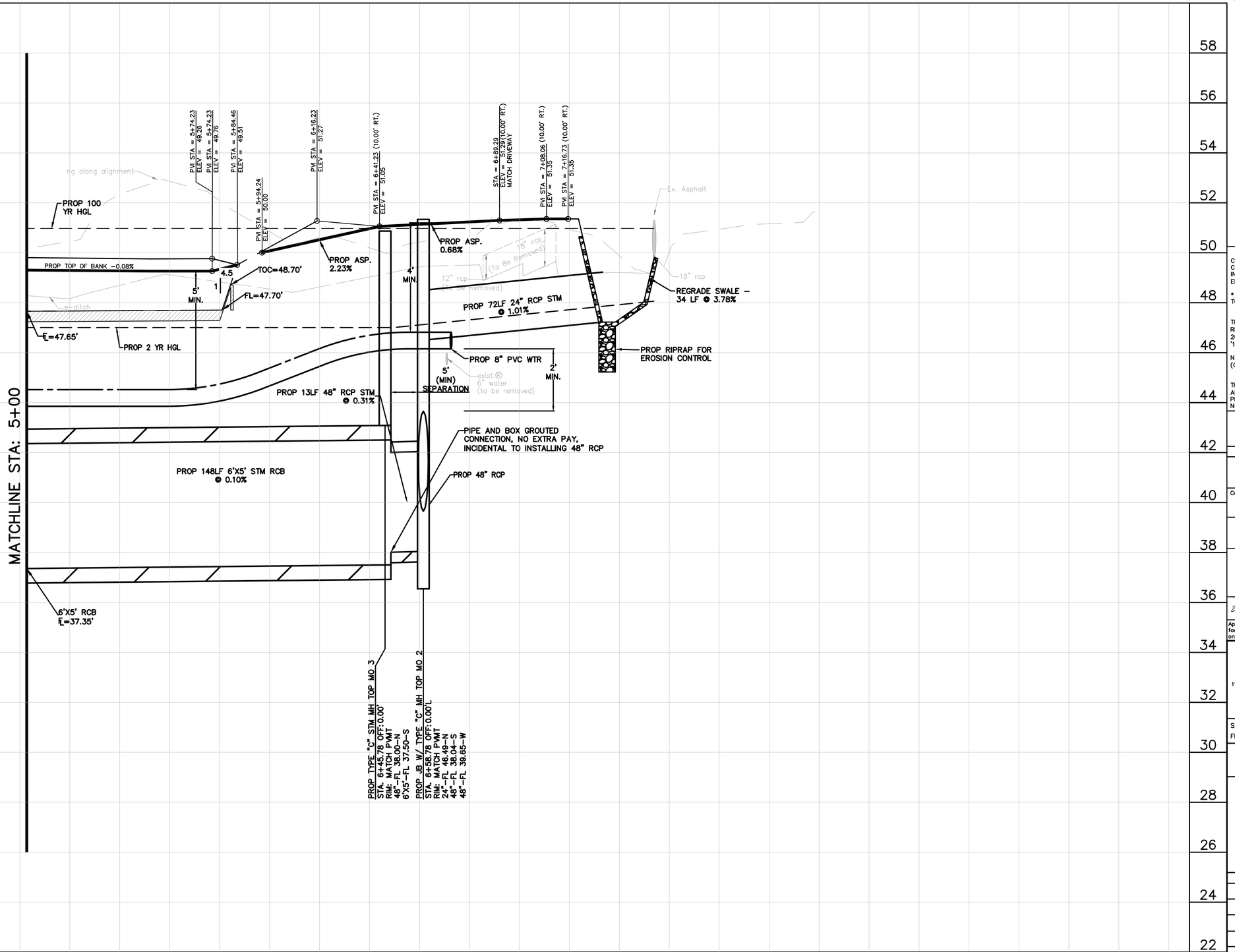
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

MOY STREET PLAN
STA: 5+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 39 OF 345	

CivilTech Engineering, Inc.
O:\2018\18001\Drawings\SHEETS\08-27-MOY-P&P.dwg Dec 12, 2025



REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

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SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 11/14/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

MOY STREET PROFILE
STA: 5+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 40 OF 345	

civilTech Engineering, Inc.
O:\2018\38003\Drawings\SHEETS\08-07-MOY-P&P.dwg Dec. 12, 2025

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+31.41	37.83' RT
2	1+46.49	48.15' LT
3	1+61.05	13.00' RT
4	1+64.13	13.00' LT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

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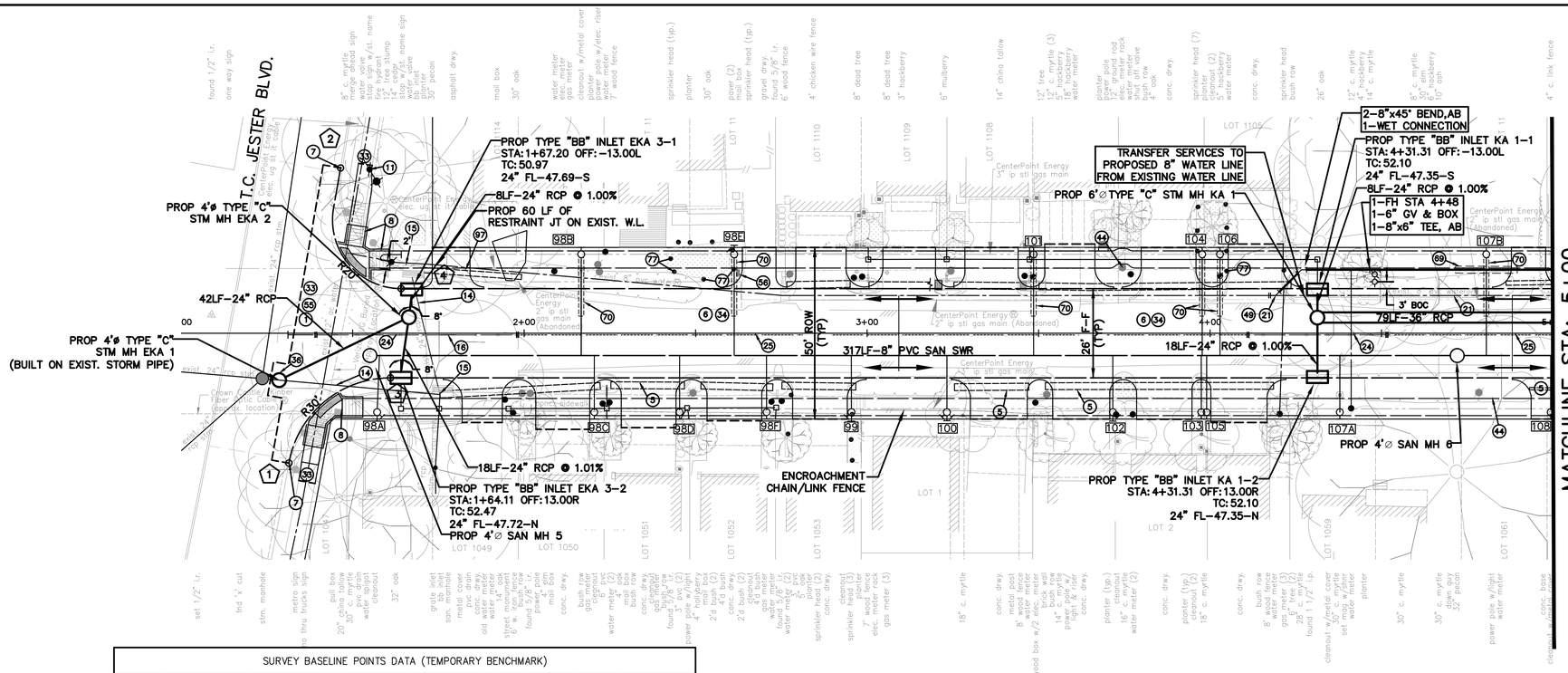
SCALE IN FEET: 20 0 10 20



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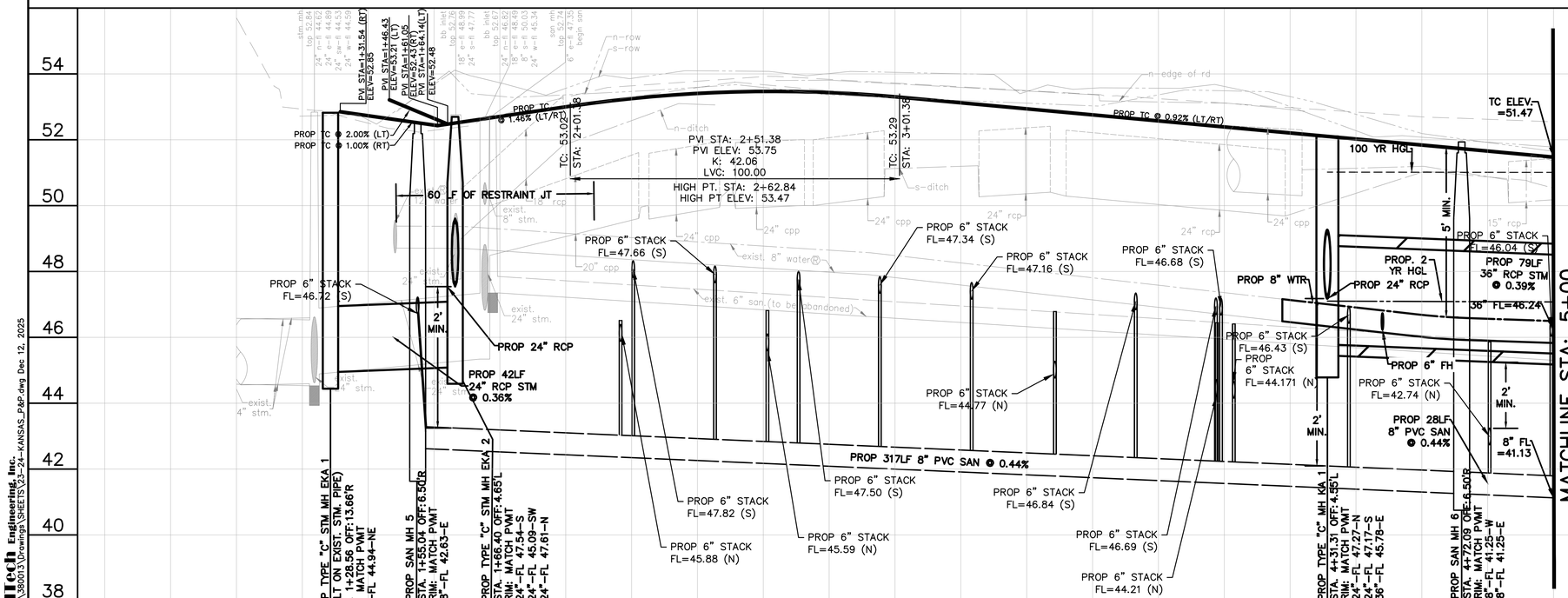
B–16	13,851,097.19	3,105,033.02	13,849,296.78	3,104,629.42	53.78'	1+08.85	5.37L	SET 1/2" I.R.
B–70	13,851,099.80	3,105,362.68	13,849,299.39	3,104,959.03	52.79'	4+38.29	7.03R	SET MAG NAIL

KANSAS STREET

DESIGN SPEED = 30 MPH



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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

KANSAS STREET
STA: 1+00 TO 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 41 OF 345	

CivilTech Engineering, Inc.
O:\2018_18001S\Drawings\SHEETS\02-24-KANSAS_P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
No.	Station	Offset
5	6+60.28	13.00' LT
6	6+60.28	13.00' RT
7	7+36.28	13.00' LT
8	7+36.28	13.00' RT
9	9+15.19	13.00' LT
10	9+15.19	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

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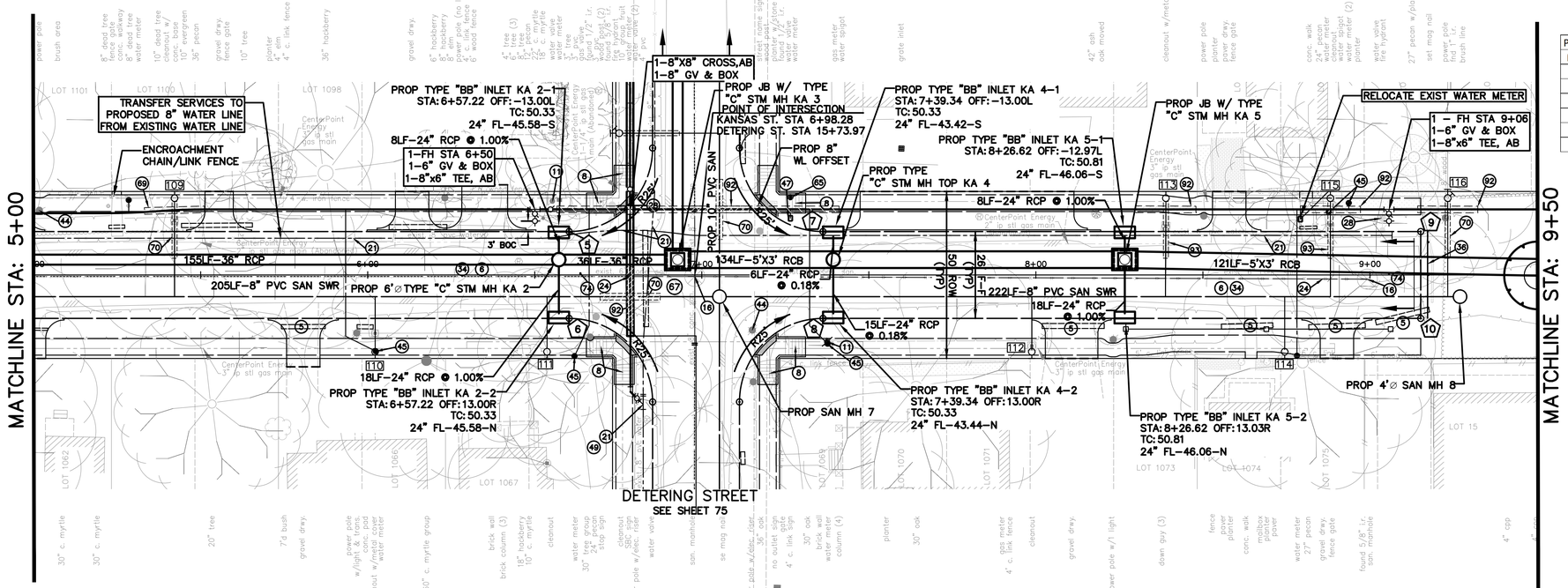

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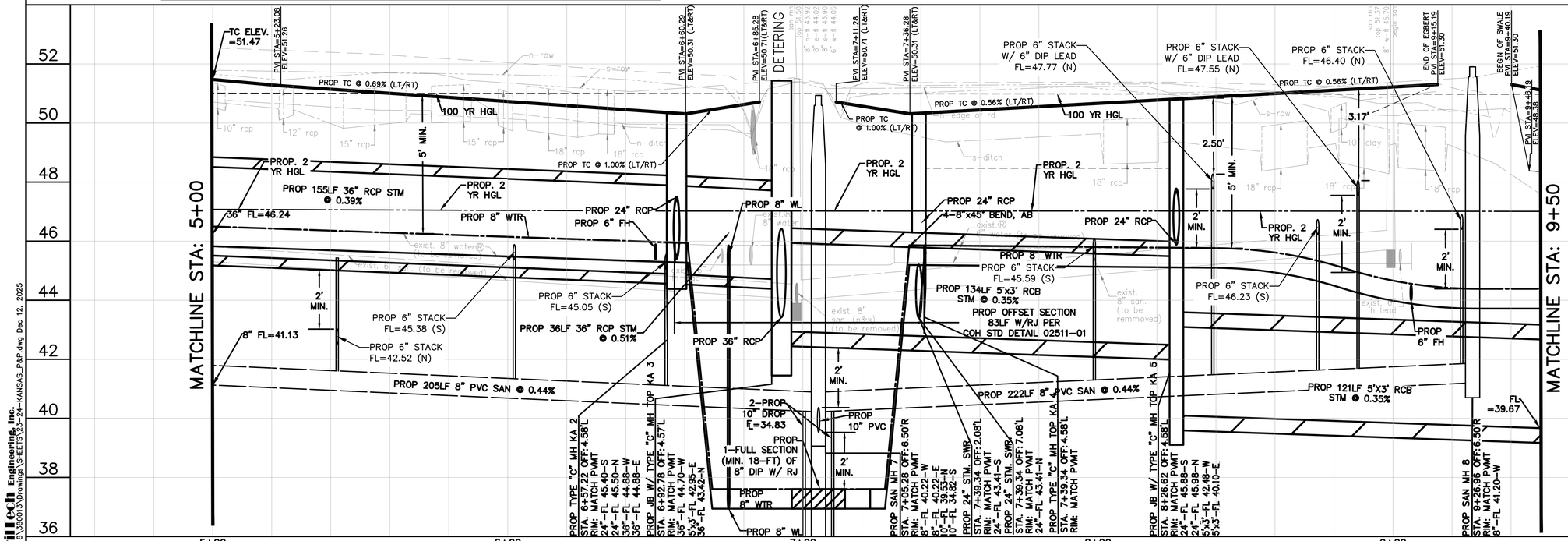
B–69	13,851,107.52	3,105,631.81	13,849,307.12	3,105,228.13	51.26'	7+07.49	11.57R	SET MAG NAIL

KANSAS STREET



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FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II DRAINAGE AND PAVING IMPROVEMENTS

KANSAS STREET
STA: 5+00 TO 9+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 42 OF 345	

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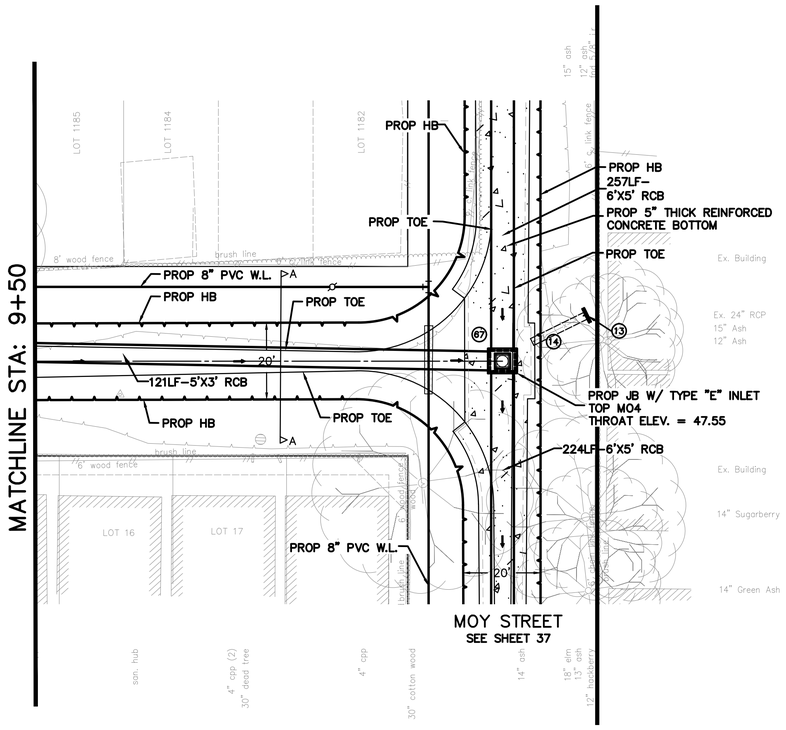
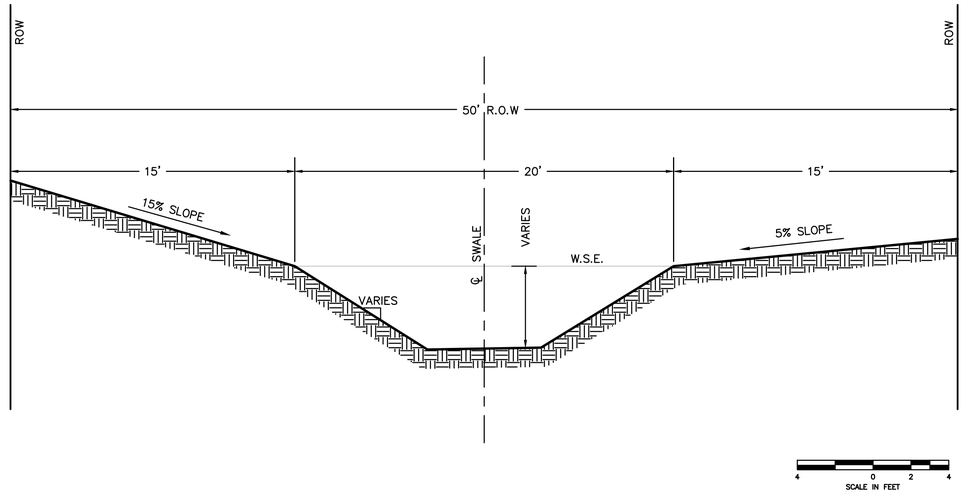
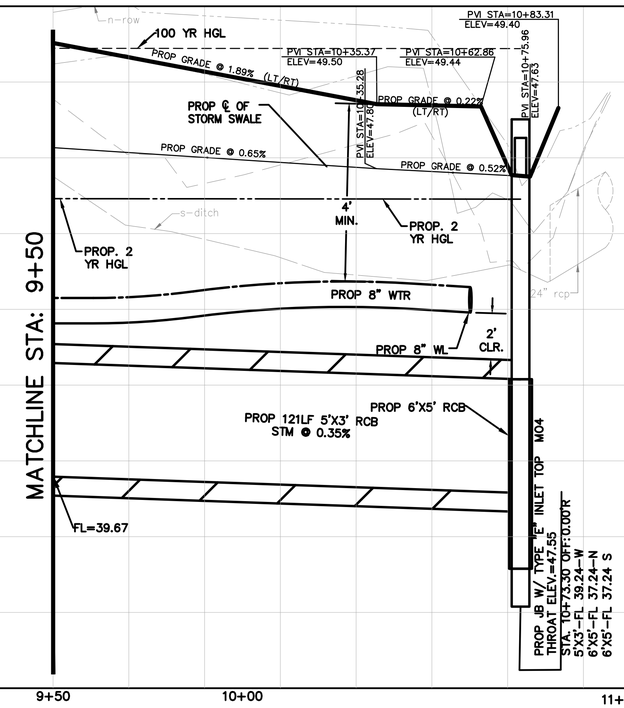
C:\2018_WBS\013\Drawings\SHEETS\02–24–KANSAS_P&P.dwg Dec 12, 2025



KANSAS STREET



SECTION "A-A"



REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

20 0 10 20
SCALE IN FEET

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

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NOTICE:

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26
Date

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Date

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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

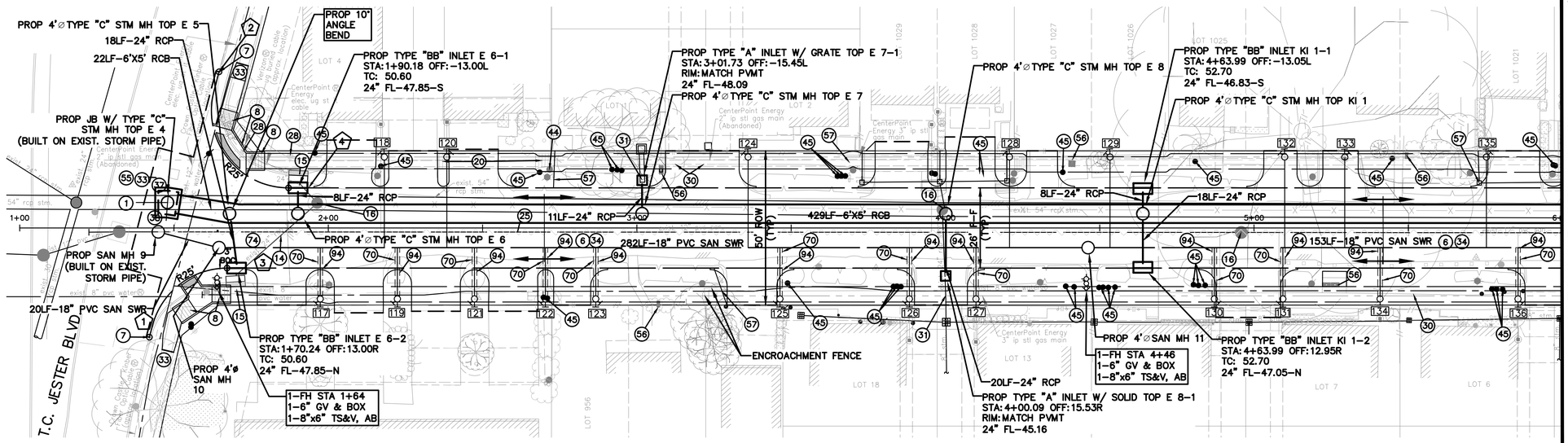
KANSAS STREET
STA: 9+50 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 43 OF 345	

CivilTech Engineering, Inc.
O:\2018\38013\Drawings\SHEETS\38013-24-KANSAS_P&P.dwg Dec. 12, 2025

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-15	13,850,838.06	3,104,978.96	13,849,037.68	3,104,575.36	54.06'	1+17.09	13.97L	SET 1/2" I.R.
B-62	13,850,823.00	3,105,240.31	13,849,022.63	3,104,836.68	53.50'	3+77.48	12.97R	SET MAG NAIL
B-103	13,850,807.58	3,105,111.85	13,849,007.21	3,104,708.24	54.18'	2+48.45	22.52R	SET 'X' IN CON.

PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+42.02	35.39' RT
2	1+64.58	50.61' LT
3	1+71.04	13.00' RT
4	1+93.60	13.00' LT



REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121-122)

NOTES

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5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143-146)

20 0 10 20
SCALE IN FEET

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

KIAM STREET
PLAN
STA: 1+00 TO 6+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 44 OF 345	

civiltech Engineering, Inc.
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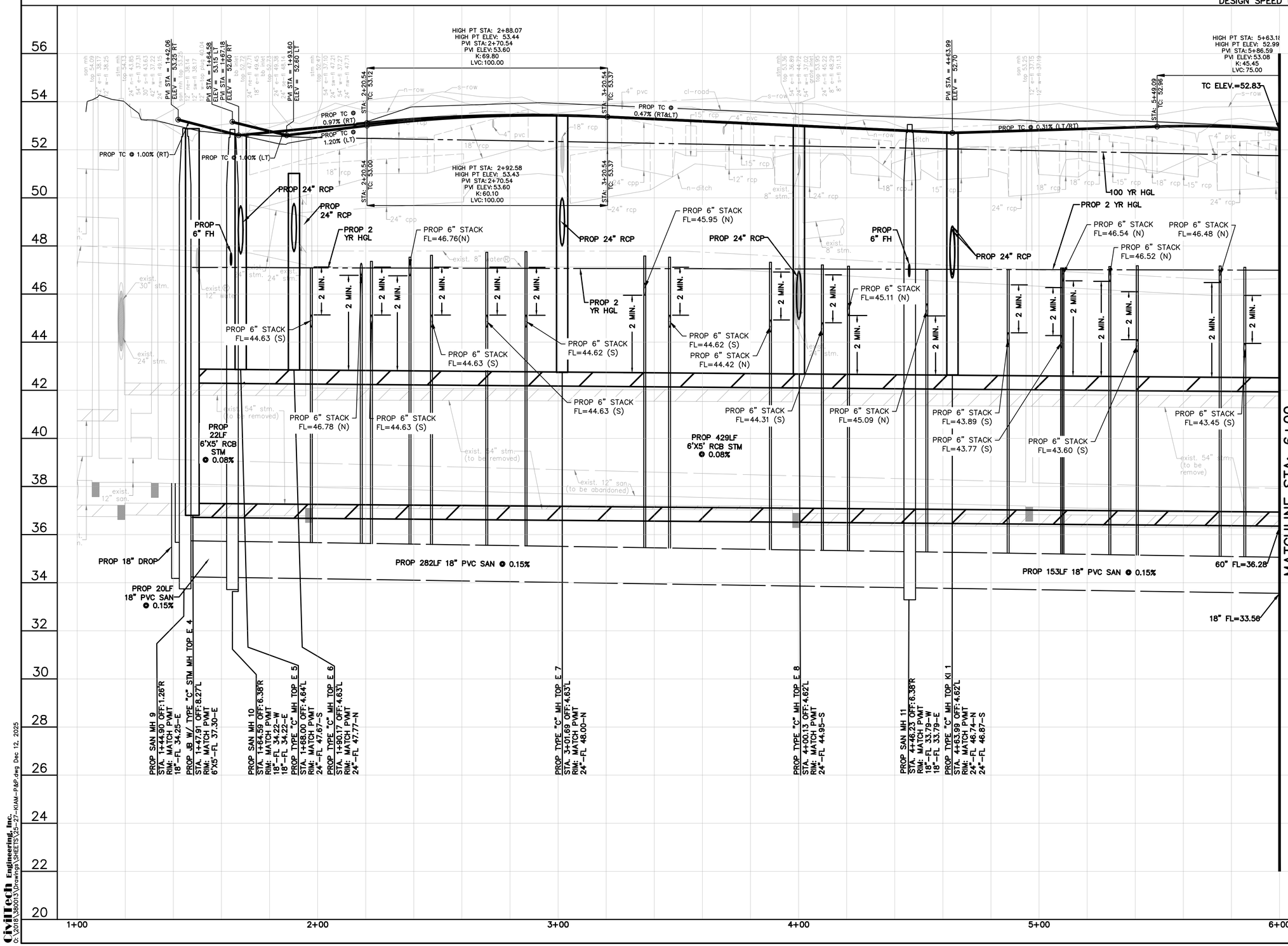
KIAM STREET

DESIGN SPEED = 30 MPH



REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

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BENCHMARK:

CITY OF HOUSTON MONUMENT 5256–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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FB NO. P–6133

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ROBERT A. HILL
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PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

KIAM STREET
PROFILE
STA: 1+00 TO 6+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 45 OF 345	

CivilTech Engineering, Inc.
O:\2018\18901\Drawings\SHEETS\25-27-KIAM-P&P.dwg Dec. 12, 2025

REV	DESCRIPTION	BY	DATE

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-63	13,850,835.17	3,105,434.44	13,849,034.80	3,105,030.79	52.98'	5+71.97	9.65R	SET 1/2" I.R.
B-64	13,850,842.65	3,105,623.82	13,849,042.27	3,105,220.14	52.45'	7+61.49	10.81R	SET MAG NAIL
B-65	13,850,851.82	3,105,809.63	13,849,051.44	3,105,405.93	50.92'	9+47.53	10.11R	SET 1/2" I.R.

PAVEMENT GEOMETRICS		
No.	Station	Offset
5	7+34.32	13.00' RT
6	7+34.32	13.00' LT
7	8+10.32	13.00' LT
8	8+10.32	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

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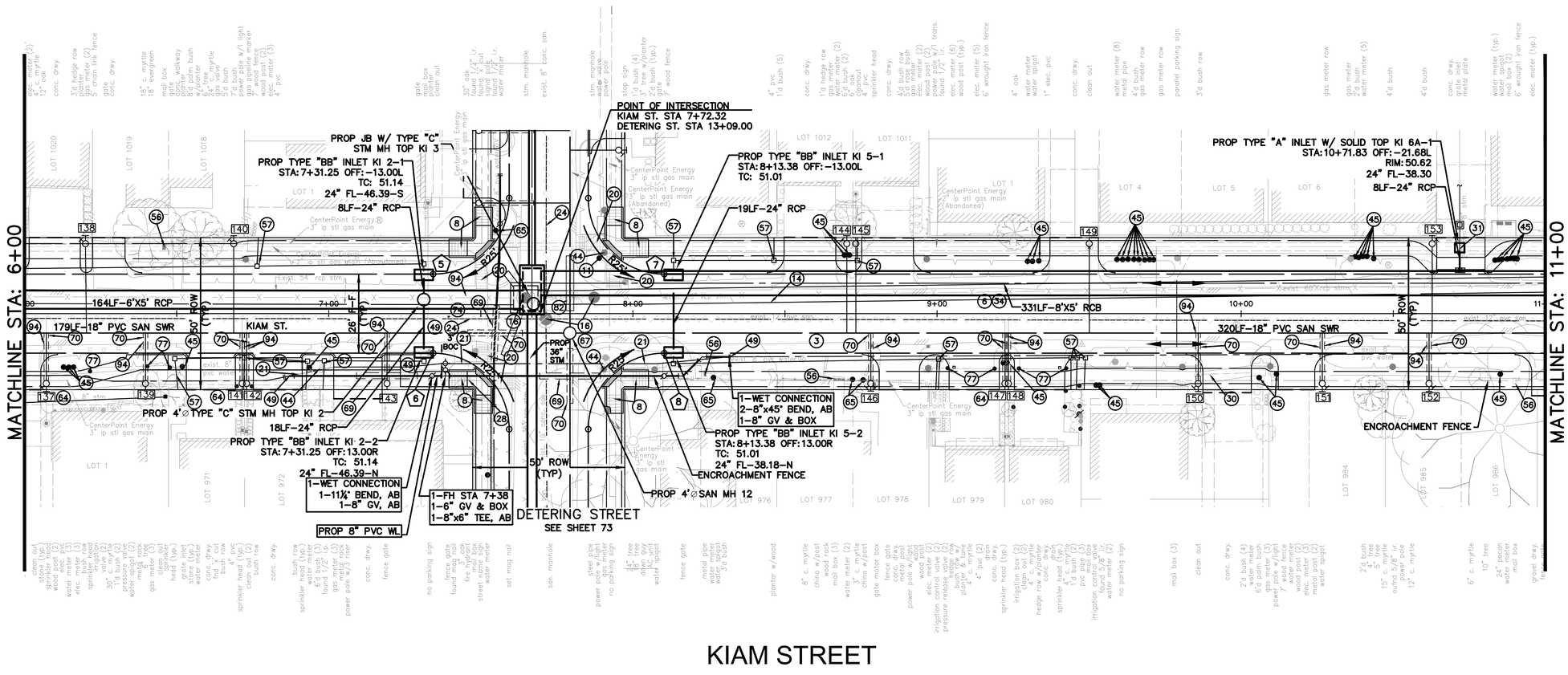
20 0 10 20
SCALE IN FEET



BENCHMARK:

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FB NO. P–6133

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11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

KIAM STREET
PLAN
STA: 6+00 TO 11+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 46 OF 345	

civilTech Engineering, Inc.
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KIAM STREET

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

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11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

KIAM STREET
PROFILE
STA: 6+00 TO 11+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 47 OF 345	

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-66	13,850,880.12	3,106,007.75	13,849,079.74	3,105,604.02	50.81'	11+46.72	9.14L	SET MAG NAIL
B-67	13,850,876.12	3,106,358.43	13,849,075.74	3,105,954.65	47.95'	14+96.86	10.83R	SET MAG NAIL

PAVEMENT GEOMETRICS		
No.	Station	Offset
9	14+66.25	13.00' LT
10	14+66.25	13.00' RT

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121-122)

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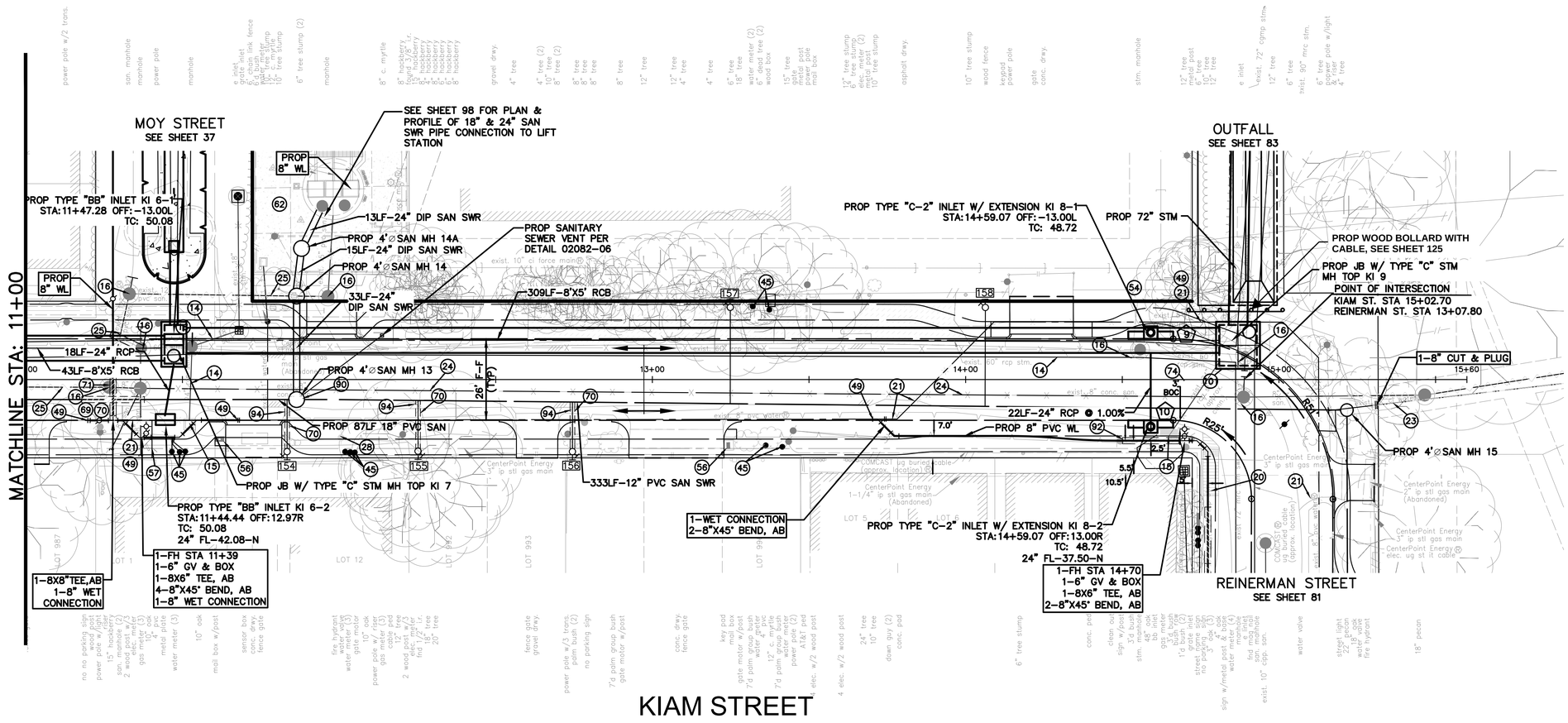
20 0 10 20
SCALE IN FEET



BENCHMARK:

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

KIAM STREET
PLAN
STA: 11+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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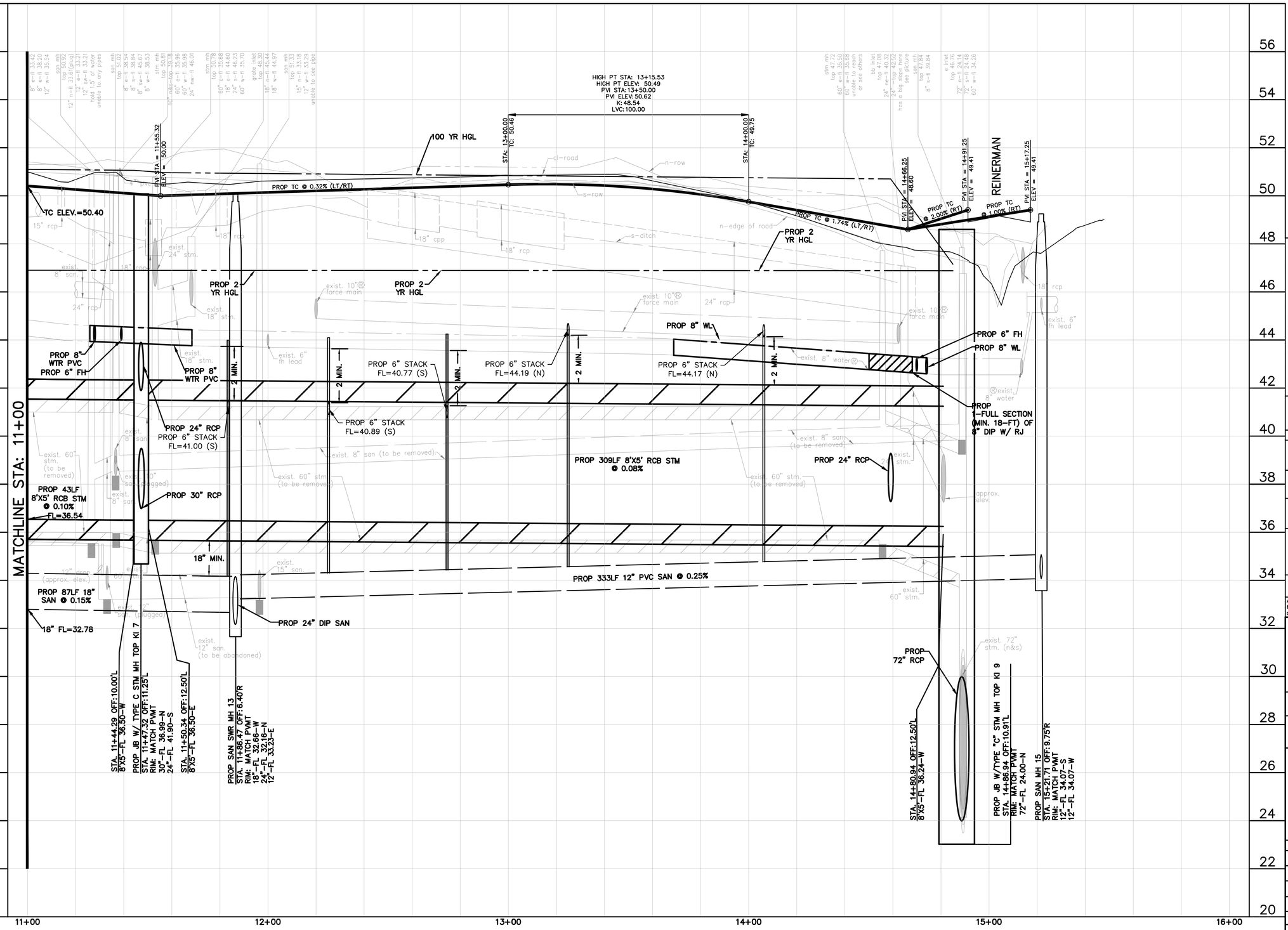
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 48 OF 345	

CivilTech Engineering, Inc.
O:\2018\038013\Drawings\SHEETS\25-27-KIAM-P&P.dwg Jan 09, 2026

KIAM STREET



REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

BENCHMARK:

CITY OF HOUSTON MONUMENT 5256–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

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FLOODPLAIN:

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Date

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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

KIAM STREET
PROFILE
STA: 11+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 49 OF 345	

civilTech Engineering, Inc.
O:\2018\J38013\Drawings\SHEETS\20-27-KIAM-P&P.dwg Jan 08, 2026

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-14	13,850,585.77	3,104,945.98	13,848,785.43	3,104,542.39	54.17'	1+15.44	28.45L	SET 'X' IN CON.
B-60	13,850,586.37	3,105,372.51	13,848,786.03	3,104,968.86	54.13'	5+41.55	9.63L	SET 'X' IN CON.
B-61	13,850,560.39	3,105,223.30	13,848,760.06	3,104,819.67	54.40'	3+91.31	9.53R	SET MAG NAIL

PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+54.98	32.82' RT
2	1+57.27	42.56' LT
3	1+74.98	13.00' RT
4	1+76.76	13.00' LT

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

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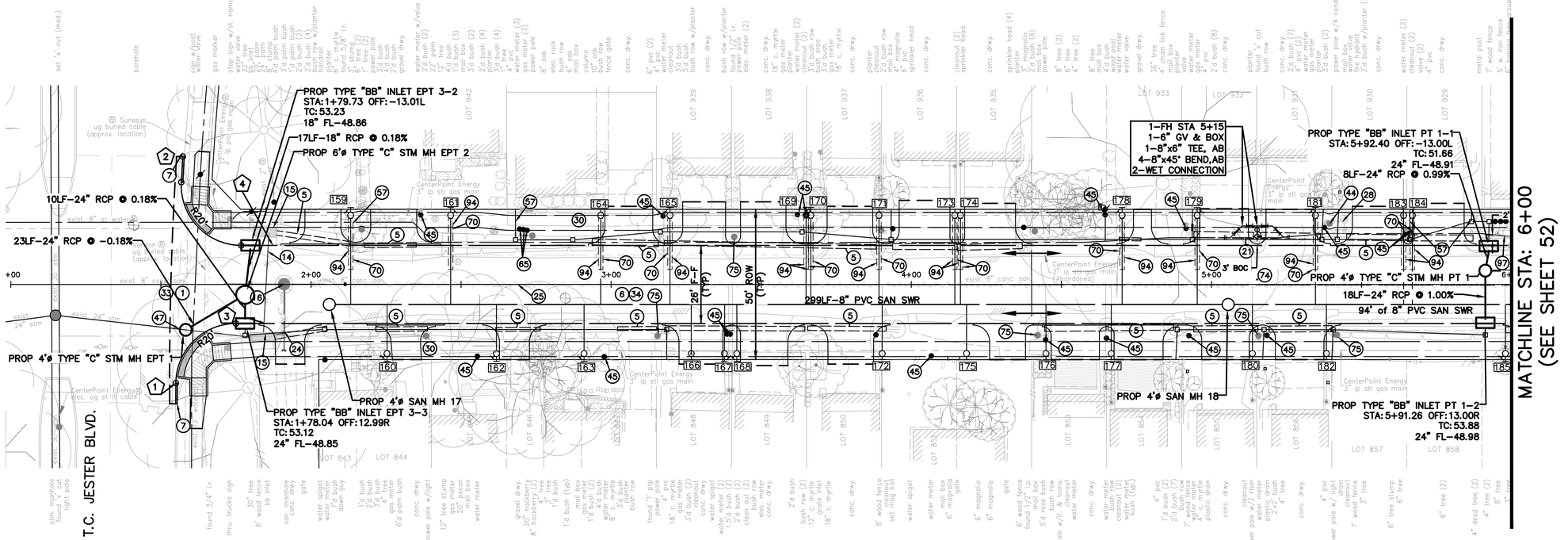
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET
20 0 10 20



BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
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PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PETTY STREET
PLAN
STA: 1+00 TO 6+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 50 OF 345	

CivilTech Engineering, Inc.
Q:\2018\38010\Drawings\SHEETS\38-51-PETTY-P&P.dwg Dec 12, 2025

PETTY STREET

DESIGN SPEED = 30 MPH

PROP TC LT. @ 1.00%

PROP TC RT. @ 1.00%

PROP TC @ 0.64%

PROP TC @ 1.36%

PROP TC @ 0.42%

PROP TC @ 0.30%

PVI STA = 1+54.99 (LT.) ELEV = 52.55

PVI STA = 1+56.39 (RT.) ELEV = 53.34

PVI STA = 1+74.98 ELEV = 52.28

PVI STA = 1+76.76 ELEV = 53.01

PVI STA = 2+79.67 ELEV = 55.63

PVI STA = 4+40.20 ELEV = 54.34

PVI STA = 5+91.40 ELEV = 53.88

TC ELEV.=53.90

PROP 23LF 24" RCP STM @ 0.18%

PROP 299LF 8" PVC SAN @ 0.44%

PROP 94LF 8" PVC SAN @ 0.44%

PROP 14LF 24" RCP STM @ 0.20%

PROP 24" RCP

PROP 8" DROP

PROP 8" WTR PVC

PROP 6" FH LEAD

24" FL =47.85

8" FL =39.94

PROP. 6" STACK FL=50.20 (S)

PROP. 6" STACK FL=50.07 (S)

PROP. 6" STACK FL=49.84 (S)

PROP. 6" STACK FL=49.91 (S)

PROP. 6" STACK FL=49.86 (S)

PROP. 6" STACK FL=49.62 (S)

PROP. 6" STACK FL=49.37 (S)

PROP. 6" STACK FL=49.49 (S)

PROP. 6" STACK FL=48.51 (S)

PROP. 6" STACK FL=49.06 (S)

PROP. 6" STACK FL=48.68 (S)

PROP. 6" STACK FL=48.95 (S)

PROP. 6" STACK FL=45.23 (N)

PROP. 6" STACK FL=46.84 (S)

PROP. 6" STACK FL=45.36 (N)

PROP. 6" STACK FL=45.21 (N)

PROP. 6" STACK FL=45.30 (N)

PROP. 6" STACK FL=45.12 (N)

PROP. 6" STACK FL=45.13 (N)

PROP. 6" STACK FL=45.12 (N)

PROP. 6" STACK FL=45.12 (N)

PROP. 6" STACK FL=45.10 (N)

PROP. 6" STACK FL=45.09 (N)

PROP. 6" STACK FL=45.08 (N)

PROP. 6" STACK FL=45.08 (N)

2' MIN.

MATCHLINE STA: 6+00

PROP TYPE "C" STM MH EPT 1
STA. 1+56.28 OFF:15.11'R
RIM: MATCH PVMT
24"-FL 48.79-NE

PROP TYPE "C" MH EPT 2
STA. 1+78.07 OFF:3.44'R
RIM: MATCH PVMT
18"-FL 48.83-N
24"-FL 48.83-S
24"-FL 48.83-SW

PROP SAN MH 17
STA. 2+06.11 OFF:6.67'R
RIM: MATCH PVMT
8"-FL 44.60-E

PROP SAN MH 18
STA. 5+05.57 OFF:6.67'R
RIM: MATCH PVMT
8"-FL 43.28-W
8"-FL 40.35-E
8" DROP-FL 40.35-W

PROP TYPE "C" MH PT 1
STA. 5+91.26 OFF:4.58'L
RIM: MATCH PVMT
24"-FL 48.80-S
24"-FL 48.82-N
24"-FL 47.87-E

1+00 2+00 3+00 4+00 5+00 6+00

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121-122)

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SCALE IN FEET 20 0 10 20

BENCHMARK:

CITY OF HOUSTON MONUMENT 5256-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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FB NO. P-6133

STATE OF TEXAS
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11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

PETTY STREET
PROFILE
STA: 1+00 TO 6+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 51 OF 345	

CivilTech Engineering, Inc.
Q:\2018\38010\Drawings\SHEETS\38010-51-PETTY-P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-58	13,850,610.48	3,105,917.86	13,848,810.14	3,105,514.14	53.53'	10+87.43	8.87L	SET MAG NAIL
B-59	13,850,578.81	3,105,656.08	13,848,778.47	3,105,252.40	54.25'	8+24.49	10.85R	SET MAG NAIL
B-500	13,850,592.42	3,105,506.90	13,848,792.08	3,105,103.24	54.11'	6+76.08	9.55L	SET MAG NAIL
B-501	13,850,585.65	3,105,721.19	13,848,785.31	3,105,317.50	54.09'	8+89.84	6.98R	SET MAG NAIL
B-503	13,850,603.54	3,105,770.11	13,848,803.20	3,105,366.41	53.92'	9+39.51	8.67L	SET MAG NAIL

PAVEMENT GEOMETRICS		
No.	Station	Offset
5	7+77.10	13.00' LT
6	7+77.10	13.00' RT
7	8+53.10	13.00' LT
8	8+53.10	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

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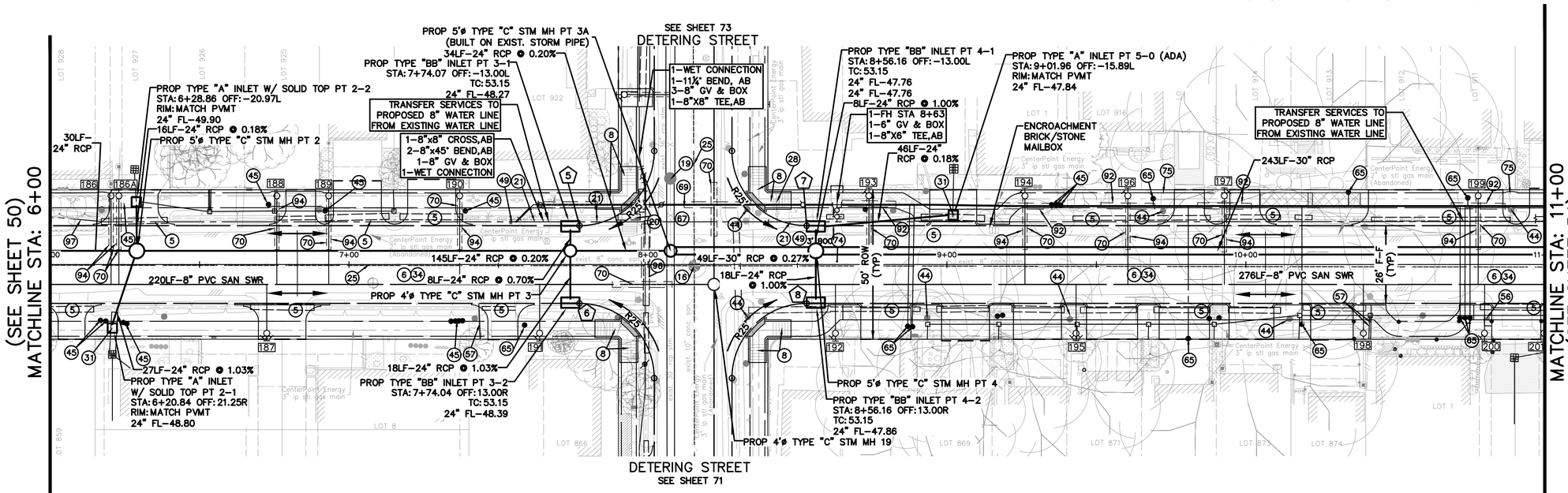
20 0 10 20
SCALE IN FEET



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STATE OF TEXAS
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11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

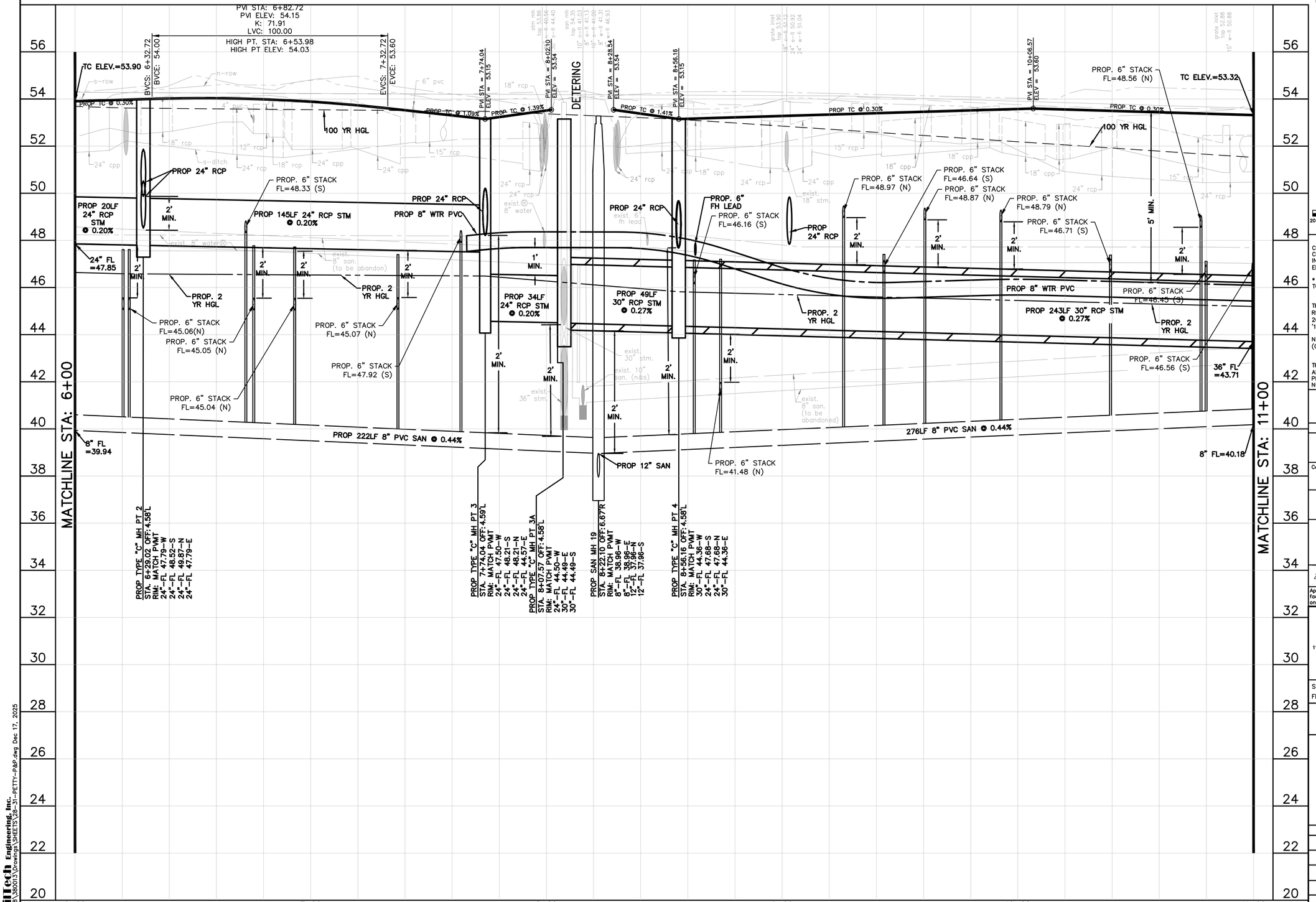
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PETTY STREET
PLAN
STA: 6+00 TO 11+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 52 OF 345	

civiltech Engineering, Inc.
G:\2018\SB0015\Drawings\SHEETS\208-51-PETTY-P&P.dwg Dec 12, 2025

PETTY STREET



REV	DESCRIPTION	BY	DATE

LEGEND

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(XX) PAVEMENT GEOMETRICS

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20 0 10 20
SCALE IN FEET

BENCHMARK:

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STATE OF TEXAS
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11/14/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PETTY STREET
STA: 6+00 TO 11+00

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DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 53 OF 345	

CivilTech Engineering, Inc.
G:\2018\38013\Drawings\SHEETS\38-31-PETTY-P&P.dwg Dec. 17, 2025

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-56	13,850,635.20	3,106,356.56	13,848,834.85	3,105,952.79	50.85'	15+26.81	13.58L	SET MAG NAIL

REV	DESCRIPTION	BY	DATE

LEGEND

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(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121-122)

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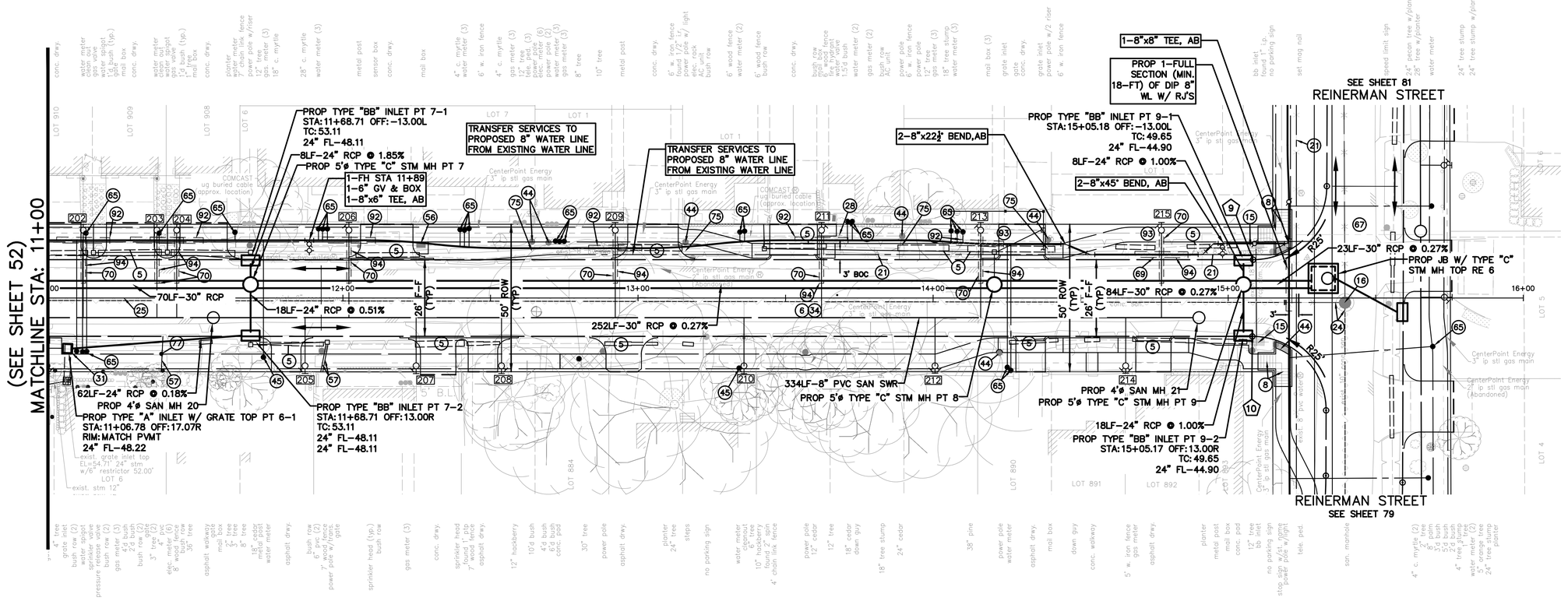
No.	Station	Offset
9	15+08.42	13.00' LT
10	15+08.18	13.00' RT

SCALE IN FEET
20 0 10 20



BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION - 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06-09-2014.

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

Mike Brower 03/18/26
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.

Mike Brower 03/18/26
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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Brian L Hill 03/24/26
Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

WOOLPERT
ARCHITECTURE | ENGINEERING | ORDINAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

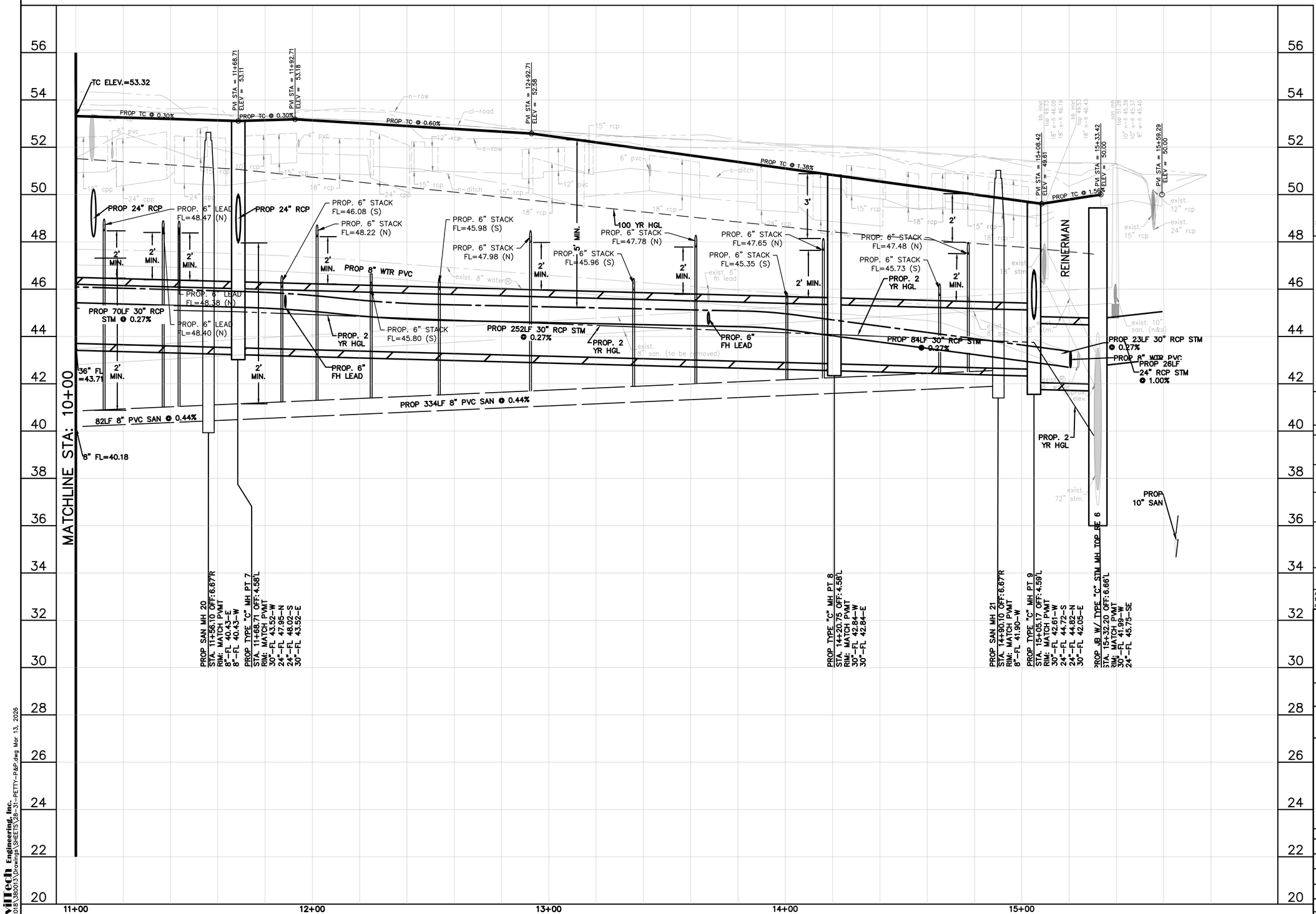
COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

PETTY STREET
PLAN
STA: 11+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 54 OF 345	

CivilTech Engineering, Inc.
O:\2018\038013\Drawings\SHEETS\28-31-PETTY-P&P.dwg Dec. 12, 2025

PETTY STREET



REV	DESCRIPTION	BY	DATE

LEGEND

- (XX) KEY NOTES (SHEET 3 –4)
- (XX) PAVEMENT GEOMETRICS
- XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

20 0 10 20
SCALE IN FEET

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

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Houston, TX 77079
800.414.1045

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PETTY STREET
PROFILE
STA: 11+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 55 OF 345	

CivilTech Engineering, Inc.
O:\2018\J38001\Drawings\SHEETS\38-31-PETTY-P&P.dwg Mar 13, 2026

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-48	13,850,361.06	3,106,696.15	13,848,560.75	3,106,292.33	51.71'	4+74.04	10.70R	SET MAG NAIL

PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+32.06	11.14' LT
2	1+27.19	10.82' RT
3	1+32.78	10.84' RT
4	1+89.41	11.79' LT
5	1+90.96	10.43' RT
6	2+26.60	13.00' LT
7	2+26.60	13.00' RT
8	4+23.95	13.00' RT
9	4+23.95	13.00' RT
10	4+99.95	13.00' LT
11	4+99.95	13.00' RT
12	1+27.06	11.16' LT

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121-122)

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1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112-118)
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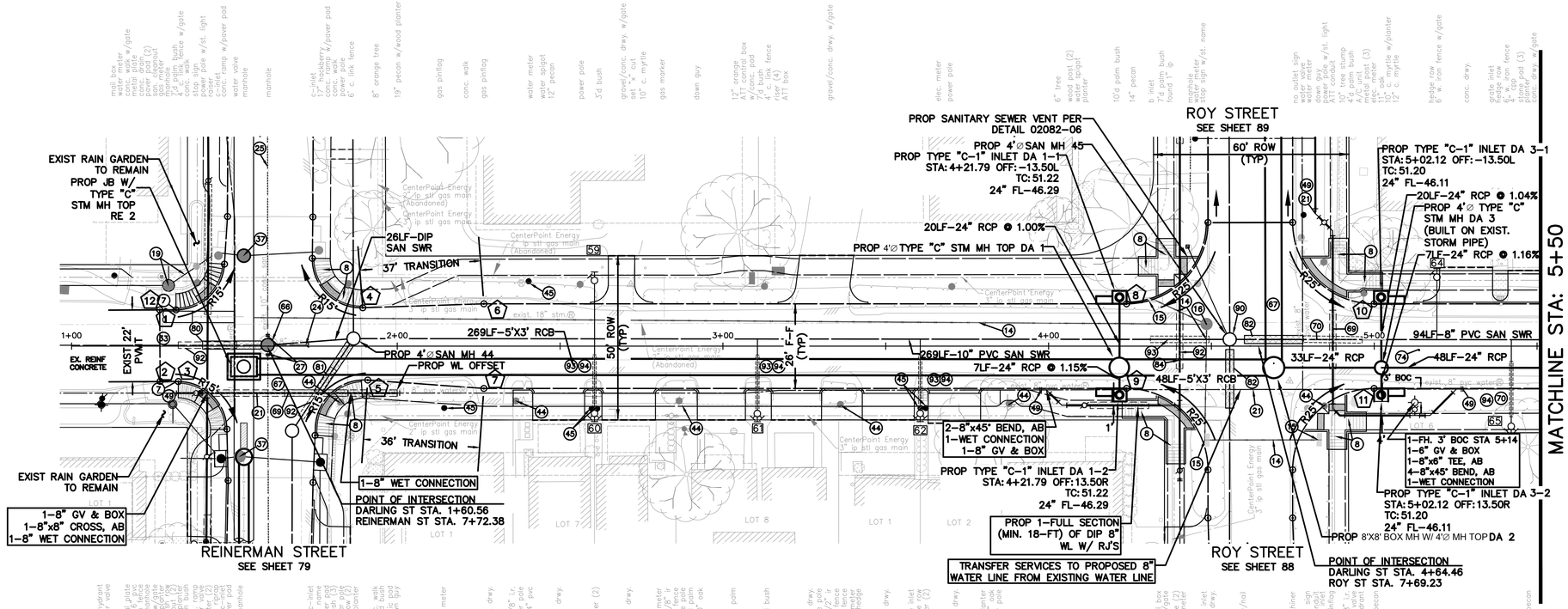
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119-120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143-146)

SCALE IN FEET
20 0 10 20



BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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FLOODPLAIN:

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Browne 03/18/26
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.

Mike Browne 03/18/26
Date

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Brian L Hill 03/24/26
Date

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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

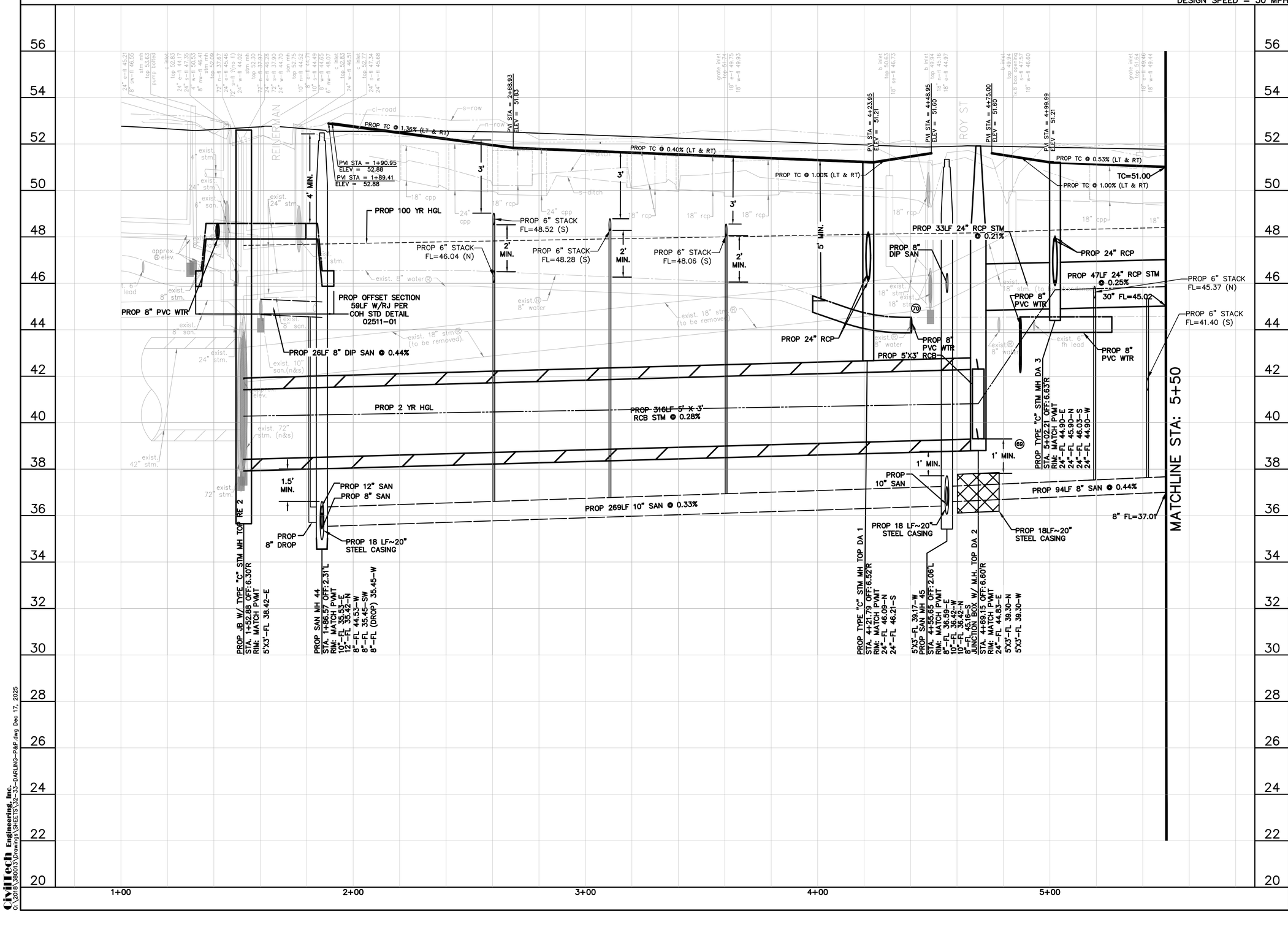
DARLING STREET
PLAN
STA: 1+00 TO 5+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 56 OF 345	

CivilTech Engineering, Inc.
O:\2018\18013\Drawings\SHEETS\02-25-DARLING-P&P.dwg Dec 12, 2025

DARLING STREET

DESIGN SPEED = 30 MPH



REV	DESCRIPTION	BY	DATE

LEGEND

- (XX) KEY NOTES (SHEET 3 –4)
- (XX) PAVEMENT GEOMETRICS
- XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
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4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET: 20 0 10 20

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26
Date

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11750 Katy Freeway, Suite 1260
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SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DARLING STREET
PROFILE
STA: 1+00 TO 5+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 57 OF 345	

CivilTech Engineering, Inc.
O:\2018\180013\Drawings\SHEETS\02–33–DARLING–P&P.dwg Dec 17, 2025

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
No.	Station	Offset
12	7+30.35	13.00' RT
13	8+06.35	13.00' RT
14	9+74.37	13.00' LT
15	9+74.48	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
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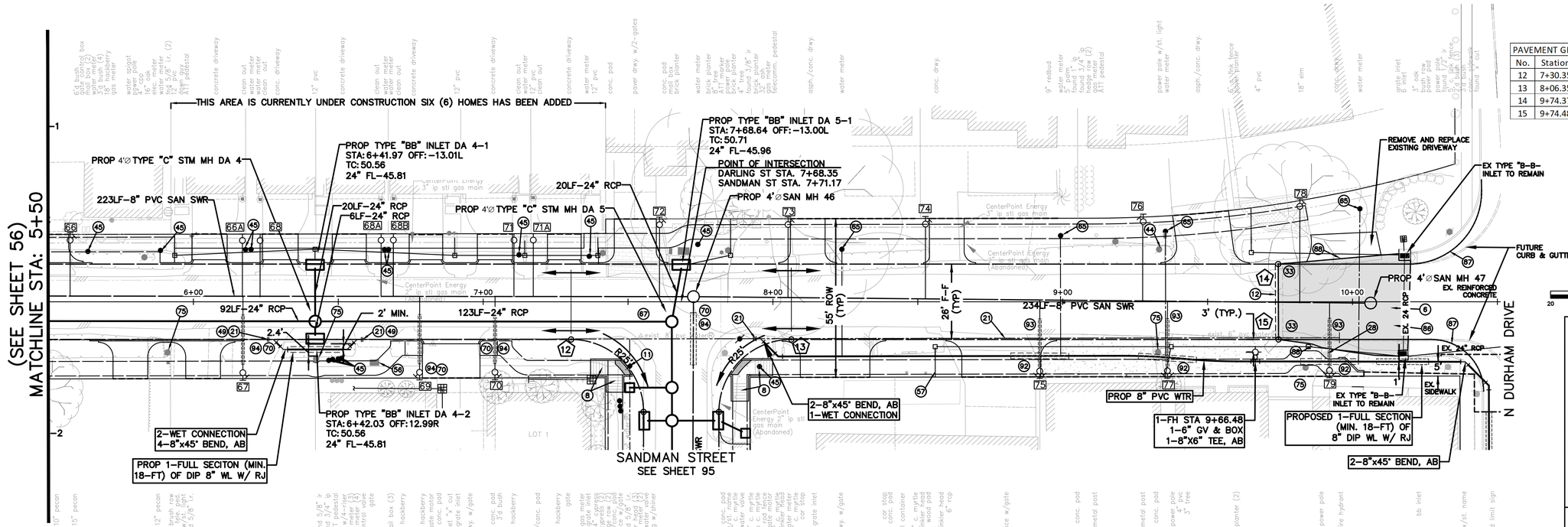
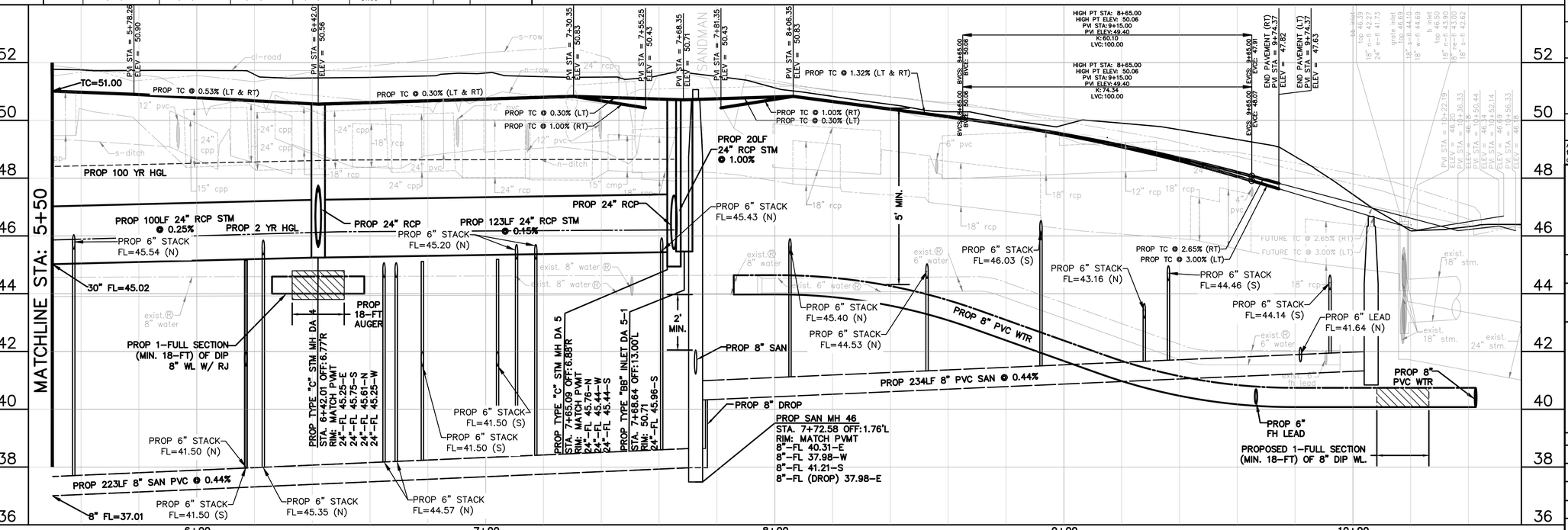
SCALE IN FEET 20 0 10 20



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–111	13,850,366.74	3,106,904.71	13,848,566.43	3,106,500.86	51.78'	6+82.63	14.53R	SET 'X' IN CON.
B–49	13,850,372.31	3,106,976.29	13,848,572.00	3,106,572.44	51.60'	7+54.40	12.22R	SET MAG NAIL

DARLING STREET



BENCHMARK:

CITY OF HOUSTON MONUMENT 5256–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

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VERIFICATION OF PRIVATE UTILITY LINES

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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS ROBERT A. HILL 93655 LICENSED PROFESSIONAL ENGINEER 11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

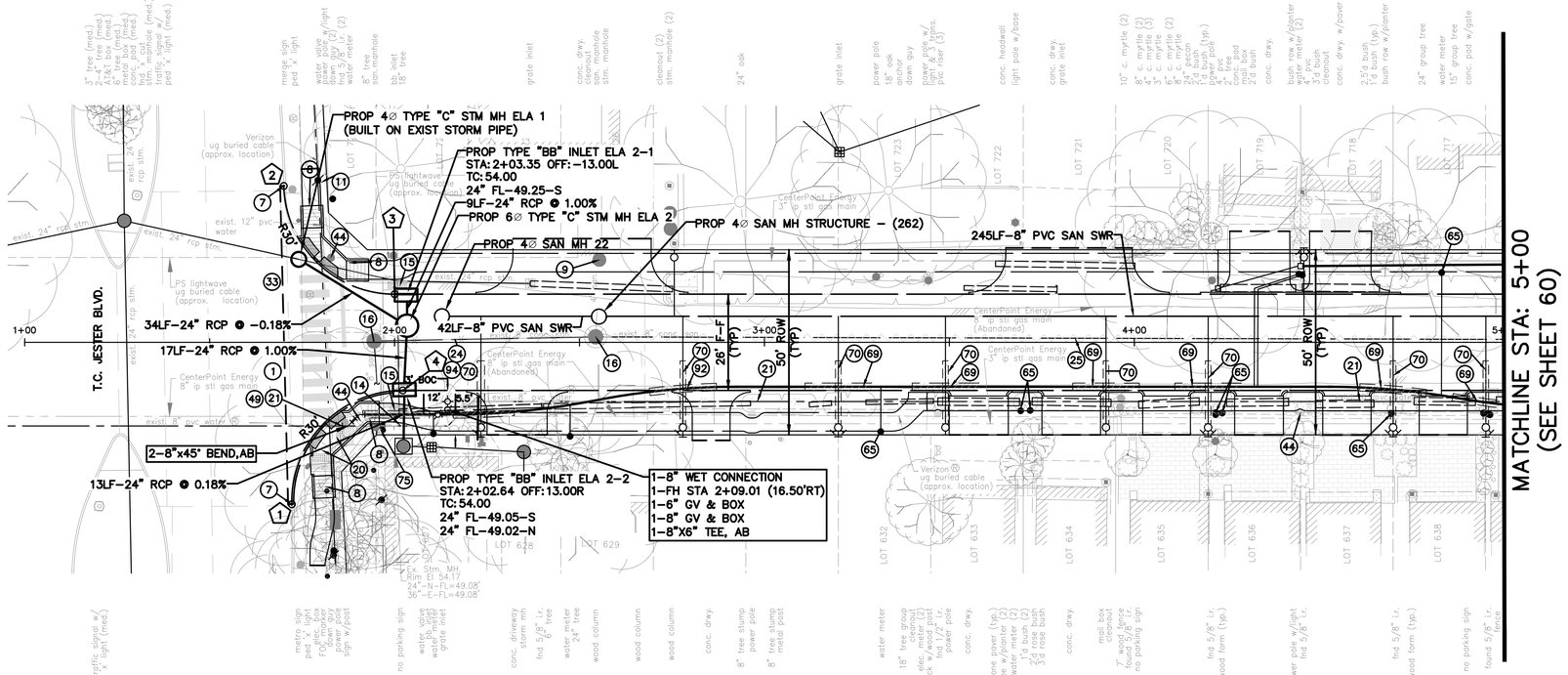
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DARLING STREET
STA: 5+50 TO 10+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 58 OF 345	

CivilTech Engineering, Inc.
©: \2018\18B0013\Drawings\SHEETS\02–DARLING–P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE



PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+72.21	43.76' RT
2	1+70.05	42.24' LT
3	2+00.04	13.00' LT
4	2+02.20	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121-122)

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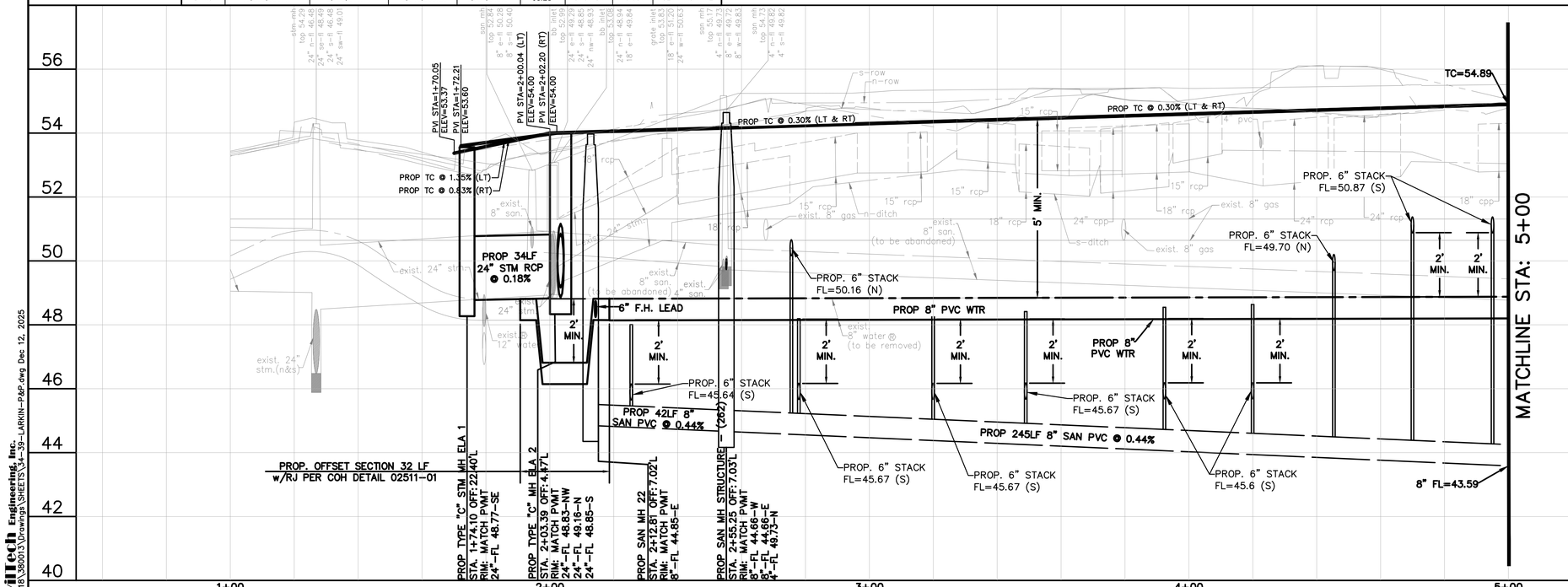
20 0 10 20
SCALE IN FEET

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-12	13,850,052.02	3,104,975.31	13,848,251.75	3,104,571.72	54.24'	1+25.28	23.92L	SET 'X' IN CONC.
B-45	13,850,030.47	3,105,249.14	13,848,230.20	3,104,845.51	55.28'	3+97.84	10.08R	SET MAG NAIL

LARKIN STREET

DESIGN SPEED = 30 MPH



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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

LARKIN STREET
STA: 1+00 TO 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 59 OF 345	

CivilTech Engineering, Inc.
C:\2018_180013\Drawings\SHEETS\4-59-LARKIN-P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

(SEE SHEET 59) MATCHLINE STA: 5+00

MATCHLINE STA: 10+00 (SEE SHEET 61)

SEE SHEET 71 DETERING STREET

PROP SANITARY SEWER VENT PER DETAIL 02082-06

17LF-8" PVC SAN SWR

PROP 4Ø TYPE "C" STM MH LA-A (BUILT ON EXIST STORM PIPE)

PROP 4Ø SAN MH 23

PROP 4Ø TYPE "C" STM MH LA 1

PROP TYPE "BB" INLET LA 2-1 STA: 7+78.89 OFF: -13.00L TC: 53.78 24" FL-49.03-S

16LF-24" RCP @ 0.95%

PROP 4Ø TYPE "C" STM MH LA 2

134LF-24" RCP @ 0.16%

PROP 4Ø SAN MH 24

PROP TYPE "BB" INLET LA 3-1 STA: 8+61.02 OFF: -13.00L TC: 53.82 24" FL-49.07-S

16LF-24" RCP @ 1.00%

PROP 4Ø TYPE "C" STM MH LA 3

25LF-24" RCP @ 0.16%

310LF-8" PVC SAN SWR

66LF-24" RCP @ 0.16%

10LF-24" RCP @ 1.00%

82LF-24" RCP @ 0.19%

4' MIN.

173LF-8" PVC SAN SWR

1-8" WET CONNECTION

10LF-24" RCP @ 1.00%

PROP TYPE "BB" INLET LA 3-2 STA: 8+61.02 OFF: 13.00R TC: 53.82 24" FL-49.07-N

2-8"x45° BEND, AB
1-8" GV & BOX
1-FH, STA. 8+55, 3' BOC
1-6" GV & BOX
1-8"X6" TEE, AB

PROP 4Ø TYPE "C" STM MH LA-B

PROP FH STA. 5+45.61, (16.50', RT)(3' BOC)
1-6" GV & BOX
1-8"X6" TEE, AB
4-22.5° BEND, AB

TRANSFER SERVICES TO PROPOSED 8" WATER LINE FROM EXISTING WATER LINE

2-8"x45° BEND, AB
1-8" GV & BOX

PROP TYPE "BB" INLET LA 2-2 STA: 7+78.90 OFF: 13.00R TC: 53.78 24" FL-49.03-N

POINT OF INTERSECTION
LARKIN ST STA. 8+19.96
DETERING ST STA. 5+14.00

1-8"X8" CROSS, AB

DETERING STREET SEE SHEET 69

PAVEMENT GEOMETRICS		
No.	Station	Offset
5	7+81.96	13.00' LT
6	7+81.96	13.00' RT
7	8+57.96	13.00' LT
8	8+57.96	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121-122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112-118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197-211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119-120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143-146)

SCALE IN FEET 20 0 10 20

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-43	13,850,048.96	3,105,680.88	13,848,248.69	3,105,277.20	55.30'	8+29.98	11.27R	SET MAG NAIL
B-44	13,850,056.75	3,105,440.89	13,848,256.47	3,105,037.24	55.48'	5+90.60	7.43L	SET MAG NAIL
B-110	13,850,039.99	3,105,550.99	13,848,239.72	3,105,147.32	55.32'	6+99.82	14.31R	SET MAG NAIL

LARKIN STREET

PVI STA=5+83.90 ELEV=55.15

PROP TC @ 0.79% (LT/RT)

PVI STA=7+78.90 ELEV=53.78

PVI STA=8+06.80 ELEV=54.18

PVI STA=8+32.96 ELEV=54.18

PVI STA=8+58.06 (LT & RT) ELEV=53.80

PROP TC @ 0.80% (LT/RT)

100 YR HGL

TC=54.87

TC=54.89

PROP TC @ 0.33% (LT/RT)

PROP TC @ 1.56% (LT/RT)

PROP TC @ 1.51% (LT/RT)

BVCS: 9+70.21 BVCE: 54.70

PROP. 6" STACK FL=51.12 (S)

PROP 66LF 24" STM RCP @ 0.16%

PROP. 6" STACK FL=50.89 (S)

PROP. 6" STACK FL=49.47 (N)

PROP. 6" STACK FL=50.90 (S)

PROP. 2 YR HGL

PROP. 6" STACK FL=48.98 (N)

PROP. 6" STACK FL=48.72 (N)

PROP 134LF 24" STM RCP @ 0.16%

PROP 24" RCP

PROP 82LF 24" STM RCP @ 0.19%

PROP 140LF 24" STM RCP @ 0.20%

24" FL=49.10

PROP 8" PVC WTR

PROP. 6" STACK FL=50.31 (N)

18LF AUGER

PROP. 6" STACK FL=48.60 (N)

PROP. 6" STACK FL=45.94 (S)

PROP. 6" STACK FL=46.15 (S)

PROP. 6" STACK FL=46.13 (S)

PROP. 6" STACK FL=48.61 (N)

PROP. 6" STACK FL=45.79 (S)

PROP. 6" STACK FL=45.77 (S)

PROP. 6" STACK FL=45.77 (S)

PROP. 6" STACK FL=48.70 (N)

PROP. 6" STACK FL=48.72 (N)

8" FL=43.59

PROP 17LF 8" PVC SAN @ 0.44%

PROP 310LF 8" SAN PVC @ 0.44%

PROP 173LF 8" SAN PVC @ 0.44%

8" FL=41.47

PROP 8" DROP

PROP 10" PVC SAN

PROP SAN MH 23
STA. 5+16.98 OFF: 7.05'L
RIM: MATCH PVMT
8"-FL 43.51-W
8"-FL 43.51-E

PROP TYPE "C" STM MH LA-A
STA. 5+74.15 OFF: 21.38'L
RIM: MATCH PVMT
24"-FL 49.21-S
24"-FL 49.37-N

PROP TYPE "C" STM MH LA-B
STA. 5+78.85 OFF: 2.54'R
RIM: MATCH PVMT
24"-FL 49.19-N
24"-FL 49.19-E

PROP TYPE "C" STM MH LA 1
STA. 6+44.94 OFF: 2.53'R
RIM: MATCH PVMT
24"-FL 49.08-W
24"-FL 49.08-E

PROP TYPE "C" STM MH LA 2
STA. 7+78.90 OFF: 2.51'R
RIM: MATCH PVMT
24"-FL 48.87-W
24"-FL 48.93-S
24"-FL 48.88-N
24"-FL 48.87-E

PROP SAN MH 24
STA. 8+26.96 OFF: 6.66'L
RIM: MATCH PVMT
8"-FL 42.65-W
8"-FL 40.74-E
10"-FL 42.65-S
10"-FL 39.65-N
8"(DROP)-FL 39.82-W

PROP TYPE "C" STM MH LA 3
STA. 8+61.02 OFF: 2.51'R
RIM: MATCH PVMT
24"-FL 48.71-W
24"-FL 48.97-S
24"-FL 48.91-N
24"-FL 48.71-E

DETERING STREET

MATCHLINE STA: 5+00

MATCHLINE STA: 10+00

5+00 6+00 7+00 8+00 9+00 10+00

38 40 42 44 46 48 50 52 54

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION - 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06-09-2014.

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

Mike Brower 03/18/26
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.

Mike Brower 03/18/26
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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Brian L Hill 03/24/26
Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS ROBERT A. HILL 93655 LICENSED PROFESSIONAL ENGINEER 11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

LARKIN STREET
STA: 5+00 TO 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 60 OF 345	

CivilTech Engineering, Inc.
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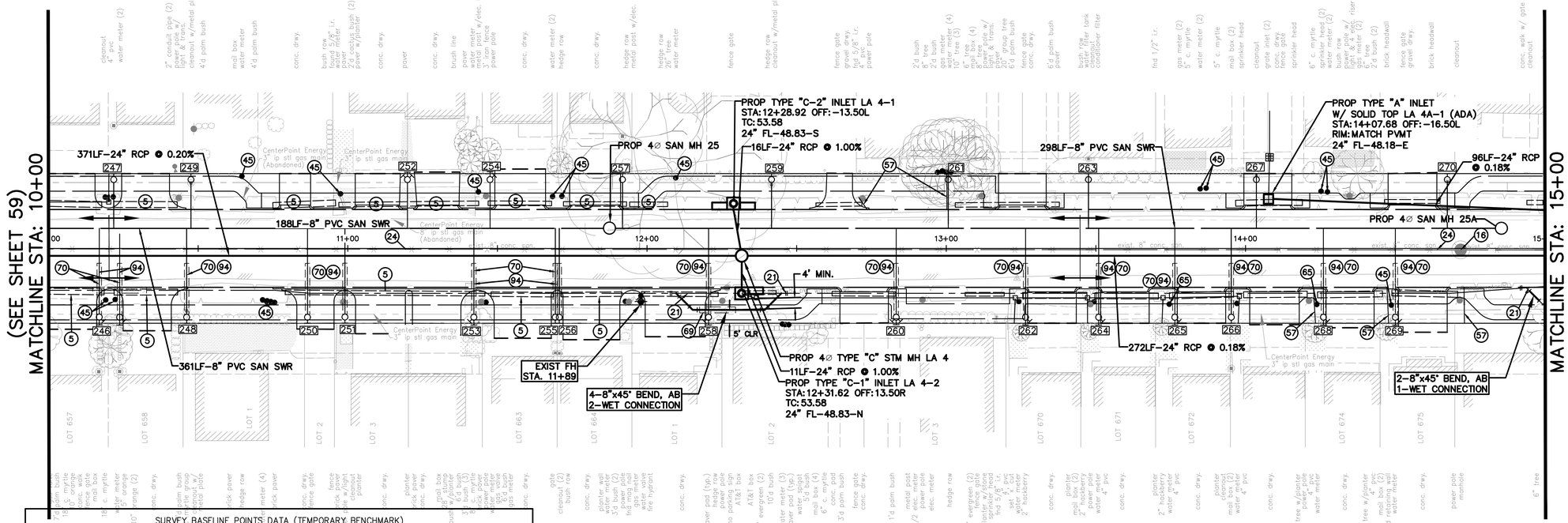
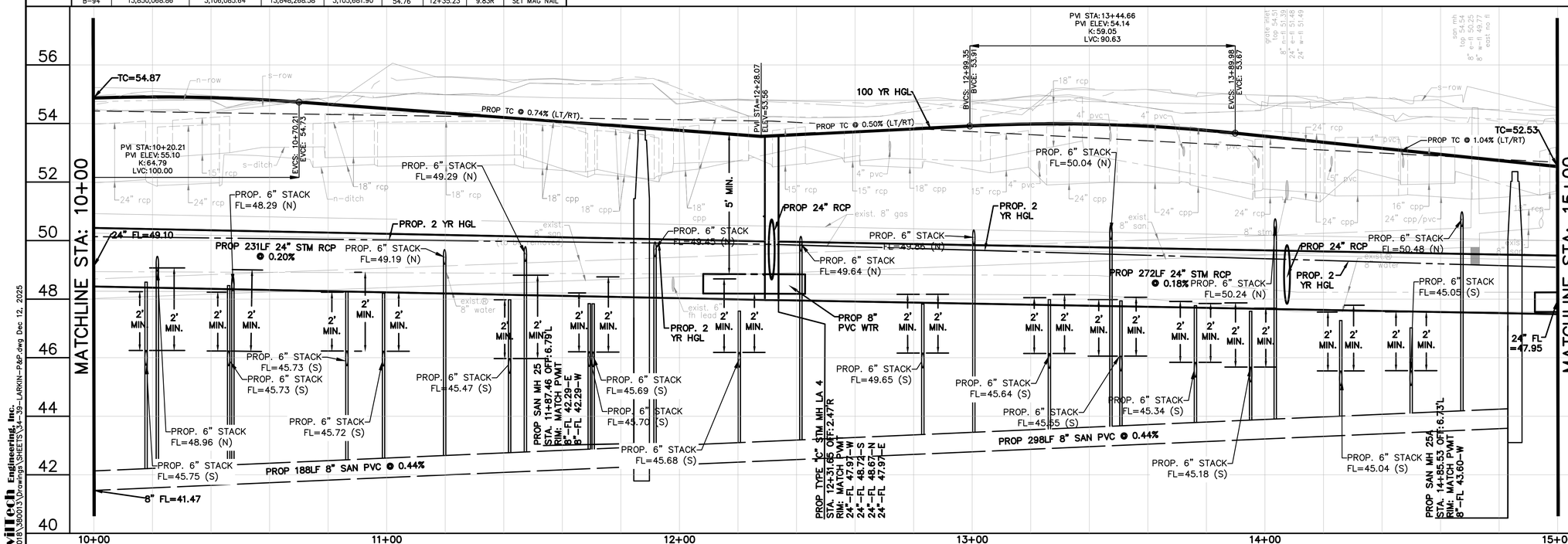


SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–41	13,850,072.68	3,106,173.99	13,848,272.40	3,105,770.24	54.62'	13+23.66	10.04R	SET 'X' IN CON.
B–42	13,850,079.80	3,105,947.78	13,848,279.52	3,105,544.06	54.98'	10+98.01	7.37L	SET MAG NAIL
B–94	13,850,068.86	3,106,085.64	13,848,268.58	3,105,681.90	54.76'	12+35.23	9.83R	SET MAG NAIL

LARKIN STREET



REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX') PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET
20 0 10 20

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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Mike Brower 03/18/26
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CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

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Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

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FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

LARKIN STREET
STA: 10+00 TO 15+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 61 OF 345	

CivilTech Engineering, Inc.
C:\2018_180013\Drawings\SHEETS\C4-39–LARKIN–P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
No.	Station	Offset
9	15+06.96	13.00' LT
10	15+06.96	13.00' RT
11	15+82.96	13.00' LT
12	15+82.96	13.00' RT
13	18+10.84	13.00' LT
14	18+10.84	13.00' RT
15	18+86.84	13.00' LT
16	18+86.84	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET 20 0 10 20

(SEE SHEET 61) MATCHLINE STA: 15+00

SEE SHEET 79 REINERMAN STREET

PROP 6'ø TYPE "C" STM MH LA 6
STA:15+37.29 OFF:2.44R
RIM:MATCH PVMT
24" FL=45.02–E
24" FL=47.45–W
30" FL=42.69–S
36" FL=42.19–N

PROP 4ø TYPE "C" STM MH LA 5
PROP TYPE "BB" INLET LA 5–1
STA:15+03.89 OFF:–13.00L
TC:52.49
24" FL=47.74–S
15LF–24" RCP @ 1.00%

PROP 4ø SAN MH 26
PROP TYPE "BB" INLET LA 7–1
STA:15+86.02 OFF:–13.00L
TC:52.49
24" FL=47.74–S

222LF–24" RCP @ 0.24%

266LF–8" PVC SAN SWR

PROP TYPE "BB" INLET LA 8–1
STA:18+07.78 OFF:–13.00L
TC:51.58
24" FL=46.83–S
16LF–24" RCP @ 1.00%

PROP 4ø TYPE "C" STM MH LA 8

SEE SHEET 88 ROY STREET

PROP 4ø SAN MH 30
PROP TYPE "BB" INLET LA 10–1
STA:18+89.90 OFF:–13.00L
TC:51.58
24" FL=46.83–S

136LF–10" PVC SAN SWR

PROP 4ø TYPE "C" STM MH LA 10

15LF–24" RCP @ 1.00%

38LF–24" RCP @ 0.24%

11LF–24" RCP @ 1.00%

15LF–24" RCP @ 1.00%

11LF–24" RCP @ 1.00%

33LF–24" RCP @ 0.18%

44LF–24" RCP @ 0.24%

10LF–24" RCP @ 1.00%

49LF–24" RCP @ 0.24%

2–8"x45° BEND, AB
1–8"x8" CROSS, AB

PROP TYPE "BB" INLET LA 5–2
STA:15+03.89 OFF:13.00R
TC:52.49
24" FL=47.74–N

POINT OF INTERSECTION
LARKIN ST STA. 15+44.96
REINERMAN ST STA. 5+07.41

TRANSFER SERVICES TO PROPOSED 8" WATER LINE FROM EXISTING WATER LINE

PROP 4ø TYPE "C" STM MH LA 7–2
STA:15+86.02 OFF:13.00R
TC:52.49
24" FL=47.74–N

PROP. STA. 16+22, (16.50' RT) (3' BOC)
1–6" GV & BOX
1–8"X6" TEE, AB
4–8"X45° BEND, AB

PROP TYPE "BB" INLET LA 8–2
STA:18+07.78 OFF:13.00R
TC:51.58
24" FL=46.83–N

1–WET CONNECTION
2–8"X45° BEND, AB
2–8"X11.25° BEND, AB

PROP 4ø TYPE "C" STM MH LA 9
POINT OF INTERSECTION
LARKIN ST STA. 18+48.85
ROY ST STA. 5+04.27

4–8"x45° BEND, AB
2–WET CONNECTION

PROP TYPE "BB" INLET LA 10–2
STA:18+89.90 OFF:13.00R
TC:51.58
24" FL=46.83–N

50' ROW (TYP) 26' F–F (TYP)

4' MIN.

REINERMAN STREET SEE SHEET 77

ROY STREET SEE SHEET 87

(SEE SHEET 63) MATCHLINE STA: 20+00

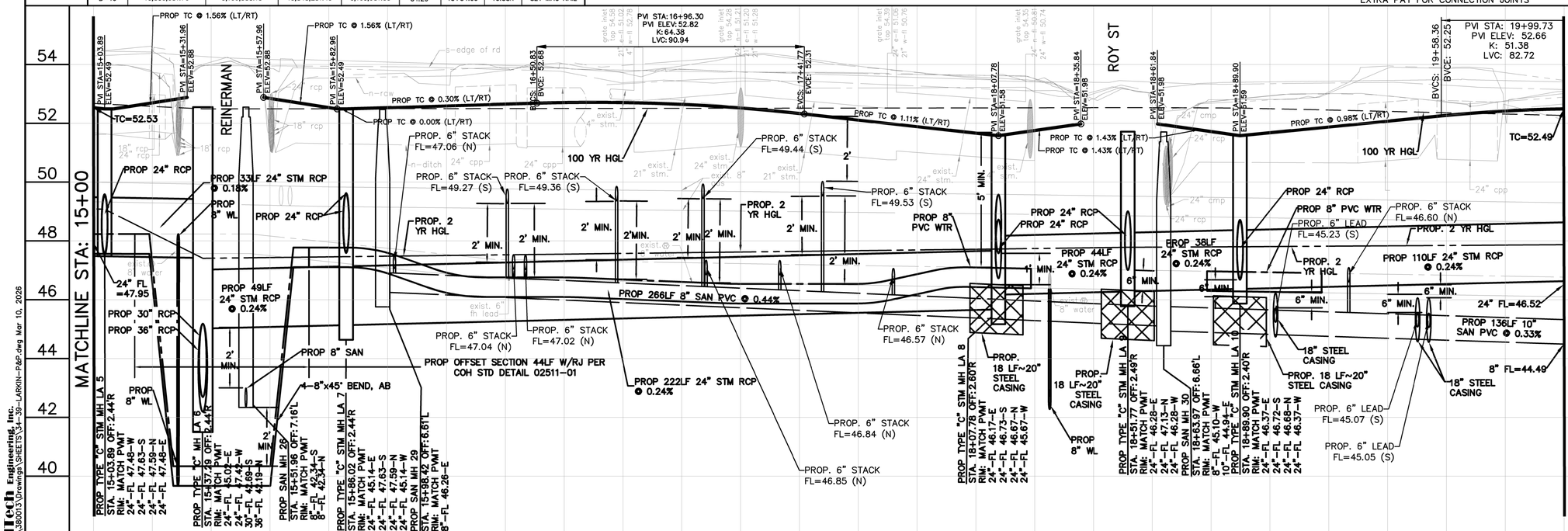
SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)

POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–39	13,850,121.63	3,106,706.41	13,848,321.35	3,106,302.59	53.32'	18+57.75	14.62L	SET MAG NAIL
B–40	13,850,081.76	3,106,385.13	13,848,281.49	3,105,981.35	54.29'	15+34.99	10.58R	SET MAG NAIL

LARKIN STREET

KEYNOTES

(A) ENCASE PROPOSED 6" SANITARY LEAD (PVC) IN 18" STEEL CASING (MIN. 18–FT) CENTERED AT STORM CROSSING, SEE SHEET 172 NO EXTRA PAY FOR CONNECTION JOINTS



BENCHMARK:

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WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED PROFESSIONAL ENGINEER
3/10/2026

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

LARKIN STREET
STA: 15+00 TO 20+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 62 OF 345	

Civilitech Engineering, Inc.
O:\2018\380013\Drawings\SHEETS\04–39–LARKIN–P&P.dwg Mar 10, 2026

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
No.	Station	Offset
17	21+14.73	13.00' LT
18	21+14.73	13.00' RT
19	21+90.73	13.00' LT
20	21+90.73	13.00' RT
21	24+09.60	12.43' LT
22	24+09.71	13.57' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET: 20 0 10 20

(SEE SHEET 62) MATCHLINE STA: 20+00

SEE SHEET 95 SANDMAN STREET 50' ROW (TYP)

PROP TYPE "BB" INLET LA 11-1 STA: 21+11.67 OFF: -13.00L TC: 51.95 24" FL-47.20-S

15LF-24" RCP @ 1.00%

PROP 8" WL OFFSET

PROP 4Ø SAN MH 32

PROP TYPE "BB" INLET LA 12-1 STA: 21+93.79 OFF: -13.00L TC: 51.94 24" FL-47.19-S

230LF-10" DIP SAN

POTENTIAL PETROLEUM CONTAMINATED AREA (PPCA)

CONTRACTOR SHALL REMOVE AND DISPOSE OF SANITARY PLUG (BY OTHERS) AND CONNECT PROPOSED 10" DIP SANITARY SEWER TO 10" DIP SANITARY SEWER (BY OTHERS), COMPLETE IN PLACE

2-8"x45° BEND, AB

PROP. FH STA. 24+06, (16.50' LT) (3' BOC) 1-8"X6" TEE, AB 1-8" GV & BOX

2-8"x45° BEND, AB

PROP 10" DIP w/PLUG (BY OTHERS)

PROP MH (BY OTHERS)

163LF-10" PVC SAN SWR

222LF-24" RCP @ 0.24%

82LF-24" RCP @ 0.24%

11LF-24" RCP @ 1.00%

11LF-24" RCP @ 0.86%

15LF-24" RCP @ 0.59%

50' ROW (TYP)

26' F-F (TYP)

PROP 8" WL OFFSET

FUTURE CURB & GUTTER

N. DURHAM DR.

2-11¼" BENDS, AB

PROP 8" DIP WL

60LF AUGER

1-8"x8" TEE, AB 1-WET CONNECTION 1-8" PLUG

1-FH STA 21+17 1-6" GV & BOX 1-8" WET CONNECTION

PROP CONNECTION POINT

PROP 4Ø TYPE "C" STM MH LA 11

PROP TYPE "BB" INLET LA 11-2 STA: 21+11.67 OFF: 13.00R TC: 51.95 24" FL-47.20-N

PROP 4Ø TYPE "C" STM MH LA 12

PROP TYPE "BB" INLET LA 12-2 STA: 21+93.79 OFF: 13.00R TC: 51.94 24" FL-47.19-N

POINT OF INTERSECTION LARKIN ST STA. 21+52.73 SANDMAN ST STA. 5+06.21

SANDMAN STREET SEE SHEET 94

LARKIN STREET

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-38	13,850,106.14	3,106,989.13	13,848,305.86	3,106,585.27	52.23'	21+39.48	13.74R	SET 1/2" I.R.

KEYNOTES

(A) ENCASE PROPOSED 6" SANITARY LEAD (PVC) IN 18" STEEL CASING (MIN. 18–FT) CENTERED AT STORM CROSSING, SEE SHEET 172 NO EXTRA PAY FOR CONNECTION JOINTS

PVI STA: 19+99.73
PVI ELEV: 52.66
K: 51.38
LVC: 82.72
EVCS: 20+41.09
EVCE: 52.39

100 YR HGL

PROP TC @ 0.63% (LT/RT)

PROP TC @ 1.56% (LT/RT)

TC=52.49

PROP TC @ 1.56% (LT)

PROP TC @ 1.00% (RT)

PROP TC @ 0.33% (RT)

PROP TC @ 0.33% (LT)

HIGH PT STA: 22+22.73
HIGH PT ELEV: 52.02
PVI STA: 22+62.19
PVI ELEV: 52.16
K: 32.32
LVC: 100.00

HIGH PT STA: 22+22.23
HIGH PT ELEV: 52.02
PVI STA: 22+62.19
PVI ELEV: 52.16
K: 30.78
LVC: 100.00

PROP. 6" STACK FL=46.70 (S)

PROP TC @ 2.77% (RT)

PROP TC @ 2.92% (LT)

PROP. 6" STACK FL=46.00 (N)

PROP. 6" LEAD FL=44.64 (S)

PROP. 2 YR HGL

PROP. 6" LEAD FL=44.77 (S)

PROP 112LF 24" STM RCP @ 0.24%

24" FL=46.52

PROP 24" RCP

1-8"X6" TS&V

PROP 82LF 24" STM RCP @ 0.24%

(TO BE REMOVED)

PROP. 2-YR HGL

PROP OFFSET SECTION 17LF W/RJ PER COH STD DETAIL 02511-01

PROP 8" WL OFFSET

6" MIN.

18" STEEL CASING

PROP 163LF 10" SAN PVC @ 0.33%

PROP. 6" LEAD FL=44.90 (N&S)

8" FL=44.49

PROP. 6" STACK FL=46.49 (N)

PROP. 6" STACK FL=46.32 (N)

2' MIN.

PROP 230LF 10" SAN DIP @ 0.34%

PROP. 6" STACK FL=44.84 (S)

PROP. 6" STACK FL=44.75 (N)

PROP. 6" STACK FL=44.65 (N)

PROP. 6" STACK FL=46.74 (S)

PROP. 6" STACK FL=46.76 (S)

PROP. 6" STACK FL=44.41 (N)

60LF AUGER

PROP 8" WL

5' MIN.

PROP TYPE "C" STM MH LA 11 STA. 21+11.67 OFF: 2.38'R RIM: MATCH PVMT 24"-FL 46.90-E 24"-FL 47.05-N 24"-FL 47.09-S 24"-FL 46.90-W

PROP SAN MH 32 STA. 21+82.70 OFF: 8.67'L RIM: MATCH PVMT 10"-FL 43.96-W 10"-FL 43.96-E

PROP TYPE "C" STM MH LA 12 STA: 21+93.79 OFF: 2.37'R RIM: MATCH PVMT 24"-FL 47.10-S 24"-FL 47.10-N 24"-FL 47.10-W

EXIST SAN SWR PLUG STA. 23+92.83 OFF: 4.09'L 10"-FL 43.18-W

MATCHLINE STA: 20+00

20+00 21+00 22+00 23+00 24+00 24+82.10

54 52 50 48 46 44 42 40 38

BENCHMARK:

CITY OF HOUSTON MONUMENT 5256–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06–09–2014.

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

Mike Brower 03/18/26
Date

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

Signature valid for six months.

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Date

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(This signature verifies existing underground facilities – not to be used for conflict verification)

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Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS ROBERT A. HILL 93655 LICENSED PROFESSIONAL ENGINEER 11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

LARKIN STREET
STA: 20+00 TO 24+82.10

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 63 OF 345	

CivilTech Engineering, Inc.
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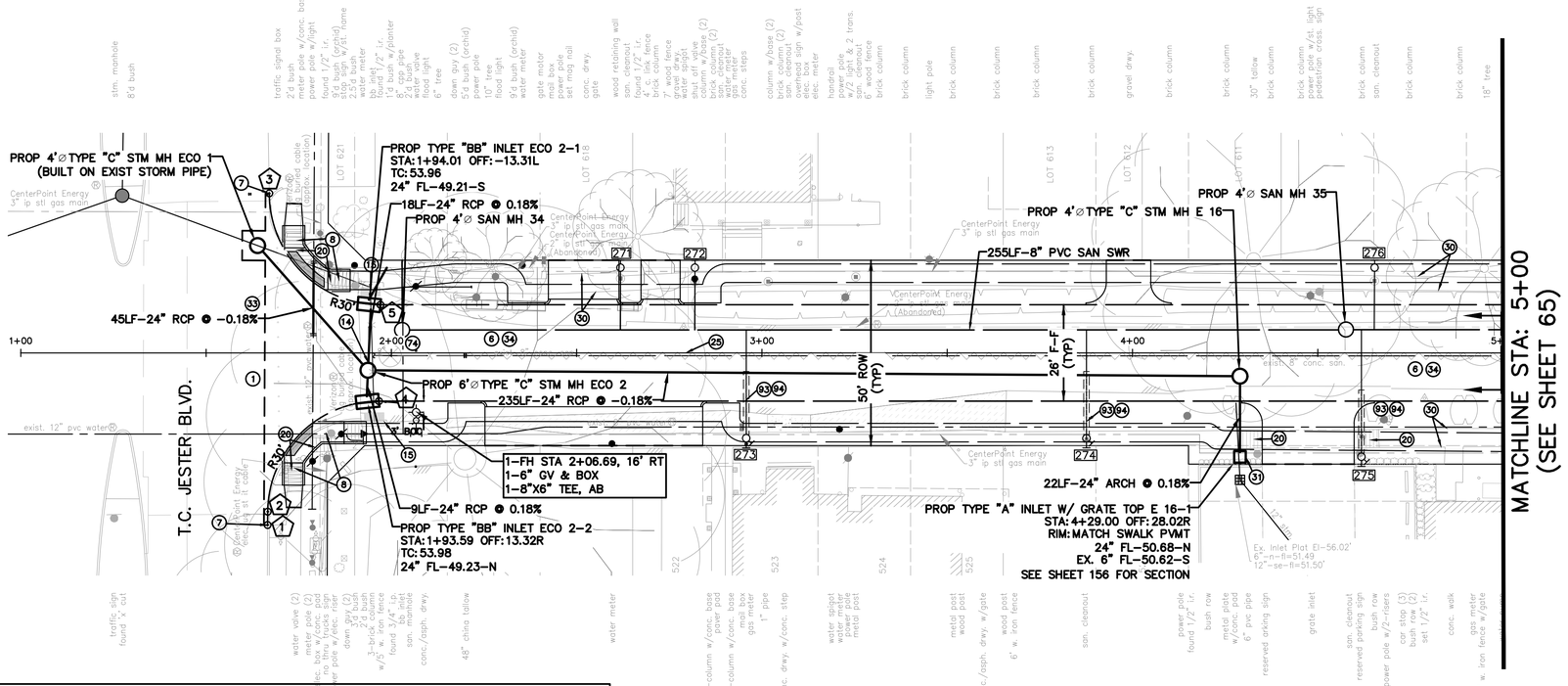

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+66.60	46.41' RT
2	1+66.64	42.80' RT
3	1+67.05	43.05' LT
4	1+96.64	13.00' RT
5	1+97.05	13.00' LT

20 0 10 20
SCALE IN FEET

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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Signature valid for six months.

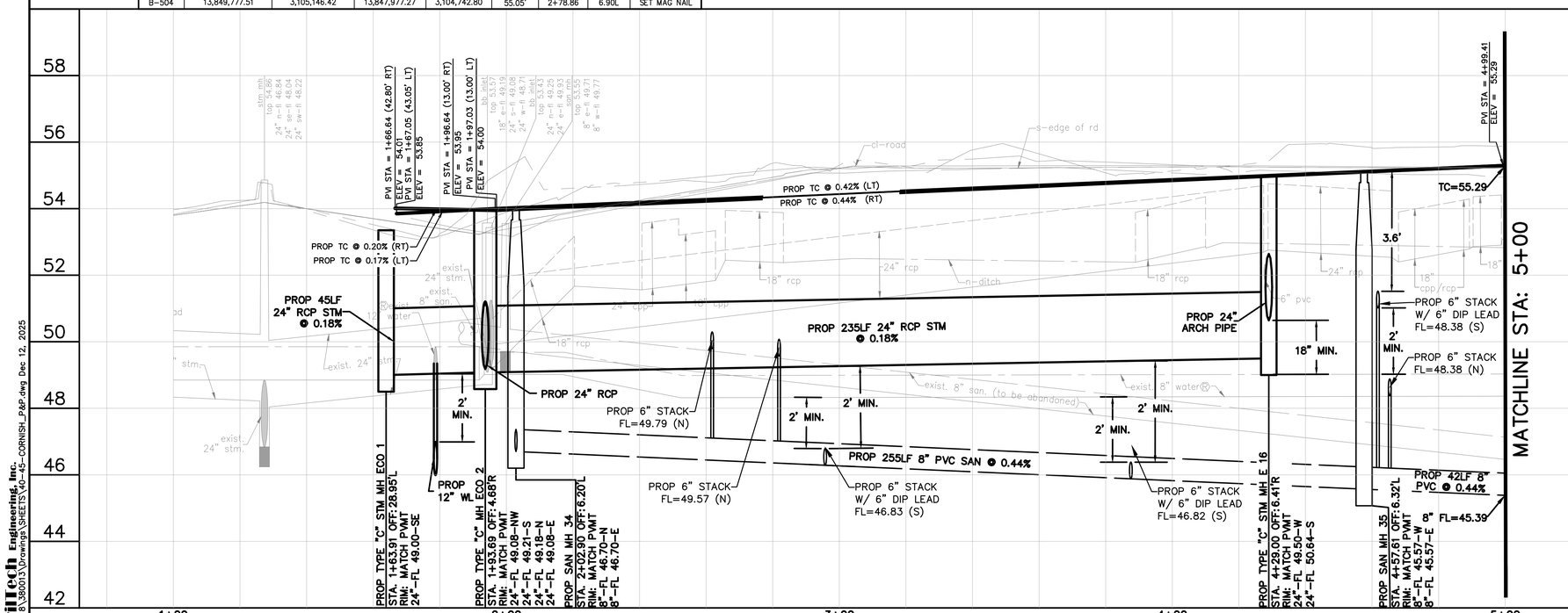
Brian L Hill 03/24/26
Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–11	13,849,739.03	3,104,996.44	13,847,938.80	3,104,592.84	54.80'	1+27.29	24.71R	SET 'X' IN CONC.
B–27	13,849,767.47	3,105,347.02	13,847,967.24	3,104,943.38	55.01'	4+78.80	12.26R	SET 1/2" I.R.
B–504	13,849,777.51	3,105,146.42	13,847,977.27	3,104,742.80	55.05'	2+78.86	6.90L	SET MAG NAIL

CORNISH STREET

DESIGN SPEED = 30 MPH



WOOLPERT
11750 Katy Freeway, Suite 1260 Houston, TX 77079 800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS ROBERT A. HILL 93655 LICENSED PROFESSIONAL ENGINEER 11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

CORNISH STREET
STA: 1+00 TO 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 64 OF 345	

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REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
6	7+77.11	13.00' LT
7	7+77.11	13.00' RT
8	8+53.11	13.00' LT
9	8+53.11	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
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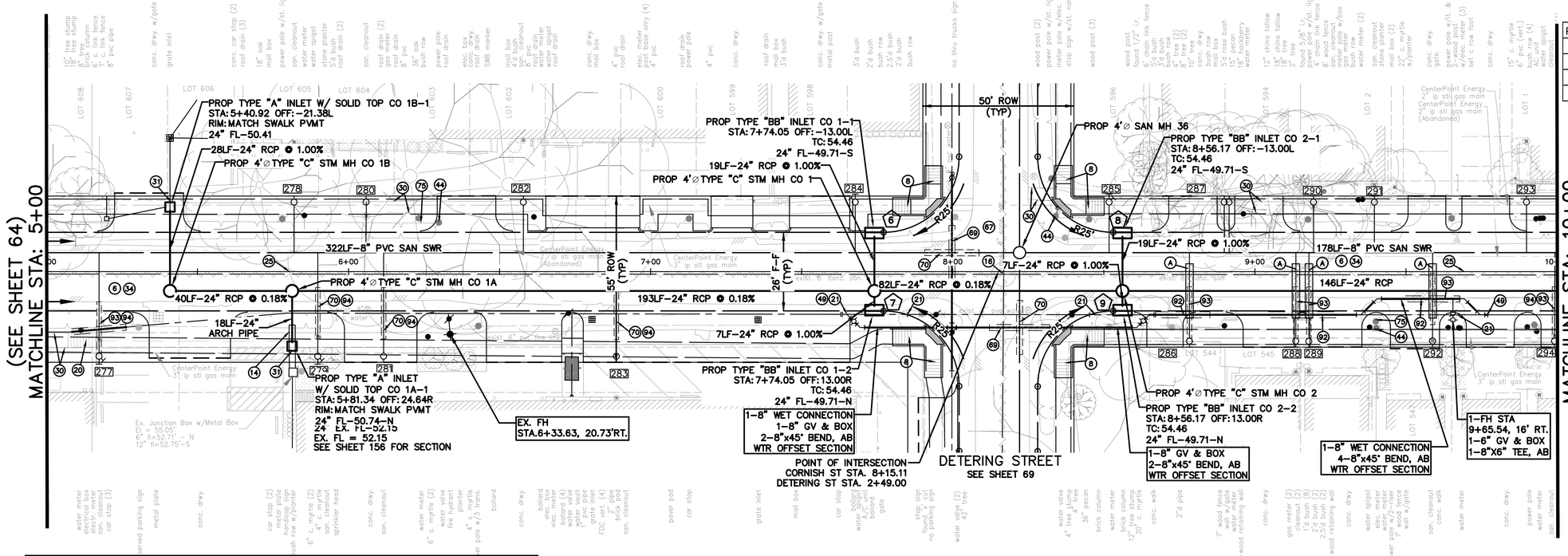
SCALE IN FEET 20 0 10 20

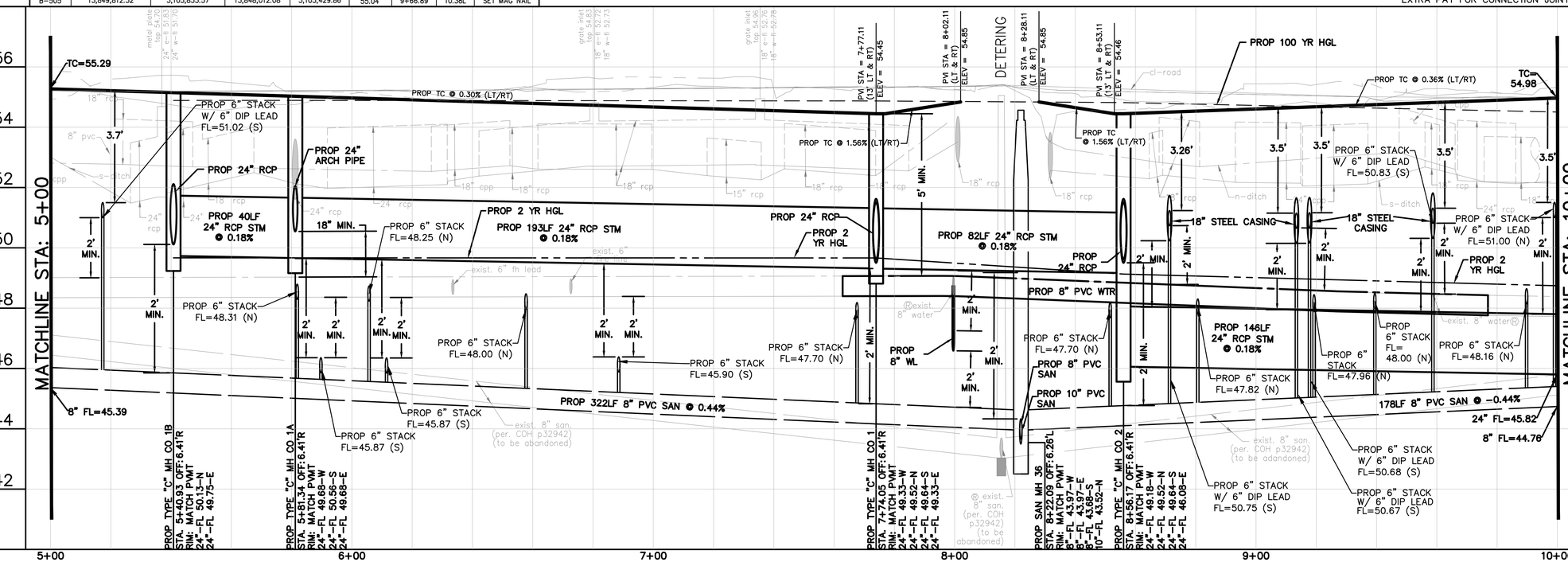


SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–28	13,849,783.95	3,105,672.86	13,847,983.72	3,105,269.18	55.39'	8+05.05	10.64R	SET MAG NAIL
B–505	13,849,812.32	3,105,833.57	13,848,012.08	3,105,429.86	55.04'	9+66.89	10.38L	SET MAG NAIL

CORNISH STREET

KEYNOTES

(A) ENCASE PROPOSED 6" SANITARY LEAD IN 18" STEEL CASING (MIN. 18–FT) CENTERED AT STORM CROSSING, SEE SHEET 172 NO EXTRA PAY FOR CONNECTION JOINTS



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BENCHMARK:

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26
Date

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Date

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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS ROBERT A. HILL 93655 LICENSED PROFESSIONAL ENGINEER 11/14/2025

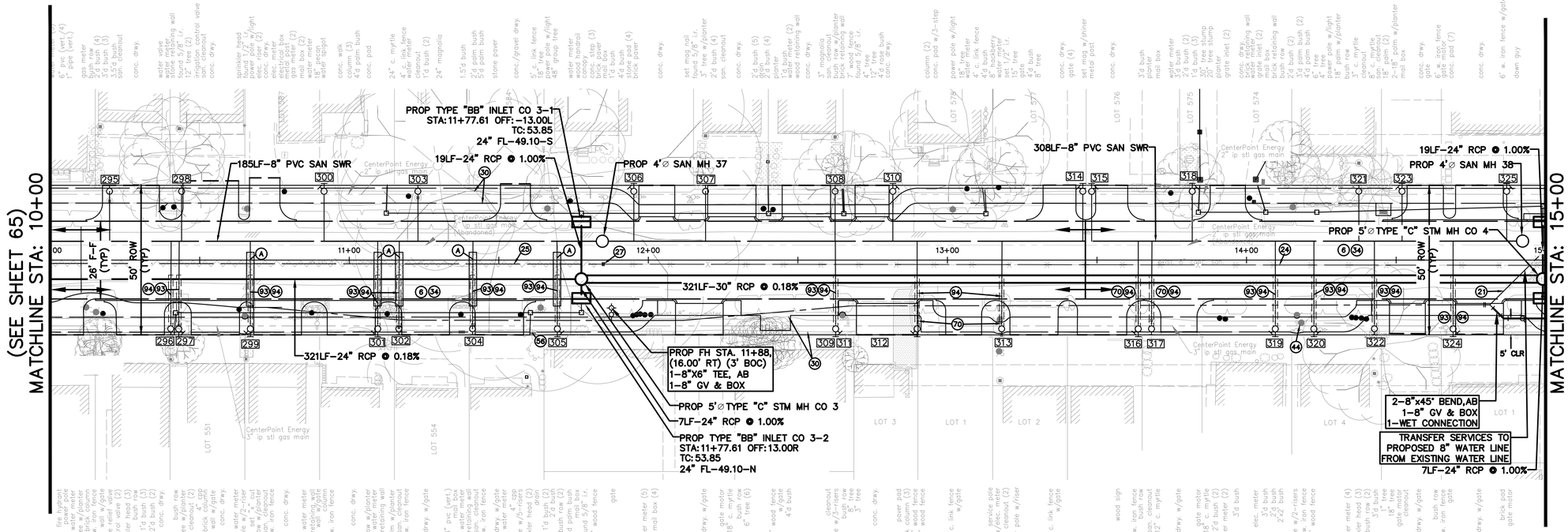
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

CORNISH STREET
STA: 5+00 TO 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 65 OF 345	

REV	DESCRIPTION	BY	DATE

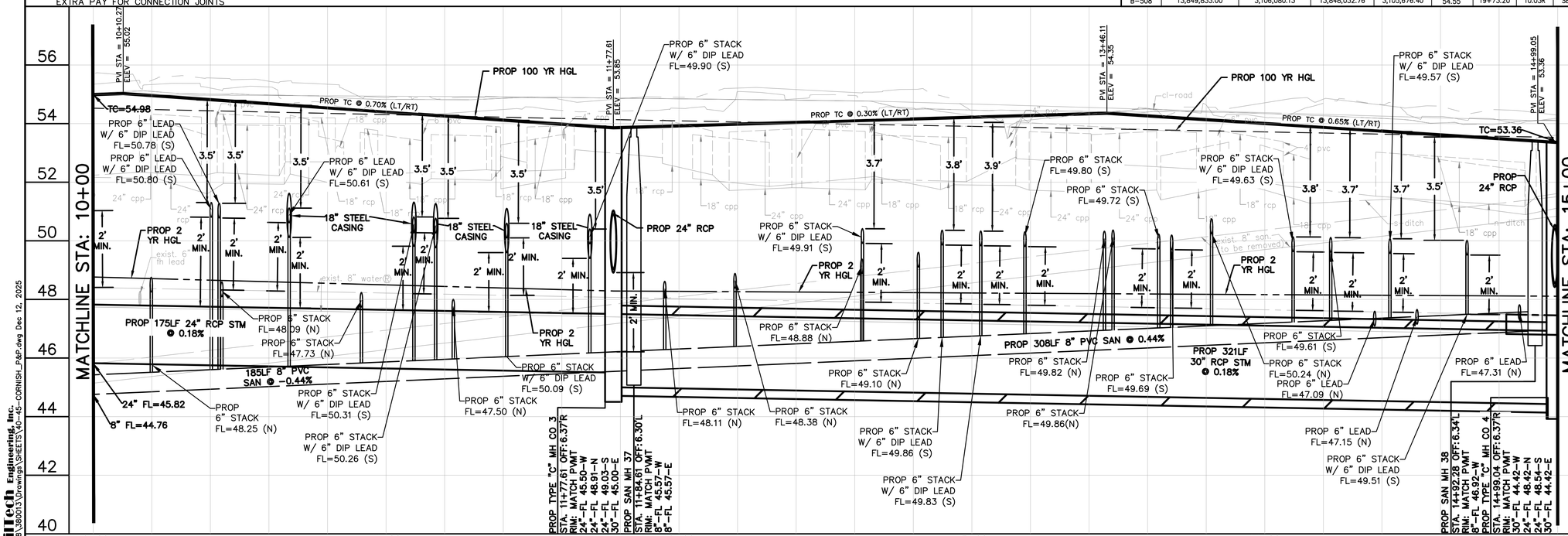


KEYNOTES

(A) ENCASE PROPOSED 6" SANITARY LEAD IN 18" STEEL CASING (MIN. 18-FT) CENTERED AT STORM CROSSING, SEE SHEET 172 NO EXTRA PAY FOR CONNECTION JOINTS

CORNISH STREET

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-30	13,849,829.82	3,106,185.43	13,848,029.58	3,105,781.68	54.11'	13+19.18	11.83L	SET 1/2" I.R.
B-508	13,849,833.00	3,106,080.13	13,848,032.76	3,105,676.40	54.55'	19+73.20	10.03R	SET MAG NAIL



LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX') PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121-122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112-118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197-211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119-120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143-146)

SCALE IN FEET: 20 0 10 20

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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Brian L Hill 03/24/26
Date

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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

CORNISH STREET
STA: 10+00 TO 15+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 66 OF 345	

CivilTech Engineering, Inc.
C:\2018_18300135\Drawings\SHEETS\CG-45-CORNISH_P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
10	15+02.11	13.00' LT
11	15+02.11	13.00' RT
12	15+78.11	13.00' LT
13	15+78.11	13.00' RT
14	18+05.99	13.00' RT
15	18+07.99	13.00' LT
16	18+81.99	13.00' LT
17	18+81.99	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

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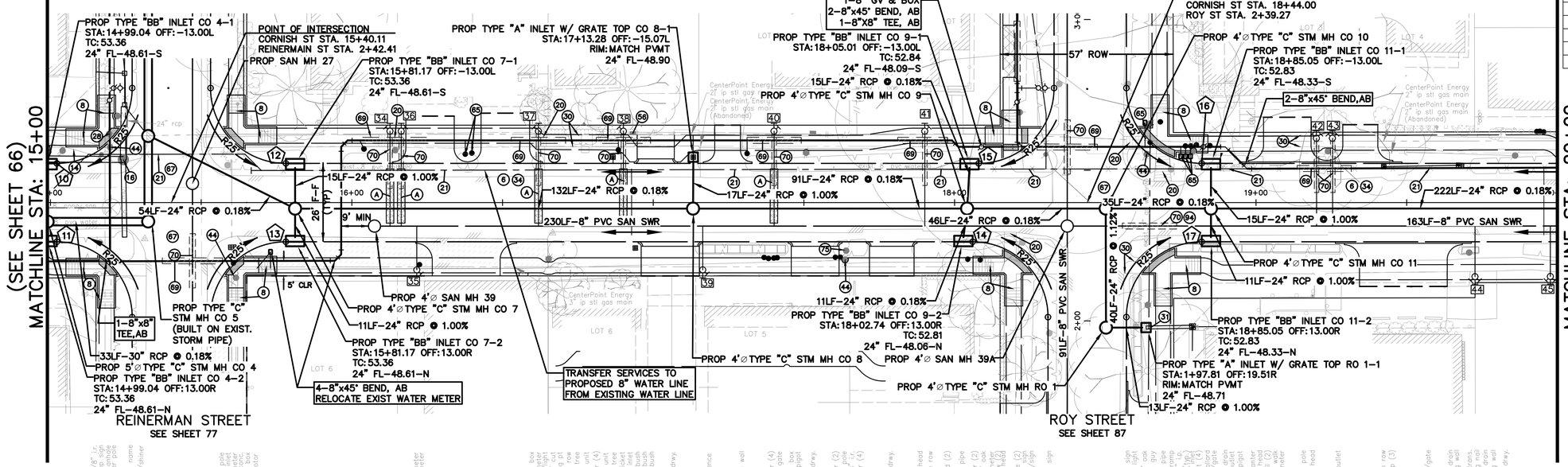
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET 20 0 10 20



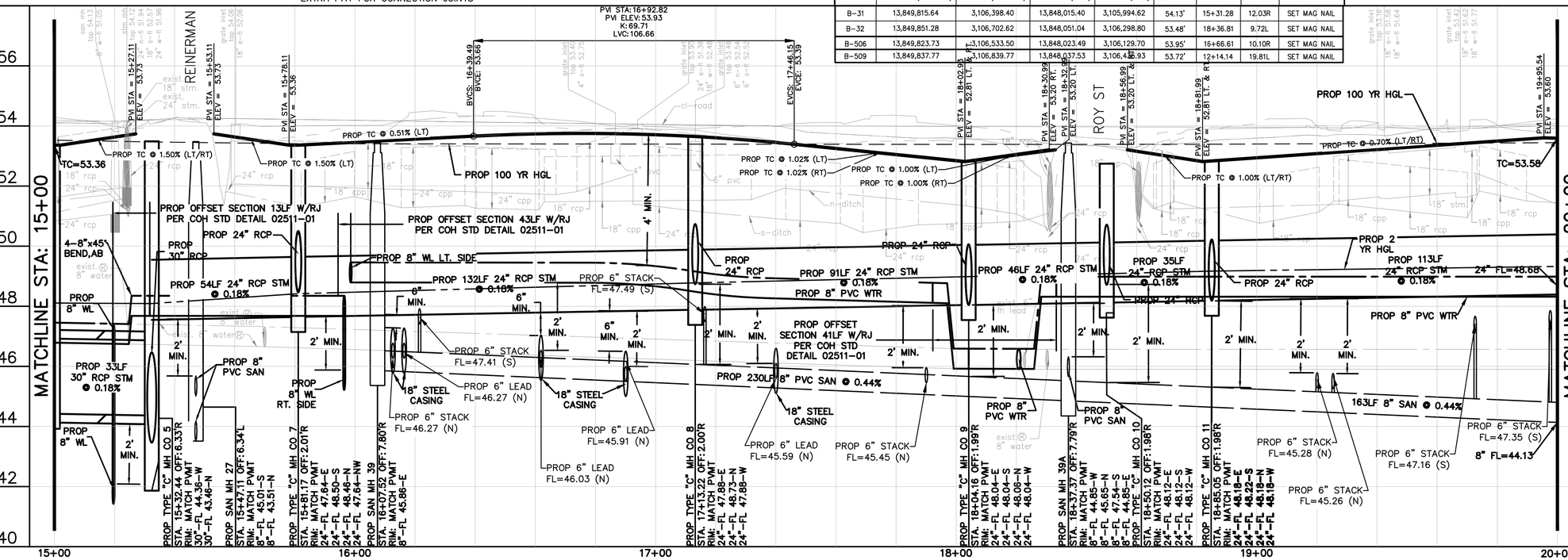
KEYNOTES

(A) ENCASE PROPOSED 6" SANITARY LEAD IN 18" STEEL CASING (MIN. 18-FT) CENTERED AT STORM CROSSING, SEE SHEET 172 NO EXTRA PAY FOR CONNECTION JOINTS

CORNISH STREET

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)

POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-31	13,849,815.64	3,106,398.40	13,848,015.40	3,105,994.62	54.13'	15+31.28	12.03R	SET MAG NAIL
B-32	13,849,851.28	3,106,702.62	13,848,051.04	3,106,298.80	53.48'	18+36.81	9.72L	SET MAG NAIL
B-506	13,849,823.73	3,106,533.50	13,848,023.49	3,106,129.70	53.95'	16+66.61	10.10R	SET MAG NAIL
B-509	13,849,837.77	3,106,839.77	13,848,037.53	3,106,435.93	53.72'	12+14.14	19.81L	SET MAG NAIL



BENCHMARK:

CITY OF HOUSTON MONUMENT 5256-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

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NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06-09-2014.

NOTICE:

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26 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.

Mike Brower 03/18/26 Date

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Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS ROBERT A. HILL 93655 LICENSED PROFESSIONAL ENGINEER 11/14/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

CORNISH STREET
STA: 15+00 TO 20+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 67 OF 345	

CivilTech Engineering, Inc.
O:\2018_18001\3 Drawings\SHEETS\02-05-CORNISH_P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
18	21+09.88	13.00' LT
19	21+09.88	13.00' RT
20	21+80.83	13.01' LT
21	21+85.88	13.00' RT
22	24+07.84	12.44' LT
23	24+07.95	13.60' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET: 20 0 10 20

(SEE SHEET 67) MATCHLINE STA: 20+00

SEE SHEET 95 SANDMAN STREET

1–8" GV & BOX
1–8"X8" TEE, AB
1–WET CONNECTION

PROP TYPE "BB" INLET CO 12–1
STA: 21+06.82 OFF: –13.00L
TC: 53.26
24" FL–48.76–S

PROP 8" PVC WL

1–FH 3' BC STA 21+83
1–6" GV & BOX
1–8"X6" TEE, AB
1–8" GV & BOX

PROP TYPE "BB" INLET CO 13–1
STA: 21+87.23 OFF: –13.00L
TC: 51.51
24" FL–48.76–S

1–WET CONNECTION

82LF–24" RCP @ 0.18%

11LF–24" RCP @ 0.18%

237LF–8" PVC SAN SWR

154LF–8" PVC SAN SWR

15LF–24" RCP @ 1.00%

PROP 4'⌀TYPE "C" STM MH CO 12

11LF–24" RCP @ 1.00%

PROP TYPE "BB" INLET CO 12–2
STA: 21+06.82 OFF: 13.00R
TC: 53.26
24" FL–48.76–N

PROP 4'⌀ SAN MH 41

TRANSFER SERVICES TO PROPOSED 8" WATER LINE FROM EXISTING WATER LINE

15LF–24" RCP @ 0.18%

PROP 4'⌀TYPE "C" STM MH CO 13

PROP TYPE "BB" INLET CO 13–2
STA: 21+88.76 OFF: 13.00R
TC: 53.26
24" FL–48.76–N

CONTRACTOR SHALL REMOVE AND DISPOSE OF SANITARY PLUG (BY OTHERS) AND CONNECT PROPOSED 8" PVC SANITARY SEWER TO 8" PVC SANITARY SEWER (BY OTHERS), COMPLETE IN PLACE

PROP SAN MH (BY OTHERS)

PROP 8" SAN SWR (BY OTHERS)

FUTURE CURB & GUTTER

NORTH DURHAM DR.

SANDMAN STREET

SEE SHEET 95

50' ROW (TYP)

26' F–F (TYP)

R25'

4' MIN

21+00

22+00

23+00

24+00

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)

POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–33	13,849,844.60	3,107,026.08	13,848,044.35	3,106,622.22	54.32'	21+59.63	11.69R	SET MAG NAIL

CORNISH STREET

MATCHLINE STA: 20+00

PROP 100 YR HGL

PROP TC @ 0.30% (LT/RT)

PROP TC @ 1.00% (LT/RT)

TC=53.58

PROP TC @ 0.33% (LT/RT)

PROP TC @ 1.56% (RT)

PROP 2 YR HGL

24" FL=48.68

PROP 109LF 24" RCP STM @ 0.18%

PROP 6" STACK FL=46.98 (S)

PROP 82LF 24" RCP STM @ 0.18%

PROP 24" RCP

PROP 8" PVC WTR

PROP 18LF~20" STEEL CASING

PROP 6" FH LEAD

PROP 237LF 8" PVC SAN @ 0.44%

154LF 8" SAN @ 0.44%

8" FL=44.13

PROP 6" STACK FL=45.10 (N)

PROP 6" STACK FL=45.17 (N)

PROP 6" STACK FL=44.69 (N)

PROP 8" PVC SAN

PROP 6" STACK FL=48.57 (N)

PROP 6" STACK W/ 6" DIP LEAD FL=48.57 (N)

PROP 6" STACK FL=45.70 (S)

3' PROP TC @ 2.22% (RT)

PROP TC @ 2.53% (LT)

FUTURE TC @ 2.07% (RT)

FUTURE TC @ 2.39% (LT)

FUTURE TC @ 2.00% (RT)

FUTURE TC @ 2.00% (LT)

5' MIN.

2' MIN.

PROP TYPE "C" MH CO 12
STA. 21+06.82 OFF: 1.96R
RIM: MATCH PVMT
24"–FL 48.58–E
24"–FL 48.65–S
24"–FL 48.61–N
24"–FL 48.58–W

PROP SAN MH 41
STA. 21+84.48 OFF: 7.76R
RIM: MATCH PVMT
8"–FL 43.45–W
8"–FL 43.45–S
8"–FL 43.45–E

PROP TYPE "C" MH CO 13
STA. 21+88.76 OFF: 1.95R
RIM: MATCH PVMT
24"–FL 48.74–S
24"–FL 48.73–N
24"–FL 48.73–W

EXIST SAN SWR PLUG
STA. 23+91.31 OFF: 4.64'R
8"–FL 42.41–W

END PAVEMENT (LT)
STA = 24+27.84
ELEV = 56.12

END PAVEMENT (RT)
STA = 24+27.95
ELEV = 50.54

HIGH PT ELEV: 53.41
PVI STA: 22+72.52
PVI ELEV: 53.55
K: 39.39
LVC: 100.00

HIGH PT STA: 22+34.19
HIGH PT ELEV: 53.40
PVI STA: 22+72.52
PVI ELEV: 53.55
K: 34.85
LVC: 100.00

BVCS: 22+22.52 BVCE: 53.39

BVCS: 22+22.52 BVCE: 53.38

EVCS: 23+22.52 EVCE: 52.44

EVCS: 23+22.52 EVCE: 52.28

PVI STA = 21+06.87 ELEV = 53.26

PVI STA = 21+35.64 ELEV = 53.65

PVI STA = 21+80.83 ELEV = 53.65

PVI STA = 21+85.88 ELEV = 53.06

PVI STA = 24+40.03 ELEV = 50.29

PVI STA = 24+39.74 ELEV = 49.17

SANDMAN

N. DURHAM

54 52 50 48 46 44 42 40 38

20+00 21+00 22+00 23+00 24+00 24+79.22

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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Mike Brower 03/18/26
Date

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Signature valid for six months.

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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

CORNISH STREET
STA: 20+00 TO 24+79.22

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 68 OF 345	

civiltech Engineering, Inc.
O:\2018\J18001\Drawings\SHEETS\CVE–CORNISH_P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

⟨XX⟩ PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

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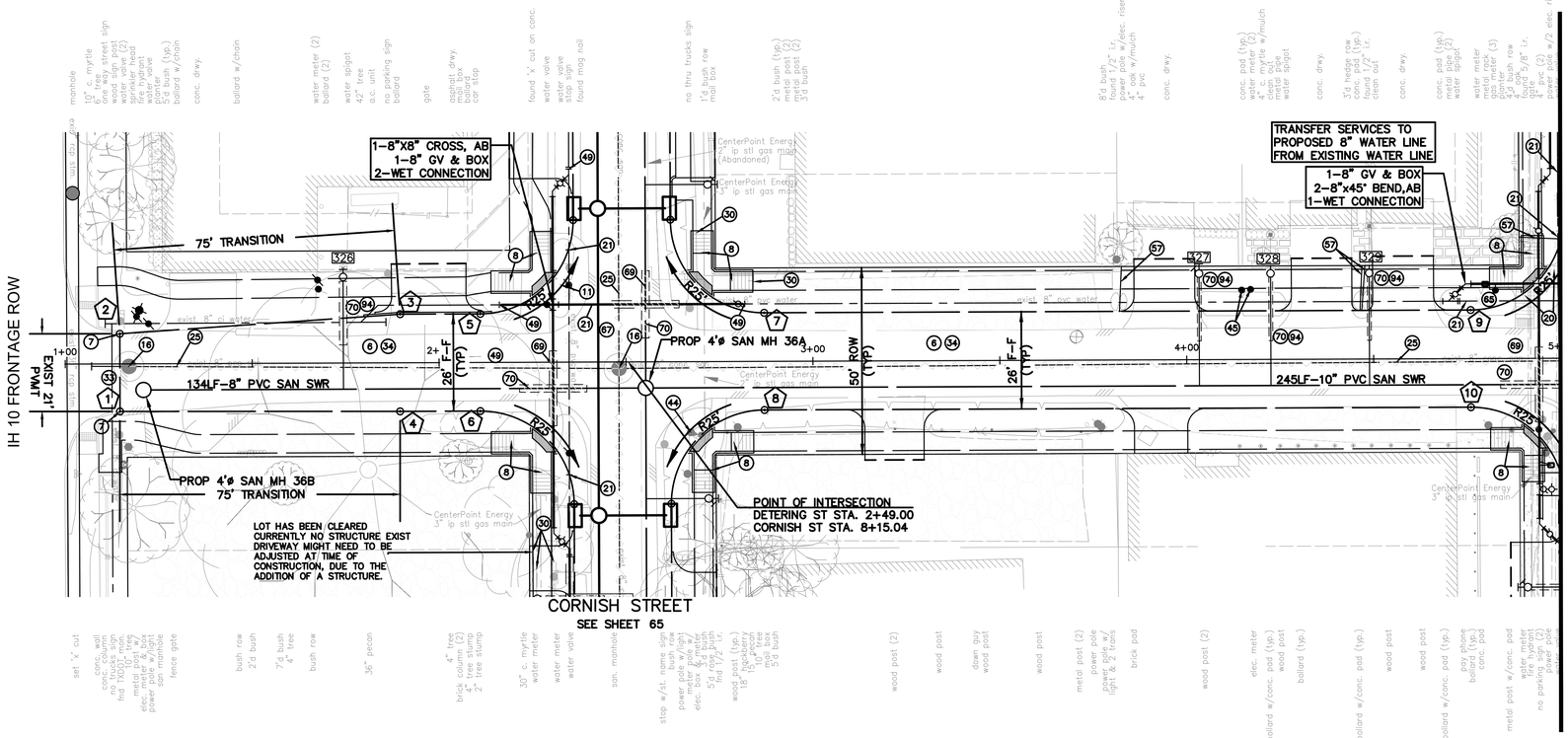
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+14.59	12.72' RT
2	1+14.62	8.06' LT
3	1+89.62	13.00' LT
4	1+89.53	13.00' RT
5	2+11.08	13.00' LT
6	2+10.98	13.00' RT
7	2+87.00	13.00' LT
8	2+87.00	13.00' RT
9	4+76.00	13.00' LT
10	4+76.00	13.00' RT

20 0 10 20
SCALE IN FEET



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
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B–26	13,849,650.54	3,105,718.40	13,847,850.32	3,105,314.71	52.72'	1+03.01	29.36R	SET 'X' IN CON.
B–28	13,849,783.95	3,105,672.86	13,847,983.72	3,105,269.18	55.39'	8+05.05	10.64R	SET MAG NAIL

BENCHMARK:

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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

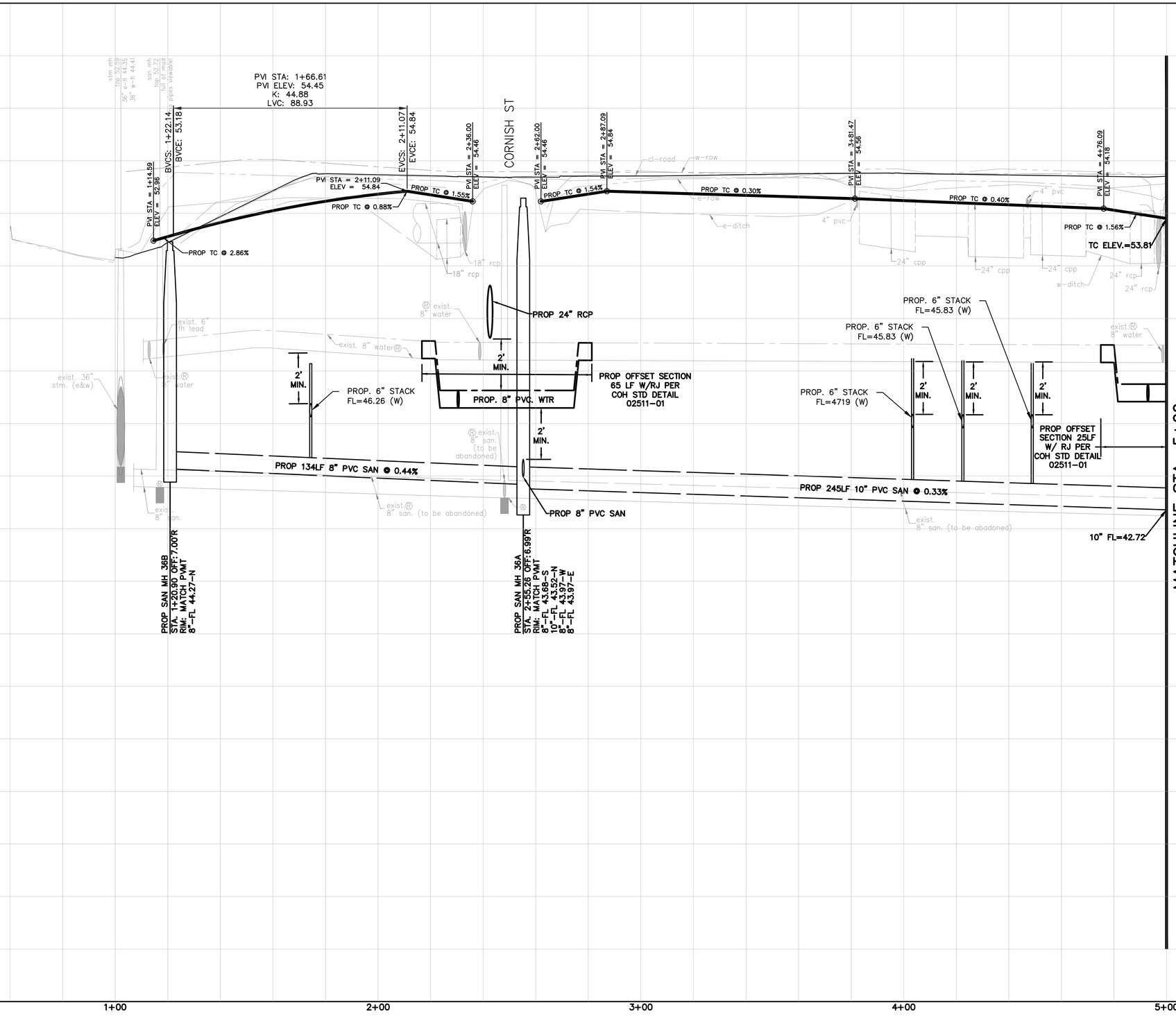
DETERING STREET
PLAN
STA: 1+00 TO 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 69 OF 345	

CivilTech Engineering, Inc.
O:\2018\38012\Drawings\SHEETS\6P–69–DETERING_P&P.dwg Dec 12, 2025

DETERING STREET

DESIGN SPEED = 30 MPH



REV	DESCRIPTION	BY	DATE

LEGEND

- (XX) KEY NOTES (SHEET 3 –4)
- (XX) PAVEMENT GEOMETRICS
- XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

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20 0 10 20
SCALE IN FEET

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DETERING STREET
PROFILE
STA: 1+00 TO 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 70 OF 345	

CivilTech Engineering, Inc.
O:\2018\J38013\Drawings\SHEETS\46-49-DETERING_P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
No.	Station	Offset
11	5+52.00	13.00' LT
12	5+52.00	13.00' RT
13	7+09.95	13.00' LT
14	7+09.95	13.00' RT
15	7+39.97	11.21' LT
16	7+39.87	10.81' RT
17	7+52.82	10.73' LT
18	7+53.00	10.81' RT
19	8+04.83	11.36' RT
20	8+04.00	10.87' LT
21	8+17.46	11.35' RT
22	8+18.19	10.14' LT
23	8+63.36	13.00' RT
24	8+63.36	13.00' LT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

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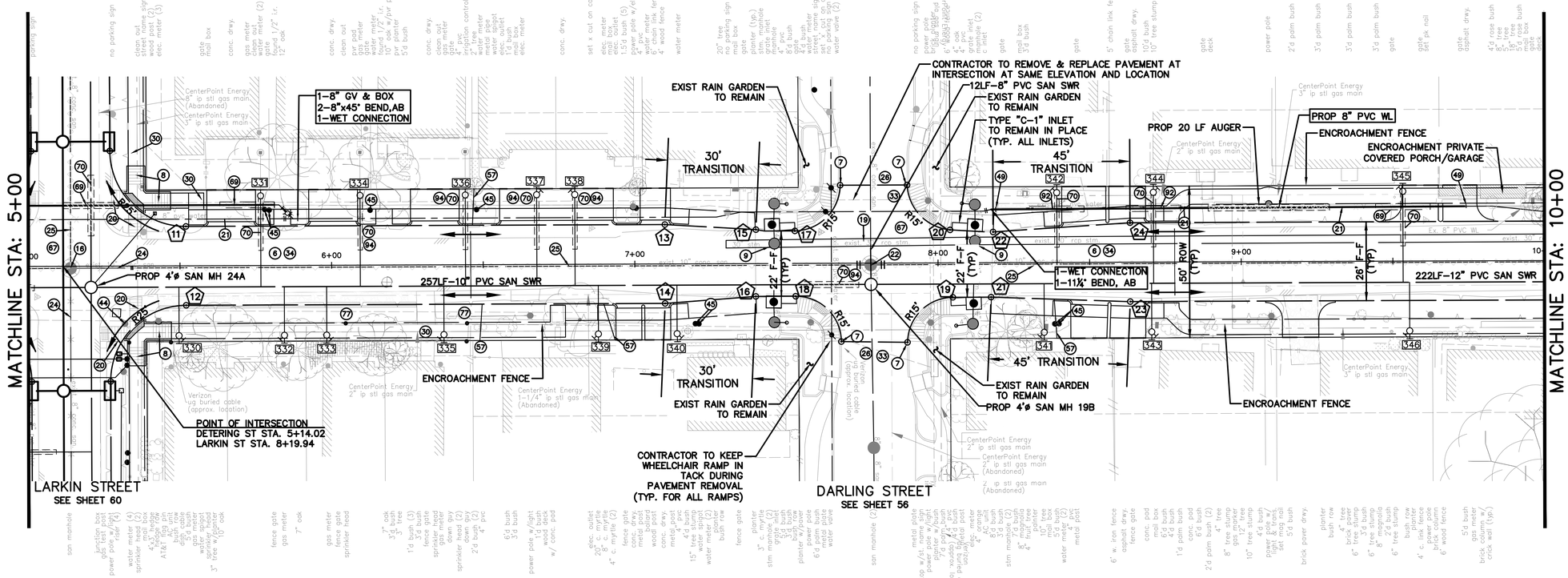
20 0 10 20
SCALE IN FEET



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–43	13,850,048.96	3,105,680.88	13,848,248.69	3,105,277.20	55.30'	8+29.98	11.27R	SET MAG NAIL
B–46	13,850,306.39	3,105,648.75	13,848,506.08	3,105,245.07	53.22'	7+61.35	10.35L	SET 'X' IN CON.

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06–09–2014.

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26
Date

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

Signature valid for six months.

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Date

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Brian L Hill 03/24/26
Date

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WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DETERING STREET
PLAN
STA: 5+00 TO 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 71 OF 345	

civiltech Engineering, Inc.

C:\2018\518013\Drawings\SHEETS\VOL-4\5-DETERING_P&P.dwg Dec 12, 2025

DETERING STREET

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX') PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)

SCALE IN FEET
20 0 10 20

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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VERTICAL DATUM ADJUSTMENT:

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Date

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SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DETERING STREET
PROFILE
STA: 5+00 TO 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 72 OF 345	

civilTech Engineering, Inc.
O:\2018\J38013\Drawings\SHEETS\48-DETERING_P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
No.	Station	Offset
25	10+06.00	13.00' LT
26	10+06.00	13.00' RT
27	10+82.00	13.00' LT
28	10+82.00	13.00' RT
29	12+70.96	13.00' LT
30	12+70.96	13.00' RT
31	13+47.00	13.00' LT
32	13+47.00	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

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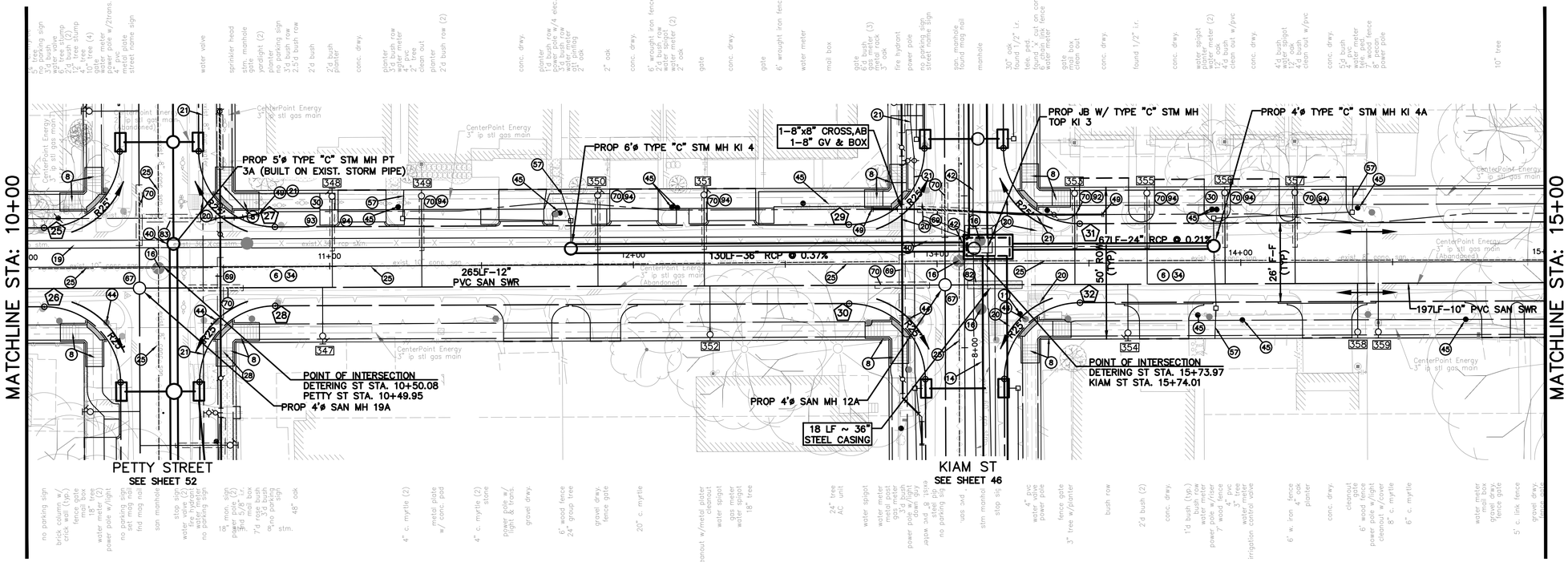
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET
20 0 10 20



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–59	13,850,578.81	3,105,656.08	13,848,778.47	3,105,252.40	54.25'	8+24.49	10.85R	SET MAG NAIL
B–64	13,850,842.65	3,105,623.82	13,849,042.27	3,105,220.14	52.45'	7+61.49	10.81R	SET MAG NAIL

DETERING STREET

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26
Date

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Signature valid for six months.

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FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
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PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

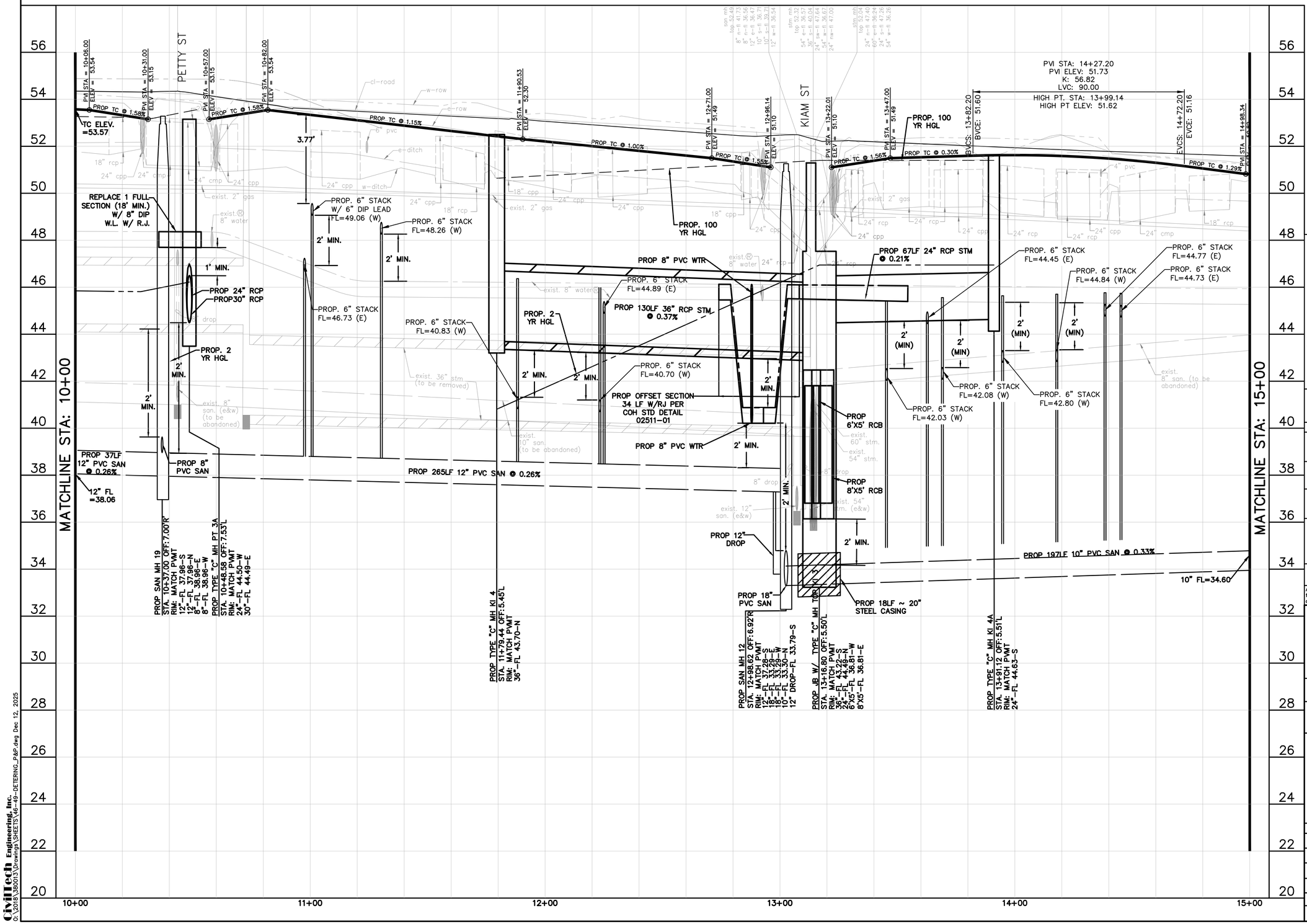
DETERING STREET
PLAN
STA: 10+00 TO 15+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 73 OF 345	

civiltech Engineering, Inc.
G:\2018\380015\Drawings\SHEETS\VOL-4\0-DETERING_P&P.dwg Dec. 12, 2025

DETERING STREET

REV	DESCRIPTION	BY	DATE



LEGEND

- (XX) KEY NOTES (SHEET 3 –4)
- (XX) PAVEMENT GEOMETRICS
- XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

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20 0 10 20
SCALE IN FEET

BENCHMARK:

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FB NO. P–6133

STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 11/14/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DETERING STREET
PROFILE
STA: 10+00 TO 15+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 74 OF 345	

CivilTech Engineering, Inc.

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REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
No.	Station	Offset
33	15+36.00	13.00' LT
34	15+36.00	13.00' RT
35	16+12.00	13.00' LT
36	16+12.00	13.00' RT
37	18+01.00	13.00' LT
38	18+01.00	13.00' RT
39	18+77.00	13.00' LT
40	18+77.00	13.00' RT
41	19+87.00	13.00' LT
42	19+87.00	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

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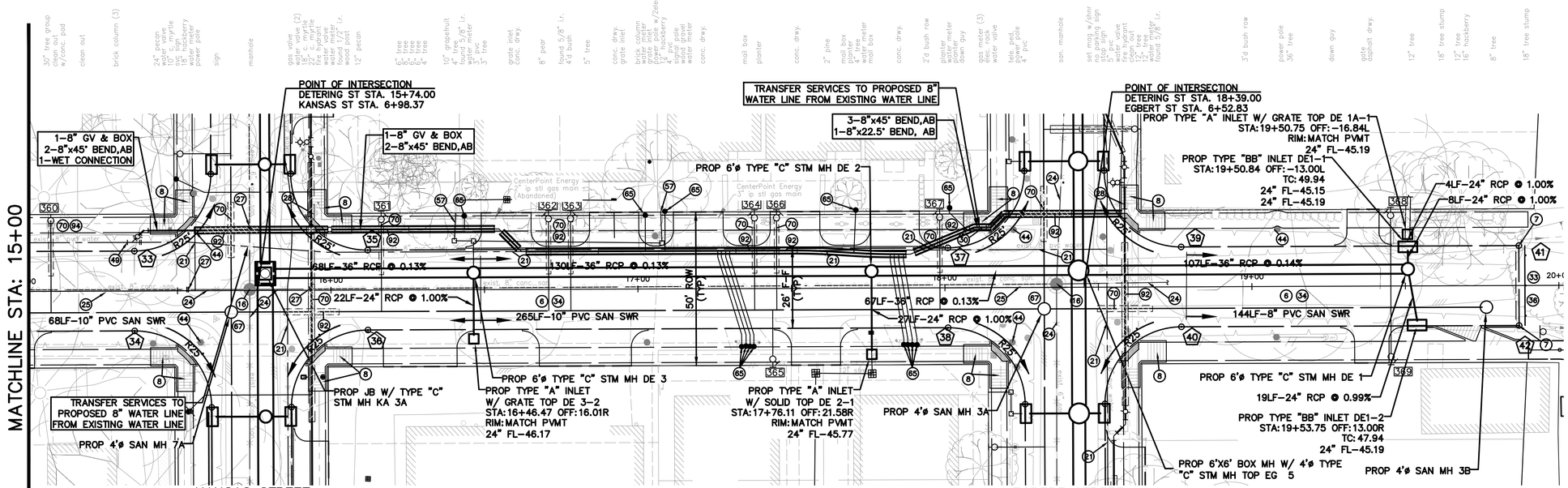
20 0 10 20
SCALE IN FEET



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–69	13,851,107.52	3,105,631.81	13,849,307.12	3,105,228.13	51.26'	7+07.49	11.57R	SET MAG NAIL
B–72	13,851,395.19	3,105,603.65	13,849,594.75	3,105,199.97	50.83'	6+47.01	12.08L	SET MAG NAIL
B–93	13,851,570.15	3,105,598.38	13,849,769.68	3,105,194.70	51.08'	20+26.09	3.11L	SET 1/2" I.R.

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DETERING STREET
PLAN
STA: 15+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 75 OF 345	

CivilTech Engineering, Inc.
C:\20181_3\00013\Drawings\SHEETS\06–145–DETERING_P&P.dwg Dec 12, 2025

DETERING STREET

REV	DESCRIPTION	BY	DATE

MATCHLINE STA: 15+00

PVI STA = 15+35.96 ELEV = 50.71
PVI STA = 15+60.96 ELEV = 50.31
PVI STA = 15+87.00 ELEV = 50.31
PVI STA = 16+11.96 ELEV = 50.71
PVI STA = 16+48.81 ELEV = 50.93
PVI STA = 18+00.96 ELEV = 50.44
PVI STA = 18+25.96 ELEV = 50.04
PVI STA = 18+51.96 ELEV = 50.04
PVI STA = 18+76.96 ELEV = 50.44
PVI STA = 19+87.00 ELEV = 50.02

KANSAS ST

EGBERT ST

PVI STA: 19+21.96
PVI ELEV: 49.82
K: 53.99
LVC: 90.00
LOW PT. STA: 19+50.84
LOW PT ELEV: 49.93

PVCS: 19+66.96
PVCE: 49.96

PROP TC @ 0.30%
PROP TC @ 1.60%
PROP TC @ 0.62%
PROP TC @ 0.33%

PROP. 100 YR HGL
PROP. 2 YR HGL

PROP 36" RCP
PROP 24" RCP
PROP 5'X3' RCB
4-8"x45° BEND, AB
PROP. 2 YR HGL
PROP 68LF 36" RCP STM @ 0.13%
PROP 8" PVC WTR
PROP. 6" LEAD FL=40.70 (W)
PROP 130LF 36" RCP STM @ 0.13%
PROP. 6" STACK FL=45.37 (E)
PROP 67LF 36" RCP STM @ 0.13%
PROP 24" RCP
PROP 36" RCP
PROP 107LF 36" RCP STM @ 0.14%
PROP 48" RCP
PROP 24" RCP
PROP 8" WL
PROP. 6" STACK FL=43.53 (E)
PROP 144LF 8" PVC SAN @ 0.44%
PROP. 6" LEAD FL=41.93 (W)
PROP. 6" STACK FL=42.76 (W)
PROP 8" PVC SAN
PROP. 6" STACK FL=40.63 (W)
PROP. 6" LEAD FL=40.80 (W)
PROP 265LF 10" PVC SAN @ 0.33%
PROP. 6" LEAD FL=40.70 (W)
PROP. 6" LEAD FL=40.81 (W)
2-8"x45° BEND, AB
PROP 8" PVC SAN
PROP 8" PVC SAN
PROP. 6" LEAD FL=40.88 (W)
PROP 10" DROP
PROP 8" PVC WTR
PROP OFFSET SECTION 323 LF W/RJ PER COH STD DETAIL 02511-01
PROP 68LF 10" PVC SAN @ 0.33%
10" FL=34.60

PROP SAN MH 7
STA. 15+67.50
OFF: 7.00'R
RIM: MATCH PVMT
10"-FL 34.82-S
10"-FL 39.52-N
8"-FL 40.22-E
8"-FL 40.22-W
10" DROP-FL 34.82-N

PROP JB W/ TYPE "C" STM MH KA/3
STA. 15+78.57 OFF: 5.50'L
RIM: MATCH PVMT
36"-FL 43.42-N
36"-FL 44.70-W
5'X3-FL 42.95-E

PROP TYPE "C" MH DE 3
STA. 16+46.47 OFF: 5.50'L
RIM: MATCH PVMT
36"-FL 43.51-N
24"-FL 45.95-E
36"-FL 43.51-S

PROP TYPE "C" MH DE 2
STA. 17+76.11 OFF: 5.50'L
RIM: MATCH PVMT
36"-FL 43.68-N
24"-FL 45.50-E
36"-FL 43.68-S

PROP SAN MH 3
STA. 18+32.33 OFF: 7.00'R
RIM: MATCH PVMT
8"-FL 40.80-N
10"-FL 40.40-S
8"-FL 42.06-E
8"-FL 41.00-W

PROP TYPE "C" STM MH EG 5
STA. 18+43.35 OFF: 5.50'L
RIM: MATCH PVMT
36"-FL 44.61-N
36"-FL 43.77-S
36"-FL 43.77-W
54"-FL 43.43-E

PROP TYPE "C" MH DE 1
STA. 19+50.84 OFF: 5.50'L
RIM: MATCH PVMT
24"-FL 45.11-W
24"-FL 45.01-E
36"-FL 44.76-S

PROP SAN MH 3B
STA. 19+76.38 OFF: 7.00'R
RIM: MATCH PVMT
8"-FL 41.23-S

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

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

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VERTICAL DATUM ADJUSTMENT:

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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DETERING STREET
PROFILE
STA: 15+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 76 OF 345	

CivilTech Engineering, Inc.
O:\2018\J38013\Drawings\SHEETS\46-PP-DETERING_P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

REINERMAN

PAVEMENT GEOMETRICS

No.	Station	Offset
1	1+21.73	8.95' LT
2	1+21.75	11.64' RT
3	1+81.75	13.00' LT
4	1+81.75	13.00' RT
5	2+04.41	13.00' LT
6	2+04.41	13.00' RT
7	2+80.41	13.00' LT
8	2+80.41	13.00' RT
9	3+44.56	13.00' RT
10	3+74.56	11.00' RT
11	3+94.65	11.00' RT
12	4+24.56	13.00' RT
13	4+69.41	13.00' LT
14	4+69.41	13.00' RT
15	5+45.41	13.00' LT
16	5+45.41	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

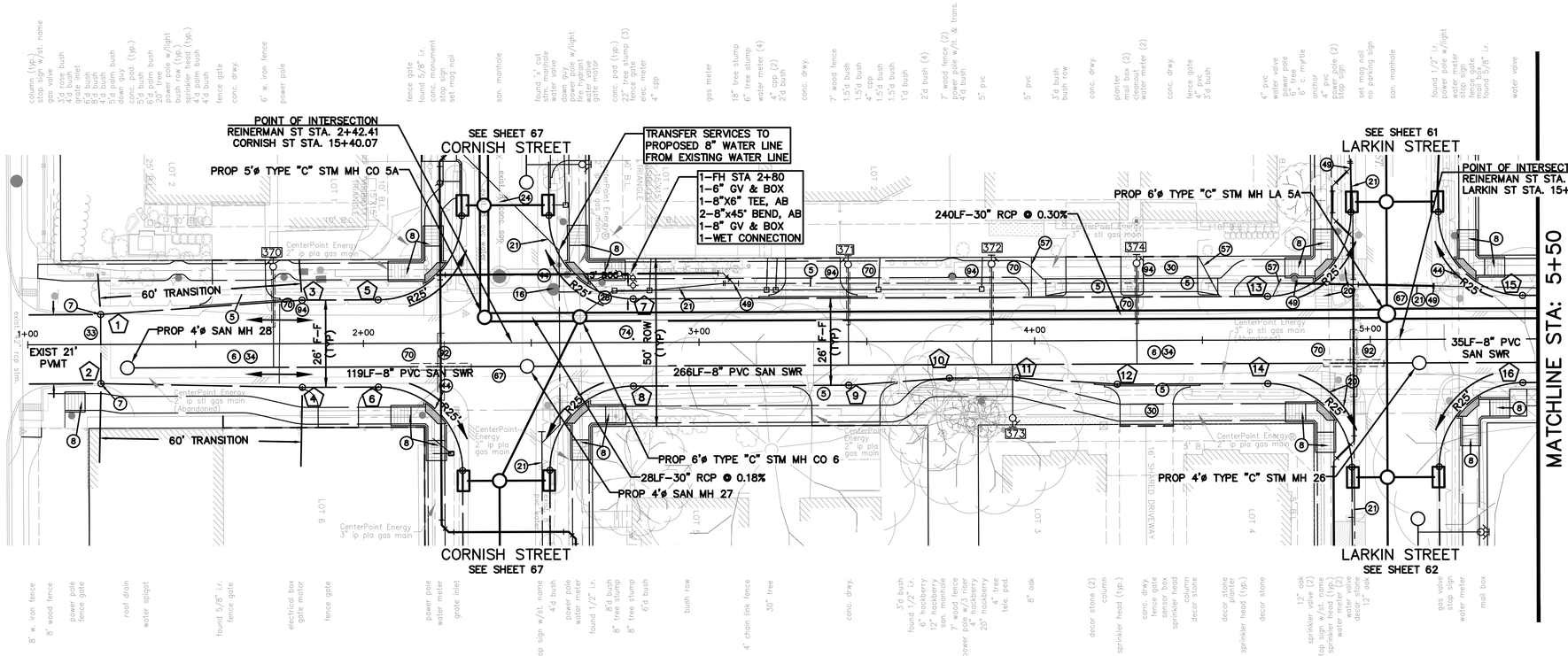
(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

20 0 10 20
SCALE IN FEET



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–31	13,849,815.64	3,106,398.40	13,848,015.40	3,105,994.62	54.13'	15+31.28	12.03R	SET MAG NAIL
B–40	13,850,081.76	3,106,385.13	13,848,281.49	3,105,981.35	54.29'	15+34.99	10.58R	SET MAG NAIL

REINERMAN STREET

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

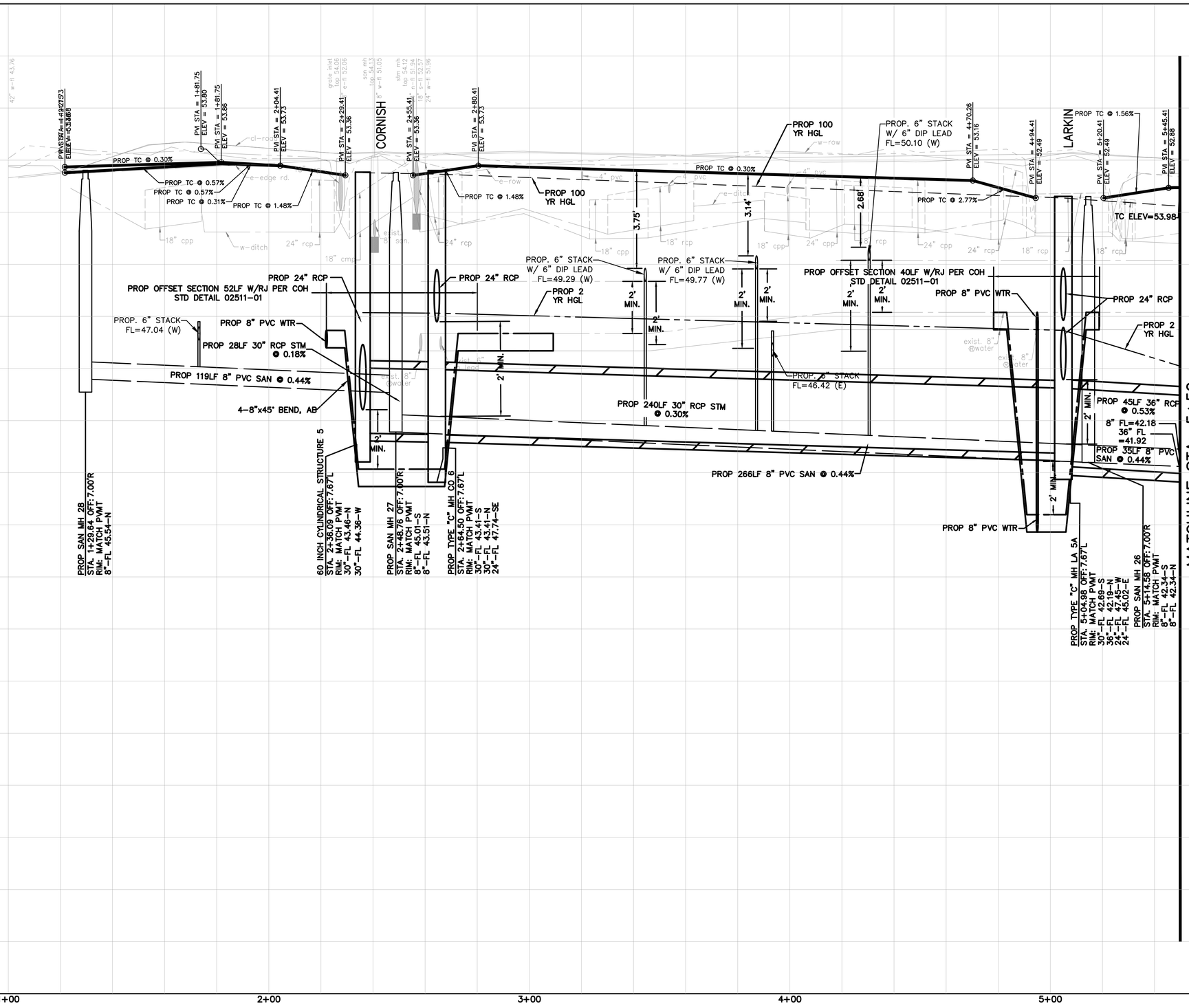
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

REINERMAN STREET
PLAN
STA: 1+00 TO 5+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 77 OF 345	

civilTech Engineering, Inc.
O:\2018\J180013\Drawings\SHEETS\CVE-52-REINERMAN_P&P.dwg Dec 12, 2025

REINERMAN STREET



REV	DESCRIPTION	BY	DATE

LEGEND

- (XX) KEY NOTES (SHEET 3 –4)
- (XX) PAVEMENT GEOMETRICS
- XX SAN SWR LEAD INFO. (SHEETS 121–122)

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SCALE IN FEET: 20 0 10 20

BENCHMARK:

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

REINERMAN STREET
PROFILE
STA: 1+00 TO 5+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 78 OF 345	

CivilTech Engineering, Inc.
O:\2018\J38013\Drawings\SHEETS\SHT-52-REINERMAN_P&P.dwg Dec 12, 2025

PAVEMENT GEOMETRICS		
No.	Station	Offset
17	7+06.90	13.00' RT
18	7+07.43	13.00' LT
19	7+30.46	13.56' RT
20	7+31.07	12.51' LT
21	7+46.86	Match ER
22	7+47.63	Match ER
23	8+03.05	Match ER
24	8+04.80	Match ER
25	8+17.52	8.06' RT
26	8+17.67	18.15' LT
27	8+97.49	17.85' LT
28	8+98.23	8.35' RT
29	9+06.77	8.69' RT
30	9+07.80	17.46' LT
31	9+70.02	13.25' RT
32	9+74.10	12.67' LT
33	9+80.33	13.65' RT
34	9+82.64	12.35' LT

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

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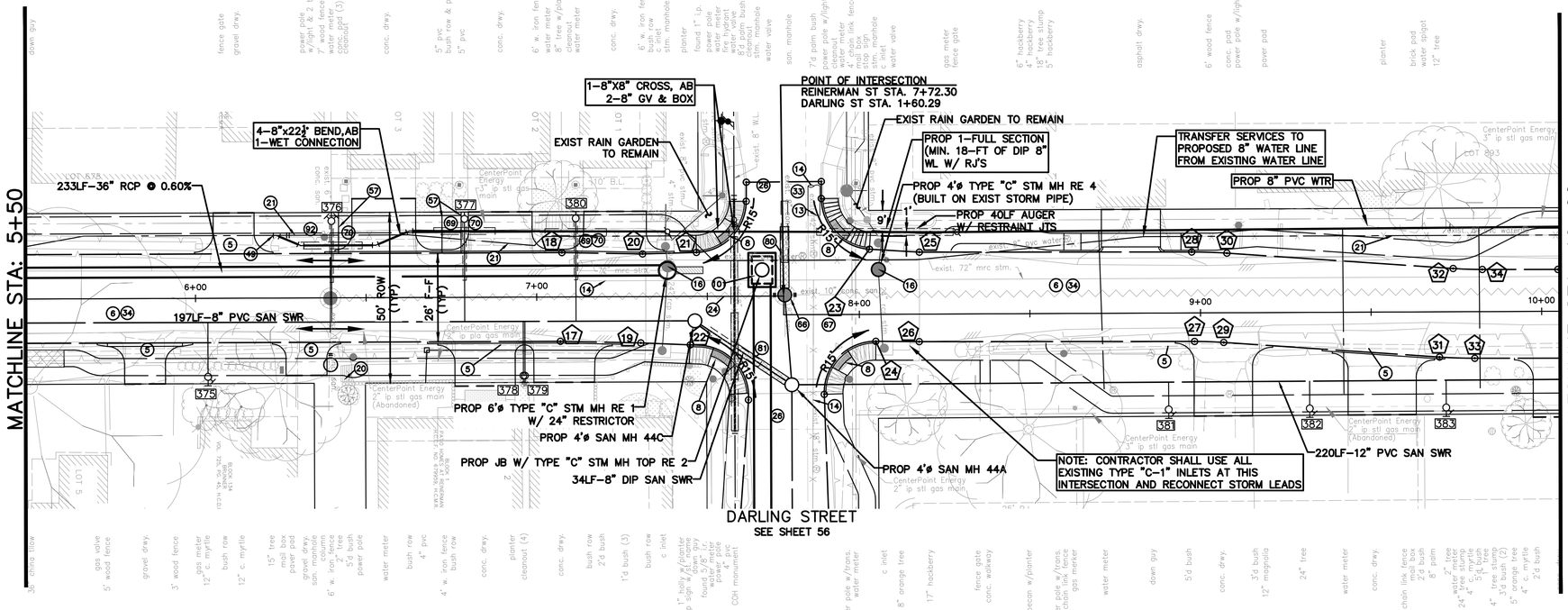
20 0 10 20
SCALE IN FEET



BENCHMARK:

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LICENSED
PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

REINERMAN STREET
PLAN
STA: 5+50 TO 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 79 OF 345	

CivilTech Engineering, Inc.
O:\2018\J38012\Drawings\SHEETS\SP–02–REINERMAN_P&P.dwg Dec 12, 2025

REINERMAN STREET

REV	DESCRIPTION	BY	DATE

LEGEND

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

REINERMAN STREET
PROFILE
STA: 5+50 TO 10+00

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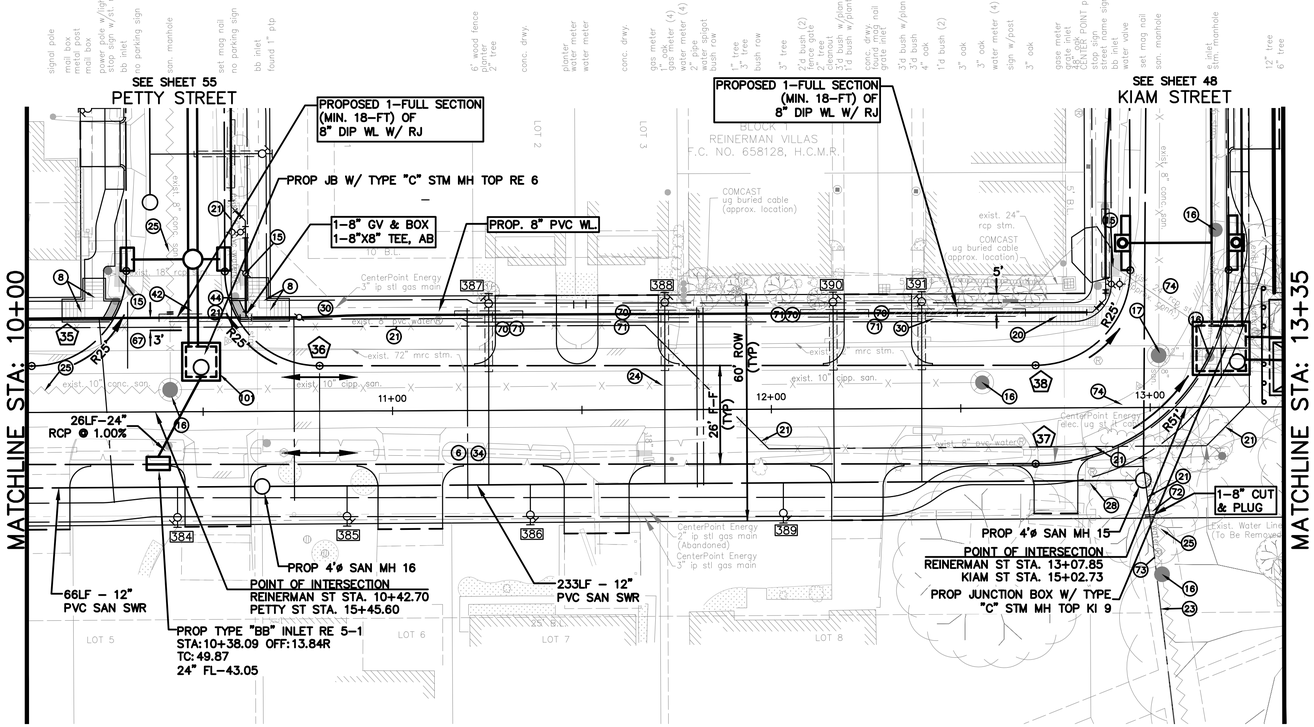
SHEET NO. 80 OF 345	



REINERMAN STREET

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)

POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-56	13,850,635.20	3,106,356.56	13,848,834.85	3,105,952.79	50.85'	15+26.81	13.58L	SET MAG NAIL
B-67	13,850,876.12	3,106,358.43	13,849,075.74	3,105,954.65	47.95'	14+96.86	10.83R	SET MAG NAIL

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

⟨XX⟩ PAVEMENT GEOMETRICS

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PAVEMENT GEOMETRICS		
No.	Station	Offset
35	10+04.80	12.26' LT
36	10+80.81	11.98' LT
37	12+67.70	14.73' RT
38	12+69.80	11.28' LT

20 0 10 20
SCALE IN FEET

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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SHEET NO. 81 OF 345	

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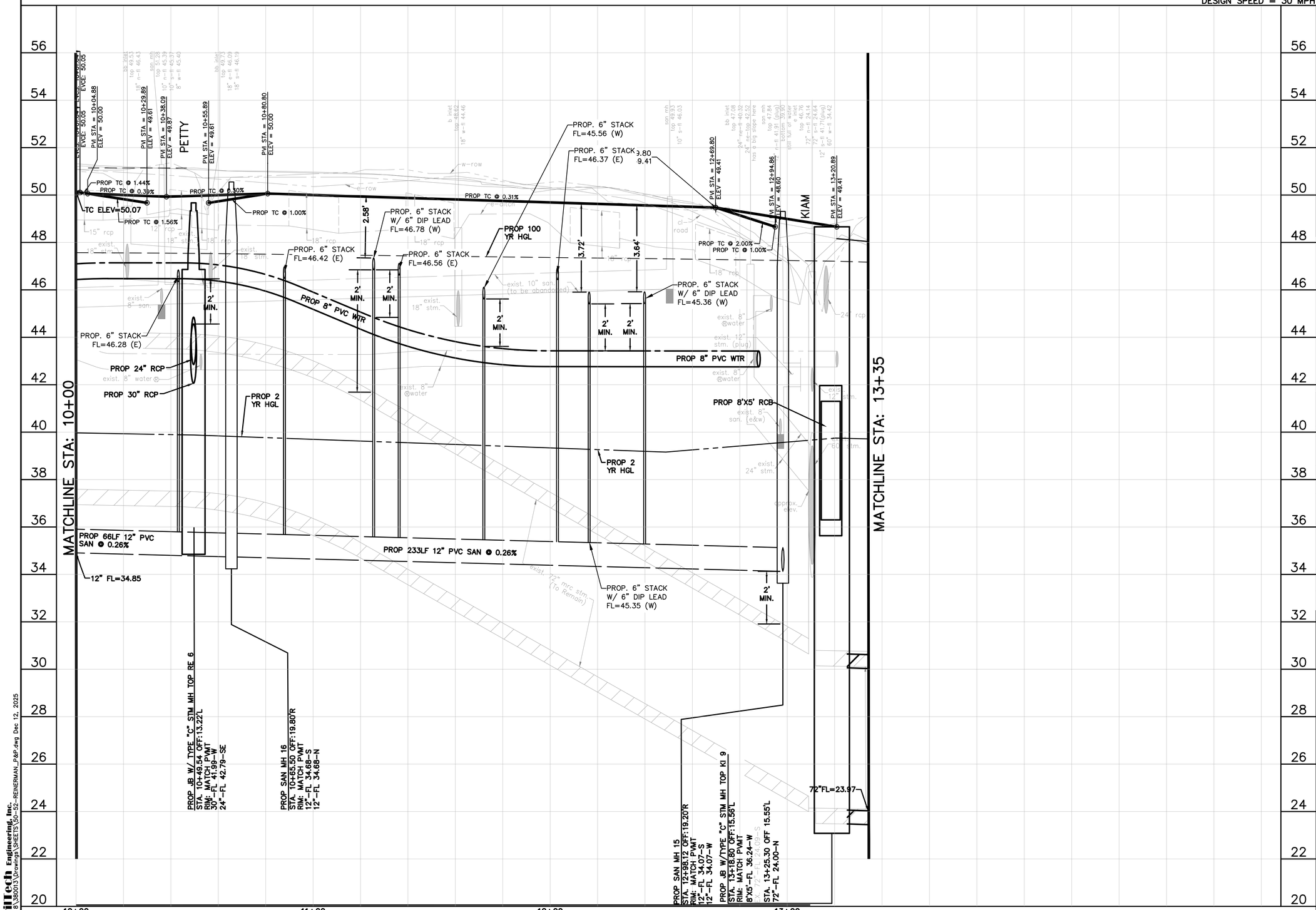
G:\2018\J180013\Drawings\SHEETS\SW-SZ-REINERMAN_P&P.dwg Dec 12, 2025

REINERMAN STREET

DESIGN SPEED = 30 MPH



REV	DESCRIPTION	BY	DATE

LEGEND

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- (XX) PAVEMENT GEOMETRICS
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BENCHMARK:

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* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06–09–2014.

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

Mike Brower 03/18/26
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.

Mike Brower 03/18/26
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.

Brian L Hill 03/24/26
Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

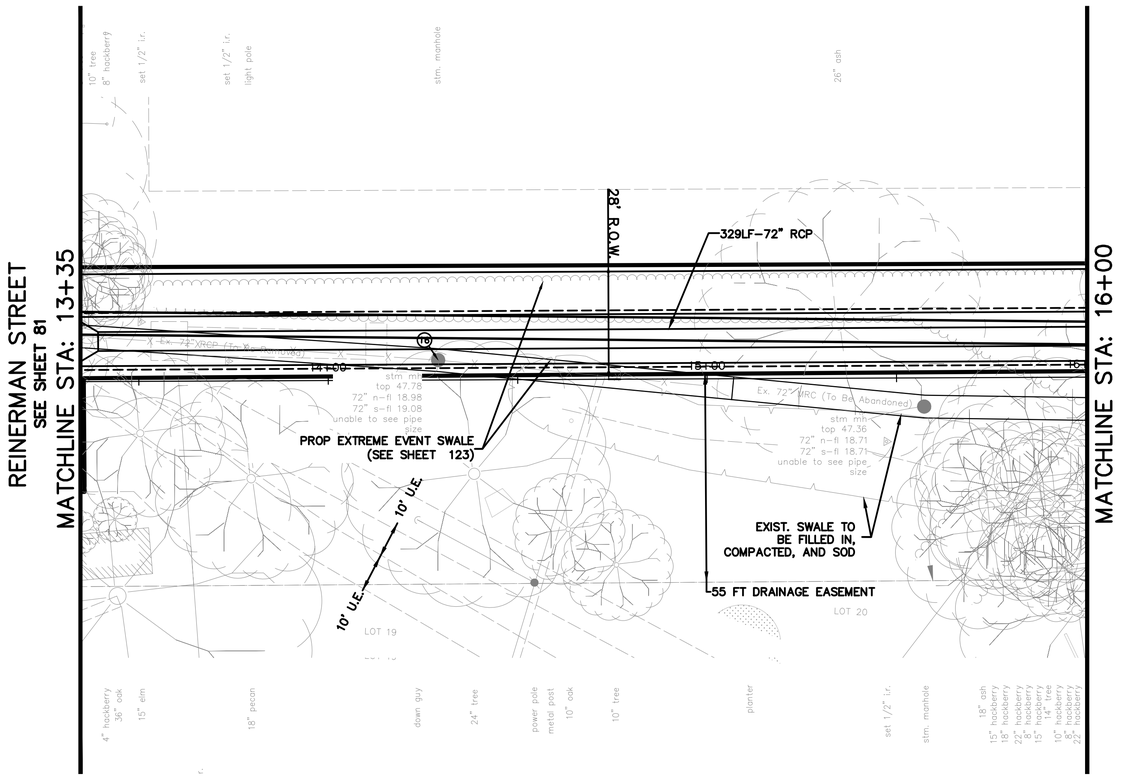
REINERMAN STREET
PROFILE
STA: 10+00 TO 13+35

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 82 OF 345	

civilTech Engineering, Inc.
O:\2018\J18001\Drawings\SHEETS\Cvr_02-REINERMAN_P&P.dwg Dec 12, 2025

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-91	13,850,952.57	3,106,355.30	13,849,152.19	3,105,951.53	47.73'	13+73.56	5.25L	SET 1/2" I.R.

REV	DESCRIPTION	BY	DATE



OUTFALL

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

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NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

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STATE OF TEXAS
ROBERT A. HILL
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PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

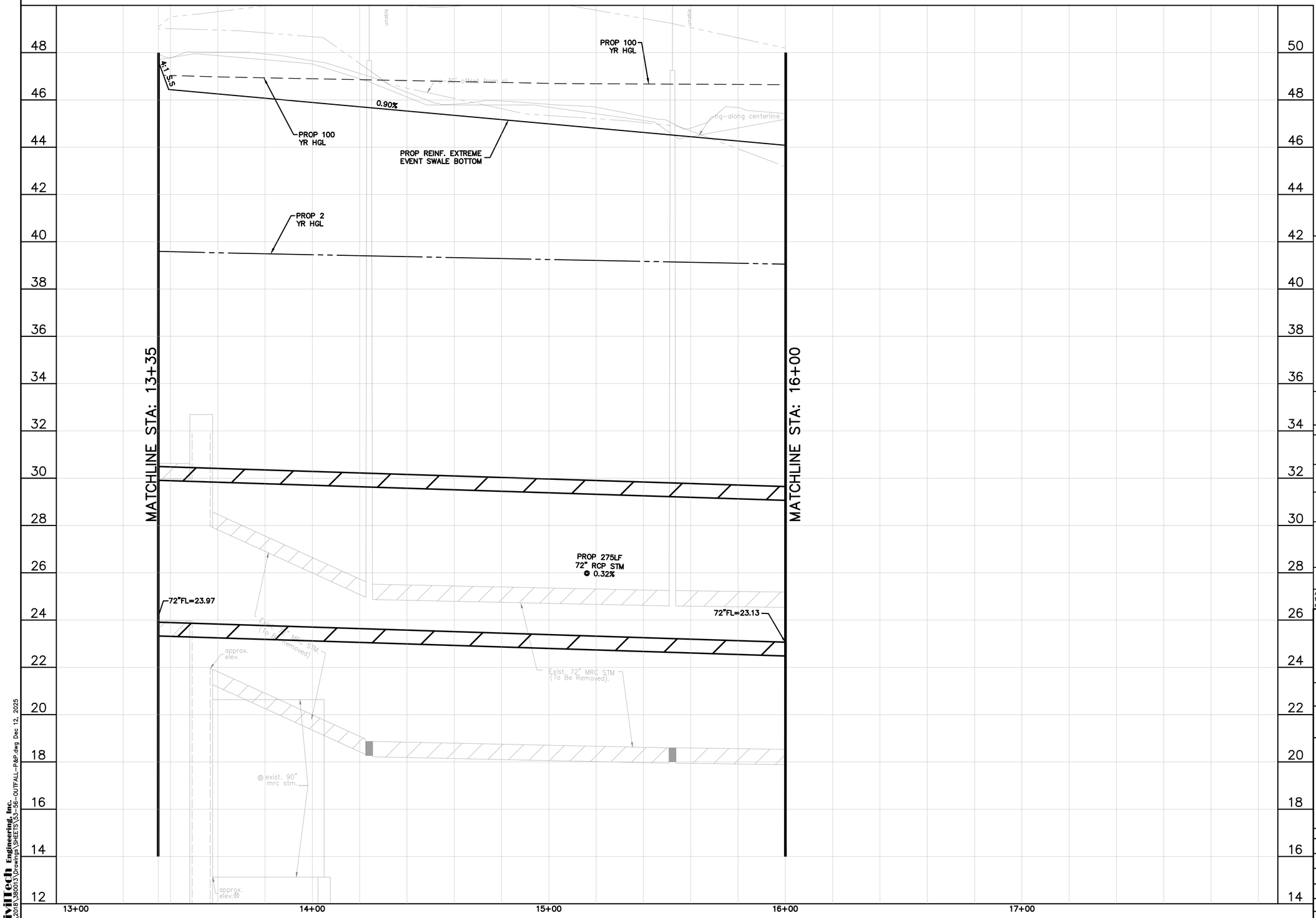
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

OUTFALL PLAN
STA: 13+35 TO 16+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 83 OF 345	

civilTech Engineering, Inc.
C:\2018\38003\Drawings\SHEETS\SS-SS-OUTFALL-P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE



BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

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800.414.1045

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II DRAINAGE AND PAVING IMPROVEMENTS

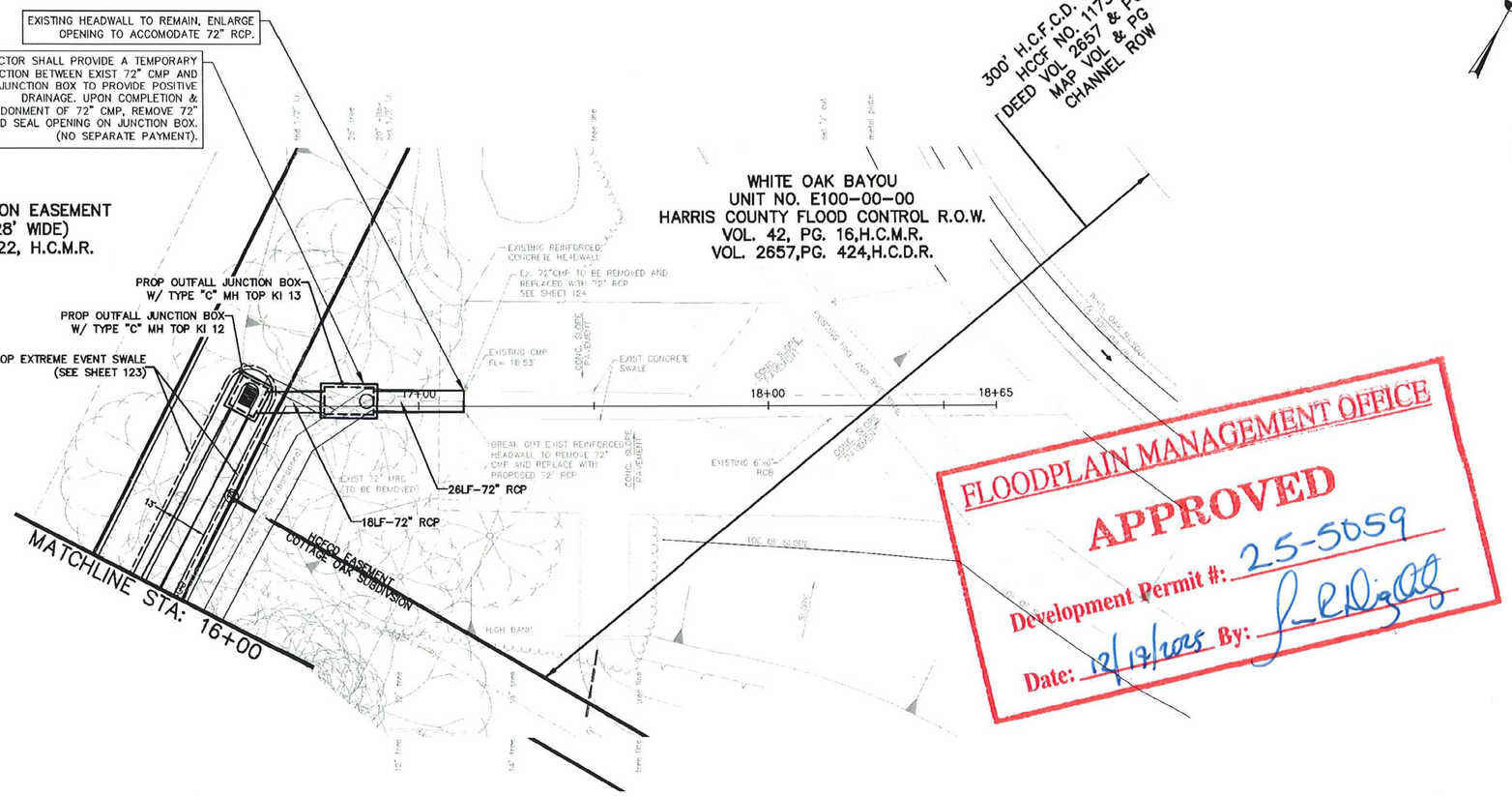
OUTFALL PROFILE
STA: 13+35 TO 16+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 84 OF 345	

CivilTech Engineering, Inc.
O:\2018\38013\Drawings\SHEETS\38-13-35-OUTFALL-P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-76	13,851,344.08	3,106,468.50	13,849,543.64	3,106,064.71	29.20'	16+18.54	29.29L	SET 'X' IN CON.
B-79	13,851,297.03	3,106,350.52	13,849,496.59	3,105,946.75	33.34'	16+92.75	46.89L	SET 1/2" I.R.



FLOODPLAIN MANAGEMENT OFFICE
APPROVED
Development Permit #: 25-5059
Date: 12/19/2025 By:

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

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

BOTH ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. THE HCFCD RIGHT-OF-WAY NOTIFICATION AND 48-HOUR NOTICE MUST BE PROVIDED TO HCFCD AT (DOD@HCFCD.NET) 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/EPERMITS AND APPLY FOR THE HCFCD ROW UNDER ROW NOTIFICATION.

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

BENCHMARK:
CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET
ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:
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VERIFICATION OF PRIVATE UTILITY LINES

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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

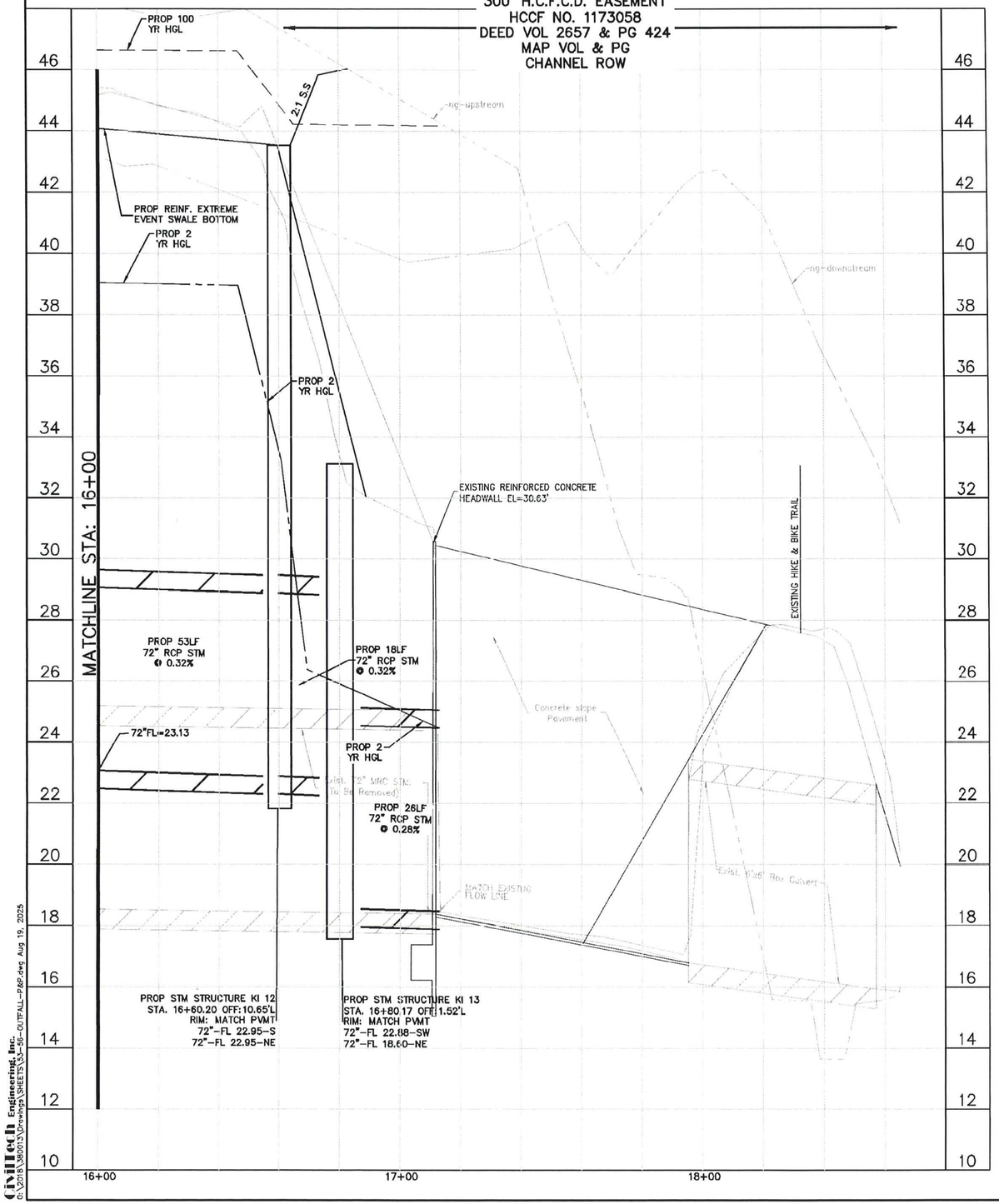
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

OUTFALL PLAN
STA: 16+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1" = 10'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 85 OF 345	

Civil Cad Engineering, Inc.
G:\2018\380013\Drawings\SHEETS\35-56-OUTFALL-P&P.dwg Aug 19, 2025



REV	DESCRIPTION	BY	DATE

FLOODPLAIN MANAGEMENT OFFICE
APPROVED
Development Permit #: 25-5059
Date: 12/17/2025 By:

BENCHMARK:
CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET
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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

OUTFALL PROFILE
STA: 16+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 86 OF 345	

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

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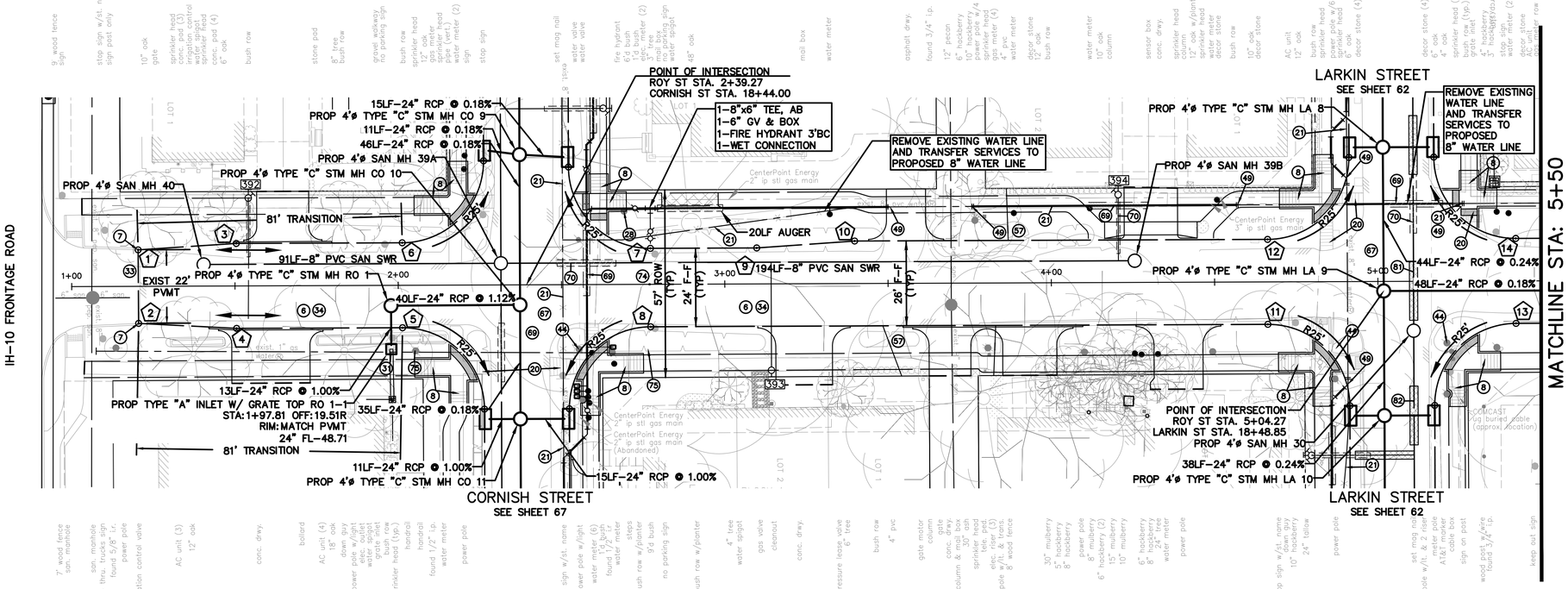
Civil Tech Engineering, Inc.
G:\2018\180013\Drawings\SHEETS\93-86-OUTFALL-P&P.dwg Aug 19, 2025

REV	DESCRIPTION	BY	DATE



PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+20.38	11.17' LT
2	1+20.45	11.34' RT
3	1+50.45	13.02' LT
4	1+50.45	12.99' LT
5	2+01.26	12.99' RT
6	2+01.27	13.01' LT
7	2+77.27	11.01' LT
8	2+77.27	12.99' RT
9	3+09.82	11.01' LT
10	3+39.83	13.01' LT
11	4+66.26	12.99' RT
12	4+66.27	13.01' LT
13	5+42.26	13.00' RT
14	5+42.27	13.01' LT

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121-122)

NOTES

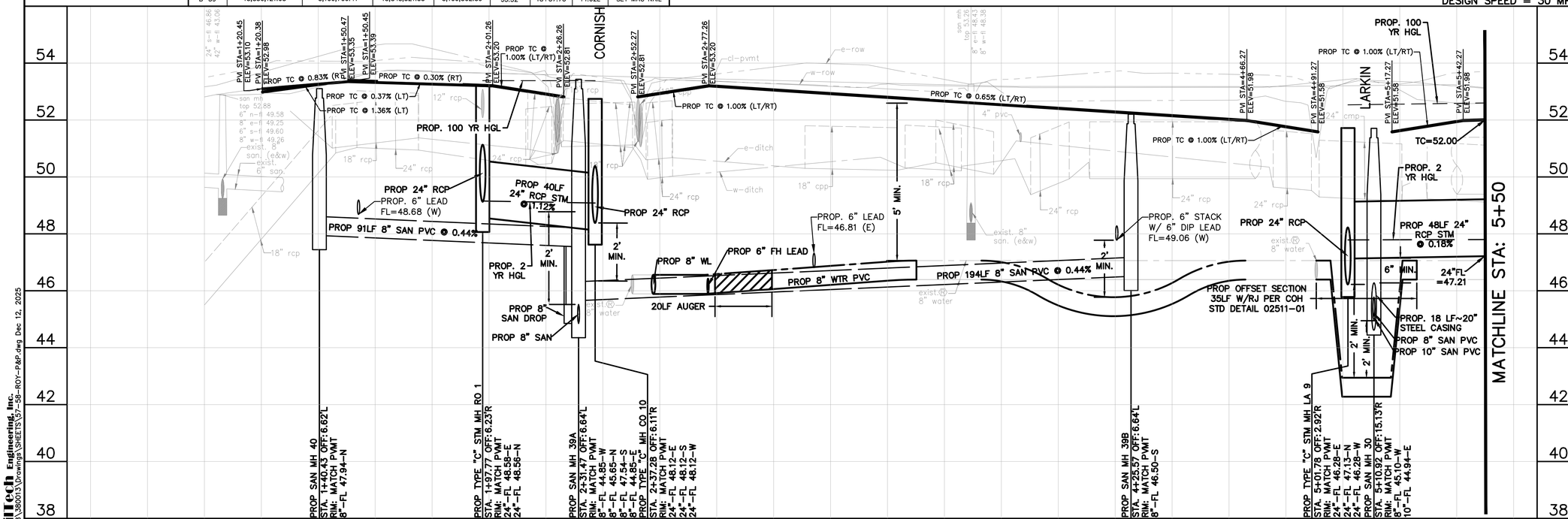
1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112-118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197-211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119-120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143-146)

SCALE IN FEET 20 0 10 20

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-32	13,849,851.28	3,106,702.62	13,848,051.04	3,106,298.80	53.48'	18+36.81	9.72L	SET MAG NAIL
B-39	13,850,121.63	3,106,706.41	13,848,321.35	3,106,302.59	53.32'	18+57.75	14.62L	SET MAG NAIL

ROY STREET

DESIGN SPEED = 30 MPH



CivilTech Engineering, Inc.
O:\2018\3180013\Drawings\SHEETS\07-SS-ROY-P&P.dwg Dec 12, 2025

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11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

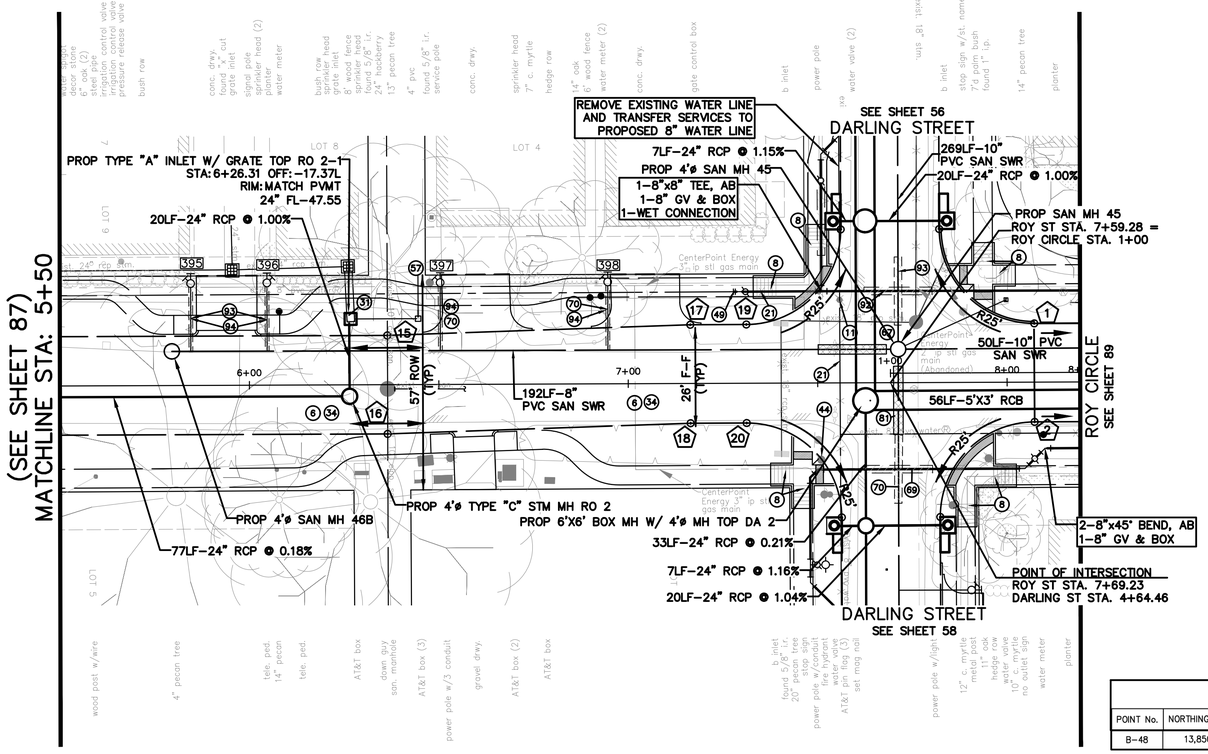
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

ROY STREET
STA: 1+00 TO 5+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 87 OF 345	

REV	DESCRIPTION	BY	DATE



PAVEMENT GEOMETRICS		
No.	Station	Offset
15	6+36.43	13.00' LT
16	6+36.43	13.00' RT
17	7+16.43	15.51' LT
18	7+16.43	10.49' RT
19	7+31.18	15.51' LT
20	7+31.23	10.49' RT

ROY CIRCLE PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+38.00	12.99' LT
2	1+38.00	13.01' RT

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121-122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112-118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197-211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119-120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143-146)

20 0 10 20
SCALE IN FEET

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-48	13,850,361.06	3,106,696.15	13,848,560.75	3,106,292.33	51.71'	4+74.04	10.70R	SET MAG NAIL

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION - 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06-09-2014.

