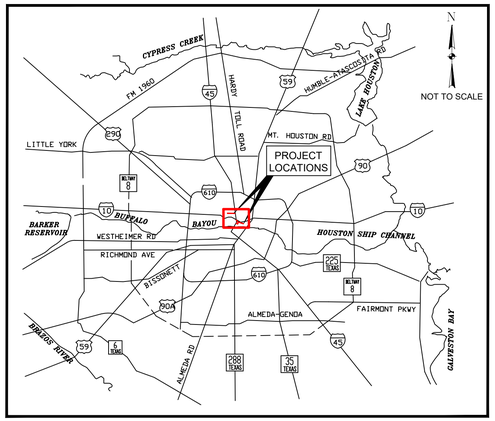
CITY OF HOUSTON

HOUSTON PUBLIC WORKS
CAPITAL PROJECTS

WRIGHTWOOD ST. SEWER AND
UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

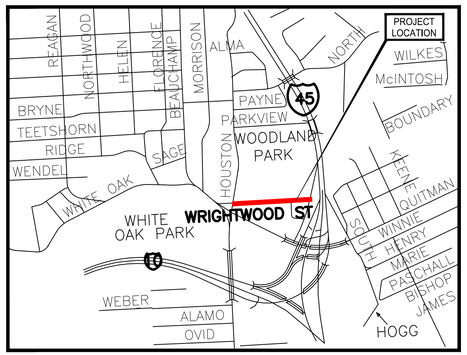
WBS NO.: R-000536-0035-3



LOCATION MAP

(NOT TO SCALE)

COUNCIL DISTRICT 'H'

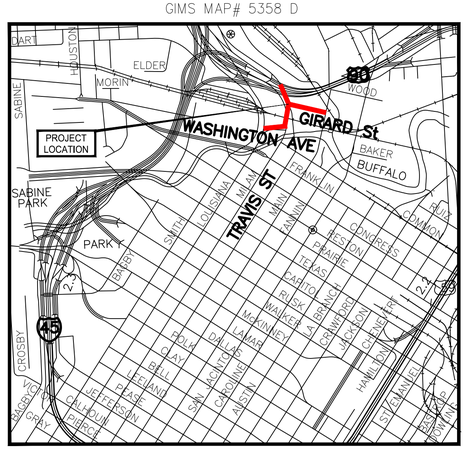


LOCATION 1 VICINITY MAP

(NOT TO SCALE)

KEY MAP NO. 493 C

GIMS MAP# 5358 D



LOCATION 2 VICINITY MAP

(NOT TO SCALE)

KEY MAP NO. 493 L & M

GIM MAP# 5457 A

TDLR EABPR#: N/A

MAYOR
JOHN WHITMIRE

CONTROLLER
CHRIS HOLLINS

DISTRICT COUNCIL MEMBERS

AMY PECK, DISTRICT A
TARSHA JACKSON, DISTRICT B
ABBIE KAMIN, DISTRICT C
CARYOLYN 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
LETITA PLUMMER, POSITION 4
SALLIE ALCORN, POSITION 5

NO.	DATE		APP.

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC.
F. B. NO. P-6408

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91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

PARKS-FORESTRY DEPT.

METRO

HOUSTON WATER

TRANSPORTATION & DRAINAGE OPERATIONS

CAPITAL PROJECTS

SURVEY

CITY ENGINEER DATE

DIRECTOR OF HOUSTON PUBLIC WORKS DATE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 4/24/2026 4:27 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\INDEX OF SHEETS.dwg

NO.	DATE	REVISION	APP.

SHEET NO. SHEET TITLE

GENERAL

1 COVER SHEET
2 SHEET INDEX
3 SYMBOLS AND ABBREVIATIONS
4 GENERAL NOTES
5 HARRIS COUNTY EXPRESS REVIEW SHEET
6 HARRIS COUNTY FLOOD CONTROL REVIEW SHEET

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7 SURVEY CONTROL MAP WRIGHTWOOD STREET
8 SURVEY CONTROL MAP GIRARD STREET (SHEET 1 OF 2)
9 SURVEY CONTROL MAP GIRARD STREET (SHEET 2 OF 2)

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10 STORM WATER POLLUTION AND PREVENTION PLAN (SHEET 1 OF 2)
11 STORM WATER POLLUTION AND PREVENTION PLAN (SHEET 2 OF 2)
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Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

SHEET INDEX

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 2 OF 57	

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FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\LEGENDS AND ABBREVIATIONS.dwg