NOTICE:

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26
Date

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Signature valid for six months.

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Date

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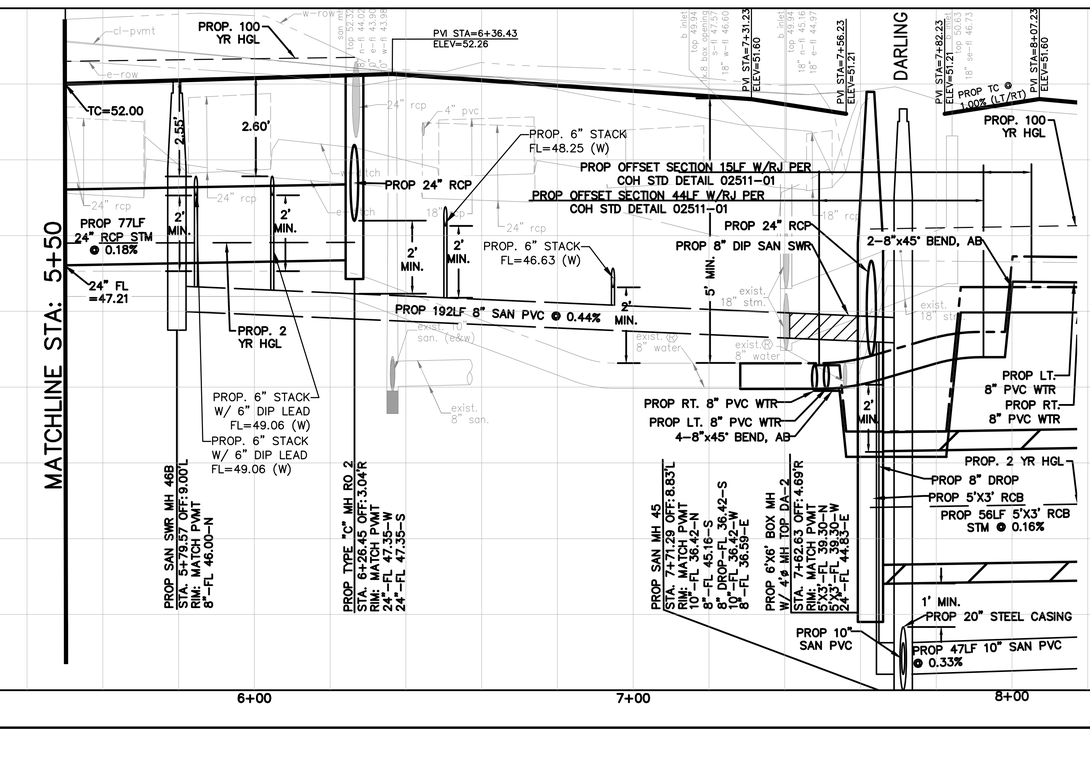
Brian L Hill 03/24/26
Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

ROY STREET/ ROY CIRCLE



WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 88 OF 345	

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

ROY STREET
STA: 5+50 TO END

CivilTech Engineering, Inc.
O:\2018\380013\Drawings\SHEETS\07-08-ROY-P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

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2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
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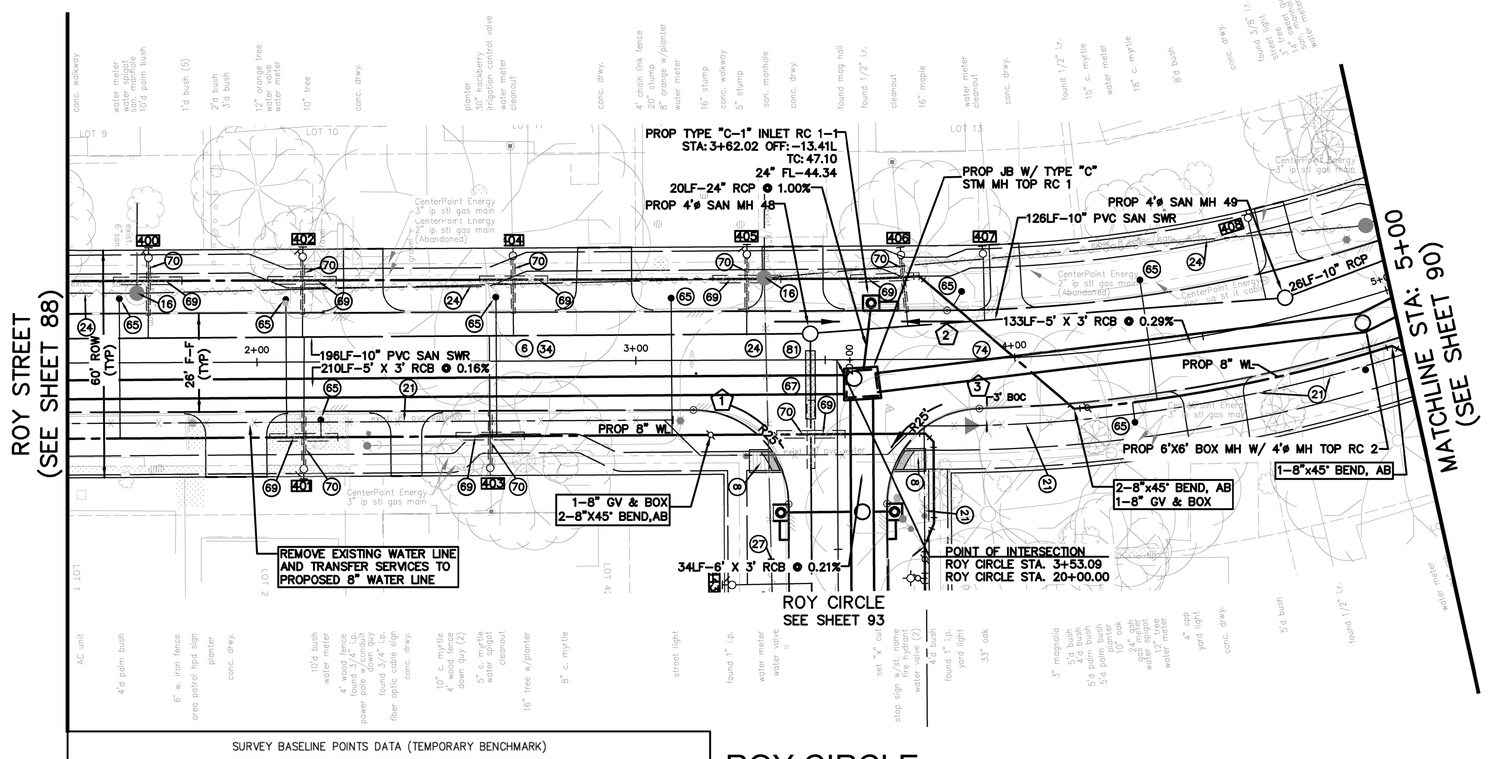
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

ROY CIRCLE PAVEMENT GEOMETRICS		
No.	Station	Offset
1	3+15.15	13.07' RT
2	3+82.22	12.90' LT
3	3+90.37	13.08' RT

SCALE IN FEET: 20 0 10 20

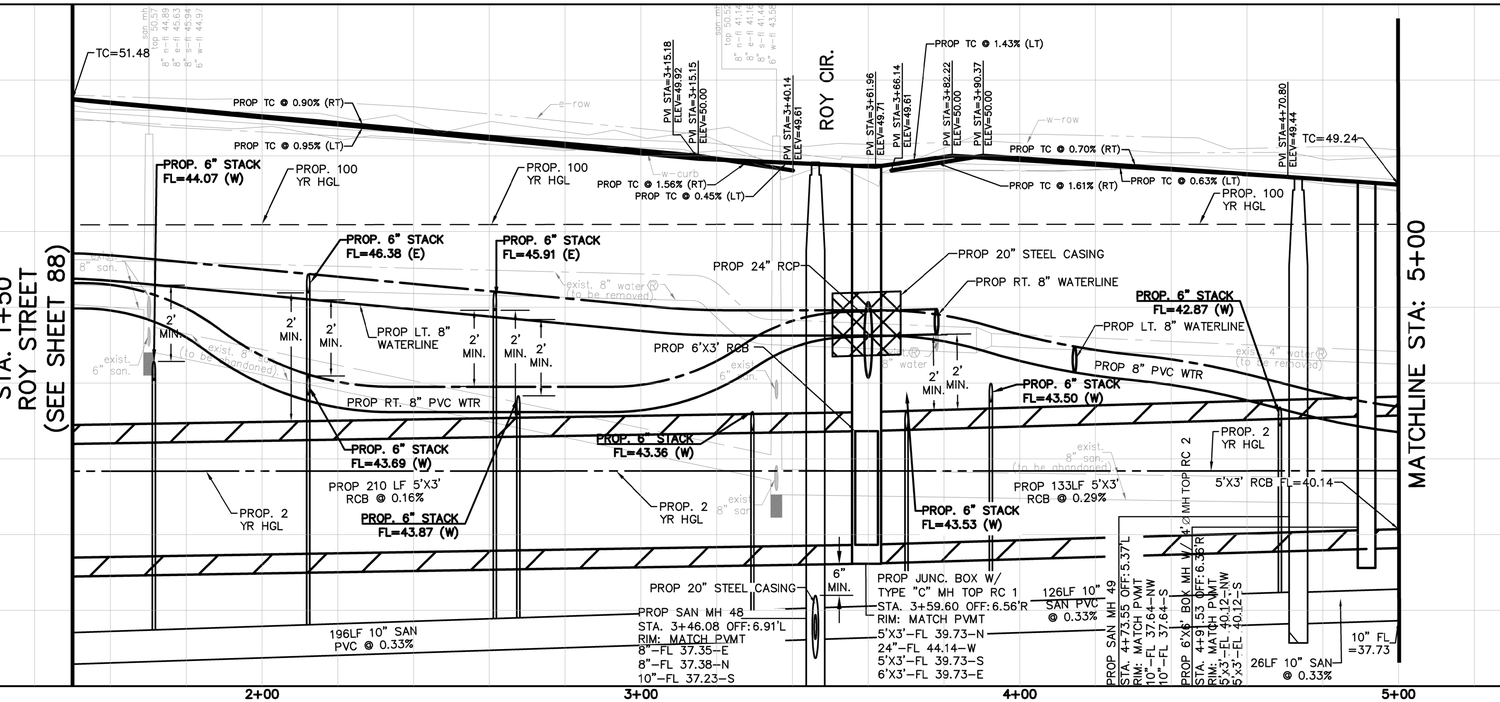


SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)

POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–51	13,850,638.31	3,106,684.26	13,848,837.96	3,106,280.44	49.60'	3+66.80	12.92R	SET 'X' IN CON.

ROY CIRCLE

DESIGN SPEED = 30 MPH



CivilTech Engineering, Inc.
G:\2018\180013\Drawings\SHEETS\00-15-ROY CIRCLE-P&P.dwg Mar 23, 2026

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

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800.414.1045

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED PROFESSIONAL ENGINEER
3/10/2026

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON

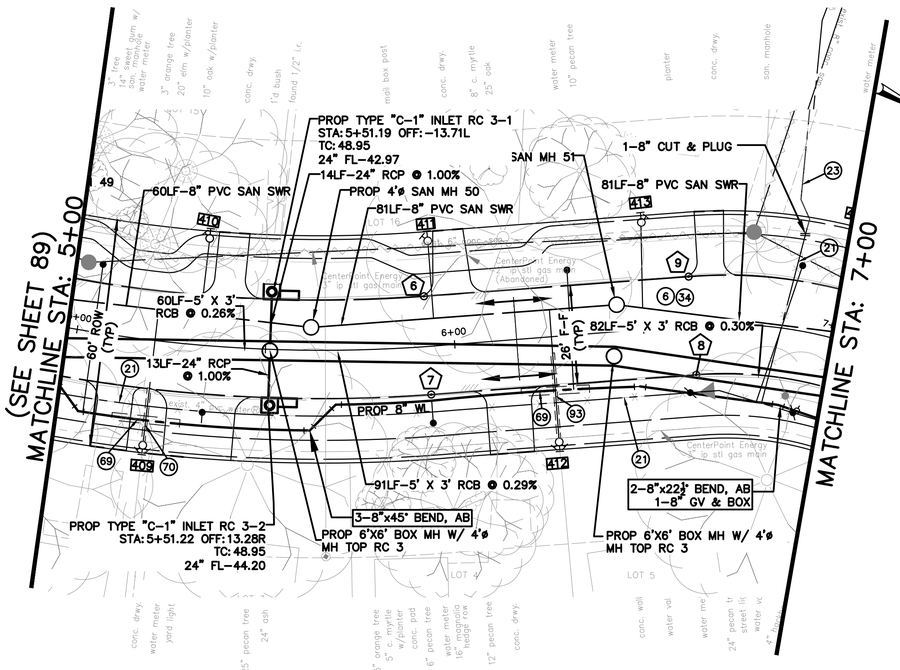
HOUSTON PUBLIC WORKS

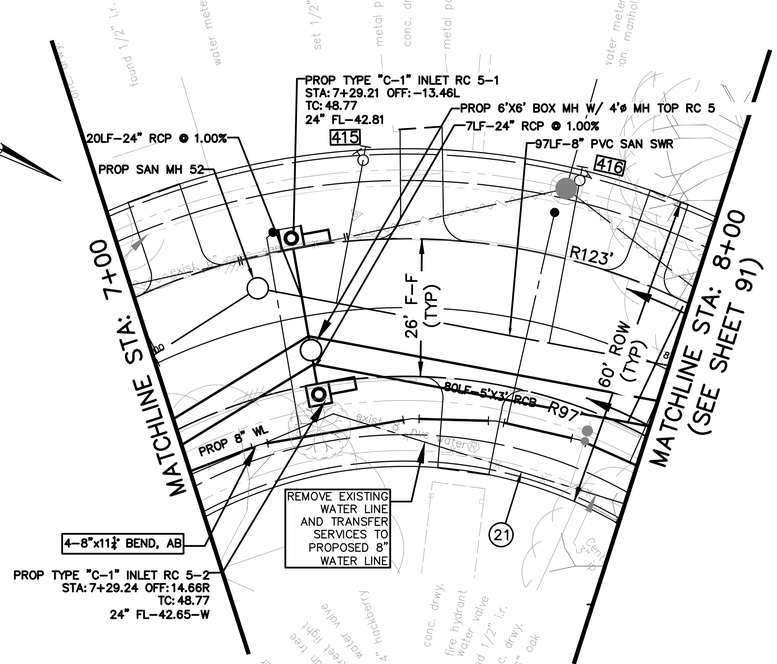
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

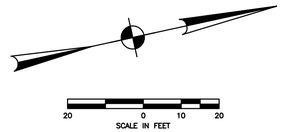
ROY CIRCLE
STA: 1+00 TO 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 89 OF 345	

REV	DESCRIPTION	BY	DATE







LEGEND

(XX) KEY NOTES (SHEET 3 -4)

⟨XX⟩ PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121-122)

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PAVEMENT GEOMETRICS		
No.	Station	Offset
6	5+92.83	13.30' LT
7	5+92.88	12.70' RT
8	6+62.90	13.00' RT
9	6+62.91	13.00' LT

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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS
ROY CIRCLE
STA: 5+00 TO 7+00
ROY CIRCLE
STA: 7+00 TO 8+00

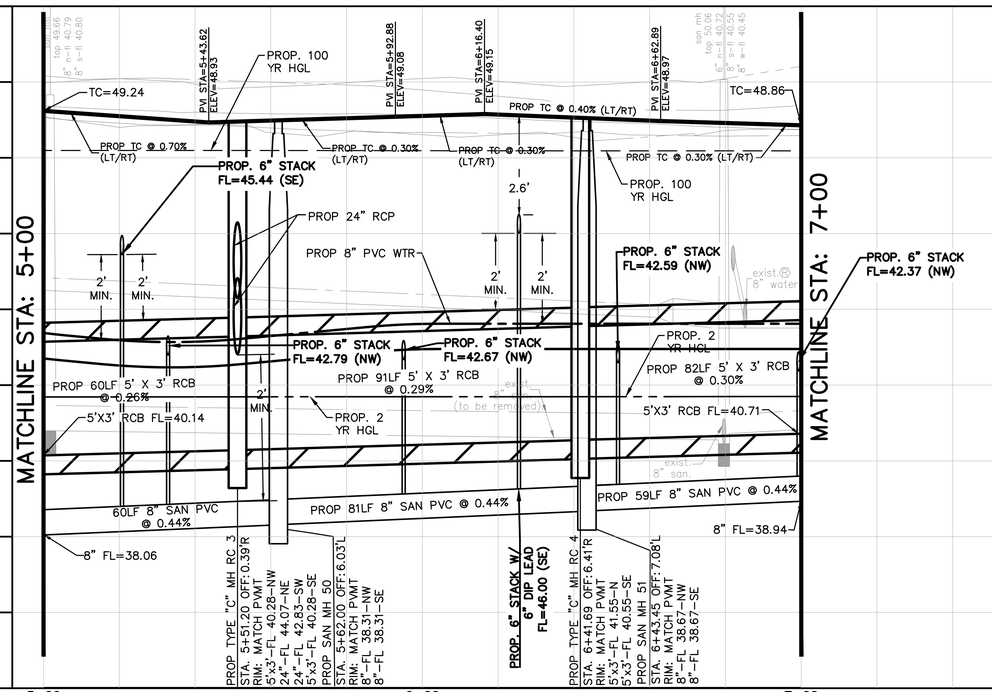
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 90 OF 345	

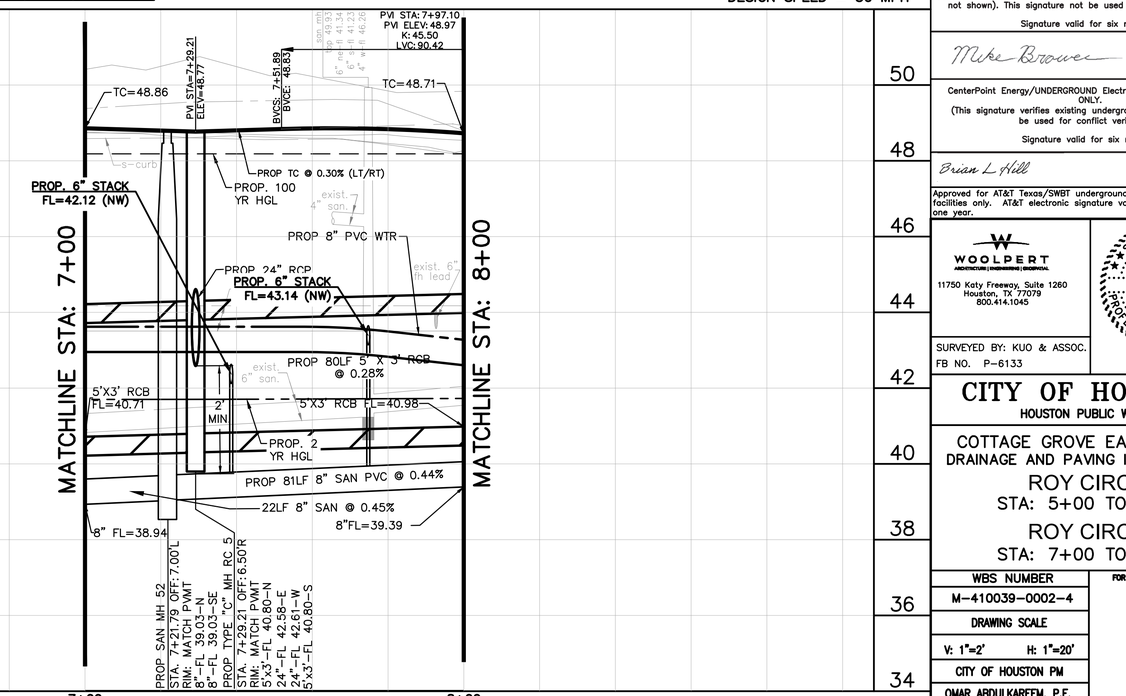
ROY CIRCLE

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-52	13,850,983.58	3,106,529.36	13,849,183.19	3,106,125.57	49.35'	7+40.19	17.86L	SET 1/2" I.R.

ROY CIRCLE

DESIGN SPEED = 30 MPH





CivilTech Engineering, Inc.
O:\2018\J180013\Drawings\SHEETS\QS-ROY CIRCLE-P&P.dwg Dec. 12, 2025

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

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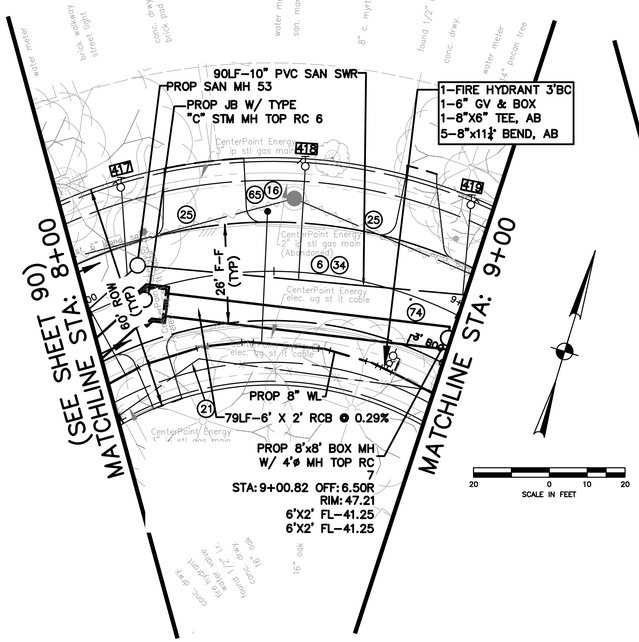
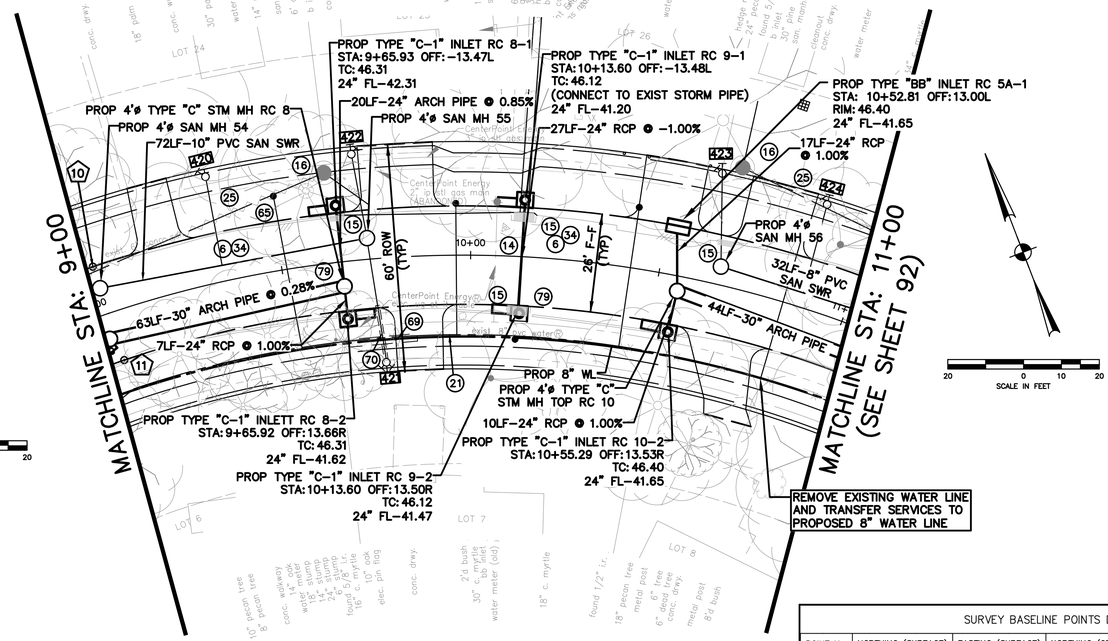
PAVEMENT GEOMETRICS		
No.	Station	Offset
10	9+02.75	13.00' LT
11	9+02.75	13.00' RT



ROY CIRCLE



ROY CIRCLE

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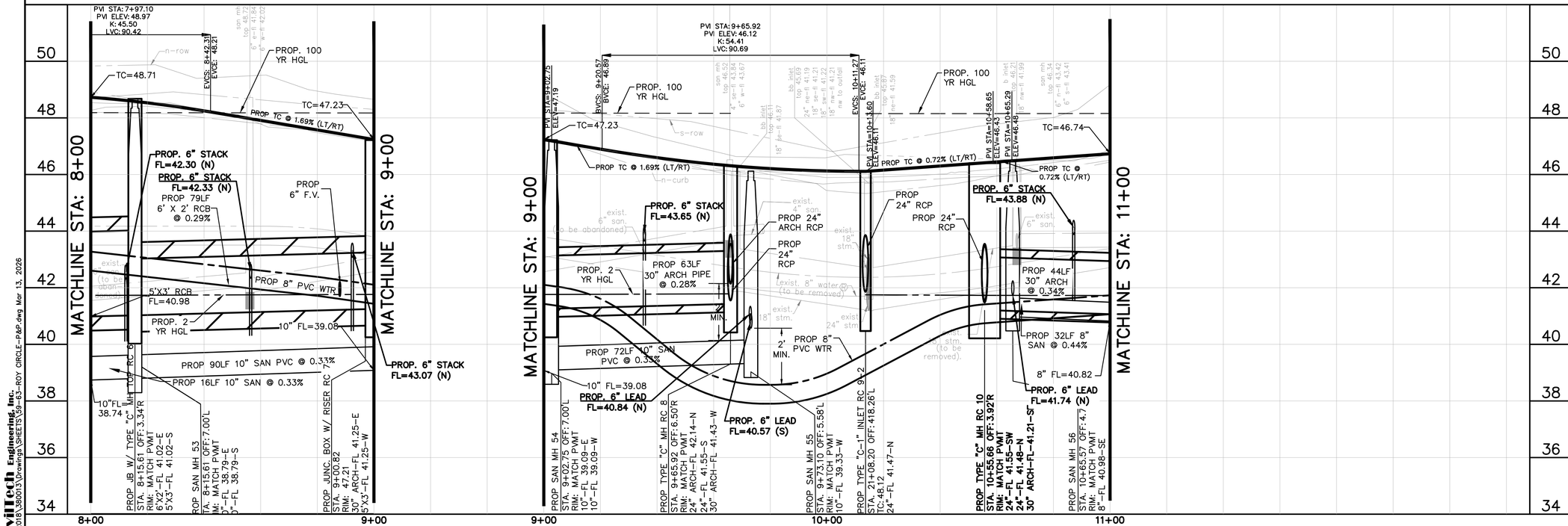
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–53	13,851,068.13	3,106,763.65	13,849,267.73	3,106,359.82	45.40'	10+08.81	7.43L	SET 1/2" I.R.



CivilTech Engineering, Inc.
O:\2018\38001\Drawings\SWEETS\38145–ROY CIRCLE–P&P.dwg Mar 13, 2026

BENCHMARK:

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STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED
PROFESSIONAL ENGINEER
3/10/2026

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

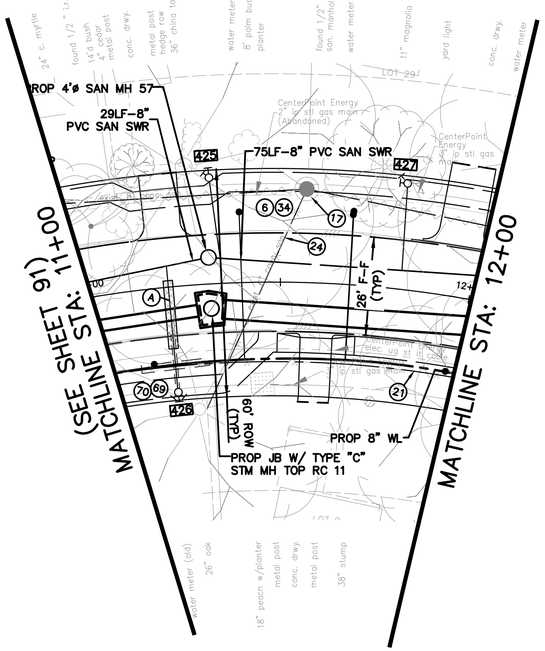
COTTAGE GROVE EAST – PH II DRAINAGE AND PAVING IMPROVEMENTS

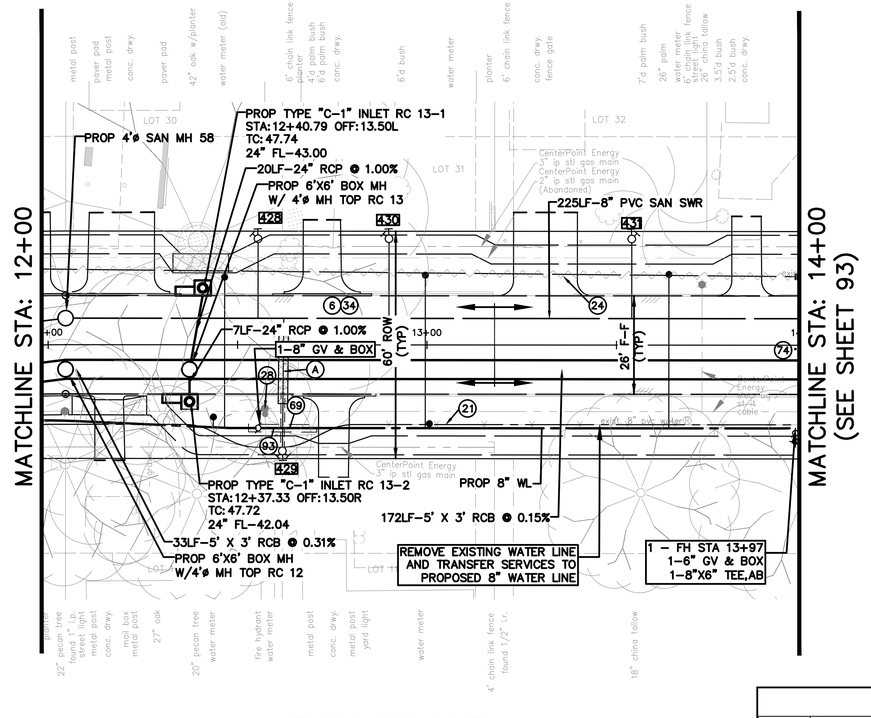
ROY CIRCLE
STA: 8+00 TO 9+00

ROY CIRCLE
STA: 9+00 TO 11+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 91 OF 345	

REV	DESCRIPTION	BY	DATE





KEYNOTES

(A) ENCASE PROPOSED 6" SANITARY LEAD IN 18" STEEL CASING (MIN. 18–FT) CENTERED AT STORM CROSSING, SEE SHEET 172 NO EXTRA PAY FOR CONNECTION JOINTS

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

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PAVEMENT GEOMETRICS		
No.	Station	Offset
12	12+04.61	13.00' LT
13	12+04.61	13.00' RT

20 0 10 20
SCALE IN FEET

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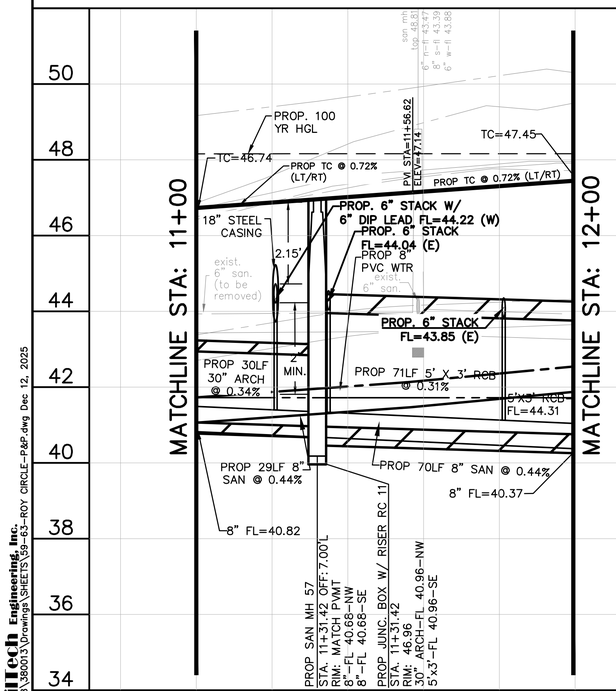

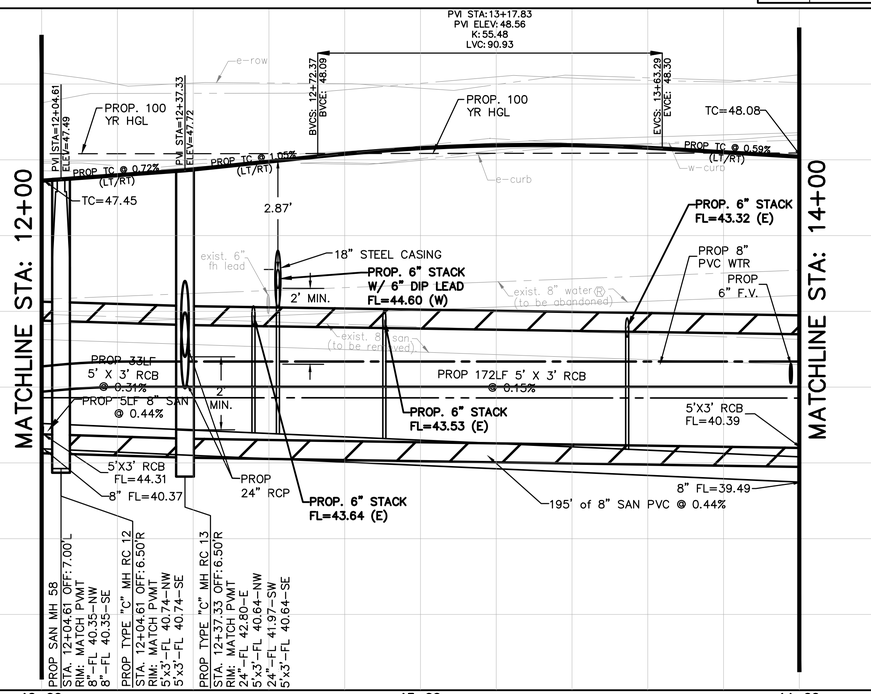

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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

STATE OF TEXAS ROBERT A. HILL 93655 LICENSED PROFESSIONAL ENGINEER 11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
ROY CIRCLE
STA: 11+00 TO 12+00
ROY CIRCLE
STA: 12+00 TO 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 92 OF 345	

CivilTech Engineering, Inc.
G:\2018_3560013\Drawings\SHEETS\3560-13-ROY CIRCLE–P&P.dwg Dec 12, 2025

REV	DESCRIPTION	BY	DATE

PAVEMENT GEOMETRICS		
No.	Station	Offset
14	14+29.84	13.00' LT
15	14+29.84	13.00' RT
16	20+37.99	13.00' RT
17	20+38.02	13.00' LT
18	22+94.30	13.00' LT
19	22+94.30	13.00' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET 20 0 10 20

(SEE SHEET 92) MATCHLINE STA: 14+00

MATCHLINE "A"

(SEE SHEET 89)

PROP 6'X6' BOX MH W/4'ø MH TOP RC 14

2–8"x22½° BEND, AB

PROP JB W/ TYPE "C" STM MH TOP RC 15

PROP 8" WL

PROP TYPE "C–1" INLET RC 14–2
STA: 14+09.83 OFF:14.66R
TC: 48.02
24" FL–42.64–NE

2–8"x22½° BEND, AB
1–8" GV & BOX

PROP TYPE "C–1" INLET RC 20–2
STA: 20+40.09 OFF: –13.50L
TC: 49.61
24" FL–44.66

1–FH STA 20+57.75, 19' LT.
1–6" GV & BOX
1–8"X6" TEE, AB

7LF–24" RCP @ 1.00%

PROP 4'ø TYPE "C" STM MH TOP RC 20

REMOVE EXISTING WATER LINE AND TRANSFER SERVICES TO PROPOSED 8" WATER LINE

20LF–24" RCP @ 1.00%

PROP TYPE "C–1" INLET RC 20–1
STA: 20+40.17 OFF:13.50R
TC: 49.61
24" FL–44.66

34LF–6'X3' RCB @ 0.21%

301LF–8" PVC SAN SWR

2–8"x22½° BEND, AB

PROP 8'X8' BOX MH W/4'ø MH TOP RC 17

31LF–6' X 3' RCB @ 0.16%

PROP 8'X8' BOX MH W/ 4'ø MH TOP RC 18

PROP TYPE "C–1" INLET RC 19–2
STA: 22+77.46 OFF: –13.53L
TC: 48.15
24" FL–43.25

7LF–24" RCP @ 1.00%

237LF 6' X 3' RCB @ 0.14%

PROP 8'X8' BOX MH W/ 4'ø MH TOP RC 19

20LF–24" RCP @ 1.00%

PROP TYPE "C–1" INLET RC 19–1
STA: 22+77.50 OFF:13.47R
TC: 48.15
24" FL–42.82

37LF–8" PVC SAN SWR

PROP 4'ø SAN MH 62

17LF–6'X3' RCB @ 0.18%

37LF–6' X 3' RCB

14LF–8" PVC SAN SWR

PROP 4'ø SAN MH 61

MATCHLINE "A"

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–51	13,850,638.31	3,106,684.26	13,848,837.96	3,106,280.44	49.60'	3+66.80	12.92R	SET 'X' IN CON.
B–55	13,850,655.38	3,107,031.52	13,848,855.03	3,106,627.66	49.16'	3+67.92	360.60R	SET 1/2" I.R.

ROY CIRCLE

ROY CIRCLE

KEYNOTES

(A) ENCASE PROPOSED 6" SANITARY LEAD IN 18" STEEL CASING (MIN. 18–FT) CENTERED AT STORM CROSSING, SEE SHEET 172 NO EXTRA PAY FOR CONNECTION JOINTS

MATCHLINE STA: 14+00

PROP TYPE "C" MH RC 14
STA: 14+09.83 OFF: 6.50R
RIM: MATCH PVMT
5'x3'–FL 40.38–NW
24"–FL 42.56–SW
24"–FL 42.61–NE
5'x3'–FL 40.38–SE

PROP JUNC. BOX RC 15
STA: 14+29.83
RIM: 48.08
6'x3'–FL 40.35–NW
6'x3'–FL 40.35–S

PROP SAN MH 59
STA: 14+29.83 OFF: 7.00L
RIM: MATCH PVMT
8"–FL 39.36–NW
8"–FL 39.36–S

PROP SAN MH 60
STA: 14+84.81 OFF: 7.00L
RIM: MATCH PVMT
8"–FL 39.10–N
8"–FL 39.10–SW

PROP TYPE "C" MH RC 16
STA: 14+84.81 OFF: 6.50R
RIM: MATCH PVMT
6'x3'–FL 40.28–N
6'x3'–FL 40.28–SW

MATCHLINE STA: 20+00

PROP TYPE "C" MH RC 20
STA: 20+06.53
RIM: MATCH PVMT
5'x3'–FL 39.73–N
24"–FL 44.14–W
6'x3'–FL 39.73–S
6'x3'–FL 39.73–E

PROP TYPE "C" MH TOP RC 20
STA: 20+40.11
RIM: MATCH PVMT
24"–FL 44.58–E
24"–FL 44.58–S
72"–FL 39.80–W

PROP TYPE "C" MH RC 19
STA: 22+77.46 OFF: 6.53L
RIM: MATCH PVMT
6'x3'–FL 40.13–E
24"–FL 42.62–S
24"–FL 43.18–N
6'x3'–FL 40.13–W

PROP TYPE "C" MH RC 18
STA: 22+94.30 OFF: 6.50L
RIM: MATCH PVMT
6'x3'–FL 40.16–E
6'x3'–FL 40.16–W
PROP SAN MH 62
STA: 22+94.30 OFF: 7.00R
RIM: MATCH PVMT
8"–FL 38.68–E
8"–FL 38.96–W

PROP TYPE "C" MH RC 17
STA: 23+28.52 OFF: 6.50L
RIM: MATCH PVMT
6'x3'–FL 40.21–NE
6'x3'–FL 40.21–W
PROP SAN MH 61
STA: 23+28.52 OFF: 7.00R
RIM: MATCH PVMT
8"–FL 38.84–NE
8"–FL 38.84–W

PVI STA = 20+13.02 ELEV = 50.00
PVI STA = 20+40.09 ELEV = 49.61
PVI STA = 20+40.17 ELEV = 49.61
PROP TC @ 1.44%
PROP TC @ 1.44% (LT/RT)
PROP TC @ 0.66%
PROP TC @ 0.30%
PROP TC @ 0.27% (LT/RT)
TC=48.29
PVI STA = 22+77.46 ELEV = 48.03
PVI STA = 22+94.30 ELEV = 48.08
PVI STA = 23+66.39 ELEV = 48.30
PROP TC @ 0.58% (LT/RT)
PROP TC @ 0.31% (LT/RT)
TC=48.08
PVI STA=14+09.88 ELEV=48.02
PVI STA=14+29.83 ELEV=48.08
PVI STA=14+84.76 ELEV=48.40

PROP. 100 YR HGL

PROP 20LF 5' X 3' RCB @ 0.15%

PROP. 6" STACK FL=43.16 (E)

PROP. 6" LEAD FL=42.92 (E)

PROP. 6" STACK FL=42.94 (E)

PROP 8" PVC WTR

6'x3' FL =40.25

PROP 49LF 6' X 3' RCB @ 0.14%

PROP 24" RCP

PROP 30LF 8" SAN @ 0.44%

6'X3' RCB FL=40.28

PROP 13LF 6' X 3' RCB @ 0.14%

PROP 59LF 8" SAN PVC @ 0.44%

PROP 13LF 8" SAN PVC @ 0.44%

6'X3' RCB FL=40.39

8" FL=39.49

8" FL =39.03

PROP. 6" STACK W/ 6" DIP LEAD FL=45.68 (N)

PROP. 6" STACK W/ 6" DIP LEAD FL=44.63 (N)

PROP. 6" STACK FL=42.27 (S)

PROP. 6" STACK FL=42.61 (S)

PROP. 6" STACK FL=42.96 (S)

PROP. 6" STACK FL=42.59 (S)

PROP. 6" STACK FL=42.42 (S)

PROP. 6" STACK FL=42.64 (S)

PROP. 6" STACK FL=42.70 (S)

PROP 8" PVC WTR

PROP 6" F.V.

PROP 24" RCP

PROP 34 LF 6' X 3' RCB @ 0.21%

6'X3' RCB FL=39.74

PROP 237LF 6' X 3' RCB @ 0.14%

PROP 17LF 6' X 3' RCB @ 0.18%

PROP 31LF 6' X 3' RCB @ 0.16%

PROP 37LF 6' X 3' RCB @ 0.14%

PROP 44LF of 8" SAN PVC @ 0.44%

6'X3' RCB FL=40.26

8" FL= 39.04

PROP 301LF 8" SAN PVC @ 0.44%

PROP. 18LF~20" STEEL CASING

3'

2' MIN.

6" MIN.

3.32'

18" STEEL CASING

PROP 24" RCP

PROP. 2 YR HGL

exist. 6" fh lead

exist. 8" water (to be removed)

exist. 8" san. (to be removed)

exist. 4" san.

14+00 15+00 20+00 21+00 22+00 23+00

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06–09–2014.

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

Mike Brower 03/18/26
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.

Mike Brower 03/18/26
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.

Brian L Hill 03/24/26
Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

ROY CIRCLE
STA: 14+00 TO 15+00

ROY CIRCLE
STA: 20+00 TO 23+70

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 93 OF 345	

CivilTech Engineering, Inc.
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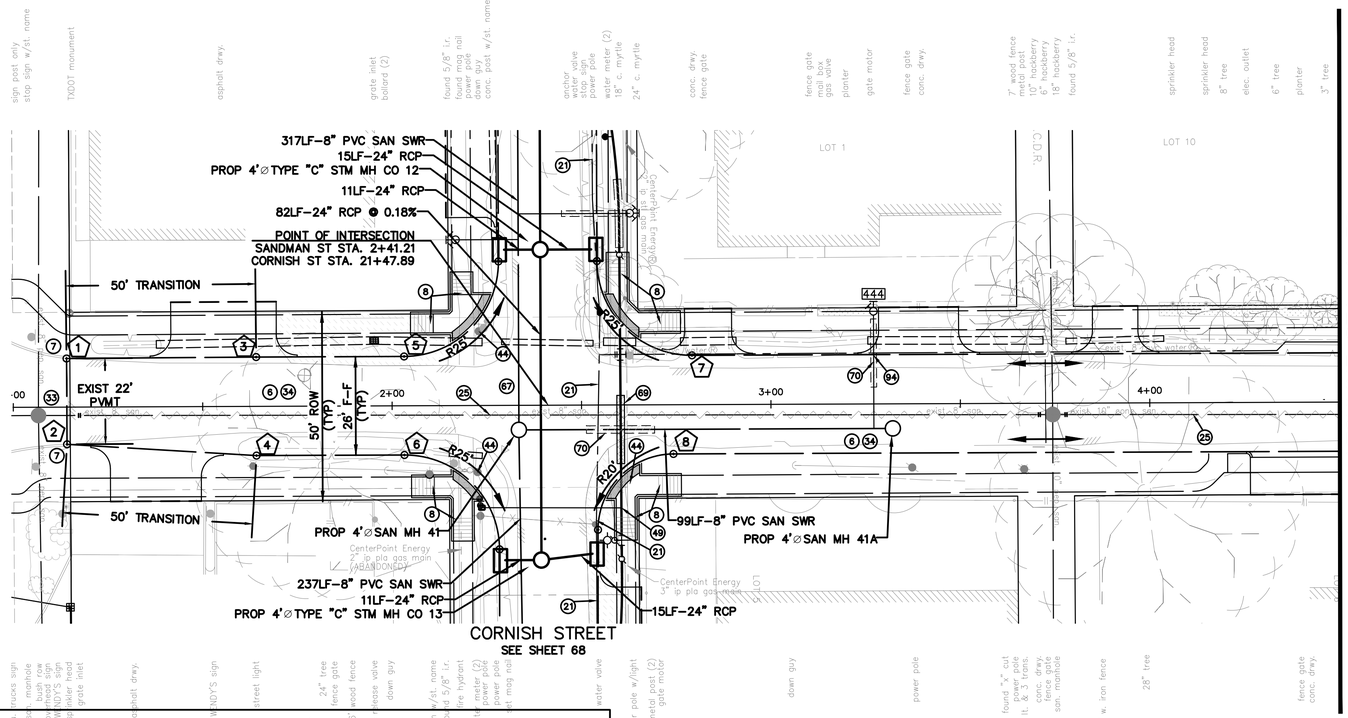
REV	DESCRIPTION	BY	DATE



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–33	13,849,844.60	3,107,026.08	13,848,044.35	3,106,622.22	54.32'	21+59.63	11.69R	SET MAG NAIL

SANDMAN		
PAVEMENT GEOMETRICS		
No.	Station	Offset
1	1+14.10	12.83' LT
2	1+14.15	9.82' RT
3	1+64.16	13.01' LT
4	1+64.16	12.99' RT
5	2+03.21	13.01' LT
6	2+03.21	12.99' RT
7	2+79.21	13.01' LT
8	2+79.21	12.99' RT

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
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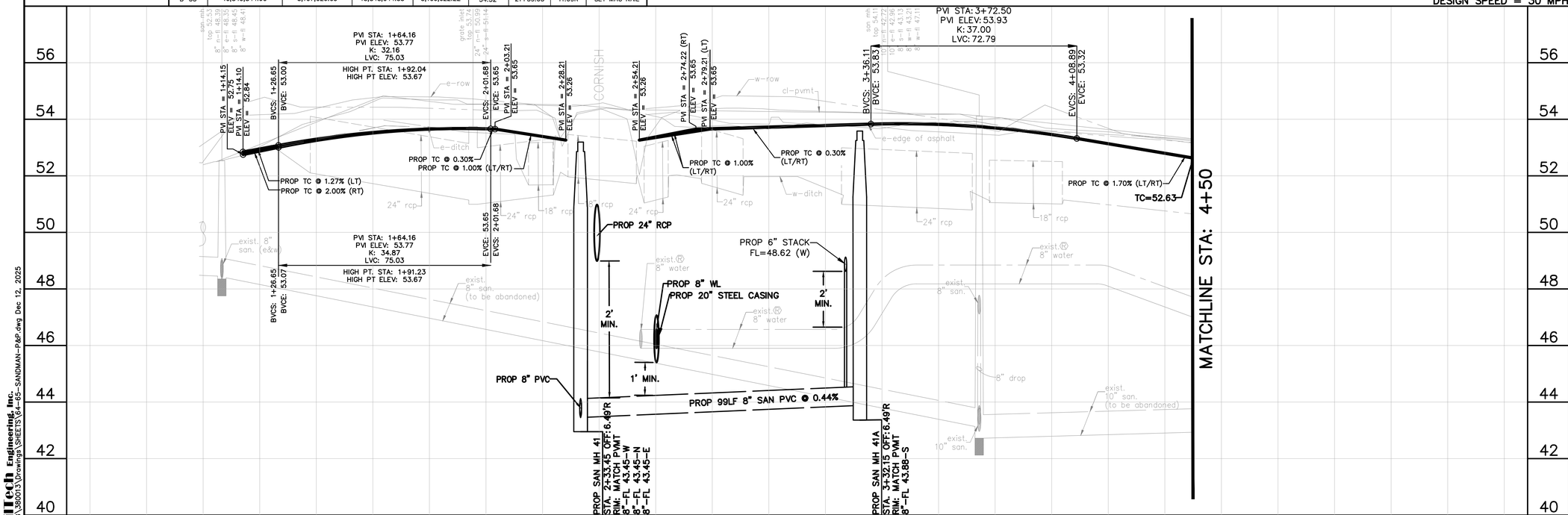
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET: 20 0 10 20

DESIGN SPEED = 30 MPH



BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06–09–2014.

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26
Date

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

Signature valid for six months.

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(This signature verifies existing underground facilities – not to be used for conflict verification)

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Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

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11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANDMAN STREET
STA: 1+00 TO 4+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 94 OF 345	

CivilTech Engineering, Inc.
C:\2018_2830013\Drawings\SHEETS\04-SS-SANDMAN-P&P.dwg Dec. 12, 2025

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

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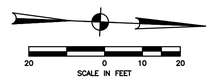
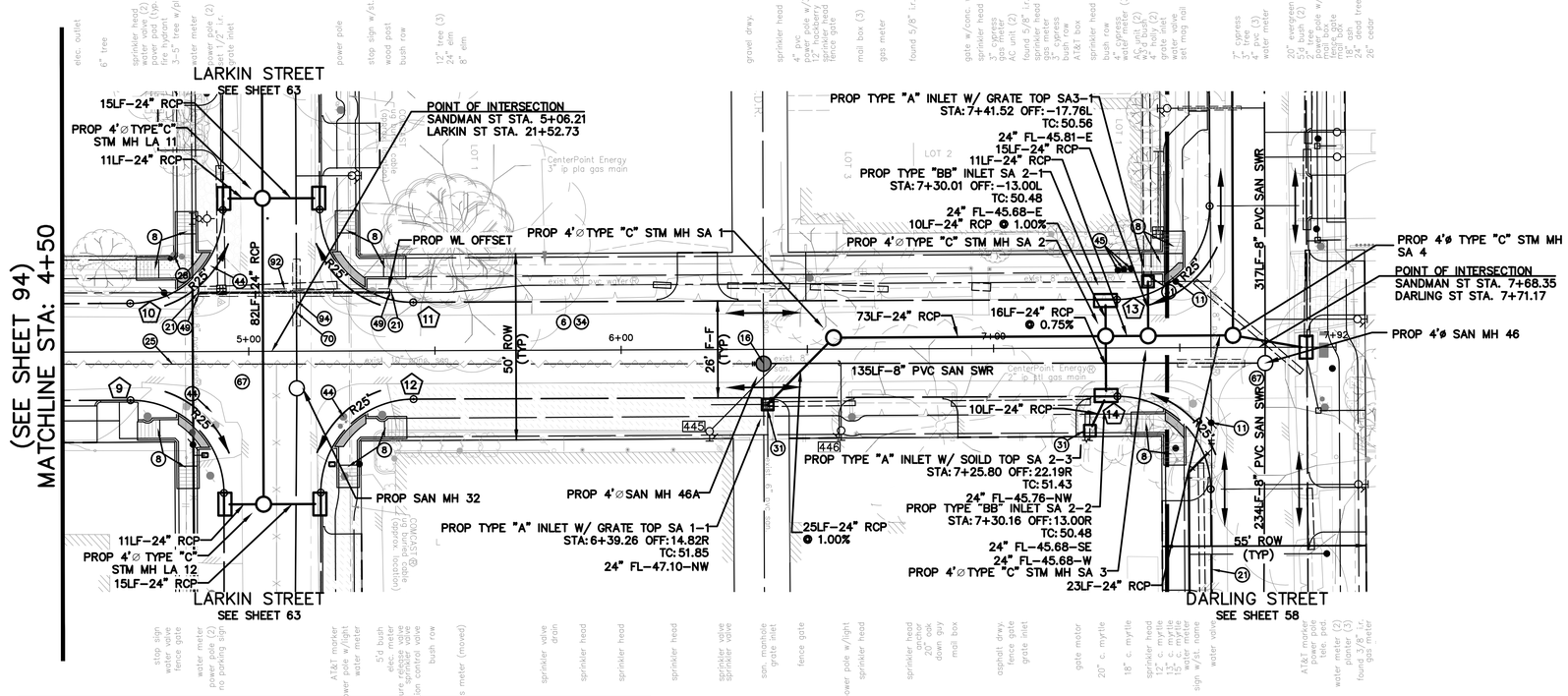
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

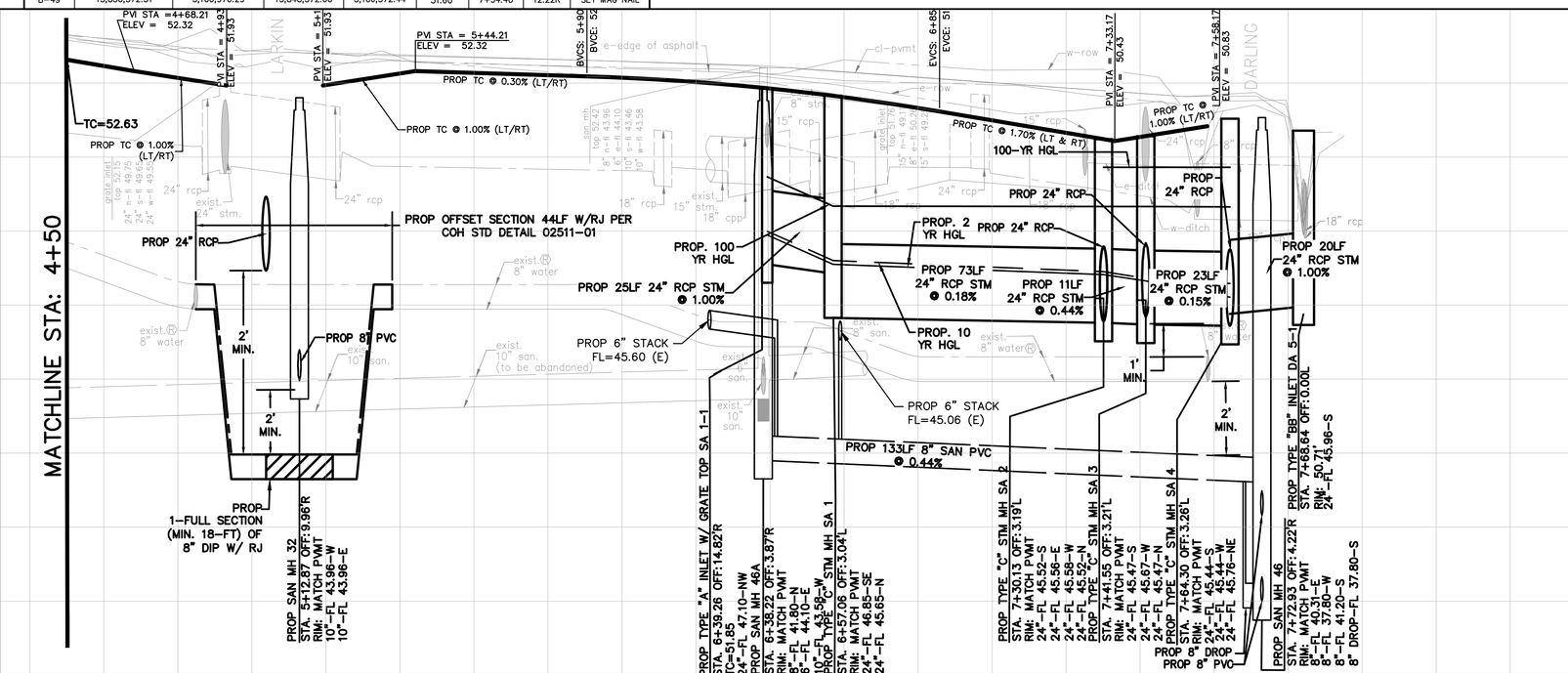
PAVEMENT GEOMETRICS		
No.	Station	Offset
9	4+68.21	12.99' RT
10	4+68.21	13.01' LT
11	5+44.21	13.01' LT
12	5+44.21	12.99' RT
13	7+33.17	12.99' LT
14	7+33.17	13.01' RT





SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B–49	13,850,372.31	3,106,976.29	13,848,572.00	3,106,572.44	51.60'	7+54.40	12.22R	SET MAG NAIL

SANDMAN STREET



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Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

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STATE OF TEXAS
ROBERT A. HILL
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11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

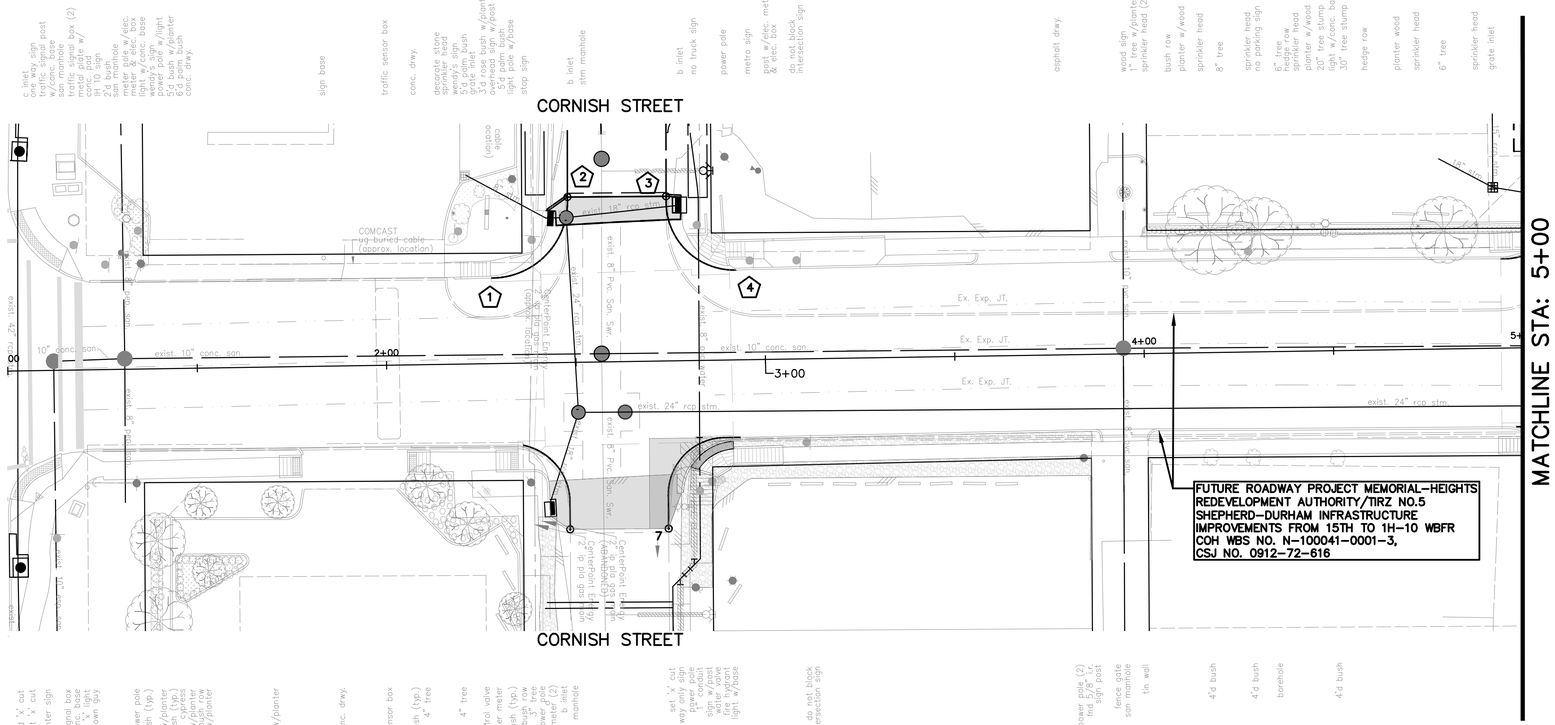
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANDMAN STREET
STA: 4+50 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 95 OF 345	

civilTech Engineering, Inc.
0:\2018\J18001\Drawings\SHEETS\PLS–SANDMAN–P&P.dwg Dec 12, 2025



PAVEMENT GEOMETRICS		
No.	Station	Offset
1	2+18.97	22.46' LT
2	2+49.09	52.10' LT
3	2+75.11	54.15' LT
4	3+05.36	23.81' LT
5	2+17.60	21.48' RT
6	2+47.41	51.75' RT
7	2+73.43	50.09' RT
8	3+03.22	20.38' RT
9	4+83.50	24.29' LT

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

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5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

SCALE IN FEET
20 0 10 20

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

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NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 03/18/26
Date

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

Signature valid for six months.

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Brian L Hill 03/24/26
Date

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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

N DURHAM DRIVE
STA: 1+00 TO 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 96 OF 345	

CivilTech Engineering, Inc.
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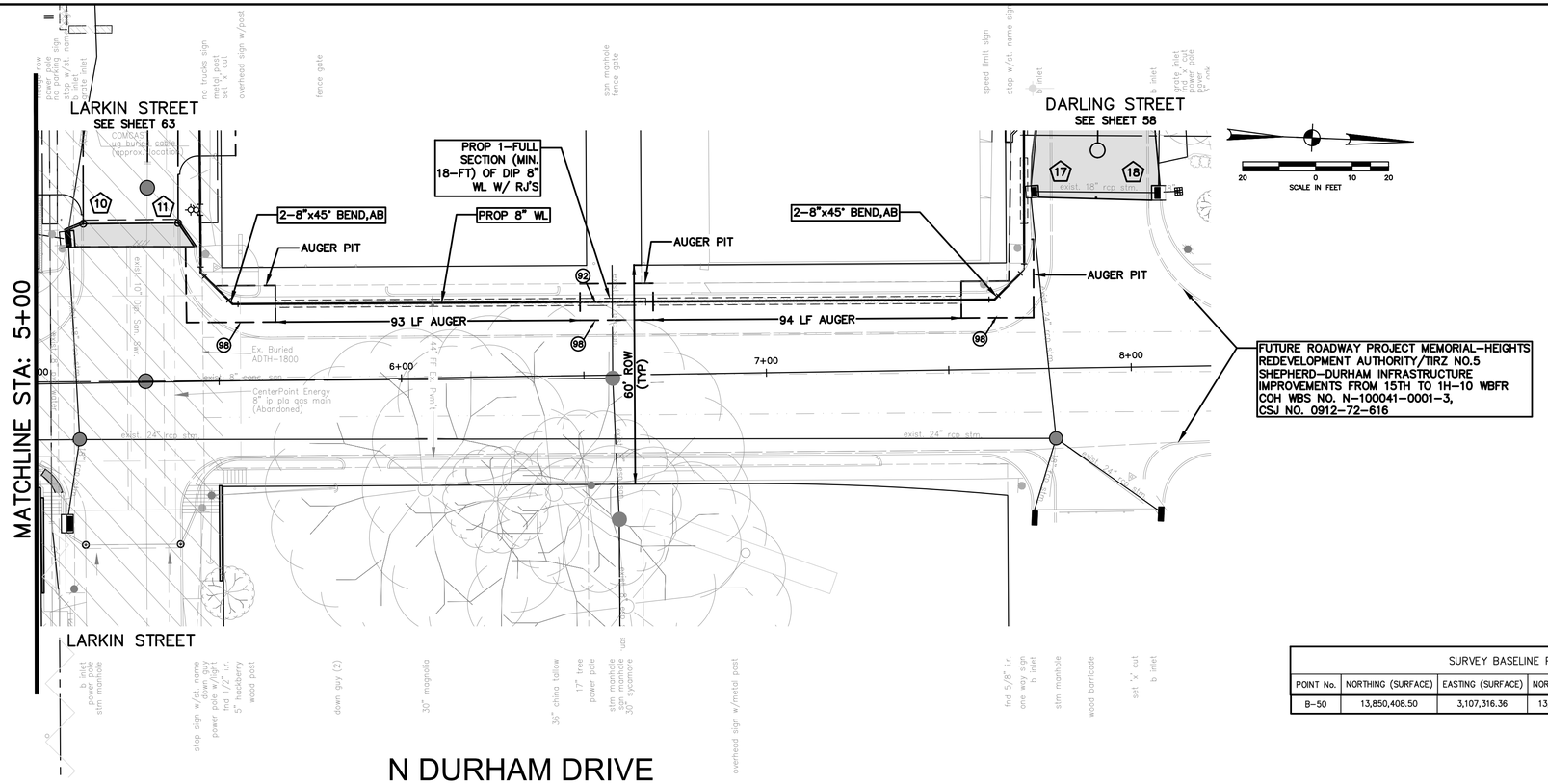
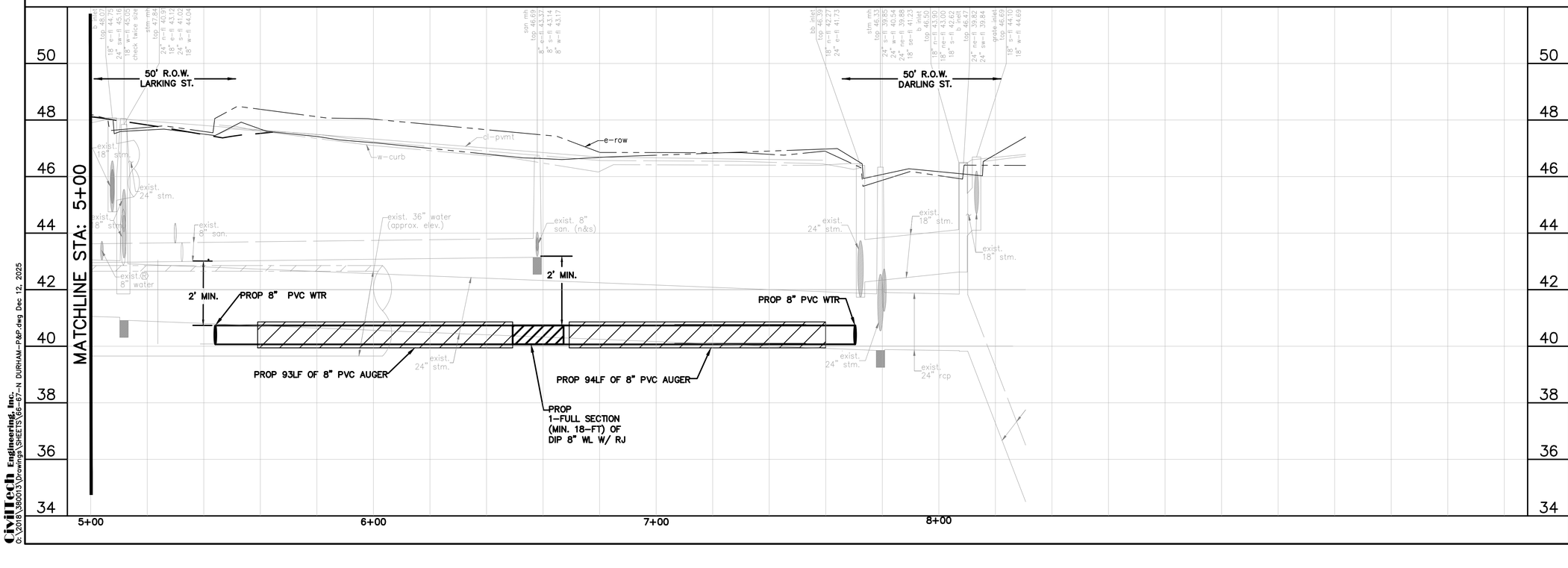


PAVEMENT GEOMETRICS		
No.	Station	Offset
10	5+14.13	54.06' LT
11	5+40.13	53.20' LT
12	5+69.79	22.85' LT
17	7+79.07	50.68' LT
18	8+05.08	51.18' LT

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-50	13,850,408.50	3,107,316.36	13,848,608.18	3,106,912.46	46.29'	10+95.76	8.44L	SET 'X' IN CON.



REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 -4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121-122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112-118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197-211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119-120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143-146)

BENCHMARK:

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STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

N DURHAM DRIVE
STA: 5+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 97 OF 345	

CivilTech Engineering, Inc.
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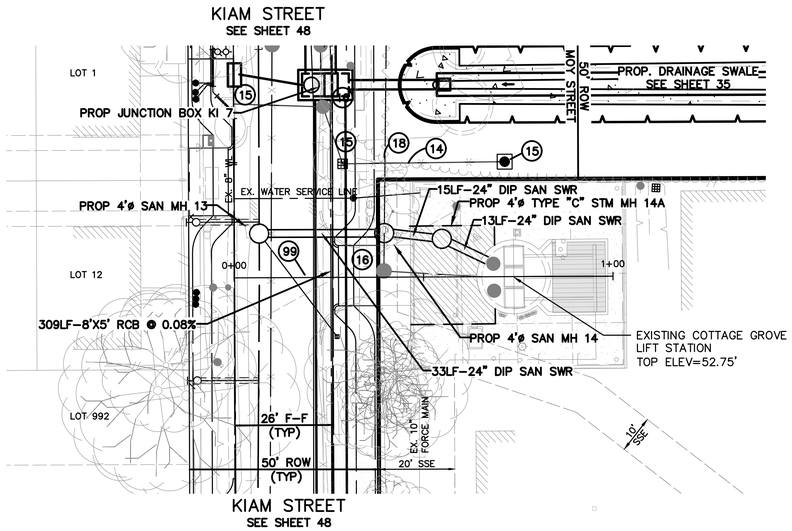


box w/post
metal post
fire dept. box
set mag nail
metal plate
fire hydrant
water valve

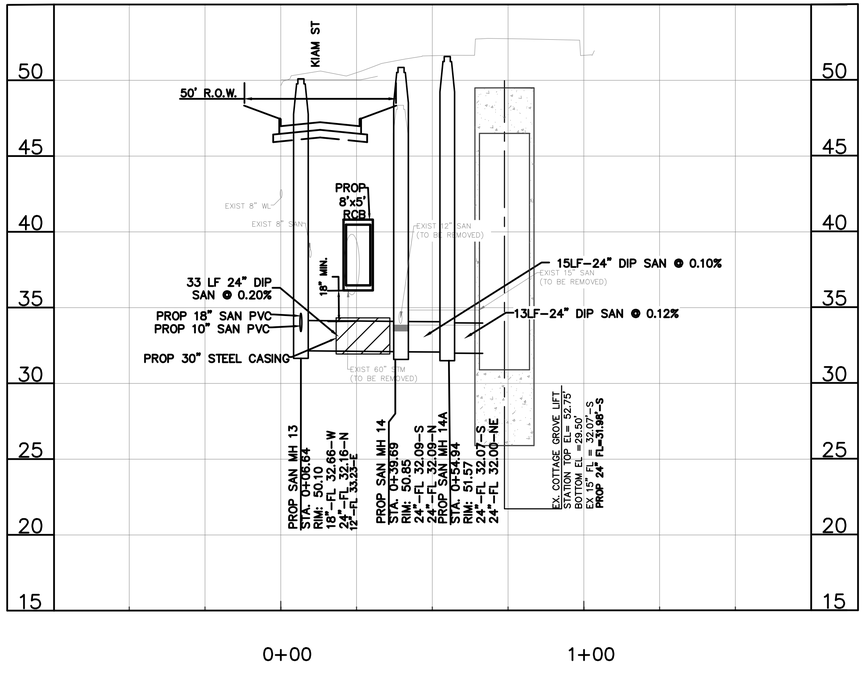
fnd mag nail
stm manhole

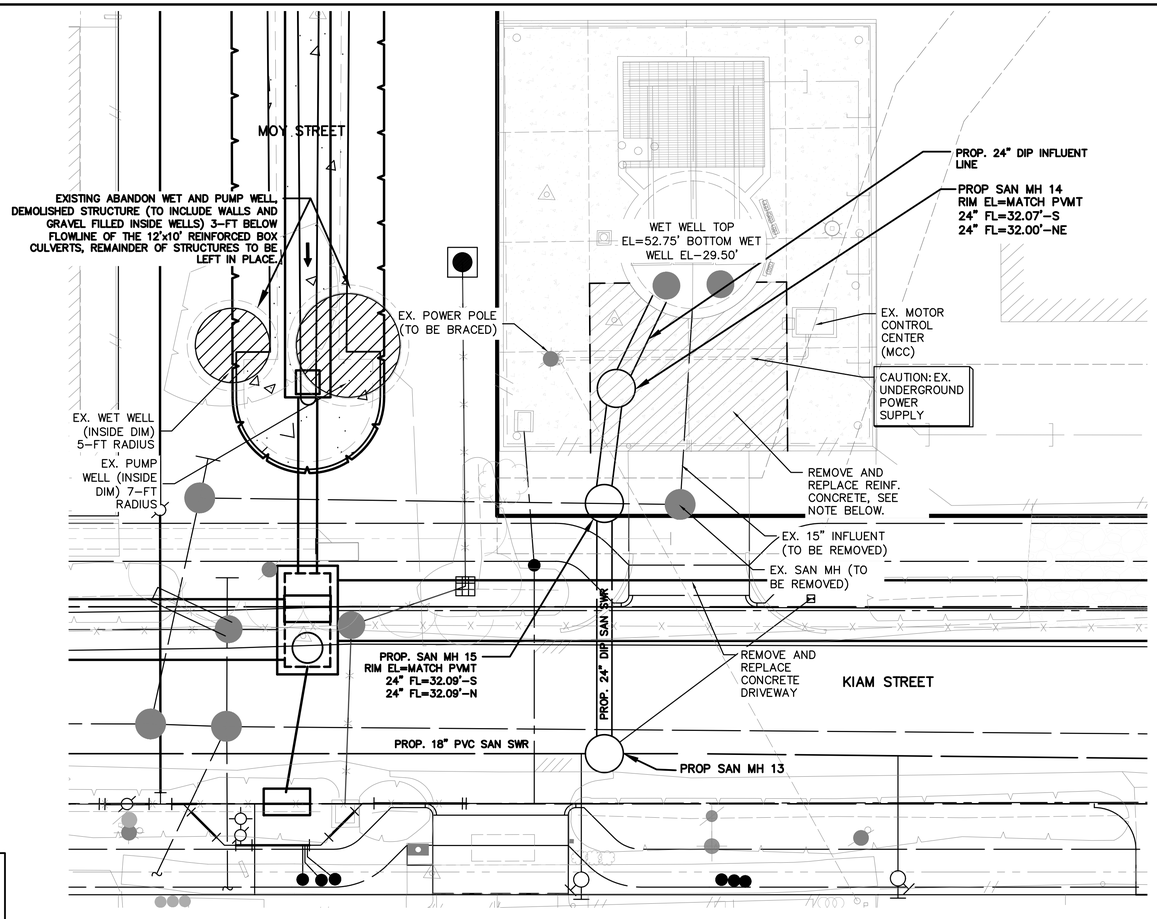
grate inlet
water meter

6' stump (4)
san manhole
6'd bush
12" c. myrtle
8" c. myrtle
metal plate
conc. pad

metal plate
power pole w/light
metal box
lift station box
san manhole (2)
e inlet
pump (3)
vent
light w/post
metal rack w/pvc
pump box
set 'x' mark
metal post (typ.)
grate hatch

LIFT STATION CONNECTION





COTTAGE GROVE LIFT STATION
PLAN VIEW

SCALE: 1" = 10'

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-66	13,850,880.12	3,106,007.75	13,849,079.74	3,105,604.02	50.81'	11+46.72	9.14L	SET MAG NAIL

NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING REINFORCED CONCRETE AND STABILIZING SUBGRADE FOR THE INSTALLATION OF PROP. SAN MH 14 AT NO ADDITIONAL COST. THE COST SHALL BE INCIDENTAL TO ITEM 195 THE INSTALLATION TO 24-INCH DIAMETER SANITARY SEWER, OPEN CUT.
2. CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING SECURITY CHAIN LINK FENCE FOR THE INSTALLATION OF PROP. SAN MH 14 AT NO ADDITIONAL COST. THE COST SHALL BE INCIDENTAL TO ITEM 195 THE INSTALLATION TO 24-INCH DIAMETER SANITARY SEWER, OPEN CUT.
3. CONTRACTOR IS RESPONSIBLE FOR SECURING THE LIFT STATION AT THE END OF THE DAY, TO INCLUDE TEMPORARY FENCING TO PREVENT SOMEONE FROM ENTERING THE SITE.
4. CAUTION EXISTING ELECTRICAL CONDUIT CROSSING PROPOSED 24-INCH SANITARY SEWER.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING THE INTERIOR OF THE LIFT STATION WITH HIGH PRESSURE WATER PRIOR TO CONNECTION TO THE LIFT STATION AT NO ADDITIONAL COST. THE COST SHALL BE INCIDENTAL TO ITEM 195 THE INSTALLATION TO 24-INCH DIAMETER SANITARY SEWER, OPEN CUT.
6. CONTRACTOR TO CORE INTO THE EXISTING WET WELL FOR THE INSTALLATION OF THE PROPOSED 24-INCH INFLUENT LINE AT NO ADDITIONAL COST. THE COST SHALL INCIDENTAL TO ITEM 195 THE INSTALLATION TO 24-INCH DIAMETER SANITARY SEWER, OPEN CUT.
7. CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF THE REINFORCED CONCRETE COLLAR AT NO ADDITIONAL COST. THE COST SHALL INCIDENTAL TO ITEM 195 THE INSTALLATION TO 24-INCH DIAMETER SANITARY SEWER, OPEN CUT.

REV	DESCRIPTION	BY	DATE

LEGEND

EXISTING 6" REINFORCED CONCRETE PAVEMENT WITH 8" PERIMETER FOOTING, TO BE SAWCUT AND REMOVED AND REPLACED.

20 0 10 20
SCALE IN FEET

BENCHMARK:

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HOUSTON PUBLIC WORKS

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CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 98 OF 345	

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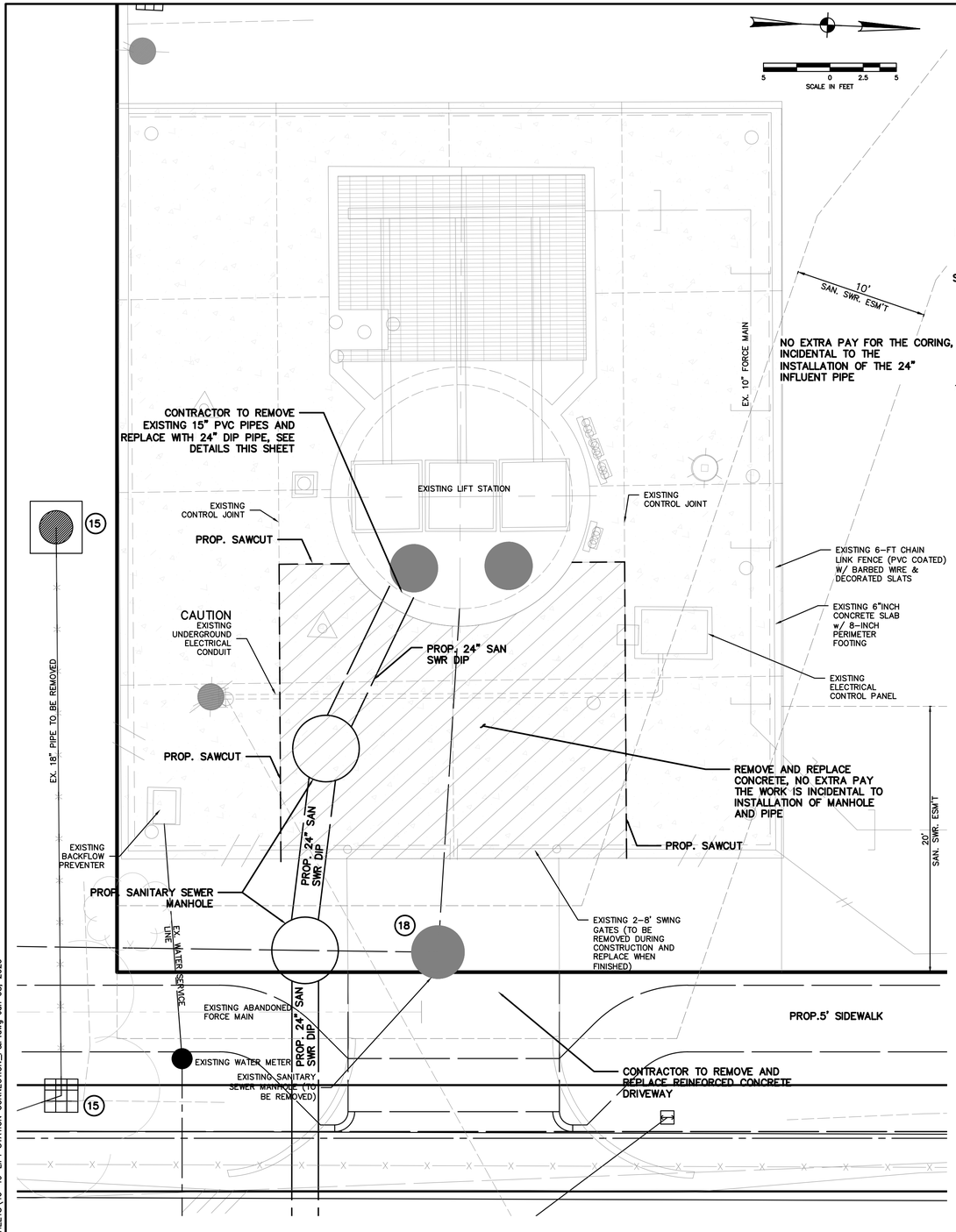
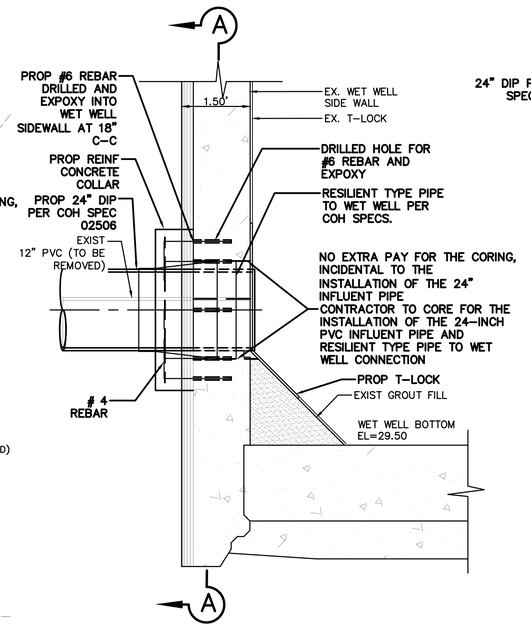
REV	DESCRIPTION	BY	DATE



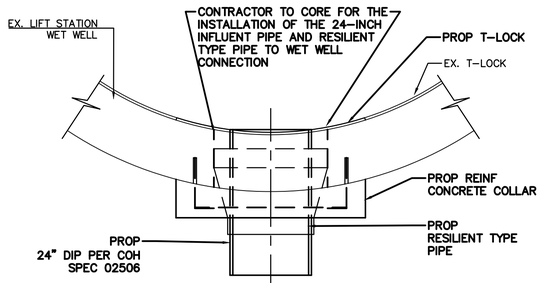
LIFT STATION DEMOLITION PLAN

SCALE: 1" = 5'



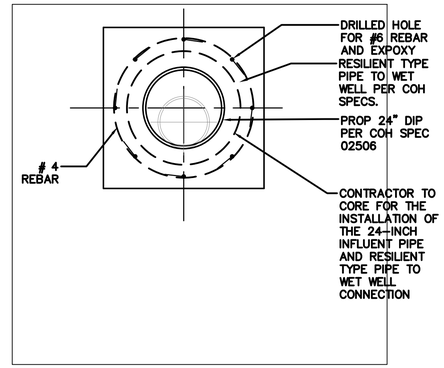
SANITARY INFLUENT CONNECTION PROFILE VIEW

SCALE: 1" = 2'



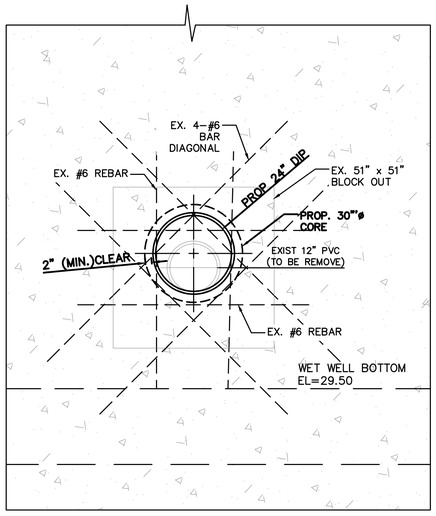
SANITARY INFLUENT CONNECTION PLAN VIEW

SCALE: 1" = 2'



SANITARY INFLUENT CONNECTION ELEVATION VIEW

SCALE: 1" = 2'

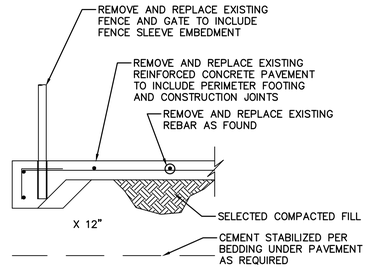


SECTION A-A

SCALE: 1" = 2'

GENERAL NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL COMPLY WITH THE CITY OF HOUSTON WATER AND WASTEWATER SPECIFICATIONS.
2. WET WELLS ARE CONFINED SPACES AND SHOULD BE TREATED WITH ALL SAFETY PRECAUTIONS.
3. CONTRACTOR TO REMOVE EXISTING GATE AND CHAIN LINK FENCE, CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A TEMPORARY FENCE AT THE END OF THE DAY.
4. CONTRACTOR SHALL SAWCUT REINFORCED CONCRETE TO INCLUDE FOOTING, EXPOSE REBAR FOR TYING PROPOSED REBAR FOR PAVEMENT REPLACEMENT
5. CONTRACTOR SHALL USE DIVERSION PUMPING DURING THE CLEANING OF THE WET WELL AND NEW CONNECTION AND WHILE REPLACING SANITARY SEWER MANHOLES AND INFLUENT LINE.
6. CONTRACTOR SHALL CLEAN TO REMOVE, GREASE OR OTHER SURFACE CONTAMINATES USING HYDRO-GRIT BLASTING AT 3,500 PSI MINIMUM OR OTHER MECHANICAL SCARIFICATION TECHNIQUES APPROVED BY THE ENGINEER.
7. CONTRACTOR SHALL REPLACE DAMAGED T-LOCK PVC LINER, IF APPLICABLE.



PAVING EDGE DETAIL

SCALE: N.T.S.

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CITY OF HOUSTON PM	
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SHEET NO. 99 OF 345	

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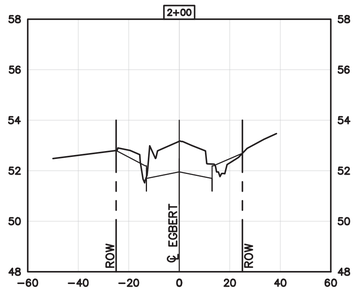
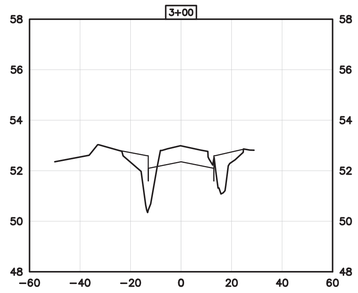
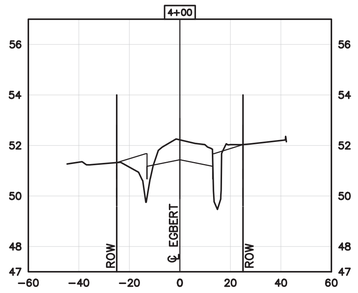
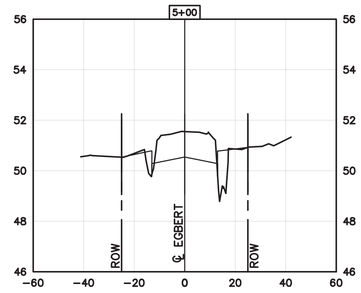
REV	DESCRIPTION	BY	DATE

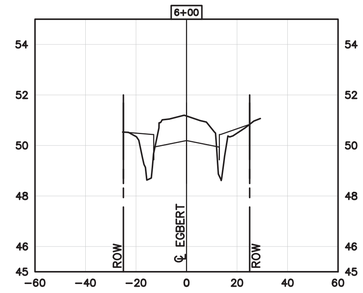
EGBERT

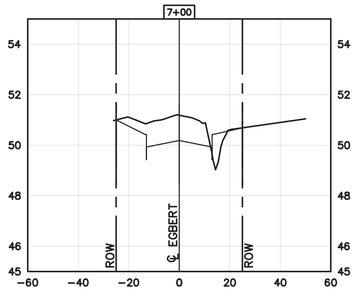


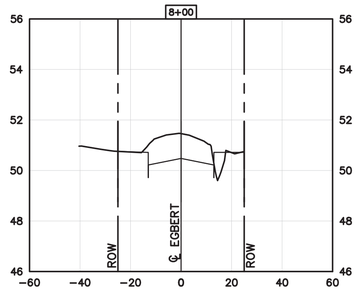


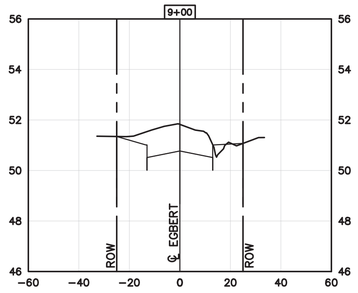












Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start					
EGBERT	200	43.49	0	-	-
	300	24.78	3.89	126.43	7.20
	400	28.8	3.8	9.92	14.24
	500	38.05	1.42	12.38	9.67
	600	33.94	2.84	13.33	7.89
	700	40.3	0.46	13.75	6.11
	800	40.36	0.05	14.94	0.94
	900	44.68	0	15.75	0.09
				Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)				* 206.49	46.15
25% Compaction					12
Net Cut (CY)					149
Net Cut(AC-FT)					0.09

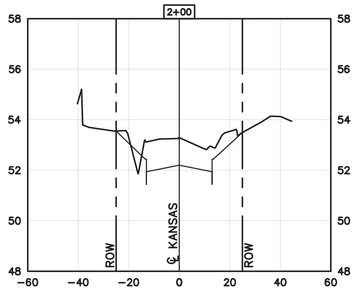
*INCLUDES 426 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

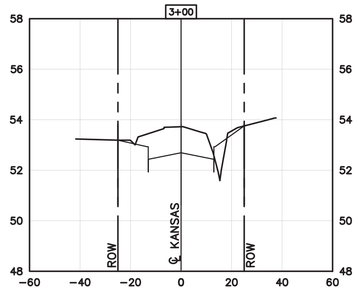
LEGEND

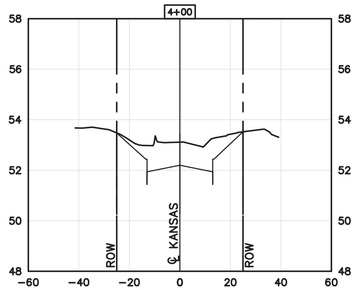
CUT

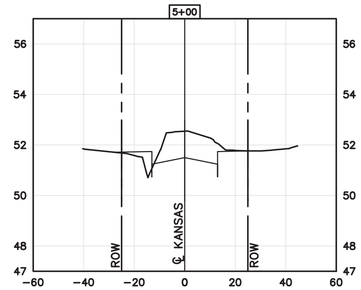
FILL

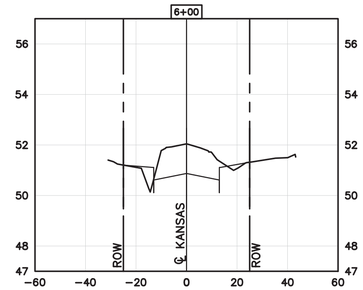
KANSAS

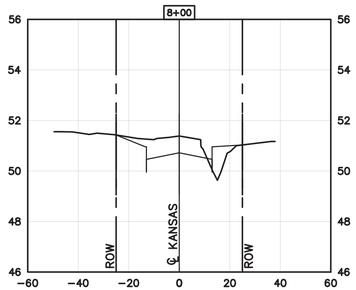


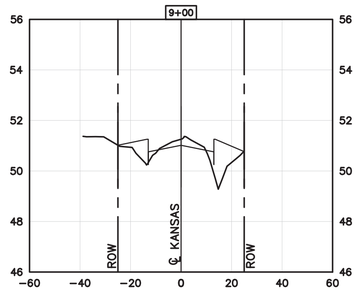












Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	200	47.63	0.00	-	-
KANSAS	300	42.8	0.16	167.46	0.30
	400	47.59	0.00	167.39	0.30
	500	39.83	0.00	161.89	0.00
	600	43.64	0.00	154.57	0.00
	800	31.59	0.39	278.63	1.44
	900	15.2	2.06	86.65	4.54
				Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)				* 1,016.59	6.57
25% Compaction					2
Net Cut (CY)					1008
Net Cut(AC-FT)					0.63

*INCLUDES 358 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

WOOLPERT
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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

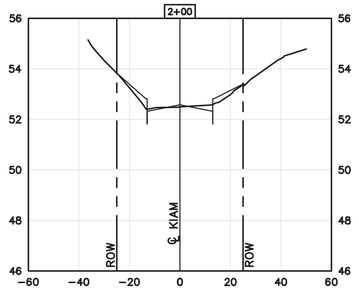
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
EARTHWORK CROSS SECTION
(1 OF 12)

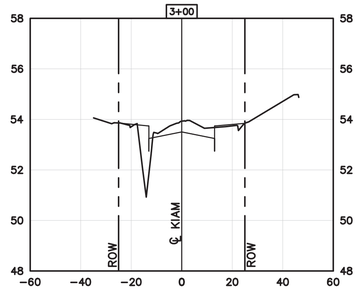
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 100 OF 345	

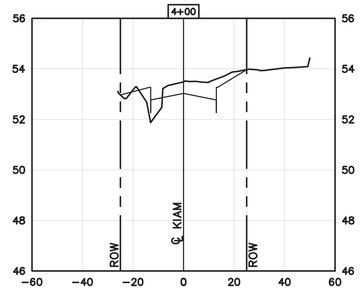
civiltech Engineering, Inc.
G:\2018\J38015\Drawings\SHEETS\75-EARTHWORK CROSS SECTION.dwg Feb 26, 2025

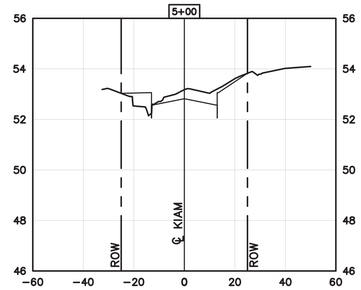
REV	DESCRIPTION	BY	DATE

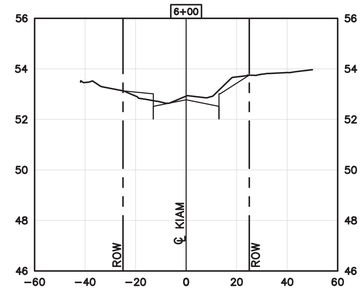
KIAM

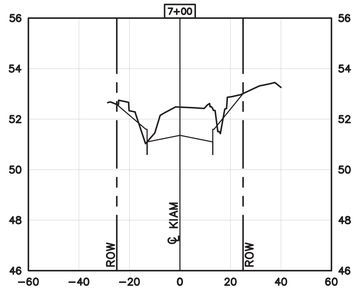


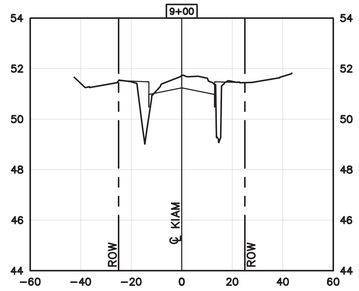


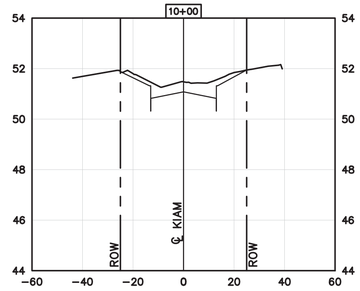


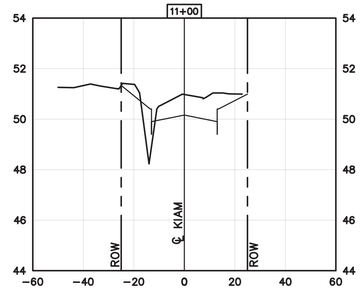


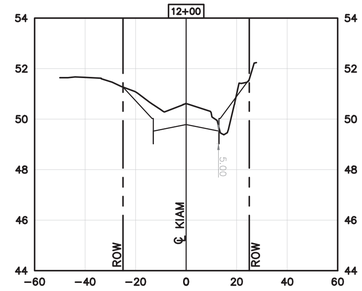


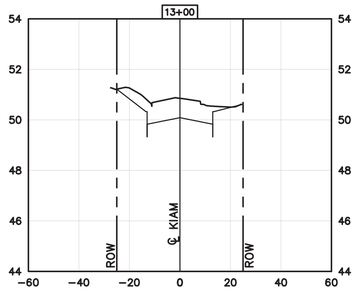


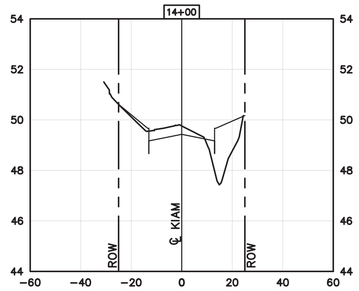


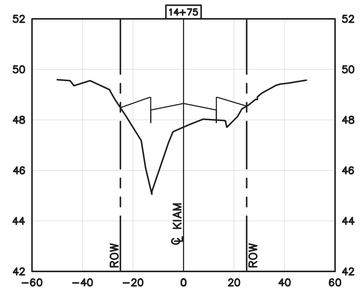












Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	200	18.13	0	-	-
KIAM	300	23.36	6.88	76.83	12.74
	400	26.29	8.4	91.94	28.30
	500	24.8	1.52	94.61	18.37
	600	22.79	0	88.13	2.81
	700	44.41	0	124.44	0.00
	900	23.3	18.2	250.78	67.41
	1000	31.25	9.1	101.02	50.56
	1100	35.93	3.49	124.41	23.31
	1200	37.29	3.49	135.59	12.93
	1300	40.45	0	143.96	6.46
	1400	20.68	6.07	113.20	11.24
				Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)			*	1,344.93	234.13
25% Compaction					59
Net Cut (CY)					1052
Net Cut(AC-FT)					0.65

*INCLUDES 1,237 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

LEGEND

CUT

FILL

WOOLPERT
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STATE OF TEXAS
ROBERT A. HILL
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02/17/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EARTHWORK CROSS SECTION
(2 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 101 OF 345	

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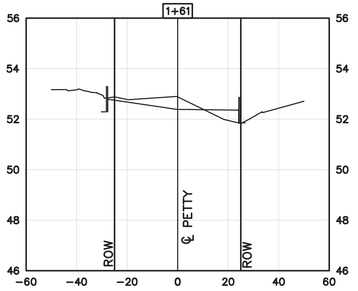
PETTY

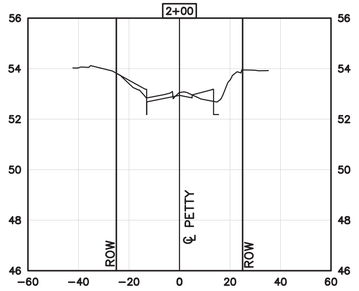
REV	DESCRIPTION	BY	DATE

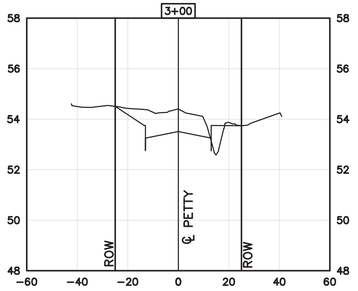
LEGEND

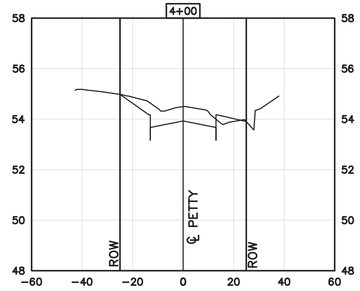
CUT

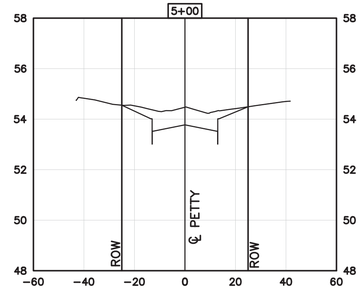
FILL

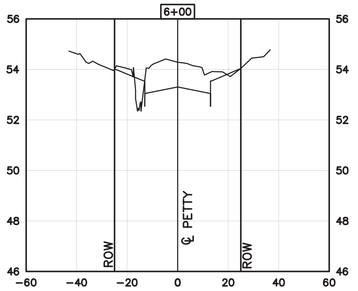


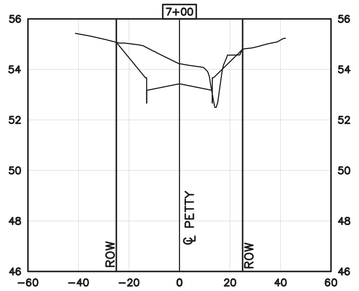


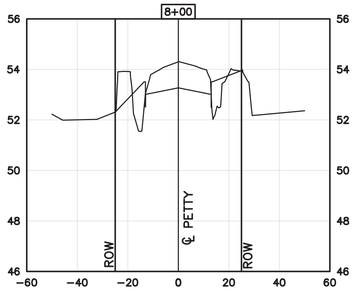


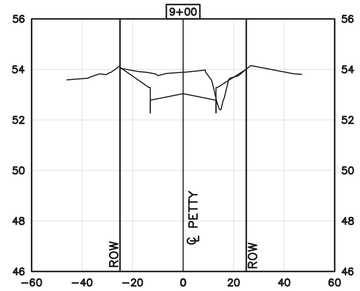


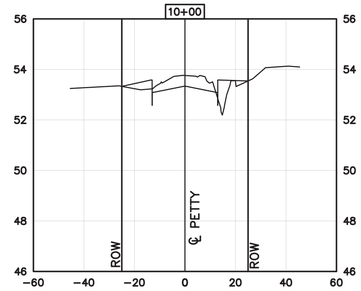


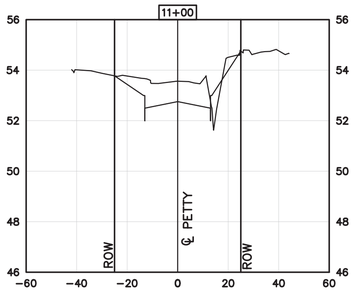


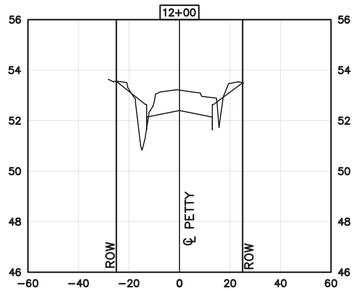


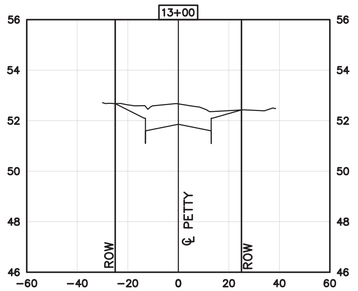


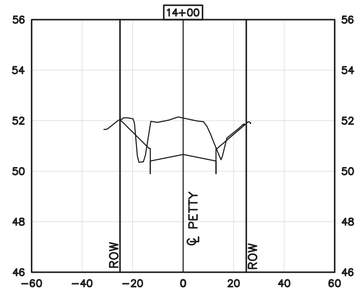


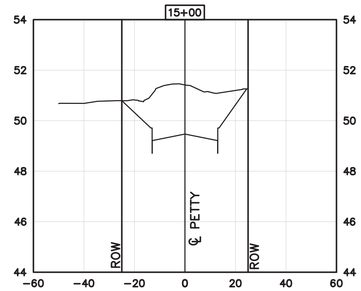


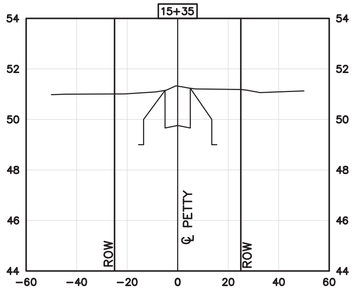












Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	200	27.1	0	-	-
PETTY	300	38.5	0.16	121.48	0.30
	400	34.12	0.89	134.48	1.94
	500	38.04	0	133.63	1.65
	600	43.34	0.08	150.70	0.15
	700	44.54	0.17	162.74	0.46
	800	36.32	2.02	149.74	4.06
	900	41.24	0	143.63	3.74
	1000	24.51	0.37	121.76	0.69
	1100	41.05	0.16	121.41	0.98
	1200	35.2	1.26	141.20	2.63
	1300	42.02	0	143.00	2.33
	1400	54.01	0	177.83	0.00
	1500	75.46	0	239.76	0.00
				Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)				* 1,941.37	18.93
25% Compaction					5
Net Cut (CY)					1918
Net Cut(AC-FT)					1.19

*INCLUDES 721 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

WOOLPERT
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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
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02/17/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EARTHWORK CROSS SECTION
(3 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 102 OF 345	

CivilTech Engineering, Inc.
O:\2018\438010\Drawings\SHEETS\78-EARTHWORK CROSS SECTION-2.dwg Feb 26, 2025

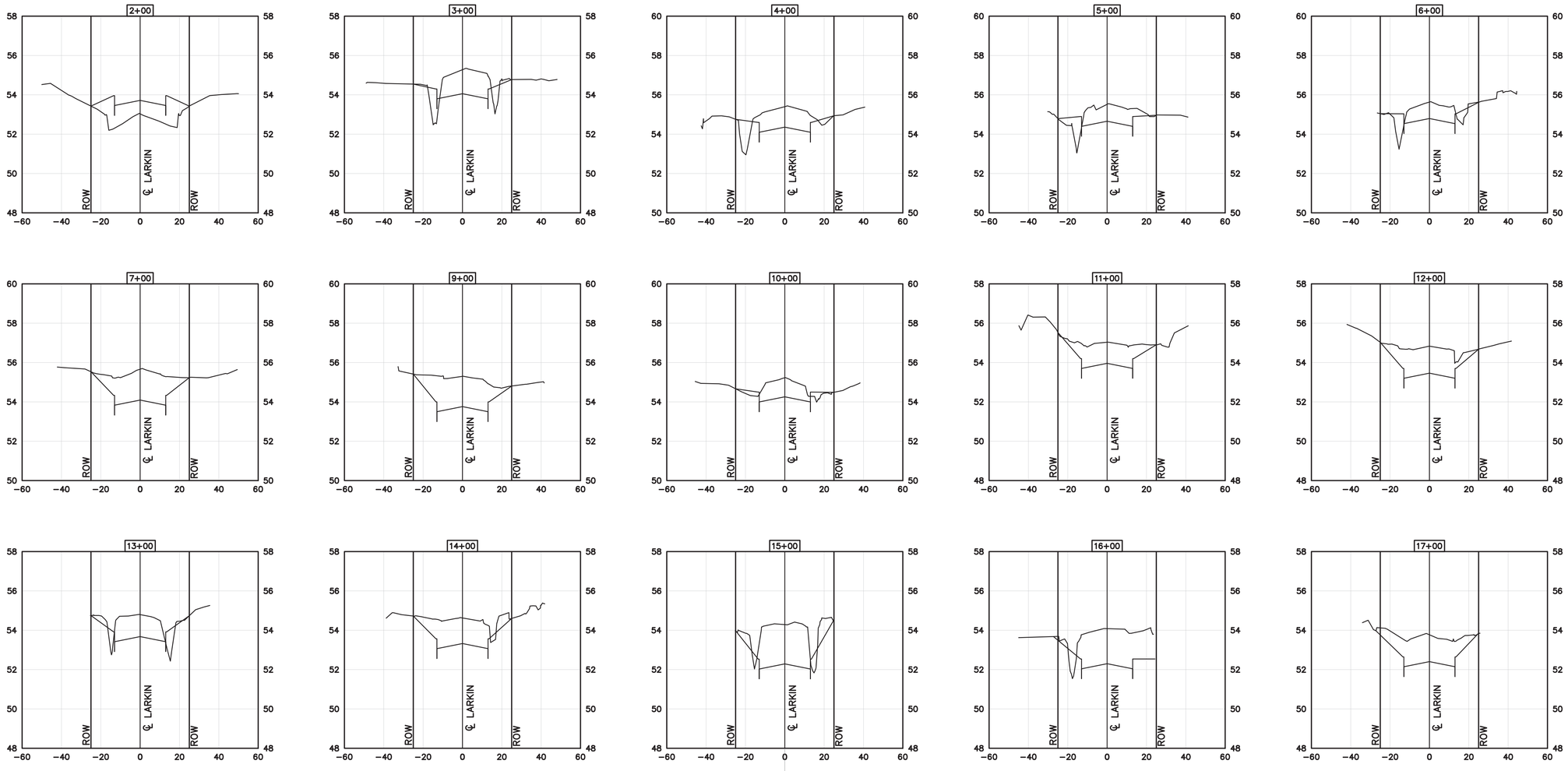
LARKIN 1/2

REV	DESCRIPTION	BY	DATE

LEGEND

CUT

FILL



WOOLPERT

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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
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PROFESSIONAL ENGINEER
02/11/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EARTHWORK CROSS SECTION
(4 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 103 OF 345	

CivilTech Engineering, Inc.
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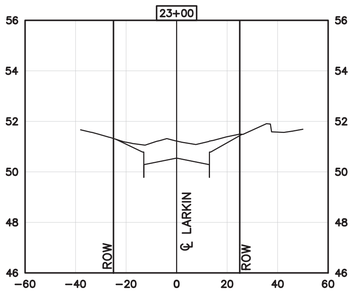
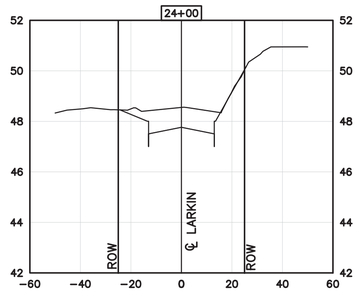
LARKIN 2/2





Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	200	0	12.22	-	-
LARKIN	300	44.22	2	81.89	26.33
	400	45.99	0	167.06	3.70
	500	37.92	0.78	155.39	1.44
	600	34.67	0.68	134.43	2.70
	700	61.45	0	178.00	1.26
	800	68.74	0	241.09	0.00
	900	64.85	0	247.39	0.00
	1000	38.06	0	190.57	0.00
	1100	50.62	0	164.22	0.00
	1200	57.43	0	200.09	0.00
	1300	41.61	0.45	183.41	0.83
	1400	55.43	0	179.70	0.83
LARKIN	1500	70.46	0	233.13	0.00
	1600	70.91	0	261.80	0.00
	1700	57.4	0	237.61	0.00
	1800	79.1	0	252.78	0.00
	1900	70.28	0	276.63	0.00
	2000	44.71	0	212.94	0.00

	Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)	* 3,598.13	37.11
25% Compaction		9
Net Cut (CY)		3552
Net Cut(AC-FT)		2.20

*INCLUDES 1,728 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

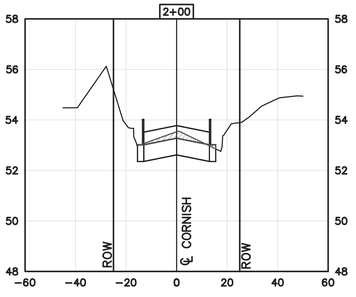
REV	DESCRIPTION	BY	DATE

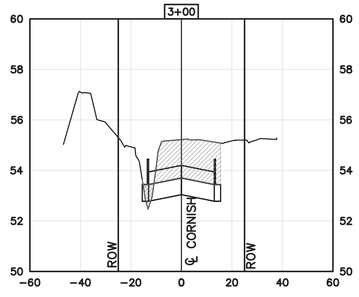
LEGEND

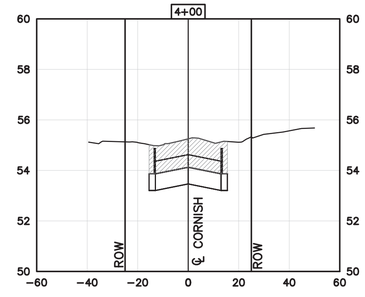
CUT

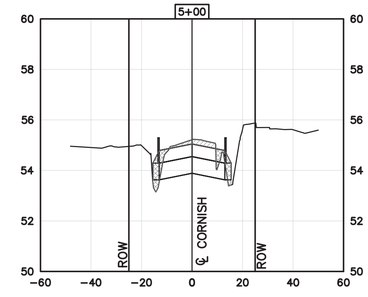
FILL

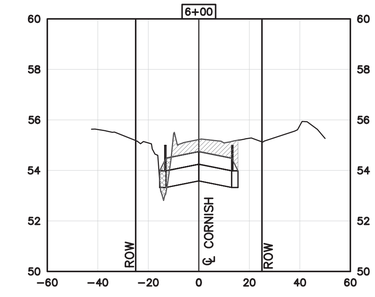
CORNISH 1/2

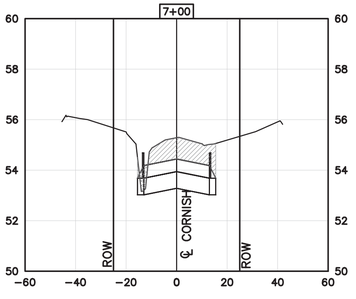


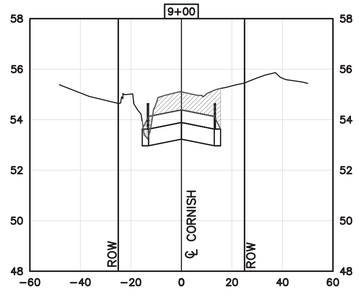


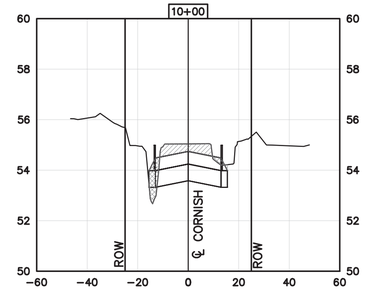


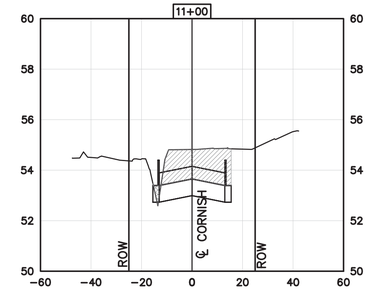


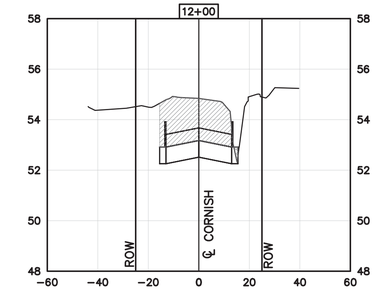












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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
EARTHWORK CROSS SECTION
(5 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 104 OF 345	

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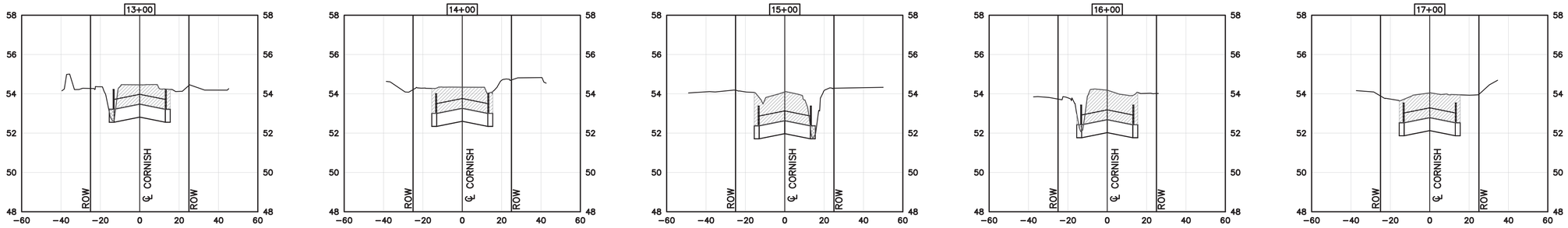
CORNISH 2/2

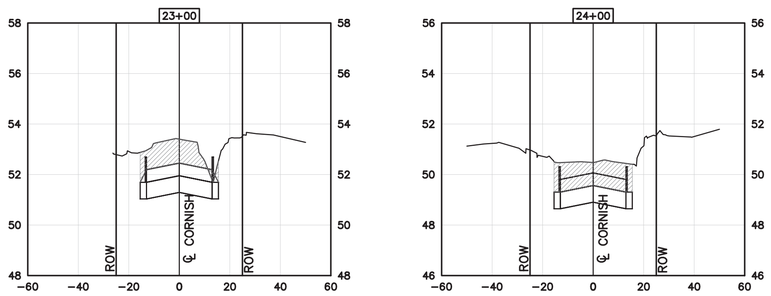
REV	DESCRIPTION	BY	DATE

LEGEND

CUT

FILL





Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	200	3.88	0.31	-	-
CORNISH	300	40.56	2.48	82.30	5.17
	400	35.94	0	82.30	4.59
	500	2.99	8.51	141.67	15.76
	600	15.13	4.45	72.09	24.00
	700	22.22	2.31	33.56	12.52
	800	23.58	0	69.17	4.28
	900	20.76	1.93	84.81	3.57
	1000	8.1	5.87	82.11	14.44
	1100	35	1.21	53.44	13.11
	1200	49.59	0.56	79.81	3.28
	1300	28.89	1.4	156.65	3.63
	1400	36.81	0	145.33	2.59
	1500	38.87	1.25	121.67	2.31
	1600	40.59	0.58	140.15	3.39
	1700	40.27	0	147.15	1.07
	1800	44.94	0.59	149.74	1.09
	1900	31.15	1.19	157.80	3.30
	2000	21.64	2.38	140.91	6.61
	2100	37.19	1.73	97.76	7.61
	2200	41.64	0	108.94	3.20
	2300	23.92	0.69	145.98	1.28
	2400	33.37	0	121.41	1.28

	Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)	* 2,414.74	138.09
25% Compaction		35
Net Cut (CY)		2242
Net Cut(AC-FT)		1.39

*INCLUDES 1,614 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
EARTHWORK CROSS SECTION
(6 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 105 OF 345	

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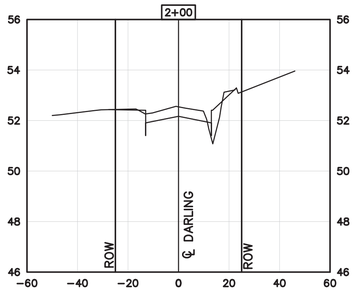
REV	DESCRIPTION	BY	DATE

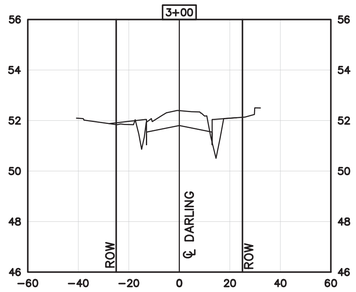
LEGEND

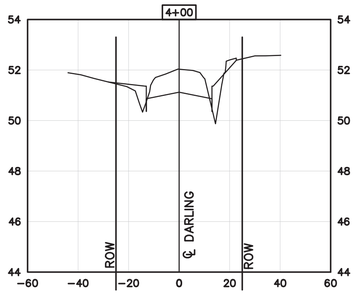
CUT

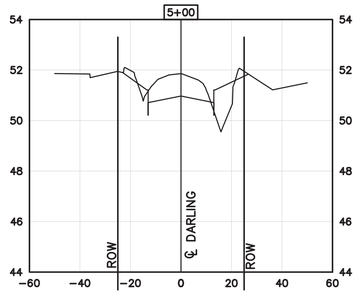
FILL

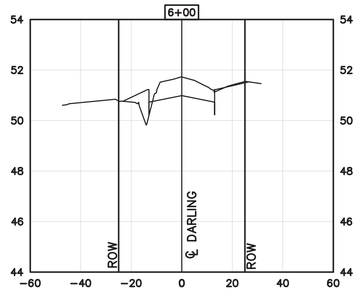
DARLING

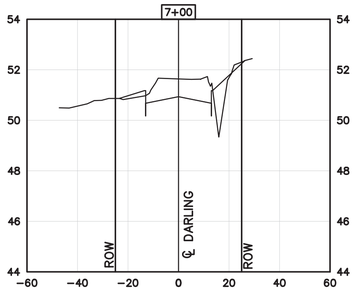


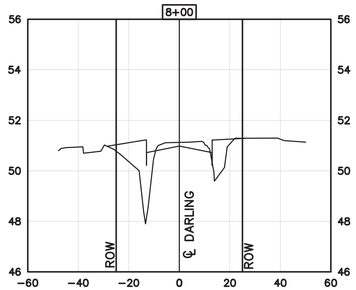


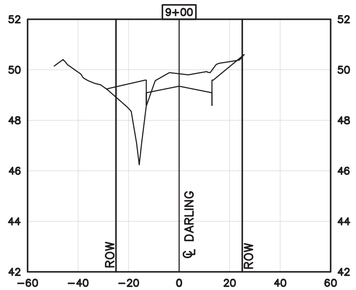


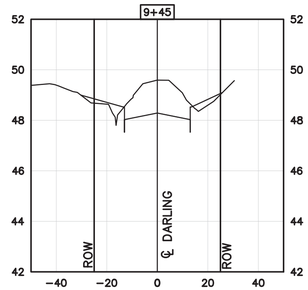












Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	200	24.01	0.29	-	-
DARLING	300	27.55	0.71	95.48	1.85
	400	32.65	0.48	111.48	2.20
	500	33.74	0.54	122.94	1.89
	600	20.17	1.18	99.83	3.19
	700	35.95	0.16	103.93	2.48
	800	16.14	7.89	96.46	14.91
	900	29.99	2.54	85.43	19.31
	1000	1483	0	2801.83	4.70
				Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)				* 3,517.39	50.54
25% Compaction					13
Net Cut (CY)					3454
Net Cut(AC-FT)					2.14

*INCLUDES 368 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
EARTHWORK CROSS SECTION
(7 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 106 OF 345	

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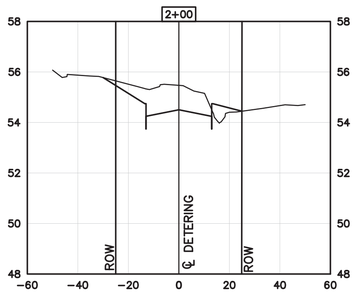
DETERING

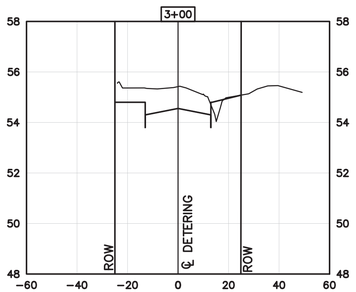
REV	DESCRIPTION	BY	DATE

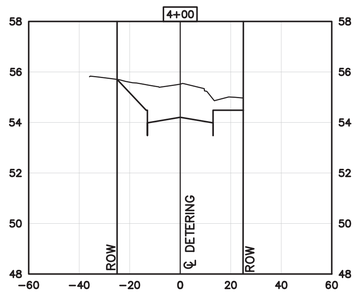
LEGEND

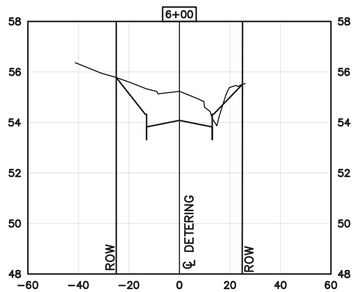
CUT

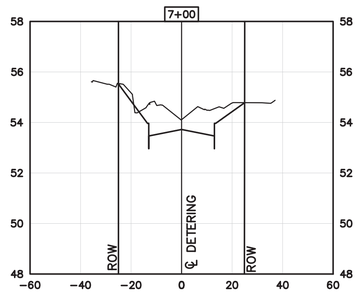
FILL

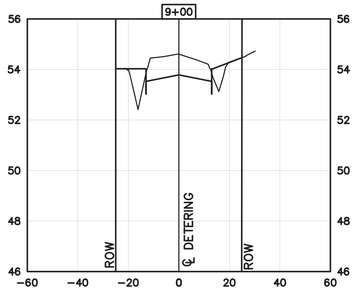


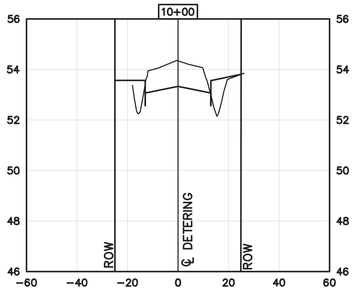


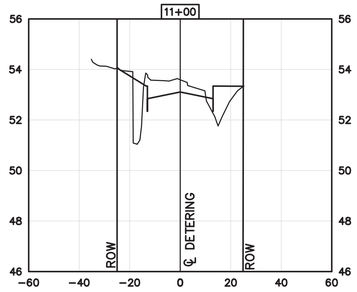


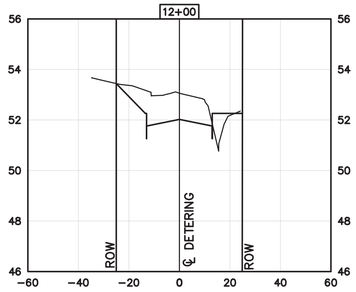


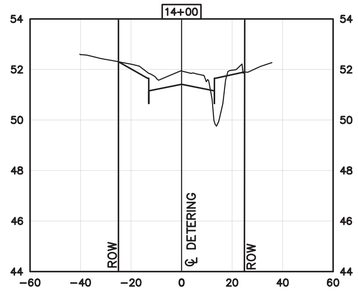


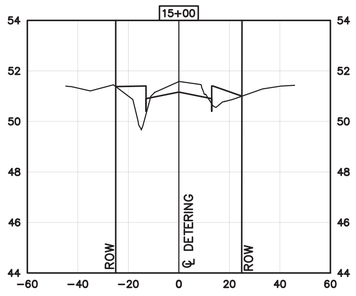


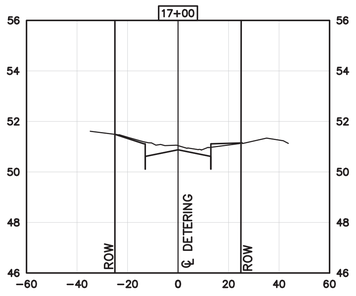


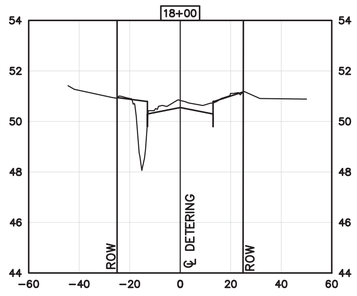


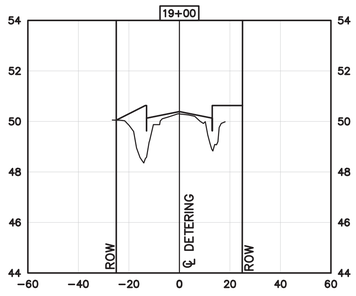












Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	200	42.8	0	-	-
DETERING	300	40.63	0	154.50	0.00
	400	55.7	0	178.39	0.00
	500	135.78	0	354.59	0.00
	600	48.49	0	341.24	0.00
	700	44.55	0	172.30	0.00
	800	13.79	0	108.04	0.00
	900	34.91	0.1	90.19	0.19
	1000	36.48	0.55	132.20	1.20
	1100	25.54	1.12	114.85	3.09
	1200	45.12	0.26	130.85	2.56
	1300	47.38	0.18	171.30	0.81
	1400	27.32	2.16	138.33	4.33
	1500	20.26	1.28	88.11	6.37
	1600	32.75	0.9	98.17	4.04
	1700	24.85	0	106.67	1.67
	1800	21.63	2.78	86.07	5.15
	1900	7.36	6.33	53.69	16.87
				Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)				* 2,519.48	46.28
25% Compaction					12
Net Cut (CY)					2462
Net Cut(AC-FT)					1.53

*INCLUDES 1,041 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

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02/11/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EARTHWORK CROSS SECTION
(8 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 107 OF 345	

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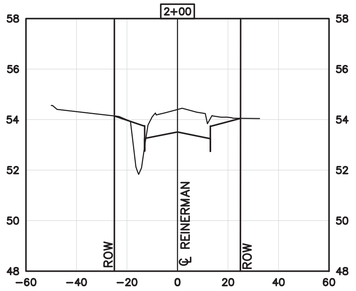
REINERMAN

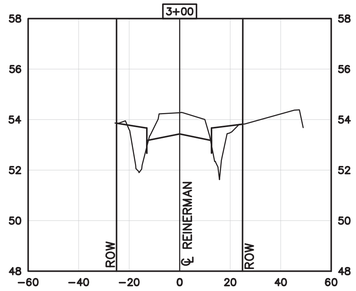
REV	DESCRIPTION	BY	DATE

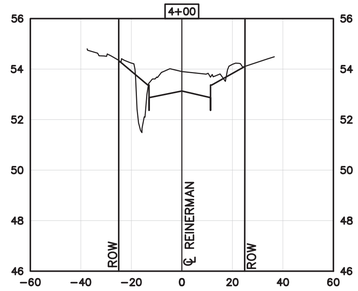
LEGEND

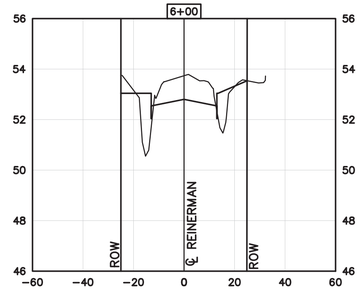
CUT

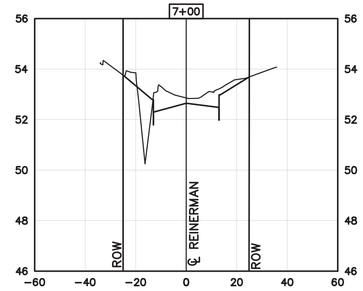
FILL

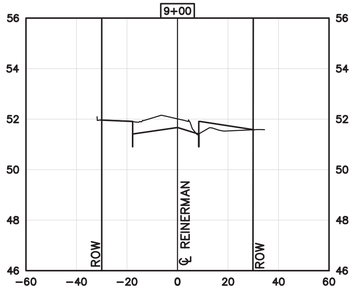


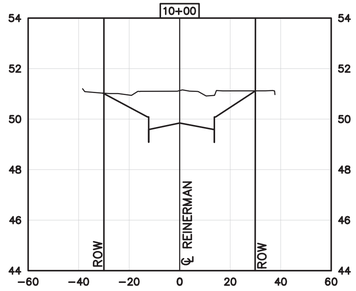


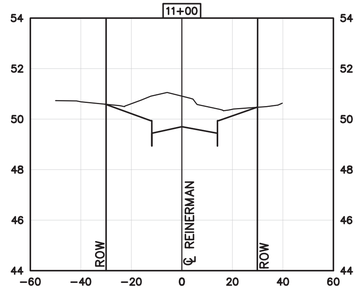


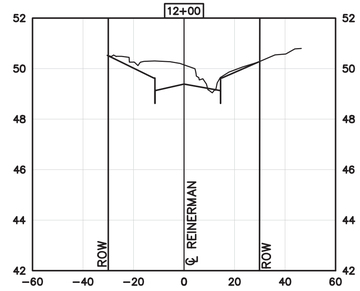


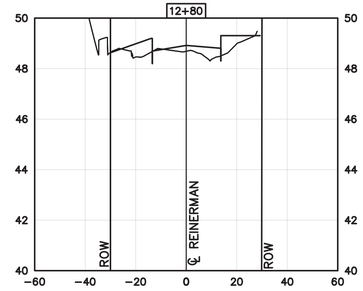












Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	100	21.07	0	-	-
	200	38.24	1.33	109.83	2.46
REINERMAN	300	31.24	1.3	128.67	4.87
	400	36.9	0.36	126.19	3.07
	500	44.61	0.17	150.94	0.98
	600	32.62	3.71	143.02	7.19
	700	30.02	0.52	116.00	7.83
	800	12.13	0	78.06	0.96
	900	27.79	0	73.93	0.00
	1000	58.38	0	159.57	0.00
	1100	53.16	0	206.56	0.00
	1200	36.5	0	166.04	0.00
	1300	9.7	0.01	85.56	0.02
				Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)				* 1,544.35	27.39
25% Compaction					7
Net Cut (CY)					1510
Net Cut(AC-FT)					0.94

*INCLUDES 1,269 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

WOOLPERT
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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EARTHWORK CROSS SECTION
(9 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 108 OF 345	

CivilTech Engineering, Inc.
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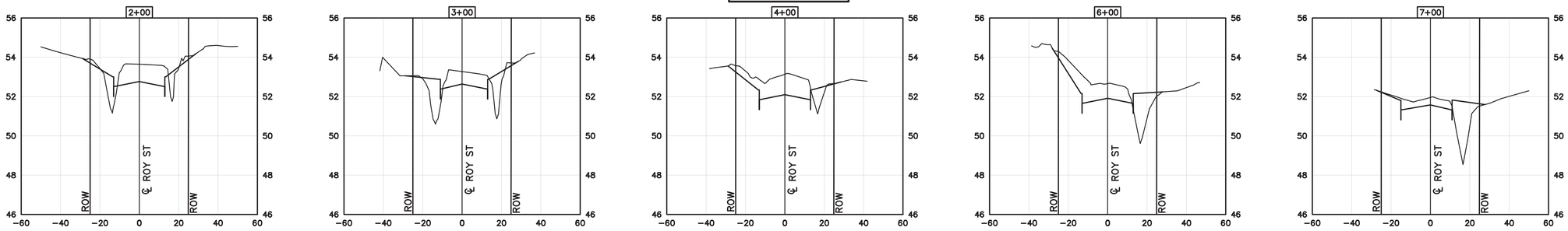
REV	DESCRIPTION	BY	DATE

LEGEND

CUT

FILL

ROY ST

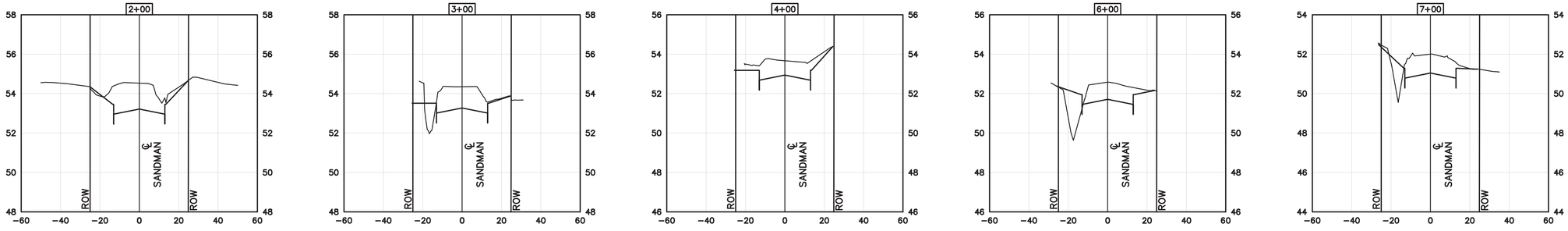


Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	100	22.44	0	-	-
ROY	200	37.77	1.74	111.50	3.22
	300	29.05	2.36	123.74	7.59
	400	44.38	0	135.98	4.37
	500	55.52	0	185.00	0.00
	600	38.89	1.12	174.83	2.07
	700	26.4	0.5	120.91	3.00
	730	19.7	4.01	25.61	2.51
				Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)				* 877.57	22.76
25% Compaction					6
Net Cut (CY)					849
Net Cut(AC-FT)					0.53

*INCLUDES 368 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

SANDMAN



Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	100	22.14	0	-	-
SANDMAN	200	53.92	0	140.85	0.00
	300	45.11	0.17	183.39	0.31
	400	41.87	0	161.07	0.31
	500	56.14	0.19	181.50	0.35
	600	37.65	0.53	173.69	1.33
	700	42.57	0.04	148.56	1.06
	750	34.97	4.28	71.80	4.00
				Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)				* 1,060.85	7.37
25% Compaction					2
Net Cut (CY)					1052
Net Cut(AC-FT)					0.65

*INCLUDES 418 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EARTHWORK CROSS SECTION (10 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 109 OF 345	

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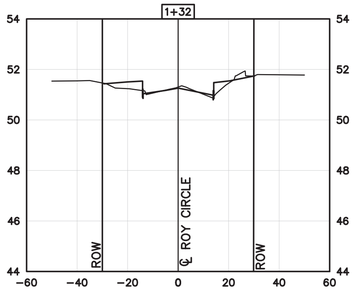
ROY CIRCLE 1/2

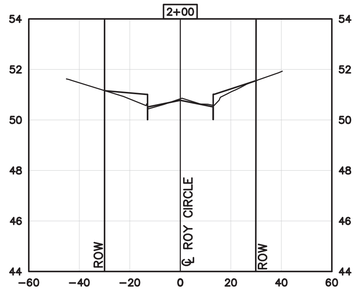
REV	DESCRIPTION	BY	DATE

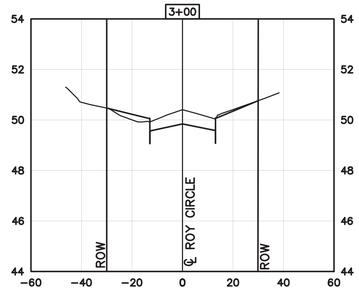
LEGEND

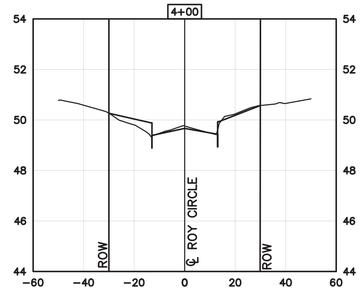
CUT

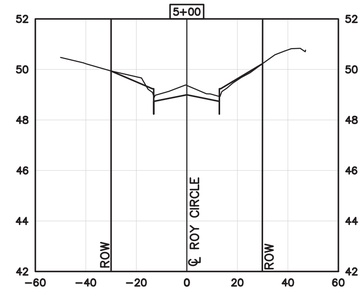
FILL

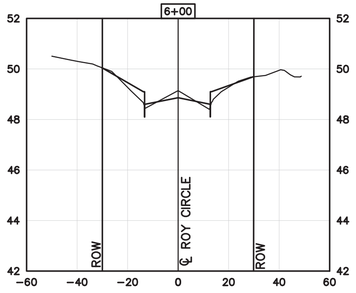


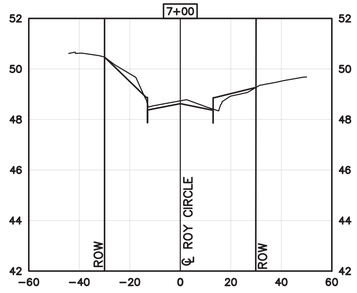


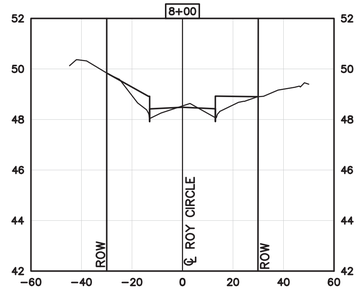


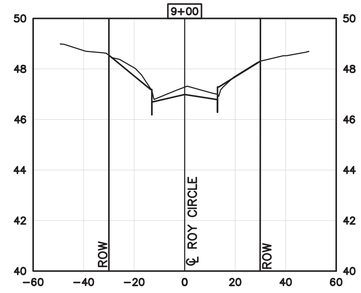


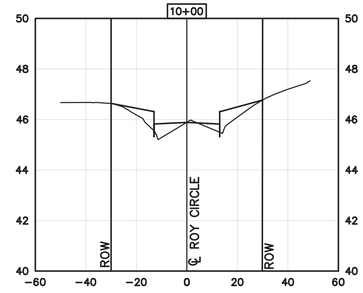


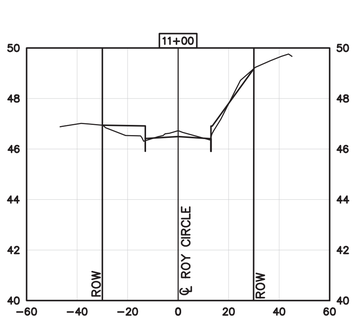


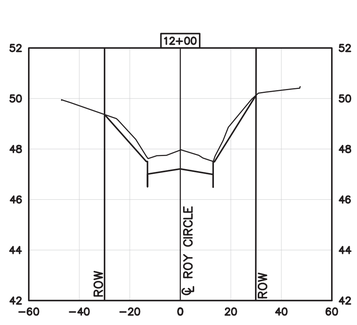


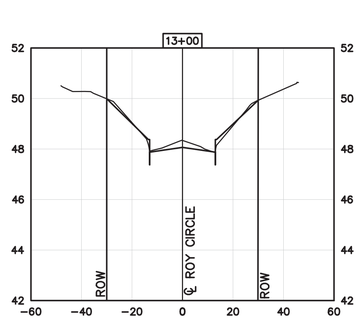


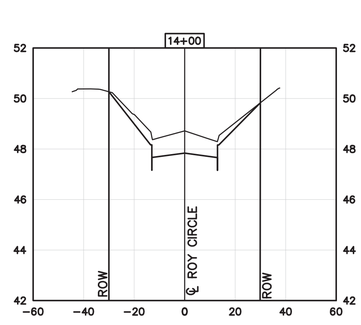


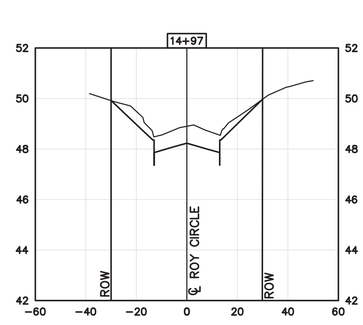












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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EARTHWORK CROSS SECTION
(11 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 110 OF 345	

CivilTech Engineering, Inc.
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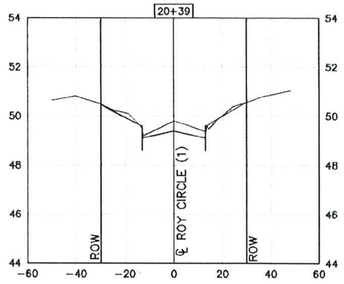
REV	DESCRIPTION	BY	DATE

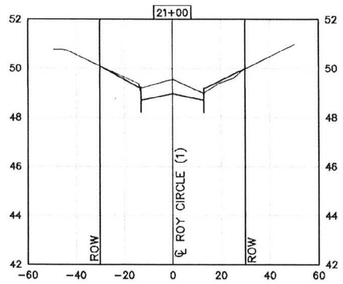
ROY CIRCLE 2/2

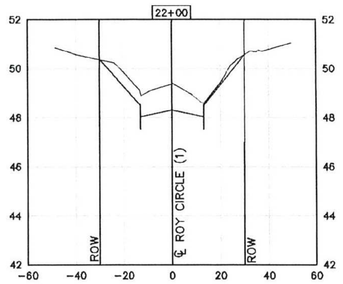
LEGEND

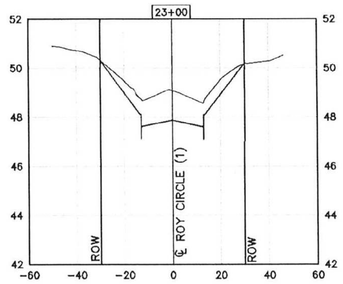
CUT

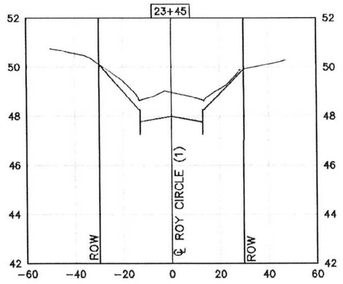
FILL











Cut & Fill Table

		CROSS-SECTION AREAS (SQ.FT)		VOLUMETRIC QUANTITIES (CY)	
	Station	Cut	Fill	Volume of Cut (CY)	Volume of Fill (CY)
Start	100	28.3	0	-	-
ROY CIRCLE	200	16.54	0	83.04	0.00
	300	30.7	0	87.48	0.00
	400	17.97	0	90.13	0.00
	500	24.64	0	78.91	0.00
	600	17.37	0	77.80	0.00
	700	20.16	0	69.50	0.00
	800	12.35	0	60.20	0.00
	900	24.11	0	67.52	0.00
	1000	9.19	0.17	61.67	0.31
	1100	18.41	0	51.11	0.31
	1200	36.63	0	101.93	0.00
	1300	21.13	0	106.96	0.00
	1400	40.54	0	114.20	0.00
	1498	37.92	0	142.39	0.00
	2030	25.42	0	624.02	0.00
	2100	30.67	0	72.71	0.00
	2200	43.77	0	137.85	0.00
	2300	51.06	0	175.61	0.00
	2370	40.39	0	118.55	0.00

	Volume of Cut (CY)	Volume of Fill (CY)
Totals (CY)	* 2,321.57	0.63
25% Compaction		0
Net Cut (CY)		2321
Net Cut(AC-FT)		1.44

*INCLUDES 1,253 CY OF EXISTING ASPHALT AND BASE TO REMOVED AND DISPOSED PER SPEC 0222

SUMMARY OF CUT & FILL		
DESCRIPTION	VOL OF CUT (CY)	VOL OF FILL (CY)
EGBERT ST	200	47
EXISTING ASPHALT & BASE REMOVAL	426	
NET CUT & FILL (CY)	-267	47
KANSAS ST	1,016	7
EXISTING ASPHALT & BASE REMOVAL	358	
NET CUT & FILL (CY)	651	7
KIAM ST	1,345	234
EXISTING ASPHALT & BASE REMOVAL	1,237	
NET CUT & FILL (CY)	-126	234
PETTY ST	1,941	19
EXISTING ASPHALT & BASE REMOVAL	721	
NET CUT & FILL (CY)	1,201	19
LARKIN ST	3,598	37
EXISTING ASPHALT & BASE REMOVAL	1,728	
NET CUT & FILL (CY)	1,833	37
CORNISH ST	2,415	138
EXISTING ASPHALT & BASE REMOVAL	1,614	
NET CUT & FILL (CY)	663	138
DARLING ST	3,517	51
EXISTING ASPHALT & BASE REMOVAL	368	
NET CUT & FILL (CY)	3,098	51
DETERING ST	2,519	46
EXISTING ASPHALT & BASE REMOVAL	1,041	
NET CUT & FILL (CY)	1,432	46
REINERMAN ST	1,544	27
EXISTING ASPHALT & BASE REMOVAL	1,269	
NET CUT & FILL (CY)	248	27
ROY ST	878	23
EXISTING ASPHALT & BASE REMOVAL	368	
NET CUT & FILL (CY)	487	23
SANDMAN ST	1,061	7
EXISTING ASPHALT & BASE REMOVAL	418	
NET CUT & FILL (CY)	636	7
ROY CIRCLE ST	2,322	1
EXISTING ASPHALT & BASE REMOVAL	1,253	
NET CUT & FILL (CY)	1,068	1
TOTAL NET CUT & FILL (CY)	9,856	636
TOTAL NET CUT (CY)	9,856	

NOTE: EXISTING ASPHALT & BASE MATERIAL WIDHT AND DEPTH WAS BASE OFF TOPOGRAPHIC SURVEY AND GEOTECHNICAL BORES

FLOODPLAIN MANAGEMENT OFFICE

APPROVED

Development Permit #: 25-5059

Date: 12/17/2025 By:

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EARTHWORK CROSS SECTION
(12 OF 12)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 111 OF 345	

Civil 4D Engineering, Inc.
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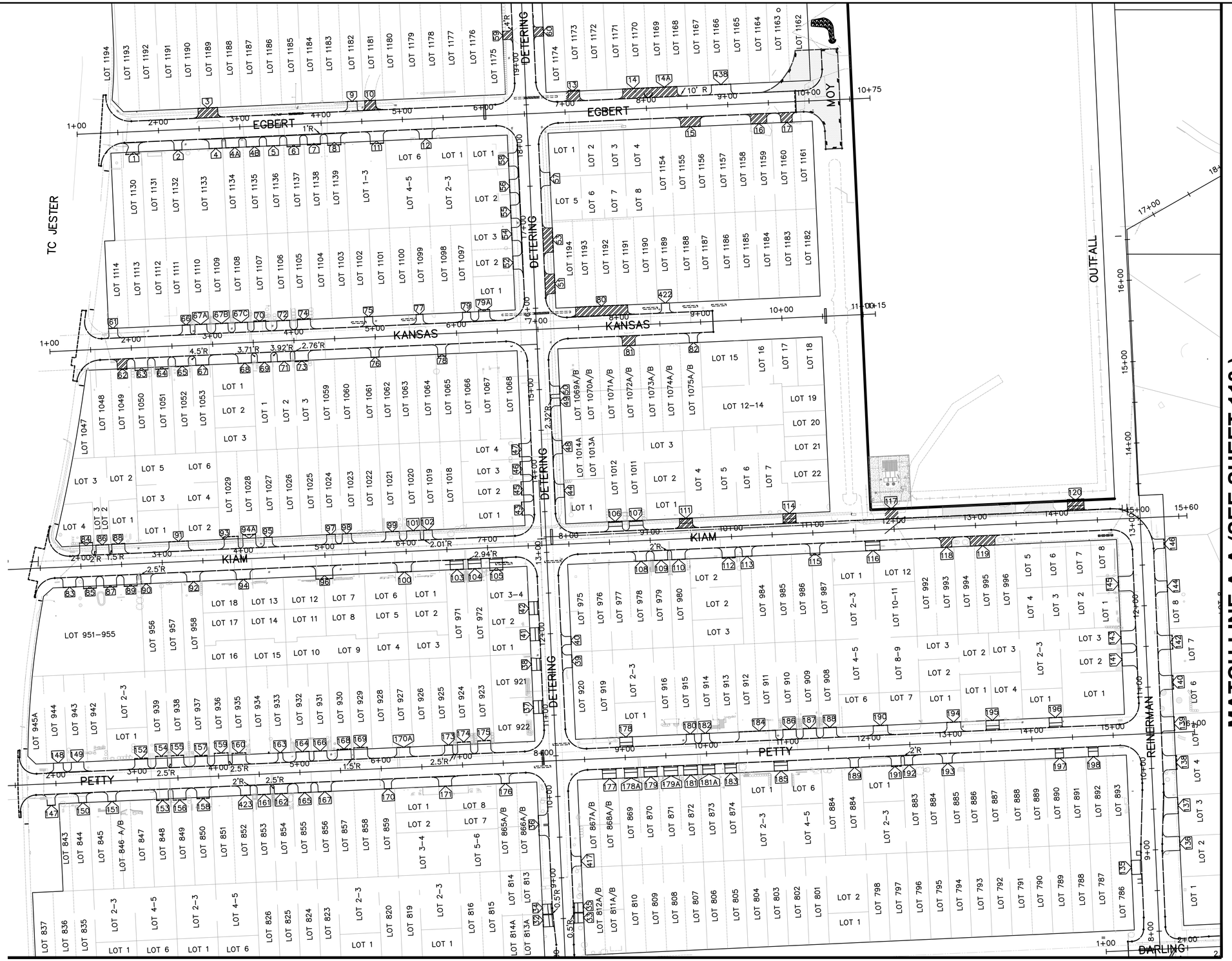
REV	DESCRIPTION	BY	DATE



0 30 60 120
SCALE IN FEET

LEGEND:

- DRIVEWAY # SEE SHEET 112–114
- RESIDENTIAL 6" THICK REINFORCED CONCRETE DRIVEWAY
- COMMERCIAL 7" THICK REINFORCED CONCRETE DRIVEWAY

NOTES:

1. ALL RESIDENTIAL DRIVEWAYS HAVE 4' RADIUS UNLESS OTHERWISE NOTED.
2. ALL COMMERCIAL DRIVEWAYS RADIUS MUST BE 10' MINIMUM.
3. RESIDENTIAL GRAVEL DRIVEWAYS ARE NOT ALLOWED (CONCRETE OR ASPHALT IN THE ROW).
4. CONTRACTOR SHALL REFER TO KEY NOTE (29) SEE SHEET 3 FOR DETAILS.
5. EXISTING DRIVEWAYS AND CULVERTS TO BE REMOVED OF AND DISPOSED OF OFF-SITE.

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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

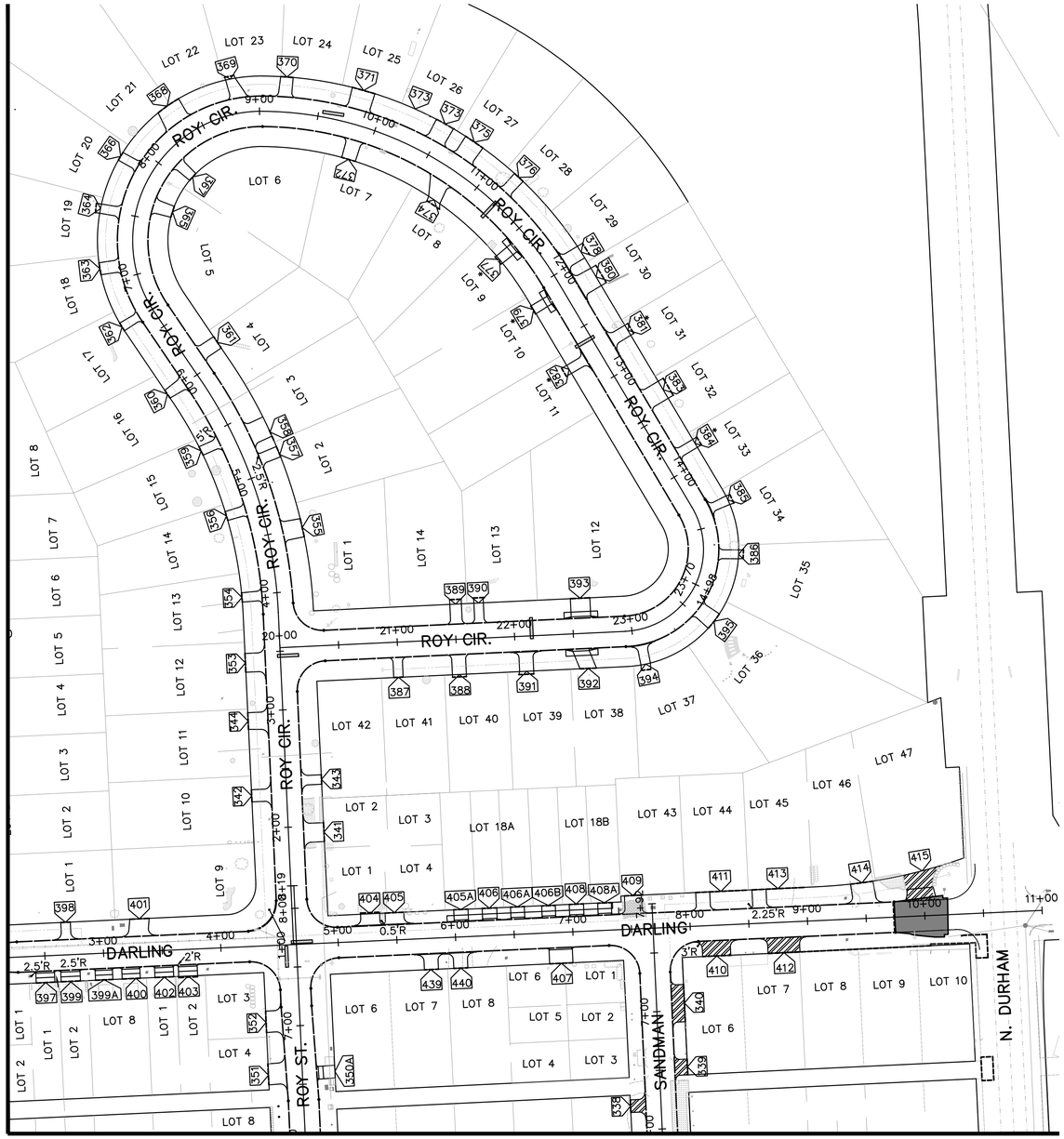
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DRIVEWAY SCHEDULE
LAYOUT
(1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=60'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 112 OF 345	

CivilTech Engineering, Inc.
O:\2018\180013\Drawings\SHEETS\DRIVEWAY SCHEDULE.dwg Dec 15, 2025

REV	DESCRIPTION	BY	DATE



0 30 60 120

SCALE IN FEET

LEGEND:

- DRIVEWAY # SEE SHEET 112–114
- RESIDENTIAL 6" THICK REINFORCED CONCRETE DRIVEWAY
- COMMERCIAL 7" THICK REINFORCED CONCRETE DRIVEWAY

NOTES:

1. ALL RESIDENTIAL DRIVEWAYS HAVE 4' RADIUS UNLESS OTHERWISE NOTED.
2. ALL COMMERCIAL DRIVEWAYS RADIUS MUST BE 10' MINIMUM.
3. RESIDENTIAL GRAVEL DRIVEWAYS ARE NOT ALLOWED (CONCRETE OR ASPHALT IN THE ROW).
4. CONTRACTOR SHALL REFER TO KEY NOTE (29) SEE SHEET 3 FOR DETAILS.
5. EXISTING DRIVEWAYS AND CULVERTS TO BE REMOVED OF AND DISPOSED OF OFF–SITE.

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

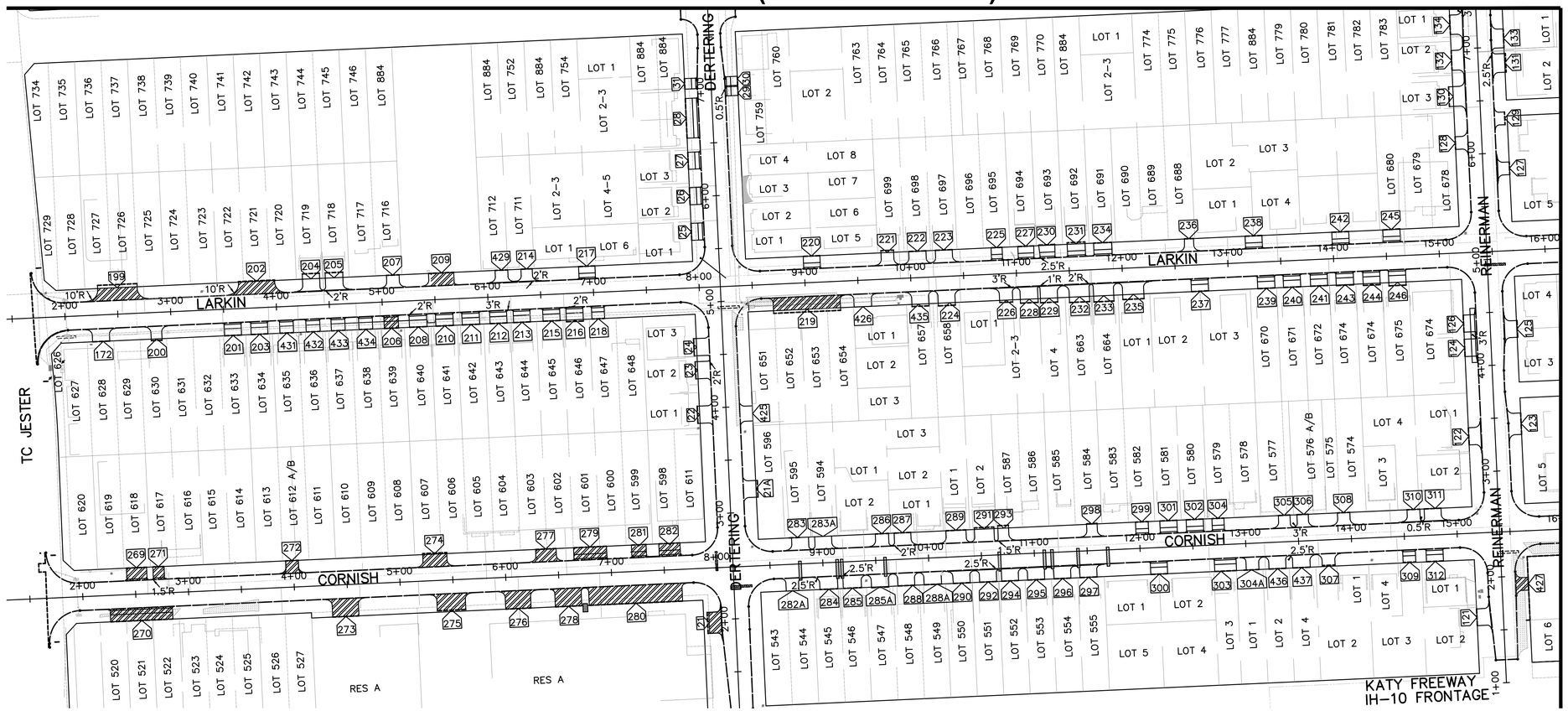
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DRIVEWAY SCHEDULE
LAYOUT
(2 OF 3)

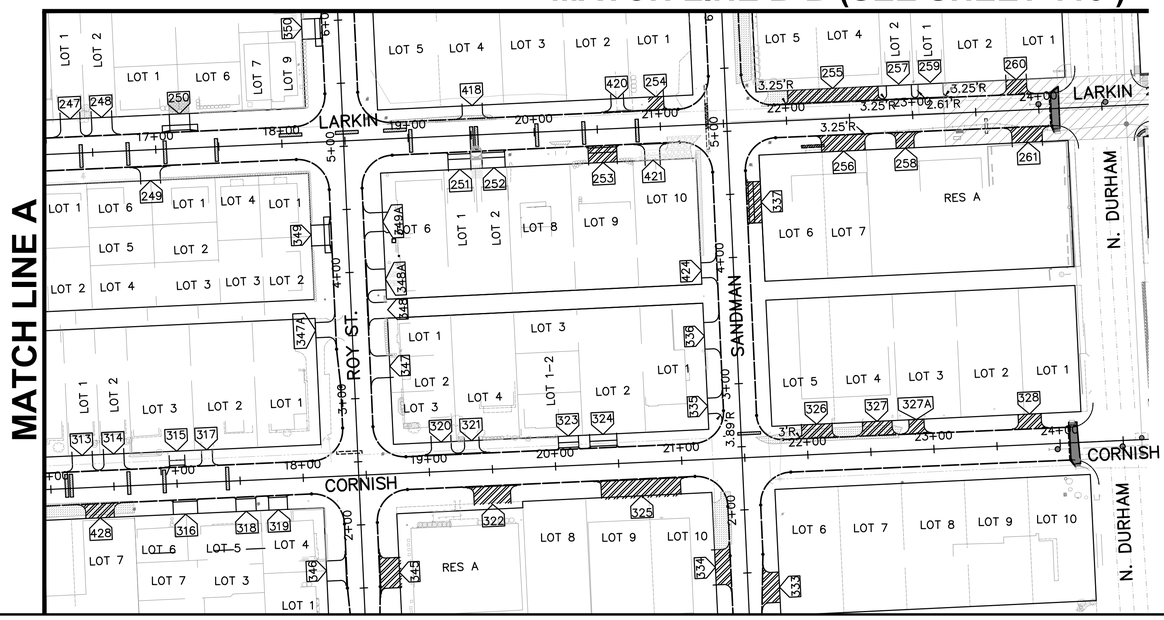
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
1"=60'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 113 OF 345	

CivilTech Engineering, Inc.
C:\2018\18001\Drawings\SHEETS\DRIVEWAY SCHEDULE.dwg Dec. 15, 2025

MATCH LINE B-B (SEE SHEET 112)



MATCH LINE B-B (SEE SHEET 113)



REV	DESCRIPTION	BY	DATE

0 30 60 120
SCALE IN FEET

LEGEND:

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

DRIVEWAY SCHEDULE LAYOUT (3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=60'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 114 OF 345	

CivilTech Engineering, Inc.
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EGBERT STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection — Begin Station 1+57.52 | Begin Elevation 52.18 | Begin Grade -0.003

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	S/W ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
1	TYPE A	1+68.39	52.90	51.65	0.10	1.15	9.5	4.0	4.0	16.0	12.13%	2.50	

Vertical Point of Intersection — Begin Station 1+87.56 | Begin Elevation 52.09 | Begin Grade 0.0084

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	S/W ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
2	TYPE A	2+23.04	52.75	51.89	0.10	0.76	7.0	2.0	4.0	10.0	10.89%		

Vertical Point of Intersection — Begin Station 2+34.12 | Begin Elevation 52.65 | Begin Grade Vertical Curve

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	S/W ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
3	TYPE C	2+61.53	52.82	52.10	0.10	0.62	7.0	4.0	4.0	24.0	8.86%		
4	TYPE A	2+69.24	53.05	52.12	0.10	0.83	7.0	2.0	4.0	16.0	11.84%		
4A	TYPE A	2+89.91	52.27	52.12	0.10	0.05	7.0	4.0	2.0	16.0	0.71%		
4B	TYPE A	3+15.06	53.06	52.03	0.10	0.93	7.5	4.0	4.0	16.0	12.40%	0.5	
5	TYPE A	3+40.01	52.80	51.84	0.10	0.86	7.0	4.0	4.0	16.0	12.29%		

Vertical Point of Intersection — Begin Station 3+52.68 | Begin Elevation 52.21 | Begin Grade -0.0113

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	S/W ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
6	TYPE A	3+64.92	52.76	51.57	0.10	1.09	9.0	4.0	4.0	16.0	12.09%	2	
7	TYPE A	3+90.02	52.24	51.29	0.10	0.85	7.0	4.0	4.0	16.0	12.17%		
8	TYPE A	4+14.99	52.10	51.01	0.10	0.99	8.0	4.0	4.0	16.0	12.43%	1	

Vertical Point of Intersection — Begin Station 4+18.16 | Begin Elevation 51.47 | Begin Grade Vertical Curve

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	S/W ELEVATION DELTA	TOTAL DELTA	APRON/DRIVEWAY LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
9	TYPE A	4+39.31	51.44	50.75	0.10	0.59	7.0	4.0	2.0	12.0	8.36%		
10	TYPE C	4+61.46	51.34	50.55	0.10	0.69	7.0	2.0	4.0	13.0	9.87%		
11	TYPE B	4+67.44	51.65	50.50	0.10	0.72	7.0	2.0	4.0	16.0	10.21%		
12	TYPE B	5+27.73	51.26	50.15	0.10	0.68	7.0	4.0	4.0	16.0	9.71%		

Vertical Point of Intersection — Begin Station 6+90.83 | Begin Elevation 50.4 | Begin Grade 0.0046

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	S/W ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
13	TYPE C	7+10.67	50.96	49.99	0.10	0.87	7.0	2.0	4.0	14.0	12.41%		
14	TYPE C	7+84.99	50.68	50.33	0.10	0.25	7.0	5.0	6.0	26.0	3.53%		
14A	TYPE C	8+23.39	50.86	50.51	0.10	0.25	7.0	6.0	5.0	31.0	3.57%		

Vertical Point of Intersection — Begin Station 8+35.71 | Begin Elevation 51.06 | Begin Grade 0.0046

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	S/W ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
15	TYPE C	8+52.83	51.00	50.64	0.10	0.26	7.0	6.0	6.0	24.0	3.73%		
438	TYPE C	8+92.91	51.32	50.82	0.10	0.40	7.0	5.5	5.5	24.0	5.66%		
16	TYPE C	9+37.23	51.73	51.03	0.10	0.27	7.0	5.5	5.5	20.0	3.91%		
17	TYPE C	9+71.56	51.44	51.18	0.10	0.16	7.0	6.0	6.0	14.0	2.27%		

KANSAS STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection — Begin Station 1+61.05 | Begin Elevation 52.43 | Begin Grade 0.0146

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
61	TYPE A	1+78.72	53.30	52.19	0.10	0.68	7.0	2.0	4.0	11.0	9.74%		*
62	TYPE C	1+87.47	53.53	52.32	0.10	0.78	7.0	4.0	4.0	12.0	11.20%		*

Vertical Point of Intersection — Begin Station 2+01.38 | Begin Elevation 53.02 | Begin Grade Vertical Curve

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
63	TYPE A	2+11.31	53.96	52.65	0.10	0.88	8.0	4.0	4.0	16.0	11.00%	1.00	*
64	TYPE A	2+36.30	54.10	52.68	0.10	0.79	7.0	4.0	4.0	16.0	11.29%		*
65	TYPE A	2+61.31	54.08	52.97	0.10	0.68	7.0	4.0	4.0	16.0	9.71%		*
66	TYPE A	2+68.51	53.52	52.96	0.10	0.46	7.0	4.0	2.0	10.0	6.57%		
67	TYPE A	2+86.27	54.07	52.90	0.10	0.74	7.0	4.0	4.0	16.0	10.57%		*
67A	TYPE A	2+96.56	54.05	52.90	0.10	0.72	7.0	2.0	4.0	15.0	10.29%		*

Vertical Point of Intersection — Begin Station 3+01.38 | Begin Elevation 53.29 | Begin Grade -0.0092

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
67B	TYPE A	3+12.29	54.07	52.69	0.10	0.95	8.0	4.0	3.0	15.0	11.88%	1.00	*
67C	TYPE A	3+36.28	54.05	52.47	0.10	1.15	9.5	4.0	4.0	16.0	12.12%	2.50	*
68	TYPE B	3+38.41	53.40	52.45	0.10	0.85	7.0	2.0	4.0	17.0	12.15%		
69	TYPE A	3+62.44	53.58	52.23	0.10	0.92	8.0	2.0	4.0	17.0	11.52%	1.00	*
70	TYPE A	3+59.12	53.93	52.26	0.10	1.24	10.0	4.0	4.0	15.0	12.41%	3.00	*
71	TYPE A	3+87.67	53.56	52.00	0.10	1.13	9.5	4.0	4.0	16.0	11.94%	2.50	*
72	TYPE A	3+87.93	53.51	51.99	0.10	1.09	9.0	4.0	2.0	16.0	12.07%	2.00	*
73	TYPE A	4+08.51	53.46	51.80	0.10	1.23	10.0	4.0	2.0	16.0	12.26%	3.00	*
74	TYPE A	4+13.30	53.46	51.76	0.10	1.27	10.5	4.0	2.0	16.0	12.09%	3.50	*
75	TYPE A	4+92.87	51.67	51.03	0.10	0.54	7.0	4.0	2.0	10.0	7.74%		
76	TYPE A	4+98.64	51.80	50.98	0.10	0.72	7.0	4.0	4.0	10.0	10.35%		

Vertical Point of Intersection — Begin Station 5+23.08 | Begin Elevation 51.26 | Begin Grade -0.0069

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
77	TYPE A	5+55.53	51.85	50.54	0.10	0.88	7.0	4.0	4.0	8.5	12.63%		*
78	TYPE A	5+80.72	51.96	50.36	0.10	1.17	9.5	4.0	2.0	10.0	12.29%	2.50	*
79	TYPE A	6+13.29	51.22	50.14	0.10	0.65	7.0	4.0	4.0	10.0	9.32%		*
79A	TYPE A	6+35.03	51.50	49.99	0.10	1.08	9.0	4.0	4.0	14.0	12.03%	2.00	*

Vertical Point of Intersection — Begin Station 7+36.28 | Begin Elevation 50.31 | Begin Grade 0.0056

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
80	TYPE C	7+79.41	51.25	50.05	0.10	0.77	7.0	4.0	4.0	64.0	10.98%		

Vertical Point of Intersection — Begin Station 7+36.28 | Begin Elevation 50.31 | Begin Grade 0.0056

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
81	TYPE A	8+10.70	51.01	50.23	0.10	0.68	7.0	4.0	4.0	16.0	9.76%		

Vertical Point of Intersection — Begin Station 7+36.28 | Begin Elevation 50.31 | Begin Grade 0.0056

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
422	TYPE A	8+57.52	51.08	50.49	0.10	0.49	7.0	4.0	4.0	10.0	7.02%		
82	TYPE A	8+90.11	50.72	50.67	0.00	0.05	7.0	3.0	4.0	10.0	0.69%		

DETERING STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection — Begin Station 1+22.14 | Begin Elevation 53.18 | Begin Grade Vertical Curve

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
21	TYPE C	1+97.29	55.82	54.20	0.10	1.19	8.5	4.5	4.5	20.0	14.07%		*

Vertical Point of Intersection — Begin Station 2+87.09 | Begin Elevation 54.84 | Begin Grade -0.003

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
21A	TYPE C	3+21.74	55.36	54.24	0.10	1.02	8.5	5.5	5.5	16.0	12.05%	1.50	

Vertical Point of Intersection — Begin Station 3+81.47 | Begin Elevation 54.58 | Begin Grade -0.004

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
425	TYPE C	3+93.08	54.95	54.01	0.10	0.83	7.0	4.0	4.0	14.0	11.91%		
22	TYPE A	3+94.09	55.69	54.01	0.10	1.08	9.0	4.0	4.0	16.0	12.01%	2.00	**
23	TYPE A	4+36.15	55.69	53.84	0.10	1.25	9.0	4.0	2.0	16.0	13.87%	2.00	**
24	TYPE A	4+57.95	55.62	53.75	0.10	1.27	9.5	2.0	4.0	16.0	13.33%	2.50	**

Vertical Point of Intersection — Begin Station 5+52.00 | Begin Elevation 54.18 | Begin Grade 0.003

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
25	TYPE A	5+66.96	55.85	53.72	0.08	1.55	9.5	1.5	1.5	16.0	16.26%	3.00	**
26	TYPE A	6+00.59	55.77	53.83	0.08	1.36	8.5	1.5	1.5	16.0	16.05%	2.00	**

Vertical Point of Intersection — Begin Station 6+00.75 | Begin Elevation 54.33 | Begin Grade Vertical Curve

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
27	TYPE A	6+34.12	55.86	53.85	0.08	1.43	8.5	1.5	1.5	16.0	16.82%	2.00	**
28	TYPE B	6+74.23	55.43	53.68	0.08	1.17	7.5	1.5	1.5	37.0	15.60%	1.00	**

Vertical Point of Intersection — Begin Station 6+91.01 | Begin Elevation 54.05 | Begin Grade -0.0104

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
29	TYPE A	6+97.97	54.84	53.48	0.08	0.78	6.5	1.0	1.5	9.0	12.04%		**
30	TYPE A	7+07.50	54.92	53.38	0.08	0.96	6.5	1.5	1.0	9.0	14.79%		**
		Begin Station 6+91.01		Begin ELEV.	54.05	Begin Grade	-0.0092						
31	TYPE A	7+06.83	55.12	53.40	0.08	1.14	6.5	1.5	1.5	10.0	17.47%		**

Vertical Point of Intersection — Begin Station 8+18.19 | Begin Elevation 53.86 | Begin Grade LT 0.0054

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
32	TYPE A	8+48.14	54.81	53.52	0.08	0.71	7.4	1.5	1.0	15.0	9.57%		**
34	TYPE A	8+62.39	56.93	53.60	0.08	2.75	6.5	1.0	1.5	12.0	42.33%		**
		Begin Station 8+17.46		Begin ELEV.	53.80	Begin Grade RT	0.0045						
33	TYPE A	8+49.65	55.01	53.44	0.08	0.99	6.9	1.0	1.5	12.0	14.28%		**
35	TYPE A	8+62.50	55.07	53.50	0.08	0.99	6.5	1.5	1.0	12.0	15.19%		**

Vertical Point of Intersection — Begin Station 8+78.01 | Begin Elevation 54.13 | Begin Grade -0.0045

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
417	TYPE A	9+19.50	54.16	53.44	0.10	0.62	7.0	4.0	2.0	12.0	8.81%		
36	TYPE B	9+66.88	54.57	53.23	0.10	1.24	7.0	4.0	4.0	25.0	17.71%		

Vertical Point of Intersection — Begin Station 10+82.00 | Begin Elevation 53.54 | Begin Grade -0.0115

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
37	TYPE A	11+10.73	53.94	52.71	0.08	0.65	6.5	1.5	1.5	16.0	10.01%		**
38	TYPE A	11+63.18	53.84	52.11	0.08	1.15	6.5	1.5	1.5	16.0	17.75%		**
39	TYPE A	11+65.10	53.01	52.08	0.10	0.82	7.0	3.0	4.0	16.0	11.75%		

Vertical Point of Intersection — Begin Station 11+90.53 | Begin Elevation 52.3 | Begin Grade -0.01

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
40	TYPE A	11+90.53	52.30	51.80	0.10	0.40	7.0	4.0	4.0	10.0	5.71%		
41	TYPE A	12+00.25	53.40	51.70	0.08	1.12	6.5	1.5	1.5	16.0	17.19%		**
42	TYPE A	12+32.36	53.30	51.38	0.08	1.34	7.5	1.5	1.5	16.0	17.84%	1.00	**

Vertical Point of Intersection — Begin Station 13+47.00 | Begin Elevation 51.49 | Begin Grade Vertical Curve

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
43	TYPE A	13+55.12	52.32	51.02	0.10	1.20	10.0	4.0	2.5	16.0	12.00%	3.00	
44	TYPE A	13+74.69	52.16	51.08	0.10	0.65	7.0	4.0	4.0	16.0	9.29%		*
45	TYPE A	13+79.87	52.35	51.09	0.10	1.16	9.5	4.0	2.0	16.0	12.18%	2.50	
46	TYPE A	14+04.69	52.24	51.12	0.10	1.02	9.5	4.0	3.0	16.0	10.74%	2.50	
47	TYPE A	14+26.72	52.41	51.06	0.10	1.25	10.0	2.5	4.0	16.0	12.50%	3.00	
48	TYPE A	14+28.38	52.35	51.05	0.10	0.87	7.0	4.0	4.0	16.0	12.43%		*

Vertical Point of Intersection — Begin Station 14+72.20 | Begin Elevation 51.16 | Begin Grade -0.0129

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
49	TYPE A	14+83.98	51.57	50.51	0.10	0.63	7.0	2.0	4.0	10.0	9.03%		*
50	TYPE A	14+98.34	50.85	50.32	0.10	0.10	7.0	4.0	2.0	10.0	1.39%		*

Vertical Point of Intersection — Begin Station 16+11.96 | Begin Elevation 50.71 | Begin Grade 0.0062

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
51	TYPE C	16+29.00	51.26	50.32	0.10	0.84	7.0	6.0	6.0	24.0	12.06%		

Vertical Point of Intersection — Begin Station 16+48.81 | Begin Elevation 50.93 | Begin Grade -0.0033

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
52	TYPE A	16+57.16	51.52	50.40	0.10	0.69	7.0	4.0	4.0	16.0	9.82%		*
53	TYPE C	16+82.78	51.02	50.32	0.10	0.60	7.0	6.0	6.0	30.0	8.60%		
54	TYPE A	16+92.33	51.59	50.29	0.10	0.87	7.0	4.0	4.0	16.0	12.48%		*
55	TYPE A	17+19.73	51.19	50.20	0.10	0.56	7.0	4.0	4.0	16.0	8.06%		*
56	TYPE A	17+51.24	50.99	50.09	0.10	0.47	7.0	2.0	4.0	16.0	6.69%		*
57	TYPE B	17+57.91	50.58	50.07	0.10	0.41	7.0	4.0	4.0	16.0	5.86%		
58	TYPE A	17+83.69	50.99	49.98	0.10	0.58	7.0	2.5	4.0	16.0	8.22%		*

Vertical Point of Intersection — Begin Station 18+76.96 | Begin Elevation 50.44 | Begin Grade Vertical Curve

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEV. AT GUTTER	SW ELEV. DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
59	TYPE A	19+36.28	50.02	49.45	0.10	0.47	7.0	4.0	4.0	10.0	6.71%		
60	TYPE A	19+38.99	50.00	49.45	0.12	0.43	6.0	4.0	4.0	11.0	7.17%		

KIAM STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection — Begin Station 1+71.04 | Begin Elevation 52.6 | Begin Grade 0.01

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
83	TYPE A	1+84.91	52.95	52.24	0.10	0.61	7.0	4.0	4.0	16.0	8.73%		
85	TYPE A	2+09.88	53.80	52.49	0.10	0.88	8.0	4.0	4.0	16.0	11.02%	1.00	*

Vertical Point of Intersection — Begin Station 1+93.60 | Begin Elevation 52.6 | Begin Grade 0.013

DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
84	TYPE A	2+07.53	53.94	52.28	0.10	1.23	10.0	4.0	2.0	16.0	12.29%	3.00	*

Vertical Point of Intersection — Begin Station 2+20.54 | Begin Elevation 53.1 | Begin Grade Vertical Curve

| DW # | DRIVEWAY TYPE | DRIVEWAY STATION | ELEV. AT ROW | PROP ELEVATION AT GUTTER | SW ELEVATION DELTA | TOTAL DELTA | APRON LENGTH | DRIVEWAY RADIUS LT | DRIVEWAY RADIUS RT | DRIVEWAY WIDTH (FT

REINERMAN STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
121	TYPE A	1+62.95	54.51	53.30	0.10	0.78	8.2	4.0	3.5	16.0	9.42%		

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
427	TYPE C	1+92.41	54.06	53.49	0.10	0.47	7.0	6.0	6.0	12.0	6.66%		

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
122	TYPE A	3+34.00	54.14	53.07	0.10	0.64	7.0	4.0	4.0	17.0	9.15%		
123	TYPE A	3+43.70	53.80	53.04	0.10	0.66	7.0	4.0	4.0	21.0	9.43%		
124	TYPE A	4+17.59	54.22	52.82	0.08	0.82	8.0	1.5	1.5	17.0	10.27%		**
125	TYPE B	4+33.09	54.12	52.77	0.10	0.92	7.5	4.0	4.0	16.0	12.24%	0.50	*
126	TYPE A	4+40.53	54.49	52.75	0.08	1.16	8.0	1.5	1.5	16.0	14.50%		**

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
127	TYPE A	5+85.12	53.78	52.50	0.10	0.85	7.0	4.0	4.0	12.0	12.16%		
128	TYPE A	6+11.21	53.50	52.58	0.10	0.82	7.0	4.0	4.0	12.0	11.75%		
129	TYPE A	6+32.41	53.30	52.64	0.10	0.56	7.0	4.0	4.0	12.0	7.99%		

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
130	TYPE A	6+55.27	54.00	52.56	0.10	1.01	11.0	4.0	4.0	19.0	9.15%	4.00	*
132	TYPE A	6+89.39	54.12	52.36	0.10	1.33	11.0	4.0	4.0	19.0	12.13%	4.00	*
134	TYPE A	7+23.07	53.15	52.15	0.10	0.57	7.0	4.0	4.0	18.0	8.14%		**

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	Vertical Curve APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
135	TYPE A	8+79.73	52.36	50.87	0.08	0.86	8.5	1.5	1.5	17.0	10.13%		**

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	Vertical Curve APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
136	TYPE A	9+06.56	51.50	50.74	0.10	0.66	13.0	2.0	4.0	17.0	5.08%		
137	TYPE A	9+53.13	51.35	50.41	0.10	0.51	7.0	2.0	4.0	20.0	7.29%		

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
138	TYPE A	10+06.05	51.10	49.50	0.10	1.50	12.2	2.0	4.0	17.0	12.32%	1.00	

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
139	TYPE A	10+53.78	50.81	49.31	0.10	1.40	11.4	3.0	4.0	17.0	12.29%	0.50	

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
140	TYPE A	11+04.24	50.35	49.43	0.10	0.82	12.1	2.0	4.0	17.0	6.80%	1.50	
141	TYPE A	11+35.33	51.05	49.33	0.10	1.62	13.5	4.0	4.0	16.0	11.99%		
142	TYPE A	11+53.74	50.21	49.27	0.10	0.84	13.3	4.0	4.0	17.0	6.30%	3.00	
143	TYPE A	11+62.30	50.91	49.25	0.10	1.56	13.6	4.0	4.0	16.0	11.50%		
144	TYPE A	12+22.56	50.30	49.06	0.10	1.14	9.8	4.0	4.0	14.0	11.58%		
145	TYPE B	12+28.25	50.28	49.04	0.10	1.14	13.8	4.0	4.0	18.0	8.25%		

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
146	TYPE A	12+75.00	49.42	48.82	0.10	0.50	8.3	3.0	4.0	12.0	6.02%		

PETTY STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
147	TYPE A	1+93.10	53.65	52.03	0.10	1.52	12.5	4.0	4.0	10.0	12.16%	5.50	
150	TYPE A	2+31.97	53.70	52.57	0.10	0.70	7.0	3.0	4.0	10.0	10.05%		*
151	TYPE A	2+67.78	53.92	53.11	0.10	0.71	7.0	4.0	4.0	10.0	10.15%		

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
148	TYPE A	2+03.97	53.89	52.68	0.10	0.78	7.0	4.0	4.0	12.0	11.08%		*
149	TYPE A	2+27.56	53.83	52.84	0.10	0.56	7.0	4.0	4.0	15.0	8.07%		*

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
152	TYPE B	3+05.89	54.36	53.27	0.10	0.99	8.0	4.0	2.0	16.0	12.38%	1.00	
153	TYPE A	3+29.92	54.54	53.37	0.10	1.07	8.5	2.0	4.0	15.0	12.57%	1.50	
154	TYPE A	3+30.98	54.68	53.37	0.10	1.21	9.5	4.0	2.0	14.0	12.69%	2.50	
155	TYPE A	3+50.67	54.76	53.46	0.10	1.20	9.5	2.0	4.0	15.0	12.66%	2.50	
156	TYPE A	3+50.97	54.62	53.46	0.10	1.06	9.0	4.0	2.0	16.0	11.79%	2.00	
157	TYPE A	3+79.55	54.65	53.58	0.10	0.97	8.0	4.0	2.0	15.0	12.14%	1.00	
158	TYPE A	3+79.83	54.72	53.58	0.10	1.04	8.5	2.0	4.0	15.0	12.23%	1.50	
159	TYPE A	4+04.43	55.01	53.68	0.10	1.23	10.0	4.0	2.0	17.0	12.27%	3.00	
160	TYPE B	4+26.22	54.99	53.78	0.10	1.12	9.0	2.0	4.0	17.0	12.41%	2.00	
423	TYPE A	4+32.10	54.00	53.80	0.10	0.10	7.0	2.0	4.0	12.0	1.43%		

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
161	TYPE A	4+54.65	54.94	53.80	0.10	0.72	7.0	2.0	3.5	16.0	10.23%		*
162	TYPE A	4+75.72	54.80	53.73	0.10	0.74	7.0	4.0	2.0	16.0	10.58%		*
163	TYPE A	4+77.02	54.25	53.73	0.10	0.42	7.0	4.0	4.0	6.0	6.01%		
164	TYPE A	5+04.25	54.60	53.65	0.10	0.85	7.0	4.0	2.5	16.0	12.17%		
165	TYPE A	5+04.68	54.47	53.65	0.10	0.72	7.0	2.5	4.0	16.0	10.33%		
166	TYPE A	5+26.18	54.53	53.58	0.10	0.85	7.0	3.0	4.0	16.0	12.11%		
167	TYPE A	5+29.39	54.48	53.57	0.10	0.81	7.0	2.5	4.0	16.0	11.51%		
168	TYPE A	5+55.44	54.60	53.45	0.10	1.01	8.0	4.0	2.0	17.0	12.57%	1.00	
169	TYPE A	5+75.76	54.63	53.43	0.10	1.10	9.0	2.0	4.0	17.0	12.19%	2.00	

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
170	TYPE A	6+07.19	54.00	53.43	0.10	0.47	7.0	3.0	4.0	9.0	6.75%		
170A	TYPE B	6+28.97	54.58	53.49	0.10	0.66	7.0	4.0	3.0	16.0	9.39%		
171	TYPE B	6+77.66	54.59	53.49	0.10	0.67	7.0	4.0	4.0	16.0	9.57%		*

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
173	TYPE A	6+83.87	54.10	53.64	0.10	0.36	7.0	4.0	2.0	10.0	5.18%		
174	TYPE A	7+02.81	54.75	53.43	0.10	1.22	10.0	3.5	4.0	16.0	12.19%	3.00	
175	TYPE A	7+27.67	54.55	53.16	0.10	1.29	10.5	4.0	4.0	16.0	12.30%	3.50	
176	TYPE A	7+51.39	53.85	52.90	0.10	0.85	7.0	4.0	4.0	10.0	12.12%		

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
177	TYPE A	8+79.58	54.55	52.72	0.08	1.25	8.0	1.5	1.5	17.0	15.62%		**
178	TYPE B	9+01.96	54.05	52.79	0.08	0.68	8.0	1.5	1.5	16.0	8.53%		**
178A	TYPE A	9+06.23	54.79	52.80	0.08	1.41	8.5	1.5	1.5	16.0	16.59%	0.50	**
179	TYPE A	9+30.29	54.78	52.87	0.08	1.33	8.0	1.5	1.5	16.0	16.60%		**
179A	TYPE A	9+55.25	54.74	52.95	0.08	1.21	8.0	1.5	1.5	17.0	15.16%		**
180	TYPE A	9+81.13	53.69	53.02	0.10	0.57	7.0	4.0	4.0	10.0	8.07%		
181	TYPE A	9+79.43	54.70	53.02	0.08	1.10	8.0	1.5	1.5	17.0	13.75%		**
181A	TYPE A	10+01.88	54.48	52.99	0.08	0.81	8.0	1.5	1.5	15.0	10.16%		**
182	TYPE A	9+99.64	53.39	53.08	0.10	0.21	7.0	4.0	4.0	10.0	2.97%		

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
183	TYPE A	10+28.80	54.40	53.03	0.08	0.79	8.0	1.5	1.5	14.0	9.83%		**
184	TYPE C	10+65.80	53.35	52.92	0.10	0.33	7.0	2.0	4.0	45.0	4.68%		
185	TYPE B	10+90.46	54.50	52.85	0.08	1.07	8.0	1.5	1.5	16.0	13.40%		**
186	TYPE A	11+03.07	53.82	52.81	0.10	0.91	7.5	4.0	4.0	16.0	12.13%	0.50	
187	TYPE A	11+27.95	53.75	52.74	0.10	0.91	7.5	4.0	4.0	16.0	12.19%	0.50	
188	TYPE A	11+52.78	53.70	52.66	0.10	0.94	7.5	4.0	4.0	16.0	12.52%	0.50	

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
189	TYPE A	11+80.77	53.24	52.65	0.10	0.49	7.0	4.0	4.0	10.0	7.00%		

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
190	TYPE B	12+14.85	53.60	52.55	0.10	0.62	7.0	4.0	4.0	18.0	8.90%		*
191	TYPE B	12+32.27	53.50	52.44	0.10	0.96	8.0	2.0	4.0	12.0	11.97%	1.00	*
192	TYPE A	12+47.46	52.36	52.35	0.00	0.01	12.0	4.0	2.0	10.0	0.07%		*

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
193	TYPE A	12+95.39	52.37	52.04	0.10	0.23	7.0	4.0	2.0	12.0	3.24%		
194	TYPE B	13+05.09	52.49	51.91	0.10	0.48	7.0	4.0	2.0	17.0	6.87%		
195	TYPE B	13+52.70	52.56	51.25	0.08	0.73	8.0	1.5	1.5	16.0	9.10%		**
196	TYPE B	14+30.14	51.70	50.18	0.08	0.94	8.0	1.5	1.5	16.0	11.71%		**
197	TYPE A	14+33.04	51.73	50.14	0.08	1.01	8.0	1.5	1.5	10.0	12.58%		**
198	TYPE A	14+74.64	51.43	49.57	0.08	1.28	8.0	1.5	1.5	12.0	16.01%		**

LARKIN STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	0.003 APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
172	TYPE B	2+33.12	54.57	53.67	0.10	0.80	7.0	4.0	4.0	16.0	11.44%		
199	TYPE C	2+50.70	54.59	53.72	0.10	0.77	7.0	10.5	10.5	37.0	10.97%	0.00	
200	TYPE A	2+85.58	54.87	53.83	0.10	0.94	8.0	4.0	4.0	10.0	11.79%	1.00	
201	TYPE A	3+57.93	55.38	54.04	0.08	0.76	6.5	1.5	1.5	16.0	11.64%		**
202	TYPE C	3+82.36	55.01	54.12	0.10	0.79	7.5	10.5	10.5	34.0	10.57%	0.50	
203	TYPE A	3+82.96	55.40	54.12	0.08	0.70	6.5	1.5	1.5	16.0	10.79%		**
431	TYPE A	4+08.41	55.66	54.20	0.08	0.88	6.5	1.5	1.5	13.0	13.61%		**
432	TYPE A	4+33.71	55.70	54.27	0.08	0.85	6.5	1.5	1.5	13.0	13.06%		**
204	TYPE A	4+33.95	56.09	54.27	0.10	1.72	14.0	4.0	2.0	16.0	12.27%	7.00	
205	TYPE A	4+55.70	56.09	54.34	0.10	1.65	13.5	2.0	4.0	17.0	12.24%	6.50	
433	TYPE A	4+56.97	55.62	54.34	0.08	0.70	6.5	1.5	1.5	13.0	10.76%		**
434	TYPE A	4+83.22	55.58	54.42	0.08	0.58	6.5	1.5	1.5	13.0	8.93%		**
206	TYPE A	5+11.22	55.68	54.50	0.08	0.60	6.5	1.5	1.5	14.0	9.18%		**
207	TYPE A	5+11.25	54.92	54.50	0.10	0.32	7.0	4.0	2.5	12.0	4.52%		
208	TYPE A	5+33.10	55.65	54.57	0.08	0.50	6.5	1.5	1.5	17.0	7.70%		**
209	TYPE C	5+56.94	55.43	54.64	0.10	0.69	7.0	6.0	3.0	24.0	9.85%		*
210	TYPE A	5+58.05	55.49	54.64	0.08	0.27	6.5	1.5	1.5	17.0	4.09%		**
211	TYPE A	5+82.95	55.36	54.72	0.08	0.06	6.5	1.5	1.5	17.0	0.94%		**

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	-0.007 APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
212	TYPE A	6+09.03	55.80	54.47	0.08	0.75	8.0	1.5	1.5	16.0	9.32%		**
213	TYPE A	6+31.30	55.85	54.32	0.08	0.95	8.0	1.5	1.5	16.0	11.90%		**
429	TYPE C	6+13.98	55.51	54.44	0.10	0.64	7.0	4.0	2.0	12.0	9.15%		
214	TYPE A	6+37.77	55.55	54.27	0.10	0.84	7.0	4.0	2.0	11.0	12.03%		
215	TYPE A	6+59.21	56.03	54.12	0.08	1.33	8.0	1.5	1.5	16.0	16.59%		**
216	TYPE A	6+81.17	56.11	53.97	0.08	1.56	9.5	1.5	1.5	16.0	16.43%	1.50	**
217	TYPE B	6+94.71	55.43	53.87	0.08	1.00	8.0	1.5	1.5	16.0	12.45%		**
218	TYPE A	7+03.37	55.24	53.81	0.08	0.85	8.0	1.5	1.5	12.0	10.58%		**

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	0.005 APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
219	TYPE C	9+00.83	54.80	53.51	0.10	1.19	9.5	4.0	4.0	63.0	12.49%	2.50	
220	TYPE B	9+07.35	55.30	53.55	0.08	1.17	6.5	1.5	1.5	16.0	18.05%		**
426	TYPE B	9+53.68	54.37	53.78	0.10	0.49	7.0	4.0	2.0	17.0	7.01%		
221	TYPE A	9+79.01	55.00	53.90	0.10	1.00	8.0	3.0	4.0	12.0	12.47%	1.00	
222	TYPE A	10+07.47	55.01	54.05	0.10	0.86	7.0	4.0	4.0	16.0	12.27%		
435	TYPE A	10+08.39	55.22	54.05	0.10	1.07	9.0	4.0	4.0	16.0	11.87%	2.00	

Vertical Point of Intersection

DW #	DRIVEWAY TYPE	Begin Station DRIVEWAY STATION	ELEV. AT ROW	Begin Elevation PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade TOTAL DELTA	-0.005 APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE	DRIVEWAY ROW ENCROACHMENT (FT)	
223	TYPE A	10+33.20	54.40	54.05	0.10	0.26	7.0	4.0	4.0	16.0	3.66%		
224	TYPE A	10+32.42	55.27	54.05	0.10	1.12	9.5	4.0	4.0	16.0	11.80%	2.50	
225	TYPE A	10+82.36	54.61	53.80	0.08	0.23	8.0	1.5	1.5	10.0	2.88%		**
226	TYPE B	10+89.18	54.95	53.77	0.10	1.08	9.0	2.0	4.0	12.0	12.05%	2.00	
227	TYPE A	11+10.02	55.51	53.66	0.08	1.27	8.0	1.5	1.5	15.0	15.90%		**
228	TYPE A	11+10.93	55.05	53.66	0.10	1.29	10.5	2.0	4.0	17.0	12.32%	3.50	
229	TYPE A	11+29.71	55.01	53.56	0.10	1.34	11.0	4.0	2.0	16.0	12.22%	4.00	
230	TYPE A	11+29.84	55.56	53.56	0.08	1.42	8.5	1.5	1.5	15.0	16.72%	0.50	**
231	TYPE

REV	DESCRIPTION	BY	DATE

CORNISH STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection

		Begin Station	1+96.64	Begin Elevation	53.95	Begin Grade	0.0042						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
269	TYPE A	2+51.89	54.89	53.68	0.08	0.63	8.0	1.5	1.5	19.0	7.85%	**	
270	TYPE C	2+54.64	54.90	53.75	0.08	0.57	8.0	1.5	1.5	59.0	7.12%	**	

Vertical Point of Intersection

		Begin Station	1+96.64	Begin Elevation	53.95	Begin Grade	0.0042						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
271	TYPE A	2+72.65	54.90	53.77	0.08	0.55	9.5	1.5	1.5	11.0	5.80%	**	
272	TYPE B	3+98.92	54.89	54.30	0.10	0.49	7.0	4.0	4.0	12.0	7.01%		
273	TYPE C	4+47.41	56.08	54.50	0.10	1.48	12.0	6.0	6.0	25.0	12.31%		

Vertical Point of Intersection

		Begin Station	4+99.41	Begin Elevation	55.29	Begin Grade	-0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
274	TYPE C	5+33.99	55.77	54.69	0.10	0.98	8.0	6.0	6.0	23.0	12.30%		1.00
275	TYPE C	5+47.43	55.20	54.65	0.10	0.45	11.0	6.0	6.0	27.0	4.13%		
276	TYPE C	6+10.67	55.63	54.46	0.10	1.07	12.0	6.0	6.0	24.0	8.95%		
277	TYPE C	6+39.06	54.93	54.37	0.10	0.46	7.0	6.0	6.0	19.0	6.56%		
278	TYPE C	6+58.12	55.75	54.31	0.10	1.34	12.0	4.0	4.5	25.0	11.13%		
279	TYPE C	6+80.87	55.66	54.25	0.08	0.83	8.0	1.5	1.5	31.0	10.43%		**
280	TYPE C	7+21.85	55.63	54.12	0.10	1.41	12.0	4.5	4.0	88.0	11.73%		
281	TYPE C	7+26.93	55.67	54.11	0.08	0.98	8.0	1.5	1.5	14.0	12.28%		**
282	TYPE C	7+55.91	55.30	54.02	0.08	0.70	8.0	1.5	1.5	20.0	8.74%		**

Vertical Point of Intersection

		Begin Station	8+53.11	Begin Elevation	54.46	Begin Grade	0.0036						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
282A	TYPE A	8+70.24	54.65	54.02	0.10	0.53	7.0	4.0	4.0	12.0	7.55%		
283	TYPE A	8+79.50	54.95	54.06	0.10	0.79	7.0	4.0	3.0	16.0	11.36%		
283A	TYPE A	9+01.33	55.12	54.13	0.10	0.89	7.0	3.0	4.0	16.0	12.66%		
284	TYPE A	9+04.59	55.25	54.15	0.10	1.00	7.0	3.0	4.0	17.0	14.35%		
285	TYPE A	9+26.82	55.22	54.23	0.10	0.89	7.0	4.0	3.0	17.0	12.78%		
285A	TYPE A	9+53.00	55.30	54.32	0.10	0.88	7.5	4.0	4.0	16.0	11.74%		0.50
286	TYPE B	9+56.95	55.29	54.33	0.10	0.86	7.0	4.0	2.0	13.0	12.23%		
287	TYPE B	9+76.41	55.16	54.40	0.10	0.66	7.0	3.0	4.0	16.0	9.37%		
288	TYPE A	9+77.90	55.28	54.41	0.10	0.77	7.0	4.0	4.0	16.0	11.01%		
288A	TYPE A	10+02.94	55.35	54.50	0.10	0.75	7.0	4.0	4.0	17.0	10.72%		

Vertical Point of Intersection

		Begin Station	10+10.27	Begin Elevation	55.02	Begin Grade	-0.007						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
289	TYPE A	10+30.23	55.28	54.38	0.10	0.80	7.0	2.0	3.5	19.0	11.42%		
290	TYPE A	10+27.01	55.63	54.40	0.10	1.13	9.0	2.0	4.0	16.0	12.52%		2.00 *
291	TYPE A	10+53.71	55.21	54.22	0.10	0.89	8.5	4.0	2.0	19.0	10.52%		1.50
292	TYPE A	10+55.25	55.51	54.21	0.10	0.87	7.0	2.0	4.0	16.0	12.50%		*
293	TYPE A	10+71.73	54.76	54.09	0.10	0.57	9.5	2.0	4.0	10.0	6.00%		2.50
294	TYPE A	10+76.06	55.35	54.06	0.10	0.86	7.0	4.0	2.0	16.0	12.29%		*
295	TYPE A	11+00.66	54.83	53.89	0.10	0.51	7.0	4.0	2.5	16.0	7.32%		*
296	TYPE A	11+25.55	54.84	53.71	0.10	0.70	7.0	4.0	2.5	16.0	9.96%		*
297	TYPE A	11+50.20	54.86	53.54	0.10	0.89	7.0	4.0	2.0	16.0	12.71%		*
298	TYPE A	11+55.58	54.36	53.50	0.10	0.76	7.5	4.0	4.0	10.0	10.10%		0.50

Vertical Point of Intersection

		Begin Station	11+77.61	Begin Elevation	53.85	Begin Grade	0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
299	TYPE A	12+02.84	54.51	53.43	0.08	0.50	8.0	1.5	1.5	12.0	6.30%		**
300	TYPE B	12+17.05	55.20	53.47	0.08	1.15	8.0	1.5	1.5	16.0	14.40%		**
301	TYPE A	12+28.21	55.07	53.50	0.08	0.99	8.0	1.5	1.5	16.0	12.35%		**
302	TYPE A	12+52.49	54.98	53.57	0.08	0.83	8.0	1.5	1.5	16.0	10.32%		**
303	TYPE A	12+79.88	55.17	53.66	0.08	0.93	8.0	1.5	1.5	21.0	11.66%		**
304	TYPE A	12+74.99	54.50	53.64	0.08	0.28	8.0	1.5	1.5	11.0	3.47%		**
304A	TYPE A	13+04.32	54.43	53.73	0.10	0.59	7.0	3.5	3.5	12.0	8.50%		
305	TYPE A	13+37.56	54.39	53.83	0.10	0.46	7.0	4.0	3.0	11.0	6.57%		
436	TYPE A	13+29.25	54.69	53.80	0.10	0.79	7.0	3.0	4.0	16.0	11.22%		

Vertical Point of Intersection

		Begin Station	13+46.11	Begin Elevation	54.35	Begin Grade	-0.0065						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
437	TYPE A	13+53.52	54.69	53.80	0.10	0.79	7.0	4.0	3.0	17.0	11.26%		
306	TYPE A	13+57.95	54.51	53.77	0.10	0.64	7.0	3.0	4.0	11.0	9.10%		
307	TYPE B	13+77.16	54.20	53.65	0.10	0.45	7.0	2.0	4.0	12.0	6.45%		
308	TYPE A	13+93.74	54.29	53.54	0.10	0.65	7.0	4.0	4.0	12.0	9.28%		
309	TYPE B	14+54.84	54.59	53.14	0.08	0.87	7.4	1.5	1.5	12.0	11.65%		**
310	TYPE B	14+60.48	54.25	53.11	0.10	0.71	7.0	4.0	2.0	12.0	10.19%		*
311	TYPE A	14+77.89	54.17	52.99	0.10	0.75	7.0	2.0	4.0	16.0	10.67%		*
312	TYPE A	14+80.67	54.48	52.98	0.08	0.92	7.4	1.5	1.5	16.0	12.43%		**

Vertical Point of Intersection

		Begin Station	15+78.11	Begin Elevation	53.36	Begin Grade	0.0031						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
313	TYPE A	16+25.82	54.44	53.01	0.10	1.33	10.7	2.5	4.0	16.0	12.47%		3.00
428	TYPE C	16+37.94	54.37	53.05	0.10	0.72	6.3	6.0	6.0	23.0	11.46%		

Vertical Point of Intersection

		Begin Station	16+47.57	Begin Elevation	53.56	Begin Grade	Vertical Curve						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
314	TYPE A	16+50.93	54.41	53.07	0.10	1.24	10.7	2.5	4.0	16.0	11.61%		3.00
315	TYPE A	17+01.04	53.78	53.02	0.08	0.18	5.3	1.5	1.5	12.0	3.37%		**
316	TYPE B	17+05.65	53.93	53.00	0.08	0.52	7.3	1.5	1.5	19.0	7.05%		*
317	TYPE A	17+24.69	53.74	52.87	0.10	0.77	7.7	4.0	4.0	9.0	10.03%		

Vertical Point of Intersection

		Begin Station	17+38.07	Begin Elevation	53.25	Begin Grade	-0.0099						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
318	TYPE A	17+53.73	53.98	52.59	0.08	0.98	8.3	1.5	1.5	16.0	11.72%		1.00 *
319	TYPE A	17+79.15	54.15	52.34	0.08	1.40	11.3	1.5	1.5	15.0	12.34%		4.00 *

CORNISH STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection

		Begin Station	18+81.99	Begin Elevation	52.61	Begin Grade	0.007						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
320	TYPE A	19+10.53	54.15	52.31	0.10	1.41	9.8	4.0	4.0	16.0	14.36%		4.50 *
321	TYPE A	19+35.87	54.00	52.49	0.10	1.08	7.8	4.0	4.0	12.0	13.85%		2.50 *
322	TYPE C	19+48.89	54.22	52.58	0.10	1.21	9.8	5.5	5.5	29.0	12.34%		*

CORNISH STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection

		Begin Station	19+95.54	Begin Elevation	53.40	Begin Grade	-0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
323	TYPE B	20+11.16	54.26	52.85	0.08	0.83	6.5	1.5	1.5	16.0	12.70%		**
324	TYPE C	20+39.13	54.47	52.77	0.08	1.12	7.1	1.5	1.5	21.0	15.85%		0.50 **
325	TYPE C	20+66.78	54.40	52.69	0.10	1.28	8.9	4.0	4.0	63.0	14.46%		0.50 *

Vertical Point of Intersection

		Begin Station	21+85.88	Begin Elevation	53.06	Begin Grade	0.0033						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
326	TYPE C	22+08.13	53.63	52.63	0.10	0.90	7.0	4.5	5.0	24.0	12.81%		1.00

Vertical Point of Intersection

		Begin Station	22+22.52	Begin Elevation	53.18	Begin Grade	Vertical Curve						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
327	TYPE C	22+56.02	53.65	52.64	0.10	0.91	6.2	4.0	4.0	23.0	14.72%		
327A	TYPE A	22+87.11	53.33	52.83	0.10	0.40	6.3	4.0	4.0	12.0	6.34%		

Vertical Point of Intersection

		Begin Station	23+22.52	Begin Elevation	52.70	Begin Grade	-0.0239						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
328	TYPE C	23+76.88	51.60	51.06	0.00	0.54	11.7	2.0	4.0	18.0	4.60%		

SANDMAN STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection

		Begin Station	1+31.87	Begin Elevation	53.1	Begin Grade	Vertical Curve						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
333	TYPE C	1+37.56	54.20	53.18	0.10	0.92	8.6	6.0	6.0	24.0	10.67%		
334	TYPE C	1+55.57	54.40	53.11	0.10	1.19	9.6	6.0	6.0	28.0	12.35%		2.50

Vertical Point of Intersection

		Begin Station	2+79.21	Begin Elevation	53.65	Begin Grade	0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
335	TYPE A	2+83.47	53.66	53.16	0.10	0.40	7.3	5.0	6.0	12.0	5.41%		
336	TYPE A	3+39.05	53.83	53.33	0.10	0.40	7.5	6.0	6.0	21.0	5.37%		

Vertical Point of Intersection

		Begin Station	3+72.50	Begin Elevation	53.93	Begin Grade	Vertical Curve						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
337	TYPE C	4+42.80	53.34	52.25	0.08	0.51	7.4	1.5	1.5	33.0	6.85%		**
424	TYPE C	3+90.95	53.64	53.07	0.10	0.47	7.6	6.0	6.0	12.0	6.22%		

Vertical Point of Intersection

		Begin Station	5+44.21	Begin Elevation	52.32	Begin Grade	-0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
338	TYPE C	6+34.31	52.39	51.55	0.10	0.74	8.0	6.0	6.0	11.0	9.22%		

Vertical Point of Intersection

		Begin Station	6+38.17	Begin Elevation	52.03	Begin Grade	Vertical Curve						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
339	TYPE C	6+60.19	52.01	51.19	0.10	0.71	5.9	4.0	4.0	13.0	12.08%		
340	TYPE C	7+06.21	51.16	50.64	0.10	0.42	5.8	4.5	4.5	32.0	7.15%		

ROY STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection

		Begin Station	1+50.45	Begin Elevation	53.39	Begin Grade	-0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
345	TYPE C	1+60.99	54.63	52.86	0.10	1.34	11.8	4.0	4.0	24.0	11.39%		1.00 *

Vertical Point of Intersection

		Begin Station	1+50.47	Begin Elevation	53.35	Begin Grade	-0.0037						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
346	TYPE B	1+64.71	54.18	52.80	0.10	1.28	10.9	4.0	4.0	16.0	11.79%		

Vertical Point of Intersection

		Begin Station	2+77.26	Begin Elevation	53.20	Begin Grade	-0.0065						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
347	TYPE A	3+24.22	53.94	52.39	0.10	1.45	13.0	4.0	4.0	17.0	11.15%		2.50
347A	TYPE A	3+55.59	53.00	52.19	0.10	0.38	10.9	4.0	4.0	12.0	3.48%		
348	TYPE A	3+68.69	53.27	52.11	0.10	0.74	10.5	5.4	5.5	13.0	7.03%		*
348A	TYPE A	3+93.32	53.42	51.95	0.10	1.04	10.3	5.5	5.4	17.0	10.12%		*
349A	TYPE A	4+38.30	53.55	51.65	0.10	1.80	14.7	4.0	4.0	15.0	12.20%		4.50

Vertical Point of Intersection

		Begin Station	2+77.26	Begin Elevation	53.20	Begin Grade	-0.0065						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
349	TYPE B	4+31.21	53.65	51.70	0.08	1.37	11.9	1.5	1.5	16.0	11.54%		**

Vertical Point of Intersection

		Begin Station	5+42.27	Begin Elevation	51.98	Begin Grade	0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
350	TYPE C	5+94.07	54.50	51.64	0.08	2.28	13.4	1.5	1.5	16.0	17.05%		1.50 **

Vertical Point of Intersection

		Begin Station	6+36.43	Begin Elevation	52.26	Begin Grade	-0.007						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
350A	TYPE A	6+59.58	52.30	51.60	0.08	0.12	11.5	1.5	1.5	11.0	1.06%		**
351	TYPE A	6+59.76	52.57	51.60	0.10	0.87	10.2	4.0	4.0	18.0	8.60%		
352	TYPE A	7+04.51	52.33	51.28	0.10	0.95	8.7	4.0	4.0	18.0	10.85%		

LEGEND:

* DRIVEWAY W/ 4"X12" CURB (SEE DETAIL SHEET 183)

** DRIVEWAY W/ EXCESSIVE ELEVATION DIFFERENCE (SEE DETAIL SHEET 193)

NOTE:
1. THE LEFT AND RIGHT POSITION OF THE PROPOSED DRIVEWAY RADIUS IS FROM THE STREET FACING THE PROPERTY.

2. REFER TO DRIVEWAY DETAIL SHEET 188 FOR TRANSITIONS FROM PROPOSED SIDEWALK TO EXISTING DRIVEWAY WIDTH.

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PROFESSIONAL ENGINEER
05/13/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DRIVEWAY SCHEDULE
(3 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 117 OF 345	

CivilTech Engineering, Inc.
C:\2018\3800\13\Drawings\SHEETS\DRIVEWAY SCHEDULE.dwg May 13, 2025

ROY CIRCLE DRIVEWAY CALCULATIONS

Vertical Point of Intersection

		Begin Station	1+38.00	Begin Elevation	51.60	Begin Grade	-0.009						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
341	TYPE A	1+94.46	51.51	50.59	0.10	0.82	12.2	4.0	4.0	16.0	6.70%		
342	TYPE A	2+28.14	51.06	50.29	0.10	0.67	11.8	4.0	4.0	10.0	5.67%		
343	TYPE A	2+39.31	51.20	50.19	0.10	0.91	12.1	4.0	4.0	8.0	7.51%		
344	TYPE A	2+91.91	50.70	49.71	0.10	0.89	12.0	4.0	3.0	14.0	7.41%		

Vertical Point of Intersection

		Begin Station	3+15.18	Begin Elevation	49.92	Begin Grade	-0.0045						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
353	TYPE A	3+41.51	50.33	49.30	0.10	0.93	12.0	4.0	4.0	16.0	7.71%		

Vertical Point of Intersection

		Begin Station	3+82.22	Begin Elevation	50.00	Begin Grade	-0.0063						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
354	TYPE A	3+98.52	50.30	49.40	0.10	0.80	12.1	4.0	4.0	8.0	6.64%		

Vertical Point of Intersection

		Begin Station	3+90.37	Begin Elevation	50.00	Begin Grade	-0.007						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
355	TYPE A	4+49.49	50.42	49.09	0.10	1.23	11.9	4.0	4.0	16.0	10.36%		

Vertical Point of Intersection

		Begin Station	4+70.80	Begin Elevation	49.44	Begin Grade	-0.007						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	Begin Grade	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
356	TYPE A	4+75.27	49.97	48.91	0.10	0.96	12.1	4.0	4.0	8.0	7.94%		
359	TYPE A	5+39.92	49.95	48.46	0.10	1.39	12.0	4.0	4.0	8.0	11.57%		

Vertical Point of Intersection

		Begin Station	4+70.80	Begin Elevation	49.44	Begin Grade	-0.007						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
357	TYPE A	5+12.48	49.96	48.65	0.10	1.22	12.1	4.0	4.0	9.0	10.06%		
358	TYPE A	5+34.21	50.01	48.50	0.10	1.42	12.0	4.0	4.0	18.0	11.81%		

Vertical Point of Intersection

		Begin Station	5+43.62	Begin Elevation	48.93	Begin Grade	0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
360	TYPE A	6+00.52	50.06	48.60	0.10	1.35	12.0	4.0	4.0	8.0	11.30%		
361	TYPE A	6+12.97	49.60	48.64	0.10	0.86	12.0	4.0	4.0	12.0	7.18%		

Vertical Point of Intersection

		Begin Station	6+16.40	Begin Elevation	49.15	Begin Grade	0.0038						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
362	TYPE A	6+68.26	50.18	48.85	0.10	1.24	12.0	4.0	4.0	8.0	10.34%		
363	TYPE A	7+10.14	50.36	49.01	0.10	1.25	12.0	4.0	4.0	11.0	10.43%		

Vertical Point of Intersection

		Begin Station	7+29.21	Begin Elevation	48.77	Begin Grade	0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
364	TYPE A	7+50.63	50.21	48.33	0.10	1.78	16.0	4.0	4.0	8.0	11.10%		4.00

Vertical Point of Intersection

		Begin Station	7+97.10	Begin Elevation	48.97	Begin Grade	Vertical Curve						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
365	TYPE A	7+63.32	49.62	48.37	0.10	1.15	12.0	4.0	4.0	10.0	9.56%		
366	TYPE A	7+88.32	49.34	48.45	0.10	0.79	12.0	4.0	4.0	8.0	6.61%		
367	TYPE A	8+10.93	48.82	48.25	0.10	0.47	12.0	4.0	4.0	8.0	3.95%		
368	TYPE B	8+35.28	49.40	47.83	0.10	1.47	12.0	4.0	4.0	21.0	12.26%		

Vertical Point of Intersection

		Begin Station	8+42.31	Begin Elevation	48.21	Begin Grade	-0.0169						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
369	TYPE A	8+80.43	48.91	47.07	0.10	1.74	14.5	2.0	4.0	8.0	12.01%		2.50

Vertical Point of Intersection

		Begin Station	9+02.75	Begin Elevation	47.19	Begin Grade	-0.0169						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
370	TYPE A	9+21.34	47.49	46.38	0.10	1.01	12.0	2.0	4.0	11.0	8.41%		

Vertical Point of Intersection

		Begin Station	9+65.92	Begin Elevation	46.12	Begin Grade	Vertical Curve						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
371	TYPE A	9+81.61	46.99	45.70	0.10	1.19	12.0	4.0	4.0	20.0	9.94%		
372	TYPE A	9+85.54	46.64	45.68	0.10	0.86	12.0	4.0	4.0	12.0	7.17%		

Vertical Point of Intersection

		Begin Station	10+13.60	Begin Elevation	46.11	Begin Grade	0.0072						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
373	TYPE A	10+49.73	46.74	45.87	0.10	0.77	12.0	4.0	3.5	17.0	6.42%		

Vertical Point of Intersection

		Begin Station	10+58.65	Begin Elevation	46.43	Begin Grade	0.0072						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
374	TYPE A	10+75.85	48.13	46.05	0.10	1.98	16.0	4.0	4.0	13.0	12.35%		4.00

Vertical Point of Intersection

		Begin Station	10+65.29	Begin Elevation	46.48	Begin Grade	0.0072						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
375	TYPE A	10+76.36	46.42	46.06	0.10	0.26	12.0	4.0	4.0	18.0	2.20%		
376	TYPE A	11+20.30	47.63	46.38	0.10	1.15	12.0	4.0	4.0	10.0	9.57%		

Vertical Point of Intersection

		Begin Station	11+56.62	Begin Elevation	47.14	Begin Grade	0.0072						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH (FF-ROW)	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
377	TYPE A	11+59.76	49.67	46.66	0.08	2.43	14.5	1.5	1.5	8.0	16.77%	**	1.50
378	TYPE A	11+95.65	49.45	46.92	0.10	2.10	17.0	4.0	4.0	12.0	12.35%	*	5.00

Vertical Point of Intersection

		Begin Station	12+04.61	Begin Elevation	47.49	Begin Grade	0.0072						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
379	TYPE A	12+16.30	49.89	47.07	0.08	2.23	13.5	1.5	1.5	8.0	16.54%	**	0.50
380	TYPE A	12+19.38	49.75	47.10	0.10	2.22	17.0	4.0	4.0	17.0	13.08%	*	5.00

ROY CIRCLE DRIVEWAY CALCULATIONS

Vertical Point of Intersection

		Begin Station	12+37.33	Begin Elevation	48.56	Begin Grade	-0.0059						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
381	TYPE A	12+72.25	49.78	47.59	0.10	1.76	15.0	4.0	4.0	10.0	11.73%		3.00
382	TYPE A	12+75.37	50.01	47.62	0.10	1.96	17.0	4.0	4.0	8.0	11.53%		5.00

Vertical Point of Intersection

		Begin Station	13+17.83	Begin Elevation	48.56	Begin Grade	Vertical Curve						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
383	TYPE A	13+31.25	49.94	47.89	0.10	1.95	17.0	4.0	4.0	17.0	11.46%		5.00

Vertical Point of Intersection

		Begin Station	13+63.29	Begin Elevation	48.30	Begin Grade	-0.0059						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
384	TYPE A	13+84.32	50.09	47.68	0.10	1.98	16.0	4.0	4.0	8.0	12.40%		4.00

Vertical Point of Intersection

		Begin Station	14+09.88	Begin Elevation	48.02	Begin Grade	0.0031						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
385	TYPE A	14+37.13	49.94	47.60	0.10	1.91	15.5	4.0	4.0	8.0	12.29%		3.50

Vertical Point of Intersection

		Begin Station	14+29.83	Begin Elevation	48.08	Begin Grade	0.0031						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
386	TYPE A	14+70.39	49.80	47.71	0.10	1.99	16.0	4.0	4.0	8.0	12.46%		4.00

Vertical Point of Intersection

		Begin Station	20+40.09	Begin Elevation	49.61	Begin Grade	-0.0066						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
387	TYPE A	20+99.62	49.95	48.72	0.10	1.13	12.0	4.0	4.0	8.0	9.44%		
388	TYPE A	21+51.12	50.19	48.38	0.10	1.71	14.0	4.0	4.0	12.0	12.24%		2.00
389	TYPE A	21+51.53	50.48	48.37	0.10	2.00	16.0	4.0	4.0	11.0	12.52%		4.00
390	TYPE A	21+70.75	50.39	48.25	0.10	2.04	16.5	4.0	4.0	9.0	12.37%		4.50
391	TYPE A	22+08.89	50.24	48.00	0.10	1.82	14.5	4.0	4.0	13.0	12.53%		2.50
392	TYPE A	22+57.24	50.39	47.68	0.08	2.13	13.0	1.5	1.5	14.0	16.41%		**
393	TYPE A	22+61.38	50.40	47.65	0.08	2.17	18.0	1.5	1.5	17.0	12.06%		5.00 **

Vertical Point of Intersection

		Begin Station	22+94.30	Begin Elevation	48.06	Begin Grade	0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
394	TYPE A	23+05.62	50.05	47.59	0.10	2.03	16.4	4.0	4.0	8.0	12.34%		4.50
395	TYPE A	23+54.73	49.14	47.74	0.10	1.30	11.9	4.0	4.0	16.0	10.90%		

DARLING STREET DRIVEWAY CALCULATIONS

Vertical Point of Intersection

		Begin Station	1+90.95	Begin Elevation	52.88	Begin Grade	-0.0136						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
397	TYPE A	2+49.57	53.17	51.58	0.08	1.01	5.7	1.5	1.5	16.0	17.67%	**	
398	TYPE A	2+68.93	52.00	51.32	0.10	0.58	9.8	4.0	4.0	8.0	5.94%		

Vertical Point of Intersection

		Begin Station	2+68.93	Begin Elevation	51.83	Begin Grade	-0.004						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
399	TYPE A	2+71.08	52.88	51.32	0.08	0.98	5.7	1.5	1.5	16.0	17.23%	**	
399A	TYPE A	2+99.52	52.68	51.21	0.08	0.89	5.7	1.5	1.5	15.0	15.71%	**	
400	TYPE A	3+22.58	52.70	51.12	0.08	1.00	5.7	1.5	1.5	15.0	17.69%	**	
401	TYPE A	3+31.90	52.03	51.08	0.10	0.85	9.9	6.0	6.0	16.0	8.62%		
402	TYPE A	3+50.70	52.53	51.00	0.08	0.95	5.7	1.5	1.5	16.0	16.67%	**	
403	TYPE A	3+71.08	52.58	50.92	0.08	1.08	6.7	1.5	1.5	16.0	16.15%	1.00	**

		Begin Station	4+99.99	Begin Elevation	51.21	Begin Grade	-0.004						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
404	TYPE A	5+28.23	52.00	50.60	0.10	1.07	6.2	4.0	2.0	16.0	17.33%	1.00	*
405	TYPE B	5+49.03	51.85	50.51	0.10	0.91	5.2	2.0	4.0	16.0	17.33%		*

Vertical Point of Intersection

		Begin Station	5+78.26	Begin Elevation	50.9	Begin Grade	-0.0053						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
439	TYPE A	5+78.26	51.15	50.40	0.10	0.32	8.6	4.0	4.0	12.0	3.74%		*
440	TYPE A	6+03.33	51.36	50.27	0.10	0.66	8.5	4.0	4.0	12.0	7.76%		*
405A	TYPE A	6+05.49	51.07	50.26	0.08	0.23	6.4	1.5	1.5	12.0	3.66%		**
406	TYPE A	6+29.96	51.05	50.13	0.08	0.34	6.4	1.5	1.5	12.0	5.38%		**

Vertical Point of Intersection

		Begin Station	6+42.01	Begin Elevation	50.56	Begin Grade	0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
406A	TYPE A	6+53.81	51.10	50.10	0.08	0.42	6.4	1.5	1.5	12.0	6.63%		**
406B	TYPE A	6+80.25	51.00	50.17	0.08	0.25	6.2	1.5	1.5	12.0	3.96%		**
407	TYPE B	6+88.98	52.07	50.20	0.08	1.29	9.3	1.5	1.5	20.0	13.80%		**
408	TYPE A	7+04.06	51.07	50.25	0.00	0.32	6.4	1.5	1.5	12.0	5.08%		**
408A	TYPE A	7+27.99	51.21	50.32	0.00	0.39	6.4	1.5	1.5	12.0	6.15%		**

Vertical Point of Intersection

		Begin Station	7+30.35	Begin Elevation	50.83	Begin Grade	-0.003						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
409	TYPE A	7+52.50	51.01	50.26	0.10	0.64	10.6	3.0	4.0	14.0	6.09%		

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		Begin Station	8+06.35	Begin Elevation	50.83	Begin Grade	Vertical Curve						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
410	TYPE C	8+21.44	51.00	50.13	0.10	0.77	8.1	6.0	6.0	24.0	9.54%		
411	TYPE A	8+27.50	50.83	50.05	0.10	0.68	10.7	4.0	4.0	12.0	6.34%		
412	TYPE C	8+78.80	50.51	49.36	0.10	1.05	8.0	2.0	4.0	27.0	13.21%		
413	TYPE A	8+76.14	50.00	49.40	0.10	0.50	10.8	2.0	4.0	12.0	4.64%		

Vertical Point of Intersection

		Begin Station	9+15.00	Begin Elevation	49.40	Begin Grade	Vertical Curve						
DW #	DRIVEWAY TYPE	DRIVEWAY STATION	ELEV. AT ROW	PROP ELEVATION AT GUTTER	SW ELEVATION DELTA	TOTAL DELTA	APRON LENGTH	DRIVEWAY RADIUS LT	DRIVEWAY RADIUS RT	DRIVEWAY WIDTH (FT)	PROP DRIVEWAY SLOPE		DRIVEWAY ROW ENCROACHMENT (FT)
414	TYPE A	9+49.45	49.00	47.43	0.10	1.47	12.5	4.0	2.0	19.0	11.75%		

REV	DESCRIPTION	BY	DATE

LEGEND:

* DRIVEWAY W/ 4"X12" CURB (SEE DETAIL SHEET 183)

** DRIVEWAY W/ EXCESSIVE ELEVATION DIFFERENCE (SEE DETAIL SHEET 193)

NOTE:
1. THE LEFT AND RIGHT POSITION OF THE PROPOSED DRIVEWAY RADIUS IS FROM THE STREET FACING THE PROPERTY.

2. REFER TO DRIVEWAY DETAIL SHEET 188 FOR TRANSITIONS FROM PROPOSED SIDEWALK TO EXISTING DRIVEWAY WIDTH.

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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
05/13/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

DRIVEWAY SCHEDULE
(4 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 118 OF 345	

civilTech Engineering, Inc.
C:\2018\18003\Drawings\SHEETS\DRIVEWAY SCHEDULE.dwg May 13, 2025

REV	DESCRIPTION	BY	DATE

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	2+24.16	52.40		
		2+34.16	52.48		
		2+44.16	52.54		
		2+54.16	52.58		
Egbert St		2+64.16	52.61		
PVI STA=2+88.42		2+74.16	52.63		
PVI ELEV=52.94		2+84.16	52.63	108.61	30
		2+94.16	52.61		
		3+04.16	52.58		
		3+14.16	52.54		
		3+24.16	52.47		
		3+34.16	52.40		
	EVC	3+44.16	52.30		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	4+18.16	51.47		
		4+28.16	51.37		
		4+38.16	51.27		
		4+48.16	51.15		
Egbert St		4+58.16	51.08		
PVI STA=4+76.43		4+68.16	51.00		
PVI ELEV=50.81		4+78.16	50.92	116.53	30
		4+88.16	50.85		
		4+98.16	50.79		
		5+08.16	50.74		
		5+18.16	50.69		
		5+28.16	50.66		
	EVC	5+34.69	50.63		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	2+59.25	52.81		
		2+69.25	52.85		
		2+79.25	52.89		
		2+89.25	52.91		
Kansas St		2+99.25	52.92		
PVI STA=3+09.25		3+09.25	52.92	100	30
PVI ELEV=53.07		3+19.25	52.90		
		3+29.25	52.87		
		3+39.25	52.84		
		3+49.25	52.78		
	EVC	3+59.25	52.72		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	2+25.54	53.43		
		2+35.54	53.53		
		2+45.54	53.61		
		2+55.54	53.68		
Kiam St (RT.)		2+65.54	53.72		
PVI STA=2+70.54		2+75.54	53.75	90	30
PVI ELEV=53.92		2+85.54	53.77		
		2+95.54	53.76		
		3+05.54	53.74		
	EVC	3+15.54	53.69		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	2+25.54	53.01		
		2+35.54	53.20		
		2+45.54	53.36		
		2+55.54	53.49		
Kiam St (LT.)		2+65.54	53.60		
PVI STA=2+70.54		2+75.54	53.67	90	30
PVI ELEV=53.92		2+85.54	53.72		
		2+95.54	53.74		
		3+05.54	53.73		
	EVC	3+15.54	53.69		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	5+41.59	53.18		
		5+51.59	53.21		
		5+61.59	53.24		
		5+71.59	53.18		
Kiam St		5+81.59	53.14		
PVI STA=5+86.59		5+91.59	53.08	90	30
PVI ELEV=53.32		6+01.59	53.00		
		6+11.59	52.90		
		6+21.59	52.77		
	EVC	6+31.59	52.64		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	9+11.77	51.53		
		9+21.77	51.56		
		9+31.77	51.59		
		9+41.77	51.62		
Kiam St		9+51.77	51.59		
PVI STA=9+56.77		9+61.77	51.56	90	30
PVI ELEV=51.72		9+71.77	51.52		
		9+81.77	51.46		
		9+91.77	51.39		
	EVC	10+01.77	51.31		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	11+10.32	50.31		
		11+20.32	50.22		
		11+30.32	50.15		
		11+40.32	50.12		
Kiam St		11+50.32	50.08		
PVI STA=11+55.32		11+60.32	50.05	90	30
PVI ELEV=49.89		11+70.32	50.02		
		11+80.32	49.97		
		11+90.32	50.00		
	EVC	12+00.32	50.03		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	13+05.00	50.34		
		13+15.00	50.37		
		13+25.00	50.34		
		13+35.00	50.31		
Kiam St		13+45.00	50.28		
PVI STA=13+50.00		13+55.00	50.22	90	30
PVI ELEV=50.48		13+65.00	50.14		
		13+75.00	50.00		
		13+85.00	49.90		
	EVC	13+95.00	49.75		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	8+65.00	50.26		
		8+75.00	50.08		
		8+85.00	49.90		
Darling St (RT.)		8+95.00	49.70		
PVI STA=9+15.00		9+05.00	49.50		
PVI ELEV=49.40		9+15.00	49.28	100	30
		9+25.00	49.06		
		9+35.00	48.83		
		9+45.00	48.59		
		9+55.00	48.34		
	EVC	9+65.00	48.07		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	8+65.00	50.26		
		8+75.00	50.08		
		8+85.00	49.89		
Darling St (RT.)		8+95.00	49.69		
PVI STA=9+15.00		9+05.00	49.47		
PVI ELEV=49.40		9+15.00	49.24	100	30
		9+25.00	49.00		
		9+35.00	48.74		
		9+45.00	48.47		
		9+55.00	48.19		
	EVC	9+65.00	47.91		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	11+92.71	52.63		
		12+02.71	52.65		
		12+12.71	52.66		
		12+22.71	52.65		
Petty St		12+32.71	52.63		
PVI STA=12+42.71		12+42.71	52.59	100	30
PVI ELEV=52.78		12+52.71	52.54		
		12+62.71	52.47		
		12+72.71	52.39		
		12+82.71	52.30		
	EVC	12+92.71	52.19		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	12+99.35	53.91		
		13+09.35	53.92		
		13+19.35	53.94		
		13+29.35	53.95		
Larkin		13+39.35	53.96		
PVI STA=13+44.66		13+49.35	53.94	90.63	30
PVI ELEV=54.14		13+59.35	53.87		
		13+69.35	53.80		
		13+79.35	53.73		
	EVC	13+89.98	53.67		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	16+50.83	52.68		
		16+60.83	52.71		
		16+70.83	52.68		
		16+80.83	52.65		
Larkin		16+90.83	52.62		
PVI STA=16+96.30		17+00.83	52.59	90.94	30
PVI ELEV=52.82		17+10.83	52.55		
		17+20.83	52.48		
		17+30.83	52.39		
	EVC	17+41.77	52.31		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	19+46.45	52.13		
		19+56.45	52.23		
		19+66.45	52.29		
		19+76.45	52.34		
Larkin		19+86.45	52.37		
PVI STA=19+99.73		19+96.45	52.39	106.57	30
PVI ELEV=52.66		20+06.45	52.38		
		20+16.45	52.35		
		20+26.45	52.30		
		20+36.45	52.23		
		20+46.45	52.15		
	EVC	20+53.02	52.08		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	22+12.19	51.52		
		22+22.19	51.55		
		22+32.19	51.54		
		22+42.19	51.50		
Larkin (RT.)		22+52.19	51.44		
PVI STA=22+62.19		22+62.19	51.35	100	30
PVI ELEV=51.70		22+72.19	51.23		
		22+82.19	51.08		
		22+92.19	50.91		
		23+02.19	50.71		
	EVC	23+12.19	50.47		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	22+12.19	51.52		
		22+22.19	51.55		
		22+32.19	51.54		
		22+42.19	51.50		
Larkin (LT.)		22+52.19	51.43		
PVI STA=22+62.19		22+62.19	51.34	100	30
PVI ELEV=51.70		22+72.19	51.21		
		22+82.19	51.05		
		22+92.19	50.87		
		23+02.19	50.66		
	EVC	23+12.19	50.41		

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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

VERTICAL CURVE TABLES (1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 119 OF 345	

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REV	DESCRIPTION	BY	DATE

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	16+47.57	53.56		
		16+57.57	53.59		
		16+67.57	53.62		
		16+77.57	53.59		
Cornish St		16+87.57	53.56	90.5	30
PVI STA=16+92.82		16+97.57	53.53		
PVI ELEV=53.70		17+07.57	53.48		
		17+17.57	53.42		
		17+27.57	53.34		
	EVC	17+38.07	53.25		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	22+22.52	53.19		
		22+32.52	53.21		
		22+42.52	53.20		
		22+52.52	53.18		
Cornish St(RT.)		22+62.52	53.13		
PVI STA=22+72.52		22+72.52	53.05	100	30
PVI ELEV=53.35		22+82.52	52.95		
		22+92.52	52.83		
		23+02.52	52.68		
		23+12.52	52.51		
	EVC	23+22.52	52.31		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	22+22.52	53.19		
		22+32.52	53.20		
		22+42.52	53.20		
		22+52.52	53.16		
Cornish St(RT.)		22+62.52	53.10		
PVI STA=22+72.52		22+72.52	53.01	100	30
PVI ELEV=53.35		22+82.52	52.89		
		22+92.52	52.75		
		23+02.52	52.58		
		23+12.52	52.38		
	EVC	23+22.52	52.16		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	1+14.59	53.18		
		1+24.59	53.45		
		1+34.59	53.70		
		1+44.59	53.93		
Detering		1+54.59	54.14	88.93	30
PVI STA=1+66.61		1+64.59	54.33		
PVI ELEV=54.45		1+74.59	54.49		
		1+84.59	54.64		
		1+94.59	54.75		
	EVC	2+11.07	54.84		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	6+00.68	54.33		
		6+10.68	54.36		
		6+20.68	54.37		
		6+30.68	54.34		
Detering		6+40.68	54.31	90.41	30
PVI STA=6+45.88		6+50.68	54.28		
PVI ELEV=54.46		6+60.68	54.25		
		6+70.68	54.20		
		6+80.68	54.12		
	EVC	6+91.08	54.05		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	8+09.80	52.87		
		8+19.80	52.83		
		8+29.80	52.77		
		8+39.80	52.70		
Reinerman		8+49.80	52.61	90	30
PVI STA=1+66.61		8+59.80	52.50		
PVI ELEV=54.45		8+69.80	52.38		
		8+79.80	52.24		
		8+89.80	52.08		
	EVC	8+99.80	51.91		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	7+51.89	48.83		
		7+61.89	48.85		
		7+71.89	48.85		
		7+81.89	48.83		
Roy Circle		7+91.89	48.78	90.42	30
PVI STA=7+97.10		8+01.89	48.71		
PVI ELEV=48.97		8+11.89	48.62		
		8+21.89	48.51		
		8+31.89	48.37		
	EVC	8+41.89	48.21		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	9+20.58	46.89		
		9+30.58	46.73		
		9+40.58	46.59		
		9+50.58	46.46		
Roy Circle		9+60.58	46.36		
PVI STA=9+65.92		9+70.58	46.27	90.69	30
PVI ELEV=46.12		9+80.58	46.21		
		9+90.58	46.16		
		10+00.58	46.13		
		10+10.58	46.12		
	EVC	10+11.27	46.12		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	12+72.37	48.08		
		12+82.37	48.18		
		12+92.37	48.26		
		13+02.37	48.32		
Roy Circle		13+12.37	48.36		
PVI STA=13+17.83		13+22.37	48.38	90.93	30
PVI ELEV=48.56		13+32.37	48.39		
		13+42.37	48.38		
		13+52.37	48.35		
		13+62.37	48.30		
	EVC	13+63.29	48.30		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	1+26.64	53.02		
		1+36.64	53.15		
		1+46.64	53.26		
Sandman		1+56.64	53.35		
PVI STA=1+64.16		1+66.64	53.41	75.03	30
PVI ELEV=53.56		1+76.64	53.47		
		1+86.64	53.43		
		1+96.64	53.46		
	EVC	2+01.67	53.45		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	3+30.01	53.60		
		3+40.01	53.62		
		3+50.01	53.61		
		3+60.01	53.57		
Sandman		3+70.01	53.51		
PVI STA=3+72.50		3+80.01	53.41	84.97	30
PVI ELEV=53.73		3+90.01	53.30		
		4+00.01	53.15		
		4+10.01	52.98		
		4+14.99	52.88		

Street		Station	Elevation	LVC	Design Speed (mph)
	BVC	5+87.91	51.92		
		5+97.91	51.94		
		6+07.91	51.95		
		6+17.91	51.94		
Sandman		6+27.91	51.92		
PVI STA=6+38.20		6+37.91	51.88		
PVI ELEV=52.04		6+47.91	51.84	100.58	30
		6+57.91	51.78		
		6+67.91	51.71		
		6+77.91	51.63		
		6+87.91	51.53		
	EVC	6+88.49	51.53		

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(2 OF 2)

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OMAR ABDULKAREEM, P.E.	
SHEET NO. 120 OF 345	

CivilTech Engineering, Inc.
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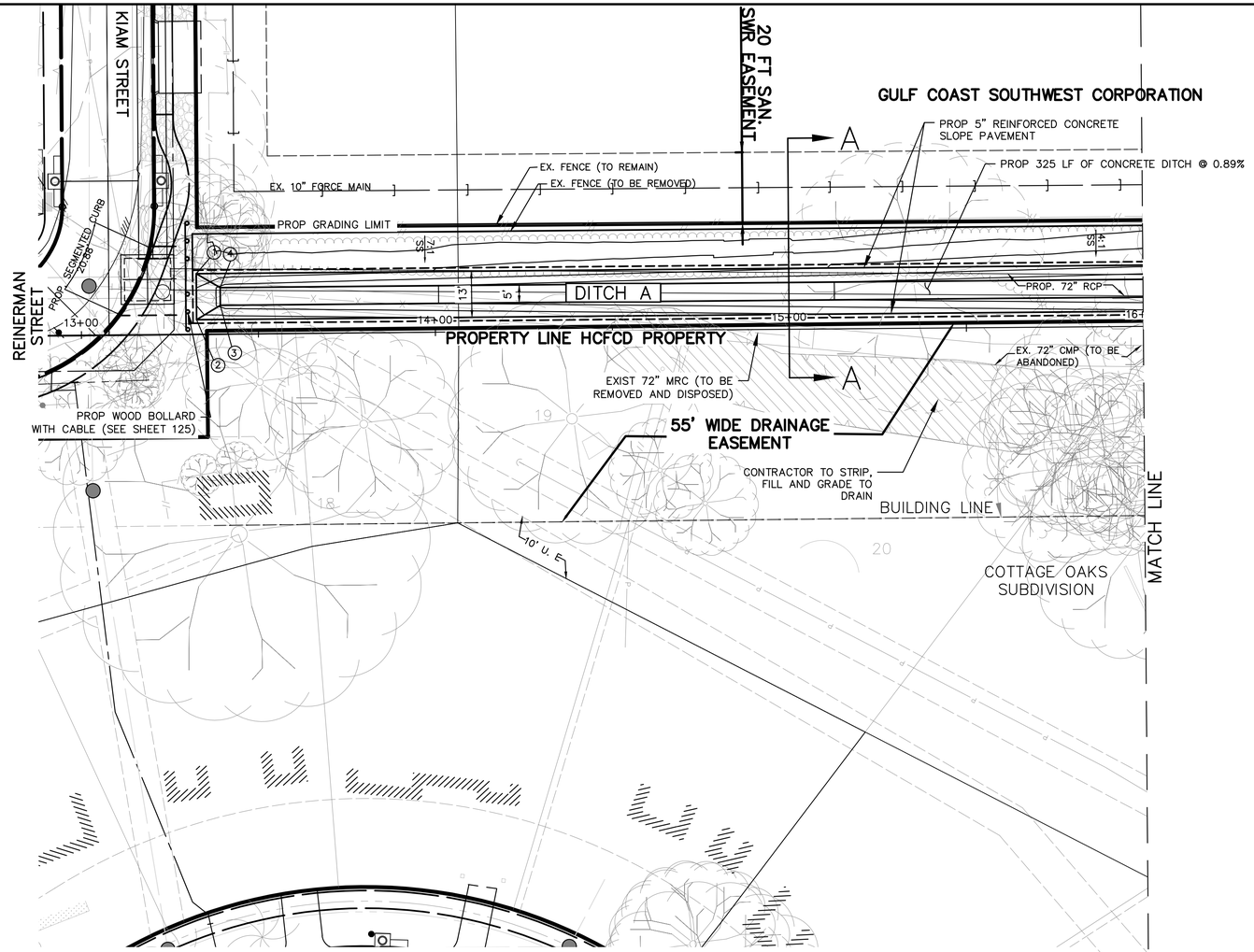
LEAD No.	STREET NAME	STA	OFFSET	LENGTH (LF)	SLOPE	SERVICE LEAD CONNECTION W/CLEAN OUT	ORIENTATION	TC ELEV	Base FL at SAN Trunk	DEPTH	FL at R.O.W.	MATERIAL
1	LARKIN ST.	16+02.45	25.28 LT	18.67	1%	SINGLE WYE	North	52.54	47.06	4.9	47.25	Green D-2241
2	LARKIN ST.	16+40.73	22.32 RT	28.94	1%	SINGLE WYE	South	52.65	48.76	3.2	49.05	DIP
3	LARKIN ST.	16+42.96	25.28 LT	18.67	1%	SINGLE WYE	North	52.66	47.04	5.1	47.23	Green D-2241
4	LARKIN ST.	16+46.96	25.28 LT	18.67	1%	SINGLE WYE	North	52.67	47.02	5.1	47.21	Green D-2241
5	LARKIN ST.	16+77.95	22.32 RT	28.95	1%	SINGLE WYE	South	52.71	48.86	3.2	49.15	DIP
6	LARKIN ST.	17+07.33	22.32 RT	28.95	1%	SINGLE WYE	South	52.61	48.94	3.0	49.23	DIP
7	LARKIN ST.	17+08.39	25.28 LT	18.66	1%	SINGLE WYE	North	52.60	46.85	5.2	47.04	Green D-2241
8	LARKIN ST.	17+33.45	25.28 LT	18.65	1%	SINGLE WYE	North	52.40	46.84	5.0	47.03	Green D-2241
9	LARKIN ST.	17+47.98	22.32 RT	28.96	1%	SINGLE WYE	South	52.25	48.54	3.0	48.54	DIP
10	LARKIN ST.	17+72.08	25.28 LT	18.64	1%	SINGLE WYE	North	51.98	46.57	4.8	46.76	Green D-2241
11	LARKIN ST.	19+01.99	24.76 RT	31.41	1%	SINGLE WYE	South	51.70	45.23	5.8	45.23	DIP
12	LARKIN ST.	19+26.89	21.33 LT	14.67	1%	SINGLE WYE	North	51.94	46.60	4.8	46.75	Green D-2241
13	LARKIN ST.	19+50.31	24.62 RT	31.28	1%	SINGLE WYE	South	52.17	45.07	6.4	45.07	DIP
14	LARKIN ST.	19+54.09	24.61 RT	31.27	1%	SINGLE WYE	South	52.20	45.05	6.5	45.05	DIP
15	LARKIN ST.	20+01.89	21.49 LT	14.82	1%	SINGLE WYE	North	52.37	45.56	6.2	45.71	Green D-2241
16	LARKIN ST.	20+01.98	24.55 RT	31.21	1%	SINGLE WYE	South	52.37	44.90	6.8	44.90	DIP
17	LARKIN ST.	20+39.16	24.44 RT	31.10	1%	SINGLE WYE	South	52.20	44.77	6.7	44.77	DIP
18	LARKIN ST.	20+51.89	21.59 LT	14.92	1%	SINGLE WYE	North	52.08	46.49	5.0	46.64	Green D-2241
19	LARKIN ST.	20+81.50	24.35 RT	31.02	1%	SINGLE WYE	South	51.76	44.64	6.4	44.64	DIP
20	LARKIN ST.	21+05.67	21.70 LT	15.03	1%	SINGLE WYE	North	51.50	46.32	4.6	46.47	Green D-2241
21	LARKIN ST.	22+19.91	24.09 RT	30.12	1%	SINGLE WYE	South	51.54	44.84	6.0	45.14	Green C-900
22	LARKIN ST.	22+74.60	24.04 LT	16.65	1%	SINGLE WYE	North	51.14	44.75	5.8	44.92	Green D-2241
23	LARKIN ST.	22+99.74	22.09 LT	16.95	1%	SINGLE WYE	North	50.71	44.65	5.5	44.82	Green D-2241
24	LARKIN ST.	23+05.26	22.10 LT	17.02	1%	SINGLE WYE	North	50.59	44.41	5.6	44.58	Green D-2241
25	LARKIN ST.	23+07.64	23.89 RT	28.95	1%	SINGLE WYE	South	50.58	46.70	3.2	46.99	Green C-900
26	LARKIN ST.	23+11.29	23.89 RT	28.90	1%	SINGLE WYE	South	50.49	46.74	3.1	47.03	Green C-900
27	LARKIN ST.	23+14.52	23.88 RT	28.85	1%	SINGLE WYE	South	50.42	46.76	3.0	47.05	Green C-900
28	LARKIN ST.	23+72.09	22.24 LT	17.91	1%	SINGLE WYE	North	48.87	46.00	2.3	46.18	Green C-900
34	CORNISH ST.	16+12.66	23.68 LT	31.50	1%	SINGLE WYE	North	53.45	46.27	6.5	46.59	DIP
35	CORNISH ST.	16+16.39	23.67 LT	31.49	1%	SINGLE WYE	North	53.48	46.27	6.5	46.58	DIP
36	CORNISH ST.	16+21.54	22.32 RT	14.51	1%	SINGLE WYE	South	53.48	47.41	5.5	47.56	Green D-2241
37	CORNISH ST.	16+61.92	23.68 LT	31.49	1%	SINGLE WYE	North	53.59	46.03	6.9	46.34	DIP
38	CORNISH ST.	16+90.11	23.68 LT	31.49	1%	SINGLE WYE	North	53.56	45.91	6.9	46.22	DIP
39	CORNISH ST.	17+16.43	22.32 RT	14.52	1%	SINGLE WYE	South	53.43	47.49	5.4	47.64	Green D-2241
40	CORNISH ST.	17+40.11	23.68 LT	31.48	1%	SINGLE WYE	North	53.23	45.59	6.9	45.90	Green C-900
41	CORNISH ST.	17+90.11	23.68 LT	31.48	1%	SINGLE WYE	North	52.74	45.45	6.6	45.76	Green C-900
42	CORNISH ST.	19+20.04	21.33 LT	29.11	1%	SINGLE WYE	North	52.86	45.28	6.9	45.57	Green C-900
43	CORNISH ST.	19+25.37	21.34 LT	29.12	1%	SINGLE WYE	North	52.90	45.26	6.9	45.55	Green C-900
44	CORNISH ST.	19+72.68	24.57 RT	16.79	1%	SINGLE WYE	South	53.24	47.16	5.5	47.33	Green D-2241
45	CORNISH ST.	19+97.68	24.52 RT	16.74	1%	SINGLE WYE	South	53.39	47.35	5.5	47.52	Green D-2241
46	CORNISH ST.	20+22.58	21.54 LT	29.31	1%	SINGLE WYE	North	53.32	45.10	7.5	45.39	Green D-2241
47	CORNISH ST.	20+51.97	21.60 LT	29.37	1%	SINGLE WYE	North	53.23	45.17	7.4	45.46	Green D-2241
48	CORNISH ST.	20+97.35	21.69 LT	29.46	1%	SINGLE WYE	North	53.09	44.69	7.7	44.98	Green D-2241
49	CORNISH ST.	21+04.14	24.30 RT	16.53	1%	SINGLE WYE	South	53.07	46.98	5.5	47.15	Green D-2241
50	CORNISH ST.	22+72.58	22.04 LT	28.26	1%	SINGLE WYE	North	53.01	48.57	3.8	48.85	Green C-900
51	CORNISH ST.	23+22.58	22.15 LT	27.70	1%	SINGLE WYE	North	52.16	48.57	2.9	48.85	Green C-900
52	CORNISH ST.	23+50.68	23.80 RT	18.62	1%	SINGLE WYE	South	51.73	45.70	5.4	45.89	Green D-2241
53	CORNISH ST.	24+01.13	22.29 LT	26.84	1%	SINGLE WYE	North	50.28	42.44	7.2	42.71	Green C-900
59	DARLING ST.	2+60.57	20.16 LT	17.92	1%	SINGLE WYE	North	52.52	46.04	5.9	46.22	Green D-2241
60	DARLING ST.	2+60.58	20.68 RT	22.93	1%	SINGLE WYE	South	52.52	48.52	3.3	48.75	Green C-900
61	DARLING ST.	3+10.58	20.73 RT	22.93	1%	SINGLE WYE	South	52.23	48.28	3.3	48.51	Green C-900
62	DARLING ST.	3+60.58	20.68 RT	22.85	1%	SINGLE WYE	South	51.78	48.06	3.1	48.29	Green C-900
64	DARLING ST.	5+19.26	21.18 LT	19.18	1%	SINGLE WYE	North	51.27	45.37	5.3	45.56	Green D-2241
65	DARLING ST.	5+42.08	24.63 RT	26.61	1%	SINGLE WYE	South	51.34	41.40	9.3	41.67	DIP
66	DARLING ST.	5+57.45	21.23 LT	19.27	1%	SINGLE WYE	North	51.38	45.54	5.2	45.73	Green D-2241
66A	DARLING ST.	6+16.92	21.15 LT	19.24	1%	SINGLE WYE	North	51.12	41.50	9.0	41.69	DIP
67	DARLING ST.	6+17.08	24.48 RT	26.39	1%	SINGLE WYE	South	51.12	41.50	9.0	41.76	DIP
67A	DARLING ST.	6+23.02	21.12 LT	19.22	1%	SINGLE WYE	North	51.09	45.35	5.1	45.54	Green D-2241
67B	DARLING ST.	6+64.78	21.22 LT	19.36	1%	SINGLE WYE	North	51.07	44.57	5.9	44.76	Green D-2241
67C	DARLING ST.	6+69.00	21.28 LT	19.42	1%	SINGLE WYE	North	51.08	44.57	5.9	44.76	Green D-2241
67D	DARLING ST.	6+78.05	24.35 RT	26.20	1%	SINGLE WYE	South	51.11	41.50	9.0	41.76	DIP
70	DARLING ST.	7+04.07	24.30 RT	26.13	1%	SINGLE WYE	South	51.19	41.50	9.0	41.76	Green C-900
71	DARLING ST.	7+10.64	21.27 LT	19.45	1%	SINGLE WYE	North	51.21	45.20	5.4	45.39	Green D-2241
71A	DARLING ST.	7+17.30	21.28 LT	19.46	1%	SINGLE WYE	North	51.23	45.20	5.4	45.39	Green D-2241
72	DARLING ST.	7+60.86	26.58 LT	24.81	1%	SINGLE WYE	North	51.12	45.43	5.1	45.68	Green D-2241
73	DARLING ST.	8+05.22	28.65 LT	25.20	1%	SINGLE WYE	North	51.26	45.40	5.2	45.65	Green D-2241
74	DARLING ST.	8+52.65	26.81 LT	25.81	1%	SINGLE WYE	North	50.47	44.53	5.3	44.79	Green D-2241
75	DARLING ST.	8+92.07	23.92 RT	24.54	1%	SINGLE WYE	South	49.75	46.03	3.1	46.28	Green C-900
76	DARLING ST.	9+27.80	27.61 LT	27.34	1%	SINGLE WYE	North	48.93	43.16	5.1	43.43	Green D-2241
77	DARLING ST.	9+36.15	23.83 RT	24.03	1%	SINGLE WYE	North	48.80	44.46	3.7	44.70	Green C-900
78	DARLING ST.	9+81.84	32.91 LT	33.15	1%	SINGLE WYE	North	47.41	41.64	5.1	41.97	Green D-2241
79	DARLING ST.	9+92.07	23.72 RT	23.38	1%	SINGLE WYE	South	47.35	44.14	2.6	44.37	Green C-900
80	EGBERT ST.	1+55.58	23.00 RT	16.33	1%	SINGLE WYE	South	52.23	48.35	3.3	48.51	Green C-900
81	EGBERT ST.	2+07.62	23.00 RT	16.33	1%	SINGLE WYE	South	52.26	48.31	3.4	48.47	Green C-900
82	EGBERT ST.	2+55.67	23.00 RT	16.33	1%	SINGLE WYE	South	52.59	48.29	3.7	48.45	Green C-900
82A	EGBERT ST.	2+81.12	23.00 RT	16.33	1%	SINGLE WYE	South	52.63	48.27	3.8	48.43	Green C-900
83	EGBERT ST.	3+05.76	23.00 RT	16.33	1%	SINGLE WYE	South	52.57	48.26	3.7	48.42	Green C-900
84	EGBERT ST.	3+52.83	23.00 RT	16.33	1%	SINGLE WYE	South	52.21	48.24	3.4	48.40	Green C-900
85	EGBERT ST.	3+69.70	23.00 LT	29.66	1%	SINGLE WYE	North	52.02	47.60	3.7	47.90	Green C-900
86	EGBERT ST.	4+02.37	23.00 RT	16.32	1%	SINGLE WYE	South	51.65	48.08	3.0	48.24	Green C-900
87	EGBERT ST.	4+24.94	23.00 RT	16.33	1%	SINGLE WYE	South	51.40	47.64	3.2	47.80	Green C-900
88	EGBERT ST.	4+27.78	23.00 LT	29.67	1%	SINGLE WYE	North	51.36	46.86	3.8	47.16	Green C-900
89	EGBERT ST.	4+46.66	23.00 RT	16.31	1%	SINGLE WYE	South	51.18	47.42	3.2	47.58	Green C-900
90	EGBERT ST.	5+36.88	23.00 RT	16.33	1%	SINGLE WYE	South	50.63	46.49	3.6	46.65	Green C-900
91	EGBERT ST.	6+01.36	23.00 LT	26.67	1%	SINGLE WYE	North	50.43	42.06	7.7	42.33	DIP
92	EGBERT ST.	7+04.77	23.00 RT	16.33	1%	SINGLE WYE	South	50.45	45.32	4.6	45.48	Green D-2241
93	EGBERT ST.	7+23.17	23.00 LT	29.67	1%	SINGLE WYE	North	50.54	47.49	2.4	47.79	Green C-900
94	EGBERT ST.	8+28.83	22.98 LT	29.66	1%	SINGLE WYE	North	51.03	47.80	2.5	48.10	Green C-900
95	EGBERT ST.	8+89.65	23.00 RT	16.33	1%	SINGLE WYE	South	51.32	46.27	4.5	46.43	Green D-2241
96	EGBERT ST.	9+52.81	23.00 LT	29.67	1%	SINGLE WYE	North	51.11	47.96	2.5	48.26	Green C-900
97	EGBERT ST.	9+87.57	23.00 RT	16.33	1%	SINGLE WYE	South	51.27	45.66	5.0	45.82	Green D-2241
98A	KANSAS ST.	1+55.04	23.00 RT	16.74	1%	SINGLE WYE	South	52.67	46.72	5.4	46.89	Green D-2241
98B	KANSAS ST.	2+16.65	23.00 LT	29.50	1%	SINGLE WYE	North	53.17	45.88	6.6	46.18	Green C-900
98C	KANSAS ST.	2+20.48	23.00 RT	16.50	1%	SINGLE WYE	South	53.20	47.82	4.8	47.99	Green D-2241
98D	KANSAS ST.	2+45.33	23.00 RT	16.50	1%	SINGLE WYE	South	53.44	47.66	5.2	47.83	Green D-2241
98E	KANSAS ST.	2+61.25	23.00 LT	29.50	1%	SINGLE WYE	North	53.59	45.59	7.3	45.89	Green C-900
98F	KANSAS ST.	2+70.70	23.00 RT	16.50	1%	SINGLE WYE	South	53.67	47.50	5.6	47.67	Green D-2241
99	KANSAS ST.	2+95.45	23.00 RT	16.50	1%	SINGLE WYE	South	53.79	47.34	5.9	47.51	Green D-2241
100	KANSAS ST.	3+23.28	23.00 RT	16.50	1%	SINGLE WYE	South	53.79	47.16	6.1	47.33	Green D-2241
101	KANSAS ST.	3+48.56	23.00 LT	29.50	1%	SINGLE WYE	North	53.66	44.77	8.2	45.07	Green C-900
102	KANSAS ST.	3+71.67	23.00 RT	16.50	1%	SINGLE WYE	South	53.46	46.84	6.1	47.01	Green D-2241
103	KANSAS ST.	3+97.45	23.00 RT	16.50	1%	SINGLE WYE	South	53.22	46.69	6.0	46.86	Green D-2241
104	KANSAS ST.	3+97.72	23.00 LT	29.50	1%	SINGLE WYE	North	53.21	44.21	8.3	44.51	Green C-900
105	KANSAS ST.	3+99.01	23.00 RT	16.50	1%	SINGLE WYE	South	53.20	46.68	6.0	46.85	Green D-2241
106	KANSAS ST.	4+02.90	23.00 LT	29.50	1%	SINGLE WYE	North	53.17	44.15	8.3	44.45	Green C-900
107A	KANSAS ST.	4+37.85	23.00 RT	16.50	1%	SINGLE WYE	South	52.84	46.43	5.8	46.60	Green D-2241
107B	KANSAS ST.	4+80.56	23.00 LT	29.50	1%	SINGLE WYE	North	52.44	43.39	8.4	43.69	Green C-900
108	KANSAS ST.	4+99.34	23.00 RT	16.50	1%	SINGLE WYE	South	52.26	46.04	5.7	46.21	Green D-2241
109	KANSAS ST.	5+42.19	23.00 LT	29.50	1%	SINGLE WYE	North	51.86	43.18	8.0	43.48	Green C-900
110	KANSAS ST.	6+02.23	23.00 RT	16.50	1%	SINGLE WYE	South	51.30	45.38	5.4	45.55	Green D-2241
111	KANSAS ST.	6+53.68	23.00 RT	16.50	1%	SINGLE WYE	South	50.81	45.05	5.2	45.22	Green D-2241
112	KANSAS ST.	7+98.78	23.00 RT	16.50	1%	SINGLE WYE	South	50.96	45.59	4.8	45.76	Green D-2241
113	KANSAS ST.	8+38.92	23.00 LT	29.50	1%	SINGLE WYE	North	51.08	47.77	2.6	48.07	Green C-900
114	KANSAS ST.	8+74.49	23.00 RT	16.50	1%	SINGLE WYE	South	51.18	46.23	4.4	46.40	Green D-2241
115	KANSAS ST.	8+88.17	23.00 LT	29.50	1%	SINGLE WYE	North	51.22	47.55	3.0	47.85	Green C-900
116	KANSAS ST.	9+23.28	23.00 LT	29.50	1%	SINGLE WYE	North	51.30	46.40	4.2	46.70	DIP
117	KIAM ST.	1+97.39	23.00 RT	16.62	1%	SINGLE WYE	South	53.33	44.63	8.1	44.80	Green D-2241
118	KIAM ST.	2+18.15	23.00 LT	29.38	1%	SINGLE WYE	North	53.30	46.78	5.8	47.07	Green D-2241
119	KIAM ST.	2+22.38	23.00 RT	16.62	1%	SINGLE WYE	South	53.62	44.63	8.4	44.80	Green D-2241
120	KIAM ST.	2+38.42	23.00 LT	29.38	1%	SINGLE WYE	North	53.62	46.76	6.2	47.05	Green D-2241
121	KIAM ST.	2+47.37	23.00 RT	16.62	1%	SINGLE WYE	South	53.86	44.63	8.7	44.80	Green D-2241
122	KIAM ST.	2+70.35	23.00 RT	16.62	1%	SINGLE WYE	South	54.00	44.62	8.8	44.79	Green D-2241
123	KIAM ST.	2+86.67	23.00 RT	16.62	1%	SINGLE WYE	South	53.76	44.62	8.6	44.79	Green D-2241
124	KIAM ST.	3+36.04	23.00 LT	29.38	1%	SINGLE WYE	North	53.93	45.95	7.3	46.24	Green D-2241
125	KIAM ST.	3+46.37	23.00 RT	16.62	1%	SINGLE WYE	South	53.89	44.62	8.7	44.79	Green D-2241
126	KIAM ST.	3+88.32	23.00 RT	16.62	1%	SINGLE WYE	South	53.73	44.42	8.7	44.59	Green D-2241
127	KIAM ST.	4+09.90	23.00 RT	16.62	1%	SINGLE WYE	South	53.65	44.31	8.8	44.48	Green D-2241
128	KIAM ST.	4+20.76	23.00 LT	29.38	1%	SINGLE WYE	North	53.61	45.11	7.8	45.40	Green D-2241
129	KIAM ST.	4+53.34	23.00 LT	29.38	1%	SINGLE WYE	North	53.49	45.09	7.7	45.38	Green D-2241
130	KIAM ST.	4+87.16	23.00 RT	16.62	1%	SINGLE WYE	South	53.52	43.89	9.1	44.06	Green D-2241
131	KIAM ST.	5+09.36	23.00 RT	16.62	1%	SINGLE WYE	South	53.59	43.77	9.3	43.94	Green D-2241
132	KIAM ST.	5+09.94	23.00 LT	29.38	1%	SINGLE WYE	North	53.59	46.54	6.4	46.83	Green D-2241
133	KIAM ST.	5+29.43	23.00 LT	29.33	1%	SINGLE WYE	North	53.65	46.52	6.4	46.81	Green D-2241
134	KIAM ST.	5+40.85	23.00 RT	16.62	1%	SINGLE WYE	South	53.69	43.60	9.5	43.77	Green D-2241
135	KIAM ST.	5+75.31	23.00 LT	29.38	1%	SINGLE WYE	South	53.66	46.48	6.5	46.77	Green D-2241
136	KIAM ST.	5+85.57	23.00 RT	16.62	1%	SINGLE WYE	South	53.59	43.45	9.6	43.62	Green D-2241
137	KIAM ST.	6+07.13	23.00 RT	16.62	1%	SINGLE WYE	South	53.37	43.48	9.3	43.65	Green D-2241
138	KIAM ST.	6+19.99	23.00 LT	29.38	1%	SINGLE WYE	North	53.19	46.47	6.0	46.76	Green D-2241
139	KIAM ST.	6+39.73	23.00 RT	16.62	1%	SINGLE WYE	South	52.84	43.42	8.9	43.59	Green D-2241
140	KIAM ST.	6+68.75	23.00 LT	29.38	1%	SINGLE WYE	North	52.30	45.42	6.2	45.71	Green D-2241
141	KIAM ST.	6+71.56	23.00 RT	16.62	1%	SINGLE WYE	South	52.24	43.28	8.4	43.45	Green D-2241
142	KIAM ST.	6+72.99	23.00 RT	16.62	1%	SINGLE WYE	South	52.22	43.28	8.4	43.45	Green D-2241
143	KIAM ST.	7+19.17	23.00 RT	16.62	1%	SINGLE WYE	South	51.36	43.07	7.7	43.24	Green D-2241
144	KIAM ST.	8+70.33	23.00 LT	29.38	1%	SINGLE WYE	North	51.35	44.77	5.9	45.06	Green D-2241
145	KIAM ST.	8+73.30	23.00 LT	29.38	1%	SINGLE WYE	North	51.36	44.77	5.9	45.06	Green D-2241
146	KIAM ST.	8+78.21	23.00 RT	16.62	1%	SINGLE WYE	South	51.38	42.49	8.3	42.66	Green C-900
147	KIAM ST.	9+22.32	23.00 RT	16.62	1%	SINGLE WYE	South	51.57	42.39	8.6	42.56	Green C-900
148	KIAM ST.	9+23.45	23.00 RT	16.62	1%	SINGLE WYE	South	51.57	42.38	8.6	42.55	Green C-900
149	KIAM ST.	9+50.05	23.00 LT	29.38	1%	SINGLE WYE	North	51.60	45.14	5.8	45.43	Green D-2241
150	KIAM ST.	9+85.85	23.00 RT	16.62	1%	SINGLE WYE	South	51.49	42.24	8.7	42.41	Green D-2241
151	KIAM ST.	10+26.66	23.00 RT	16.62	1%	SINGLE WYE	South	51.23	42.13	8.5	42.30	Green D-2241
152	KIAM ST.	10+61.76	23.00 RT	16.62	1%	SINGLE WYE	South	50.98	42.05	8.4	42.22	Green D-2241
153	KIAM ST.	10+62.80	23.00 LT	29.38	1%	SINGLE WYE	North	50.97	44.46	5.8	44.75	Green D-2241
154	KIAM ST.	11+83.42	23.00 RT	16.61	1%	SINGLE WYE	South	50.41	41.00	8.8	41.17	Green D-2241
155	KIAM ST.	12+25.22	22.85 RT	16.18	1%	SINGLE WYE	South	50.52	40.89	9.1	41.05	Green D-2241
156	KIAM ST.	12+74.50	23.00 RT	15.82	1%	SINGLE WYE	South	50.67	40.77	9.3	40.93	Green D-2241
157	KIAM ST.	13+24.89	23.03 LT	30.73	1%	SINGLE WYE	North	50.77	44.19	5.9	44.50	Green D-2241
158	KIAM ST.	14+06.31	23.00 LT	31.55	1%	SINGLE WYE	North	49.78	44.13	4.9	44.45	Green D-2241
159	PETTY ST.	2+13.22	23.00 LT	29.67	1%	SINGLE WYE	South	53.25	45.36	7.2	45.66	Green C-900
160	PETTY ST.	2+25.34	23.00 RT	16.33	1%	SINGLE WYE	South	53.32	46.84	5.9	47.00	Green D-2241
161	PETTY ST.	2+46.54	23.00 LT	29.67	1%	SINGLE WYE	North	53.46	45.23	7.5	45.53	Green D-2241
162	PETTY ST.	2+61.80	23.00 RT	16.33	1%	SINGLE WYE	South	53.48	50.20	2.7	50.36	Green C-900
163	PETTY ST.	2+90.98	23.00 RT	16.33	1%	SINGLE WYE	South	53.71	50.07	3.1	50.23	Green C-900
164	PETTY ST.	2+96.52	23.00 LT	29.67	1%	SINGLE WYE	North	53.73	45.21	7.8	45.51	Green C-900
165	PETTY ST.	3+19.59	23.00 LT	29.67	1%	SINGLE WYE	North	53.83	45.30	7.8	45.60	Green C-900
166	PETTY ST.	3+26.69	23.00 RT	16.33	1%	SINGLE WYE	South	53.86	49.91	3.4	50.07	Green C-900
167	PETTY ST.	3+37.75	23.00 RT	16.33	1%	SINGLE WYE	South	53.91	49.86	3.5	50.02	Green C-900
168	PETTY ST.	3+41.88	23.00 RT	16.33	1%	SINGLE WYE	South	53.92	49.84	3.5	50.00	Green C-900
169	PETTY ST.	3+64.94	23.00 LT	29.67	1%	SINGLE WYE	North	54.00	45.10	8.2	45.40	Green D-2241
170	PETTY ST.	3+66.53	23.00 LT	29.67	1%	SINGLE WYE	North	54.04	45.10	8.2	45.40	Green D-2241
171	PETTY ST.	3+89.24	23.00 LT	29.67	1%	SINGLE WYE	North	54.12	45.12	8.3	45.42	Green D-2241
172	PETTY ST.	3+90.30	23.00 RT	16.33	1%	SINGLE WYE	South	54.13	49.62	3.9	49.78	Green C-900
173	PETTY ST.	4+14.51	23.00 LT	29.67	1%	SINGLE WYE	North	54.23	45.12	8.4	45.42	Green D-2241
174	PETTY ST.	4+16.38	23.00 LT	29.67	1%	SINGLE WYE	North	54.24	45.12	8.4	45.42	Green D-2241
175	PETTY ST.	4+18.41	23.00 RT	16.33	1%	SINGLE WYE	South	54.25	49.49	4.2	49.65	Green D-2241
176	PETTY ST.	4+44.88	23.00 RT	16.33	1%	SINGLE WYE	South	54.31	49.37	4.4	49.53	Green D-2241
177	PETTY ST.	4+66.63	23.00 RT	16.33	1%	SINGLE WYE	South	54.19	48.51	5.1	48.67	Green D-2241
178	PETTY ST.	4+70.25	23.00 LT	29.67	1%	SINGLE WYE	North	54.17	45.10	8.4	45.40	Green D-2241
179	PETTY ST.	4+95.26	22.99 LT	29.66	1%	SINGLE WYE	North	54.16	45.09	8.4	45.39	Green D-2241
180	PETTY ST.	5+13.67	23.00 RT	16.33	1%	SINGLE WYE	South	54.12	49.06	4.5	49.22	Green D-2241
181	PETTY ST.	5+34.64	23.00 LT	29.67	1%	SINGLE WYE	North	54.05	45.08	8.3	45.38	Green D-2241
182	PETTY ST.	5+38.29	23.00 RT	16.33	1%	SINGLE WYE	South	54.05	48.95	4.5	49.11	Green D-2241
183	PETTY ST.	5+64.03	23.00 LT	29.67	1%	SINGLE WYE	North	53.96	45.08	8.2	45.38	Green D-2241
184	PETTY ST.	5+66.95	23.00 LT	29.67	1%	SINGLE WYE	North	53.96	45.08	8.2	45.38	Green D-2241
185	PETTY ST.	5+97.94	23.00 RT	16.33	1%	SINGLE WYE	South	53.90	48.68	4.7	48.84	Green D-2241
186	PETTY ST.	6+20.42	23.00 LT	29.67	1%	SINGLE WYE	North	53.97	45.06	8.2	45.36	Green D-2241
186A	PETTY ST.	6+23.02	23.00 LT	29.67	1%	SINGLE WYE	North	53.97	45.06	8.2	45.36	Green D-2241
187	PETTY ST.	6+72.50	23.00 RT	16.33	1%	SINGLE WYE	South	54.00	48.33	5.1	48.49	Green D-2241
188	PETTY ST.	6+75.87	23.00 LT	29.67	1%	SINGLE WYE	North	54.00	45.05	8.3	45.35	Green D-2241
189	PETTY ST.	6+93.23	23.00 LT	29.67	1%	SINGLE WYE	North	53.93	45.05	8.2	45.35	Green D-2241
190	PETTY ST.	7+37.03	23.00 LT	29.67	1%	SINGLE WYE	North	53.56	45.07	7.8	45.37	Green C-900
191	PETTY ST.	7+63.77	23.00 RT	16.33	1%	SINGLE W

LEAD No.	STREET NAME	STA	OFFSET	LENGTH (LF)	SLOPE	SERVICE LEAD CONNECTION W/CLEAN OUT	ORIENTATION	TC ELEV	Base FL at SAN Trunk	DEPTH	FL at R.O.W.	MATERIAL
251	LARKIN ST.	10+99.06	22.94 RT	29.62	1%	SINGLE WYE	South	54.20	45.72	7.8	46.02	Green D-2241
252	LARKIN ST.	11+19.93	23.00 LT	16.31	1%	SINGLE WYE	North	54.10	49.19	4.3	49.35	Green D-2241
253	LARKIN ST.	11+42.13	23.00 RT	29.69	1%	SINGLE WYE	South	53.99	45.47	7.8	45.77	Green D-2241
254	LARKIN ST.	11+47.54	23.00 LT	16.31	1%	SINGLE WYE	North	53.96	49.29	4.1	49.45	Green D-2241
255	LARKIN ST.	11+69.33	23.00 RT	29.69	1%	SINGLE WYE	South	53.85	45.70	7.5	46.00	Green D-2241
256	LARKIN ST.	11+70.67	23.01 RT	29.71	1%	SINGLE WYE	South	53.85	45.69	7.5	45.99	Green D-2241
257	LARKIN ST.	11+91.79	23.00 LT	16.30	1%	SINGLE WYE	North	53.74	49.45	3.7	49.61	Green C-900
258	LARKIN ST.	12+20.57	23.00 RT	29.70	1%	SINGLE WYE	South	53.60	45.68	7.2	45.98	Green D-2241
259	LARKIN ST.	12+41.61	23.00 LT	16.30	1%	SINGLE WYE	North	53.63	49.64	3.4	49.80	Green C-900
260	LARKIN ST.	12+83.26	23.00 RT	29.71	1%	SINGLE WYE	South	53.84	45.65	7.5	45.95	Green D-2241
261	LARKIN ST.	13+00.67	23.00 LT	16.29	1%	SINGLE WYE	North	53.92	49.86	3.5	50.02	Green C-900
262	LARKIN ST.	13+26.50	23.00 RT	29.71	1%	SINGLE WYE	South	53.99	45.64	7.7	45.94	Green D-2241
263	LARKIN ST.	13+47.53	23.00 LT	16.29	1%	SINGLE WYE	North	53.96	50.04	3.4	50.20	Green C-900
264	LARKIN ST.	13+50.94	23.00 RT	29.71	1%	SINGLE WYE	South	53.95	45.55	7.7	45.85	Green D-2241
265	LARKIN ST.	13+76.39	23.00 RT	29.72	1%	SINGLE WYE	South	53.80	45.34	7.8	45.64	Green D-2241
266	LARKIN ST.	13+95.25	23.00 RT	29.72	1%	SINGLE WYE	South	53.61	45.18	7.7	45.48	Green D-2241
267	LARKIN ST.	14+03.64	23.00 LT	16.28	1%	SINGLE WYE	North	53.53	50.24	2.7	50.40	Green C-900
268	LARKIN ST.	14+26.03	23.00 RT	29.72	1%	SINGLE WYE	South	53.29	45.04	7.6	45.34	Green D-2241
269	LARKIN ST.	14+50.07	23.00 RT	29.72	1%	SINGLE WYE	South	53.05	45.05	7.3	45.35	Green D-2241
270	LARKIN ST.	14+67.43	23.00 LT	16.27	1%	SINGLE WYE	North	52.87	50.48	1.8	50.64	DIP
271	CORNISH ST.	2+61.83	23.00 LT	16.80	1%	SINGLE WYE	North	54.28	49.79	3.9	49.96	Green C-900
272	CORNISH ST.	2+81.92	23.00 LT	16.80	1%	SINGLE WYE	North	54.37	49.57	4.2	49.74	Green D-2241
273	CORNISH ST.	2+95.77	23.00 RT	29.21	1%	SINGLE WYE	South	54.35	46.83	6.8	47.12	DIP
274	CORNISH ST.	3+87.58	23.00 RT	29.22	1%	SINGLE WYE	South	54.77	46.82	7.3	47.11	Green C-900
275	CORNISH ST.	4+61.78	28.00 RT	34.22	1%	SINGLE WYE	South	55.12	51.02	3.4	51.36	Green C-900
276	CORNISH ST.	4+65.33	23.00 LT	16.78	1%	SINGLE WYE	North	55.14	48.38	6.2	48.55	Green D-2241
277	CORNISH ST.	5+17.44	28.00 RT	34.23	1%	SINGLE WYE	South	55.24	51.02	3.5	51.36	Green C-900
278	CORNISH ST.	5+81.99	23.00 LT	16.76	1%	SINGLE WYE	North	55.04	48.31	6.2	48.48	Green D-2241
279	CORNISH ST.	5+89.84	28.00 RT	34.24	1%	SINGLE WYE	South	55.01	45.87	8.5	46.21	Green D-2241
280	CORNISH ST.	6+05.83	23.00 LT	16.76	1%	SINGLE WYE	North	54.97	48.25	6.1	48.42	Green D-2241
281	CORNISH ST.	6+11.63	28.00 RT	34.24	1%	SINGLE WYE	South	54.95	45.87	8.4	46.21	Green D-2241
282	CORNISH ST.	6+57.87	23.00 LT	16.75	1%	SINGLE WYE	North	54.75	47.99	6.2	48.16	Green D-2241
283	CORNISH ST.	6+88.65	28.00 RT	34.25	1%	SINGLE WYE	South	54.52	45.90	7.9	46.24	Green D-2241
284	CORNISH ST.	7+67.72	23.00 LT	16.74	1%	SINGLE WYE	North	54.46	47.70	6.2	47.87	Green D-2241
285	CORNISH ST.	8+51.73	23.00 LT	16.73	1%	SINGLE WYE	North	54.47	47.70	6.2	47.87	Green D-2241
286	CORNISH ST.	8+71.41	23.00 RT	29.27	1%	SINGLE WYE	South	54.52	50.75	3.1	51.04	DIP
287	CORNISH ST.	8+80.80	23.00 LT	16.73	1%	SINGLE WYE	North	54.55	47.82	6.2	47.99	Green D-2241
288	CORNISH ST.	9+13.52	23.00 RT	29.27	1%	SINGLE WYE	South	54.68	50.67	3.3	50.96	DIP
289	CORNISH ST.	9+17.86	23.00 RT	29.34	1%	SINGLE WYE	South	54.70	50.68	3.3	50.97	DIP
290	CORNISH ST.	9+19.39	23.00 LT	16.73	1%	SINGLE WYE	North	54.69	47.96	6.2	48.13	Green D-2241
291	CORNISH ST.	9+39.55	23.00 LT	16.72	1%	SINGLE WYE	North	54.76	48.00	6.2	48.17	Green D-2241
292	CORNISH ST.	9+58.80	23.00 RT	29.28	1%	SINGLE WYE	South	54.85	50.83	3.3	51.12	DIP
293	CORNISH ST.	9+89.90	23.00 LT	16.72	1%	SINGLE WYE	North	54.95	48.16	6.2	48.33	Green D-2241
294	CORNISH ST.	9+99.17	23.00 RT	29.28	1%	SINGLE WYE	North	54.98	51.02	3.3	51.31	Green C-900
295	CORNISH ST.	10+19.86	23.00 LT	16.71	1%	SINGLE WYE	North	54.95	48.25	6.1	48.42	Green D-2241
296	CORNISH ST.	10+40.34	23.00 RT	29.29	1%	SINGLE WYE	South	54.81	50.80	3.3	51.09	DIP
297	CORNISH ST.	10+43.01	23.00 RT	29.29	1%	SINGLE WYE	South	54.79	50.78	3.3	51.07	DIP
298	CORNISH ST.	10+43.95	23.00 LT	16.71	1%	SINGLE WYE	North	54.79	48.09	6.1	48.26	Green D-2241
299	CORNISH ST.	10+66.93	23.00 RT	29.29	1%	SINGLE WYE	South	54.62	50.61	3.3	50.90	DIP
300	CORNISH ST.	10+91.58	23.00 LT	16.71	1%	SINGLE WYE	North	54.45	47.73	6.2	47.90	Green D-2241
301	CORNISH ST.	11+09.52	23.00 RT	29.30	1%	SINGLE WYE	South	54.33	50.31	3.3	50.60	DIP
302	CORNISH ST.	11+16.59	23.00 RT	29.30	1%	SINGLE WYE	South	54.28	50.26	3.3	50.55	DIP
303	CORNISH ST.	11+22.96	23.00 LT	16.70	1%	SINGLE WYE	North	54.23	47.50	6.2	47.67	Green D-2241
304	CORNISH ST.	11+41.22	23.00 RT	29.30	1%	SINGLE WYE	South	54.10	50.09	3.3	50.38	DIP
305	CORNISH ST.	11+69.58	23.00 RT	29.31	1%	SINGLE WYE	South	53.91	49.90	3.3	50.19	DIP
306	CORNISH ST.	11+95.15	23.00 LT	16.69	1%	SINGLE WYE	North	53.90	48.11	5.2	48.28	Green D-2241
307	CORNISH ST.	12+19.14	23.00 LT	16.69	1%	SINGLE WYE	North	53.97	48.38	5.0	48.55	Green D-2241
308	CORNISH ST.	12+62.42	23.00 LT	16.69	1%	SINGLE WYE	North	54.10	48.88	4.7	49.05	Green D-2241
309	CORNISH ST.	12+62.64	23.00 RT	29.31	1%	SINGLE WYE	South	54.10	49.91	3.5	50.20	Green C-900
310	CORNISH ST.	12+81.75	23.00 LT	16.69	1%	SINGLE WYE	North	54.16	49.10	4.5	49.27	Green D-2241
311	CORNISH ST.	12+89.86	23.00 RT	29.32	1%	SINGLE WYE	South	54.18	49.85	3.6	50.14	Green C-900
312	CORNISH ST.	13+03.04	23.00 RT	29.32	1%	SINGLE WYE	South	54.22	49.83	3.7	50.12	Green C-900
313	CORNISH ST.	13+18.12	23.00 RT	29.32	1%	SINGLE WYE	South	54.27	49.80	3.8	50.09	Green C-900
314	CORNISH ST.	13+45.26	23.00 LT	16.69	1%	SINGLE WYE	North	54.35	49.82	4.0	49.99	Green C-900
315	CORNISH ST.	13+48.21	23.00 LT	16.66	1%	SINGLE WYE	North	54.34	49.86	3.9	50.03	Green C-900
316	CORNISH ST.	13+63.80	23.00 RT	29.33	1%	SINGLE WYE	South	54.25	49.72	3.8	50.01	Green C-900
317	CORNISH ST.	13+68.22	23.00 RT	29.32	1%	SINGLE WYE	South	54.23	49.69	3.8	49.98	Green C-900
318	CORNISH ST.	13+81.84	23.00 LT	16.69	1%	SINGLE WYE	North	54.12	50.24	3.3	50.41	Green C-900
319	CORNISH ST.	14+09.63	23.00 RT	29.33	1%	SINGLE WYE	South	54.01	49.63	3.7	49.92	Green C-900
320	CORNISH ST.	14+22.52	23.00 RT	29.33	1%	SINGLE WYE	South	53.94	49.61	3.6	49.90	Green C-900
321	CORNISH ST.	14+37.54	23.00 LT	16.67	1%	SINGLE WYE	North	53.76	47.09	6.1	47.26	Green D-2241
322	CORNISH ST.	14+42.75	23.00 RT	29.33	1%	SINGLE WYE	South	53.78	49.57	3.5	49.86	Green C-900
323	CORNISH ST.	14+51.99	23.00 LT	16.67	1%	SINGLE WYE	North	53.67	47.15	5.9	47.32	Green D-2241
324	CORNISH ST.	14+69.06	23.00 RT	29.33	1%	SINGLE WYE	South	53.59	49.51	3.4	49.80	Green C-900
325	CORNISH ST.	14+86.98	23.00 LT	16.66	1%	SINGLE WYE	North	53.44	47.31	5.6	47.48	Green D-2241
326	DETERING ST.	1+74.41	23.00 LT	30.00	1%	SINGLE WYE	West	54.37	46.26	7.4	46.56	Green D-2241
327	DETERING ST.	4+03.38	23.00 LT	30.00	1%	SINGLE WYE	West	54.47	45.85	7.9	46.15	Green D-2241
328	DETERING ST.	4+22.52	23.00 LT	30.00	1%	SINGLE WYE	West	54.39	45.83	7.9	46.13	Green D-2241
329	DETERING ST.	4+48.90	23.00 LT	30.00	1%	SINGLE WYE	West	54.29	45.83	7.8	46.13	Green D-2241
330	DETERING ST.	5+49.61	23.00 RT	16.00	1%	SINGLE WYE	East	54.00	47.40	6.0	47.56	Green D-2241
331	DETERING ST.	5+76.67	23.00 RT	30.00	1%	SINGLE WYE	West	54.25	45.75	7.8	46.05	Green D-2241
332	DETERING ST.	5+84.37	23.00 RT	16.00	1%	SINGLE WYE	East	54.28	47.50	6.2	47.66	Green D-2241
333	DETERING ST.	5+98.31	23.00 RT	16.00	1%	SINGLE WYE	East	54.32	47.56	6.2	47.72	Green D-2241
334	DETERING ST.	6+09.45	23.00 LT	30.00	1%	SINGLE WYE	West	54.34	45.76	7.9	46.06	Green D-2241
335	DETERING ST.	6+36.98	23.00 RT	16.00	1%	SINGLE WYE	East	54.34	47.65	6.1	47.81	Green D-2241
336	DETERING ST.	6+44.16	23.00 LT	30.00	1%	SINGLE WYE	West	54.33	45.74	7.9	46.04	Green D-2241
337	DETERING ST.	6+67.72	23.00 LT	30.00	1%	SINGLE WYE	West	54.22	45.74	7.8	46.04	Green D-2241
338	DETERING ST.	6+80.29	23.00 LT	30.00	1%	SINGLE WYE	West	54.14	45.73	7.7	46.03	Green D-2241
339	DETERING ST.	6+87.91	23.00 RT	16.00	1%	SINGLE WYE	East	54.07	47.26	6.3	47.42	Green D-2241
340	DETERING ST.	7+13.87	23.00 RT	16.10	1%	SINGLE WYE	East	53.84	46.86	6.4	47.02	Green D-2241
341	DETERING ST.	8+34.93	23.00 RT	16.00	1%	SINGLE WYE	East	53.89	46.95	6.4	47.11	Green D-2241
342	DETERING ST.	8+39.24	23.00 LT	30.00	1%	SINGLE WYE	West	53.92	49.39	3.8	49.69	Green C-900
343	DETERING ST.	8+70.41	23.00 RT	16.00	1%	SINGLE WYE	East	54.08	46.84	6.7	47.00	Green D-2241

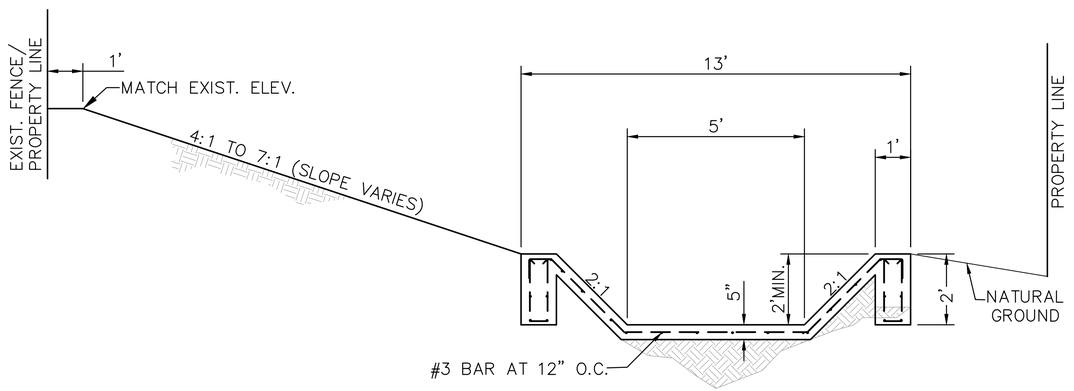
LEAD No.	STREET NAME	STA	OFFSET	LENGTH (LF)	SLOPE	SERVICE LEAD CONNECTION W/CLEAN OUT	ORIENTATION	TC ELEV	Base FL at SAN Trunk	DEPTH	FL at R.O.W.	MATERIAL
344	DETERING ST.	8+71.08	23.00 LT	30.00	1%	SINGLE WYE	West	54.09	49.37	4.0	49.67	Green C-900
345	DETERING ST.	9+53.37	23.00 LT	30.00	1%	SINGLE WYE	West	53.78	49.32	3.8	49.62	Green C-900
346	DETERING ST.	9+55.48	23.00 RT	16.00	1%	SINGLE WYE	East	53.77	46.40	6.8	46.56	Green D-2241
347	DETERING ST.	10+97.61	23.00 RT	16.00	1%	SINGLE WYE	East	53.38	46.73	6.1	46.89	Green D-2241
348	DETERING ST.	11+00.86	23.00 LT	30.00	1%	SINGLE WYE	West	53.34	49.06	3.6	49.36	Green C-900
349	DETERING ST.	11+30.32	23.00 LT	30.00	1%	SINGLE WYE	West	53.02	48.26	4.1	48.56	Green C-900
350	DETERING ST.	11+88.32	23.00 LT	30.00	1%	SINGLE WYE	West	52.40	40.83	10.9	41.13	Green D-2241
351	DETERING ST.	12+23.35	23.00 LT	30.00	1%	SINGLE WYE	West	52.01	40.70	10.6	41.00	Green D-2241
352	DETERING ST.	12+25.16	23.00 RT	16.00	1%	SINGLE WYE	East	51.99	44.91	6.5	45.07	Green D-2241
353	DETERING ST.	13+45.38	23.00 LT	30.00	1%	SINGLE WYE	West	51.47	42.03	8.7	42.33	Green D-2241
354	DETERING ST.	13+62.77	23.00 RT	16.00	1%	SINGLE WYE	East	51.54	44.45	6.5	44.61	Green D-2241
355	DETERING ST.	13+69.18	23.00 LT	30.00	1%	SINGLE WYE	West	51.56	42.08	8.8	42.38	Green D-2241
356	DETERING ST.	13+94.82	23.00 LT	30.00	1%	SINGLE WYE	West	51.64	42.80	8.1	43.10	Green D-2241
357	DETERING ST.	14+17.90	23.00 LT	30.00	1%	SINGLE WYE	West	51.71	42.84	8.2	43.14	Green D-2241
358	DETERING ST.	14+38.42	23.00 RT	16.00	1%	SINGLE WYE	East	51.77	44.77	6.4	44.93	Green D-2241
359	DETERING ST.	14+45.21	23.00 RT	16.00	1%	SINGLE WYE	East	51.75	44.73	6.5	44.89	Green D-2241
360	DETERING ST.	15+08.81	23.00 LT	30.00	1%	SINGLE WYE	West	51.34	42.76	7.9	43.06	Green D-2241
361	DETERING ST.	16+16.44	23.00 LT	30.00	1%	SINGLE WYE	West	51.18	40.63	9.9	40.93	Green C-900
362	DETERING ST.	16+70.93	23.00 LT	30.00	1%	SINGLE WYE	West	51.21	40.70	9.8	41.00	Green C-900
363	DETERING ST.	16+78.13	23.00 LT	30.00	1%	SINGLE WYE	West	51.19	40.70	9.8	41.00	Green C-900
364	DETERING ST.	17+38.02	23.00 LT	30.00	1%	SINGLE WYE	West	50.99	40.80	9.5	41.10	Green C-900
365	DETERING ST.	17+43.86	23.00 RT	16.00	1%	SINGLE WYE	East	50.97	45.37	5.0	45.53	Green D-2241
366	DETERING ST.	17+45.21	23.00 LT	30.00	1%	SINGLE WYE	West	50.97	40.81	9.5	41.11	Green C-900
367	DETERING ST.	17+98.38	23.00 LT	30.00	1%	SINGLE WYE	West	50.80	40.88	9.2	41.18	Green C-900
368	DETERING ST.	19+45.26	23.00 LT	30.00	1%	SINGLE WYE	West	50.31	41.93	7.7	42.23	Green D-2241
369	DETERING ST.	19+48.93	23.00 RT	16.00	1%	SINGLE WYE	East	50.29	43.53	6.2	43.69	Green D-2241
370	REINERMAN ST.	1+73.19	23.00 LT	30.00	1%	SINGLE WYE	West	53.83	47.04	6.1	47.34	Green D-2241
371	REINERMAN ST.	3+44.51	23.00 LT	30.00	1%	SINGLE WYE	West	53.54	49.29	3.6	49.59	Green C-900
372	REINERMAN ST.	3+87.24	23.00 LT	30.00	1%	SINGLE WYE	West	53.41	49.77	2.9	50.07	Green C-900
373	REINERMAN ST.	3+93.37	23.00 RT	16.00	1%	SINGLE WYE	East	53.39	46.42	6.4	46.58	Green D-2241
374	REINERMAN ST.	4+30.47	23.00 LT	30.00	1%	SINGLE WYE	West	53.28	50.10	2.5	50.40	Green C-900
375	REINERMAN ST.	6+03.59	23.00 RT	15.93	1%	SINGLE WYE	East	53.05	46.20	6.3	46.36	Green D-2241
376	REINERMAN ST.	6+39.91	22.50 LT	29.59	1%	SINGLE WYE	West	53.16	49.19	3.3	49.49	Green C-900
377	REINERMAN ST.	6+78.90	23.00 LT	30.13	1%	SINGLE WYE	West	52.92	49.17	3.0	49.47	Green C-900
378	REINERMAN ST.	6+96.02	23.00 RT	15.88	1%	SINGLE WYE	East	52.82	46.09	6.2	46.25	Green D-2241
379	REINERMAN ST.	6+96.48	23.00 RT	15.88	1%	SINGLE WYE	East	52.82	46.24	6.0	46.40	Green D-2241
380	REINERMAN ST.	7+11.51	23.00 LT	30.13	1%	SINGLE WYE	West	52.72	49.19	2.8	49.49	Green C-900
381	REINERMAN ST.	8+90.57	28.25 RT	8.00	1%	SINGLE WYE	East	52.07	45.56	6.0	45.64	Green D-2241
382	REINERMAN ST.	9+31.90	28.14 RT	8.00	1%	SINGLE WYE	East	51.33	45.91	4.9	45.99	Green D-2241
383	REINERMAN ST.	9+71.91	28.04 RT	8.00	1%	SINGLE WYE	East	50.60	46.04	4.1	46.12	Green C-900
384	REINERMAN ST.	10+43.12	27.86 RT	8.00	1%	SINGLE WYE	East	49.89	46.28	3.1	46.36	Green C-900
385	REINERMAN ST.	10+87.88	27.74 RT	8.00	1%	SINGLE WYE	East	49.98	46.42	3.1	46.50	Green C-900
386	REINERMAN ST.	11+36.26	27.62 RT	8.00	1%	SINGLE WYE	East	49.83	46.56	2.8	46.64	Green C-900
387	REINERMAN ST.	11+25.51	28.22 LT	47.90	1%	SINGLE WYE	West	49.86	46.78	2.3	47.26	Green C-900
388	REINERMAN ST.	11+71.98	28.33 LT	47.85	1%	SINGLE WYE	West	49.71	45.56	3.3	46.04	Green C-900
389	REINERMAN ST.	12+03.05	27.44 RT	8.00	1%	SINGLE WYE	East	49.62	46.37	2.8	46.45	Green C-900
390	REINERMAN ST.	12+16.40	28.23 LT	47.64	1%	SINGLE WYE	West	49.58	45.35	3.4	45.83	Green C-900
391	REINERMAN ST.	12+39.81	28.22 LT	47.57	1%	SINGLE WYE	West	49.50	45.36	3.3	45.84	Green C-900
392	ROY ST.	1+54.17	26.89 LT	20.28	1%	SINGLE WYE	West	53.14	48.68	3.9	48.88	Green C-900
393	ROY ST.	3+14.20	26.45 RT	33.07	1%	SINGLE WYE	East	52.80	46.81	5.3	47.14	Green D-2241
394	ROY ST.	4+20.57	26.89 LT	20.25	1%	SINGLE WYE	West	52.23	49.06	2.6	49.26	DIP
395	ROY ST.	5+84.59	26.88 LT	17.89	1%	SINGLE WYE	West	52.11	49.06	2.5	49.24	DIP
396	ROY ST.	6+04.73	26.98 LT	18.01	1%	SINGLE WYE	West	52.17	49.06	2.6	49.24	DIP
397	ROY ST.	6+50.45	26.88 LT	17.95	1%	SINGLE WYE	West	52.16	48.25	3.4	48.43	Green C-900
398	ROY ST.	6+94.68	26.88 LT	17.99	1%	SINGLE WYE	West	51.85	46.63	4.7	46.81	Green C-900
400	ROY CIRCLE	1+71.50	27.73 LT	21.24	1%	SINGLE WYE	West	51.28	45.37	5.3	45.58	Green D-2241
401	ROY CIRCLE	2+12.22	28.22 RT	34.76	1%	SINGLE WYE	East	50.93	46.38	3.9	46.73	Green C-900
402	ROY CIRCLE	2+12.20	27.78 LT	21.24	1%	SINGLE WYE	West	50.91	43.93	6.4	44.14	Green C-900
403	ROY CIRCLE	2+61.47	28.16 RT	34.86	1%	SINGLE WYE	East	50.48	45.91	3.9	46.26	Green C-900
404	ROY CIRCLE	2+67.69	27.85 LT	21.13	1%	SINGLE WYE	West	50.37	43.87	5.9	44.08	Green D-2241
405	ROY CIRCLE	3+29.43	27.93 LT	21.24	1%	SINGLE WYE	West	49.86	43.36	5.9	43.57	Green D-2241
406	ROY CIRCLE	3+70.13	27.62 LT	18.89	1%	SINGLE WYE	West	49.83	43.53	5.8	43.72	Green D-2241
407	ROY CIRCLE	3+92.38	27.75 LT	17.62	1%	SINGLE WYE	West	49.94	43.50	5.9	43.68	Green D-2241
408	ROY CIRCLE	4+68.68	28.19 LT	22.02	1%	SINGLE WYE	West	49.45	42.87	6.0	43.09	Green D-2241
409	ROY CIRCLE	5+20.73	27.82 RT	36.05	1%	SINGLE WYE	S-East	49.09	45.44	2.9	45.80	DIP
410	ROY CIRCLE	5+32.89	28.27 LT	20.23	1%	SINGLE WYE	N-West	49.01	42.79	5.7	42.99	Green D-2241
411	ROY CIRCLE	5+95.06	27.80 LT	20.50	1%	SINGLE WYE	N-West	49.09	42.67	5.9	42.88	Green D-2241
412	ROY CIRCLE	6+25.49	27.85 RT	35.00	1%	SINGLE WYE	S-East	49.12	46.00	2.4	46.35	Green C-900
413	ROY CIRCLE	6+51.64	28.23 LT	22.58	1%	SINGLE WYE	N-West	49.01	42.59	5.8	42.82	Green D-2241
414	ROY CIRCLE	6+99.31	28.00 LT	26.29	1%	SINGLE WYE	N-West	48.86	42.37	5.9	42.63	Green D-2241
415	ROY CIRCLE	7+41.91	28.00 LT	27.47	1%	SINGLE WYE	N-West	48.80	42.12	6.1	42.39	Green D-2241
416	ROY CIRCLE	7+74.79	28.00 LT	31.27	1%	SINGLE WYE	N-West	48.84	43.14	5.0	43.45	Green D-2241
417	ROY CIRCLE	8+17.19	28.00 LT	23.13	1%	SINGLE WYE	West	48.61	42.30	5.7	42.53	Green D-2241
418	ROY CIRCLE	8+56.47	28.00 LT	30.03	1%	SINGLE WYE	West	47.97	42.33	5.0	42.63	Green D-2241
419	ROY CIRCLE	8+92.38	28.02 LT	23.84	1%	SINGLE WYE	West	47.36	43.07	3.6	43.31	Green C-900
420	ROY CIRCLE	9+35.47	28.00 LT	23.79	1%	SINGLE WYE	West	46.66	43.65	2.4	43.89	Green C-900
421	ROY CIRCLE	9+75.65	27.50 RT	31.17	1%	SINGLE WYE	East	46.26	40.57	5.0	40.88	Green C-900
422	ROY CIRCLE	9+71.05	28.00 LT	20.53	1%	SINGLE WYE	West	46.26	40.84	4.9	41.05	Green D-2241
423	ROY CIRCLE	10+60.80	28.87 LT	22.61	1%	SINGLE WYE	West	46.48	41.74	4.2	41.97	Green C-900
424	ROY CIRCLE	10+87.12	28.00 LT	24.17	1%	SINGLE WYE	West	46.64	43.88	2.2	44.12	Green C-900
425	ROY CIRCLE	11+32.62	28.00 LT	21.45	1%	SINGLE WYE	East	46.88	44.22	2.1	44.43	Green C-900
426	ROY CIRCLE	11+20.40	27.87 RT	33.43	1%	SINGLE WYE	West	46.98	44.04	2.3	44.37	DIP
427	ROY CIRCLE	11+80.62	28.00 LT	23.04	1%	SINGLE WYE	East	47.31	43.85	2.9	44.08	Green C-900
428	ROY CIRCLE	12+55.40	28.00 LT	21.00	1%	SINGLE WYE	East	47.91	43.64	3.7	43.85	Green C-900
429	ROY CIRCLE	12+61.86	28.00 RT	35.00	1%	SINGLE WYE	West	47.98	44.60	2.7	44.95	DIP
430	ROY CIRCLE	12+89.95	28.02 LT	21.02	1%	SINGLE WYE	East	48.24	43.53	4.2	43.74	Green C-900
431	ROY CIRCLE	13+54.04	28.00 LT	21.00	1%	SINGLE WYE	East	48.34	43.32	4.5	43.53	Green D-2241
432	ROY CIRCLE	14+01.82	28.00 LT	21.00	1%	SINGLE WYE	East	48.07	43.16	4.4	43.37	Green D-2241
433	ROY CIRCLE	14+47.35	28.00 LT	25.87	1%	SINGLE WYE	East	48.18	42.94	4.6	43.20	Green D-2241
434	ROY CIRCLE	14+82.38	28.00 LT	19.23	1%	SINGLE WYE	East	48.40	42.92	4.9	43.11	Green D-2241
435	ROY CIRCLE	23+50.93	28.00 RT	26.60	1%	SINGLE WYE	South	48.25	42.70	4.9	42.97	Green D-2241

REV	DESCRIPTION	BY	DATE

LEAD No.	STREET NAME	STA	OFFSET	LENGTH (LF)	SLOPE	SERVICE LEAD CONNECTION W/CLEAN OUT	ORIENTATION	TC ELEV	Base FL at SAN Trunk	DEPTH	FL at R.O.W.	MATERIAL
436	ROY CIRCLE	23+15.93	28.00 RT	23.08	1%	SINGLE WYE	South	48.15	42.64	4.9	42.87	Green D-2241
437	ROY CIRCLE	22+69.69	28.00 RT	21.00	1%	SINGLE WYE	South	48.00	42.57	4.9	42.78	Green D-2241
438	ROY CIRCLE	22+



REINFORCED CONCRETE EXTREME EVENT PLAN LAYOUT



SECTION A–A
SCALE: N.T.S.

REV	DESCRIPTION	BY	DATE

NOTE:
CONTRACTOR TO REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)

20 0 10 20
SCALE IN FEET

LEGEND

(13) DESIGN SWALE ELEVATION

SWALE GEOMETRICS

No.	Station	Offset	Elev (ft)	Description
1	13+32.55	28.31 LT	48.50	High Bank
2	13+32.57	4.06 LT	48.50	High Bank
3	13+39.30	8.07 LT	46.50	Toe
4	13+32.30	13.07 LT	46.50	Toe

EARTHWORK CALCULATIONS

SECTION	EXCAVATION (CY)	FILL (CY)	NET (CY)
DITCH A	230	30	200
TOTAL	230	30	200

NOTES:

1. ALL EXCAVATION AND FILL QUANTITIES ARE FOR CONTRACTOR'S INFORMATION ONLY AND NOT PAID FOR SEPARATELY, INCIDENTAL TO LINE ITEM, "5–IN THICK REINFORCED CONCRETE CHANNEL LINING AT OUTFALL".

2. THE EXCAVATION AND BACKFILL FOR "DITCH A" IS INCIDENTAL TO HCFCD SPECIFICATION 02376, "CONCRETE CHANNEL LINING AND CONCRETE INTERCEPTOR STRUCTURES".

NOTICE:

*Construction adjacent to or within Harris County Flood Control District Right-of-Way requires:

HCFCD 48-hr Pre-Construction Notice

The 48-hour Pre-Construction form must be completed and provided to HCFCD at dcid@hcfcd.net

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

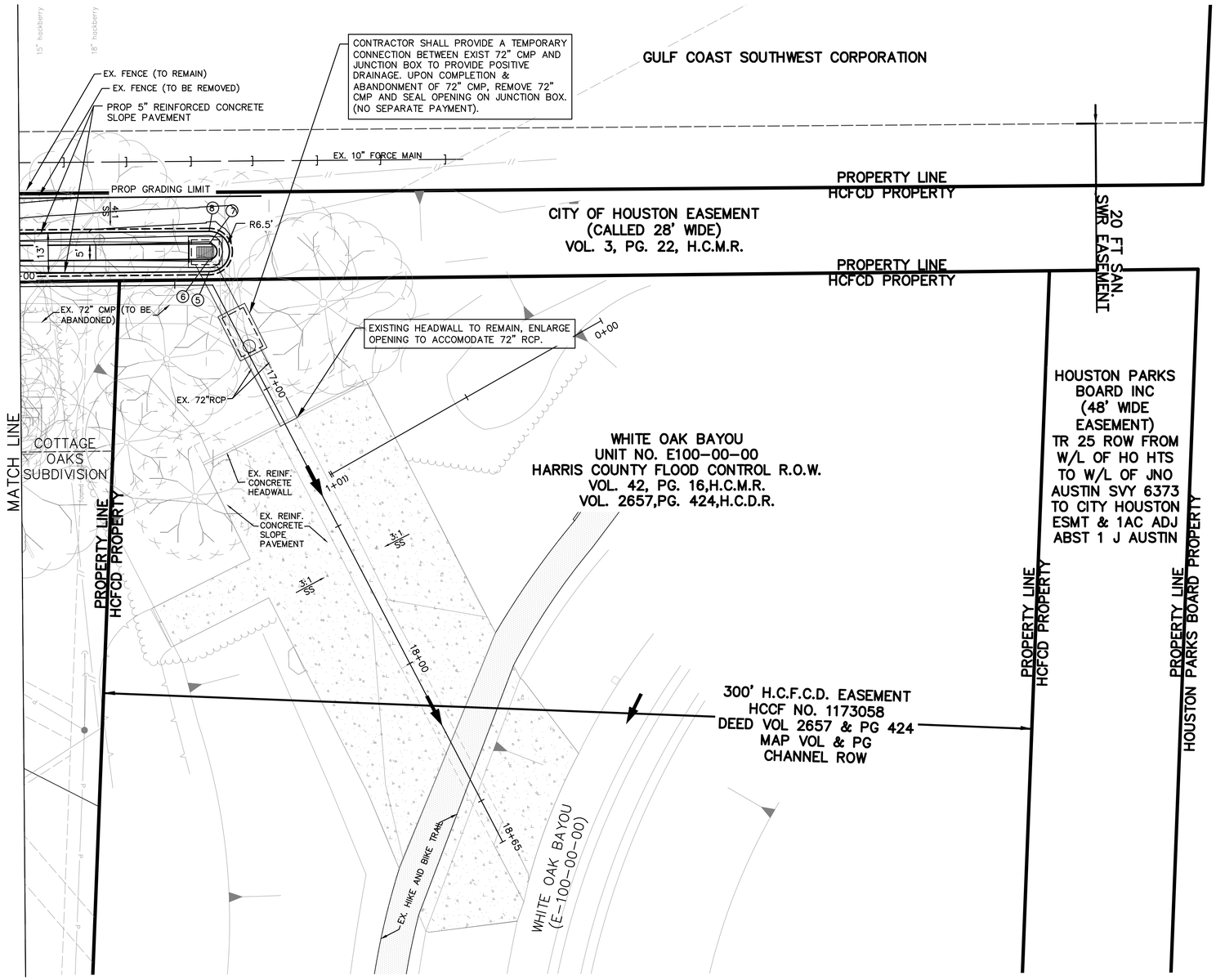
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EXTREME EVENT OVERFLOW PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 123 OF 345	

civilTech Engineering, Inc.
O:\2018\J38013\Drawings\SHEETS\EXTREME EVENT OVERFLOW PLAN.dwg Jun 02, 2025

REV	DESCRIPTION	BY	DATE



SWALE GEOMETRICS				
No.	Station	Offset	Elev (ft)	Description
5	16+61.22	4.35 LT	45.60	High Bank
6	16+61.23	8.35 LT	43.60	Toe
7	16+61.22	13.35 LT	43.60	Toe
8	16+61.21	17.35 LT	45.60	High Bank

NOTE:
CONTRACTOR TO REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)

20 0 10 20
SCALE IN FEET

LEGEND

(13) DESIGN SWALE ELEVATION

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

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

BOTH ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. THE HCFCD RIGHT-OF-WAY NOTIFICATION AND 48-HOUR NOTICE MUST BE PROVIDED TO HCFCD AT DCID@HCFCD.HCTX.NET 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/EPERMITS AND APPLY FOR THE HCFCD ROW UNDER ROW NOTIFICATION.

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

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

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Signature valid for six months.

Date

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(This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

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Houston, TX 77079
800.414.1045

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
08/19/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

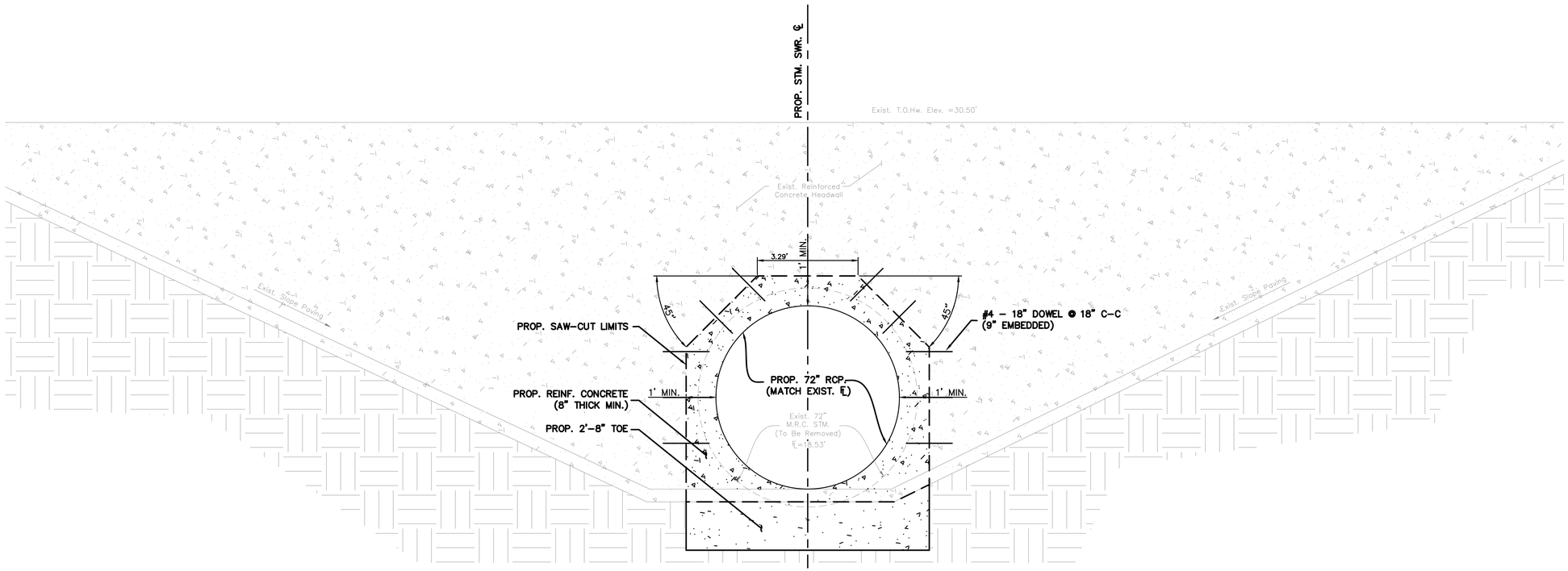
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

EXTREME EVENT OVERFLOW PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 123A OF 345	

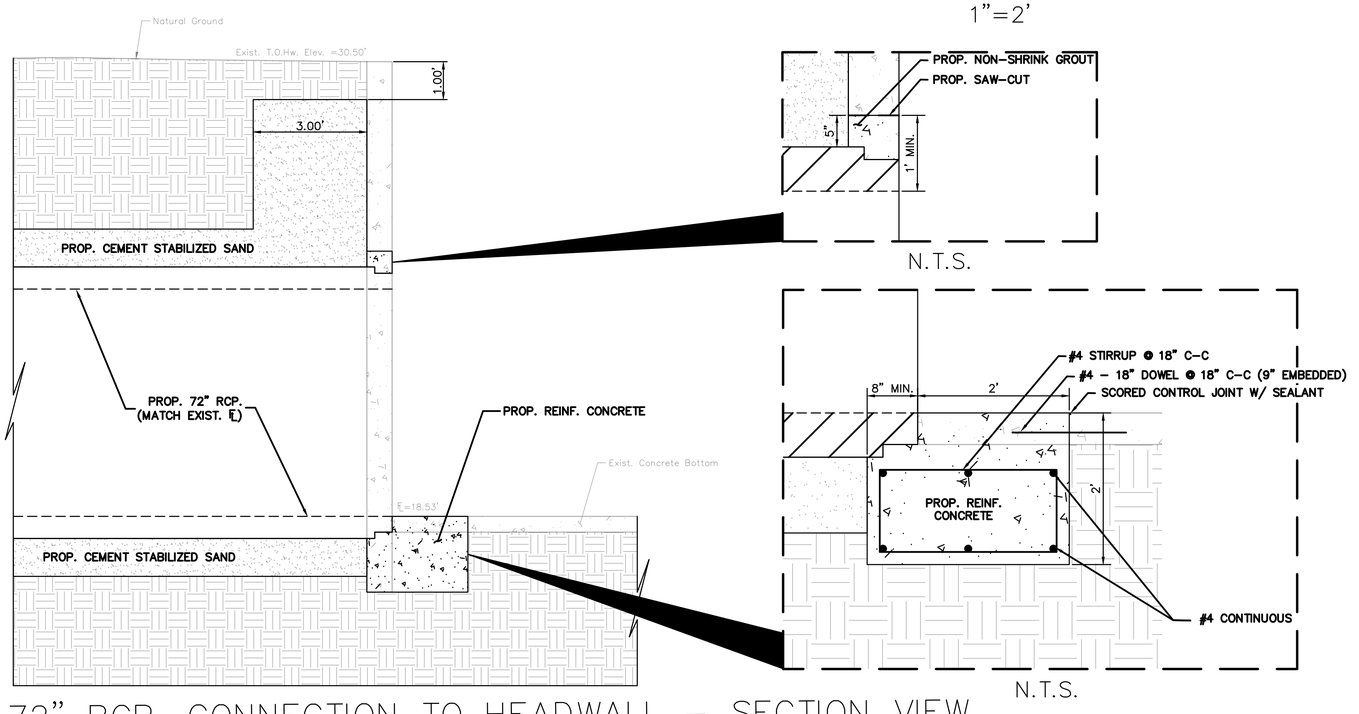
civilTech Engineering, Inc.
G:\2018\J380013\Drawings\SHEETS\EXTREME EVENT OVERFLOW PLAN.dwg Aug 19, 2025

REV	DESCRIPTION	BY	DATE



72" RCP. CONNECTION TO HEADWALL – ELEVATION VIEW

1"=2'



72" RCP. CONNECTION TO HEADWALL – SECTION VIEW

1"=2'

NOTE:
1. COST OF HEADWALL MODIFICATION SHALL BE INCEDENTAL TO COST OF 72" OUTFALL PIPING.

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06-09-2014.

NOTICE:

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

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Houston, TX 77079
800.414.1045

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
08/19/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

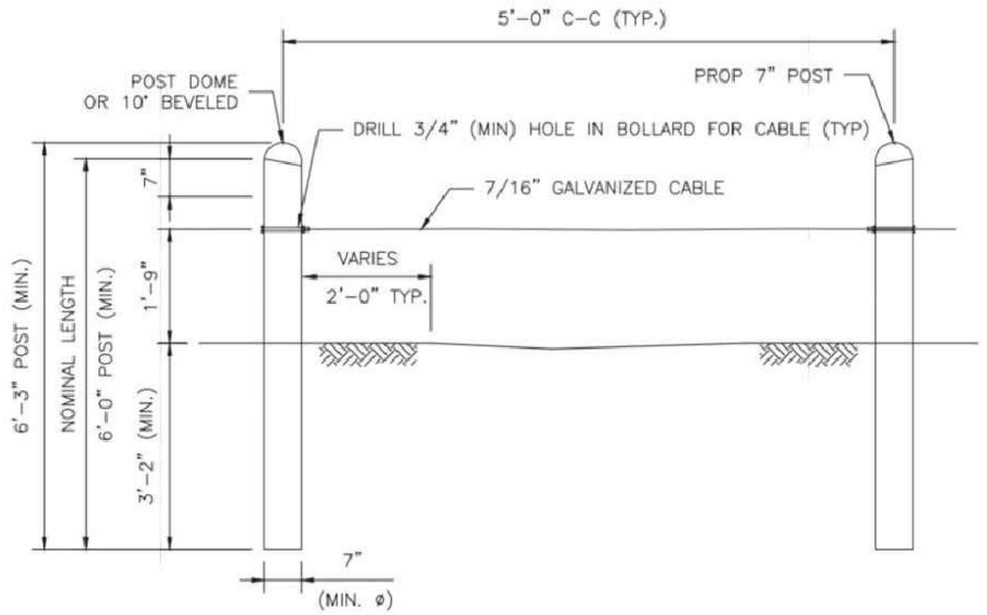
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

HEADWALL DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 124 OF 345	

CivilTech Engineering, Inc.
O:\2018\380013\Drawings\SHEETS\53-56-OUTFALL-P&P.dwg Aug 20, 2025

REV	DESCRIPTION	BY	DATE



WOOD BOLLARD WITH CABLE
SCALE: NOT TO SCALE

NOTE:

1. CABLE AND BOLLARD FENCE IS TO BE CONSTRUCTED PER DETAIL SHALL BE INCIDENTAL TO ROADWAY, NO SEPARATE PAY.

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

WOOD BOLLARD WITH CABLE DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 125 OF 345	

CivilTech Engineering, Inc.
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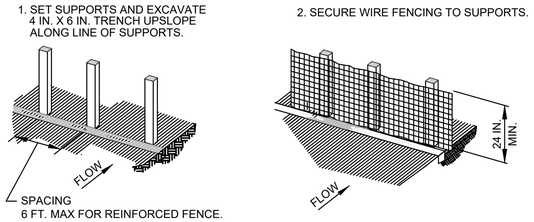
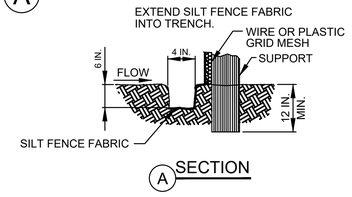


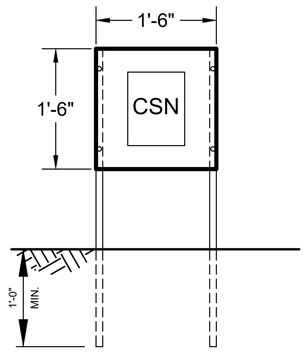


NOTE:

1. SEE SPECIFICATION SECTION NO. 02361-SILT FENCES.

RSF SYMBOL — REINFORCED SILT FENCE

REINFORCED SILT FENCE

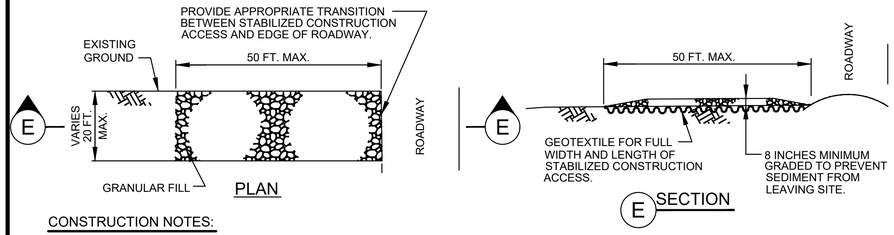


NOTE:

CONSTRUCT IN ACCORDANCE WITH HCFCD SPECIFICATION SECTION 01580 - PROJECT SIGNS.

CSN HOLDER

SWPPP / BMP SIGN AND CONSTRUCTION SITE NOTICE HOLDER DETAILS

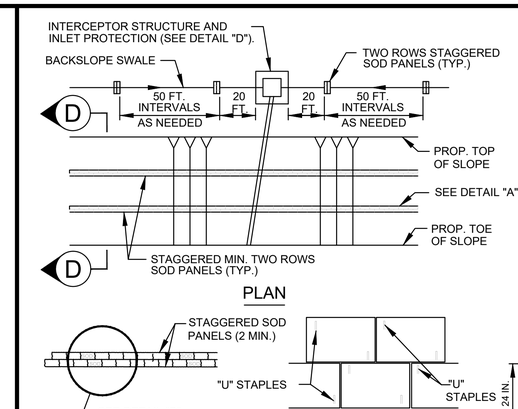


CONSTRUCTION NOTES:

1. SEE SPECIFICATION SECTION NO. 02365-STABILIZED CONSTRUCTION ACCESS.

STABILIZED CONSTRUCTION ACCESS

SCA SYMBOL

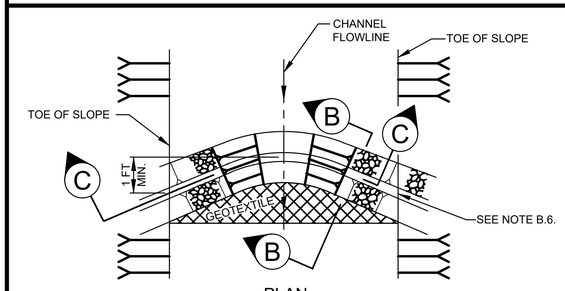


NOTES:

1. FOR SOD ROLLS, 24 INCHES WIDE, PLACE STAPLES ON 48 INCH CENTERS NEAR THE EDGES. STAGGER STAPLES ON OPPOSING SIDES. PLACE ADDITIONAL STAPLES IN CORNERS AT ENDS OF ROLL AND ONE IN MIDDLE AT BOTH ENDS OF ROLL.
2. PROVIDE STAPLES PER SPECIFICATION SECTION NO. 02922-SOD.
3. SOD ROLL AS SHOWN IN DETAIL "C" EQUIVALENT TO TWO ROWS OF SOD PANELS.
4. PLACE TWO ROWS OF SOD PANELS ALONG EDGES OF CONCRETE PAVING AND STRUCTURES WHERE SOIL IS DISTURBED EXCEPT BELOW THE NORMAL WATER SURFACE.

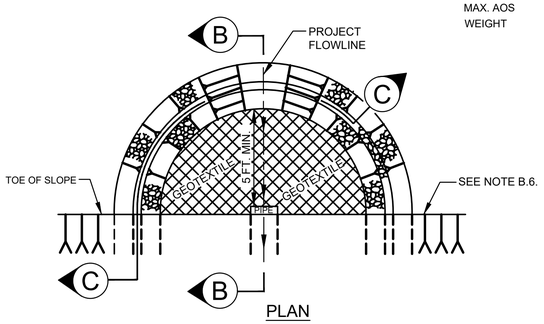
SOD SYMBOL — IP SYMBOL

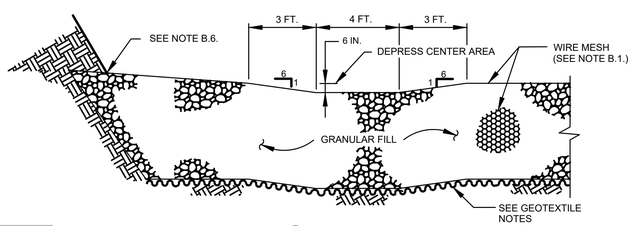
SODDING

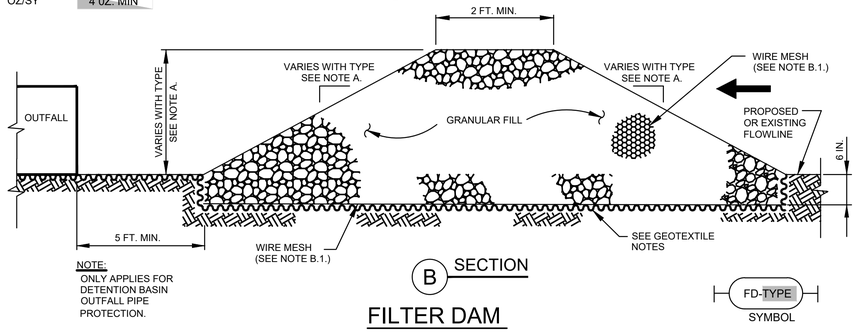


GEOTEXTILE NOTES:

MIN. AOS	SIEVE NO.	120 MIN
MAX. AOS	SIEVE NO.	50 MAX
WEIGHT	OZ/SY	4 OZ. MIN







NOTE:

ONLY APPLIES FOR DETENTION BASIN OUTFALL PIPE PROTECTION.

FILTER DAM

FD-TYPE SYMBOL

FILTER DAM NOTES:

A. TYPES OF FILTER DAMS
   1. TYPE 1 - NOT USED BY HCFCD
   2. TYPE 2 (REINFORCED).
      a. HEIGHT - 18-36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
      b. TOP WIDTH - 2 FEET (MINIMUM).
      c. SLOPES - 2:1 (MAXIMUM).
   3. TYPE 3 - NOT USED BY HCFCD
   4. TYPE 4 (GABION)
      a. HEIGHT - 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
      b. TOP WIDTH - 2 FEET (MINIMUM).
   5. TYPE 5. AS SHOWN ON THE PLANS.

B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.
   1. TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
   2. GRANULAR FILL:
      a. PLACE ON MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
      b. 3-5 INCHES FOR ROCK FILTER DAM TYPES 2, AND 4. REFER TO GRANULAR FILL IN SPECIFICATION SECTION NO. 02378-RIPRAP AND GRANULAR FILL.
   3. WIRE MESH: FOLD AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURE TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
   4. IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
   5. SEE SPECIFICATION SECTION NO. 02364-FILTER DAMS.
   6. EMBED ONE FOOT MINIMUM INTO SLOPE AND AT SLOPE RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA.

THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON HCFCD PROJECTS OR PROJECTS TO BE MAINTAINED BY THE HCFCD WHEN COMPLETED BY OTHERS. AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 137.33 (b) AND (c) OF THE TEXAS BOARD OF PROFESSIONAL ENGINEERS.

STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER

P.E. SEAL AND SIGNATURE

ENGINEER - CONFIRM, CHANGE, OR FILL IN.

DESCRIPTION	DATE	APPR

PROJECT ID#

COTTAGE GROVE EAST-PH II
DRAINAGE AND PAVING IMPROEMENTS

HCFCD STORMWATER
POLLUTION PREVENTION PLAN

PREPARED:

CHECKED:

APPROVED:

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 Northwest Freeway
Houston, Texas 77092

DATE: 10-23-2018
SCALE: NTS

SHEET NUMBER
126 OF 345

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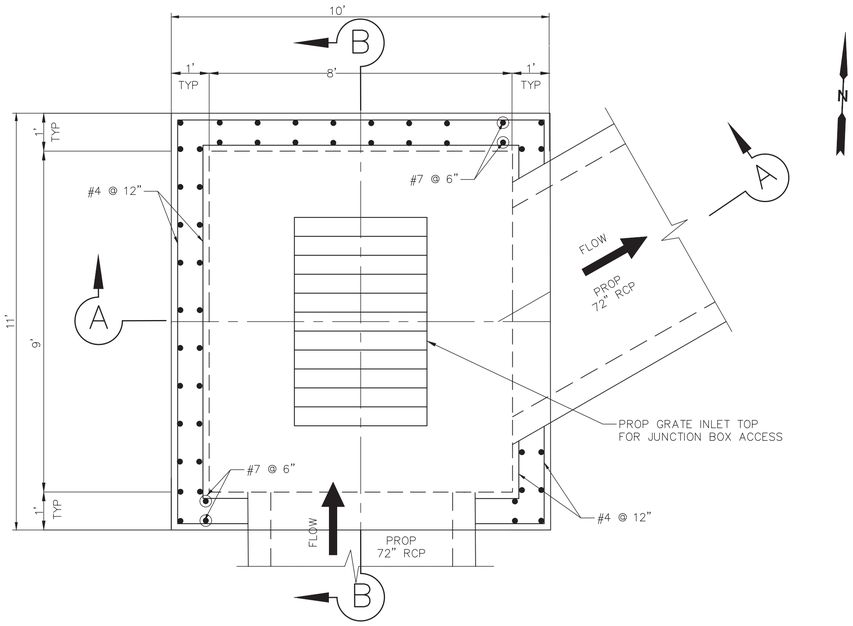
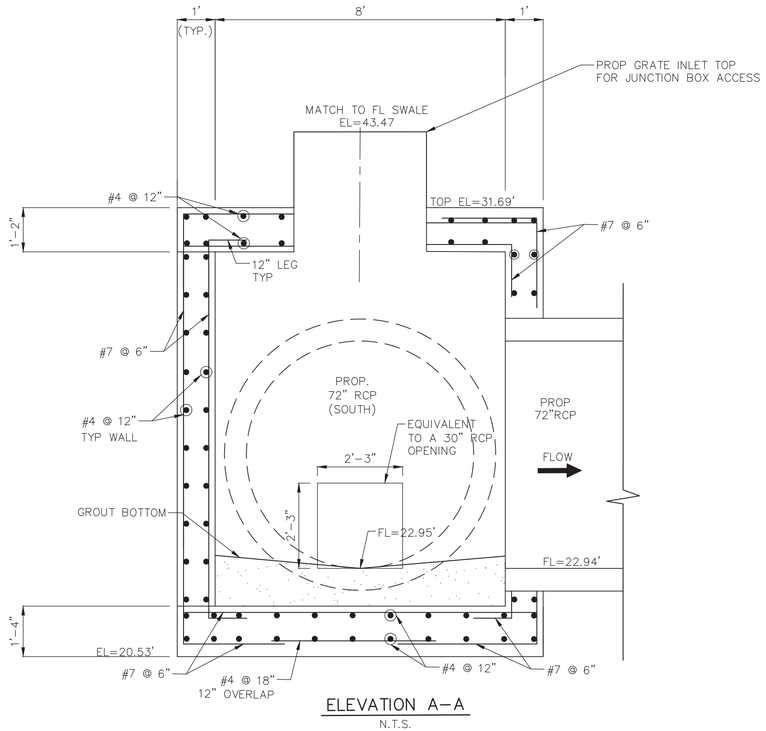
REV	DESCRIPTION	BY	DATE



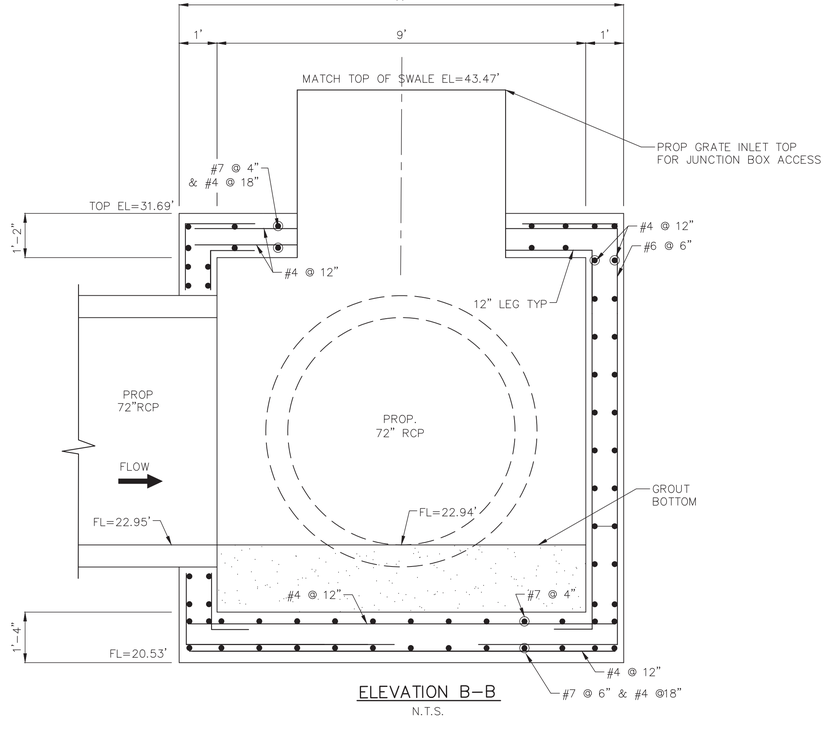
PLAN JUNCTION BOX–KI 12 STA 16+57.00

1"=2'



ELEVATION A–A

N.T.S.



ELEVATION B–B

N.T.S.

NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
3. ALL CONCRETE SHALL BE CLASS "A" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ITEM 03315
4. ALL EXPOSED CORNERS SHALL HAVE A ¾" CHAMFER
5. CONTRACTOR TO GROUT BOTTOM OF JUNCTION BOX TO ELIMINATE STANDING WATER
6. REFERENCE THE CITY OF HOUSTON STANDARD SPECIFICATIONS FOR EXCAVATION AND BACK FILL 02317–18

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06–09–2014.

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

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ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/11/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

OUTFALL JUNCTION BOX DETAILS (1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 127 OF 345	

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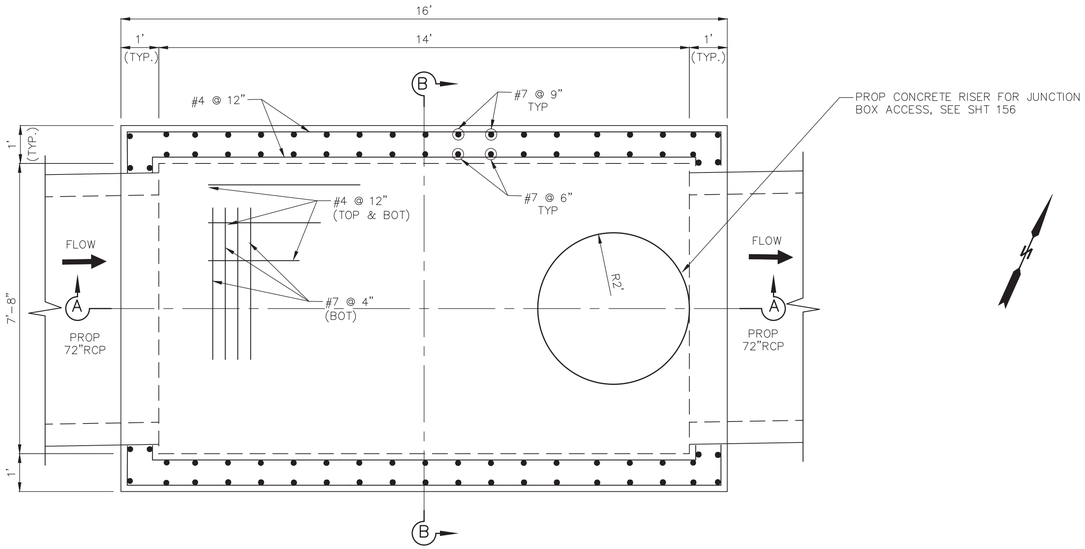
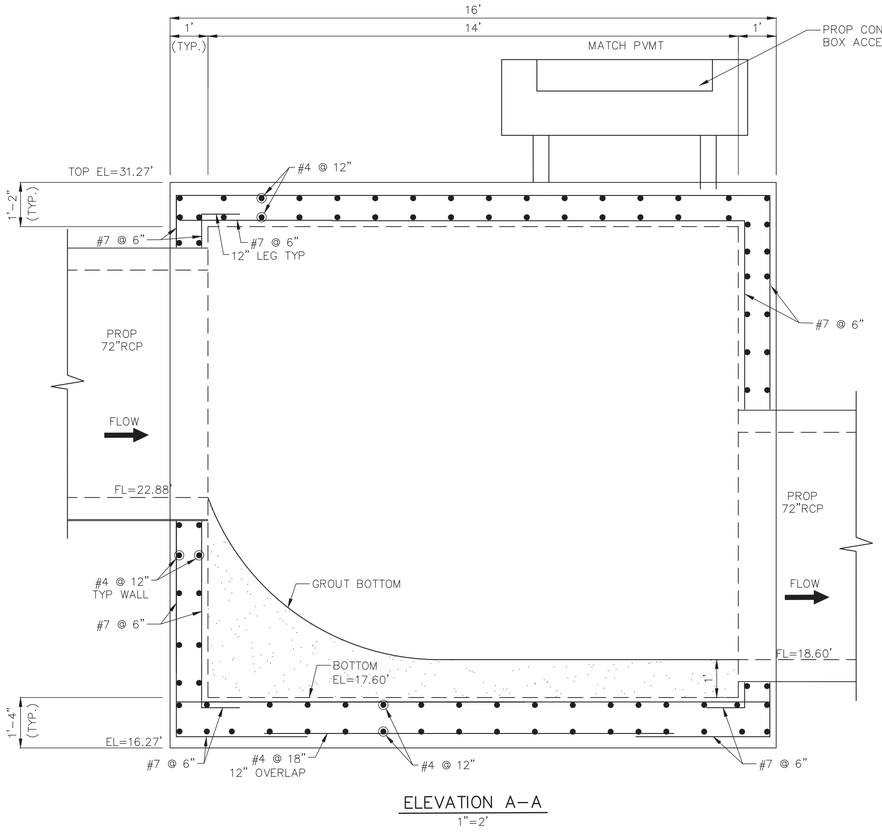
REV	DESCRIPTION	BY	DATE



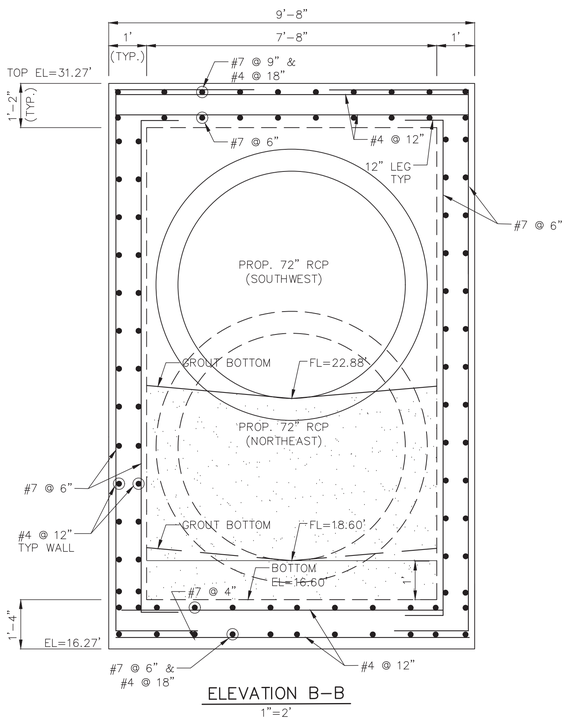
PLAN JUNCTION BOX–KI 12 STA 16+57.00

1"=2'



ELEVATION A–A

1"=2'



ELEVATION B–B

1"=2'

NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
3. ALL CONCRETE SHALL BE CLASS "A" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ITEM 03315
4. ALL EXPOSED CORNERS SHALL HAVE A ¾" CHAMFER
5. CONTRACTOR TO GROUT BOTTOM OF JUNCTION BOX TO ELIMINATE STANDING WATER
6. REFERENCE THE CITY OF HOUSTON STANDARD SPECIFICATIONS FOR EXCAVATION AND BACK FILL 02317–18

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258–8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

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NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

OUTFALL JUNCTION BOX DETAILS (2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 128 OF 345	

CivilTech Engineering, Inc.
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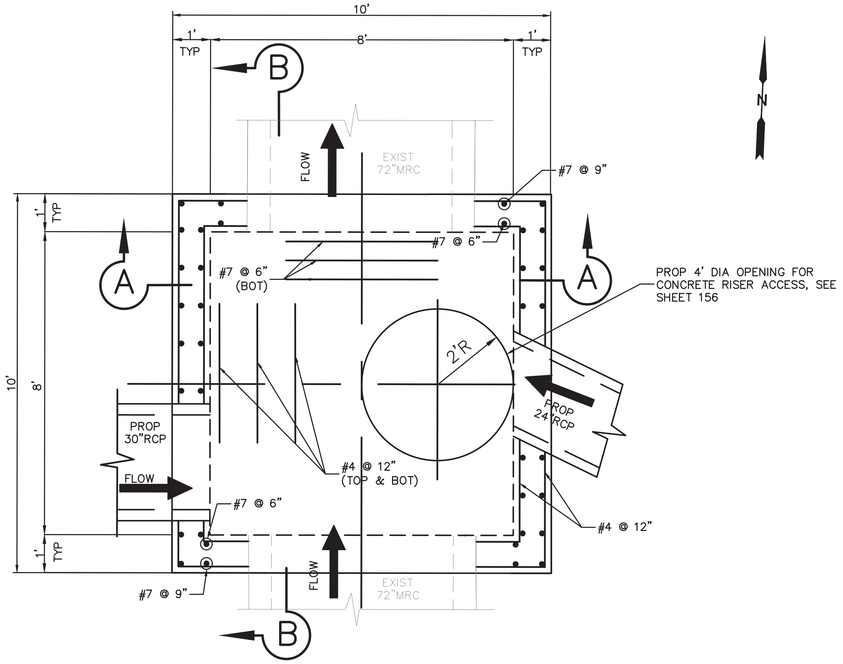
REV	DESCRIPTION	BY	DATE

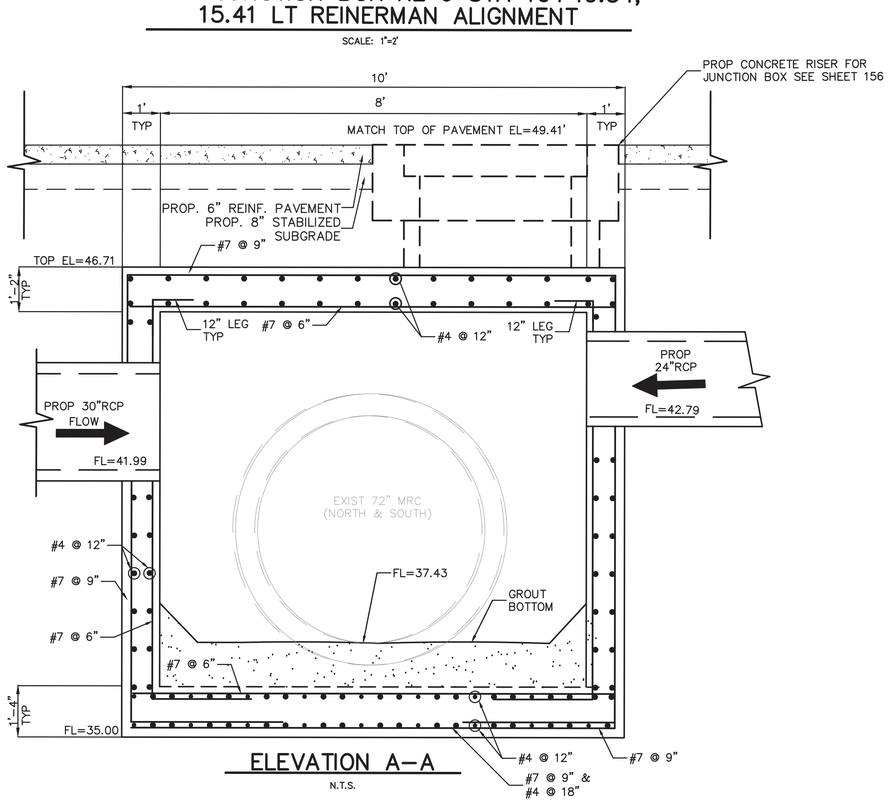


PLAN–JUNCTION BOX RE 6 STA 10+49.54, 15.41 LT REINERMAN ALIGNMENT

SCALE: 1"=2'

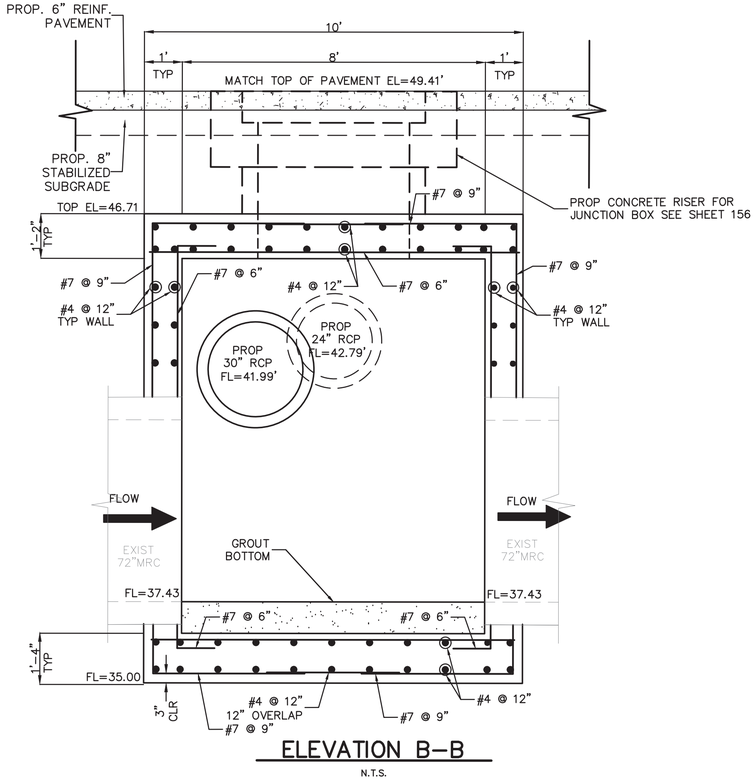
NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
3. ALL CONCRETE SHALL BE CLASS "A" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ITEM 03315
4. ALL EXPOSED CORNERS SHALL HAVE A ¾" CHAMFER
5. CONTRACTOR TO GROUT BOTTOM OF JUNCTION BOX TO ELIMINATE STANDING WATER
6. PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL, SEE 02137–05 FOR DRY STABLE TRENCH



ELEVATION A–A

N.T.S.



ELEVATION B–B

N.T.S.

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02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS (1 OF 11)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 129 OF 345	

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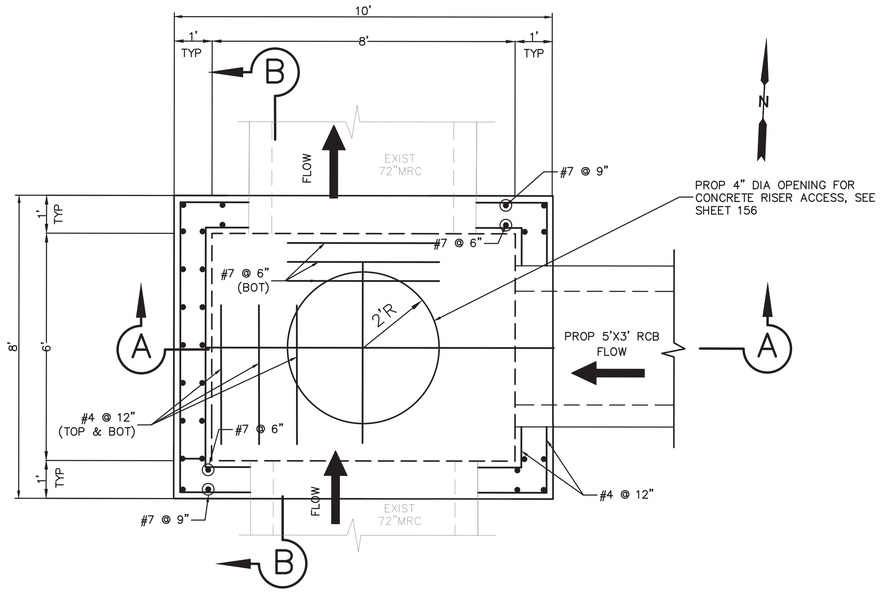
REV	DESCRIPTION	BY	DATE

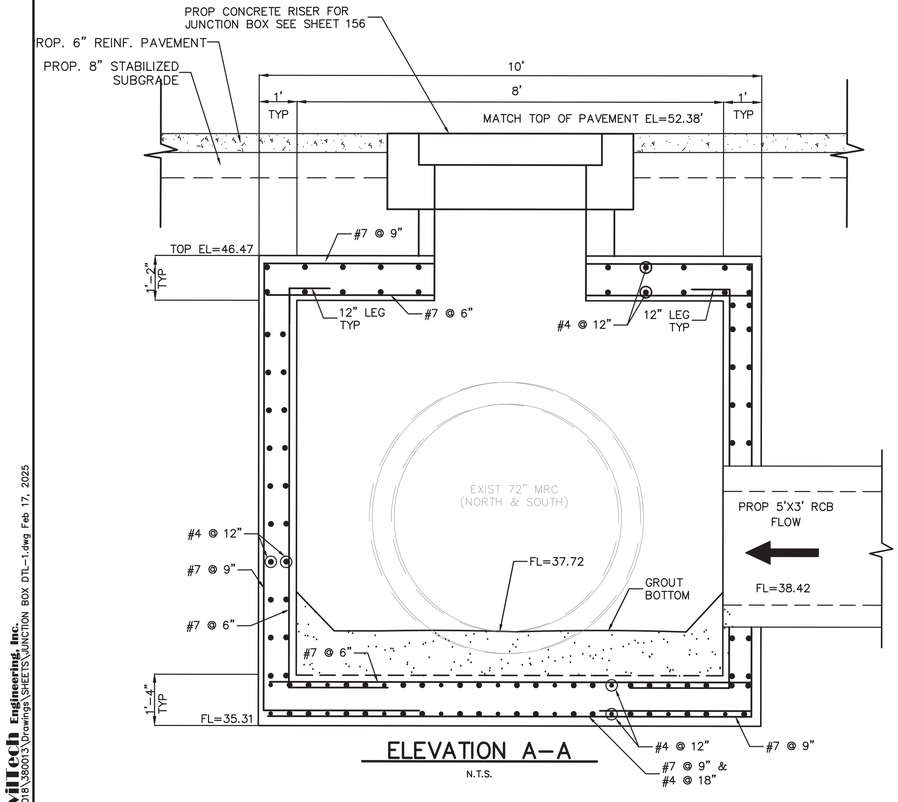


PLAN–JUNCTION BOX RE 2 STA 7+66.08, 7.70 LT REINERMAN ALIGNMENT

SCALE: 1"=2'

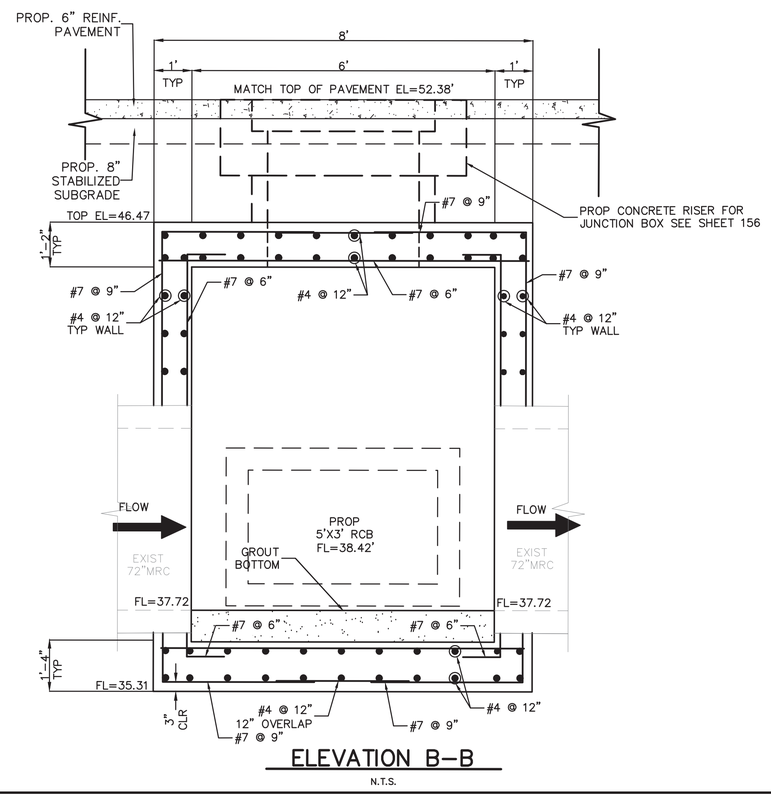
NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
3. ALL CONCRETE SHALL BE CLASS "A" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ITEM 03315
4. ALL EXPOSED CORNERS SHALL HAVE A ¾" CHAMFER
5. CONTRACTOR TO GROUT BOTTOM OF JUNCTION BOX TO ELIMINATE STANDING WATER
6. PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL, SEE 02137–05 FOR DRY STABLE TRENCH



ELEVATION A–A

N.T.S.



ELEVATION B–B

N.T.S.

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02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS (2 OF 11)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 130 OF 345	

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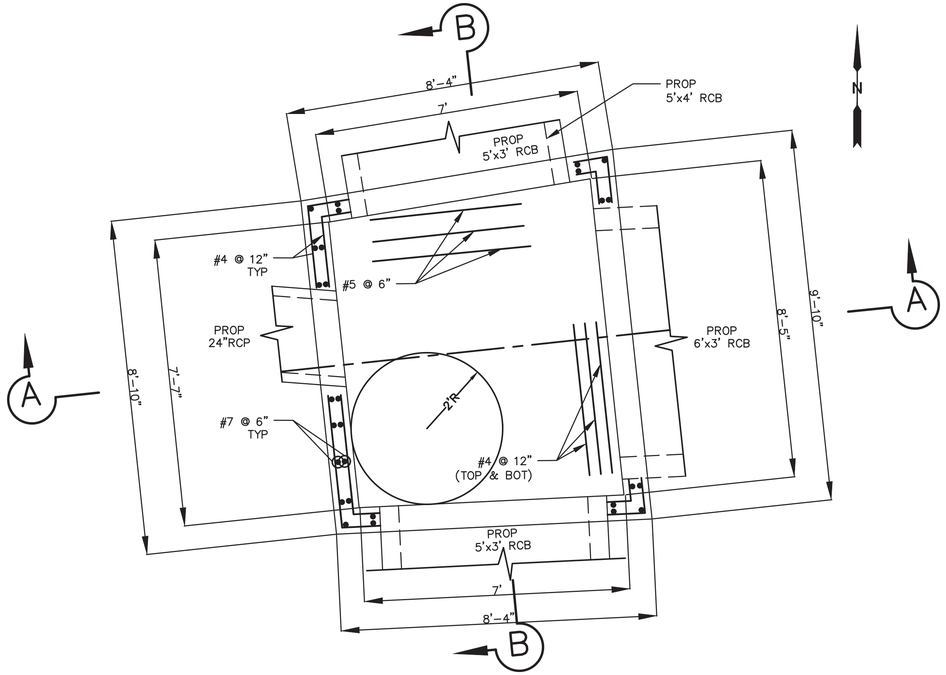
REV	DESCRIPTION	BY	DATE

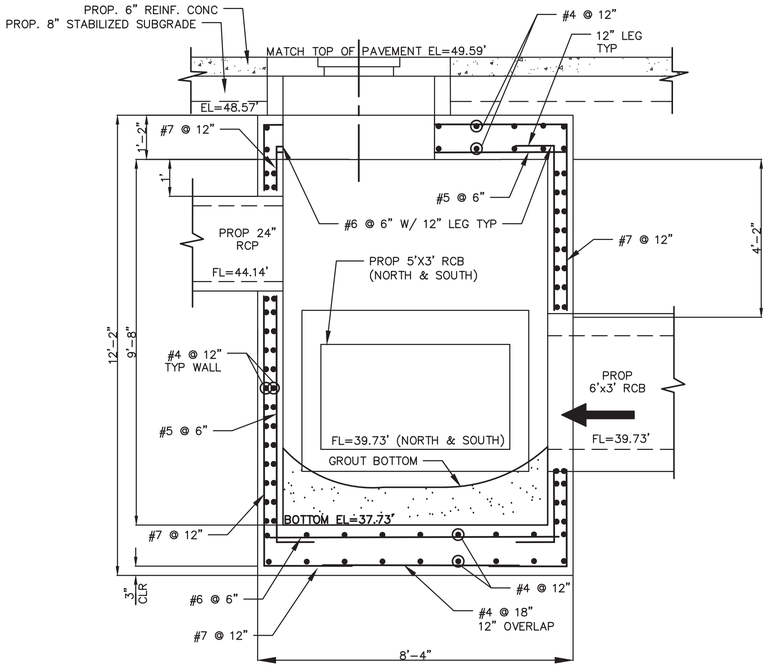


PLAN–JUNCTION BOX RC1 STA 3+59.60
ROY CIRCLE ALIGNMENT

SCALE: 1"=2'

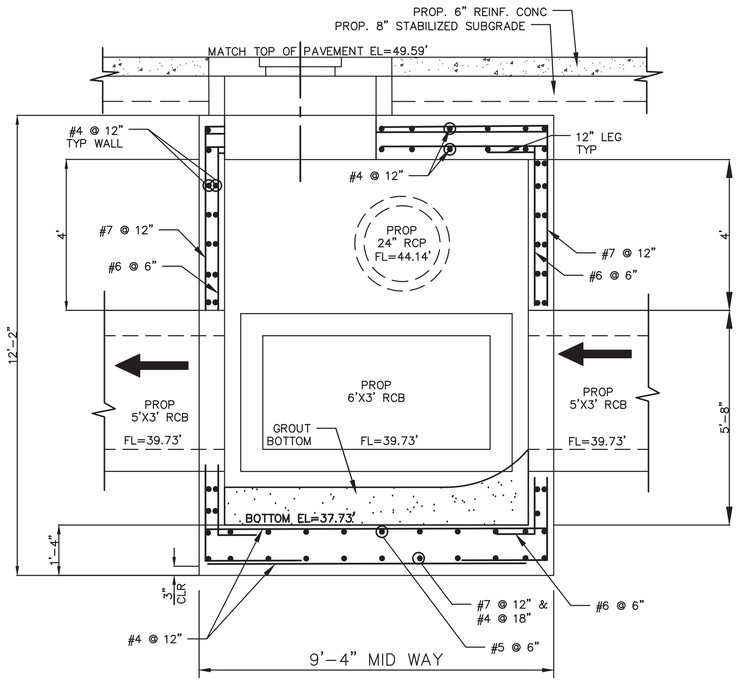
NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
3. ALL CONCRETE SHALL BE CLASS "A" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ITEM 03315
4. ALL EXPOSED CORNERS SHALL HAVE A ¾" CHAMFER
5. CONTRACTOR TO GROUT BOTTOM OF JUNCTION BOX TO ELIMINATE STANDING WATER
6. PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL, SEE 02137–05 FOR DRY STABLE TRENCH



ELEVATION A–A

SCALE: 1"=2'



ELEVATION B–B

SCALE: 1"=2'

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS
(3 OF 11)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 131 OF 345	

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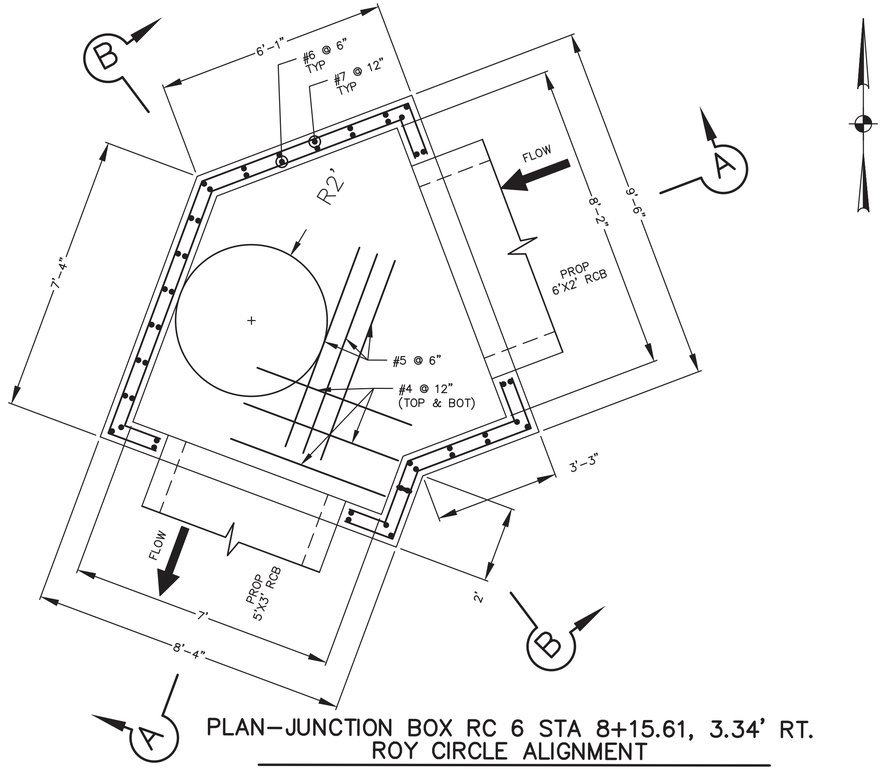
REV	DESCRIPTION	BY	DATE



PLAN–JUNCTION BOX RC 6 STA 8+15.61, 3.34' RT. ROY CIRCLE ALIGNMENT

SCALE: 1"=2'

NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
3. ALL CONCRETE SHALL BE CLASS "A" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ITEM 03315
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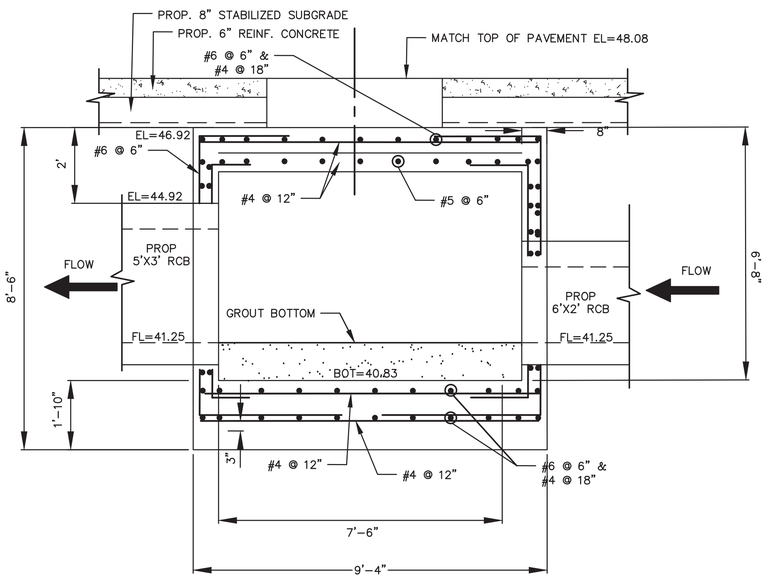
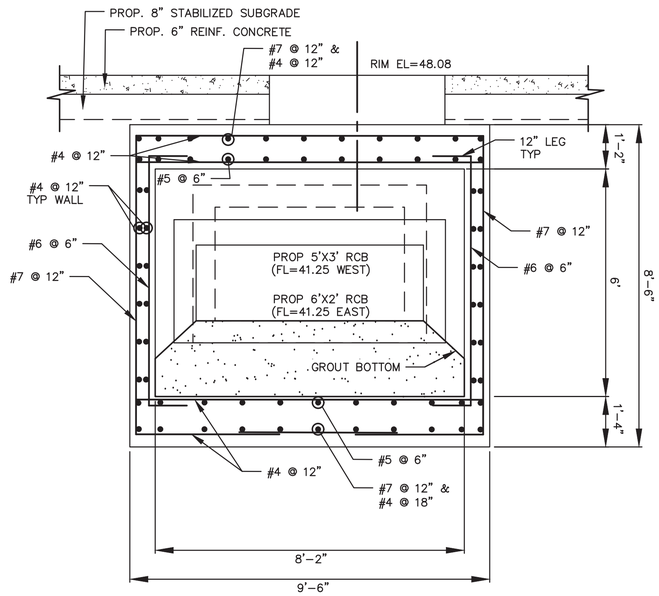
6. PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL, SEE 02137–05 FOR DRY STABLE TRENCH



ELEVATION A–A

SCALE: 1"=2'



ELEVATION B–B

SCALE: 1"=2'

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02/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS
(4 OF 11)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 132 OF 345	

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REV	DESCRIPTION	BY	DATE

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS
(5 OF 11)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 133 OF 345	

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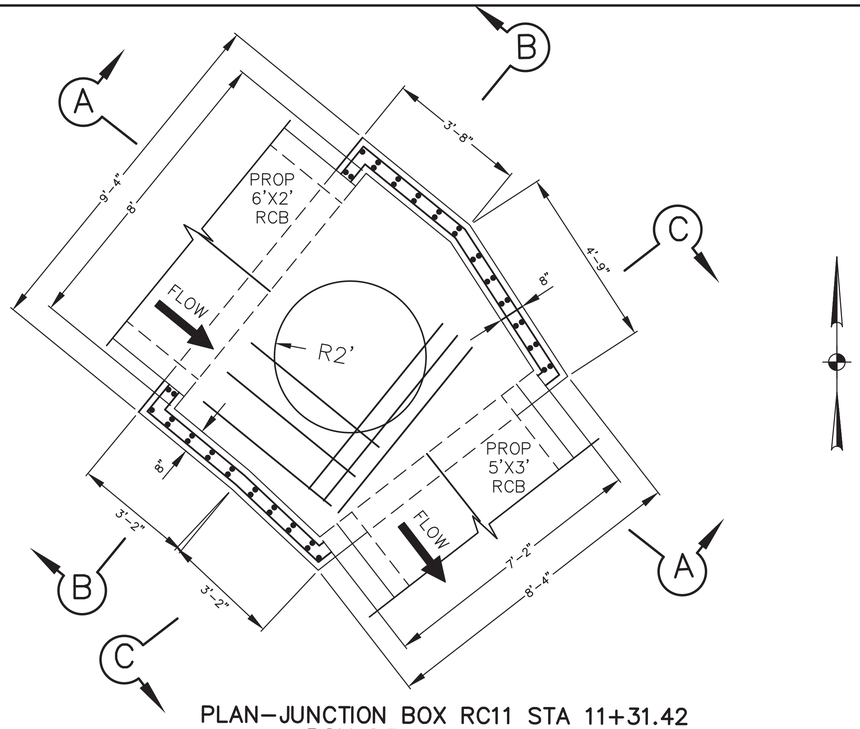
O:\2018\438010\Drawings\SHEETS\JUNCTION BOX DTL-2.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

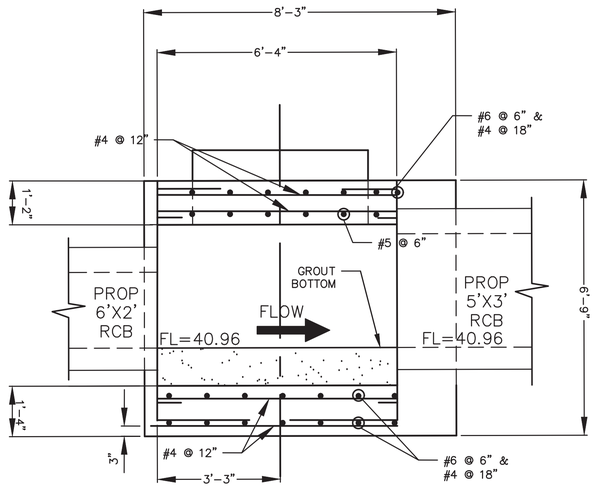


PLAN–JUNCTION BOX RC11 STA 11+31.42
ROY CIRCLE ALIGNMENT

SCALE: 1"=2'

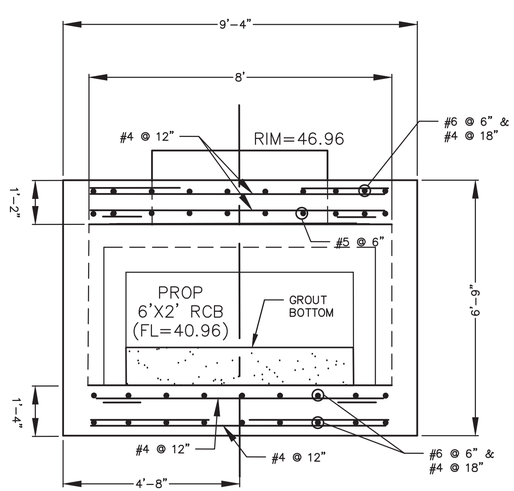
NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
3. ALL CONCRETE SHALL BE CLASS "A" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ITEM 03315
4. ALL EXPOSED CORNERS SHALL HAVE A ¾" CHAMFER
5. CONTRACTOR TO GROUT BOTTOM OF JUNCTION BOX TO ELIMINATE STANDING WATER
6. PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL, SEE 02137–05 FOR DRY STABLE TRENCH



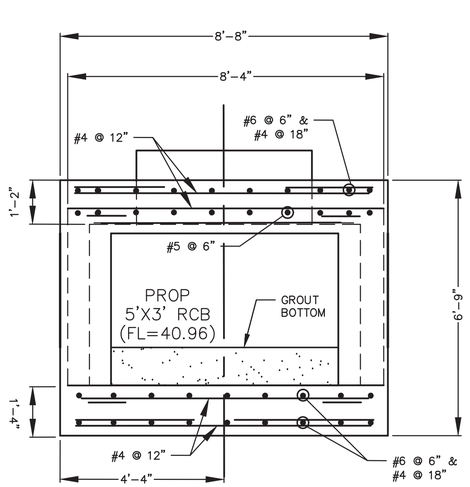
ELEVATION A–A

SCALE: 1"=2'



ELEVATION B–B

SCALE: 1"=2'



ELEVATION C–C

SCALE: 1"=2'

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02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS
(6 OF 11)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 134 OF 345	

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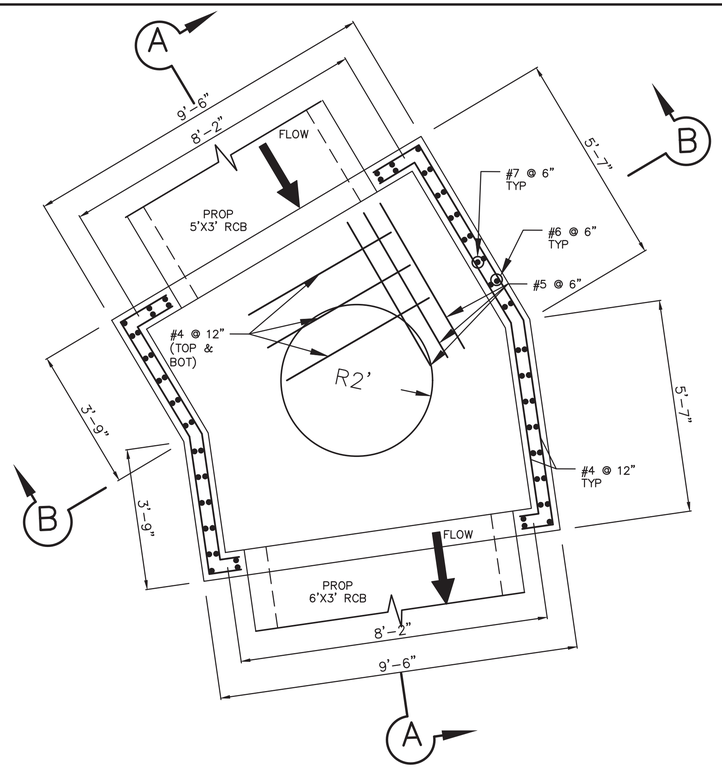
REV	DESCRIPTION	BY	DATE

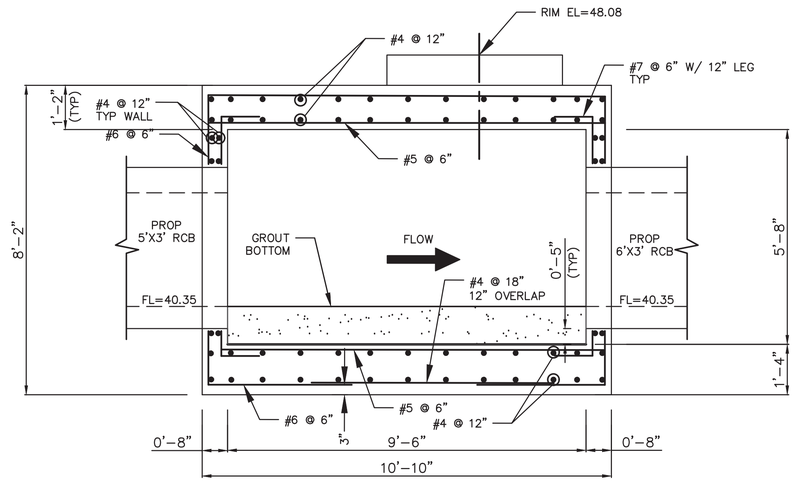


PLAN–JUNCTION BOX RC 15 STA 14+29.80
ROY CIRCLE ALIGNMENT

SCALE: 1"=2'

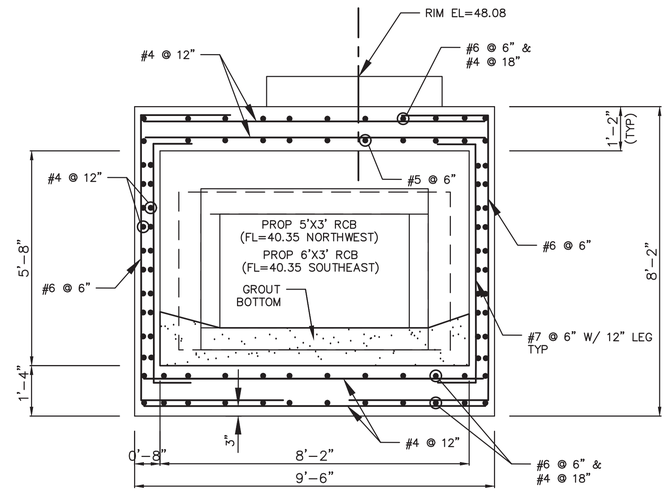
NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
3. ALL CONCRETE SHALL BE CLASS "A" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ITEM 03315
4. ALL EXPOSED CORNERS SHALL HAVE A ¾" CHAMFER
5. CONTRACTOR TO GROUT BOTTOM OF JUNCTION BOX TO ELIMINATE STANDING WATER
6. PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL, SEE 02137–05 FOR DRY STABLE TRENCH



ELEVATION A–A

SCALE: 1"=2'



ELEVATION B–B

SCALE: 1"=2'

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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
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02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS
(7 OF 11)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 135 OF 345	

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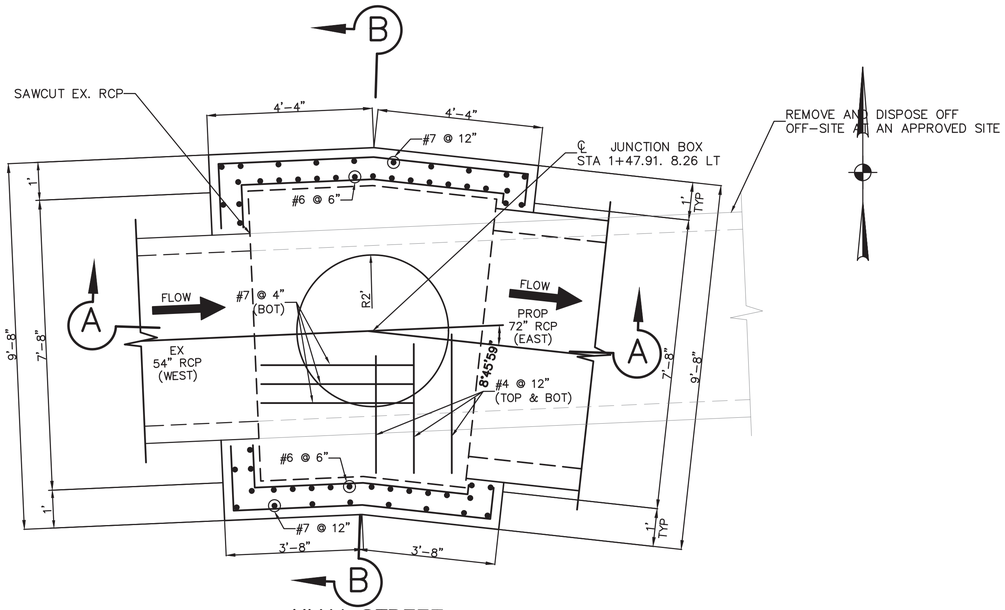
REV	DESCRIPTION	BY	DATE

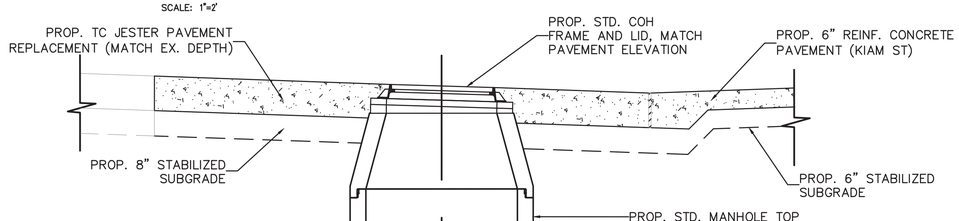


KIAM STREET
PLAN–JUNCTION BOX E4 STA 1+47.90

SCALE: 1"=2'

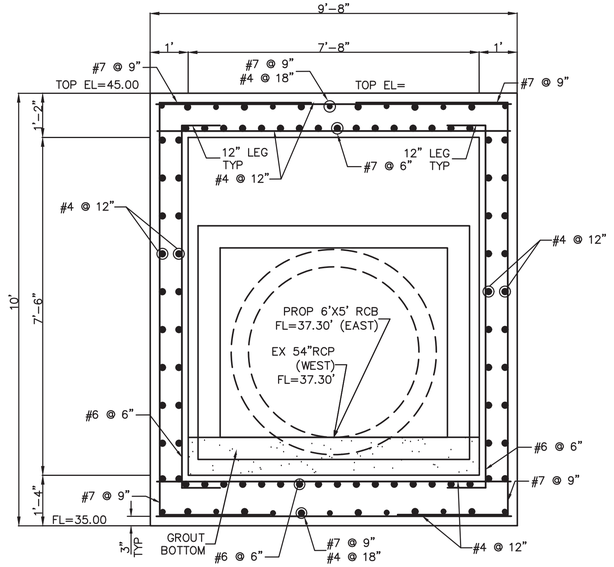
NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
3. ALL CONCRETE SHALL BE CLASS "A" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ITEM 03315
4. ALL EXPOSED CORNERS SHALL HAVE A ¾" CHAMFER
5. CONTRACTOR TO GROUT BOTTOM OF JUNCTION BOX TO ELIMINATE STANDING WATER
6. PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL, SEE 02137-05 FOR DRY STABLE TRENCH



ELEVATION A–A

SCALE: 1"=2'



ELEVATION B–B

SCALE: 1"=2'

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

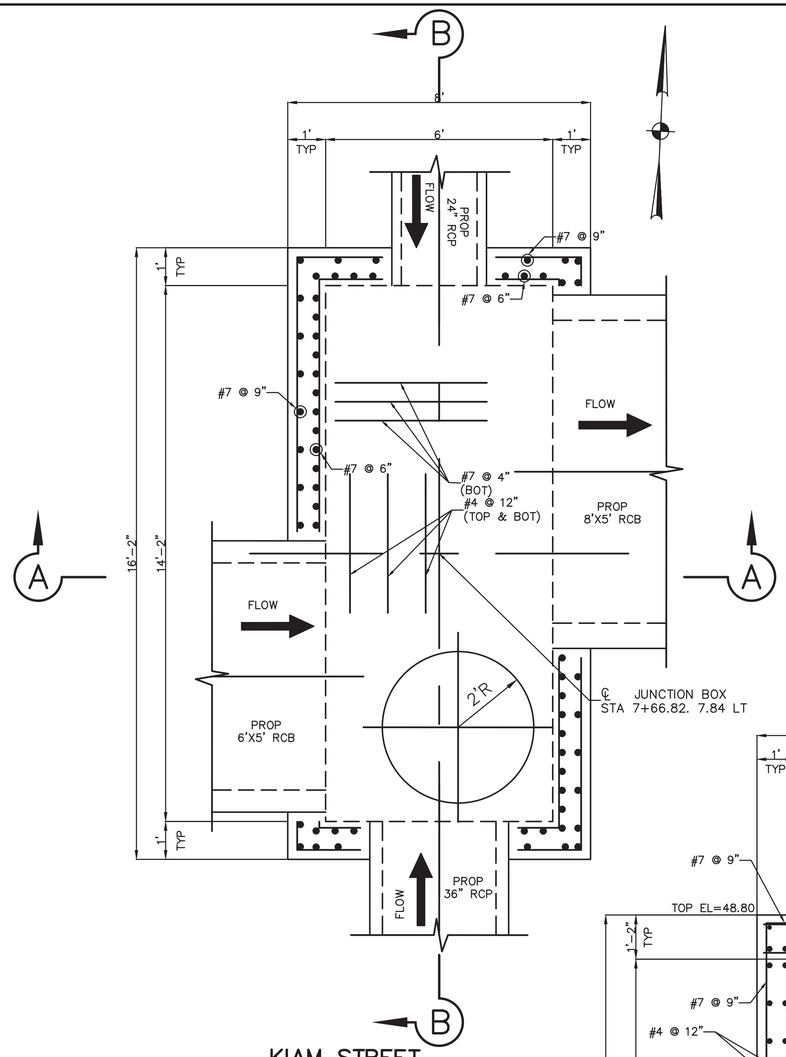
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS
(8 OF 11)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 136 OF 345	

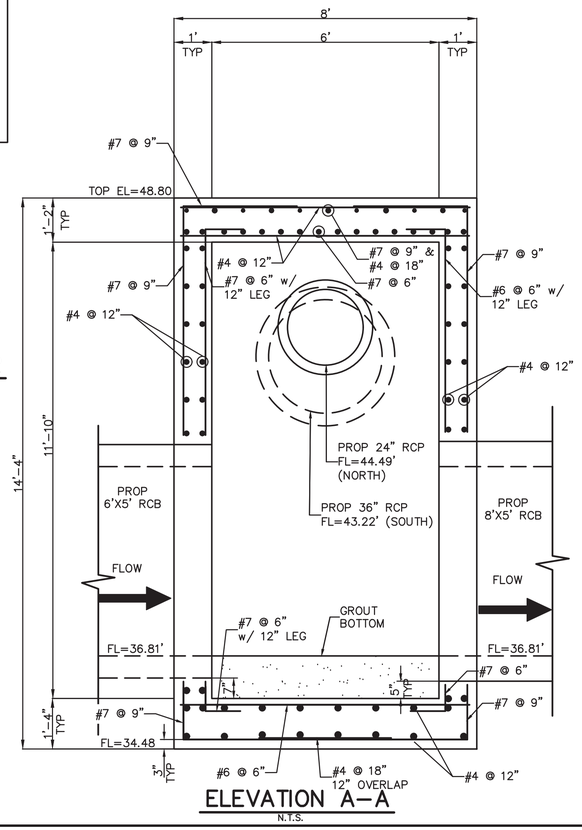
CivilTech Engineering, Inc.
O:\2018\138013\Drawings\SHEETS\JUNCTION BOX DTL-4.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE



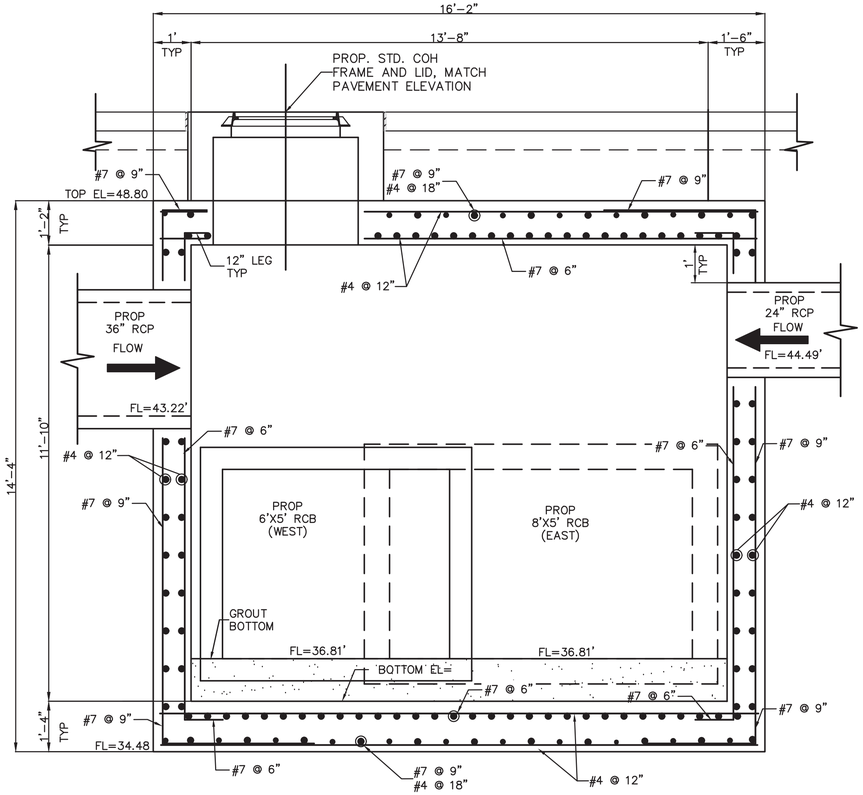
KIAM STREET
PLAN–JUNCTION BOX KI 3 STA 7+66.82

SCALE: 1"=2'



ELEVATION A–A

N.T.S.



ELEVATION B–B

N.T.S.

NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
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4. ALL EXPOSED CORNERS SHALL HAVE A ¾" CHAMFER
5. CONTRACTOR TO GROUT BOTTOM OF JUNCTION BOX TO ELIMINATE STANDING WATER
6. PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL, SEE 02137–05 FOR DRY STABLE TRENCH

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02/11/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS
(9 OF 11)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 137 OF 345	

CivilTech Engineering, Inc.
G:\2018\180013\Drawings\SHEETS\JUNCTION BOX DTL-4.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

NOTES:

1. ALL REINFORCING STEEL SHALL BE GRADE 60
2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
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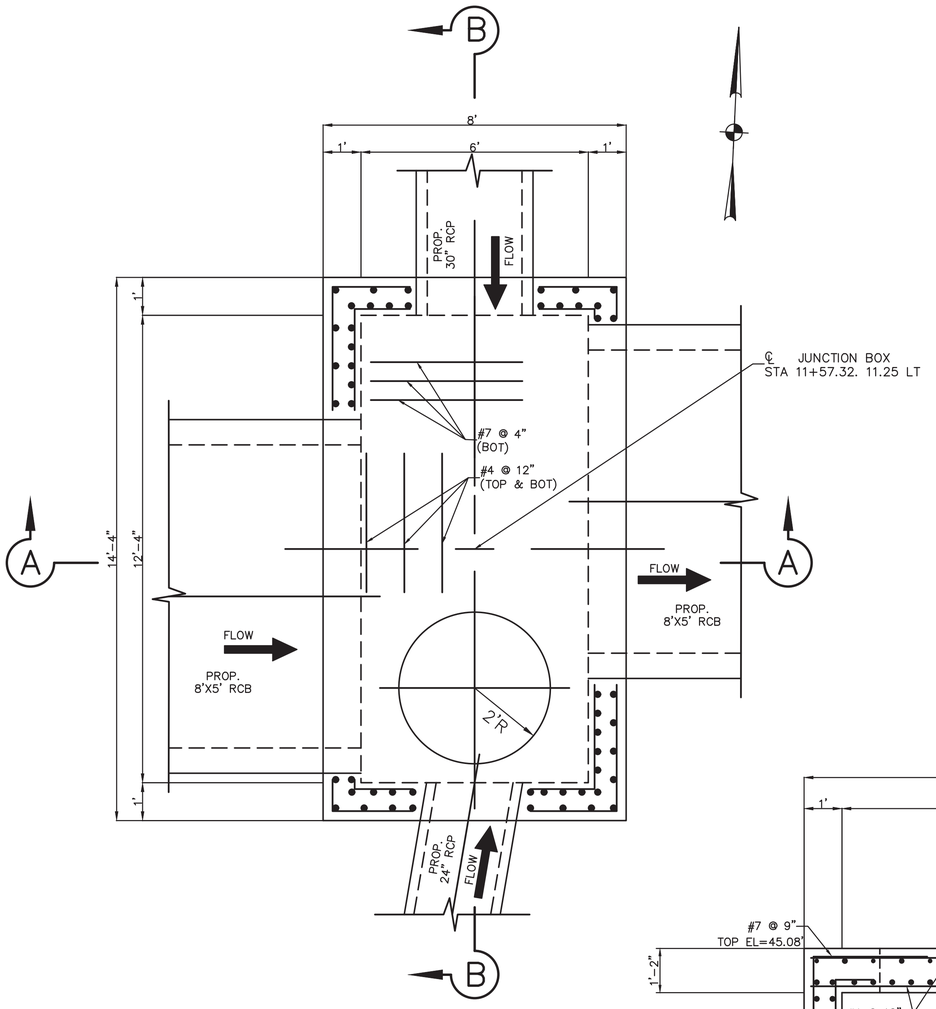
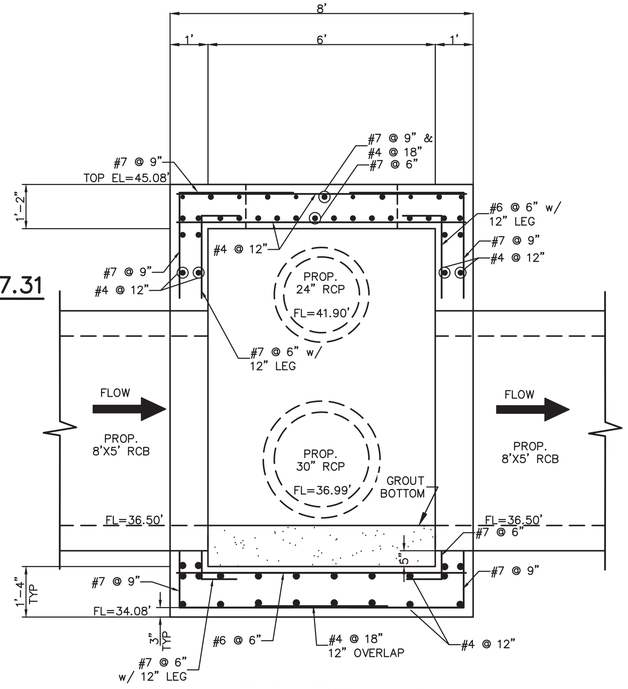
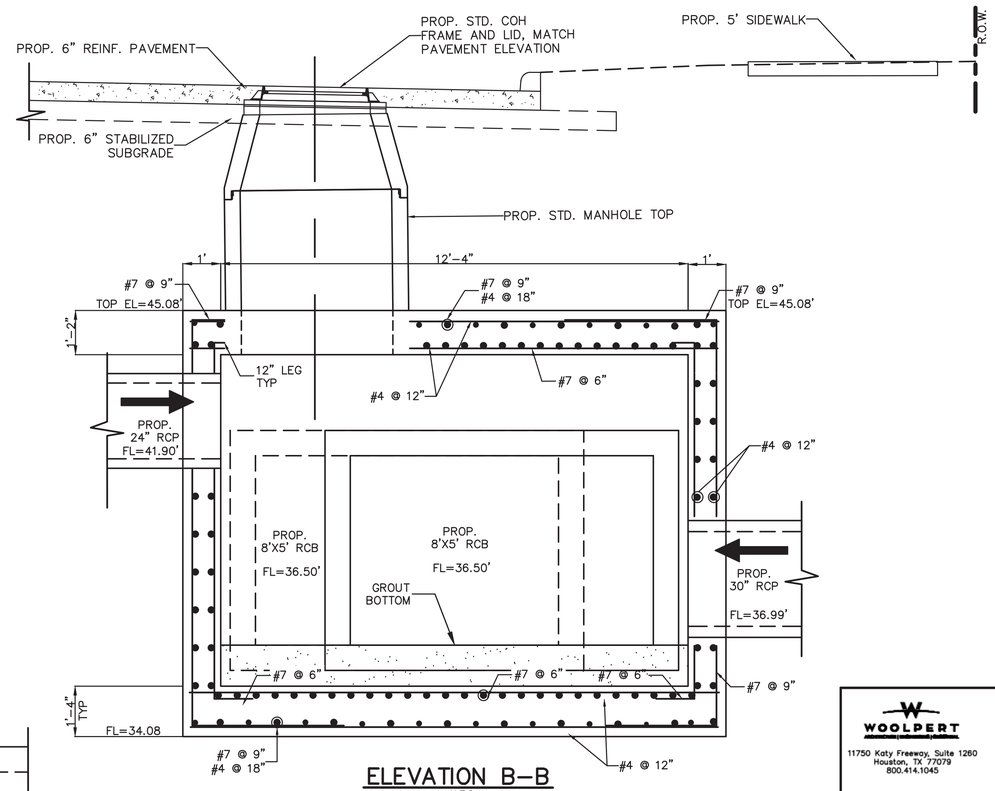
6. PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL, SEE 02137-05 FOR DRY STABLE TRENCH



KIAM STREET
PLAN-JUNCTION BOX KI 7 STA 11+57.31
SCALE: 1"=2'



ELEVATION A-A
N.T.S.



ELEVATION B-B
N.T.S.

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Houston, TX 77079
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS
(10 OF 11)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
(SEE DRAWING)	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 138 OF 345	

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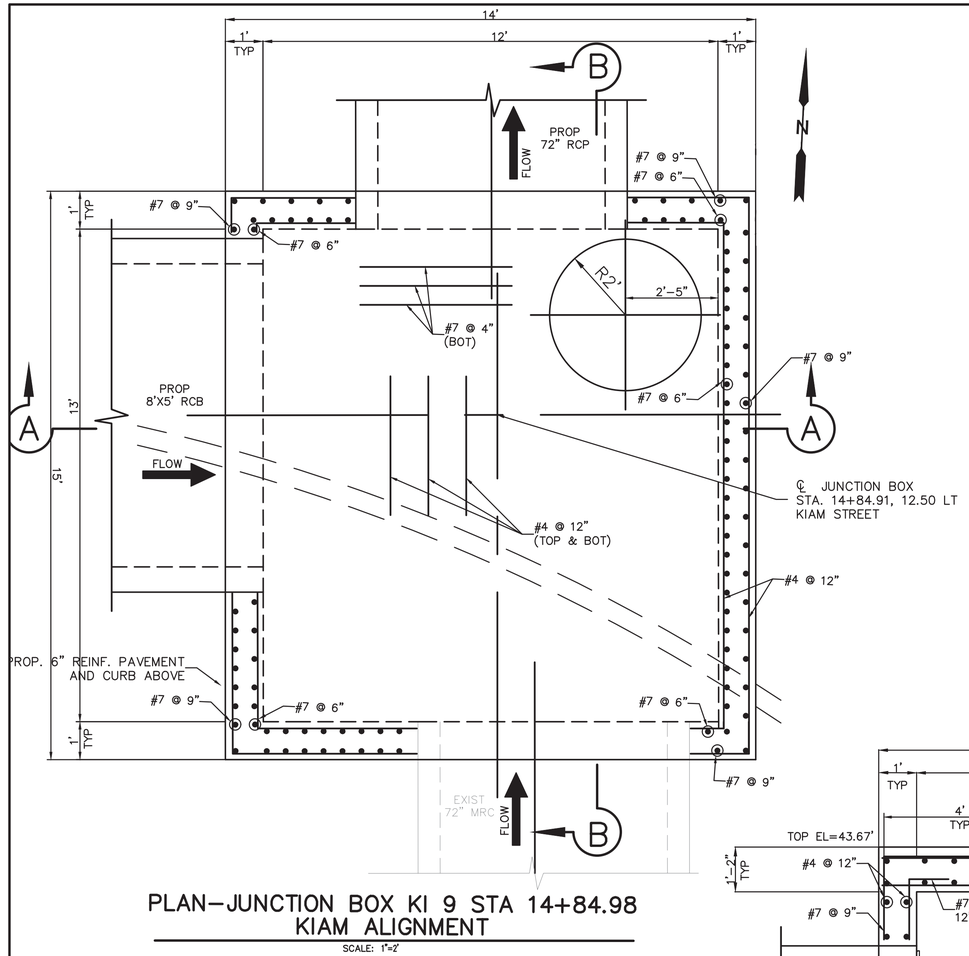
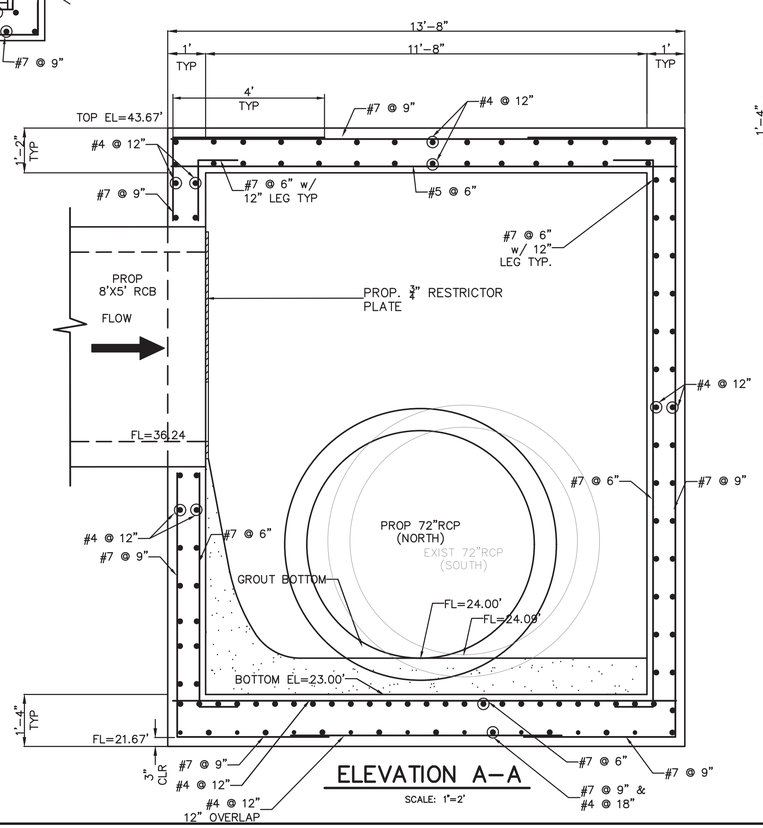
O:\2018\J38013\Drawings\SHEETS\JUNCTION BOX DTL-4.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE



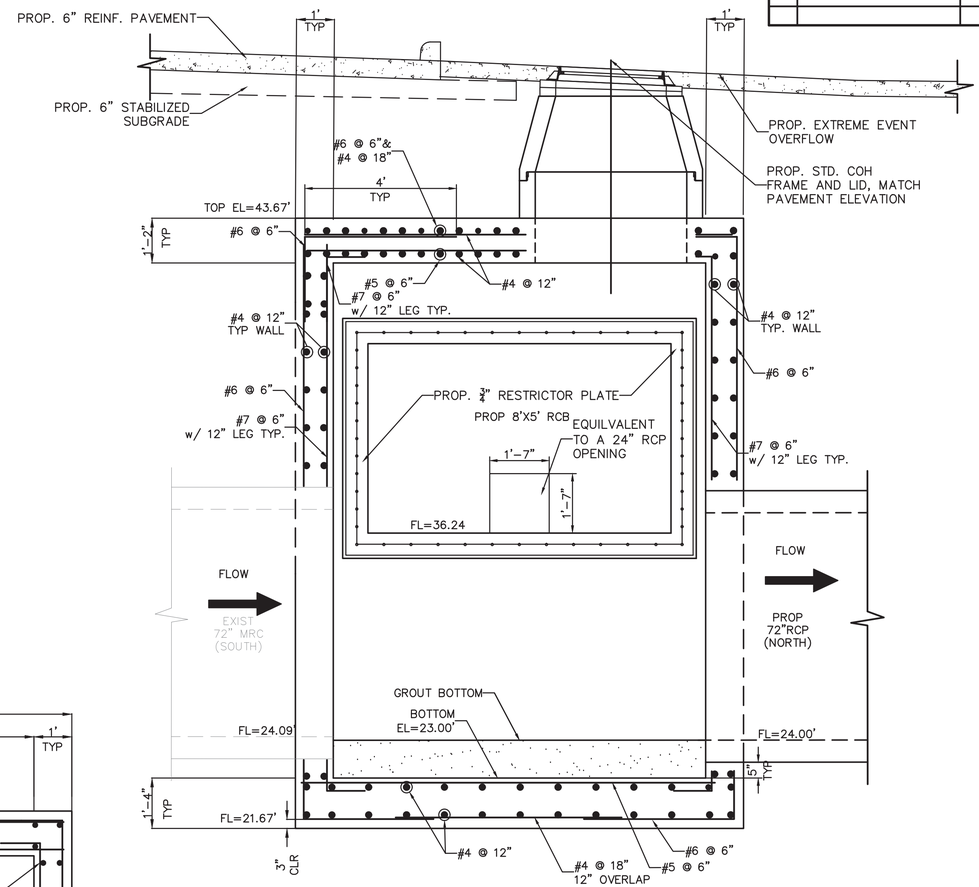
PLAN–JUNCTION BOX KI 9 STA 14+84.98 KIAM ALIGNMENT

SCALE: 1"=2'



ELEVATION A–A

SCALE: 1"=2'



ELEVATION B–B

SCALE: 1"=2'

NOTES:

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2. ALL REINFORCING STEEL SHALL BE 2" CLEAR FROM CONCRETE EDGE UNLESS OTHERWISE NOTED
3. ALL CONCRETE SHALL BE CLASS "A" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN ACCORDANCE WITH ITEM 03315
4. ALL EXPOSED CORNERS SHALL HAVE A ¾" CHAMFER
5. CONTRACTOR TO GROUT BOTTOM OF JUNCTION BOX TO ELIMINATE STANDING WATER
6. PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL, SEE 02137–05 FOR DRY STABLE TRENCH

RESTRICTOR PLATES NOTES:

1. HOLES IN PLATE TO BE $\frac{9}{16}$" DIA. w/ ½" THREADED ANCHOR RODS DRILLED & EMBEDDED 6" INTO RCB (HILTI HY EXPOXY w/ HILTI HIT ANCHOR RODS OR EQUAL, EVENLY SPACED 18" MAX.
2. PLATES TO BE $\frac{7}{8}$" THICK A36 STEEL GALVANIZED.
3. PLATES MAY BE DELIVERED TO SITE IN SMALLER SECTIONS, BUT MUST BE FILED WELDED WITH ¼" BEVEL.

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02/17/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX DETAILS (11 OF 11)

WBS NUMBER
M–410039–0002–4
DRAWING SCALE
(SEE DRAWING)
CITY OF HOUSTON PM
OMAR ABDULKAREEM, P.E.
SHEET NO. 139 OF 345

FOR CITY OF HOUSTON USE ONLY

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O:\2018\3180013\Drawings\SHEETS\JUNCTION BOX DTL–4.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

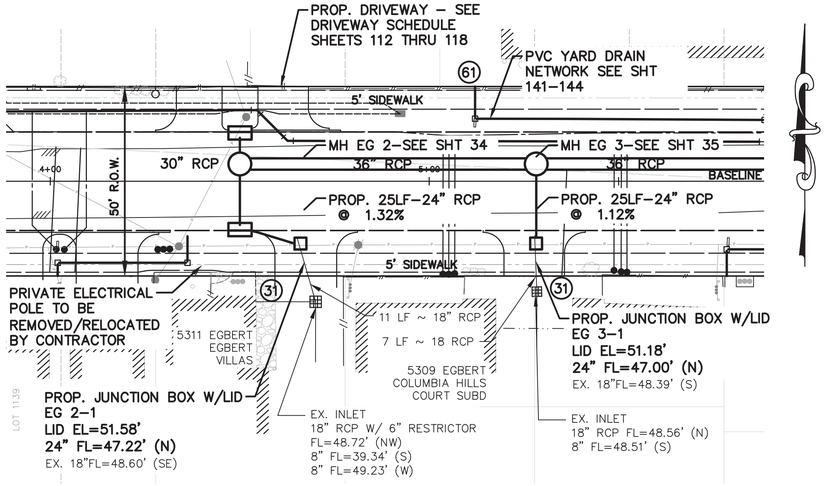
[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

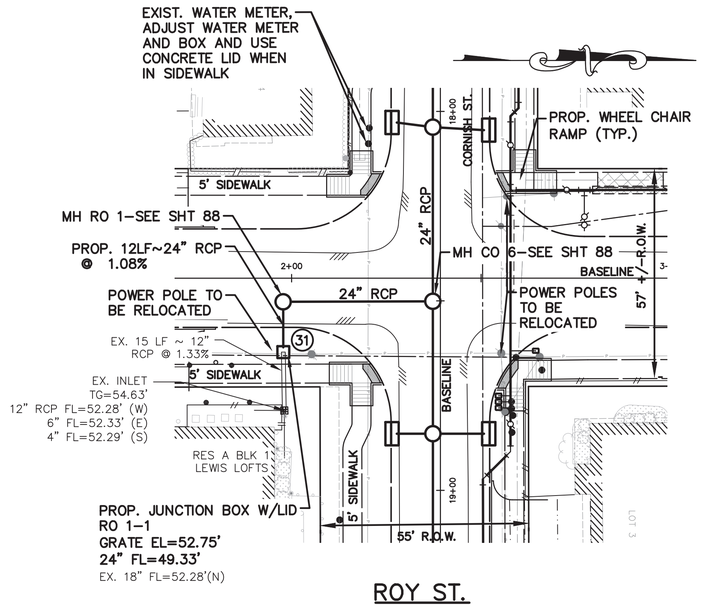
1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

0 10 20 40

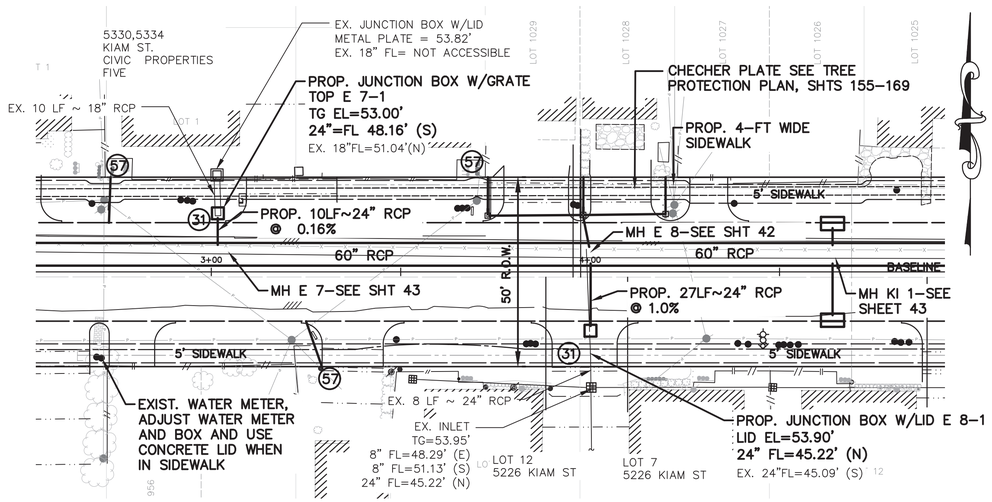
SCALE IN FEET



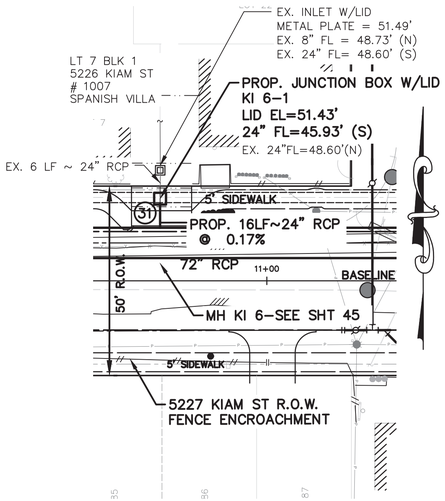
EGBERT ST.
STA 4+69.55 & STA 5+28.27



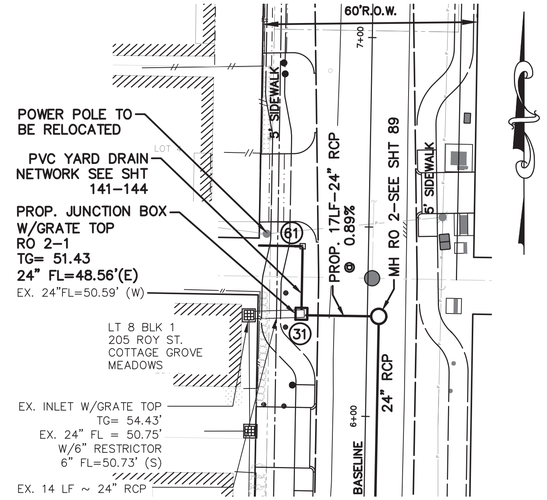
ROY ST.
STA 1+97.77



KIAM ST.
STA 3+01.39 & STA 4+00.13



KIAM ST.
STA 10+71.83



ROY ST.
STA 6+26.37

WOOLPERT
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02/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX LAYOUT
(1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 140 OF 345	

CivilTech Engineering, Inc.
O:\2018\J38013\Drawings\SHEETS\JUNCTION BOX STORM LAYOUT.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

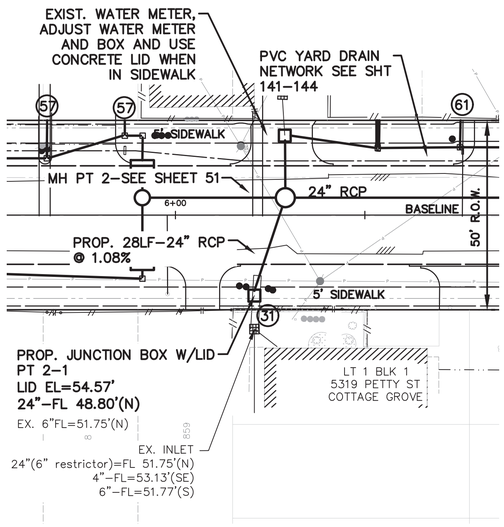
XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

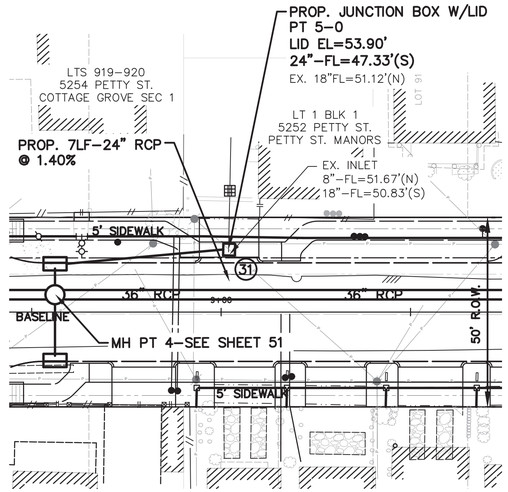
1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

0 10' 20' 40'

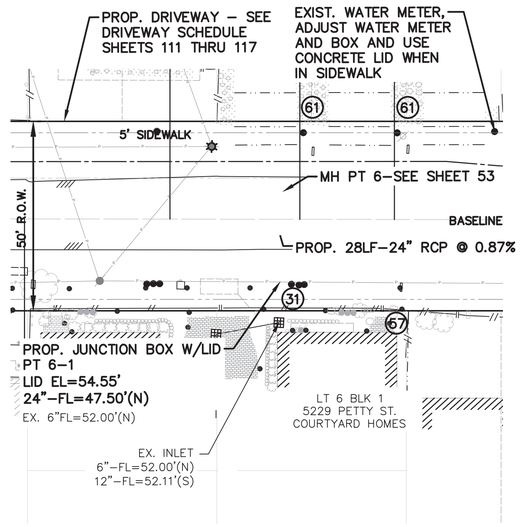
SCALE IN FEET



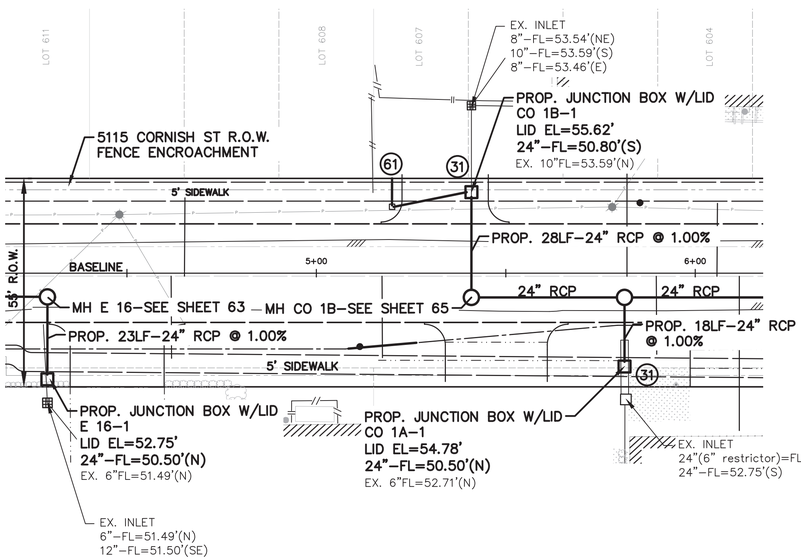
PETTY ST.
STA 6+20.84



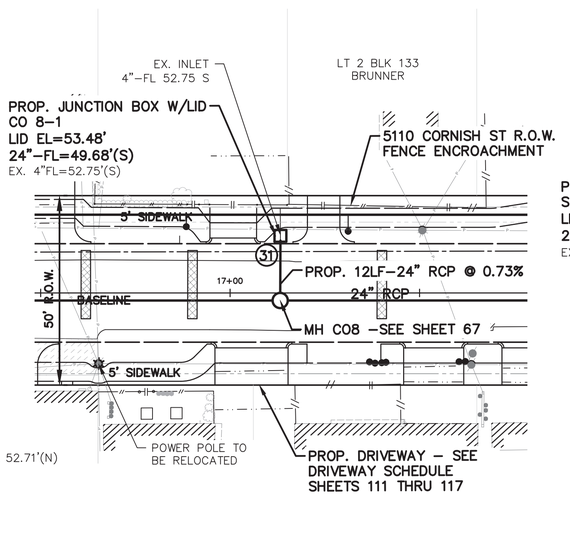
PETTY ST.
STA 9+02.15



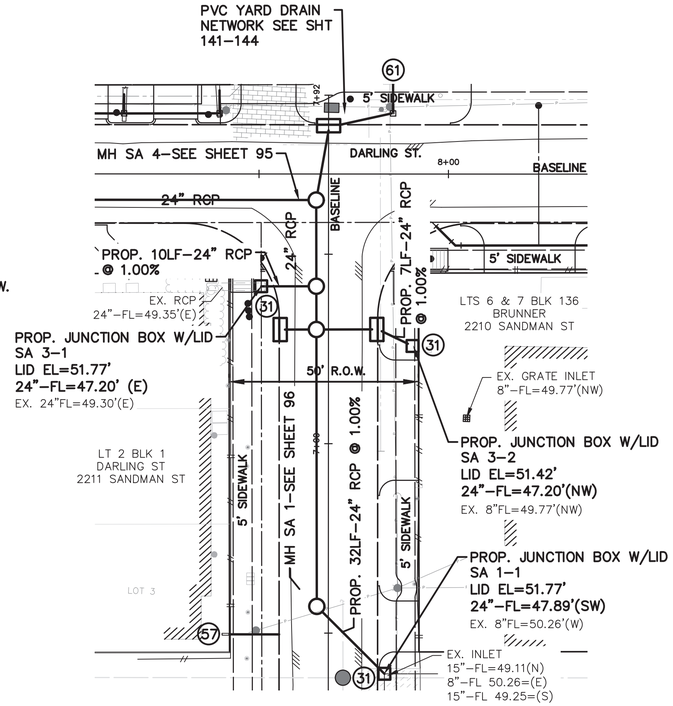
PETTY ST.
STA 11+06.31



CORNISH ST.
STA 4+29.50 & STA 5+40.92 & STA 5+81.34



CORNISH ST.
STA 17+13.28



SANDMAN ST.
STA 6+39.26 & STA 7+41.52

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ROBERT A. HILL
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LICENSED PROFESSIONAL ENGINEER
02/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX LAYOUT
(2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 141 OF 345	

CivilTech Engineering, Inc.
O:\2018\18001\Drawings\SHEETS\JUNCTION BOX, STORM LAYOUT.dwg Feb 17, 2025

REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

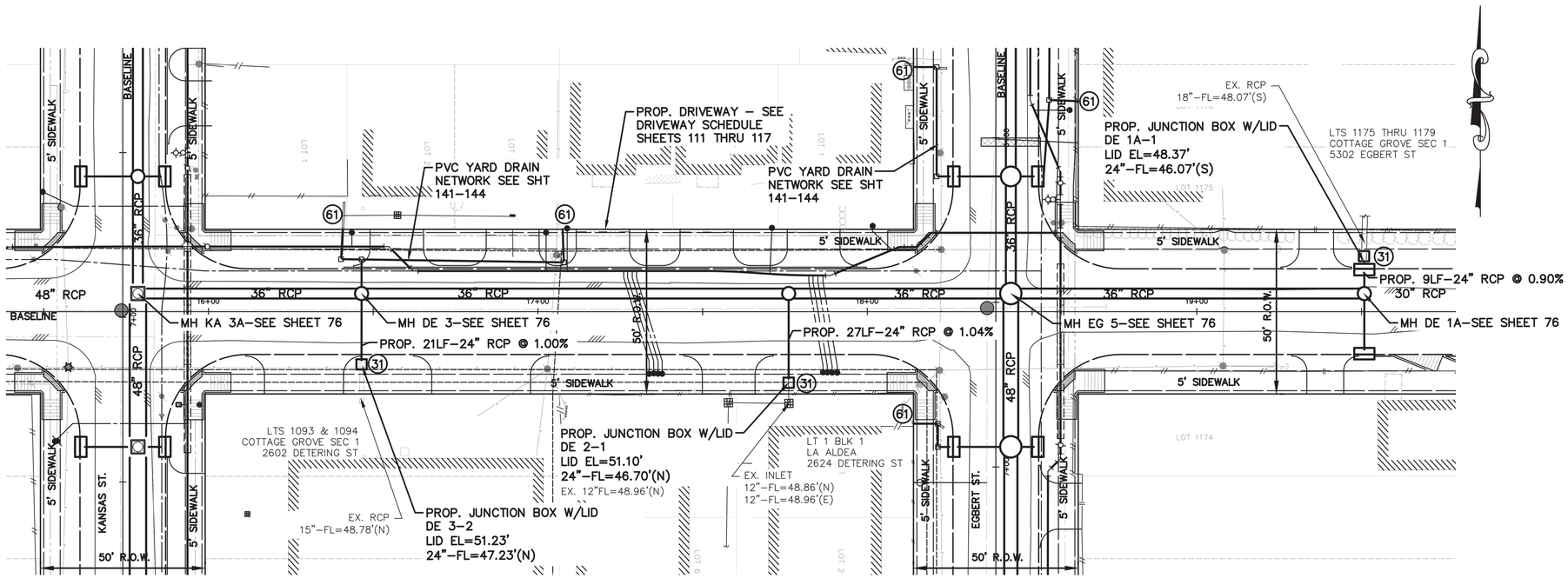
[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

0 10' 20' 40'

SCALE IN FEET



DETERING ST
STA 16+40.40 & STA 16+46.47 & STA 19+50.71

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02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

JUNCTION BOX LAYOUT
(3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 142 OF 345	

CivilTech Engineering, Inc.
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REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
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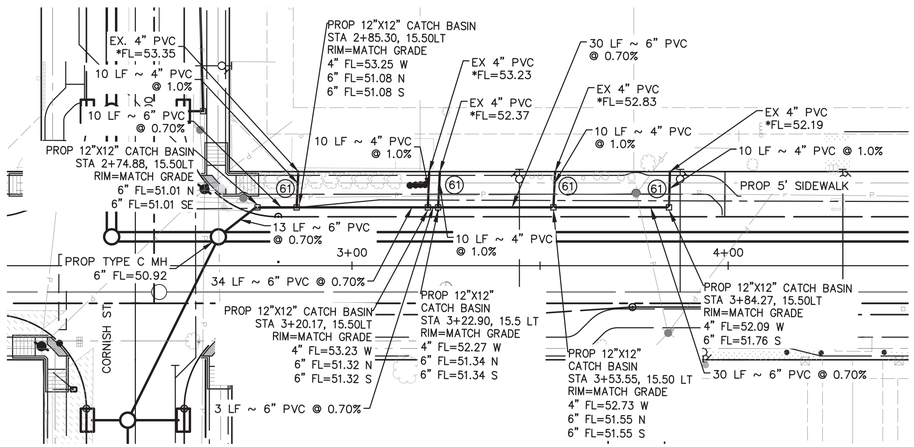
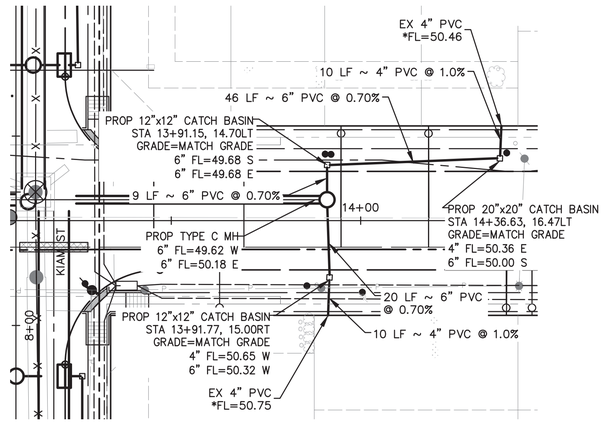
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

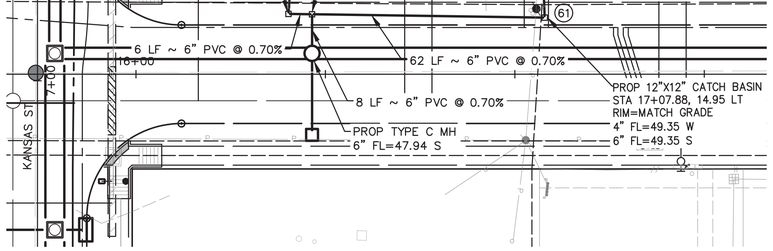
* CONTRACTOR TO VERIFY IF THE EXISTING 4" PVC IS HIGHER THAN THE PROPOSED PVC YARD DRAINAGE SYSTEM. IF NOT NOTIFY PROJECT ENGINEER.



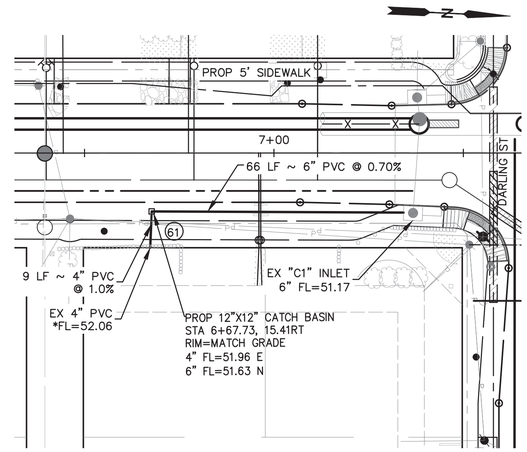
REINERMAN ST.



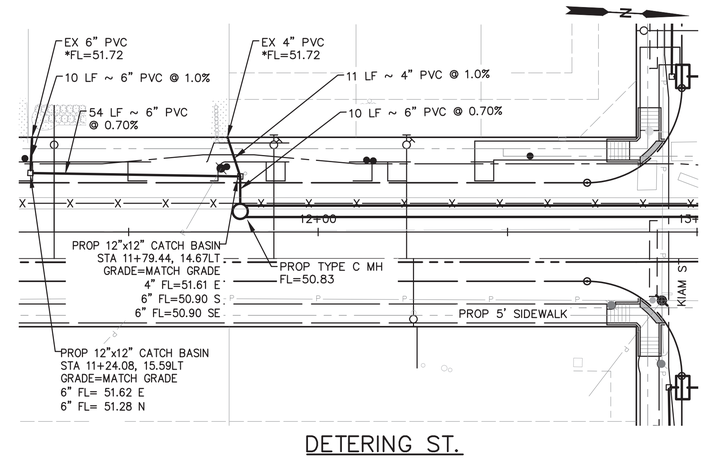
DETERING ST.



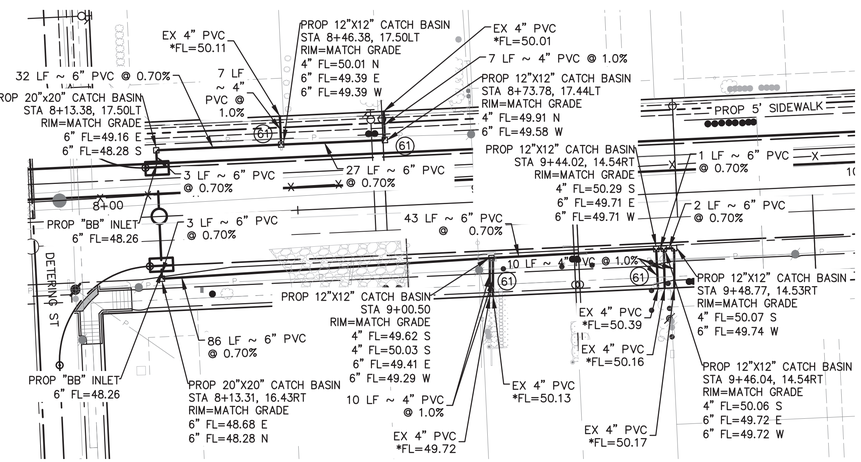
DETERING ST.



REINERMAN ST. STA 6+67.73



DETERING ST.



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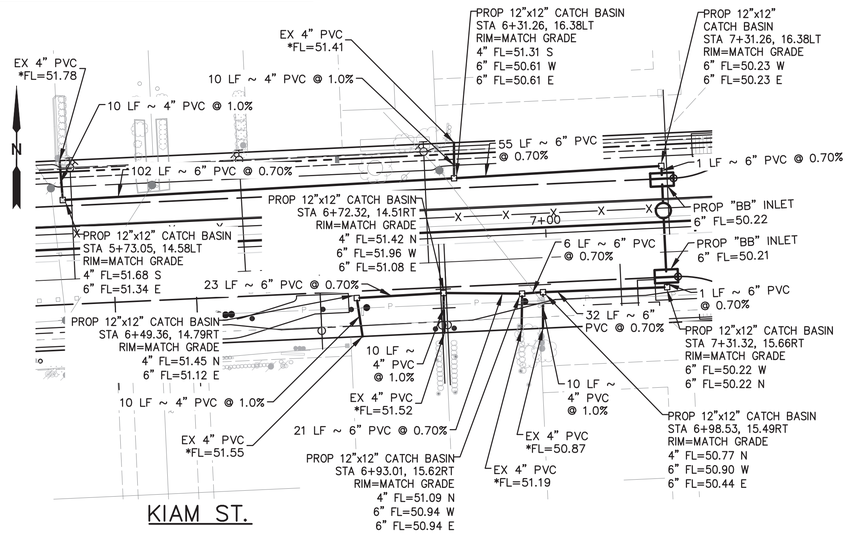


KIAM ST.

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/17/2025

CITY OF HOUSTON

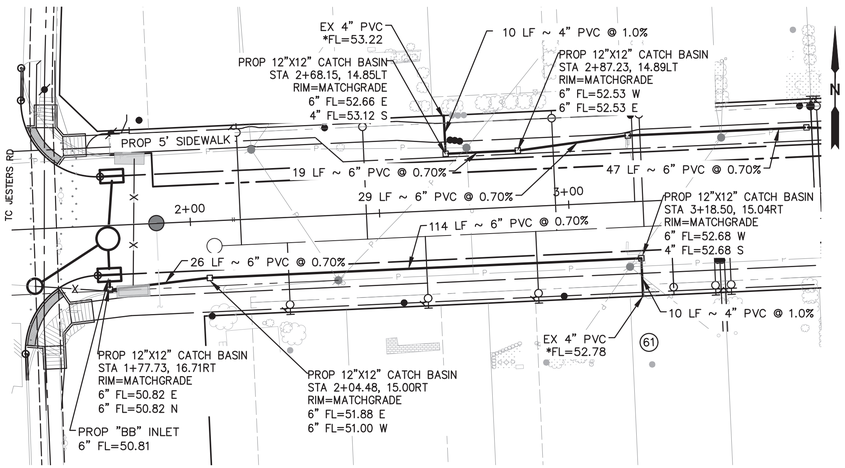
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

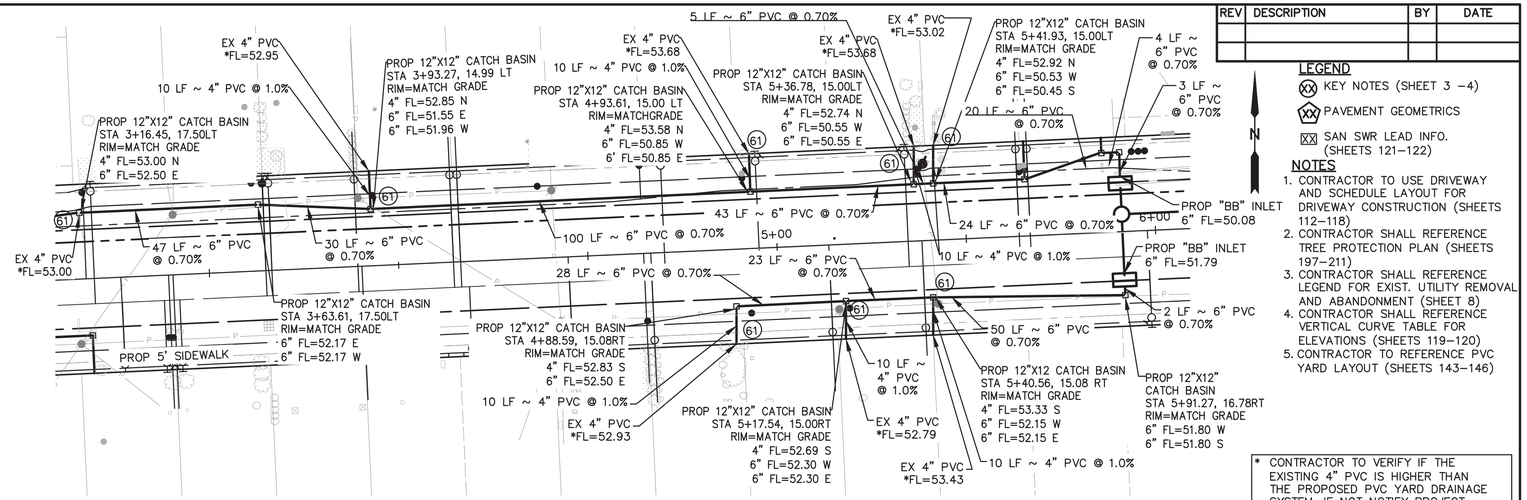
PVC YARD DRAINAGE LAYOUT (1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 143 OF 345	

CivilTech Engineering, Inc.
O:\2018\038013\Drawings\SHEETS\PVC DRAINAGE STORM LAYOUT.dwg Feb 17, 2025



PETTY ST. STA 2+04.44 & STA 3+18.50



REV	DESCRIPTION	BY	DATE

LEGEND

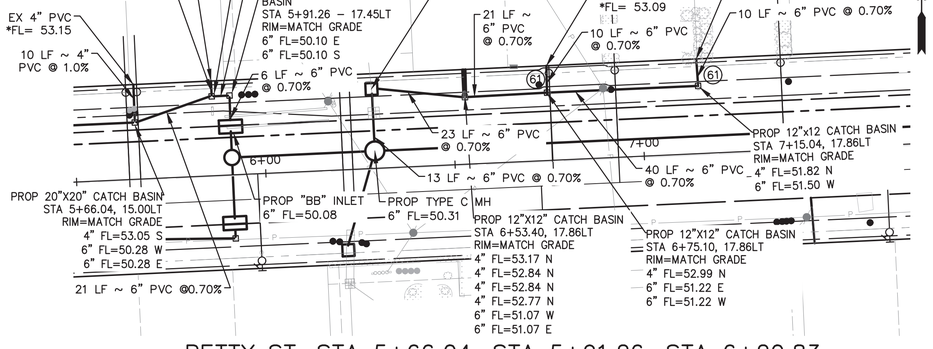
- (XX) KEY NOTES (SHEET 3 –4)
- (XX) PAVEMENT GEOMETRICS
- XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

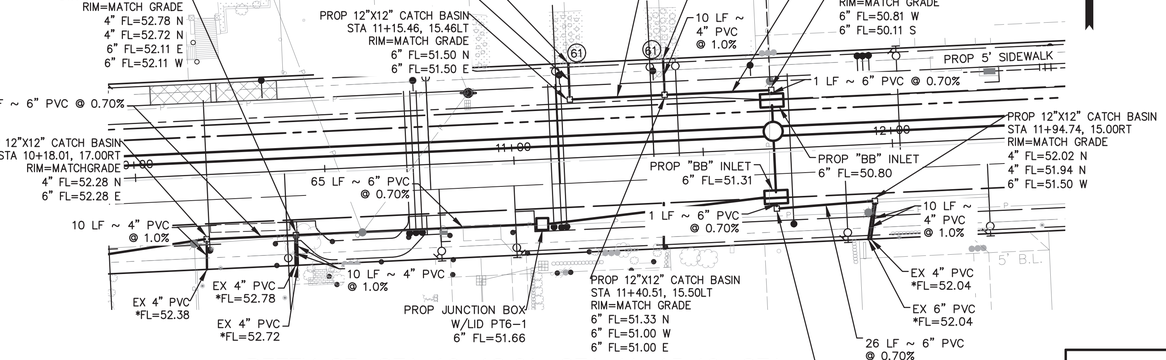
1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
2. CONTRACTOR SHALL REFERENCE TREE PROTECTION PLAN (SHEETS 197–211)
3. CONTRACTOR SHALL REFERENCE LEGEND FOR EXIST. UTILITY REMOVAL AND ABANDONMENT (SHEET 8)
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

* CONTRACTOR TO VERIFY IF THE EXISTING 4" PVC IS HIGHER THAN THE PROPOSED PVC YARD DRAINAGE SYSTEM. IF NOT NOTIFY PROJECT ENGINEER.

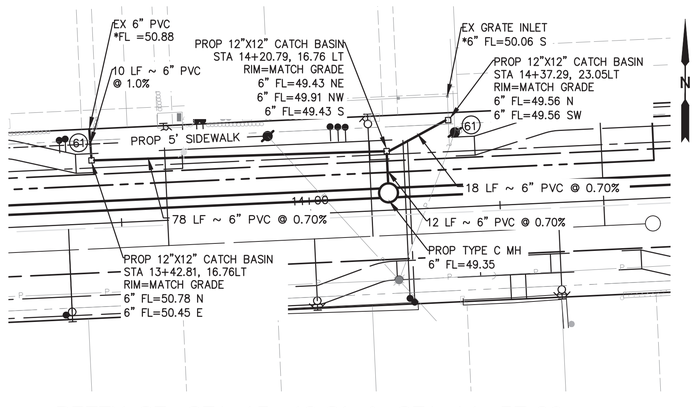
PETTY ST. STA 3+16.45, STA 3+63.65, STA 3+93.27, STA 4+93.65, STA 5+36.78 & STA 5+41.97



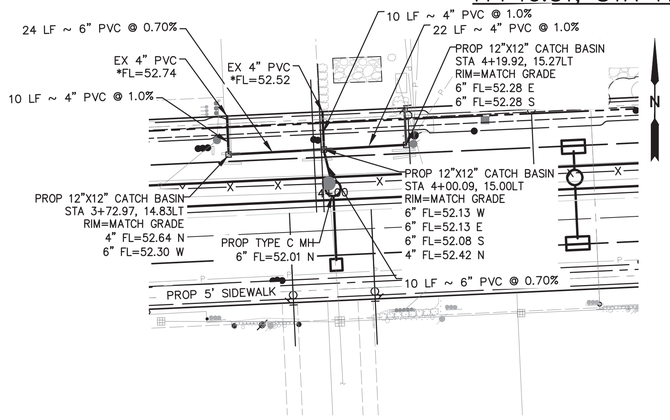
PETTY ST. STA 5+66.04, STA 5+91.26, STA 6+20.83, STA 6+75.06 & STA 7+15.06



PETTY ST. STA 10+18.01, STA 11+15.46, STA 11+40.51, STA 11+68.73 & STA 11+94.74



PETTY ST. STA 13+42.81 & STA 14+37.29



KIAM ST. STA 3+68.85 & STA 4+00.09

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ROBERT A. HILL
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02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PVC YARD DRAINAGE LAYOUT
(2 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 144 OF 345	

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REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

XX SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
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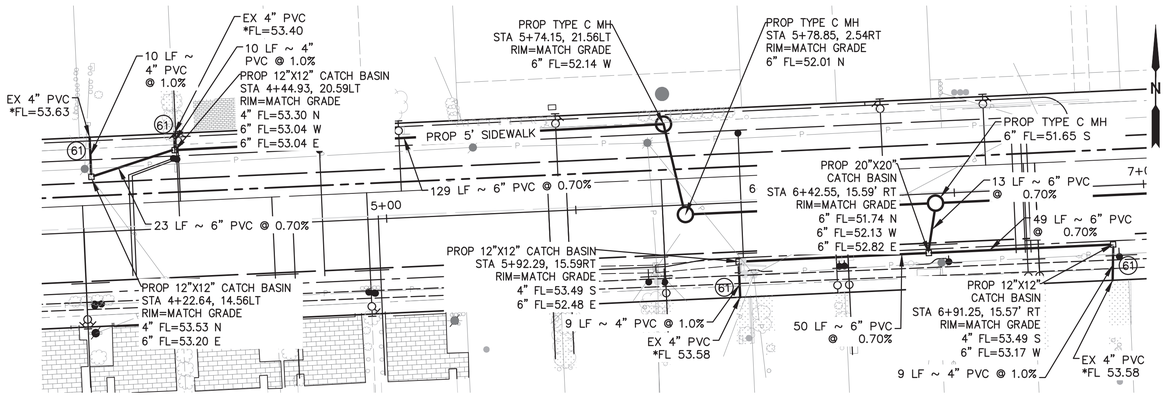
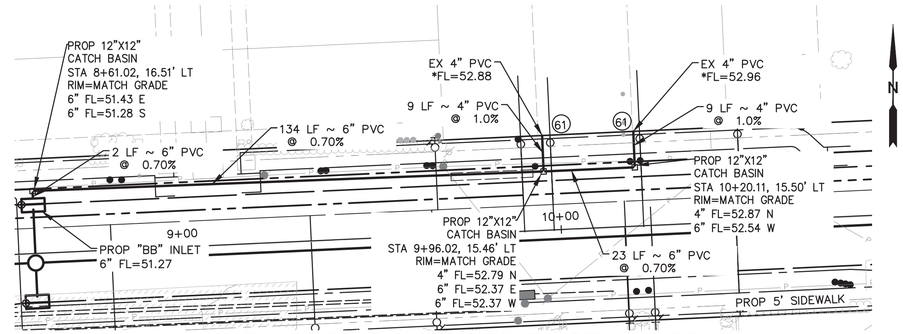
4. CONTRACTOR SHALL REFERENCE VERTICAL CURVE TABLE FOR ELEVATIONS (SHEETS 119–120)
5. CONTRACTOR TO REFERENCE PVC YARD LAYOUT (SHEETS 143–146)

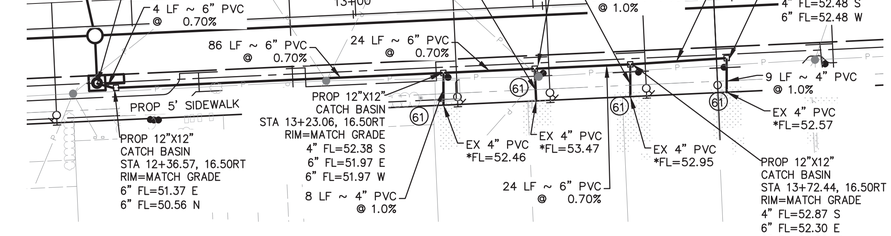
* CONTRACTOR TO VERIFY IF THE EXISTING 12" PVC IS HIGHER THAN THE PROPOSED PVC YARD DRAINAGE SYSTEM. IF NOT NOTIFY PROJECT ENGINEER.



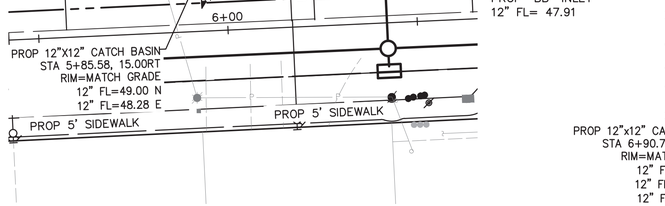
LARKIN ST. STA 4+44.71 TO STA 6+92.25



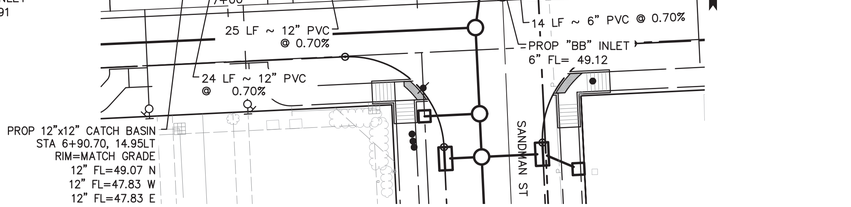
LARKIN ST. STA 8+60.98 TO STA 10+20.15



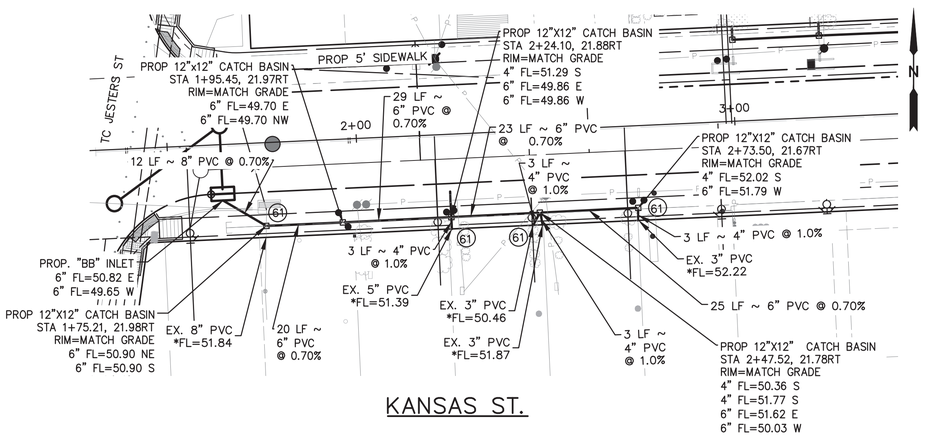
LARKIN ST. STA 12+32.96 TO STA 13+97.90



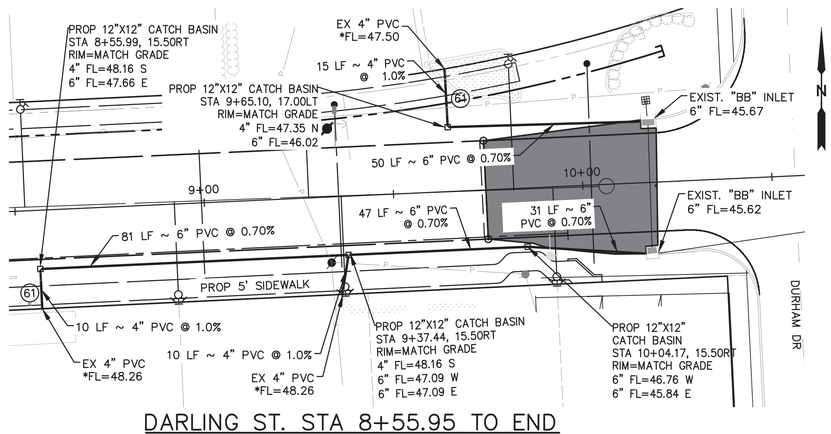
DARLING ST. STA 5+85.58 TO STA 7+85.38



DARLING ST. STA 7+85.38 TO STA 8+55.95 TO END



KANSAS ST.



DARLING ST. STA 8+55.95 TO END

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STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PVC YARD DRAINAGE LAYOUT
(3 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 145 OF 345	

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REV	DESCRIPTION	BY	DATE

LEGEND

(XX) KEY NOTES (SHEET 3 –4)

(XX) PAVEMENT GEOMETRICS

[XX] SAN SWR LEAD INFO. (SHEETS 121–122)

NOTES

1. CONTRACTOR TO USE DRIVEWAY AND SCHEDULE LAYOUT FOR DRIVEWAY CONSTRUCTION (SHEETS 112–118)
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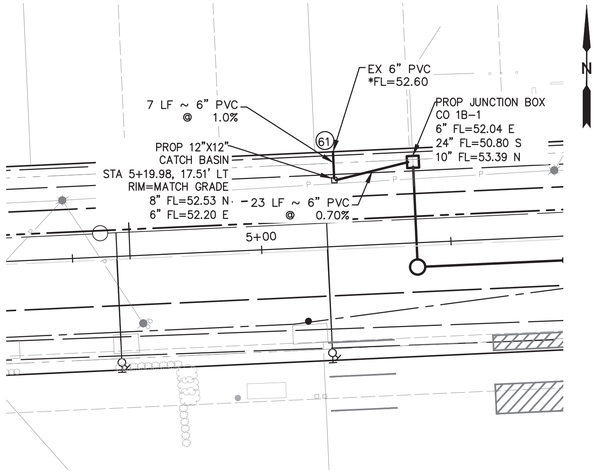
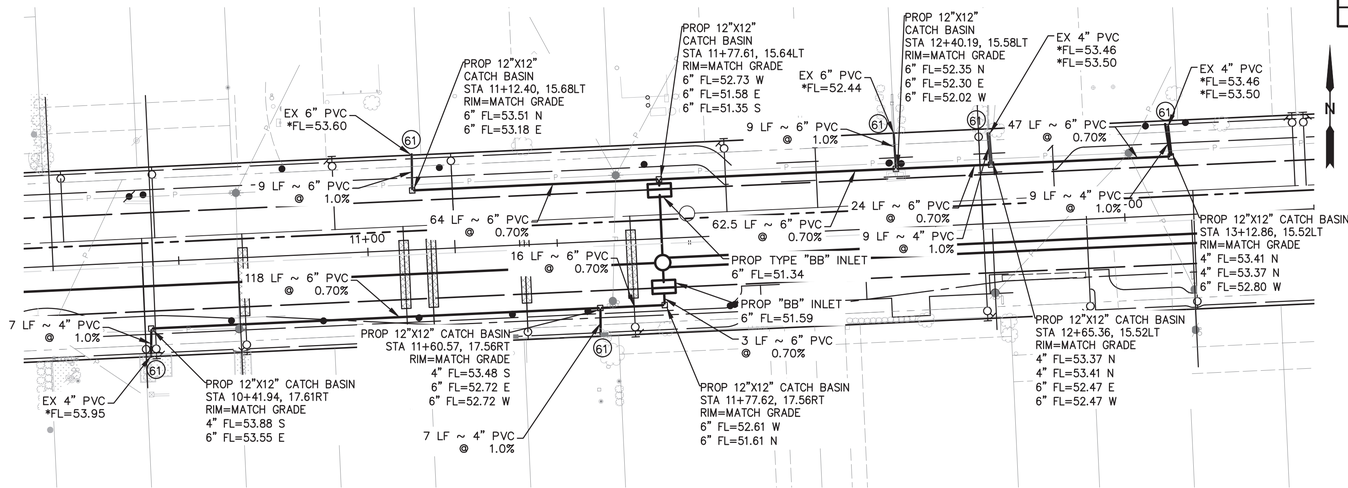
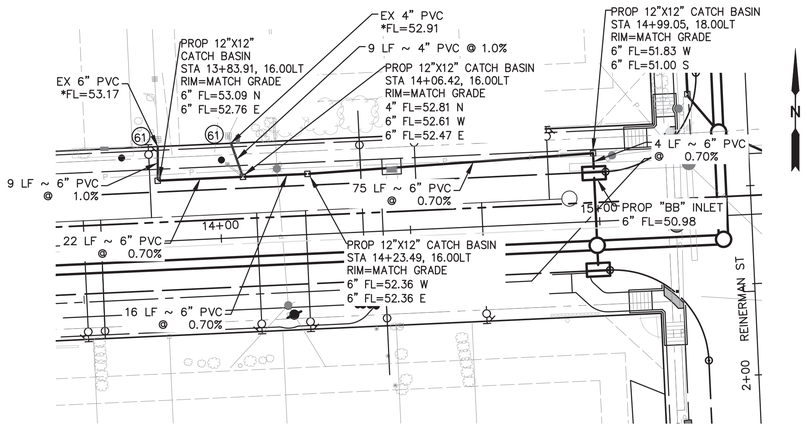


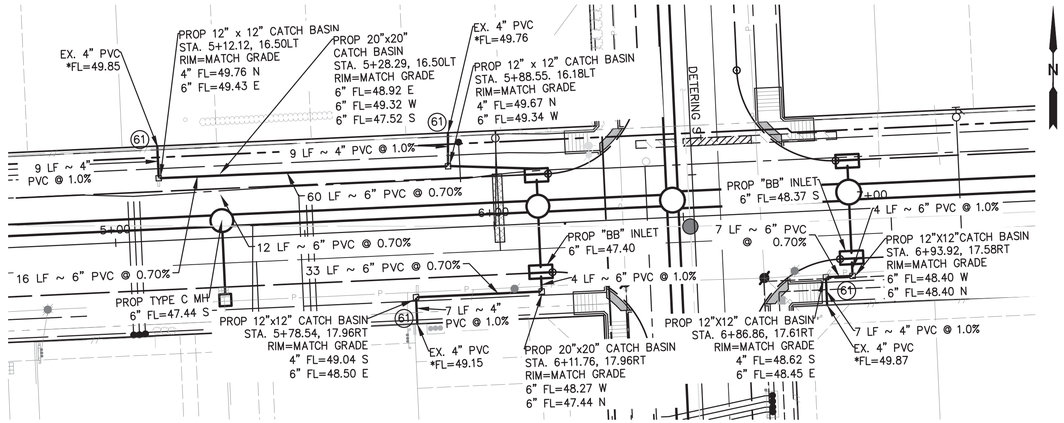


CORNISH ST. STA 5+19.91

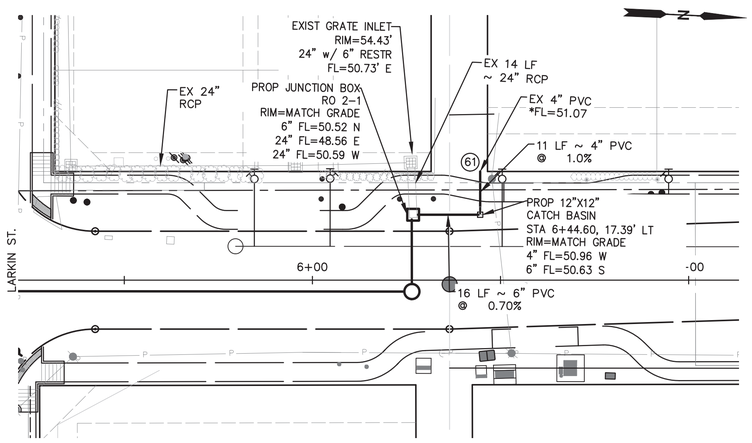
CORNISH ST. STA 10+41.93 TO STA 13+12.86



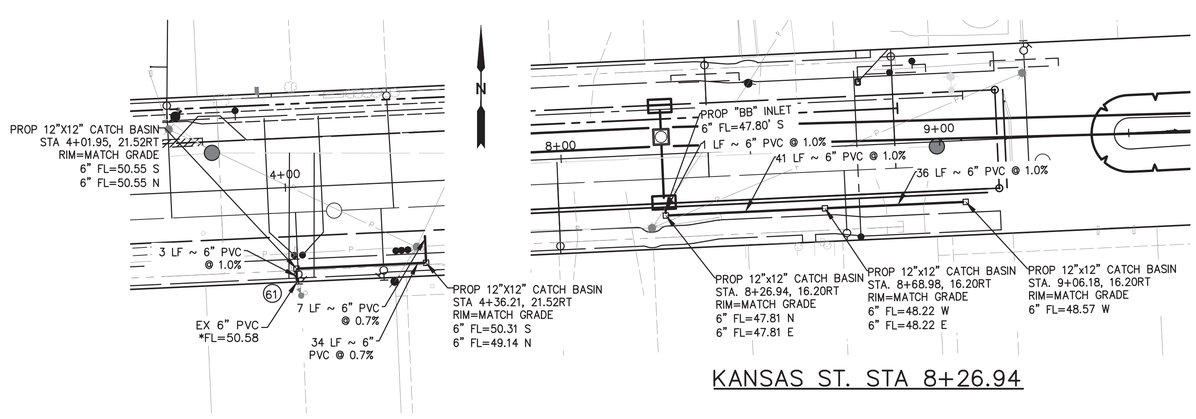
CORNISH ST. STA 13+83.91 TO STA 14+99.05



EGBERT ST. STA 5+12.12 TO STA 6+93.92



ROY ST. STA 6+26.50



EGBERT ST. STA 4+02.45

KANSAS ST. STA 8+26.94

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800.414.1045

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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
02/11/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PVC YARD DRAINAGE LAYOUT
(4 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 146 OF 345	

CivilTech Engineering, Inc.
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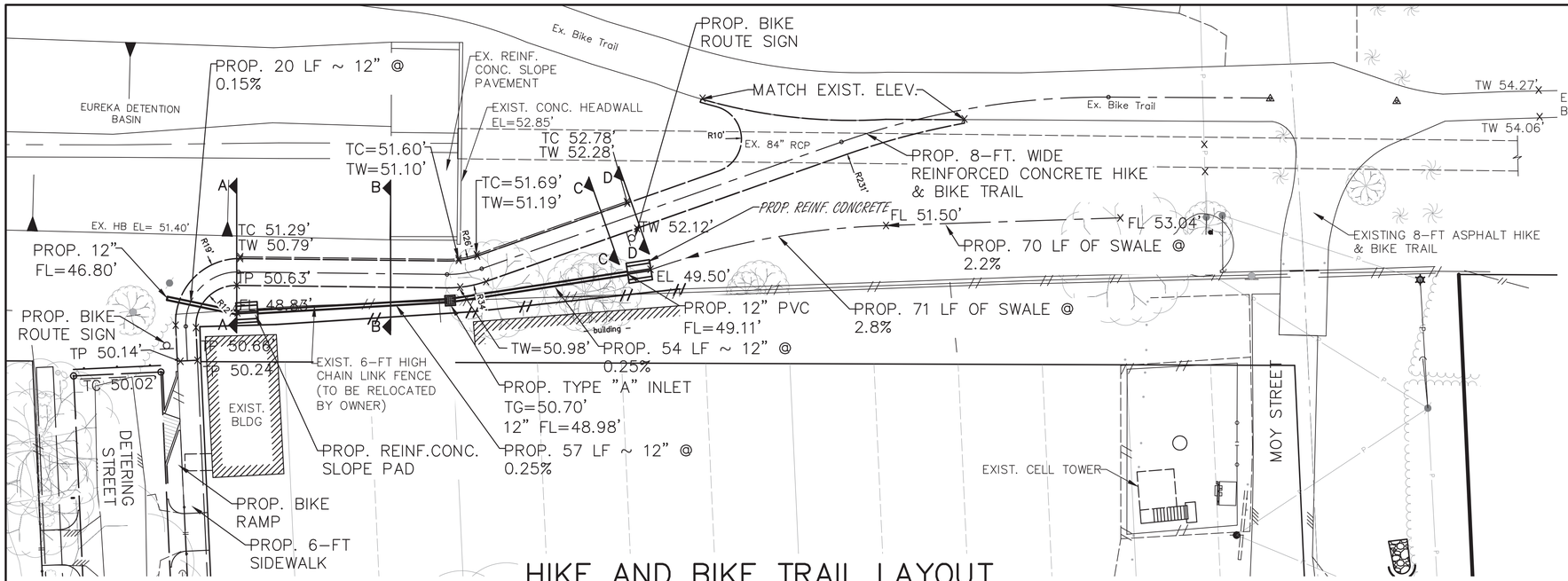
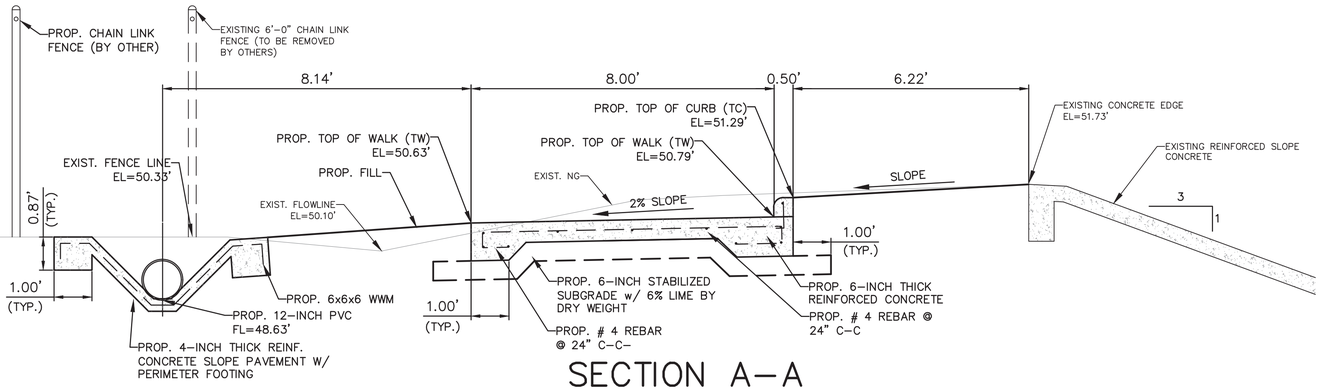


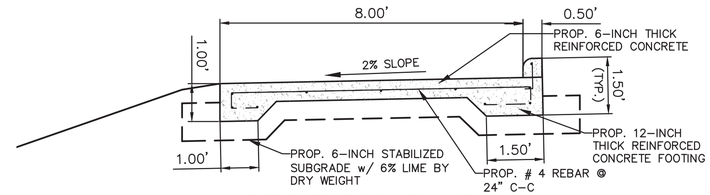
HIKE AND BIKE TRAIL LAYOUT

SCALE: 1"=40'

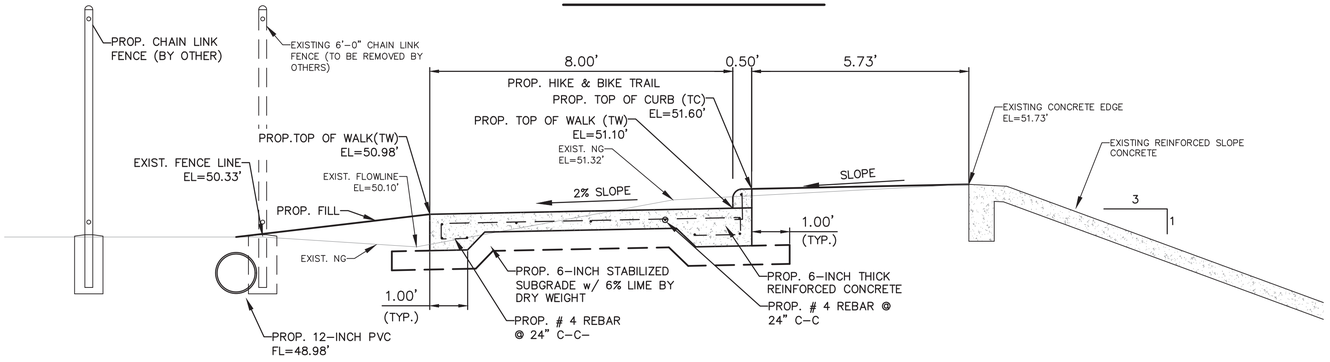
BIKE ROUTE SIGN



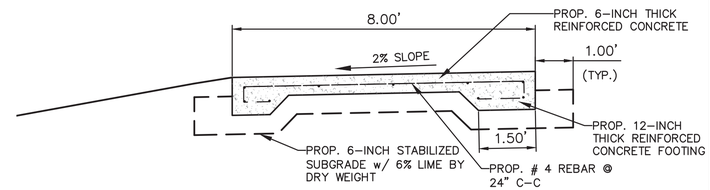
SECTION A-A



SECTION C-C



SECTION B-B



SECTION D-D

REV	DESCRIPTION	BY	DATE

LEGEND

EXIST. ASPHALT TO REMAIN

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06-09-2014.

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

Mike Brower — 03/18/26 (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.

Mike Brower — 03/18/26 (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.

Brian L Hill — 03/24/26 (Date)

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 02/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

HIKE AND BIKE TRAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 147 OF 345	

CivilTech Engineering, Inc.
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REV	DESCRIPTION	BY	DATE

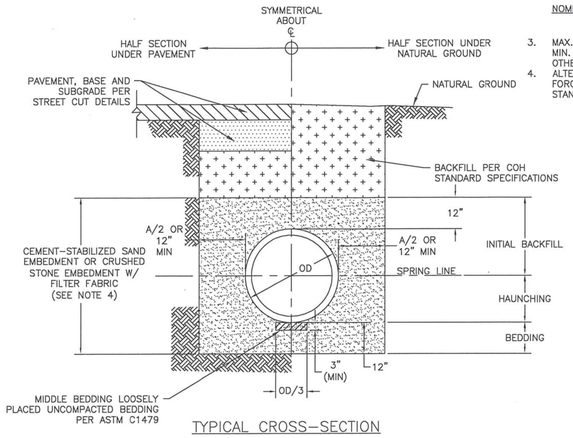
02317–03

NOTES:

1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARD. SEE COH STANDARD SPECIFICATION FOR REQUIREMENTS IN OTHER CONDITIONS.
2. MIN. TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

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

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



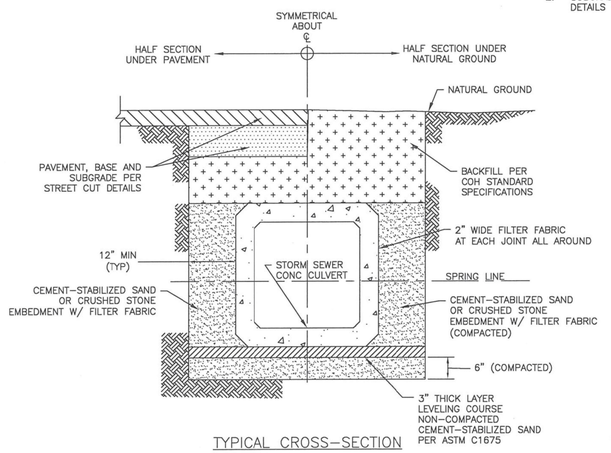
TYPICAL CROSS–SECTION

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

02317–05

NOTES:

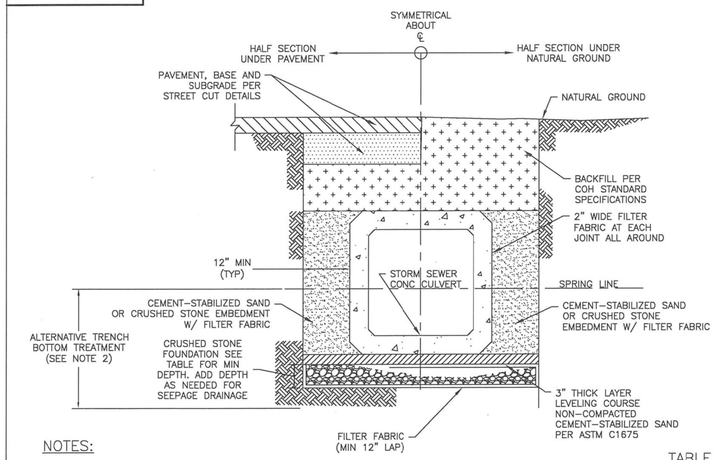
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. SUBGRADE AND PAVEMENT FOR STREET CUT DETAILS – 02951.



TYPICAL CROSS–SECTION

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

02317–06



NOTES:

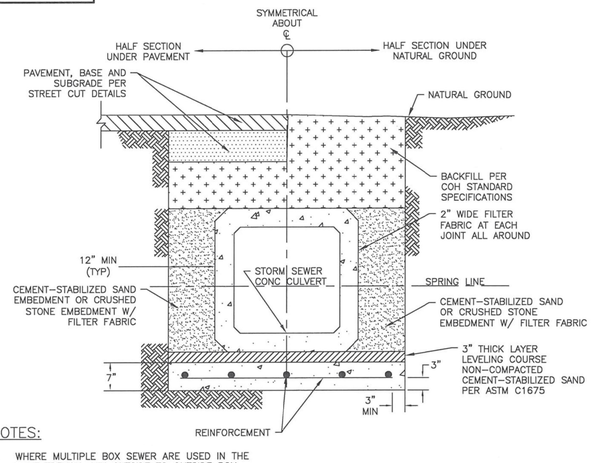
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. ALTERNATIVE TRENCH BOTTOM TREATMENT MAY BE USED AS APPROVED BY THE CITY OF ENGINEERS AND AS PAID FOR IN THE PROPOSAL.

TABLE

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

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

02317–07



NOTES:

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

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

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02317–03 THROUGH 07

APPROVED BY: _____ CITY ENGINEER | APPROVED BY: _____ DEPUTY DIRECTOR

APPROVED BY: _____ DIRECTOR

EFFECTIVE DATE: JUL–01–2019

FOR CITY OF HOUSTON USE ONLY

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WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM SEWER DETAILS
(1 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 148 OF 345	

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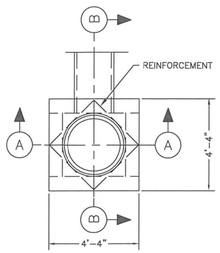
REV	DESCRIPTION	BY	DATE

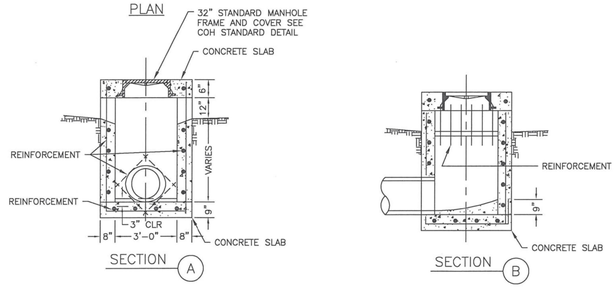
02632–09



PLAN

NOTE:

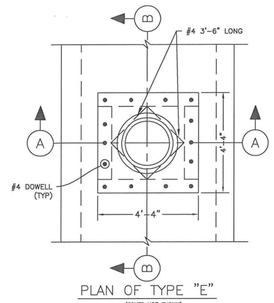
1. TYPE "E" INLET TOP CAN BE CONSTRUCTED ON A STANDARD "C" MANHOLE.



STORM SEWER TYPE "E" INLET
NTS

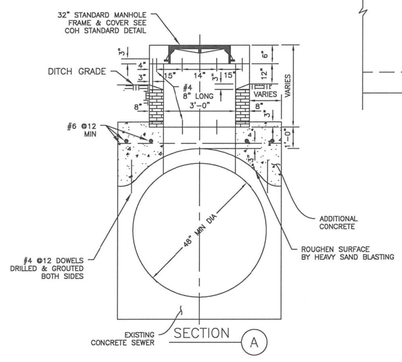
02632–10

COH IS PHASING OUT BRICK. NEW DETAILS TO BE POSTED END OF 2019

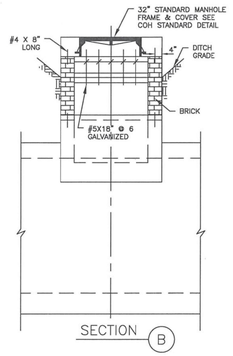


PLAN OF TYPE "E"
(COVER NOT SHOWN)

NOTE:
1. 8" CONCRETE WALLS MAY BE CONSTRUCTED IN LEU OF 8" BRICK WALLS.



STORM SEWER TYPE "E" INLET ON EXIST MONOLITHIC CONC SEWERS OF 48" DIA & GREATER
NTS



FIRM INFORMATION	ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02632–09
AND 02632–10

APPROVED BY: CITY ENGINEER	APPROVED BY: DEPUTY DIRECTOR
APPROVED BY: DIRECTOR	
EFFECTIVE DATE: JUL–01–2019	
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM SEWER DETAILS
(2 OF 9)

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M–410039–0002–4	
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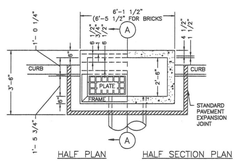
REV	DESCRIPTION	BY	DATE

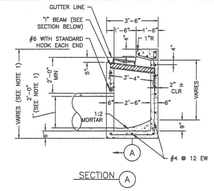
02632-04



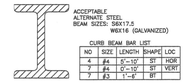
HALF PLAN HALF SECTION PLAN

GENERAL NOTES:

USE STANDARD CAST IRON FRAME & PLATES. LEAD SHALL LEAVE INLET AT LOCATION AND GRADE REQUIRED.



SECTION A



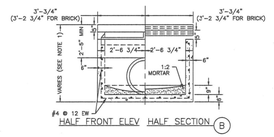
CURB BEAM BAR LIST

NO	SIZE	LENGTH	SHAPE	LOC
4	#4	5'-10"	ST	HOR
7	#4	0'-10"	ST	VERT
7	#3	1'-6"	BT	

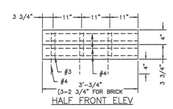
SECTION THRU BEAM

NOTES:

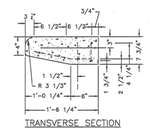
1. DIMENSION VARIES BASED ON PIPE DIAMETER AND WALL THICKNESS.
2. CENTER REINFORCING IN SLAB AND WALLS.
3. CENTER STEEL BEAM ON INLET AND CAST INTO WALLS AS SHOWN.
4. WHEN TOP OF CURB TO FLOWLINE IS GREATER THAN 8 FEET USE TYPE "C" INLET.



HALF FRONT ELEV HALF SECTION



HALF FRONT ELEV



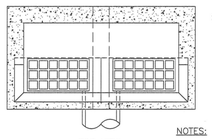
TRANSVERSE SECTION

PRECAST CURB BEAM

STORM SEWER TYPE "B-B" INLET
NTS

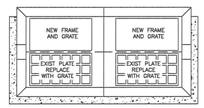
02632-05

STEP 1: EXIST TYPE "B" INLET



TOP VIEW

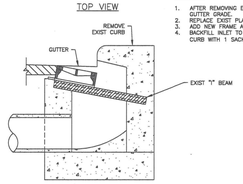
STEP 2:



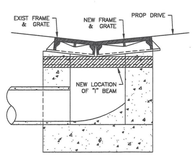
TOP VIEW

NOTES:

1. AFTER REMOVING EXIST CURB, RAISE EXIST FRAME TO GUTTER GRADE.
2. REPLACE EXIST PLATE WITH A GRATE.
3. ADD NEW FRAME AND GRATE NEXT TO EXIST FRAME.
4. BACKFILL INLET TO A POINT ONE FOOT BEHIND THE CURB WITH 1 SACK/TON CEMENT STABILIZED SAND.

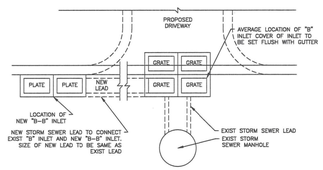


SIDE VIEW



SIDE VIEW

STEP 3: CONSTRUCT NEW TYPE "B-B" INLET ON CURB RETURN OF PROPOSED DRIVEWAY



STORM SEWER TYPE "B" INLET RELOCATION
NTS

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02632-04 THROUGH 05

APPROVED BY: CITY ENGINEER
APPROVED BY: DEPUTY DIRECTOR
APPROVED BY: DIRECTOR

EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY

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STATE OF TEXAS
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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM SEWER DETAILS
(3 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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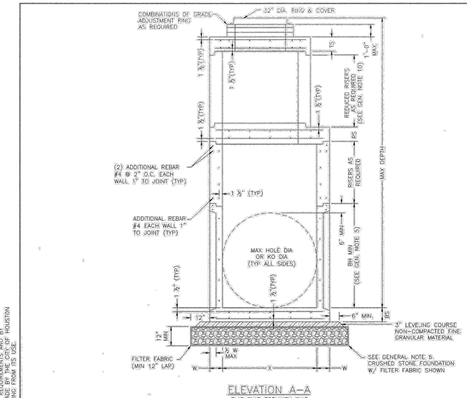
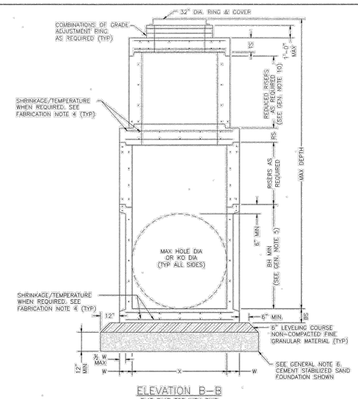
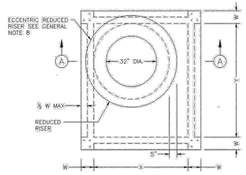
REV	DESCRIPTION	BY	DATE



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

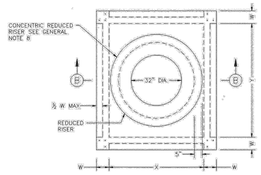


ELEVATION B–B
FLAT SLAB TOP WITH SHIP LOOSE RING & COVER OPTION



PLAN VIEW A
COVER: NOT SHOWN

ECCENTRIC MANHOLE
(PREFERRED CONFIGURATION)



PLAN VIEW B
COVER: NOT SHOWN

CONCENTRIC MANHOLE
(ALTERNATE CONFIGURATION)

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)
	X & Y	BS	W	ID	RS	TS	MAX DEPTH	8H MIN	MAX. HOLE DIA	KO DIA
	FT.	IN.	IN.	FT.	IN.	IN.	FT.	FT.	IN.	IN.
PBM	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	9	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. (T) ROUND MANHOLES ARE PREFERRED FOR THESE SIZES.
2. (*) UNLESS OTHERWISE INDICATED.
3. TABLE IS VALID FOR UP TO 25 FT OF INSTALLATION DEPTH.

ANGLE OF ENTRY IS LESS THAN OR EQUAL TO 7°
ANGLE OF ENTRY IS GREATER THAN 7°

PIPE CONNECTION DETAIL
CONNECT PIPES WITHIN 7° OF NORMAL TO PRECAST BASE WALL. IF NECESSARY, USE PIPE ELBOW OR CURVED APPROACH ALIGNMENT TO STAY WITHIN THIS LIMIT.

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 WWF. PROVIDE CIRCUMFERENTIAL REINFORCING STEEL IN VERTICAL WALLS OF RISER AND CONE IN ACCORDANCE WITH ACI-318.
3. PROVIDE TYPICAL MINIMUM CONCRETE CLEAR COVER OF 1 ½" 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 1½".
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 9".
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. KO'S 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 8" 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 ½" BETWEEN EACH SECTION, OR ⅜ 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 O.D.
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. DESIGNED 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. WHERE SIZE SMALL, CONSIDER ENGINEERING ECONOMY. THIS DETAIL IS NOT APPLICABLE TO BOX MANHOLES LARGER THAN B=FOOT BY B=FOOT.
10. REFER TO STORM SEWER TYPE 'C' PRECAST ROUND MANHOLE DETAIL (02082-12) FOR REDUCED RISER DESIGN REQUIREMENTS.

CITY OF HOUSTON	
HOUSTON PUBLIC WORKS	
STORM SEWER PRECAST BOX MANHOLE	
(NOT TO SCALE)	
APPROVED BY: Subhash Kanwar, CITY ENGINEER	APPROVED BY: Carol Haddock, DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 02082-13

DISCLAIMER: THE STANDARDS IT CONTAINED IN THIS BOOK ENGINEERING PRACTICES ARE THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY ISSUING THESE PLANS FOR CONSTRUCTION ASSUMES ALL RESPONSIBILITY FOR THE DESIGN AND DETAILS SHOWN HEREIN. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 06/02/2025

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HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
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(4 OF 9)

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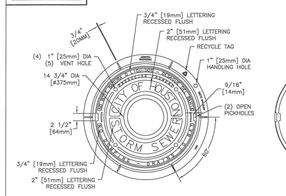
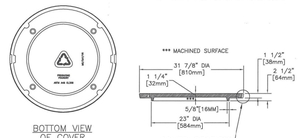
REV	DESCRIPTION	BY	DATE

02084-02

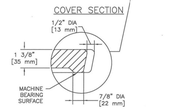




FRAME SECTION

BOTTOM VIEW OF COVER

COVER SECTION



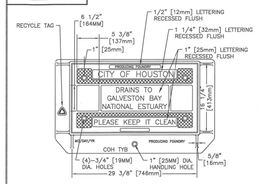
OPEN PICKHOLE DETAIL

NOTES:

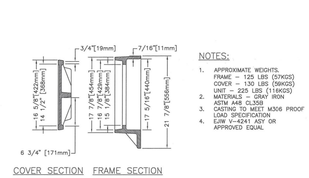
1. APPROXIMATE WEIGHTS.
   FRAME - 170 LBS (77KGS)
   COVER - 270 LBS (123KGS)
   UNIT - 440 LBS (200KGS)
2. MATERIALS - GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M305 PROOF LOAD SPECIFICATION
4. EJIW V-1420 ASY OR APPROVED EQUAL

STORM SEWER MANHOLE FRAME AND COVER
NTS

02084-03



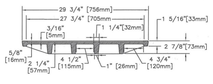
COVER SECTION



FRAME SECTION

NOTES:

1. APPROXIMATE WEIGHTS.
   FRAME - 125 LBS (57KGS)
   COVER - 130 LBS (59KGS)
   UNIT - 225 LBS (114KGS)
2. MATERIALS - GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4. EJIW V-4241 ASY OR APPROVED EQUAL



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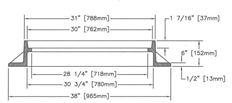
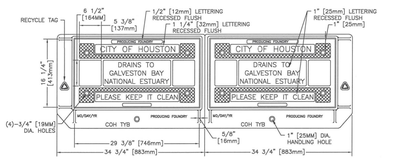
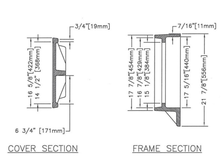


FRAME SECTION

STORM SEWER TYPE "B" INLET ASSEMBLY
NTS

02084-04

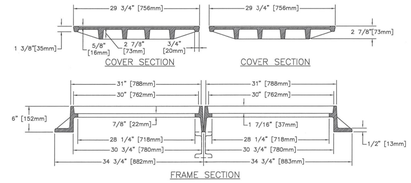




COVER SECTION FRAME SECTION

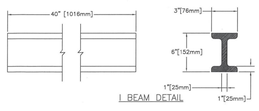
NOTES:

1. APPROXIMATE WEIGHTS.
   FRAME - 125 LBS (57KGS)
   COVER - 120 LBS (55KGS)
   I BEAM - 107 LBS (49KGS)
   UNIT - 597 LBS (271KGS)
2. MATERIALS - GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4. EJIW V-4243 ASY OR APPROVED EQUAL



COVER SECTION COVER SECTION

FRAME SECTION



I BEAM DETAIL

STORM SEWER TYPE "BB" INLET DOUBLE ASSEMBLY
NTS

FIRM INFORMATION	ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02084-02 THROUGH 04

APPROVED BY: CITY ENGINEER	APPROVED BY: DEPUTY DIRECTOR
APPROVED BY: DIRECTOR	

EFFECTIVE DATE: JUL-01-2019

FOR CITY OF HOUSTON USE ONLY

SHEET NO.

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM SEWER DETAILS
(5 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 152 OF 345	

CivilTech Engineering, Inc.
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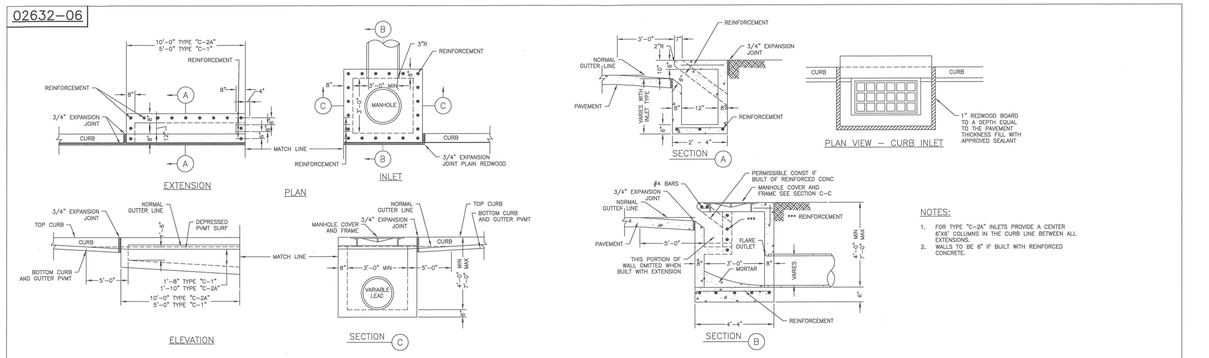
REV	DESCRIPTION	BY	DATE

02632-06

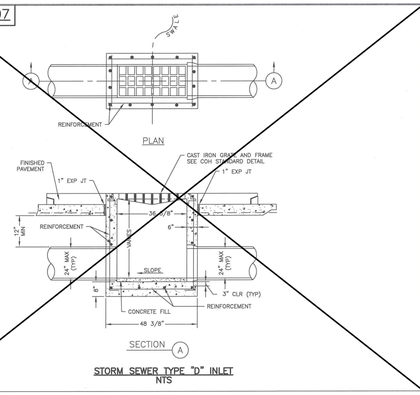


NOTES:

1. FOR TYPE "C-2A" INLETS PROVIDE A CENTER 6"X6" COLUMNS IN THE CURB LINE BETWEEN ALL EXTENSIONS.
2. WALLS TO BE 6" IF BUILT WITH REINFORCED CONCRETE.

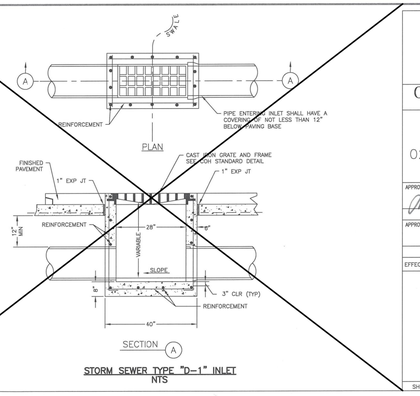
STORM SEWER TYPE "C-1", "C-2" AND "C-2A" INLET
NTS

02632-07



STORM SEWER TYPE "D" INLET
NTS

02632-08



STORM SEWER TYPE "D-1" INLET
NTS

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02632-06 THROUGH 08

APPROVED BY: CITY ENGINEER
APPROVED BY: DEPUTY DIRECTOR
APPROVED BY: DIRECTOR

EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY

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ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM SEWER DETAILS
(6 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 153 OF 345	

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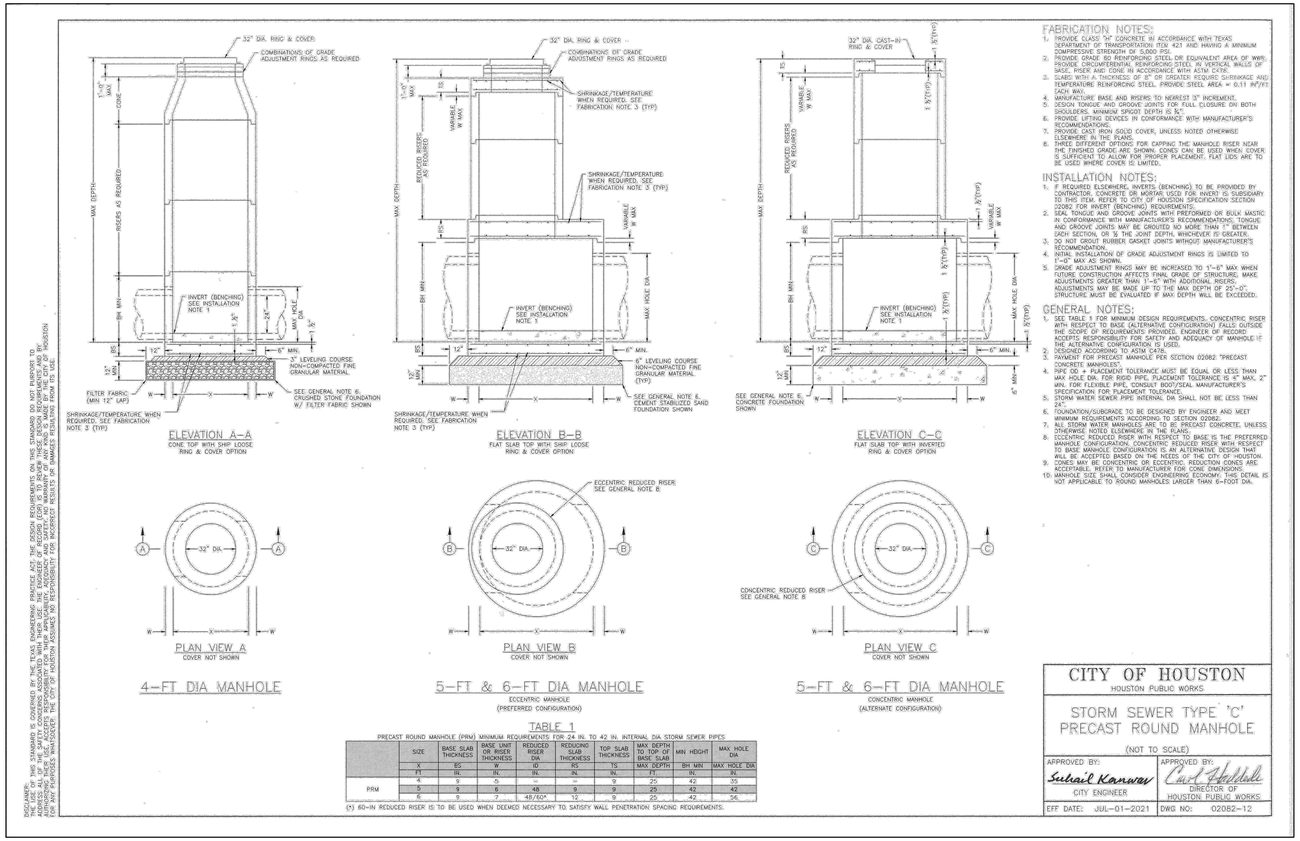
REV	DESCRIPTION	BY	DATE



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 WWF; PROVIDE CIRCUMFERENTIAL REINFORCING STEEL IN VERTICAL WALLS OF BASE, RISER AND CONE IN ACCORDANCE WITH ASTM C478.
3. SLABS WITH A THICKNESS OF 8" OR GREATER: REQUIRE SHRINKAGE AND TEMPERATURE REINFORCING STEEL. PROVIDE STEEL AREA = 0.11 IN²/FT/ EACH WAY.
4. MANUFACTURE BASE AND RISERS TO NEAREST 1" INCREMENT.
5. DESIGN TONGUE AND GROOVE JOINTS FOR FULL CLOSURE ON BOTH SHOULDERS. MINIMUM SPIGOT DEPTH IS 1".
6. PROVIDE LIFTING DEVICES IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. PROVIDE CAST IRON SOLID COVER, UNLESS NOTED OTHERWISE ELSEWHERE IN THE PLANS.
8. THREE DIFFERENT OPTIONS FOR CAPPING THE MANHOLE RISER NEAR THE FINISHED GRADE ARE SHOWN. CONES CAN BE USED WHEN COVER IS SUFFICIENT TO ALLOW FOR PROPER PLACEMENT. FLAT LIDS ARE TO BE USED WHERE COVER IS LIMITED.

INSTALLATION NOTES:

1. IF REQUIRED ELSEWHERE, INVERTS (BENCHING) TO BE PROVIDED BY CONTRACTOR. CONCRETE OR MORTAR USED FOR INVERT IS SUBSIDIARY TO THIS ITEM. 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 ¼ THE JOINT DEPTH, WHICHEVER IS GREATER.
3. DO NOT GROUT RUBBER GASKET JOINTS WITHOUT MANUFACTURER'S RECOMMENDATION.
4. INITIAL INSTALLATION OF GRADE ADJUSTMENT RINGS IS LIMITED TO 1'-0" MAX AS SHOWN.
5. 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. DESIGNED ACCORDING TO ASTM C478.
3. PAYMENT FOR PRECAST MANHOLE PER SECTION 02082 "PRECAST CONCRETE MANHOLES".
4. PIPE OD → PLACEMENT TOLERANCE MUST BE EQUAL OR LESS THAN (MH HOLE DIA. FOR RIGID PIPE, PLACEMENT TOLERANCE IS 4" MAX, 2" MIN. FOR FLEXIBLE PIPE, CONSULT BOOT/SEAL MANUFACTURER'S SPECIFICATION FOR PLACEMENT TOLERANCE.
5. STORM WATER SEWER PIPE INTERNAL DIA SHALL NOT BE LESS THAN 24".
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. CONES MAY BE CONCENTRIC OR ECCENTRIC. REDUCTION CONES ARE ACCEPTABLE. REFER TO MANUFACTURER FOR CONE DIMENSIONS.
9. MANHOLE SIZE SHALL CONSIDER ENGINEERING ECONOMY. THIS DETAIL IS NOT APPLICABLE TO ROUND MANHOLES LARGER THAN 6-FOOT DIA.

TABLE 1

PRECAST ROUND MANHOLE (PRM) MINIMUM REQUIREMENTS FOR 24 IN. TO 42 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	MAX HOLE DIA
	X	BS	W	ID	RS	TS	MAX. DEPTH	BH MIN	MAX HOLE DIA
	FT	IN.	IN.	IN.	IN.	IN.	FT.	IN.	IN.
PRM	4	9	5	–	–	9	25	42	35
	5	9	6	48	9	9	25	42	42
	6	9	7	48/60*	12	9	25	42	56

(*) 60-IN REDUCED RISER IS TO BE USED WHEN DEEMED NECESSARY TO SATISFY WALL PENETRATION SPACING REQUIREMENTS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER TYPE 'C' PRECAST ROUND MANHOLE

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 02082-12

DISCLAIMER:
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SURVEYED BY: KUO & ASSOC.
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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM SEWER DETAILS
(7 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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OMAR ABDULKAREEM, P.E.	
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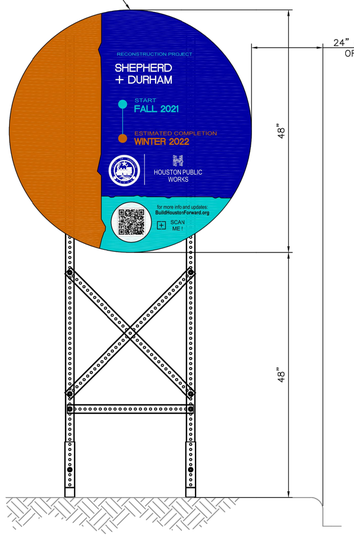
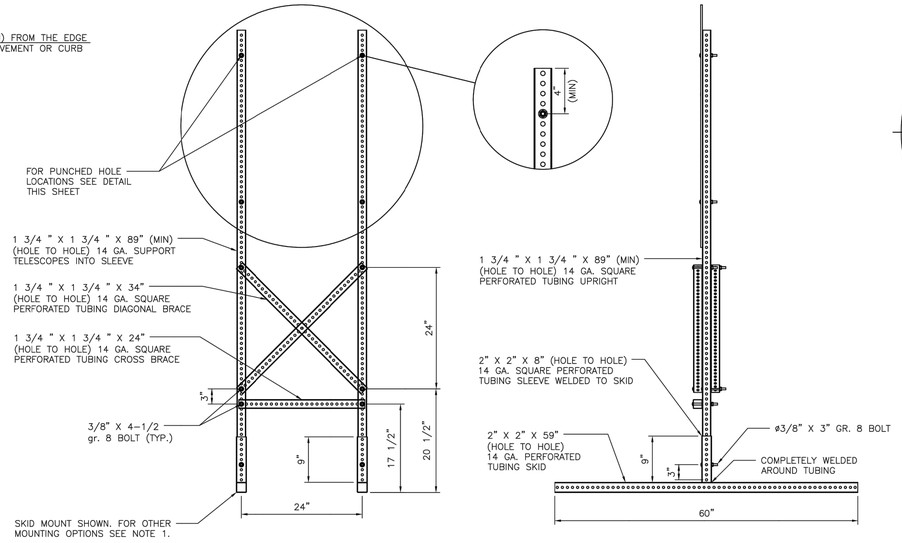


FRONT VIEW

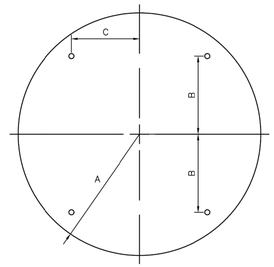


FRONT VIEW

SIDE VIEW

PROJECT SIGN – 48"

SKID MOUNTED SUPPORTS FOR 48" PROJECT SIGN



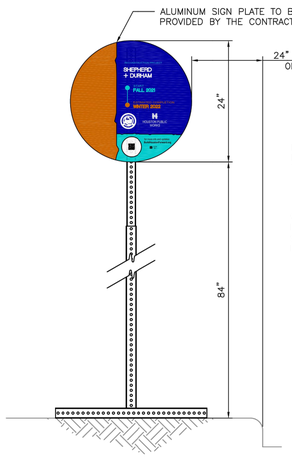
CIRCLE

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

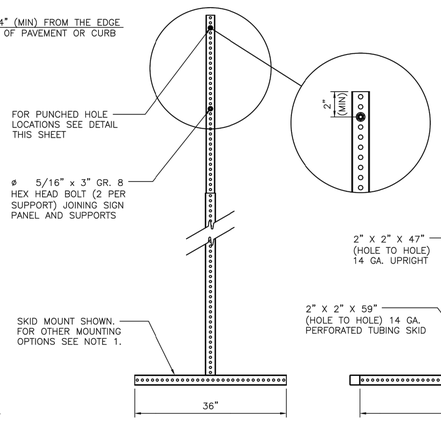
48" SIGN PLATE HOLE DETAIL

NOTES:

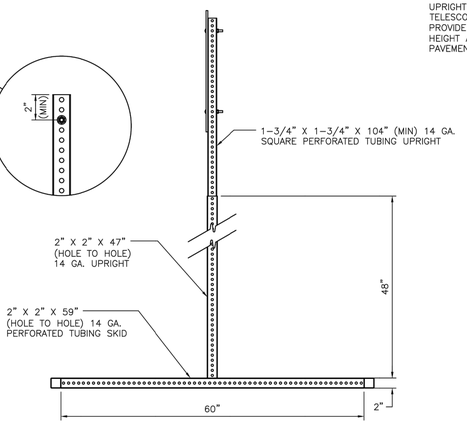
1. ALLOWABLE POST INSTALLATION METHODS ARE: CONCRETE FOOTING, SURFACE MOUNTING, SKID MOUNTING AND PILE DRIVEN POSTS.
2. FOR POST INSTALLATION WITH CONCRETE FOOTING, REFER TO DETAIL 01554-01.
3. FOR SURFACE MOUNTED POST INSTALLATION, REFER TO DETAIL 01554-02.
4. FOR SKID MOUNTING REQUIREMENTS REFER TO 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



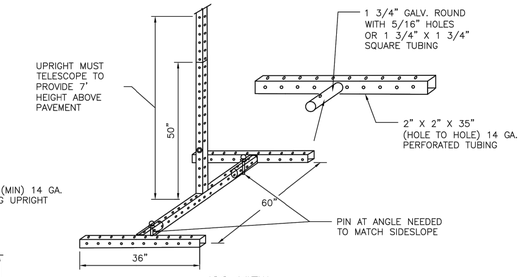
FRONT VIEW



SIDE VIEW

PROJECT SIGN – 24"

SKID MOUNTED SUPPORTS FOR 24" PROJECT SIGN



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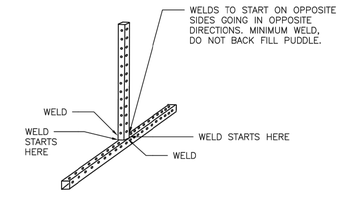
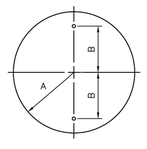


ISO VIEW



A	B	C
12"	8"	0.080"

24" SIGN PLATE HOLE DETAIL

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukat Kanwar 9EF8B0C841F5478...	DocuSigned by: Carl Haddock A83C4159F2B2465...
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: NOV-27-2023	DWG NO: 01582-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONSTRUCTION SIGN BUILD HOUSTON FORWARD

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM SEWER DETAILS
(8 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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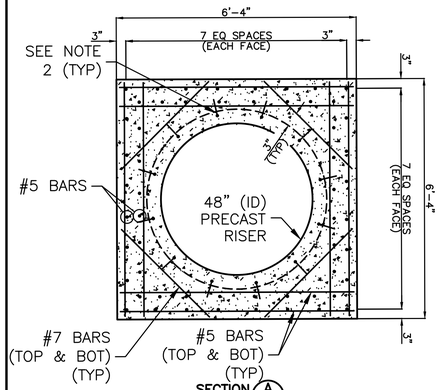
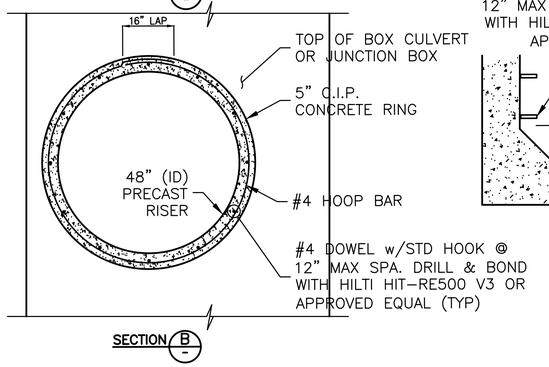
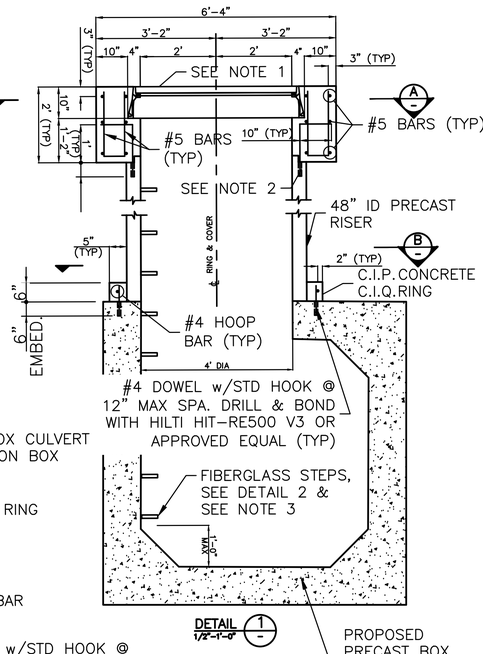


SECTION A



SECTION B

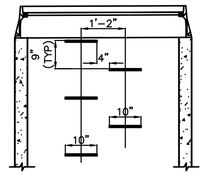


DETAIL 1 1/2"=1'-0"

CONCRETE RISER ON BOX CULVERT/JUNCTION BOX

NOTES:

1. RING AND COVER EAST JORDAN IRON WORKS PRODUCT #NPR16-1124C OR APPROVED EQUAL.
2. #4 DOWEL w/STD HOOK @ 12" MAX SPA. CENTERED IN RISER WALL, DRILL & BOND WITH HILTI HIT-RE500 V3 OR APPROVED EQUAL.
3. FOR DEPTHS DEEPER THAN 20 FEET, PROFIDE SAFETY CLIMBING RAIL. REFER TO 02081-5, 2.12 MANHOLE LADDER FOR WATERLINE MANHOLES.
4. CONCRETE STRENGTH F'c=4,000 PSI.
5. ALL STEEL SHALL BE GRADE 60.
6. RISER MANHOLE ON RCB SHALL USE THE DETAIL TO INCLUDE MANHOLE STEPS, INCIDENTAL TO PAY ITEM FOR TYPE C - 4 FOOT DIAMETER RECAST MANHOLE ON PROP RCB, NO ADDITIONAL PAY.



MANHOLE STEPS DETAIL

DETAIL 2

NOTES:

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

NOTES:

1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARD. SEE COH STANDARD SPECIFICATION FOR REQUIREMENTS IN OTHER CONDITIONS.
2. MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

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

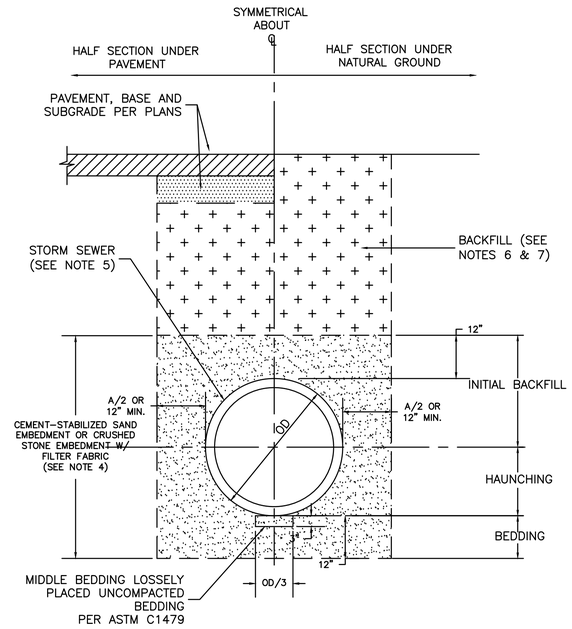
3. MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
4. ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED. SEE COH STANDARD SPECIFICATIONS.
5. STORM SEWER MUST BE REINFORCED CONCRETE (RCP, CLASS III) OR HIGH PERFORMANCE CORRUGATED POLYPROPYLENE (HP STORM). THIS DETAIL WAS DEVELOPED GIVING THE FINDINGS OF GEOTECHNICAL REPORT No. 02-18-22472 R AND SHALL BE USED FOR THE CONSTRUCTION OF RCP OR HP STORM SEWER.
6. FOR RCP, BACKFILL PER COH STANDARD SPECIFICATIONS FOR HP STORM BACKFILL PER PROJECT-SPECIFIC SUPPLEMENTAL SPECIFICATIONS.
7. MIN. COVER MEASURED FROM TOP OF PIPE TO NATURAL GROUND:

NOMIAL PIPE SIDE:	MIN. COVER:
18" - 48"	12"
60"	24"

MIN. COVER MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR RIGID PAVEMENT:

NOMIAL PIPE SIZE:	MIN. COVER:
18" - 48"	24"
60"	30"

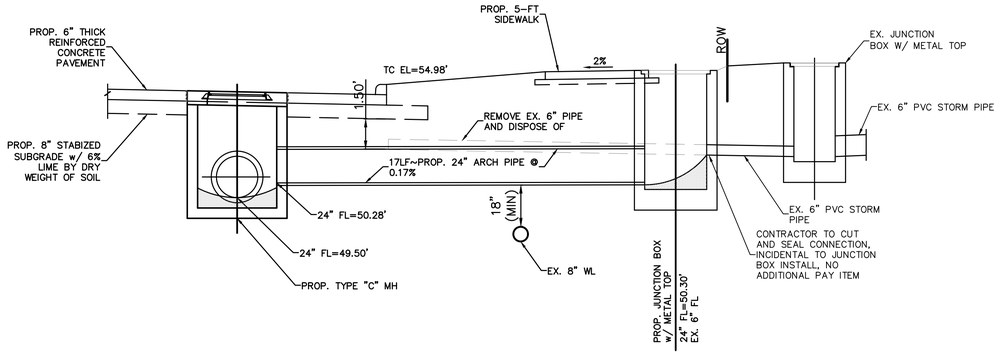
REV	DESCRIPTION	BY	DATE



TYPICAL CROSS-SECTION STORM SEWER BEDDING AND BACKFILL

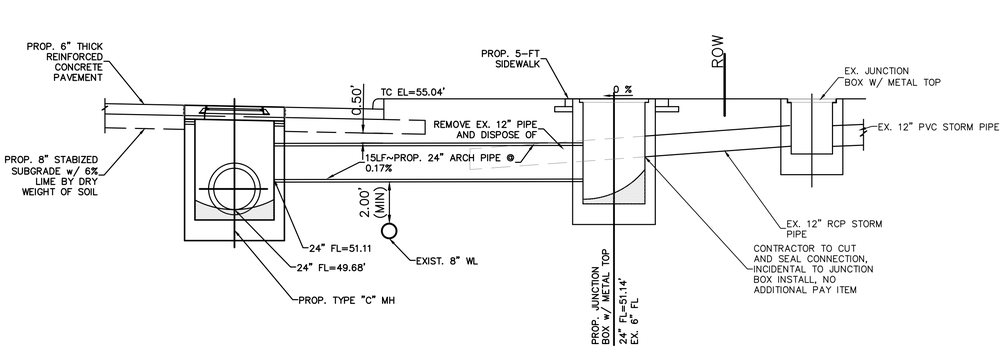
8. MAX. COVER MEASURED FROM TOP OF PIPE:

NOMIAL PIPE SIDE:	MAX. FILL:
18"	21'
24"	16.5'
30"	18.5'
36"	15.5'
42"	15'
48"	14'
60"	13'



SECTION @ STA 4+29.00 CORNISH ST

SCALE N.T.S.



SECTION @ STA 5+81.34 CORNISH ST

SCALE N.T.S.

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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM SEWER DETAILS
(9 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 156 OF 345	

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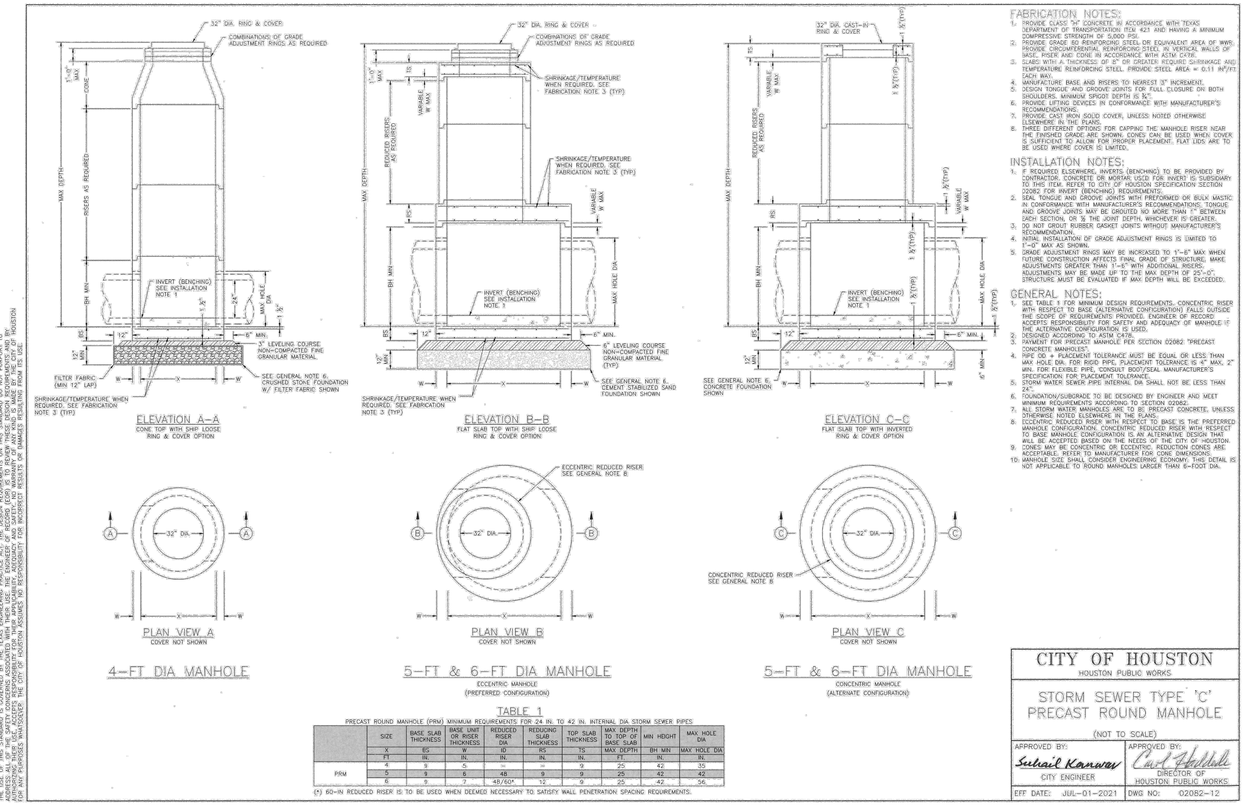
O:\2018\J38013\Drawings\SHEETS\08-09-STORM SEWER DETAILS Continued.dwg Jun 12, 2025

REV	DESCRIPTION	BY	DATE



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 DETERMINE THE APPROPRIATENESS FOR USE ON THE PROJECT. ANY USE OF THESE DESIGN REQUIREMENTS BY THE EOR OR OTHERS ON THE PROJECT IS AT THE SOLE RISK OF THE USER AND THE USER'S PROFESSIONAL(S) FOR ANY AND ALL DAMAGES OR LOSSES OF WHATSOEVER KIND OR NATURE WHETHER DIRECT, INDIRECT, OR CONSEQUENTIAL ARISING OUT OF OR RESULTING FROM ITS USE. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

FABRICATION NOTES:

1. PROVIDE CLASS "H" CONCRETE IN ACCORDANCE WITH TEXAS DEPARTMENT OF TRANSPORTATION ITEM 423 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 BASE, RISER AND CONE IN ACCORDANCE WITH ASTM C478.
3. SLABS WITH A THICKNESS OF 8" OR GREATER REQUIRE SHRINKAGE AND TEMPERATURE REINFORCING STEEL. PROVIDE STEEL AREA = 0.11 IN^2/FT EACH WAY.
4. MANUFACTURE BASE AND RISERS TO NEAREST 3" INCREMENT.
5. DESIGN TONGUE AND GROOVE JOINTS FOR FULL CLOSURE ON BOTH SHOULDERS. MINIMUM SPIGOT DEPTH IS 3/4".
6. PROVIDE LIFTING DEVICES IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. PROVIDE CAST IRON SOLID COVER, UNLESS NOTED OTHERWISE ON PLANS. SEE STANDARD DETAIL 02082-FLARE.
8. THERE ARE DIFFERENT OPTIONS FOR CAPPING THE MANHOLE RISER NEAR THE FINISHED GRADE ARE SHOWN. CONES CAN BE USED WHEN COVER IS SUFFICIENT TO ALLOW FOR PROPER PLACEMENT. FLAT LIDS ARE TO BE USED WHERE COVER IS LIMITED.

INSTALLATION NOTES:

1. IF REQUIRED ELSEWHERE, INVERTS (BENCHING) TO BE PROVIDED BY CONTRACTOR. CONCRETE OR MORTAR USED FOR INVERT IS SUBSIDIARY TO THIS ITEM. 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 ¼ THE JOINT DEPTH, WHICHEVER IS GREATER.
3. DO NOT GROUT RUBBER GASKET JOINTS WITHOUT MANUFACTURER'S RECOMMENDATION.
4. INITIAL INSTALLATION OF GRADE ADJUSTMENT RINGS IS LIMITED TO 1'-0" MAX AS SHOWN.
5. 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. DESIGNED ACCORDING TO ASTM C478.
3. PAYMENT FOR PRECAST MANHOLE PER SECTION 02082 "PRECAST CONCRETE MANHOLES".
4. PIPE OD + PLACEMENT TOLERANCE MUST BE EQUAL OR LESS THAN MAX HOLE DIA. FOR RIGID PIPE, PLACEMENT TOLERANCE IS 4" MAX. 2" MIN. FOR FLEXIBLE PIPE, "CONDUIT BOOT/SEAL MANUFACTURER'S SPECIFICATION FOR PLACEMENT TOLERANCE.
5. STORM WATER SEWER PIPE INTERNAL DIA SHALL NOT BE LESS THAN 24".
6. FOUNDATION/SUBGRADE TO BE DESIGNED BY ENGINEER AND MEET MINIMUM REQUIREMENTS ACCORDING TO SECTION 02082.
7. MANHOLE CONSTRUCTION SHALL BE OF 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. CONES MAY BE CONCENTRIC OR ECCENTRIC. REDUCTION CONES ARE ACCEPTABLE. REFER TO MANUFACTURER FOR CONE DIMENSIONS.
10. MANHOLE SIZE SHALL CONSIDER ENGINEERING ECONOMY. THIS DETAIL IS NOT APPLICABLE TO ROUND MANHOLES LARGER THAN 6-FOOT DIA.

TABLE 1

PRECAST ROUND MANHOLE (PRM) MINIMUM REQUIREMENTS FOR 24 IN. TO 42 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	MAX HOLE DIA
	X	BS	W	ID	RS	TS	MAX DEPTH	BH MIN	MAX HOLE DIA
	FT	IN.	IN.	IN.	IN.	IN.	FT.	IN.	IN.
PRM	4	9	6	=	=	9	25	42	33
	5	9	6	48	9	9	25	42	42
	6	9	7	48/60*	12	9	25	42	56

(*) 60-IN REDUCED RISER IS TO BE USED WHEN DEEMED NECESSARY TO SATISFY WALL PENETRATION SPACING REQUIREMENTS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER TYPE 'C'
PRECAST ROUND MANHOLE
(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
Suhail Kanwar	Carol Haddock
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 02082-12

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STATE OF TEXAS
ROBERT A. HILL
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LICENSED PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(1 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 157 OF 345	

CivilTech Engineering, Inc.
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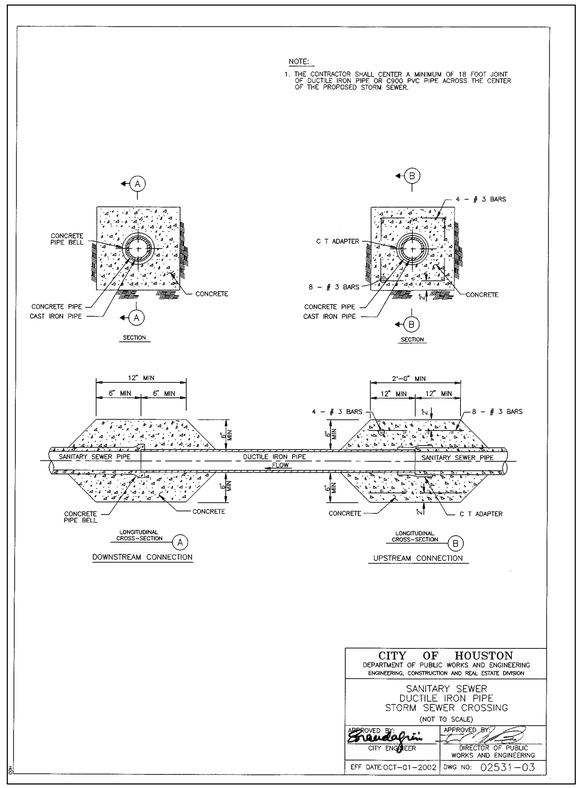
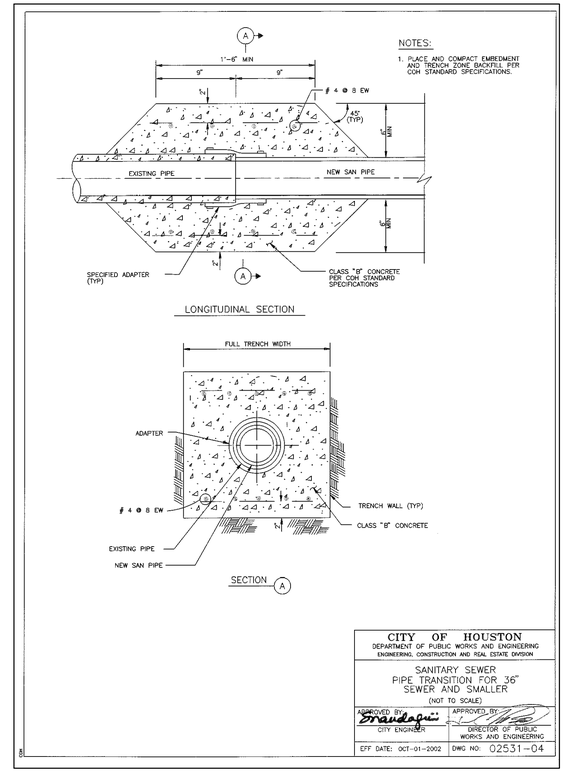
REV	DESCRIPTION	BY	DATE





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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(2 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
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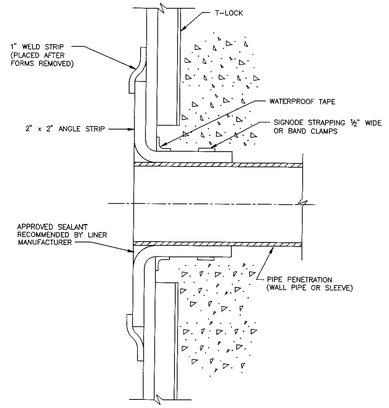
REV	DESCRIPTION	BY	DATE

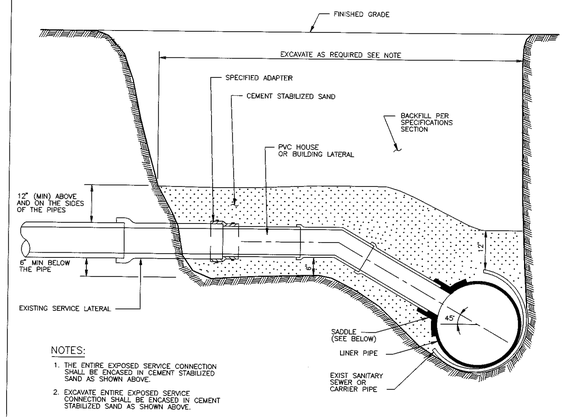


CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SANITARY SEWER
SEALING PENETRATION THROUGH
PVC-LINED CONCRETE WALL
(NOT TO SCALE)

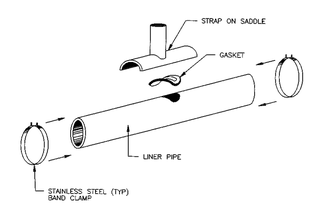
APPROVED BY: CITY ENGINEER
APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-01-2002 | DWG NO: 02531-06



NOTES:

1. THE ENTIRE EXPOSED SERVICE CONNECTION SHALL BE ENCASED IN CEMENT STABILIZED SAND AS SHOWN ABOVE.
2. EXCAVATE ENTIRE EXPOSED SERVICE CONNECTION SHALL BE ENCASED IN CEMENT STABILIZED SAND AS SHOWN ABOVE.



LATERAL STRAP-ON SADDLE

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SANITARY SEWER
SERVICE RECONNECTION
FOR LINER PIPE
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER
APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-01-2002 | DWG NO: 02534-01

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06/02/2025

SURVEYED BY: KUO & ASSOC.
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(3 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 159 OF 345	

CivilTech Engineering, Inc.
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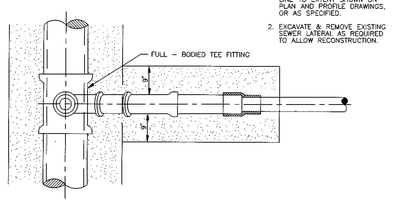
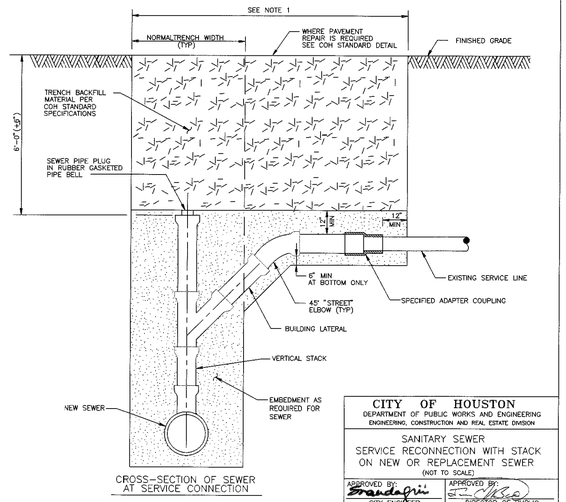
REV	DESCRIPTION	BY	DATE

NOTES:

1. REPLACE EXISTING SERVICE LINE TO EXTENT SHOWN ON PLAN AND PROFILE DRAWINGS, OR AS SPECIFIED.
2. EXCAVATE & REMOVE EXISTING SEWER LATERAL AS REQUIRED TO ALLOW RECONSTRUCTION.

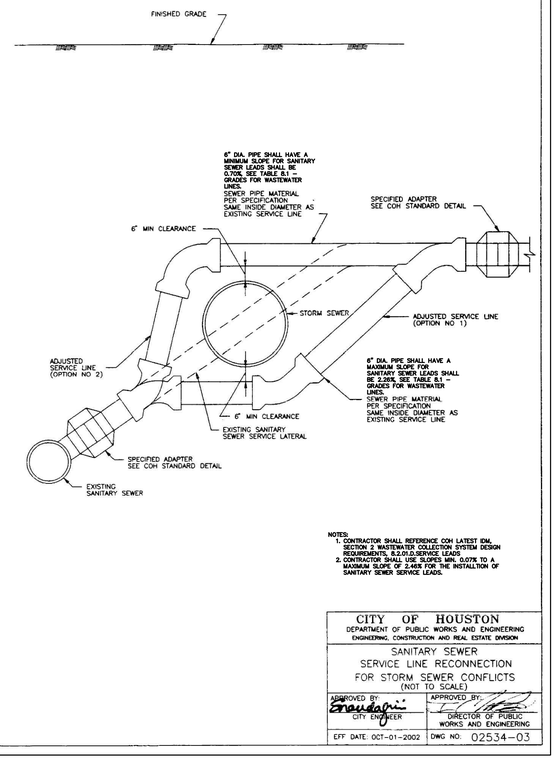


PLAN



CROSS–SECTION OF SEWER AT SERVICE CONNECTION

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
SANITARY SEWER SERVICE RECONNECTION WITH STACK ON NEW OR REPLACEMENT SEWER (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT–01–2002	DWG NO: 02534–02



NOTES:
1. CONTRACTOR SHALL REFERENCE COH LATEST EDITION, SECTION 2, WASTEWATER COLLECTION SYSTEM DESIGN REQUIREMENTS, B.2.01.D.SERVICE LEADS.
2. CONTRACTOR SHALL USE SLOPES MIN. 0.07% TO A MAXIMUM SLOPE OF 2.00% FOR THE INSTALLTION OF SANITARY SEWER SERVICE LEADS.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
SANITARY SEWER SERVICE LINE RECONNECTION FOR STORM SEWER CONFLICTS (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT–01–2002	DWG NO: 02534–03

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(4 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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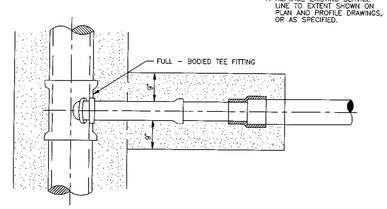
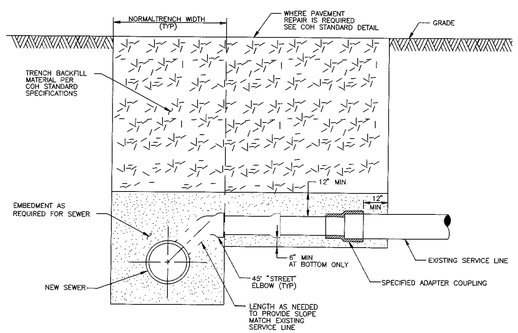
REV	DESCRIPTION	BY	DATE

NOTE:

1. REPLACE EXISTING SERVICE LINE TO EXTENT SHOWN ON PLAN AND PROFILE DRAWINGS, OR AS SPECIFIED.



PLAN



CROSS-SECTION OF SEWER AT SERVICE CONNECTION

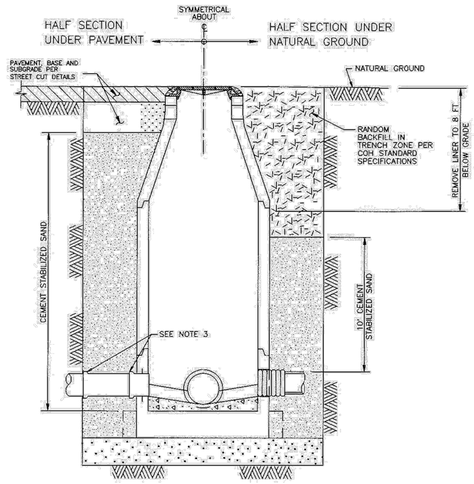
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SANITARY SEWER
SERVICE RECONNECTION
ON NEW OR REPLACEMENT SEWER
(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02534-04

NOTES:

1. GROUTING OF MANHOLE STRUCTURE ANNULAR SPACE WILL BE PERMITTED IN CASES WHERE INSUFFICIENT WORK SPACE EXISTS FOR PLACEMENT AND COMPACTATION OF CEMENT STABILIZED SAND, PER COH STANDARD SPECIFICATION FOR TUNNEL GROUT.
2. THIS DETAIL ALSO APPLIES TO BACKFILL OF SHAFTS WITHOUT STRUCTURES.
3. ARRANGE PIPE JOINTS AS SHOWN WHEN USING RIGID CONNECTION TO CAST IN PLACE MANHOLE BASE.



TYPICAL CROSS - SECTION

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SANITARY SEWER
BACKFILL OF SHAFTS
(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02317-08

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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

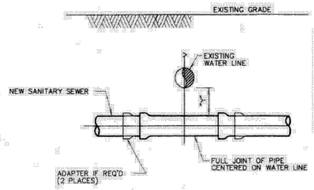
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(5 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 161 OF 345	

CivilTech Engineering, Inc.
O:\2018\380013\Drawings\SHEETS\70-SAN SWR DETAILS Continued.dwg Jun 12, 2025

REV	DESCRIPTION	BY	DATE



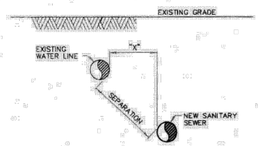
NEW SANITARY SEWER CROSSING EXISTING WATER LINE

INSTALLATION REQUIREMENTS

1. IF "Y" IS GREATER THAN 1' AND "Y" IS LESS THAN 2', USE MINIMUM 18 FT JOINT OF PRESSURE-RATED PIPE PER COH STANDARD DRAWING.
2. IF "Y" IS GREATER THAN 2' AND "Y" IS LESS THAN 9', USE GRAVITY SEWER PIPE IN CEMENT-STABILIZED SAND EMBEDMENT.
3. IF "Y" IS GREATER THAN 9', USE STANDARD EMBEDMENT AND NORMAL JOINT SPACING.

NOTES:

1. SANITARY SEWER MUST BE BELOW WATER LINE WHEREVER POSSIBLE. WHEN WATERLINE IS BELOW THE SANITARY SEWER PROVIDE MINIMUM 2 FT SEPARATION AND INSTALL PIPE IN ACCORDANCE TO CHAPTER 7 TABLE 7.3 OF COH DESIGN MANUAL.
2. WHEN PRESSURE-RATED PIPE IS REQUIRED, PROVIDE PIPE WITH MINIMUM 150 psi PRESSURE RATING.
3. ADAPTERS MUST BE FACTORY MOLDED OR FABRICATED, WITH RING STIFFNES AT LEAST EQUAL TO THE ADJOINING SANITARY SEWER PIPE, AND USING RESILIENT GASKET OR SEAL MATERIAL. FLEXIBLE RUBBER "BOOT" TYPE ADAPTERS WILL NOT BE ACCEPTED.
4. INSTALL FORCE MAINS SAME AS FOR GRAVITY SEWER, USING SPECIFIED PRESSURE PIPE.
5. "Y" MUST ALWAYS BE GREATER THAN OR EQUAL TO 1 FT FOR PRESSURE RATED SS AND 2 FT FOR NON-PRESSURE RATED SS.
6. "X" MUST BE GREATER THAN OR EQUAL TO 4 FT.
7. ALTERNATIVES MAY BE SHOWN ON THE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS.
8. SEPARATION REQUIREMENTS SHOWN HERE DO NOT APPLY TO SERVICE CONNECTIONS -- REFER TO PLUMBING CODE FOR APPLICABLE REQUIREMENTS.



NEW SANITARY SEWER PARALLEL TO EXISTING WATER LINE

INSTALLATION REQUIREMENTS

1. IF SEPARATION IS LESS THAN 9', USE PRESSURE-RATED PIPE MH TO MH. "X" MUST BE AT LEAST 4 FT. VERTICAL SEPARATION MUST BE AT LEAST 2 FT.
2. IF SEPARATION IS 9' OR GREATER, USE STANDARD PIPE AND EMBEDMENT.

INSTALLING SANITARY SEWERS CROSSING OR PARALLEL TO WATER LINES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SANITARY SEWER
INSTALLING SANITARY SEWERS
CROSSING OR PARALLEL TO WATER LINES
(NOT TO SCALE)

APPROVED: CITY ENGINEER
APPROVED: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF. DATE: JUL-01-2010 DWG. NO. 02531-05

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

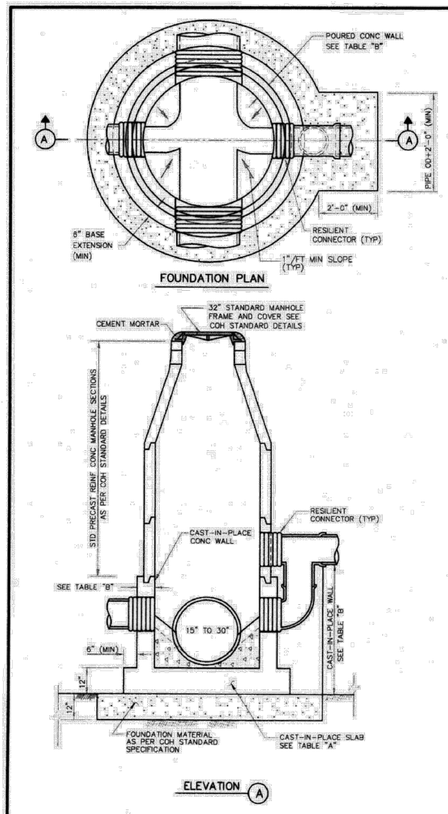
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(6 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 162 OF 345	

CivilTech Engineering, Inc.
O:\2018\38013\Drawings\SHEETS\PS-SAN SWR DETAILS Continued.dwg Jun 12, 2025

REV	DESCRIPTION	BY	DATE



FOUNDATION PLAN

ELEVATION (A)

NOTES:

1. SEAT MANHOLE FRAME IN SEALANT PER COH STANDARD SPECIFICATION.
2. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
3. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.

NOTES ON USE OF STANDARD DETAIL

TABLE "A"

BASE SLAB REINFORCING AND THICKNESS			
MH INSIDE DIA (FT)	DEPTH TO INV (FT)	BASE THICKNESS	REINFORCING (E.W. T & B)
8	≤ 20	1'-0"	# 6 @ 10"
	≤ 25	1'-2"	# 6 @ 8"
	≤ 30	1'-4"	# 6 @ 7"
	≤ 40	1'-6"	# 6 @ 6"
	≤ 50	1'-8"	# 6 @ 6"
	≤ 60	1'-10"	# 6 @ 6"
6	≤ 15	1'-0"	# 5 @ 8"
	≤ 20	1'-0"	# 5 @ 8"
	≤ 25	1'-2"	# 5 @ 7"
	≤ 30	1'-2"	# 5 @ 6"
	≤ 40	1'-2"	# 6 @ 8"
	≤ 50	1'-4"	# 6 @ 8"
	≤ 60	1'-4"	# 6 @ 7"
5	≤ 15	1'-0"	# 5 @ 8"
	≤ 20	1'-0"	# 5 @ 7"
	≤ 25	1'-0"	# 5 @ 6"
	≤ 30	1'-0"	# 6 @ 10"
	≤ 40	1'-2"	# 6 @ 10"
	≤ 50	1'-2"	# 6 @ 9"
	≤ 60	1'-2"	# 6 @ 8"
4	≤ 20	1'-0"	# 5 @ 8"
	≤ 25	1'-0"	# 5 @ 8"
	≤ 30	1'-0"	# 5 @ 7"
	≤ 40	1'-0"	# 5 @ 10"

TABLE "B"

WALL REINFORCING AND THICKNESS					
MH INSIDE DIA (FT)	DEPTH TO PIPE TO INV (FT)	MAXIMUM CAST-IN-PLACE WALL HEIGHT	WALL THICKNESS	REINFORCING AT EACH FACE VERTICAL	HORIZONTAL
8	≤ 20	6'-0"	0'-10"	# 6 @ 12"	# 6 @ 12"
	≤ 25	6'-6"	0'-10"	# 6 @ 10"	
	≤ 30	7'-0"	0'-10"	# 6 @ 8"	
	≤ 40	8'-0"	1'-0"	# 6 @ 8"	
	≤ 50	9'-0"	1'-2"	# 6 @ 8"	
	≤ 60	10'-0"	1'-4"	# 6 @ 8"	
6	≤ 15	5'-0"	0'-8"	# 5 @ 12"	# 5 @ 12"
	≤ 20	5'-6"	0'-8"	# 5 @ 8"	
	≤ 25	6'-0"	0'-9"	# 5 @ 8"	
	≤ 30	6'-6"	0'-9"	# 5 @ 6"	# 5 @ 8"
	≤ 40	7'-0"	0'-10"	# 5 @ 8"	
	≤ 50	7'-0"	1'-0"	# 6 @ 8"	
	≤ 60	8'-0"	1'-2"	# 6 @ 7"	
5	≤ 15	5'-0"	0'-8"	# 5 @ 8"	# 4 @ 12"
	≤ 20	5'-4"	0'-8"	# 5 @ 7"	
	≤ 25	5'-8"	0'-10"	# 5 @ 6"	
	≤ 30	6'-0"	0'-10"	# 6 @ 10"	# 5 @ 12"
	≤ 40	6'-4"	0'-10"	# 6 @ 10"	
	≤ 50	6'-8"	1'-0"	# 6 @ 8"	
	≤ 60	7'-0"	1'-0"	# 6 @ 8"	
4	≤ 20	4'-8"	0'-8"	# 5 @ 12"	# 4 @ 12"
	≤ 25	5'-0"	0'-8"	# 5 @ 10"	
	≤ 30	5'-8"	0'-10"	# 6 @ 12"	
	≤ 40	6'-0"	0'-10"	# 6 @ 12"	

NOTE TO SPECIFIER:

1. TABLES "A" AND "B" WILL BE USED TO DESIGN THE CAST-IN-PLACE BASE AND WALL FOR VARIOUS MANHOLE DIAMETER AND DEPTH.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SANITARY SEWER
PRECAST CONCRETE MANHOLE
WITH CAST-IN-PLACE BASE
(NOT TO SCALE)

APPROVED: CITY ENGINEER | DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE JULY-01-2010 | DWG NO 02082-08

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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(7 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
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OMAR ABDULKAREEM, P.E.	
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CivilTech Engineering, Inc.
G:\2018\L380015\Drawings\SHEETS\COH-SAN SWR DETAILS Continued.dwg Jun 12, 2025

REV	DESCRIPTION	BY	DATE

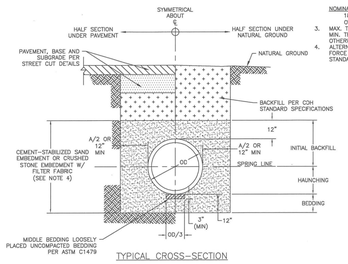
02317–03

NOTES:

1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARD. SEE COH STANDARD SPECIFICATION FOR REQUIREMENTS IN OTHER CONDITIONS.
2. MIN. TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

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

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



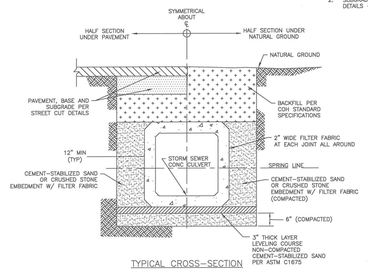
TYPICAL CROSS–SECTION

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

02317–05

NOTES:

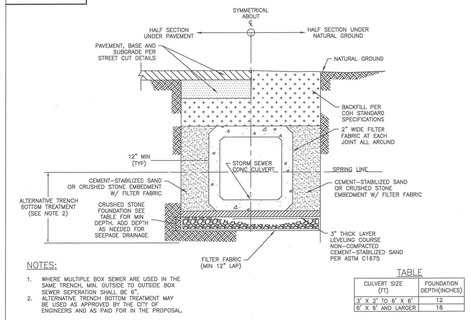
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. SUBGRADE AND PAVEMENT FOR STREET CUT DETAILS – 02951.



TYPICAL CROSS–SECTION

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

02317–06



NOTES:

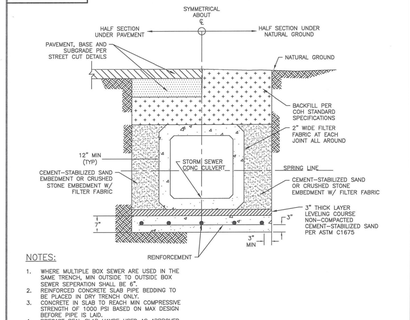
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. ALTERNATIVE TRENCH BOTTOM TREATMENT MAY BE USED AS APPROVED BY THE CITY OF ENGINEERS AND AS PAID FOR IN THE PROPOSAL.

TABLE

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

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

02317–07



NOTES:

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

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

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02317–03 THROUGH 07

APPROVED BY: CITY ENGINEER | APPROVED BY: DEPUTY DIRECTOR

APPROVED BY: DIRECTOR

EFFECTIVE DATE: JUL–01–2019

FOR CITY OF HOUSTON USE ONLY

SHEET NO.

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SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(8 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
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CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 164 OF 345	

CivilTech Engineering, Inc.
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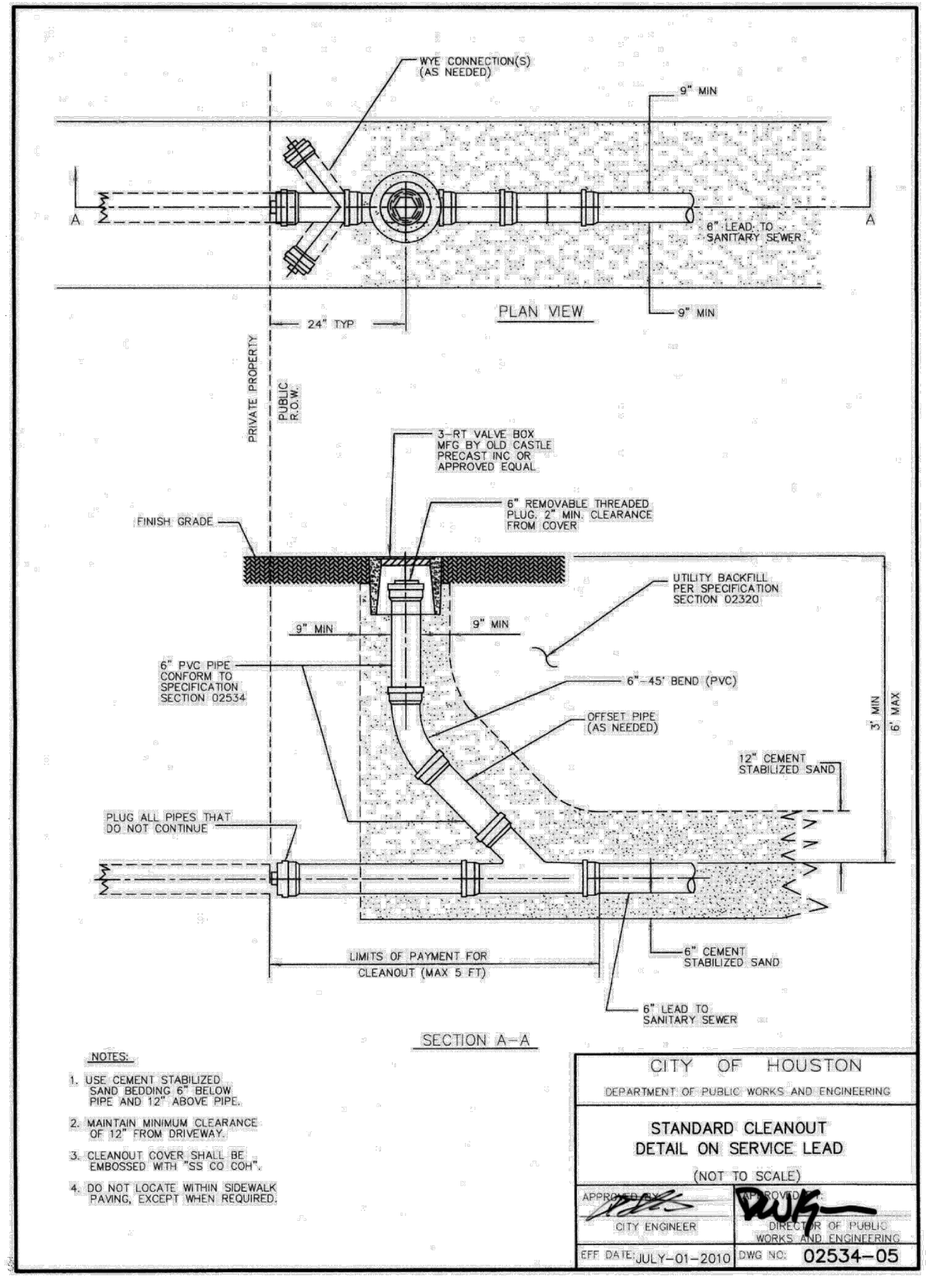
REV	DESCRIPTION	BY	DATE



NOTES:

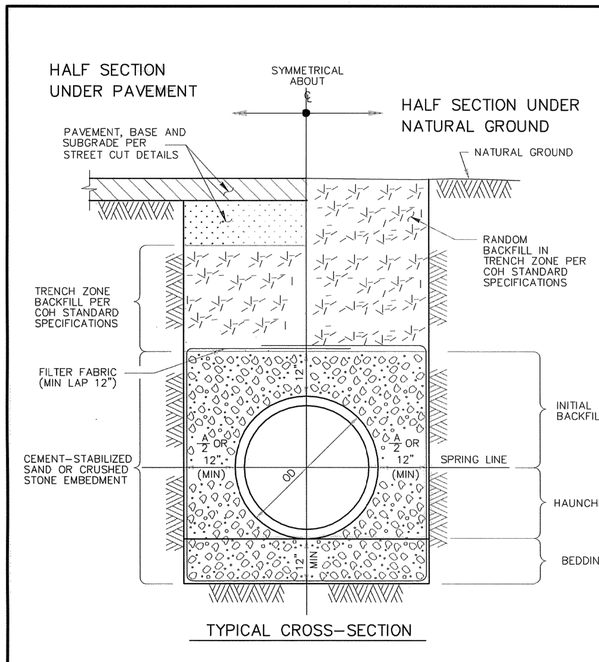
1. USE CEMENT STABILIZED SAND BEDDING 6" BELOW PIPE AND 12" ABOVE PIPE.
2. MAINTAIN MINIMUM CLEARANCE OF 12" FROM DRIVEWAY.
3. CLEANOUT COVER SHALL BE EMBOSSED WITH "SS CO COH".
4. DO NOT LOCATE WITHIN SIDEWALK PAVING, EXCEPT WHEN REQUIRED.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STANDARD CLEANOUT DETAIL ON SERVICE LEAD

(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 02534-05

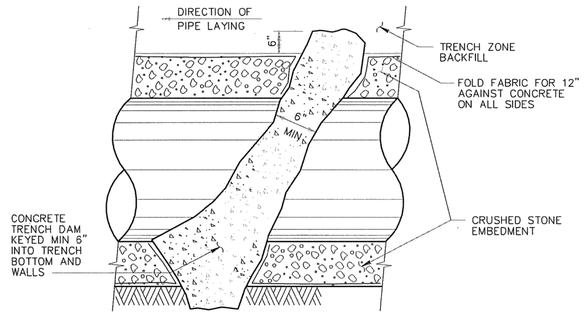


NOTES:

1. MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

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

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



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2016	DWG NO: 02317-01

COH

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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(9 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 165 OF 345	

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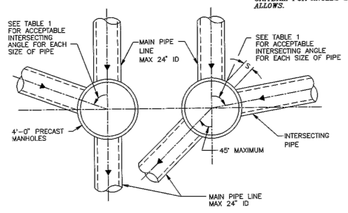
REV	DESCRIPTION	BY	DATE

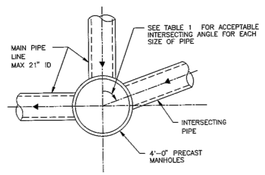
NOTES ON USE OF STANDARD DETAIL 02082-02

NOTES TO SPECIFIER:

1. *"-" INDICATES THAT A SPECIAL DESIGN OR THE NEXT LARGER MANHOLE SIZE SHALL BE USED.*
2. *TABLE 1 IS BASED ON A MIN SEPARATION DISTANCE "S" OF 15.5" OR INTERSECTION PIPE OD/2, WHICHEVER IS GREATER, BETWEEN MAIN AND INTERSECTING PIPES ALONG THE MANHOLE INSIDE WALL ARC.*
3. *PIPE WALL THICKNESS USED IN TABLE 1 ARE BASED ON RCP. THE DESIGN ENGINEER MAY CALCULATE TO SEE IF THINNER WALL PIPES CAN MEET THE SEPARATION CRITERIA FOR ANGLES SMALLER THAN THE TABLE ALLOWS.*



MAX 24" ID MAIN PIPE ALLOWED FOR STRAIGHT THROUGH TO 45° DEFLECTION



MAX 21" ID MAIN PIPE ALLOWED FOR 45° TO 90° DEFLECTION

TABLE 1
MIN ANGLE AND INTERSECTING PIPE SIZES FOR A 4'-0" DIA MANHOLE

INTERSECTING PIPE SIZE (INCHES)	MIN INTERSECTING ANGLE IN DEGREES FOR FOR VARIOUS MAIN PIPE SIZES IN INCHES							
	6"	8"	10"	12"	15"	18"	21"	24"
6	55	58	60	65	70	75	80	85
8		60	63	68	73	77	82	87
10			66	71	75	80	85	90
12				76	80	85	90	–
15					85	90	–	–
18	NOT APPLICABLE UNLESS HYDRAULICS DICTATE (INTERSECTING PIPE > MAIN PIPE)					–	–	–
21							–	–
24								–

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

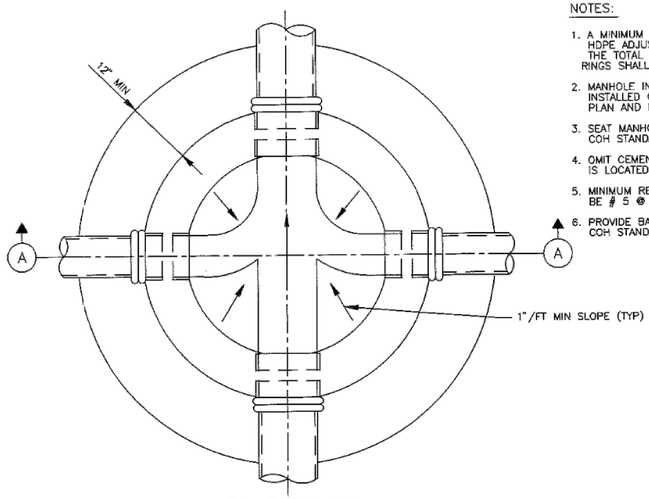
SANITARY SEWER
4'-0" DIAMETER PRECAST CONCRETE MANHOLE NOTES
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER — APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002 — DWG NO: 02082N-02

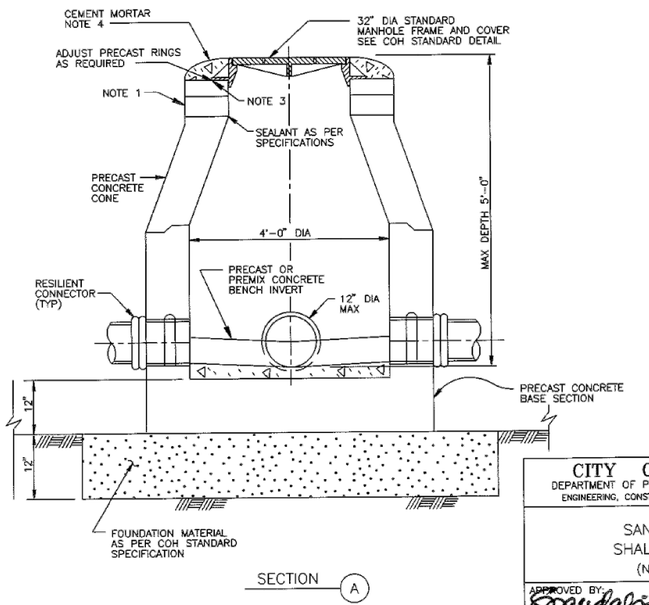
COH

NOTES:

1. A MINIMUM OF 3" PRECAST CONCRETE OR HDPE ADJUSTMENT RING SHALL BE PROVIDED. THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 12".
2. MANHOLE INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
3. SEAT MANHOLE FRAME IN SEALANT PER COH STANDARD SPECIFICATION.
4. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
5. MINIMUM REINFORCING IN THE BASE BE # 5 @ 8 EW.
6. PROVIDE BACKFILL MATERIAL AS PER COH STANDARD SPECIFICATION.



FOUNDATION PLAN



SECTION A

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SANITARY SEWER
SHALLOW MANHOLE
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER — APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002 — DWG NO: 02082-01

COH

WOOLPERT
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(10 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 166 OF 345	

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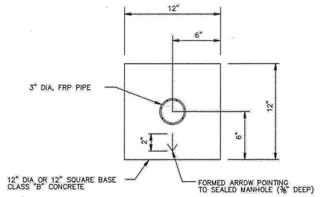
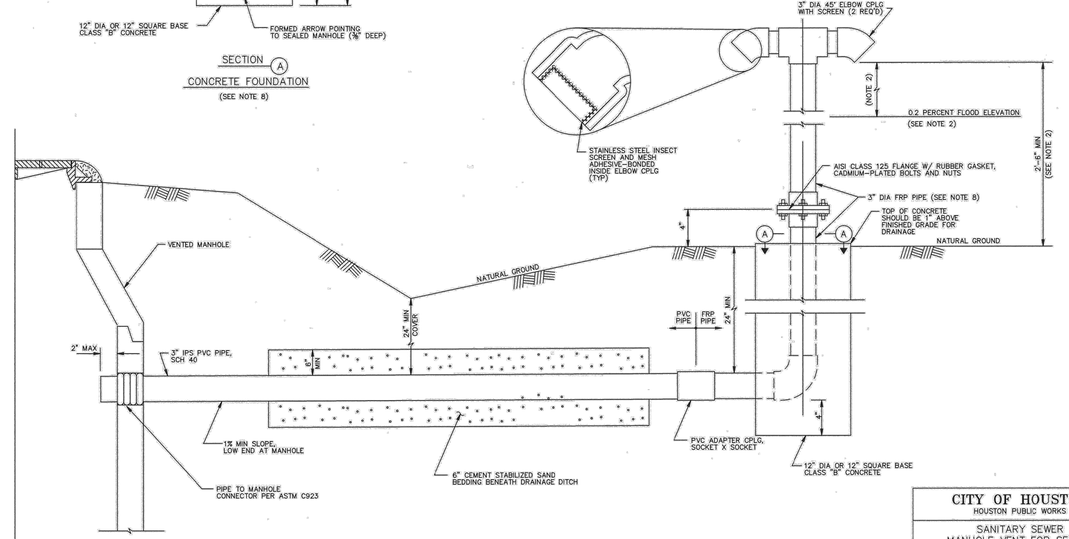
REV	DESCRIPTION	BY	DATE



SECTION (A)
CONCRETE FOUNDATION
(SEE NOTE 8)

NOTES:

1. INSTALL AT LOCATION AND BASED ON 0.2 PERCENT FLOOD ELEVATION SHOWN ON PLAN AND PROFILE DWGS.
2. MINIMUM VENT HEIGHT ELEVATION IS TO BE 2'-6" ABOVE THE NATURAL GROUND OR AS REQUIRED BY CHAPTER 19 SECTION 19-33 OF THE CITY OF HOUSTON CODE OF ORDINANCES, WHICHEVER IS HIGHER.
3. WHEN FLOODPROOFED VENTS ARE SPECIFIED BY THE EOR, REFER TO THE CONTRACT DOCUMENTS FOR CONSTRUCTION REQUIREMENTS.
4. DRAIN TO VENTED (ADJACENT) MH AT MIN 1% SLOPE. CONNECT TO MANHOLE WITH SPECIFIED CONNECTOR.
5. WHEN VENT CROSSES DRAINAGE DITCH, PROVIDE CEMENT STABILIZED SAND BEDDING
6. THE VENT IS TO BE INSTALLED WITHIN THE RIGHT OF WAY.
7. SEE COH STANDARD SPECIFICATIONS FOR PROTECTIVE COATING REQUIREMENTS FOR EXPOSED FRP PIPE.
8. THIS STANDARD DETAIL SETS THE MINIMUM REQUIREMENTS FOR THE MANHOLE VENT'S CONCRETE FOUNDATION AND VENT PIPE SIZE. THE EOR IS RESPONSIBLE FOR THE ADEQUACY AND DESIGN OF THE CONCRETE FOUNDATION AND VENT PIPE SIZE AND SHALL PROVIDE CONSTRUCTION DETAILS IN THE DRAWINGS.



CITY OF HOUSTON HOUSTON PUBLIC WORKS	
SANITARY SEWER MANHOLE VENT FOR SEALED MANHOLE (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 02082-06

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FB NO. P-6133

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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(11 OF 16)

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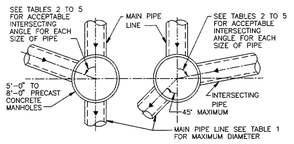
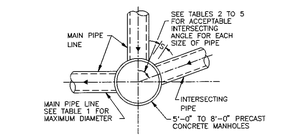
NOTES ON USE OF STANDARD DETAIL 02082-03



FOR MAIN PIPES FROM STRAIGHT THROUGH TO 45° DEFLECTION



FOR MAIN PIPE WITH 45° TO 90° DEFLECTION

TABLE 1

MAXIMUM MAIN PIPE DIAMETER (I.D) IN INCHES

MANHOLE DIAMETER (FT)	STRAIGHT THROUGH TO 45° DEFLECTION	WITH 90° DEFLECTION	TABLE TO BE USED
5	36	27	2
6	42	33	3
7	48	36	4
8	60	42	5

TABLE 2

MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 5'-0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES										
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"
8	49	50	54	58	61	66	69	73	77	82	86
10		53	57	61	64	68	71	76	79	84	88
12			61	65	68	72	75	80	83	88	–
15				68	71	75	79	83	87	–	–
18					75	79	82	87	90	–	–
21						83	86	90	–	–	–
24							90	–	–	–	–
27								–	–	–	–
30									–	–	–
33										–	–
36											–

TABLE 3

MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 6'-0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES										
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"
8	40	42	45	49	51	54	57	61	63	67	70	78
10		44	47	50	53	56	59	62	65	69	72	79
12			50	54	56	60	62	66	68	72	75	83
15				57	59	62	65	69	71	75	78	85
18					62	65	68	71	74	78	81	88
21						68	71	74	77	81	84	–
24							74	77	80	84	87	–
27								83	85	89	–	–
30									–	–	–	–
33										–	–	–
36											–	–
42												–

TABLE 4

MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 7'-0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES											
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"
8	35	36	39	42	44	47	49	52	54	57	59	65	71
10		38	40	43	45	48	50	53	55	59	61	67	73
12			43	46	48	51	53	56	58	61	64	70	76
15				48	50	53	55	58	61	64	66	72	78
18					58	56	58	61	63	66	69	74	81
21						58	60	63	66	69	71	77	83
24							63	66	68	71	74	79	86
27								70	72	76	78	84	90
30									78	81	83	89	–
33										86	88	–	–
36											–	–	–
42												–	–
48													–

TABLE 5

MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 8'-0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES													
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"	54"	60"
8	30	32	34	36	38	41	43	45	47	50	52	56	61	67	74
10		33	35	38	40	42	44	46	48	51	53	58	63	68	77
12			38	40	42	44	46	49	51	53	55	60	65	71	79
15				42	44	47	48	51	53	56	58	62	67	73	81
18					46	49	51	53	55	58	66	64	70	75	83
21						51	53	55	57	60	62	67	72	77	85
24							55	57	59	62	64	69	74	79	89
27								61	63	66	68	73	78	83	–
30									67	70	72	77	82	87	–
33										74	76	81	86	–	–
36											81	86	–	–	–
42												–	–	–	–
48													–	–	–
54														–	–
60															–

* NOT APPLICABLE (INTERSECTING PIPE GREATER THAN MAIN PIPE)

NOTES TO SPECIFIER:

1. "–" INDICATES THAT A SPECIAL DESIGN OR THE NEXT LARGER MANHOLE SIZE SHALL BE USED.
2. TABLES 2 TO 5 ARE BASED ON A MIN SEPARATION DISTANCE "S" OF 15.5" OR INTERSECTION PIPE OD/2, WHICHEVER IS GREATER, BETWEEN MAIN AND INTERSECTING PIPES ALONG THE MANHOLE INSIDE WALL ARC.
3. PIPE WALL THICKNESS USED IN TABLES 2 TO 5 ARE BASED ON RCP. THE DESIGN ENGINEER MAY CALCULATE TO SEE IF THINNER WALL PIPES CAN MEET THE SEPARATION CRITERIA FOR ANGLES SMALLER THAN THE TABLES ALLOW.
4. LIMITATIONS TO BASE HEIGHT ARE BASED ON RESISTING BUOYANT UPLIFT FORCES BASED ON WATER AT GROUND SURFACE AND A SAFETY FACTOR OF 1.20.
5. A SPECIAL DESIGN IS REQUIRED IF MANHOLE ID IS GREATER THAN 8 FT.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SANITARY SEWER
5'-0" TO 8'-0" DIAMETER
PRECAST CONCRETE MANHOLE NOTES
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER

APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-01-2002 DWG NO: 02082N-03

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06/02/2025

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FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(12 OF 16)

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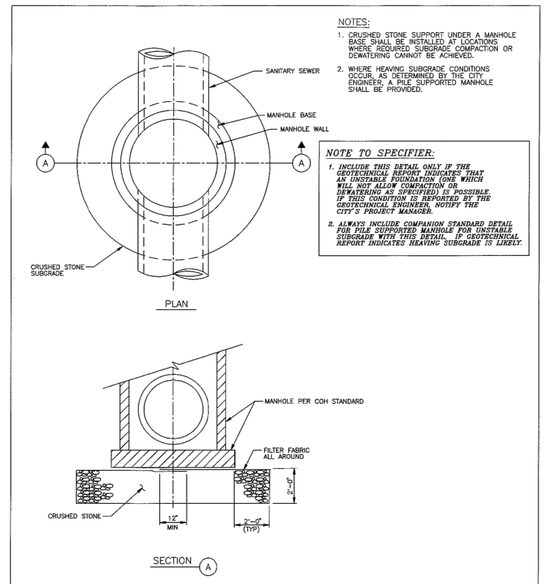


NOTES:

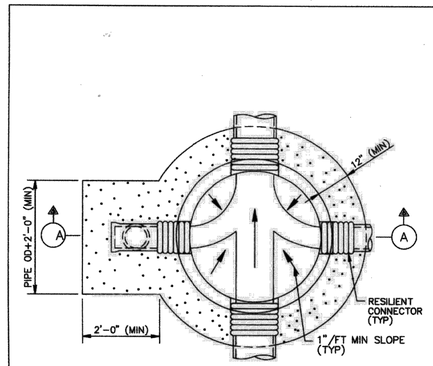
1. CRUSHED STONE SUPPORT UNDER A MANHOLE BASE SHALL BE INSTALLED AT LOCATIONS WHERE REQUIRED SUBGRADE COMPACTION OR DEWATERING CANNOT BE ACHIEVED.
2. WHERE HEAVING SUBGRADE CONDITIONS OCCUR, AS DETERMINED BY THE CITY ENGINEER, A PILE SUPPORTED MANHOLE SHALL BE PROVIDED.

NOTE TO SPECIFIER:

1. INCLUDE THIS DETAIL ONLY IF THE GEOTECHNICAL REPORT INDICATES THAT AN UNSTABLE FOUNDATION (ONE WHICH WILL NOT ALLOW COMPACTION OR DEWATERING) IS LIKELY TO BE ENCOUNTERED. IF THIS CONDITION IS REPORTED BY THE GEOTECHNICAL ENGINEER, NOTIFY THE CITY'S PROJECT MANAGER.

2. ALWAYS INCLUDE COMPANION STANDARD DETAIL FOR PILE SUPPORTED MANHOLE FOR UNSTABLE SUBGRADE WITH THIS DETAIL. IF GEOTECHNICAL REPORT INDICATES HEAVING SUBGRADE IS LIKELY.

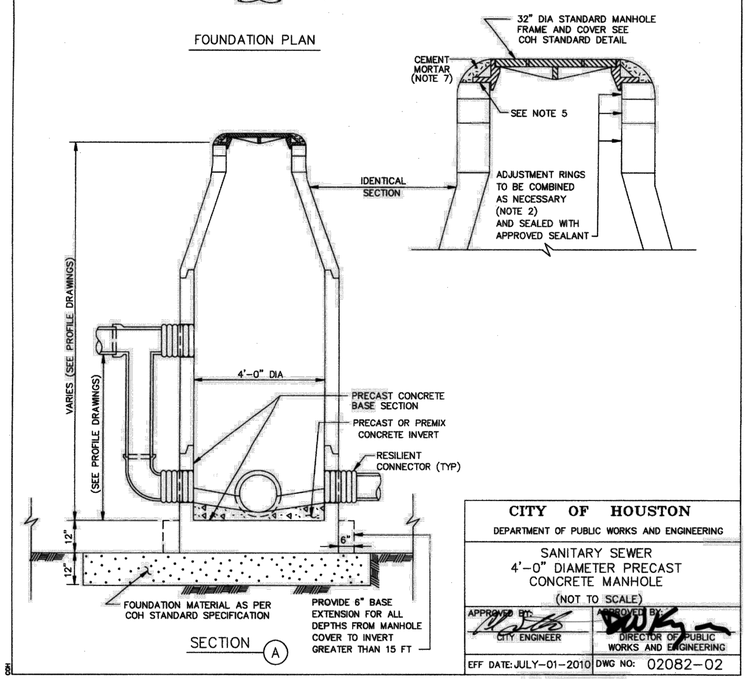
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
SANITARY SEWER CRUSHED STONE SUPPORTED MANHOLE FOR WET STABLE TRENCH (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	REVIEWED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02082-05



FOUNDATION PLAN

NOTES:

1. DEPTH OF MANHOLE DETERMINES SECTIONS REQUIRED.
2. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12". THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'-6".
3. MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12'-0" SHALL BE DETERMINED TO MEET LOADING CONDITIONS. MIN THICKNESS 5".
4. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
5. SEAT MANHOLE FRAME IN SEALANT PER COH STANDARD SPECIFICATION.
6. ECCENTRIC PRECAST CONCRETE MANHOLE MAY BE USED.
7. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
8. MIN REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE # 5 @ 8 EW.



CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
SANITARY SEWER 4'-0" DIAMETER PRECAST CONCRETE MANHOLE (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 02082-02

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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(13 OF 16)

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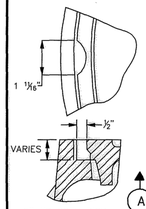
REV	DESCRIPTION	BY	DATE

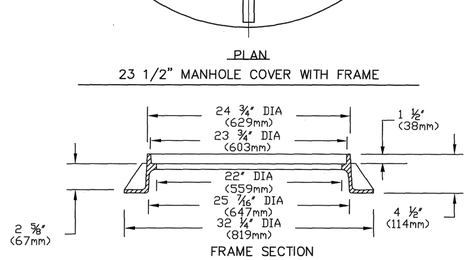
TYPE 1
OPEN PICK HOLE



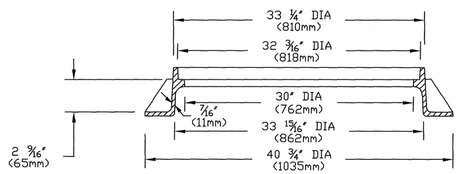
NOTE:
23 1/2" MANHOLE COVER CAN BE USED ONLY FOR REPLACEMENT OF EXISTING MANHOLE COVER.

PLAN

23 1/2" MANHOLE COVER WITH FRAME



FRAME SECTION



SECTION (A)

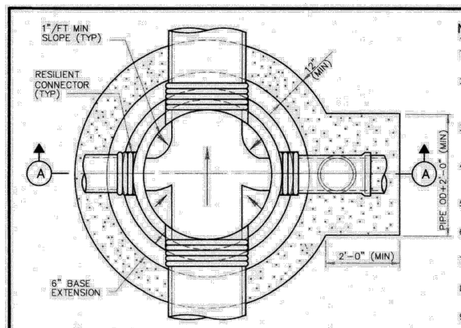
32" MANHOLE COVER WITH FRAME

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SANITARY SEWER AND WATER MANHOLE FRAME AND COVER
(NOT TO SCALE)

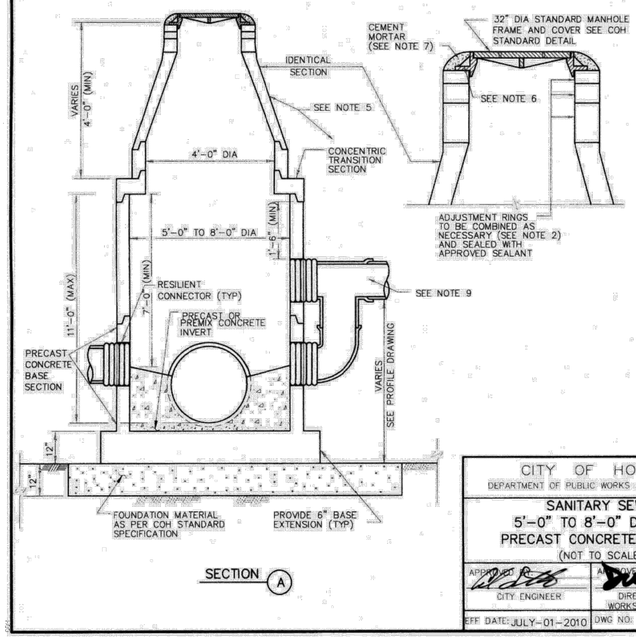
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2016	DWG NO: 02090-01



FOUNDATION PLAN

NOTES:

1. DEPTH OF MANHOLE DETERMINES SECTIONS REQUIRED.
2. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12" THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'-6".
3. MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12'-0" SHALL BE DETERMINED TO MEET LOADING CONDITIONS. MIN. THICKNESS 5".
4. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
5. ALTERNATE ECCENTRIC CONE AND/OR TRANSITION SECTION MAY BE USED.
6. SEAT MANHOLE FRAME IN SEALANT PER COH STANDARD SPECIFICATION.
7. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
8. MIN REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE # 5 @ 8 EW.
9. WHERE DIMENSIONAL RESTRICTIONS DICTATE, THE MANHOLE BASE HEIGHT SHALL BE ADJUSTED TO HAVE THE UPPER INLET PIPE OF THE DROP ENTER INTO THE 4'-0" DIAMETER RISER SECTION.



SECTION (A)

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SANITARY SEWER
5'-0" TO 8'-0" DIAMETER
PRECAST CONCRETE MANHOLE
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 02082-03

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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(14 OF 16)

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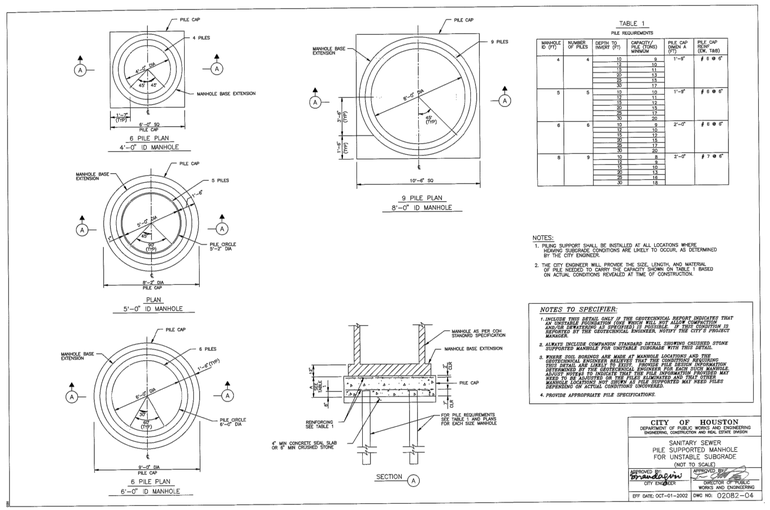

TABLE 1

PILE REQUIREMENTS

MANHOLE ID (FT)	NUMBER OF PILES	DEPTH TO BEARING (FT)	CAPACITY / PILE (TONS) MINIMUM	PILE CAP WIDTH 'A' (FT)	PILE CAP DEPTH 'B' (SK 1365)
4	4	10	8	1'-9"	1' 0"
		11	10		
		12	11		
		13	13		
		14	15		
		15	17		
5	5	10	8	1'-9"	1' 0"
		11	10		
		12	12		
		13	13		
		14	15		
		15	20		
6	6	10	8	2'-0"	1' 0"
		11	10		
		12	12		
		13	13		
		14	15		
		15	20		
8	9	10	8	2'-0"	1' 0"
		11	10		
		12	12		
		13	13		
		14	15		
		15	18		

NOTES:
1. PILING SUPPORT SHALL BE INSTALLED AT ALL LOCATIONS WHERE BEARING SUBGRADE CONDITIONS ARE LIKELY TO OCCUR, AS DETERMINED BY THE CITY ENGINEER.
2. THE CITY ENGINEER WILL PROVIDE THE SIZE, LENGTH, AND MATERIAL OF PILE NEEDED TO CARRY THE CAPACITY SHOWN ON TABLE 1 BASED ON ACTUAL CONDITIONS REVEALED AT TIME OF CONSTRUCTION.

NOTES TO SPECIFIER:

1. *INFLUENCE ZONE DETAIL ONLY IF THE GEOTECHNICAL REPORT INDICATES THAT AN UNSUITABLE FOUNDATION ZONE ABOVE THE BEARING STRATUM IS EXPECTED BY THE GEOTECHNICAL ENGINEER, WITHOUT THE CITY'S PROJECT MANAGER.*
2. *ALWAYS PROVIDE COMPACTED, STANDARD DETAIL FORMING, CRUSHED, STONE SUPPORTED MANHOLE FOR LOCATIONS NOT USING PILE SUPPORT.*
3. *WHERE SOIL BORINGS ARE MADE AT MANHOLE LOCATIONS AND THE GEOTECHNICAL ENGINEER'S REPORT INDICATES THAT THE FOLLOWING SPEC DETAIL ARE LIKELY TO EXIST, PROVIDE PILE DESIGN INFORMATION FOR THE CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADDITIONAL COSTS ASSOCIATED TO ADJUSTS THAT THE INFORMATION PROVIDED MAY NEED TO BE ALGORITHM OF THE PILES ELIMINATED AND THAT OTHER CONDITIONS ENCOUNTERED MAY NEED PILES DEPENDENT OF OTHER CONDITIONS ENCOUNTERED.*
4. *PROVIDE APPROPRIATE PILE SPECIFICATIONS.*

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING CONSTRUCTION AND R&D/C STORM DIVISION

SANITARY SEWER
PILE SUPPORTED MANHOLE
FOR UNSTABLE SUBGRADE
(NOT TO SCALE)

APPROVED BY: DIRECTOR
APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-01-2002 DWG NO. 02082-04

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06/02/2025

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COTTAGE GROVE EAST – PH II
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(15 OF 16)

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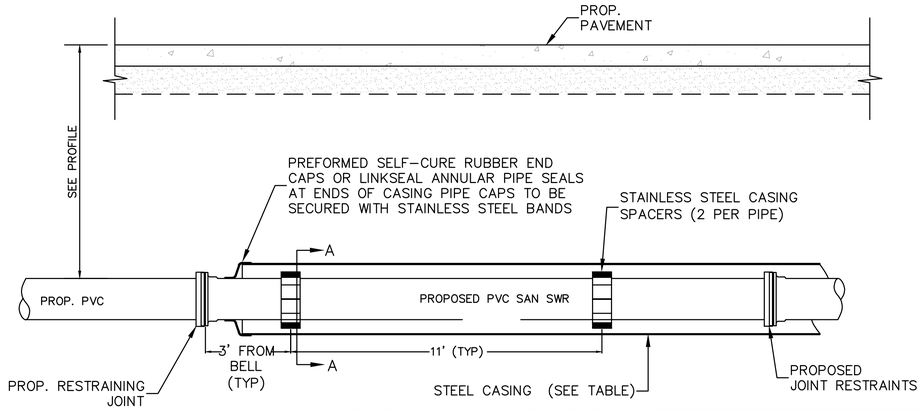
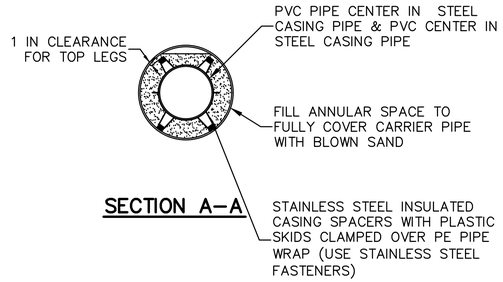
O:\2018\18001\Drawings\SHEETS\VP-SAN SWR DETAILS Continued.dwg Jun 12, 2025

REV	DESCRIPTION	BY	DATE



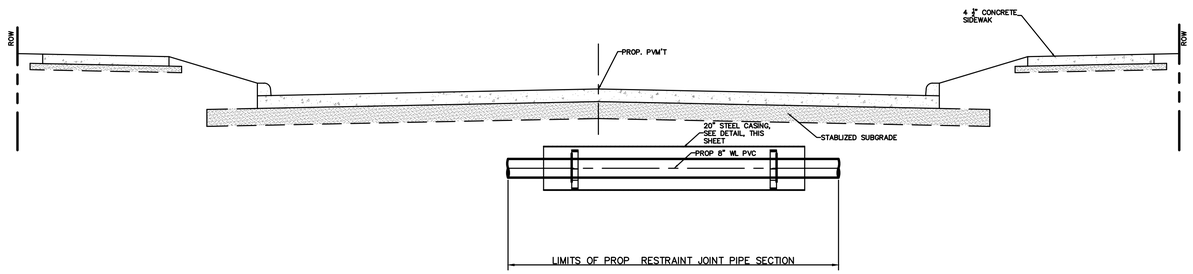
UTILITY CROSSING PROFILE



SECTION A–A

SIZE OF CARRIER	MJ BELL O.D.	MIN. CASING SIZE	MIN. CASING WALL THICKNESS
6	11.12	18	0.250
8	13.37	20	0.281
10	15.69	22	0.296
12	17.88	24	0 312
16	22.50	30	0.406
20	27.00	36	0.469
24	31 50	42	0 500

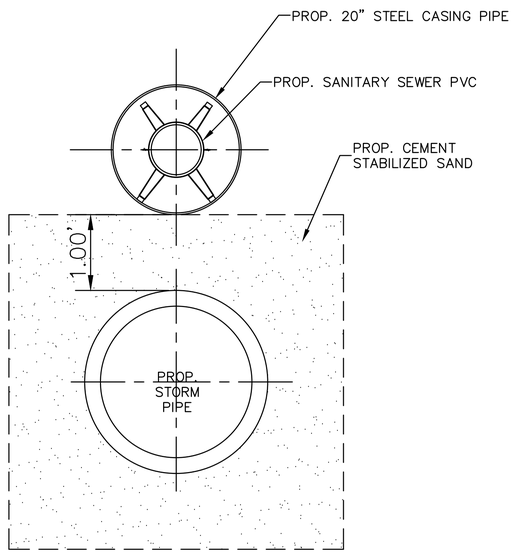
NOTES:
1. CASING PIPE SHALL BE ASTM 252 WELDED STEEL (MIN. 35,000 PSI YIELD STRENGTH) COATED WITH BITUMINOUS ASPHALT COATING ACCORDING TO AWWA C104.
2. CASING SPACER SHALL BE STAINLESS STEEL OR APPROVED EQUAL.
3. SPACERS SHALL BE DESIGNED FOR ALL POTENTIAL STATIC AND DYNAMIC LOADS ASSOCIATED WITH THE INSTALLATION, CARRIER PIPE OPERATION AND REMOVAL.
4. JOINT RESTRAIN MUST EXTEND AT LEAST 10–FT BEYOND THE END OF THE CASING PIPE.
5. SPLIT STEEL CASING TO BE USED WHEN EXISTING CARRIER IS USED.
6. NO EXTRA PAY, FOR STEEL CASNG AND ASSOCIATED ITEMS SUCH AS RUBBER END CAP, STAINLESS STEEL CASING, JOINTS RESTRAINST, ETC. INCIDENTAL TO PIPE INSTALLATION



WATER LINE STEEL CASING

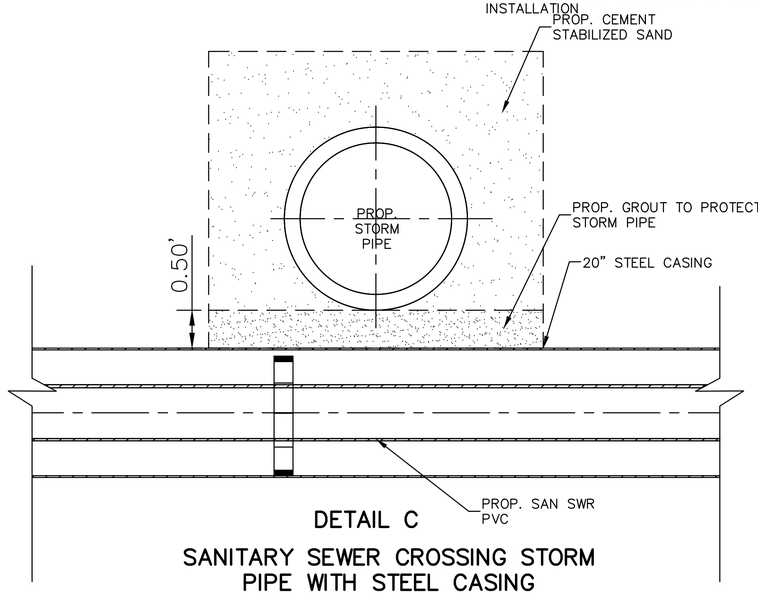
NOTES:
1. NO EXTRA PAY, FOR STEEL CASING AND ASSOCIATED ITEM SUCH AS RUBBER END CAP, STAINLESS STEEL CASING JOINT RESTRAINST, ETC. INCIDENTAL TO PIPE INSTALLATION

STEEL CASING PIPE



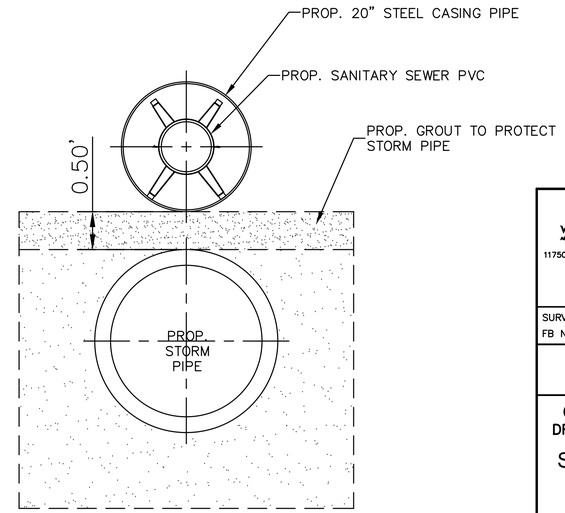
DETAIL A

SANITARY SEWER CROSSING STORM PIPE WITH STEEL CASING PROTECTION



DETAIL C

SANITARY SEWER CROSSING STORM PIPE WITH STEEL CASING PROTECTION



DETAIL B

SANITARY SEWER CROSSING STORM PIPE WITH STEEL CASING PROTECTION AND GROUT PROTECTION

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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
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PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

SANITARY SEWER DETAILS
(16 OF 16)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 172 OF 345	

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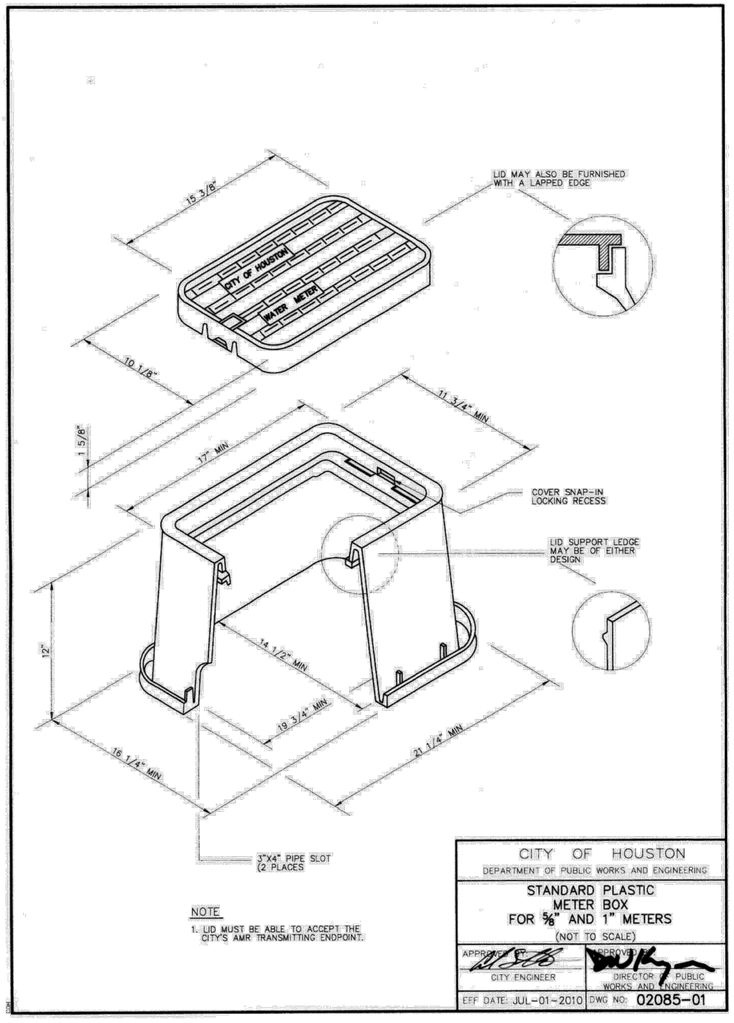
REV	DESCRIPTION	BY	DATE



NOTE

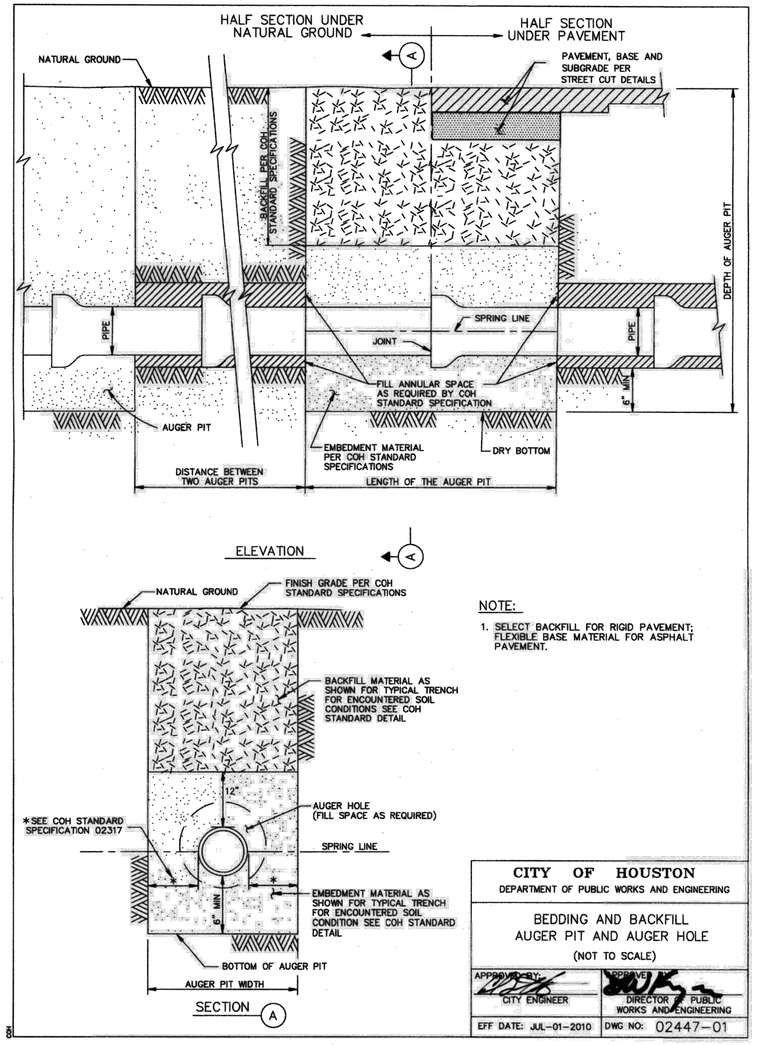
1. LID MUST BE ABLE TO ACCEPT THE CITY'S AMR TRANSMITTING ENDPOINT.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STANDARD PLASTIC METER BOX FOR ⅝" AND 1" METERS
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER | APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JUL-01-2010 | DWG NO: 02085-01



NOTE:

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

APPROVED BY: CITY ENGINEER | APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JUL-01-2010 | DWG NO: 02447-01

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06/02/2025

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FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

WATER LINE DETAILS
(1 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 173 OF 345	

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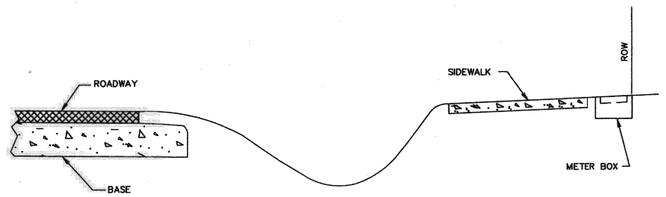
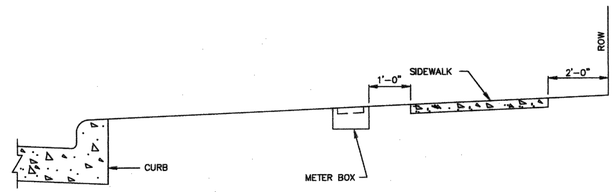
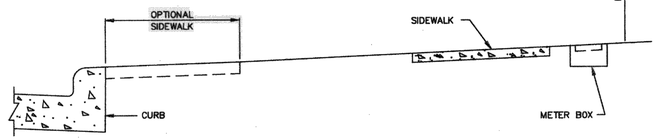
REV	DESCRIPTION	BY	DATE



OPEN DITCH STREET



CURB STREET



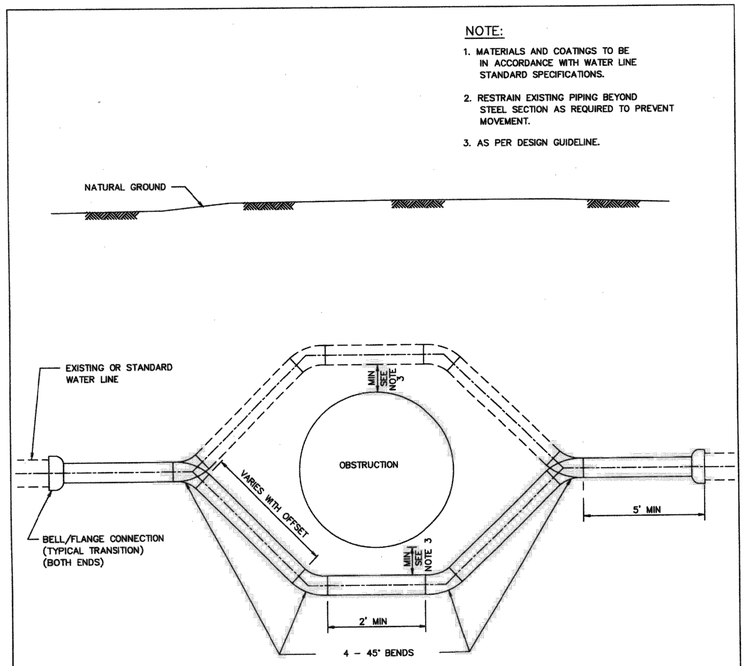
CURB STREET

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

LOCATION OF WATER METER BOX FOR 2" DIAMETER AND LESS

(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010	DWG NO: 02085-02



PIPE OFFSET ALTERNATES

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

TYPICAL STEEL PIPE OFFSET SECTION FOR WATER LINES

(NOT TO SCALE)

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

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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
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LICENSED PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

WATER LINE DETAILS (2 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 174 OF 345	

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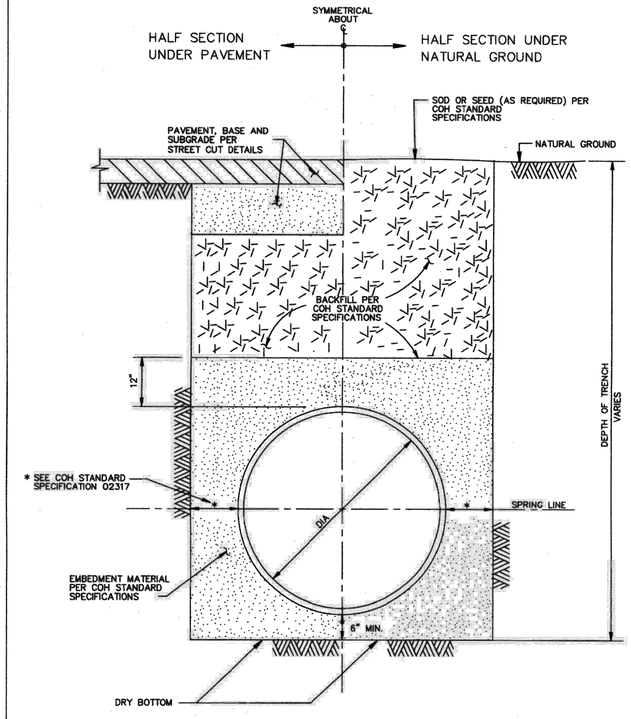
O:\2018\180013\Drawings\SHEETS\01-WTR LINE DETAILS.dwg Jun 12, 2025

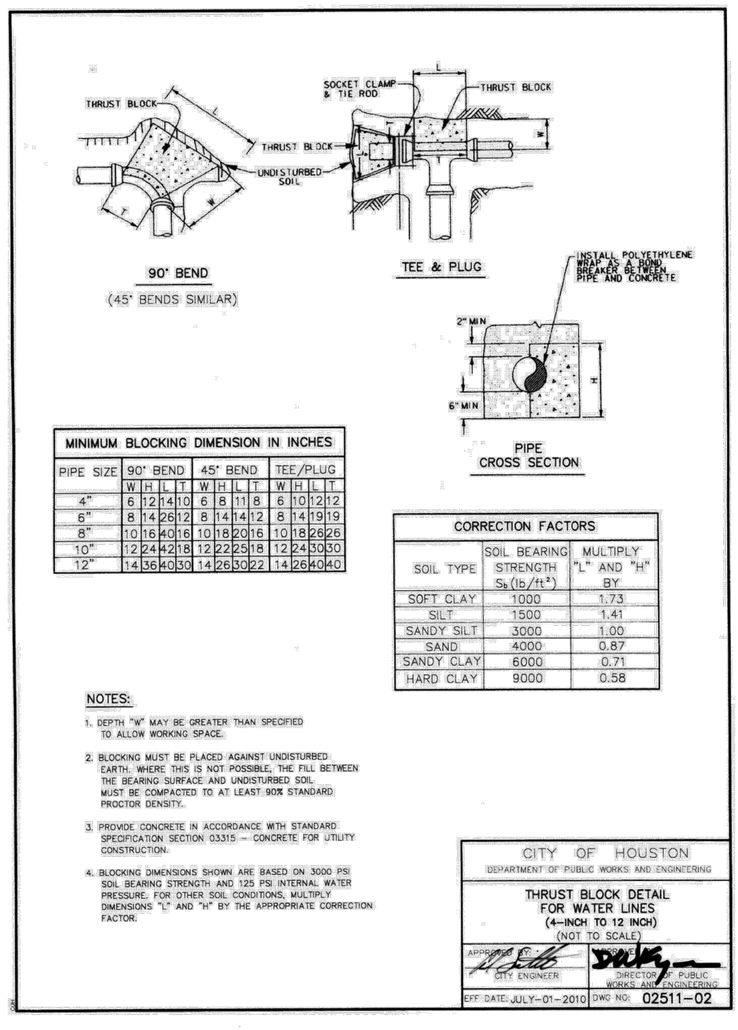
REV	DESCRIPTION	BY	DATE



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER DISTRIBUTION MAIN
BEDDING AND BACKFILL FOR
OPEN CUT TRENCHES
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010	DWG NO: 02317-04



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

CORRECTION FACTORS		
SOIL TYPE	SOIL BEARING STRENGTH S_b (lb/ft²)	MULTIPLY "L" AND "H" BY
SOFT CLAY	1000	1.73
SILT	1500	1.41
SANDY SILT	3000	1.00
SAND	4000	0.87
SANDY CLAY	6000	0.71
HARD CLAY	9000	0.58

NOTES:

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 02511-02

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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

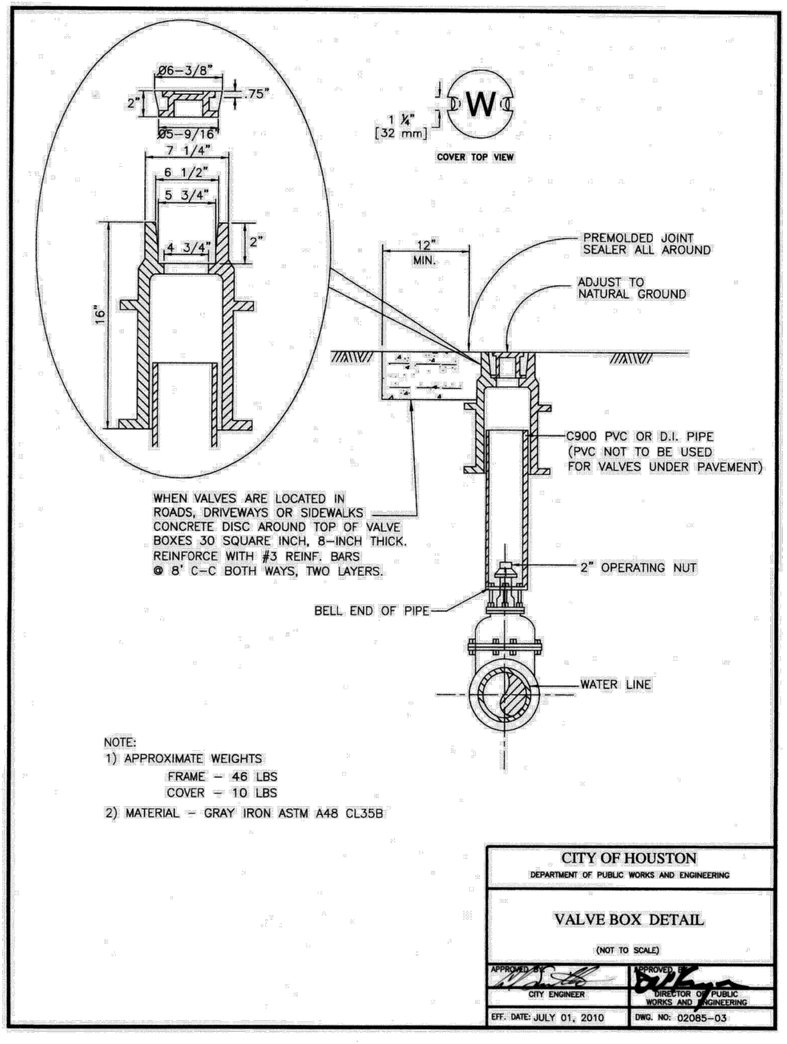
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

WATER LINE DETAILS
(3 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 175 OF 345	

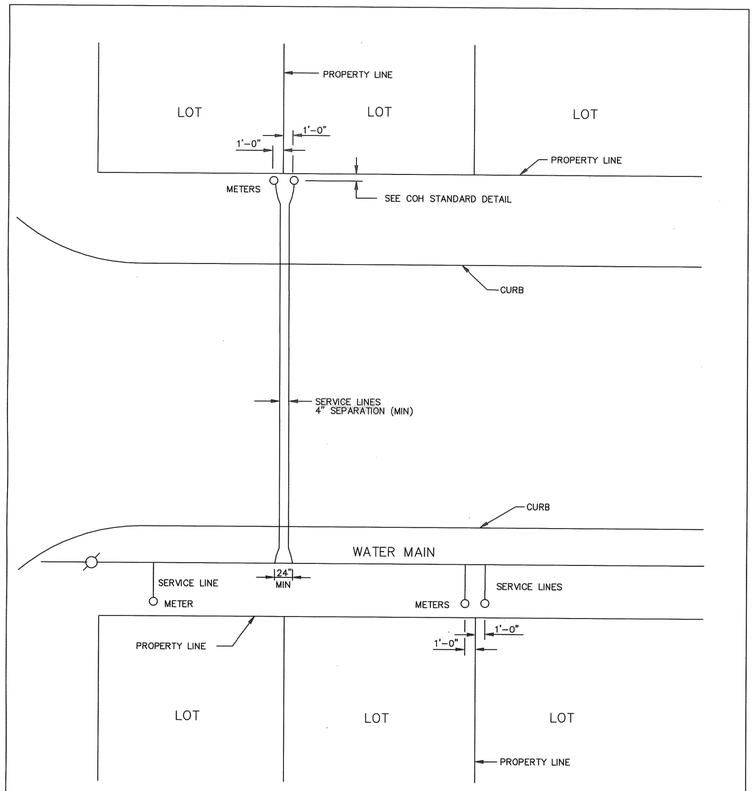
CivilTech Engineering, Inc.
O:\2018\L38010\Drawings\SHEETS\7-WTR LINE DETAILS.dwg Jun 12, 2025

REV	DESCRIPTION	BY	DATE



NOTE:
1) APPROXIMATE WEIGHTS
FRAME – 46 LBS
COVER – 10 LBS
2) MATERIAL – GRAY IRON ASTM A48 CL35B

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



GENERAL NOTES:

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

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
TYPICAL 3/4" THROUGH 2" SERVICE ARRANGEMENTS (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2016	DWG NO: 02512-01

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

WATER LINE DETAILS
(4 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
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CITY OF HOUSTON PM	
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SHEET NO. 176 OF 345	

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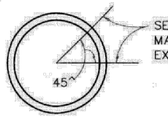
REV	DESCRIPTION	BY	DATE

PIPE TAPPING SCHEDULE

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

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



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

BLOW-OFF & CHLORINATION TAPS ARE MADE IN VERTICAL POSITION



WIDE BAND SINGLE SADDLE OR DUAL SADDLES

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SERVICE TAPS

(NOT TO SCALE)

APPROVED BY: CITY ENGINEER
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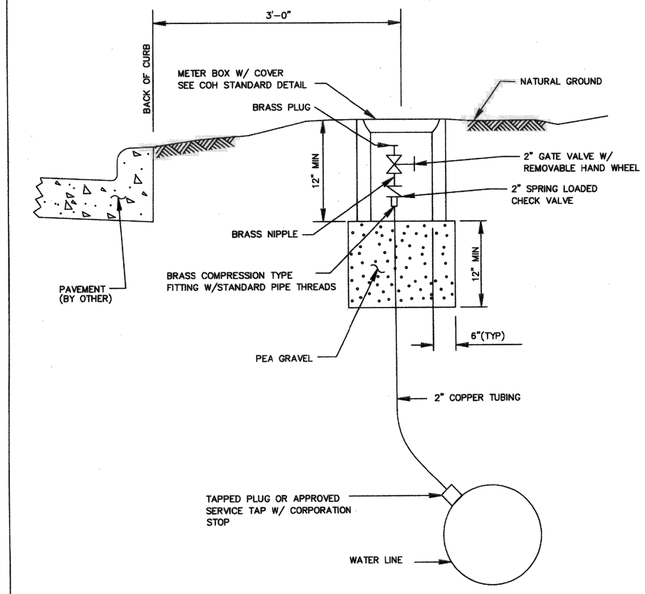
EFF DATE: JUL-01-2010
DWG NO: 02512-02



GENERAL NOTES:

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PERMANENT
BLOW-OFF-DETAIL

(NOT TO SCALE)

APPROVED BY: CITY ENGINEER
APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010
DWG NO: 02524-01

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STATE OF TEXAS
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

WATER LINE DETAILS
(5 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 177 OF 345	

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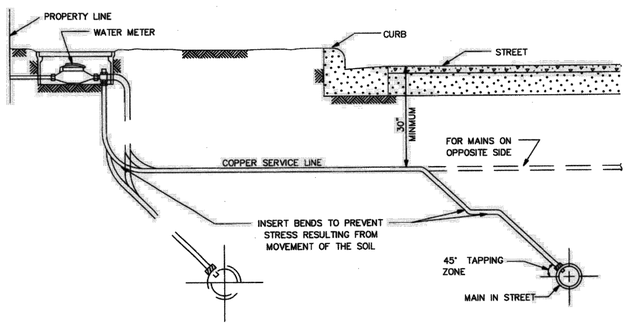
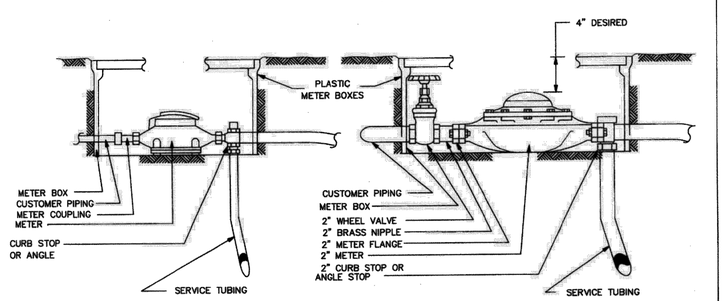
REV	DESCRIPTION	BY	DATE

NOTES:

1 1/2" METER SET IS SAME AS 2" EXCEPT WHEEL VALVE IS NOT REQUIRED.



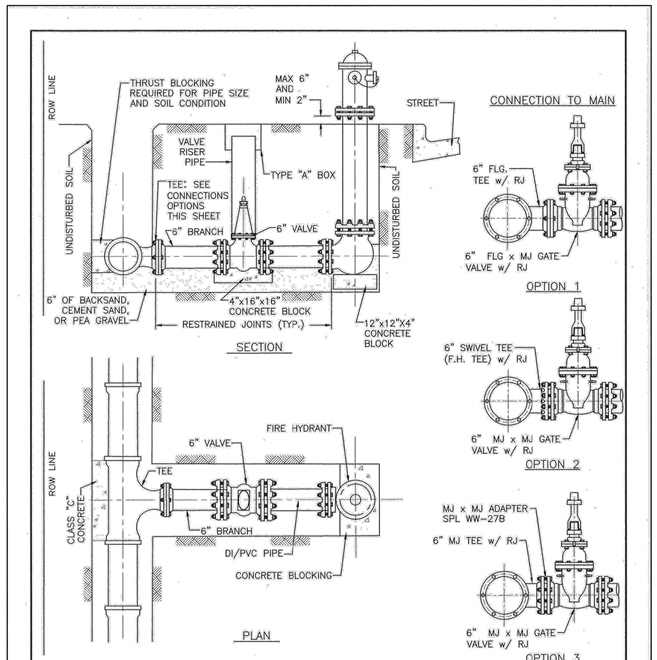
TYPICAL SECTION SERVICE LINE



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

2" METER SET

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
TYPICAL METER SETTINGS (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 02526-01



NOTES:

1. LOCATE FIRE HYDRANTS AT POINT OF CURVATURE (PC) OR POINT OF TANGENCY (PT) OF THE INTERSECTION CURB RADIUS, 3 FEET BEHIND CURB OR PROJECTED FUTURE CURB.
2. ON OPEN-DITCH ROADWAYS, SET THE FIRE HYDRANTS WITH IN 5 FEET OF RIGHT-OF-WAY LINES.
3. FIRE HYDRANT STEAMER NOZZLE SHALL FACE THE STREET.
4. LOCATE HYDRANT VALVE IMMEDIATELY ADJACENT TO WATER LINE.
5. ALL PIPING TO BE RESTRAINED JOINTS.

CITY OF HOUSTON HOUSTON PUBLIC WORKS	
STANDARD FIRE HYDRANT DETAIL (NOT TO SCALE)	
APPROVED BY: Sethait Kanvaty CITY ENGINEER	APPROVED BY: DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 02520-01

Table 7.3
PROTECTION REQUIREMENTS AT WATER LINE (WL) - SANITARY SEWER (SS) CROSSINGS

	PROPOSED WATER LINE				PROPOSED SANITARY SEWER			
	OVER		UNDER		OVER		UNDER	
	EXISTING SS	PROP SS	EXISTING SS	PROP SS	EXISTING WL	PROP WL	EXISTING WL	PROP WL
Minimum 2 feet vertical clearance	√[1]	√[1]	√	√	√[6]	√	√[1]	√[1]
Place 1 full section (min 18 ft) of WL centered at SS Crossing. Provide restrained joints on WL, spaced at least 9 ft horizontally from centerline of SS	√	√	√	√	√[6]	√		√
Place 1 full section (min 18 ft) of SS centered at WL Crossing. Provide restrained joints on SS, spaced at least 9 ft horizontally from centerline of WL		√			√[6]		√	√
Replace 1 full section of existing SS with pressure-rated DIP or pressure-rated PVC pipe with adapters and restrained joints centered at WL crossing	√[2,3]		√[3]		√[6]			
Provide DIP for small diameter WL (less than 24 inches). PVC pipe is only allowed if encased as per TAC § 290.44, and use restrained joints for both DIP and PVC pipe			√	√	√[6]	√		
Embed SS with CSS for the total length of 1 pipe segment plus 1 foot beyond the joints on each end	√[2,3]	√[4]	√[3]	√[4]	√[5,6]	√[4]	√[4]	√[4]
Place 1 full section (min 18 ft) of min 150 psi SS centered at WL crossing. Provide restrained joints on SS, spaced at least 9 ft horizontally from centerline of WL or encase in a joint of 150 psi pressure pipe (min 18 ft) two nominal sizes larger with spacers at 5 ft interval.				√	√	√		

1. Minimum clearance is 2 feet for non-pressure rated SS and 6 inches for pressure rated SS(with at least 150 psi pressure rating)
2. Minimum clearance is 2 feet for non-pressure rated SS and 1 foot for pressure rated SS
3. Required if existing SS is disturted and/or there is evidence of leakage
4. Not required for augered WL unless there is evidence of leakage, completely fill augered hole with bentonite/clay mixture
5. Not required for augered SS, completely fill augered hole with bentonite/clay mixture
6. Not allowed requires approval of City Engineer
7. Both Waterline and Wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600 standards

WOOLPERT
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FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

WATER LINE DETAILS
(6 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 178 OF 345	

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REV	DESCRIPTION	BY	DATE

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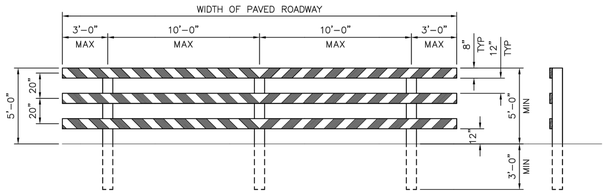
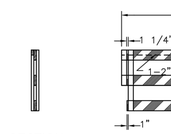
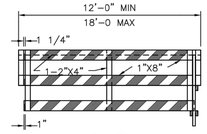
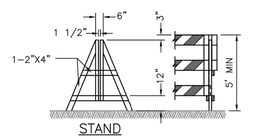


TYPE III BARRICADE
FOR END OF ROAD

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

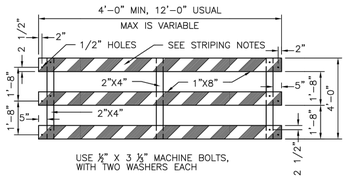




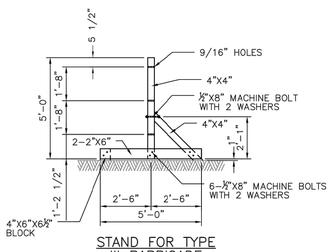




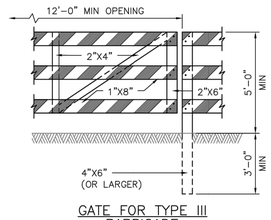
DEMOUNTABLE TYPE III BARRICADE



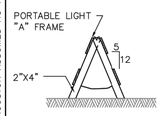
PANEL FOR TYPE
III BARRICADE



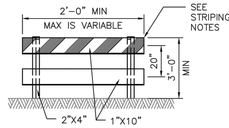
STAND FOR TYPE
III BARRICADE



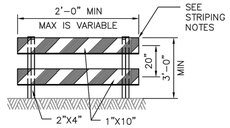
GATE FOR TYPE III
BARRICADE



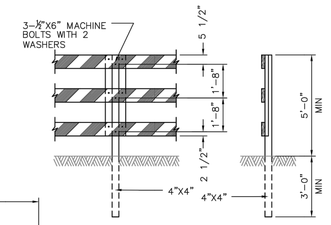
"A" FRAME



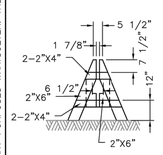
TYPE I



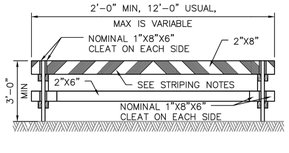
TYPE II



POST FOR TYPE III
BARRICADE



DEMOUNTABLE



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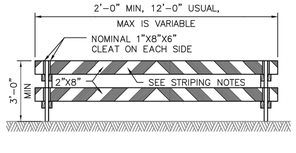

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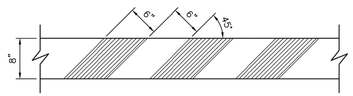
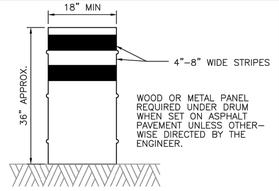


STRIPING FOR BARRICADE

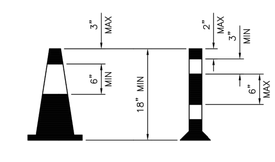
BARRICADE NOTES:

1. THE MOST RECENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND IT'S REVISIONS, SHALL GOVERN THE CONSTRUCTION AND USE OF ALL ITEMS HEREIN DESCRIBED.
2. CHANNELIZATION DEVICES OTHER THAN BARRICADES SHOULD NORMALLY BE USED FOR CHANNELIZATION PURPOSES.
3. BARRICADES SHOULD NORMALLY BE PLACED PERPENDICULAR TO THE TRAFFIC FLOW. OTHER CHANNELIZING DEVICES, SUCH AS DRUMS, VERTICAL PANELS OR PORTABLE BARRIERS, SHOULD BE USED WHERE NEEDED TO SEPARATE TRAFFIC FROM THE WORK AREA. IN ALL CASES, THE BARRICADES SHOULD BE SO LOCATED AS TO MOST ADVANTAGEOUSLY WARN AND DIRECT TRAFFIC.
4. BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL APPROVED BY THE TMUTCD. THE CONSTRUCTION DETAILS SHOWN HEREON ARE TYPICAL AND ARE SUGGESTED DETAILS FOR WOOD SUPPORT SYSTEMS FOR BARRICADES. THE DETAILS OF RAIL WIDTH AND STRIPING, NUMBER AND SPACING OF RAILS, MINIMUM LENGTH AND HEIGHT (ABOVE PAVEMENT) OF RAILS MUST BE ADHERED TO WHEN ALTERNATE DESIGNS ARE USED.
5. BARRICADES ARE TO BE CONSTRUCTED OF CLEAN SOUND MATERIAL. ALL SURFACES ABOVE GROUND, WHICH ARE NOT STRIPED, SHALL BE WHITE EXCEPT THE UNPAINTED GALVANIZED METAL OR ALUMINUM COMPONENTS MAY BE USED. COMPONENTS MADE OF LUMBER SHALL BE PAINTED WITH A MINIMUM OF TWO COATS OF AN APPROVED BRAND OF WHITE PAINT TO SECURE THOROUGH COVERAGE AND A UNIFORM WHITE COLOR.
6. THE REFLECTORIZED WHITE AND REFLECTORIZED ORANGE (REFLECTORIZED RED) STRIPES FOR BARRICADES, DRUMS AND VERTICAL PANELS SHALL BE CONSTRUCTED OF HIGH INTESITY SHEETING AND SHALL BE MAINTAINED TO MEET THE APPEARANCE, COLOR AND REFLECTIVITY REQUIREMENTS SET BY DOTT.
7. THE CONTRACTOR SHALL MAINTAIN EACH BARRICADE IN A CLEAN AND GOOD CONDITION.
8. BARRICADES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND/OR THE ELIMINATION OF THE HAZARD ON ANY SECTION.



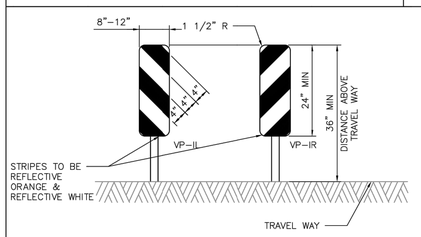
DRUMS

1. DRUMS, SET ON END, AND USED FOR TRAFFIC WARNING OR CHANNELIZATION SHALL BE APPROX 36" IN HEIGHT AND A MIN OF 18" IN DIAMETER. THE CONTRACTOR, AT HIS OPTION, MAY USE DRUMS MADE FROM STEEL BARRELS OR BLACK POLYETHYLENE PLASTIC DRUM LINERS WEIGHING APPROX EIGHT POUNDS EACH. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL, CIRCUMFERENTIAL, REFLECTORIZED ORANGE AND REFLECTORIZED WHITE STRIPES, 4 TO 8 INCHES WIDE. THE FIRST REFLECTORIZED STRIPE SHOULD START WITHIN TWO (2) INCHES OF THE TOP OF THE DRUM. THERE SHALL BE AT LEAST TWO ORANGE AND TWO WHITE STRIPES ON EACH DRUM. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE HORIZONTAL ORANGE AND WHITE STRIPES, THEY SHALL BE NO MORE THAN 2 INCHES WIDE. METAL DRUMS SHALL BE PAINTED BLACK OR ORANGE BEFORE REFLECTORIZED STRIPES ARE ADDED. ALL DRUMS ON PROJECT WILL BE THE SAME COLOR. WHEN DRUMS ARE PLACED IN THE ROADWAY, APPROPRIATE WARNING SIGNS SHOULD BE USED. DURING HOURS OF DARKNESS, A FLASHING WARNING LIGHT SHOULD BE PLACED ON DRUMS USED SINGLY AS A WARNING DEVICE. STEADY BURN ELECTRIC LIGHTS OR DELINEATORS SHOULD BE PLACED ON DRUMS USED IN SERIES FOR TRAFFIC CHANNELIZATION. DRUMS SHALL BE WEIGHTED WITH SAND TO THE EXTENT INDICATED IN THE PLANS.
2. CWI-8 CHEVRON SIGNS, CWI-6A ARROW SIGNS OR VP-1 VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.



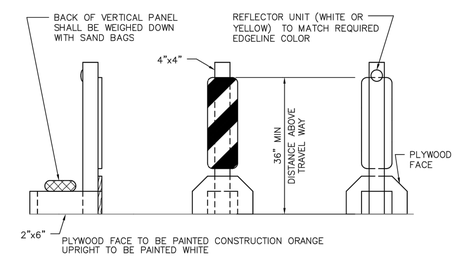
CONES

1. TRAFFIC CONES AND TUBULAR MARKERS SHALL BE A MIN OF 18" INCHES IN HEIGHT WITH A BROADENED BASE AND MAY BE MADE OF VARIOUS MATERIALS TO WITHSTAND IMPACT WITHOUT DAMAGE TO THEMSELVES OR TO VEHICLES. LARGER SIZES SHOULD BE USED ON FREEWAYS AND OTHER ROADWAYS WHERE SPEED ARE RELATIVELY HIGH OR WHERE EVER MORE CONSPICUOUS GUIDANCE IS NEEDED. ORANGE SHALL BE THE PREDOMINANT COLOR ON CONES AND TUBULAR MARKERS. THEY SHOULD BE KEPT CLEAN AND BRIGHT FOR MAX TARGET VALUE. FOR NIGHT TIME USE THEY SHALL BE REFLECTORIZED OR EQUIPPED WITH LIGHTING DEVICES FOR MAX VISIBILITY. REFLECTORIZED MATERIAL SHALL HAVE A SMOOTH, SEALED OUTER SURFACE WHICH WILL DISPLAY THE SAME APPROX COLOR DAY AND NIGHT.
2. REFLECTORIZATION OF TUBULAR MARKERS SHALL BE A MIN OF TWO THREE-INCH BANDS PLACED A MAX OF 2" FROM THE TOP WITH A MAX OF 6" BETWEEN THE BANDS. REFLECTORIZATION OF CONES SHALL BE PROVIDED BY A MIN 6" BAND PLACED A MAX OF 3" FROM THE TOP.
3. CONES OR TUBULAR MARKERS ARE GENERALLY ONLY SUITABLE FOR TEMPORARY USAGE (UP TO 8 HOURS) WITH OTHER CHANNELIZATION DEVICES SUCH AS VERTICAL PANELS OR BARRICADES PREFERRED FOR LONGER TERM USAGE. CARE SHOULD BE TAKEN TO INSURE THAT THEY REMAIN IN THEIR PROPER LOCATION AND IN AN UPRIGHT POSITION.



VERTICAL PANELS (VP)

VERTICAL PANELS ARE NORMALLY USED AS CHANNELIZING DEVICES TO INDICATE TANGENT OR NEARLY TANGENT ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME. IN ADDITION, VERTICAL PANELS SHOULD BE USED AT THE EDGE OF SHOULDER DROP-OFFS AND OTHER SUCH AREAS AS LANE TRANSITIONS WHERE POSITIVE DAY AND NIGHT DELINEATION MAY BE REQUIRED. VERTICAL PANELS SHOULD BE MOUNTED BACK TO BACK IF USED AT THE EDGE OF CUTS ADJACENT TO TWO-WAY TWO LANE ROADWAYS. STRIPES SHOULD ALWAYS SLOPE DOWNWARD TOWARD THE TRAVELED WAY.



TYPICAL PORTABLE VERTICAL PANEL
OR DELINEATOR

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

APPROVED BY:	APPROVED BY:
DocuSigned by: Sylvia Kanwar 92F5B0C3419478...	DocuSigned by: Hiếu Nguyễn 864268FDA7884CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A8DC410B72B3453...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-14

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

BARRICADE AND
CHANNELIZING DEVICES

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONTAL
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Houston, TX 77079
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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(1 OF 18)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 179 OF 345	

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REV	DESCRIPTION	BY	DATE

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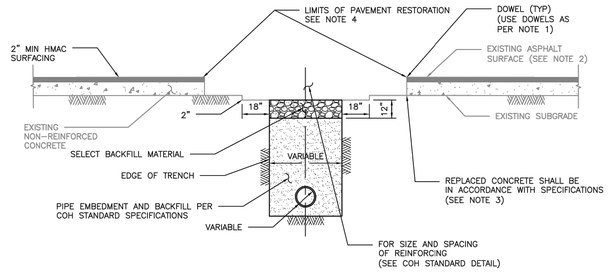
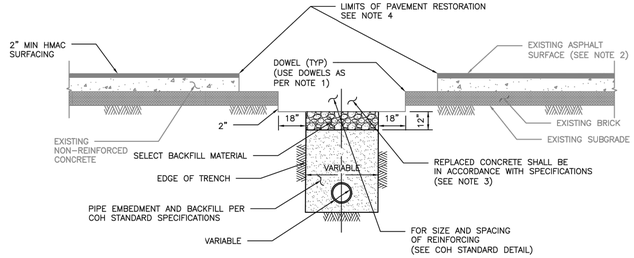


ELEVATION C
REPAIR OF NON-REINFORCED CONCRETE PAVEMENT



ELEVATION D
REPAIR OF NON-REINFORCED CONCRETE PAVEMENT WITH BRICK

NOTES:

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PAVEMENT REPAIR DETAIL
FOR STREET CUTS
(NON-REINFORCED CONCRETE & BRICK PAVEMENT)
(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sulaf Kanawar — CITY ENGINEER
DocuSigned by: Carl Hallbach — DIRECTOR OF HPW
DocuSigned by: HANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV-27-2023 | DWG NO: 02951-05

DISCLAIMER:
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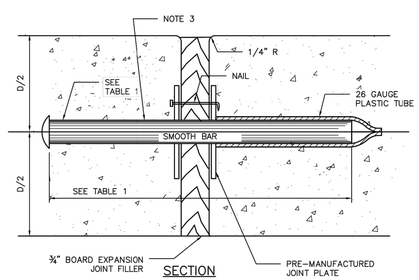
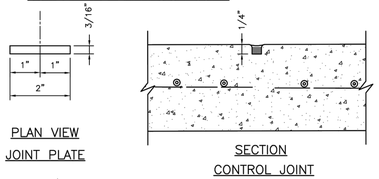
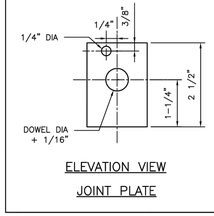


SECTION
DOWEL TYPE EXPANSION JOINT



PLAN VIEW
JOINT PLATE

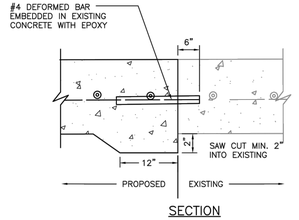
SECTION
CONTROL JOINT



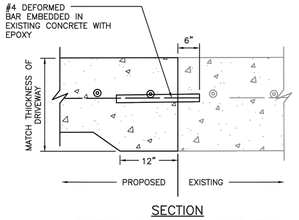
ELEVATION VIEW
JOINT PLATE

TABLE 1

PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS		
	DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
4 1/2	1/2	18	12
5	1/2	18	12
6	3/4	18	12
7	1	18	12



SECTION
SIDEWALK TO EXISTING SIDEWALK



SECTION
SIDEWALK TO EXISTING DRIVEWAY

NOTES:

1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS.
2. EXPANSION JOINT TO BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED AT A MAXIMUM DISTANCE OF 3 FEET MAXIMUM SPACING FOR CONTROL JOINTS SHALL BE 5 FEET.
3. CENTER DOWEL HORIZONTALLY ON JOINT.
4. CENTER DOWEL VERTICALLY IN CONCRETE AS NEEDED TO MAINTAIN A 2 INCH MINIMUM COVER.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

SIDEWALK EXPANSION AND
CONSTRUCTION JOINT DETAILS
(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sulaf Kanawar — CITY ENGINEER
DocuSigned by: Carl Hallbach — DIRECTOR OF HPW
DocuSigned by: HANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV-27-2023 | DWG NO: 02752-02

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STATE OF TEXAS
ROBERT A. HILL
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PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(2 OF 18)

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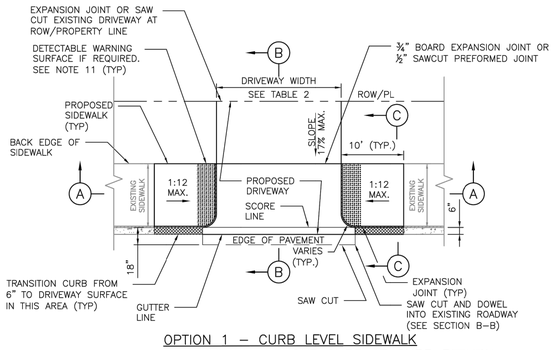
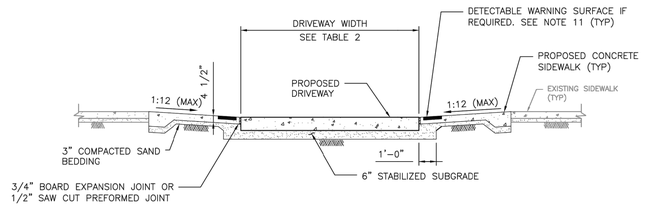
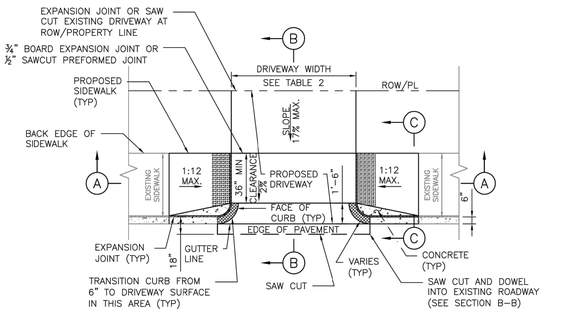


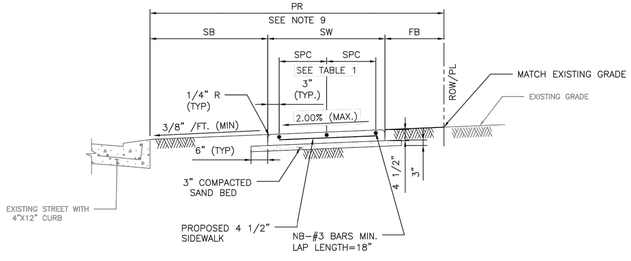
OPTION 1 – CURB LEVEL SIDEWALK
PLAN VIEW – DRIVEWAY WITHOUT CURB AT CURB RETURN



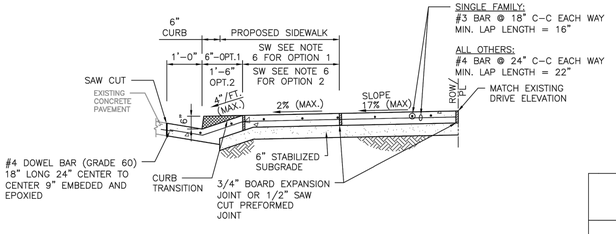
SECTION A–A
PROPOSED SIDEWALK THROUGH DRIVEWAY



OPTION 2 – CURB LEVEL SIDEWALK
PLAN VIEW – DRIVEWAY WITH CURB AT CURB RETURN



SECTION C–C
TYPICAL SIDEWALK SECTION



SECTION B–B
TYPICAL DRIVEWAY SECTION THROUGH DRIVEWAY

TABLE 1

REINFORCING STEEL INFORMATION
FOR 4 ½ " THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
fc' = 3,500 PSI AND fy = 60,000 PSI
REFER TO CONTRACT DRAWINGS FOR SIDEWALKS WIDER THAN 6 FEET.

SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL			TRANSVERSE STEEL #3 BARS SPACING (IN)
		#3 BARS			
		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 SWEPT PATH ANALYSIS.
(2) REFER TO INFRASTRUCTURE DESIGN MANUAL ARTCILES 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:

1. REPAIR, RECONSTRUCTION OR REPLACEMENT OF SIDEWALKS SHALL MEET PERMITTING REQUIREMENTS OF CODE OF ORDINANCES SECTION 40–552.
2. FOR REPAIR, RECONSTRUCTION, OR REPLACEMENT OF EXISTING SIDEWALKS:
   - 2.1. EXISTING SIDEWALKS LESS THAN OR EQUAL TO 20 FEET IN TOTAL LENGTH:
     - 2.1.1. THE PROPOSED SIDEWALK WIDTH WILL BE ALLOWED TO MATCH THE EXISTING SIDEWALK.
   - 2.2. EXISTING SIDEWALKS GREATER THAN 20 FEET IN TOTAL LENGTH:
     - 2.2.1. THE SIDEWALK WIDTH FOR THE ENTIRE PROPERTY WIDTH SHALL BE IMPROVED TO MEET WIDTH REQUIREMENTS ACCORDING TO THE LATEST INFRASTRUCTURE DESIGN MANUAL.
   - 2.3. 20 FOOT TOTAL LENGTH IS DEFINED AS:
     - 2.3.1. UP TO 10 FEET ON BOTH SIDES OF THE DRIVEWAY; OR
     - 2.3.2. UP TO 20 FEET WHEN SIDEWALK AFFECTED IS LOCATED ONLY ON ONE SIDE OF THE DRIVEWAY.
3. PROPOSED SIDEWALKS THAT DO NOT FALL WITHIN THE SCOPE DEFINED IN NOTE 2 SHALL BE DESIGNED ACCORDING TO IDM REQUIREMENTS AND CONSTRUCTED ACCORDING TO THE CONTRACT DRAWINGS.
4. DRIVEWAY WIDTH VARIES TO MATCH EXISTING DRIVE.
5. DRIVEWAY DETAIL TO PROVIDE FOR SIDEWALK TRANSITION FROM EXISTING BACK OF CURB TO PROPOSED DRIVEWAY EDGE.
6. DRIVEWAY WITH WIDTH >5' @ 2% CROSS SLOPE QUALIFIES AS PASSING SPACE. (SEE OPTION 1 AND OPTION 2 PLANS)
7. ALL RAMPS 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.
8. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
9. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.
10. 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.)
11. DETECTABLE WARNING SURFACES:
    - 11.1. SIDEWALK SHALL HAVE A DETECTABLE WARNING SURFACE WHERE:
      - 11.1.1. SIDEWALK INTERSECTS TYPE C DRIVEWAYS (COMMERCIAL DRIVEWAYS) THAT ARE STOP, YIELD OR TRAFFIC SIGNAL CONTROLLED; OR
      - 11.1.2. SIDEWALK SLOPE IS GREATER THAN 1:20 AND INTERSECTS A TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY)
    - 11.2. 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).
    - 11.3. REFER TO STANDARD DETAILS 02775–06 TO 02775–07 FOR DETECTABLE WARNING SURFACE STANDARDS.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukrit Kanwar 9EF8B0C041F9478...	DocuSigned by: Khang Nguyen 95A28EF0A758400...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A26341B72B34B5...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02754–03

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PROPOSED SIDEWALK THROUGH DRIVEWAY WITH EXCESSIVE ELEVATION DIFFERENCE

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STATE OF TEXAS
ROBERT A. HILL
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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(3 OF 18)

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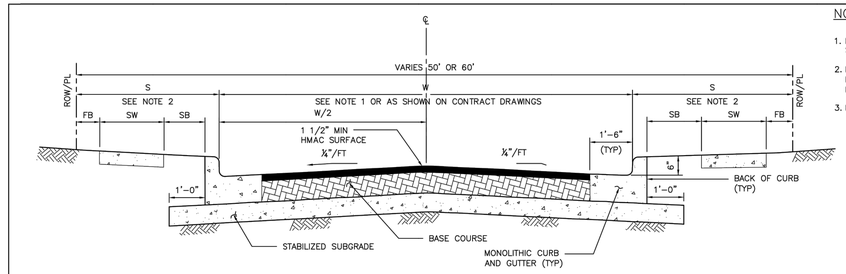
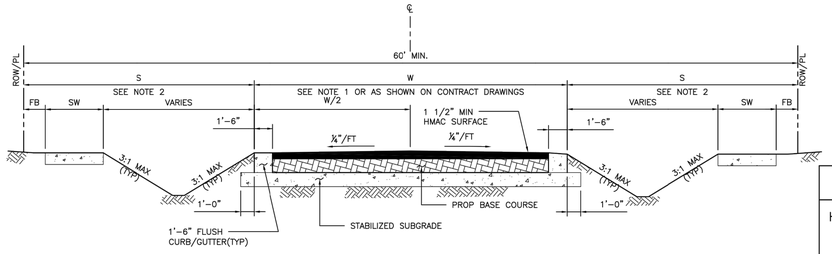


HMAC PAVEMENT – CURB & GUTTER SECTION

(NOT APPLICABLE TO ETJ OF CITY OF HOUSTON)



HMAC PAVEMENT – DITCH SECTION

(NOT APPLICABLE TO ETJ OF CITY OF HOUSTON)

NOTES:

1. FOR TRAVEL WAY WIDTH (W) REFER TO IDM SECTION 10.3.03.A.
2. REFER TO CONTRACT DRAWINGS FOR "S" DIMENSION (S), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.
3. BASE COURSE SHALL BE:
   ALTERNATES:
   A) 6" (MIN) HOT MIX ASPHALTIC CONCRETE.
   B) 8" (MIN) CRUSHED CONCRETE.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

HOT MIX ASPHALTIC CONCRETE PAVEMENT DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sukut Iranwar — CITY ENGINEER
DocuSigned by: Binh Nguyen — CITY TRAFFIC ENGINEER
DocuSigned by: Carol Haddock — DIRECTOR OF HPW

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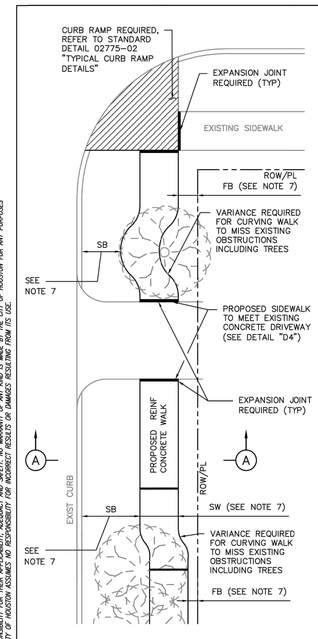
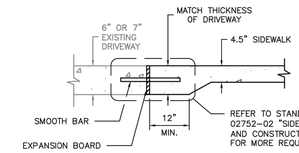


PLAN VIEW

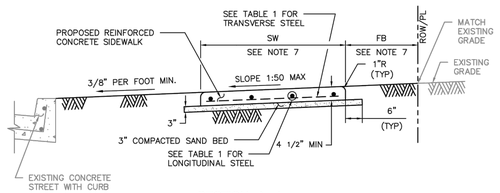


DETAIL D4
DRIVEWAY/SIDEWALK HEADER

TABLE 1

REINFORCING STEEL INFORMATION
FOR 4 ½ " THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
f'_c = 3,500 PSI AND fy = 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	SPACING (IN)	END BAR SPACING (IN)	
4.5	5	3	27	3	48
4.5	6	4	22	3	48



SECTION A–A

NOTES:

1. 6X6 – W2.9XW2.9 WELDED WIRE FABRIC MAY BE USED IN LIEU OF THE REINFORCING STEEL GIVEN IN TABLE 1.
2. REINFORCED CONCRETE SIDEWALKS THRU DRIVEWAYS OPENINGS SHALL BE EITHER 6" THICK OR 7" THICK AS SPECIFIED ON 6" STABILIZED SUBGRADE. FOR THE REINFORCING STEEL REQUIREMENTS, SEE CITY OF HOUSTON STANDARD DETAILS 02754-01A, 02754-01B, 02754-03, AND 02754-04.
3. MAXIMUM SPACING FOR EXPANSION JOINTS SHALL BE 40 FEET.
4. CONTRACTOR SHALL CONSTRUCT SIDEWALK IN A MANNER NOT TO BLOCK THE NATURAL DRAINAGE FROM ADJACENT PROPERTY.
5. ALL RAMPS 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.
6. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON UNLESS NOTED OTHERWISE.
7. REFER TO CONTRACT DRAWINGS FOR SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL SIDEWALK LAYOUT AND DETAILS FOR STREETS WITH CURBS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sukut Iranwar — CITY ENGINEER
DocuSigned by: Binh Nguyen — CITY TRAFFIC ENGINEER
DocuSigned by: Carol Haddock — DIRECTOR OF HPW

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06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(4 OF 18)

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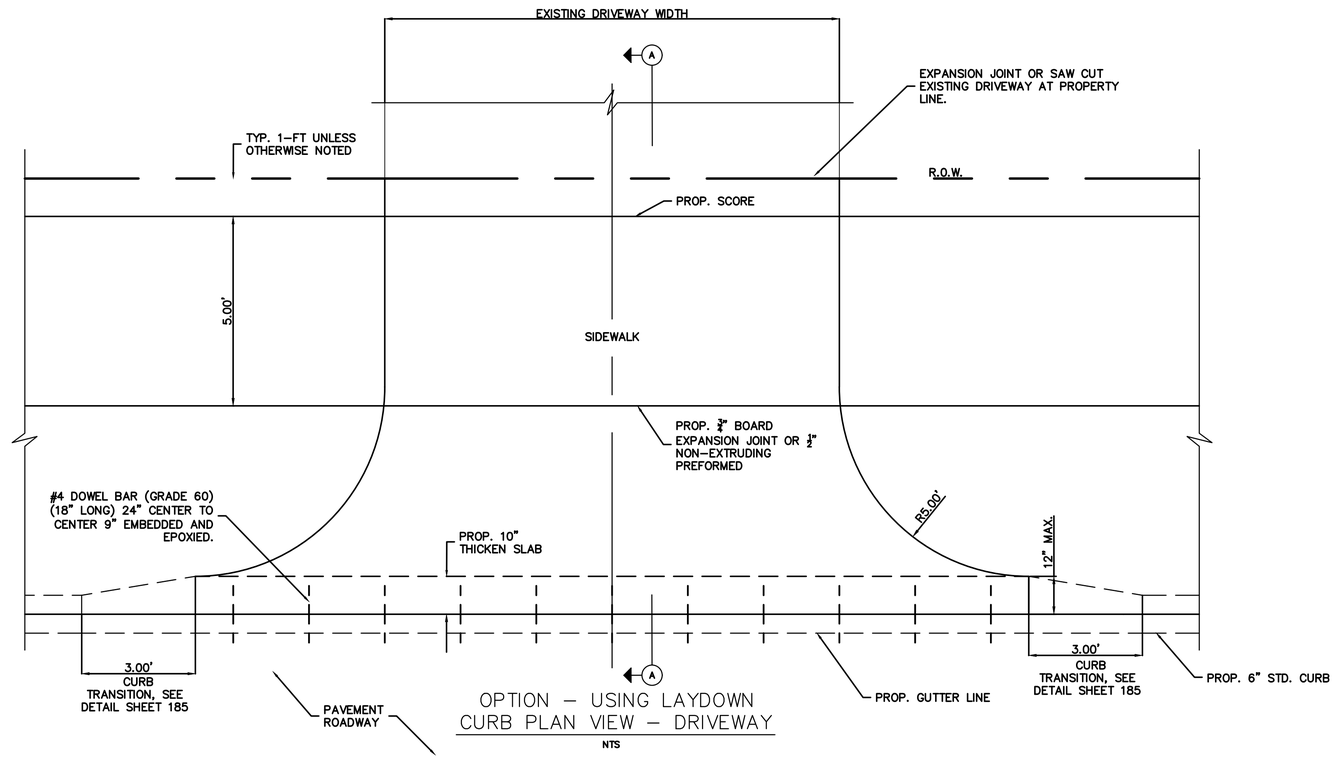
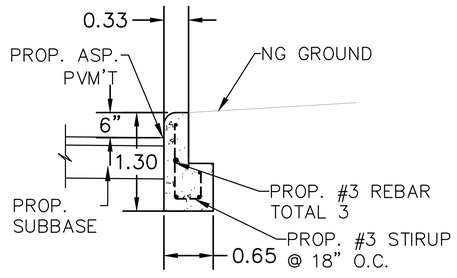
NOTE: DRIVEWAY WIDTH VARIES TO MATCH EXSITING DRIVE.

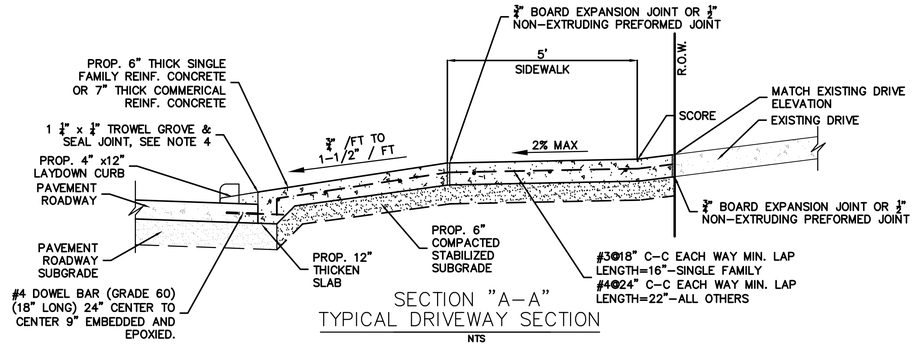


OPTION – USING LAYDOWN CURB PLAN VIEW – DRIVEWAY

NTS



TYPICAL TEMPORARY CURB



SECTION "A–A"
TYPICAL DRIVEWAY SECTION

NTS

NOTES:

1. DRIVEWAYS SHALL BE 6" THICK FOR SINGLE FAMILY USE AND MINIMUM 7" THICK FOR ALL OTHERS (I.E. COMMERICAL, INDUSTRIAL, MULTI–FAMILY, ETC.)
2. DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5 ½ SACKS OF CEMENT PER CUBIC YARD.
3. THE OUTER DOWELS BARS ARE TO BE LOACTED 12" FROM END OF PROPOSED EDGE OF DRIVEWAY RETURN. EXTEND DOWEL 3" INCHES INTO PROPOSED DRIVEWAY AND BEND REAMINING BAR TO ENTEND TO RADIUS RETURN BOTH SIDES.
4. TROWEL GROOVE SEALANT SHALL BE LOW MODULUS SILICONE OR POLYURETHANE SEALANT.
5. EXPANSION AND CONSTRUCTION JOINTS ALONG SIDEWALK SHALL BE ACCORDING TO DRAWING No. 02752–02.
6. CEMENT STABLIZED SAND 1.5 SACKS OF CEMENT PER TON OF DRY SAND.
7. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH AGENCY STANDARDS DETAILS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICAN WITH DISABILITIES ACT (ADA) REQUIREMENTS, IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
8. CURB RAMPS THAT ARE STEEPER THAN 1:15 MAX. SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
9. GLASS FIBER REINFORCED POLYMER (GFRP) BARS FOR CONCRETE REINFORCEMENT (#3 BATORBAR® GLASS) CAN BE USED AS AN ALTERNATIVE TO #3 AND #4 REINFORCING STEEL IN CURBS, SIDEWALKS, DRIVEWAYS, PARKING AREAS, TRUCK COURTS AND BANK SIDE SLOPES OR OTHER SIMILAR APPLICATIONS.

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STATE OF TEXAS
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06/02/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(5 OF 18)

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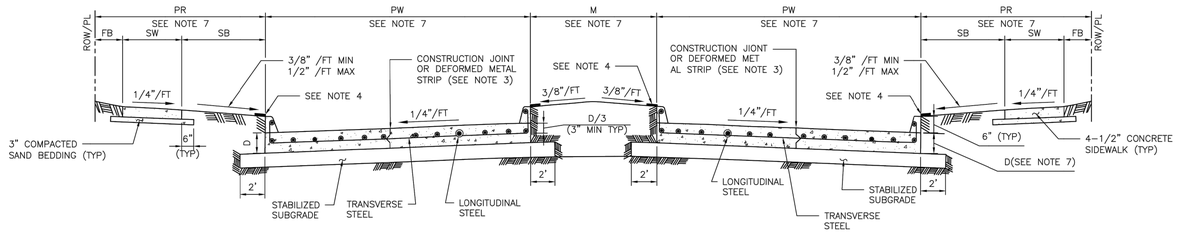
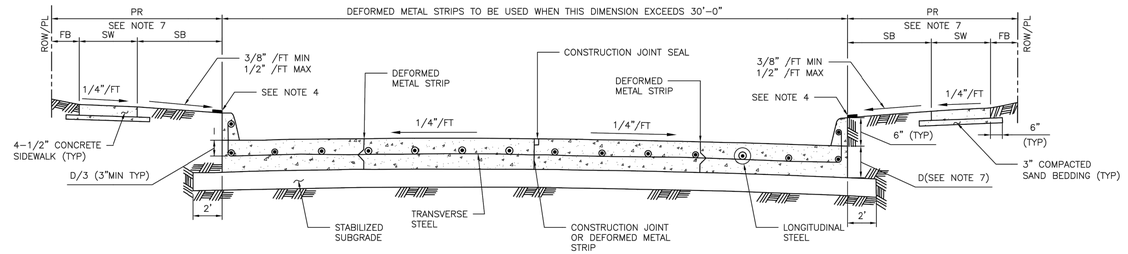


TYPICAL DOUBLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS



TYPICAL SINGLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS

NOTES:

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

TABLE 1

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

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

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

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CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02751-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(6 OF 18)

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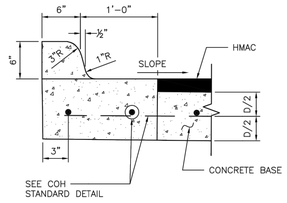
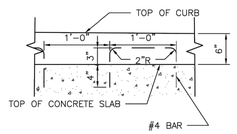
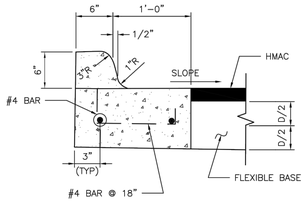


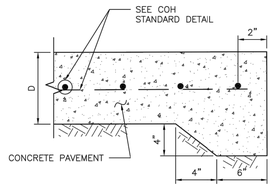
ESPLANADE CURB CONNECTED TO CONCRETE BASE



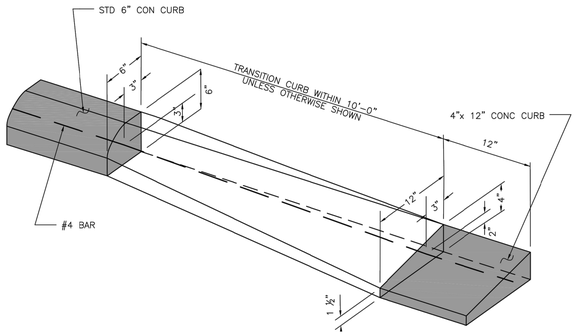
ALTERNATE CONCRETE CURB REINFORCEMENT



ESPLANADE CURB CONNECTED TO FLEXIBLE BASE

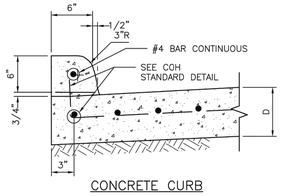


STANDARD CONCRETE PAVING HEADER



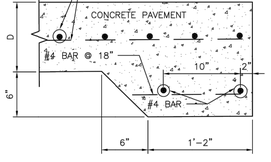
CURB TRANSITION

(SEE NOTES)

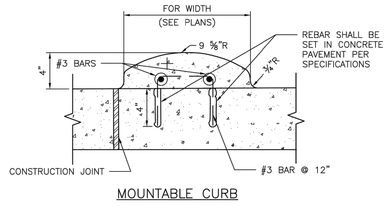


CONCRETE CURB

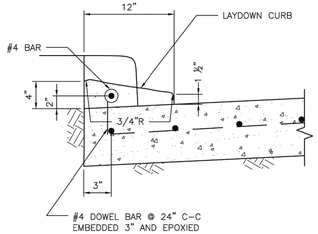
WHEN CONCRETE CURB IS TO BE PLACED EXISTING CONCRETE USE BASE #4 BAR @ 18x10" LONG, DOWELED AND SET IN EPOXY GROUT. SET #4 DOWEL BARS, 25" LONG AT 12" C-C WHEN PAVEMENT SECTION POURED.



STANDARD RAILROAD HEADER

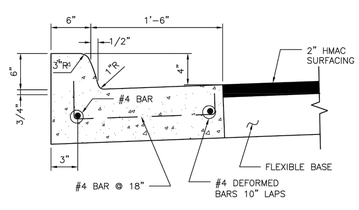


MOUNTABLE CURB

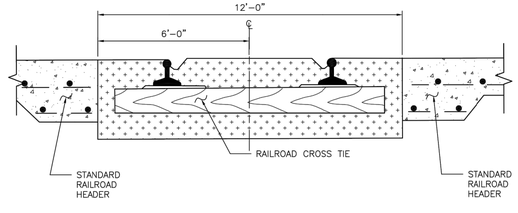


4-INCH x 12-INCH TRANSITION CURB

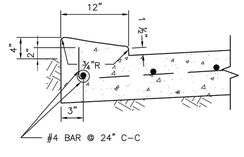
(SEE NOTES)



MONOLITHIC CURB AND GUTTER



STANDARD RAILROAD CROSSING – SINGLE TRACK



4-INCH x 12-INCH MONOLITHIC CURB

(SEE NOTES)

4"x12" MONOLITHIC AND TRANSITION CURB NOTES:

1. 6-INCH CONCRETE CURB TO BE CONSTRUCTED ON ALL ESPLANADES, ISLANDS, NON-RESIDENTIAL STREETS, AND RESIDENTIAL STREETS.
2. TRANSITIONS FROM 6- INCH CONCRETE CURB TO 4-INCH x 12-INCH CONCRETE CURB TO BE ACCOMPLISHED WITHIN 10 FEET, UNLESS OTHERWISE SHOWN. IF THIS 10-FEET TRANSITION CURB IS NOT POURED MONOLITHICALLY WITH THE PAVEMENT, THEN REINFORCING STEEL AS SHOWN IN "4-INCH x 12-INCH TRANSITION CURB" IS TO BE INSTALLED.

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APPROVED BY: DocuSigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

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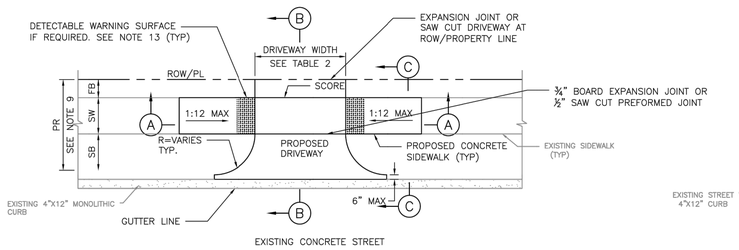
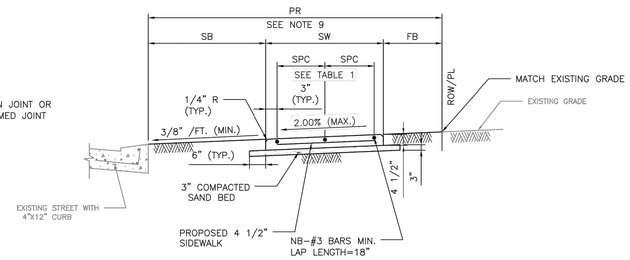
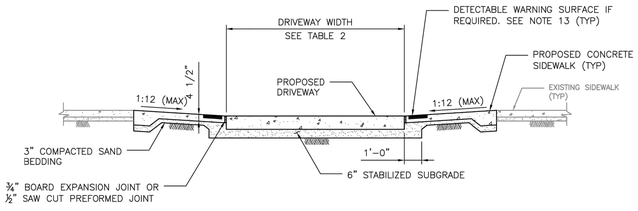


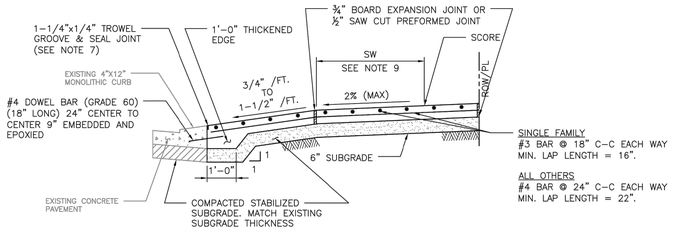
PLAN VIEW
DRIVEWAY



SECTION C–C
TYPICAL SIDEWALK SECTION



SECTION A–A
PROPOSED SIDEWALK, THROUGH DRIVEWAY WITH EXCESSIVE GRADES



SECTION B–B
TYPICAL DRIVEWAY SECTION

NOTES:

1. REPAIR, RECONSTRUCTION OR REPLACEMENT OF SIDEWALKS SHALL MEET PERMITTING REQUIREMENTS OF CODE OF ORDINANCES SECTION 40–552.
2. FOR REPAIR, RECONSTRUCTION, OR REPLACEMENT OF EXISTING SIDEWALKS:
   - 2.1. EXISTING SIDEWALKS LESS THAN OR EQUAL TO 20 FEET IN TOTAL LENGTH:
     - 2.1.1. THE PROPOSED SIDEWALK WIDTH WILL BE ALLOWED TO MATCH THE EXISTING SIDEWALK.
   - 2.2. EXISTING SIDEWALKS GREATER THAN 20 FEET IN TOTAL LENGTH:
     - 2.2.1. THE SIDEWALK WIDTH FOR THE ENTIRE PROPERTY WIDTH SHALL BE IMPROVED TO MEET WIDTH REQUIREMENTS ACCORDING TO THE LATEST INFRASTRUCTURE DESIGN MANUAL.
   - 2.3. 20 FOOT TOTAL LENGTH IS DEFINED AS:
     - 2.3.1. UP TO 10 FEET ON BOTH SIDES OF THE DRIVEWAY; OR
     - 2.3.2. UP TO 20 FEET WHEN SIDEWALK AFFECTED IS LOCATED ONLY ON ONE SIDE OF THE DRIVEWAY.
3. IF AVAILABLE ROW IS NOT SUFFICIENT TO ACCOMMODATE SIDEWALK WIDTH (SW) ACCORDING TO IDM REQUIREMENTS, ENGINEER SHALL OBTAIN A VARIANCE FROM THE CITY ENGINEER.
4. DRIVEWAYS SHALL BE 6" THICK FOR SINGLE FAMILY OR DUPLEXES.
5. DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5 1/2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.
6. THE OUTER DOWEL BARS ARE TO BE LOCATED 12" FROM END OF PROPOSED EDGE OF DRIVEWAY RETURN. EXTEND DOWEL 3" INCHES INTO PROPOSED DRIVEWAY AND BEND REMAINING BAR TO EXTEND TO RADIUS RETURN BOTH SIDES.
7. TROWEL GROOVE SEALANT SHALL BE LOW MODULUS SILICONE OR POLYURETHANE SEALANT.
8. ALL JOINTS ALONG THE SIDEWALK SHALL BE CONSTRUCTED ACCORDING TO DRAWING 02752–02 AND SPECIFICATION 02752.
9. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.
10. CEMENT STABILIZED SAND 1.5 SACKS OF CEMENT PER TON OF DRY SAND.
11. ALL RAMPS 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.
12. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
13. DETECTABLE WARNING SURFACES:
    - 13.1. SIDEWALK SHALL HAVE A DETECTABLE WARNING SURFACE WHERE:
      - 13.1.1. SIDEWALK INTERSECTS TYPE C DRIVEWAYS (COMMERCIAL DRIVEWAYS) THAT ARE STOP, YIELD OR TRAFFIC SIGNAL CONTROLLED; OR
      - 13.1.2. SIDEWALK SLOPE IS GREATER THAN 1:20 AND INTERSECTS A TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY)
    - 13.2. 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).
    - 13.3. REFER TO STANDARD DETAILS 02775–06 TO 02775–07 FOR DETECTABLE WARNING SURFACE STANDARDS.

TABLE 1

REINFORCING STEEL INFORMATION
FOR 4 ½ " THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
fc' = 3,500 PSI AND fy = 60,000 PSI
REFER TO CONTRACT DRAWINGS FOR SIDEWALKS WIDER THAN 6 FEET.

SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL			TRANSVERSE STEEL #3 BARS SPACING (IN)
		#3 BARS			
		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(3)	16(3)	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 SWEPT PATH ANALYSIS.
(2) REFER TO INFRASTRUCTURE DESIGN MANUAL ARTCILES 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.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukai Kanwar 9EF8B0C841754F6...	DocuSigned by: KHANG NGUYEN 59A28EF0A7594CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A3BC4195F3B34B6...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02754–01A

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DRIVEWAY DETAIL WITH 4"x12" CURB FOR LOCAL RESIDENTIAL STREETS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

WOOLPERT
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Houston, TX 77079
800.414.1045

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(8 OF 18)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
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DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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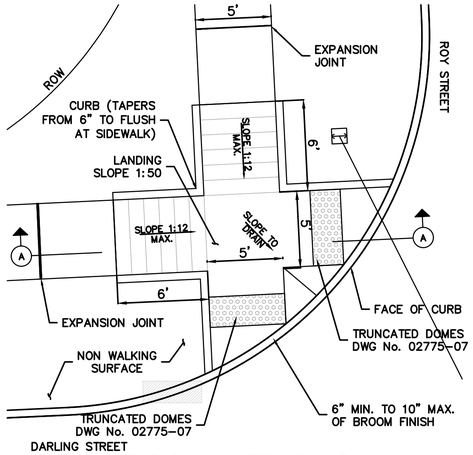
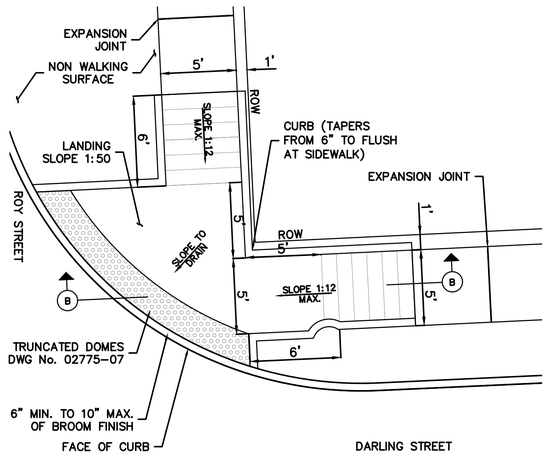


TYPICAL WHEEL CHAIR RAMP DETAILS

50-FT ROW (N/S) AND 50-FT ROW (E/W)

NTS



TYPICAL WHEEL CHAIR RAMP DETAILS

50-FT ROW (N/S) AND 50-FT ROW (E/W)

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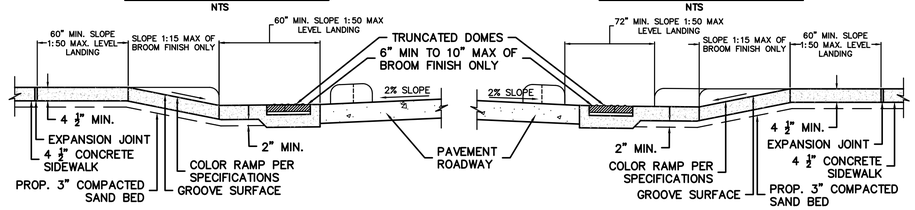
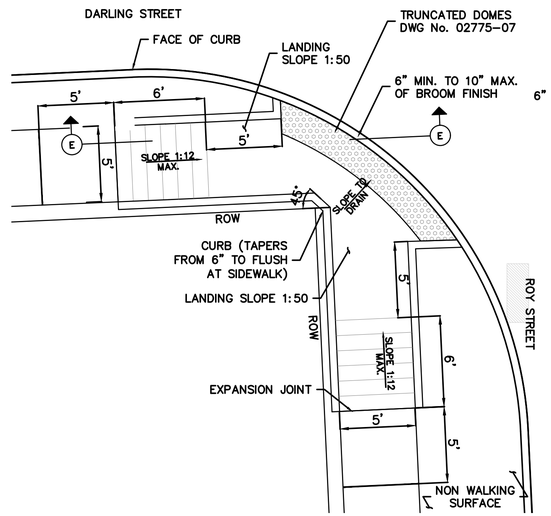


SECTION "A-A"

NTS

SECTION "B-B"

NTS



TYPICAL WHEEL CHAIR RAMP DETAILS

50-FT ROW (N/S) AND 50-FT ROW (E/W)

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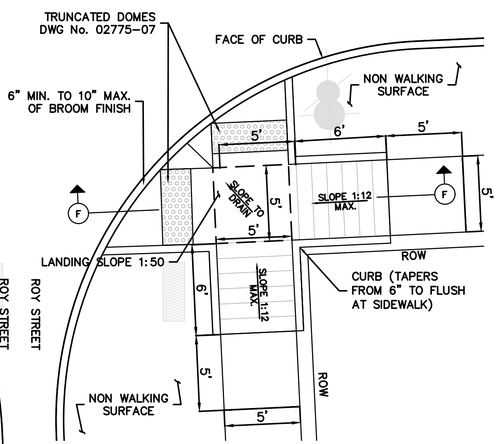

TYPICAL WHEEL CHAIR RAMP DETAILS

50-FT ROW (N/S) AND 50-FT ROW (E/W)

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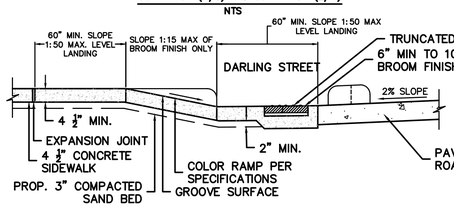

SECTION "E-E"

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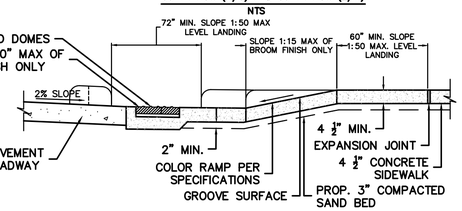

SECTION "F-F"

NTS

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Houston, TX 77079
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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(9 OF 18)

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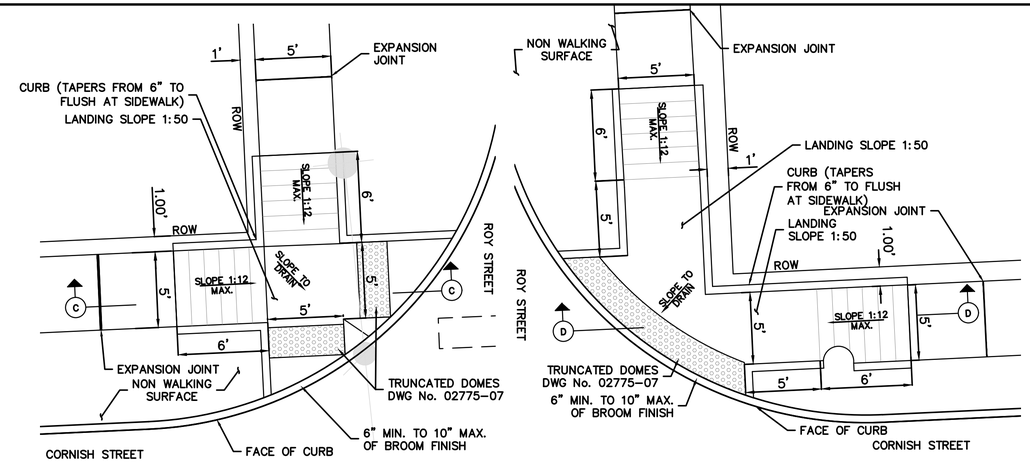
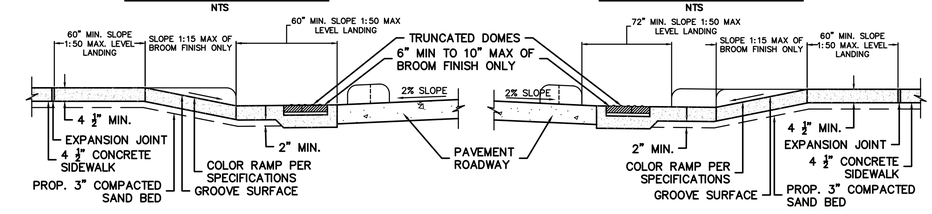


TYPICAL WHEEL CHAIR RAMP DETAILS

50-FT ROW (N/S) AND 50-FT ROW (E/W)

NTS



SECTION "C-C"

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SECTION "D-D"

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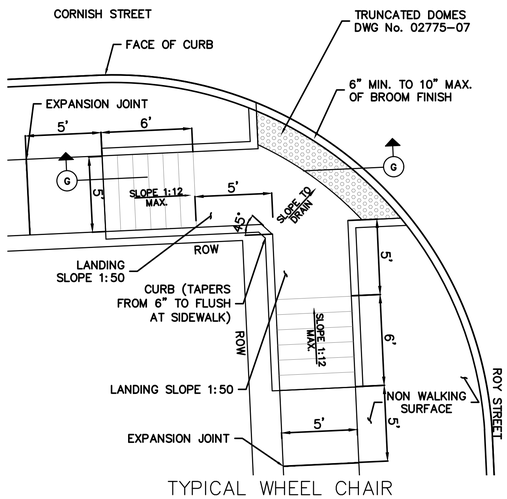

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50-FT ROW (N/S) AND 50-FT ROW (E/W)

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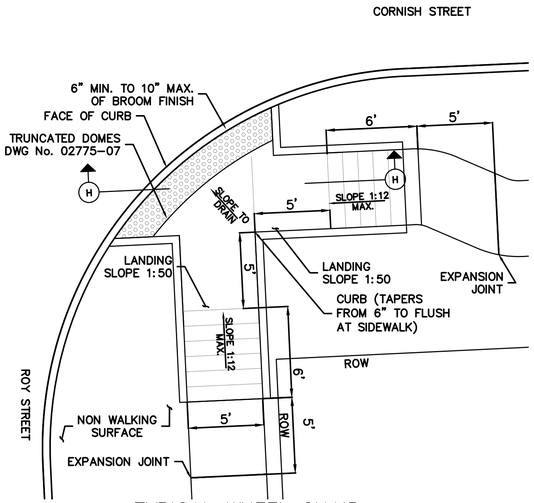

TYPICAL WHEEL CHAIR RAMP DETAILS

50-FT ROW (N/S) AND 50-FT ROW (E/W)

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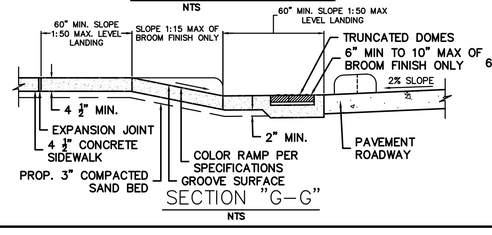

SECTION "G-G"

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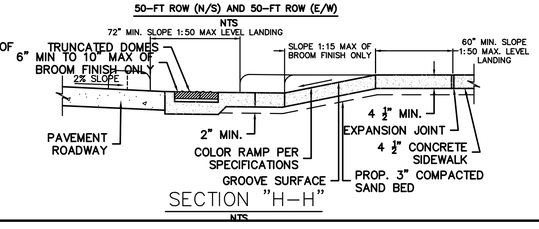

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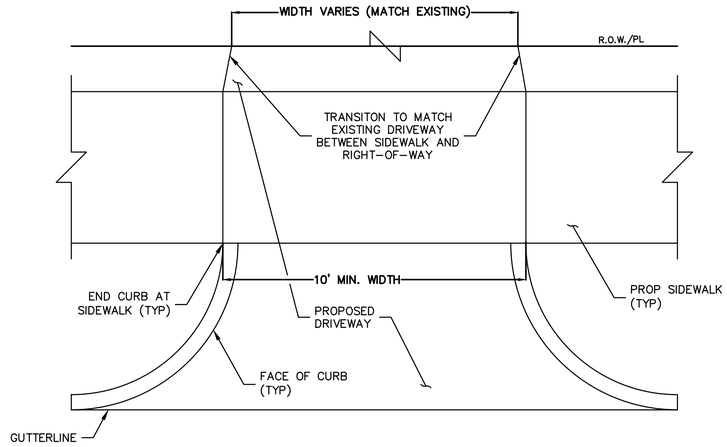
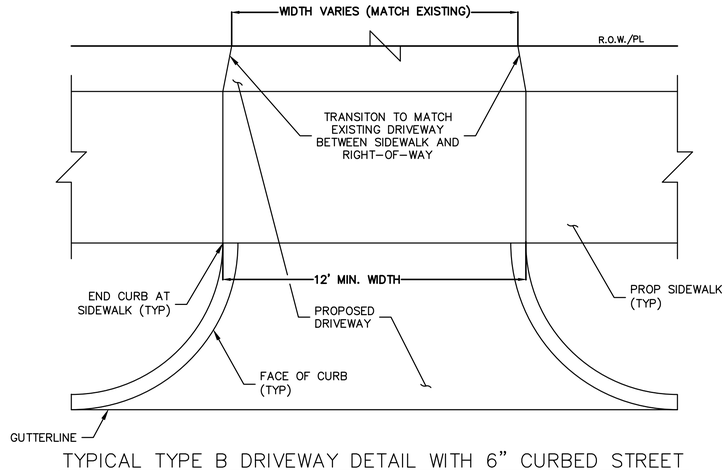


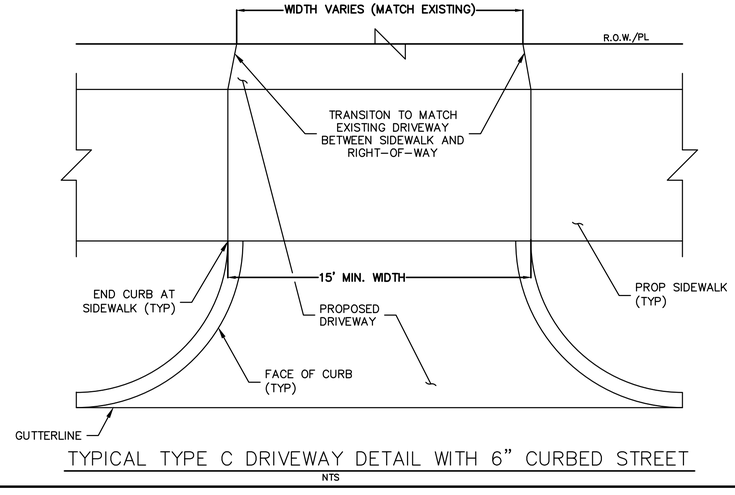
TYPICAL TYPE A DRIVEWAY DETAIL WITH 6" CURBED STREET

NTS



TYPICAL TYPE B DRIVEWAY DETAIL WITH 6" CURBED STREET

NTS



TYPICAL TYPE C DRIVEWAY DETAIL WITH 6" CURBED STREET

NTS

NOTE:
SEE DETAIL SHEET NO. 194
FOR STANDARD COH DETAIL
DWG NO. 02754-01B.

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STATE OF TEXAS
ROBERT A. HILL
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PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(10 OF 18)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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SHEET NO. 188 OF 345	

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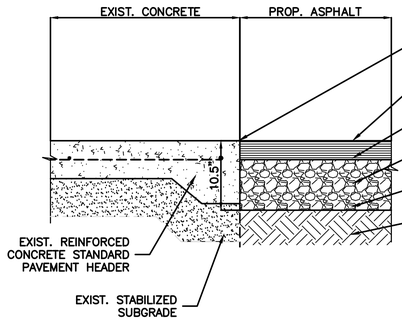
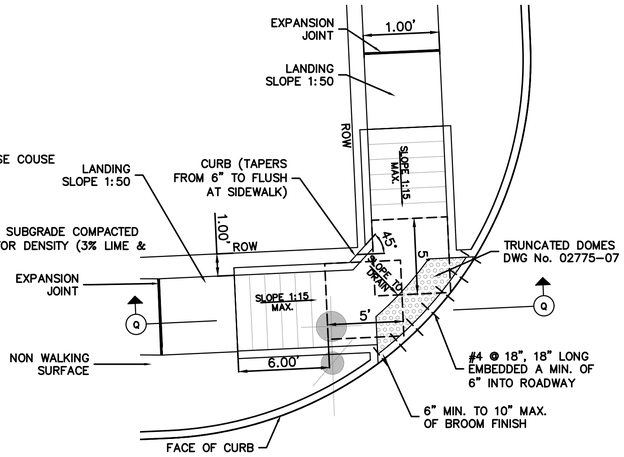
REV	DESCRIPTION	BY	DATE



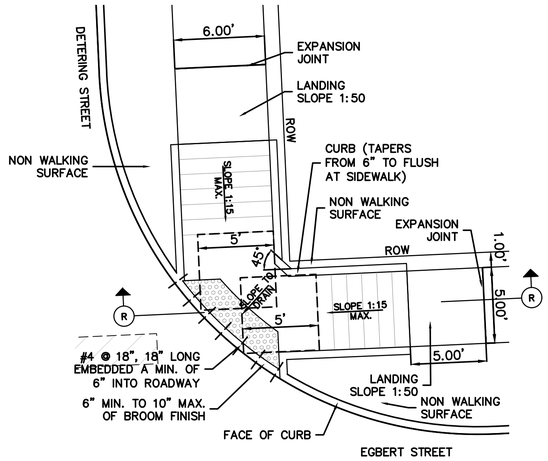
PROP ASPHALT AND CONCRETE HEADER



TYPICAL WHEEL CHAIR RAMP DETAILS

50-FT ROW (N/S) AND 50-FT ROW (E/W)

NTS



WHEEL CHAIR RAMP DETAILS

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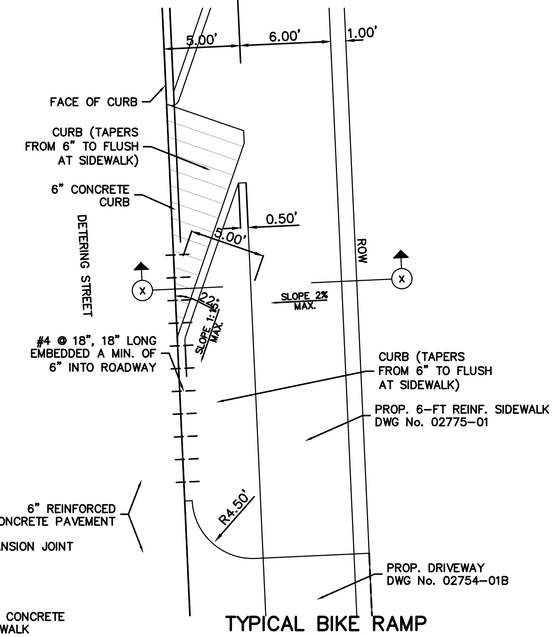
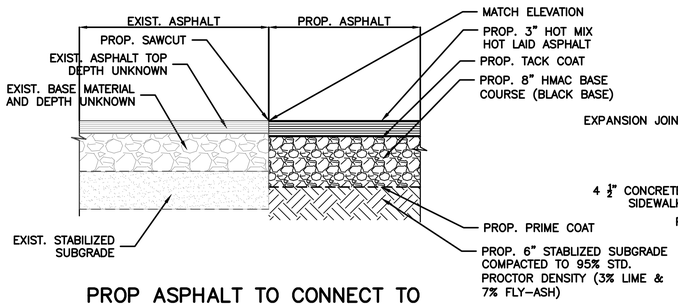
NTS

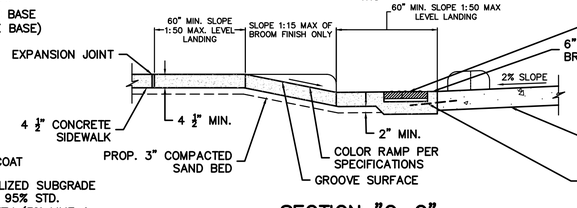


TYPICAL BIKE RAMP DETAILS

NTS



PROP ASPHALT TO CONNECT TO EXISTING ASPHALT



SECTION "Q-Q"

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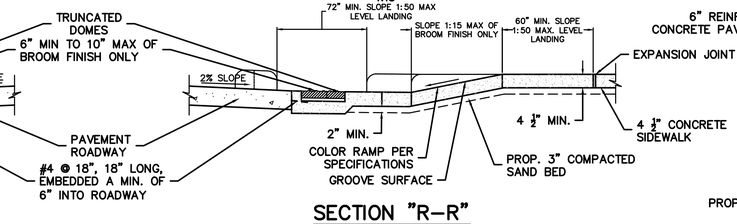

SECTION "R-R"

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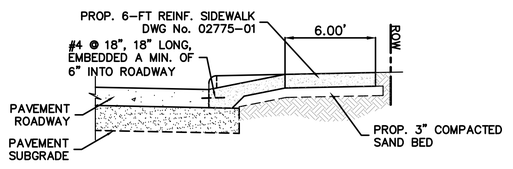

SECTION "X-X"

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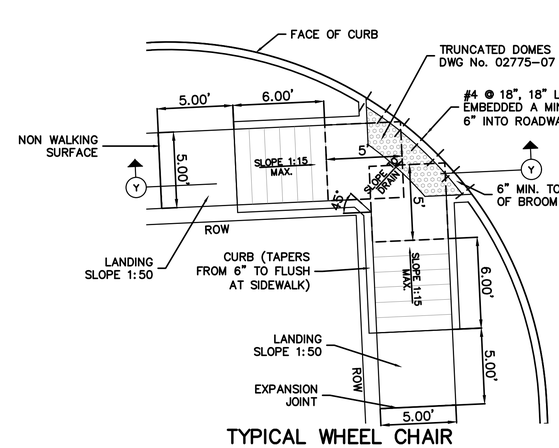
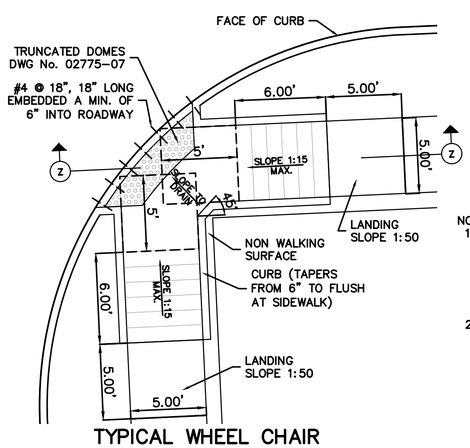


TYPICAL WHEEL CHAIR RAMP DETAILS

50-FT ROW (N/S) AND 50-FT ROW (E/W)

NTS



TYPICAL WHEEL CHAIR RAMP DETAILS

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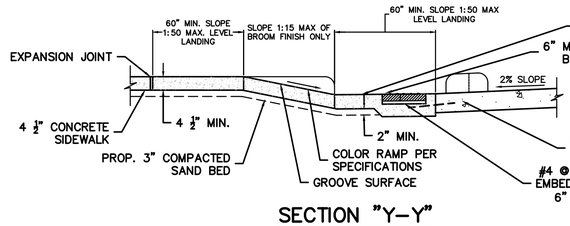

SECTION "Y-Y"

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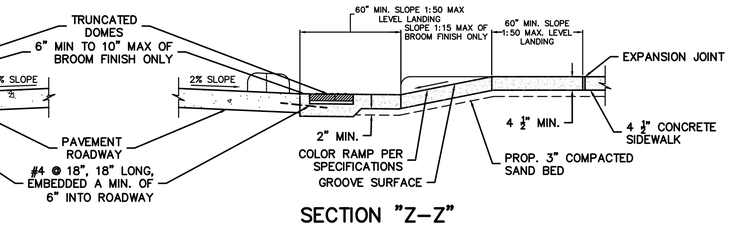

SECTION "Z-Z"

NTS

NOTES:
1. ASPHALT PAVEMENT SHOULD BE CONSTRUCTED IN GENERAL ACCORDANCE WITH ITEM 340 OF THE HCED SPECIFICATIONS.
2. HMAC BASE COURSE (BLACK BASE) SHOULD BE PLACED IN GENERAL ACCORDANCE WITH ITEM 250.
3. CHEMICAL TREATMENT OF SUBGRADE SOILS WITH LIME OR LIME-FLY ASH, SHOULD BE PERFORMED IN ACCORDANCE WITH ITEM 223.
4. FOR AREAS THAT WILL BE FILLED, EXISTING VEGETATION, TREES, ROOTS, ORGANIC SOIL AND OTHER DELETERIOUS MATERIAL SHOULD BR REMOVED AND WASTED.
5. THE EXPOSED SOILS SHOULD THEN BE PROOF-ROLLED IN ACCORDANCE WITH ITEM 205 OF THE 2017 HCED SPECIFICATIONS TO IDENTIFY AND REMOVE WEAK, COMPRESSIBLE, OR OTHER UNSUITABLE MATERIAL; SUCH MATERIAL SHOULD BE REPLACED WITH COMPACTED EMBANKMENT FILL.
6. THE STABLIZED SOIL SHALL BE COMPACTED TO 95 PERCENT OF THEIR ASTM 698 (STANDARD PROCTOR) DRY DENSITY AT A MOISTURE CONTENT RANGING FROM OPTIMUM TO 3 PERCENT ABOVE OPTIMUM.

NOTES:
1. ALL RAMPS AND SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH AGENCY STANDARDS DETAILS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS, IF THERE IS CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
2. BIKE RAMP TO BE PAID IN ACCORDANCE WITH SIDEWALK AND RAMP SPECIFICATIONS.

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11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

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(11 OF 18)

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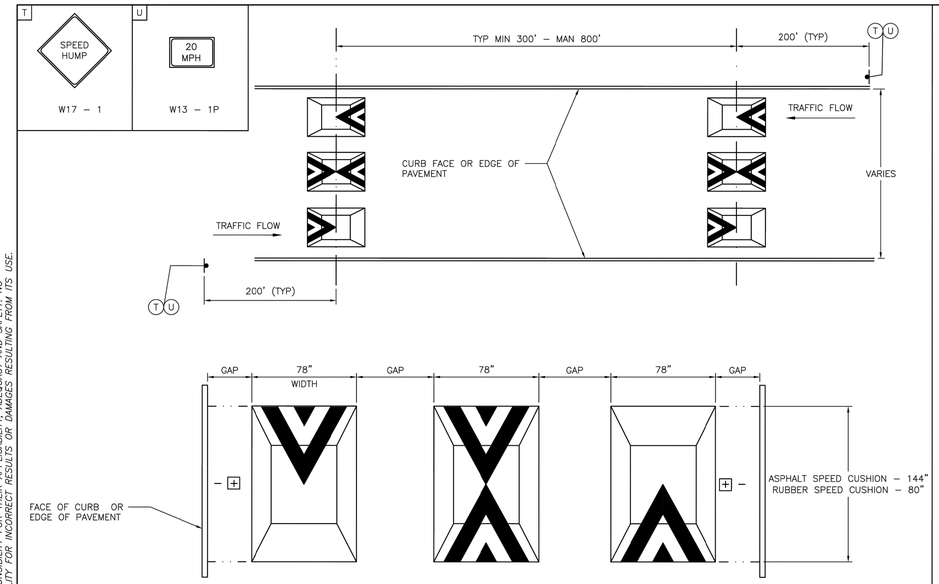
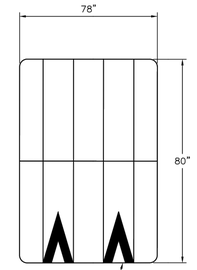


RUBBER SPEED CUSHION



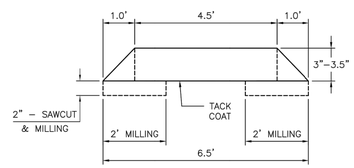
SEE SECTION 13500 FOR MATERIAL AND PRODUCT SPECIFICATIONS

INSTALL PER MANUFACTURER'S SPECIFICATIONS

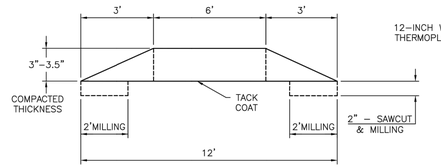
NOTES:

1. SPEED CUSHIONS AND ASSOCIATED SIGNS AND PAVEMENT MARKINGS WILL BE CONSTRUCTED AT LOCATIONS DESIGNED BY TRANSPORTATION AND DRAINAGE OPERATIONS (TDO) OR PER PLANS APPROVED BY TDO.
2. CONTRACTOR SHALL CONTACT THE CONSTRUCTION COORDINATOR BEFORE ANY STREET IS TEMPORARILY CLOSED FOR CONSTRUCTION.
3. THE TYPE OF SPEED CUSHION AND DISTANCE BETWEEN EACH CUSHION WILL BE DETERMINED BY TDO.
4. NO PART OF A SPEED CUSHION SHALL BE LOCATED IN FRONT OF DRIVEWAY APPROACH; RATHER THERE SHOULD BE A MINIMUM OF 6 FEET FROM THE EDGE OF A DRIVEWAY, WHEN PRACTICAL.
5. SPEED CUSHIONS SHOULD BE PLACED AS CLOSE AS POSSIBLE TO THE PROPERTY LINES INSTEAD OF MID – LOT LOCATION, WHERE PRACTICAL.
6. SPEED CUSHIONS SHOULD BE INSTALLED AT A RIGHT ANGLE TO THE CENTERLINE TANGENT OF THE ROADWAY.
7. TRAFFIC CONTROL CONSISTING OF SIGNS SHALL BE PROVIDED TO ADVISE ROADWAY USER OF SPEED CUSHIONS PRESENT. TRAFFIC SIGNS, AND PAVEMENT MARKINGS SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
8. ALL SIGNS AND PAVEMENT MARKINGS WILL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.
9. CONTRACTOR SHALL NOT OPEN SPEED CUSHIONS TO TRAFFIC UNTIL ALL REQUIRED WARNING SIGNS AND PAVEMENT MARKINGS ARE COMPLETED.
10. CONTRACTOR WILL MAINTAIN TEMPORARY MARKINGS UNTIL PERMANENT MARKINGS ARE INSTALLED.
11. CONTRACTOR SHALL COMPLETE THE CUSHION INSTALLATION TO FORM ONE COMPLETE HUMP BEFORE LEAVING THE JOB SITE.
12. CONTRACTOR SHALL WORK ONE HALF OF THE STREET AT A TIME AND MAINTAIN TWO – WAY TRAFFIC WITH CERTIFIED FLAGGER.
13. ASPHALT SPEED CUSHION SHALL BE CONSTRUCTED WITH TYPE D ASPHALT MIX PER CITY OF HOUSTON SPECIFICATIONS; A TACK COAT SHALL BE APPLIED PRIOR TO APPLICATION OF PAVEMENT MATERIAL.
14. ASPHALT SPEED CUSHIONS SHALL BE COMPACTED PER CITY OF HOUSTON SPECIFICATIONS AND SHAPE ACCORDING TO INSTALLATION DETAILS. COMPACTION SHALL REQUIRE UTILIZATION OF ALL NECESSARY SIZES AND TYPES OF ROLLERS TO ACCOMPLISH PROPER COMPACTION AND SHAPE.
15. ASPHALT SPEED CUSHIONS ARE TO BE CONSTRUCTED BETWEEN 3" – 3 ½" IN HEIGHT.
16. CONTRACTOR SHALL NOTIFY GARY DRABEK (832–395–2997) A MINIMUM OF TWO BUSINESS DAYS IN ADVANCE OF THE INSTALLATION OF SPEED CUSHIONS.

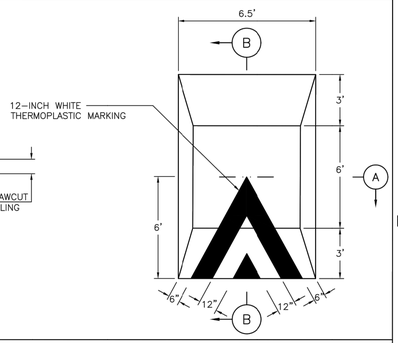
ASPHALT SPEED CUSHION – INSTALLATION DETAILS

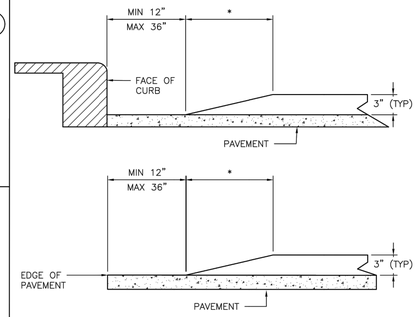


SECTION A – A



SECTION B – B





* RUBBER CUSHION – 12" TAPER, ASPHALT CUSHION – 12" TAPER.

TYPICAL SPEED CUSHIONS ARRANGEMENT FOR A GIVEN PAVEMENT WIDTH

PAVEMENT WIDTH (FT)	No OF CUSHIONS	GAP (IN)	CUSHION (IN)	GAP (IN)	CUSHION (IN)	GAP (IN)	CUSHION (IN)	GAP (IN)	CUSHION (IN)	GAP (IN)	CUSHION (IN)	GAP (IN)
16	2	12	78	12	78	12						
18	2	20	78	20	78	20						
20	2	30	78	24	78	30						
22	2	36	78	36	78	36						
24	3	15	78	12	78	12	78	15				
26	3	20	78	19	78	19	78	20				
28	3	27	78	24	78	24	78	27				
30	3	31	78	32	78	32	78	31				
32	4	18	78	12	78	12	78	12	78	18		
34	4	21	78	18	78	18	78	18	78	21		
36	4	24	78	24	78	24	78	24	78	24		
38	4	30	78	28	78	28	78	28	78	30		
40	4	33	78	34	78	34	78	34	78	33		
42	5	19	78	19	78	19	78	19	78	19	78	19
44	5	23	78	23	78	23	78	23	78	23	78	23

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APPROVED BY: Docusigned by: Carl Stahlbock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 13501–01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

SPEED CUSHIONS ARRANGEMENT AND INSTALLATION

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STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(12 OF 18)

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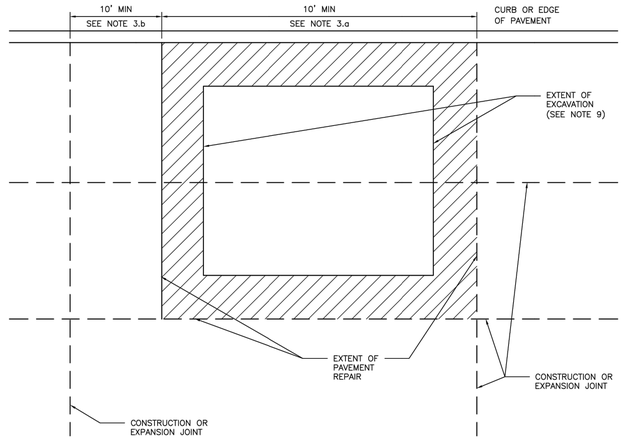

NOTES:

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

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CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
STREET CUT FOR CONCRETE PAVEMENT REPLACEMENT/RESTORATION AGE OF PAVEMENT > 5YRS (SCALE: NOT TO SCALE)	
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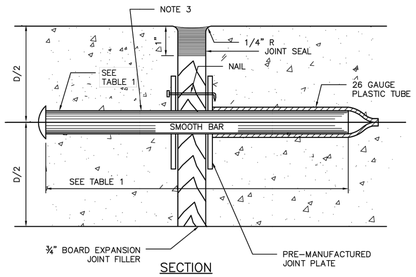
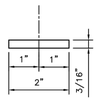


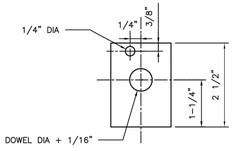
SECTION

DOWEL TYPE EXPANSION JOINT



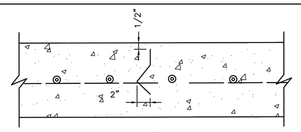
PLAN VIEW

JOINT PLATE



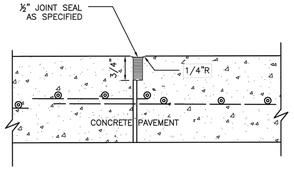
ELEVATION VIEW

JOINT PLATE



SECTION

DEFORMED METAL STRIP



SECTION

CONSTRUCTION JOINT SEAL

TABLE 1

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

NOTES:

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

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PAVEMENT EXPANSION AND CONSTRUCTION JOINT DETAILS (SCALE: NOT TO SCALE)	
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(13 OF 18)

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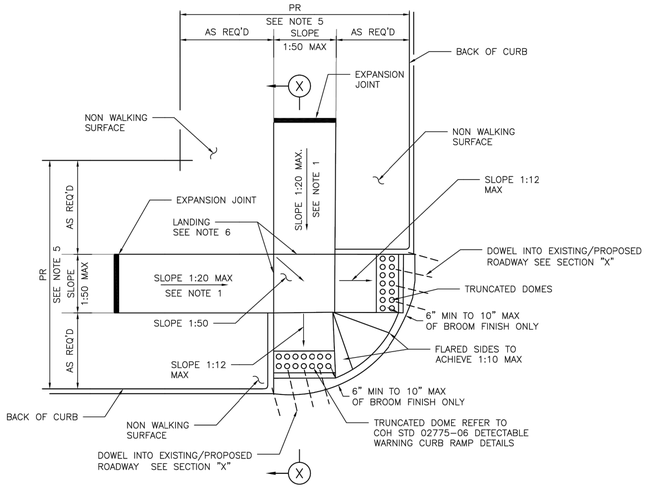
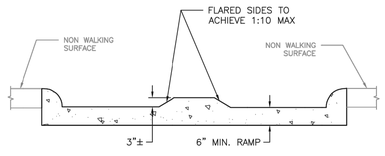
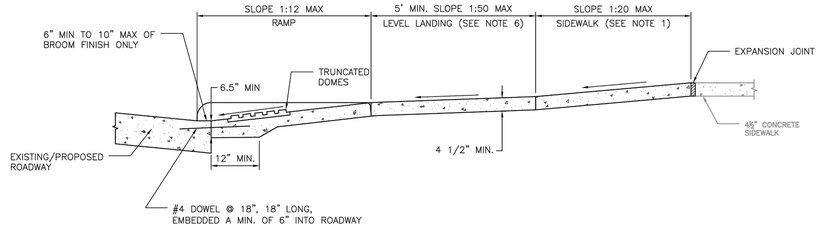


STREETS WITH NON– WALKING SURFACE BEHIND CURB
SEE NOTE–7



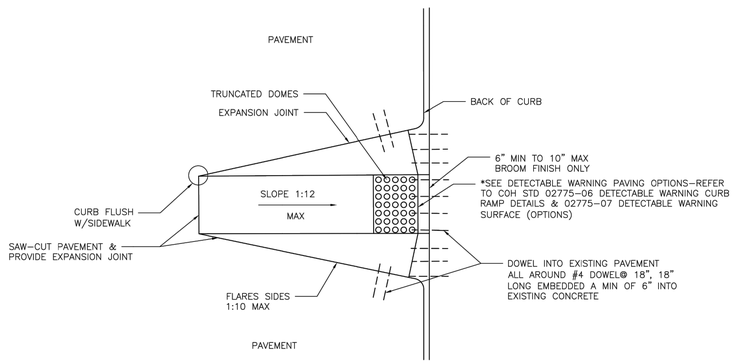
ELEVATION
LOOKING UP RAMP



SECTION X–X

NOTES:

1. REPLACE EXISTING SIDEWALK FROM LEVEL LANDING AS NECESSARY TO ACHIEVE 1:20 SLOPE
2. BROOM FINISH IS MEASURED FROM FACE OF CURB.
3. ALL RAMPS 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.
4. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON UNLESS NOTED OTHERWISE.
5. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR) WIDTH.
6. MINIMUM 5'x5' LANDING PAD ACCORDING TO ADA REQUIREMENTS. WHEN THE APPROACHING SIDEWALK IS WIDER THAN 5', THE LANDING PAD AND RAMP WIDTH MUST MATCH THE SIDEWALK WIDTH.
7. FOR STREETS WITH WALKABLE SURFACES IMMEDIATELY BEHIND THE CURB A FLARE IS REQUIRED ON BOTH SIDES OF THE RAMP.



CURB RAMP CONSTRUCTION FOR EXISTING PAVEMENT

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APPROVED BY: DocuSigned by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02775–02

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06/02/2025

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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(14 OF 18)

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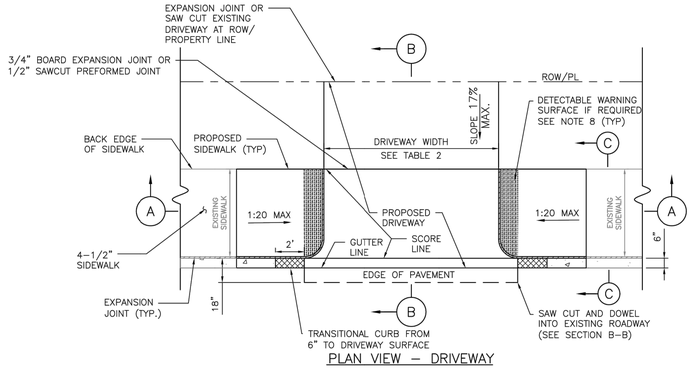
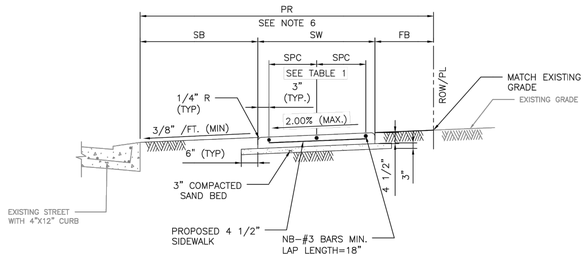
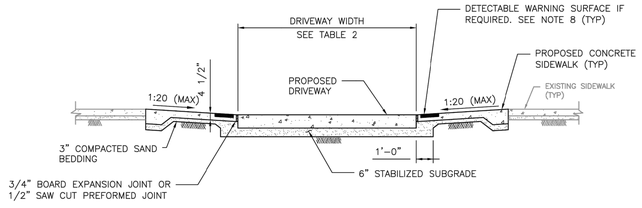


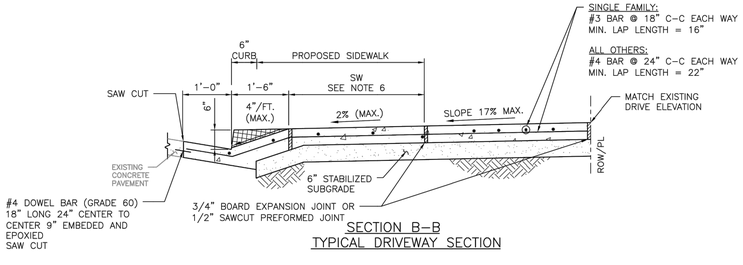
PLAN VIEW – DRIVEWAY



SECTION C–C
TYPICAL SIDEWALK SECTION



SECTION A–A
PROPOSED SIDEWALK THROUGH DRIVEWAY



SECTION B–B
TYPICAL DRIVEWAY SECTION

NOTES:

1. REPAIR, RECONSTRUCTION OR REPLACEMENT OF SIDEWALKS SHALL MEET PERMITTING REQUIREMENTS OF CODE OF ORDINANCES SECTION 40–552.
2. FOR REPAIR, RECONSTRUCTION, OR REPLACEMENT OF EXISTING SIDEWALKS:
   - 2.1. EXISTING SIDEWALKS LESS THAN OR EQUAL TO 20 FEET IN TOTAL LENGTH:
     - 2.1.1. THE PROPOSED SIDEWALK WIDTH WILL BE ALLOWED TO MATCH THE EXISTING SIDEWALK.
   - 2.2. EXISTING SIDEWALKS GREATER THAN 20 FEET IN TOTAL LENGTH:
     - 2.2.1. THE SIDEWALK WIDTH FOR THE ENTIRE PROPERTY WIDTH SHALL BE IMPROVED TO MEET WIDTH REQUIREMENTS ACCORDING TO THE LATEST INFRASTRUCTURE DESIGN MANUAL.
   - 2.3. 20 FOOT TOTAL LENGTH IS DEFINED AS:
     - 2.3.1. UP TO 10 FEET ON BOTH SIDES OF THE DRIVEWAY; OR
     - 2.3.2. UP TO 20 FEET WHEN SIDEWALK AFFECTED IS LOCATED ONLY ON ONE SIDE OF THE DRIVEWAY.
3. PROPOSED SIDEWALKS THAT DO NOT FALL WITHIN THE SCOPE DEFINED IN NOTE 2 SHALL BE DESIGNED ACCORDING TO IDM REQUIREMENTS AND CONSTRUCTED ACCORDING TO THE CONTRACT DRAWINGS.
4. ALL RAMPS 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.
5. CURB RAMPS THAT ARE STEEPER THAN A 1:20 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
6. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.
7. 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.)
8. DETECTABLE WARNING SURFACES:
   - 8.1. SIDEWALK SHALL HAVE A DETECTABLE WARNING SURFACE WHERE SIDEWALK INTERSECTS TYPE C DRIVEWAYS (COMMERCIAL DRIVEWAYS) THAT ARE STOP, YIELD, OR TRAFFIC SIGNAL CONTROLLED.
   - 8.2. 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).
   - 8.3. REFER TO STANDARD DETAILS 02775–06 TO 02775–07 FOR DETECTABLE WARNING SURFACE STANDARDS.

TABLE 1

REINFORCING STEEL INFORMATION
FOR 4 ½ " THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
f'c' = 3,500 PSI AND fy = 60,000 PSI
REFER TO CONTRACT DRAWINGS FOR SIDEWALKS WIDER THAN 6 FEET.

SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL #3 BARS NO. OF BARS "NB"	LONGITUDINAL STEEL #3 BARS SPACING "SPC" (IN)	LONGITUDINAL STEEL #3 BARS END BAR SPACING (IN)	TRANSVERSE STEEL #3 BARS 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) WIDTH (FT) MIN	WIDTH (FT) MAX	RADIUS (FT) MIN	RADIUS (FT) MAX	TYPE B DRIVEWAY (SHARED ACCESS/SHARED DRIVEWAY) WIDTH (FT) MIN	WIDTH (FT) MAX	RADIUS (FT) MIN	RADIUS (FT) MAX	TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY) WIDTH (FT) MIN	WIDTH (FT) MAX	RADIUS (FT) MIN	RADIUS (FT) 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 SWEPT PATH ANALYSIS.
(2) REFER TO INFRASTRUCTURE DESIGN MANUAL ARTCILES 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.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukant Kanwar 9EF8B0C041F9478...	DocuSigned by: tuHANG NGUYEN 35A28EFDA7584C0...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock A3DC41987283485...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02754–04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PROPOSED SIDEWALK THROUGH DRIVEWAY WITH MINIMAL ELEVATION DIFFERENCE

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

WOOLPERT
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SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(15 OF 18)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 193 OF 345	

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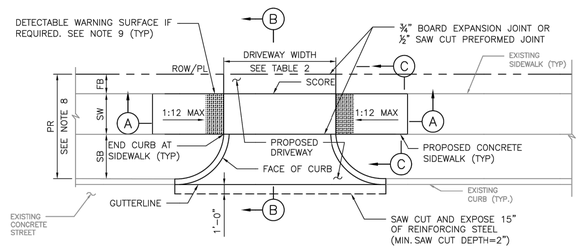
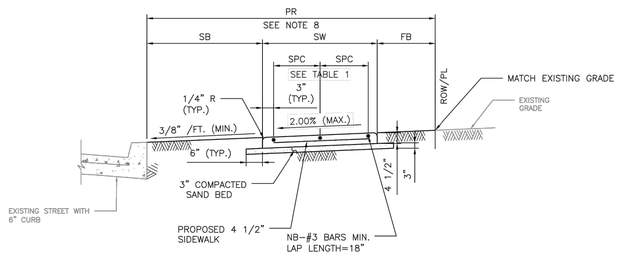
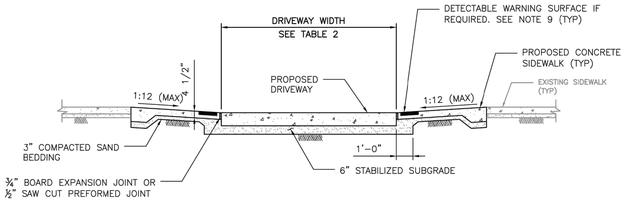


PLAN VIEW
DRIVEWAY



SECTION C–C
TYPICAL SIDEWALK SECTION



SECTION A–A
PROPOSED SIDEWALK THROUGH DRIVEWAY
WITH EXCESSIVE ELEVATION DIFFERENCE
WITH EXISTING SIDEWALK

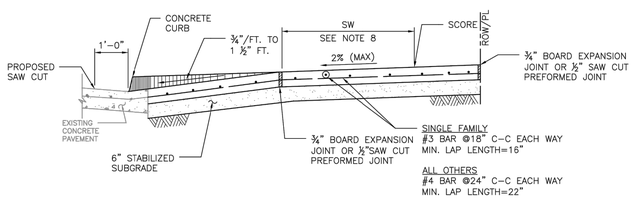
TABLE 1

REINFORCING STEEL INFORMATION
FOR 4 ½ " THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
fc' = 3,500 PSI AND fy = 60,000 PSI
REFER TO CONTRACT DRAWINGS FOR SIDEWALKS WIDER THAN 6 FEET.

SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL			TRANSVERSE STEEL #3 BARS SPACING (IN)
		#3 BARS			
		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

NOTES:

1. REPAIR, RECONSTRUCTION OR REPLACEMENT OF SIDEWALKS SHALL MEET PERMITTING REQUIREMENTS OF CODE OF ORDINANCES SECTION 40–552.
2. FOR REPAIR, RECONSTRUCTION, OR REPLACEMENT OF EXISTING SIDEWALKS:
   - 2.1. EXISTING SIDEWALKS LESS THAN OR EQUAL TO 20 FEET IN TOTAL LENGTH:
     - 2.1.1. THE PROPOSED SIDEWALK WIDTH WILL BE ALLOWED TO MATCH THE EXISTING SIDEWALK.
   - 2.2. EXISTING SIDEWALKS GREATER THAN 20 FEET IN TOTAL LENGTH:
     - 2.2.1. THE SIDEWALK WIDTH FOR THE ENTIRE PROPERTY WIDTH SHALL BE IMPROVED TO MEET WIDTH REQUIREMENTS ACCORDING TO THE LATEST INFRASTRUCTURE DESIGN MANUAL.
   - 2.3. 20 FOOT TOTAL LENGTH IS DEFINED AS:
     - 2.3.1. UP TO 10 FEET ON BOTH SIDES OF THE DRIVEWAY; OR
     - 2.3.2. UP TO 20 FEET WHEN SIDEWALK AFFECTED IS LOCATED ONLY ON ONE SIDE OF THE DRIVEWAY.
3. ALL JOINTS ALONG THE SIDEWALK SHALL BE CONSTRUCTED ACCORDING TO DRAWING 02752–02 AND SPECIFICATION 02752.
4. 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.)
5. DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5 1/2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.
6. ALL RAMPS 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.
7. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
8. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.
9. DETECTABLE WARNING SURFACES:
   - 9.1. SIDEWALK SHALL HAVE A DETECTABLE WARNING SURFACE WHERE:
     - 9.1.1. SIDEWALK INTERSECTS TYPE C DRIVEWAYS (COMMERCIAL DRIVEWAYS) THAT ARE STOP, YIELD, OR TRAFFIC SIGNAL CONTROLLED; OR
     - 9.1.2. SIDEWALK SLOPE IS GREATER THAN 1:20 AND INTERSECTS A TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY)
   - 9.2. 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).
   - 9.3. REFER TO STANDARD DETAILS 02775–06 TO 02775–07 FOR DETECTABLE WARNING SURFACE STANDARDS.



SECTION B–B
TYPICAL DRIVEWAY SECTION

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

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APPROVED BY:	APPROVED BY:
DocuSigned by: Suhail Kauswar 9EF8B0C641F5478...	DocuSigned by: kitching Nguyen 95A261EFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock A2D31497E9E9476...	
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

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SURVEYED BY: KUO & ASSOC.
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STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(16 OF 18)

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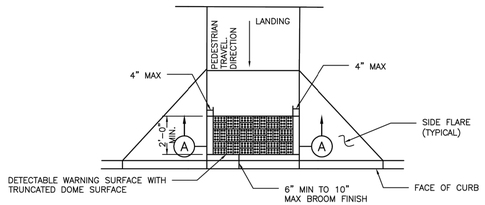
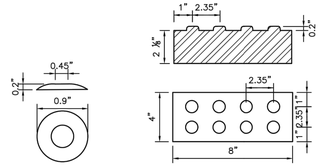


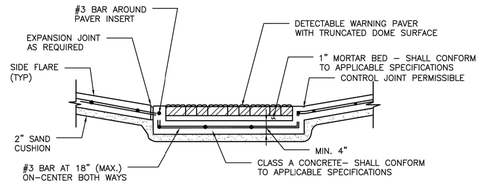
PLAN VIEW

DETECTABLE WARNING SURFACE



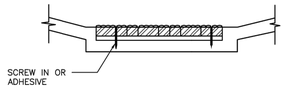
DETAIL

DETECTABLE WARNING PAVER



SECTION A–A

PAVER



DETAIL A–5

NOTES:

GENERAL NOTES

1. ALL RAMPS 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.
2. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

PAVERS

1. FURNISH DETECTABLE WARNING SURFACE UNITS MEETING ALL REQUIREMENTS OF ASTM C–936, C–33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.
2. LAY FULL–SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING POWER UNITS USING A POWER SAW.

POLYMER CONCRETE

1. DETECTABLE WARNING TILES SHALL BE MADE OF POLYMER CONCRETE MATERIALS.
2. DETECTABLE WARNING TILES SHALL BE INSTALLED INTO FRESH CONCRETE (CAST–IN–PLACE) UTILIZING AN ANCHORING SYSTEM.
3. DETECTABLE WARNING TILES SHALL BE OF TERRACOTTA (BRICK–RED) COLOR AND COLORED THROUGHOUT TO GUARANTEE THE ADA REQUIRED COLOR CONTRAST.
4. DETECTABLE WARNING TILES SHALL MEET OR EXCEED THE FOLLOWING ASTM–BASED "STANDARDS" FOR CONCRETE MATERIALS.
   A. COMPRESSION STRENGTH > 12,500 PSI PER ASTM C 39–04
   B. WATER ABSORPTION < 0.25% PER ASTM C 97–09

PADS

1. FURNISH REQUIREMENTS OF ADAAG (MARCH 2003).
2. OTHER MATERIALS MAY BE USED IF APPROVED BY THE CITY ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DETECTABLE WARNING SURFACE (OPTIONS)

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sukut Kanwar — CITY ENGINEER

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

DocuSigned by: Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV–27–2023 | DWG NO: 02775–07

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WHATSOEVER, THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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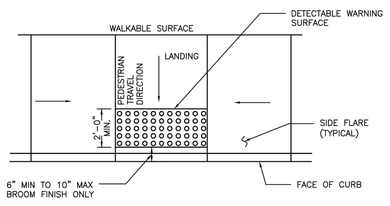
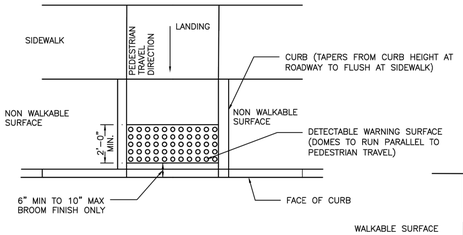
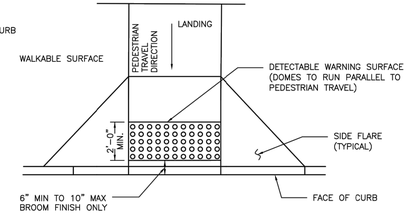


TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE





TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN

GENERAL NOTES FOR DETECTABLE WARNINGS:

1. DETECTABLE WARNING SURFACES MUST BE FULLY ADA COMPLIANT.
2. ALL NEW CURB RAMPS MUST CONTAIN A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES. THE SURFACE MUST CONTRAST VISUALLY WITH ADJOINING SURFACE, INCLUDING SIDE FLARES. FURNISH DARK BROWN OR DARK RED DETECTABLE WARNING SURFACE ADJACENT TO UNCOLORED CONCRETE, UNLESS SPECIFIED ELSEWHERE IN THE PLANS.
3. DETECTABLE WARNING SURFACES MUST MAINTAIN A SLIP RESISTANCE WITH FA–VALUE OF EQUAL TO OR GREATER THAN 0.8.
4. DETECTABLE WARNING SURFACES MUST MAINTAIN A WATER ABSORPTION RATE OF LESS THAN 1%, DETECTABLE WARNING SHALL NOT ALLOW WATER TO ACCUMULATE.
5. DETECTABLE WARNINGS INSTALLED INTO FRESH CONCRETE SHALL BE WITHOUT VOIDS AND UTILIZING AN ACCEPTABLE ANCHORING SYSTEM.
6. ALIGN TRUNCATED DOMES IN THE DIRECTION OF PEDESTRIAN TRAVEL WHEN ENTERING THE STREET.
7. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.
8. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6" MIN TO 10" MAX FROM THE DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.
9. ALL RAMPS 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.
10. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DETECTABLE WARNING CURB RAMP DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sukut Kanwar — CITY ENGINEER

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

DocuSigned by: Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV–27–2023 | DWG NO: 02775–06

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STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 08/02/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(17 OF 18)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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OMAR ABDULKAREEM, P.E.	
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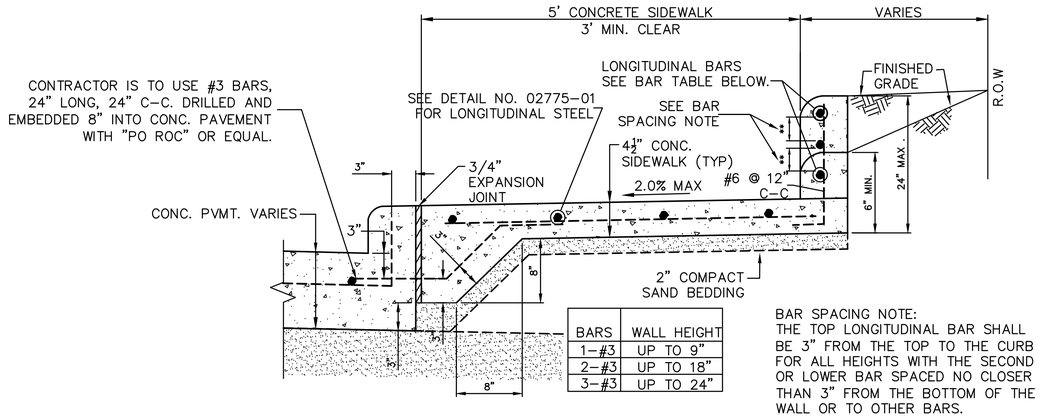
REV	DESCRIPTION	BY	DATE

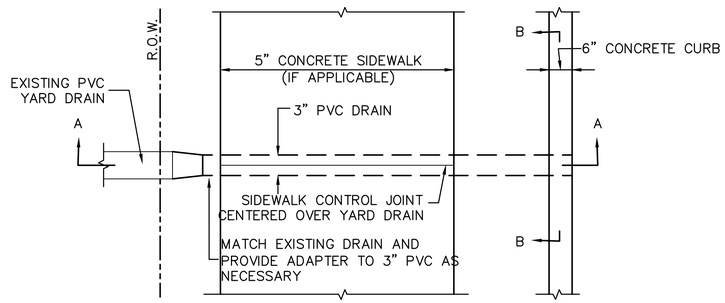


BARS	WALL HEIGHT
1-#3	UP TO 9"
2-#3	UP TO 18"
3-#3	UP TO 24"

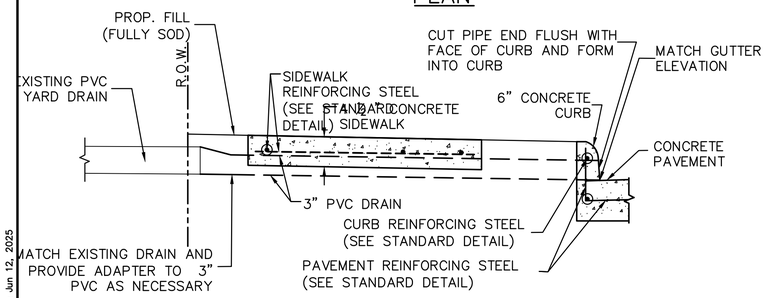
BAR SPACING NOTE:
THE TOP LONGITUDINAL BAR SHALL BE 3" FROM THE TOP TO THE CURB FOR ALL HEIGHTS WITH THE SECOND OR LOWER BAR SPACED NO CLOSER THAN 3" FROM THE BOTTOM OF THE WALL OR TO OTHER BARS.

SIDEWALK ON BACK OF CURB WITH TOE WALL & EXTENDED INTERGRAL CURB DETAIL

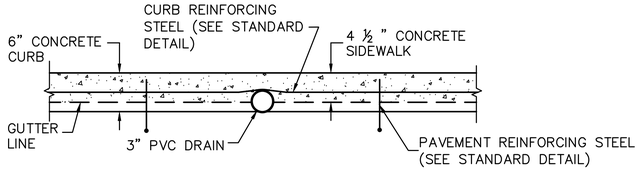
(NOT TO SCALE)



PLAN



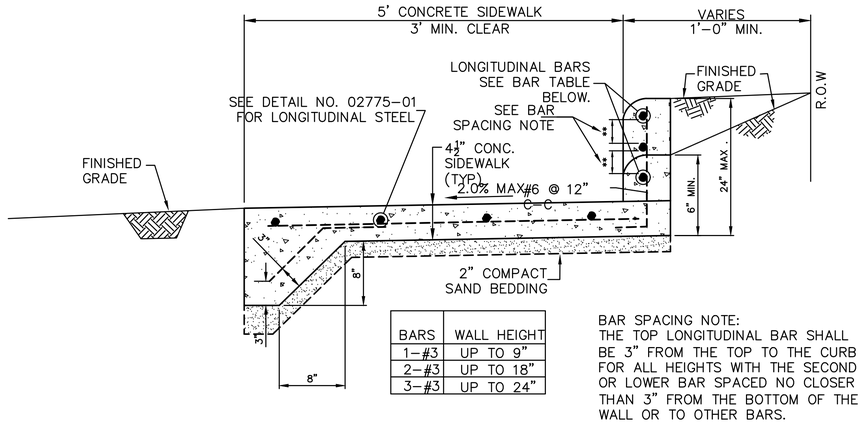
SECTION A-A



SECTION B-B

PVC YARD DRAIN

(NOT TO SCALE)



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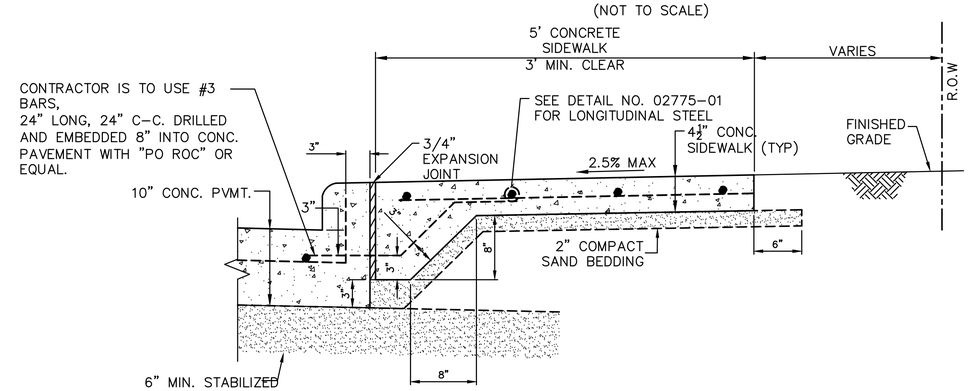
SIDEWALK WITH TOE WALL & EXTENDED INTERGAL CURB DETAIL

(NOT TO SCALE)



SIDEWALK ON BACK OF CURB DETAIL

(NOT TO SCALE)

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

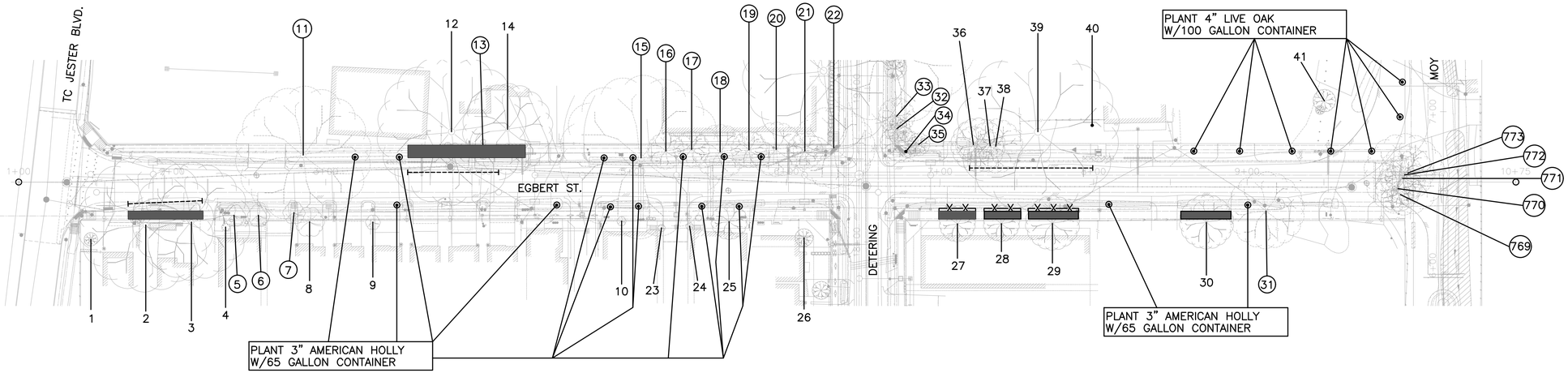
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILS
(18 OF 18)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 196 OF 345	

CivilTech Engineering, Inc.
O:\2018\J18001\3 Drawings\SHEETS\01-15-PAVEMENT DETAILS Continued.dwg Jun 12, 2025

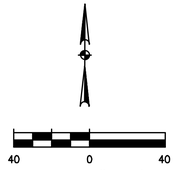
REV	DESCRIPTION	BY	DATE



Tree No.	Location	Description	Comments	Treatment
Trees on Egbert Street				
1	5335 Egbert	2" Live Oak	Private tree, Not impacted	
2	5335 Egbert	26" Red Cedar	Utility pruned, Private tree	Root prune for street, Demo-form-pour walk without damage to roots 1" diameter or larger, Fence
3	5335 Egbert	20" Cedar Elm	Utility pruned, Private tree	Root prune for street, Demo-form-pour walk without damage to roots 1" diameter or larger, Fence
4	5327 Egbert	1' Sago	Private tree, Not impacted	
5	5327 Egbert	12" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
6	5327 Egbert	12" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
7	5327 Egbert	12" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
8	5327 Egbert	16" Crepe Myrtle	Private tree, Not impacted	
9	5327 Egbert	5" Crepe Myrtle	Private tree, Not impacted	
10	5309 Egbert	4" Crepe Myrtle	Private tree, Not impacted	
11	5316 Egbert	23" Sycamore	50% dead, Poor, Ordinance tree, Remove for path	Remove tree, No replacement required
12	5316 Egbert	30" Cherrybark Oak	Private tree	Root prune for street, Demo-form-pour walk without damage to roots 1" diameter or larger
13	5316 Egbert	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
14	5310 Egbert	20" Live oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
15	5310 Egbert	29" Water Oak	Burls, Ordinance tree, Remove for path	Remove tree, Provide 29" replacement
16	5310 Egbert	12" Photinia	Not ordinance tree, Remove for walk	Remove tree, No replacement required
17	5310 Egbert	12" Photinia	Not ordinance tree, Remove for walk	Remove tree, No replacement required
18	5310 Egbert	12" Photinia	Not ordinance tree, Remove for walk	Remove tree, No replacement required
19	5310 Egbert	12" Photinia	Not ordinance tree, Remove for walk	Remove tree, No replacement required
20	5310 Egbert	12" Photinia	Not ordinance tree, Remove for walk	Remove tree, No replacement required
21	5310 Egbert	12" Photinia	Not ordinance tree, Remove for walk	Remove tree, No replacement required
22	5310 Egbert	13" Pear	Not ordinance tree, Remove for walk	Remove tree, No replacement required
23	5309 Egbert	4" Ligustrum	Private tree, Not impacted	
24	5309 Egbert	4" Ligustrum	Private tree, Not impacted	
25	5309 Egbert	4" Ligustrum	Private tree, Not impacted	
26	5309 Egbert	6" Japanese Blueberry	Private tree, Not impacted	
27	Not available	6" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
28	Not available	7" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
29	Not available	10" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
30	Not available	12" Mulberry	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
31	Not available	18" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
32	5222 Egbert	5" American Elm	ordinance tree, Remove for walk	Remove tree, provide 5" replacement
33	5222 Egbert	6" Water Oak	Ordinance tree, Remove for walk	Remove tree, provide 6" replacement
34	5222 Egbert	4" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
35	5222 Egbert	5" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
36	5222 Egbert	10" Tallow	Not ordinance tree	
37	5222 Egbert	10" Sugarberry	Not ordinance tree	
38	5222 Egbert	10" Sugarberry	Not ordinance tree	
39	5222 Egbert	26" Arizona Ash	Poor, Dieback, Trunk cavity, Private tree	Root prune for street
40	5222 Egbert	18" Arizona Ash	Private tree, Not impacted	
41	5202 Egbert	5" American Elm	Private tree, Not impacted	

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- —X—X— TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- OCC — ZERO CUTBACK CURB
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION



SCALE: 1"=40'

NOTE:

1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED NOVEMBER 2022. 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.
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4. THE CONTRACTOR'S ARBORIST WILL MARK LOCATIONS OF TREES TO BE PLANTED AND OBTAIN APPROVAL BY CITY ENGINEER AND CITY FORESTER BEFORE PURCHASING OR EXCAVATING PLANTING HOLE OF EACH TREE.

WOOLPERT
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SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

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

APPROVED: Craig N. Koehl 11/14/2024

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 1 OF 15

WBS NUMBER
M–410039–0001–4

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

CITY OF HOUSTON PM
PM, SAM HABIBI

SHEET NO. 197 OF 345

CivilTech Engineering, Inc.
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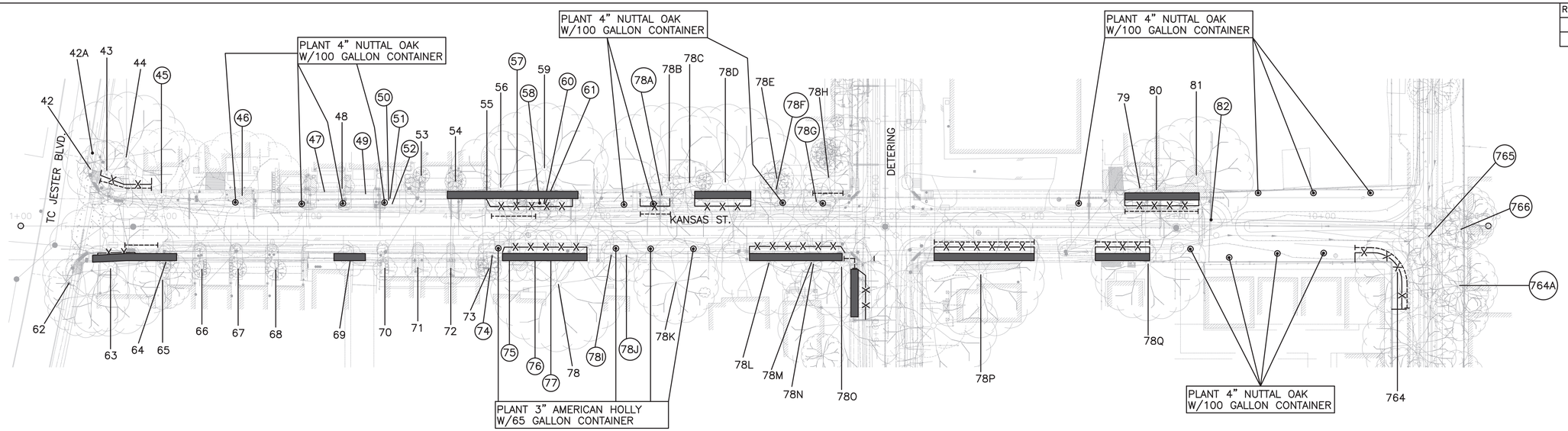

Tree No.	Location	Description	Comments	Treatment
Trees on Kansas Street				
42	5338 Kansas	5" Crepe Myrtle	Not ordinance tree	
42A	5338 Kansas	7" Crepe Myrtle	Not ordinance tree	
43	5338 Kansas	12" Red Cedar	Not ordinance tree	
44	5338 Kansas	25" Pecan	Topped, Private tree	Root prune for walk, Fence
45	5338 Kansas	30" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 30" replacement
46	5334 Kansas	30" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 30" replacement
47	5334 Kansas	4" Redbud	Not ordinance tree, Remove for walk	Remove tree, No replacement required
48	5334 Kansas	5" Mulberry	Private tree, Not impacted	
49	5334 Kansas	12" Tallow	Not ordinance tree, Remove for walk	Remove tree, No replacement required
50	5334 Kansas	6" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
51	5334 Kansas	10" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
52	5334 Kansas	10" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
53	5322 Kansas	5" Savannah Holly	Private tree, Not impacted	
54	5322 Kansas	5" Savannah Holly	Private tree, Not impacted	
55	5322 Kansas	2" Ligustrum	Private tree, Not impacted	
56	5322 Kansas	18" Water Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
57	5322 Kansas	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
58	5322 Kansas	5" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
59	5322 Kansas	22" American Elm	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence
60	5322 Kansas	5" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
61	5322 Kansas	10" Arizona Ash	Not ordinance tree, Remove for walk	Remove tree, No replacement required
62	5337 Kansas	8" Crepe Myrtle	Not ordinance tree	
63	5337 Kansas	31" Live Oak	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
64	5337 Kansas	5" Crepe Myrtle	Private tree, Not impacted	
65	5337 Kansas	9" Willow Oak	Private tree, Not impacted	
66	5337 Kansas	4" Live Oak	Private tree, Not impacted	
67	5337 Kansas	4" Savannah Holly	Private tree, Not impacted	
68	5337 Kansas	4" Live Oak	Private tree, Not impacted	
69	5331 Kansas	10" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
70	5325 Kansas	10" Crepe Myrtle	Private tree, Not impacted	
71	5325 Kansas	10" Crepe Myrtle	Private tree, Not impacted	
72	5321 Kansas	12" Crepe Myrtle	Private tree, Not impacted	
73	5319 Kansas	5" Yaupon	Private tree, Not impacted	
74	5319 Kansas	17" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
75	5319 Kansas	15" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
76	5319 Kansas	16" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
77	5319 Kansas	17" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
78	5319 Kansas	25" Pecan	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
78A	5312 Kansas	10" Arborvitae	Not ordinance tree, Remove for walk	Remove tree, No replacement required
78B	5312 Kansas	36" Pecan	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
78C	5312 Kansas	10" Redbud	Private tree, Not impacted	
78D	5312B Kansas	26" Sugarberry	Poor condition, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
78E	5312B Kansas	8" Sugarberry	Private tree, Not impacted	
78F	5312B Kansas	8" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
78G	5312B Kansas	14" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
78H	5312B Kansas	14" Pecan	Private tree	Root prune for walk, Clearance prune
78I	5315 Kansas	18" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
78J	5315 Kansas	17" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
78K	5315 Kansas	14" Catalpa	Private tree, Not impacted	
78L	5315 Kansas	15" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
78M	5315 Kansas	12" Sugarberry	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
78N	5315 Kansas	8" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
78O	5315 Kansas	20" Pecan	Private tree	Root prune for walk, Fence
78P	5217 Kansas	35" Post Oak	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
78Q	5217 Kansas	27" Pecan	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
79	5212 Kansas	14" Magnolia	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
80	5212 Kansas	30" Pecan	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
81	5212 Kansas	36" Pecan	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
82	5212 Kansas	12" Sugarberry	Not ordinance tree, Remove for storm	Remove tree, No replacement required

REV	DESCRIPTION	BY	DATE

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- —X—X— TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- OCC — ZERO CUTBACK CURB
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION

40 0 40

SCALE: 1"=40'

NOTE:

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FB NO. P–6133

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APPROVED: Craig N. Koehl 11/14/2024

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 2 OF 15

WBS NUMBER M–410039–0001–4	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 198 OF 345	

Civiltech Engineering, Inc.
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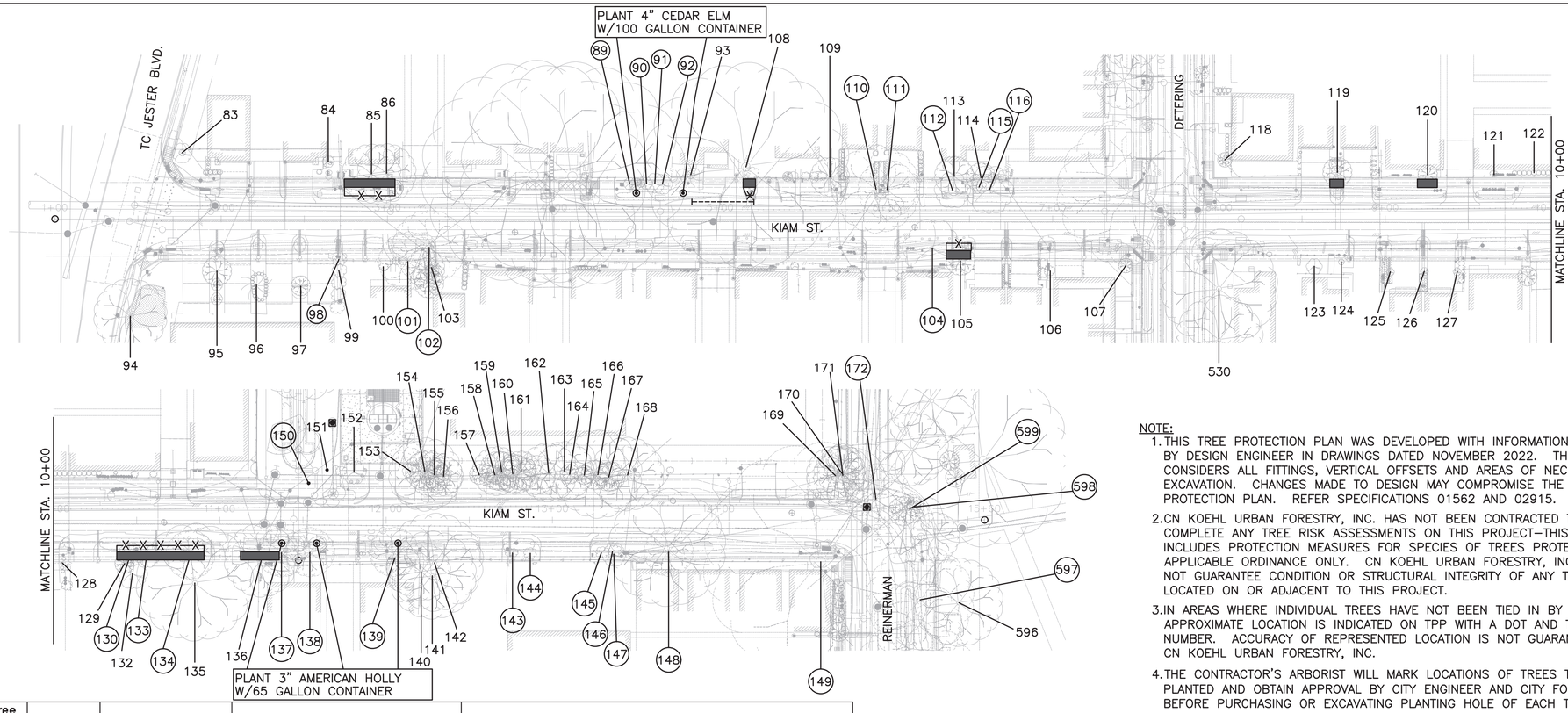
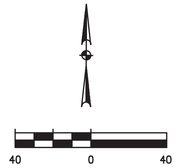
REV	DESCRIPTION	BY	DATE



TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- X-X-X — TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- 0CC — ZERO CUTBACK CURB
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION



SCALE: 1"=40'

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Tree No.	Location	Description	Comments	Treatment
Trees on Kiam Street				
83	5342 Kiam	3" Crepe Myrtle	Private tree, Not impacted	
84	5336 Kiam	5" Crepe Myrtle	Private tree, Not impacted	
85	5336 Kiam	12" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
86	5336 Kiam	14" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
87	Not used			
88	Not used			
89	5322 Kiam	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
90	5322 Kiam	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
91	5322 Kiam	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
92	5322 Kiam	5" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
93	5318 Kiam	10' Palm	Private tree, Not impacted	
94	5343 Kiam	18" Pecan	Ordinance tree, Not impacted	
95	5341 Kiam	5" Magnolia	Private tree, Not impacted	
96	5337 Kiam	18" Arborvitae	Private tree, Not impacted	
97	5337 Kiam	3" Red Maple	Private tree, Not impacted	
98	5337 Kiam	6" Oleander	Not ordinance tree, Remove for walk	Remove tree, No replacement required
99	5337 Kiam	6" Oleander	Private tree, Not impacted	
100	5335 Kiam	4" Prunus spp	Private tree, Not impacted	
101	5335 Kiam	12" Citrus spp	Not ordinance tree, Remove for walk	Remove tree, No replacement required
102	5335 Kiam	14" Tallow	Not ordinance tree, Remove for walk	Remove tree, No replacement required
103	5335 Kiam	6" Sugarberry	Private tree, Not impacted	
104	5307 Kiam	28" Crepe Myrtle	Wires in trunk, Cavities, Poor, Ordinance tree, Remove for walk	Remove tree, No replacement required
105	5307 Kiam	7" Water Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
106	5307 Kiam	4" Mulberry	Private tree, Not impacted	
107	5307 Kiam	2" Live Oak	Private tree, Not impacted	
108	5316 Kiam	34" Post Oak	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
109	5316 Kiam	6" Citrus spp	Private tree, Not impacted	
110	5306 Kiam	16" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 16" replacement
111	5306 Kiam	12" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 12" replacement
112	5306 Kiam	15" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
113	5306 Kiam	6" Arborvitae	Private tree	Clearance prune
114	5306 Kiam	4" Citrus spp	Private tree	Clearance prune
115	5306 Kiam	4' Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
116	5306 Kiam	16" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
117	Not used			
118	5236 Kiam	7" Crepe Myrtle	Private tree, Not impacted	
119	5236 Kiam	9" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
120	5236 Kiam	4" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune

Tree No.	Location	Description	Comments	Treatment
Trees on Kiam Street				
121	5236 Kiam	3" Photinia	Private tree, Not impacted	
122	5236 Kiam	3" Photinia	Private tree, Not impacted	
123	5237 Kiam	4" Crepe Myrtle	Private tree, Not impacted	
124	5237 Kiam	2" Crepe Myrtle	Private tree, Not impacted	
125	5235 Kiam	4" Crepe Myrtle	Private tree, Not impacted	
126	5235 Kiam	3" Crepe Myrtle	Private tree, Not impacted	
127	5231 Kiam	3" Crepe Myrtle	Private tree, Not impacted	
128	5231 Kiam	3" Mulberry	Topped, Private, Poor, Not impacted	
129	5219 Kiam	12" Sugarberry	Private tree, Not impacted	
130	5219 Kiam	4" Citrus spp	Not ordinance tree, Remove for walk	Remove tree, No replacement required
131	Not used			
132	5219 Kiam	15" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
133	5219 Kiam	15" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
134	5219 Kiam	7" Water Oak	Wires in trunk, Cavities, Poor, Ordinance tree, Remove for walk	Remove tree, No replacement required
135	5219 Kiam	22" Pecan	Utility pruned, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
136	5219 Kiam	14" Sugarberry	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
137	5219 Kiam	12" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 12" replacement
138	5219 Kiam	11" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 11" replacement
139	5219 Kiam	5" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 5" replacement
140	5207 Kiam	12" Sugarberry	Private tree, Not impacted	
141	5207 Kiam	12" Sugarberry	Private tree, Not impacted	
142	5207 Kiam	12" Sugarberry	Private tree, Not impacted	
143	5207 Kiam	5' Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
144	5207 Kiam	5' Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
145	5207 Kiam	4' Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
146	5207 Kiam	5" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
147	5207 Kiam	4' Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
148	5207 Kiam	12" Water Oak	50% dead, Poor, Ordinance tree, Remove for walk	Remove tree, No replacement required
149	5207 Kiam	33" Water Oak	Recently removed	
150	5226 Kiam	10" Mulberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
151	5226 Kiam	10" Mulberry	Private tree, Not impacted	
152	5210 Kiam	12" Crepe Myrtle	Private tree, Not impacted	
153	5210 Kiam	14" Crepe Myrtle	Private tree, Not impacted	
154	5210 Kiam	10" Sugarberry	Private tree, Not impacted	
155	5210 Kiam	7" Sugarberry	Private tree, Not impacted	
156	5210 Kiam	7" Sugarberry	Private tree, Not impacted	
157	5210 Kiam	8" American Elm	Private tree, Not impacted	
158	5210 Kiam	12" American Elm	Private tree, Not impacted	
159	5210 Kiam	8" American Elm	Private tree, Not impacted	
160	5210 Kiam	6" American Elm	Private tree, Not impacted	
161	5210 Kiam	8" American Elm	Private tree, Not impacted	
162	5210 Kiam	12" American Elm	Private tree, Not impacted	
163	5210 Kiam	7" Sugarberry	Private tree, Not impacted	
164	5210 Kiam	12" Mulberry	Private tree, Not impacted	
165	5210 Kiam	12" American Elm	Private tree, Not impacted	
166	5210 Kiam	12" American Elm	Private tree, Not impacted	
167	5210 Kiam	11" American Elm	Dead, Private tree, Not impacted	
168	5210 Kiam	15" Tallow	Dead, Private tree, Not impacted	
169	5206 Kiam	8" Sugarberry	Private tree, Not impacted	
170	5206 Kiam	7" Sugarberry	Private tree, Not impacted	
171	5206 Kiam	5" Sugarberry	Private tree, Not impacted	
172	5206 Kiam	12" Mulberry	Not ordinance tree, Remove for walk	

WOOLPERT
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Houston, TX 77079
800.414.1045

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FB NO. P-6133

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281-391-0022 ckoehl@koehlurbanforestry.com

APPROVED: Craig N. Koehl 11/14/2024

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 3 OF 15

WBS NUMBER
M-410039-0001-4

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

CITY OF HOUSTON PM

PM, SAM HABIBI

SHEET NO. 199 OF 345

Civiltech Engineering, Inc.
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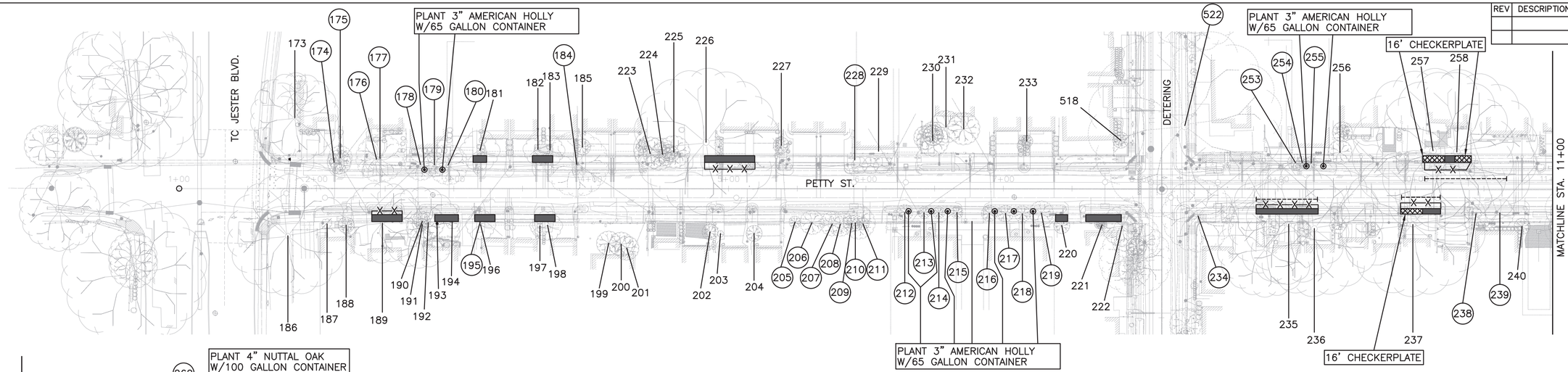

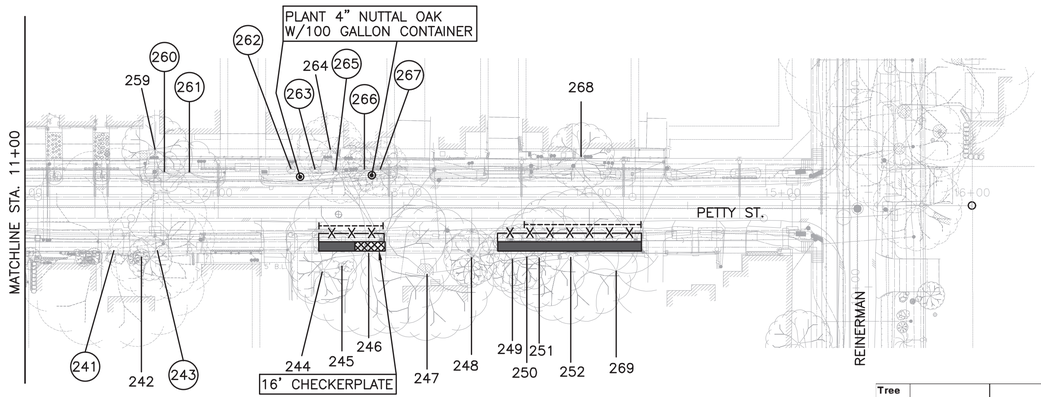

REV	DESCRIPTION	BY	DATE

NOTE:

1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED NOVEMBER 2022. 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.
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4. THE CONTRACTOR'S ARBORIST WILL MARK LOCATIONS OF TREES TO BE PLANTED AND OBTAIN APPROVAL BY CITY ENGINEER AND CITY FORESTER BEFORE PURCHASING OR EXCAVATING PLANTING HOLE OF EACH TREE.

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- –X–X– — TREE PROTECTION FENCE
- ------ — ROOT PRUNING TRENCH
- OCC — ZERO CUTBACK CURB
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION

Tree No.	Location	Description	Comments	Treatment
Trees on Petty Street				
173	5342 Petty	15" Arizona Ash	Private tree, Not impacted	
174	5342 Petty	3" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
175	5342 Petty	4" Loquat	Not ordinance tree, Remove for walk	Remove tree, No replacement required
176	5338 Petty	20' Palm	Not ordinance tree, Remove for walk	Remove tree, No replacement required
177	5338 Petty	9" Red Cedar	Not ordinance tree, Remove for walk	Remove tree, No replacement required
178	5338 Petty	6" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 6" replacement
179	5338 Petty	6" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 6" replacement
180	5338 Petty	12" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 12" replacement
181	5322 Petty	14" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
182	5322 Petty	12" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
183	5322 Petty	15" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
184	5322 Petty	12" Oleander	Not ordinance tree, Remove for walk	Remove tree, No replacement required
185	5322 Petty	4" Magnolia	Private tree, Not impacted	
186	5347 Petty	18" Arborvitae	Private tree, Not impacted	
187	5347 Petty	5" Camphor	Private tree, Not impacted	
188	5347 Petty	4" Mulberry	Topped, Private tree	
189	5347 Petty	14" Pecan	Topped, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
190	5347 Petty	12" Sugarberry	Utility pruned, Private tree	
191	5347 Petty	16" Sugarberry	Utility pruned, Private tree	
192	5347 Petty	10" Sugarberry	Utility pruned, Private tree	
193	5343 Petty	4" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
194	5343 Petty	12" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
195	5339 Petty	3" Yucca	Not ordinance tree, Remove for walk	Remove tree, No replacement required
196	5339 Petty	14" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
197	5339 Petty	10" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
198	5339 Petty	14" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
199	5327 Petty	5" Loquat	Private tree, Not impacted	
200	5327 Petty	4" Loquat	Private tree, Not impacted	
201	5327 Petty	5" Loquat	Private tree, Not impacted	
202	5327 Petty	3" Live Oak	Private tree, Not impacted	
203	5327 Petty	2" Crepe Myrtle	Private tree, Not impacted	
204	5325 Petty	2" Savannah Holly	Private tree, Not impacted	
205	5325 Petty	9" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
206	5325 Petty	5" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
207	5325 Petty	4" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
208	5325 Petty	6" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
209	5325 Petty	4" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
210	5325 Petty	10" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
211	5325 Petty	5" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
212	5319 Petty	11" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 11" replacement
213	5319 Petty	3" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 3" replacement
214	5319 Petty	2" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 2" replacement
215	5319 Petty	2" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 2" replacement
216	5305 Petty	4" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 4" replacement
217	5305 Petty	4" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 4" replacement
218	5305 Petty	4" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 4" replacement
219	5305 Petty	4" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 4" replacement
220	5305 Petty	4" Pomegranate	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
221	5305 Petty	12" Avocado	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune

Tree No.	Location	Description	Comments	Treatment
Trees on Petty Street				
222	5305 Petty	16" Loquat	Private tree	Clearance prune
223	5324 Petty	6" Loquat	Private tree	Clearance prune
224	5324 Petty	8" Loquat	Private tree	Clearance prune
225	5324 Petty	12" Loquat	Private tree	Clearance prune
226	5324 Petty	24" Pecan	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
227	5322 Petty	7" Juniper	Private tree, Not impacted	
228	5322 Petty	Banana	Not ordinance tree, Remove for walk	Remove tree, No replacement required
229	5322 Petty	6" Crepe Myrtle	Private tree, Not impacted	
230	5310 Petty	5" Prunus	Private tree, Not impacted	
231	5310 Petty	4" Yew	Private tree, Not impacted	
232	5310 Petty	4" Citrus spp	Private tree, Not impacted	
233	5310 Petty	2" Savannah Holly	Private tree, Not impacted	
234	5239 Petty	13" Pecan	Ordinance tree, Remove for wider street	Remove tree, Provide 13" replacement
235	5233 Petty	20" Red Cedar	Private tree	Root prune for street, Demo-form-pour walk without damage to roots 1" diameter or larger, Fence, Clearance prune
236	5233 Petty	24" Red Cedar	Private tree	Root prune for street, Demo-form-pour walk without damage to roots 1" diameter or larger, Fence, Clearance prune
237	5231 Petty	25" Red Cedar	Private tree	16' checker plate, Root prune for street, Demo-form-pour walk without damage to roots 1" diameter or larger, Fence, Clearance prune
238	5231 Petty	2" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
239	5231 Petty	17" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
240	5231 Petty	5" Crepe Myrtle	Private tree, Not impacted	
241	5227 Petty	25" Red Cedar	Ordinance tree, Remove for walk	Remove tree, Provide 25" replacement
242	5227 Petty	5" Loquat	Private tree	Clearance prune
243	5227 Petty	18" Red Cedar	Not ordinance tree, Remove for walk	Remove tree, No replacement required
244	5215 Petty	14" Oleander	Private tree, Not impacted	
245	5215 Petty	5" Oleander	Private tree, Not impacted	
246	5215 Petty	22" Tallow	Private tree	16' checker plate, Root prune for street, Demo-form-pour walk without damage to roots 1" diameter or larger, Fence, Clearance prune
247	5215 Petty	25" Pecan	50% topped, Private tree, not impacted	
248	5215 Petty	10" Sugarberry	Private tree, Not impacted	
249	5215 Petty	13" Red Cedar	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
250	5215 Petty	12" Ligustrum	Private tree, Not impacted	
251	5215 Petty	16" Red Cedar	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
252	5215 Petty	20" Red Cedar	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
253	5244 Petty	3" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 3" replacement
254	5244 Petty	3" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 3" replacement
255	5244 Petty	3" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 3" replacement
256	5244 Petty	3" Exotic tree	Private tree	Clearance prune
257	5230 Petty	40" Live Oak	Arboriculturally significant, Private tree	16' checker plate, Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
258	5230 Petty	38" Live Oak	Arboriculturally significant, Private tree	16' checker plate, Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
259	5220 Petty	12" River birch	Private tree, Not impacted	
260	5220 Petty	18" Crepe Myrtle	Decay, Poor, Not ordinance tree, Remove for walk	Remove tree, No replacement required
261	5220 Petty	15" Crepe Myrtle	Decay, Poor, Not ordinance tree, Remove for walk	Remove tree, No replacement required
262	5220 Petty	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
263	5220 Petty	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
264	5220 Petty	12" River birch	Private tree	Clearance prune
265	5220 Petty	12" Live Oak	Recently removed	
266	5220 Petty	6" Live Oak	Recently removed	
267	5220 Petty	10" Live Oak	Recently removed	
268	5206 Petty	16" Oleander	Private tree	Clearance prune
269	5205 Petty	36" Pine	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune

40 0 40

SCALE: 1"=40'

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

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281-391-0022 ckoehl@koehlurbanforestry.com

APPROVED: Craig N. Koehl 11/14/2024

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 4 OF 15

WBS NUMBER M-410039-0001-4	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 200 OF 345	

civiltech Engineering, Inc.
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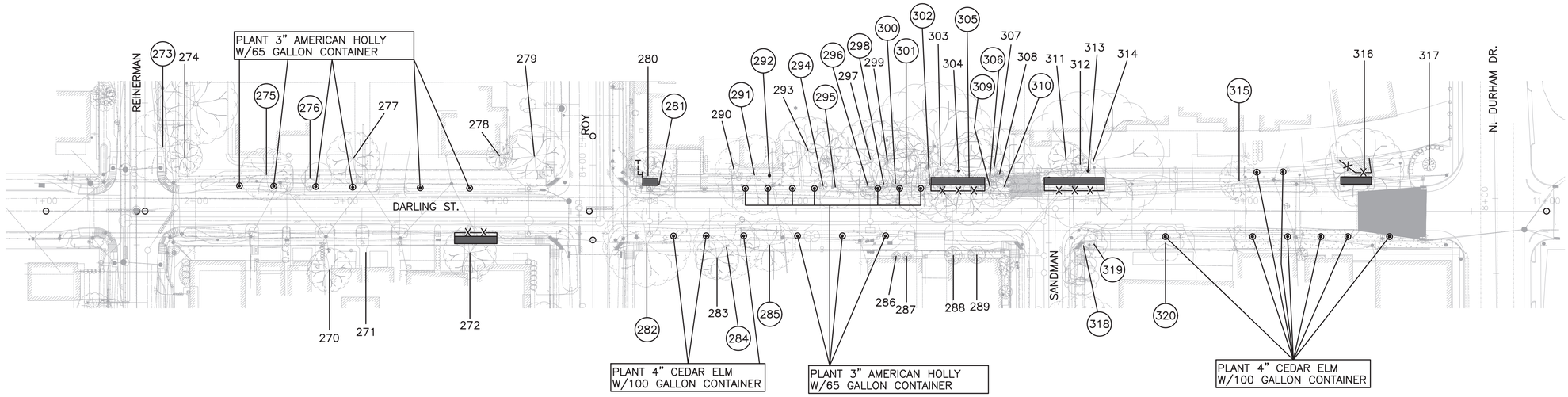
REV	DESCRIPTION	BY	DATE



Tree No.	Location	Description	Comments	Treatment
Trees on Darling Street				
270	5103 Darling	11" Water Oak	Private tree, Not impacted	
271	5103 Darling	2" Orchid tree	Private tree, Not impacted	
272	5103 Darling	14" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
273	Not available	24" Sugarberry	ordinance tree, Remove for walk	Remove tree, Provide 24" replacement
274	Not available	10" Citrus spp	Not ordinance tree	
275	Not available	12" Pecan	Ordinance tree, Remove for walk	Remove tree, Provide 12" replacement
276	Not available	6" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
277	Not available	14" Citrus spp	Private tree, Not impacted	
278	2303 Roy	14" Pecan	Private tree, Not impacted	
279	2303 Roy	5' Sago	Not ordinance tree	
280	5022 Darling	12" Post Oak	Basal cavity, Private tree	Root prune for ramp, Demo-form-pour walk without damage to roots 1" or larger
281	5022 Darling	15" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
282	Not available	24" Pecan	Ordinance tree, Remove for walk	Remove tree, Provide 24" replacement
283	Not available	9" Pecan	Private tree, Not impacted	
284	Not available	18" Pecan	Ordinance tree, Remove for walk	Remove tree, Provide 18" replacement
285	Not available	12" Pecan	Ordinance tree, Remove for walk	Remove tree, Provide 12" replacement
286	Not available	3" Cherrylaurel	Private tree, Not impacted	
287	Not available	3" Cherrylaurel	Private tree, Not impacted	
288	Not available	3" Cherrylaurel	Private tree, Not impacted	
289	Not available	3" Cherrylaurel	Private tree, Not impacted	
290	5018 Darling	5" Oleander	Private tree, Not impacted	
291	5018 Darling	16" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
292	5018 Darling	13" Willow Oak	Dieback, Poor, Ordinance, remove for walk	Remove tree, No replacement required
293	5010 Darling	10" Red Cedar	Private tree, Not impacted	
294	5010 Darling	3" Citrus spp	Not ordinance tree, Remove for walk	Remove tree, No replacement required
295	5010 Darling	15" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
296	5010 Darling	8" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
297	5010 Darling	13" Pecan	Private tree, Not impacted	
298	5010 Darling	2" Citrus spp	Not ordinance tree, Remove for walk	Remove tree, No replacement required
299	5010 Darling	13" Pecan	Private tree, Not impacted	
300	5010 Darling	2" Citrus spp	Not ordinance tree, Remove for walk	Remove tree, No replacement required
301	5010 Darling	12" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
302	5010 Darling	11" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
303	5002 Darling	25" Red Cedar	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
304	5002 Darling	5" Loquat	Private tree, Not impacted	
305	5002 Darling	8" Arborvitae	Not ordinance tree, Remove for walk	Remove tree, No replacement required
306	5002 Darling	2' Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
307	5002 Darling	15" Arizona Ash	Dieback, Poor, Private, Not impacted	
308	5002 Darling	2' Sago	Private tree	Clearance prune
309	5002 Darling	4" Exotic shrub	Not ordinance tree, Remove for walk	Remove tree, No replacement required
310	5002 Darling	5" Arborvitae	Not ordinance tree, Remove for walk	Remove tree, No replacement required
311	4932 Darling	8" Citrus spp	Private tree, Not impacted	
312	4932 Darling	4" Prunus spp	Private tree, Not impacted	
313	4932 Darling	2" Crepe Myrtle	Not ordinance tree	
314	4932 Darling	26" Sycamore	40% dieback, Poor, Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
315	4918 Darling	5" Redbud	Not ordinance tree	Remove tree, No replacement required
316	4910 Darling	14" Lacebark Elm	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
317	4910 Darling	2" Live Oak	Ordinance tree, Not impacted	
318	Not available	12" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
319	Not available	18" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
320	Not available	17" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- —X—X— TREE PROTECTION FENCE
- ------ ROOT PRUNING TRENCH
- 0CC — ZERO CUTBACK CURB
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION

40 0 40

SCALE: 1"=40'

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WOOLPERT
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SURVEYED BY: KUO & ASSOC.
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APPROVED: Craig N. Koehl 11/14/2024

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TREE PROTECTION PLAN

SHEET 5 OF 15

WBS NUMBER M-410039-0001-4	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 201 OF 345	

CivilTech Engineering, Inc.
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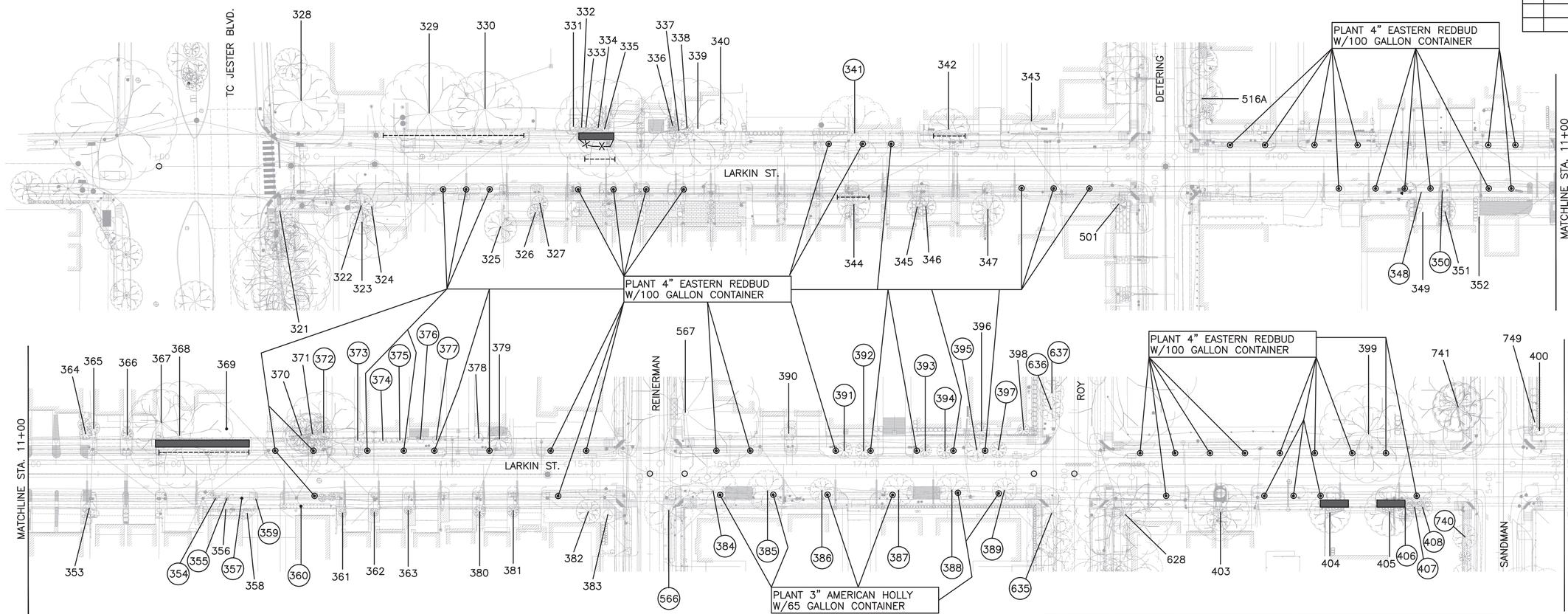
REV	DESCRIPTION	BY	DATE



SCALE: 1"=40'

Tree No.	Location	Description	Comments	Treatment
Trees on Larkin Street				
321	5339 Larkin	18" Catalpa	Not ordinance tree	
322	5339 Larkin	5" Sugarberry	Private tree, Not impacted	
323	5339 Larkin	12" American Elm	50% topped, Private tree, not impacted	
324	5339 Larkin	25' Palm	Private tree, Not impacted	
325	5339 Larkin	6" Mulberry	Private tree, Not impacted	
326	5339 Larkin	4" Japanese Blueberry	Private tree, Not impacted	
327	5339 Larkin	4" Japanese Blueberry	Private tree	Clearance prune
328	Fire Station 11	12" Bur Oak	Private tree, Not impacted	
329	Fire Station 11	28" Live Oak	Arboricultarilly significant, Private tree	Root prune for walk
330	Fire Station 11	14" Live Oak	Private tree	Root prune for walk
331	Fire Station 11	4" Crepe Myrtle	Private tree, Not impacted	
332	Fire Station 11	4" Crepe Myrtle	Private tree, Not impacted	
333	Fire Station 11	4" Crepe Myrtle	Private tree, Not impacted	
334	Fire Station 11	4" Crepe Myrtle	Private tree, Not impacted	
335	Fire Station 11	19" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
336	5328 Larkin	2" Water Oak	Private tree, Not impacted	
337	5328 Larkin	4" Loquat	Private tree, Not impacted	
338	5328 Larkin	12" Oleander	Private tree, Not impacted	
339	5328 Larkin	7" Boxwood	Private tree, Not impacted	
340	5328 Larkin	7" Boxwood	Private tree, Not impacted	
341	5314 Larkin	15" American Elm	ordinance tree, Remove for walk	Remove tree, Provide 15" replacement
342	5310 Larkin	7" Live Oak	Private tree	Root prune for walk, Clearance prune
343	5306 Larkin	15' Palm	Private tree, Not impacted	
344	5307 Larkin	4" Shumard Oak	Private tree	Root prune for walk, Clearance prune
345	5307 Larkin	3" Shumard Oak	Private tree, Not impacted	
346	5307 Larkin	5" Live Oak	Private tree, Not impacted	
347	5307 Larkin	4" Live Oak	Private tree, Not impacted	
348	5235 Larkin	18" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
349	5235 Larkin	6" Citrus spp	Private tree, Not impacted	
350	5235 Larkin	12" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
351	5235 Larkin	10" Citrus spp	Private tree, Not impacted	
352	5235 Larkin	15" Crepe Myrtle	Private tree, Not impacted	
353	5235 Larkin	7" Crepe Myrtle	Private tree, Not impacted	
354	5235 Larkin	2" Juniper	Not ordinance tree, Remove for walk	Remove tree, No replacement required
355	5235 Larkin	2" Juniper	Not ordinance tree, Remove for walk	Remove tree, No replacement required
356	5235 Larkin	6" Mulberry	Private tree, Not impacted	
357	5235 Larkin	2" Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
358	5235 Larkin	4" Crepe Myrtle	Private tree, Not impacted	
359	5235 Larkin	2" Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
360	5235 Larkin	3" Photinia	Not ordinance tree, Remove for walk	Remove tree, No replacement required

Tree No.	Location	Description	Comments	Treatment
Trees on Larkin Street				
361	5235 Larkin	3" Savannah Holly	Private tree, Not impacted	
362	5235 Larkin	3" Savannah Holly	Private tree, Not impacted	
363	5235 Larkin	3" Savannah Holly	Private tree, Not impacted	
364	5226 Larkin	4" Citrus spp	Private tree, Not impacted	
365	5226 Larkin	5" Water Oak	Private tree, Not impacted	
366	5226 Larkin	4" Shumard Oak	Private tree, Not impacted	
367	5226 Larkin	19" Water Oak	Private tree	Root prune for street, Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
368	5226 Larkin	22" Catalpa	Poor condition, Private tree	Root prune for street, Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
369	5226 Larkin	26" Catalpa	Private tree	Root prune for street, Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
370	5226 Larkin	10" Oleander	Private tree	Clearance prune
371	5226 Larkin	14" Oleander	Private tree	Clearance prune
372	5226 Larkin	4' Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
373	5226 Larkin	4' Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
374	5226 Larkin	8" Oleander	Not ordinance tree, Remove for walk	Remove tree, No replacement required
375	5226 Larkin	7" Oleander	Not ordinance tree, Remove for walk	Remove tree, No replacement required
376	5226 Larkin	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
377	5226 Larkin	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
378	5212 Larkin	4" Crepe Myrtle	Private tree, Not impacted	Clearance prune
379	5212 Larkin	6" Crepe Myrtle	Private tree, Not impacted	Clearance prune
380	5205 Larkin	4" Savannah Holly	Private tree, Not impacted	
381	5203 Larkin	4" Live Oak	Private tree, Not impacted	
382	5203 Larkin	3" Savannah Holly	Private tree, Not impacted	
383	5203 Larkin	2" Savannah Holly	Private tree, Not impacted	
384	Not available	18" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 18" replacement
385	Not available	15" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 15" replacement
386	Not available	10" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 10" replacement
387	Not available	12" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 12" replacement
388	Not available	5" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 5" replacement
389	Not available	12" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 12" replacement

Tree No.	Location	Description	Comments	Treatment
Trees on Larkin Street				
390	5120 Larkin	8" Japanese Blueberry	Private tree, Not impacted	
391	5120 Larkin	10" Live Oak	Ordinance tree, Remove for lower street	Remove tree, Provide 10" replacement
392	5120 Larkin	10" Live Oak	Ordinance tree, Remove for lower street	Remove tree, Provide 10" replacement
393	5109 Larkin	3" Live Oak	Ordinance tree, Remove for lower street	Remove tree, Provide 3" replacement
394	5109 Larkin	8" Live Oak	Ordinance tree, Remove for lower street	Remove tree, Provide 8" replacement
395	5109 Larkin	13" Live Oak	Ordinance tree, Remove for lower street	Remove tree, Provide 13" replacement
396	5108 Larkin	3" Savannah Holly	Private tree, Not impacted	
397	5108 Larkin	3" Live Oak	Ordinance tree, Remove for lower street	Remove tree, Provide 3" replacement
398	5108 Larkin	2" Savannah Holly	Private tree, Not impacted	
399	Not available	19" Oleander	Private tree, Not impacted	
400	Not available	8" Ligustrum	Private tree, Not impacted	
403	Not available	14" Japanese Blueberry	Private tree	Clearance prune
404	Not available	7" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
405	Not available	12" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
406	Not available	4" Olive	Not ordinance tree, Remove for walk	Remove tree, No replacement required
407	Not available	4" Olive	Not ordinance tree, Remove for walk	Remove tree, No replacement required
408	Not available	4" Olive	Not ordinance tree, Remove for walk	Remove tree, No replacement required

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WOOLPERT
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Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

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

APPROVED: Craig N. Koehl 11/14/2024

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 6 OF 15

WBS NUMBER M-410039-0001-4	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 202 OF 345	

civiltech Engineering, Inc.
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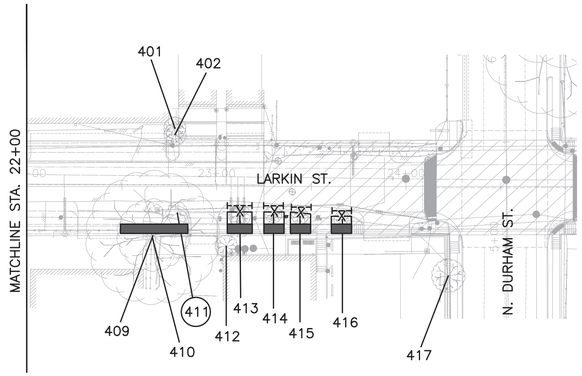
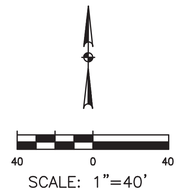
REV	DESCRIPTION	BY	DATE



Tree No.	Location	Description	Comments	Treatment
Trees on Larkin Street				
401	Not available	3" Italian Cypress	Private tree, Not impacted	
402	Not available	3" Italian Cypress	Private tree, Not impacted	
409	105 Sandman	18" American Elm	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
410	105 Sandman	15" Sugarberry	Dead, Private tree, Not impacted	
411	105 Sandman	5" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
412	105 Sandman	4" Redbud	Private tree, Not impacted	
413	105 Sandman	4" Red Maple	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
414	105 Sandman	4" Red Maple	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
415	105 Sandman	4" Red Maple	Ordinance tree	Fence, Clearance prune
416	105 Sandman	4" Red Maple	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
417	105 Sandman	4" Red Maple	Ordinance tree, Not impacted	

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- —X—X— TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- OCC — ZERO CUTBACK CURB
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION



SCALE: 1"=40'

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 7 OF 15

WBS NUMBER
M-410039-0001-4

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

CITY OF HOUSTON PM
PM, SAM HABIBI

SHEET NO. 203 OF 345

civiltech Engineering, Inc.
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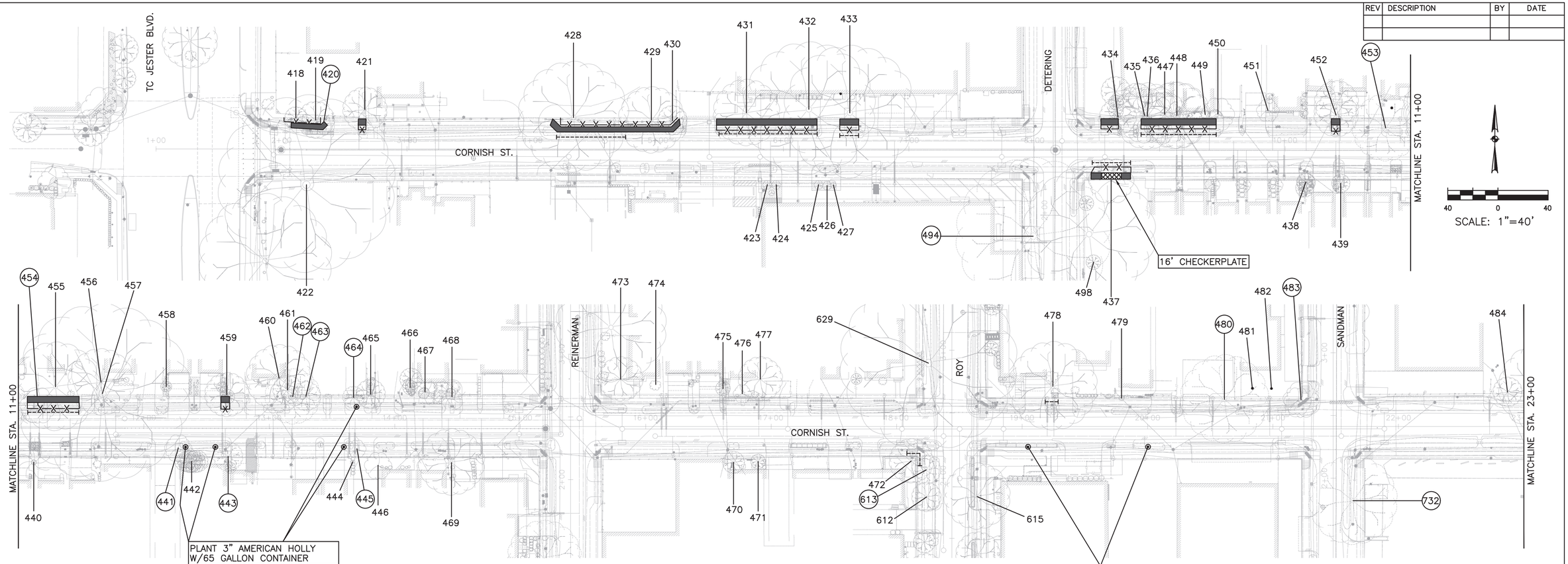
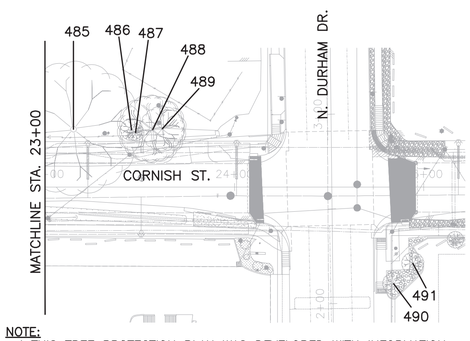
REV	DESCRIPTION	BY	DATE





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Tree No.	Location	Description	Comments	Treatment
Trees on Cornish Street				
418	5338 Cornish	5" Polymorpha Oak	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
419	5338 Cornish	7" Polymorpha Oak	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
420	5338 Cornish	4" Aloe	Not ordinance tree, Remove for walk	Remove tree, No replacement required
421	5338 Cornish	14" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
422	Not available	38" Tallow	Large trunk cavities, Poor, Private tree, No protection warranted	
423	5311 Cornish	4" Crepe Myrtle	Not ordinance tree	Clearance prune
424	5311 Cornish	4" Crepe Myrtle	Not ordinance tree	Clearance prune
425	5311 Cornish	4" Crepe Myrtle	Not ordinance tree	Clearance prune
426	5311 Cornish	4" Crepe Myrtle	Not ordinance tree	Clearance prune
427	5311 Cornish	4" Crepe Myrtle	Not ordinance tree	Clearance prune
428	5320 Cornish	24" Tallow	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
429	5320 Cornish	15" American Elm	Not ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
430	5320 Cornish	8" Mulberry	Not ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
431	5320 Cornish	18" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
432	5320 Cornish	28" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
433	5320 Cornish	24" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
434	5240 Cornish	7" Water Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
435	5240 Cornish	8" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
436	5240 Cornish	14" Sugarberry	Poor condition, Private tree	
437	Not available	26" Crepe Myrtle	Private tree	16' checker plate, Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
438	Not available	5" Exotic tree	Private tree, Not impacted	
439	Not available	4" Japanese Blueberry	Private tree, Not impacted	
440	Not available	15' Palm	Private tree, Not impacted	
441	5221 Cornish	10" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
442	5221 Cornish	5" Oleander	Private tree, Not impacted	
443	5221 Cornish	4" Loquat	Not ordinance tree, Remove for walk	Remove tree, No replacement required
444	5221 Cornish	6" Oleander	Private tree, Not impacted	
445	5221 Cornish	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
446	5221 Cornish	12" Crepe Myrtle	Private tree, Not impacted	
447	5238 Cornish	10" Tallow	Private tree, Not impacted	
448	5238 Cornish	19" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
449	5238 Cornish	5" Oleander	Private tree, Not impacted	
450	5238 Cornish	15" Crepe Myrtle	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
451	5234 Cornish	14" Crepe Myrtle	Private tree, Not impacted	
452	5232 Cornish	10" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
453	5226 Cornish	15" Pecan	Ordinance tree, Remove for walk	Remove tree, Provide 15" replacement

Tree No.	Location	Description	Comments	Treatment
Trees on Cornish Street				
454	5226 Cornish	22" Crepe Myrtle	Ordinance tree, Remove for walk	Remove tree, Provide 22" replacement
455	5222 Cornish	24" Magnolia	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
456	5220 Cornish	12" Sugarberry	Private tree, Not impacted	
457	5220 Cornish	18" Tallow	Topped, Private tree	
458	5220 Cornish	3" Bottlebrush	Private tree, Not impacted	
459	5212 Cornish	11" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
460	5212 Cornish	11" Mimosa	Private tree, Not impacted	
461	5212 Cornish	6" Sugarberry	Poor condition, Private tree	
462	5212 Cornish	6" Pittosporum	Not ordinance tree, Remove for walk	Remove tree, No replacement required
463	5212 Cornish	17" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 17" replacement
464	5212 Cornish	13" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 13" replacement
465	5210 Cornish	5" Loquat	Private tree	Clearance prune
466	5206 Cornish	3" Loquat	Private tree, Not impacted	
467	5206 Cornish	15' Palm	Private tree, Not impacted	
468	5206 Cornish	15' Palm	Private tree, Not impacted	
469	5203 Cornish	12" Crepe Myrtle	Vines, Private tree, Not impacted	
470	Not available	3" Mulberry	Private tree, Not impacted	
471	Not available	4" Live Oak	Private tree, Not impacted	
472	Not available	11" Live Oak	Private tree	Root prune for walk
473	5118 Cornish	5" Mulberry	Private tree, Not impacted	
474	5118 Cornish	18" Oleander	Private tree, Not impacted	
475	5114 Cornish	3" Savannah Holly	Private tree, Not impacted	
476	5112 Cornish	10" Crepe Myrtle	Private tree, Not impacted	
477	5112 Cornish	3" Savannah Holly	Private tree, Not impacted	
478	5014 Cornish	22" Pear	Private tree	Root prune for walk
479	5008 Cornish	2" Palm	Not ordinance tree	
480	5006 Cornish	22" Pecan	Ordinance tree, Remove for walk	Remove tree, Provide 22" replacement
481	5006 Cornish	22" Tallow	Private tree	Clearance prune
482	5006 Cornish	22" Tallow	Private tree	Clearance prune
483	5006 Cornish	24" Crepe Myrtle	Ordinance tree, Remove for walk	Remove tree, Provide 24" replacement
484	Not available	6" Water Oak	Poor condition, Private tree	
485	Not available	18" Mulberry	Private tree, Not impacted	
486	Not available	4" Mulberry	Private tree, Not impacted	
487	Not available	10" American Elm	Private tree, Not impacted	
488	Not available	4" American Elm	Private tree, Not impacted	
489	Not available	5" American Elm	Private tree, Not impacted	
490	Not available	3" Sago	Private tree, Not impacted	
491	Not available	3" Sago	Private tree, Not impacted	

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SHEET 8 OF 15

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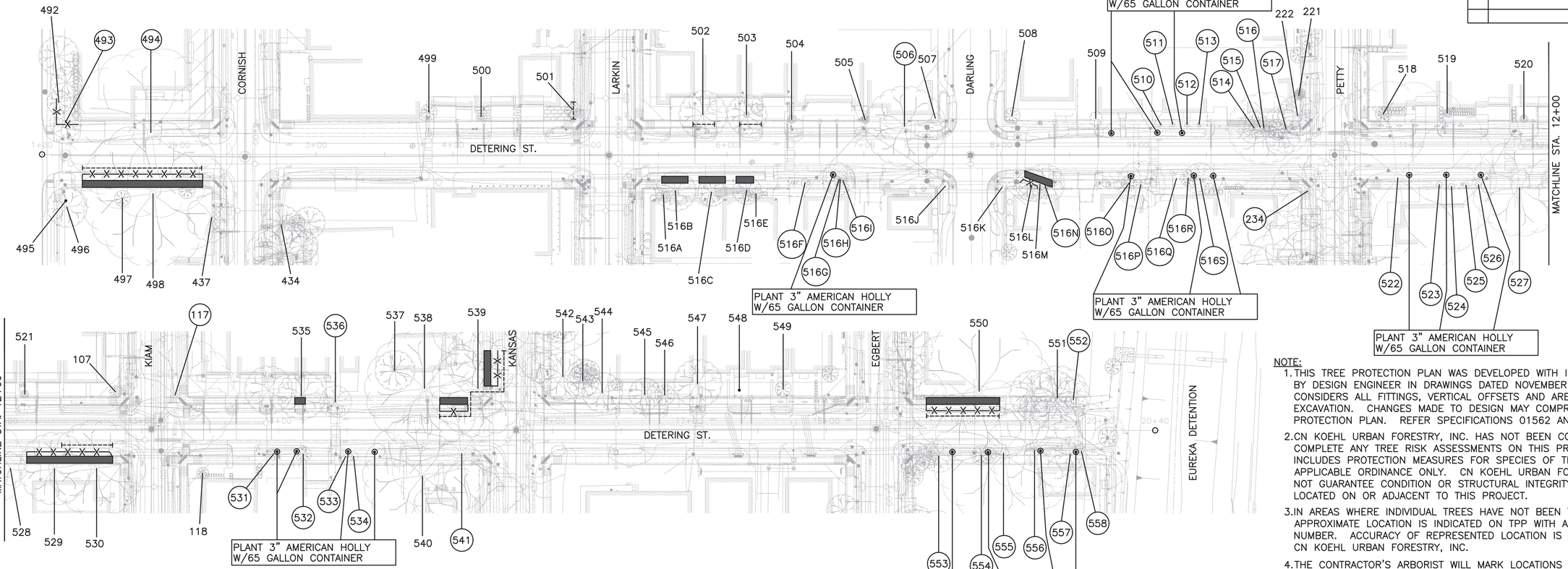

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Tree No.	Location	Description	Comments	Treatment
Trees on Detering Street				
492	Not available	4" Live Oak	Ordinance tree	Fence
493	Not available	16" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 16" replacement
494	Not available	36" Water Oak	Hypoxylon symptoms. Poor. Ordinance tree. Remove tree for safety concerns	Remove tree, No replacement required
495	Not available	4" Sugarberry	Private tree, Not impacted	
496	Not available	6" Citrus spp	Private tree, Not impacted	
497	Not available	4" Tallow	Private tree, Not impacted	
498	Not available	27" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
499	Not available	2" Live Oak	Private tree, Not impacted	
500	Not available	3" Crepe Myrtle	Private tree, Not impacted	
501	Not available	4" Live Oak	Private tree	Root prune for walk
502	2211 Detering	10" Live Oak	Private tree	Root prune for walk
503	2211 Detering	6" Live Oak	Private tree	Root prune for walk
504	2211 Detering	2" Savannah Holly	Private tree, Not impacted	
505	2211 Detering	3" Savannah Holly	Private tree, Not impacted	
506	2215 Detering	18" Black Willow	Not ordinance tree, Remove for walk	Remove tree, No replacement required
507	2215 Detering	4" Mimosa	Private tree, Not impacted	
508	2301 Detering	3" Live Oak	Private tree, Not impacted	
509	2305 Detering	12" Ligustrum	Private tree, Not impacted	
510	2305 Detering	2" Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
511	2305 Detering	2" Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
512	2305 Detering	2" Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
513	2305 Detering	2" Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
514	2305 Detering	6" Loquat	Not ordinance tree, Remove for walk	Remove tree, No replacement required
515	2305 Detering	6" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
516	2305 Detering	3" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 3" replacement
516A	5248 Larkin	3" Juniper	Private tree, Not impacted	
516B	5248 Larkin	12" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
516C	5248 Larkin	8" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
516D	2210 Detering	6" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
516E	2210 Detering	3" Juniper	Private tree, Not impacted	
516F	2210 Detering	13" Mimosa	Not ordinance tree, Remove for walk	Remove tree, No replacement required
516G	2214 Detering	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
516H	2214 Detering	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
516I	2214 Detering	3" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
516J	2214 Detering	2" Palm	Not ordinance tree	
516K	2305 Detering	1' Palm	Not ordinance tree	
516L	2305 Detering	8" Magnolia	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
516M	2305 Detering	6" Citrus spp	Not ordinance tree	Clearance prune
516N	2305 Detering	10" Magnolia	ordinance tree, Remove for walk	Remove tree, Provide 10" replacement
516O	2305 Detering	3" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
516P	2305 Detering	7" Citrus spp	Not ordinance tree, Remove for walk	Remove tree, No replacement required
516Q	2305 Detering	3" Pecan	Ordinance tree, Remove for walk	Remove tree, Provide 3" replacement
516R	2305 Detering	5" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
516S	2305 Detering	10" Loquat	Not ordinance tree, Remove for walk	Remove tree, No replacement required
517	2305 Detering	12" Citrus spp	Not ordinance tree, Remove for walk	Remove tree, No replacement required
518	2411 Detering	3" Japanese Blueberry	Private tree, Not impacted	
519	2411 Detering	3" Japanese Blueberry	Private tree, Not impacted	
520	2411 Detering	3" Japanese Blueberry	Private tree, Not impacted	
521	2411 Detering	3" Japanese Blueberry	Private tree, Not impacted	
522	Not available	43" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 43" replacement
523	Not available	3" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
524	Not available	3" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
525	Not available	3" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
526	Not available	4" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
527	Not available	12" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
528	Not available	12" Crepe Myrtle	Private tree, Not impacted	
529	Not available	13" Tallow	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
530	Not available	24" Tallow	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
531	2514 Detering	7" Red Maple	Ordinance tree, Remove for wider street	Remove tree, Provide 7" replacement
532	2514 Detering	11" Live Oak	Ordinance tree, Remove for wider street	Remove tree, Provide 11" replacement
533	2518 Detering	5" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
534	2518 Detering	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
535	2509 Detering	11" Live Oak	1-sided, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
536	2509 Detering	12" Live Oak	Recently removed	
537	2509 Detering	5" Pecan	Utility pruned, Private tree	
538	2509 Detering	17" Sugarberry	Poor condition, Private tree	
539	2509 Detering	25" Pecan	Private tree	Root prune for ramp, Fence, Demo-form-pour walk without damage to roots 1" or larger
540	2518 Detering	25" Tallow	Private tree, Not impacted	
541	2518 Detering	29" Post Oak	Recently removed	
542	2601 Detering	12" Pecan	Private tree, Not impacted	
543	2601 Detering	6" Tallow	Private tree, Not impacted	
544	2601 Detering	13" Citrus spp.	Private tree, Not impacted	
545	2601 Detering	6" Pear	Private tree, Not impacted	
546	2601 Detering	4" Pear	Private tree, Not impacted	
547	2605 Detering	13" Sugarberry	Private tree, Not impacted	
548	2605 Detering	3" Water Oak	Private tree, Not impacted	
549	2605 Detering	3" Water Oak	Private tree, Not impacted	
550	Not available	34" Post Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
551	Not available	14" Sugarberry	Private tree, Not impacted	
552	Not available	5" Pittosporum	Not ordinance tree, Remove for walk	Remove tree, No replacement required
553	Not available	5" Water Oak	Ordinance tree, Remove for walk	Remove tree, Provide 5" replacement
554	Not available	5" American Elm	ordinance tree, Remove for walk	Remove tree, Provide 5" replacement
555	Not available	24" White Ash	Ordinance tree, Remove for walk	Remove tree, Provide 24" replacement
556	Not available	18" Arizona Ash	Not ordinance tree, Remove for walk	Remove tree, No replacement required
557	Not available	6" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
558	Not available	21" Arizona Ash	Trunk cavities, Structurally compromised, Hazardous, Ordinance tree, Remove for safety concerns	Remove tree, No replacement required

TREE PRESERVATION PLAN LEGEND

- TREE NUMBER/LOCATION
- TREE TO BE REMOVED
- TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- ZERO CUTBACK CURB
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION

40 0 40

SCALE: 1"=40'

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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

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281-391-0022 ckoehl@koehlurbanforestry.com

APPROVED: Craig N. Koehl 11/14/2024

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 9 OF 15

WBS NUMBER M-410039-0001-4	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 205 OF 345	

Civiltech Engineering, Inc.
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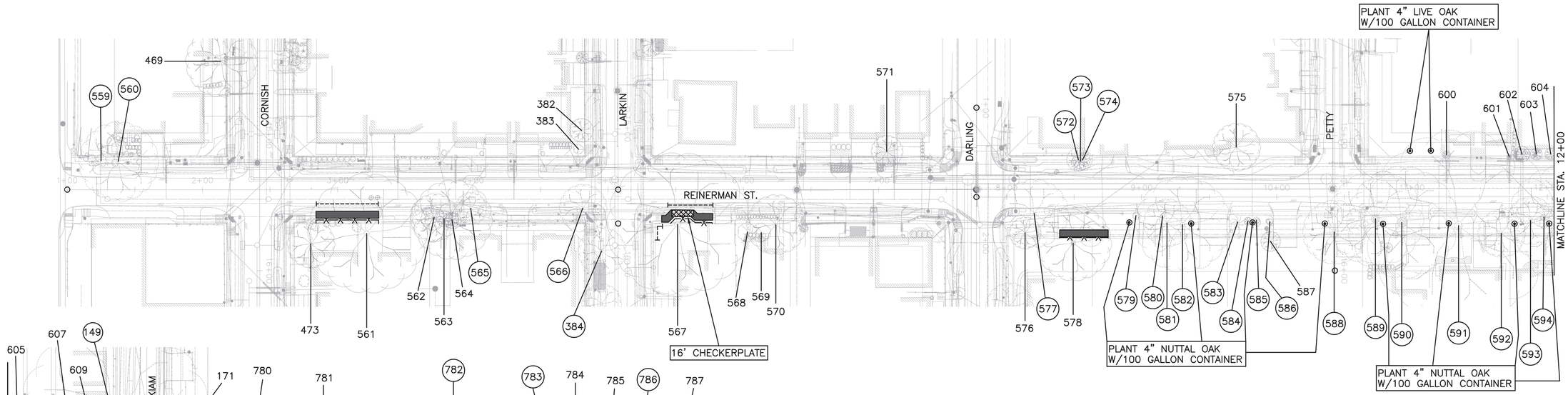
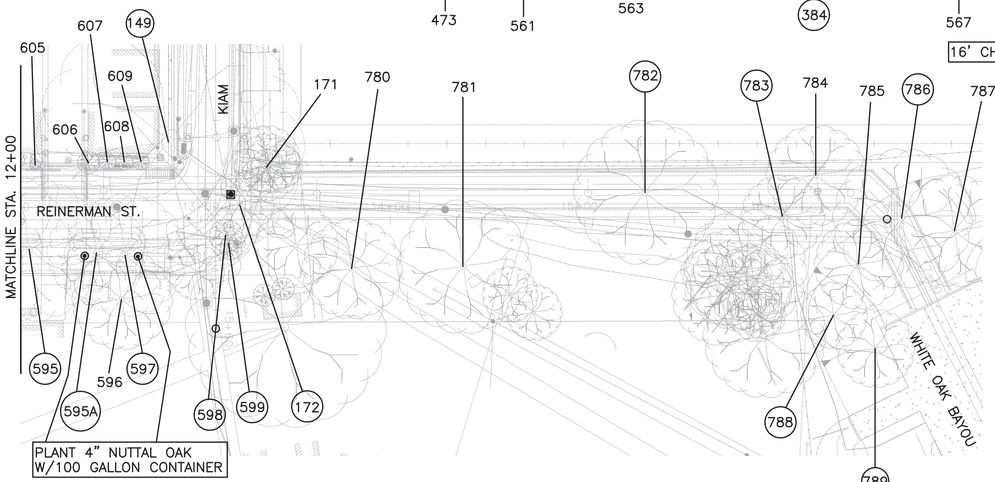
REV	DESCRIPTION	BY	DATE





Tree No.	Location	Description	Comments	Treatment
Trees on Outfall				
780	5206 Kiam	14" American Elm	Private tree	
781	5206 Kiam	21" Sugarberry	Private tree	
782	5206 Kiam	23" Arizona Ash	Easement tree, Remove for storm	Remove tree, No replacement required
783	5206 Kiam	14" Sugarberry	Easement tree, Remove for storm	Remove tree, No replacement required
784	Not available	17" Sugarberry	Easement tree	Clearance prune
785	5206 Kiam	17" Sugarberry	Easement tree	Clearance prune
786	Not available	22" Black Willow	Easement tree, Remove for storm	Remove tree, No replacement required
787	Not available	18" Black Willow	Easement tree	
788	5206 Kiam	17" Sugarberry	Easement tree, Remove for storm	Remove tree, No replacement required
789	5206 Kiam	14" Black Willow	Easement tree, Remove for storm	Remove tree, No replacement required

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- —X—X— TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- 0CC — ZERO CUTBACK CURB
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION

NOTE:

1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED NOVEMBER 2022. 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 No.	Location	Description	Comments	Treatment
Trees on Reinerman Street				
559	2001 Reinerman	15" Oleander	Not ordinance tree, Remove for walk	Remove tree, No replacement required
560	2001 Reinerman	18" Mulberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
561	Not available	25" Arizona Ash	Cavities, Poor conditions, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
562	Not available	4" Sugarberry	Not ordinance tree	
563	Not available	4" American Elm	Not ordinance tree	
564	Not available	19" Sugarberry	Not ordinance tree	
565	Not available	10" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 10" replacement
566	Not available	14" Live Oak	Ordinance tree, Remove for wider street	Remove tree, Provide 10" replacement
567	2206 Reinerman	27" Sycamore	Ordinance tree	16' checker plate, Root prune for ramps, Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
568	2206 Reinerman	6" Crepe Myrtle	Private tree, Not impacted	
569	2206 Reinerman	4" Crepe Myrtle	Private tree, Not impacted	
570	2206 Reinerman	8" River birch	Not ordinance tree	Clearance prune
571	2217 Reinerman	5" Magnolia	Private tree, Not impacted	
572	Not available	3" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
573	Not available	6" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
574	Not available	4" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
575	Not available	12" Saucer Magnolia	Private tree, Not impacted	
576	2302 Reinerman	10" Citrus spp	Not ordinance tree	
577	2302 Reinerman	14" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
578	2302 Reinerman	18" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
579	2302 Reinerman	6" Ligustrum	Not ordinance tree, Remove for wider walk	Remove tree, No replacement required
580	2302 Reinerman	4" Ligustrum	Not ordinance tree, Remove for wider walk	Remove tree, No replacement required
581	2302 Reinerman	10" Magnolia	Recently removed	
582	2302 Reinerman	18" White Oak	Recently removed	
583	2310 Reinerman	4' Palm	Not ordinance tree, Remove for walk	Remove tree, No replacement required
584	2310 Reinerman	1" Pecan	Not ordinance tree, Remove for walk	Remove tree, No replacement required
585	2310 Reinerman	5" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
586	2310 Reinerman	4" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
587	2310 Reinerman	4" Citrus spp	Private tree, Not impacted	
588	2218 Reinerman	14" Pecan	Ordinance tree, Remove for walk	Remove tree, Provide 14" replacement
589	2402 Reinerman	21" Pecan	Ordinance tree, Remove for wider street	Remove tree, Provide 21" replacement
590	2402 Reinerman	24" Willow Oak	Poor Condition, Ordinance tree, Remove for wider street	Remove tree, No replacement required
591	2402 Reinerman	36" Water Oak	Recently removed	
592	2402 Reinerman	12" Pecan	Ordinance tree, Remove for wider street	Remove tree, Provide 12" replacement
593	2402 Reinerman	12" Live Oak	Ordinance tree, Remove for wider street	Remove tree, Provide 12" replacement
594	2402 Reinerman	4' Sago	Not ordinance tree, Remove for walk	Remove tree, No replacement required
595	2402 Reinerman	23" Pecan	90% dead, Remove for wider street, Ordinance tree	Remove tree, No replacement required
595A	2402 Reinerman	14" Live Oak	90% dead, Remove for wider street, Ordinance tree	Remove tree, No replacement required
596	2402 Reinerman	25" Pecan	50% dieback, Private tree, Not impacted	
597	2402 Reinerman	16" Pecan	Ordinance tree, Remove for wider street	Remove tree, Provide 16" replacement
598	5206 Kiam	5" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
599	5206 Kiam	8" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
600	2405 Reinerman	11" Live Oak	Private tree, Not impacted	
601	2405 Reinerman	1" Live Oak	Private tree, Not impacted	
602	2405 Reinerman	3" Live Oak	Private tree, Not impacted	
603	2405 Reinerman	3" Live Oak	Private tree, Not impacted	
604	2405 Reinerman	3" Live Oak	Private tree, Not impacted	
605	2405 Reinerman	3" Live Oak	Private tree, Not impacted	
606	2405 Reinerman	3" Live Oak	Private tree, Not impacted	
607	2405 Reinerman	3" Live Oak	Private tree, Not impacted	
608	2405 Reinerman	3" Live Oak	Private tree, Not impacted	
609	2405 Reinerman	3" Live Oak	Private tree, Not impacted	

40 0 40

SCALE: 1"=40'

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

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

APPROVED: Craig N. Koehl 11/14/2024

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 10 OF 15

WBS NUMBER
M-410039-0001-4

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

CITY OF HOUSTON PM

PM, SAM HABIBI

SHEET NO. 206 OF 345

Civiltech Engineering, Inc.
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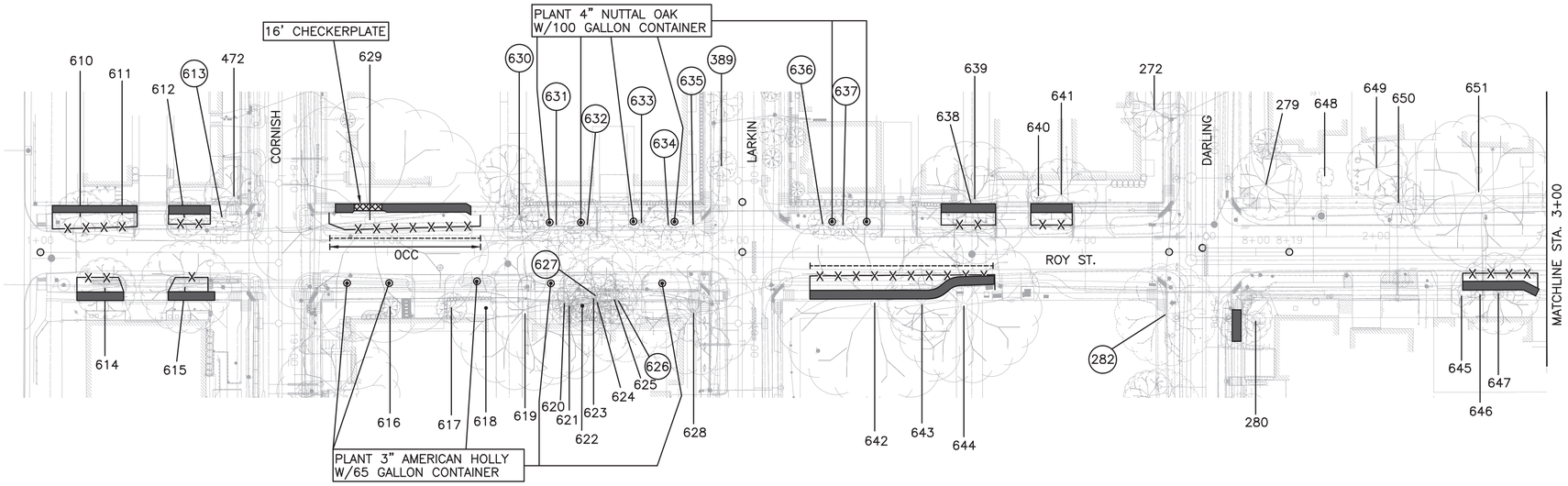
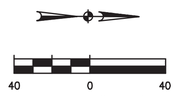
REV	DESCRIPTION	BY	DATE



Tree No.	Location	Description	Comments	Treatment
Trees on Roy Street				
610	2003 Roy	9" Live Oak	Girdled trunk, Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
611	2003 Roy	5" Live Oak	Girdled trunk, Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
612	2003 Roy	10" Live Oak	Girdled trunk, Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
613	2003 Roy	10" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 10" replacement
614	Not available	9" Live Oak	Girdled trunk, Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Bore sanitary, Clearance prune
615	Not available	10" Live Oak	Girdled trunk, Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Bore sanitary, Clearance prune
616	2110 Roy	4" Savannah Holly	Private tree, Not impacted	
617	2110 Roy	5" Bottlebrush	Private tree	Clearance prune
618	2110 Roy	6" Bottlebrush	Private tree	Clearance prune
619	2112 Roy	30" Green Ash	Cavities, Poor, Private tree, Not impacted	
620	2112 Roy	6" Sugarberry	Private tree, Not impacted	
621	2112 Roy	24" Mulberry	Cavities, Poor, Private tree, Not impacted	
622	2112 Roy	4" Sugarberry	Private tree, Not impacted	
623	2112 Roy	18" Mulberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
624	2112 Roy	7" Sugarberry	Private tree, Not impacted	
625	2112 Roy	7" Sugarberry	Private tree, Not impacted	
626	2112 Roy	24" Red Cedar	80% dieback, Poor, Ordinance tree, Remove for walk	Remove tree, No replacement required
627	2112 Roy	9" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
628	2112 Roy	11"Sugarberry	Private tree, Not impacted	
629	Not available	34" Live Oak	Ordinance tree	Hand dig for fire hydrant, Bore waterline, Zero Curb Cutback, 16' checker plate, Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
630	2125 Roy	15" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
631	2125 Roy	15" Live Oak	Ordinance tree, Remove for wider street	Remove tree, Provide 15" replacement
632	2125 Roy	9" Live Oak	Ordinance tree, Remove for wider street	Remove tree, Provide 9" replacement
633	2125 Roy	10" Live Oak	Ordinance tree, Remove for wider street	Remove tree, Provide 10" replacement
634	2125 Roy	13" Live Oak	Ordinance tree, Remove for wider street	Remove tree, Provide 13" replacement
635	2125 Roy	11" Live Oak	Ordinance tree, Remove for wider street	Remove tree, Provide 11" replacement
636	211 Larkin	10" Live Oak	Ordinance tree, Remove for wider street	Remove tree, Provide 10" replacement
637	211 Larkin	12" Live Oak	Ordinance tree, Remove for wider street	Remove tree, Provide 12" replacement
638	211 Larkin	20" Sugarberry	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
639	211 Larkin	14" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
640	211 Larkin	7" Crepe Myrtle	Private tree	Clearance prune
641	211 Larkin	14" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
642	Not available	28" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
643	Not available	16" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
644	Not available	25" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
Trees on Roy Circle				
645	5022 Darling	14" Live Oak	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
646	5022 Darling	4" Crepe Myrtle	Not ordinance tree	Clearance prune
647	5022 Darling	20" Redbud	Ordinance tree	Bore waterline, Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
648	2303 Roy Circle	6' Sago	Private tree, Not impacted	
649	2303 Roy Circle	14" Citrus spp	Private tree, Not impacted	
650	2303 Roy Circle	10" Mulberry	Not ordinance tree	Clearance prune
651	2303 Roy Circle	20" Sugarberry	Private tree, Not impacted	

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- —X—X— TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- 0CC — ZERO CUTBACK CURB
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION



SCALE: 1"=40'

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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 11 OF 15

WBS NUMBER M–410039–0001–4	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 207 OF 345	

CivilTech Engineering, Inc.
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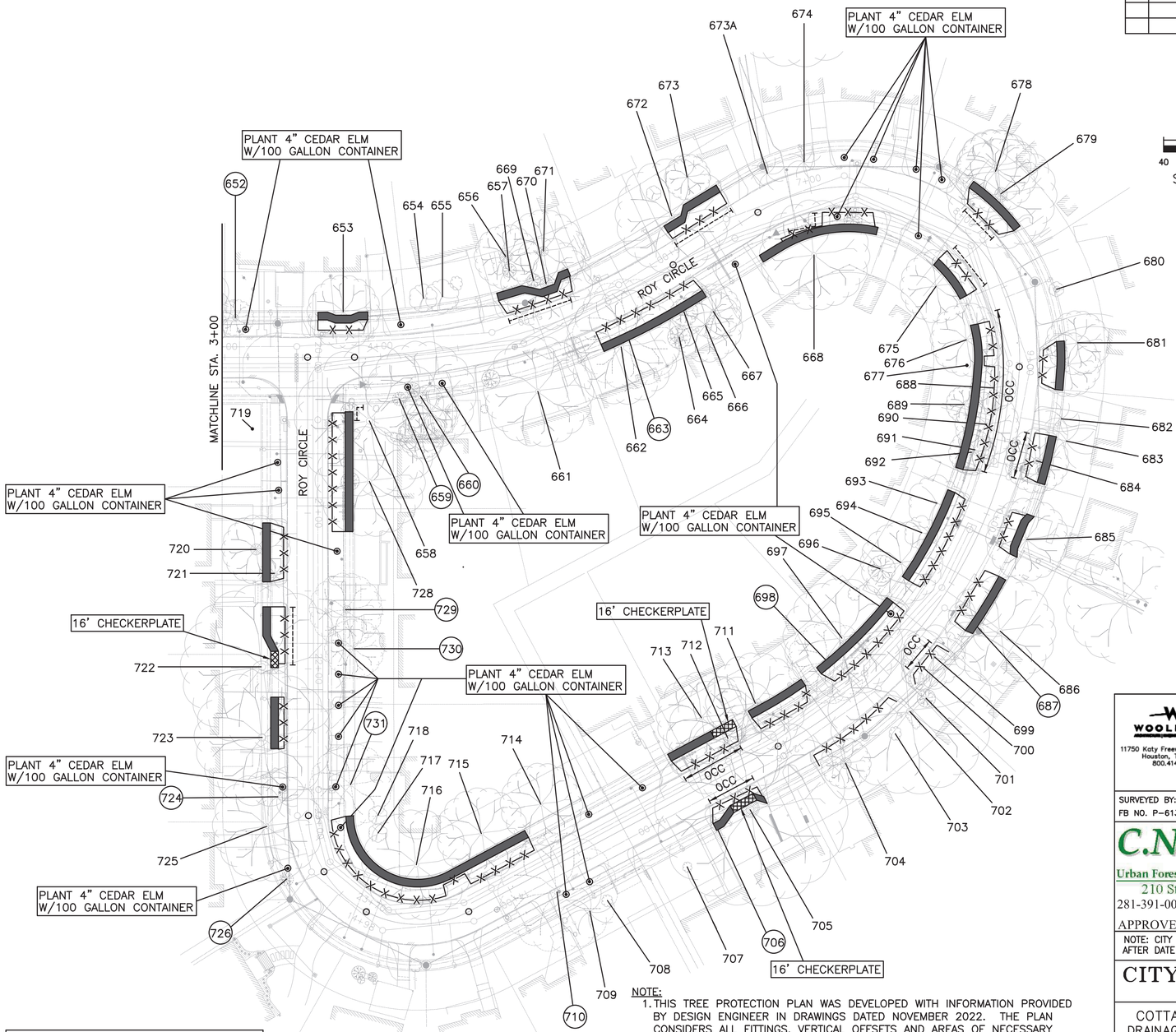
Tree No.	Location	Description	Comments	Treatment
Trees on Roy Circle				
652	2315 Roy Circle	10" Citrus spp	Not ordinance tree; Remove for walk	Remove tree, No replacement required
653	2319 Roy Circle	16" Red Maple	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
654	2319 Roy Circle	4" Crepe Myrtle	Private tree, Not impacted	
655	2319 Roy Circle	12" Crepe Myrtle	Private tree, Not impacted	
656	2407 Roy Circle	18" Sweetgum	Private tree, Not impacted	
657	2407 Roy Circle	3" Olive	Private tree, Not impacted	
658	2406 Roy Circle	30" Water Oak	Topped, Private tree	Root prune for ramp, Demo-form-pour walk without damage to roots 1" or larger
659	2406 Roy Circle	3" Mulberry	Not ordinance tree; Remove for walk	Remove tree, No replacement required
660	2406 Roy Circle	13" Mulberry	Not ordinance tree; Remove for walk	Remove tree, No replacement required
661	2406 Roy Circle	26" Sycamore	40% dieback, Topped, Private, Not impacted	
662	2410 Roy Circle	27" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Bore waterline, Clearance prune
663	2410 Roy Circle	18" Green Ash	Recently removed	
664	2410 Roy Circle	7" Citrus spp	Private tree, Not impacted	
665	2410 Roy Circle	6" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Bore waterline, Clearance prune
666	2410 Roy Circle	20" Magnolia	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Bore waterline, Clearance prune
667	2410 Roy Circle	6" Palm	Private tree, Not impacted	
668	2418 Roy Circle	21" Pecan	Private tree	Root prune for tee, Fence, Bore water north of tee, Demo-form-pour walk without damage to roots 1" or larger, Clearance prune
669	2407 Roy Circle	2" Olive	Private tree, Not impacted	
670	2407 Roy Circle	22" American Elm	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
671	2407 Roy Circle	18" Water Oak	Private tree, Not impacted	
672	2415 Roy Circle	25" Post Oak	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
673	2415 Roy Circle	11" Pecan	Private tree, Not impacted	
673A	2419 Roy Circle	30" Palm	Not ordinance tree	
674	2419 Roy Circle	30" Palm	Not ordinance tree	
675	2505 Roy Circle	14" Water Oak	Private tree	Root prune for waterline, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
676	Not available	13" Cherrybark Oak	Private tree	Bore waterline, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
677	Not available	13" Cherrybark Oak	Private tree	Bore waterline, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
678	2431 Roy Circle	24" Post Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
679	2431 Roy Circle	15" Post Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
680	2502 Roy Circle	3" Crepe Myrtle	Private tree, Not impacted	
681	2502 Roy Circle	14" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
682	2506 Roy Circle	4" Palm	Private tree, Not impacted	
683	2506 Roy Circle	6" Palm	Private tree, Not impacted	
684	2506 Roy Circle	14" Pecan	Ordinance tree	Zero Curb Cutback, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
685	2510 Roy Circle	18" Pecan	Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
686	2518 Roy Circle	20" Pecan	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
687	2518 Roy Circle	22" Pine	Recently removed	
688	2502 Roy Circle	9" Pecan	Ordinance tree	Bore waterline, Zero Curb Cutback, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
689	2502 Roy Circle	5" Pecan	Private tree	Bore waterline, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
690	2502 Roy Circle	14" Cherrybark Oak	Ordinance tree	Bore waterline, Zero Curb Cutback, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
691	2502 Roy Circle	9" Water Oak	Ordinance tree	Bore waterline, Zero Curb Cutback, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
692	2502 Roy Circle	10" Crepe Myrtle	Not ordinance tree	
693	2511 Roy Circle	16" Crepe Myrtle	Private tree	Bore waterline, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
694	2511 Roy Circle	15" Crepe Myrtle	Private tree	Bore waterline, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
695	2511 Roy Circle	18" Pecan	Private tree	Bore waterline, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
696	2511 Roy Circle	4" Italian Cypress	Dead, Private tree, Not impacted	
697	2519 Roy Circle	20" Water Oak	Private tree	Bore waterline, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
698	2519 Roy Circle	14" Pecan	Ordinance tree; Remove for walk	Remove tree, Provide 14" replacement
699	2518 Roy Circle	24" Crepe Myrtle	Ordinance tree	Zero Curb Cutback, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
700	2518 Roy Circle	14" Crepe Myrtle	Not ordinance tree	Clearance prune
701	2518 Roy Circle	6" Juniper	80% dieback, Private, Not impacted	
702	2522 Roy Circle	25" Tallow	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
703	2522 Roy Circle	5" Sago	Private tree, Not impacted	
704	2526 Roy Circle	15" Magnolia	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
705	2530 Roy Circle	38" Live Oak	Arboriculturally Significant, Ordinance tree	16' checker plate, Demo-form-pour walk without damage to roots 1" or larger, Zero Curb Cutback, Fence, Clearance prune
706	2530 Roy Circle	4" Sago	Not ordinance tree; Remove for walk	Remove tree, No replacement required
707	2530 Roy Circle	4" Aloe	Private tree, Not impacted	
708	2536 Roy Circle	5" Sago	Private tree, Not impacted	
709	2538 Roy Circle	30" Palm	Private tree, Not impacted	
710	2542 Roy Circle	20" Tallow	Cavities, Poor, Ordinance, Remove for safety concerns	Remove tree, No replacement required
711	2531 Roy Circle	20" Pecan	Private tree	Hand dig tap&lead, Bore waterline, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
712	2531 Roy Circle	28" Water Oak	Ordinance tree	Hand dig tap&lead, Bore waterline, 16' checker plate, Demo-form-pour walk without damage to roots 1" or larger, Zero Curb Cutback, Fence, Clearance prune
713	2531 Roy Circle	21" Pecan	30% dieback, Private tree	Bore waterline, Zero Curb Cutback, Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
714	Not available	14" Tallow	Private tree	Clearance prune
715	Not available	20" Arizona Ash	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Bore waterline, Clearance prune
716	Not available	22" Arizona Ash	Topped, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Bore waterline, Clearance prune
717	Not available	5" Crepe Myrtle	Topped, Private tree	
718	Not available	6" Crepe Myrtle	Topped, Private tree	
719	2518 Roy Circle	4" Red Maple	Private tree, Not impacted	
720	2518 Roy Circle	16" Live Oak	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
721	2518 Roy Circle	15" Palm	Not ordinance tree	
722	2510 Roy Circle	38" Water Oak	Arboriculturally Significant, Ordinance tree	12' checker plate, Demo-form-pour walk without damage to roots 1" or larger, Root prune for street, Fence, Clearance prune
723	2510 Roy Circle	25" Tallow	50% dieback, Ordinance tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
724	2606 Roy Circle	30" Palm	Not ordinance tree; Remove for walk	Remove tree, No replacement required
725	2606 Roy Circle	16" Tallow	Not ordinance tree	
726	2602 Roy Circle	2" Live Oak	Recently removed	
727	2623 Roy Circle	34" Water Oak	50% dieback, Private, Poor condition	Root prune for ramp, Demo-form-pour walk without damage to roots 1" or larger
728	2623 Roy Circle	24" Water Oak	Arboriculturally significant, Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
729	2615 Roy Circle	18" Pecan	Ordinance tree, Remove for walk	Remove tree, Provide 18" replacement
730	2615 Roy Circle	16" Pecan	Ordinance tree, Remove for walk	Remove tree, Provide 16" replacement
731	2615 Roy Circle	17" Live Oak	Ordinance tree, Remove for walk	Remove tree, Provide 17" replacement



TREE PRESERVATION PLAN LEGEND

- TREE NUMBER/LOCATION
- TREE TO BE REMOVED
- TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- ZERO CUTBACK CURB
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION

NOTE:

1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED NOVEMBER 2022. 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.

REV	DESCRIPTION	BY	DATE

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

C.N. Koehl Urban Forestry, Inc.
210 Stone Bush Ct. ◦ Katy, Texas 77493
281-391-0022 ckoehl@koehlurbanforestry.com
APPROVED: Craig N. Koehl 11/14/2024
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 12 OF 15

WBS NUMBER M–410039–0001–4	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 208 OF 345	

Civiltech Engineering, Inc.
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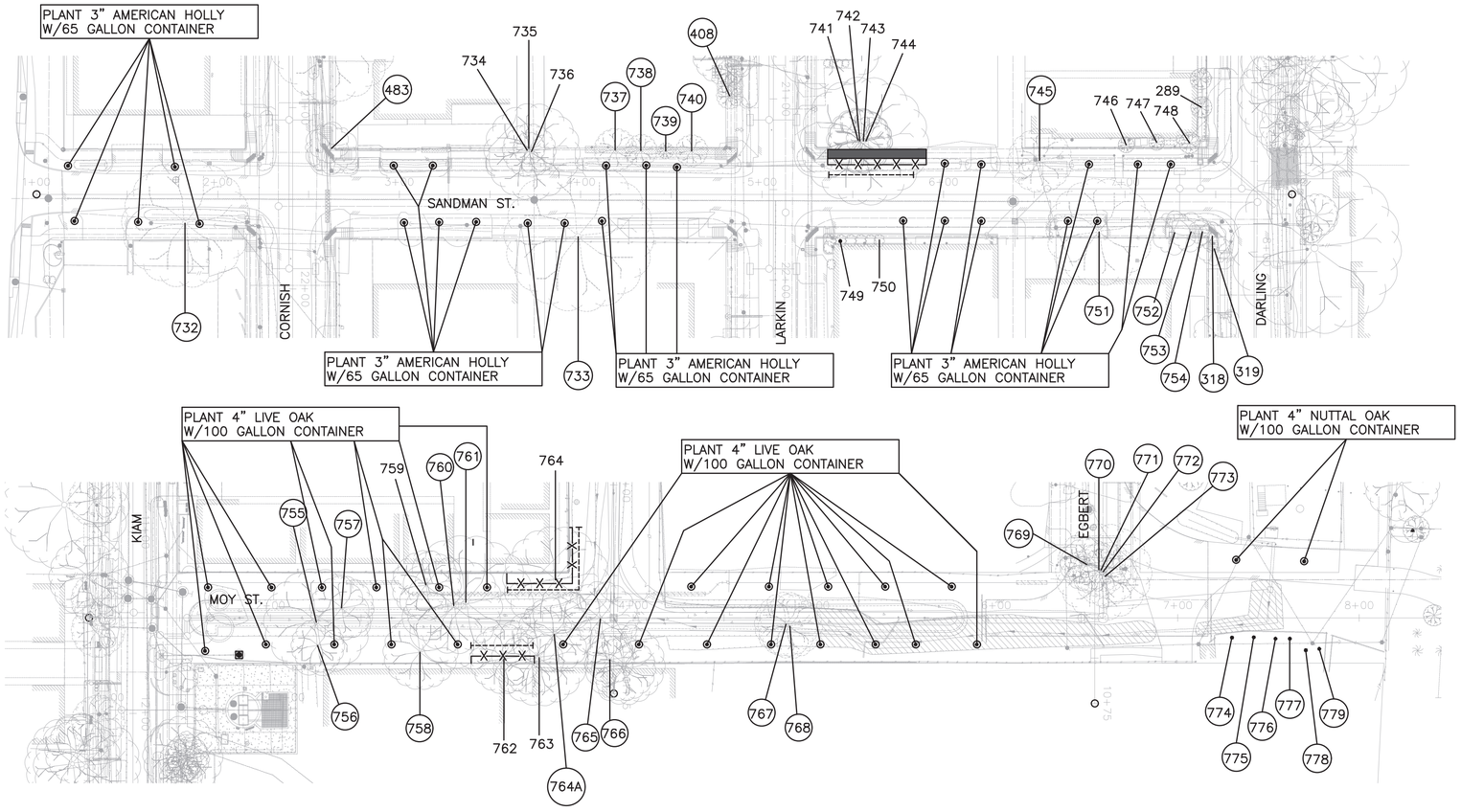
REV	DESCRIPTION	BY	DATE



TREE PRESERVATION PLAN LEGEND

1	TREE NUMBER/LOCATION
(1)	TREE TO BE REMOVED
—X—X—	TREE PROTECTION FENCE
------	ROOT PRUNING TRENCH
0CC	ZERO CUTBACK CURB
	SIDEWALK ON GRADE
	CHECKERPLATE SECTION

40 0 40

SCALE: 1"=40'

NOTE:

1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED NOVEMBER 2022. 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.
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4. THE CONTRACTOR'S ARBORIST WILL MARK LOCATIONS OF TREES TO BE PLANTED AND OBTAIN APPROVAL BY CITY ENGINEER AND CITY FORESTER BEFORE PURCHASING OR EXCAVATING PLANTING HOLE OF EACH TREE.

Tree No.	Location	Description	Comments	Treatment
Trees on Sandman Street				
732	Not available	18" Tallow	Not ordinance tree, Remove for walk	Remove tree, No replacement required
733	Not available	25" Sugarberry	Topped, Poor, Ordinance tree, Remove for walk	Remove tree, No replacement required
734	5002 Cornish	6" Sugarberry	Not ordinance tree	
735	5002 Cornish	8" Sugarberry	Not ordinance tree	
736	5002 Cornish	16" Sugarberry	Not ordinance tree	
737	Not available	8" Mexican Sycamore	Ordinance tree, Remove for walk	Remove tree, Provide 8" replacement
738	Not available	8" Mexican Sycamore	Ordinance tree, Remove for walk	Remove tree, Provide 8" replacement
739	Not available	3" Mexican Sycamore	Ordinance tree, Remove for walk	Remove tree, Provide 3" replacement
740	Not available	8" Mexican Sycamore	Ordinance tree, Remove for walk	Remove tree, Provide 8" replacement
741	Not available	5" Crepe Myrtle	Private tree, Not impacted	
742	Not available	5" Sugarberry	Private tree, Not impacted	
743	Not available	22" American Elm	Private tree	Demo-form-pour walk without damage to roots 1" or larger, Fence, Clearance prune
744	Not available	6" American Elm	Private tree, Not impacted	
745	2209 Sandman	12" Sugarberry	Not ordinance tree, Remove for walk	Remove tree, No replacement required
746	2209 Sandman	6" Italian Cypress	Private tree, Not impacted	
747	2209 Sandman	6" Italian Cypress	Private tree, Not impacted	
748	2209 Sandman	6" Italian Cypress	Private tree, Not impacted	
749	Not available	4" Ligustrum	Private tree, Not impacted	
750	Not available	4" Ligustrum	Private tree, Not impacted	
751	2210 Sandman	16" Shumard Oak	Ordinance tree, Remove for walk	Remove tree, Provide 16" replacement
752	2210 Sandman	17" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
753	2210 Sandman	18" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required
754	2210 Sandman	17" Crepe Myrtle	Not ordinance tree, Remove for walk	Remove tree, No replacement required

Tree No.	Location	Description	Comments	Treatment
Trees on Moy Street				
755	5210 Kiam	14" Mulberry	Not ordinance tree, Remove for ditch	Remove tree, No replacement required
756	5210 Kiam	14" Sugarberry	Not ordinance tree, Remove for ditch	Remove tree, No replacement required
757	5210 Kiam	18" Sugarberry	Not ordinance tree, Remove for ditch	Remove tree, No replacement required
758	5210 Kiam	18" Mulberry	Not ordinance tree, Remove for ditch	Remove tree, No replacement required
759	5210 Kiam	15" Sugarberry	Not ordinance tree	
760	5210 Kiam	15" American Elm	ordinance tree, Remove for ditch	Remove tree, Provide 15" replacement
761	5210 Kiam	24" Sugarberry	Dieback, Poor, Ordinance, Remove for ditch	Remove tree, No replacement required
762	5210 Kiam	14" Green Ash	Ordinance tree	Root prune for ditch, Fence, Bore waterline
763	5210 Kiam	14" Sugarberry	Not ordinance tree	
764	5210 Kiam	30" Cottonwood	Topped, Poor, Ordinance tree	Root prune for ditch, Fence, Clearance prune
764A	5210 Kiam	13" Sugarberry	Not ordinance tree, Remove for ditch	Remove tree, No replacement required
765	5210 Kiam	15" Sugarberry	Not ordinance tree, Remove for ditch	Remove tree, No replacement required
766	5210 Kiam	9" Sugarberry	Not ordinance tree, Remove for ditch	Remove tree, No replacement required
767	Not available	13" Sugarberry	Not ordinance tree, Remove for ditch	Remove tree, No replacement required
768	Not available	14" Sugarberry	Not ordinance tree, Remove for ditch	Remove tree, No replacement required
769	5200 Moy	6" American Elm	Not ordinance tree, Remove for new street	Remove tree, No replacement required
770	5200 Moy	12" American Elm	Not ordinance tree, Remove for new street	Remove tree, No replacement required
771	5200 Moy	14" American Elm	Not ordinance tree, Remove for new street	Remove tree, No replacement required
772	5200 Moy	18" American Elm	Not ordinance tree, Remove for new street	Remove tree, No replacement required
773	5200 Moy	12" American Elm	Not ordinance tree, Remove for new street	Remove tree, No replacement required
774	5200 Moy	15" Oleander	Not ordinance tree, Remove for new street	Remove tree, No replacement required
775	5200 Moy	15" Oleander	Not ordinance tree, Remove for new street	Remove tree, No replacement required
776	5200 Moy	15" Oleander	Not ordinance tree, Remove for new street	Remove tree, No replacement required
777	5200 Moy	15" Oleander	Not ordinance tree, Remove for new street	Remove tree, No replacement required
778	5200 Moy	15" Oleander	Not ordinance tree, Remove for new street	Remove tree, No replacement required
779	5200 Moy	15" Oleander	Not ordinance tree, Remove for new street	Remove tree, No replacement required

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

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

APPROVED: Craig N. Koehl 11/14/2024

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 13 OF 15

WBS NUMBER
M–410039–0001–4

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

CITY OF HOUSTON PM

PM, SAM HABIBI

SHEET NO. 209 OF 345

CivilTech Engineering, Inc.
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Tree Removal List

Tree No.	Location	Description	Replacement requirement
5	5327 Egbert	12" Crepe Myrtle	0
6	5327 Egbert	12" Crepe Myrtle	0
7	5327 Egbert	12" Crepe Myrtle	0
11	5316 Egbert	23" Sycamore	0
13	5316 Egbert	4" Crepe Myrtle	0
16	5310 Egbert	12" Photinia	0
17	5310 Egbert	12" Photinia	0
18	5310 Egbert	12" Photinia	0
19	5310 Egbert	12" Photinia	0
20	5310 Egbert	12" Photinia	0
21	5310 Egbert	12" Photinia	0
22	5310 Egbert	15" Pear	0
31	Not available	18" Sugarberry	0
32	5222 Egbert	5" American Elm	5
33	5222 Egbert	6" Water Oak	6
34	5222 Egbert	4" Sugarberry	0
35	5222 Egbert	5" Sugarberry	0
45	5338 Kansas	30" Live Oak	30
46	5334 Kansas	30" Live Oak	30
47	5334 Kansas	4" Redbud	0
49	5334 Kansas	12" Tallow	0
50	5334 Kansas	6" Crepe Myrtle	0
51	5334 Kansas	10" Sugarberry	0
52	5334 Kansas	10" Sugarberry	0
57	5322 Kansas	4" Crepe Myrtle	0
58	5322 Kansas	5" Sugarberry	0
60	5322 Kansas	5" Sugarberry	0
61	5322 Kansas	10" Arizona Ash	0
74	5319 Kansas	17" Crepe Myrtle	0
75	5319 Kansas	15" Crepe Myrtle	0
76	5319 Kansas	16" Crepe Myrtle	0
77	5319 Kansas	17" Crepe Myrtle	0
78A	53212 Kansas	10" Arbonvtae	0
78F	5312B Kansas	8" Sugarberry	0
78G	5312B Kansas	14" Crepe Myrtle	0
78I	5315 Kansas	18" Crepe Myrtle	0
78J	5315 Kansas	17" Crepe Myrtle	0
82	5212 Kansas	12" Sugarberry	0
89	5322 Kiam	4" Crepe Myrtle	0
90	5322 Kiam	4" Crepe Myrtle	0
91	5322 Kiam	4" Crepe Myrtle	0
92	5322 Kiam	5" Crepe Myrtle	0
98	5337 Kiam	6" Oleander	0
101	5335 Kiam	12" Citrus spp	0
102	5335 Kiam	14" Tallow	0
104	5307 Kiam	28" Crepe Myrtle	0
110	5306 Kiam	16" Live Oak	16
111	5308 Kiam	12" Live Oak	12
112	5306 Kiam	15" Crepe Myrtle	0
115	5306 Kiam	4' Sago	0
116	5306 Kiam	16" Crepe Myrtle	0
133	5219 Kiam	15" Crepe Myrtle	0
134	5219 Kiam	7" Water Oak	0
137	5219 Kiam	12" Live Oak	12
138	5219 Kiam	11" Live Oak	11
139	5219 Kiam	5" Live Oak	5
143	5207 Kiam	5' Sago	0
144	5207 Kiam	5' Sago	0
145	5207 Kiam	4' Sago	0
146	5207 Kiam	5" Crepe Myrtle	0
147	5207 Kiam	4' Sago	0
148	5207 Kiam	12" Water Oak	0
150	5226 Kiam	10" Mulberry	0
172	5206 Kiam	12" Mulberry	0
174	5342 Petty	3" Crepe Myrtle	0
175	5342 Petty	4" Loquat	0
176	5338 Petty	20' Palm	0
177	5338 Petty	9" Red Cedar	0
178	5336 Petty	6" Live Oak	6
179	5336 Petty	6" Live Oak	6
180	5336 Petty	12" Live Oak	12
184	5322 Petty	12" Oleander	0
195	5339 Petty	3' Yucca	0
205	5325 Petty	9" Sugarberry	0
206	5325 Petty	5" Sugarberry	0
207	5325 Petty	4" Sugarberry	0
208	5325 Petty	6" Sugarberry	0
209	5325 Petty	4" Sugarberry	0
210	5325 Petty	10" Sugarberry	0
211	5325 Petty	5" Sugarberry	0
212	5319 Petty	11" Live Oak	11
213	5319 Petty	3" Live Oak	4
214	5319 Petty	2" Live Oak	4
215	5319 Petty	2" Live Oak	4
216	5305 Petty	4" Live Oak	4
217	5305 Petty	4" Live Oak	4
218	5305 Petty	4" Live Oak	4
219	5305 Petty	4" Live Oak	4
228	5322 Petty	Banana	0
234	5239 Petty	13" Pecan	13
238	5231 Petty	2" Crepe Myrtle	0
239	5231 Petty	17" Crepe Myrtle	0
241	5227 Petty	25" Red Cedar	25
243	5227 Petty	18" Red Cedar	0
253	5244 Petty	3" Live Oak	3
254	5244 Petty	3" Live Oak	3

Tree Removal List

Tree No.	Location	Description	Replacement requirement
255	5244 Petty	3" Live Oak	3
260	5220 Petty	18" Crepe Myrtle	0
261	5220 Petty	19" Crepe Myrtle	0
262	5220 Petty	4" Crepe Myrtle	0
263	5220 Petty	4" Crepe Myrtle	0
273	Not available	24" Sugarberry	24
275	Not available	12" Pecan	12
276	Not available	6" Crepe Myrtle	0
282	Not available	24" Pecan	24
284	Not available	18" Pecan	18
285	Not available	12" Pecan	12
291	5018 Darling	16" Sugarberry	0
292	5018 Darling	13" Willow Oak	0
294	5010 Darling	3" Citrus spp	0
295	5010 Darling	15" Crepe Myrtle	0
296	5010 Darling	8" Crepe Myrtle	0
298	5010 Darling	2" Citrus spp	0
300	5010 Darling	2" Citrus spp	0
301	5010 Darling	12" Sugarberry	0
302	5010 Darling	11" Sugarberry	0
305	5002 Darling	8" Arbonvtae	0
306	5002 Darling	2' Sago	0
309	5002 Darling	4" Exotic shrub	0
310	5002 Darling	5" Arbonvtae	0
315	4918 Darling	5" Redbud	0
318	Not available	12" Crepe Myrtle	0
319	Not available	18" Crepe Myrtle	0
320	Not available	17" Crepe Myrtle	0
341	5314 Larkin	15" American Elm	15
348	5235 Larkin	18" Crepe Myrtle	0
350	5235 Larkin	12" Crepe Myrtle	0
354	5235 Larkin	2" Juniper	0
355	5235 Larkin	2" Juniper	0
357	5235 Larkin	2' Sago	0
359	5235 Larkin	2' Sago	0
360	5235 Larkin	3" Photinia	0
372	5226 Larkin	4' Sago	0
373	5226 Larkin	4' Sago	0
374	5226 Larkin	6" Oleander	0
375	5226 Larkin	7" Oleander	0
376	5226 Larkin	4" Crepe Myrtle	0
377	5226 Larkin	4" Crepe Myrtle	0
384	Not available	18" Live Oak	18
385	Not available	15" Live Oak	15
386	Not available	10" Live Oak	10
387	Not available	12" Live Oak	12
388	Not available	5" Live Oak	5
389	Not available	12" Live Oak	12
391	5106 Larkin	10" Live Oak	10
392	5106 Larkin	10" Live Oak	10
393	5106 Larkin	3" Live Oak	3
394	5106 Larkin	8" Live Oak	8
395	5106 Larkin	13" Live Oak	13
406	Not available	4" Olive	0
407	Not available	4" Olive	0
408	Not available	4" Olive	0
411	105 Sandman	5" Crepe Myrtle	0
420	5338 Cornish	4' Aloe	0
441	5221 Cornish	10" Crepe Myrtle	0
443	5221 Cornish	4" Loquat	0
445	5221 Cornish	4" Crepe Myrtle	0
453	5226 Cornish	15" Pecan	15
454	5226 Cornish	22" Crepe Myrtle	22
462	5212 Cornish	6" Pittosporum	0
463	5212 Cornish	17" Live Oak	17
464	5212 Cornish	13" Live Oak	13
480	5006 Cornish	22" Pecan	22
483	5006 Cornish	24" Crepe Myrtle	24
493	Not available	16" Live Oak	16
494	Not available	36" Water Oak	0
506	2215 Detering	18" Black Willow	0
510	2305 Detering	2' Sago	0
511	2305 Detering	2' Sago	0
512	2305 Detering	2' Sago	0
513	2305 Detering	2' Sago	0
514	2305 Detering	6" Loquat	0
515	2305 Detering	5" Sugarberry	0
516	2305 Detering	3" Live Oak	3
516F	2210 Detering	13" Mimosa	0
516G	2214 Detering	4" Crepe Myrtle	0
516H	2214 Detering	4" Crepe Myrtle	0
516I	2214 Detering	3" Crepe Myrtle	0
516N	2305 Detering	10" Magnolia	10
516O	2305 Detering	3" Sugarberry	0
516P	2305 Detering	7" Citrus spp	0
516Q	2305 Detering	3" Pecan	3
516R	2305 Detering	5" Sugarberry	0
516S	2305 Detering	10" Loquat	0
517	2305 Detering	12" Citrus spp	0
522	Not available	43" Live Oak	43
523	Not available	3" Sugarberry	0
524	Not available	3" Sugarberry	0
525	Not available	3" Sugarberry	0
526	Not available	4" Sugarberry	0
527	Not available	12" Sugarberry	0

Tree Removal List

Tree No.	Location	Description	Replacement requirement
531	2514 Detering	7" Red Maple	7
532	2514 Detering	11" Live Oak	11
533	2518 Detering	5" Crepe Myrtle	0
534	2518 Detering	4" Crepe Myrtle	0
554	Not available	5" American Elm	5
555	Not available	24" White Ash	24
556	Not available	18" Arizona Ash	0
557	Not available	6" Sugarberry	0
558	Not available	21" Arizona Ash	0
559	2001 Reinerman	15" Oleander	0
560	2001 Reinerman	18" Mulberry	0
565	Not available	10" Live Oak	10
566	Not available	14" Live Oak	14
572	Not available	3" Sugarberry	0
573	Not available	6" Sugarberry	0
574	Not available	4" Sugarberry	0
577	2302 Reinerman	14" Sugarberry	0
579	2302 Reinerman	6" Ligustrum	0
580	2302 Reinerman	4" Ligustrum	0
583	2310 Reinerman	4" Palm	0
584	2310 Reinerman	1" Pecan	0
585	2310 Reinerman	5" Crepe Myrtle	0
586	2310 Reinerman	4" Crepe Myrtle	0
588	2218 Reinerman	14" Pecan	14
589	2402 Reinerman	21" Pecan	21
590	2402 Reinerman	24" Willow Oak	0
592	2402 Reinerman	12" Pecan	12
593	2402 Reinerman	12" Live Oak	12
594	2402 Reinerman	4' Sago	0
595	2402 Reinerman	23" Pecan	0
595A	2402 Reinerman	14" Live Oak	0
597	2402 Reinerman	16" Pecan	16
598	5206 Kiam	5" Sugarberry	0
599	5206 Kiam	8" Sugarberry	0
613	2003 Roy	10" Live Oak	10
623	2112 Roy	18" Mulberry	0
626	2112 Roy	24" Red Cedar	0
627	2112 Roy	9" Sugarberry	0
630	2125 Roy	15" Sugarberry	0
631	2125 Roy	15" Live Oak	15
632	2125 Roy	9" Live Oak	9
633	2125 Roy	10" Live Oak	10
634	2125 Roy	13" Live Oak	13
635	2125 Roy	11" Live Oak	11
636	211 Larkin	10" Live Oak	10
637	211 Larkin	12" Live Oak	12
652	2315 Roy Circle	10" Citrus spp	0
659	2406 Roy Circle	3" Mulberry	0
660	2406 Roy Circle	13" Mulberry	0
698	2519 Roy Circle	14" Pecan	14
706	2530 Roy Circle	4" Sago	0
710	2542 Roy Circle	20" Tallow	0
724	2606 Roy Circle	30' Palm	0
729	2615 Roy Circle	18" Pecan	18
730	2615 Roy Circle	16" Pecan	16
731	2615 Roy Circle	17" Live Oak	17
732	Not available	18" Tallow	0
733	Not available	25" Sugarberry	0
737	Not available	8" Mexican Sycamore	8
738	Not available	8" Mexican Sycamore	8
739	Not available	3" Mexican Sycamore	3
740	Not available	8" Mexican Sycamore	8
745	2209 Sandman	12" Sugarberry	0
751	2210 Sandman	16" Shumard Oak	16
752	2210 Sandman	17" Crepe Myrtle	0
753	2210 Sandman	18" Crepe Myrtle	0
754	2210 Sandman	17" Crepe Myrtle	0
755	5210 Kiam	14" Mulberry	0
756	5210 Kiam	14" Sugarberry	0
757	5210 Kiam	18" Sugarberry	0
758	5210 Kiam	18" Mulberry	0
760	5210 Kiam	15" American Elm	15
761	5210 Kiam	24" Sugarberry	0
764A	5210 Kiam	13" Sugarberry	0
765	5210 Kiam	15" Sugarberry	0
766	5210 Kiam	9" Sugarberry	0
767	Not available	13" Sugarberry	0
768	Not available	14" Sugarberry	0
782	5206 Kiam	23" Arizona Ash	0
783	5206 Kiam	14" Sugarberry	0
786	Not available	22" Black Willow	0
788	5206 Kiam	17" Sugarberry	0
789	5206 Kiam	14" Black Willow	0
		TOTAL REPLACEMENT INCHES REQUIRED	**1005**

REV	DESCRIPTION	BY	DATE

Tree Replacement List

Quantity	Caliper Size	Species	Container/Tree Spade size
35	4	Nuttall Oak (*Quercus texana*)	100 gallon container
55	4	Eastern Redbud (*Cercis canadensis*)	100 gallon container
33	4	Live Oak (*Quercus virginiana*)	100 gallon container
120	3	American Holly (*Ilex opaca*)	65 gallon container
40	4	Cedar Elm (*Ulmus crassifolia*)	100 gallon container
TOTAL REPLACEMENT INCHES INCLUDED IN PLAN			**1012**

NOTES:

Tree replacement locations shown on plans are not final. Locations must be coordinated with adjacent property owner and City of Houston Forestry and Public Works prior to PURCHASING trees and excavation for planting. All trees may not be planted and locations and species may change relative to coordination with listed parties. Coordination shall be completed by construction contractor's Certified Arborist.

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.

Arboriculturally Significant Tree List

Tree No.	Location	Description
63	5337 Kansas	31" Live Oak
78	5319 Kansas	25" Pecan
78B	5312 Kansas	36" Pecan
78P	5217 Kansas	35" Post Oak
78Q	5217 Kansas	27" Pecan
80	5212 Kansas	30" Pecan
81	5212 Kansas	36" Pecan
226	5324 Petty	24" Pecan
257	5230 Petty	40" Live Oak
258	5230 Petty	38" Live Oak
303	5002 Darling	25" Red Cedar
329	Fire Station 11	25" Live Oak
705	2530 Roy Circle	38" Live Oak
722	2610 Roy Circle	38" Water Oak
728	2623 Roy Circle	24" Water 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.

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

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

APPROVED: Craig N. Koehl 11/14/2024

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 14 OF 15

WBS NUMBER M-410039-0001-4	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 210 OF 345	

CivilTech Engineering, Inc.
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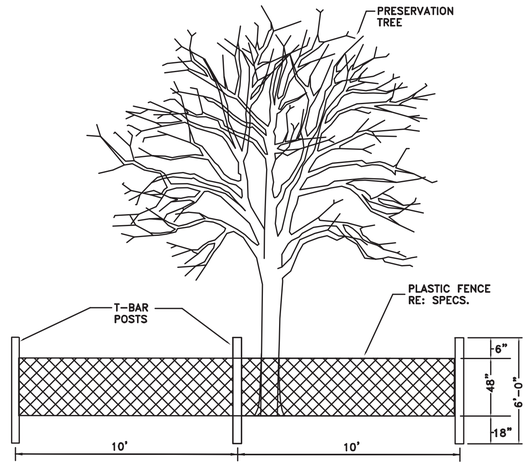
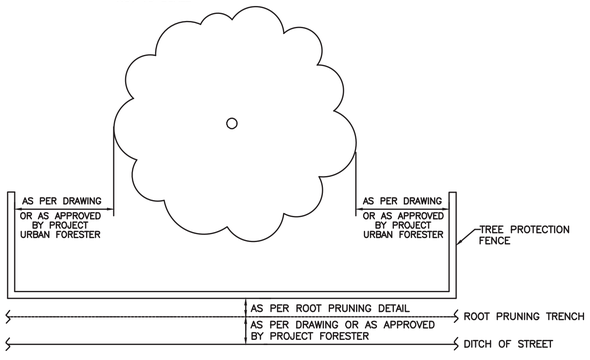
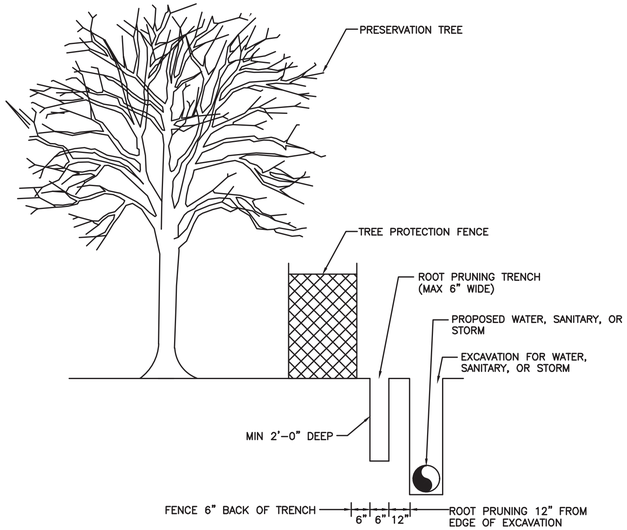
REV	DESCRIPTION	BY	DATE



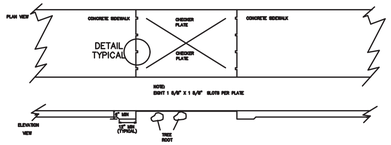
TREE PROTECTION FENCING DETAIL A
NOT TO SCALE



TREE PROTECTION FENCING DETAIL B
NOT TO SCALE

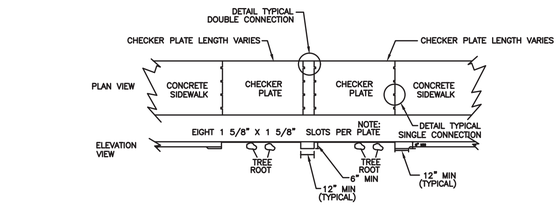


ROOT PRUNE FOR WATER, SANITARY, OR STORM LINE
NOT TO SCALE



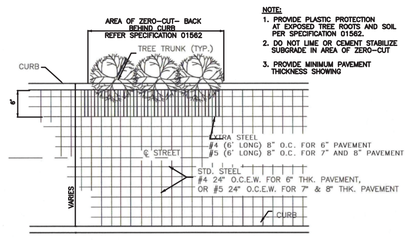
CHECKERPLATE DETAIL-SINGLE CONNECTION
NOT TO SCALE

NOTE:
ALL IRONWORK TO BE HOT DIPPED GALVINIZED EXCEPT AS NOTED.



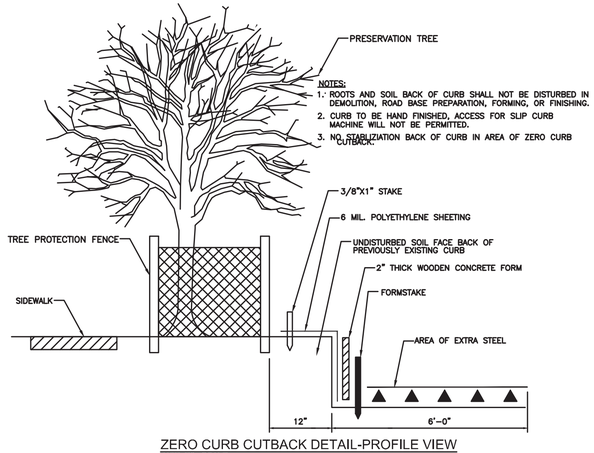
CHECKERPLATE DETAIL-DOUBLE CONNECTION
NOT TO SCALE

NOTE:
ALL IRONWORK TO BE HOT DIPPED GALVINIZED EXCEPT AS NOTED.

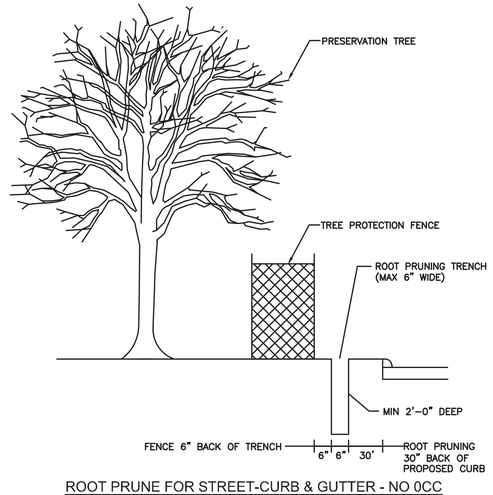


NOTE:
1. PROVIDE PLASTIC PROTECTION AT EXPOSED TREE ROOTS AND SOIL PER SPECIFICATION 01562.
2. DO NOT LIME OR CEMENT STABILIZE SUBGRADE IN AREA OF ZERO-CUT
3. PROVIDE MINIMUM PAVEMENT THICKNESS SHOWING

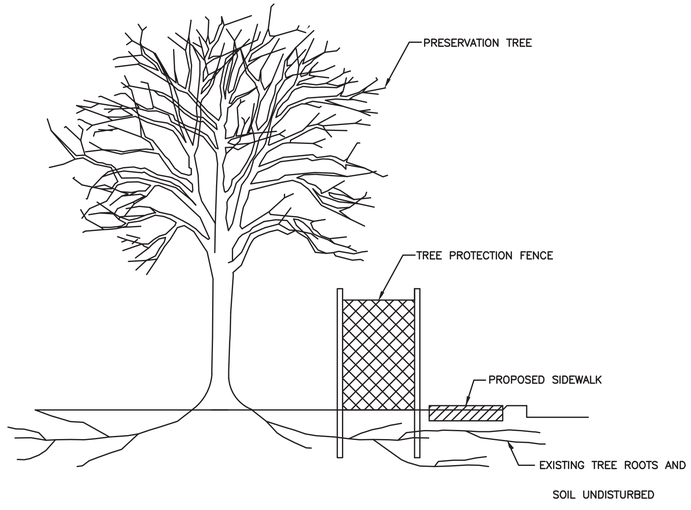
ZERO CURB CUTBACK DETAIL EXTRA STEEL BEHIND CURB
NOT TO SCALE



ZERO CURB CUTBACK DETAIL-PROFILE VIEW
NOT TO SCALE



ROOT PRUNE FOR STREET-CURB & GUTTER - NO 0CC
NOT TO SCALE



DEMO-FORM-POUR WALK WITHOUT DAMAGE TO TREE ROOTS 1" DIAMETER OR LARGER
NOT TO SCALE

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

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281-391-0022 ckoehl@koehlurbanforestry.com

APPROVED: Craig N. Koehl 11/14/2024

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 15 OF 15

WBS NUMBER M-410039-0001-4	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 211 OF 345	

CivilTech Engineering, Inc.
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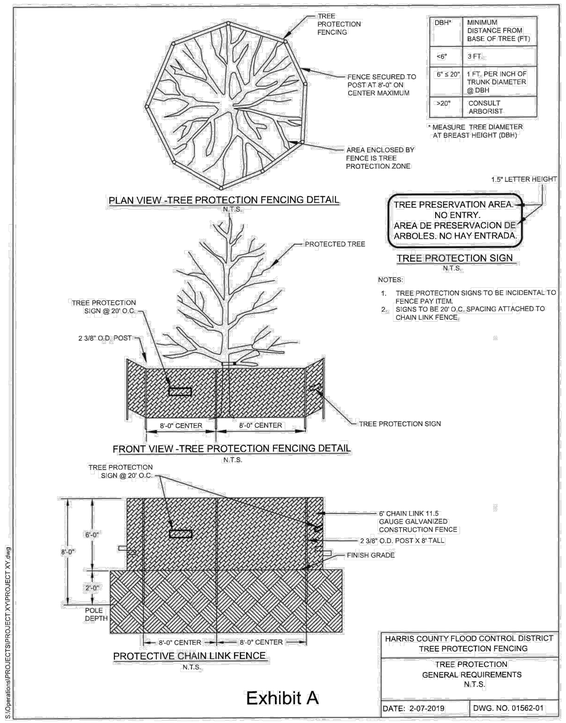


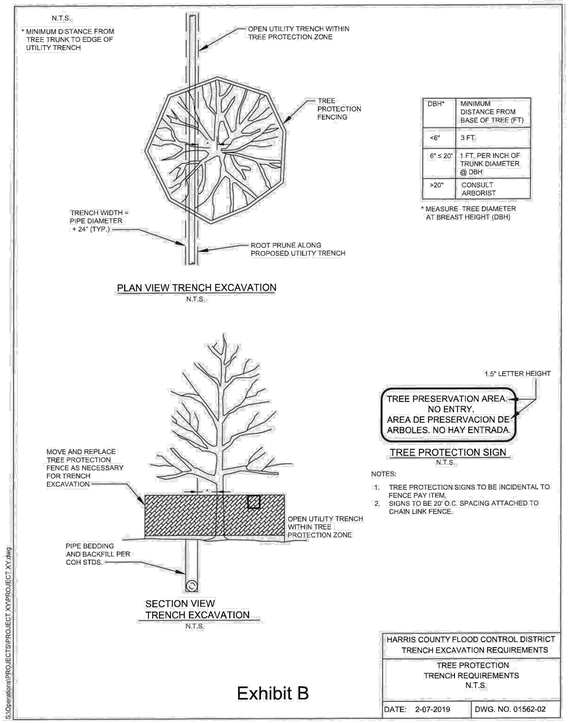
DBH*	MINIMUM DISTANCE FROM BASE OF TREE (FT)
<6"	3 FT.
6" ≤ 20"	1 FT. PER INCH OF TRUNK DIAMETER @ DBH
>20"	CONSULT ARBORIST

* MEASURE TREE DIAMETER AT BREAST HEIGHT (DBH)

S:\Operations\PROJECTS\PROJECT XY\PROJECT XY.dwg

Exhibit A

HARRIS COUNTY FLOOD CONTROL DISTRICT
TREE PROTECTION FENCING
TREE PROTECTION GENERAL REQUIREMENTS N.T.S.
DATE: 2-07-2019 | DWG. NO. 01562-01



DBH*	MINIMUM DISTANCE FROM BASE OF TREE (FT)
<6"	3 FT.
6" ≤ 20"	1 FT. PER INCH OF TRUNK DIAMETER @ DBH
>20"	CONSULT ARBORIST

* MEASURE TREE DIAMETER AT BREAST HEIGHT (DBH)

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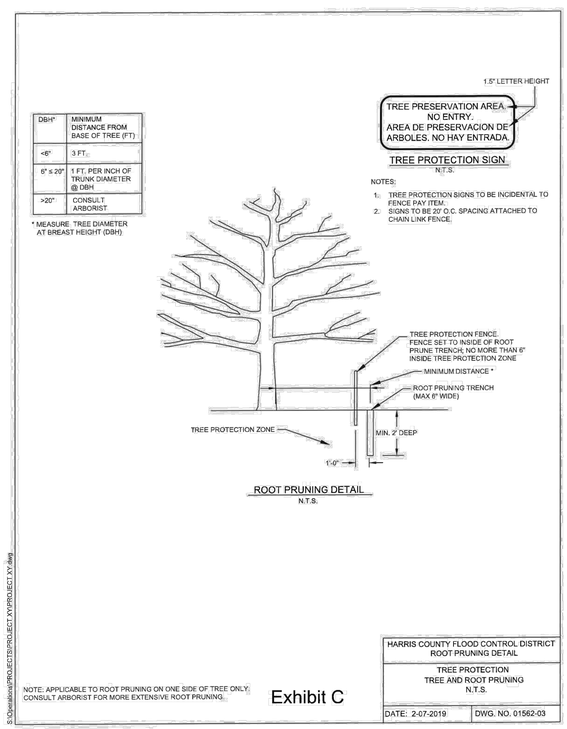
Exhibit B

HARRIS COUNTY FLOOD CONTROL DISTRICT
TRENCH EXCAVATION REQUIREMENTS
TREE PROTECTION TRENCH REQUIREMENTS N.T.S.
DATE: 2-07-2019 | DWG. NO. 01562-02



DBH*	MINIMUM DISTANCE FROM BASE OF TREE (FT)
<6"	3 FT.
6" ≤ 20"	1 FT. PER INCH OF TRUNK DIAMETER @ DBH
>20"	CONSULT ARBORIST

* MEASURE TREE DIAMETER AT BREAST HEIGHT (DBH)

NOTE: APPLICABLE TO ROOT PRUNING ON ONE SIDE OF TREE ONLY; CONSULT ARBORIST FOR MORE EXTENSIVE ROOT PRUNING.

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Exhibit C

HARRIS COUNTY FLOOD CONTROL DISTRICT
ROOT PRUNING DETAIL
TREE PROTECTION TREE AND ROOT PRUNING N.T.S.
DATE: 2-07-2019 | DWG. NO. 01562-03

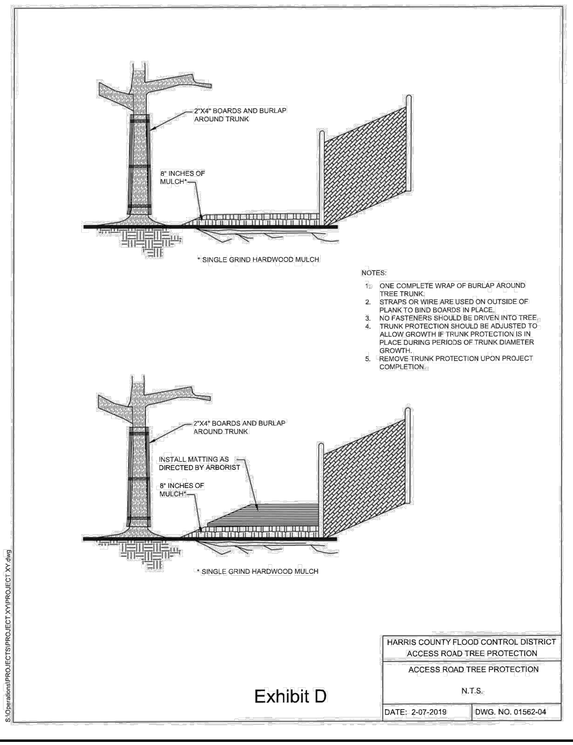

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Exhibit D

HARRIS COUNTY FLOOD CONTROL DISTRICT
ACCESS ROAD TREE PROTECTION
ACCESS ROAD TREE PROTECTION N.T.S.
DATE: 2-07-2019 | DWG. NO. 01562-04

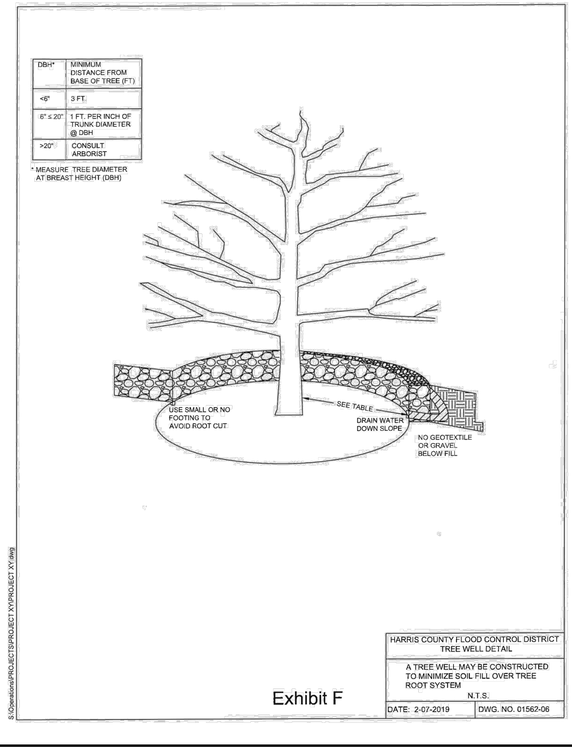

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Exhibit F

HARRIS COUNTY FLOOD CONTROL DISTRICT
TREE WELL DETAIL
A TREE WELL MAY BE CONSTRUCTED TO MINIMIZE SOIL FILL OVER TREE ROOT SYSTEM N.T.S.
DATE: 2-07-2019 | DWG. NO. 01562-06

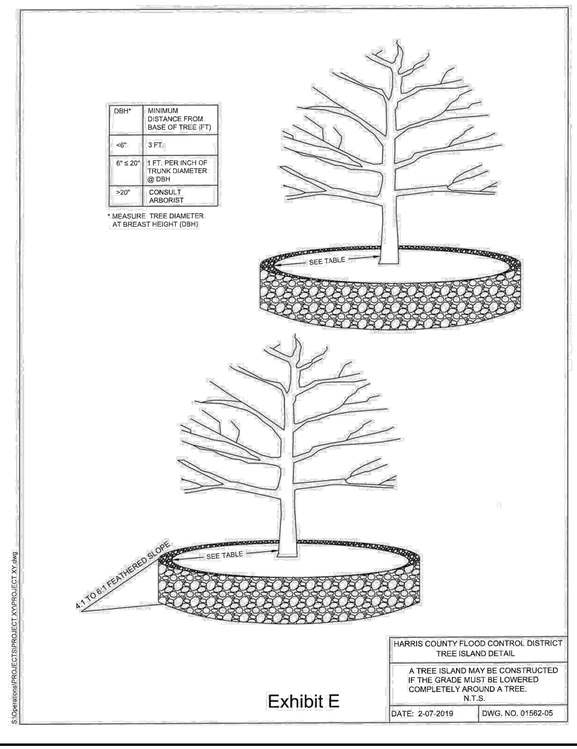

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Exhibit E

HARRIS COUNTY FLOOD CONTROL DISTRICT
TREE ISLAND DETAIL
A TREE ISLAND MAY BE CONSTRUCTED IF THE GRADE MUST BE LOWERED COMPLETELY AROUND A TREE. N.T.S.
DATE: 2-07-2019 | DWG. NO. 01562-05

REV	DESCRIPTION	BY	DATE

ONE CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
CALL 811 OR
(NEW STATEWIDE NUMBER OUTSIDE HOUSTON)
1-800-344-8377

BENCHMARK:

CITY OF HOUSTON MONUMENT 5258-8507, A BRASS DISK IN CONCRETE, LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF DARLING STREET AND REINERMAN STREET ELEV. 52.44 FEET NAVD 1988 (CORS96)(GEOID '12A)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED JUNE 12, 2019.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 050035) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (CORS96)(GEOID '12A) IS 0.06'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988, (CORS96)(GEOID '12A) ELEVATION – 0.06 FEET.

FLOODPLAIN:

THIS PROPERTY LIES PARTIALLY IN ZONE "X", SHADED "X" AND "AE" INSIDE AND OUTSIDE THE 100 YEAR FLOOD PLAIN PER GRAPHIC SCALING ACCORDING TO COMMUNITY PANEL NO.48201C0670M HAVING AN EFFECTIVE DATE 06-09-2014.

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

Approved for AT&T Texas/SWBT underground conduit facilities only. AT&T electronic signature valid for one year.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
06/02/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II DRAINAGE AND PAVING IMPROVEMENTS

HCFCD TREE PROTECTION DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 211A OF 345	

CivilTech Engineering, Inc.
O:\2018\J380013\Drawings\SHEETS\HCFCD TREE PROTECTION DETAILS.dwg Jun 12, 2025

NOTES:

1. REFER TO CENTERPOINT ENERGY SPECIFICATION NO. 007-371-08 REV. 7/25/07 FOR ADDITIONAL INFORMATION.
2. ANY POLE, NOT CALLED OUT BUT FOUND TO BE IN CONFLICT DURING CONSTRUCTION, CONTRACTOR SHALL BRING TO THE ATTENTION OF THE COH STREETLIGHTING DEPARTMENT FOR COORDINATION WITH CENTERPOINT.
3. CONDUIT/PULL BOX LAYOUT WILL BE DETERMINED BY CENTERPOINT ENERGY.
4. CONTACT ENGINEER PRIOR TO RELOCATION OF ANY POLES WITH SIGNAL ELEMENTS OR TRAFFIC CONTROL ELEMENTS ON THEM.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPOSED STREET LIGHT CONDUIT TO BE RUN AND STAKING OF LIGHTS TO BE DONE. CENTERPOINT WILL INSTALL AS STAKED.

THESE PLANS MAY NOT ACCURATELY REPRESENT EXISTING CONDITIONS. CONTRACTOR SHALL CLOSELY COORDINATE WITH CENTERPOINT ELECTRIC FOR PLACEMENT OF NEW STREET LIGHT FIXTURES.

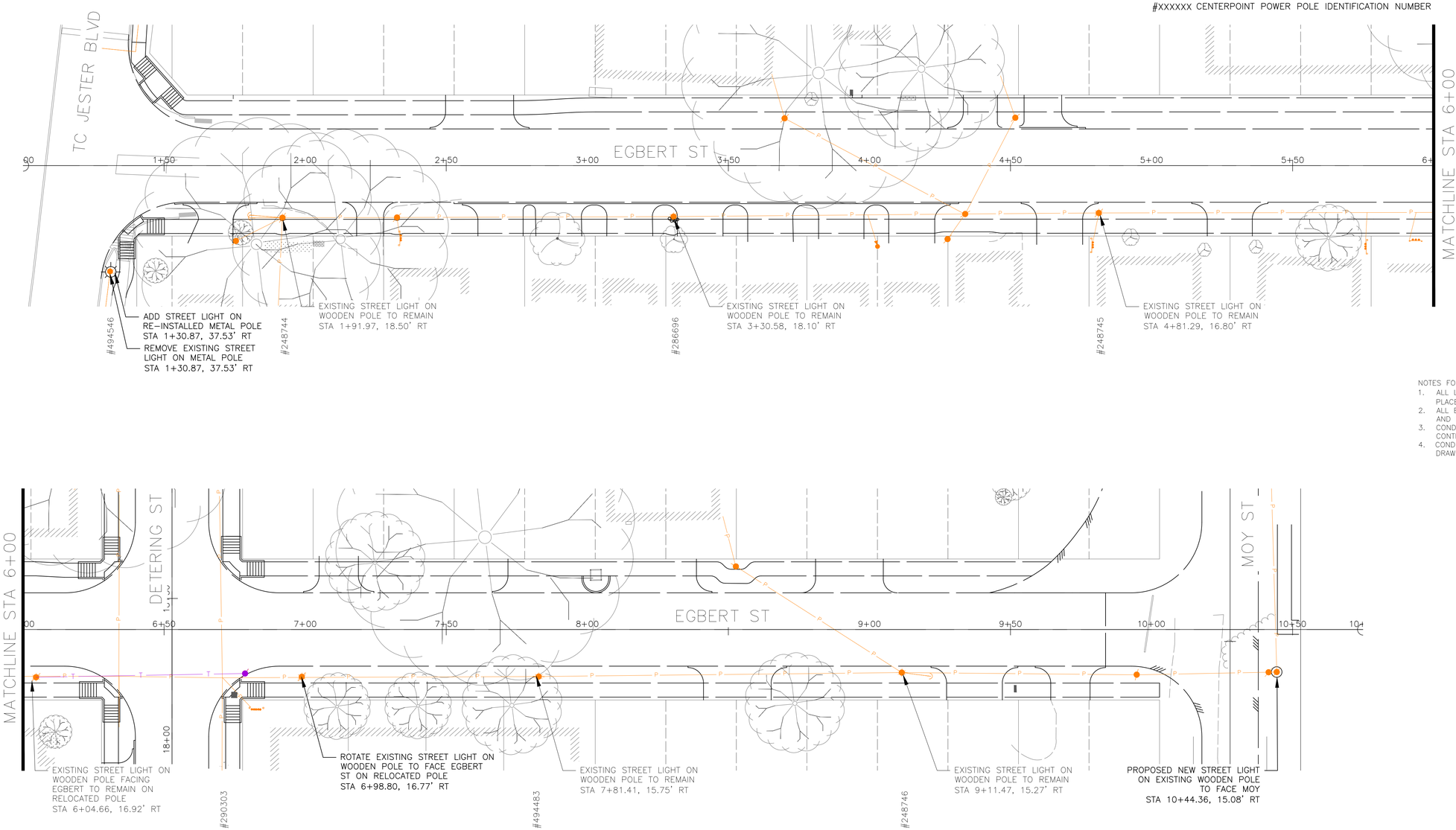
LEGENDS:

- EXISTING WOODEN POLE
- EXISTING STREET LIGHT ON WOODEN POLE TO REMAIN
- EXISTING STREET LIGHT ON METAL POLE TO REMAIN
- EXISTING STREET LIGHT ON EXISTING WOODEN POLE TO BE REMOVED
- PROPOSED NEW WOODEN POLE
- PROPOSED NEW STREET LIGHT ON EXISTING WOODEN POLE
- ADD STREET LIGHT ON NEW WOODEN POLE
- ADD STREET LIGHT ON NEW METAL POLE
- EXISTING COMMUNICATION POLE (TO REMAIN/RELOCATE BY OTHERS)

#XXXXXX CENTERPOINT POWER POLE IDENTIFICATION NUMBER

REV	DESCRIPTION	BY	DATE

20 0 10 20
SCALE IN FEET
FULL SIZE: H. 1"=20', V. 1"=2'
HALF SIZE: H. 1"=40', V. 1"=4'



NOTES FOR METAL POLES:
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WOOLPERT
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FB NO. P-6133

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED PROFESSIONAL ENGINEER
3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
EGBERT ST
STA 1+00 TO STA 10+75

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 212 OF 345	

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- EXISTING STREET LIGHT ON WOODEN POLE TO REMAIN
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- PROPOSED NEW WOODEN POLE
- PROPOSED NEW STREET LIGHT ON EXISTING WOODEN POLE
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#XXXXXX CENTERPOINT POWER POLE IDENTIFICATION NUMBER

REV	DESCRIPTION	BY	DATE

20 0 10 20
SCALE IN FEET
FULL SIZE: H. 1"=20', V. 1"=2'
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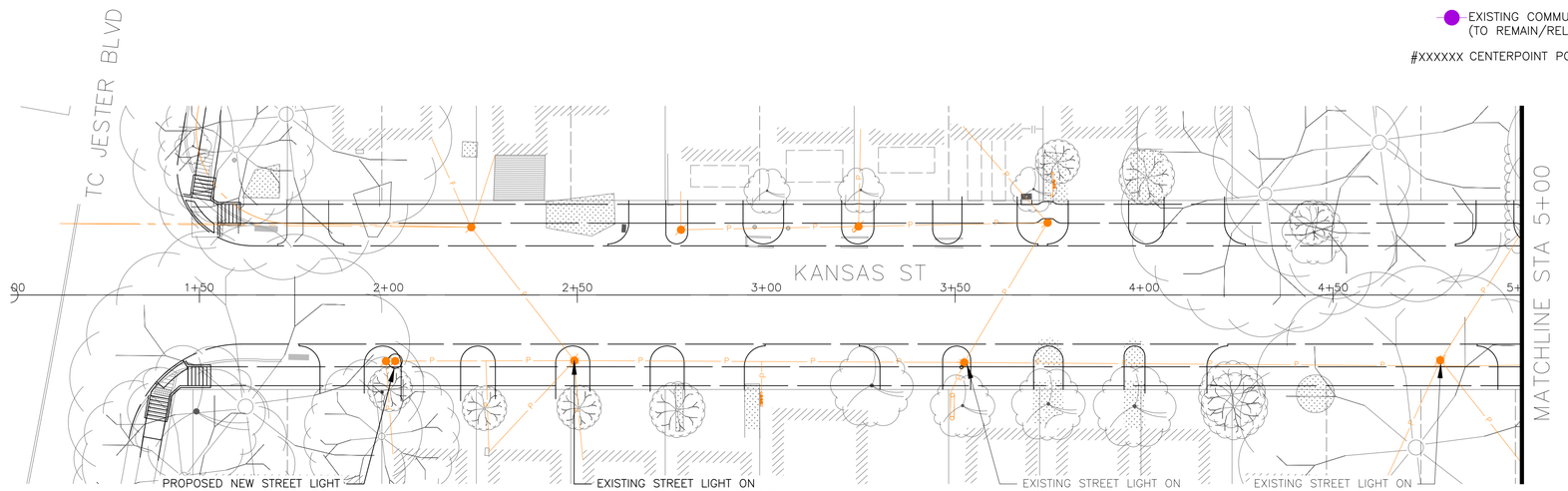

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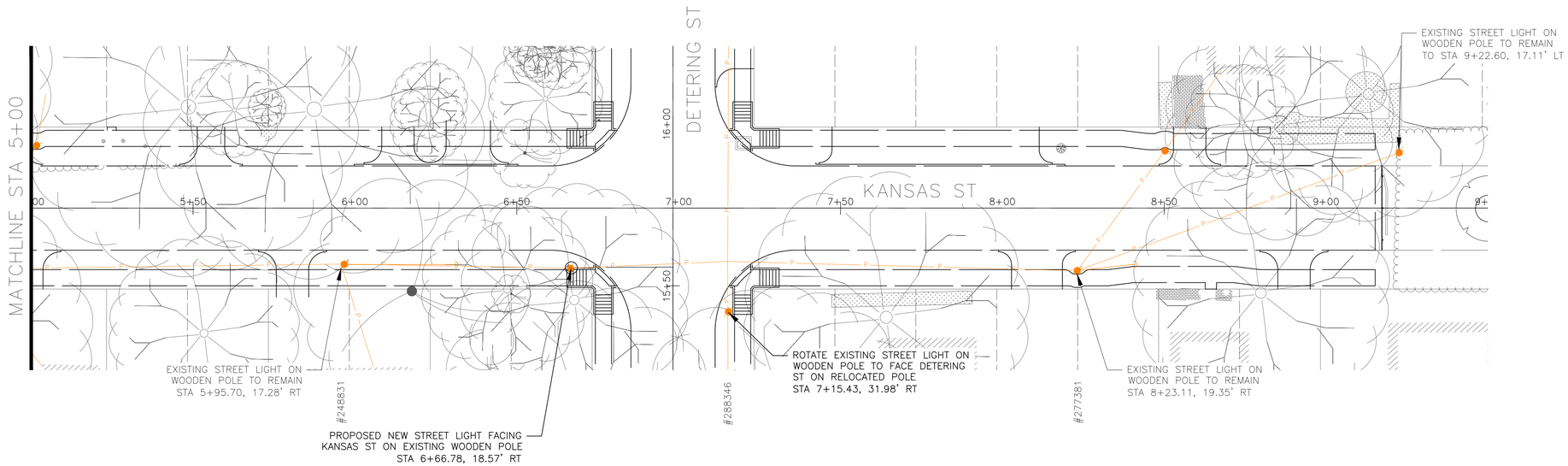

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CITY OF HOUSTON
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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
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CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
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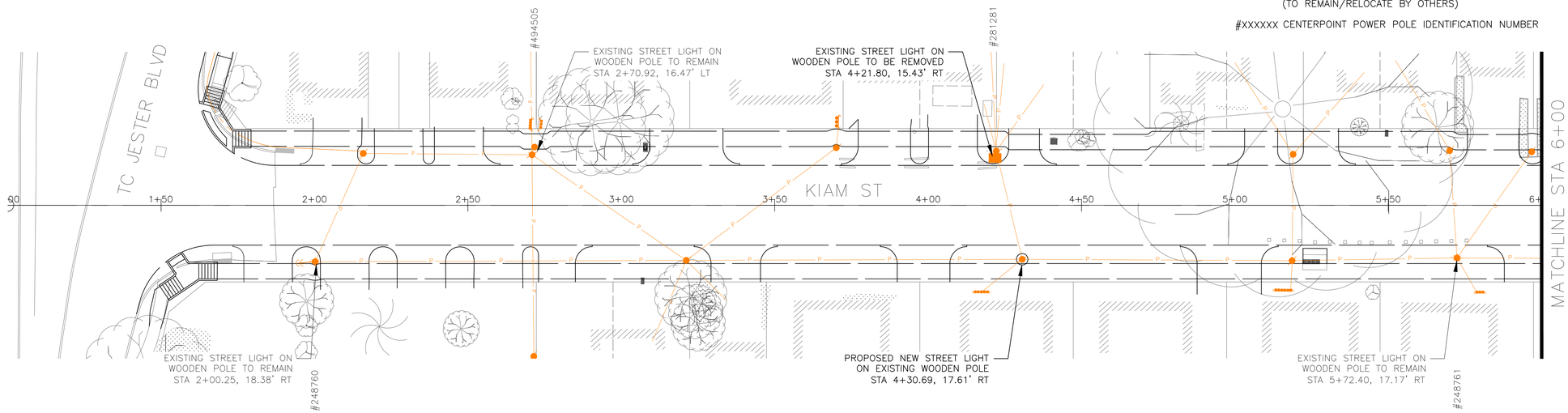

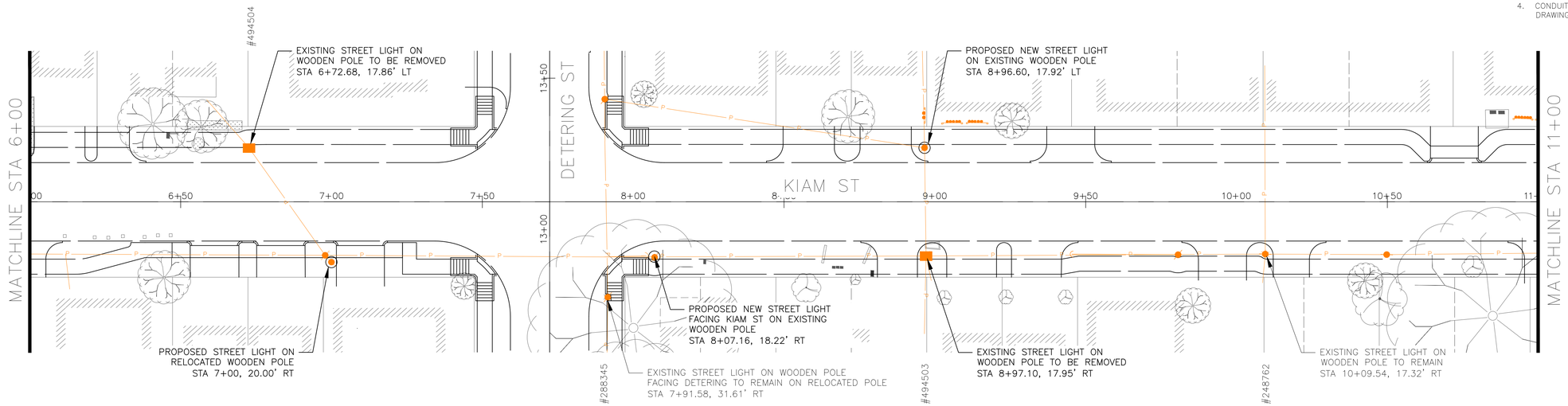

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
KIAM ST
STA 1+00 TO STA 11+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 214 OF 345	

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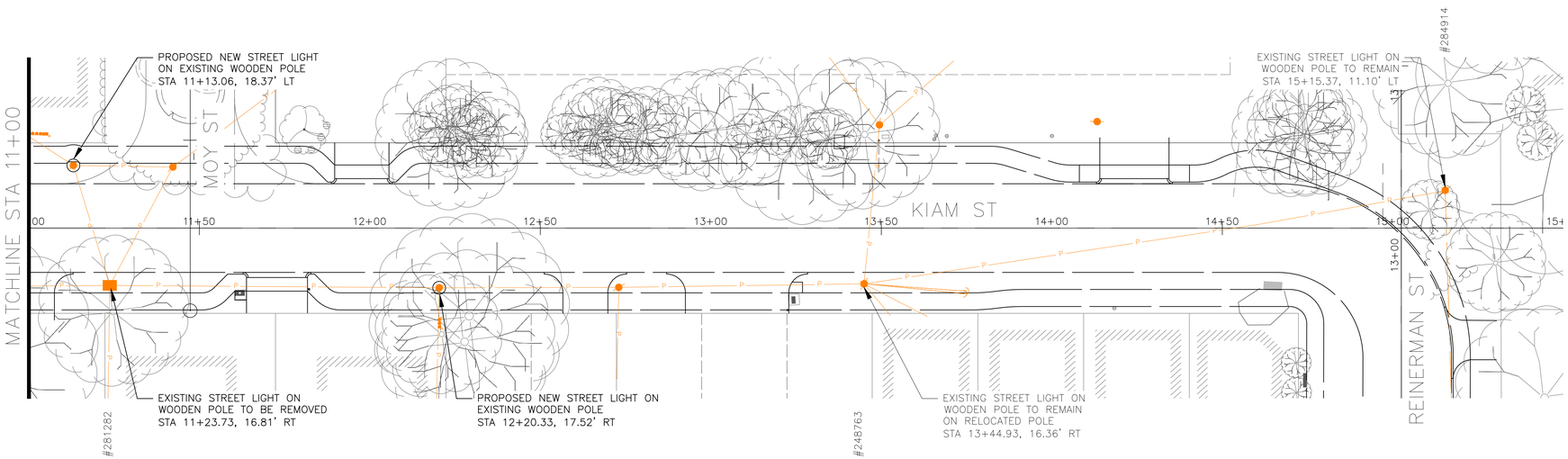

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STREET LIGHTING PLAN
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CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 215 OF 345	

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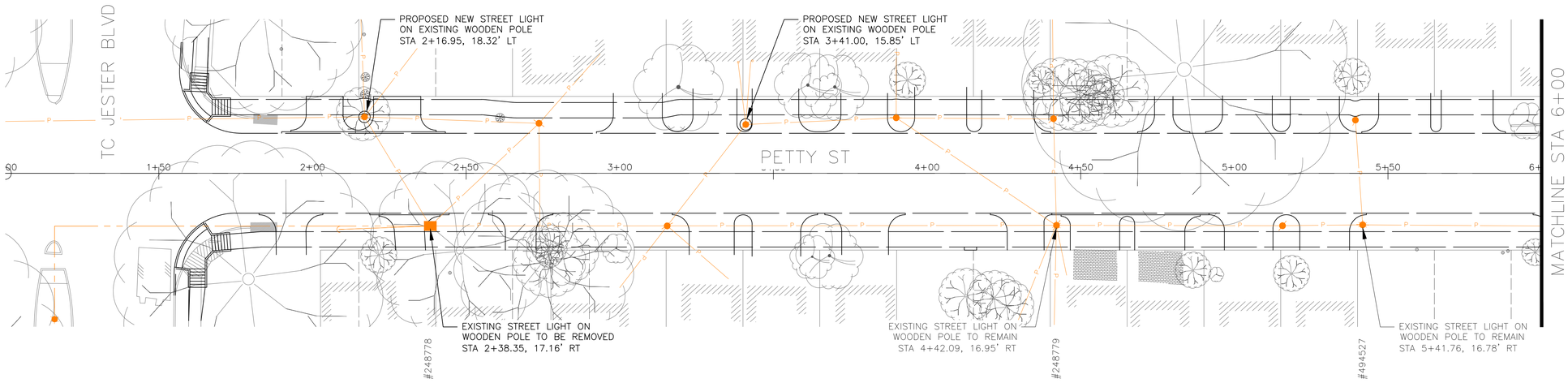

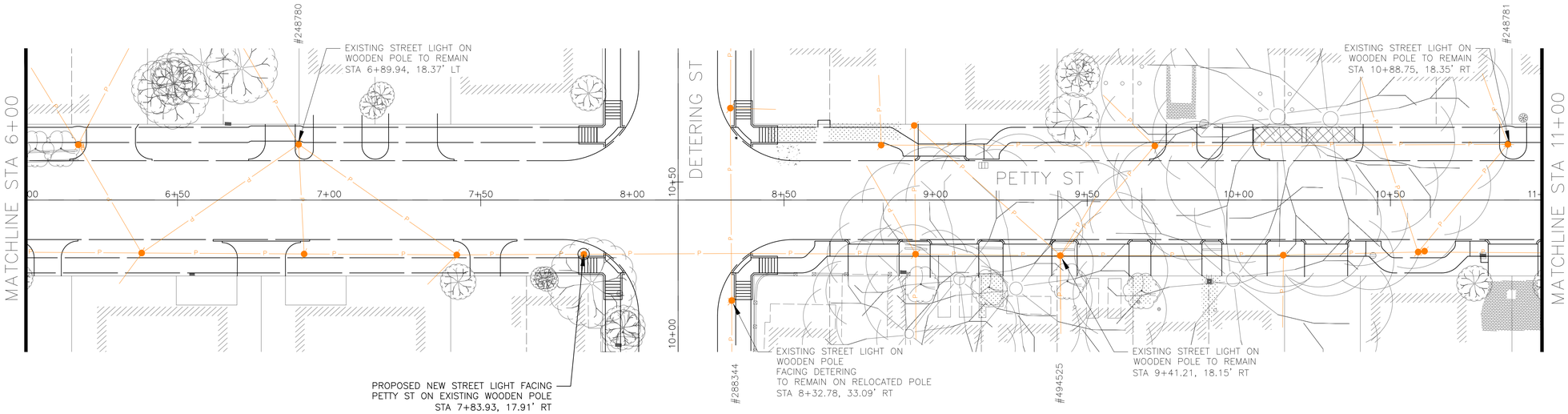

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3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN PETTY ST STA 1+00 TO STA 11+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 216 OF 345	

CivilTech Engineering, Inc.
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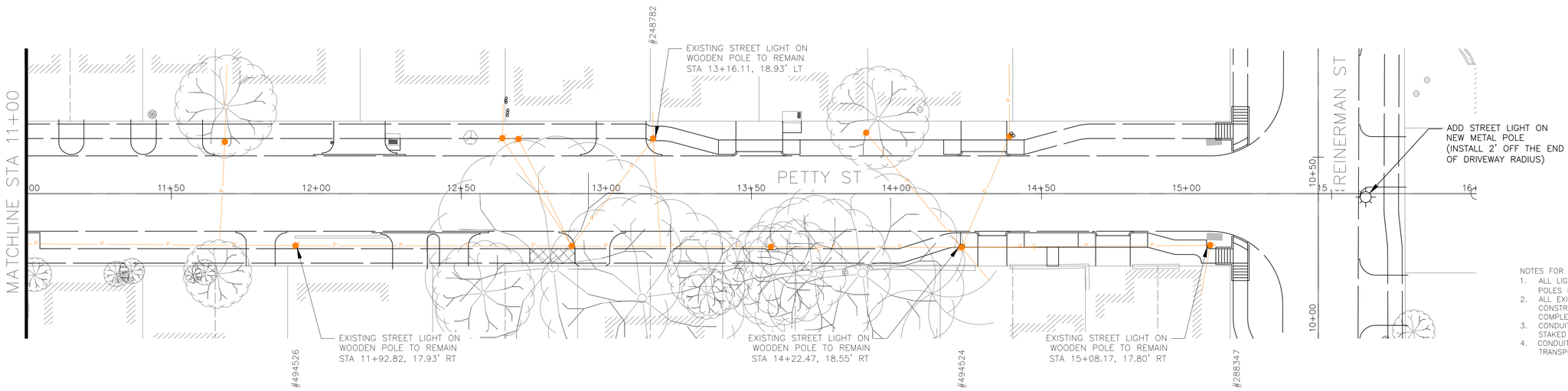

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CITY OF HOUSTON
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STREET LIGHTING PLAN
PETTY ST
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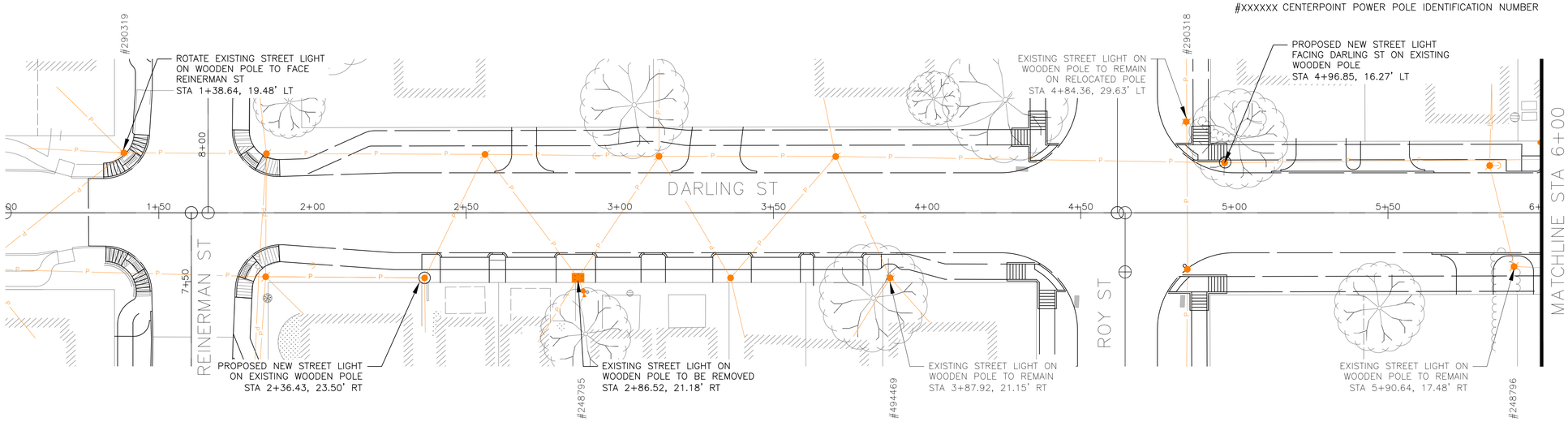

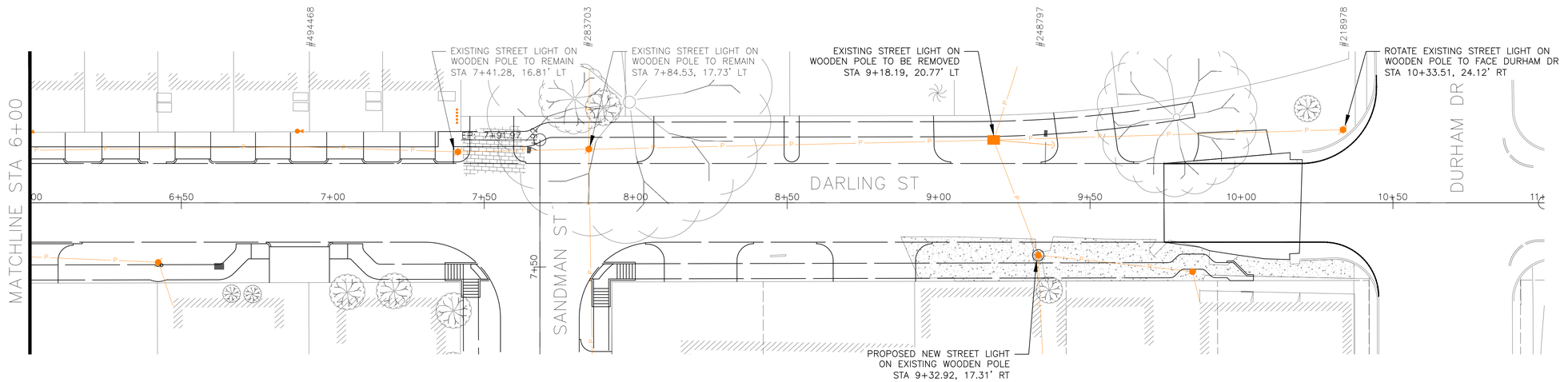

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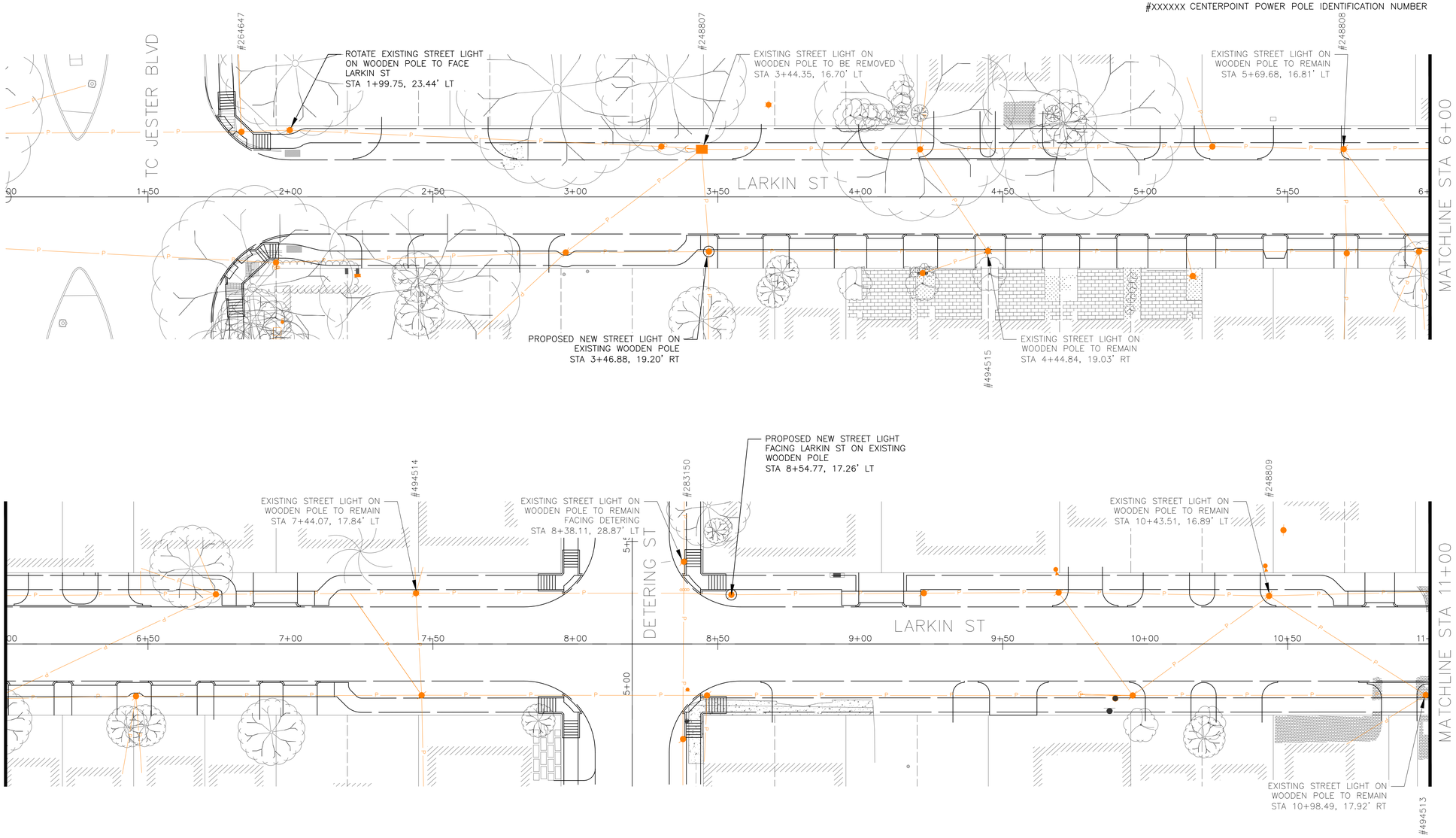
LEGENDS:

- EXISTING WOODEN POLE
- EXISTING STREET LIGHT ON WOODEN POLE TO REMAIN
- EXISTING STREET LIGHT ON METAL POLE TO REMAIN
- EXISTING STREET LIGHT ON EXISTING WOODEN POLE TO BE REMOVED
- PROPOSED NEW WOODEN POLE
- PROPOSED NEW STREET LIGHT ON EXISTING WOODEN POLE
- ADD STREET LIGHT ON NEW WOODEN POLE
- ADD STREET LIGHT ON NEW METAL POLE
- EXISTING COMMUNICATION POLE (TO REMAIN/RELOCATE BY OTHERS)

#XXXXXX CENTERPOINT POWER POLE IDENTIFICATION NUMBER

REV	DESCRIPTION	BY	DATE

20 0 10 20
SCALE IN FEET
FULL SIZE: H. 1"=20', V. 1"=2'
HALF SIZE: H. 1"=40', V. 1"=4'



NOTES FOR METAL POLES:

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WOOLPERT
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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED PROFESSIONAL ENGINEER
3/10/2026

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
LARKIN ST
STA 1+00 TO 11+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 219 OF 345	

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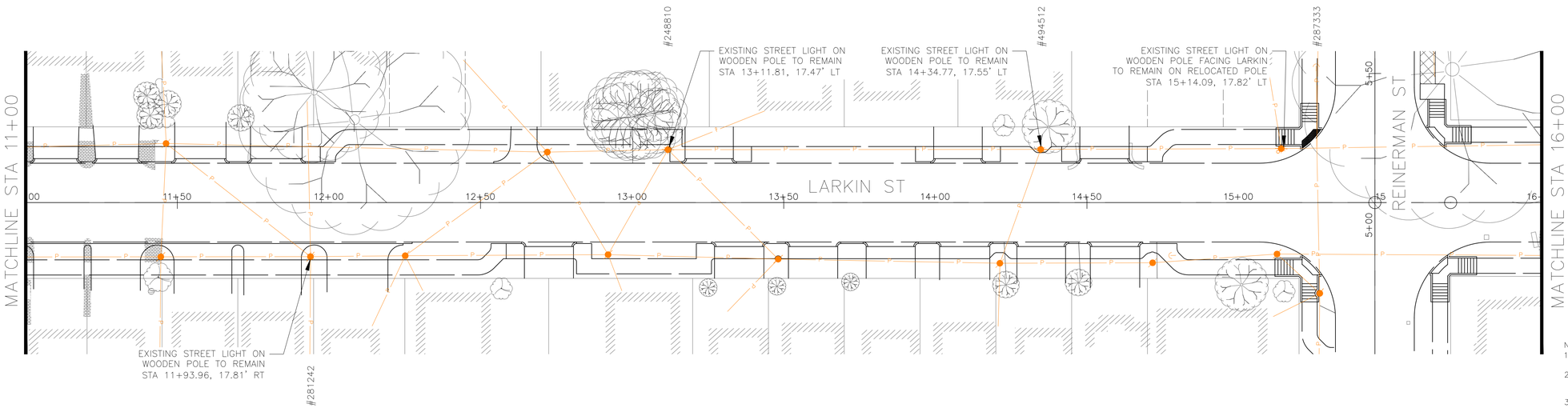

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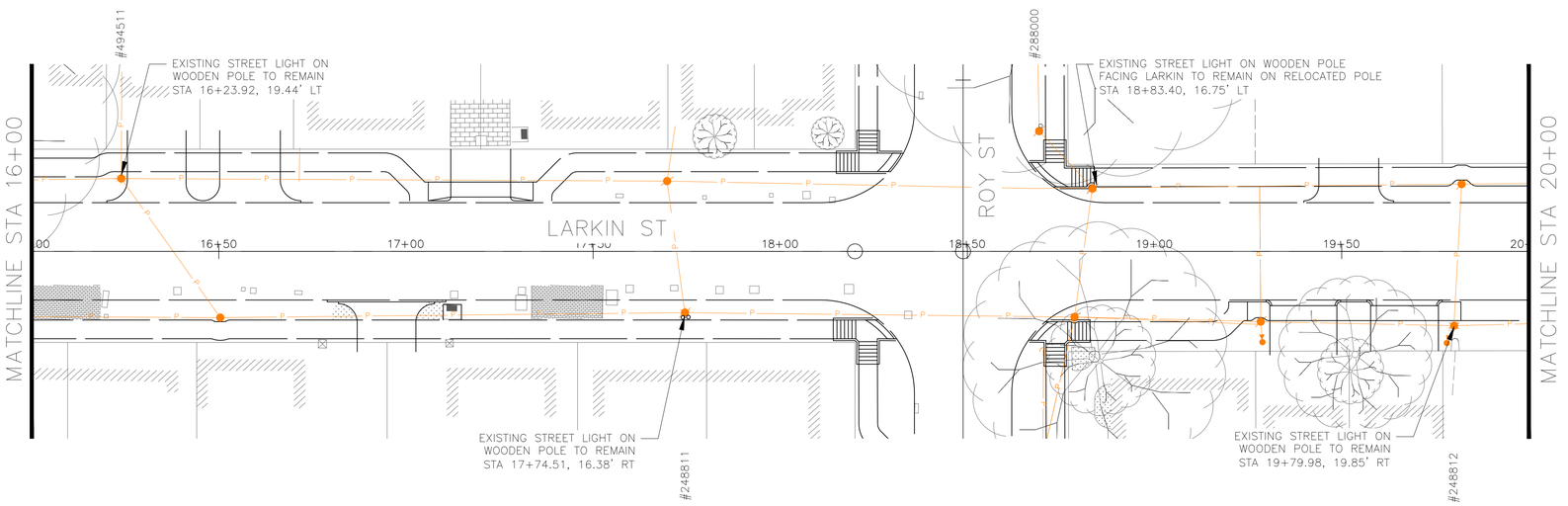

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DRAINAGE AND PAVING IMPROVEMENTS

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CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 220 OF 345	

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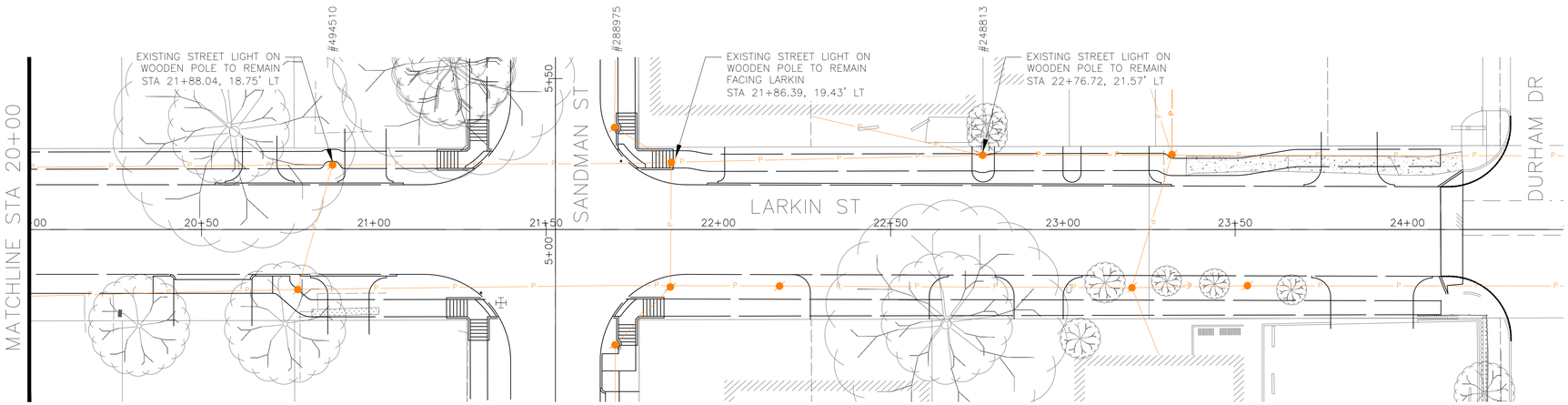

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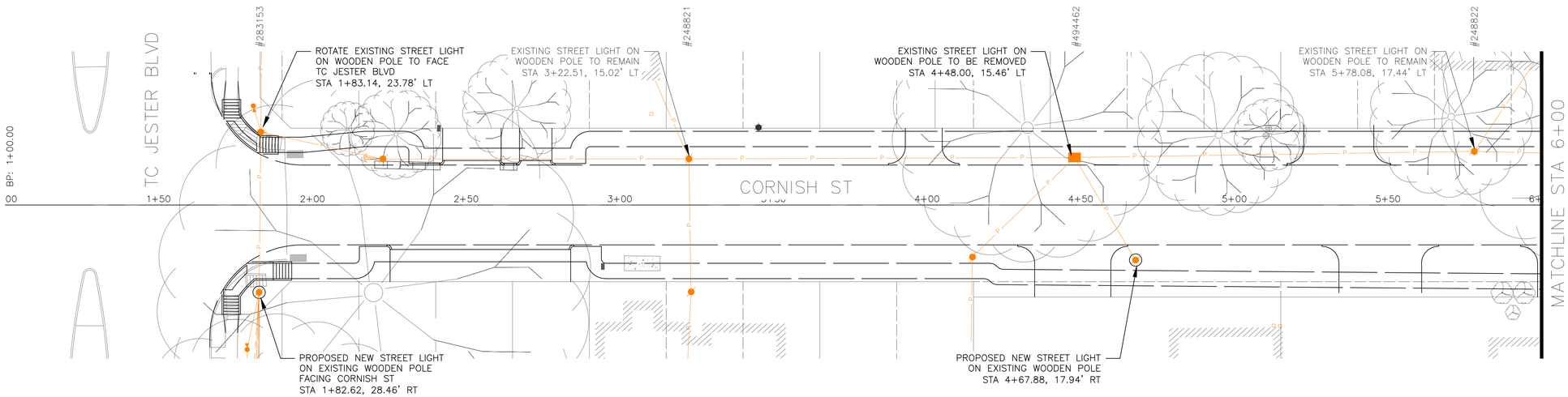

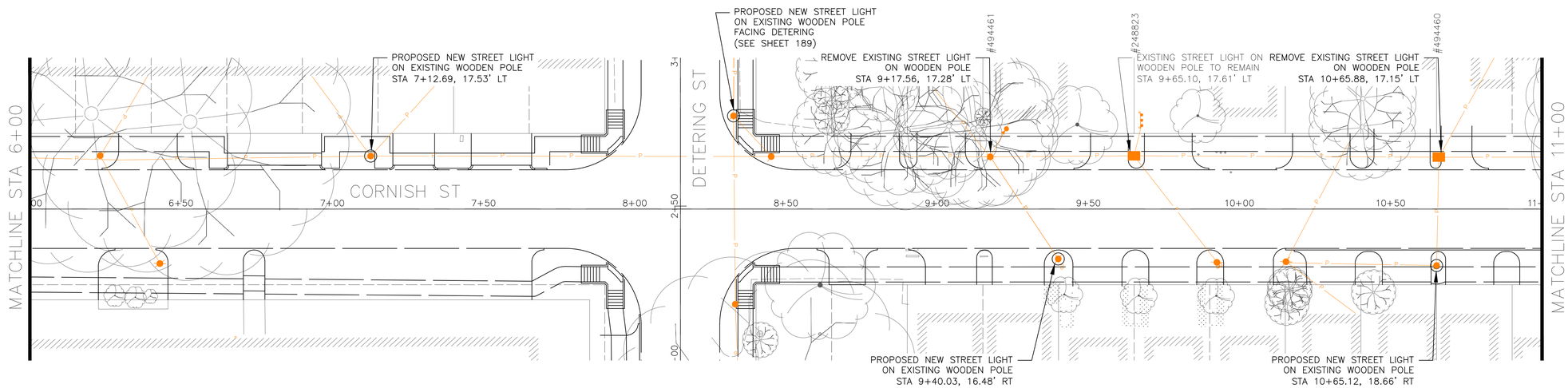

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3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN CORNISH ST STA 1+00 TO 11+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 222 OF 345	

CivilTech Engineering, Inc.
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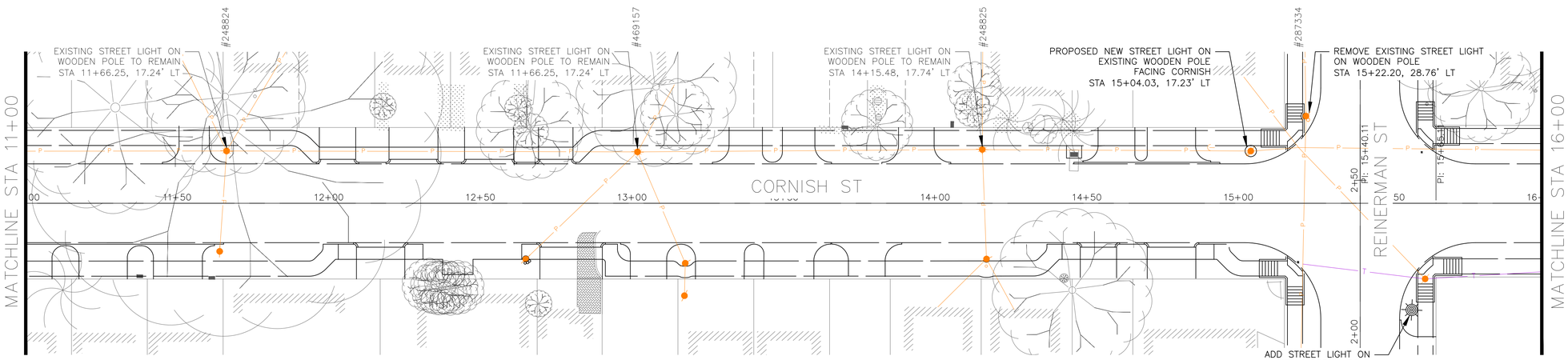

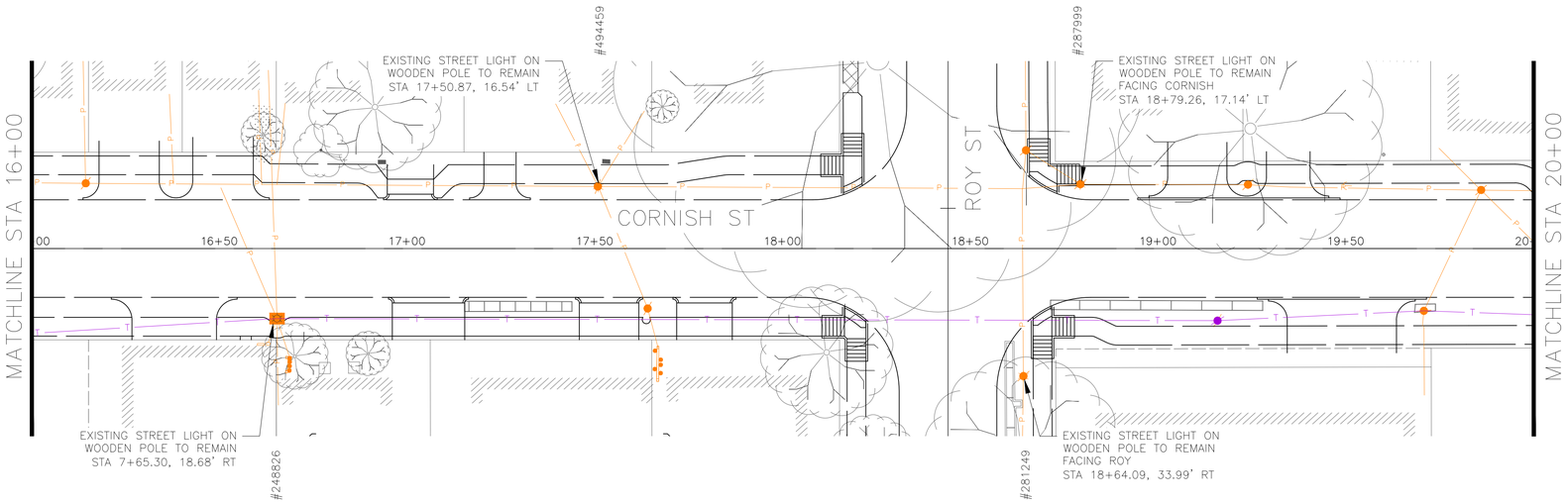

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
CORNISH ST
STA 11+00 TO 20+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
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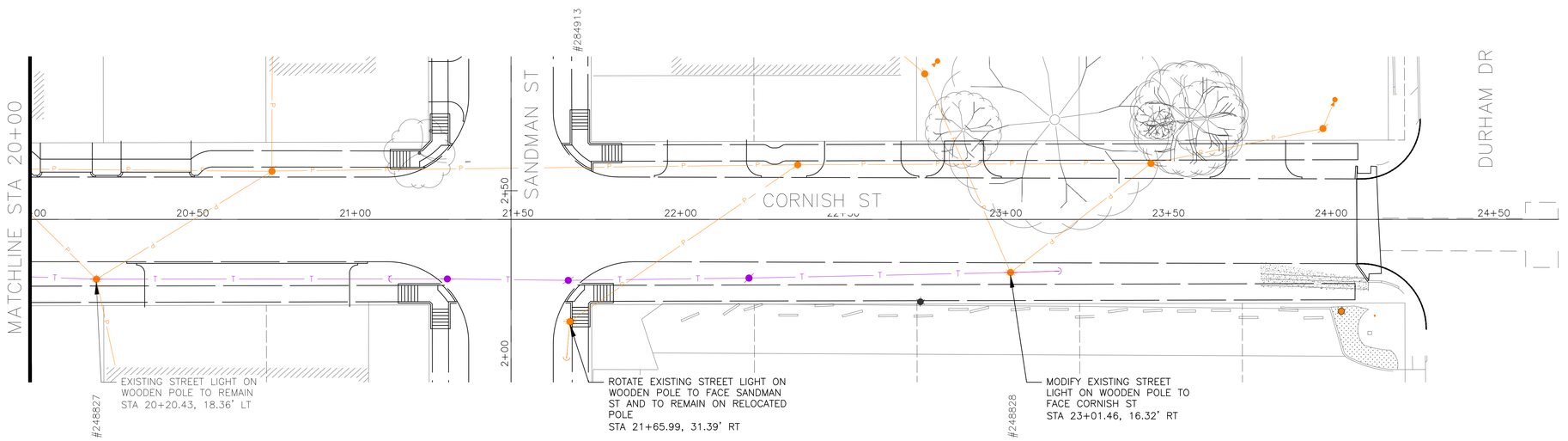

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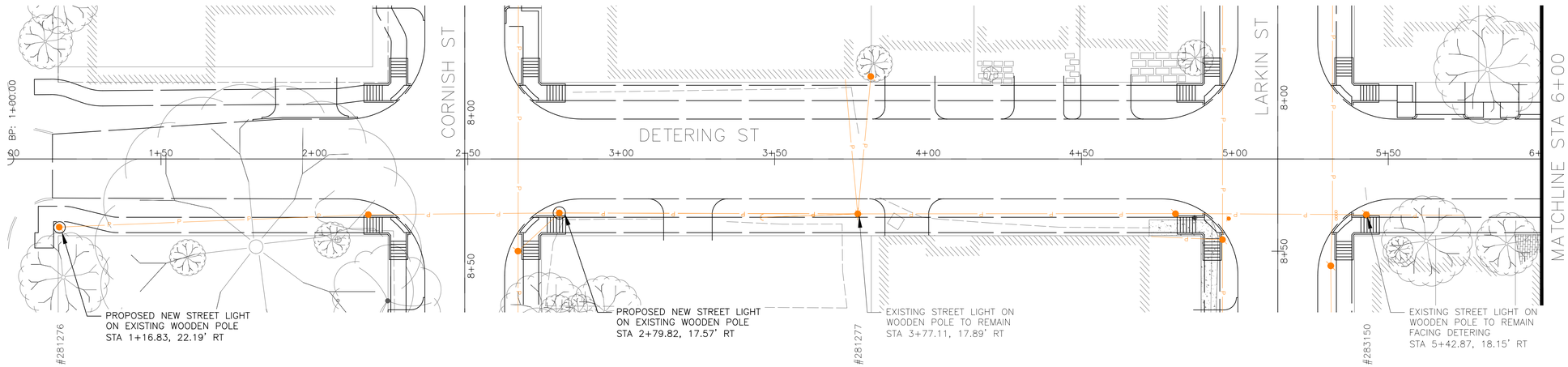

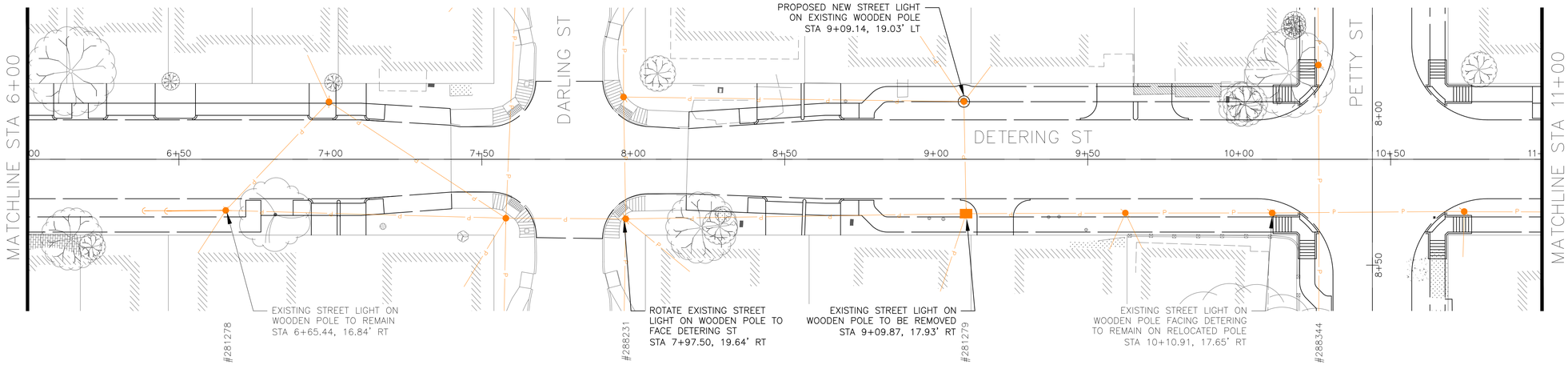

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STA 1+00 TO 11+00

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M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 225 OF 345	

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NOTES:

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4. CONTACT ENGINEER PRIOR TO RELOCATION OF ANY POLES WITH SIGNAL ELEMENTS OR TRAFFIC CONTROL ELEMENTS ON THEM.

5. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPOSED STREET LIGHT CONDUIT TO BE RUN AND STAKING OF LIGHTS TO BE DONE. CENTERPOINT WILL INSTALL AS STAKED.

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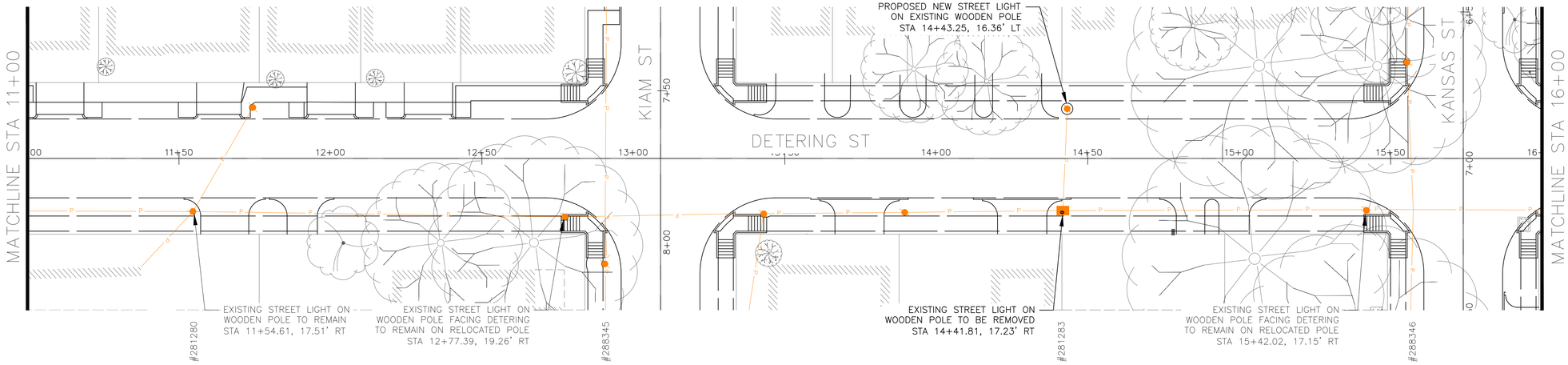
LEGENDS:

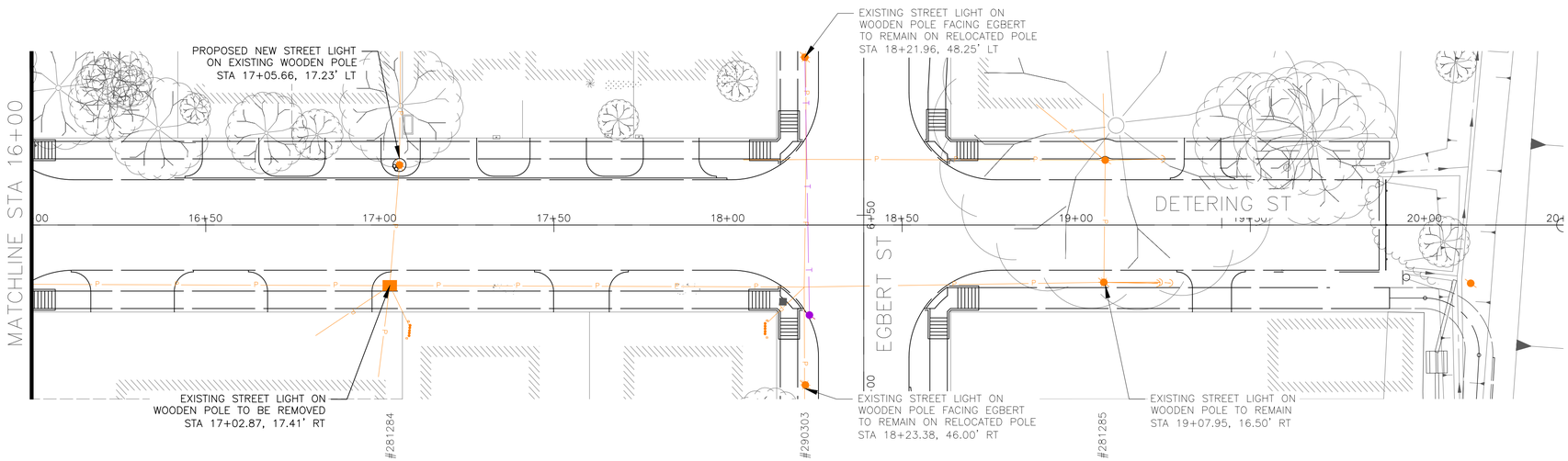
- EXISTING WOODEN POLE
- EXISTING STREET LIGHT ON WOODEN POLE TO REMAIN
- EXISTING STREET LIGHT ON METAL POLE TO REMAIN
- EXISTING STREET LIGHT ON EXISTING WOODEN POLE TO BE REMOVED
- PROPOSED NEW WOODEN POLE
- PROPOSED NEW STREET LIGHT ON EXISTING WOODEN POLE
- ADD STREET LIGHT ON NEW WOODEN POLE
- ADD STREET LIGHT ON NEW METAL POLE
- EXISTING COMMUNICATION POLE (TO REMAIN/RELOCATE BY OTHERS)

#XXXXXX CENTERPOINT POWER POLE IDENTIFICATION NUMBER

REV	DESCRIPTION	BY	DATE

SCALE IN FEET
20 0 10 20
FULL SIZE: H. 1"=20', V. 1"=2'
HALF SIZE: H. 1"=40', V. 1"=4'





NOTES FOR METAL POLES:
1. ALL LIGHTS ARE TO BE 45W SLS ON 30' EMBEDDED METAL POLES PLACED 3-4' FROM BOC.
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4. CONDUIT DESIGN IS TO BE DONE BY CENTERPOINT AND TRANSPOSED ONTO DRAWING BY EOR.

WOOLPERT
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11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED
PROFESSIONAL ENGINEER
3/10/2026

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN DETERING ST STA 11+00 TO 20+40

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 226 OF 345	

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- EXISTING STREET LIGHT ON WOODEN POLE TO REMAIN
- EXISTING STREET LIGHT ON METAL POLE TO REMAIN
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- PROPOSED NEW WOODEN POLE
- PROPOSED NEW STREET LIGHT ON EXISTING WOODEN POLE
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REV	DESCRIPTION	BY	DATE

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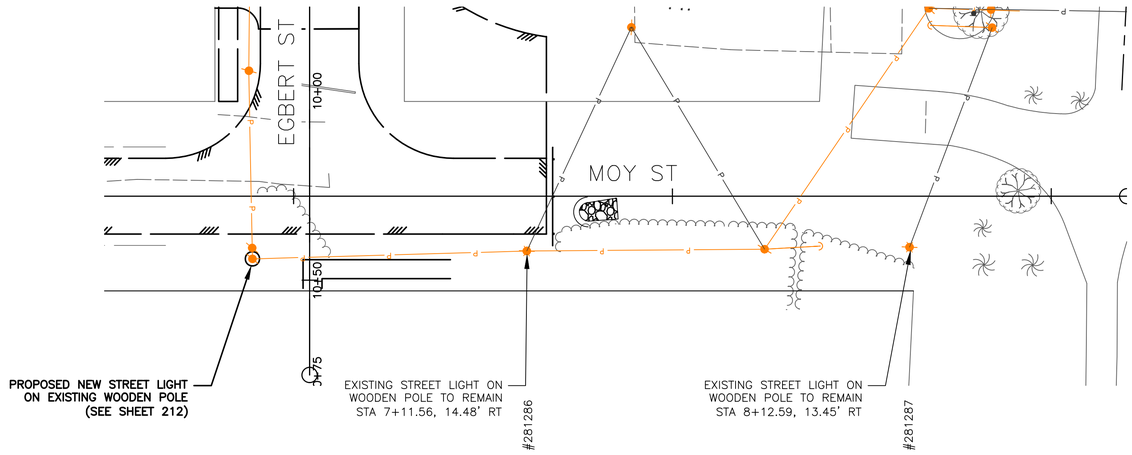

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FB NO. P-6133

STATE OF TEXAS
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3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
MOY ST
STA 6+00 TO 8+70

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 227 OF 345	

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O:\2018\438013\Data Collection\mon\10-7-2025 Street Lights Plan\STREET LIGHTS PLANS.dwg Oct. 20, 2025

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- PROPOSED NEW WOODEN POLE
- PROPOSED NEW STREET LIGHT ON EXISTING WOODEN POLE
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REV	DESCRIPTION	BY	DATE

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SCALE IN FEET
FULL SIZE: H. 1"=20', V. 1"=2'
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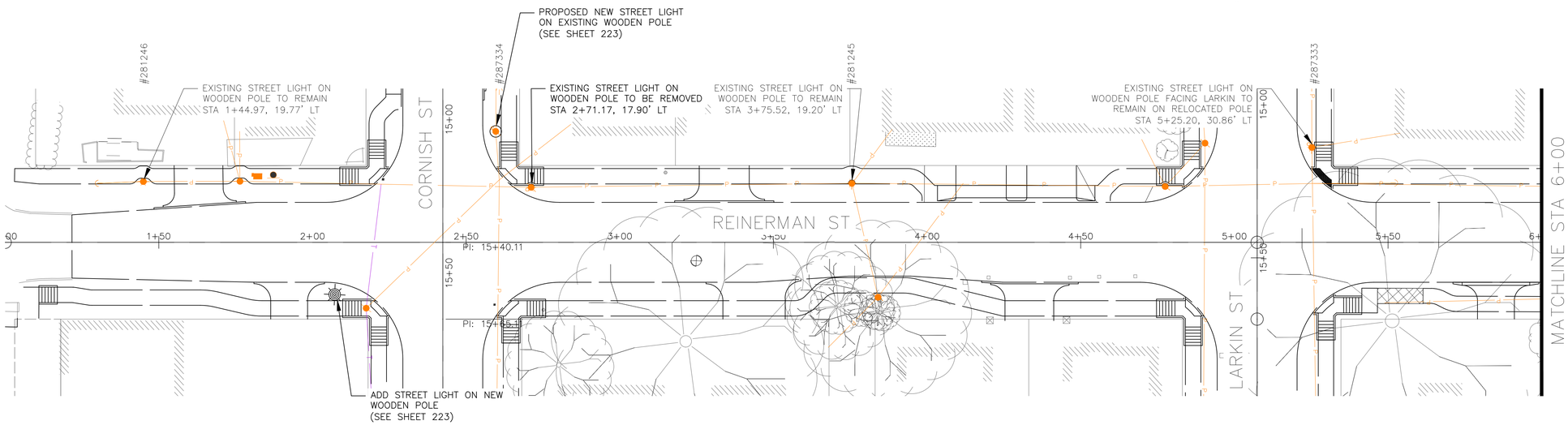

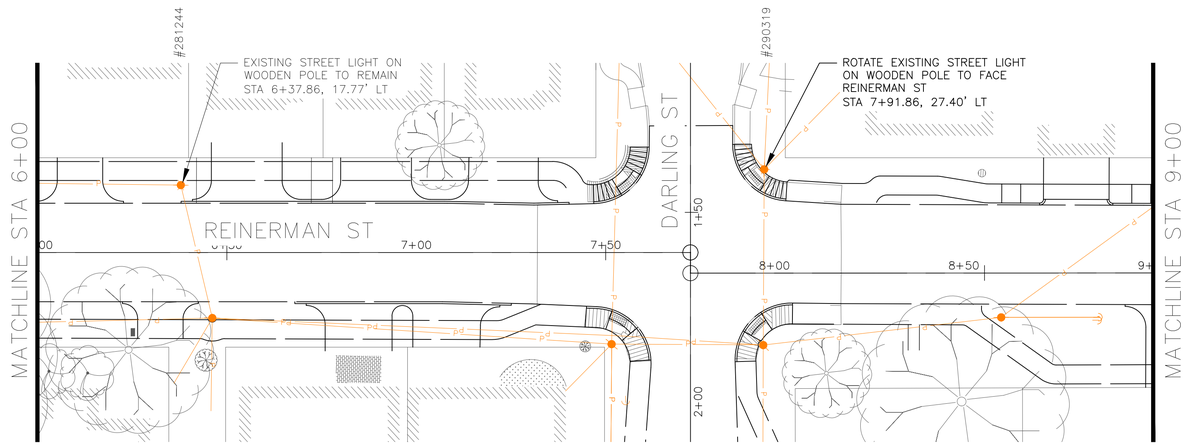

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FB NO. P-6133

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED
PROFESSIONAL ENGINEER
3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
REINERMAN ST
STA 1+00 TO 9+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 228 OF 345	

CivilTech Engineering, Inc.
O:\2018\2018013\Data Collection\Design\10-7-2025 Street Lights Plan\STREET LIGHTS PLANS.dwg Mar 13, 2026

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REV	DESCRIPTION	BY	DATE

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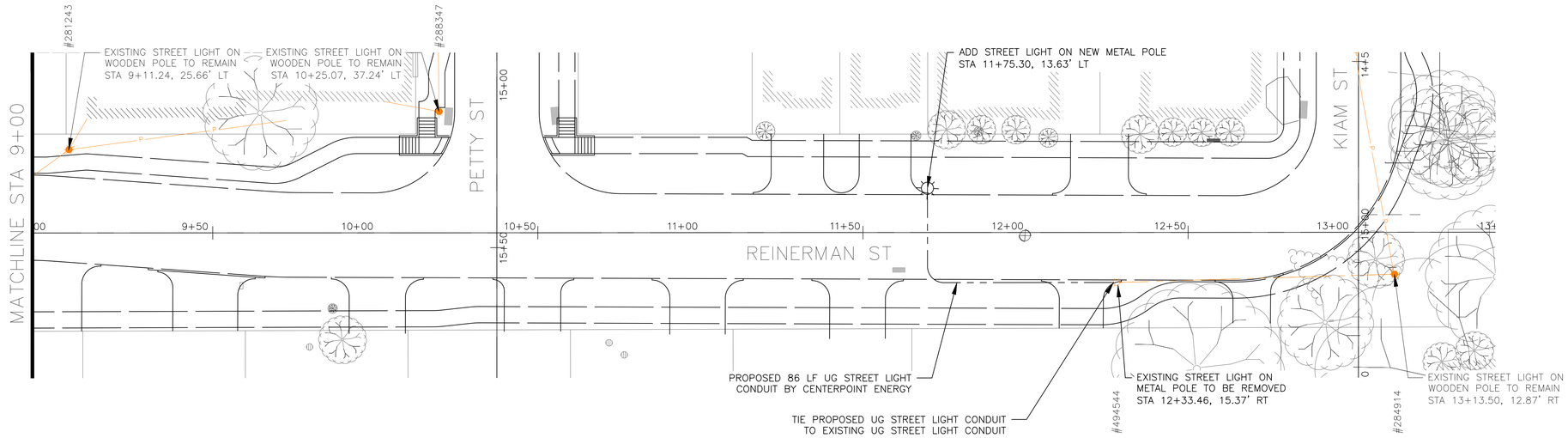
SCALE IN FEET
FULL SIZE: H. 1"=20', V. 1"=2'
HALF SIZE: H. 1"=40', V. 1"=4'



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FB NO. P-6133

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED PROFESSIONAL ENGINEER
3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
REINERMAN ST
STA 9+00 TO 13+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 229 OF 345	

CivilTech Engineering, Inc.
O:\2018\2018003\03 Design\03 Construction Version\10-7-2025 Street Lights Plan\STREET LIGHTS PLANS.dwg Apr 01, 2026

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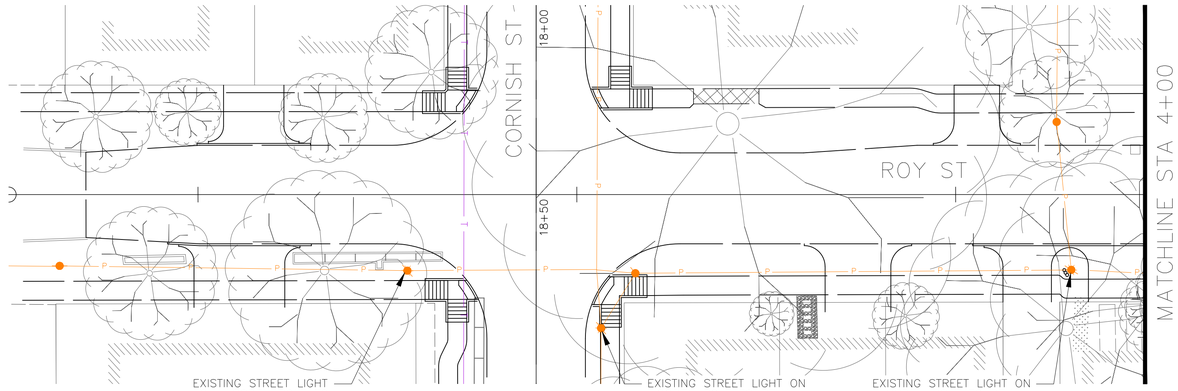
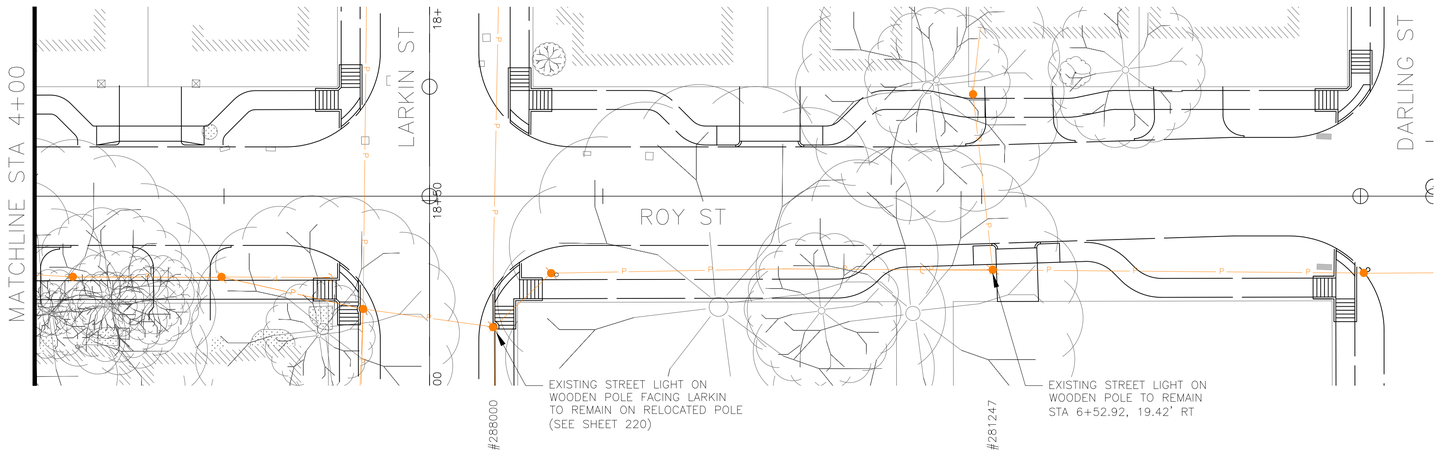
REV	DESCRIPTION	BY	DATE

20 0 10 20
SCALE IN FEET
FULL SIZE: H. 1"=20', V. 1"=2'
HALF SIZE: H. 1"=40', V. 1"=4'





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3/10/2026

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
ROY ST
STA 1+00 TO 7+69

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 230 OF 345	

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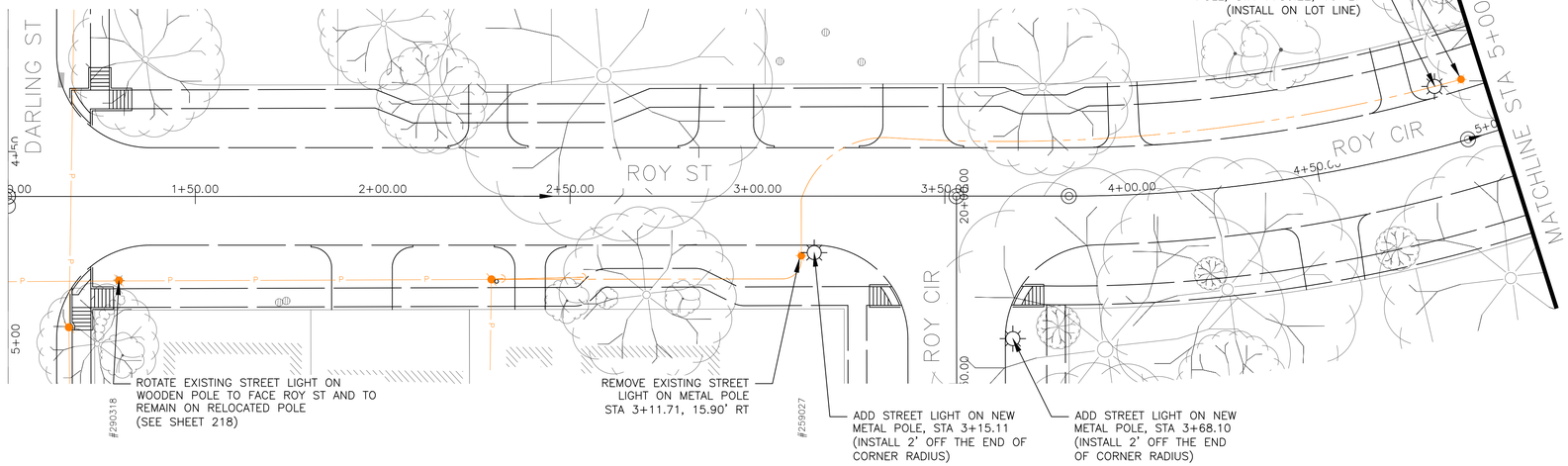
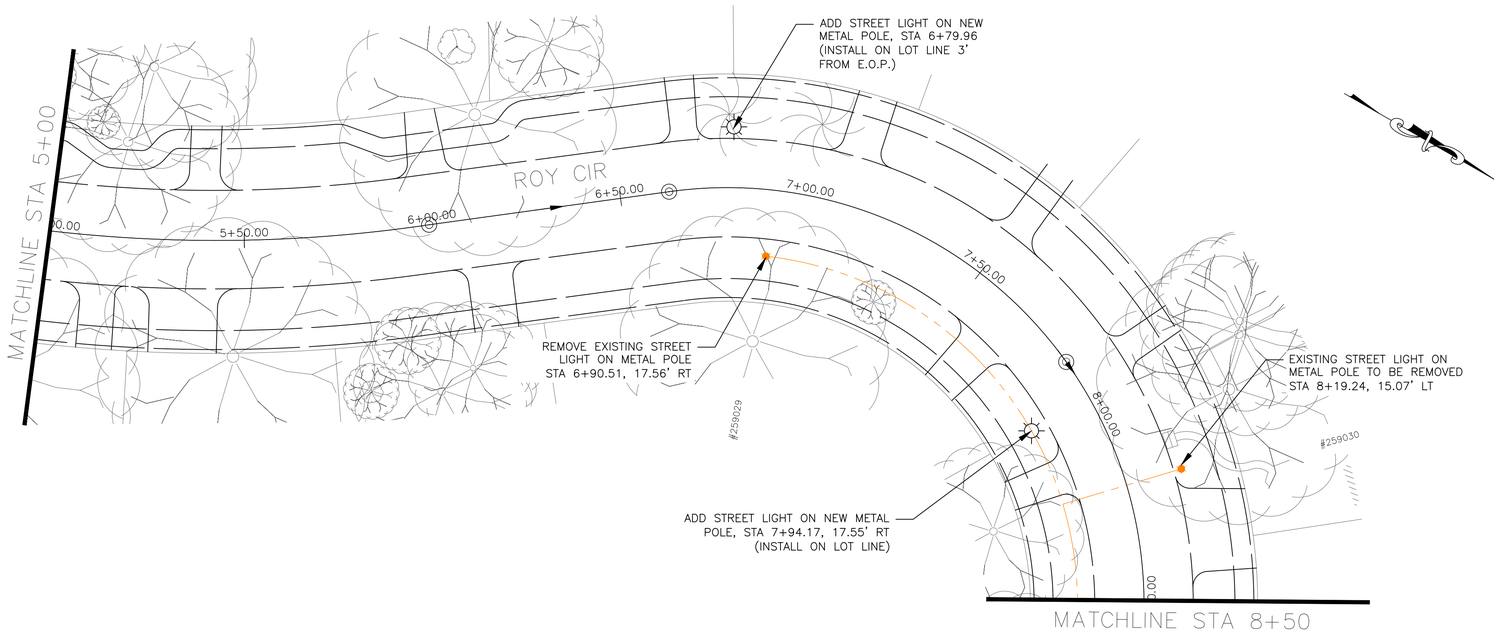
G:\2018\180013 Data Collection\Arman\10-7-2025 Street Lights Plan\STREET LIGHTS PLANS.dwg Mar 13, 2026

REV	DESCRIPTION	BY	DATE





LEGENDS:

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#XXXXXX CENTERPOINT POWER POLE IDENTIFICATION NUMBER

SCALE IN FEET
20 0 10 20
FULL SIZE: H. 1"=20', V. 1"=2'
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CITY OF HOUSTON

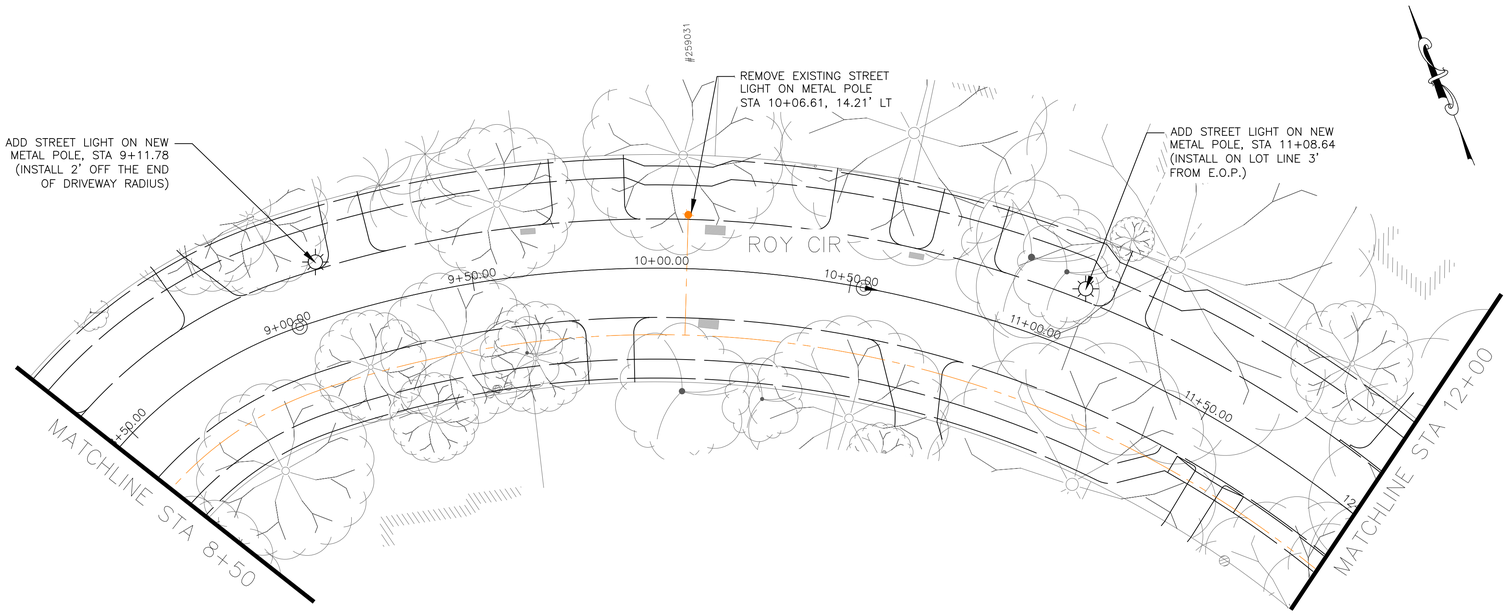
HOUSTON PUBLIC WORKS

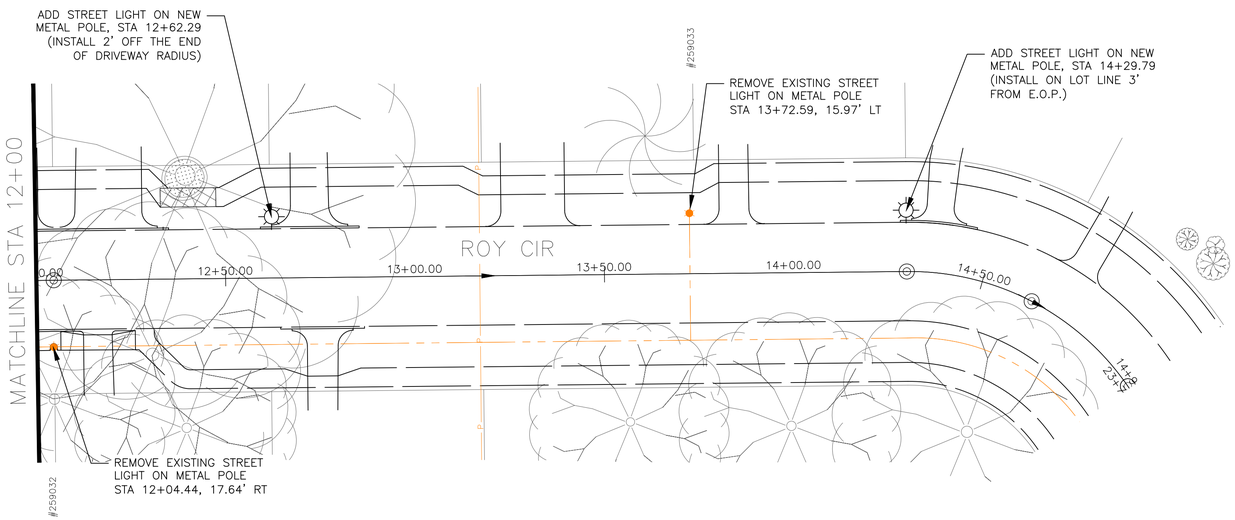
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
ROY CIR
STA 1+00 TO 8+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 231 OF 345	

CivilTech Engineering, Inc.
O:\2018\438010\Data Collection\Atmos\10-7-2025 Street Lights Plan\STREET LIGHTS PLANS.dwg Apr 01, 2026





REV	DESCRIPTION	BY	DATE

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5. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPOSED STREET LIGHT CONDUIT TO BE RUN AND STAKING OF LIGHTS TO BE DONE. CENTERPOINT WILL INSTALL AS STAKED.

THESE PLANS MAY NOT ACCURATELY REPRESENT EXISTING CONDITIONS. CONTRACTOR SHALL CLOSELY COORDINATE WITH CENTERPOINT ELECTRIC FOR PLACEMENT OF NEW STREET LIGHT FIXTURES.

NOTES FOR METAL POLES:

1. ALL LIGHTS ARE TO BE 45W SLS ON 30' EMBEDDED METAL POLES PLACED 3-4' FROM BOC.
2. ALL EXISTING METAL POLES ARE TO BE REMOVED PRIOR TO CONSTRUCTION AND NEW LIGHTS ADDED AFTER COMPLETION.
3. CONDUIT IS TO BE INSTALLED AND POLE LOCATIONS STAKED BY THE CONTRACTOR.
4. CONDUIT DESIGN IS TO BE DONE BY CENTERPOINT AND TRANSPOSED ONTO DRAWING BY EOR.

WOOLPERT
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11750 Katy Freeway, Suite 1260
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YOUSEF U. HUSAIN
107412
LICENSED
PROFESSIONAL ENGINEER
3/10/2026

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
ROY CIR
STA 8+50 TO 14+98

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 232 OF 345	

CivilTech Engineering, Inc.
O:\2018\18801\Data Collection\Admin\10-7-2025 Street Lights Plan\STREET LIGHTS PLANS.dwg Apr 01, 2026

REV	DESCRIPTION	BY	DATE

NOTES:

1. REFER TO CENTERPOINT ENERGY SPECIFICATION NO. 007-371-08 REV. 7/25/07 FOR ADDITIONAL INFORMATION.
2. ANY POLE, NOT CALLED OUT BUT FOUND TO BE IN CONFLICT DURING CONSTRUCTION, CONTRACTOR SHALL BRING TO THE ATTENTION OF THE COH STREETLIGHTING DEPARTMENT FOR COORDINATION WITH CENTERPOINT.
3. CONDUIT/PULL BOX LAYOUT WILL BE DETERMINED BY CENTERPOINT ENERGY.
4. CONTACT ENGINEER PRIOR TO RELOCATION OF ANY POLES WITH SIGNAL ELEMENTS OR TRAFFIC CONTROL ELEMENTS ON THEM.
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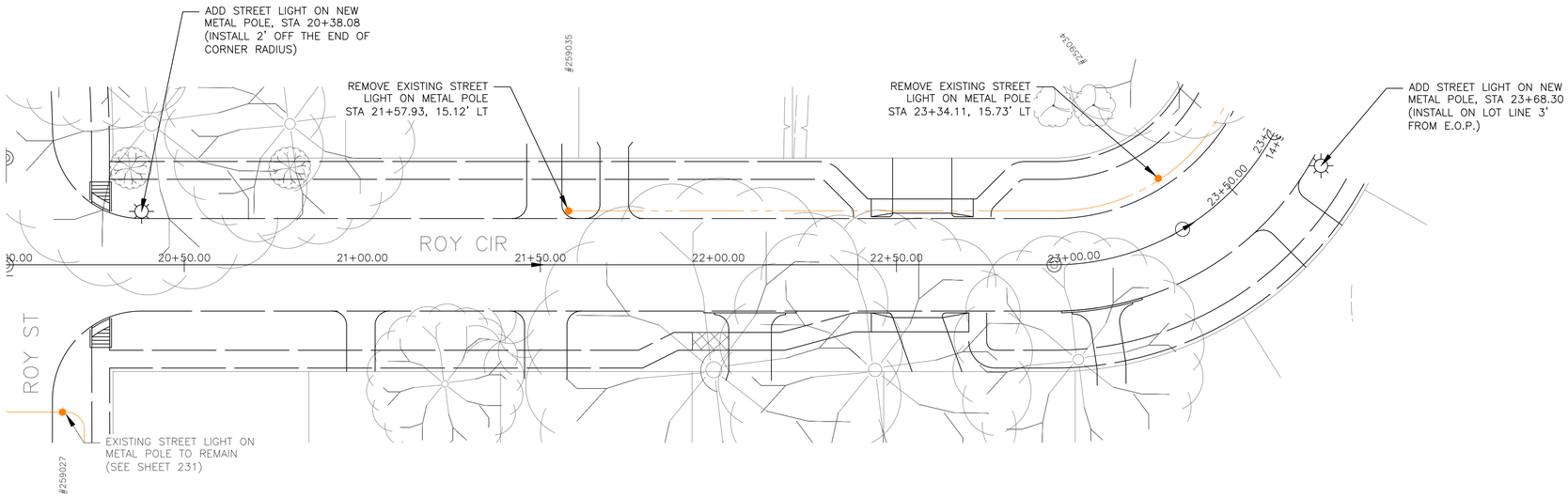
THESE PLANS MAY NOT ACCURATELY REPRESENT EXISTING CONDITIONS. CONTRACTOR SHALL CLOSELY COORDINATE WITH CENTERPOINT ELECTRIC FOR PLACEMENT OF NEW STREET LIGHT FIXTURES.

LEGENDS:

- EXISTING WOODEN POLE
- EXISTING STREET LIGHT ON WOODEN POLE TO REMAIN
- EXISTING STREET LIGHT ON METAL POLE TO REMAIN
- EXISTING STREET LIGHT ON EXISTING WOODEN POLE TO BE REMOVED
- PROPOSED NEW WOODEN POLE
- PROPOSED NEW STREET LIGHT ON EXISTING WOODEN POLE
- ADD STREET LIGHT ON NEW WOODEN POLE
- ADD STREET LIGHT ON NEW METAL POLE
- EXISTING COMMUNICATION POLE (TO REMAIN/RELOCATE BY OTHERS)
- #XXXXXX CENTERPOINT POWER POLE IDENTIFICATION NUMBER

20 0 10 20
SCALE IN FEET
FULL SIZE: H. 1"=20', V. 1"=2'
HALF SIZE: H. 1"=40', V. 1"=4'



NOTES FOR METAL POLES:

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
ROY CIR
STA 20+00 TO 23+70

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 233 OF 345	

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NOTES:

1. REFER TO CENTERPOINT ENERGY SPECIFICATION NO. 007-371-08 REV. 7/25/07 FOR ADDITIONAL INFORMATION.

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- EXISTING STREET LIGHT ON METAL POLE TO REMAIN
- EXISTING STREET LIGHT ON EXISTING WOODEN POLE TO BE REMOVED
- PROPOSED NEW WOODEN POLE
- PROPOSED NEW STREET LIGHT ON EXISTING WOODEN POLE
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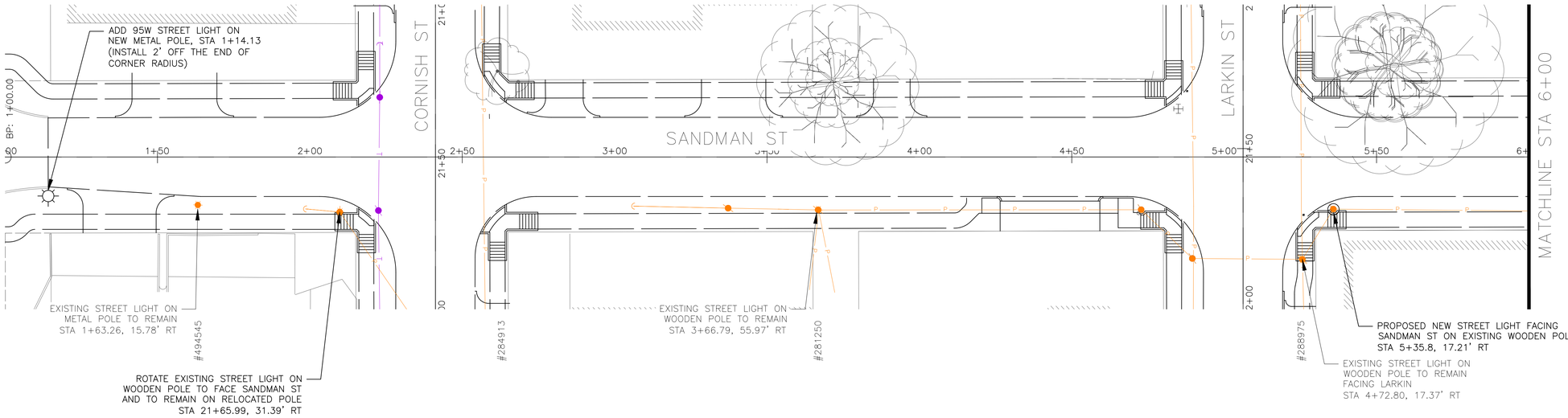
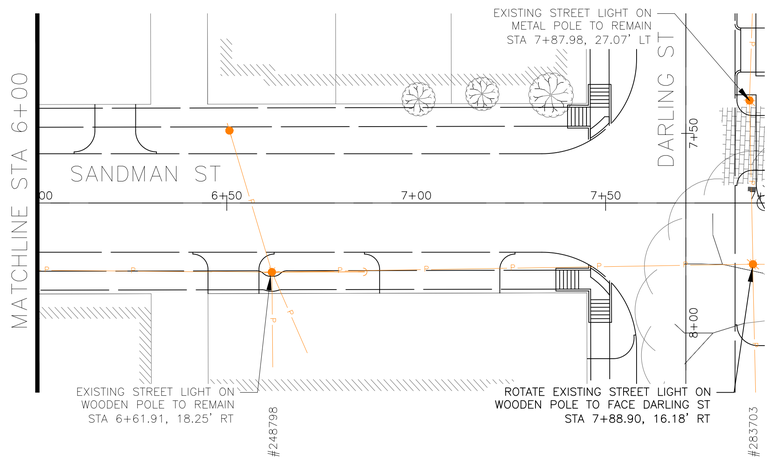
#XXXXXX CENTERPOINT POWER POLE IDENTIFICATION NUMBER

REV	DESCRIPTION	BY	DATE

20 0 10 20
SCALE IN FEET
FULL SIZE: H. 1"=20', V. 1"=2'
HALF SIZE: H. 1"=40', V. 1"=4'





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PROFESSIONAL ENGINEER
3/10/2026

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FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

STREET LIGHTING PLAN
SANDMAN ST
STA 1+00 TO 7+92

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
V: 1"=2' H: 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 234 OF 345	

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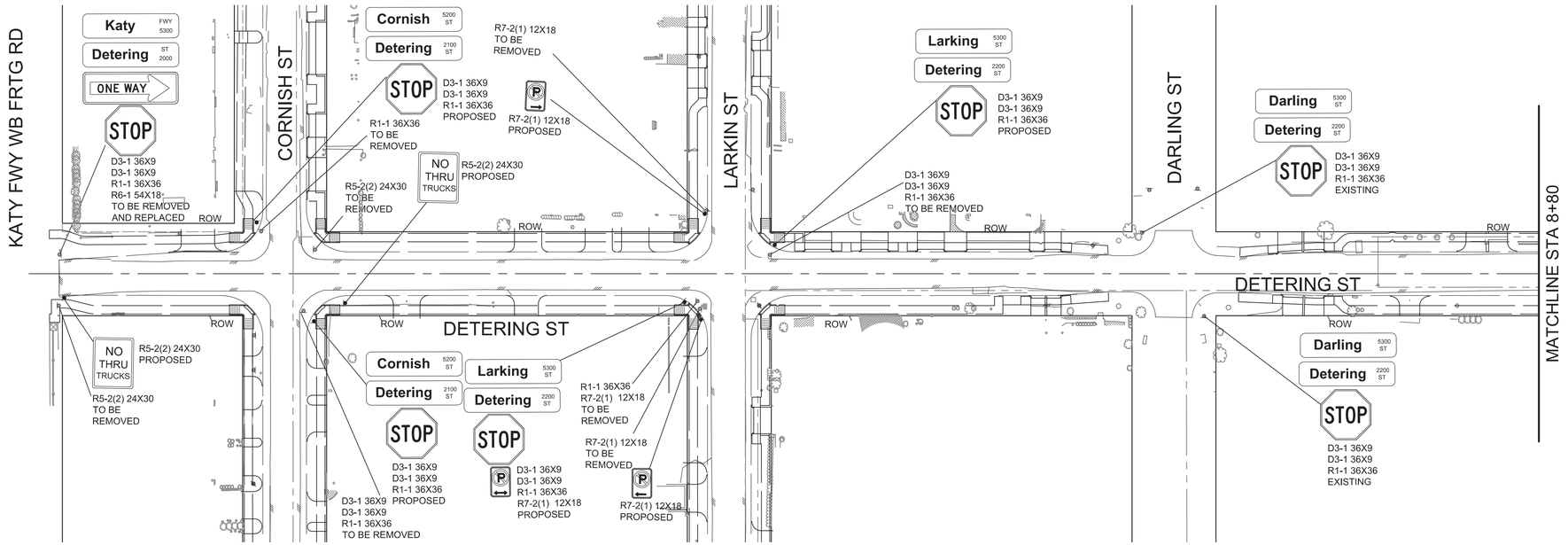

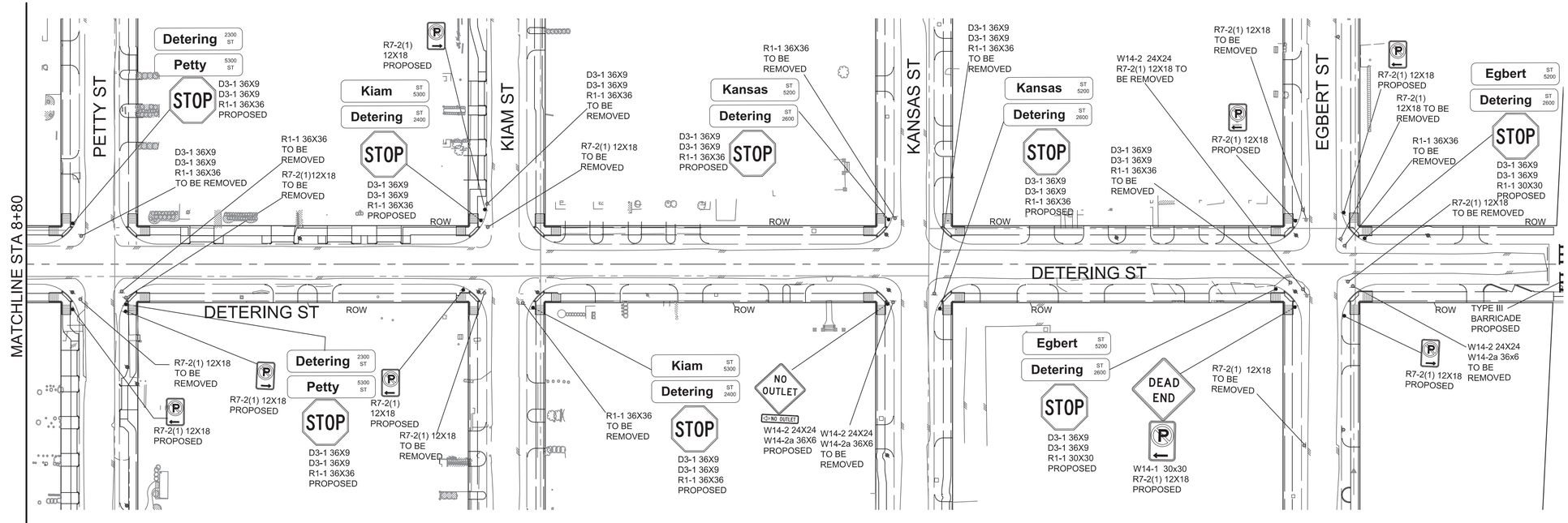

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RAGHU K. VETURI
116330
LICENSED
PROFESSIONAL ENGINEER
DATE: 12/17/24

SURVEYED BY:KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

DETERING STREET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 235 of 345	

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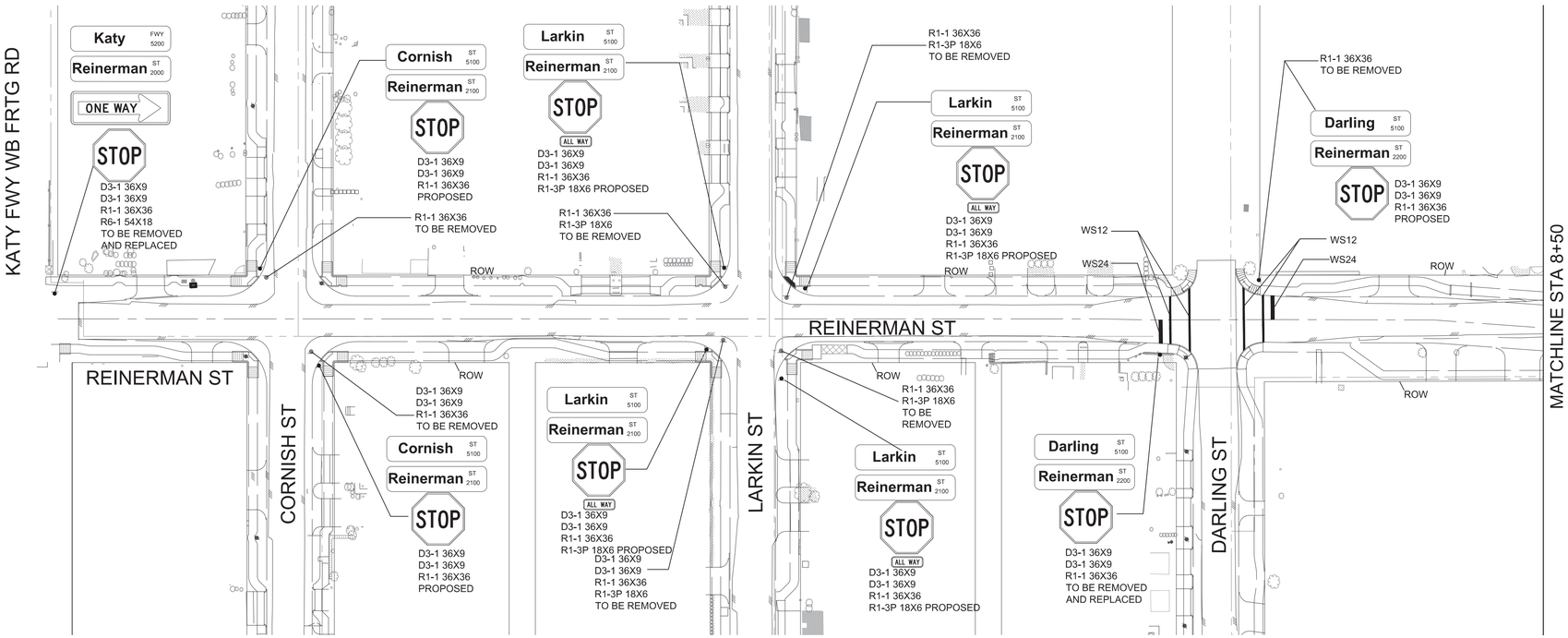

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CITY OF HOUSTON

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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

REINERMAN STREET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 236 of 345	

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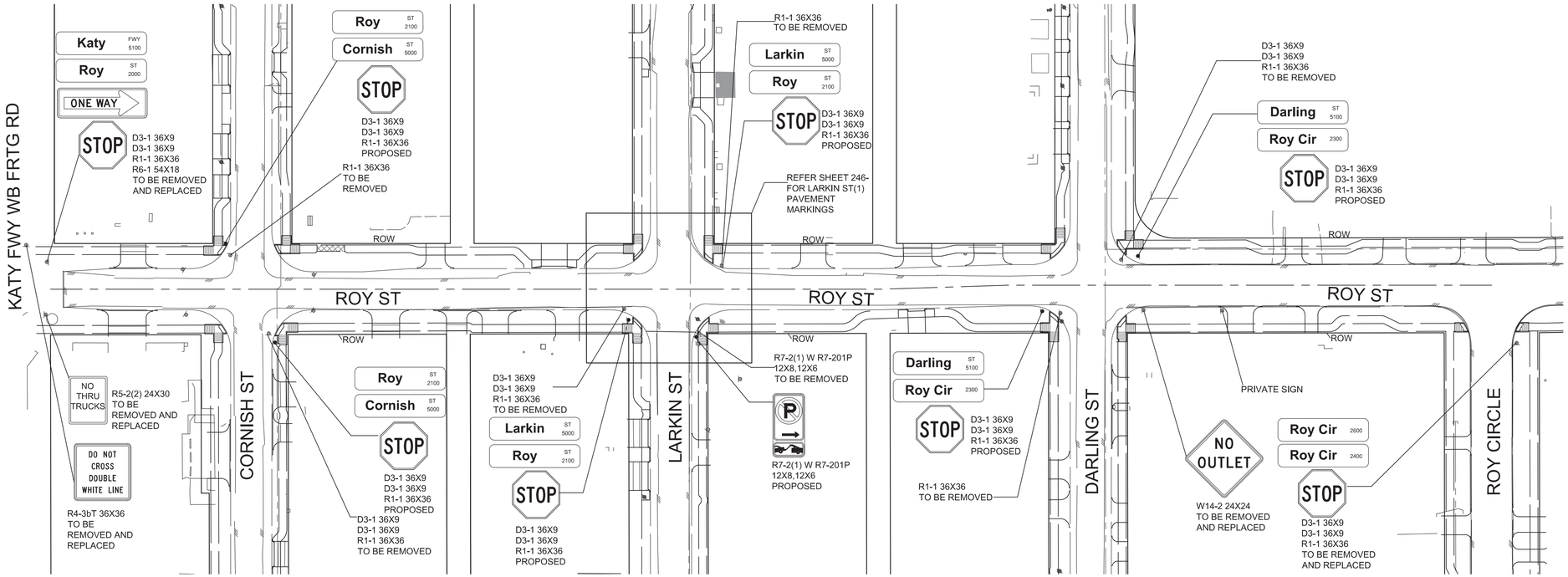

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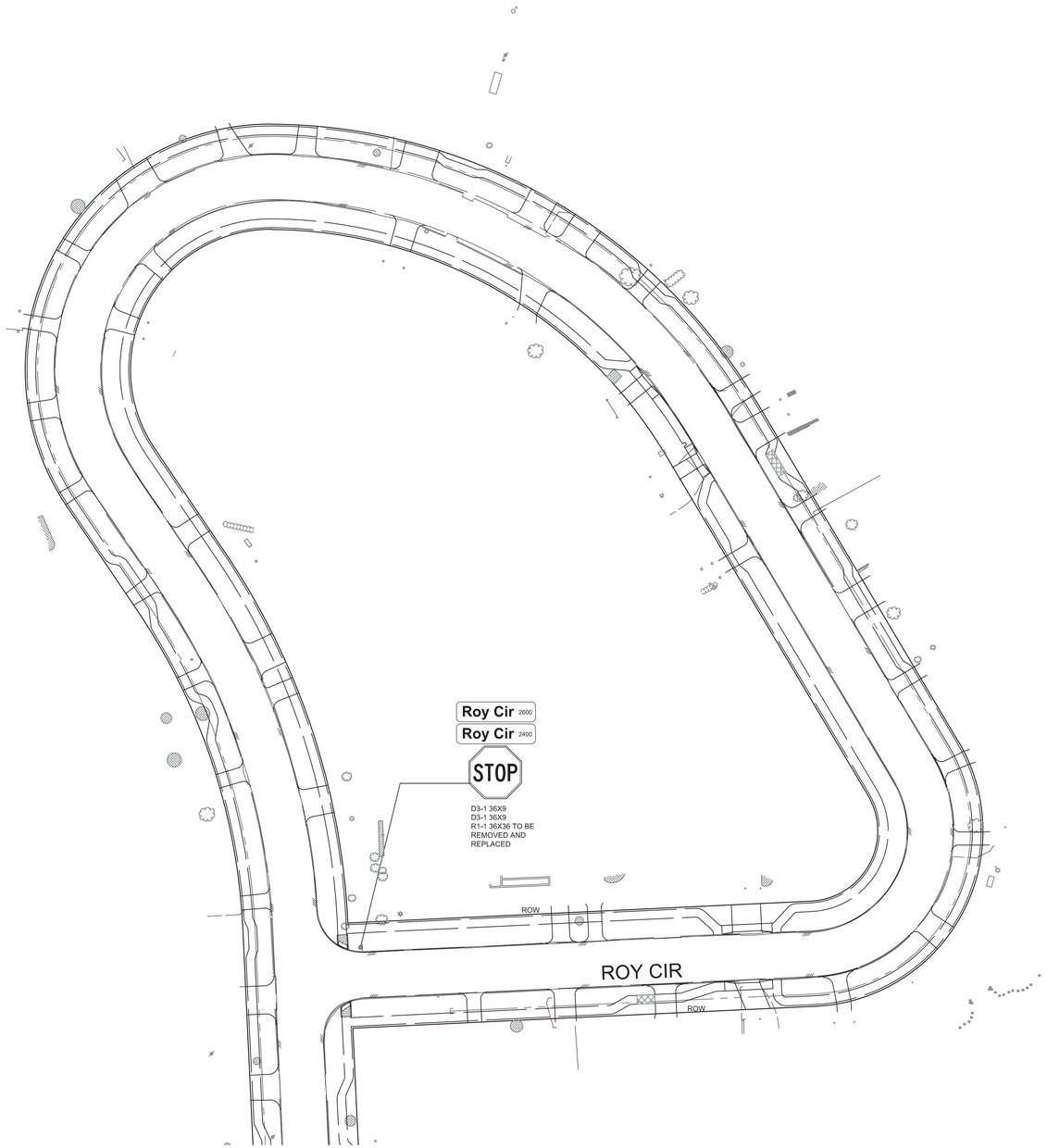
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

ROY STREET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 237 of 345	



0 40' 80'

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(SPM)

EXISTING SIGN

PROPOSED SIGN

WOOLPERT
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PROFESSIONAL ENGINEER

DATE: 12/17/24

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

ROY CIRCLE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No.238 of 345	

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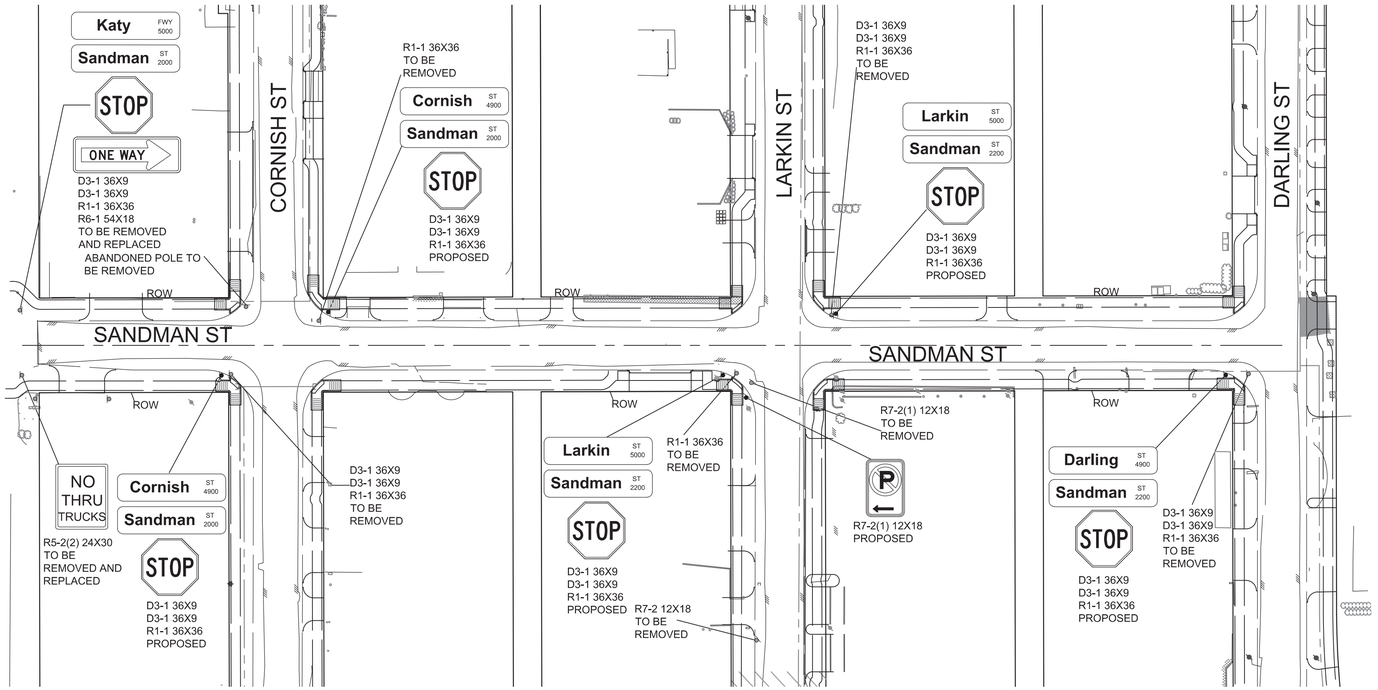



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(SPM)

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CITY OF HOUSTON

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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

SANDMAN STREET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 239 of 345	

GUNDA CORPORATION
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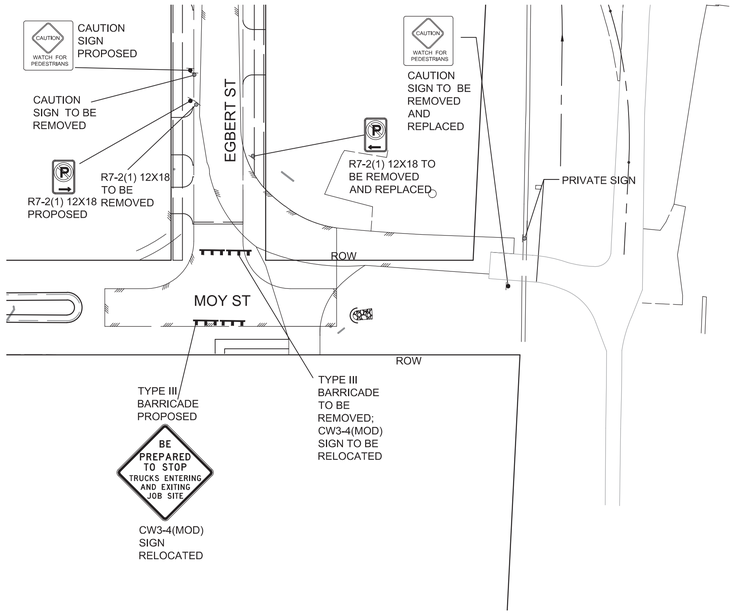



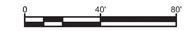

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(SPM)

EXISTING SIGN

PROPOSED SIGN

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P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\19.SPM MOY.dwg Dec 17, 2024 - 4:29pm PRamasamy

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

MOY STREET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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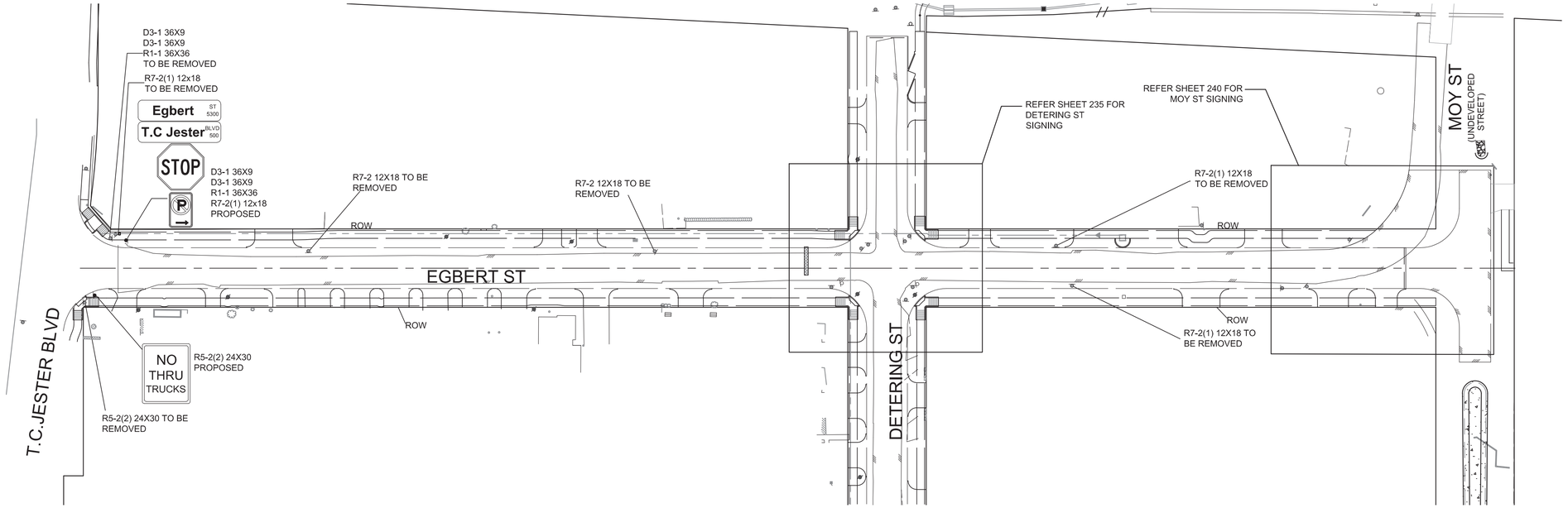
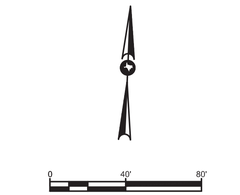
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No.240 of 345	





NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(SPM)

EXISTING SIGN

PROPOSED SIGN

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P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\20.SPM EGBERT.dwg Dec 17, 2024-4:27pm PRamasamy

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CITY OF HOUSTON
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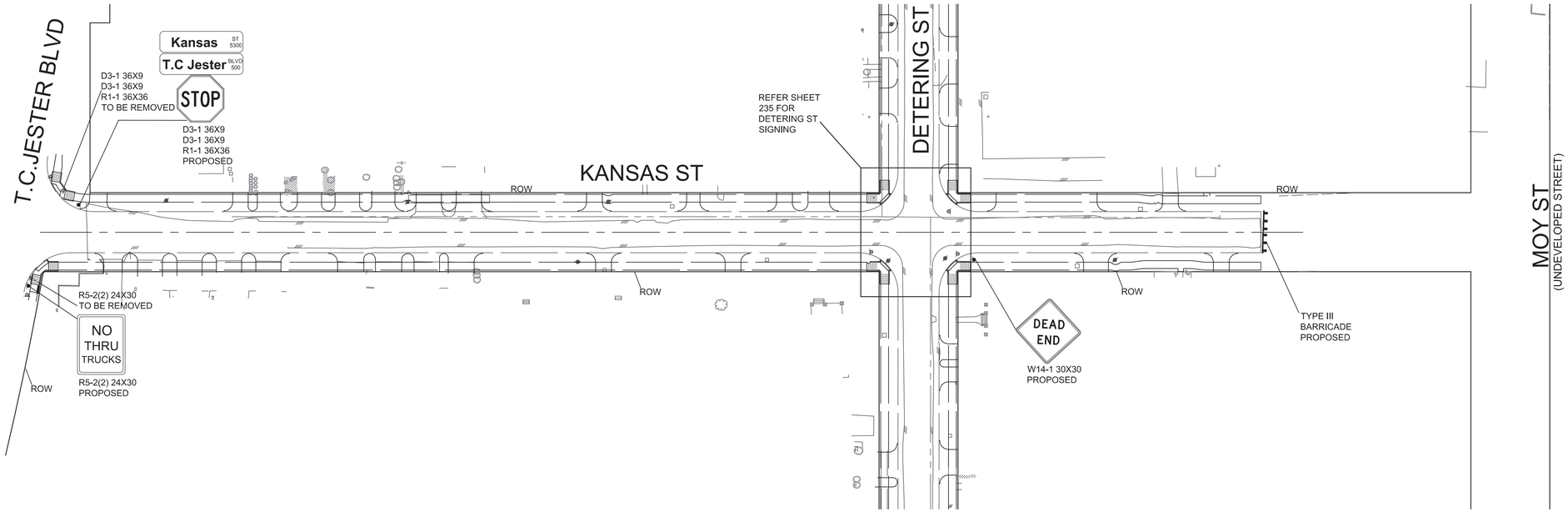
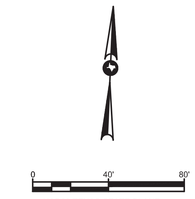
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS
EGBERT STREET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 241 of 345	





LEGEND
(SPM)

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DATE: 12/17/24

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DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

KANSAS STREET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 242 of 345	

GUNDA CORPORATION
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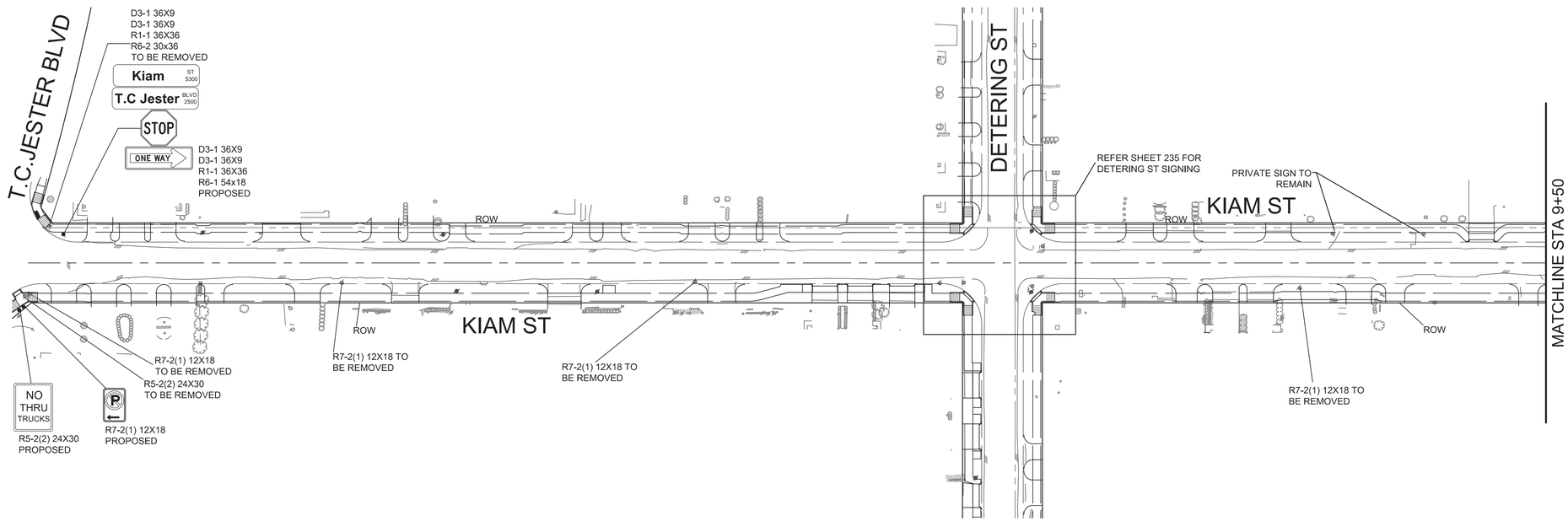

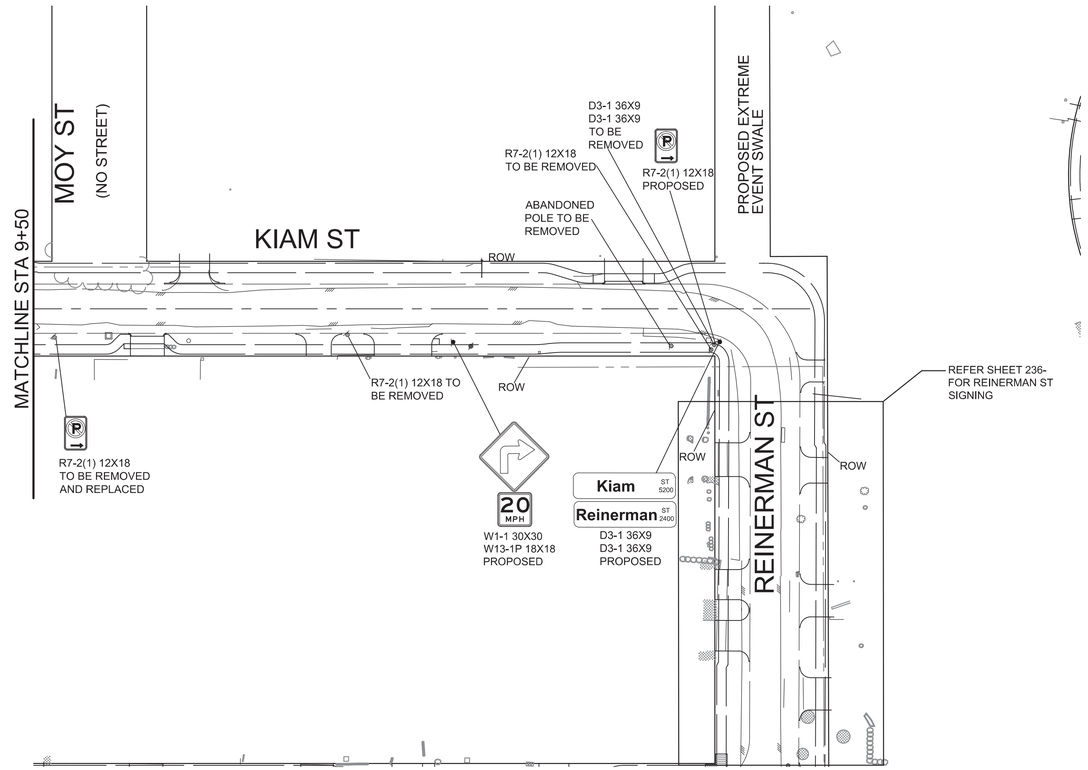

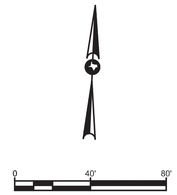

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(SPM)

EXISTING SIGN

PROPOSED SIGN

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

GUNDA CORPORATION
Engineers, Planners & Managers
17150 Katy Fwy, Suite 300
Houston, Texas 77094
713.541.3530 - www.gundacorp.com
TBPE Registration Number: F-3531

100% SUBMITTAL

STATE OF TEXAS
RAGHU K. VETURI
116330
LICENSED
PROFESSIONAL ENGINEER

DATE: 12/17/24

SURVEYED BY:KUO & ASSOC.

FB NO. P-6133

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

KIAM STREET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 243 of 345	

GUNDA CORPORATION
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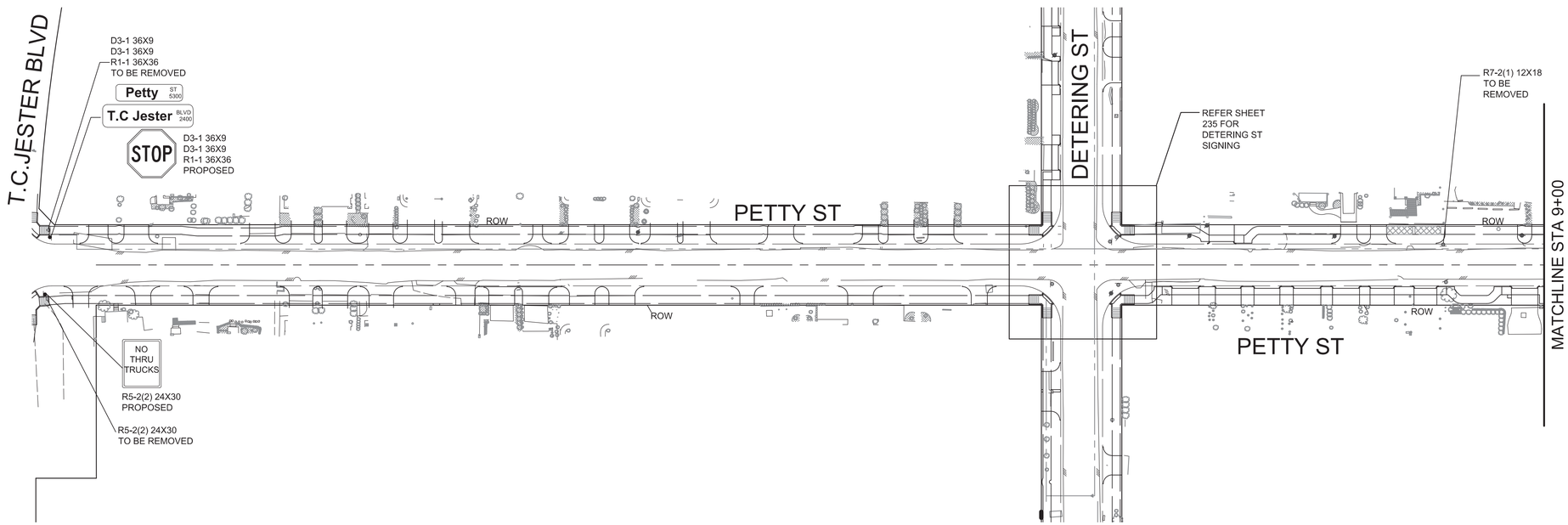

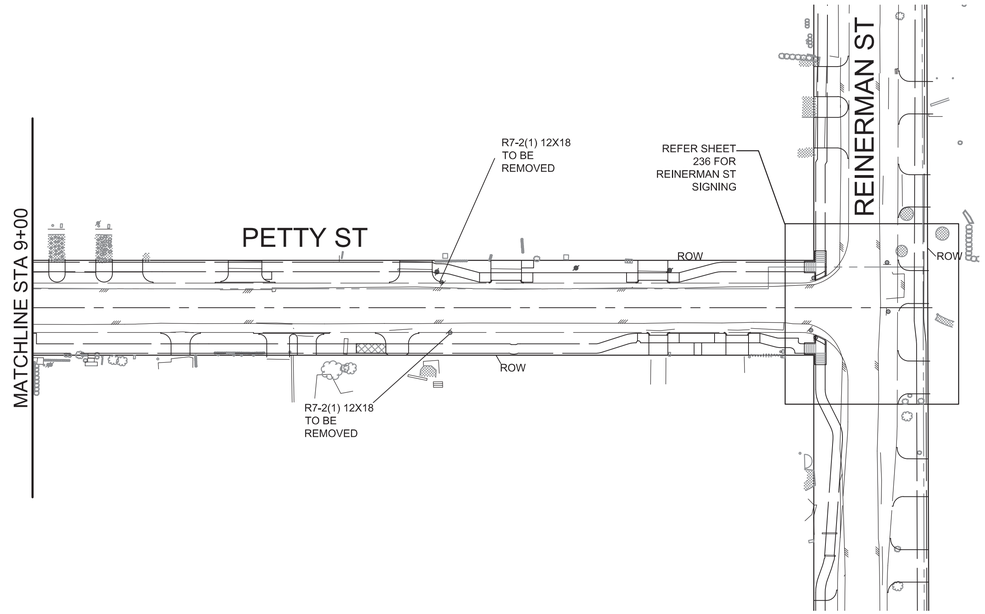

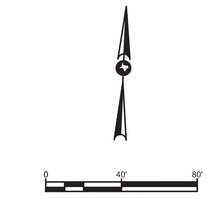

LEGEND
(SPM)

EXISTING SIGN

PROPOSED SIGN

GUNDA CORPORATION
P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\23.SPM PETTY.dwg Dec 17, 2024 - 4:29pm PRamasamy

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TBPE Registration Number: F-3531

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STATE OF TEXAS
RAGHU K. VETURI
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DATE: 12/17/24

SURVEYED BY:KUO & ASSOC.

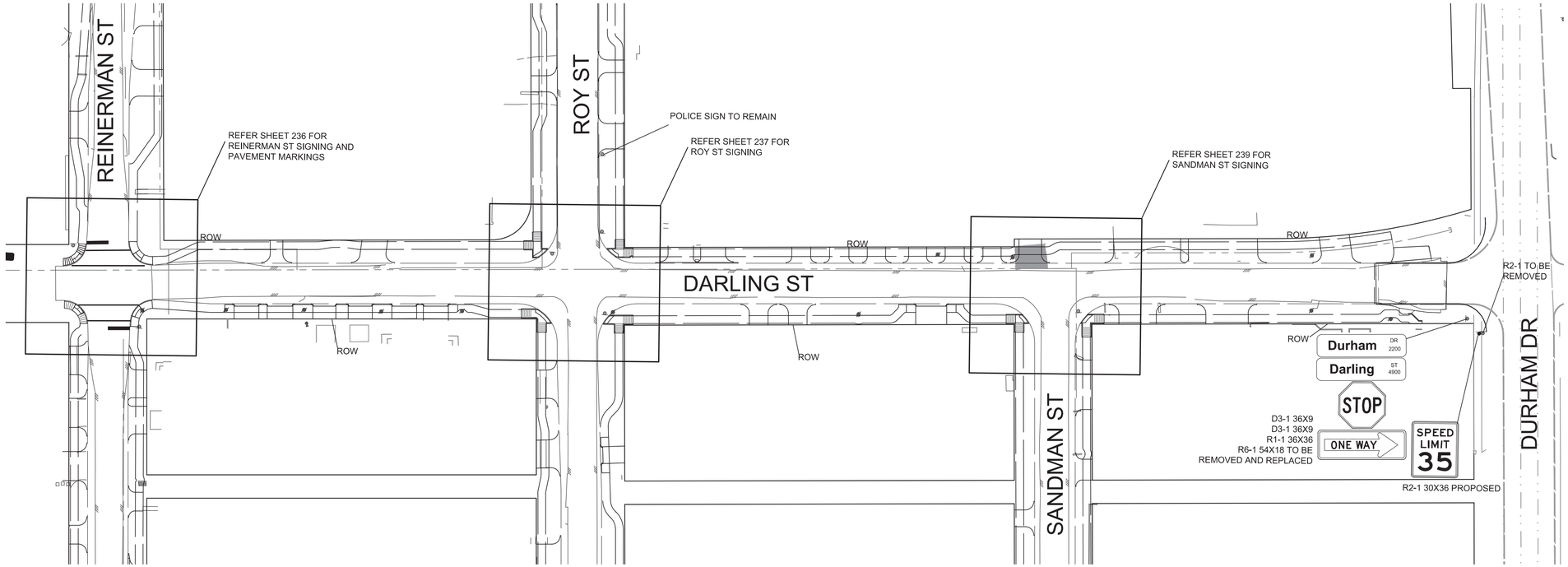
FB NO. P-6133

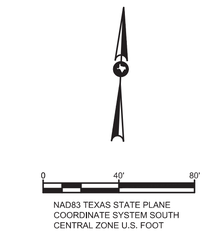
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

PETTY STREET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No.244 of 345	





GUNDA CORPORATION
P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\24.SPM DARLING.dwg Dec 17, 2024-4:29pm PRamasamy

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TBPE Registration Number:F-3531

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STATE OF TEXAS
RAGHU K. VETURI
116330
LICENSED
PROFESSIONAL ENGINEER

DATE: 12/17/24

SURVEYED BY:KUO & ASSOC.

FB NO. P-6133

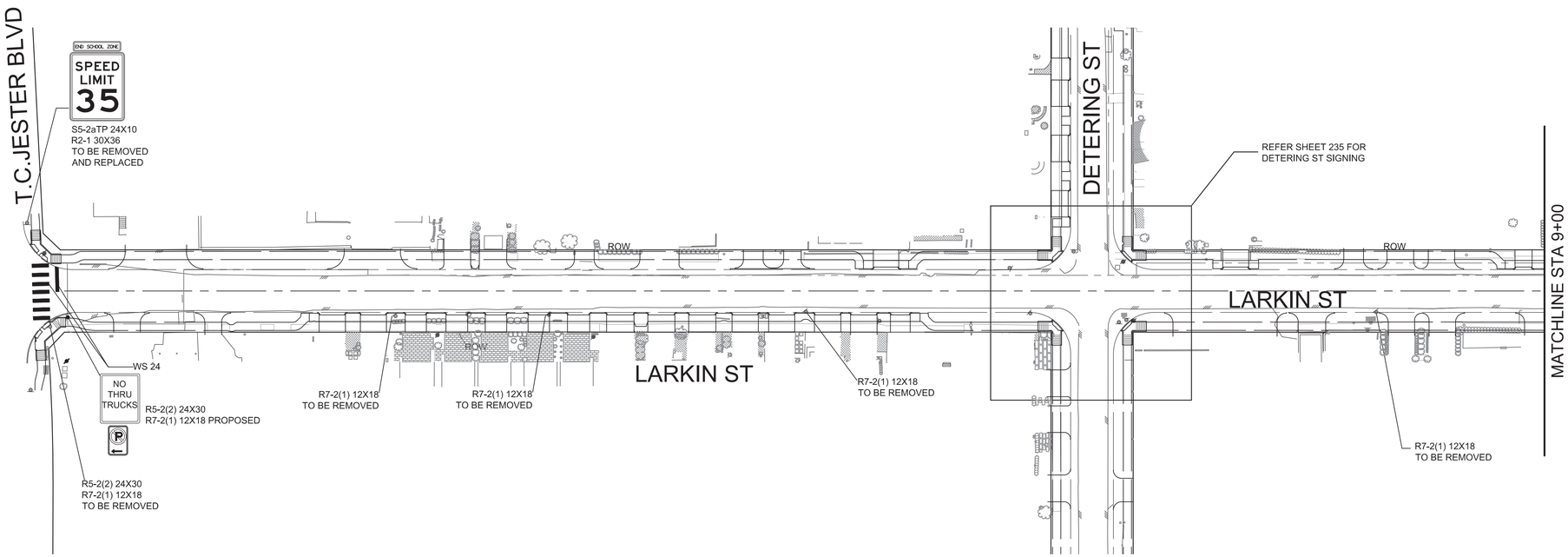
CITY OF HOUSTON

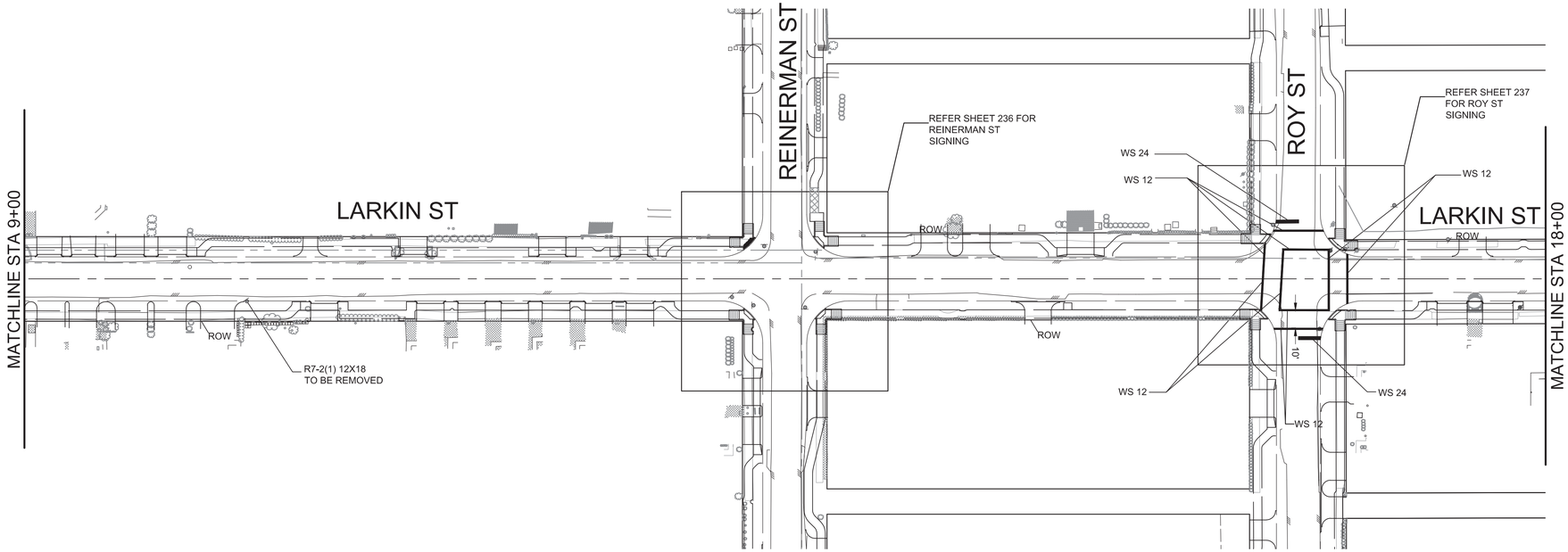
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

DARLING STREET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No.245 of 345	







NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(SPM)

EXISTING SIGN

PROPOSED SIGN

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
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STATE OF TEXAS
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SURVEYED BY:KUO & ASSOC.

FB NO. P-6133

DATE: 12/17/24

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

LARKIN STREET(1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No.246 of 345	

GUNDA CORPORATION
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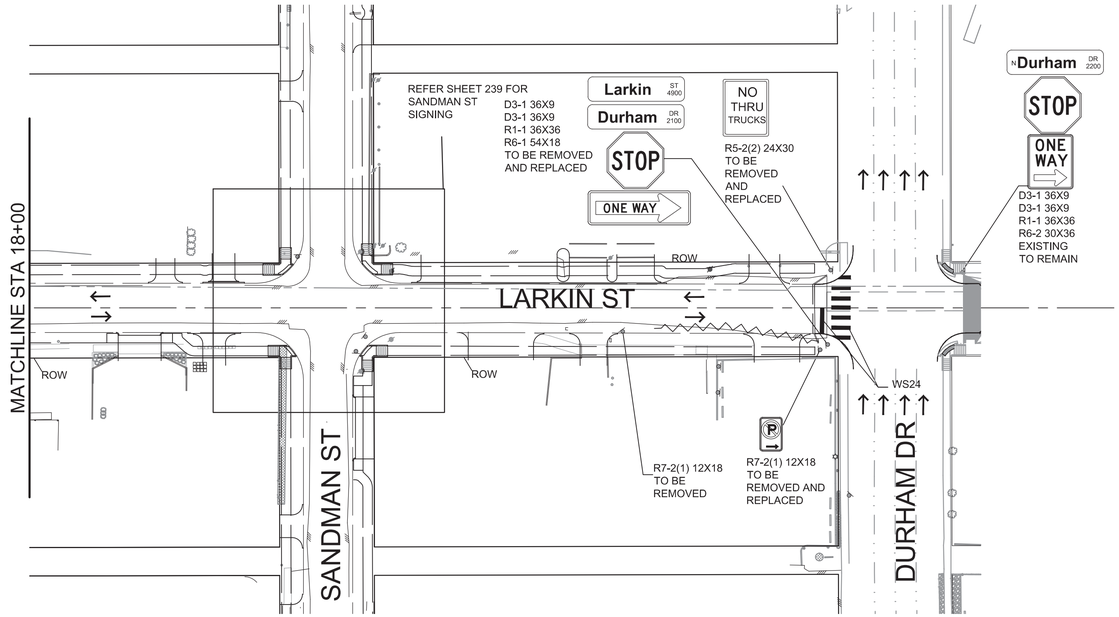

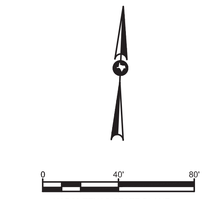

LEGEND
(SPM)

EXISTING SIGN

PROPOSED SIGN

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
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Engineers, Planners & Managers
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TBPE Registration Number F-3531

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STATE OF TEXAS
RAGHU K. VETURI
116330
LICENSED
PROFESSIONAL ENGINEER

DATE: 12/17/24

SURVEYED BY:KUO & ASSOC.

FB NO. P-6133

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

LARKIN STREET(2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No.247 of 345	

GUNDA CORPORATION
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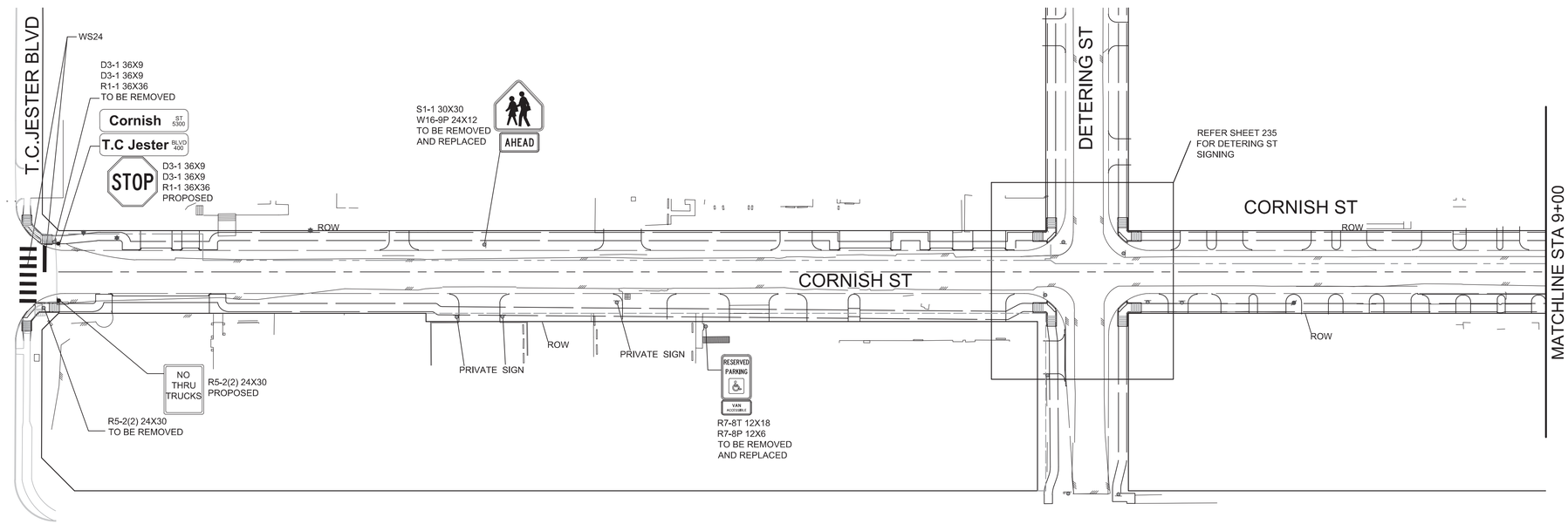

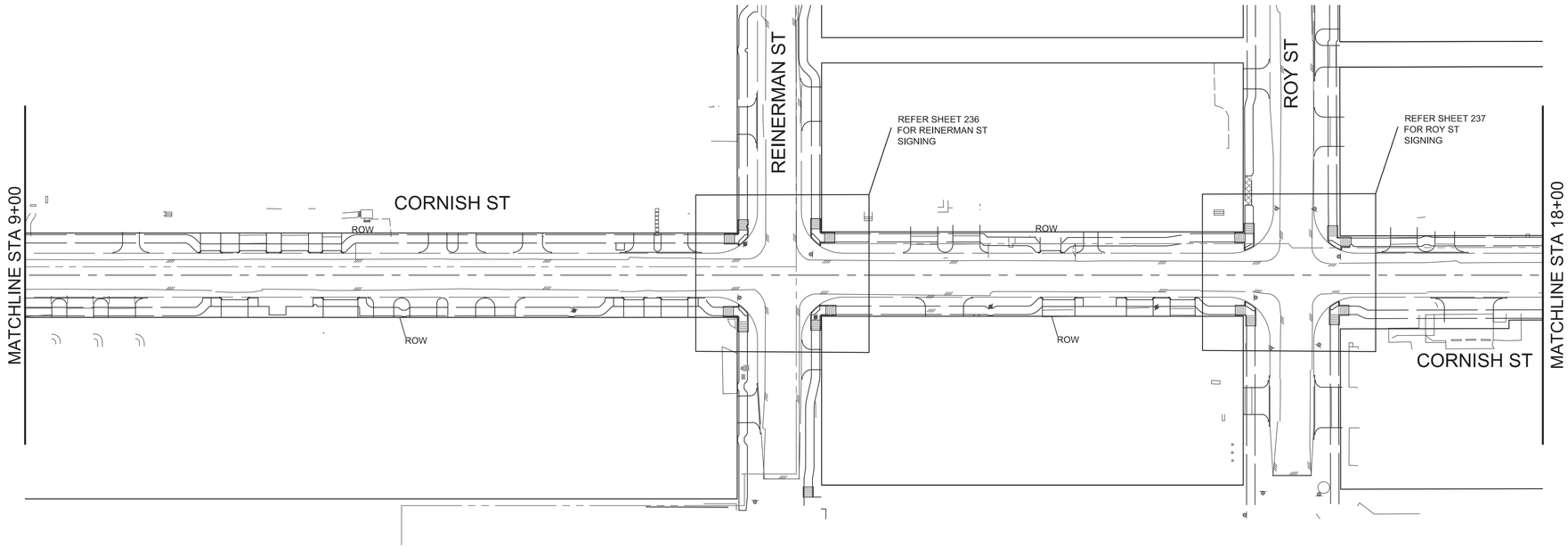



LEGEND
(SPM)

- EXISTING SIGN
- PROPOSED SIGN

WOOLPERT
11750 Katy Freeway, Suite 1260
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GUNDA CORPORATION
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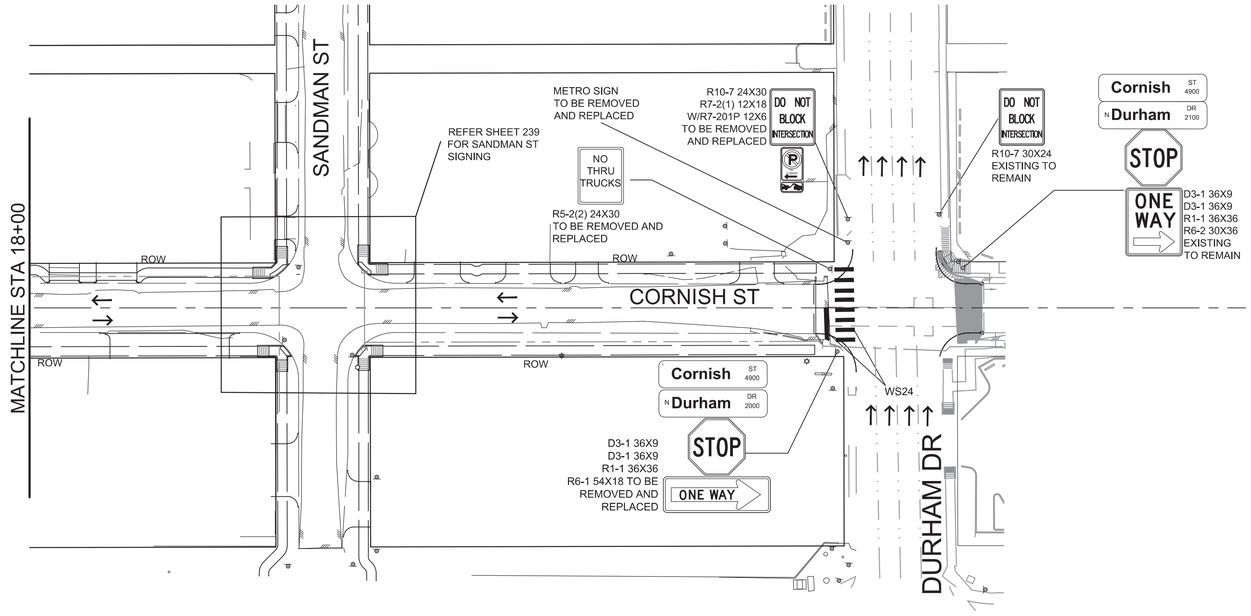
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

CORNISH STREET(1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No.248 of 345	

GUNDA CORPORATION
P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\26.SPM CORNISH.dwg Dec 17, 2024-4:28pm PRamasamy





LEGEND

(SPM)

EXISTING SIGN

PROPOSED SIGN

WOOLPERT
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

GUNDA CORPORATION
Engineers, Planners & Managers
11750 Katy Fwy, Suite 300
Houston, Texas 77079
713.541.3530 www.gundacorp.com
TBPE Registration Number P-3531

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STATE OF TEXAS
RAGHU K. VETURI
116330
LICENSED
PROFESSIONAL ENGINEER

DATE: 12/17/24

SURVEYED BY:KUO & ASSOC.

FB NO. P-6133

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

CORNISH STREET(2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1" 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 249 of 345	

GUNDA CORPORATION
P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\26.SPM CORNISH.dwg Dec 17, 2024 - 4:32pm PRamasamy

SUMMARY OF SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN TEXT	DIMENSIONS	SQUARE POST	SIGNAL MOUNT	ROUND POST (SIGNAL MOUNT ASSEMBLY NOT REQUIRED)	NO. OF POSTS (1 OR 2)	SIGN AREA SQ.FT (FOR INFORMATION ONLY, NOT INTENDED FOR BID)	SIGN POST SIZE (TABLE A)
235	01	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	02	D3-1	Street Name	36X9 Back to Back					1.500	
235	03	R1-1	STOP	36X36 Back to Back					9	
235	04	R6-1	One Way (Long)	54X18					6.750	
235	05	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	06	D3-1	Street Name	36X9 Back to Back					1.500	
235	07	R1-1	STOP	36X36					9	
235	08	R5-2(2)	No Thru Trucks	24X30	1			1	5	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	09	R5-2(2)	No Thru Trucks	24X30	1			1	5	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	10	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	11	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	12	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	13	D3-1	Street Name	36X9 Back to Back					1.500	
235	14	R1-1	STOP	36X36					9	
235	15	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	16	D3-1	Street Name	36X9 Back to Back					1.500	
235	17	R1-1	STOP	36X36 Back to Back					9	
235	18	R7-2(1)	Parking Restriction (Arrow)	12X18					1.500	
235	19	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	20	D3-1	Street Name	36X9 Back to Back					1.500	
235	21	R1-1	STOP	36X36					9	
235	22	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	23	D3-1	Street Name	36X9 Back to Back					1.500	
235	24	R1-1	STOP	36X36					9	
235	25	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	26	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	27	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	28	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	29	D3-1	Street Name	36X9 Back to Back					1.500	
235	30	R1-1	STOP	36X36					9	
235	31	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	32	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	33	R1-1	Street Name	36X9 Back to Back					1.500	
235	34	R1-1	STOP	36X36					9	
235	35	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	36	D3-1	Street Name	36X9 Back to Back					1.500	
235	37	R1-1	STOP	36X36					9	
235	38	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	39	D3-1	Street Name	36X9 Back to Back					1.500	
235	40	R1-1	STOP	36X36					9	
235	41	W14-2	No Outlet	24X24 Back to Back	1			1	4	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	42	W14-2a	No Outlet with Arrow	36X6					1.500	
235	43	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	44	D3-1	Street Name	36X9 Back to Back					1.500	
235	45	R1-1	STOP	36X36					9	
235	46	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	47	D3-1	Street Name	36X9 Back to Back					1.500	
235	48	R1-1	STOP	36X36					9	
235	49	W14-1	Dead End	30X30 Back to Back	1			1	6.250	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	50	R7-2(1)	Parking Restriction (Arrow)	12X18					1.500	
235	51	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	52	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	53	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
235	54	D3-1	Street Name	36X9 Back to Back					1.500	
235	55	R1-1	STOP	36X36					9	
235	56	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	57	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	58	D3-1	Street Name	36X9 Back to Back					1.500	
236	59	R6-1	One Way (Long)	54X18 Back to Back					6.750	
236	60	R1-1	STOP	36X36					9	
236	61	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	62	D3-1	Street Name	36X9 Back to Back					1.500	
236	63	R1-1	STOP	36X36					9	
236	64	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	65	D3-1	Street Name	36X9 Back to Back					1.500	
236	66	R1-1	STOP	36X36 Back to Back					9	
236	67	R1-3P	All Way Plaque	18X6					0.750	
236	68	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	69	D3-1	Street Name	36X9 Back to Back					1.500	
236	70	R1-1	STOP	36X36 Back to Back					9	
236	71	R1-3P	All Way Plaque	18X6					0.750	
236	72	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	73	D3-1	Street Name	36X9 Back to Back					1.500	
236	74	R1-1	STOP	36X36					9	
236	75	D3-1	Street Name	36X9 Back to Back	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	76	D3-1	Street Name	36X9 Back to Back					1.500	
236	77	R1-1	STOP	36X36					9	
236	78	W1-8L	Chevron Alignment	18X24	1			1	3	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	79	W1-8L	Chevron Alignment	18X24	1			1	3	1- 3/4 " X 1-3/4 " (14 GAUGE)

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GUNDA CORPORATION
Engineers, Planners & Managers
TBPE Registration Number F-3311
TBPLS Registration Number 10193800

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

100% SUBMITTAL

DATE: 12/17/24

RACHEL K. VICTUS
103339
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

SUMMARY OF STANDARD SIGNING DETAIL(1)

FOR CITY OF HOUSTON USE ONLY

WBS NUMBER
M-410039-0001-4

DRAWING SCALE
N.T.S

CITY OF HOUSTON PM
SAM HABIBI

SUMMARY OF SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN TEXT	DIMENSIONS	SQUARE POST	SIGNAL MOUNT	ROUND POST (GALVANIZED STEEL PIPE CITY TRAFFIC SIGN STANDARD)	NO. OF POSTS (1 OR 2)	SIGN AREA SQ.FT (FOR INFORMATION ONLY NOT INTENDED FOR BID)	SIGN POST SIZE (TABLE A)
236	80	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36 Back to Back 18X6	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	81	D3-1	Street Name						1.500	
236	82	R1-1	STOP						9	
236	83	R1-3P	All Way Plaque						0.750	
236	84	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36 Back to Back 18X6	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	85	D3-1	Street Name						1.500	
236	86	R1-1	STOP						9	
236	87	R1-3P	All Way Plaque						0.750	
236	88	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	89	D3-1	Street Name						1.500	
236	90	R1-1	STOP						9	
236	91	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	92	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	93	D3-1	Street Name						1.500	
236	94	R1-1	STOP						9	
236	95	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	96	W1-1	Horizontal Curve	30X30	1			1	6.250	1- 3/4 " X 1-3/4 " (14 GAUGE)
236	97	W13-1P	Advisory Speed (Plaque)	18X18					2.250	
236	98	W1-7	Two Direction Large Arrow	24X12	1			1	8	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	99	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36 Back to Back 54X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	100	D3-1	Street Name						1.500	
237	101	R1-1	STOP						9	
237	102	R6-1	One Way (Long)						6.750	
237	103	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	104	D3-1	Street Name						1.500	
237	105	R1-1	STOP		1				9	
237	106	R5-2(2)	No Thru Trucks	24X30	1			1	5	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	107	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	108	D3-1	Street Name						1.500	
237	109	R1-1	STOP						9	
237	110	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	111	D3-1	Street Name						1.500	
237	112	R1-1	STOP						9	
237	113	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	114	D3-1	Street Name						1.500	
237	115	R1-1	STOP						9	
237	116	R7-2(1)	Parking Restriction (Arrow)	12X18 Back to Back 12X6	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	117	R7-201P	Tow Away Zone (Plaque)							
237	118	R4-3bT	Do Not Cross Double White Line	36X36	1			1	9	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	119	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	120	D3-1	Street Name						1.500	
237	121	R1-1	STOP						9	
237	122	W14-2	No Outlet	24X24	1			1	4	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	123	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	124	D3-1	Street Name						1.500	
237	125	R1-1	STOP						9	
237	126	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
237	127	D3-1	Street Name						1.500	
237	128	R1-1	STOP						9	
238	129	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
238	130	D3-1	Street Name						1.500	
238	131	R1-1	STOP						9	
239	132	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36 Back to Back 54X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
239	133	D3-1	Street Name						1.500	
239	134	R1-1	STOP						9	
239	135	R6-1	One Way (Long)						6.750	
239	136	R5-2(2)	No Thru Trucks	24X30	1			1	5	1- 3/4 " X 1-3/4 " (14 GAUGE)
239	137	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
239	138	D3-1	Street Name						1.500	
239	139	R1-1	STOP						9	
239	140	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
239	141	D3-1	Street Name						1.500	
239	142	R1-1	STOP						9	
239	143	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
239	144	D3-1	Street Name						1.500	
239	145	R1-1	STOP						9	
239	146	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
239	147	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
239	148	D3-1	Street Name						1.500	
239	149	R1-1	STOP						9	
239	150	D3-1	Street Name	36X9 Back to Back 36X9 Back to Back 36X36	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
239	151	D3-1	Street Name						1.500	
239	152	R1-1	STOP						9	
239	153	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
240	154	R7-2(1)	Parking Restriction (Arrow)	12X18	1			1	1.500	1- 3/4 " X 1-3/4 " (14 GAUGE)
240	155	CUSTOM	Caution Sign for Pedestrians	36X36	1			1	9	1- 3/4 " X 1-3/4 " (14 GAUGE)
240	156	CUSTOM	Caution Sign for Pedestrians	36X36	1			1	9	1- 3/4 " X 1-3/4 " (14 GAUGE)

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713.461.3391 www.gundacorp.com
Texas Registration Number F-3311

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

100% SUBMITTAL

RACHEL K. VICTUR
103391
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
DATE: 12/17/24

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

SUMMARY OF STANDARD SIGNING DETAIL(2)

WBS NUMBER
M-410039-0001-4

DRAWING SCALE
N.T.S

CITY OF HOUSTON PM
SAM HABIBI

FOR CITY OF HOUSTON USE ONLY

SUMMARY OF SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN TEXT	DIMENSIONS	SQUARE POST	SIGNAL MOUNT	OVERHEAD SIGN SUPPORT	ROUND POST	NO. OF POSTS (1 OR 2)	SIGN AREA SQ.FT (FOR INFORMATION ONLY, NOT INTENDED FOR BID)	SIGN POST SIZE (TABLE A)
241	157	R1-1	STOP	36X36	1				1	9	1- 3/4 " X 1- 3/4 " (14 GAUGE)
241	158	R7-2(1)	Parking Restriction (Arrow)	12X18 Back to Back						1.500	
241	159	D3-1	Street Name	36X9 Back to Back						1.500	
241	160	D3-1	Street Name	36X9						1.500	
241	161	R5-2(2)	No Thru Trucks	24X30	1				1	5	1- 3/4 " X 1- 3/4 " (14 GAUGE)
242	162	D3-1	Street Name	36X9 Back to Back	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
242	163	D3-1	Street Name	36X9						1.500	
242	164	R1-1	STOP	36X36						9	
242	165	R5-2(2)	No Thru Trucks	24X30	1				1	5	1- 3/4 " X 1- 3/4 " (14 GAUGE)
242	166	W14-1	Dead End	30X30	1				1	6.250	1- 3/4 " X 1- 3/4 " (14 GAUGE)
243	167	D3-1	Street Name	36X9 Back to Back	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
243	168	D3-1	Street Name	36X9						1.500	
243	169	R1-1	STOP	36X36						9	
243	170	R6-1	One Way	54X18						6.750	
243	171	R5-2(2)	No Thru Trucks	24X30	1				1	5	1- 3/4 " X 1- 3/4 " (14 GAUGE)
243	172	R7-2(1)	Parking Restriction (Arrow)	12X18	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
243	173	D3-1	Street Name	36X9 Back to Back	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
243	174	D3-1	Street Name	36X9						1.500	
243	175	R7-2(1)	Parking Restriction (Arrow)	12X18	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
243	176	R7-2(1)	Parking Restriction (Arrow)	12X18	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
243	177	W1-1	Horizontal Curve	30X30	1				1	6.250	1- 3/4 " X 1- 3/4 " (14 GAUGE)
243	178	W13-1P	Advisory Speed (Plaque)	18X18						2.250	
244	179	D3-1	Street Name	36X9 Back to Back	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
244	180	D3-1	Street Name	36X9						1.500	
244	181	R1-1	STOP	Back to Back 36X36						9	
244	182	R5-2(2)	No Thru Trucks	24X30	1				1	5	1- 3/4 " X 1- 3/4 " (14 GAUGE)
245	183	D3-1	Street Name	36X9 Back to Back	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
245	184	D3-1	Street Name	36X9						1.500	
245	185	R1-1	STOP	Back to Back 36X36						9	
245	186	R6-1	One Way	Back to Back 54X18						6.750	
245	187	R7-2(1)	Speed Limit Sign	30X36	1				1	7.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
246	188	S5-2ATP	End School Zone (Plaque)	24X10 Back to Back	1				1	1.667	1- 3/4 " X 1- 3/4 " (14 GAUGE)
246	189	R2-1	Speed Limit	30X36						7.500	
246	190	R5-2(2)	No Thru Trucks	24X30 Back to Back	1				1	5	1- 3/4 " X 1- 3/4 " (14 GAUGE)
246	191	R7-2(1)	Parking Restriction (Arrow)	12X18	1				1	1.500	
247	192	D3-1	Street Name	36X9 Back to Back	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
247	193	D3-1	Street Name	36X9						1.500	
247	194	R1-1	STOP	Back to Back 36X36						9	
247	195	R6-1	One Way (Long)	Back to Back 54X18						6.750	
247	196	R5-2(2)	No Thru Trucks	24X30	1				1	5	1- 3/4 " X 1- 3/4 " (14 GAUGE)
247	197	R7-2(1)	Parking Restriction (Arrow)	12X18	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
248	198	D3-1	Street Name	36X9 Back to Back	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
248	199	D3-1	Street Name	36X9						1.500	
248	200	R1-1	STOP	Back to Back 36X36						9	
248	201	R5-2(2)	No Thru Trucks	24X30	1				1	5	1- 3/4 " X 1- 3/4 " (14 GAUGE)
248	202	S1-1	School (FYG)	36X36 Back to Back	1				1	9	1- 3/4 " X 1- 3/4 " (14 GAUGE)
248	203	W16-9P	Ahead (Plaque)	24X12						2	
248	204	R7-8T	Handicapped Parking	12X18 Back to Back	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
248	205	R7-8P	Van Accessible (Plaque)	12X6						0.500	
249	206	R5-2(2)	No Thru Trucks	24X30	1				1	5	1- 3/4 " X 1- 3/4 " (14 GAUGE)
249	207	MOD	Metro Bus Stop Sign	30X30	1				1	6.250	1- 3/4 " X 1- 3/4 " (14 GAUGE)
249	208	R10-7	Do Not Block Intersection	24X30 Back to Back	1				1	5	1- 3/4 " X 1- 3/4 " (14 GAUGE)
249	209	R7-201P	Tow Away Zone (Plaque)	12X6 Back to Back						0.5	
249	210	R7-2(1)	Parking Restriction (Arrow)	12X18						1.500	
249	211	D3-1	Street Name	36X9 Back to Back	1				1	1.500	1- 3/4 " X 1- 3/4 " (14 GAUGE)
249	212	D3-1	Street Name	36X9						1.500	
249	213	R1-1	STOP	Back to Back 36X36						9	
249	214	R6-1	One Way	Back to Back 54X18						6.750	

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RACHEL K. VICTOR
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LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

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DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
SIGNING AND PAVEMENT MARKING PLANS

SUMMARY OF STANDARD SIGNING DETAIL(3)

WBS NUMBER
M-410039-0001-4

DRAWING SCALE
N.T.S

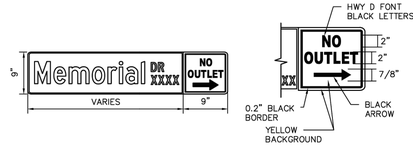
CITY OF HOUSTON PM
SAM HABIBI

FOR CITY OF HOUSTON USE ONLY

DocuSign Envelope ID: CB71C116-B716-4899-A5EE-0D2F2CC55AF6

REV	DESCRIPTION	BY	DATE

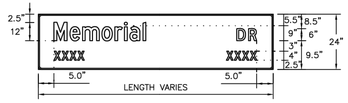
POST MOUNTED STREET NAME SIGN W/ NO OUTLET SIGN



D3 – POST MOUNTED STREET NAME SIGN



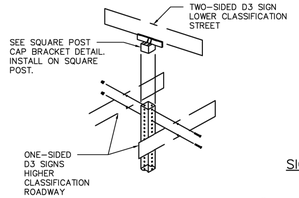
OVERHEAD STREET NAME SIGN DETAIL



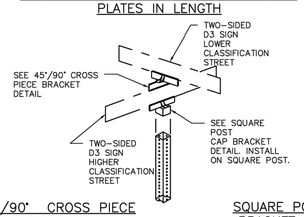
D3 – STREET NAME SIGN

	POST–MOUNTED SIGN	OVERHEAD SIGN
HEIGHT	9"	24"
LENGTH	30" MIN 48" MAX 6" INCREMENTS OF LENGTH	10" MAX 2' INCREMENT OF LENGTH
THICKNESS	0.125"	0.080"
SUBSTREATE	ALLUMINUM ALLOY, 5052–H38 (ASTM B–209)	
SIGN FACE MATERIALS	GREEN FILM OVER DIAMOND GRADE VIP SHEETING	
LEGENDS AND SYMBOLS	HIGHWAY GOTHIC SERIES D (USUAL) HIGHWAY GOTHIC SERIES C OR B FOR MAXIMUM LENGTH SIGN BLACK	
COLOR	LETTERS–WHITE REFLECTIVE BORDER–WHITE REFLECTIVE BACKGROUND–GREEN REFLECTIVE	

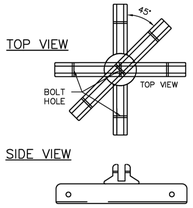
D3 SIGNS GREATER THAN 42" PLATES IN LENGTH



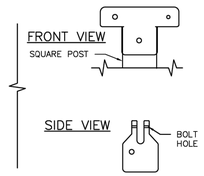
D3 SIGNS LESS THAN OR EQUAL TO 42" PLATES IN LENGTH



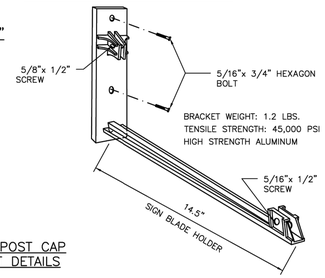
45°/90° CROSS PIECE SIGN BRACKET



SQUARE POST CAP BRACKET DETAILS



SIGNAL POLE MOUNTING DETAIL



NOTES:

1. TYPICAL SIGN PLATE SHOULD BE 30" MAX.
2. LONGER SIGN PLATE MUST BE APPROVED BY THE CITY TRAFFIC ENGINEER.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STREET NAME SIGN AND SIGN MOUNTING

(SCALE: NOT TO SCALE)

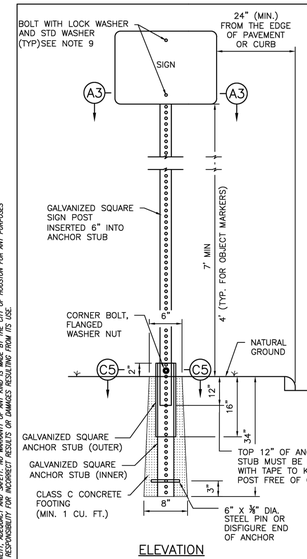
APPROVED BY:

Digitally signed by: Suhail Kanwar — CITY ENGINEER
Digitally signed by: KHANG NGUYEN — CITY TRAFFIC ENGINEER
Digitally signed by: Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV–27–2023 | DWG NO: 01554–03

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 DESIGN CONSIDERATIONS NECESSARY FOR SATISFACTORY AND SAFE PERFORMANCE. ENGINEERS USING THIS STANDARD ASSUME ALL RESPONSIBILITY AND LIABILITY FOR THEIR APPLICATION OF THESE DESIGN REQUIREMENTS. BY REFERENCING THIS STANDARD IN THEIR CONSTRUCTION DOCUMENTS, ENGINEERS AGREE TO INDEMNIFY AND HOLD HARMLESS THE CITY OF HOUSTON, ITS OFFICERS AND EMPLOYEES FROM ANY AND ALL LIABILITY, CLAIMS, LOSSES, AND EXPENSES, INCLUDING ATTORNEY'S FEES AND COURT COSTS, ARISING OUT OF OR RESULTING FROM THE USE OF THIS STANDARD BY THE ENGINEER OR ANY OTHER PERSON OR ENTITY ACTING UNDER THE ENGINEER'S DIRECTION OR CONTROL. THE CITY OF HOUSTON (COH) DOES NOT WARRANT THE ACCURACY OF THIS STANDARD AND USES IT WITHOUT ANY WARRANTY OF ANY KIND. THE COH ASSUMES NO RESPONSIBILITY FOR ENGINEERS' INTERPRETATION OF THIS STANDARD OR THE DESIGN DETAILS BASED ON THIS STANDARD OR FOR ANY DEVIATIONS FROM THIS STANDARD NOR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

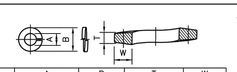
DocuSign Envelope ID: CB71C116-B716-4899-A5EE-0D2F2CC55AF6



ELEVATION

TYPICAL GROUND SIGN INSTALLATION PERFORATED SQUARE METAL TUBING

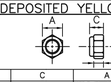
TABLE A	
GALVANIZED SQUARE SIGN POST (PERFORATED)	1–3/4"x–1–3/4" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PREFORATAED) (INNER)	2"x2"x36" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PERFORATED) (OUTER)	2 1/4" x 2 1/4" x 18" (14 GAUGE)



NOMINAL WASHER SIZE	A INSIDE DIAMETER MAX	A INSIDE DIAMETER MIN	B OUTSIDE DIAMETER MAX	T MEAN SECTION (THICKNESS)	W SECTION WIDTH
5/16"	0.332"	0.314"	0.583"	0.078"	0.125"

DIMENSIONS: ASME B18.21.1
MATERIAL: ALLOY STEEL PER ASME B18.21.1
FINISH: MECHANICAL ZINC PER ASTM B695, CLASS 5, TYPE 2 (YELLOW)

5/16" SPLIT LOCK WASHER, HIGH ALLOY MECHANICAL DEPOSITED YELLOW SINK



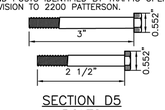
SIZE	C THICKNESS MAX	C THICKNESS MIN	A WIDTH ACROSS FLATS MAX	A WIDTH ACROSS FLATS MIN	D HEX HEIGHT MIN
0.313"	0.359"	0.329"	0.502"	0.489"	0.250"

DIMENSIONS: ASME B18.16.6
MATERIAL: CARBON STEEL, GRADE 8 PER ASME B18.16.6, NYLON ⅝
THREAD REQUIREMENTS: ASME B1.1 UNC & UNF CLASS 2B

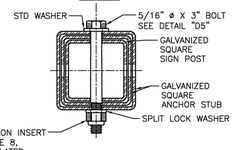
HEX NYLON INSERT LOCKNUTS (NE), GRADE 8, YELLOW ZINC PLATED

NOTES:

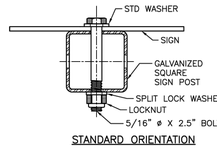
1. THE EXISTING SIGNS LOCATED ON PUBLIC CONSTRUCTION SITE ARE THE PROPERTY OF THE CITY OF HOUSTON. THROUGHOUT THE PERIOD OF THE CONTRACT, THE CONTRACTOR SHALL PROTECT THESE SIGNS SUCH THAT THEY ARE NOT DAMAGED IN THE COURSE OF CONSTRUCTION ACTIVITY. SUCH PROTECTION SHALL INCLUDE THE PERIOD AFTER SIGNS ARE REMOVED FROM INSTALLATION AND STORED BY THE CONTRACTOR OR DELIVERED TO THE TRAFFIC OPERATIONS CENTER (2200 PATTERSON). THE GENERAL TRAFFIC SUPERINTENDENT (832–395–6771) MUST BE NOTIFIED 48 HOURS IN ADVANCE PRIOR TO DELIVERY.
2. AFTER SIGNS ARE REMOVED FROM INSTALLATION AND ARE BEING STORED BY THE CONTRACTOR, THE CONTRACTOR SHALL CONTACT THE TRAFFIC OPERATIONS DIVISION OF HOUSTON PUBLIC WORKS (832–395–6771) AND ARRANGE FOR A CONVENIENT TIME TO DELIVER ONLY CITY SIGNS AND POSTS IDENTIFIED BY TRAFFIC OPERATIONS DIVISION TO 2200 PATTERSON.



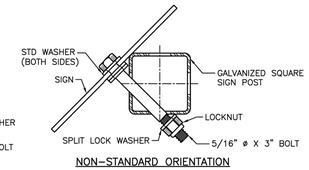
SECTION D5 BOLTS



SECTION C5 CORNER BOLT



STANDARD ORIENTATION



NON–STANDARD ORIENTATION

SECTION A3: SIGN CONNECTION DETAILS

3. PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIGN SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC. THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE PROJECTS COMPLETION.
4. ALL GROUND MOUNTED STOP SIGNS, WARNING SIGNS, AND OTHER REGULATORY SIGNS SHALL USE AT A MINIMUM HIGH INTENSITY PRISMATIC REFLECTIVE SHEETING.
5. ALL OVERHEAD SIGNS SHALL USE DIAMOND GRADE REFLECTIVE SHEETING.
6. ALL OTHER SIGNS SHALL USE SUPER ENGINEER GRADE SHEETING.
7. ALL BLANKS TO BE INSTALLED SHALL BE ALUMINUM ALLOY 6061–T–6 OR 5052–H38 IN ACCORDANCE WITH ASTM B209.
8. ALL HOLES SHALL BE ¾" DIAMETER DRILLED OR PUNCHED AS SHOWN ON EACH BLANK DETAIL AND SHALL BE FREE OF BURRS AND / OR ROUGH EDGES. WHERE NON–STANDARD ORIENTATION OF SIGN IS USED, ENLARGE HOLE IN SIGN POST AT SIGN CONNECTION NOT GREATER THAN 11/16" IN DIAMETER.
9. BOLT SIZE REQUIREMENTS FOR SIGN CONNECTION:
   9.1. STANDARD ORIENTATION = 5/16" DIA X 2 1/2" BOLT
   9.2. NON STANDARD ORIENTATION = 5/16" DIA X 3" BOLT
10. SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON EACH DETAIL ON SHEET 01554–06.
11. ALL SIGN BLANKS ARE TO BE ETCHED, DEGREASED, AND HAVE A COATING MEETING THE REQUIREMENTS OF ASTM B449, CLASS 2, OR ASTM B921, CLASS 2. PRIOR TO APPLICATION OF LEGENDS.
12. ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN CONFORMANCE TO THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND STANDARD HIGHWAY SIGNS LATEST EDITION.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

GENERAL NOTES AND GROUND MOUNTING SIGN

(SCALE: NOT TO SCALE)

APPROVED BY:

Digitally signed by: Suhail Kanwar — CITY ENGINEER
Digitally signed by: KHANG NGUYEN — CITY TRAFFIC ENGINEER
Digitally signed by: Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV–27–2023 | DWG NO: 01554–01

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 DESIGN CONSIDERATIONS NECESSARY FOR SATISFACTORY AND SAFE PERFORMANCE. ENGINEERS USING THIS STANDARD ASSUME ALL RESPONSIBILITY AND LIABILITY FOR THEIR APPLICATION OF THESE DESIGN REQUIREMENTS. BY REFERENCING THIS STANDARD IN THEIR CONSTRUCTION DOCUMENTS, ENGINEERS AGREE TO INDEMNIFY AND HOLD HARMLESS THE CITY OF HOUSTON, ITS OFFICERS AND EMPLOYEES FROM ANY AND ALL LIABILITY, CLAIMS, LOSSES, AND EXPENSES, INCLUDING ATTORNEY'S FEES AND COURT COSTS, ARISING OUT OF OR RESULTING FROM THE USE OF THIS STANDARD BY THE ENGINEER OR ANY OTHER PERSON OR ENTITY ACTING UNDER THE ENGINEER'S DIRECTION OR CONTROL. THE CITY OF HOUSTON (COH) DOES NOT WARRANT THE ACCURACY OF THIS STANDARD AND USES IT WITHOUT ANY WARRANTY OF ANY KIND. THE COH ASSUMES NO RESPONSIBILITY FOR ENGINEERS' INTERPRETATION OF THIS STANDARD OR THE DESIGN DETAILS BASED ON THIS STANDARD OR FOR ANY DEVIATIONS FROM THIS STANDARD NOR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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ARCHITECTURE | ENGINEERING | GEOSPATIAL
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Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS — ROBERT A. HILL — 93655 — LICENSED PROFESSIONAL ENGINEER — 11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC SIGNING DETAILING
(1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 253 OF 345	

CivilTech Engineering, Inc.
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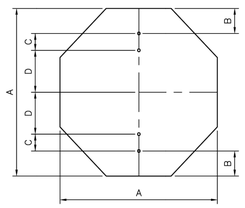
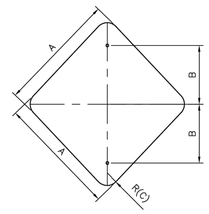
REV	DESCRIPTION	BY	DATE



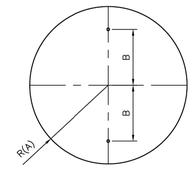
OCTAGONAL

A	B	C	D	T
24	3	3	12	0.08
36	3	3	24	0.08



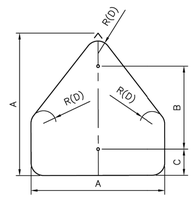
DIAMOND

A	B	C	T
24	12	1 1/2	0.08
30	15	1 1/2	0.08
36	18	1 1/2	0.08



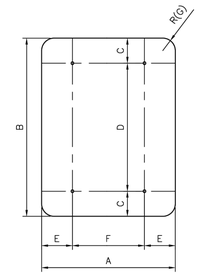
CIRCLE

A	B	T
15	15	0.08
18	12	0.08



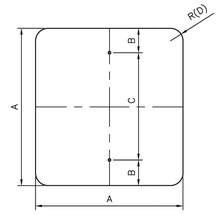
PENTAGON (SCHOOL)

A	B	C	D	T
36	24	3	1 1/2	0.08



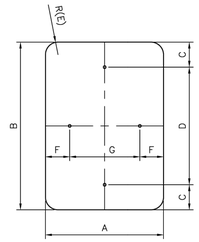
VERTICAL RECTANGLE

A	B	C	D	E	F	G	T
36	48	6	36	6	24	1 1/2	0.08
48	60	6	48	9	30	1 1/2	0.08
18	30	3	24	–	–	1 1/2	0.08



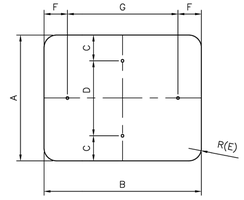
SQUARE (A)

A	B	C	D	T
18	3	12	1 1/2	0.08
24	3	18	1 1/2	0.08
36	3	30	1 1/2	0.08



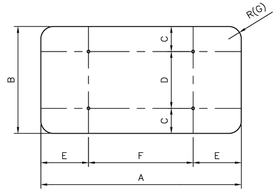
VERTICAL/HORIZONTAL RECTANGLE

A	B	C	D	E	F	G	T
12	18	1 1/2	15	1 1/2	1 1/2	9	0.08
12	36	3	30	1 1/2	1 1/2	9	0.08
18	24	3	18	1 1/2	1 1/2	15	0.08
24	30	3	24	1 1/2	3	18	0.08
24	36	3	30	1 1/2	3	18	0.08
24	48	3	36	1 1/2	3	18	0.08
30	36	3	30	1 1/2	3	24	0.08



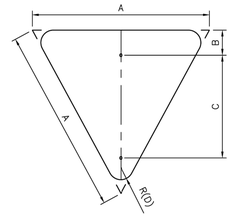
HORIZONTAL/VERTICAL RECTANGLE

A	B	C	D	E	F	G	T
12	6	–	–	1 1/2	1	4	0.08
18	6	–	–	1 1/2	1	4	0.08
12	9	1	10	1 1/2	–	–	0.08
24	12	1 1/2	9	1 1/2	2	8	0.08
24	18	3	12	1 1/2	2	14	0.08
30	24	3	18	1 1/2	3	18	0.08
36	12	1 1/2	9	1 1/2	2	8	0.08



HORIZONTAL RECTANGLE

A	B	C	D	E	F	G	T
36	24	3	18	6	24	1 1/2	0.08
48	24	3	18	9	30	1 1/2	0.08
48	36	6	24	9	30	1 1/2	0.08
60	24	3	18	12	36	1 1/2	0.08
60	36	6	24	12	36	1 1/2	0.08



EQUILATERAL TRIANGLE

A	B	C	D	T
36	3	21	1 1/2	0.08

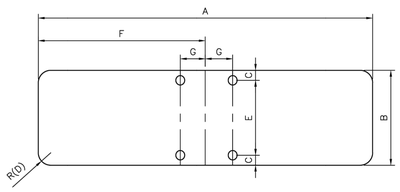


TABLE – D3 SIGNS (BRACKETS)

A	B	C	D	E	F	G	T
30	9	5/16	1 1/2	8 3/8	15	1 3/4	0.125
36	9	5/16	1 1/2	8 3/8	18	1 3/4	0.125
42	9	5/16	1 1/2	8 3/8	21	1 3/4	0.125
48	9	5/16	1 1/2	8 3/8	24	1 3/4	0.125

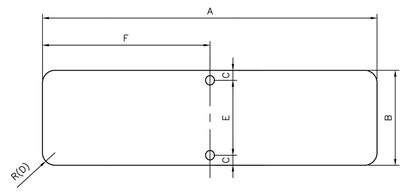


TABLE – D3 SIGNS

A	B	C	D	E	F	T
30	9	1 1/2	1 1/2	6	15	0.125
36	9	1 1/2	1 1/2	6	18	0.125
42	9	1 1/2	1 1/2	6	21	0.125
48	9	1 1/2	1 1/2	6	24	0.125

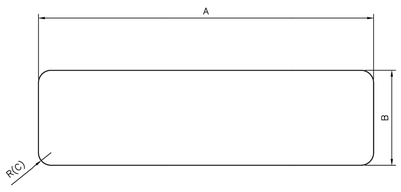
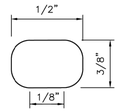


TABLE – D1 SIGNS

A	B	C	T
60	24	1 1/2	0.08
72	24	1 1/2	0.08
84	24	1 1/2	0.08
96	24	1 1/2	0.08

NOTES:

1. A 30" LONG OR GREATER PLATE SHALL BE USED WHEN A "NO OUTLET" SUPPLEMENT IS REQUIRED.
2. THE CITY OF HOUSTON "STOP" AND "YIELD" SIGNS SHALL BE A MINIMUM 36". SPECIAL PERMISSION FROM THE CITY TRAFFIC ENGINEER IS REQUIRED FOR LESS THAN 36" SIGNS.
3. ALL PUNCHED HOLES ARE 3/8"x 1/2" OVAL.
4. ALL CORNER RADII ARE 1 1/2".
5. ALL DIMENSIONS ARE IN INCHES.
6. T = THICKNESS



APPROVED BY:	APPROVED BY:
DocuSigned by: Suhail Kanwar 3EF8B8CB641F5478...	DocuSigned by: LONG NGUYEN 85A256F7DA7E8D4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock 8A0C41DE7B5A4E9...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01554-06

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

GROUND MOUNTED SIGN SIZES

	FOR CITY OF HOUSTON USE ONLY
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NOT TO SCALE	

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Houston, TX 77079
800.414.1045

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC SIGNING DETAILING
(2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
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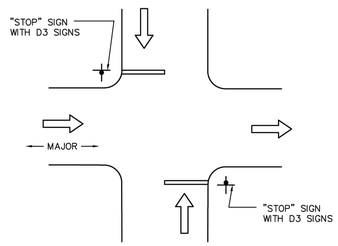
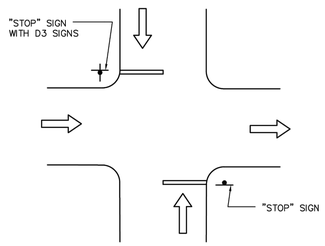
REV	DESCRIPTION	BY	DATE

DocuSign Envelope ID: CB71C116-B716-4899-A5EE-0D2F2CC55AF6

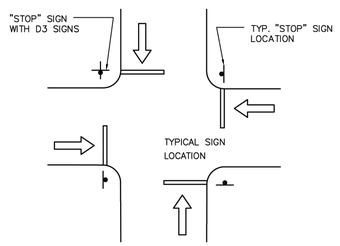
TYPICAL SIGN PLACEMENT



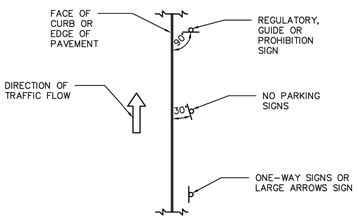
TWO-WAY STOP
AND ONE-WAY OPERATION
ON MAJOR/LOCAL INTERSECTION



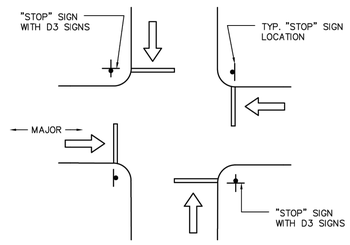
TWO-WAY STOP
AND ONE-WAY OPERATION
ON LOCAL/LOCAL INTERSECTION



FOUR-WAY STOP CONTROL
ON LOCAL/LOCAL INTERSECTION



MAST ARM INSTALLATION
REFER TO TRAFFIC SIGNAL DETAILS
FOR ADDITIONAL INFORMATION.



FOUR-WAY STOP CONTROL
ON MAJOR/LOCAL INTERSECTION

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL SIGN PLACEMENT

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER	DocuSigned by: Carl Haddock — DIRECTOR OF HPW
DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 01554-07

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11/14/2025

SURVEYED BY: KUO & ASSOC.
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC SIGNING DETAILING
(3 OF 3)

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SHEET NO. 253B OF 345	

CivilTech Engineering, Inc.
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REV	DESCRIPTION	BY	DATE

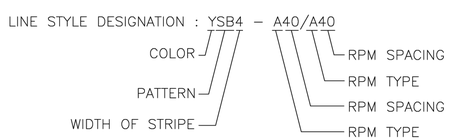
DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. IT IS THE RESPONSIBILITY OF THE DESIGN ENGINEER ADOPTING A DESIGN TO ADDRESS THE SAFETY CONCERNS ASSOCIATED WITH EACH DESIGN SITUATION. CIVILTECH ENGINEERING, INC. ASSUMES NO RESPONSIBILITY FOR ANY BIDDING, CONSTRUCTION, OR MAINTENANCE DECISIONS MADE BY OTHERS BASED ON THIS STANDARD. ANY USE OF THIS STANDARD IS AT THE SOLE RISK OF THE USER, AND THE USER EXPRESSLY WAIVES ANY AND ALL CLAIMS AGAINST CIVILTECH ENGINEERING, INC. IN CONNECTION WITH SUCH USE. CIVILTECH ENGINEERING, INC. MAKES NO WARRANTY OF ANY KIND WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DESCRIPTION AND APPLICATION OF PAVEMENT MARKING LINES

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

DESCRIPTION AND APPLICATION OF REFLECTIVE RAISED PAVEMENT MARKERS (RPM)

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



GENERAL PAVEMENT MARKING NOTES:

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

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukrit Kanwar 3EF8B0C641754F6...	DocuSigned by: HANG NGUYEN 95A29EFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock A60C410072924A0...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PAVEMENT MARKINGS GENERAL NOTES AND LEGENDS

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILING
(1 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 254 OF 345	

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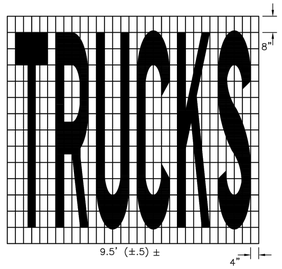

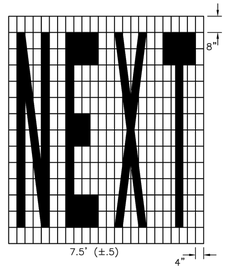

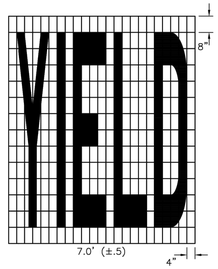

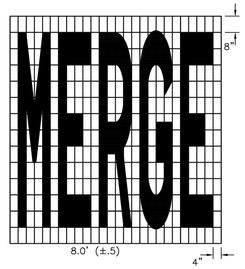

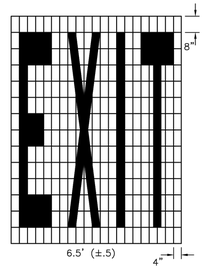

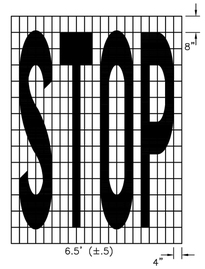

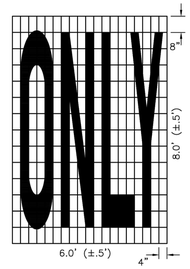

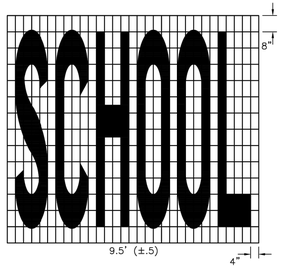

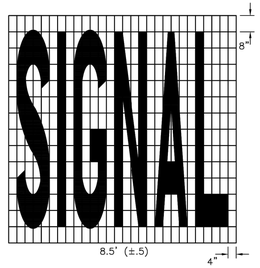

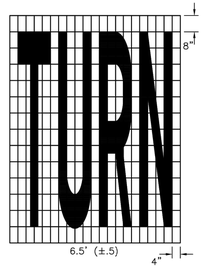

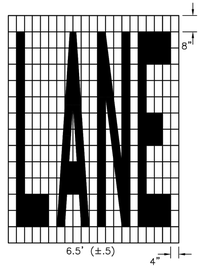

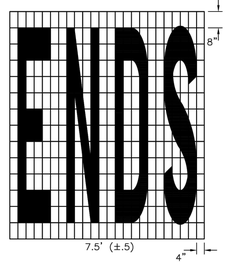

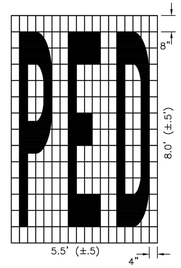

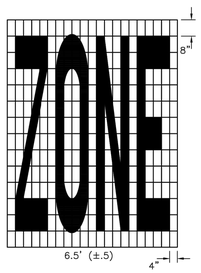

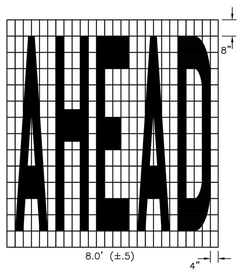

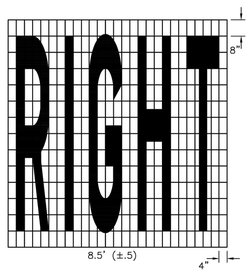

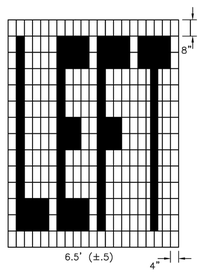

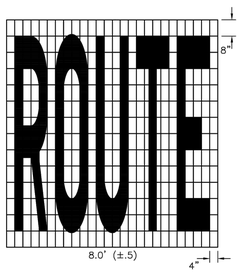

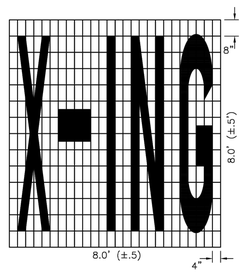

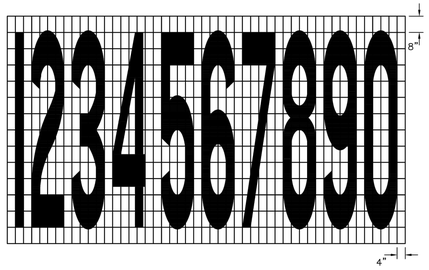

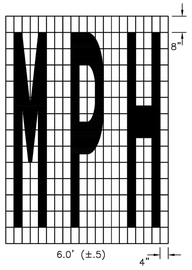

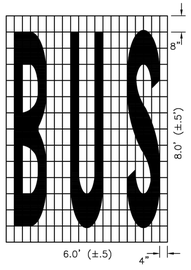

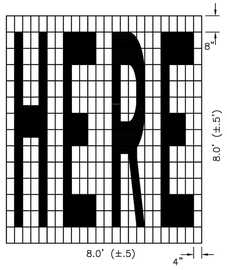

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DocuSigned by: Sukrit Kanwar	DocuSigned by: HANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-03

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKING – (WORDS)

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DRAWING SCALE	
NOT TO SCALE	

WOOLPERT
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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILING
(2 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 255 OF 345	

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CivilTech Engineering, Inc.
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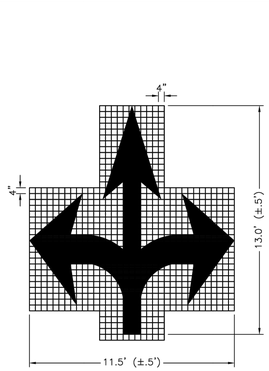
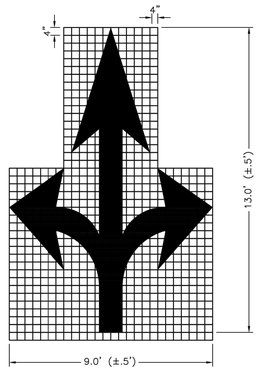
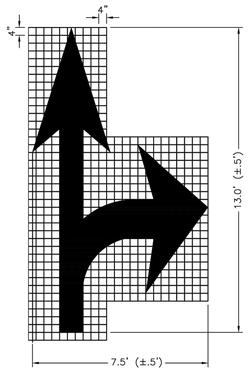
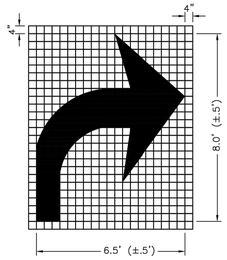
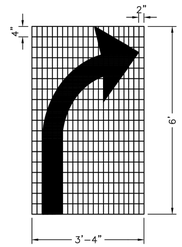
REV	DESCRIPTION	BY	DATE

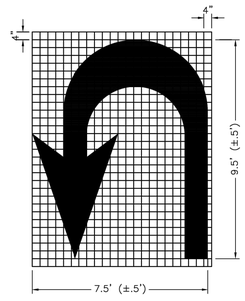


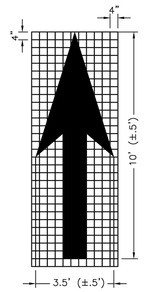


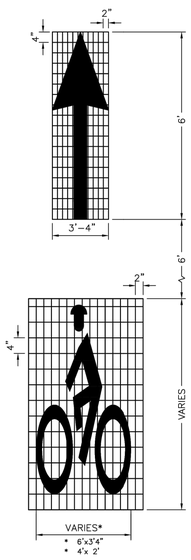


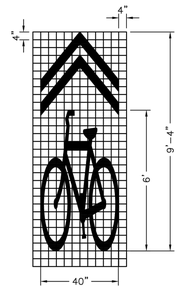


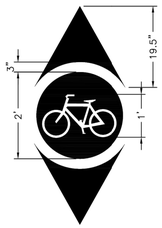


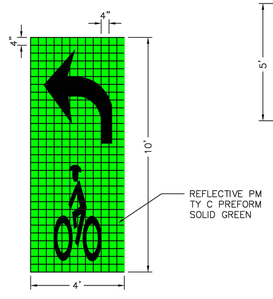


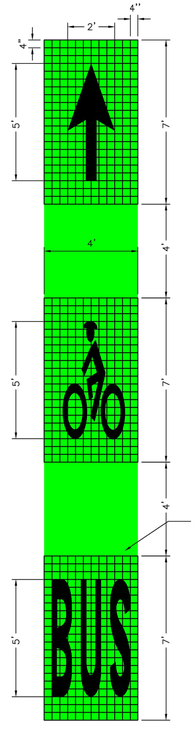


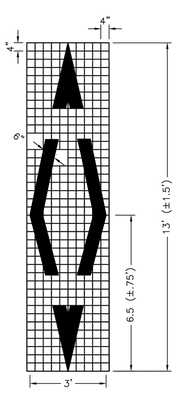


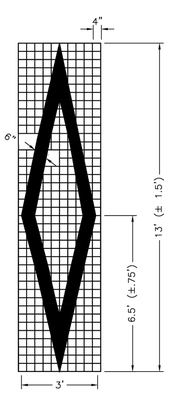


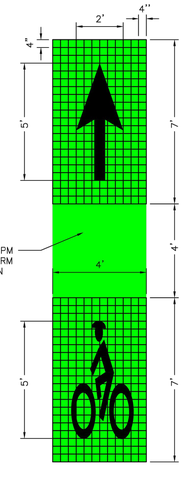












NOTES FOR PAVEMENT MARKINGS "SYMBOLS" AND "ARROWS":

1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.

2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION; SIZES MAY BE REDUCED APPROXIMATELY ONE–THIRD DEPENDING ON CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR REDUCTION BELOW ONE–THIRD OF STANDARD SIZES.

3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET, OR AS INDICATED ON THE PLANS.

4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:

   A. REGULATOR
      STOP
      RIGHT (LEFT) TURN ONLY, SYMBOL ARROWS.

   B. WARNING
      STOP AHEAD
      SIGNAL AHEAD
      SCHOOL
      SCHOOL X–ING
      PED X–ING
      R X R (SEE SHEET 02760–08 DETAILS
      OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR SPECIAL CONDITIONS.

5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.

6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES (ALL–WAY STOP).

7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VII OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

8. SPACING BETWEEN STANDARD SIZE LETTERS SHOULD BE 4 INCHES (MIN). THE WIDTH OF NON–STANDARD SIZE LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES. APPROVAL BY CITY TRAFFIC ENGINEER. SPECIAL PERMISSION NEEDED FOR NON–STANDARD SIZE "LETTER" AND/OR "ARROWS".

9. LANE–USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. SINGLE TURN ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".

10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED IN THE DESIGN PLANS.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukait Kanwar	DocuSigned by: LaMing Nguyen
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02760–04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKING – SYMBOLS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILING
(3 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 255AOF 345	

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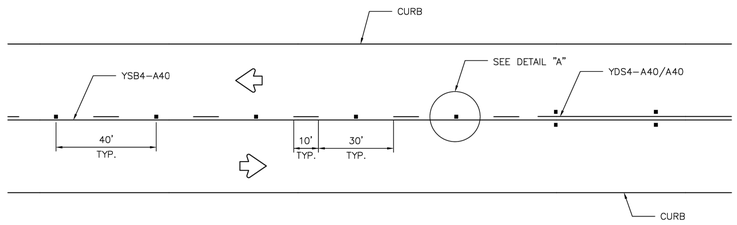
WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

civilTech Engineering, Inc.
O:\2018\J38013\Drawings\SHEETS\TRAFFIC DETAILS.dwg Dec 15, 2025

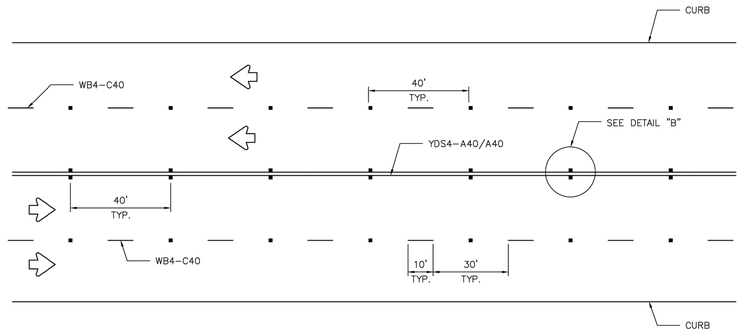
REV	DESCRIPTION	BY	DATE

CENTERLINE & FOR ALL TWO LANE STREETS WITH PASSING ZONE

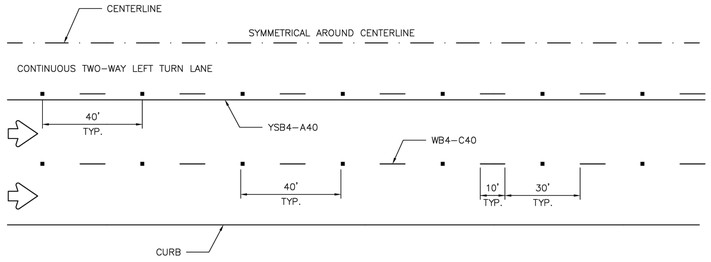


CENTERLINE & LANE LINES FOR FOUR LANE TWO–WAY STREETS

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

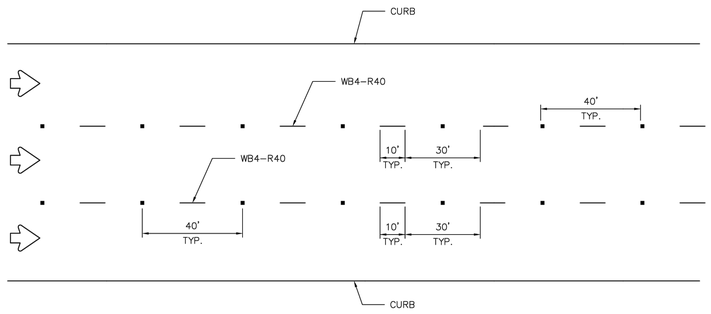


CENTERLINE & LANE LINES FOR TWO–WAY LEFT TURN LANE



LANE LINES FOR ONE–WAY MULTILANE STREET

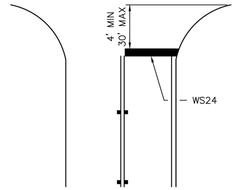
RRPM TYPE R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG–WAY TRAFFIC.



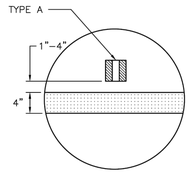
GENERAL NOTES:

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

GUIDE FOR PLACEMENT OF STOP LINES & CENTERLINE



DETAIL "A"



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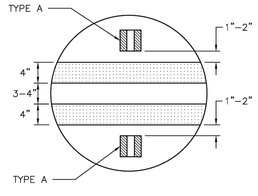
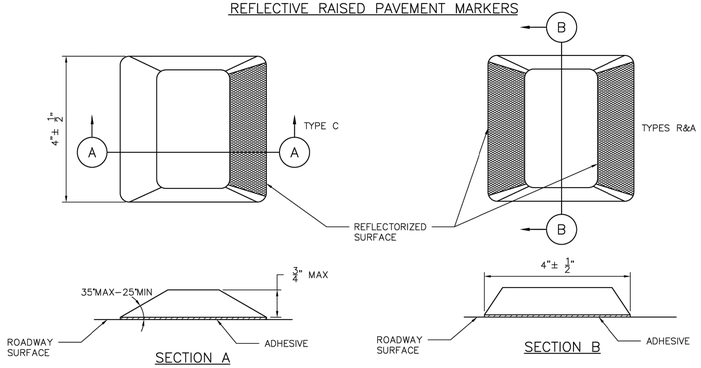


REFLECTIVE RAISED PAVEMENT MARKERS



APPROVED BY:	APPROVED BY:
DocuSigned by: Sukait Tesfamar 3EFB80C0A1F5478...	DocuSigned by: HANG NGUYEN 95A29EFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock 7E5CA1B7D8A843...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02760–05

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE

	FOR CITY OF HOUSTON USE ONLY
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NOT TO SCALE	

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILING
(4 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0002–4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 255B OF 345	

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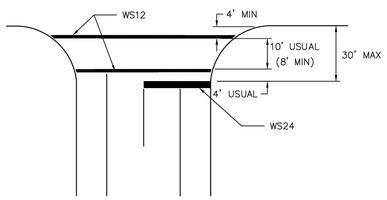
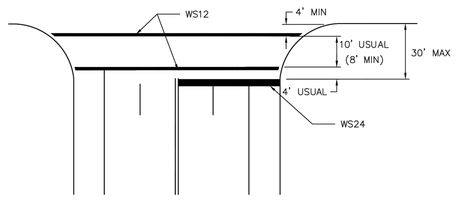
REV	DESCRIPTION	BY	DATE

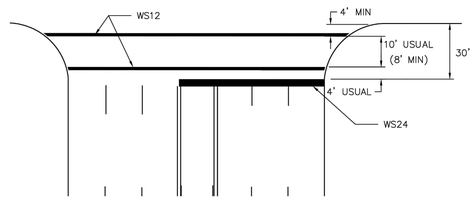
TWO LANES WITH SHOULDERS



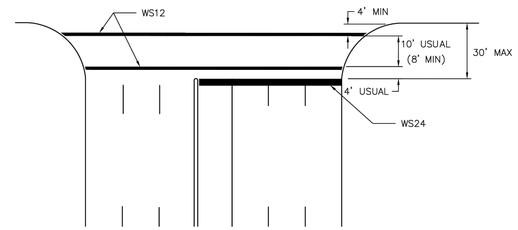
FOUR LANES WITH SHOULDERS



MULTI – LANES



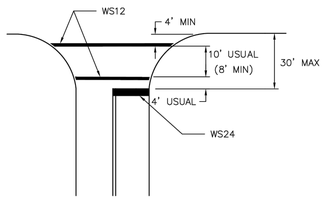
MULTI – LANE WITH MEDIAN



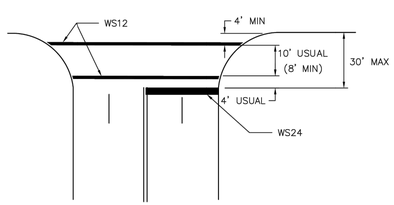
NOTES:

1. CROSSWALKS AND STOP LINES SHALL BE WHITE.
2. "D" IS EQUAL TO ONE HALF THE WIDTH OF TRAVEL LANE.

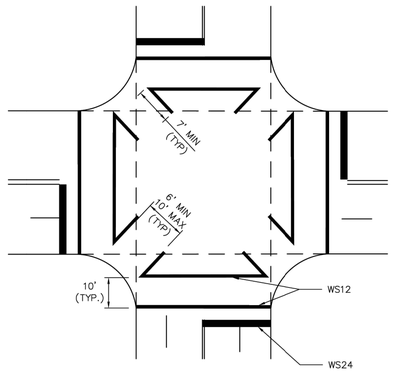
TWO LANES



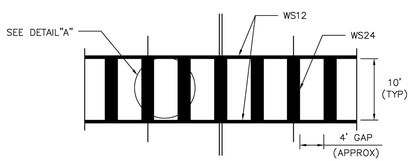
FOUR LANES



EXCLUSIVE PEDESTRIAN PHASE

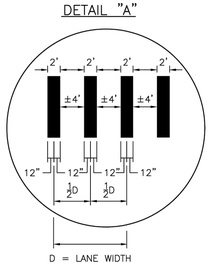


HIGH VISIBILITY
CROSSWALK DETAIL



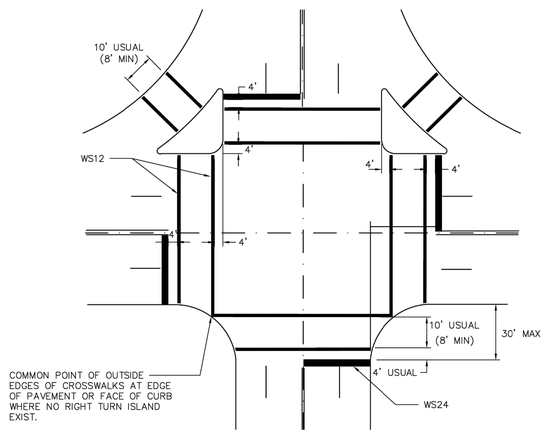
TYPICALLY USED AT SIGNALIZED AND NON–SIGNALIZED CROSSINGS ON COLLECTOR AND ARTERIAL ROADWAYS AND AT LOCATIONS REQUIRING EXTRA EMPHASIS.

DETAIL "A"



D = LANE WIDTH

INTERSECTION WITH RIGHT – TURN ISLANDS



APPROVED BY:	APPROVED BY:
DocuSigned by: Sukait Kanwar 3EFB0DC041F5478...	DocuSigned by: HANG NGUYEN 95A29EFDA75B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:
DocuSigned by: Carol Haddock A93C41067283403...
DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV–27–2023	DWG NO: 02760–12

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CROSSWALK DETAILS

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800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILING
(5 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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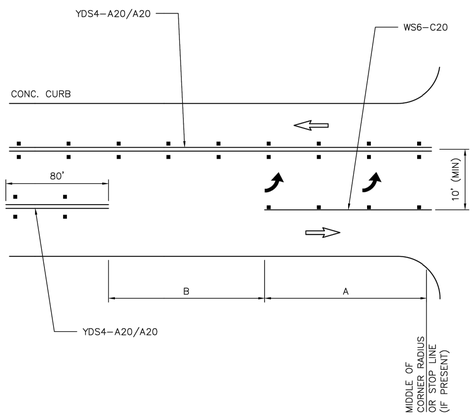
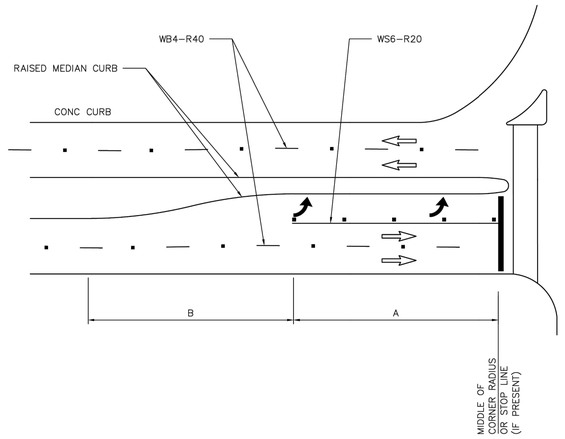
REV	DESCRIPTION	BY	DATE

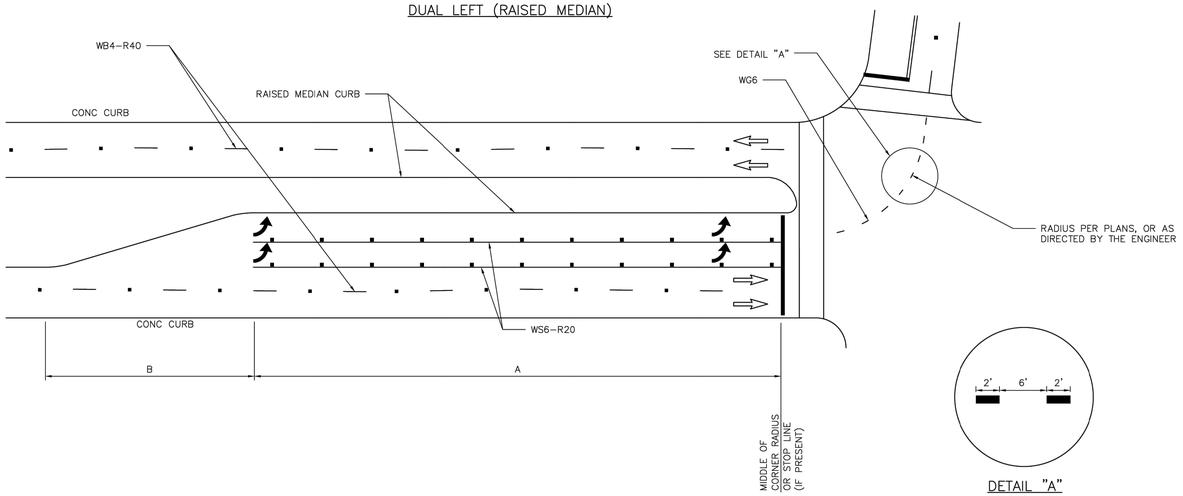
LEFT–TURN LANE



LEFT–TURN LANE (RAISED MEDIAN)



DUAL LEFT (RAISED MEDIAN)



DETAIL "A"

GENERAL NOTES:

1. THE DIMENSIONS GIVEN FOR DUAL LEFT (RAISED MEDIAN) ON THIS SHEET ARE ALSO APPLICABLE FOR DUAL RIGHT–TURN LANES.
2. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS.
3. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS REFER TO 02760–02 – LEFT/RIGHT TURN "ONLY" AND ARROW SPACING.
4. REFER TO APPLICABLE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE AND LEFT– TURN & RIGHT–TURN LANE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKINGS.
5. REFER TO BICYCLE LANE PAVEMENT MARKINGS STANDARD FOR TYPE AND PLACEMENT.

LEFT TURN BAY NOTES:

1. LEFT TURN BAY DIMENSIONS
   A = 150' MINIMUM AT INTERSECTION OF TWO (2) MAJOR STREETS WHEN PRACTICAL.
   = 100' MINIMUM AT ALL OTHER INTERSECTIONS.

   B = 100' MINIMUM ON STRAIGHT ROADWAYS.
   *TAPER LENGTH MAY BE SHORTER IF IT IS ON A HORIZONTAL CURVE TO THE LEFT.
   *TAPER LENGTH MAY BE LONGER IF CURVE IS TO THE RIGHT.
2. DIMENSIONS SHALL BE ADJUSTED AS DETERMINED BY CITY OF HOUSTON TRAFFIC ENGINEER.
3. REFER TO CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL (FIGURE 10.8) FOR DETAILS.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukait Kanvar 5EF8B0C041F547B...	DocuSigned by: LIHENG NGUYEN 95A29EFDA7084CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock A80C41887359403...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02760–13

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

LEFT–TURN LANE &
RIGHT–TURN LANE DESIGN

SHEET 01 OF 02

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SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILING
(6 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 255DOF 345	

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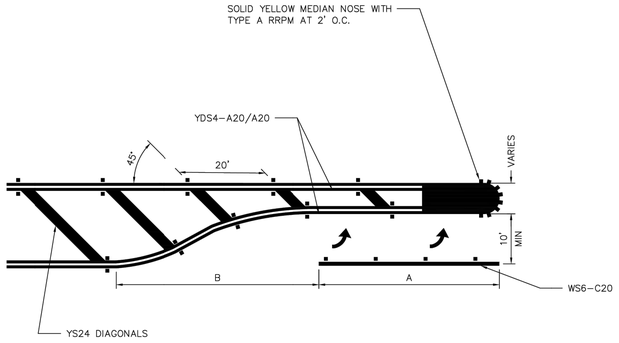
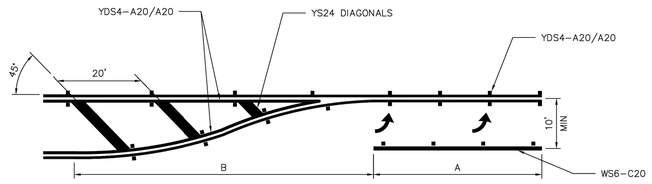
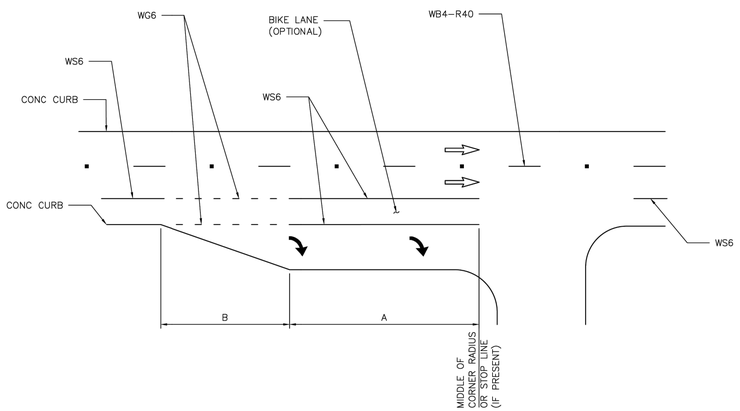
REV	DESCRIPTION	BY	DATE

PAINTED MEDIAN LEFT TURN BAY DETAILS





UNSIGNALIZED RIGHT–TURN LANE



GENERAL NOTES:

1. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS OR APPROXIMATE CALCULATIONS.
2. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS REFER TO 02760–02 – LEFT/RIGHT TURN "ONLY" AND ARROW SPACING.
3. REFER TO APPLICABLE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE AND LEFT–TURN & RIGHT–TURN LANE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKINGS.
4. REFER TO BICYCLE LANE PAVEMENT MARKINGS STANDARD FOR TYPE AND PLACEMENT.

LEFT TURN BAY NOTES:

1. LEFT TURN BAY DIMENSIONS
   A = 150' MINIMUM AT INTERSECTION OF TWO (2) MAJOR STREETS WHEN PRACTICAL.
   = 100' MINIMUM AT ALL OTHER INTERSECTIONS.

   B = 100' MINIMUM ON STRAIGHT ROADWAYS.
   *TAPER LENGTH MAY BE SHORTER IF IT IS ON A HORIZONTAL CURVE TO THE LEFT.
   *TAPER LENGTH MAY BE LONGER IF CURVE IS TO THE RIGHT.
2. DIMENSIONS SHALL BE ADJUSTED AS DETERMINED BY CITY OF HOUSTON TRAFFIC ENGINEER.
3. REFER TO CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL (FIGURE 10.8) FOR DETAILS.

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DocuSigned by: Sukait Kanwar 5EF8B6C641F547B...	DocuSigned by: LINHNG NGUYEN 96A29EFDA7084CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock A80C41BD7204403...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02760–14

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

LEFT TURN LANE &
RIGHT TURN LANE DESIGN

SHEET 02 OF 02

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SURVEYED BY: KUO & ASSOC.
FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILING
(7 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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N.T.S	
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OMAR ABDULKAREEM, P.E.	
SHEET NO. 255E OF 345	

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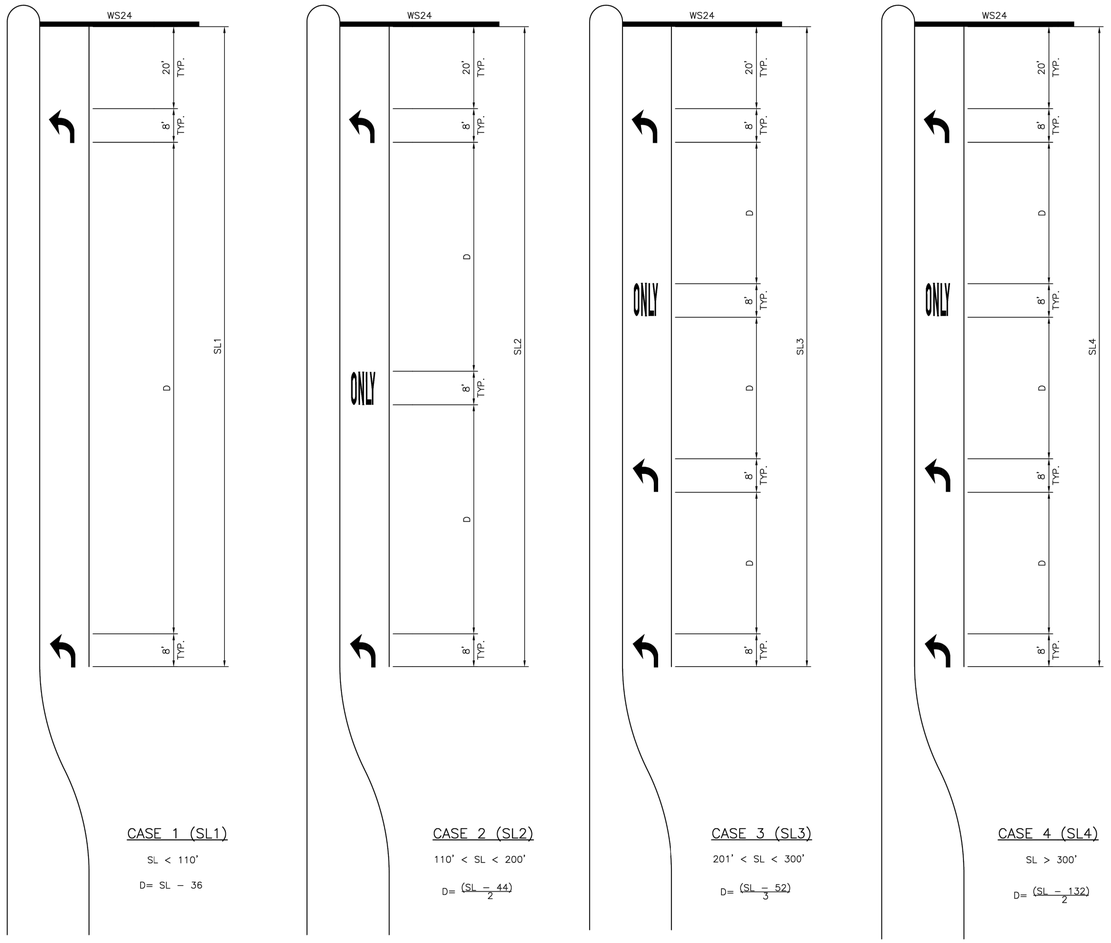
REV	DESCRIPTION	BY	DATE



CASE 1 (SL1)

SL < 110'

D= SL – 36

CASE 2 (SL2)

110' < SL < 200'

$D = \frac{(SL - 44)}{2}$

CASE 3 (SL3)

201' < SL < 300'

$D = \frac{(SL - 52)}{3}$

CASE 4 (SL4)

SL > 300'

$D = \frac{(SL - 132)}{2}$

KEY (FOR TURN LANES ONLY):

SL – STORAGE LENGTH (FEET)

D – DISTANCE BETWEEN ARROWS AND/OR WORDS (FEET)

GENERAL NOTES:

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

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CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:

DocuSigned by: Carol Haddock A93C4108728D453...

DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV–27–2023	DWG NO: 02760–02

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

LEFT/RIGHT–TURN "ONLY" AND ARROW SPACING

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11/14/2025

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILING
(8 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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OMAR ABDULKAREEM, P.E.	
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REV	DESCRIPTION	BY	DATE

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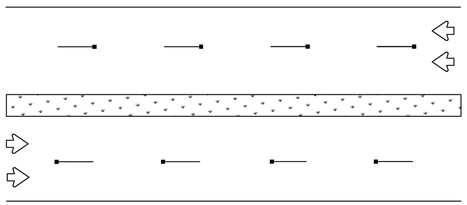
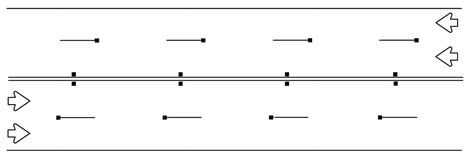
WITH THE USE OF THIS STANDARD. ADDITIONS, DELETIONS OR MODIFICATIONS TO THIS STANDARD BECOME THE RESPONSIBILITY OF THE ENGINEER OR ENTITY MAKING SUCH CHANGES, AND NO WARRANTY BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.
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.

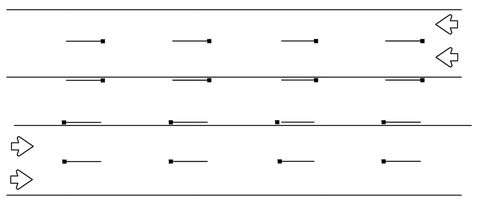
LANE LINES FOR DIVIDED STREET



LANE & CENTER LINES FOR MULTILANE UNDIVIDED STREETS

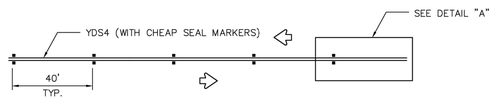


TWO–WAY LEFT TURN LANE



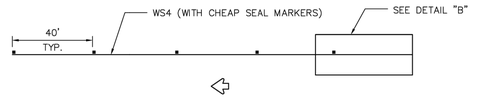
TEMPORARY PAVEMENT MARKINGS PLACEMENT DETAILS

DOUBLE YELLOW LINE



SOLID LINES

EDGE LINE OR SINGLE NO–PASSING LINE

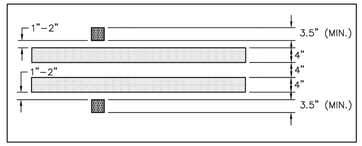


BROKEN LINE



YELLOW DOUBLE BROKEN LINE

DETAIL "A"



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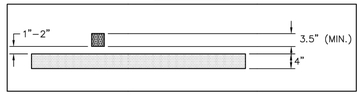
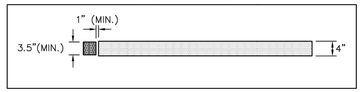
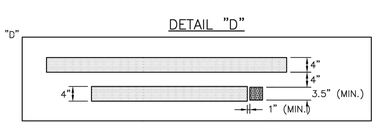


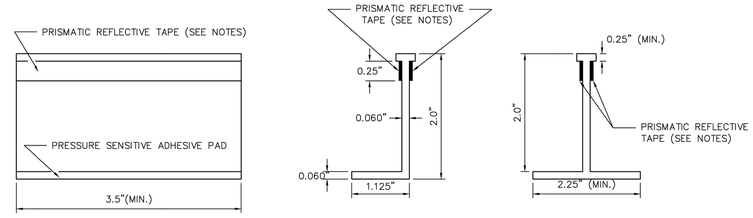
DETAIL "C"



DETAIL "D"



TEMPORARY CHIP SEAL MARKER DETAIL



TEMPORARY PAVEMENT MARKER FRONT VIEW

"L" DESIGN RIGHT VIEW

"T" DESIGN RIGHT VIEW

NOTES:

1. YELLOW MARKERS SHALL HAVE YELLOW BODIES AND YELLOW REFLECTIVE TAPE.
2. WHITE MARKERS SHALL HAVE WHITE BODIES AND WHITE REFLECTIVE TAPE.
3. ONE–WAY OR TWO–WAY REFLECTIVE SHALL BE USED AS NECESSARY FOR APPLICATION.
4. THE CLEAR PLASTIC COVER MAY VARY FROM ONE MANUFACTURER TO ANOTHER IF DEEMED NECESSARY BY SPECIFIC PROJECT.
5. ALL TEMPORARY PAVEMENT MARKERS SHALL BE PLACED WITH REFLECTIVE SIDE FACING ONCOMING TRAFFIC.
6. ALL TEMPORARY STRIPING SHALL BE WATER BASED PAINT.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukrit Kumar 3EF8D0C64175478...	DocuSigned by: HANG NGUYEN 95A29EFDA75B4C0...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A30C41067393403...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02760–06

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

REFLECTIVE CHIP SEAL MARKER USE FOR TEMPORARY MARKINGS

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FB NO. P–6133

STATE OF TEXAS
ROBERT A. HILL
93655
LICENSED
PROFESSIONAL ENGINEER
11/14/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

PAVEMENT DETAILING
(9 OF 9)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 255GOF 345	

GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) LATEST EDITION WITH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.

2. ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST VERSION OF THE TMUTCD.

3. NO LANES SHALL BE CLOSED DURING THE HOURS OF 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM MONDAY THRU FRIDAY WITHOUT APPROVAL OF THE CITY TRAFFIC ENGINEER.

4. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00 PM TO 7:00 AM.

5. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF THRU LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS.TRAFFIC CONTROL PLANS SHALL INCLUDE ONE-WAY AND/OR DETOUR PLANS.

6. CONTRACTOR SHALL MAINTAIN TRAFFIC LANES AND DETOURS ACCORDING TO TRAFFIC CONTROL PLANS DURING WORKING HOURS.

7. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, AND OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.

8. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT AN ALTERNATE SET OF TRAFFIC CONTROL PLANS TO THE CITY OF HOUSTON PROJECT MANAGER FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION. THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SHALL BE SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. TRAFFIC OPERATIONS DIVISION REPRESENTATIVE APPROVAL IS REQUIRED TO ACCEPT THE PROPOSED CHANGES.

9. CONTRACTOR SHALL SECURE LANE/SIDEWALK CLOSURE PERMITS FROM TRAFFIC OPERATIONS DIVISION (MOBILITY PERMIT SECTION AT HTTP://WWW.GIMS.HOUSTONTX.GOV/PORTALWS/MAINPORTAL.ASPX) BEFORE IMPLEMENTING THE TRAFFIC CONTROL PLAN. THE APPLICATION MUST BE SUBMITTED AT LEAST TEN BUSINESS DAYS PRIOR TO THE IMPLEMENTATION OF THE TRAFFIC CONTROL PLAN AND/OR BEGINNING
CONSTRUCTION WORK. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS, CONSTRUCTION SEQUENCING, AND SCHEDULE WITH THE APPLICATION.

10. CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES.

11. DURING PAVEMENT SURFACE RESTORATION PROJECTS; THE CONTRACTOR SHALL NOT OPEN CLOSED LANES UNTIL THE PAVEMENT SURFACE HAS CURED ENOUGH TO ALLOW VEHICULAR TRAFFIC ACCORDING TO CITY OF HOUSTON STANDARD SPECIFICATIONS.

12. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND COORDINATING ALL CONSTRUCTION ACTIVITIES WITH STAKE HOLDERS IN THE VICINITY INCLUDING EMERGENCY RESPONSE AGENCIES SUCH AS HOUSTON POLICE DEPARTMENT, HOUSTON FIRE DEPARTMENT, AND METROPOLITAN TRANSIT AUTHORITY.

13. CONTRACTOR SHALL BE RESPONSIBLE FOR ISSUING ALL WORK DIRECTIVES TO ALL SUB-CONTRACTORS, UTILITY COMPANIES, AND ALL OTHER ENTITIES PERFORMING CONSTRUCTION WORK ASSOCIATED WITH THE PROJECT.

14. NOTHING IN THESE NOTES OR PLANS SHALL RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT; INCLUDING SAFETY OF ALL MODES OF TRANSPORTATION, PERSONS, AND PROPERTY, AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO WORKING HOURS.

15. THE TRAFFIC OPERATION DIVISION (MOBILITY PERMITS GROUP) PER THE DIRECTION OF THE CITY TRAFFIC ENGINEER HAS THE RIGHT TO DEMAND THE INSTALLATION OF ADDITIONAL TRAFFIC CONTROL DEVICES OR MODIFICATIONS TO THESE PLANS AND NOTES, AS DEEMED NECESSARY TO PROMOTE THE SAFE AND ORDERLY FLOW OF TRAFFIC AND PEDESTRIANS THROUGH THE CONSTRUCTION WORK ZONE. THE CONTRACTOR SHALL COMPLY WITH THESE ADDITIONAL REQUESTS OR MODIFICATIONS WITH DUE DILIGENCE.

16. ALL EXISTING TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE MAINTAINED IN VISIBLE LOCATIONS DURING CONSTRUCTION UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER. THE CONTRACTOR SHALL RESTORE OR REPLACE (AT THE DISCRETION OF THE CITY TRAFFIC ENGINEER) ANY PAVEMENT MARKING OR SIGNING DAMAGED DURING CONSTRUCTION OPERATIONS, INCLUDING RAISED PAVEMENT MARKERS (RPMs) AND CHIP SEAL MARKERS.

17. WHEN ENTERING OR LEAVING ROADWAYS CARRYING PUBLIC TRAFFIC, THE CONTRACTOR'S EQUIPMENT, WHETHER EMPTY OR LOADED SHALL IN ALL CASES YIELD TO PUBLIC TRAFFIC WITH ASSISTANCE BY CONTRACTOR PROVIDED CERTIFIED FLAGGER/PEACE OFFICER.

18. ACCESS TO DRIVEWAYS ADJACENT TO THE CONSTRUCTION WORK ZONE SHALL BE MAINTAINED AT ALL TIMES AS MUCH AS POSSIBLE. ADDITIONAL CONES DELINEATORS MAY BE REQUIRED TO DELINEATE THE DRIVEWAY ACCESS ROUTE THROUGH THE CONSTRUCTION WORK ZONE. A MINIMUM OF ONE TRAVEL LANE SHALL BE MAINTAINED ACROSS THE DRIVEWAYS, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER.

19. SPILLAGE RESULTING FROM HAULING OPERATIONS ALONG OR ACROSS ANY PUBLIC TRAVELED WAY SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.

20. THE CONTRACTOR SHALL SUBMIT AN APPLICATION FOR TEMPORARY PARKING RESTRICTIONS IF THERE ARE PARKING METERS LOCATED AT THE PROPOSED LANE CLOSURES FROM PARKING MANAGEMENT DIVISION (832-393-8690) AT LEAST TEN BUSINESS DAYS BEFORE IMPLEMENTATION OF LANE CLOSURES. IN ADDITION, TEMPORARY NO PARKING SIGNS SHALL BE POSTED 24 HOURS PRIOR TO COMMENCEMENT OF WORK.

21. ADDITIONAL OFF DUTY POLICE OFFICERS/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED AT THE DISCRETION OF THE CITY PROJECT MANAGER EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS.

22. THE CONTRACTOR SHALL REPLACE WITHIN 72 HOURS, ANY TRAFFIC SIGNAL LOOP DETECTORS DAMAGED DURING CONSTRUCTION.

23. IN GENERAL, A SOLAR POWERED FLASHING ARROW BOARD SHALL BE REQUIRED ON ALL MAJOR THOROUGHFARE LANE CLOSURES. EXCEPTIONS TO FLASHING ARROW BOARDS AND/OR IMPLEMENTATION ON RESIDENTIAL LANE CLOSURES SHALL BE APPROVED BY THE CITY TRAFFIC ENGINEER.

24. APPROVED TRAFFIC CONTROL PLAN SHALL BE IN PLACE BEFORE STARTING ANY EXCAVATION.

SPACING FOR CHANNELIZING DEVICE

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

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

C. PLASTIC DRUMS ON RADII @ 10' C-C.

D. PLASTIC DRUMS ON TANGENT @ 30' C-C WITH VERTICAL PANEL @ 60' C-C AND APPROVED WARNING LIGHT @ 70' C-C (FOR OVERNIGHT CLOSURE).

E. PLASTIC DRUMS IN FRONT OF CONSTRUCTION ZONE @ 20' C-C WITH VERTICAL PANEL @ 40' C-C AND APPROVED WARNING LIGHT @ 40' C-C (FOR OVERNIGHT CLOSURE).

F. CONCRETE TRAFFIC BARRIER (CTB) OR LOW PROFILE CONCRETE TRAFFIC BARRIER (LPCB) WITH APPROVED REFLECTORS @ 10' C-C IF PAVEMENT DROP IS GREATER THAN 1 FOOT.

G. PLASTIC DRUMS W/GUARD RAIL MOUNTED.

H. SELF - RIGHTING VERTICAL PANEL SPACING.
- 4 LANES TO 2 LANES UNDIVIDED ROADWAY SECTION @ 20' C-C.
- 4 LANES DIVIDED ROADWAY TO ONE SIDE TWO WAY ROADWAY @ 20' C-C.
- LEFT LANE AND RIGHT LANE STORAGE BAYS @ 15' C-C.

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

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

K. USE LPCB (TYP 2) AS END TREATMENT FOR LPCB

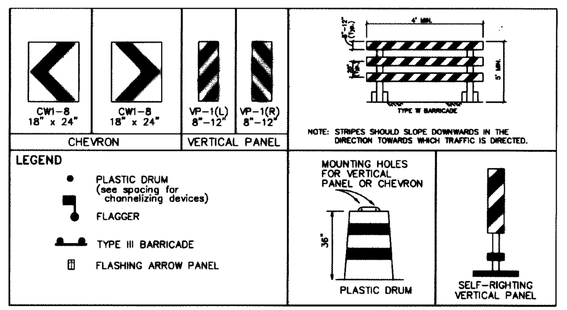
SITE SPECIFIC NOTES

1. CONTRACTOR TO FILL IN WITH TEMPORARY ASPHALT WHERE THERE IS DIFFERENCE IN GRADE ELEVATION. TEMPORARY PAVEMENT SLOPE NOT TO EXCEED MAXIMUM OF 10%.
2. USE LOW PROFILE CONCRETE BARRIERS (TYP 2) AS END TREATMENT FOR LOW PROFILE CONCRETE BARRIERS.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. A UNIFORMED PEACE OFFICER SHALL DIRECT TRAFFIC DURING INTERSECTION CONSTRUCTION.
5. CONTRACTOR SHALL COORDINATE WITH RESIDENTS AND COMMERCIAL BUSINESS OWNERS FOR THE CONSTRUCTION ALONG STREETS.
6. ALL THE INTERSECTIONS SHALL BE CONSTRUCTED (MAJOR & MINOR), USING HIGH-EARLY STRENGTH CONCRETE DURING WEEKENDS AND NIGHT TIME ONLY AND SHALL BE OPEN TO NORMAL TRAFFIC AS QUICKLY AS POSSIBLE. THE LIMITS OF HIGH EARLY STRENGTH CONCRETE SHALL BE AT THE END OF RADIUS RETURN AT ALL FOUR CORNERS.
7. NO CONSECUTIVE CROSS STREETS SHALL BE CLOSED AT SAME TIME.
8. DO NOT BLOCK INTERSECTIONS OR DRIVEWAYS WITH ANY CHANNELIZING DEVICE.
9. USE HIGH EARLY STRENGTH CONCRETE FOR PAVEMENTS AT ALL INTERSECTIONS.
10. TWO ADJACENT CROSS STREETS CANNOT BE CONVERTED INTO ONE-WAY AT THE SAME TIME IN THE SAME DIRECTION FOR CONSTRUCTION IN ORDER TO MAINTAIN TRAFFIC CIRCULATION.
11. USE LOW PROFILE CONCRETE BARRIER FOR THE CONSTRUCTION OF DEEP STORM SEWERS AND WATERLINE.
12. CONSTRUCTION SHOULD BE BLOCK TO BLOCK, LIMITED NO MORE THAN 1 BLOCK OR AS DIRECTED BY CITY ENGINEER.
13. ON CUL-DE-SAC STREETS CONSTRUCTION SHOULD BE LIMITED TO 300' TO 400' OR AS DIRECTED BY CITY ENGINEER.
14. CONTRACTOR TO MAINTAIN STORM FLOW BY REGRADING TEMPORARY DITCHES AND PROVIDING TEMPORARY INLETS, MANHOLES, AT SUITABLE GRADES WHEN TEMPORARY ASPHALT IN STEP 0 CONFLICTS EXISTING STORM LINE FACILITIES.

TRAFFIC CONTROL NOTES

1. OPEN EXCAVATION MUST BE PROTECTED WITH CONCRETE BARRIERS OR WATER-FILLED BARRIERS.
2. BORE PIT CONSTRUCTION TO AVOID DRIVEWAYS.
3. FLAGGER CONTROL IS NOT PERMITTED FOR OVERNIGHT CLOSURES UNLESS ALL EXCAVATIONS ARE FULLY PLATED DAILY.
4. STEEL PLATES TO COVER OPEN PITS WHEN CONSTRUCTION IS NOT ACTIVE.
5. CONSTRUCTION MUST BE COORDINATED WITH THE PRIVATE PROPERTY TO MAINTAIN ACCESS TO LOCAL TRAFFIC AND ESTABLISHMENTS.
6. CONTRACTOR SHALL NOT BLOCK OR CONSTRUCT TWO ADJACENT DRIVEWAYS/SIDE STREETS AT THE SAME TIME.
7. LIMIT CONSTRUCTION TO AVOID SIMULTANEOUS CLOSURES.

CHANNELIZATION AND BARRICADES



TYPICAL SIGN SPACING, TAPER LENGTHS, AND SUGGESTED SPACING OF CHANNELIZATION DEVICES

Posted Speed (mph)	Sign Spacing "X"	Min. Desirable Taper Length "L" 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing Of Device: 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'~~

Length for Buffers	
Posted Speed (mph)	Length in Feet (B)
~~20~~	~~40~~
~~25~~	~~60~~
30	90
35	120
~~40~~	~~155~~
~~45~~	~~195~~
~~50~~	~~240~~
~~55~~	~~295~~
~~60~~	~~350~~
~~65~~	~~410~~
~~70~~	~~475~~

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1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
GENERAL NOTES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
H: N/A V: N/A	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 256 of 345	

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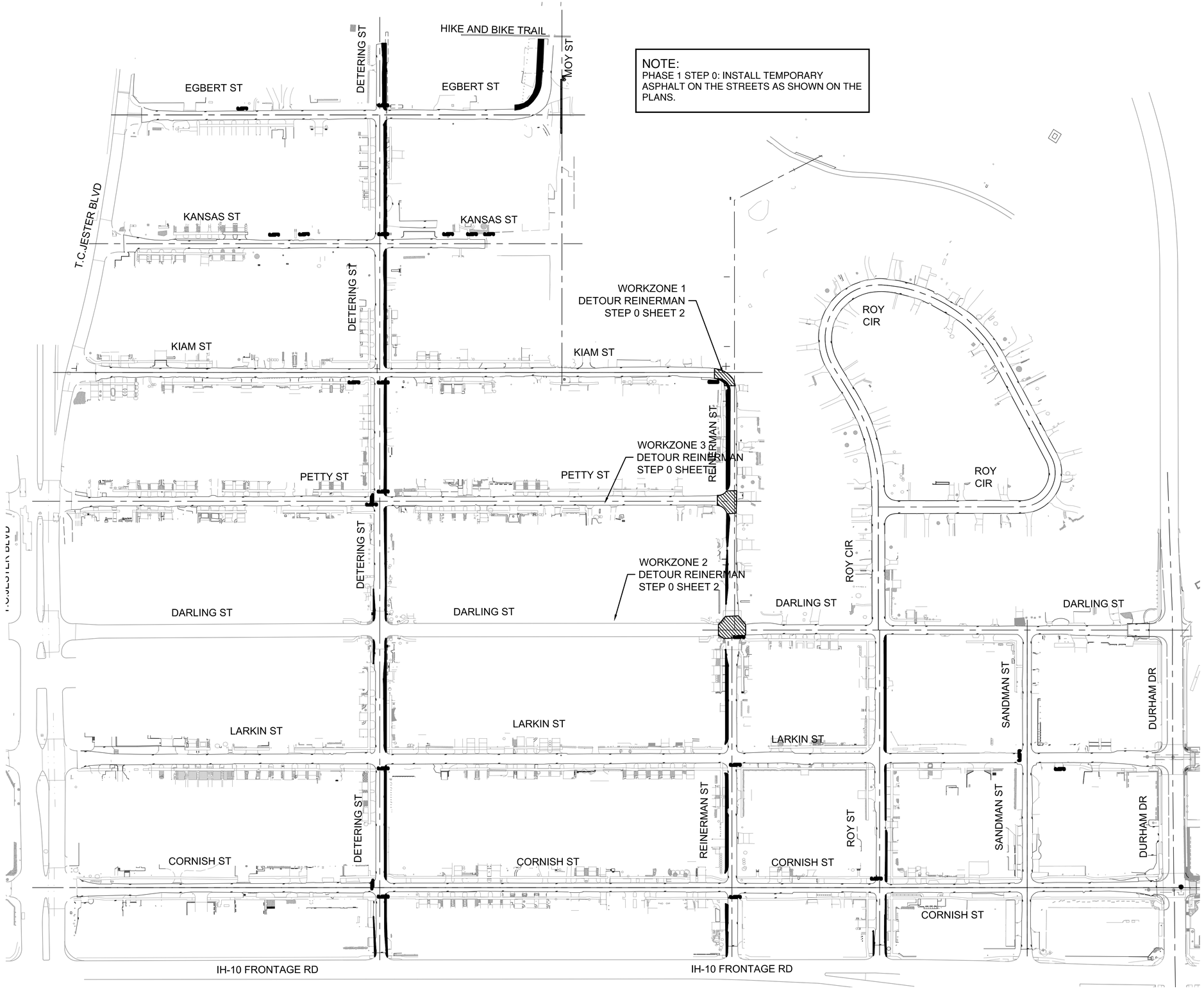
P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\213.GENERAL NOTES.dwg Aug 22, 2025-3:37pm CRubit

NOTE:
PHASE 1 STEP 0: INSTALL TEMPORARY ASPHALT ON THE STREETS AS SHOWN ON THE PLANS.



0 100' 200'

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND

- CONSTRUCTION AREA STEP 1
- CONSTRUCTION AREA STEP 2
- TEMPORARY ASPHALT PAVEMENT CONSTRUCTION

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
PHASE 1 STEP 0 LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
1"= 100'	
CITY OF HOUSTON PM	
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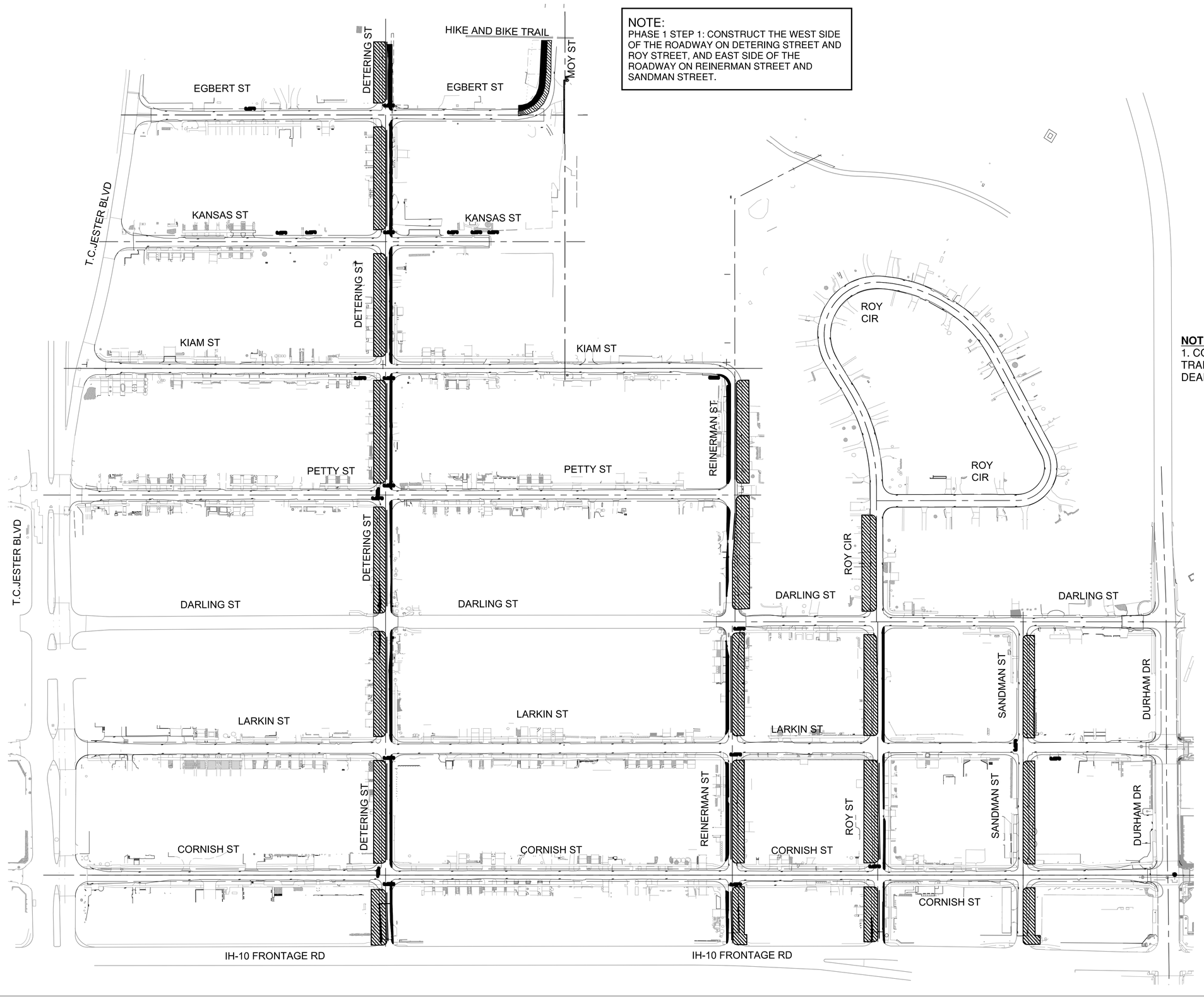
NOTE:
PHASE 1 STEP 1: CONSTRUCT THE WEST SIDE OF THE ROADWAY ON DETERING STREET AND ROY STREET, AND EAST SIDE OF THE ROADWAY ON REINERMAN STREET AND SANDMAN STREET.



0 100' 200'

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND	
	CONSTRUCTION AREA STEP 1
	CONSTRUCTION AREA STEP 2
	TEMPORARY ASPHALT PAVEMENT CONSTRUCTION

NOTE:
1. CONTRACTOR TO USE "YIELD" SIGN TO INCOMING TRAFFIC WHEN CONSTRUCTION IS NOT ACTIVE FOR DEAD-END STREETS AND CUL-DE-SACS.

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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
PHASE 1 STEP 1 LAYOUT

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DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
SAM HABIBI	
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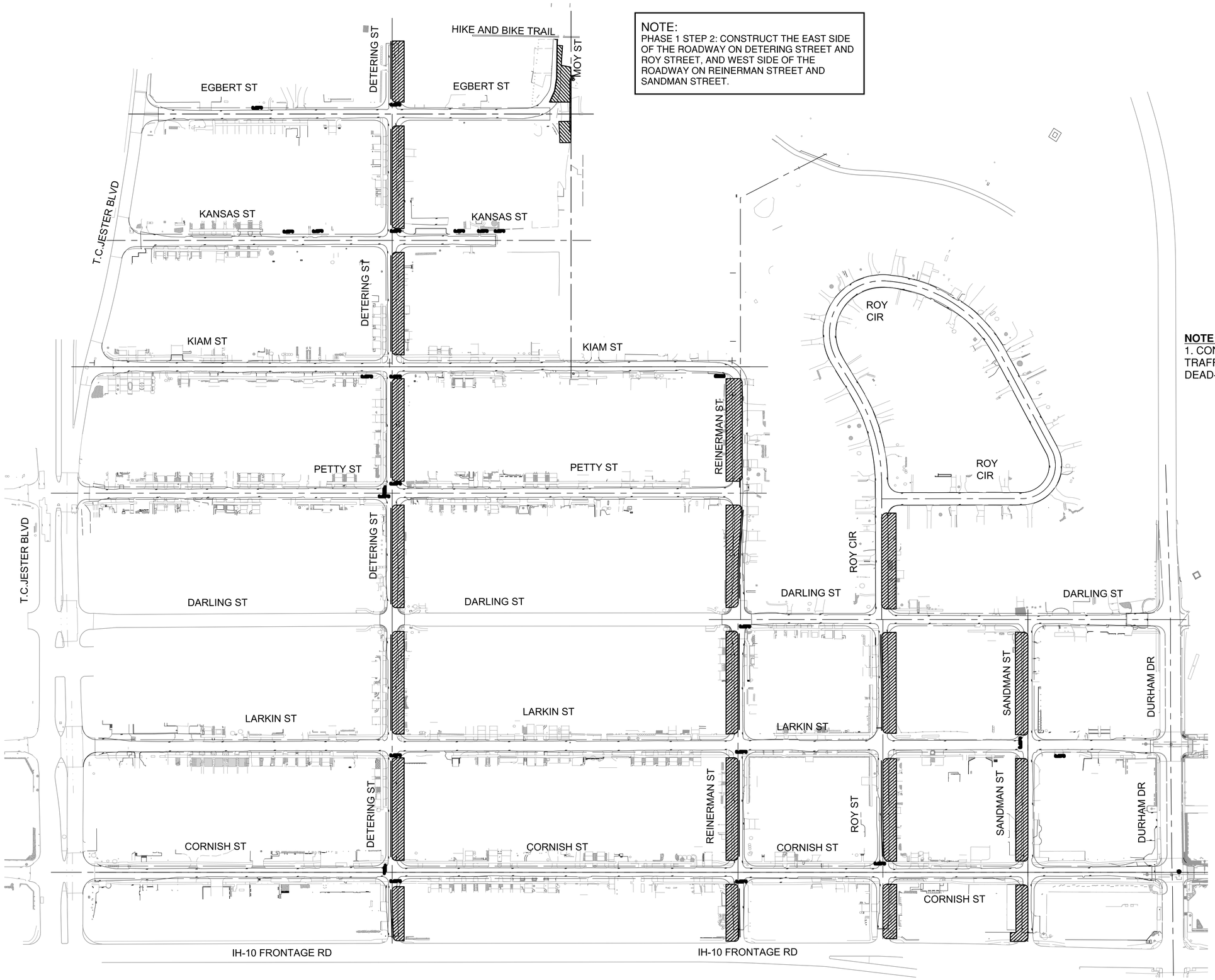
NOTE:
PHASE 1 STEP 2: CONSTRUCT THE EAST SIDE OF THE ROADWAY ON DETERING STREET AND ROY STREET, AND WEST SIDE OF THE ROADWAY ON REINERMAN STREET AND SANDMAN STREET.



0 100' 200'

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND	
	CONSTRUCTION AREA STEP 1
	CONSTRUCTION AREA STEP 2
	TEMPORARY ASPHALT PAVEMENT CONSTRUCTION

NOTE:
1. CONTRACTOR TO USE "YIELD" SIGN TO INCOMING TRAFFIC WHEN CONSTRUCTION IS NOT ACTIVE FOR DEAD-END STREETS AND CUL-DE-SACS.

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DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
PHASE 1 STEP 2 LAYOUT

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CITY OF HOUSTON PM	
SAM HABIBI	
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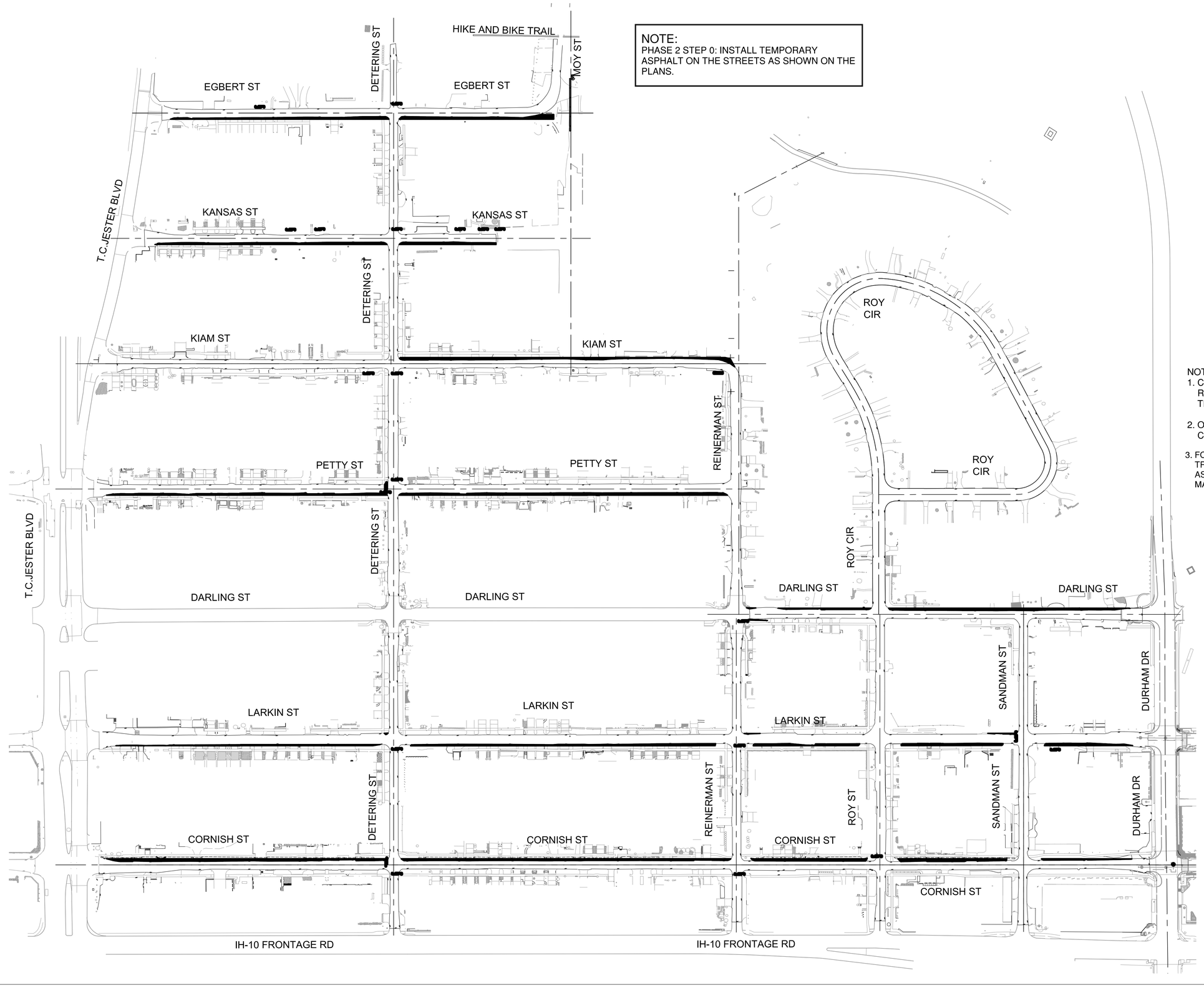

NOTE:
PHASE 2 STEP 0: INSTALL TEMPORARY ASPHALT ON THE STREETS AS SHOWN ON THE PLANS.

0 100' 200'

NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

LEGEND

- CONSTRUCTION AREA STEP 1
- CONSTRUCTION AREA STEP 2
- TEMPORARY ASPHALT PAVEMENT CONSTRUCTION

NOTES:
1. CONTRACTOR SHALL COORDINATE WITH THE RESIDENTS REGARDING ACCESS RESTRICTION AND TEMPORARY YIELD CONDITION ON ROY CIRCLE.
2. OPEN EXCAVATION MUST BE PROTECTED WITH CONCRETE BARRIERS OR WATER FILLED BARRIERS.
3. FOR ROY CIRCLE, CONTRACTOR SHALL MAINTAIN 10-FT TRAVEL LANE DURING CONSTRUCTION. TEMPORARY ASPHALT PAVEMENT SHALL BE ADDED WHEN NEEDED TO MAINTAIN 10-FT TRAVEL LANE.

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
PHASE 2 STEP 0 LAYOUT

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DRAWING SCALE	
1"= 100'	
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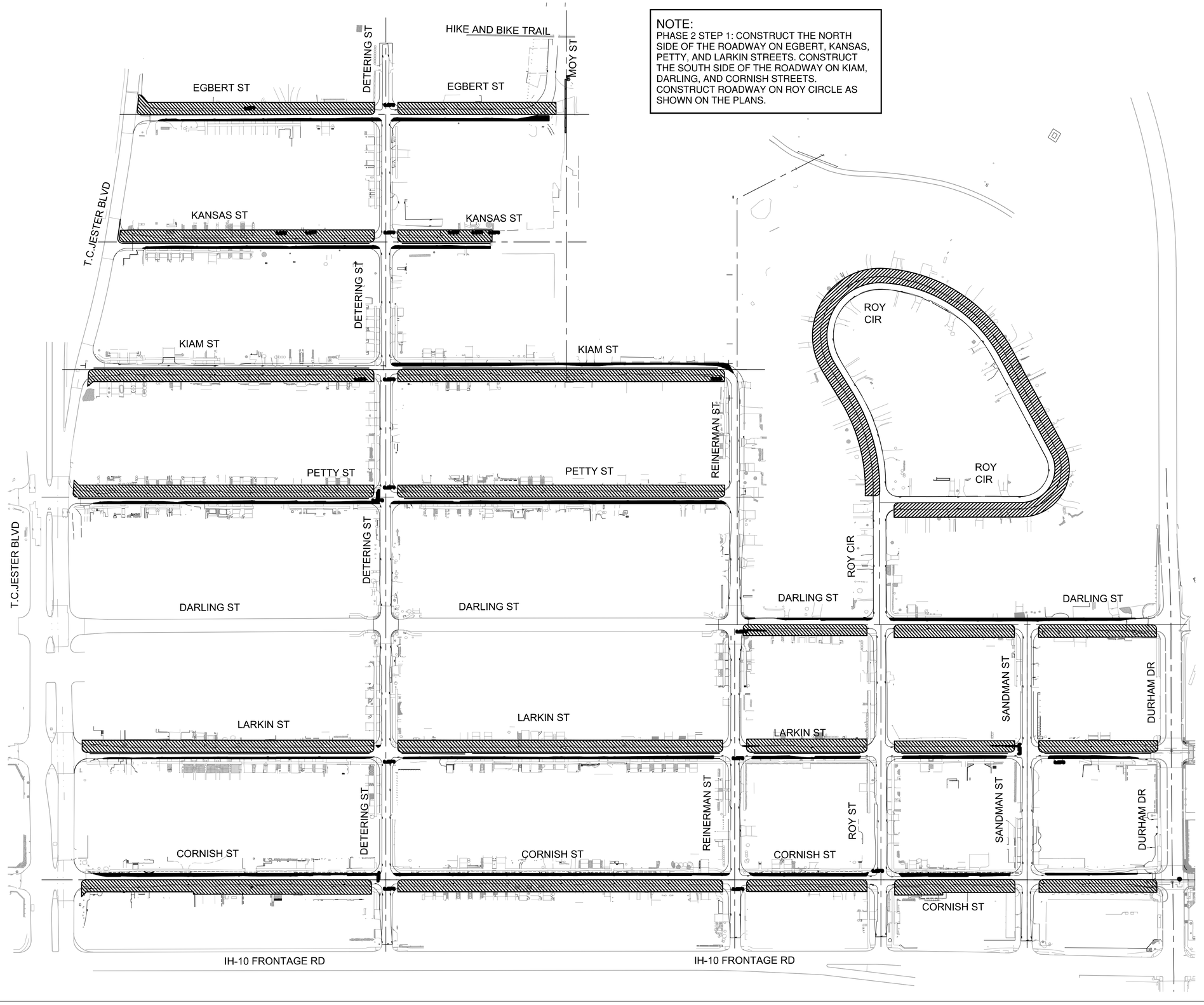
NOTE:
PHASE 2 STEP 1: CONSTRUCT THE NORTH SIDE OF THE ROADWAY ON EGBERT, KANSAS, PETTY, AND LARKIN STREETS. CONSTRUCT THE SOUTH SIDE OF THE ROADWAY ON KIAM, DARLING, AND CORNISH STREETS. CONSTRUCT ROADWAY ON ROY CIRCLE AS SHOWN ON THE PLANS.



0 100' 200'

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND

- CONSTRUCTION AREA STEP 1
- CONSTRUCTION AREA STEP 2
- TEMPORARY ASPHALT PAVEMENT CONSTRUCTION

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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
PHASE 2 STEP 1 LAYOUT

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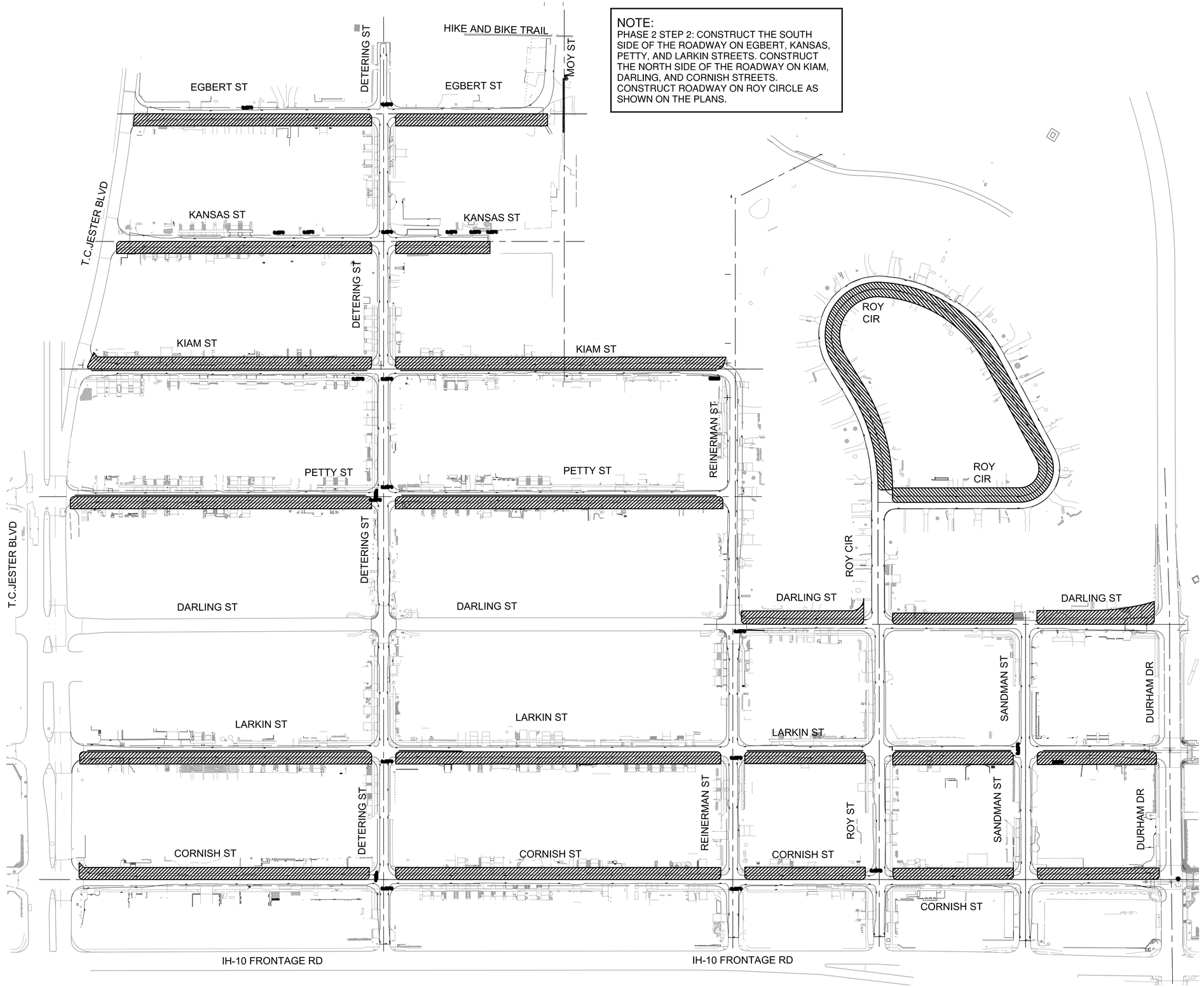
NOTE:
PHASE 2 STEP 2: CONSTRUCT THE SOUTH SIDE OF THE ROADWAY ON EGBERT, KANSAS, PETTY, AND LARKIN STREETS. CONSTRUCT THE NORTH SIDE OF THE ROADWAY ON KIAM, DARLING, AND CORNISH STREETS. CONSTRUCT ROADWAY ON ROY CIRCLE AS SHOWN ON THE PLANS.



0 100' 200'

NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

LEGEND

- CONSTRUCTION AREA STEP 1
- CONSTRUCTION AREA STEP 2
- TEMPORARY ASPHALT PAVEMENT CONSTRUCTION

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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS

PHASE 2 STEP 2 LAYOUT

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DRAWING SCALE	
1"= 100'	
CITY OF HOUSTON PM	
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Sheet No. 262 of 345	

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OVERALL:

PHASE 1 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT FOR NORTH–SOUTH STREETS AS ROLLING OVER OPERATION AS BLOCK BY BLOCK CONSTRUCTION WITH FLAGMEN CONTROL SHOWN ON PLANS.
2. PROVIDE TEMPORARY STORM DITCHES, INLETS AND MANHOLES WHERE TEMPORARY ASPHALT PAVEMENT IMPACTS EXISTING STORM SEWER FACILITIES.

PHASE 1 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY TRAFFIC FOR NORTH–SOUTH STREETS, EXCEPT PARTS OF DETERING STREET, MOY STREET, AND ROY CIRCLE, AS SHOWN ON PLANS. FOR DETERING STREET NORTH OF KIAM STREET, MOY STREET, AND ROY CIRCLE NORTH OF DARLING STREET AND SOUTH OF ROY CIRCLE, MAINTAIN ONE–LANE TWO–WAY TRAFFIC WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2. CONSTRUCT 13' OF NEW PAVEMENT AND UTILITIES FOR NORTH–SOUTH STREETS AS SHOWN ON PLANS.

PHASE 1 – STEP 2:

1. SHIFT TRAFFIC TO OPPOSITE SIDE OF STREET AND MAINTAIN ONE–LANE ONE–WAY TRAFFIC FOR NORTH–SOUTH STREETS, EXCEPT PARTS OF DETERING STREET, MOY STREET, AND ROY CIRCLE, AS SHOWN ON PLANS. FOR DETERING STREET NORTH OF EGBERT STREET, MOY STREET, AND ROY CIRCLE NORTH OF DARLING STREET AND SOUTH OF ROY CIRCLE, MAINTAIN ONE–LANE TWO–WAY TRAFFIC WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2. CONSTRUCT 13' OF NEW PAVEMENT AND UTILITIES FOR NORTH–SOUTH STREETS AS SHOWN ON PLANS.

PHASE 2 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT FOR EAST–WEST STREETS AND ROY CIRCLE AS ROLLING OVER OPERATION AS BLOCK BY BLOCK CONSTRUCTION WITH FLAGMEN CONTROL SHOWN ON PLANS.
2. PROVIDE TEMPORARY STORM DITCHES, INLETS AND MANHOLES WHERE TEMPORARY ASPHALT PAVEMENT IMPACTS EXISTING STORM SEWER FACILITIES.

PHASE 2 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY TRAFFIC FOR ALL EAST–WEST STREETS, EXCEPT EGBERT STREET, PARTS OF KANSAS STREET AND ROY CIRCLE AS SHOWN ON PLANS. FOR EGBERT STREET AND KANSAS STREET EAST OF DETERING STREET, MAINTAIN ONE–LANE TWO–WAY TRAFFIC WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2. CONSTRUCT 13' OF NEW PAVEMENT AND UTILITIES FOR EAST–WEST STREETS AND ROY CIRCLE AS SHOWN ON PLANS.

PHASE 2 – STEP 2:

1. SHIFT TRAFFIC TO OPPOSITE SIDE OF STREET AND MAINTAIN ONE–LANE ONE–WAY TRAFFIC FOR ALL EAST–WEST STREETS, EXCEPT EGBERT STREET, KANSAS STREET AND ROY CIRCLE AS SHOWN ON PLANS. FOR EGBERT STREET,AND KANSAS STREET EAST OF DETERING STREET MAINTAIN ONE–LANE TWO–WAY TRAFFIC WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2. CONSTRUCT 13' OF NEW PAVEMENT AND UTILITIES FOR EAST–WEST STREETS AND ROY CIRCLE AS SHOWN ON PLANS.

DETERING STREET

PHASE 1 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON EAST SIDE OF DETERING STREET.

PHASE 1 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY NORTHBOUND TRAFFIC ON THE EAST SIDE OF DETERING STREET SOUTH OF KIAM STREET. MAINTAIN ONE–LANE TWO–WAY TRAFFIC ON THE EAST SIDE OF DETERING STREET NORTH OF KIAM STREET WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER ON THE WEST SIDE.

PHASE 1 – STEP 2:

1. SHIFT TRAFFIC TO THE WEST SIDE AND MAINTAIN ONE–LANE ONE–WAY SOUTHBOUND TRAFFIC ON DETERING STREET SOUTH OF EGBERT STREET. MAINTAIN ONE–LANE TWO–WAY TRAFFIC ON THE EAST SIDE OF DETERING STREET NORTH OF EGBERT STREET WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2. CONSTRUCT 13' OF NEW PAVEMENT, SANITARY SEWER ON THE EAST SIDE.

MOY STREET

PHASE 1 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON WEST SIDE OF MOY STREET.

PHASE 1 – STEP 1:

1. MAINTAIN ONE–LANE TWO–WAY TRAFFIC ON THE EAST SIDE OF MOY STREET.
2. CONSTRUCT 10' ASPHALT PAVEMENT ON THE WEST SIDE OF MOY STREET.

PHASE 1 – STEP 2:

1. SHIFT TRAFFIC TO THE WEST SIDE AND MAINTAIN ONE–LANE TWO–WAY TRAFFIC ON MOY STREET.
2. CONSTRUCT 10' OF DRIVEWAY ASPHALT, WATER AND STORM SEWER ON THE EAST SIDE OF MOY STREET.

REINERMAN STREET

PHASE 1 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON WEST SIDE OF REINERMAN STREET.
2. CLOSE TRAFFIC AND BUILD INTERSECTIONS IN SEQUENCE WORK ZONES 1, 2 AND 3 AS SHOWN ON DETOUR PLANS TO CONSTRUCT PROPOSED STORM LINE BOX RCB.

PHASE 1 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY SOUTHBOUND TRAFFIC ON THE **WEST** SIDE OF REINERMAN STREET.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER AND SANITARY SEWER ON THE **EAST** SIDE OF REINERMAN STREET.

PHASE 1 – STEP 2:

1. SHIFT TRAFFIC TO THE **EAST** SIDE AND MAINTAIN ONE–LANE ONE–WAY **NORTHBOUND** TRAFFIC ON REINERMAN STREET.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER AND SANITARY SEWER ON THE **WEST** SIDE OF REINERMAN STREET.

ROY STREET

PHASE 1 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON EAST SIDE OF ROY STREET.

PHASE 1 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY NORTHBOUND TRAFFIC ON THE EAST SIDE OF ROY STREET (SOUTH OF DARLING STREET).
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER AND SANITARY SEWER ON THE WEST SIDE OF ROY STREET (SOUTH OF DARLING STREET).

PHASE 1 – STEP 2:

1. SHIFT TRAFFIC TO THE WEST SIDE AND MAINTAIN ONE–LANE ONE–WAY SOUTHBOUND TRAFFIC ON ROY STREET (SOUTH OF DARLING STREET).
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER AND SANITARY SEWER ON THE EAST SIDE OF ROY STREET (SOUTH OF DARLING STREET).

ROY CIRCLE

PHASE 1 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON EAST SIDE OF ROY CIRCLE.

PHASE 1 – STEP 1:

1. MAINTAIN ONE–LANE TWO–WAY TRAFFIC ON THE EAST SIDE OF ROY CIRCLE SOUTH OF THE ROY CIRCLE LOOP WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2. CONSTRUCT 13' OF NEW PAVEMENT, SANITARY SEWER ON THE WEST SIDE OF ROY CIRCLE. USE HIGH EARLY STRENGTH CONCRETE.

PHASE 1 – STEP 2:

1. SHIFT TRAFFIC TO THE WEST SIDE AND MAINTAIN ONE–LANE TWO–WAY TRAFFIC ON ROY CIRCLE SOUTH OF THE ROY CIRCLE LOOP WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER ON THE EAST SIDE OF ROY CIRCLE. USE HIGH EARLY STRENGTH CONCRETE.

PHASE 2 – STEP 0:

1. ROY CIRCLE PHASE 1 CONSTRUCTION TO BE COMPLETED PRIOR TO ROY CIRCLE PHASE 2 CONSTRUCTION.
2. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON THE OUTER LOOP SIDE OF ROY CIRCLE LOOP.

PHASE 2 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY COUNTERCLOCKWISE TRAFFIC ON THE OUTER LOOP SIDE OF ROY CIRCLE LOOP.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER ON THE INNER LOOP SIDE OF ROY CIRCLE LOOP.

PHASE 2 – STEP 2:

1. SHIFT TRAFFIC TO THE INNER LOOP SIDE AND MAINTAIN ONE–LANE ONE–WAY CLOCKWISE TRAFFIC ON ROY CIRCLE LOOP.
2. CONSTRUCT 13' OF NEW PAVEMENT, SANITARY SEWER ON THE OUTER LOOP SIDE OF ROY CIRCLE LOOP.

SANDMAN STREET

PHASE 1 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON WEST SIDE OF SANDMAN STREET.

PHASE 1 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY SOUTHBOUND TRAFFIC ON THE WEST SIDE OF SANDMAN STREET.
2. CONSTRUCT 13' OF NEW PAVEMENT, SANITARY SEWER ON THE EAST SIDE OF SANDMAN STREET.

PHASE 1 – STEP 2:

1. SHIFT TRAFFIC TO THE EAST SIDE AND MAINTAIN ONE–LANE ONE–WAY NORTHBOUND TRAFFIC ON SANDMAN STREET.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER ON THE WEST SIDE OF SANDMAN STREET.

DURHAM DRIVE

NOTE: NO WORK TO BE PERFORMED ON DURHAM DRIVE

EGBERT STREET

PHASE 2 – STEP 0:
1.MOY STREET PHASE 1 CONSTRUCTION TO BE COMPLETED PRIOR TO EGBERT STREET PHASE 2 CONSTRUCTION.
2.CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON SOUTH SIDE OF EGBERT STREET.
PHASE 2 – STEP 1:
1.MAINTAIN ONE–LANE TWO–WAY TRAFFIC ON THE SOUTH SIDE OF EGBERT STREET WITH FLAGGER CONTROL AS SHOWN ON PLANS .
2.CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER ON THE NORTH SIDE OF EGBERT STREET. USE HIGH EARLY STRENGTH CONCRETE.
PHASE 2 – STEP 2:
1.SHIFT TRAFFIC TO THE NORTH SIDE AND MAINTAIN ONE–LANE TWO–WAY TRAFFIC ON EGBERT STREET WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2.CONSTRUCT 13' OF NEW PAVEMENT, SANITARY SEWER ON THE SOUTH SIDE OF EGBERT STREET. USE HIGH EARLY STRENGTH CONCRETE.

KANSAS STREET

PHASE 2 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON SOUTH SIDE OF KANSAS STREET.

PHASE 2 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY EASTBOUND TRAFFIC ON THE SOUTH SIDE OF KANSAS STREET WEST OF DETERING STREET. MAINTAIN ONE–LANE TWO–WAY TRAFFIC ON THE SOUTH SIDE OF KANSAS STREET EAST OF DETERING STREET WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER ON THE NORTH SIDE OF KANSAS STREET. USE HIGH EARLY STRENGTH CONCRETE ON KANSAS STREET EAST OF DETERING STREET.

PHASE 2 – STEP 2:

1. SHIFT TRAFFIC TO THE NORTH SIDE OF KANSAS STREET. MAINTAIN ONE–LANE ONE–WAY WESTBOUND TRAFFIC ON KANSAS STREET WEST OF DETERING STREET AND ONE–LANE TWO–WAY TRAFFIC ON KANSAS STREET EAST OF DETERING STREET WITH FLAGGER CONTROL AS SHOWN ON PLANS.
2. CONSTRUCT 13' OF NEW PAVEMENT, SANITARY SEWER ON THE SOUTH SIDE OF KANSAS STREET. USE HIGH EARLY STRENGTH CONCRETE ON KANSAS STREET EAST OF DETERING STREET.

KIAM STREET

PHASE 2 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON NORTH SIDE OF KIAM STREET.

PHASE 2 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY WESTBOUND TRAFFIC ON THE NORTH SIDE OF KIAM STREET.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER AND SANITARY SEWER ON THE SOUTH SIDE OF KIAM STREET.

PHASE 2 – STEP 2:

1. SHIFT TRAFFIC TO THE SOUTH SIDE AND MAINTAIN ONE–LANE ONE–WAY EASTBOUND TRAFFIC ON THE KIAM STREET
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER AND SANITARY SEWER ON THE NORTH SIDE OF KIAM STREET.

PETTY STREET

PHASE 2 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON SOUTH SIDE OF PETTY STREET.

PHASE 2 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY EASTBOUND TRAFFIC ON THE SOUTH SIDE OF PETTY STREET.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER ON THE NORTH SIDE OF PETTY STREET. USE HIGH EARLY STRENGTH CONCRETE ON PETTY STREET EAST OF DETERING STREET.

PHASE 2 – STEP 2:

1. SHIFT TRAFFIC TO THE NORTH SIDE AND MAINTAIN ONE–LANE ONE–WAY WESTBOUND TRAFFIC ON PETTY STREET.
2. CONSTRUCT 13' OF NEW PAVEMENT, SANITARY SEWER ON THE SOUTH SIDE OF PETTY STREET.

DARLING STREET

PHASE 2 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON NORTH SIDE OF DARLING STREET EAST OF REINERMAN ST AND TO WEST OF DURHAM DR.

PHASE 2 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY WESTBOUND TRAFFIC ON THE NORTH SIDE OF DARLING STREET, EAST OF REINERMAN ST AND TO WEST OF DURHAM DR.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER AND SANITARY SEWER ON THE SOUTH SIDE OF DARLING STREET.

PHASE 2 – STEP 2:

1. SHIFT TRAFFIC TO THE SOUTH SIDE AND MAINTAIN ONE–LANE ONE–WAY EASTBOUND TRAFFIC ON DARLING STREET EAST OF REINERMAN ST AND TO WEST OF DURHAM DR.
2. CONSTRUCT 13' OF NEW PAVEMENT, SANITARY SEWER ON THE NORTH SIDE OF DARLING STREET.

LARKIN STREET

PHASE 2 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON SOUTH SIDE OF LARKIN STREET.

PHASE 2 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY EASTBOUND TRAFFIC ON THE SOUTH SIDE OF LARKIN STREET WEST OF DURHAM DRIVE. MAINTAIN ONE–LANE ONE–WAY WESTBOUND TRAFFIC ON THE SOUTH SIDE OF LARKIN STREET EAST OF DURHAM DRIVE.
2. CONSTRUCT 13' OF NEW PAVEMENT, SANITARY SEWER ON THE NORTH SIDE OF LARKIN STREET.

PHASE 2 – STEP 2:

1. SHIFT TRAFFIC TO THE NORTH SIDE AND MAINTAIN ONE–LANE ONE–WAY WESTBOUND TRAFFIC ON LARKIN STREET.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER ON THE SOUTH SIDE OF LARKIN STREET.

CORNISH STREET

PHASE 2 – STEP 0:

1. CONSTRUCT TEMPORARY ASPHALT AS SHOWN ON THE PLANS ON NORTH SIDE OF CORNISH STREET.

PHASE 2 – STEP 1:

1. MAINTAIN ONE–LANE ONE–WAY WESTBOUND TRAFFIC ON THE NORTH SIDE OF CORNISH STREET WEST OF DURHAM DRIVE. MAINTAIN ONE–LANE ONE–WAY EASTBOUND TRAFFIC ON THE NORTH SIDE OF CORNISH STREET EAST OF DURHAM DRIVE.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER AND SANITARY SEWER ON THE SOUTH SIDE OF CORNISH STREET.

PHASE 2 – STEP 2:

1. SHIFT TRAFFIC TO THE SOUTH SIDE AND MAINTAIN ONE–LANE ONE–WAY EASTBOUND TRAFFIC ON CORNISH STREET.
2. CONSTRUCT 13' OF NEW PAVEMENT, STORM SEWER AND SANITARY SEWER ON THE NORTH SIDE OF CORNISH STREET.

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Fax (281) 304–0210
Registration No. F–382

SURVEYED BY:KUO & ASSOC.
FB NO. P–6133

LOUIS M. GOMEZ 106741 LICENSED PROFESSIONAL ENGINEER
1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
SEQUENCE OF CONSTRUCTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0001–4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 263 of 345	

GUNDA CORPORATION
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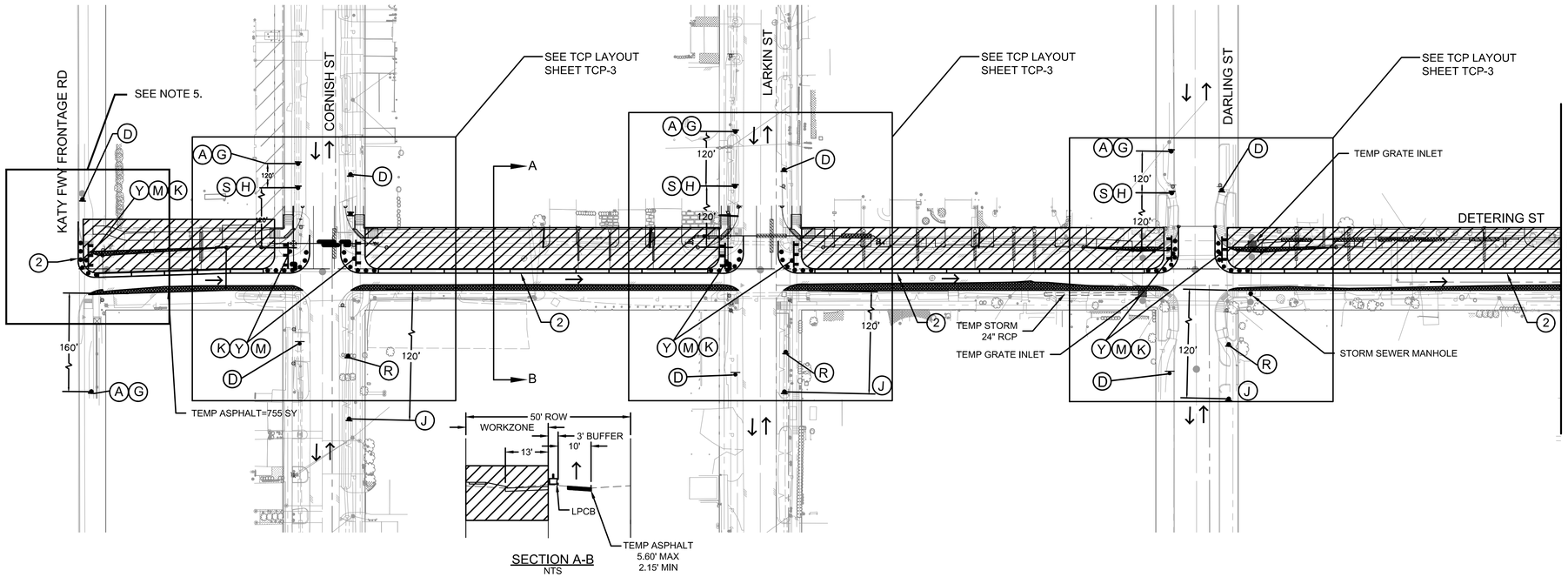


SECTION A-B
NTS

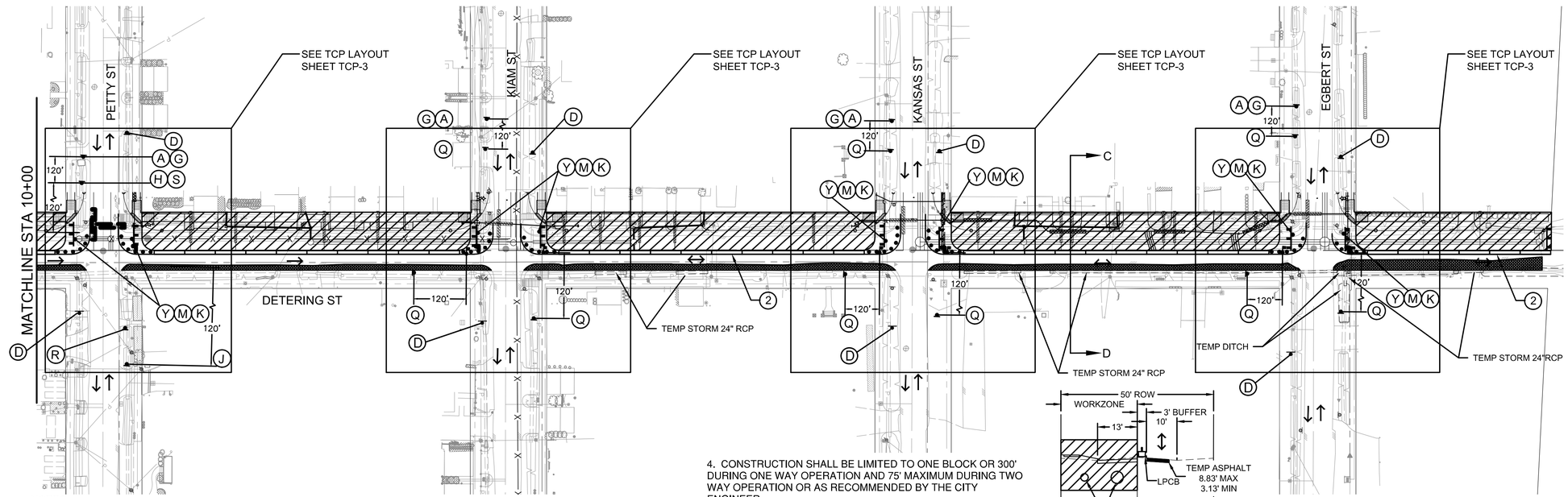
TEMP STORM
(24" RCP)= 56.93 LF

TEMP ASPHALT
= 307.07 SY

NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)



SECTION C-D
NTS

TEMP STORM
(24" RCP)= 259.13 LF
TEMP ASPHALT= 403.82 SY

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. PROVIDE TEMPORARY ASPHALT PAVEMENT IN STEP 0, CONSTRUCTION OF PAVEMENT CONFLICTING WITH STORM DITCH, INLETS, MANHOLES, TEMPORARY FACILITIES SHALL BE PROVIDED TO MAINTAIN STORM FLOW.
4. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
5. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			DETERING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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LUIS M. GOMEZ 106474 LICENSED PROFESSIONAL ENGINEER
2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DETERING STREET
PHASE 1 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 264 of 345	

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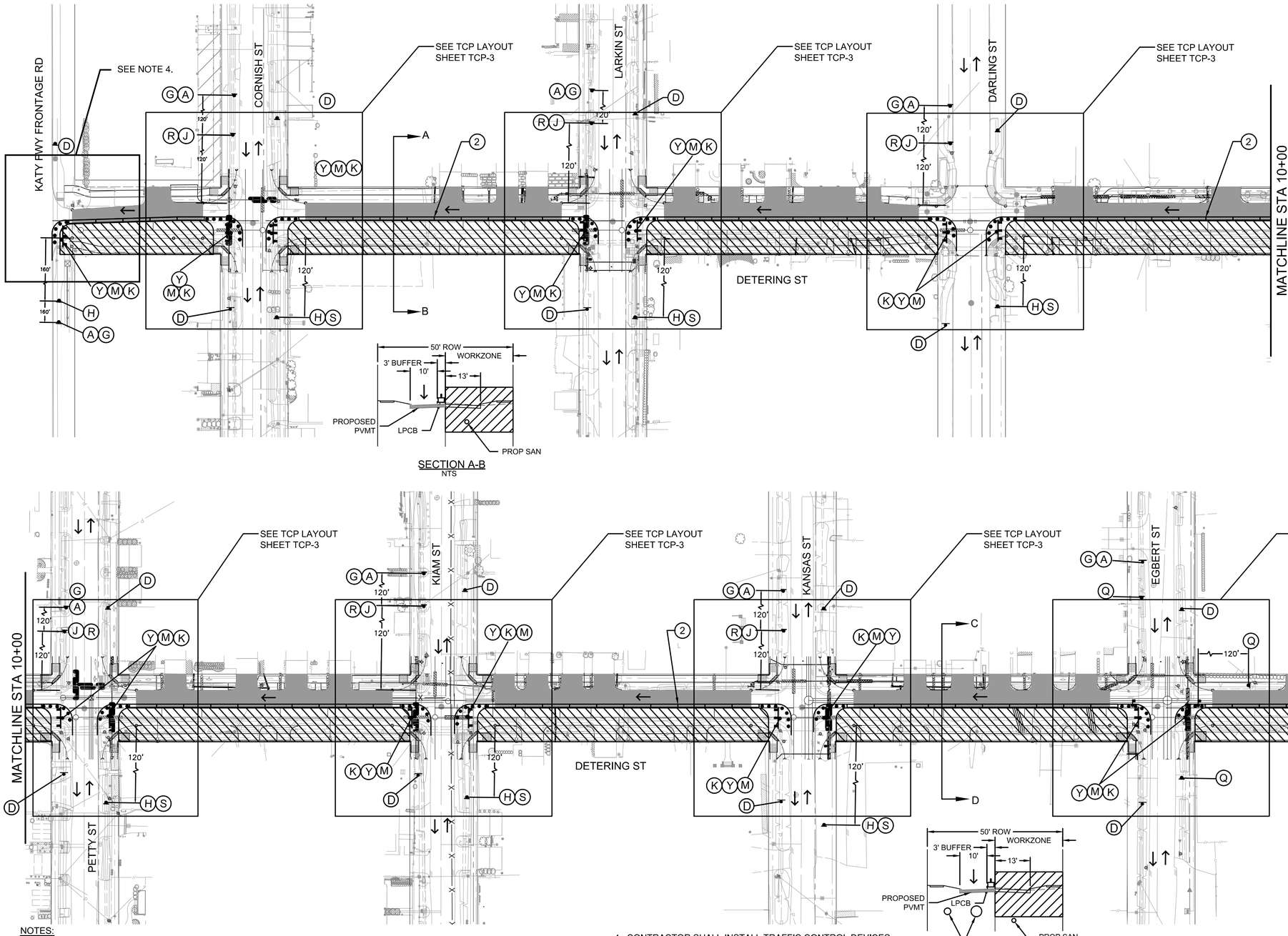

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			DETERING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

0 40' 80'

NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

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Registration No. F-382

STATE OF TEXAS · GUS K. GUNDA · 106747 · PROFESSIONAL ENGINEER

SURVEYED BY:KUO & ASSOC.
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2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DETERING STREET
PHASE 1 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
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Sheet No. 265 of 345	

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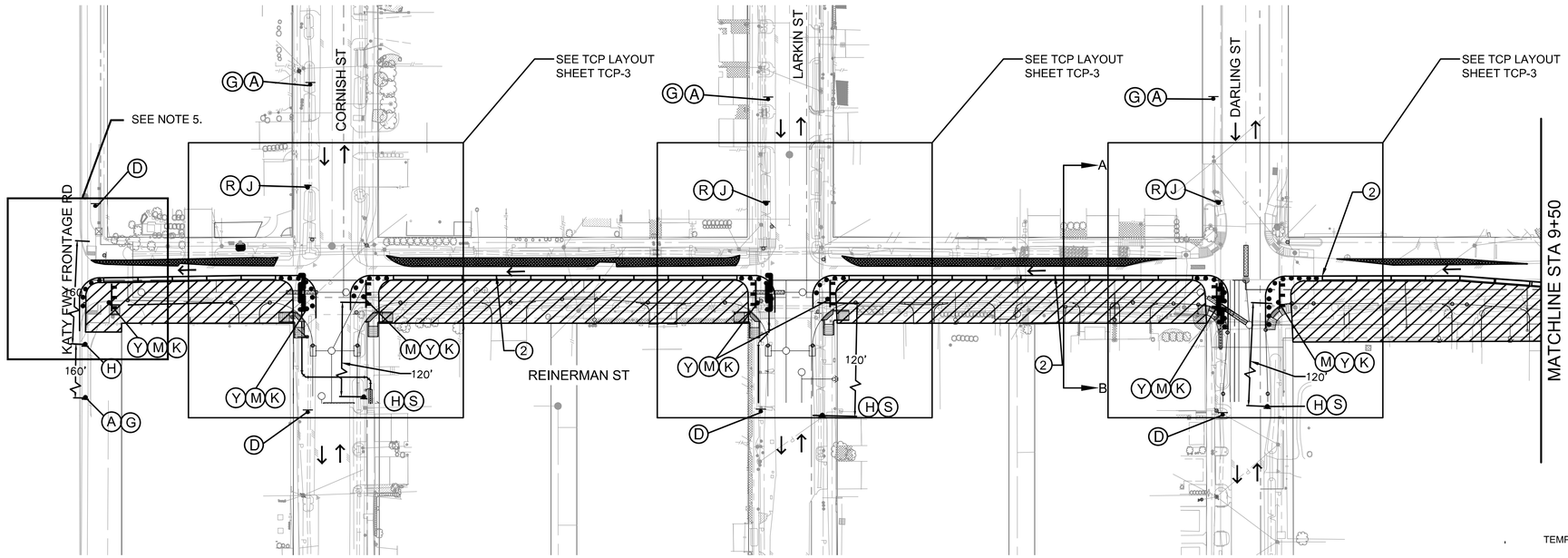
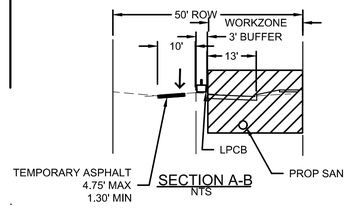
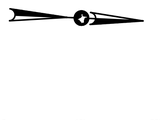


TEMPORARY ASPHALT
=261.31 SY



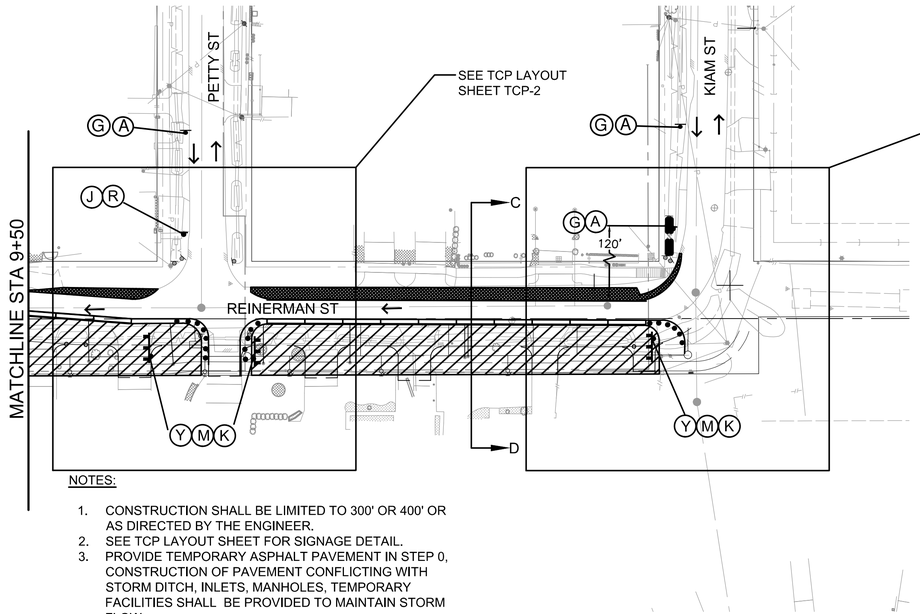
SECTION A-B
NTS



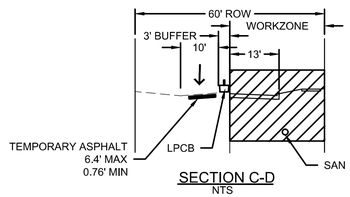
NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)



TEMPORARY ASPHALT
=188.43 SY



SECTION C-D
NTS

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. PROVIDE TEMPORARY ASPHALT PAVEMENT IN STEP 0, CONSTRUCTION OF PAVEMENT CONFLICTING WITH STORM DITCH, INLETS, MANHOLES, TEMPORARY FACILITIES SHALL BE PROVIDED TO MAINTAIN STORM FLOW.
4. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
5. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			REINERMAN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	DRUM

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FB NO. P-6133

2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
REINERMAN STREET
PHASE 1 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 266 of 345	

GUNDA CORPORATION
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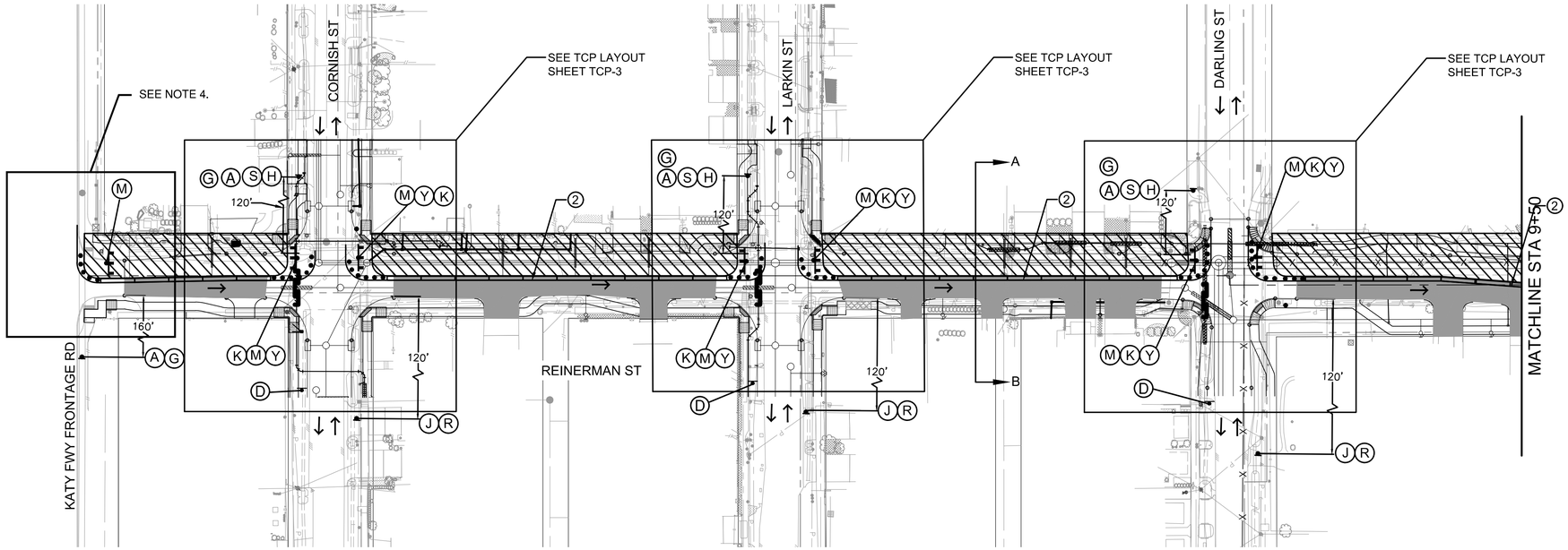
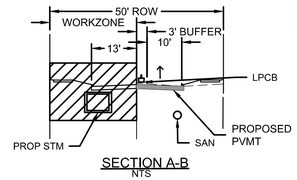
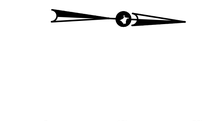


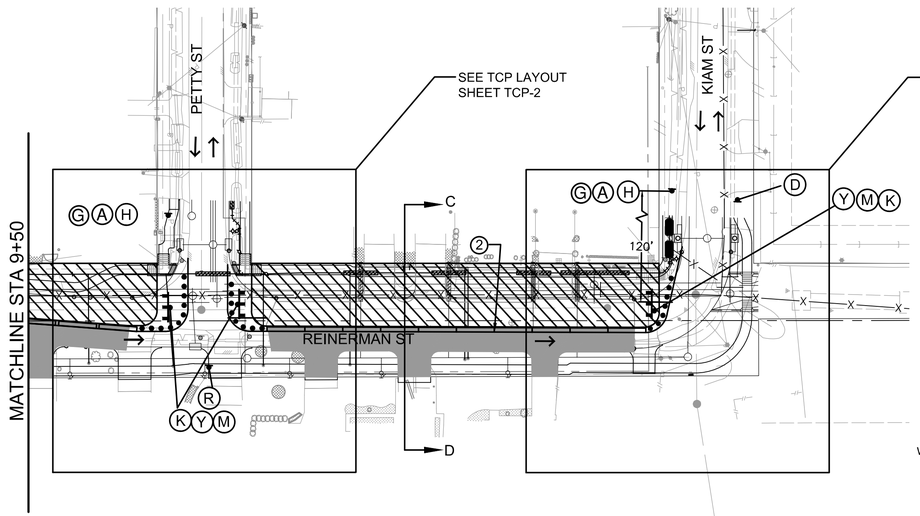


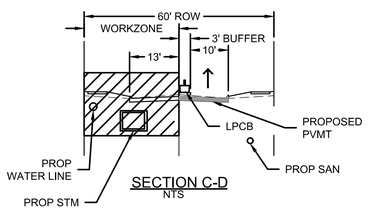
SECTION A-B
NTS



LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)





SECTION C-D
NTS

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			REINERMAN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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Registration No. F-382

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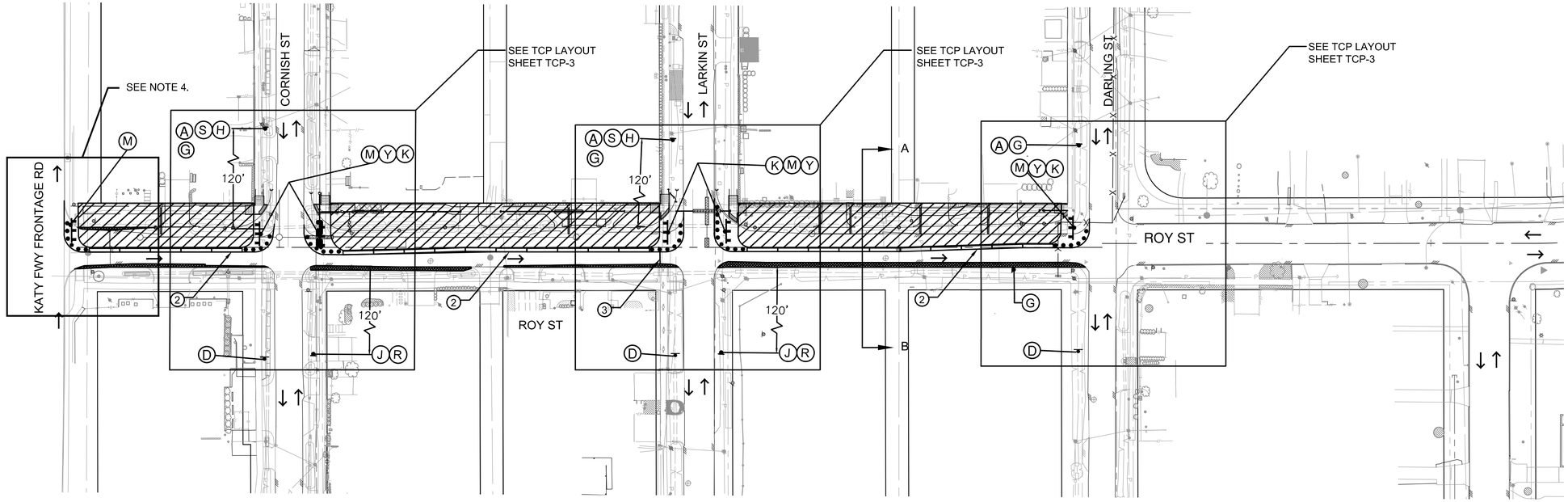
FB NO. P-6133

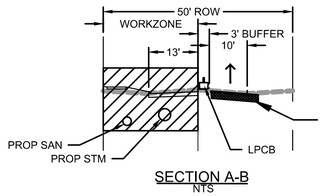
LUIS M. GOMEZ 106747 LICENSED PROFESSIONAL ENGINEER
2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
REINERMAN STREET
PHASE 1 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 267 of 345	





SECTION A-B
NTS

TEMPORARY ASPHALT
3.67' MAX
0.82' MIN

TEMPORARY ASPHALT= 161.71 SY



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			ROY STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					36" DRUM
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	

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2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
ROY STREET
PHASE 1 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 268 of 345	

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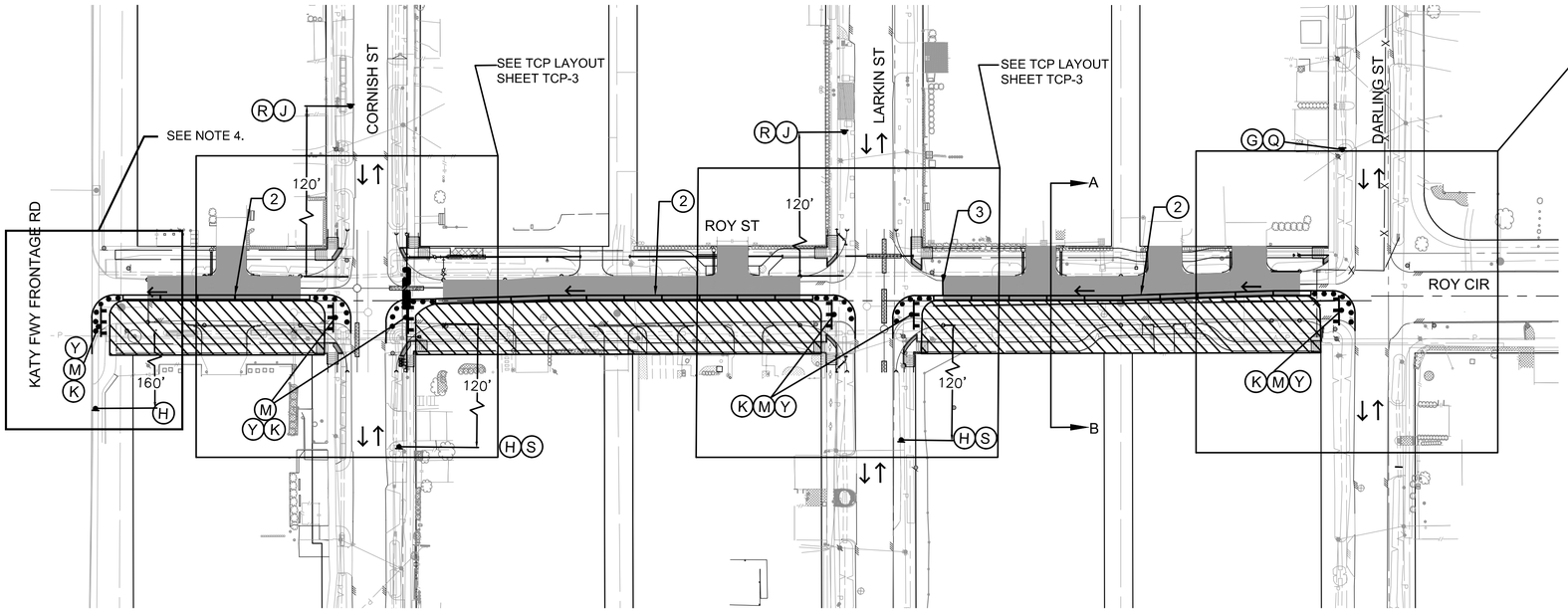
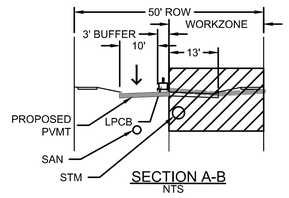
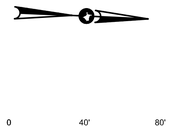




SECTION A-B
NTS



NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			ROY STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30

LEFT	RIGHT	8"-12"	8"-12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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STATE OF TEXAS
LUIS M. GOMEZ
108747
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2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
ROY STREET
PHASE 1 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 269 of 345	

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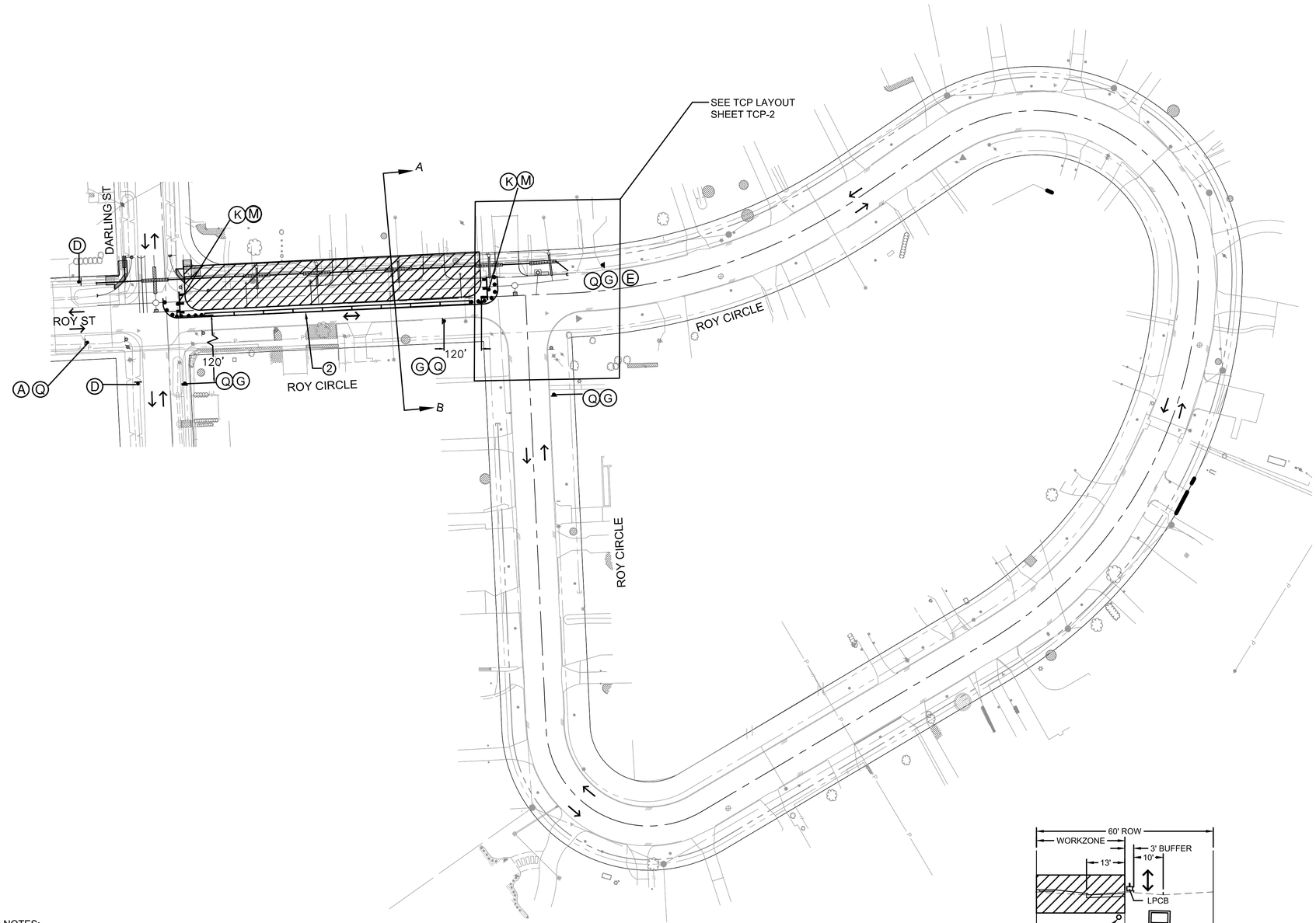

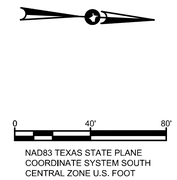

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP-1 LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.

SECTION A-B
NTS

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"-12"	8"-12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			ROY CIRCLE			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
ROY CIRCLE
PHASE 1 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 270 of 345	

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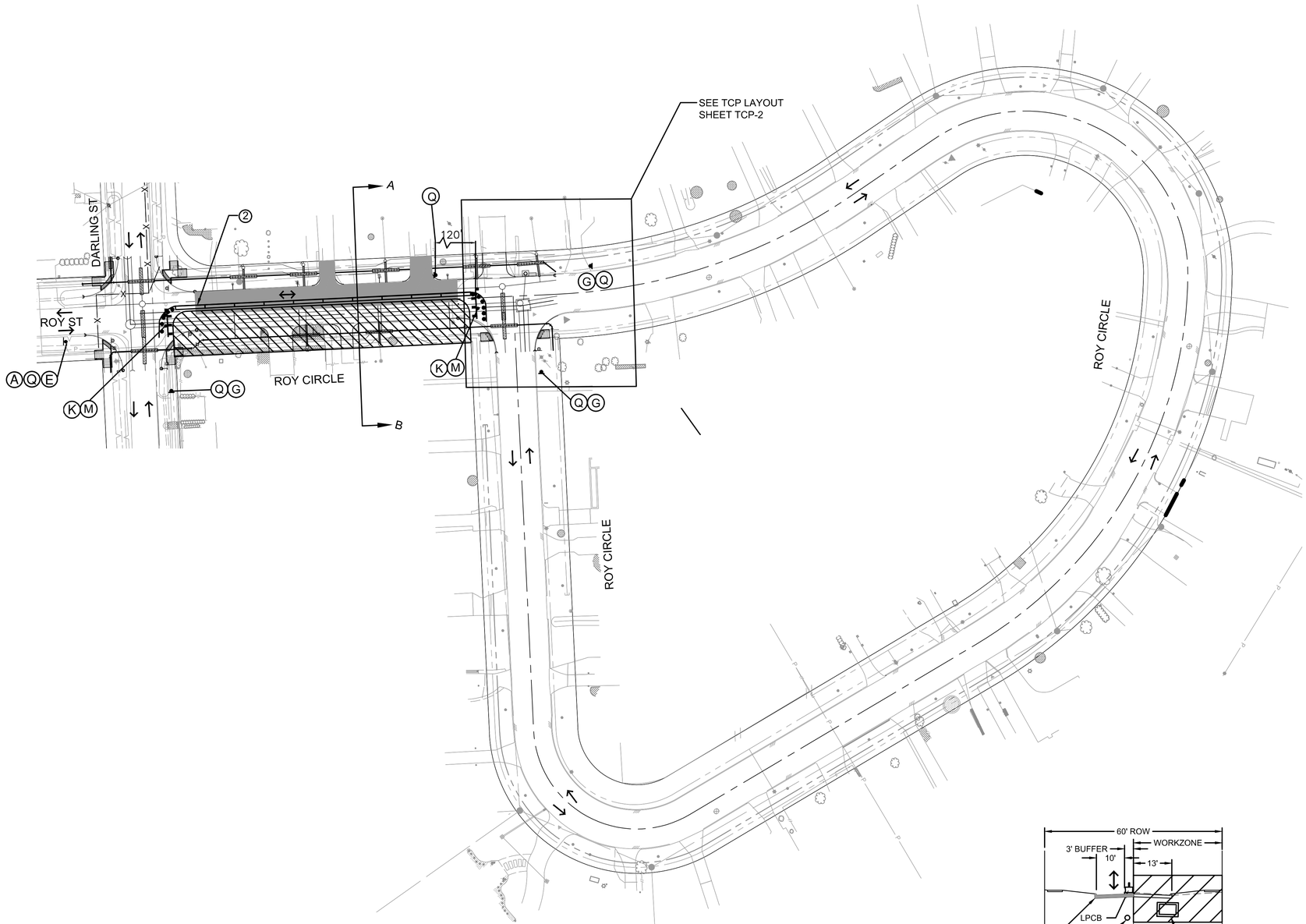

SECTION A-B
NTS

0 40' 80'

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			ROY CIRCLE			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					36" DRUM
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	

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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
ROY CIRCLE
PHASE 1 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 271 of 345	

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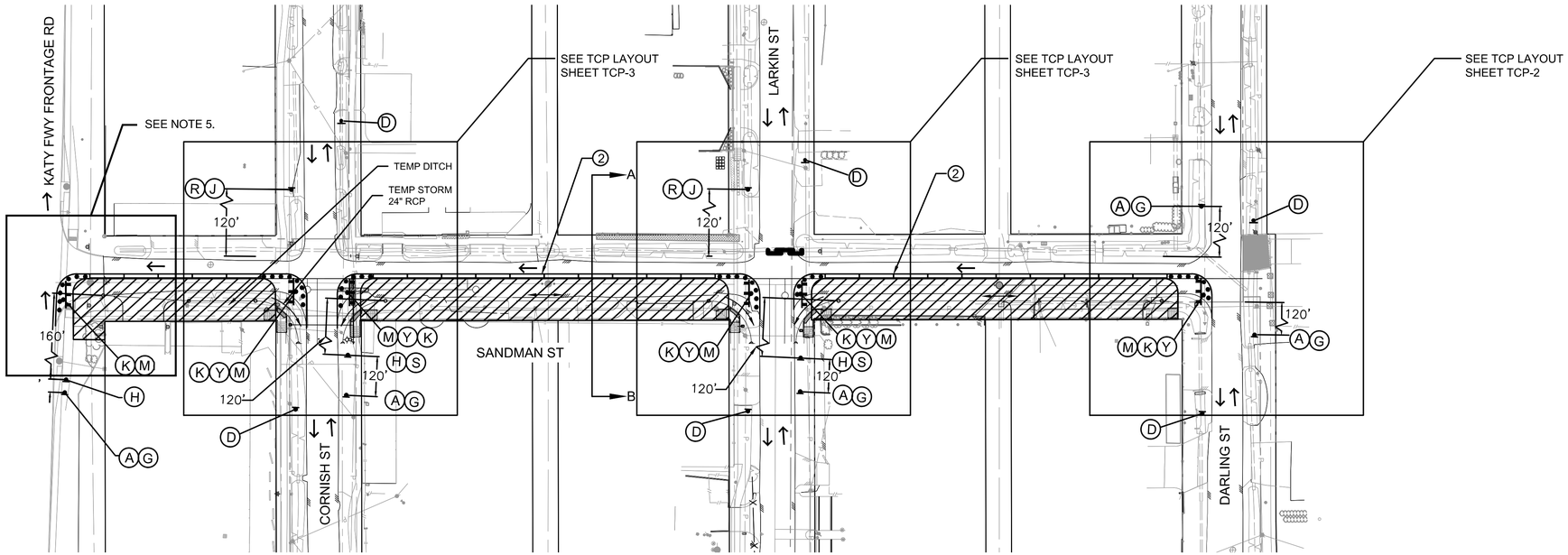
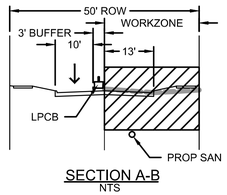
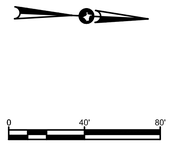




SECTION A-B
NTS



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. PROVIDE TEMPORARY ASPHALT PAVEMENT IN STEP 0, CONSTRUCTION OF PAVEMENT CONFLICTING WITH STORM DITCH, INLETS, MANHOLES, TEMPORARY FACILITIES SHALL BE PROVIDED TO MAINTAIN STORM FLOW.
4. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
5. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			SANDMAN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

GUNDA CORPORATION
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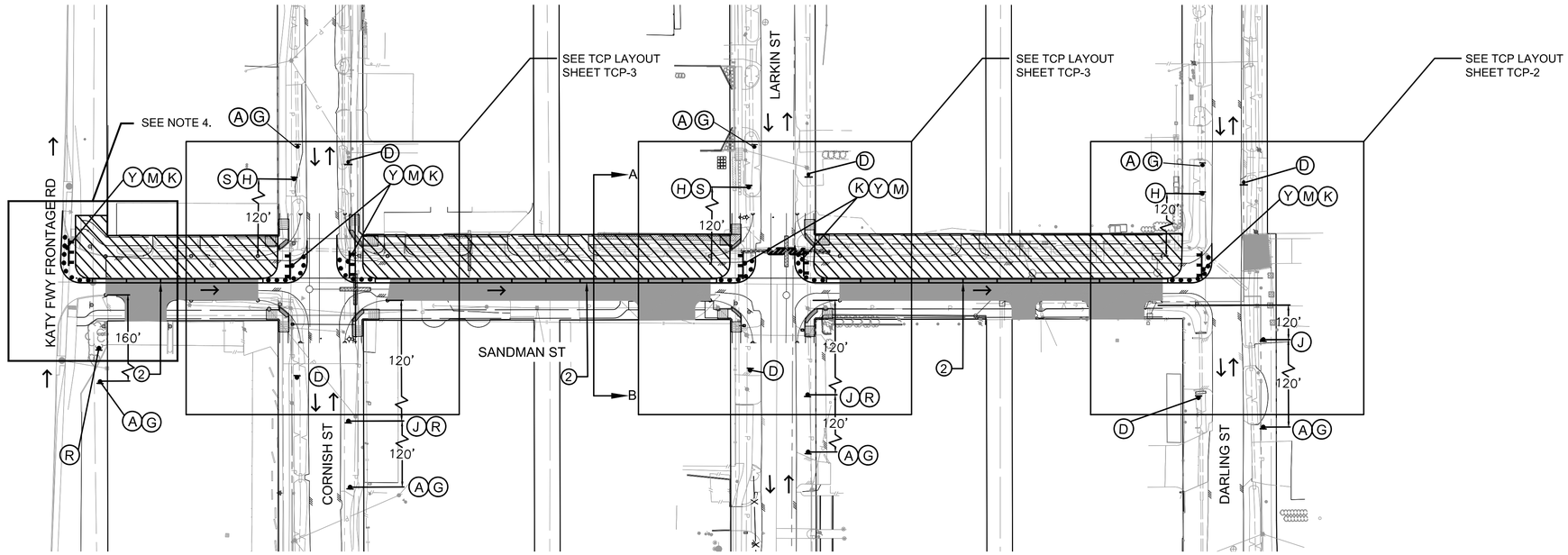
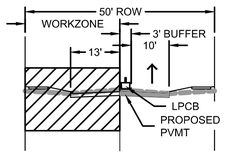
TRAFFIC CONTROL PLANS
SANDMAN STREET
PHASE 1 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 272 of 345	





SECTION A-B
NTS



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			SANDMAN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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SURVEYED BY:KUO & ASSOC.

FB NO. P–6133

STATE OF TEXAS
LUIS M. GOMEZ
106747
LICENSED PROFESSIONAL ENGINEER

2/02/2026

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
SANDMAN STREET
PHASE 1 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0001–4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 273 of 345	

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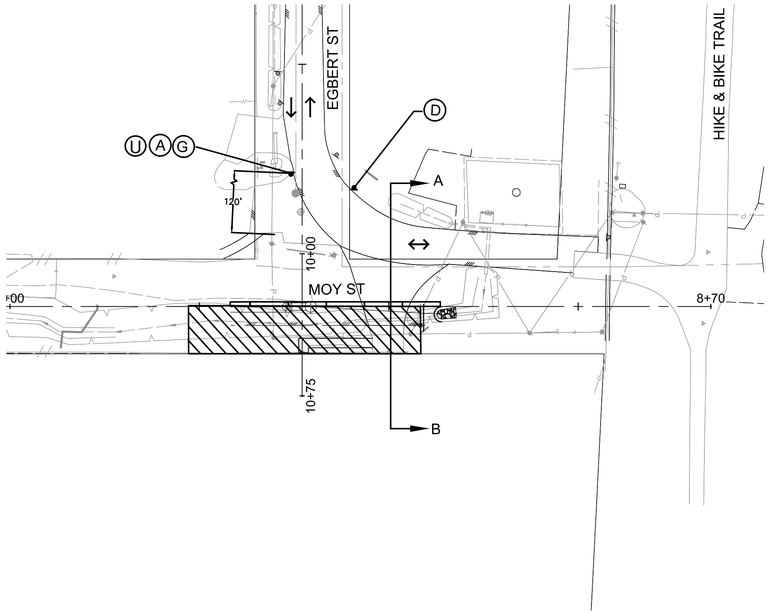
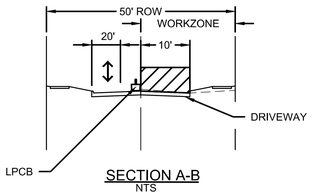
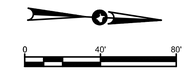




SECTION A-B
NTS



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. CONTRACTOR SHALL COORDINATE WITH FORESTRY IF TREE TRIMMING IS REQUIRED AS THERE ARE MATURE TREES WITH BRANCHES.
5. CONTRACTOR SHALL COORDINATE WITH HOUSTON FIRE DEPARTMENT (HFD) AS THERE IS AN EXISTING FIRE HYDRANT IN THE ROW.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"-12"	8"-12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD PLAQUE	LEFT LANE CLOSED AHEAD PLAQUE	END ROAD WORK			MOY STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

U
YIELD R1-2 TO ONCOMING TRAFFIC R1-2aP

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FB NO. P-6133

STATE OF TEXAS
LUIS M. GOMEZ
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1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
MOY ST
PHASE 1 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 274 of 345	

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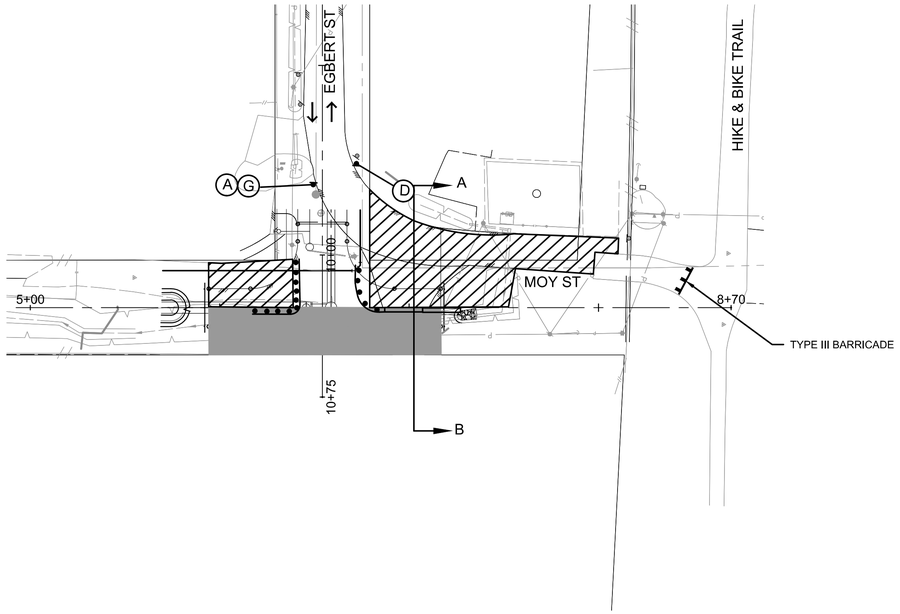

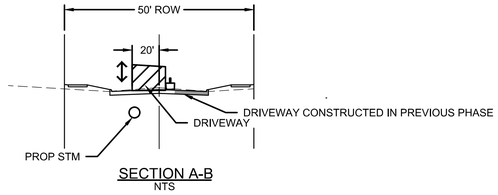

SECTION A-B
NTS



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

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A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"-12"	8"-12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			MOY STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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FB NO. P-6133

STATE OF TEXAS
LUIS M. GOMEZ
108747
LICENSED PROFESSIONAL ENGINEER
1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
MOY ST
PHASE 1 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 275 of 345	

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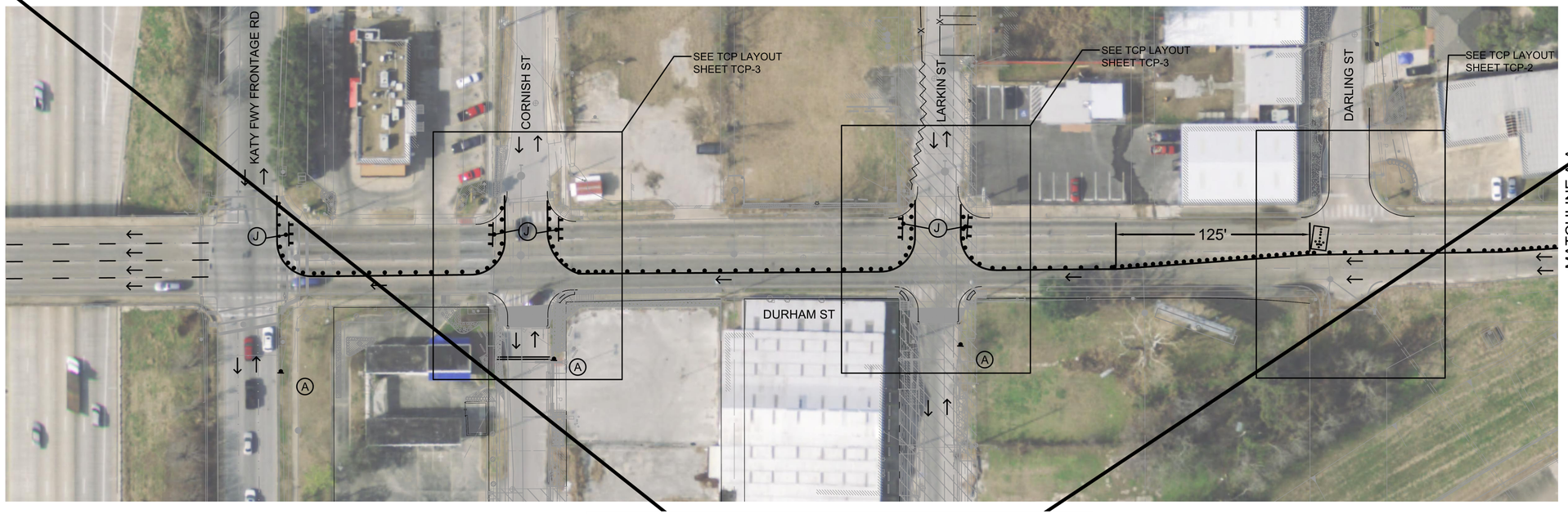

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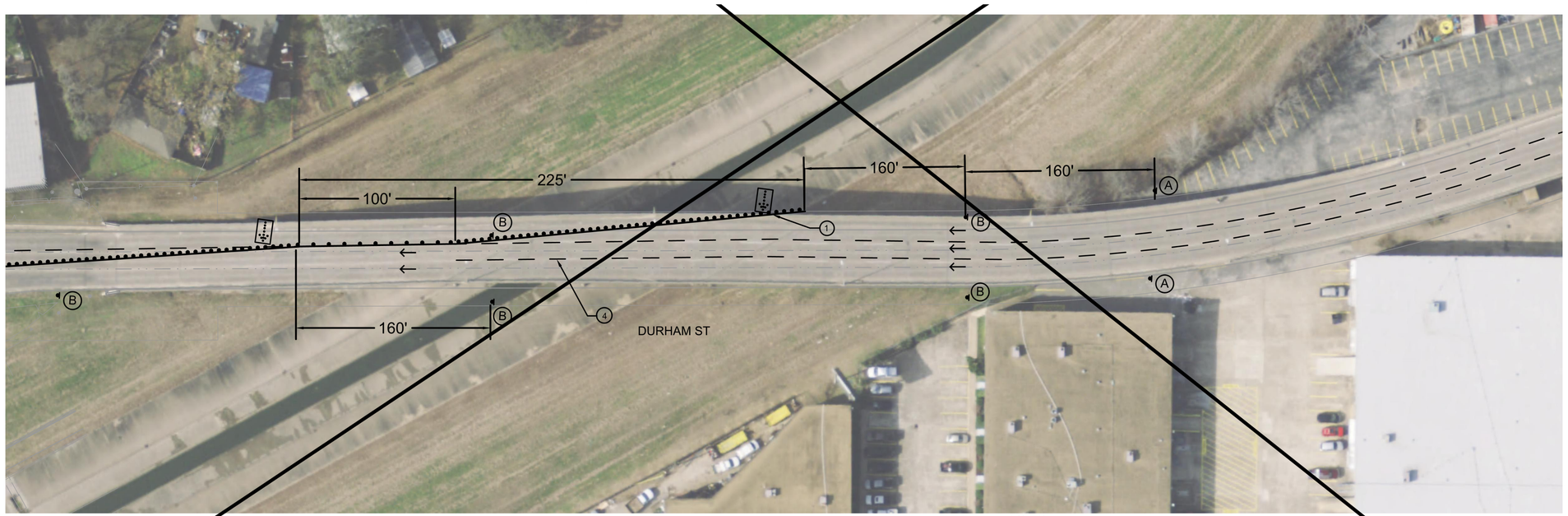

NOTES:

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2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			DURHAM STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					36" DRUM
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	

MATCHLINE A-A

0 40' 80'

NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
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- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

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1/23/2026

CITY OF HOUSTON
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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DURHAM STREET
PHASE 1 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 276 of 345	

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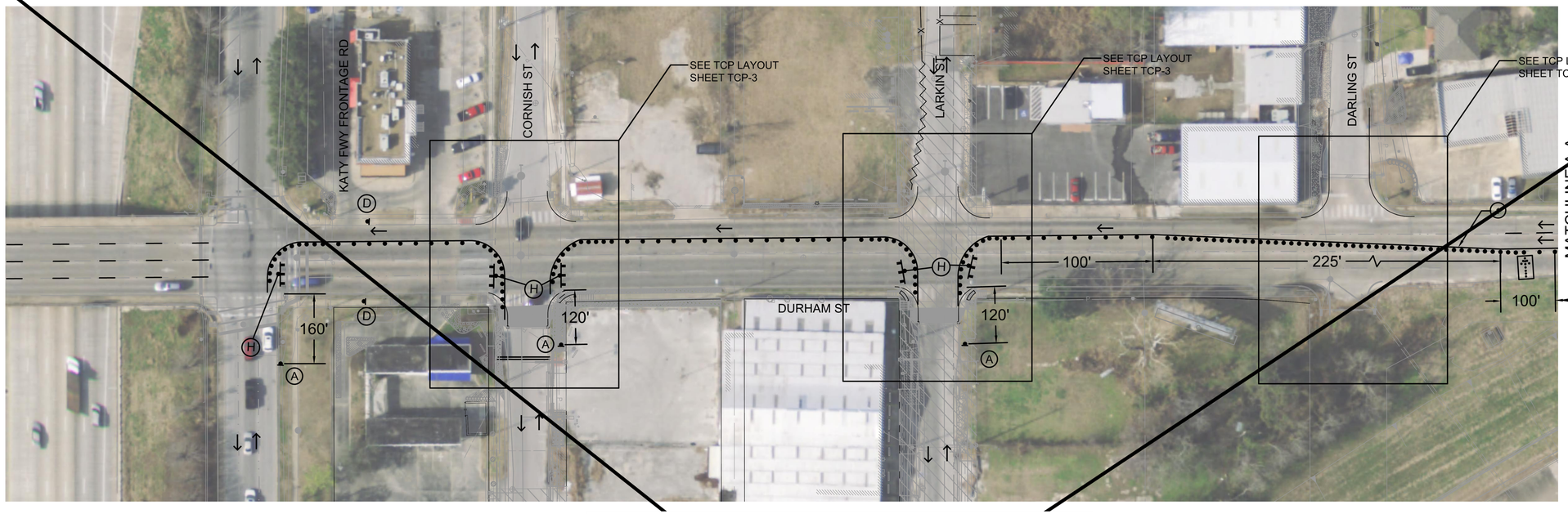
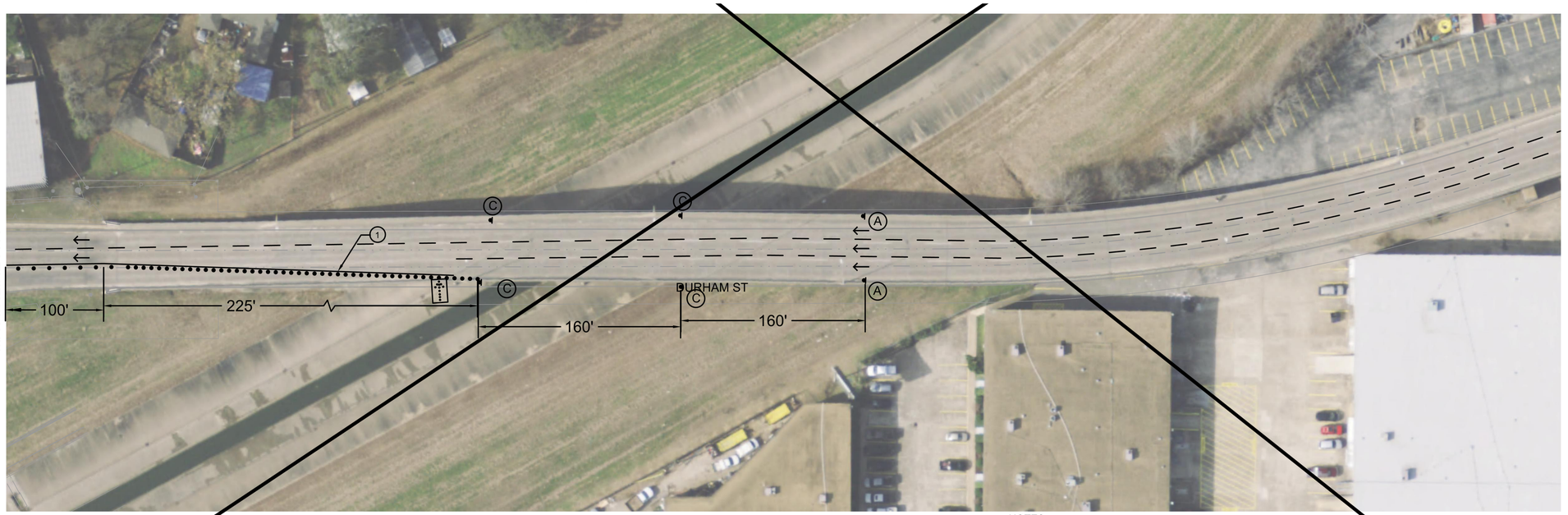


(NO WORK TO BE PERFORMED ON DURHAM ST)



NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

0 40' 80'

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
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NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK						DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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FB NO. P-6133

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DURHAM STREET
PHASE 1 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 277 of 345	

GUNDA CORPORATION
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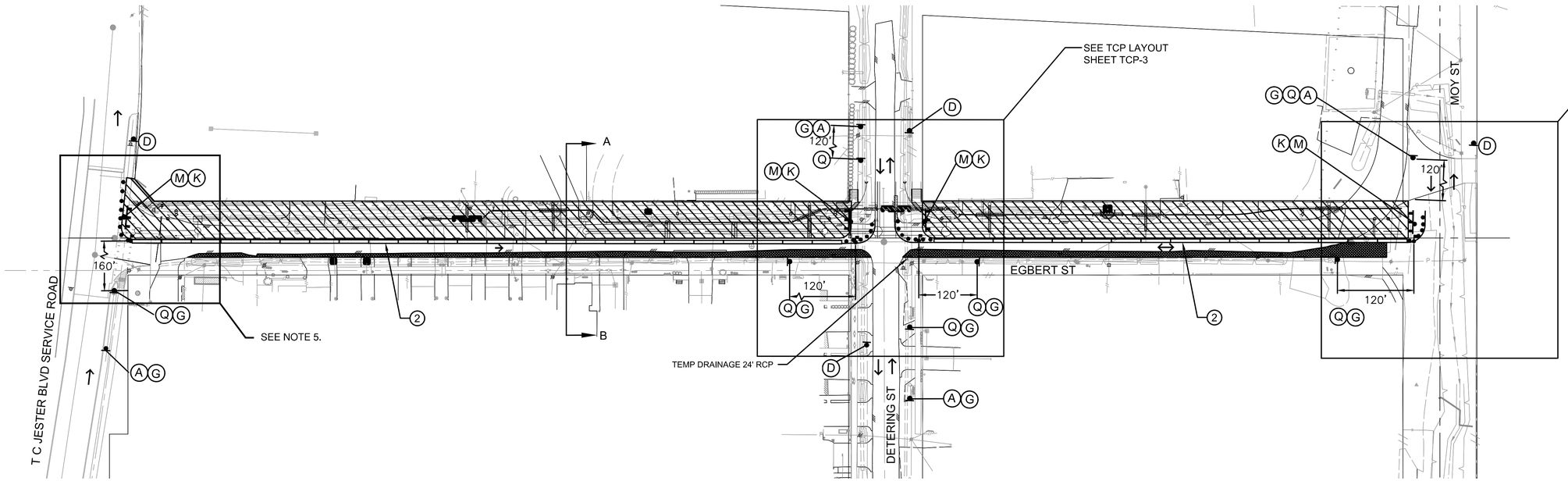

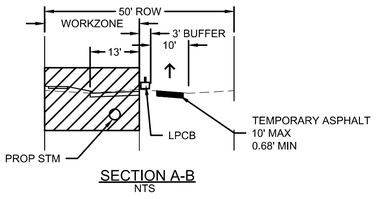

SECTION A-B
NTS

TEMPORARY ASPHALT= 346.50 SY
TEMPORARY STORM 24" RCP= 2.13 LF

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
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- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
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NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. PROVIDE TEMPORARY ASPHALT PAVEMENT IN STEP 0. CONSTRUCTION OF PAVEMENT CONFLICTING WITH STORM DITCH, INLETS, MANHOLES; TEMPORARY FACILITIES SHALL BE PROVIDED TO MAINTAIN STORM FLOW.
4. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
5. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			EGBERT STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

GUNDA CORPORATION
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2/02/2026

CITY OF HOUSTON
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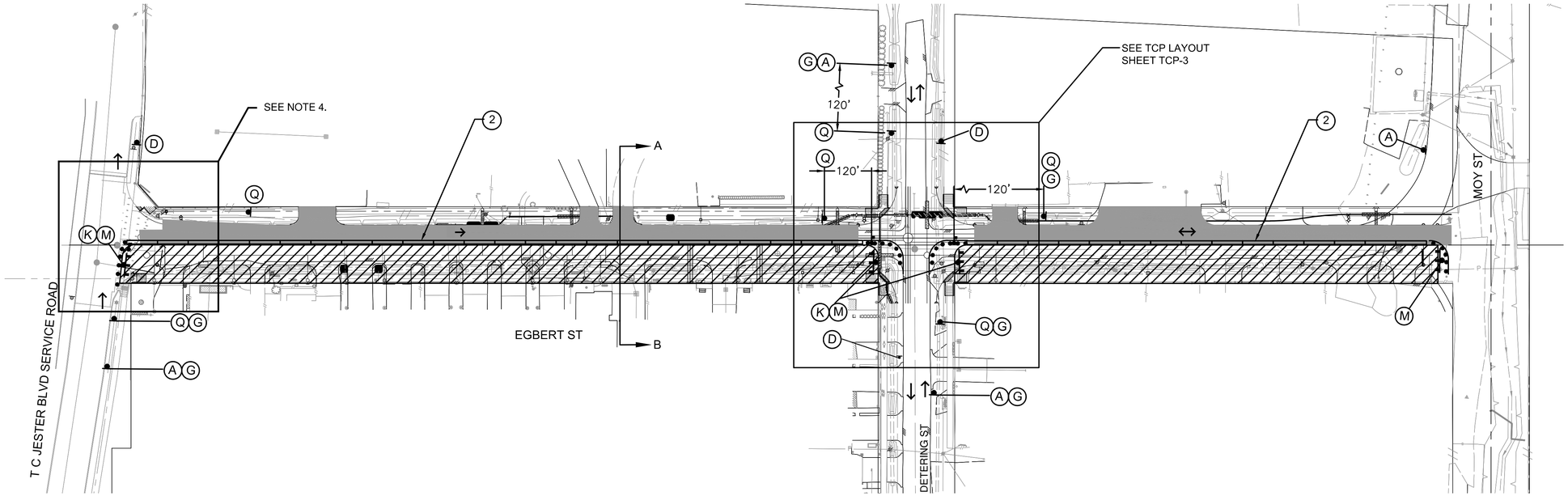
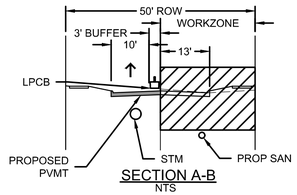
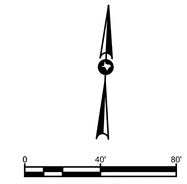
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
EGBERT ST
PHASE 2 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 278 of 345	





SECTION A-B
NTS



NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			EGBERT STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

GUNDA CORPORATION
P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\7.TCP EGBERT.dwg Aug 22, 2025-3:42pm CRubit

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Fax (281) 304-0210
Registration No. F-382

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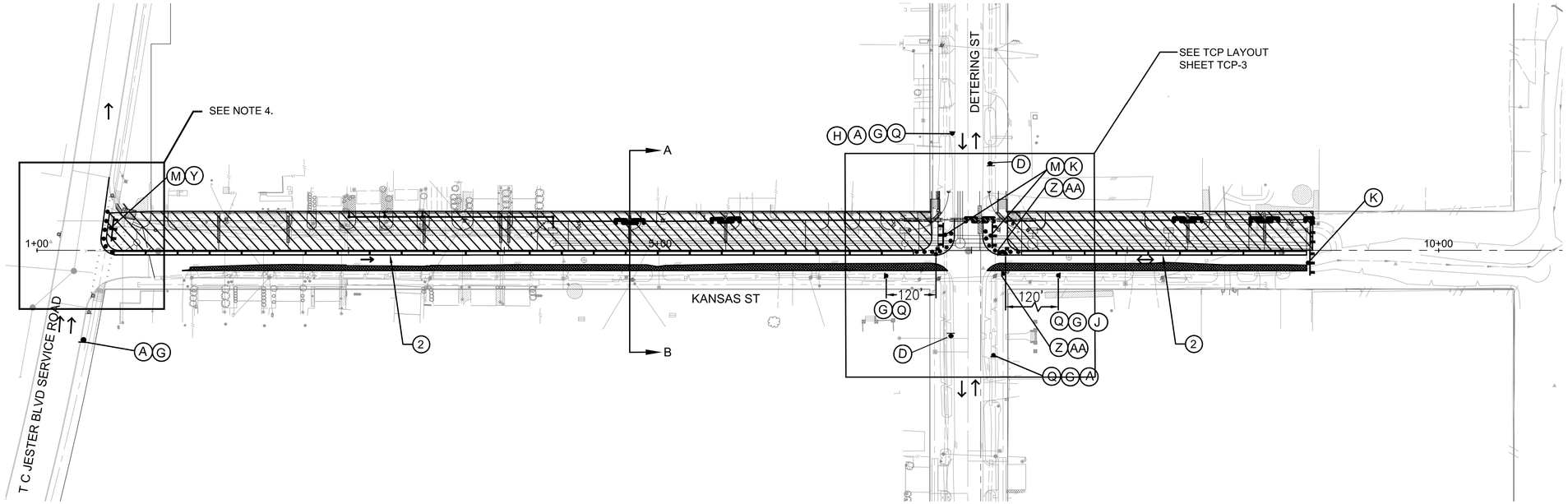
FB NO. P-6133

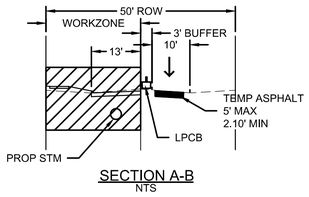
LUIS M. GOMEZ 106747 LICENSED PROFESSIONAL ENGINEER
2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
EGBERT ST
PHASE 2 STEP 2

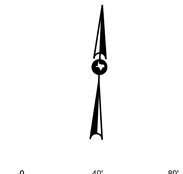
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 279 of 345	





SECTION A-B
NTS

TEMPORARY ASPHALT= 301.11 SY



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

Z	AA
YIELD R1-2 36 X 36 X 36	TO ONCOMING TRAFFIC R1-2a 24 X 12

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"-12"	8"-12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD CW20-1D 48 X 48	RIGHT LANE CLOSED AHEAD CW20-5RD 48 X 48 PLAQUE 30 X 12	LEFT LANE CLOSED AHEAD CW20-5LD 48 X 48 PLAQUE 30 X 12	END ROAD WORK G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	KANSAS STREET M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	DO NOT ENTER R5-1 30 X 30	CW6-3 36 X 36	ROAD CLOSED R11-2	ROAD CLOSED TO THRU TRAFFIC R11-4	ROAD CLOSED AHEAD CW20-30 36 X 36	CW20-7a 48 x 48	ONE WAY R6-2R	ONE WAY R6-2L	BEGIN ONE WAY R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
KANSAS STREET
PHASE 2 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 280 of 345	

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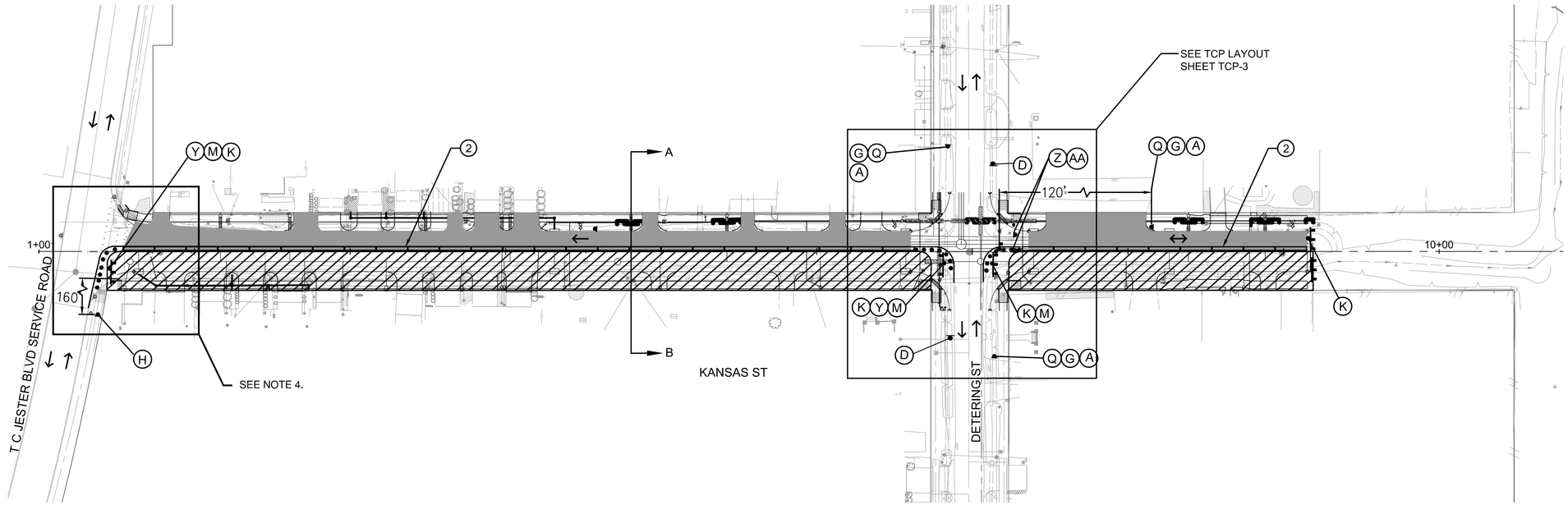

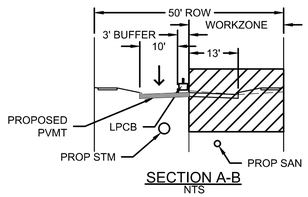

SECTION A-B
NTS



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

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Z	AA	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
YIELD	TO ONCOMING TRAFFIC	ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			KANSAS STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
R1–2 36 X 36 X 36	R1–2a 24 X 12	CW20–1D 48 X 48	CW20–5RD 48 X 48 PLAQUE 30 X 12	CW20–5LD 48 X 48 PLAQUE 30 X 12	G20–2a 36 X 18	CW1–4L 36 X 36	CW1–4R 36 X 36	M4–9N 30 X 12	R3–1 24 X 24	R3–2 24 X 24	R5–1 30 X 30	CW6–3 36 X 36	R11–2	R11–4	CW20–30 36 X 36	CW20–7a 48 x 48	R6-2R	R6-2L	R6–6 24 X 30	CW1–8 18 x 24 CHEVRON	CW1–8 18 x 24 CHEVRON	VP–1L	VP–1R	36" DRUM

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LUIS M. GOMEZ
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LICENSED PROFESSIONAL ENGINEER

SURVEYED BY:KUO & ASSOC.
FB NO. P–6133

2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
KANSAS STREET
PHASE 2 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0001–4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 281 of 345	

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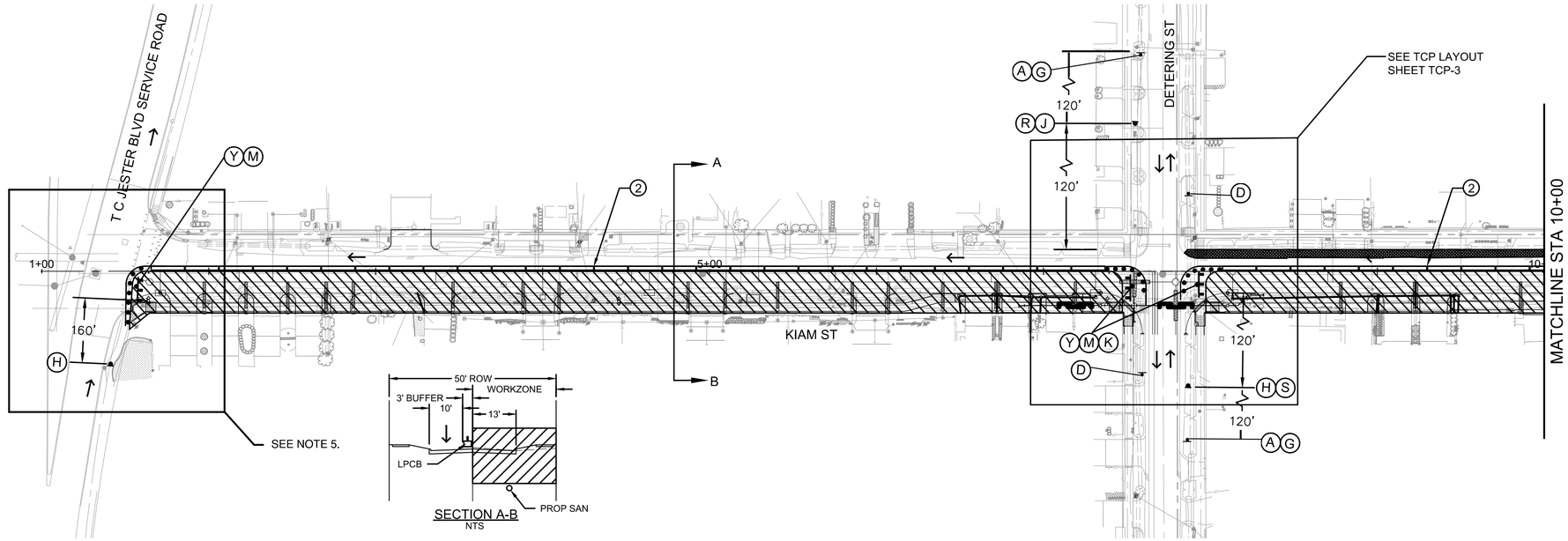
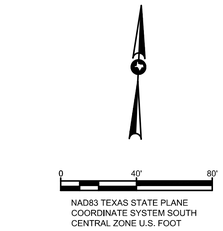
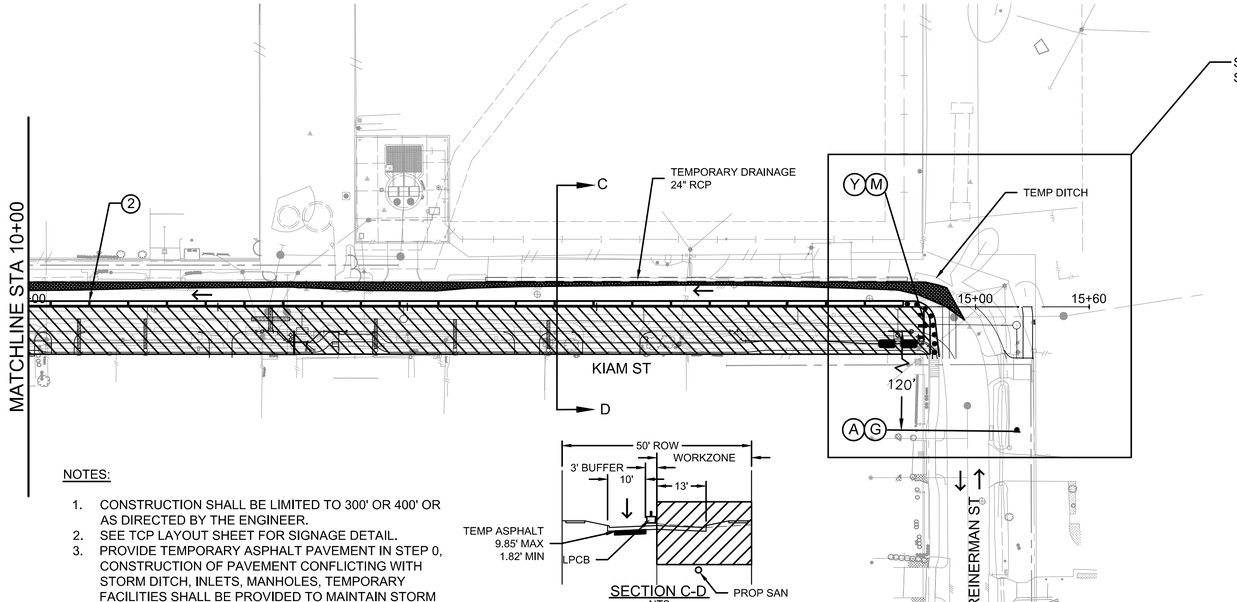




LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

TEMPORARY ASPHALT = 288.86 SY
TEMPORARY STORM 24" RCP= 228.12 LF



NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. PROVIDE TEMPORARY ASPHALT PAVEMENT IN STEP 0, CONSTRUCTION OF PAVEMENT CONFLICTING WITH STORM DITCH, INLETS, MANHOLES, TEMPORARY FACILITIES SHALL BE PROVIDED TO MAINTAIN STORM FLOW.
4. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
5. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			KIAM STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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110674
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SURVEYED BY:KUO & ASSOC.
FB NO. P-6133

2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
KIAM STREET
PHASE 2 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 282 of 345	

GUNDA CORPORATION
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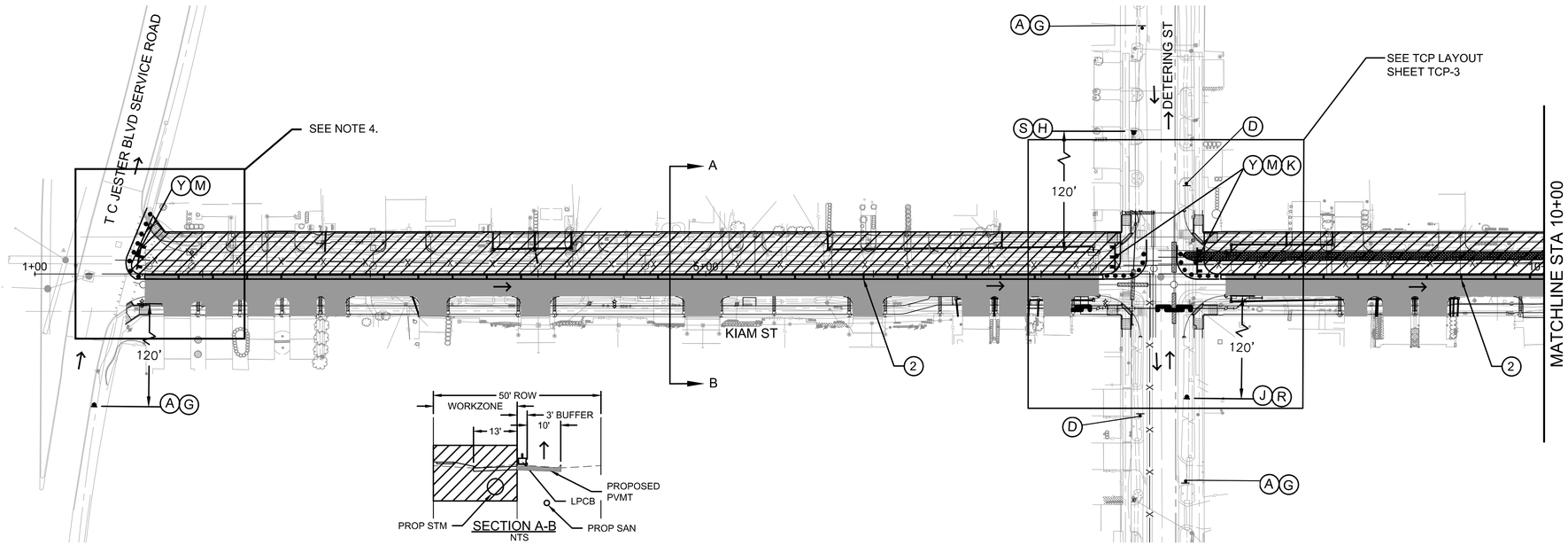

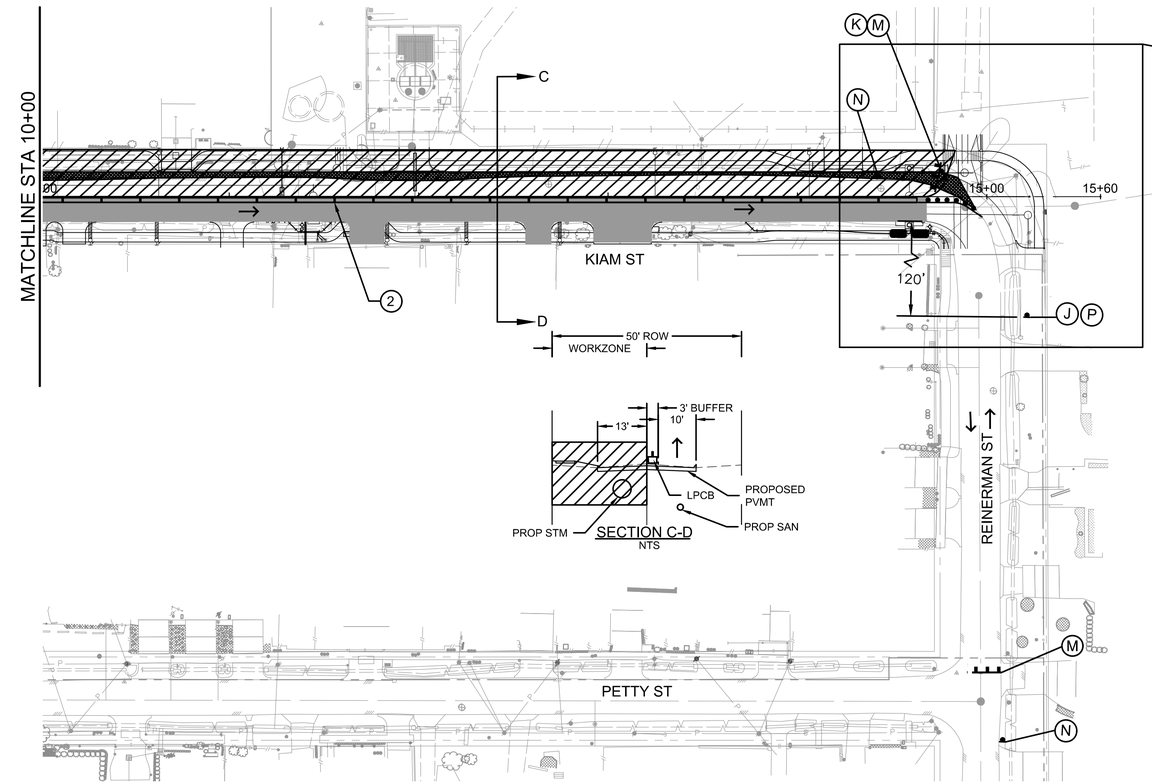



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
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- SIGN ON POST
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- TRAFFIC FLOW DIRECTION
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NOTES:

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A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			KIAM STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
KIAM STREET
PHASE 2 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 283 of 345	

GUNDA CORPORATION
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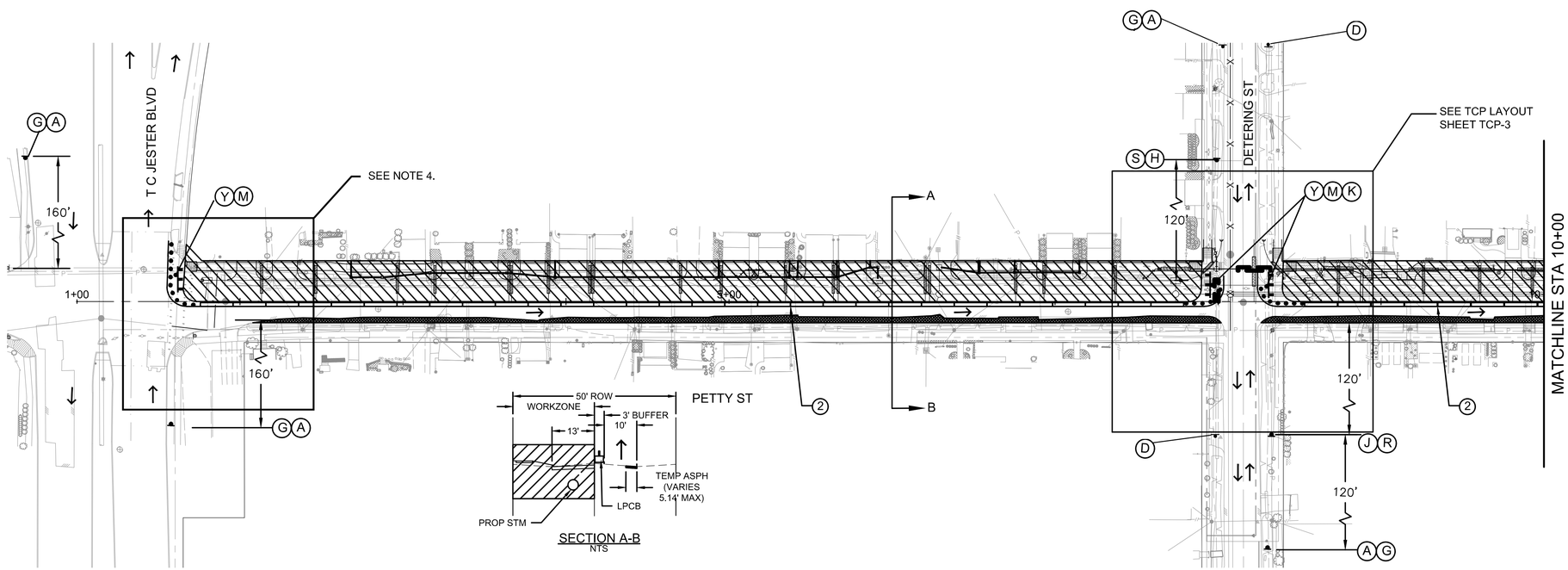

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2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
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A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			PETTY STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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2/02/2026

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TRAFFIC CONTROL PLANS
PETTY STREET
PHASE 2 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 284 of 345	

GUNDA CORPORATION
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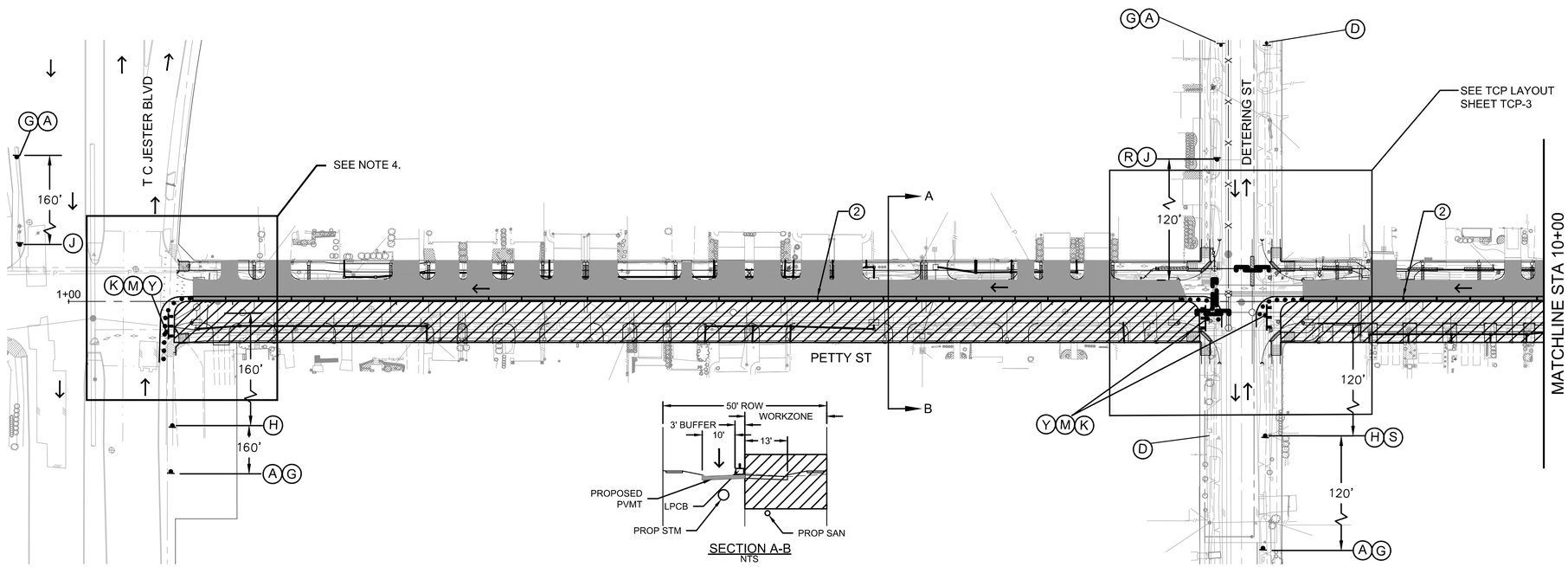
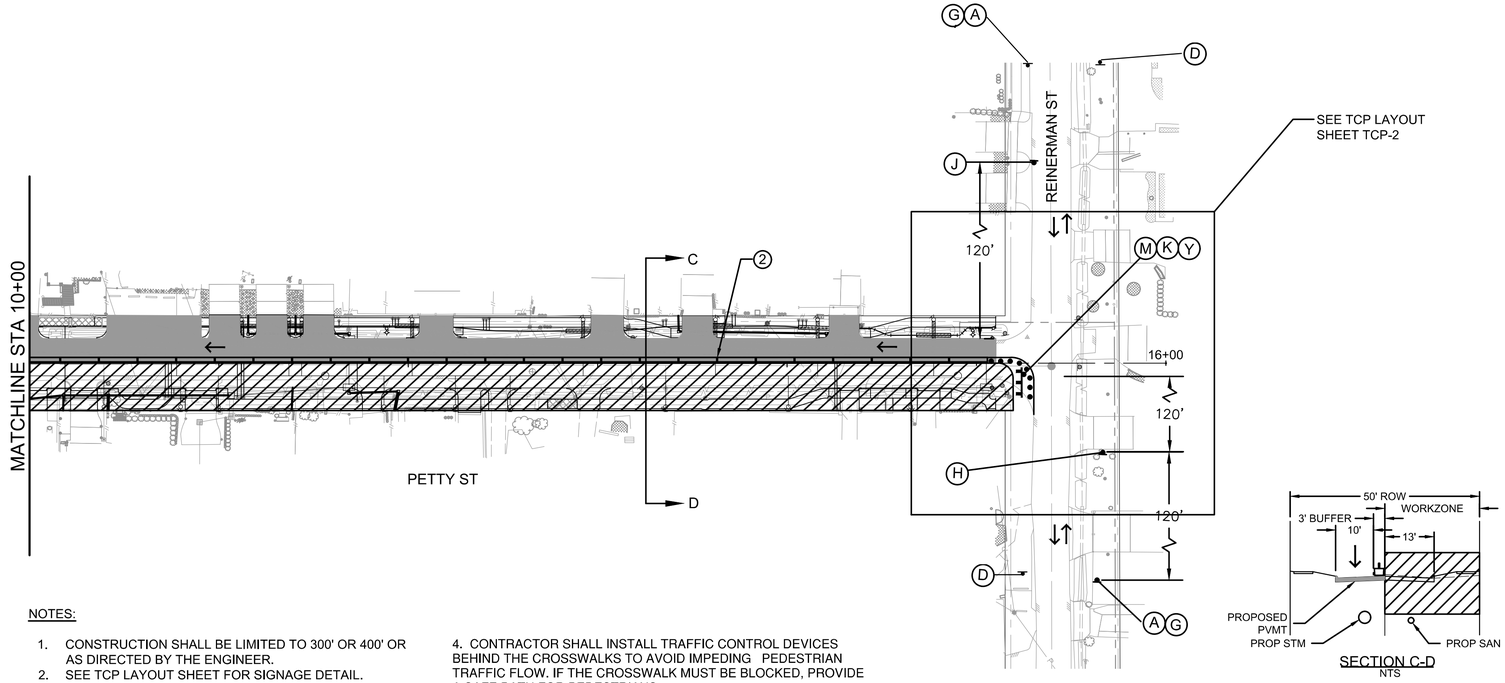
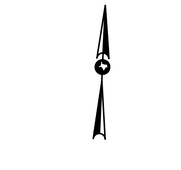




NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y					
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			PETTY STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM



LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

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Registration No. F-382

LUIS M. GOMEZ 106747 LICENSED PROFESSIONAL ENGINEER

SURVEYED BY:KUO & ASSOC.
FB NO. P-6133

2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
PETTY STREET
PHASE 2 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 285 of 345	

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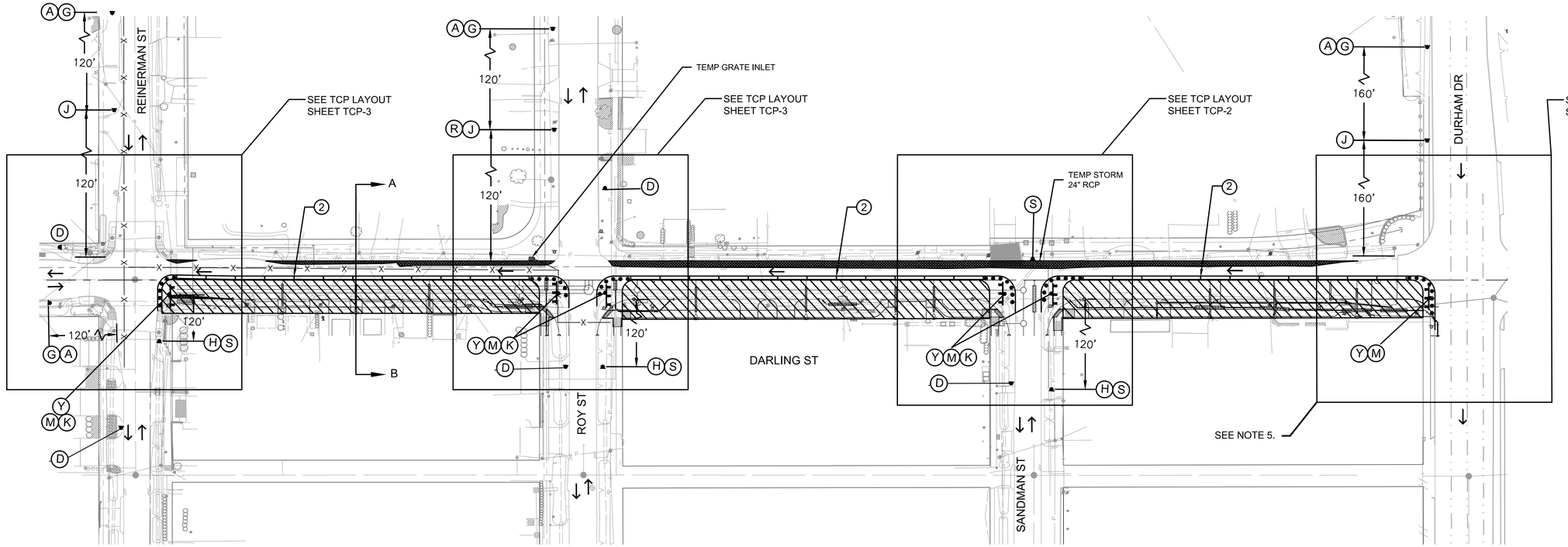

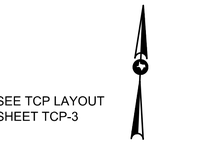

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
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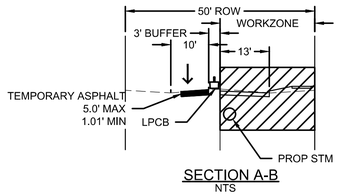

SECTION A-B
NTS

TEMPORARY ASPHALT =287.14 SY
TEMPORARY STORM 24" RCP=2.67 LF

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. PROVIDE TEMPORARY ASPHALT PAVEMENT IN STEP 0, CONSTRUCTION OF PAVEMENT CONFLICTING WITH STORM DITCH, INLETS, MANHOLES, TEMPORARY FACILITIES SHALL BE PROVIDED TO MAINTAIN STORM FLOW.
4. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
5. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			DARLING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

GUNDA CORPORATION
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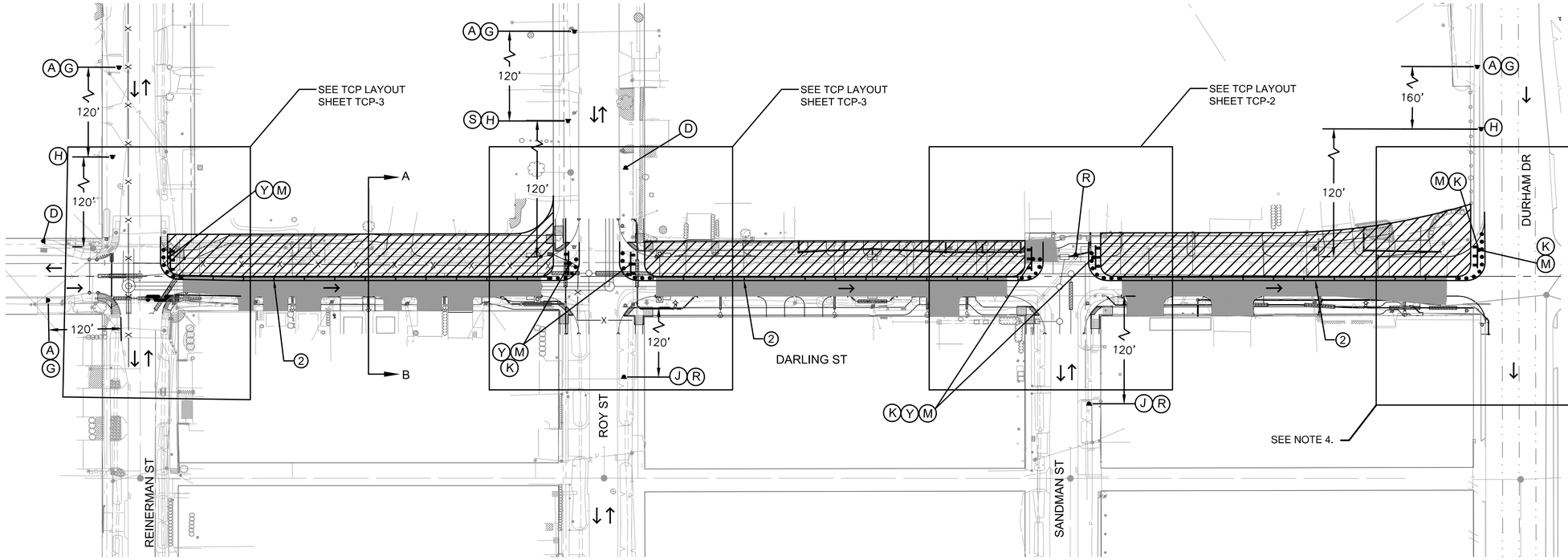
2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DARLING STREET
PHASE 2 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0001–4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 286 of 345	



LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
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- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
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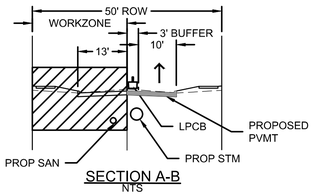

SECTION A-B
NTS

NOTES:

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A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			DARLING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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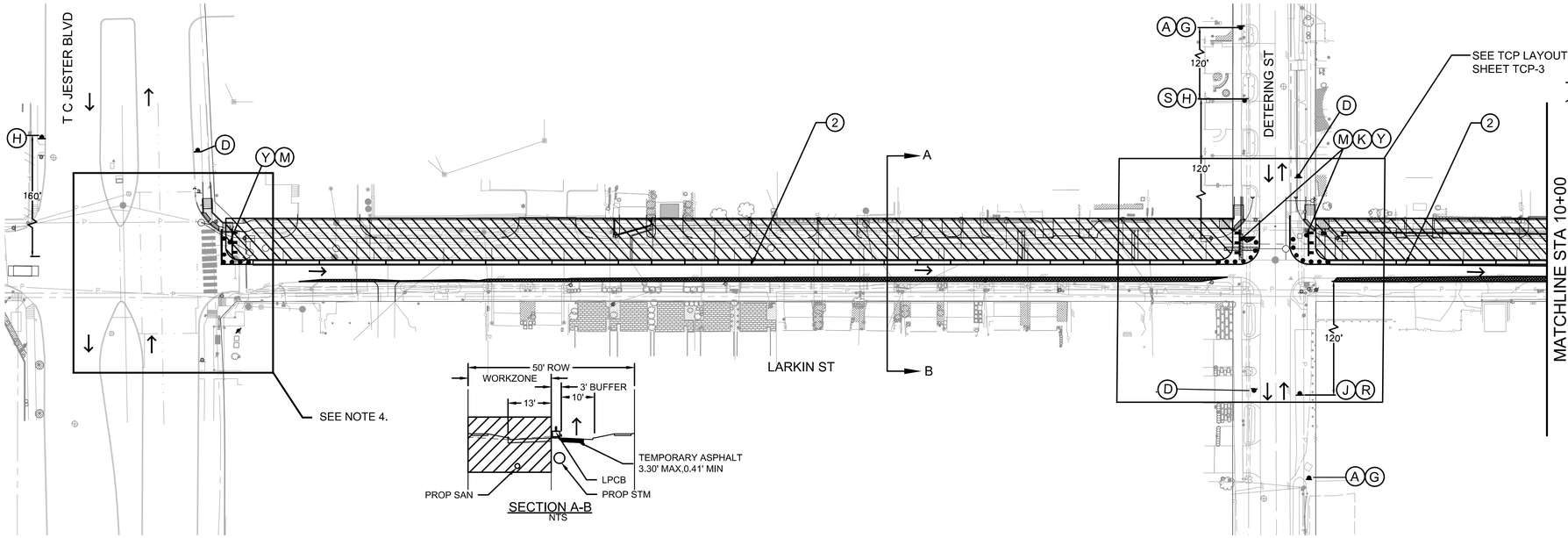
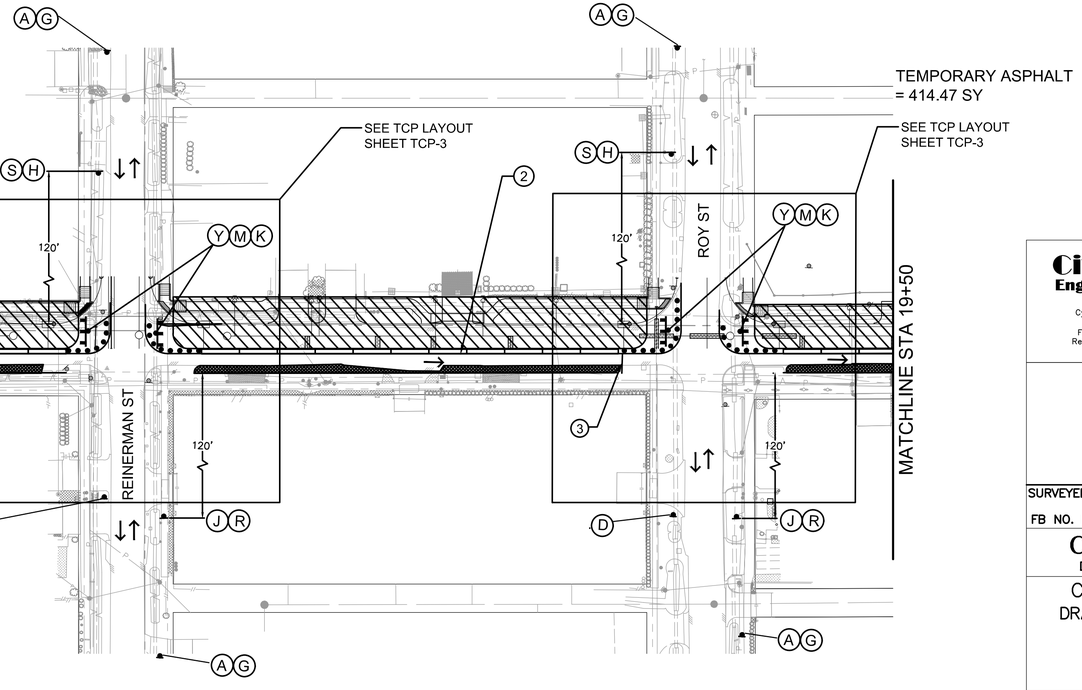
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DARLING STREET
PHASE 2 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0001–4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 287 of 345	





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NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

0 40' 80'

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
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- FLASHING ARROW PANEL
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- LPCB
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- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					36" DRUM
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	

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2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
LARKIN STREET (1)
PHASE 2 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"= 40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 288 of 345	

GUNDA CORPORATION
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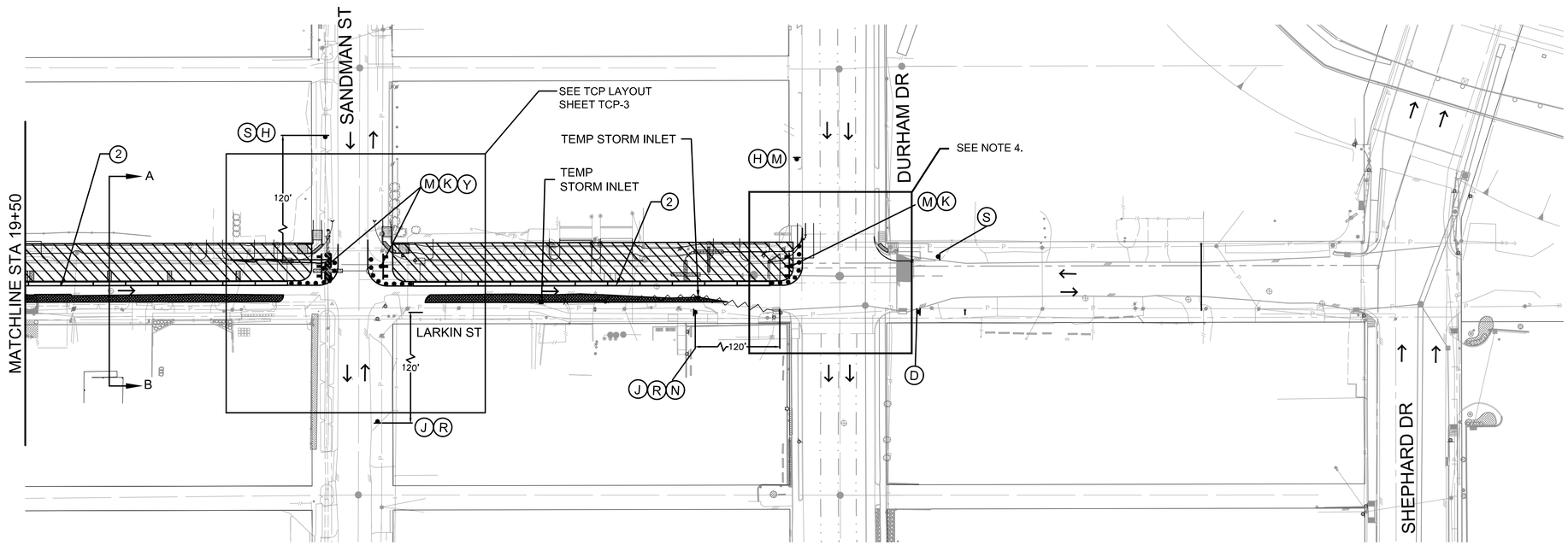

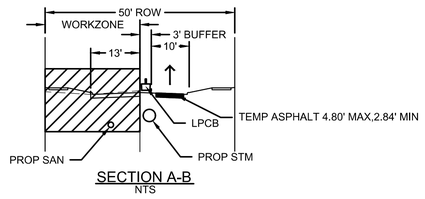

SECTION A-B
NTS

TEMPORARY ASPHALT= 82.11 SY



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
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A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					36" DRUM
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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
LARKIN STREET (2)
PHASE 2 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M–410039–0001–4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 289 of 345	

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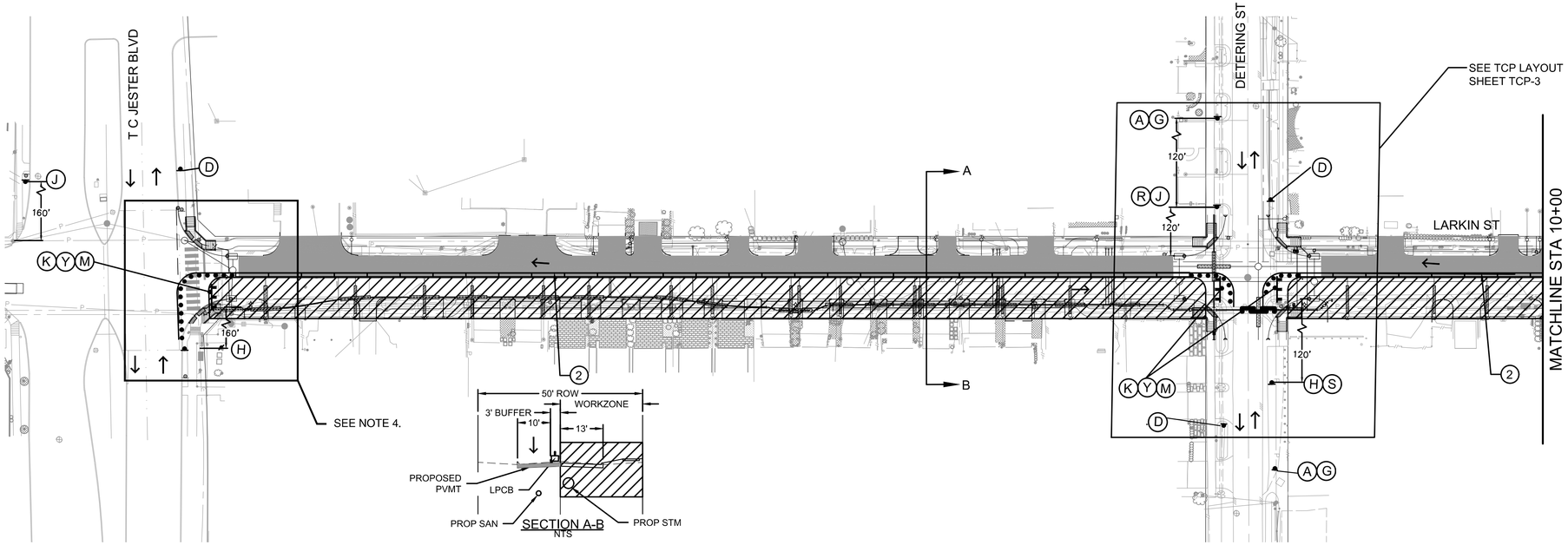

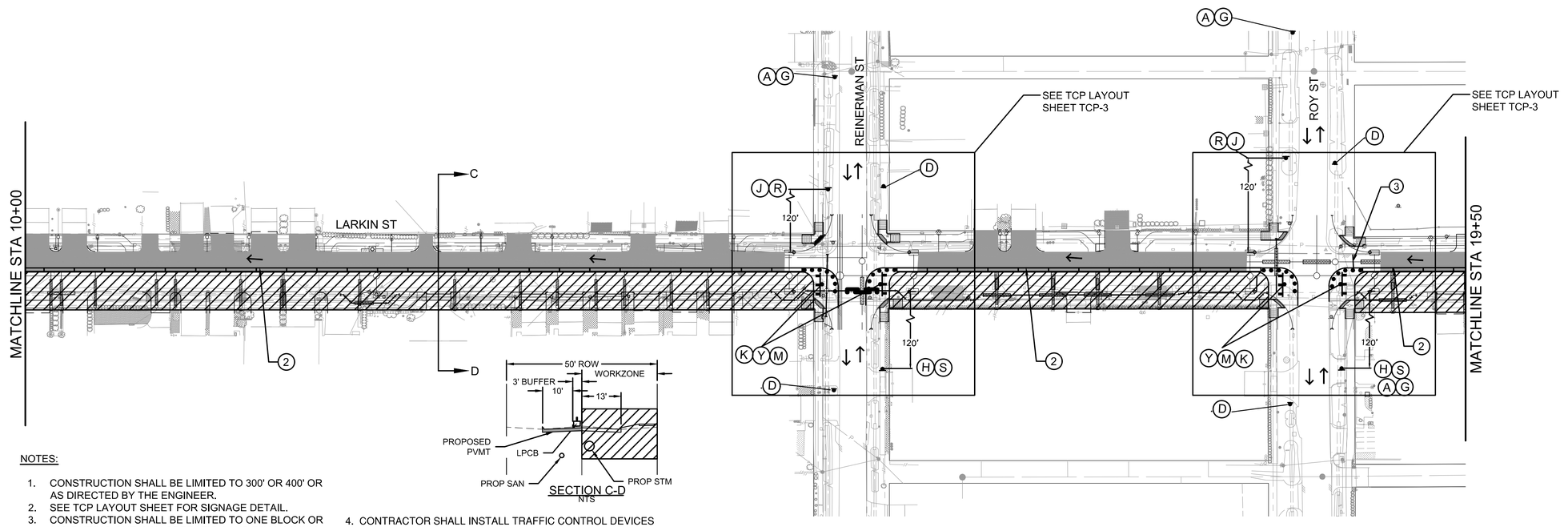

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NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
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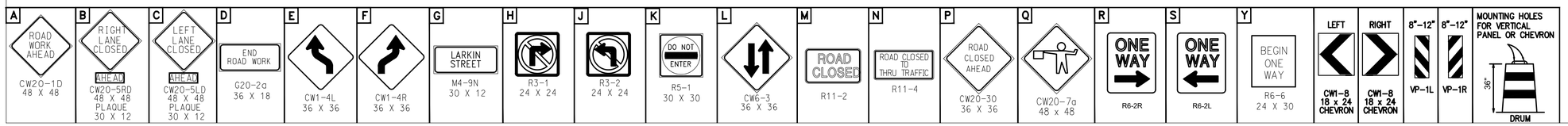

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TRAFFIC CONTROL PLANS
LARKIN STREET (1)
PHASE 2 STEP 2

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M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 290 of 345	

GUNDA CORPORATION
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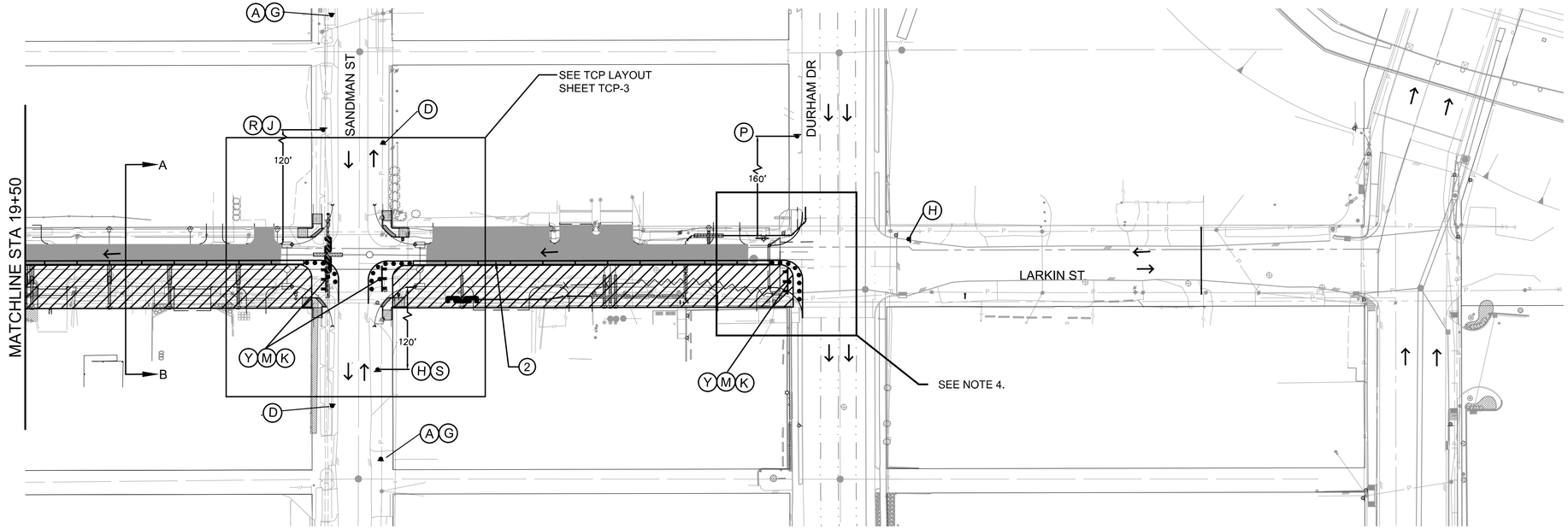

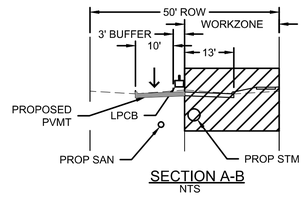

SECTION A-B
NTS



0 40' 80'

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
4. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"-12"	8"-12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

GUNDA CORPORATION
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Registration No. F-382

SURVEYED BY:KUO & ASSOC.
FB NO. P-6133

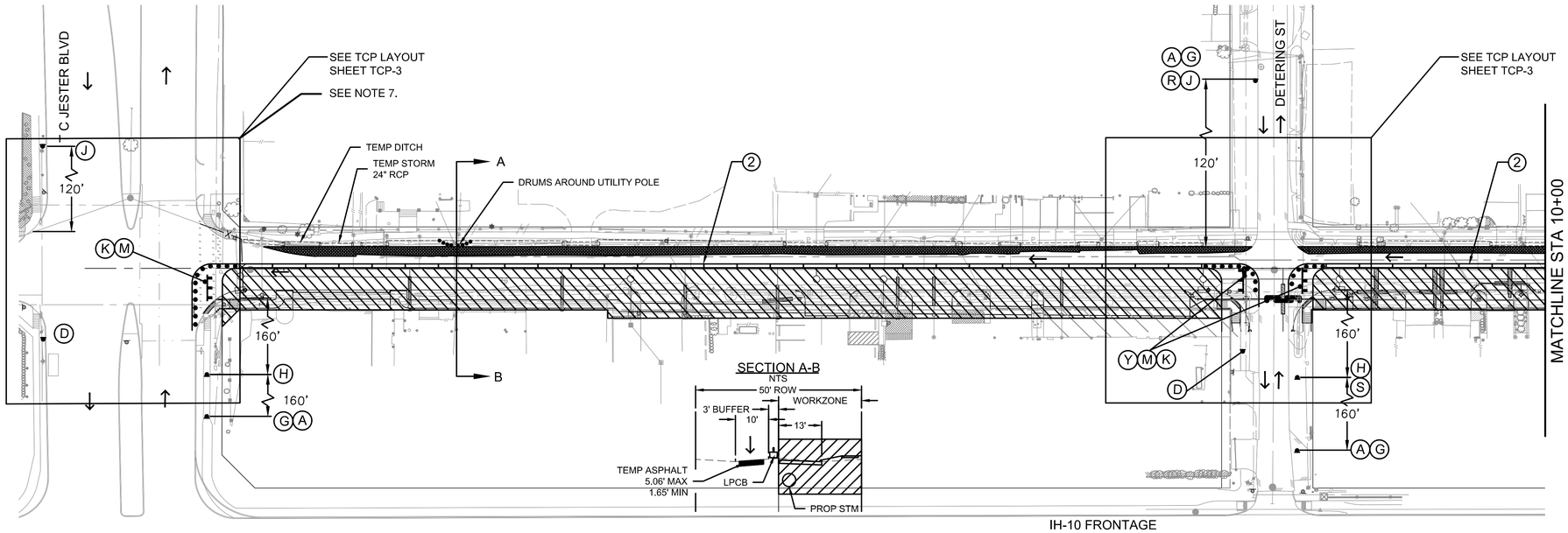
STATE OF TEXAS
LUIS M. GOMEZ
106747
LICENSED PROFESSIONAL ENGINEER

2/02/2026

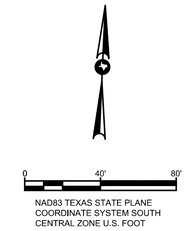
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
LARKIN STREET (2)
PHASE 2 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 291 of 345	



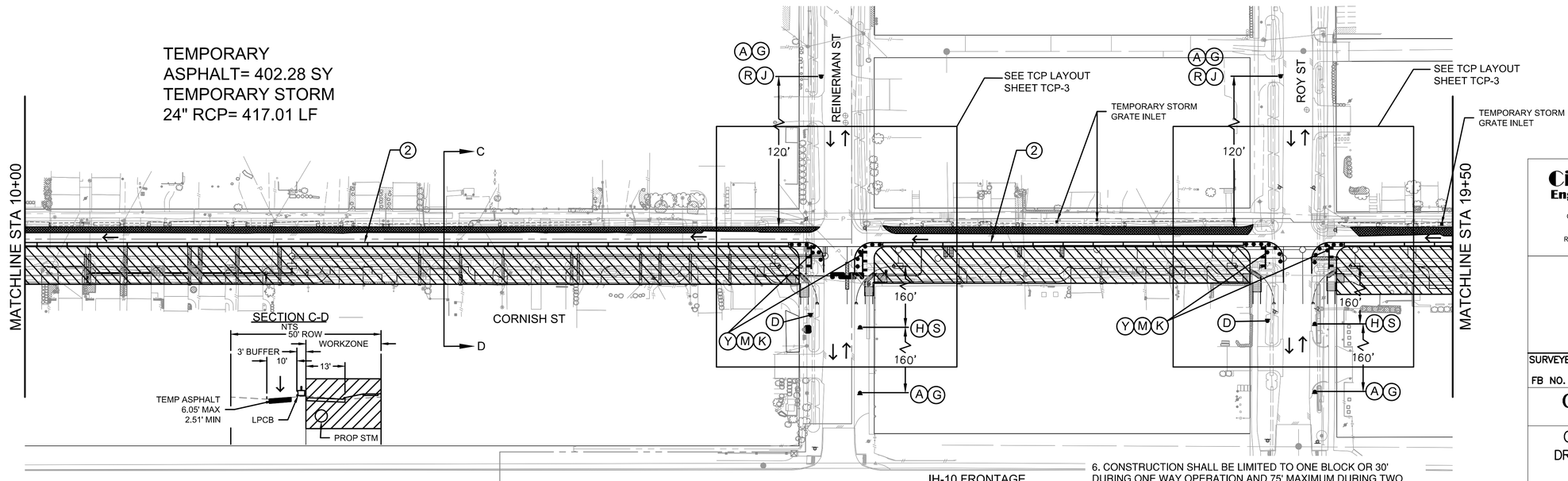
TEMPORARY
ASPHALT= 288.79 SY
TEMPORARY STORM
24" RCP= 225.99 LF



LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

TEMPORARY
ASPHALT= 402.28 SY
TEMPORARY STORM
24" RCP= 417.01 LF



NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. PROVIDE TEMPORARY ASPHALT PAVEMENT IN STEP 0, CONSTRUCTION OF PAVEMENT CONFLICTING WITH STORM DITCH, INLETS, MANHOLES, TEMPORARY FACILITIES SHALL BE PROVIDED TO MAINTAIN STORM FLOW.
4. PROVIDE DRUMS AROUND UTILITY POLE IN STEP 0 CONFLICTING WITH TEMPORARY ASPHALT PAVEMENT.
5. PROPOSED STORM LINE SUGGESTED TO MOVE 3 FT TO SOUTH FROM REINERMAN ST TO SHEPHERD DR TO FALL INSIDE STEP 1 WORKZONE.
6. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 30' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OF AS RECOMMENDED BY THE CITY ENGINEER.
7. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			CORNISH STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

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2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
CORNISH STREET (1)
PHASE 2 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 292 of 345	

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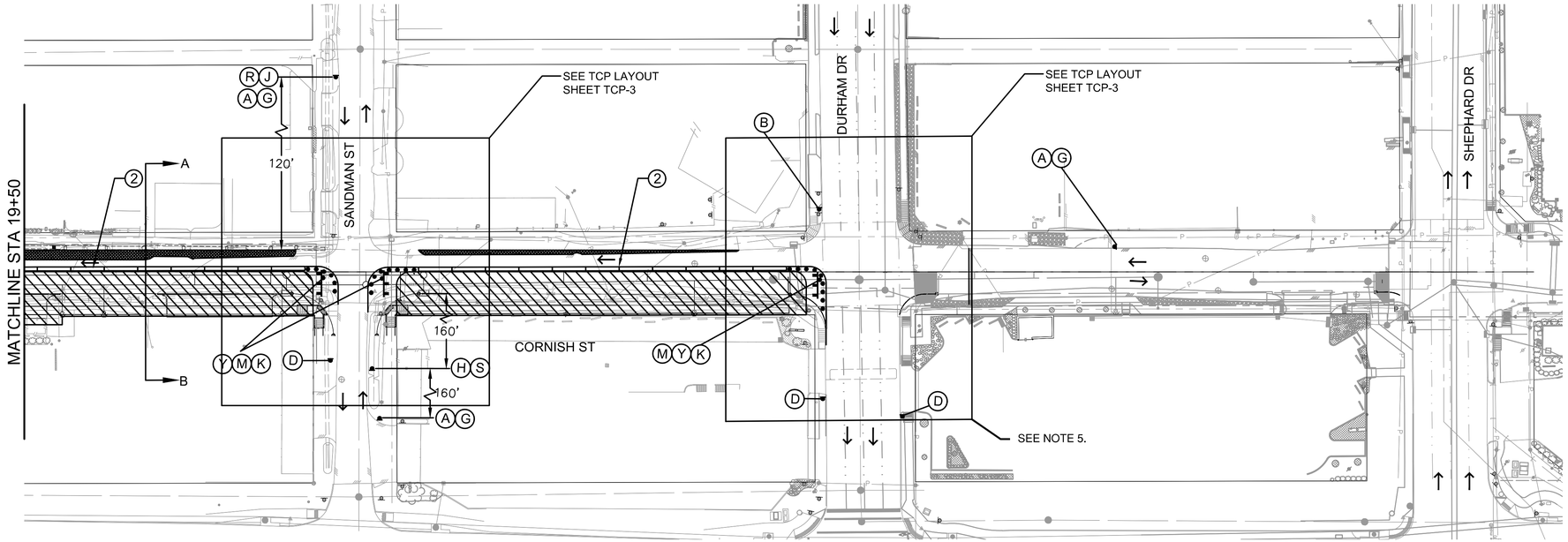
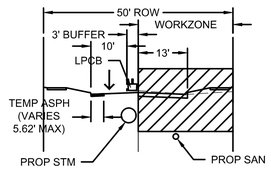


SECTION A-B
NTS



TEMPORARY ASPHALT= 173.55 SY
TEMPORARY STORM 24" RCP= 113.32 LF



NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. PROPOSED STORM LINE SUGGESTED TO MOVE 3 FT TO SOUTH FROM REINERMAN ST TO SHEPHERD DR TO FALL INSIDE STEP 1 WORKZONE.
4. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.
5. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES BEHIND THE CROSSWALKS TO AVOID IMPEDING PEDESTRIAN TRAFFIC FLOW. IF THE CROSSWALK MUST BE BLOCKED, PROVIDE A SAFE PATH FOR PEDESTRIANS.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"-12"	8"-12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			CORNISH STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					36" DRUM
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	

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STATE OF TEXAS
CHRISTOPHER J. CORNELIUS
106747
LICENSED PROFESSIONAL ENGINEER
2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
CORNISH STREET (2)
PHASE 2 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 293 of 345	

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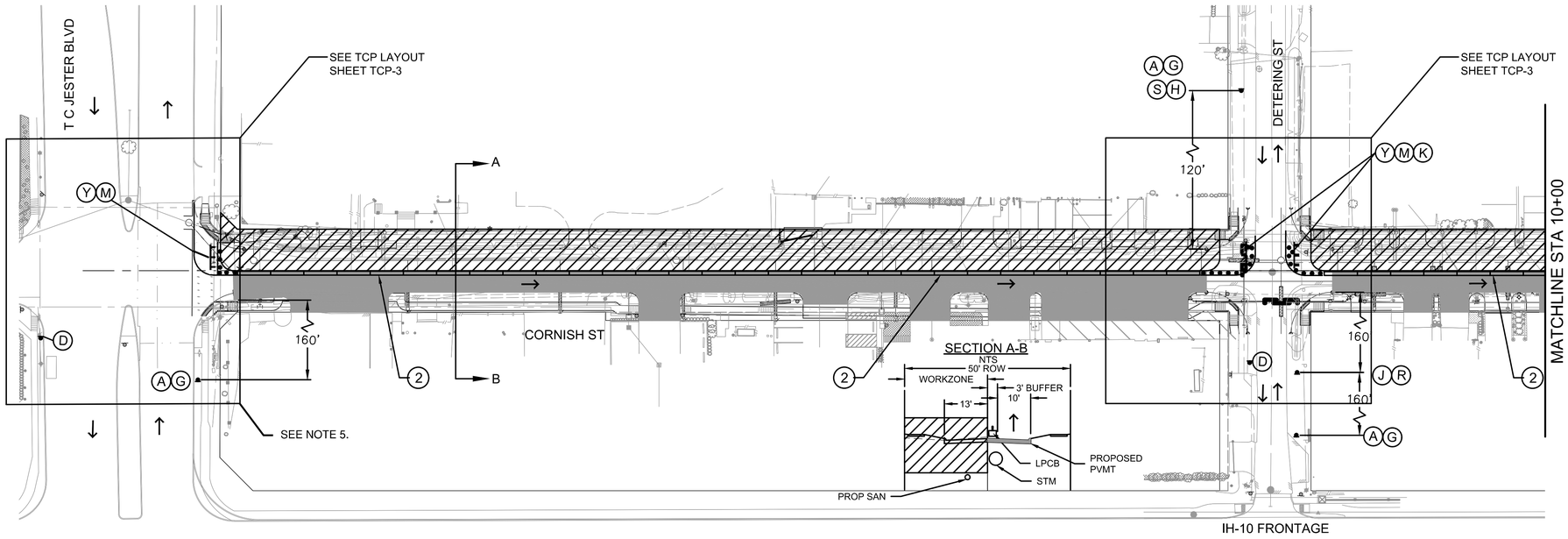

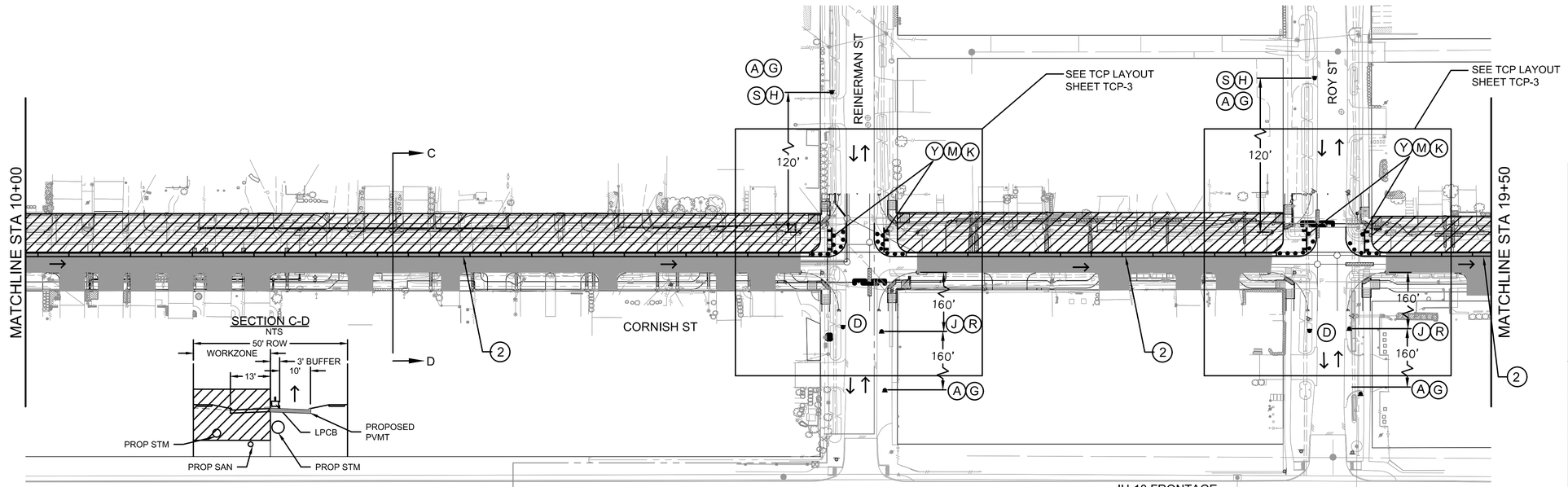

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A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			CORNISH STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30

LEFT	RIGHT	8"-12"	8"-12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	36" DRUM

0 40' 80'

NAD83 TEXAS STATE PLANE COORDINATE SYSTEM SOUTH CENTRAL ZONE U.S. FOOT

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
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- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
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- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
CORNISH STREET (1)
PHASE 2 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 294 of 345	

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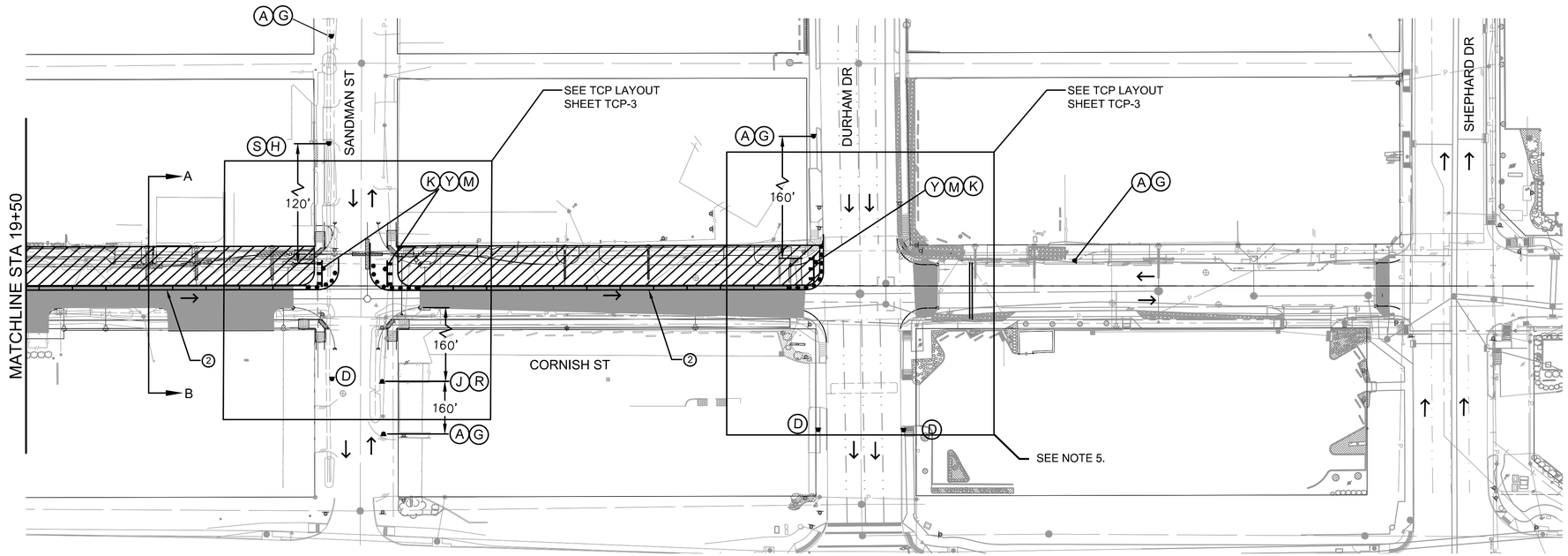

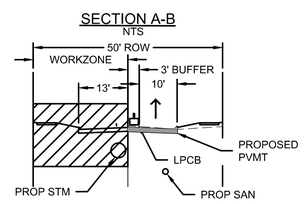

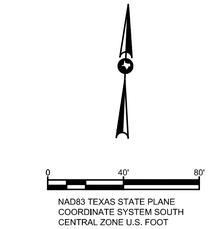

LEGEND (TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
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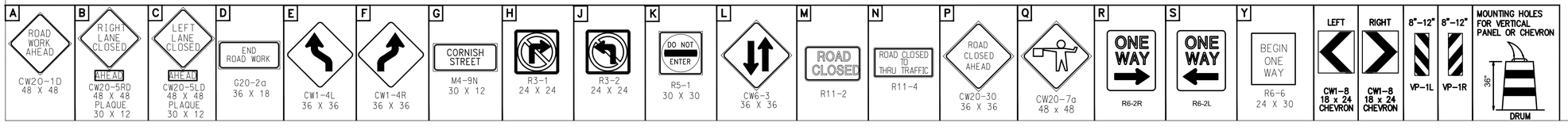

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FB NO. P-6133

2/02/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
CORNISH STREET (2)
PHASE 2 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 295 of 345	

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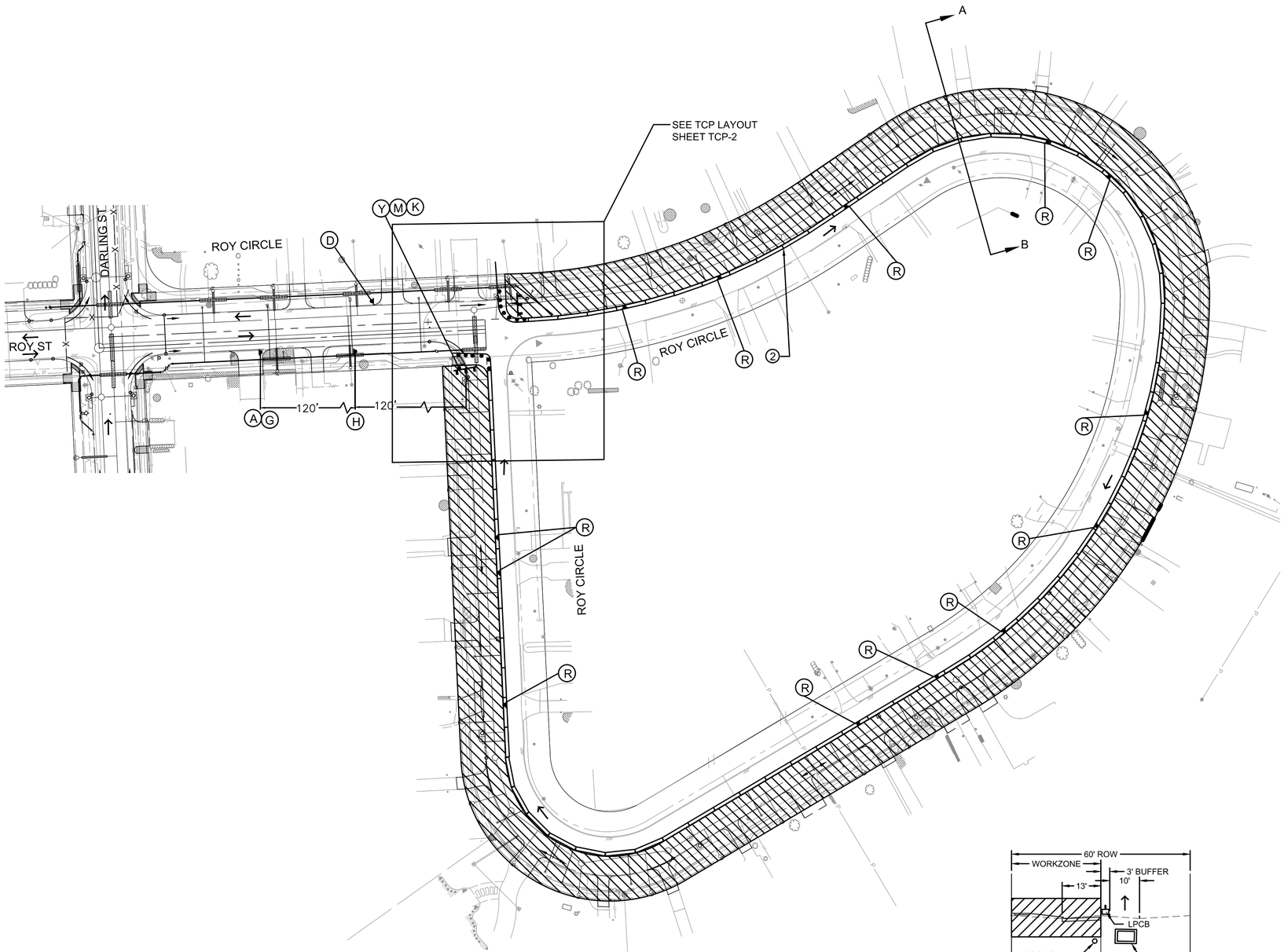

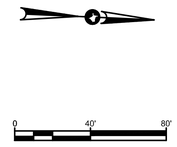

NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
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SECTION A-B
NTS

NOTES:

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A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"–12"	8"–12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			ROY CIRCLE			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					36" DRUM
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	

GUNDA CORPORATION
P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\4-TCP ROY CIRCLE.dwg Aug 22, 2025–3:45pm CRubit

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Registration No. F-382

SURVEYED BY:KUO & ASSOC.
FB NO. P-6133

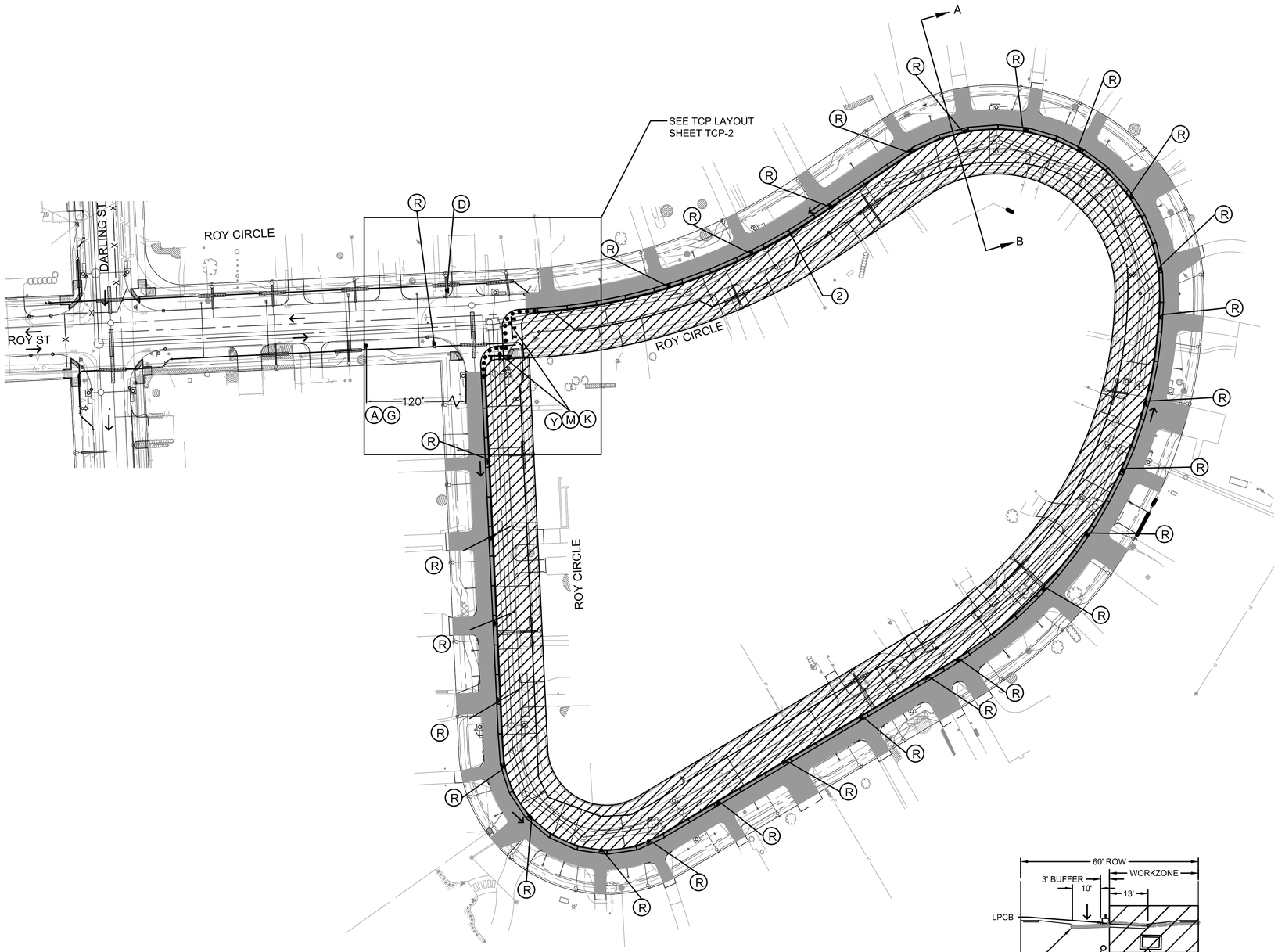


1/23/2026

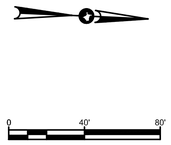
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
ROY CIRCLE
PHASE 2 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 296 of 345	



SECTION A-B
NTS



NAD83 TEXAS STATE PLANE
COORDINATE SYSTEM SOUTH
CENTRAL ZONE U.S. FOOT

LEGEND
(TCP)

- CONSTRUCTION AREA
- TEMP ASPHALT PVMT
- PROPOSED PAVEMENT AND DRIVEWAY SURFACE CONSTRUCTED IN PREVIOUS STEP
- PROPOSED TEMPORARY STORM RCP CONSTRUCTED IN STEP 0
- PLASTIC DRUM
- TYPE III BARRICADE
- FLASHING ARROW PANEL
- SIGN ON POST
- LPCB
- FLAG MAN
- TRAFFIC FLOW DIRECTION
- (1) WORK ZONE PAVEMENT MARKING REMOVABLE (WS4)
- (2) WORK ZONE PAVEMENT MARKING REMOVABLE (YS4)
- (3) WORK ZONE PAVEMENT MARKING REMOVABLE (WS24)
- (4) WORK ZONE PAVEMENT MARKING REMOVABLE (WB4)

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO 300' OR 400' OR AS DIRECTED BY THE ENGINEER.
2. SEE TCP LAYOUT SHEET FOR SIGNAGE DETAIL.
3. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	Y	LEFT	RIGHT	8"-12"	8"-12"	MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK			ROY CIRCLE			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	BEGIN ONE WAY					36" DRUM
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	CW1-4L 36 X 36	CW1-4R 36 X 36	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3 36 X 36	R11-2	R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	R6-6 24 X 30	CW1-8 18 x 24 CHEVRON	CW1-8 18 x 24 CHEVRON	VP-1L	VP-1R	

CivilTech Engineering, Inc.
11821 Telge Road
Cypress, Texas 77429
(281) 304-0200
Fax (281) 304-0210
Registration No. F-382

STATE OF TEXAS
LUIS M. GOMEZ
100674
LICENSED PROFESSIONAL ENGINEER

SURVEYED BY:KUO & ASSOC.
FB NO. P-6133

1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
ROY CIRCLE
PHASE 2 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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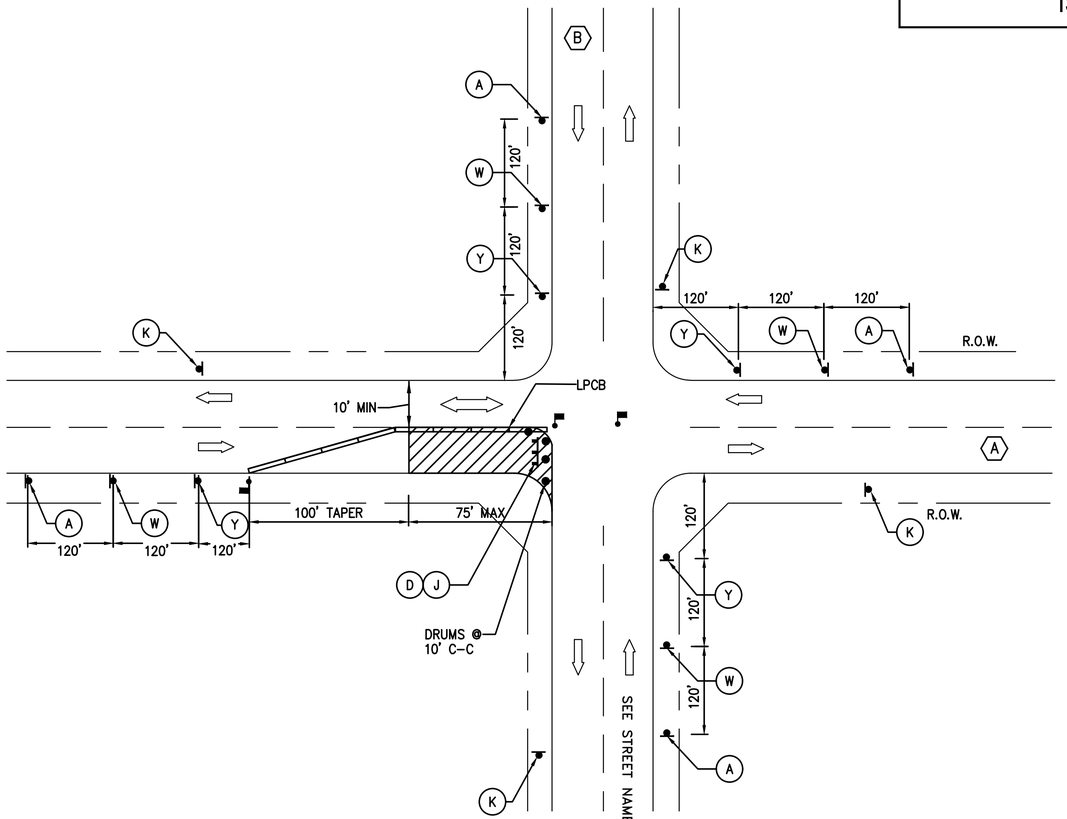
DRAWING SCALE	
1"=40'	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 297 of 345	

GUNDA CORPORATION
P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\4.TCP ROY CIRCLE.dwg Aug 22, 2025-3:45pm CRubit

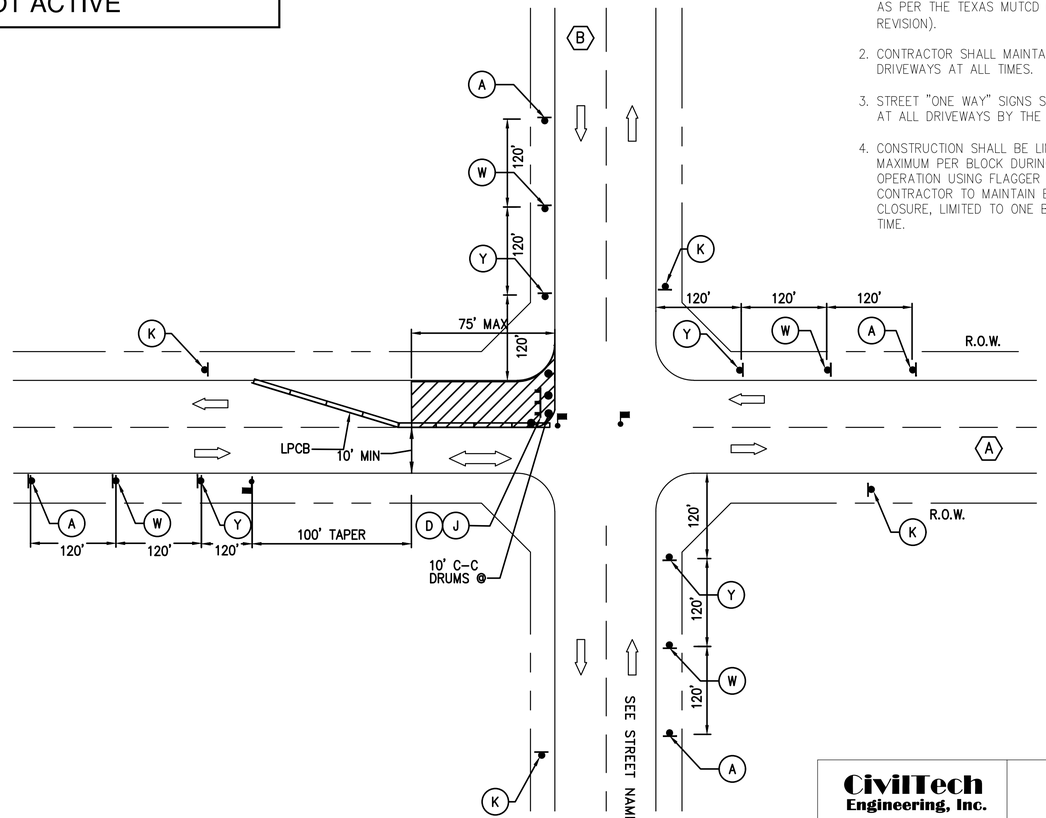
NOT APPLICABLE FOR OVER-NIGHT CLOSURES OR WHEN CONSTRUCTION IS NOT ACTIVE

NOTES:

1. ALL ADVANCE WARNING SIGNS TO BE PLACED AS PER THE TEXAS MUTCD (LATEST REVISION).
2. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES.
3. STREET "ONE WAY" SIGNS SHALL BE PLACED AT ALL DRIVEWAYS BY THE CONTRACTOR.
4. CONSTRUCTION SHALL BE LIMITED TO 75' MAXIMUM PER BLOCK DURING TWO WAY OPERATION USING FLAGGER AT ALL TIMES. CONTRACTOR TO MAINTAIN BLOCK BY BLOCK CLOSURE, LIMITED TO ONE BLOCK AT THE TIME.



PHASE II



PHASE I

LEGEND (TYPICAL)	TYPICAL SIGN SPACING	
CONSTRUCTION AREA	Posted Speed (mph)	Sign Spacing "X"
PLASTIC DRUM	30	120'
LPCB	35	160'
TYPE III BARRICADE	40	240'
FLASHING ARROW PANEL	45	320'
SIGN ON POST	50	400'
TRAFFIC FLOW DIRECTION	55	500'
FLAGGER		

(A) EAST-WEST ROADS

1. EGBERT STREET
2. KANSAS STREET
3. KIAM STREET
4. PETTY STREET
5. DARLING STREET
6. LARKIN STREET
7. CORNISH STREET

(B) NORTH-SOUTH ROADS

1. DETERING STREET
2. REINERMAN STREET
3. SANDMAN STREET
4. ROY STREET
5. ROY CIRCLE
6. MOY STREET

P: STNAME / DETOUR — M4-9R 30 X 30
Q: STNAME / DETOUR — M4-9L 30 X 30
S: ROAD CLOSED TO THRU TRAFFIC — R11-4
T: DETOUR — M4-10L 48 X 18
U: DETOUR — M4-10R 48 X 18
V: STNAME — M4-9N 30 X 12
W: ONE LANE ROAD AHEAD — CW20-4D 48 X 48
Y: CW20-7a 48 X 48

A: ROAD WORK AHEAD — CW20-1D 48 X 48
B: ROAD CLOSED AHEAD — CW20-3D 48 X 48
C: DETOUR AHEAD — CW20-2D 48 X 48
D: TYPE III BARRICADE
E: ROAD CLOSED — R11-2 48 X 30
F: ONE WAY — R6-2R 18 X 24
G: ONE WAY — R6-2L 18 X 24
H: R3-1 24 X 24
R: R3-2 24 X 24
J: DO NOT ENTER — R5-1 36 X 36
K: END ROAD WORK — G20-2a 36 X 18
L: R8-3aL (12X18) R7-201a (12X6)
M: R8-3aR(12X18) R7-201a (12X6)
N: R8-3aD(12X18) R7-201a (12X6)
LEFT — CW1-8 18 x 24 CHEVRON
RIGHT — CW1-8 18 x 24 CHEVRON
8"-12" — VP-1L
8"-12" — VP-1R
MOUNTING HOLES FOR VERTICAL PANEL OR CHEVRON — 36" DRUM

CivilTech Engineering, Inc.
11821 Telge Road
Cypress, Texas 77429
(281) 304-0200
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Registration No. F-382

SURVEYED BY:KUO & ASSOC.
FB NO. P-6133

1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
TYPICAL LAYOUT
(TCP – 1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
SAM HABIBI	

Sheet No. 298 of 345

GUNDA CORPORATION
P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\253.TCP TYPICAL LAYOUT.dwg Aug 22, 2025-3:46pm CRubit

REV	DESCRIPTION	BY	DATE

NOT APPLICABLE FOR OVER-NIGHT CLOSURES OR WHEN CONSTRUCTION IS NOT ACTIVE

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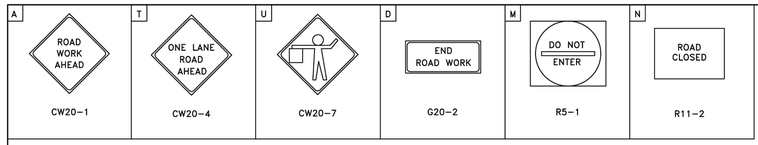

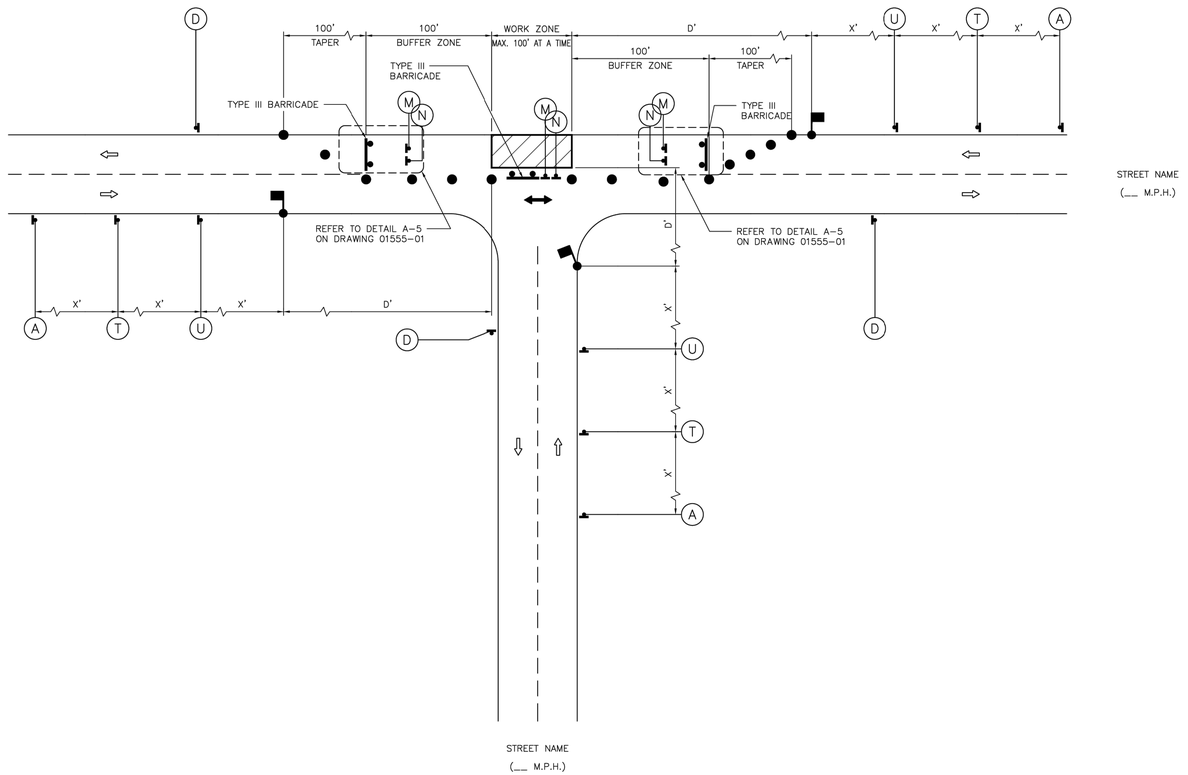

LEGEND:

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

NOTES:

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

APPROVED BY:	APPROVED BY:
DocuSigned by: Suhail Kanwar	DocuSigned by: KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-06

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A T-INTERSECTION PHASE 1 OF 3

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
11750 Katy Freeway, Suite 1260
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800.414.1045

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED
PROFESSIONAL ENGINEER
3/10/2026

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC CONTROL PLAN 3 WAY INTERSECTION DETAIL (TCP-2) (1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
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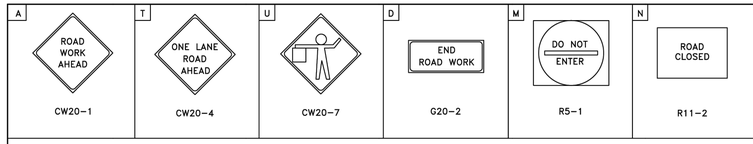

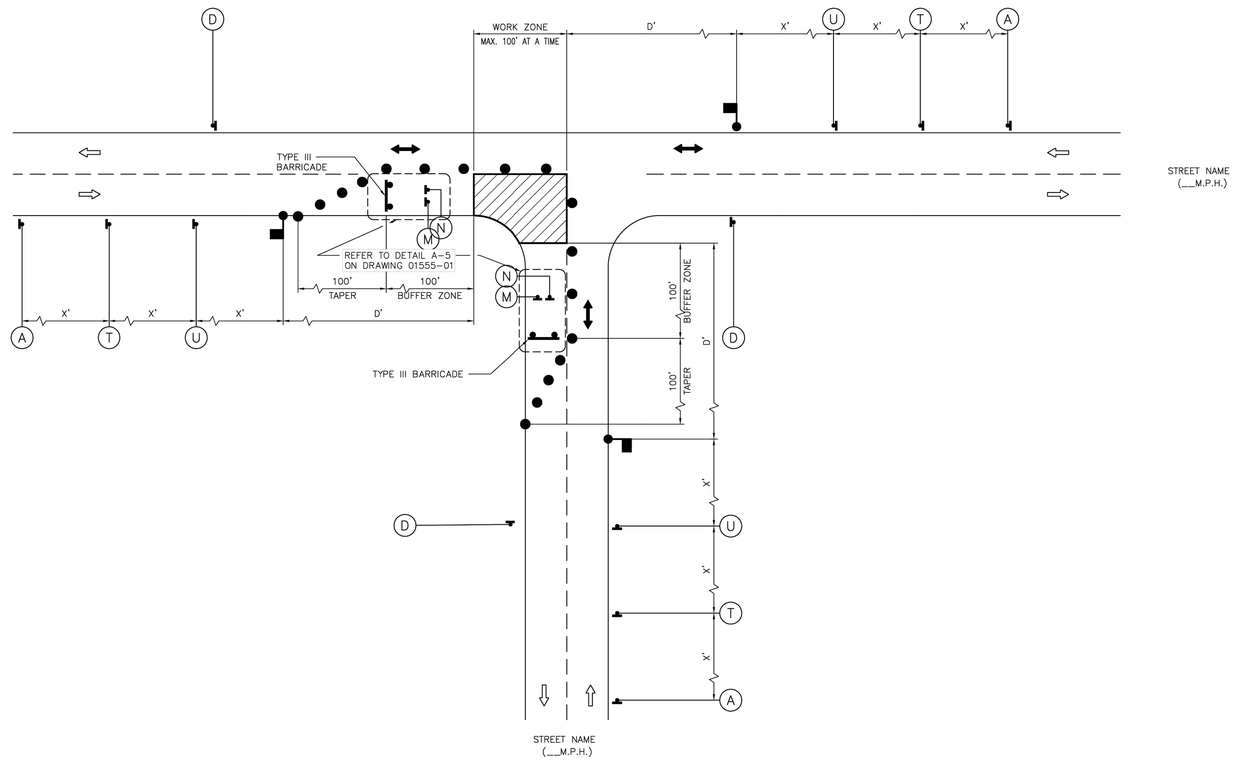

LEGEND:

- SIGN
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CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A90C41D8F2B3463...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-07

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A T-INTERSECTION PHASE 2 OF 3

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107412
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PROFESSIONAL ENGINEER
3/10/2026

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC CONTROL PLAN 3 WAY INTERSECTION DETAIL (TCP-2) (2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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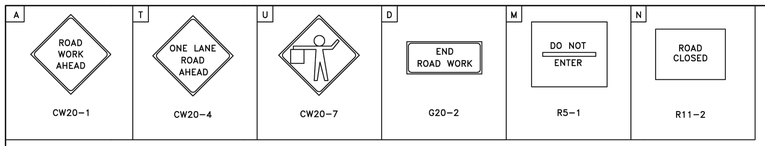

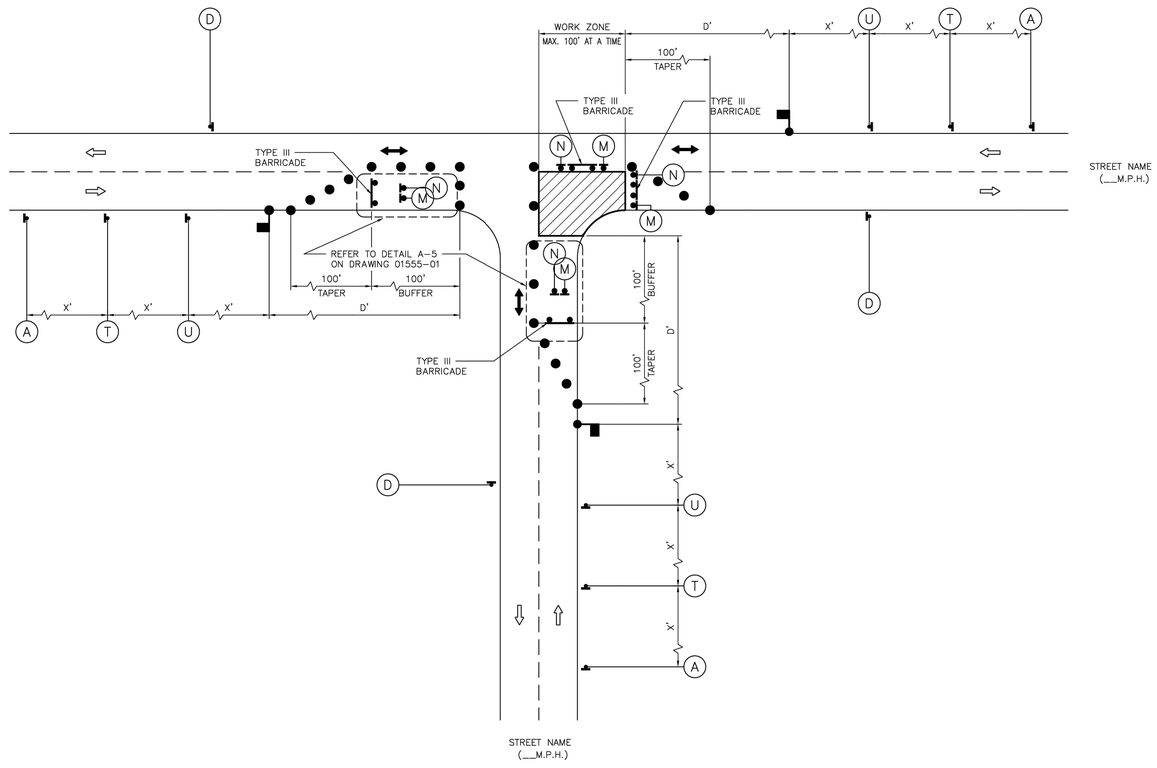

LEGEND:

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

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3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.
5. MAX. 100' WORK ZONE AT A TIME.

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CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A89C4108F2B3493...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-08

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A T-INTERSECTION PHASE 3 OF 3

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3/10/2026

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC CONTROL PLAN 3 WAY INTERSECTION DETAIL (TCP-2) (3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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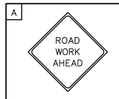
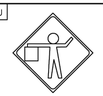
 CW20-1	 CW20-4	 CW20-7	 G20-2

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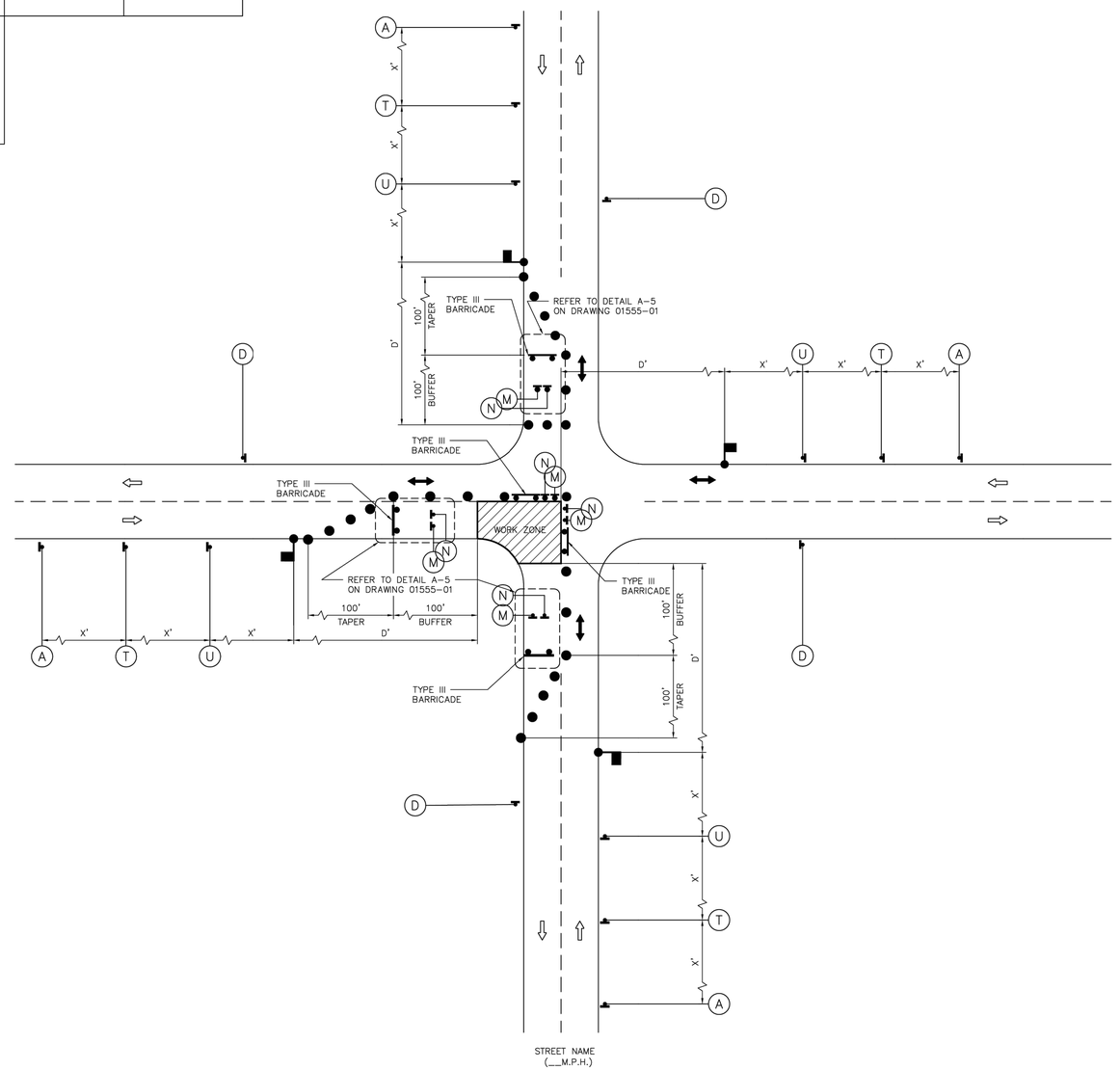
 R5-1	 R11-2



LEGEND:

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

NOTES:

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

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CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock 4004A1457B5A4A...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-09

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A 4-WAY INTERSECTION (LOW VOLUME TRAFFIC) PHASE 1 OF 4

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NOT TO SCALE	

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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED
PROFESSIONAL ENGINEER
3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC CONTROL PLAN 4 WAY INTERSECTION DETAIL (TCP-3) (1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 300 OF 345	

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REV	DESCRIPTION	BY	DATE

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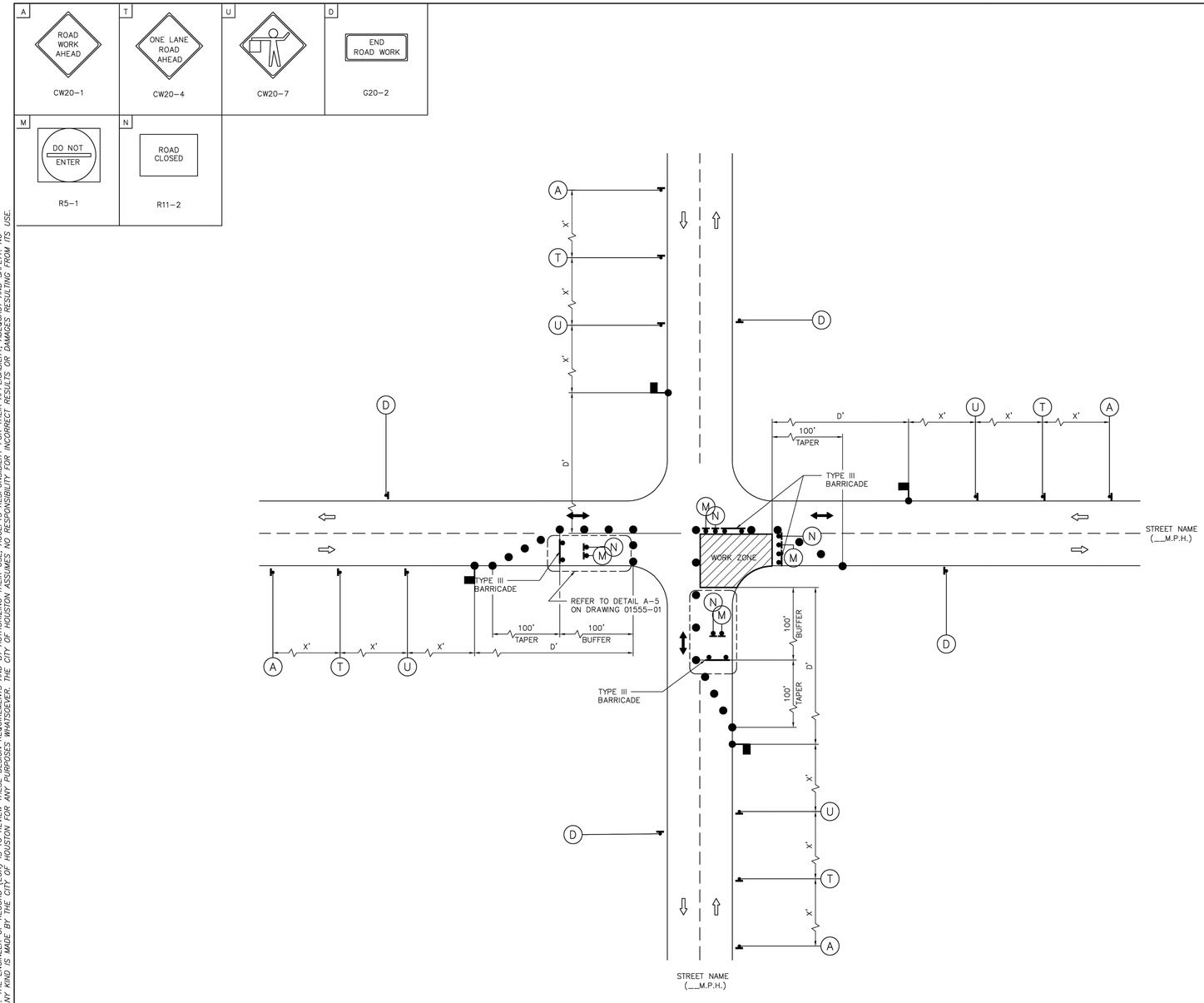

LEGEND:

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

NOTES:

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

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CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock — 4D0C41D5175E4E5...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-10

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A 4-WAY INTERSECTION (LOW VOLUME TRAFFIC) PHASE 2 OF 4

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS — YOUSEF U. HUSAIN — 107412 — LICENSED PROFESSIONAL ENGINEER — 3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC CONTROL PLAN 4 WAY INTERSECTION DETAIL (TCP-3) (2 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
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N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
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REV	DESCRIPTION	BY	DATE

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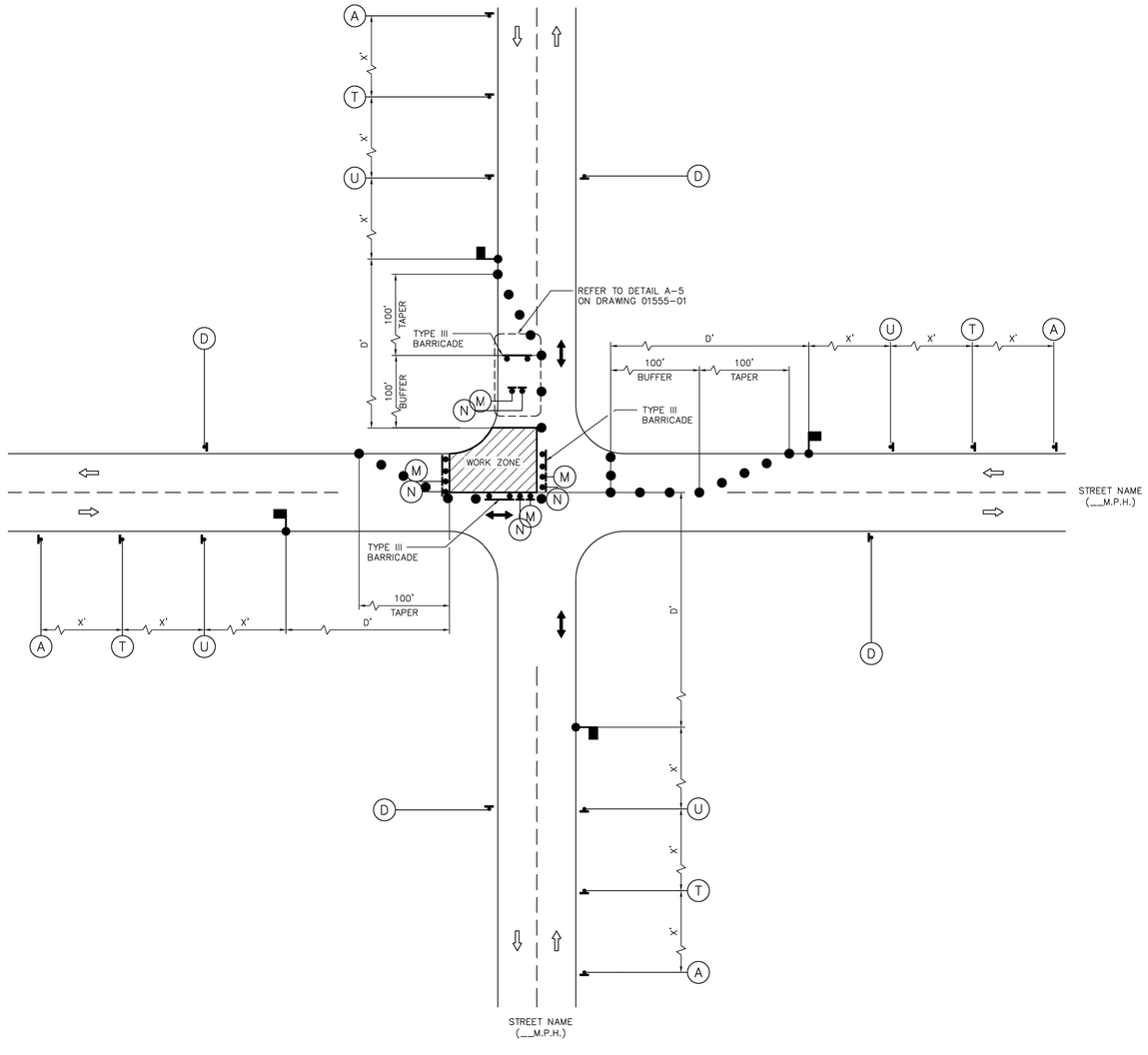
A	T	U	D
ROAD WORK AHEAD CW20-1	ONE LANE ROAD AHEAD CW20-4	 CW20-7	END ROAD WORK G20-2

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



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CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A5DCA1097FF5418...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-11

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A 4-WAY INTERSECTION (LOW VOLUME TRAFFIC) PHASE 3 OF 4

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC CONTROL PLAN 4 WAY INTERSECTION DETAIL (TCP-3) (3 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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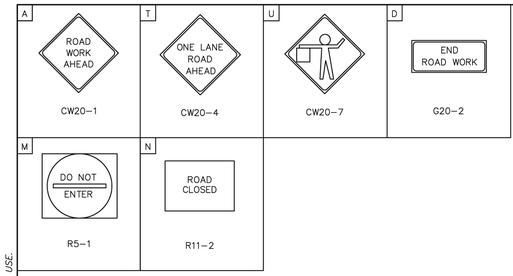

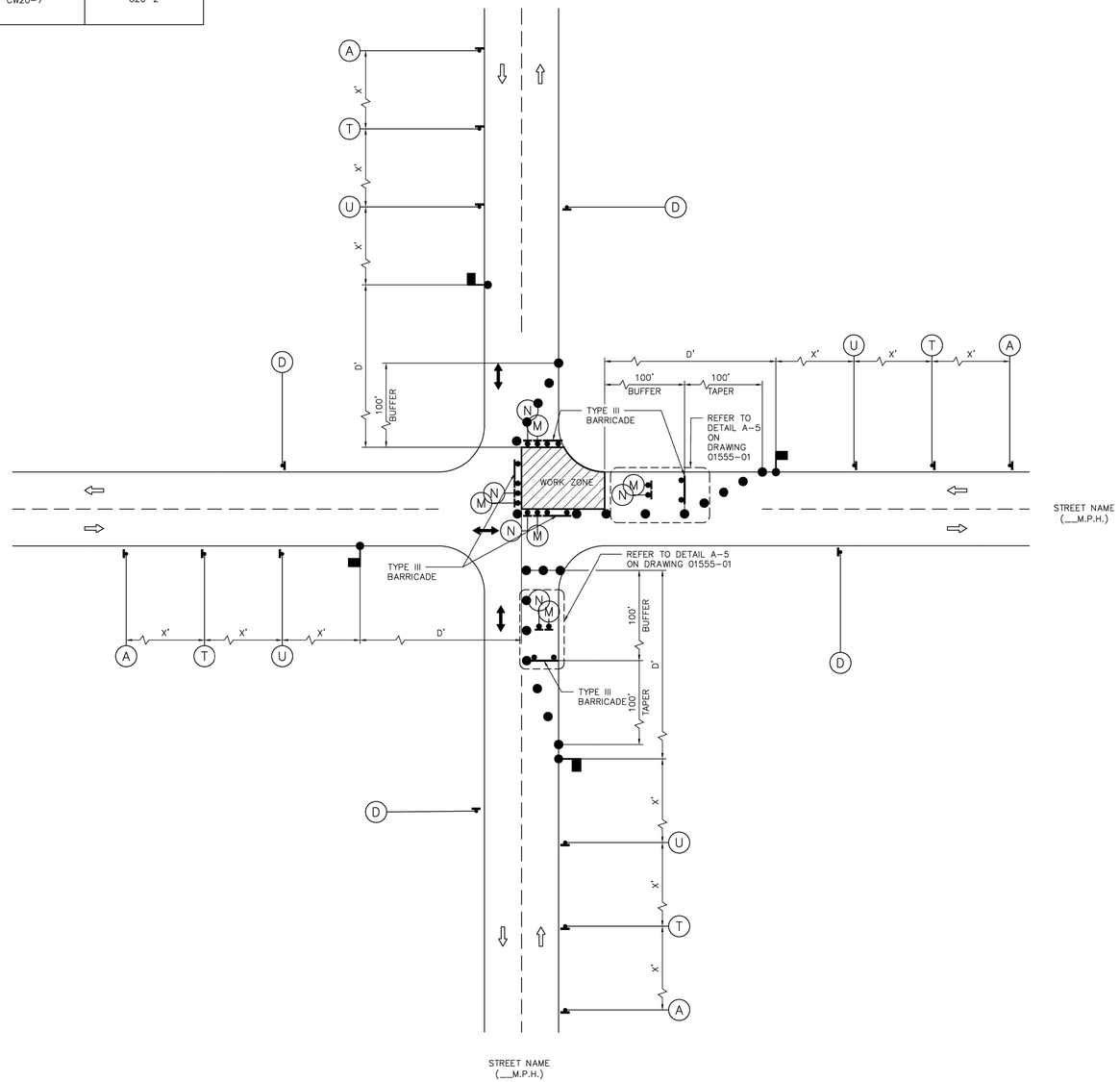

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A 4-WAY INTERSECTION (LOW VOLUME TRAFFIC) PHASE 4 OF 4

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC CONTROL PLAN 4 WAY INTERSECTION DETAIL (TCP-3) (4 OF 4)

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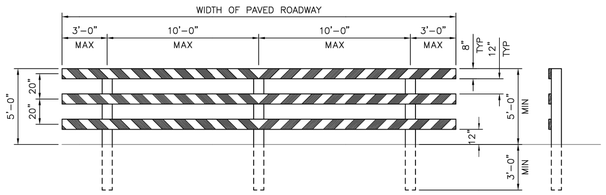
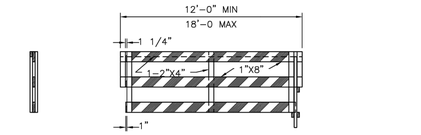
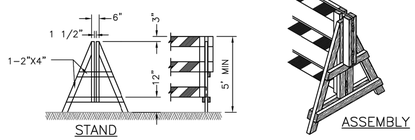


TYPE III BARRICADE
FOR END OF ROAD

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



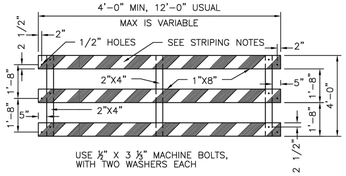
PANEL



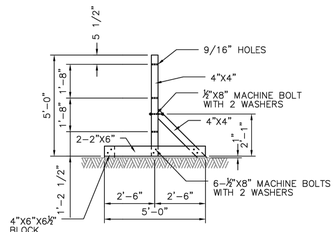
STAND

ASSEMBLY

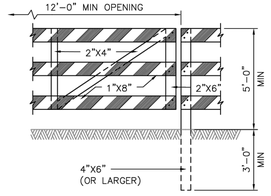
DEMOUNTABLE TYPE III BARRICADE



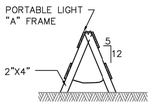
PANEL FOR TYPE III BARRICADE



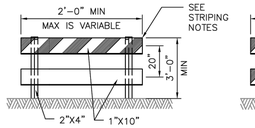
STAND FOR TYPE III BARRICADE



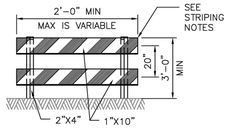
GATE FOR TYPE III BARRICADE



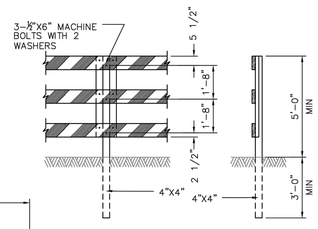
"A" FRAME



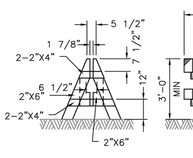
TYPE I



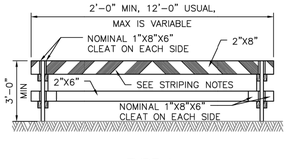
TYPE II



POST FOR TYPE III BARRICADE



DEMOUNTABLE



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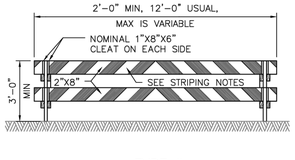

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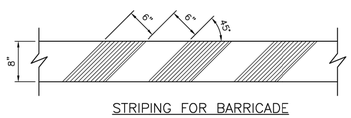
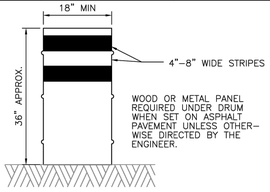


STRIPING FOR BARRICADE

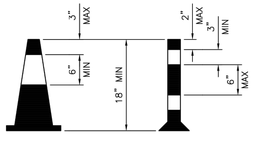
BARRICADE NOTES:

1. THE MOST RECENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND IT'S REVISIONS, SHALL GOVERN THE CONSTRUCTION AND USE OF ALL ITEMS HEREIN DESCRIBED.
2. CHANNELIZATION DEVICES OTHER THAN BARRICADES SHOULD NORMALLY BE USED FOR CHANNELIZATION PURPOSES.
3. BARRICADES SHOULD NORMALLY BE PLACED PERPENDICULAR TO THE TRAFFIC FLOW. OTHER CHANNELIZING DEVICES, SUCH AS DRUMS, VERTICAL PANELS OR PORTABLE BARRIERS, SHOULD BE USED WHERE NEEDED TO SEPARATE TRAFFIC FROM THE WORK AREA. IN ALL CASES, THE BARRICADES SHOULD BE SO LOCATED AS TO MOST ADVANTAGEOUSLY WARN AND DIRECT TRAFFIC.
4. BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL APPROVED BY THE TMUTCD. THE CONSTRUCTION DETAILS SHOWN HEREON ARE TYPICAL AND ARE SUGGESTED DETAILS FOR WOOD SUPPORT SYSTEMS FOR BARRICADES. THE DETAILS OF RAIL WIDTH AND STRIPING, NUMBER AND SPACING OF RAILS, MINIMUM LENGTH AND HEIGHT (ABOVE PAVEMENT) OF RAILS MUST BE ADHERED TO WHEN ALTERNATE DESIGNS ARE USED.
5. BARRICADES ARE TO BE CONSTRUCTED OF CLEAN SOUND MATERIAL. ALL SURFACES ABOVE GROUND, WHICH ARE NOT STRIPED, SHALL BE WHITE EXCEPT THE UNPAINTED GALVANIZED METAL OR ALUMINUM COMPONENTS MAY BE USED. COMPONENTS MADE OF LUMBER SHALL BE PAINTED WITH A MINIMUM OF TWO COATS OF AN APPROVED BRAND OF WHITE PAINT TO SECURE THOROUGH COVERAGE AND A UNIFORM WHITE COLOR.
6. THE REFLECTORIZED WHITE AND REFLECTORIZED ORANGE (REFLECTORIZED RED) STRIPES FOR BARRICADES, DRUMS AND VERTICAL PANELS SHALL BE CONSTRUCTED OF HIGH INTESITY SHEETING AND SHALL BE MAINTAINED TO MEET THE APPEARANCE, COLOR AND REFLECTIVITY REQUIREMENTS SET BY DOTT.
7. THE CONTRACTOR SHALL MAINTAIN EACH BARRICADE IN A CLEAN AND GOOD CONDITION.
8. BARRICADES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND/OR THE ELIMINATION OF THE HAZARD ON ANY SECTION.



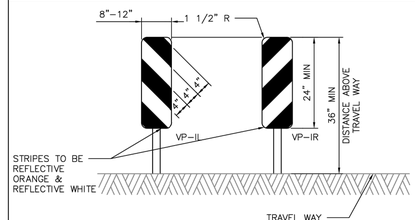
DRUMS

1. DRUMS, SET ON END, AND USED FOR TRAFFIC WARNING OR CHANNELIZATION SHALL BE APPROX 36" IN HEIGHT AND A MIN OF 18" IN DIAMETER. THE CONTRACTOR, AT HIS OPTION, MAY USE DRUMS MADE FROM STEEL BARRELS OR BLACK POLYETHYLENE PLASTIC DRUM LINERS WEIGHING APPROX EIGHT POUNDS EACH. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL, CIRCUMFERENTIAL, REFLECTORIZED ORANGE AND REFLECTORIZED WHITE STRIPES, 4 TO 8 INCHES WIDE. THE FIRST REFLECTORIZED STRIPE SHOULD START WITHIN TWO (2) INCHES OF THE TOP OF THE DRUM. THERE SHALL BE AT LEAST TWO ORANGE AND TWO WHITE STRIPES ON EACH DRUM. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE HORIZONTAL ORANGE AND WHITE STRIPES, THEY SHALL BE NO MORE THAN 2 INCHES WIDE. METAL DRUMS SHALL BE PAINTED BLACK OR ORANGE BEFORE REFLECTORIZED STRIPES ARE ADDED. ALL DRUMS ON PROJECT WILL BE THE SAME COLOR. WHEN DRUMS ARE PLACED IN THE ROADWAY, APPROPIATE WARNING SIGNS SHOULD BE USED. DURING HOURS OF DARKNESS, A FLASHING WARNING LIGHT SHOULD BE PLACED ON DRUMS USED SINGLY AS A WARNING DEVICE. STEADY BURN ELECTRIC LIGHTS OR DELINEATORS SHOULD BE PLACED ON DRUMS USED IN SERIES FOR TRAFFIC CHANNELIZATION. DRUMS SHALL BE WEIGHTED WITH SAND TO THE EXTENT INDICATED IN THE PLANS.
2. CWI-8 CHEVRON SIGNS, CWI-6A ARROW SIGNS OR VP-1 VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.



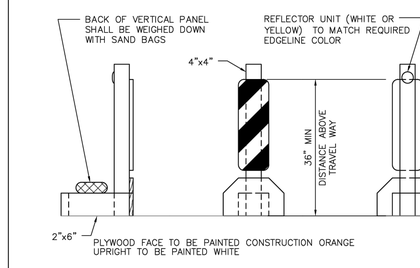
CONES

1. TRAFFIC CONES AND TUBULAR MARKERS SHALL BE A MIN OF 18" INCHES IN HEIGHT WITH A BROADENED BASE AND MAY BE MADE OF VARIOUS MATERIALS TO WITHSTAND IMPACT WITHOUT DAMAGE TO THEMSELVES OR TO VEHICLES. LARGER SIZES SHOULD BE USED ON FREEWAYS AND OTHER ROADWAYS WHERE SPEED ARE RELATIVELY HIGH OR WHERE EVER MORE CONSPICUOUS GUIDANCE IS NEEDED. ORANGE SHALL BE THE PREDOMINANT COLOR ON CONES AND TUBULAR MARKERS. THEY SHOULD BE KEPT CLEAN AND BRIGHT FOR MAX TARGET VALUE. FOR NIGHT TIME USE THEY SHALL BE REFLECTORIZED OR EQUIPPED WITH LIGHTING DEVICES FOR MAX VISIBILITY. REFLECTORIZED MATERIAL SHALL HAVE A SMOOTH, SEALED OUTER SURFACE WHICH WILL DISPLAY THE SAME APPROX COLOR DAY AND NIGHT.
2. REFLECTORIZATION OF TUBULAR MARKERS SHALL BE A MIN OF TWO THREE-INCH BANDS PLACED A MAX OF 2" FROM THE TOP WITH A MAX OF 6" BETWEEN THE BANDS. REFLECTORIZATION OF CONES SHALL BE PROVIDED BY A MIN 6" BAND PLACED A MAX OF 3" FROM THE TOP.
3. CONES OR TUBULAR MARKERS ARE GENERALLY ONLY SUITABLE FOR TEMPORARY USAGE (UP TO 8 HOURS) WITH OTHER CHANNELIZATION DEVICES SUCH AS VERTICAL PANELS OR BARRICADES PREFERRED FOR LONGER TERM USAGE. CARE SHOULD BE TAKEN TO INSURE THAT THEY REMAIN IN THEIR PROPER LOCATION AND IN AN UPRIGHT POSITION.



VERTICAL PANELS (VP)

VERTICAL PANELS ARE NORMALLY USED AS CHANNELIZING DEVICES TO INDICATE TANGENT OR NEARLY TANGENT ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME. IN ADDITION, VERTICAL PANELS SHOULD BE USED AT THE EDGE OF SHOULDER DROP-OFFS AND OTHER SUCH AREAS AS LANE TRANSITIONS WHERE POSITIVE DAY AND NIGHT DELINEATION MAY BE REQUIRED. VERTICAL PANELS SHOULD BE MOUNTED BACK TO BACK IF USED AT THE EDGE OF CUTS ADJACENT TO TWO-WAY TWO LANE ROADWAYS. STRIPES SHOULD ALWAYS SLOPE DOWNWARD TOWARD THE TRAVELED WAY.



TYPICAL PORTABLE VERTICAL PANEL OR DELINEATOR

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

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CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:
DocuSigned by: Carol Haddock A5DC61DB72B4464...
DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023 | DWG NO: 01555-14

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

BARRICADE AND CHANNELIZING DEVICES

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

WOOLPERT
ARCHITECTURE | ENGINEERING | ENVIRONMENTAL
11750 Katy Freeway, Suite 1260
Houston, TX 77079
800.414.1045

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS
YOUSEF U. HUSAIN
107412
LICENSED
PROFESSIONAL ENGINEER
3/10/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

TRAFFIC CONTROL PLANS
BARRICADE STANDARD
DETAIL (TCP-4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 301 OF 345	

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.

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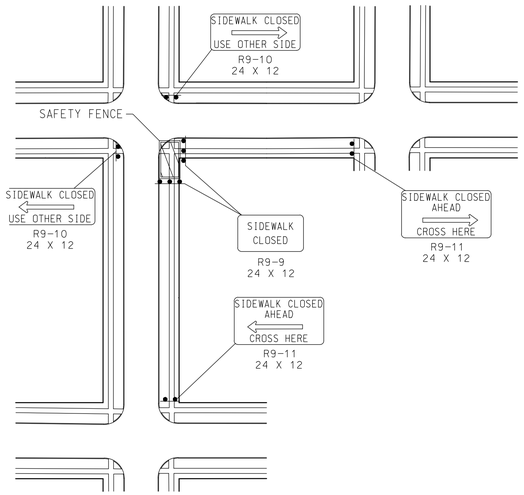
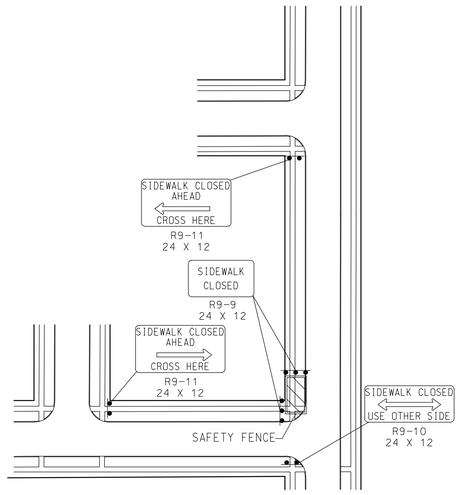
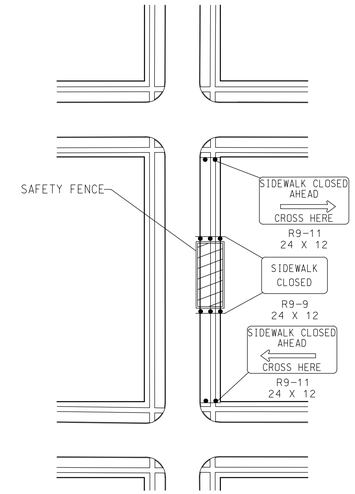


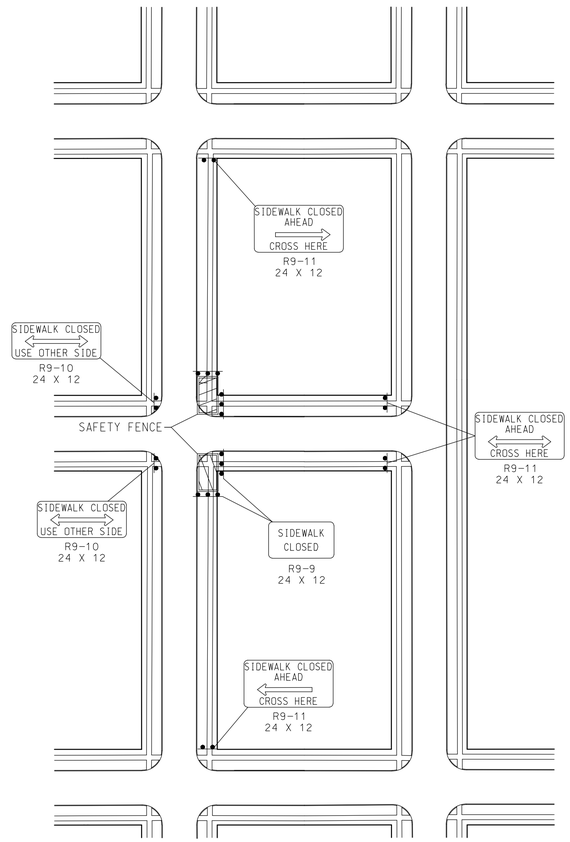
TYPICAL PEDESTRIAN TRAFFIC CONTROL DETAILS
FOR CROSSWALK CLOSURE



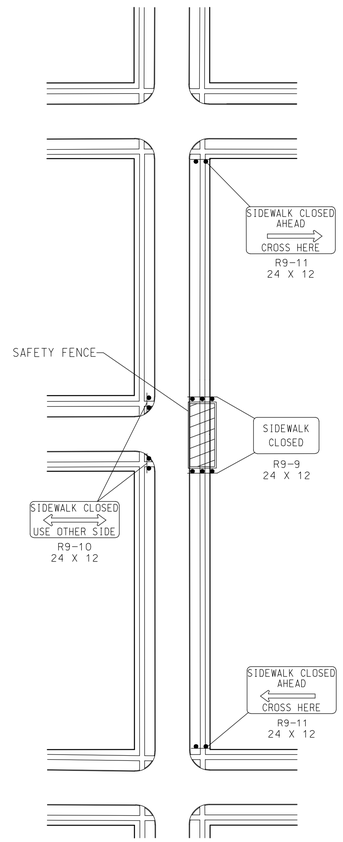
TYPICAL PEDESTRIAN TRAFFIC CONTROL DETAILS
FOR CROSSWALK CLOSURE



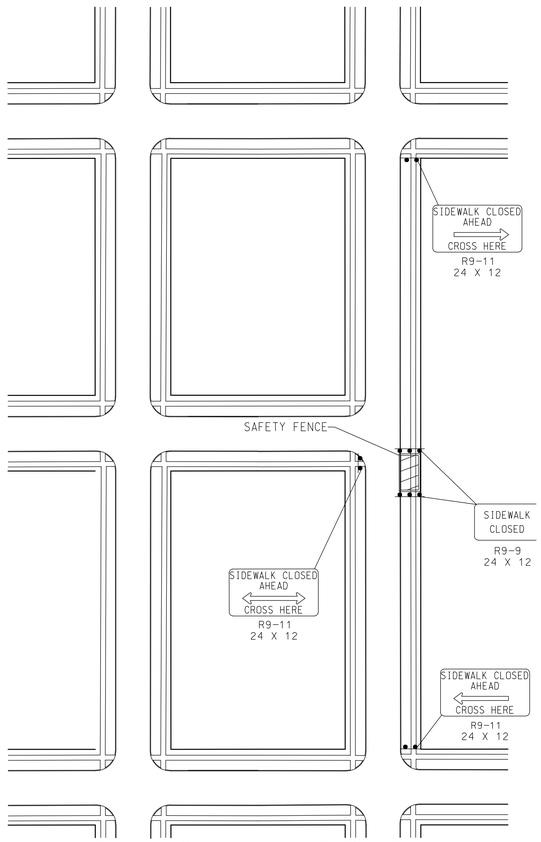
TYPICAL PEDESTRIAN TRAFFIC CONTROL DETAILS
FOR SIDEWALK CLOSURE



TYPICAL PEDESTRIAN TRAFFIC CONTROL DETAILS
FOR CROSSWALK CLOSURE



TYPICAL PEDESTRIAN TRAFFIC CONTROL DETAILS
FOR SIDEWALK & CROSSWALK CLOSURE



TYPICAL PEDESTRIAN TRAFFIC CONTROL DETAILS
FOR SIDEWALK CLOSURE

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FB NO. P-6133

1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
PEDESTRIAN TRAFFIC CONTROL DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
NTS	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 302 of 345	

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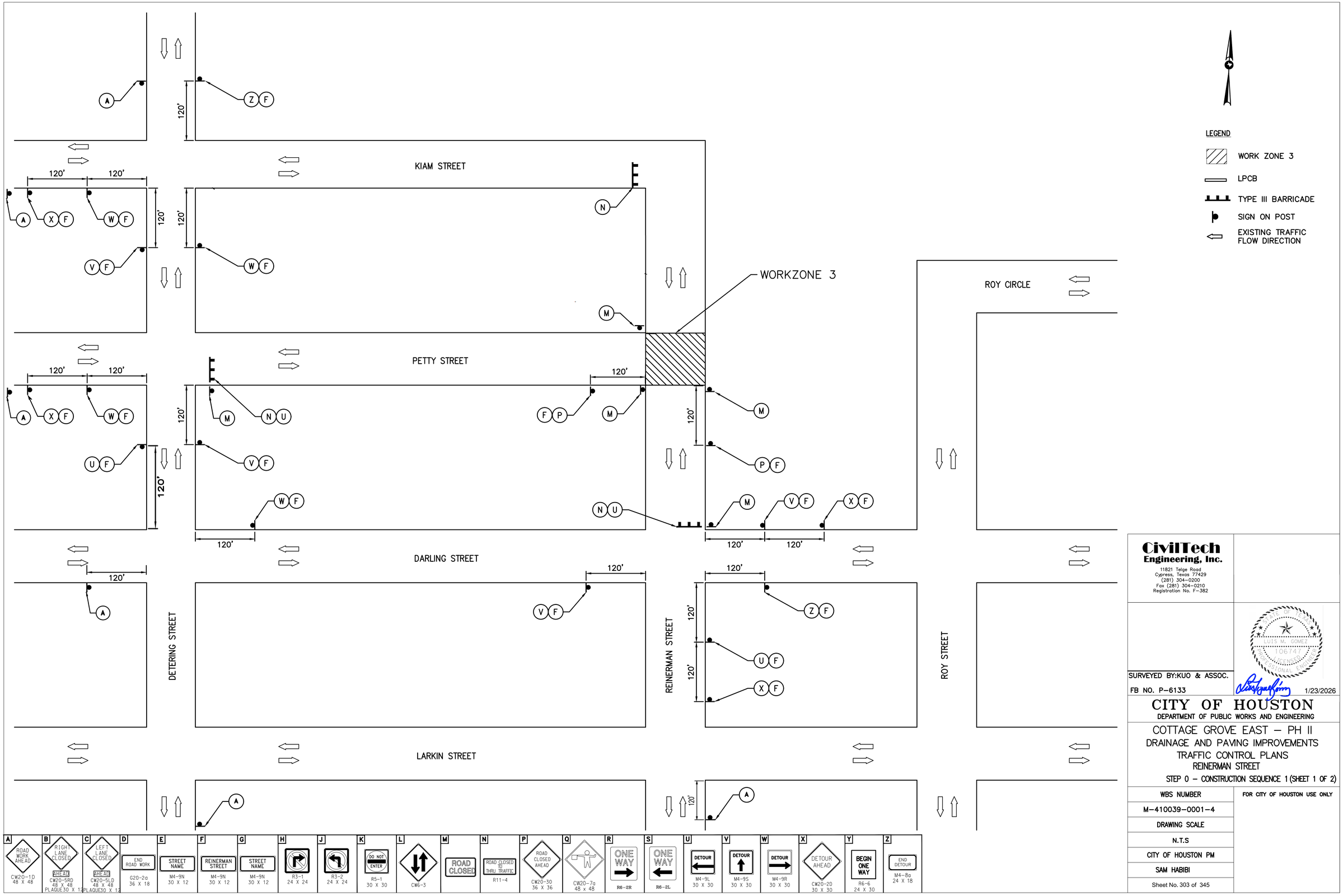

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
REINERMAN STREET
STEP 0 – CONSTRUCTION SEQUENCE 1 (SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 303 of 345	

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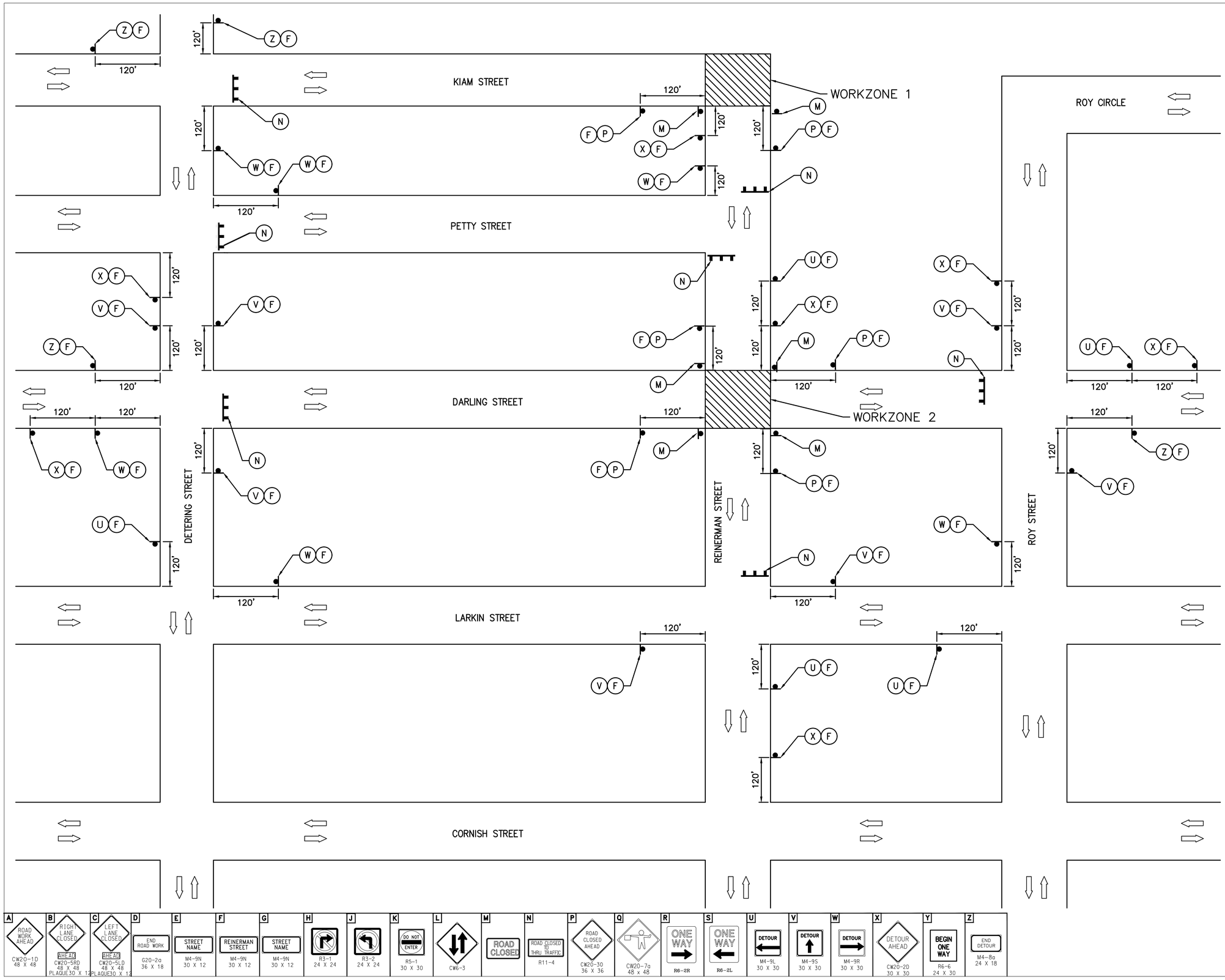

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z
ROAD WORK AHEAD CW20-1D 48 X 48	RIGHT LANE CLOSED AHEAD CW20-5RD 48 X 48 PLAQUE30 X 12	LEFT LANE CLOSED AHEAD CW20-5LD 48 X 48 PLAQUE30 X 12	END ROAD WORK G20-2a 36 X 18	STREET NAME M4-9N 30 X 12	REINERMAN STREET M4-9N 30 X 12	STREET NAME M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	DO NOT ENTER R5-1 30 X 30	CW6-3	ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC R11-4	ROAD CLOSED AHEAD CW20-30 36 X 36	CW20-7a 48 x 48	ONE WAY R6-2R	ONE WAY R6-2L	DETOUR M4-9L 30 X 30	DETOUR M4-9S 30 X 30	DETOUR M4-9R 30 X 30	DETOUR AHEAD CW20-2D 30 X 30	BEGIN ONE WAY R6-6 24 X 30	END DETOUR M4-8a 24 X 18

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
REINERMAN STREET
STEP 0–CONSTRUCTION SEQUENCE 2 (SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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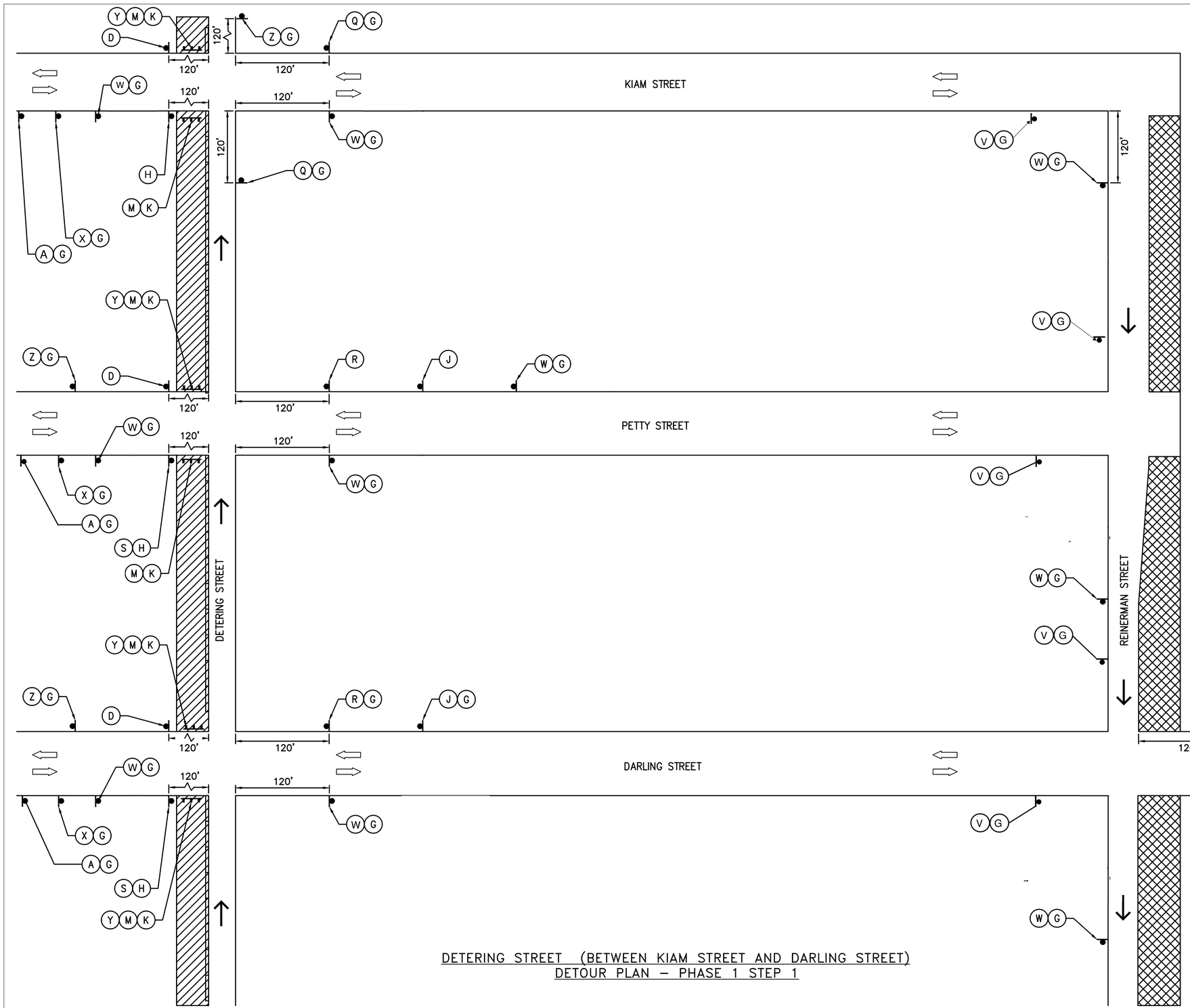
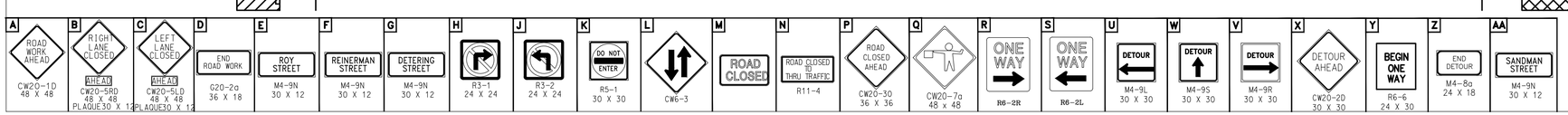
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 304 of 345	



DETERING STREET (BETWEEN KIAM STREET AND DARLING STREET)
DETOUR PLAN – PHASE 1 STEP 1



LEGEND

- DETERING ST WORK ZONE
- PHASE 1 STEP 1 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

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1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DETERING STREET
DETOUR LAYOUT – PHASE 1 STEP 1 (SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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Sheet No. 305 of 345	

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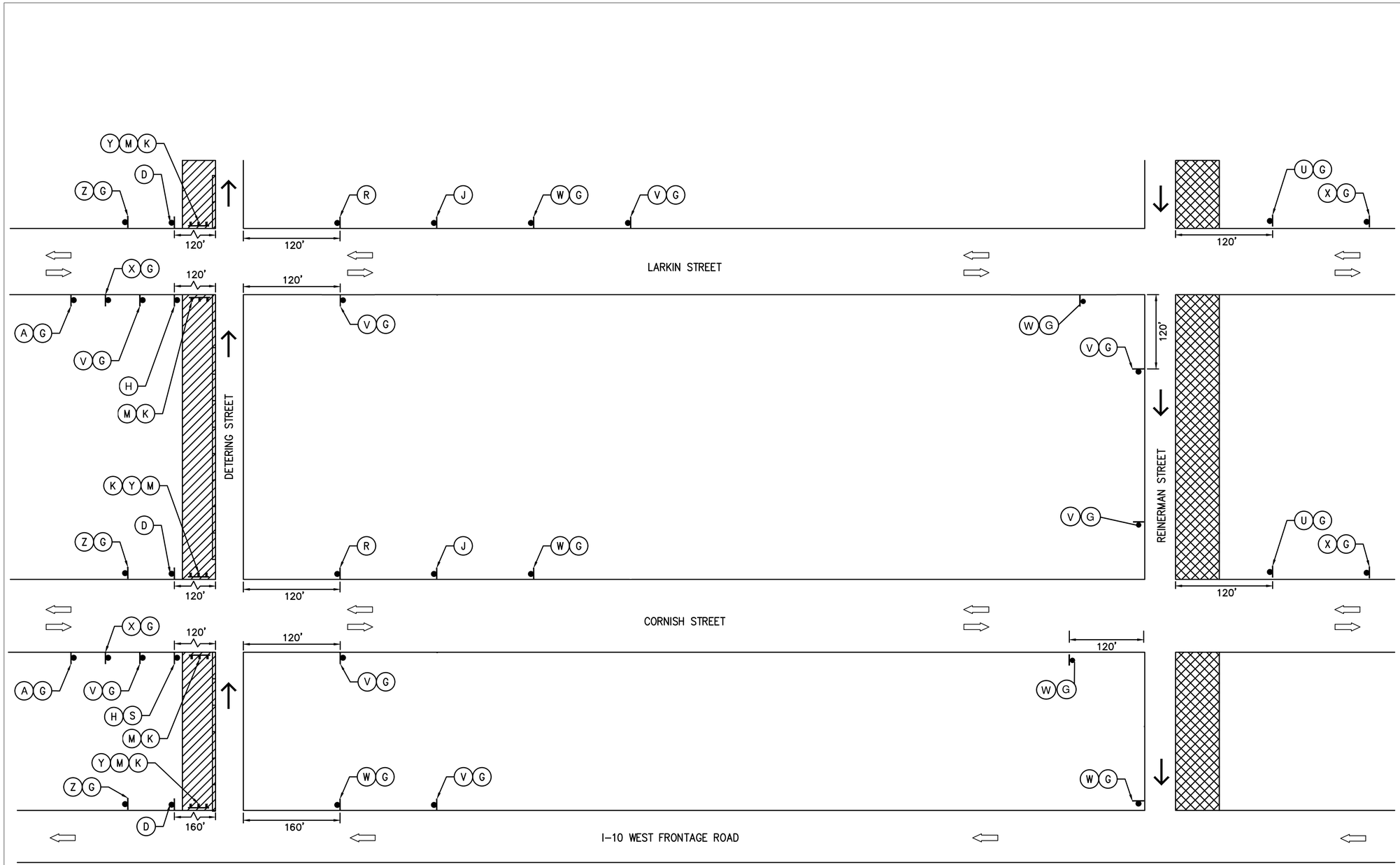

DETERING STREET (BETWEEN LARKIN STREET AND CORNISH STREET) DETOUR PLAN – PHASE 1 STEP 1

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	REINERMAN STREET	DETERING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	SANDMAN STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30		CW20-2D 30 X 30	M4-8a 24 X 18	M4-9N 30 X 12

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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DETERING STREET
DETOUR LAYOUT – PHASE 1 STEP 1 (SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
N.T.S	
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Sheet No. 306 of 345	

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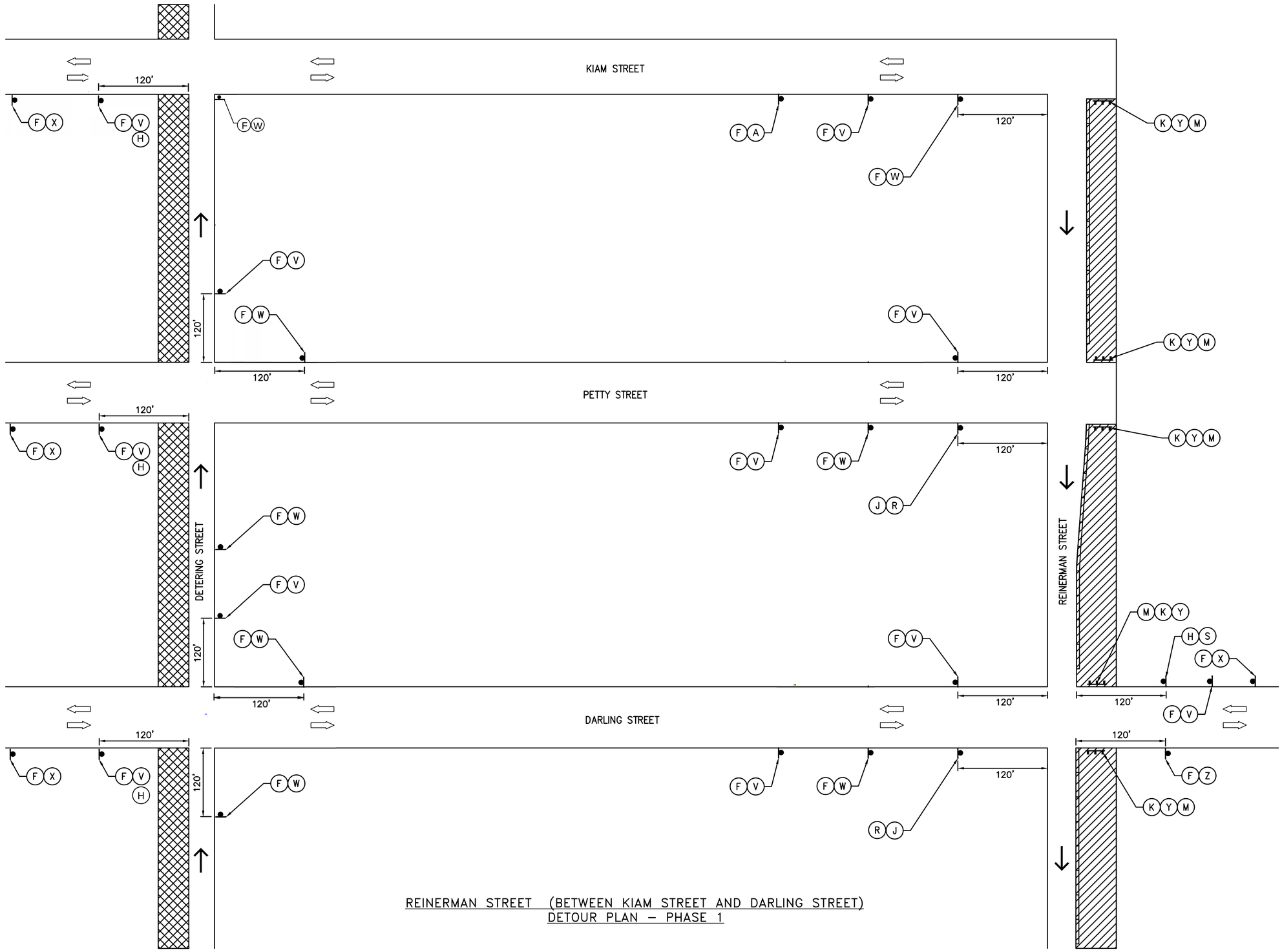
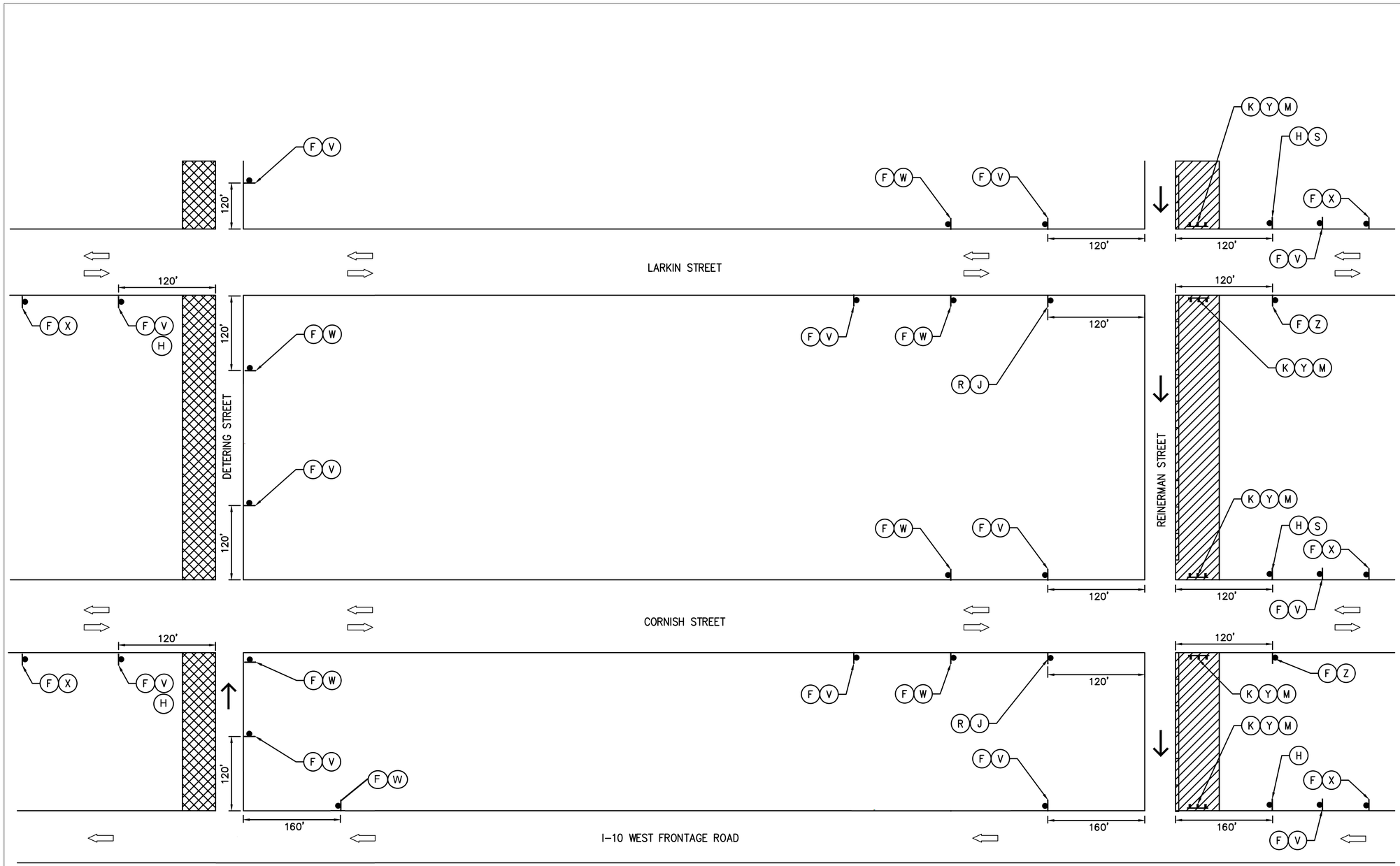

KIAM STREET
PETTY STREET
DARLING STREET
DETERING STREET
REINERMAN STREET
120'
F X
F V H
F W
F A
F V
F W
F V
F W
F V
F W



REINERMAN STREET (BETWEEN LARKIN STREET AND I-10 WEST FRONTAGE ROAD) DETOUR PLAN – PHASE 1 STEP 1

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	REINERMAN STREET	DETERING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	SANDMAN STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
REINERMAN STREET
DETOUR LAYOUT – PHASE 1 STEP 1 (SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
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Sheet No. 308 of 345	

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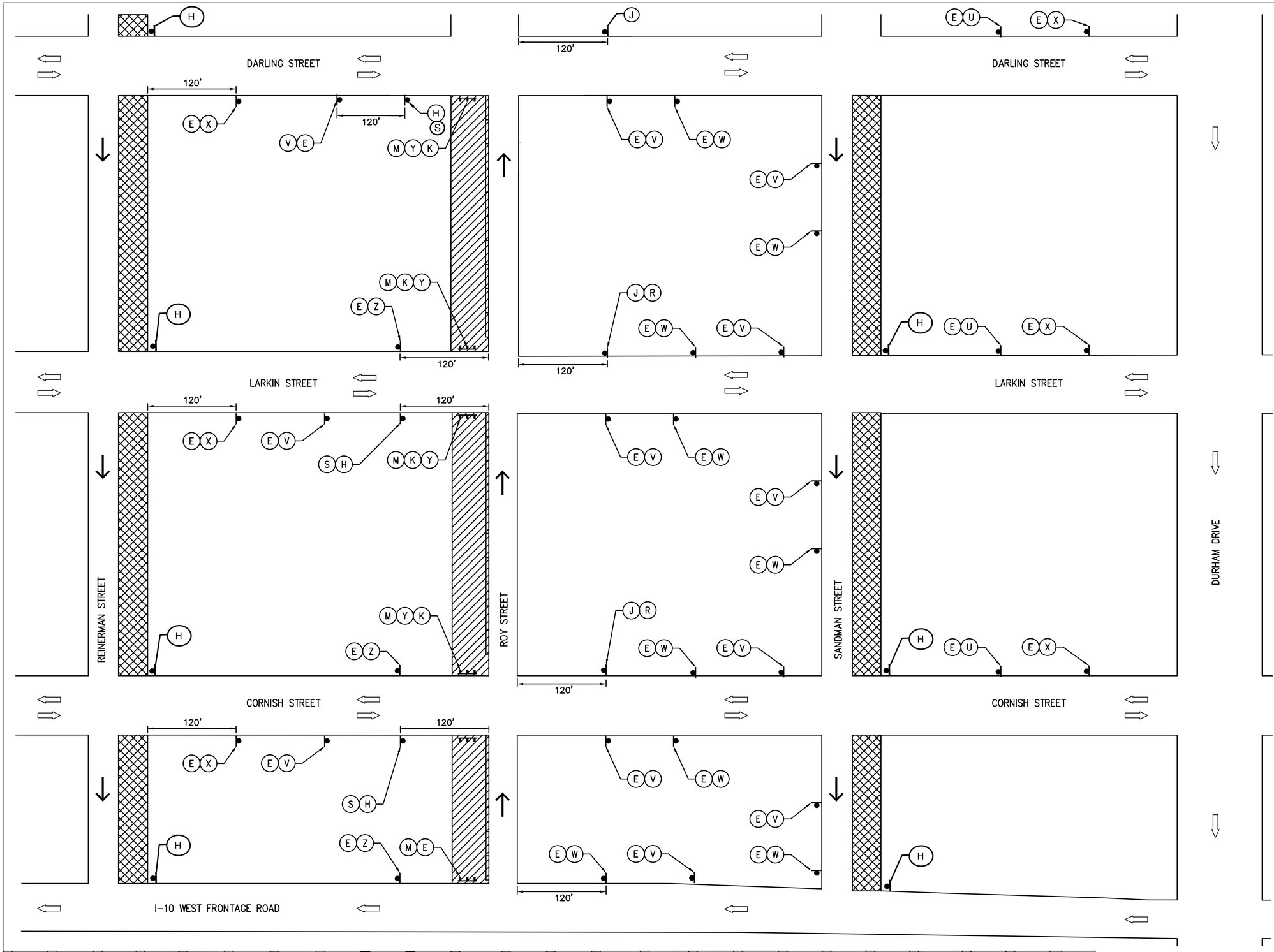

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	REINERMAN STREET	DETERING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	SANDMAN STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12

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1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
ROY STREET
DETOUR LAYOUT – PHASE 1 STEP 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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Sheet No. 309 of 345	

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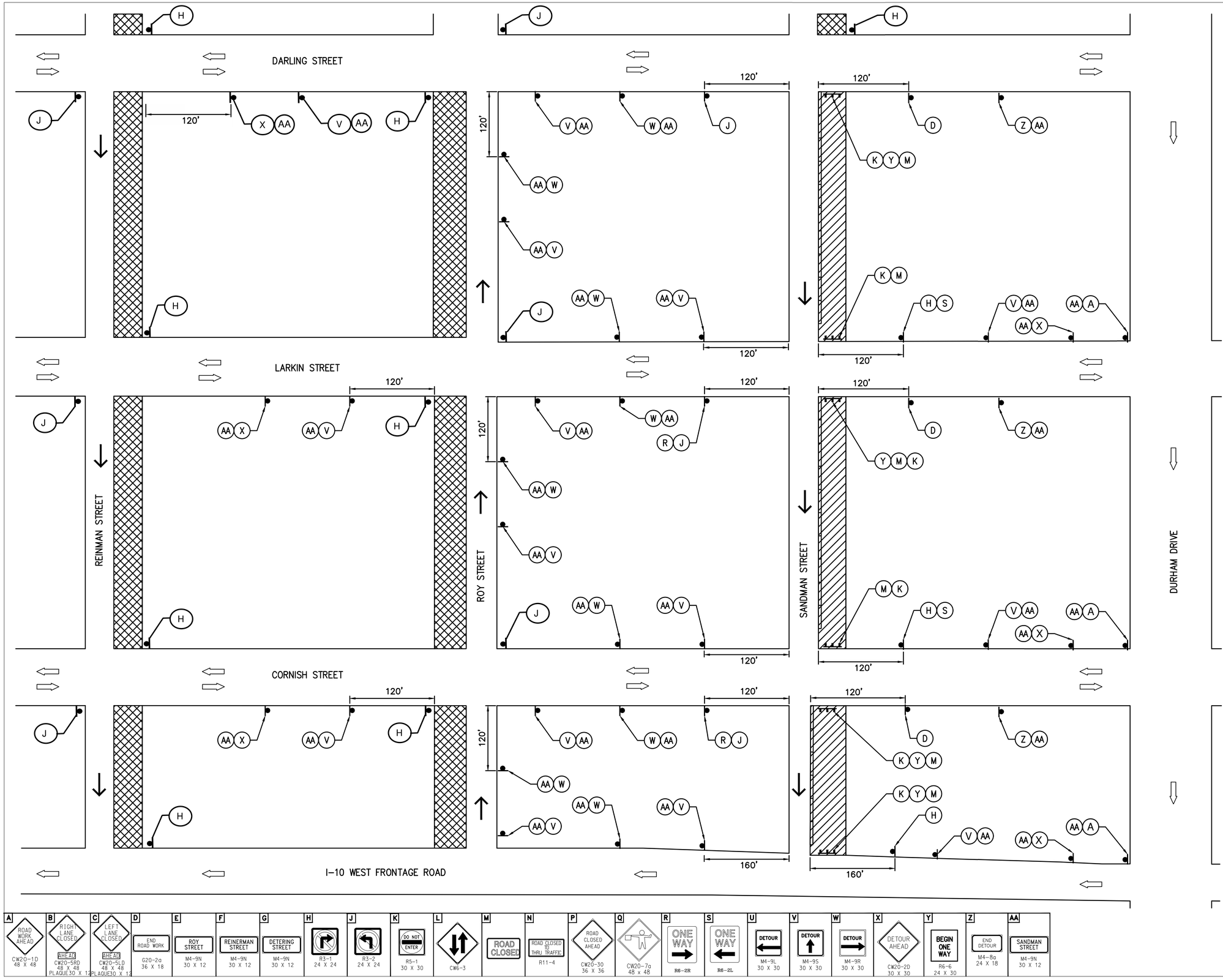

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	REINERMAN STREET	DETERING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED @ THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	SANDMAN STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12

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COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS
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SANDMAN STREET
DETOUR LAYOUT - PHASE 1 STEP 1

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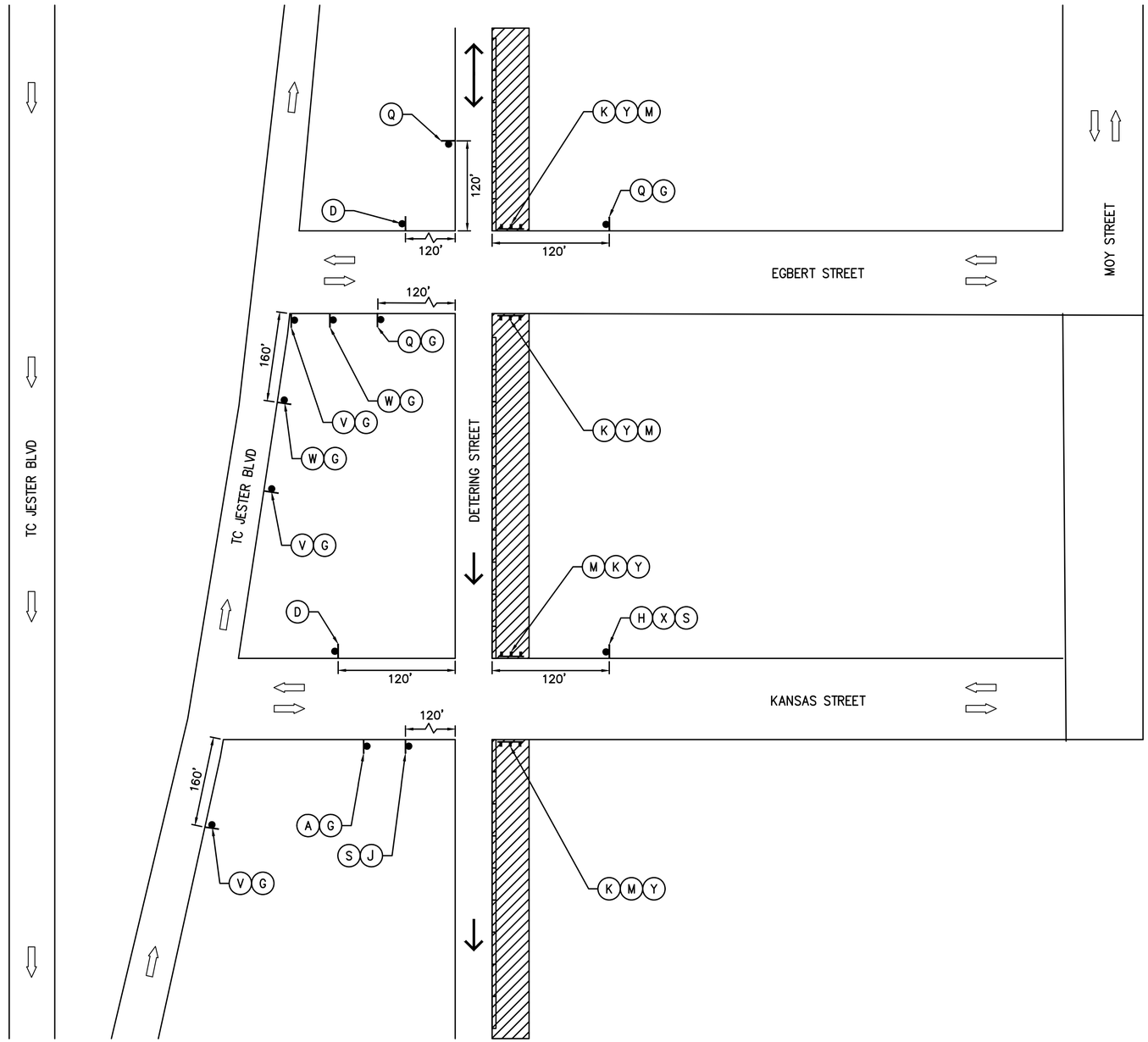
Sheet No. 310 of 345	



DETERING STREET (BETWEEN EGBERT STREET AND KANSAS STREET)
DETOUR PLAN – PHASE 1 STEP 2

LEGEND

- DETERING ST WORK ZONE
- PHASE 1 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	REINERMAN STREET	DETERING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED @ THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	SANDMAN STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW26-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12

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1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DETERING STREET
DETOUR LAYOUT – PHASE 1 STEP 2 (SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
SAM HABIBI	
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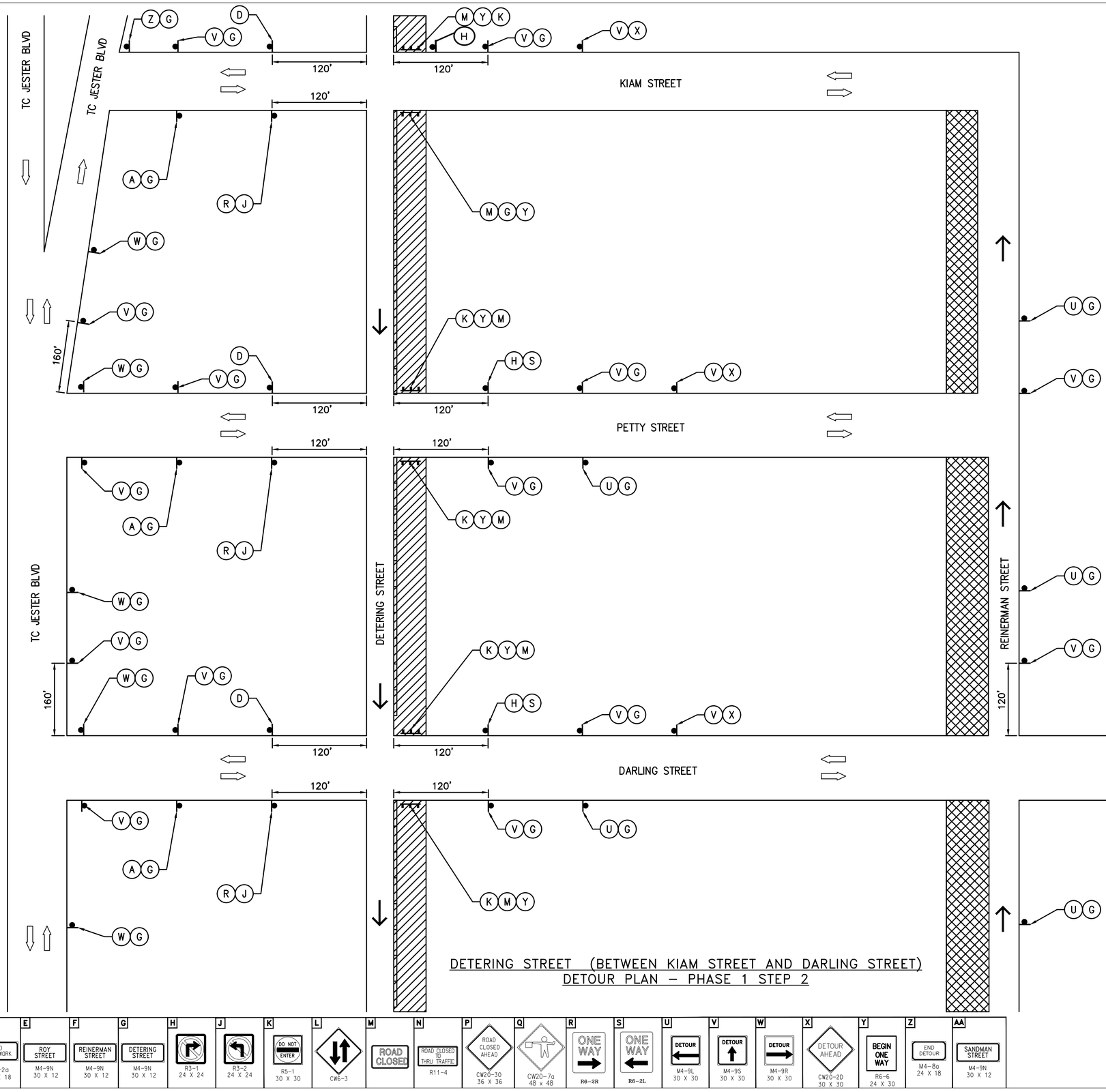

DETERING STREET (BETWEEN KIAM STREET AND DARLING STREET)
DETOUR PLAN – PHASE 1 STEP 2

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA
ROAD WORK AHEAD CW20-1D 48 X 48	RIGHT LANE CLOSED AHEAD CW20-5RD 48 X 48 PLAQUE30 X 12	LEFT LANE CLOSED AHEAD CW20-5LD 48 X 48 PLAQUE30 X 12	END ROAD WORK G20-2a 36 X 18	ROY STREET M4-9N 30 X 12	REINERMAN STREET M4-9N 30 X 12	DETERING STREET M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	DO NOT ENTER R5-1 30 X 30	CW6-3	ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC R11-4	ROAD CLOSED AHEAD CW20-3D 36 X 36	CW20-7a 48 X 48	ONE WAY R6-2R	ONE WAY R6-2L	DETOUR M4-9L 30 X 30	DETOUR M4-9S 30 X 30	DETOUR M4-9R 30 X 30	DETOUR AHEAD CW20-2D 30 X 30	BEGIN ONE WAY R6-6 24 X 30	END DETOUR M4-8a 24 X 18	SANDMAN STREET M4-9N 30 X 12

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Fax (281) 304-0210
Registration No. F-382

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FB NO. P-6133

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DETERING STREET
DETOUR LAYOUT – PHASE 1 STEP 2 (SHEET 2 OF 3)

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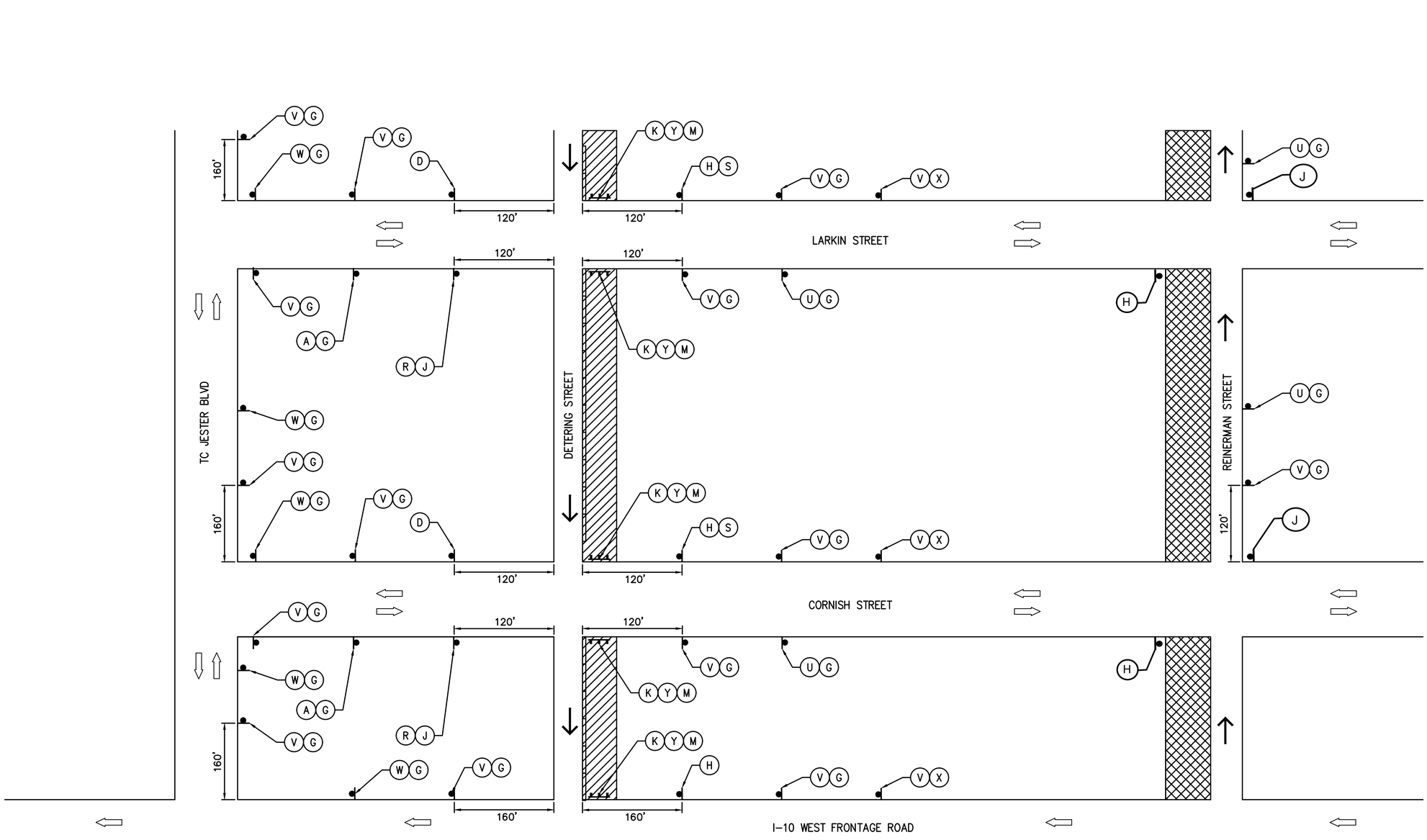

LEGEND

- DETERING ST WORK ZONE
- PHASE 1 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

DETERING STREET (BETWEEN LARKIN STREET AND I-10 WEST FRONTAGE ROAD) DETOUR PLAN – PHASE 1 STEP 2

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	REINERMAN STREET	DETERING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	SANDMAN STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12

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TRAFFIC CONTROL PLANS
DETERING STREET
DETOUR LAYOUT – PHASE 1 STEP 2 (SHEET 3 OF 3)

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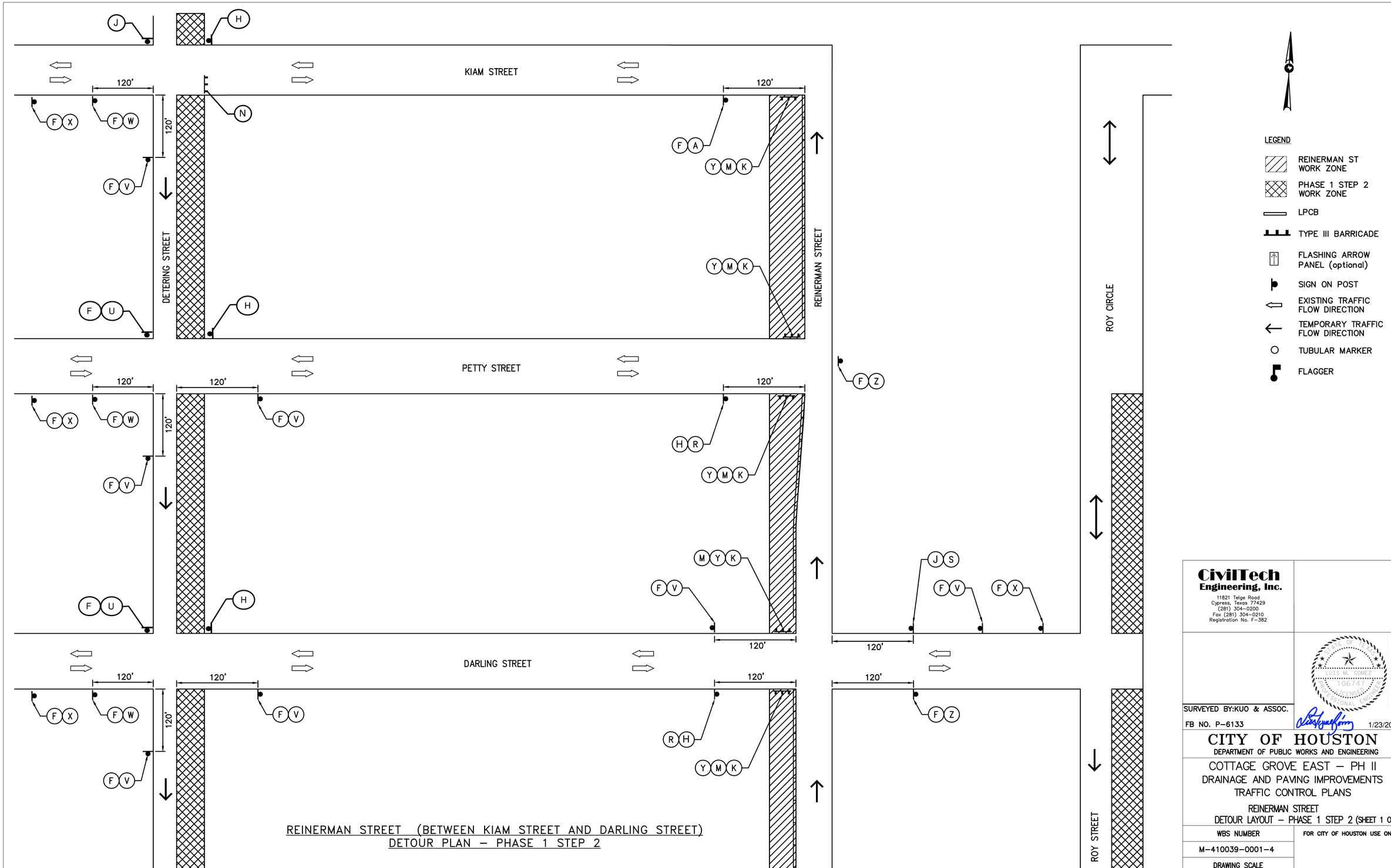

REINERMAN STREET (BETWEEN KIAM STREET AND DARLING STREET)
DETOUR PLAN – PHASE 1 STEP 2

LEGEND

- REINERMAN ST WORK ZONE
- PHASE 1 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA				
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	REINERMAN STREET	DETERING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	SANDMAN STREET				
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12				

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LICENSED PROFESSIONAL ENGINEER
LUIS M. GOMEZ
106747
1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS

REINERMAN STREET
DETOUR LAYOUT – PHASE 1 STEP 2 (SHEET 1 OF 2)

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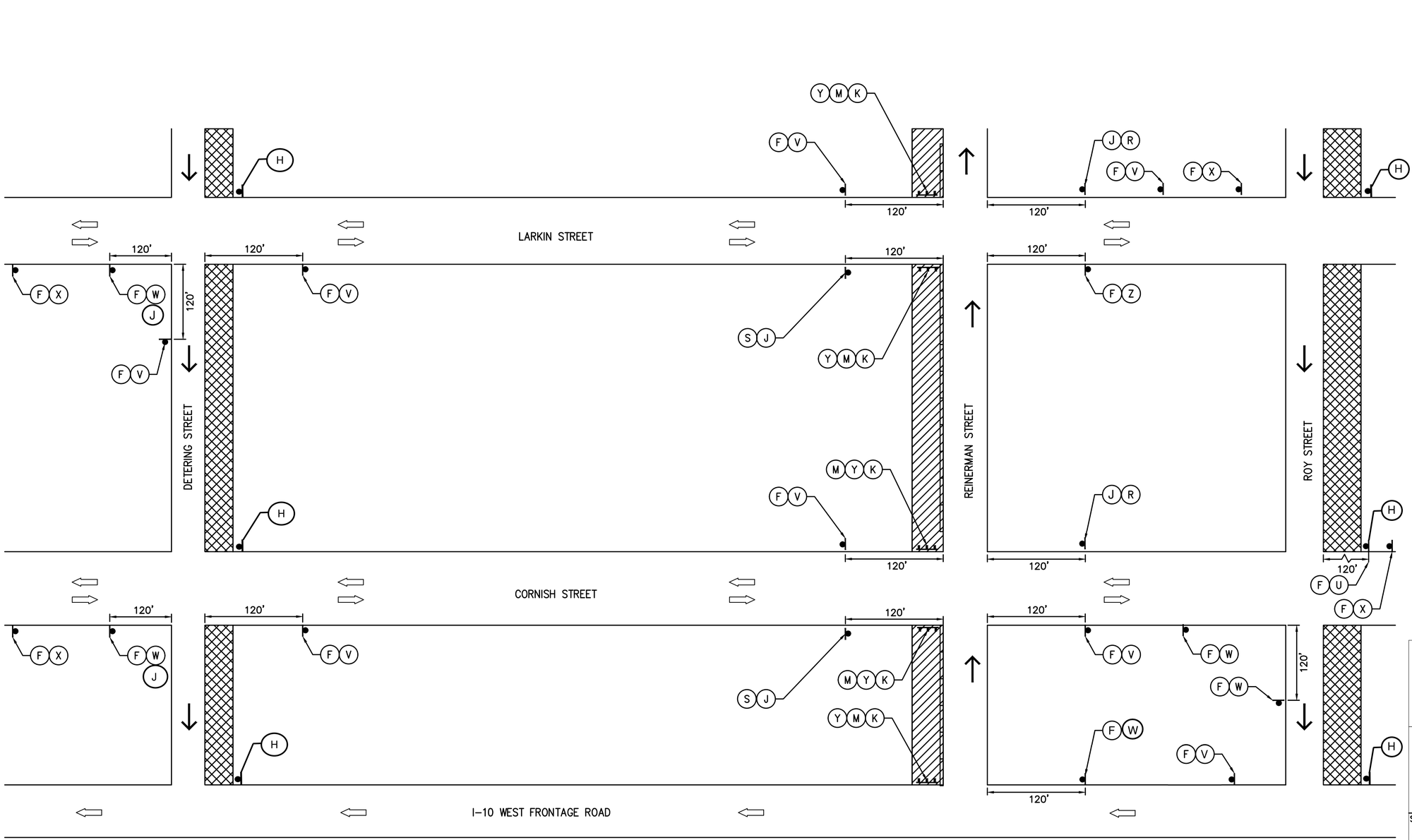

LEGEND

- REINERMAN ST WORK ZONE
- PHASE 1 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

REINERMAN STREET (BETWEEN LARKIN STREET AND I-10 WEST FRONTAGE ROAD) DETOUR PLAN – PHASE 1 STEP 2

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	REINERMAN STREET	DETERING STREET	R3-1	R3-2	DO NOT ENTER	CW6-3	ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD	CW20-7a	ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	SANDMAN STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	24 X 24	24 X 24	R5-1 30 X 30			R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30		M4-9R 30 X 30	CW20-2D 30 X 30	M4-8a 24 X 18 / R6-1R 24 X 30	M4-9N 30 X 12

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CITY OF HOUSTON
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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
REINERMAN STREET
DETOUR LAYOUT – PHASE 1 STEP 2 (SHEET 2 OF 2)

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DRAWING SCALE	
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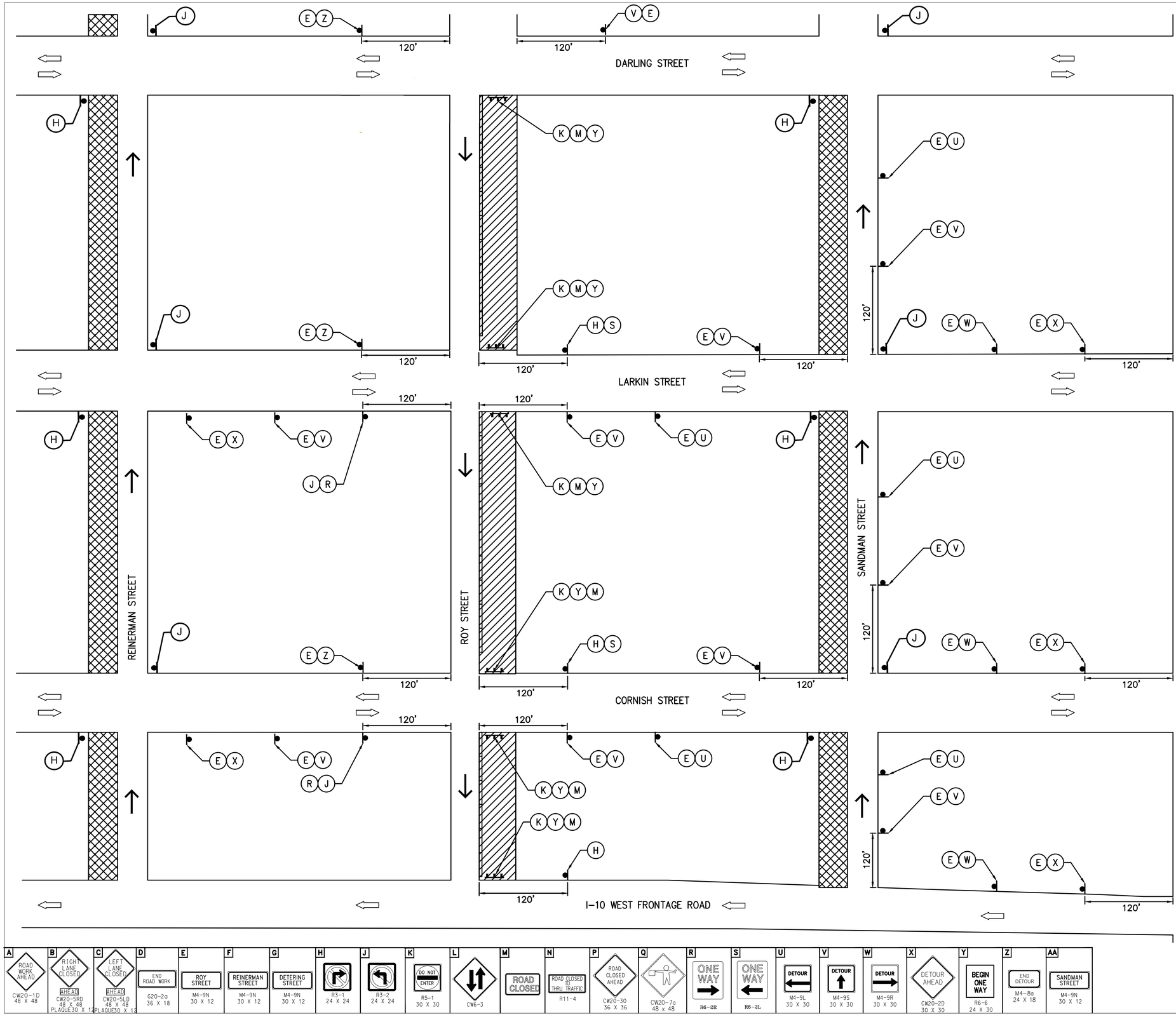

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CITY OF HOUSTON
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COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
ROY STREET
DETOUR LAYOUT – PHASE 1 STEP 2

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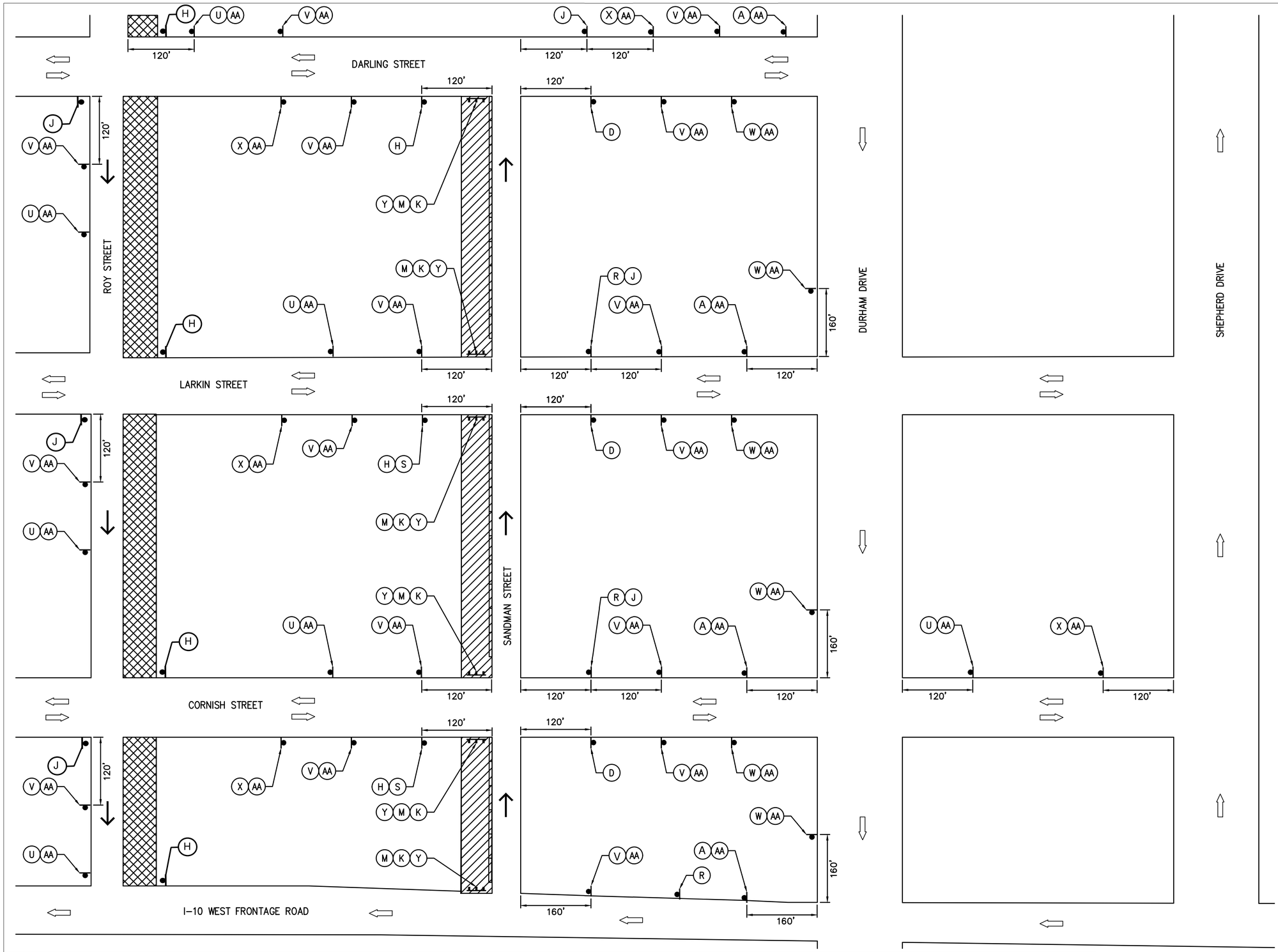

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	REINERMAN STREET	DETERING STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED @ THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	SANDMAN STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12

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SANDMAN STREET
DETOUR LAYOUT – PHASE 1 STEP 2

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N.T.S	
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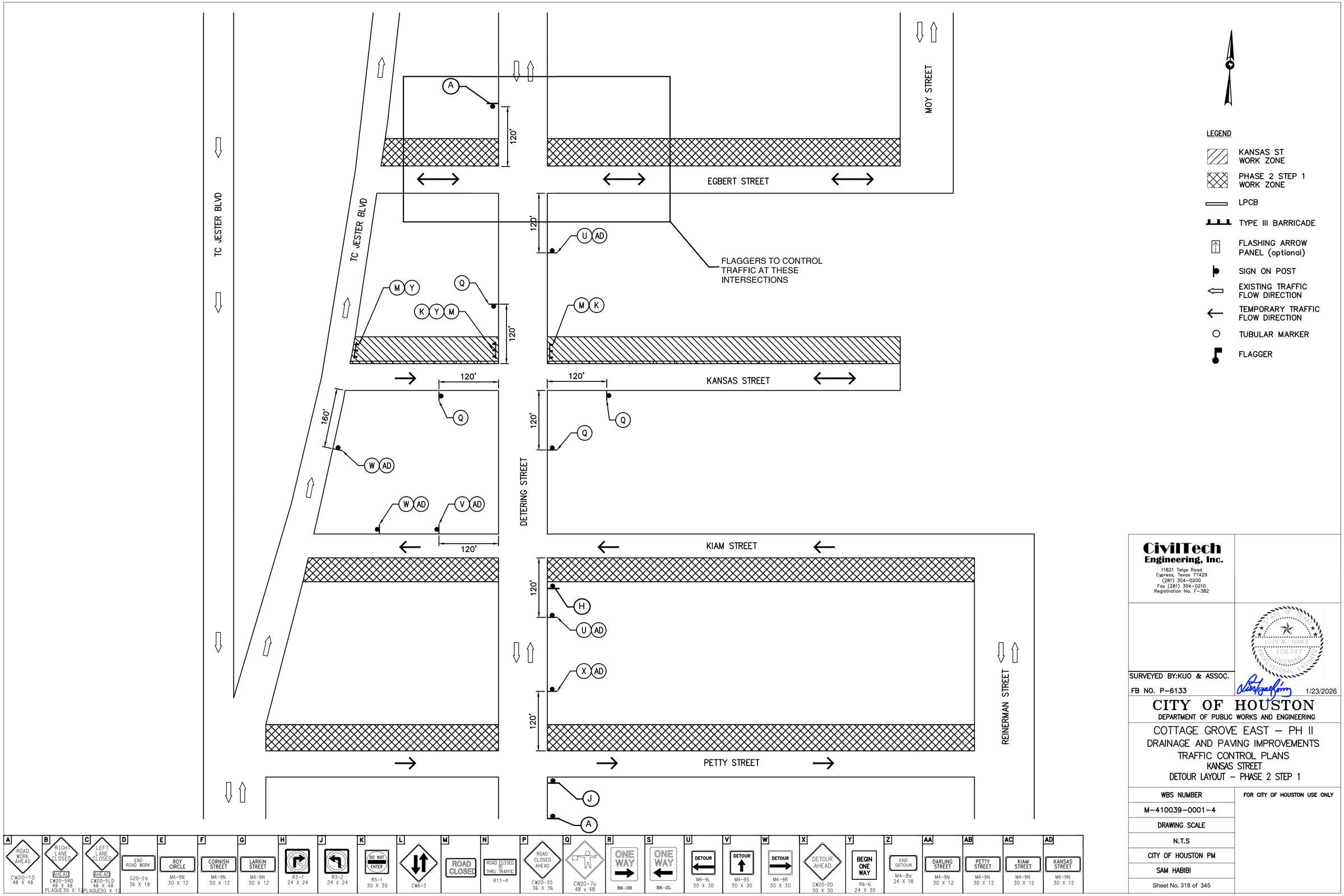

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DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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KANSAS STREET
DETOUR LAYOUT - PHASE 2 STEP 1

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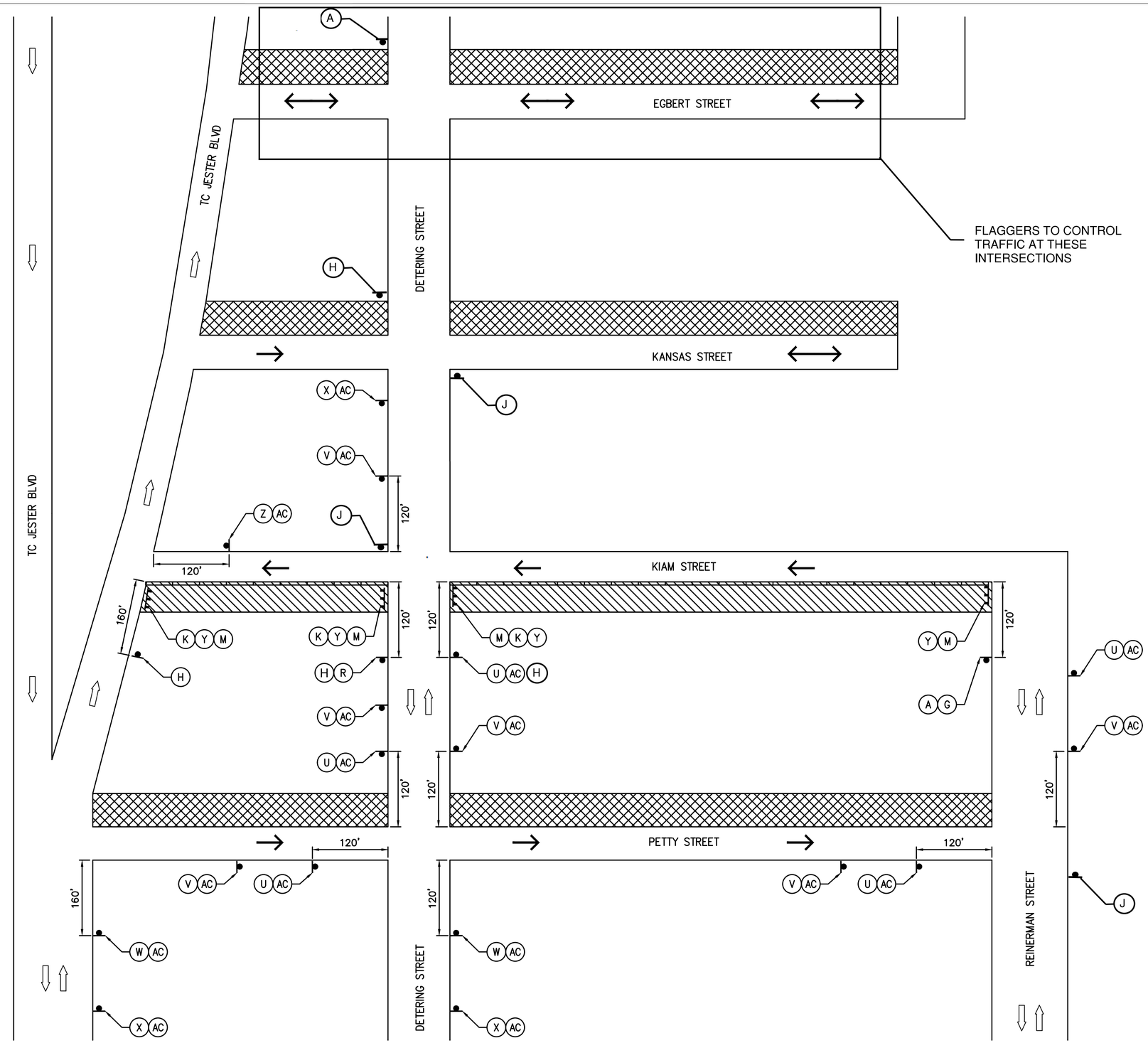

LEGEND

- KIAM ST WORK ZONE
- PHASE 2 STEP 1 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD			
ROAD WORK AHEAD	RIGHT LANE CLOSED	LEFT LANE CLOSED	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET			
CW20-1D 48 X 48	R4-2 AD CW20-5RD 48 X 48 PLAQUE30 X 12	R4-2 AD CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12			

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KIAM STREET
DETOUR LAYOUT – PHASE 2 STEP 1

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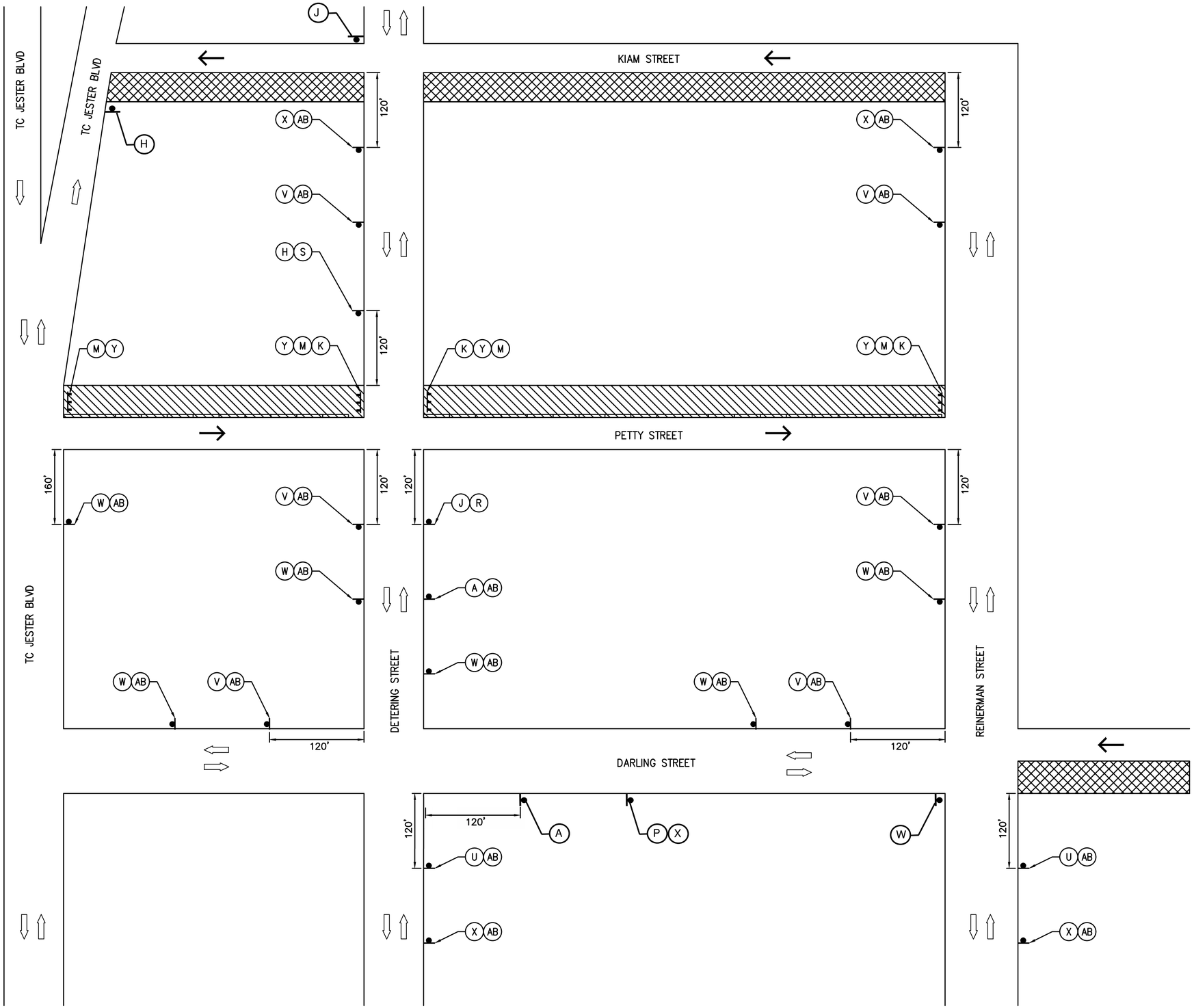

LEGEND

- PETTY ST WORK ZONE
- PHASE 2 STEP 1 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
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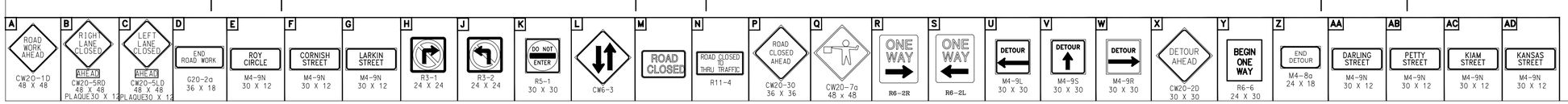

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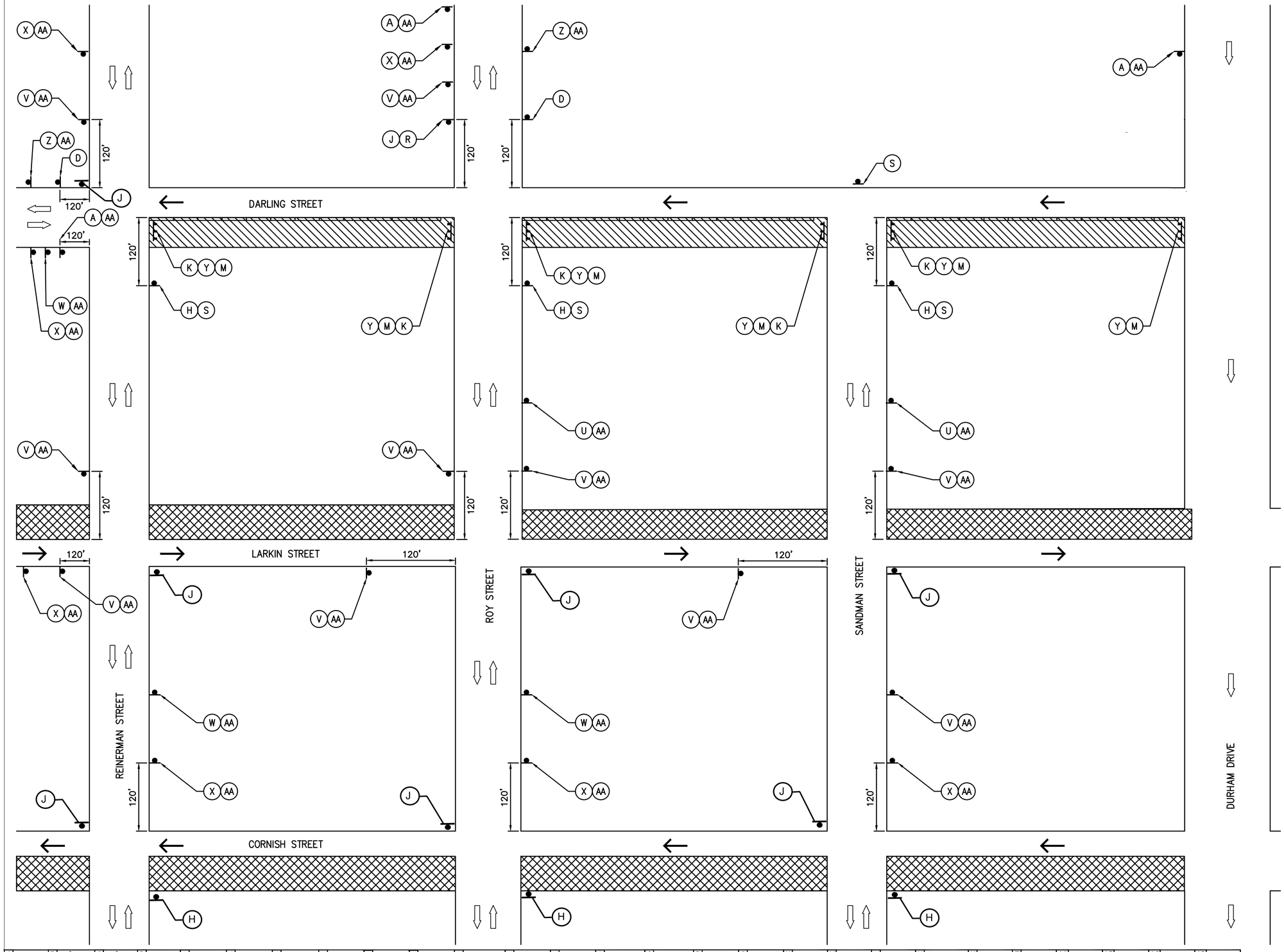

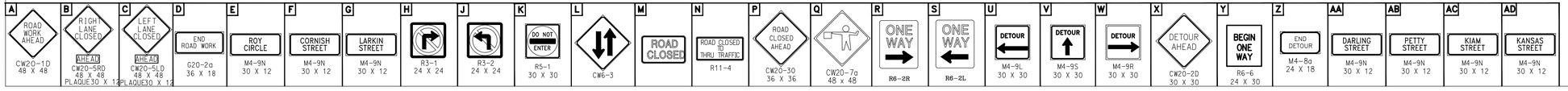

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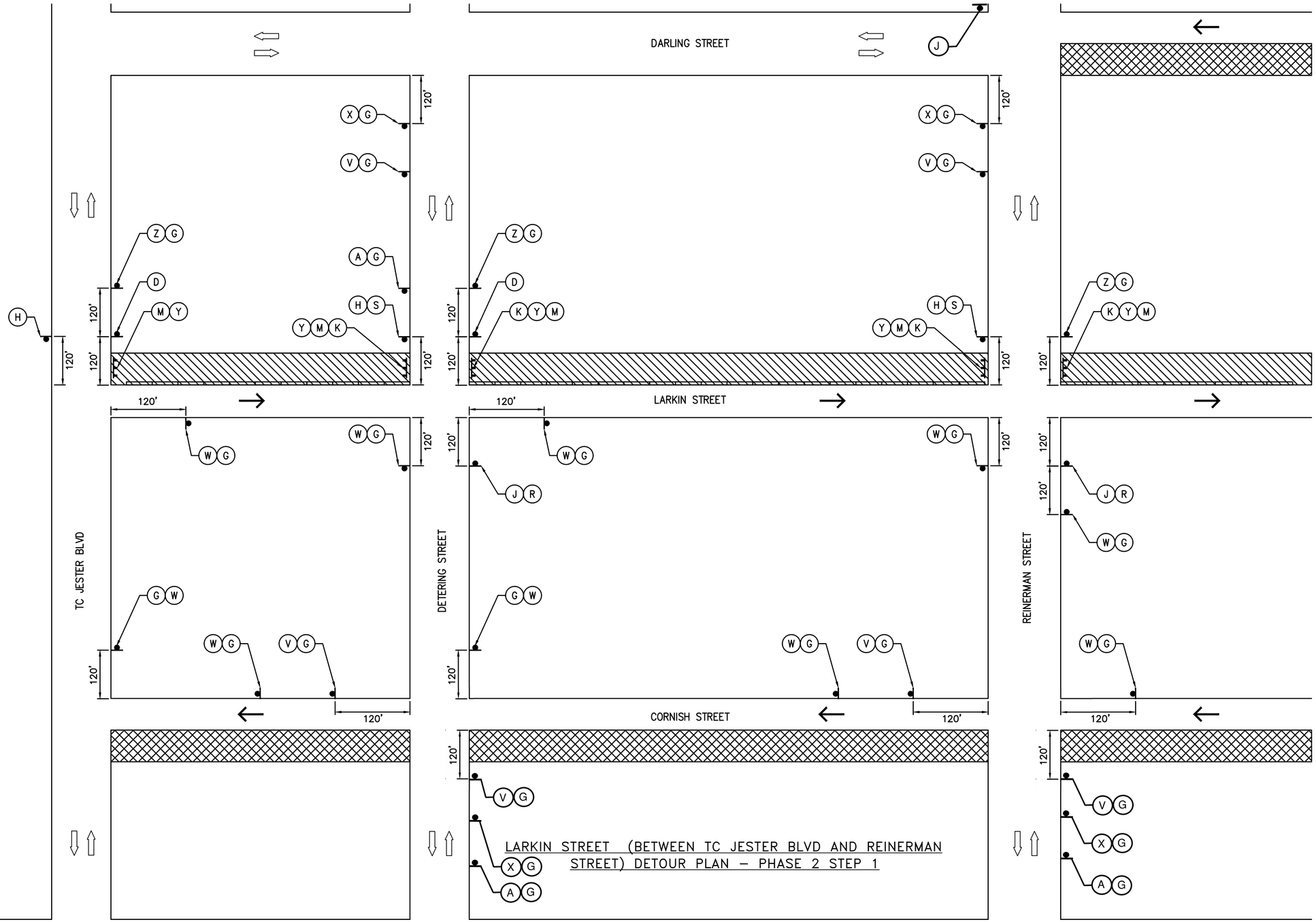

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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Registration No. F-382

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FB NO. P-6133

LUIS M. GOMEZ 106747 LICENSED PROFESSIONAL ENGINEER
1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
LARKIN STREET
DETOUR LAYOUT – PHASE 2 STEP 1 (SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
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Sheet No. 322 of 345	

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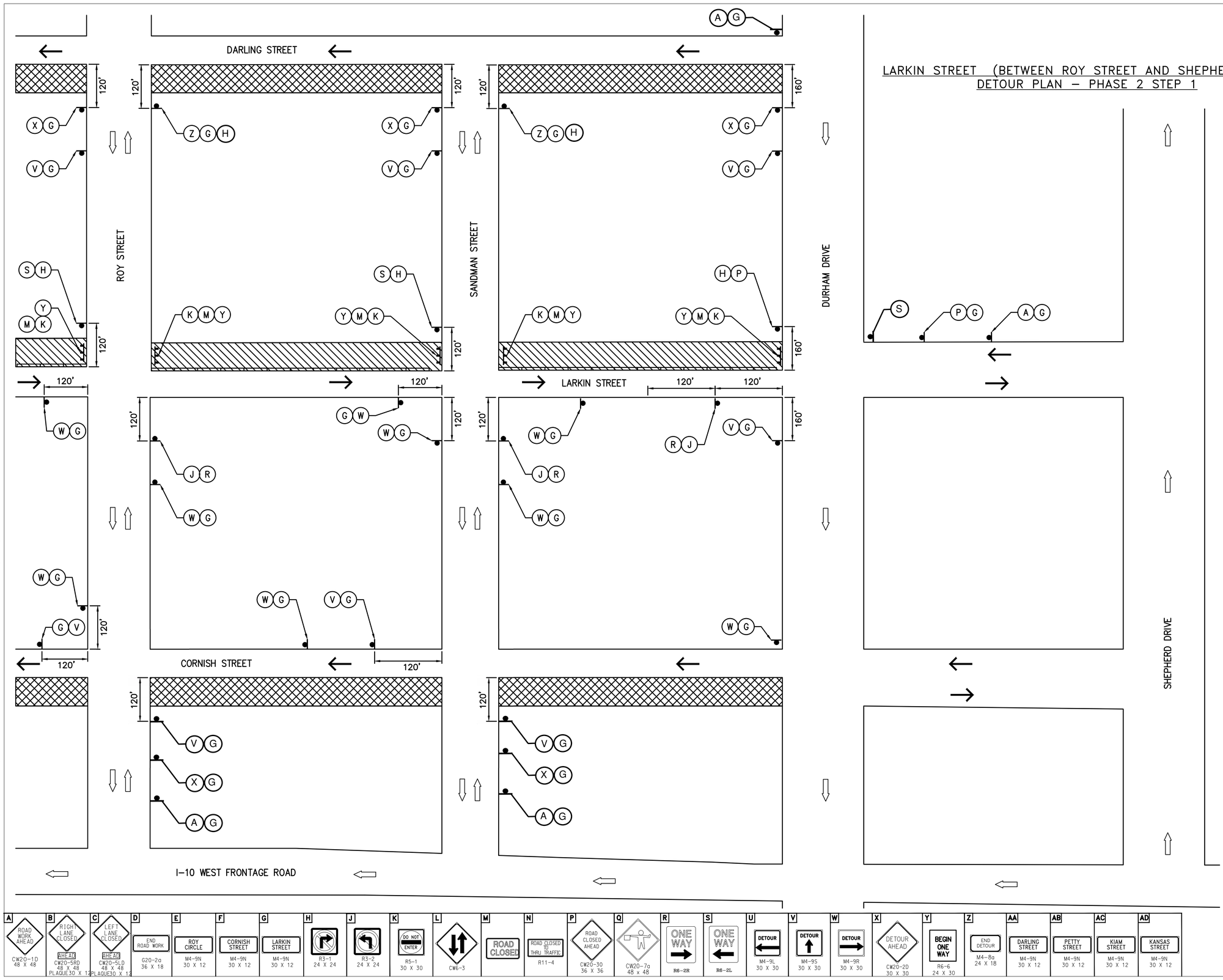
LARKIN STREET (BETWEEN ROY STREET AND SHEPHERD DRIVE)
DETOUR PLAN – PHASE 2 STEP 1



LEGEND

- LARKIN ST WORK ZONE
- PHASE 2 STEP 1 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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STATE OF TEXAS · LUIS M. GOMEZ · 106747 · LICENSED PROFESSIONAL ENGINEER
1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
LARKIN STREET
DETOUR LAYOUT – PHASE 2 STEP 1 (SHEET 2 OF 2)

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CORNISH STREET (BETWEEN TC JESTER BLVD AND REINERMAN STREET) DETOUR PLAN – PHASE 2 STEP 1

DARLING STREET

LARKIN STREET

CORNISH STREET

I-10 WEST FRONTAGE ROAD

TC JESTER BLVD

DETERING STREET

REINERMAN STREET

120'

LEGEND

- CORNISH ST WORK ZONE
- PHASE 2 STEP 1 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	F20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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TRAFFIC CONTROL PLANS
CORNISH STREET
DETOUR LAYOUT – PHASE 2 STEP 1 (SHEET 1 OF 2)

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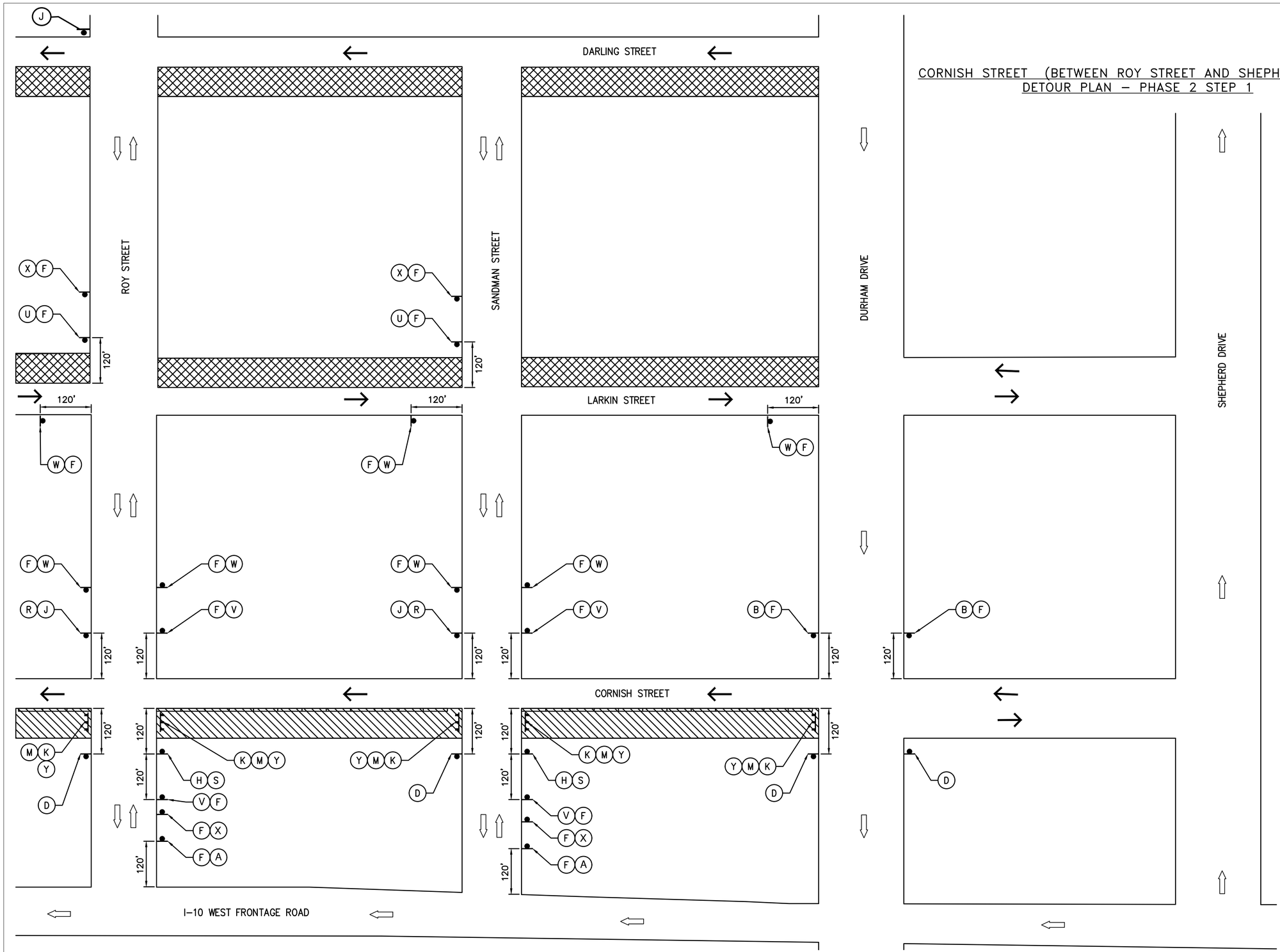

CORNISH STREET (BETWEEN ROY STREET AND SHEPHERD DRIVE)
DETOUR PLAN – PHASE 2 STEP 1

LEGEND

- CORNISH ST WORK ZONE
- PHASE 2 STEP 1 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	F20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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FB NO. P-6133

1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
CORNISH STREET
DETOUR LAYOUT – PHASE 2 STEP 1 (SHEET 2 OF 2)

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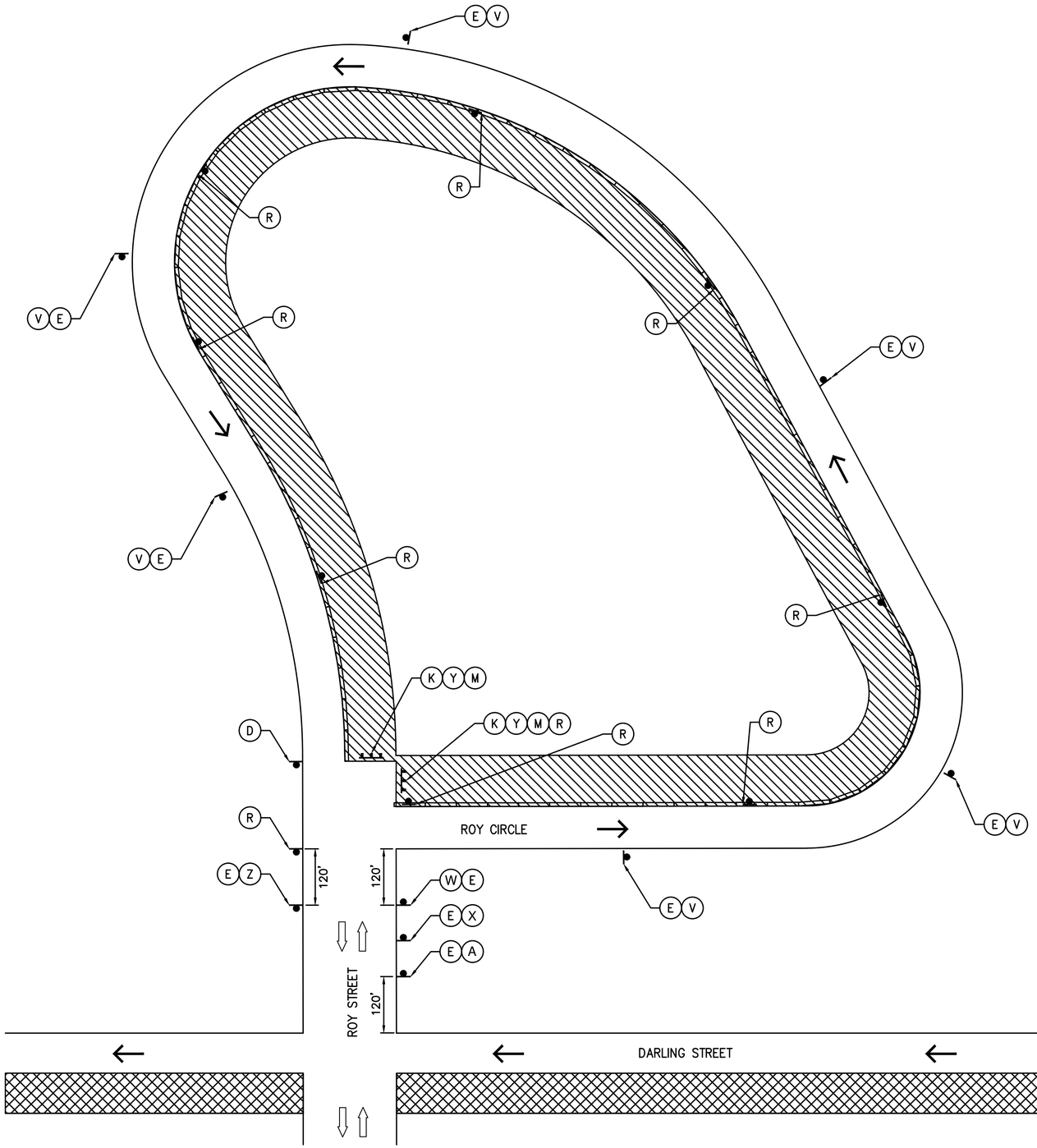

LEGEND

- ROY CIRCLE WORK ZONE
- PHASE 2 STEP 1 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE 30 X 12	CW20-5LD 48 X 48 PLAQUE 30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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STATE OF TEXAS — LICENSED — 106747 — PROFESSIONAL ENGINEER
1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
ROY CIRCLE
DETOUR LAYOUT – PHASE 2 STEP 1

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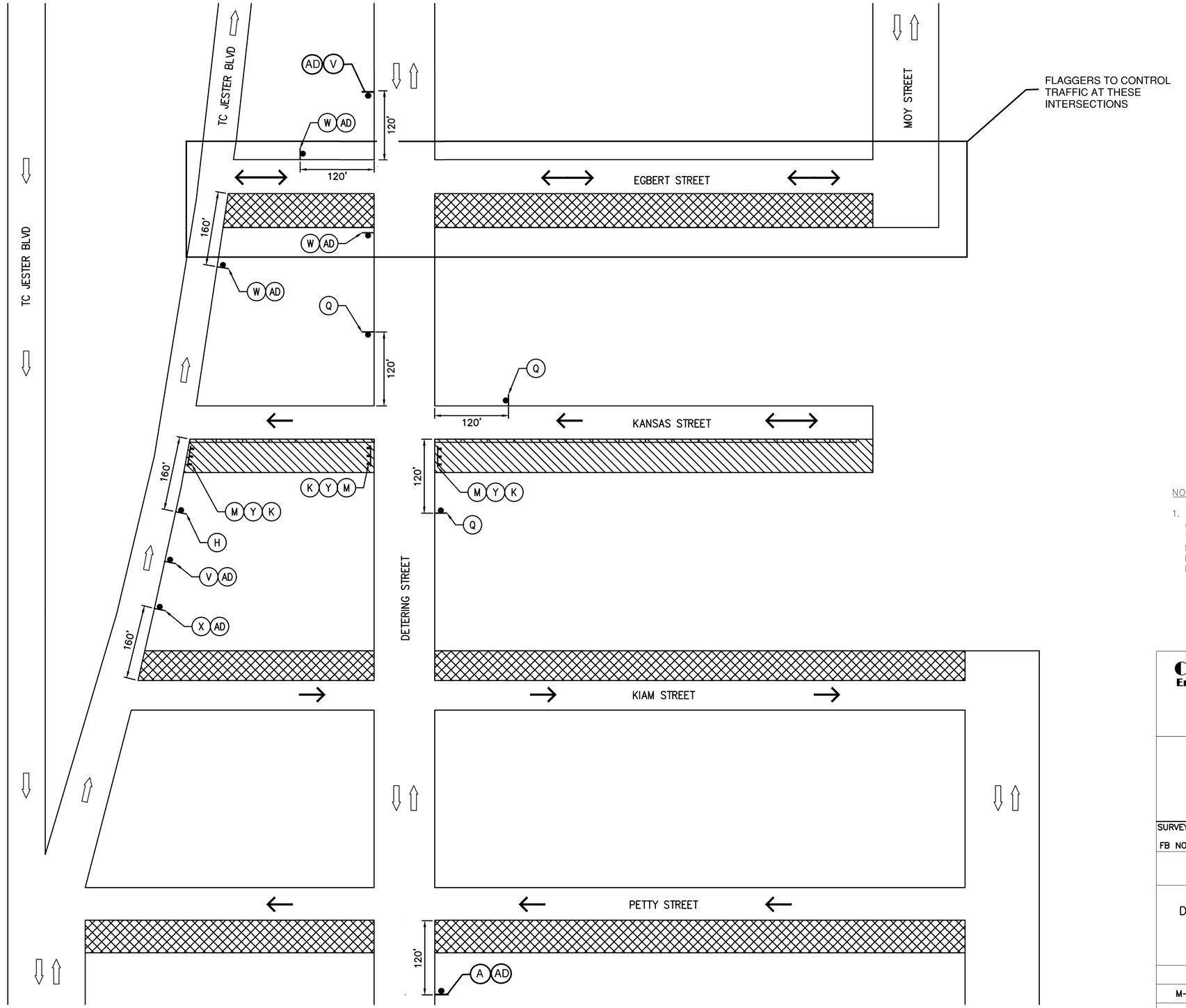

LEGEND

- KANSAS ST WORK ZONE
- PHASE 2 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

NOTES:

1. CONSTRUCTION SHALL BE LIMITED TO ONE BLOCK OR 300' DURING ONE WAY OPERATION AND 75' MAXIMUM DURING TWO WAY OPERATION OR AS RECOMMENDED BY THE CITY ENGINEER.

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED @ THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N	M4-9N 30X 12	M4-9N 30 X 12

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FB NO. P-6133

LUIS M. GOMEZ 106747 LICENSED PROFESSIONAL ENGINEER

1/23/2026

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
KANSAS STREET
DETOUR LAYOUT – PHASE 2 STEP 2

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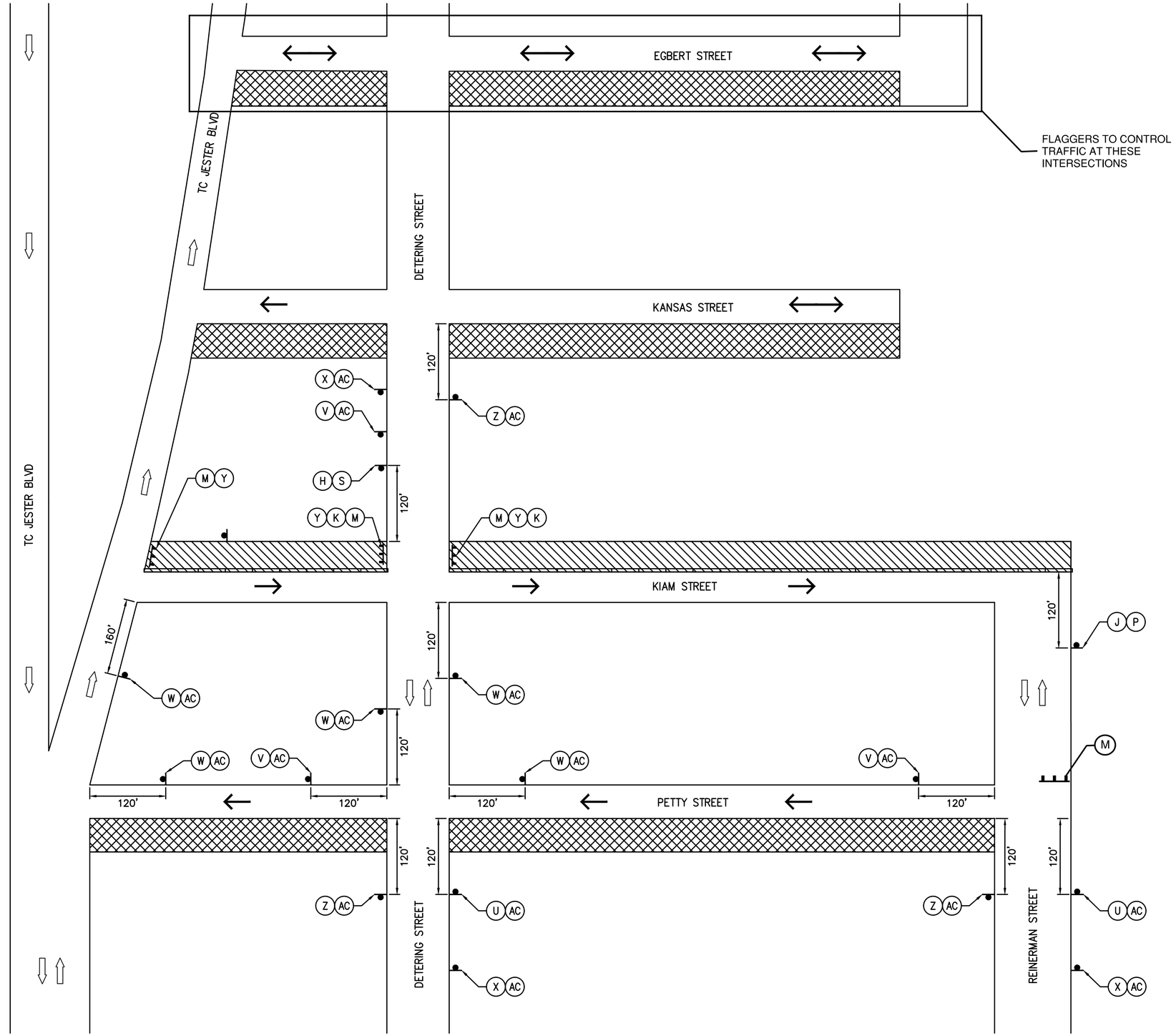

LEGEND

- KIAM ST WORK ZONE
- PHASE 2 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

NOTES:

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A	B	C	D	E	F	G	H	J	K
ROAD WORK AHEAD	RIGHT LANE CLOSED	LEFT LANE CLOSED	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET			DO NOT ENTER
CW20-1D 48 X 48	AHEAD CW20-5RD 48 X 48 PLAQUE30 X 12	AHEAD CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30

L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
	ROAD CLOSED	ROAD CLOSED @ THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW6-3		R11-4	CW20-3O 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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TRAFFIC CONTROL PLANS
KIAM STREET
DETOUR LAYOUT – PHASE 2 STEP 2

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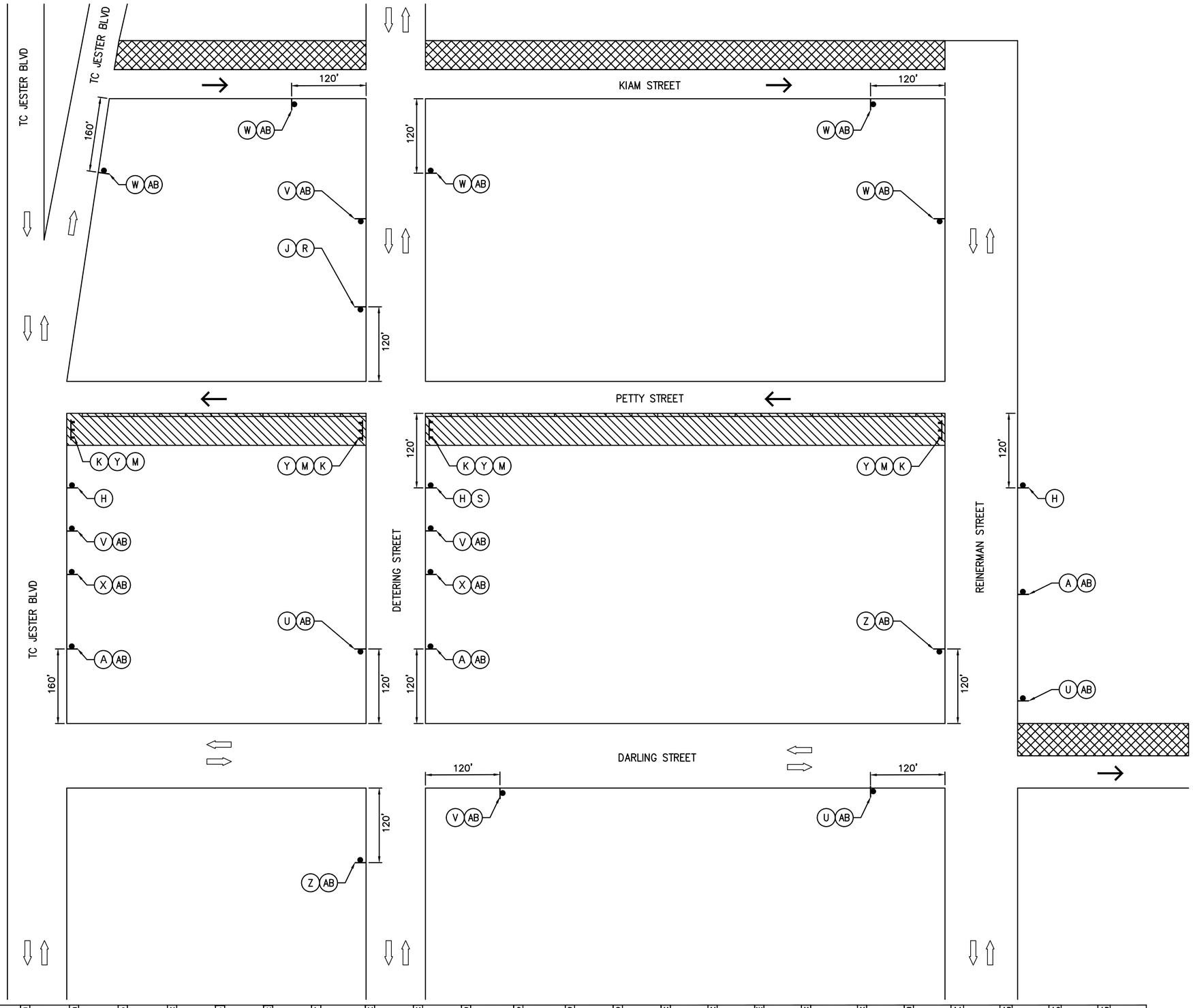

LEGEND

- PETTY ST WORK ZONE
- PHASE 2 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
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PETTY STREET
DETOUR LAYOUT – PHASE 2 STEP 2

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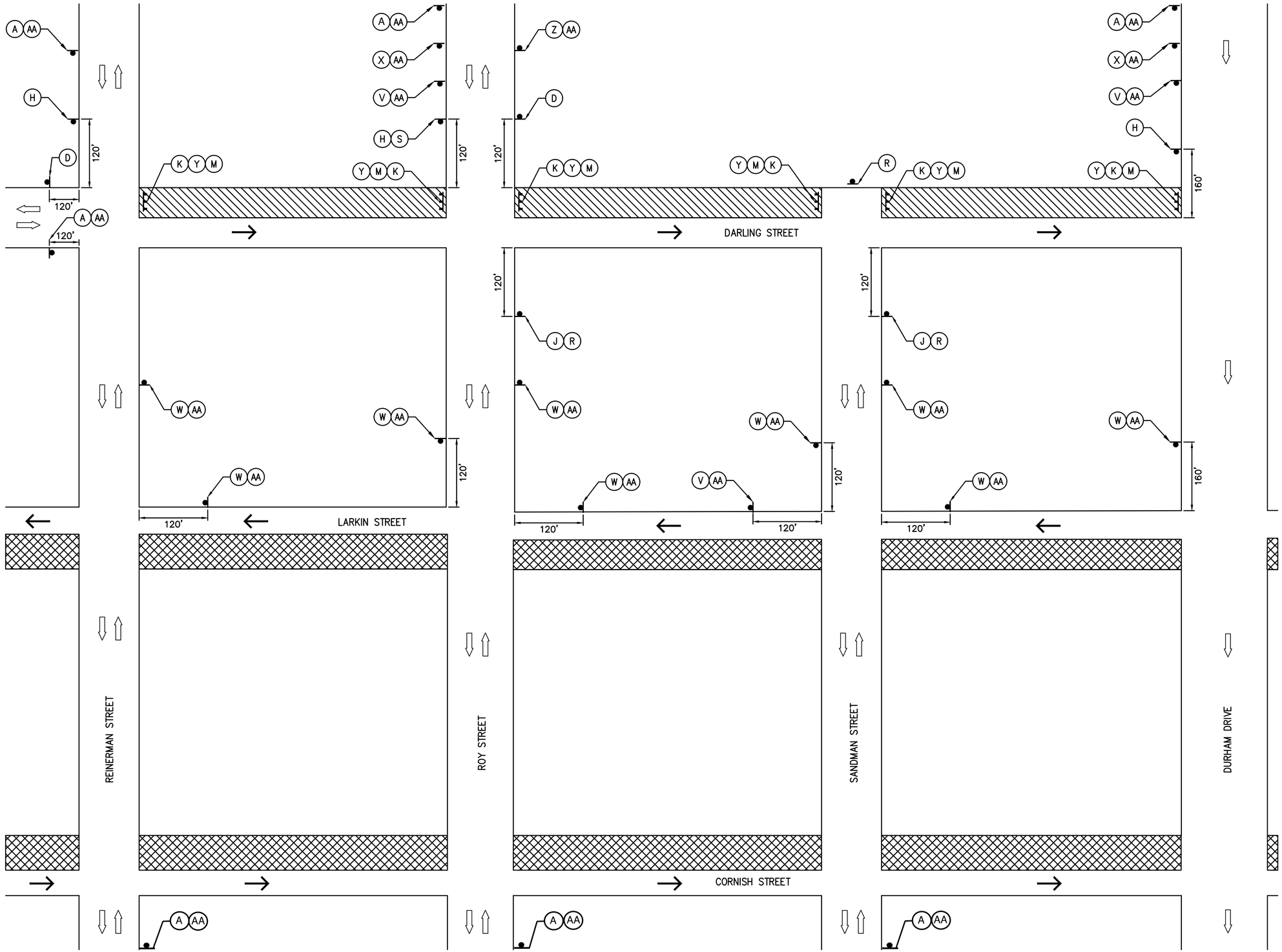

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY CIRCLE	CORNISH NAME	LARKIN NAME			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED @ THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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1/23/2026

CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
DARLING STREET
DETOUR LAYOUT – PHASE 2 STEP 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
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Sheet No. 330 of 345	

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P:\2019 Projects\19003-01 CivilTech Cottage Grove East\CAD\TCP-Detour Plan - LARKIN ST - PH 2 ST 2.dwg Aug 22, 2025-3:50pm CRubit

DARLING STREET

LARKIN STREET

CORNISH STREET

I-10 WEST FRONTAGE ROAD

TC JESTER BLVD

DETERING STREET

REINERMAN STREET

LEGEND

- LARKIN ST WORK ZONE
- PHASE 2 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

LARKIN STREET (BETWEEN TC JESTER BLVD AND REINERMAN STREET) DETOUR PLAN - PHASE 2 STEP 2

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET	R3-1	R3-2	DO NOT ENTER	CW6-3	ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD	CW20-7a	ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	24 X 24	24 X 24	R5-1 30 X 30		36 X 36	R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L		M4-9L 30 X 30	M4-9BS 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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FB NO. P-6133

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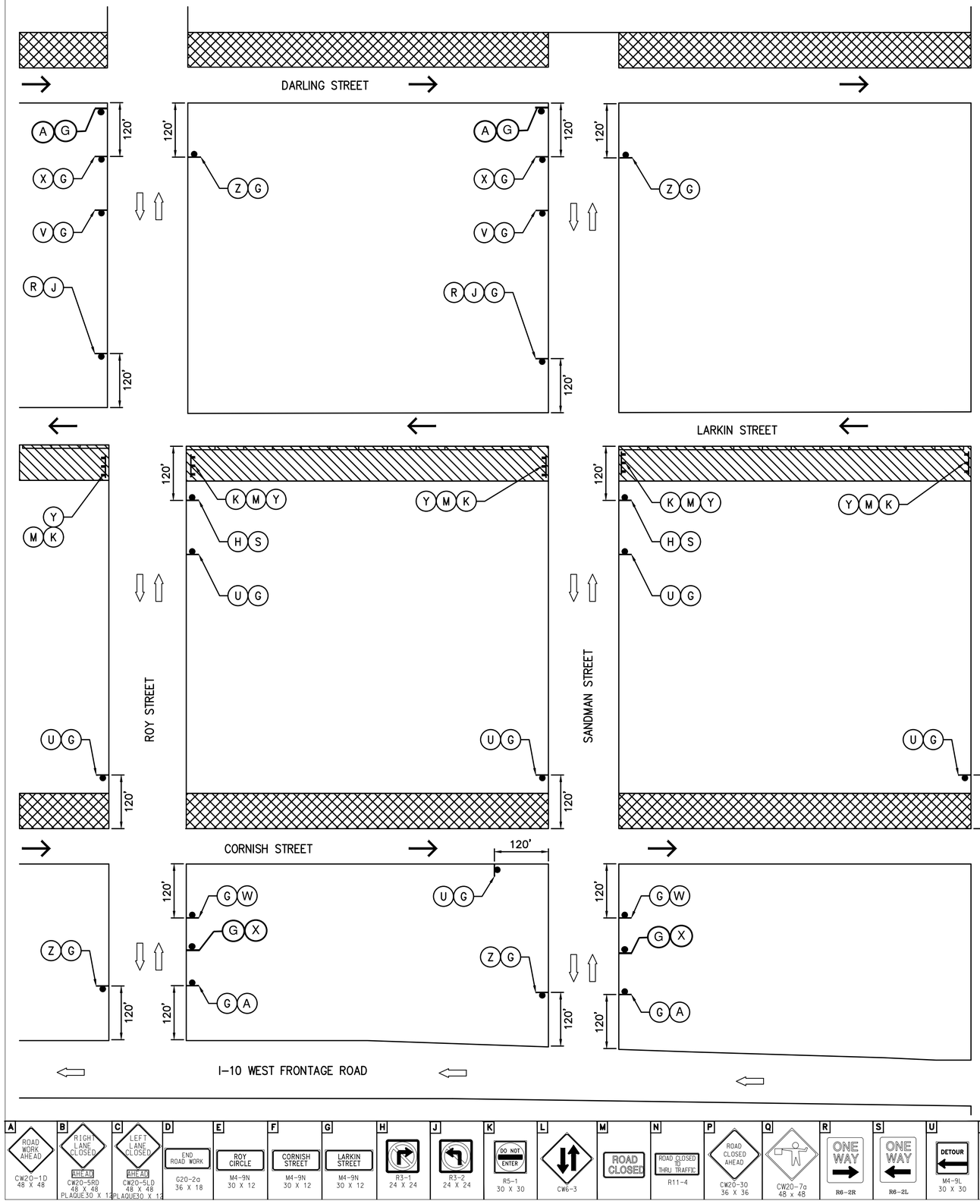
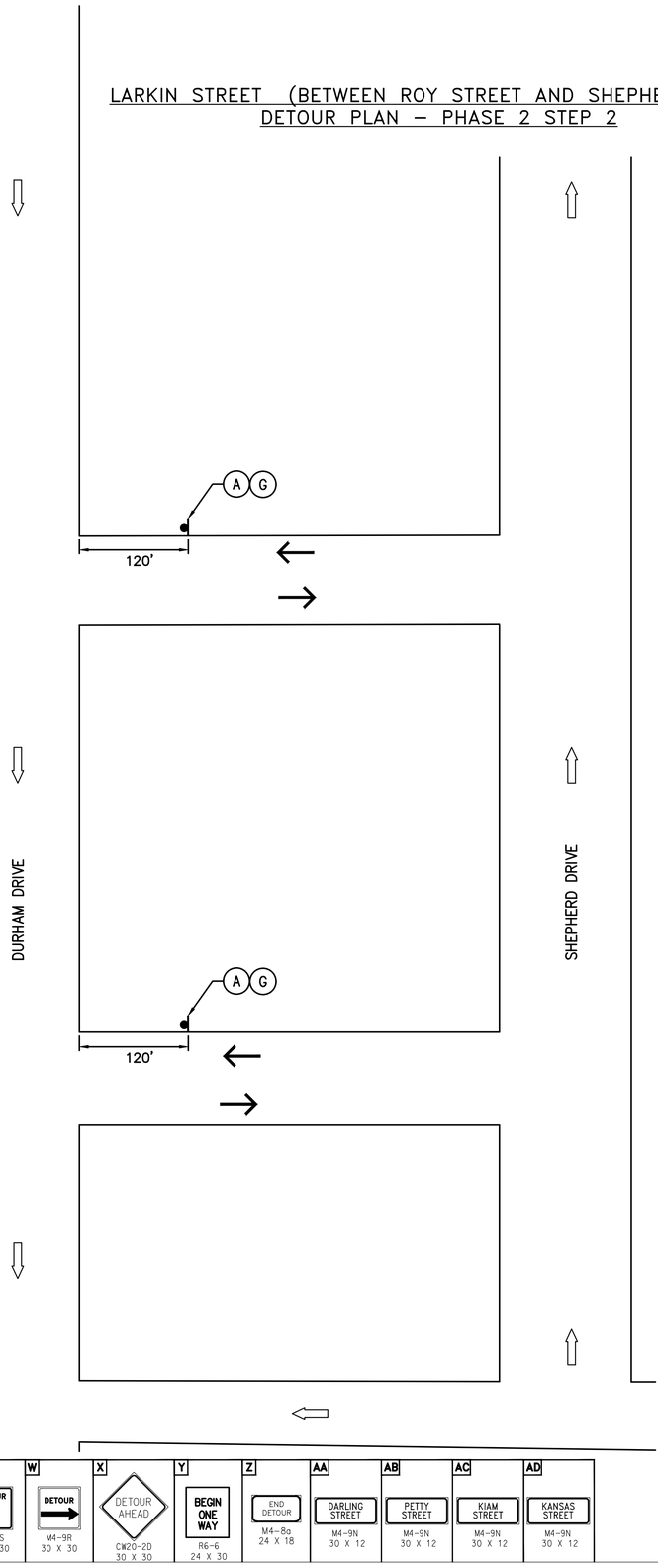
1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
LARKIN STREET
DETOUR LAYOUT - PHASE 2 STEP 2 (SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0001-4	
DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
SAM HABIBI	
Sheet No. 331 of 345	





LEGEND

- LARKIN ST WORK ZONE
- PHASE 2 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW2G-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
LARKIN STREET
DETOUR LAYOUT – PHASE 2 STEP 2 (SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
N.T.S	
CITY OF HOUSTON PM	
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Sheet No. 332 of 345	

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DARLING STREET

CORNISH STREET (BETWEEN TC JESTER BLVD AND REINERMAN STREET) DETOUR PLAN – PHASE 2 STEP 2

LARKIN STREET

CORNISH STREET

I-10 WEST FRONTAGE ROAD

TC JESTER BLVD

DETERING STREET

REINERMAN STREET

120'

160'

LEGEND

- CORNISH ST WORK ZONE
- PHASE 2 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
CORNISH STREET
DETOUR LAYOUT – PHASE 2 STEP 2 (SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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Sheet No. 333 of 345	

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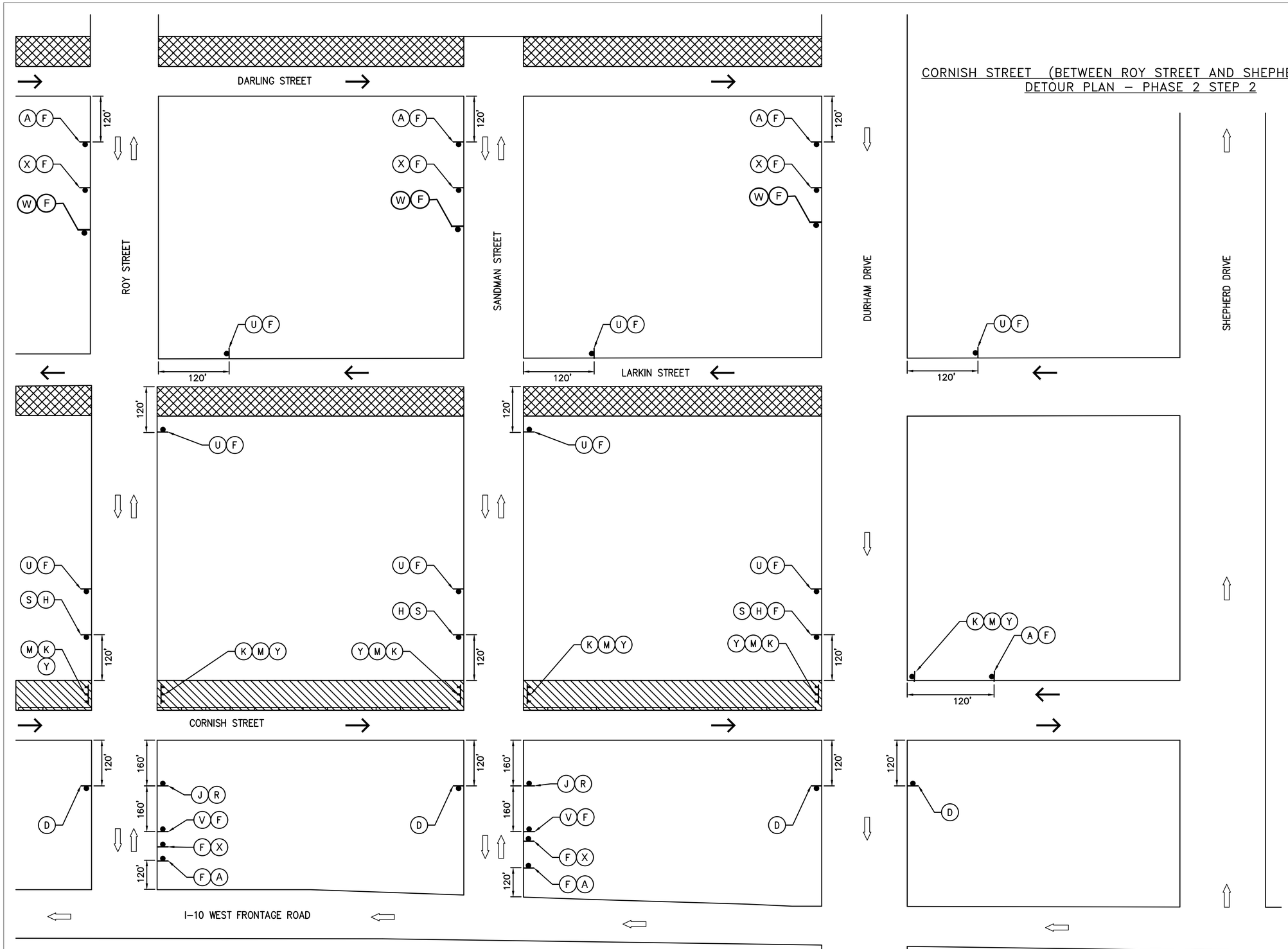
CORNISH STREET (BETWEEN ROY STREET AND SHEPHERD DRIVE)
DETOUR PLAN – PHASE 2 STEP 2



LEGEND

- CORNISH ST WORK ZONE
- PHASE 2 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY CIRCLE	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 X 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
CORNISH STREET
DETOUR LAYOUT – PHASE 2 STEP 2 (SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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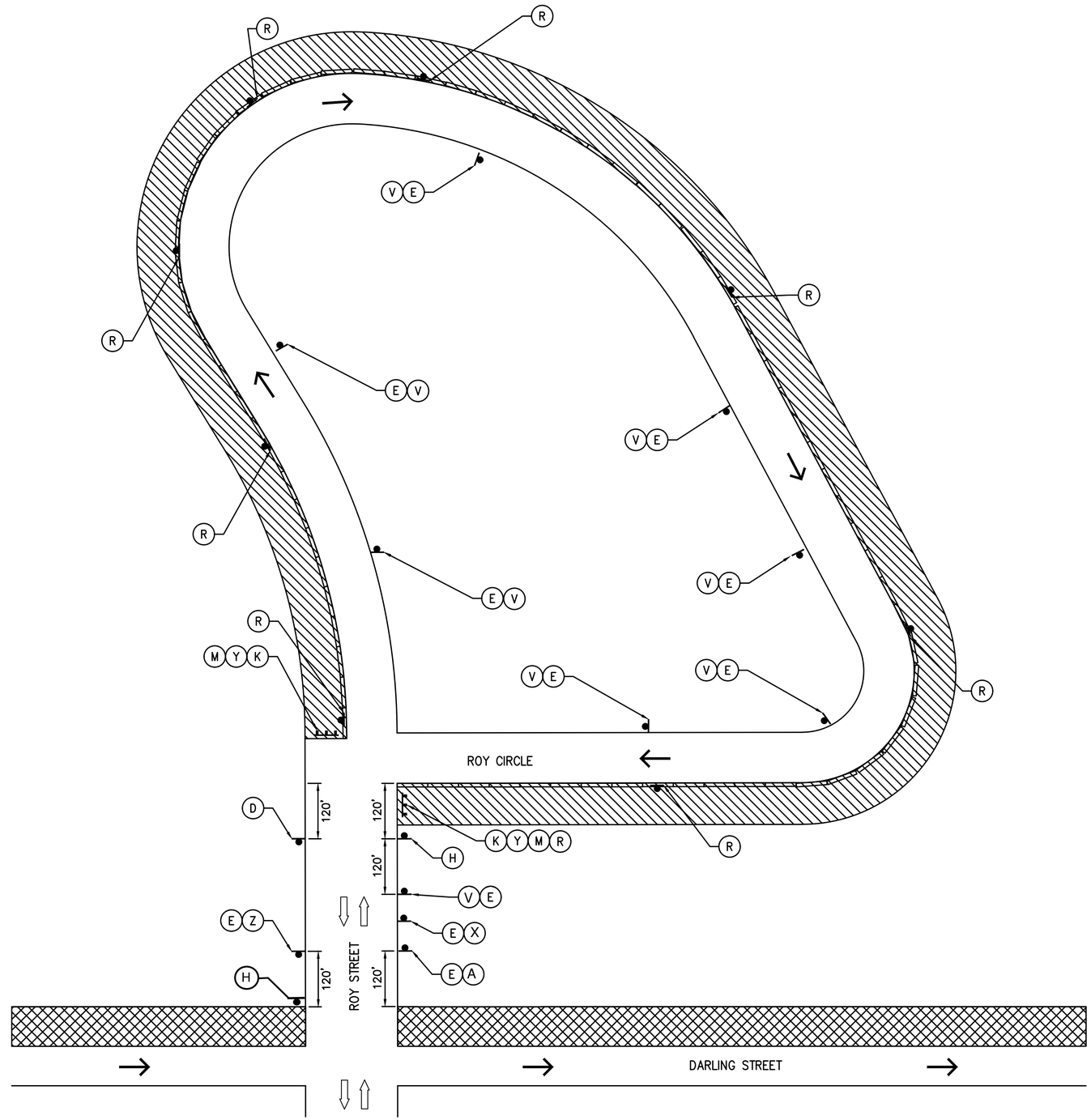

LEGEND

- ROY CIRCLE WORK ZONE
- PHASE 2 STEP 2 WORK ZONE
- LPCB
- TYPE III BARRICADE
- FLASHING ARROW PANEL (optional)
- SIGN ON POST
- EXISTING TRAFFIC FLOW DIRECTION
- TEMPORARY TRAFFIC FLOW DIRECTION
- TUBULAR MARKER
- FLAGGER

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	U	V	W	X	Y	Z	AA	AB	AC	AD
ROAD WORK AHEAD	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	END ROAD WORK	ROY STREET	CORNISH STREET	LARKIN STREET			DO NOT ENTER		ROAD CLOSED	ROAD CLOSED TO THRU TRAFFIC	ROAD CLOSED AHEAD		ONE WAY	ONE WAY	DETOUR	DETOUR	DETOUR	DETOUR AHEAD	BEGIN ONE WAY	END DETOUR	DARLING STREET	PETTY STREET	KIAM STREET	KANSAS STREET
CW20-1D 48 X 48	CW20-5RD 48 X 48 PLAQUE30 X 12	CW20-5LD 48 X 48 PLAQUE30 X 12	G20-2a 36 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	R3-1 24 X 24	R3-2 24 X 24	R5-1 30 X 30	CW6-3		R11-4	CW20-30 36 X 36	CW20-7a 48 x 48	R6-2R	R6-2L	M4-9L 30 X 30	M4-9S 30 X 30	M4-9R 30 X 30	CW20-2D 30 X 30	R6-6 24 X 30	M4-8a 24 X 18	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12	M4-9N 30 X 12

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1/23/2026

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS
TRAFFIC CONTROL PLANS
ROY CIRCLE
DETOUR LAYOUT – PHASE 2 STEP 2

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Sheet No. 335 of 345	

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NOTES:

1. INSTALL SWPPP MEASURES BASED ON THE CONSTRUCTION PHASING AND SEQUENCING SHOWN IN TCP/CONSTRUCTION PHASING PLANS.
2. PROTECT ALL EXISTING INLETS IN AND AROUND AREAS UNDER CONSTRUCTION. USE IPB I'S FOR AREA DRAINS AND ROADWAY INLETS WITHOUT PAVEMENT INSTALLED. USE IPB II'S FOR INLETS WITHIN PAVED AREAS.
3. IN AREAS WHERE THE ROADSIDE DITCH IS TO REMAIN, REINFORCED FILTER FABRIC BARRIERS SHOULD BE PLACED AS INDICATED IN THE REINFORCED FILTER FABRIC BARRIER DETAILS.
4. TYPICAL EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION ARE SHOWN.
5. OTHER EROSION/SEDIMENTATION CONTROLS INCLUDE:
   5.1. DAILY STREET SWEEPING
   5.2. INSPECTION AND MAINTENANCE PER APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.
6. FINAL EROSION CONTROL PER SPEC ITEM 01740 SITE RESTORATION, SEEDING AND SODDING

LEGENDS:

IPB I	INLET PROTECTION BARRIER (FOR STAGE 1 INLET CONSTRUCTION)
IPB II	INLET PROTECTION BARRIER (FOR CURB INLETS INSTALLED WITHIN PAVED AREA)
□	SEDIMENT CONTROL FENCE AROUND INLET
RFB	REINFORCED FILTER BARRIER
←	DIRECTION OF FLOW IN ROADSIDE DITCH

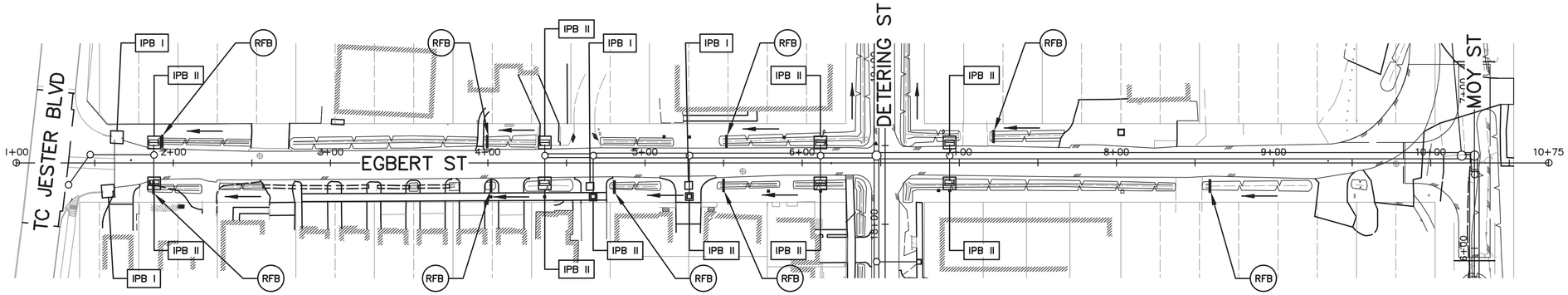
REV	DESCRIPTION	BY	DATE

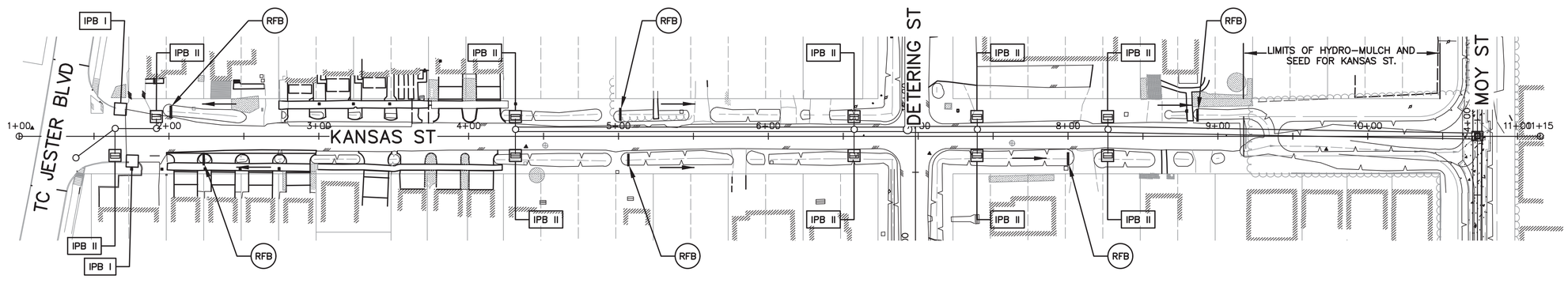
GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

FULL SIZE: H. 1"=40', V. 1"=4'
HALF SIZE: H. 1"=80', V. 1"=8'





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11750 Katy Freeway, Suite 1260
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STATE OF TEXAS
DAVID L BROWN
48282
REGISTERED PROFESSIONAL ENGINEER
7/14/23

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST - PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 8)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. **336** OF 345	

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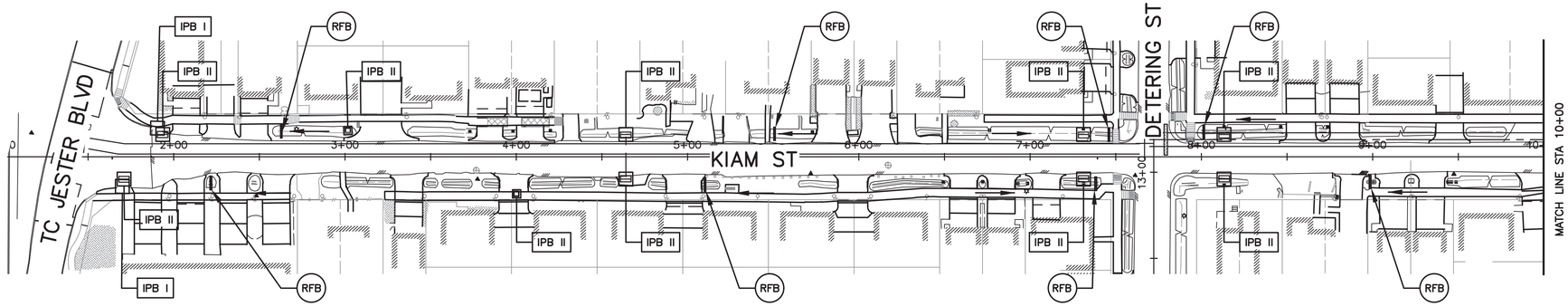
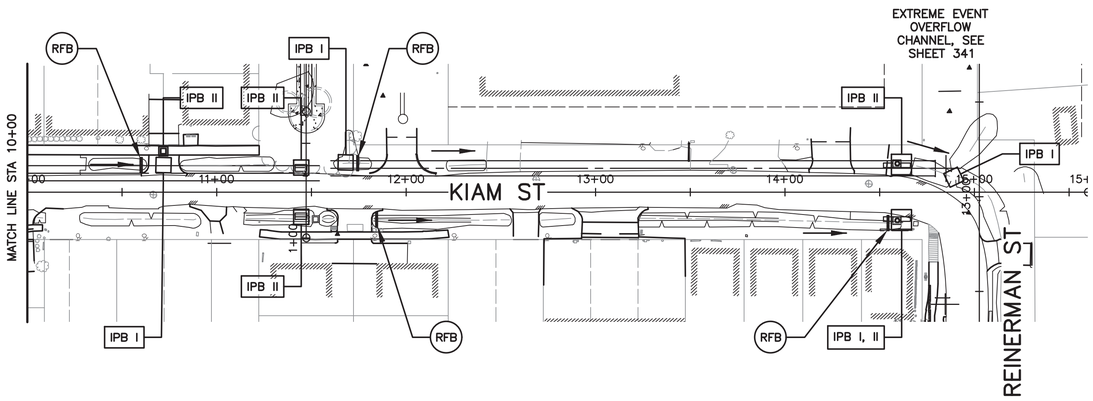
REV	DESCRIPTION	BY	DATE





GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

FULL SIZE: H. 1"=40', V. 1"=4'
HALF SIZE: H. 1"=80', V. 1"=8'

LEGENDS:

IPB I	INLET PROTECTION BARRIER (FOR STAGE 1 INLET CONSTRUCTION)
IPB II	INLET PROTECTION BARRIER (FOR CURB INLETS INSTALLED WITHIN PAVED AREA)
□	SEDIMENT CONTROL FENCE AROUND INLET
RFB	REINFORCED FILTER BARRIER
←	DIRECTION OF FLOW IN ROADSIDE DITCH

NOTES:

1. INSTALL SWPPP MEASURES BASED ON THE CONSTRUCTION PHASING AND SEQUENCING SHOWN IN TCP/CONSTRUCTION PHASING PLANS.
2. PROTECT ALL EXISTING INLETS IN AND AROUND AREAS UNDER CONSTRUCTION. USE IPB I'S FOR AREA DRAINS AND ROADWAY INLETS WITHOUT PAVEMENT INSTALLED. USE IPB II'S FOR INLETS WITHIN PAVED AREAS.
3. IN AREAS WHERE THE ROADSIDE DITCH IS TO REMAIN, REINFORCED FILTER FABRIC BARRIERS SHOULD BE PLACED AS INDICATED IN THE REINFORCED FILTER FABRIC BARRIER DETAILS.
4. TYPICAL EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION ARE SHOWN.
5. OTHER EROSION/SEDIMENTATION CONTROLS INCLUDE:
   - 5.1. DAILY STREET SWEEPING
   - 5.2. INSPECTION AND MAINTENANCE PER APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.

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STATE OF TEXAS
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7/20/23

SURVEYED BY: KUO & ASSOC.
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN (SHEET 2 OF 8)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. **337** OF 345	

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NOTES:

1. INSTALL SWPPP MEASURES BASED ON THE CONSTRUCTION PHASING AND SEQUENCING SHOWN IN TCP/CONSTRUCTION PHASING PLANS.
2. PROTECT ALL EXISTING INLETS IN AND AROUND AREAS UNDER CONSTRUCTION. USE IPB I'S FOR AREA DRAINS AND ROADWAY INLETS WITHOUT PAVEMENT INSTALLED. USE IPB II'S FOR INLETS WITHIN PAVED AREAS.
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4. TYPICAL EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION ARE SHOWN.
5. OTHER EROSION/SEDIMENTATION CONTROLS INCLUDE:
   5.1. DAILY STREET SWEEPING
   5.2. INSPECTION AND MAINTENANCE PER APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.

LEGENDS:

- IPB I — INLET PROTECTION BARRIER (FOR STAGE 1 INLET CONSTRUCTION)
- IPB II — INLET PROTECTION BARRIER (FOR CURB INLETS INSTALLED WITHIN PAVED AREA)
- SEDIMENT CONTROL FENCE AROUND INLET
- RFB — REINFORCED FILTER BARRIER
- DIRECTION OF FLOW IN ROADSIDE DITCH

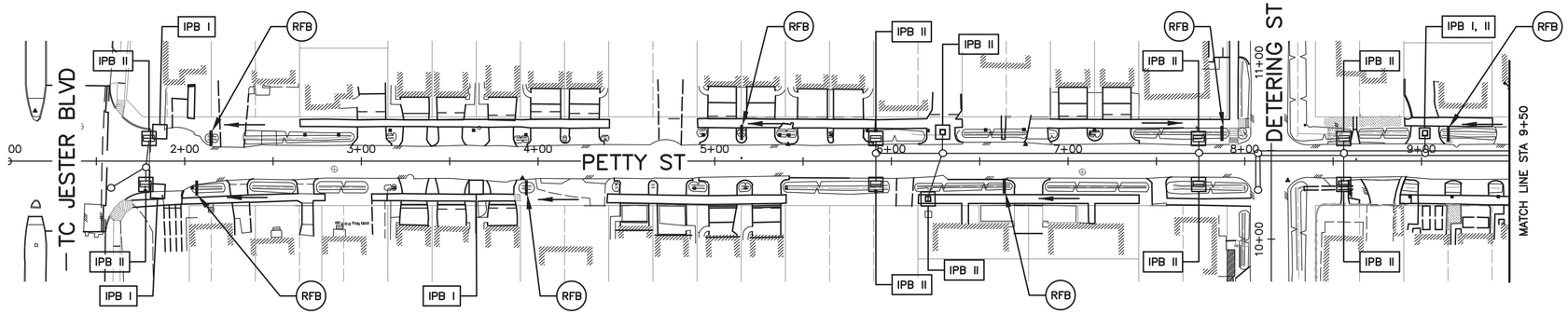
REV	DESCRIPTION	BY	DATE

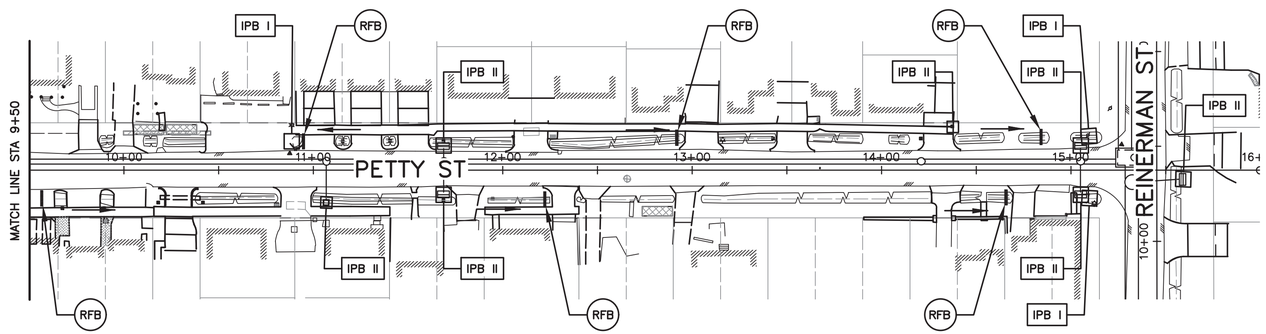
GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

FULL SIZE: H. 1"=40', V. 1"=4'
HALF SIZE: H. 1"=80', V. 1"=8'





AMANI ENGINEERING, INC.
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TEL: (713) 270-5700
TBPE REG. NO. F-4528. TBPELS REG. NO. 1028200.

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800.414.1045

STATE OF TEXAS — DAVID L. BROWN — 48282 — REGISTERED PROFESSIONAL ENGINEER

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

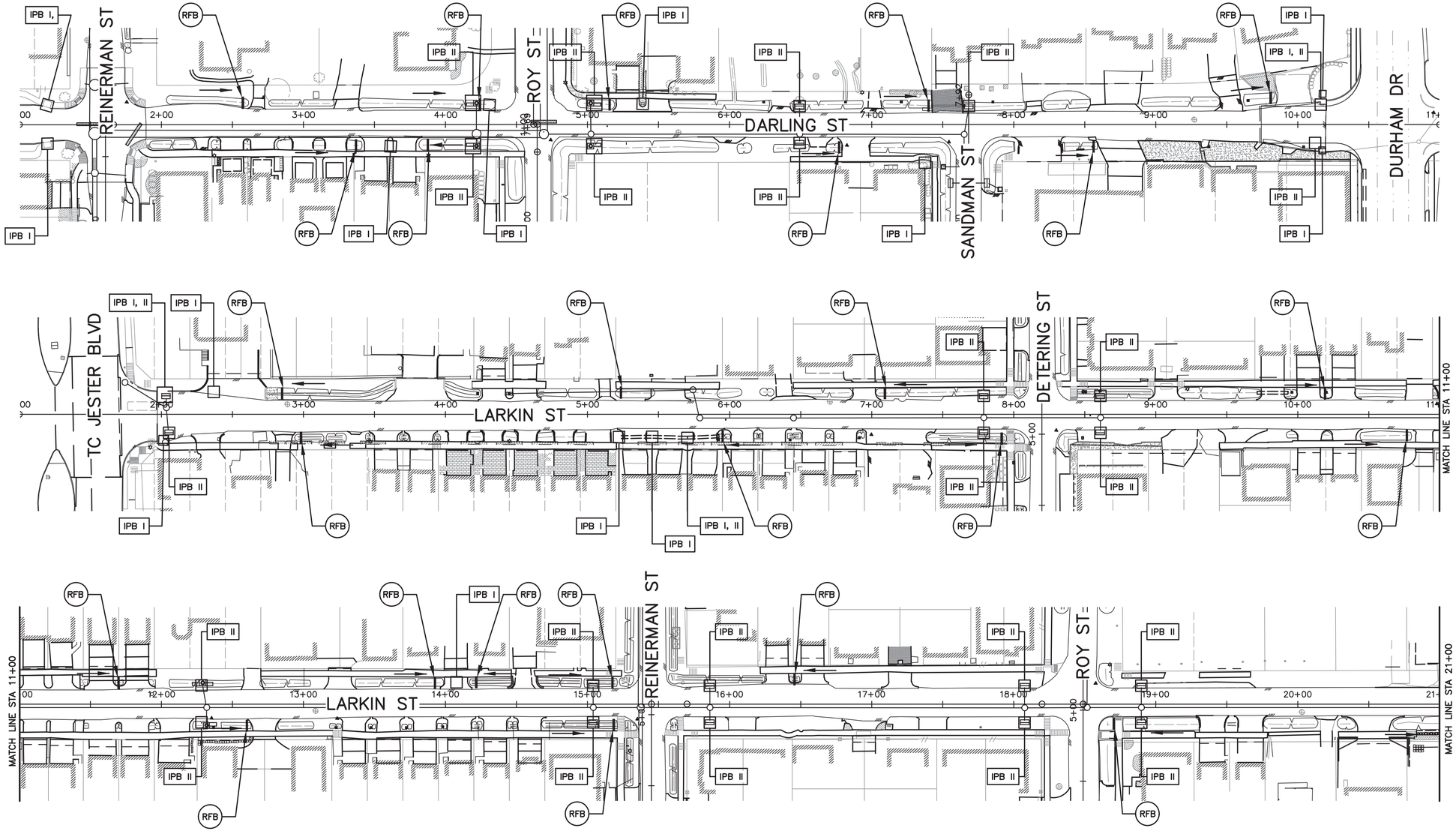
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

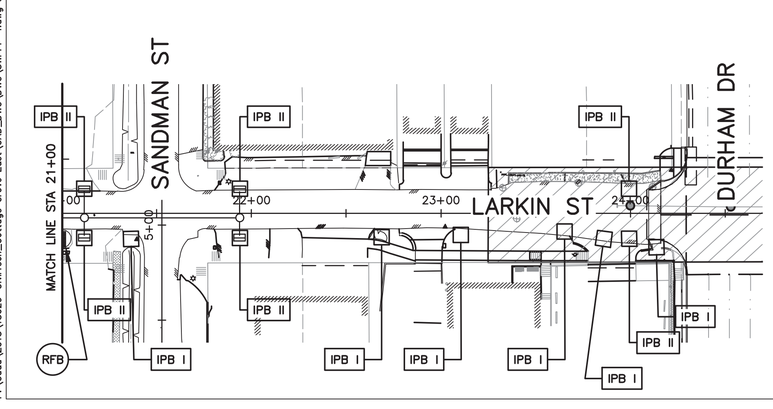
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN (SHEET 3 OF 8)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 338 OF 345	

CivilTech Engineering, Inc.
P:\Cadd\2018\18020-Sullivan_Cottage Grove East\CAD_DWG\DWG\SWPPP 3.dwg Jul 20, 2023





REV	DESCRIPTION	BY	DATE

GRAPHIC SCALE

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(IN FEET)

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IPB II	INLET PROTECTION BARRIER (FOR CURB INLETS INSTALLED WITHIN PAVED AREA)
	SEDIMENT CONTROL FENCE AROUND INLET
RFB	REINFORCED FILTER BARRIER
	POTENTIAL PETROLEUM CONTAMINATED AREA (PPCA)
	DIRECTION OF FLOW IN ROADSIDE DITCH

NOTES:

1. INSTALL SWPPP MEASURES BASED ON THE CONSTRUCTION PHASING AND SEQUENCING SHOWN IN TCP/CONSTRUCTION PHASING PLANS.
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   - 5.2. INSPECTION AND MAINTENANCE PER APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN (SHEET 4 OF 8)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. **339** OF 345	

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REV	DESCRIPTION	BY	DATE

GRAPHIC SCALE

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(IN FEET)

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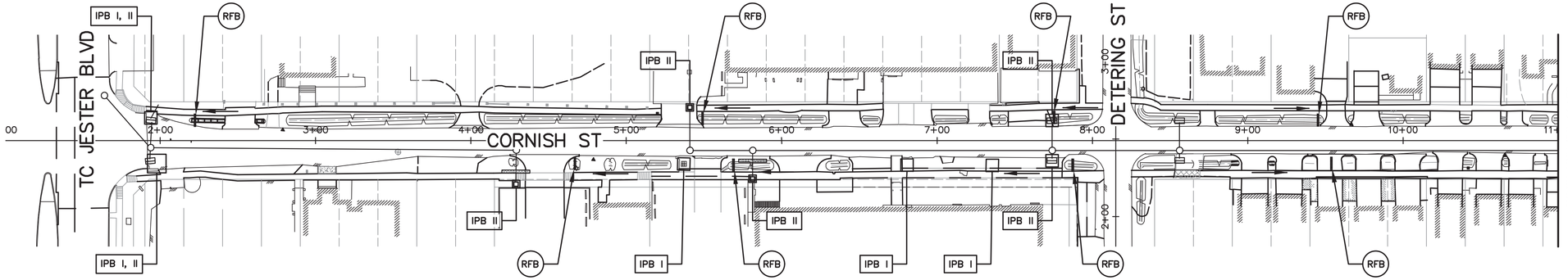

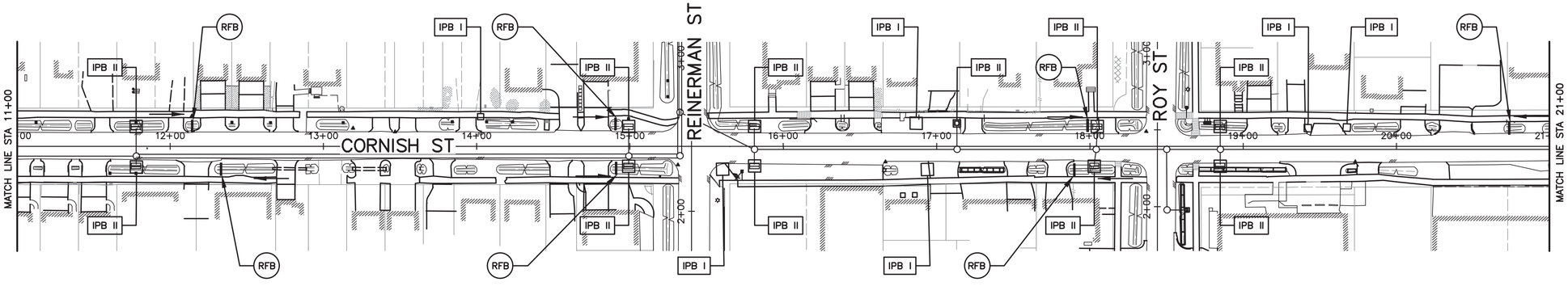

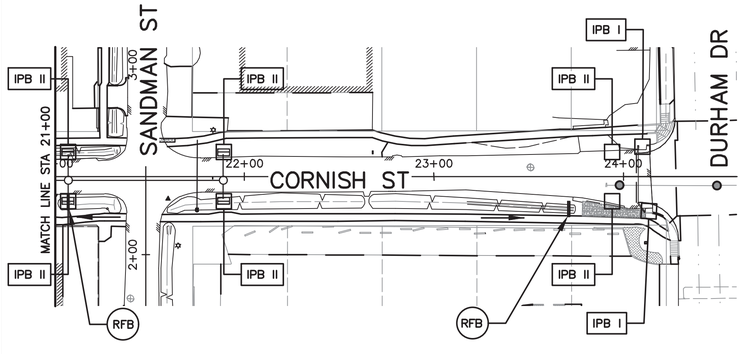

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	SEDIMENT CONTROL FENCE AROUND INLET
RFB	REINFORCED FILTER BARRIER
	DIRECTION OF FLOW IN ROADSIDE DITCH

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN (SHEET 5 OF 8)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 340 OF 345	

CivilTech Engineering, Inc.
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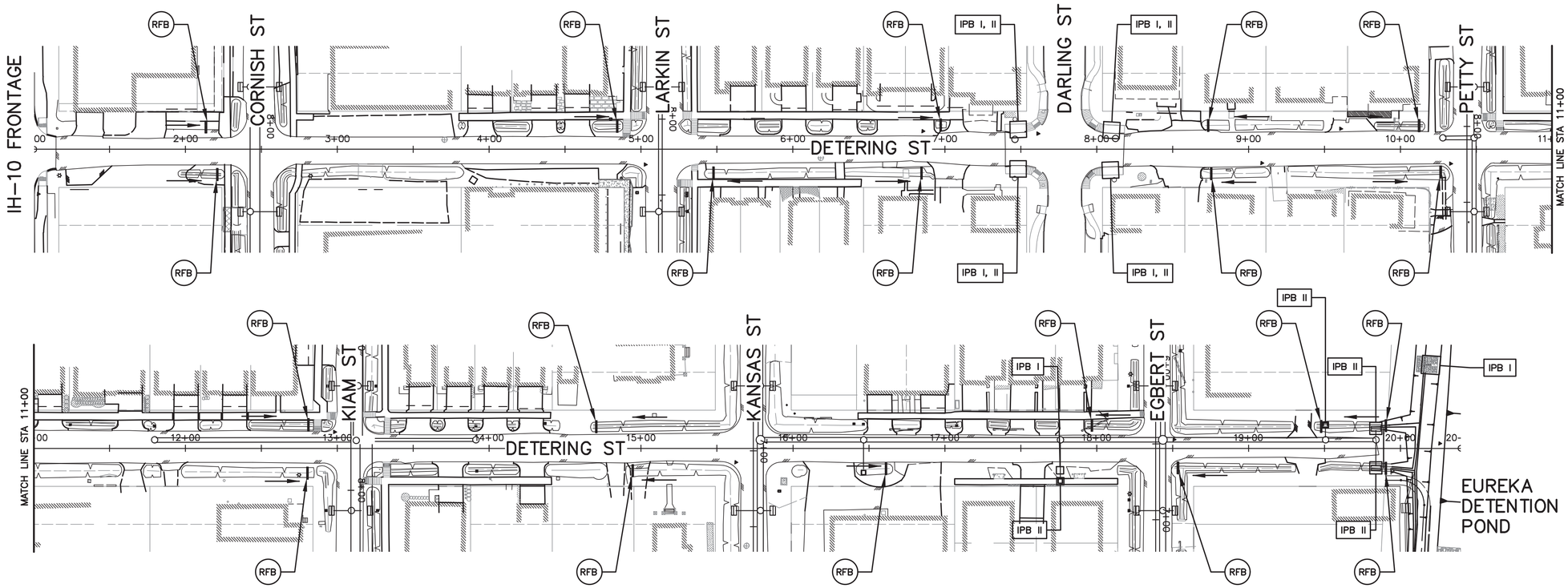
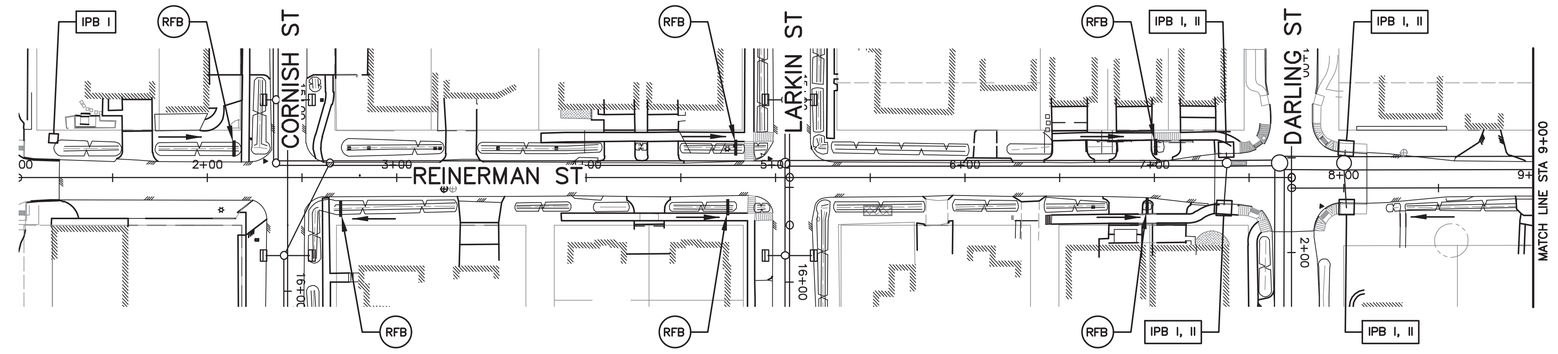
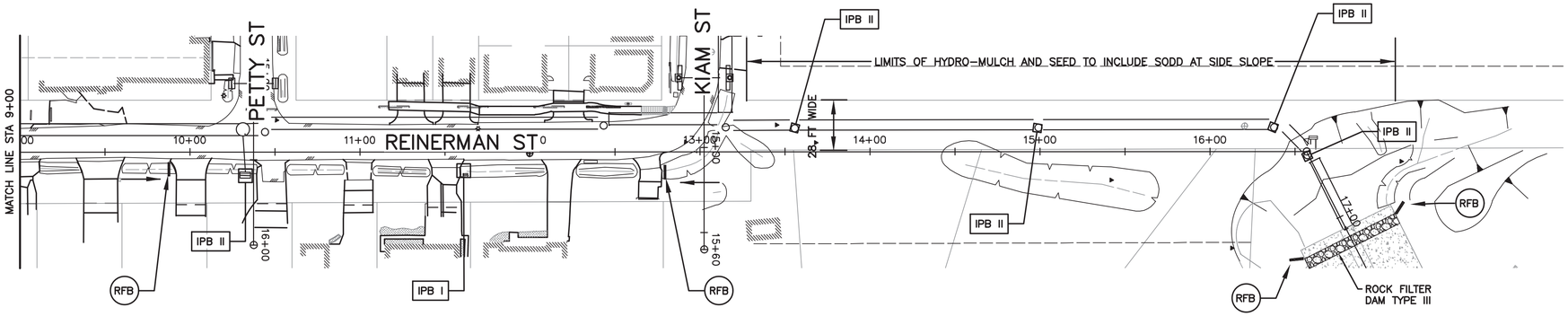
REV	DESCRIPTION	BY	DATE







GRAPHIC SCALE

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(IN FEET)

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- SEDIMENT CONTROL FENCE AROUND INLET
- RFB — REINFORCED FILTER BARRIER
- ROCK FILTER DAM
- SC — STABILIZED CONSTRUCTION EXIT
- DIRECTION OF FLOW IN ROADSIDE DITCH

NOTES:

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN (SHEET 6 OF 8)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. **341** OF 345	

CivilTech Engineering, Inc.
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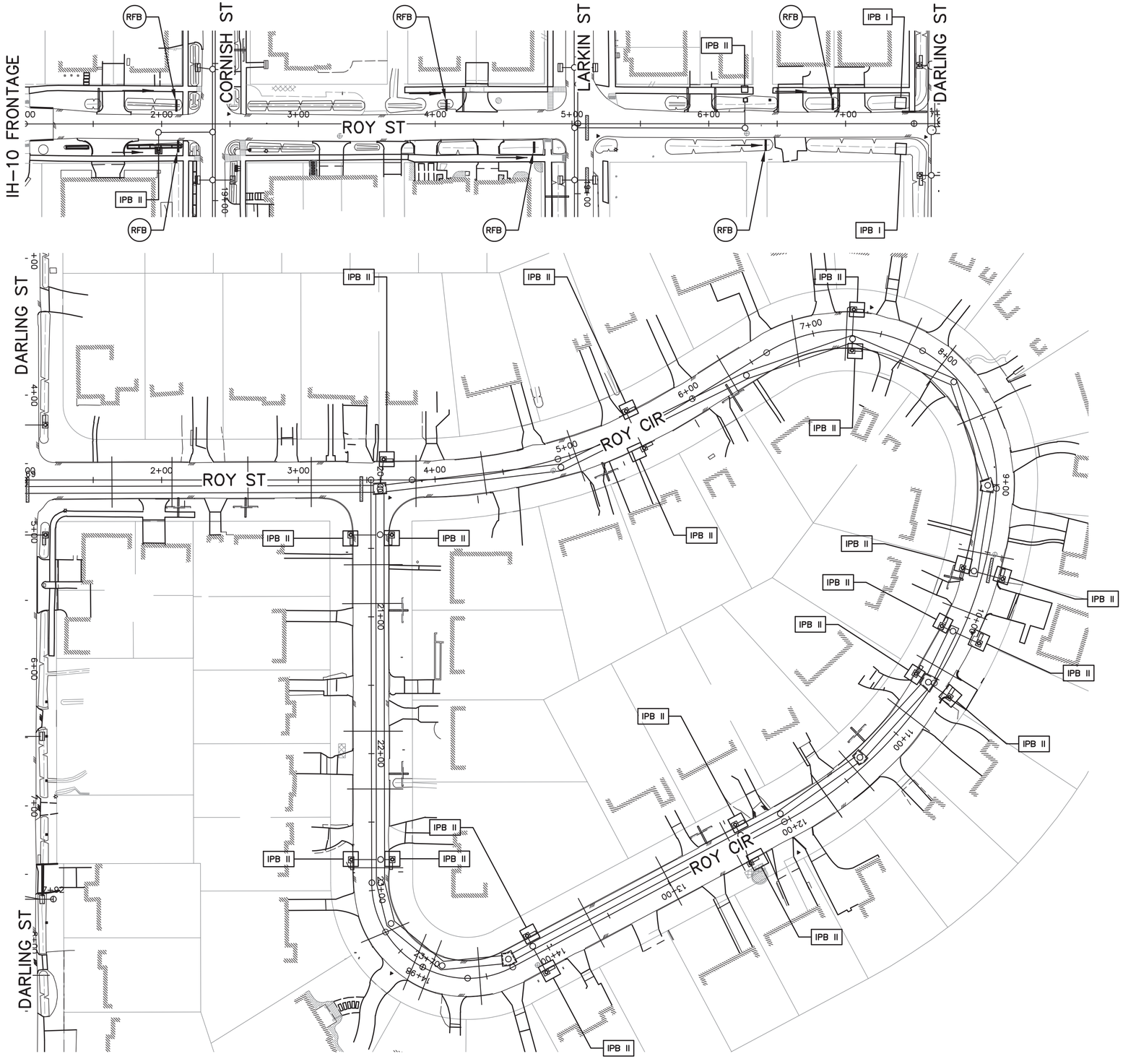
REV	DESCRIPTION	BY	DATE



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←	DIRECTION OF FLOW IN ROADSIDE DITCH

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN (SHEET 7 OF 8)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. **342** OF 345	

CivilTech Engineering, Inc.
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REV	DESCRIPTION	BY	DATE

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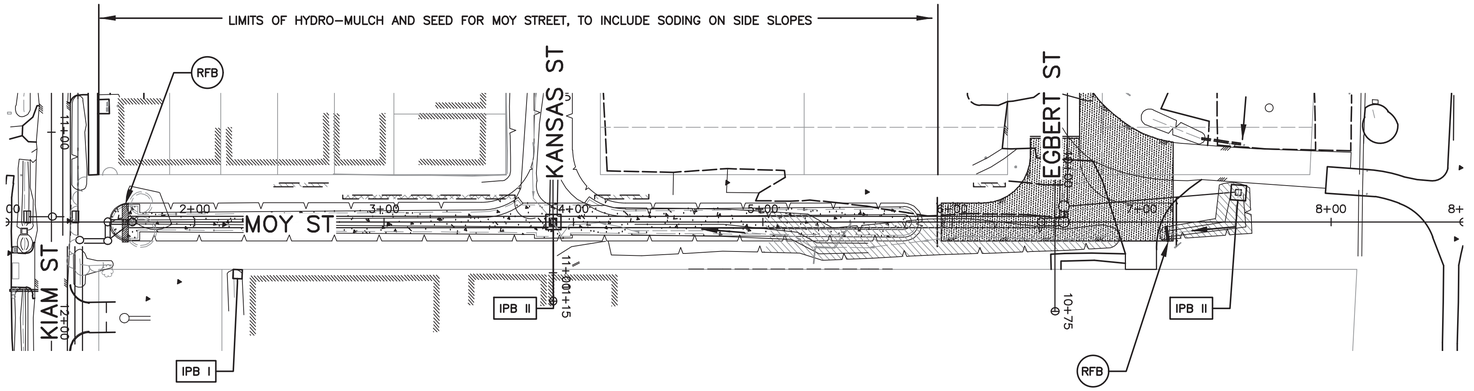

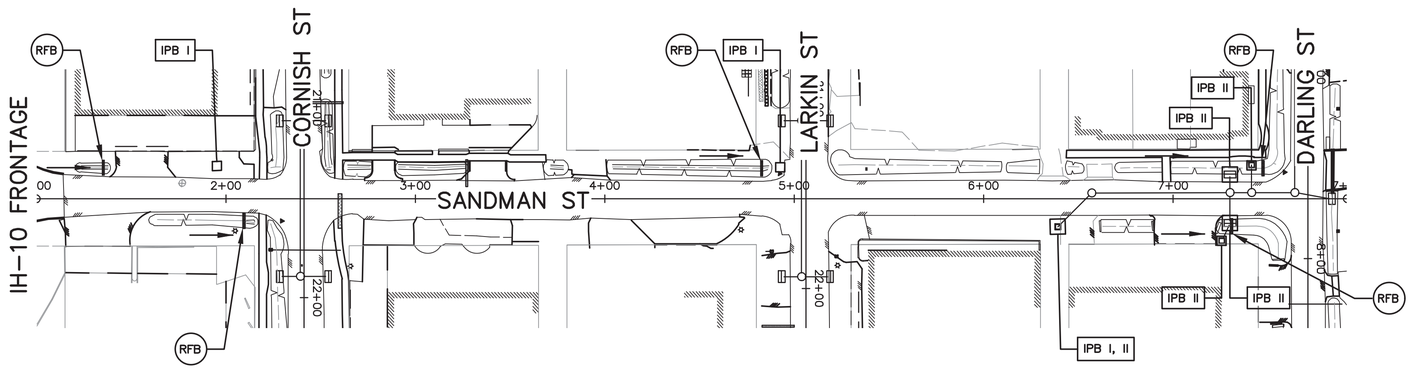

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN
(SHEET 8 OF 8)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 343 OF 345	

CivilTech Engineering, Inc.
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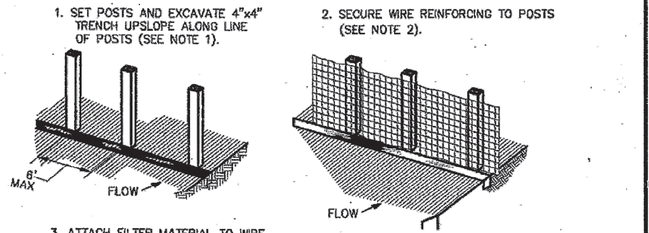
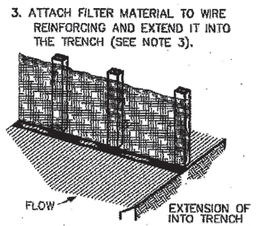
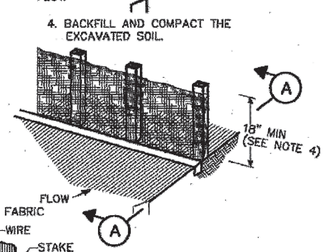
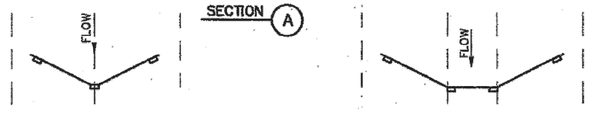
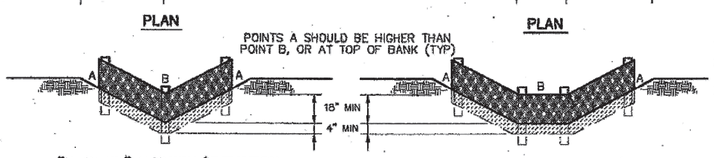






SECTION (A)



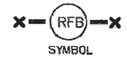


"V-DITCH" SECTION/ELEVATION

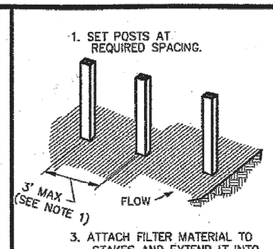
TRAPEZOIDAL SECTION/ELEVATION

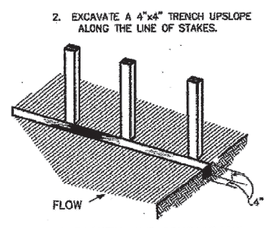
CONSTRUCTION NOTES:

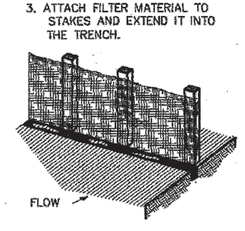
1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.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



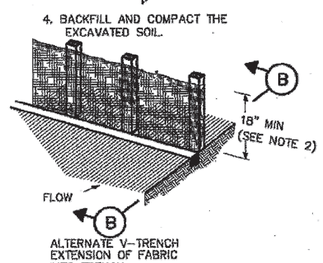
REINFORCED FILTER FABRIC BARRIER



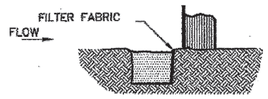




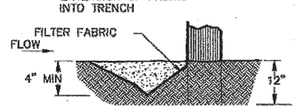
EXTENSION OF FABRIC INTO TRENCH



ALTERNATE V-TRENCH EXTENSION OF FABRIC INTO TRENCH



SECTION (B)



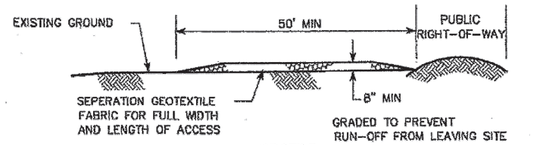
SECTION (B) ALTERNATE

CONSTRUCTION NOTES:

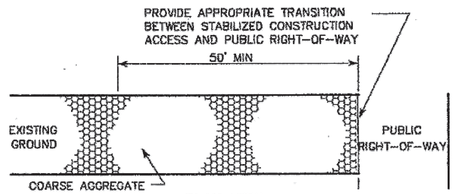
1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL HAVE A MIN HEIGHT OF 18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



FILTER FABRIC BARRIER



PROFILE



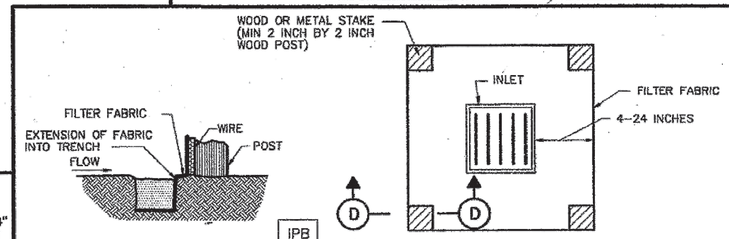
PLAN VIEW

CONSTRUCTION NOTES:

1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION ACCESS, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE WASHING AREA.
6. COH STANDARD SPECIFICATION FOR STABILIZED CONSTRUCTION ACCESS.
7. STABILIZED CONSTRUCTION ACCESS SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.



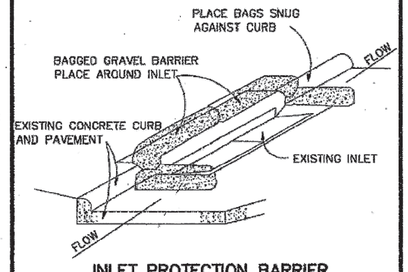
STABILIZED CONSTRUCTION ACCESS



CONSTRUCTION NOTE:

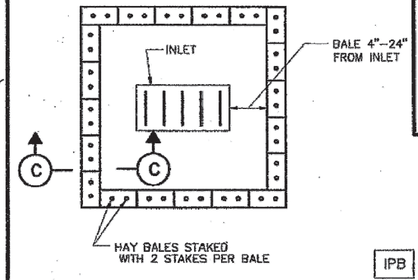
1. SEE CONSTRUCTION NOTES FOR RFB.

SILT FENCE INLET PROTECTION BARRIER

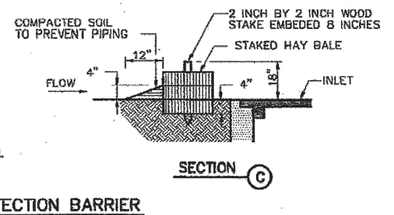


INLET PROTECTION BARRIER

(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER







HAY BALE INLET PROTECTION BARRIER

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS

(NOT TO SCALE)

APPROVED — CITY ENGINEER

APPROVED — DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY-01-2010

DWG NO: 01571-01

AMANI ENGINEERING, INC.
11011 Richmond Ave. Suite 700. Houston, Texas 77042
TEL: (713) 270-5700
TBPE REG. NO. F-4528. TBPELS REG. NO. 1028200.

WOOLPERT
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SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

STATE OF TEXAS — DAVID L. BROWN — 48282 — REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

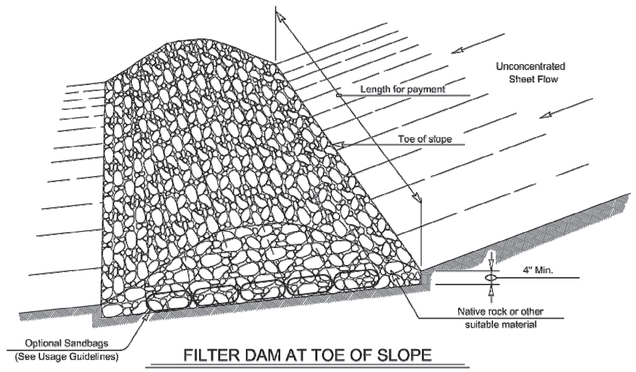
COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN DETAIL (SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. 344 OF 345	

CivilTech Engineering, Inc.
P:\Cad\2018\18020-Shifren_Cottage Grove East\CAD_DWG\SWPPP DETAILS 1 OF 2.dwg Jul 20, 2023

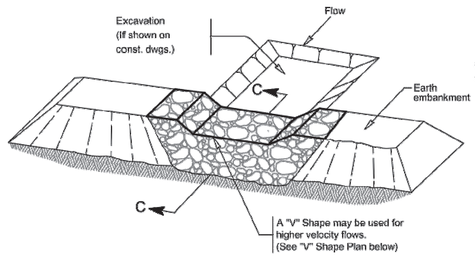
REV	DESCRIPTION	BY	DATE



FILTER DAM AT TOE OF SLOPE

RFD1

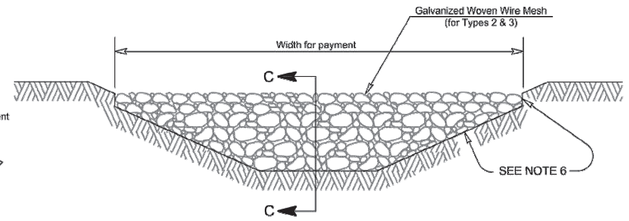
TYPE 1



FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2

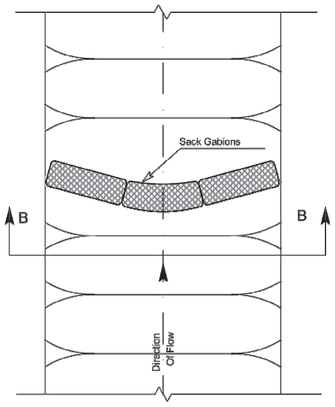
TYPE 1 OR TYPE 2



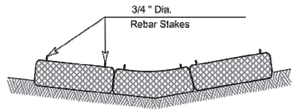
FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

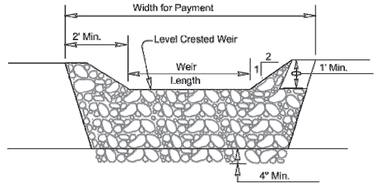
TYPE 1 OR TYPE 2



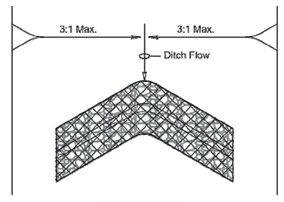
PLAN VIEW



SECTION B-B

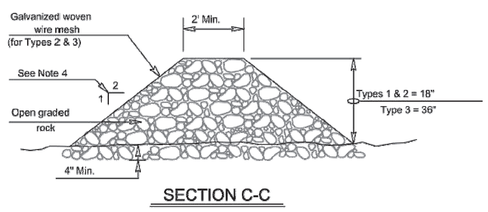


PROFILE



"V" SHAPE

(Plan View)



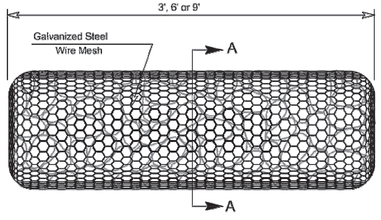
SECTION C-C

PLANS SHEET LEGEND

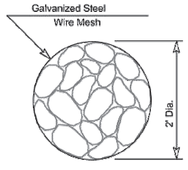
Type 1 Rock Filter Dam — RFD1

Type 2 Rock Filter Dam — RFD2

Type 3 Rock Filter Dam — RFD3



TYPE 4 (SACK GABIONS)



SECTION A-A

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approx. 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or bag rings. In stream use the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with 3/4 " dia. rebar stakes.
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
12. All material incorporated in the construction shall be new.

01 C-5.2 **ROCK FILTER DAM DETAILS**

SCALE: NTS

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STATE OF TEXAS — DAVID L. BROWN — 48282 — REGISTERED PROFESSIONAL ENGINEER

SURVEYED BY: KUO & ASSOC.
FB NO. P-6133

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

COTTAGE GROVE EAST – PH II
DRAINAGE AND PAVING IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN DETAIL (SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
M-410039-0002-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
PM, SAM HABIBI	
SHEET NO. **345** OF 345	

CivilTech Engineering, Inc.
P:\Civil\2019\18020-Chiffon_Cottage Grove East\CAD_DWG\DWG\SWPPP DETAILS 2 OF 2.dwg Jul 20, 2023