EXISTING PLAN VIEW

- WATER METER
- WATER VALVE (GATE)
- WATER VALVE (BUTTERFLY)
- FIRE HYDRANT/FLUSHING VALVE
- TAPPING SLEEVE & VALVE
- REDUCER (8" × 6")
- ROUND CONNECTION
- SANITARY SEWER CLEANOUT & MANHOLE (CO, SAN, SAN MH)
- STORM SEWER MANHOLE (STM, STM MH)
- STORM SEWER INLETS ('B', 'B–B', 'C', 'C–1', 'C–2', 'C–2A', 'GRATE')
- CULVERT PIPE AND HEADWALL
- TOP OF CURB ELEVATION (TC=XX.XX)
- GUTTER ELEVATION (G=XX.XX)
- TOP OF PAVEMENT ELEVATION (TP=XX.XX)
- CONTOUR LINE (XX.X')
- ROW LINE
- PROPERTY LINE
- LOT LINES
- EASEMENT LINE
- CENTER LINE OF ROW
- TRANSIT LINE
- EDGE OF DITCHES
- CENTER LINE OF DITCHES
- EDGE OF DITCHES
- FENCE LINE, WOOD
- FENCE LINE, CHAIN LINK
- FENCE LINE, BARBED WIRE
- FENCE LINE, HOG WIRE
- EDGE OF CONCRETE
- CURB LINE
- CONCRETE WALK
- EDGE OF ASPHALT
- EDGE OF SHELL OR GRAVEL
- DIMENSION LINE
- AERIAL POWER LINE (P)
- UNDERGROUND POWER LINE (UGP)
- GAS LINE (GAS)
- UNKNOWN UNDERGROUND LINE (MISC, IDENTIFY CONDUIT)
- OIL PIPELINE (DDP)
- UNDERGROUND TELECOMM LINE W/VAULT (UGT)
- AERIAL TELECOMM LINE (T)
- RAILROAD LINE
- WATER LINE (20" (AND SMALLER) WATER; 24" (LARGER THAN 20") WATER)
- SANITARY SEWER LINE (24" (AND SMALLER) SANITARY SEWER; 30" (LARGER THAN 24") SANITARY SEWER)
- STORM SEWER LINE (24" (AND SMALLER) STORM SEWER; 30" (LARGER THAN 24") STORM SEWER)
- SANITARY SEWER FORCE MAIN (FM)
- RECLAIMED WATER LINE (RWL)
- NON–POTABLE WATER LINE (NPW)
- GAS METER
- GAS VALVE
- PROPANE LINE (PROPANE)
- STEAM LINE (STEAM)
- MISC UNDERGROUND PIPELINE LABLE (A2)

PROPOSED PLAN VIEW

- WATER METER (WM)
- WATER VALVE (GATE) (WV)
- WATER VALVE (BUTTERFLY) (BFWV)
- FIRE HYDRANT/FLUSHING VALVE (FH, WV)
- TAPPING SLEEVE & VALVE (TS&V)
- REDUCER (12" × 8")
- ROUND CONNECTION
- SANITARY SEWER CLEANOUT & MANHOLE (SAN, CO, SAN MH)
- STORM SEWER MANHOLE (STM, STM MH)
- STORM SEWER INLETS ('B', 'B–B', 'C', 'C–1', 'C–2', 'C–2A', 'GRATE')
- CULVERT PIPE AND HEADWALL
- TOP OF CURB ELEVATION (TC=XX.XX)
- GUTTER ELEVATION (G=XX.XX)
- TOP OF PAVEMENT ELEVATION (TP=XX.XX)
- CONTOUR LINE (XX.X')
- ROW LINE
- PROPERTY LINE
- LOT LINES
- EASEMENT LINE
- CENTER LINE OF ROW
- TRANSIT LINE
- EDGE OF DITCHES
- CENTER LINE OF DITCHES
- EDGE OF DITCHES
- FENCE LINE, WOOD
- FENCE LINE, CHAIN LINK
- FENCE LINE, BARBED WIRE
- FENCE LINE, HOG WIRE
- EDGE OF CONCRETE
- CURB LINE
- CONCRETE WALK
- EDGE OF ASPHALT
- EDGE OF SHELL OR GRAVEL
- DIMENSION LINE
- AERIAL POWER LINE (P)
- UNDERGROUND POWER LINE (UGP)
- GAS LINE (GAS)
- UNKNOWN UNDERGROUND LINE (MISC, IDENTIFY CONDUIT)
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- SANITARY SEWER FORCE MAIN (FM)
- RECLAIMED WATER LINE (RWL)
- NON–POTABLE WATER LINE (NPW)
- GAS METER
- GAS VALVE
- PROPANE LINE (PROPANE)
- STEAM LINE (STEAM)
- MISC UNDERGROUND PIPELINE LABLE (A2)
- MATCH LINE

EXISTING PLAN VIEW

- PAVING HEADER
- BUILDING, RESIDENTIAL (RES. 1–STORY BR. BLDG.)
- BUILDING, COMMERCIAL (COMM. 1–STORY BR. BLDG.)
- TREE
- HEDGE
- IRON PIPE OR IRON ROD MONUMENT (3/4" IP)
- POINT OF INTERSECTION (PI)
- POINT OF CURVE (PC)
- POINT OF TANGENCY (PT)
- POWER POLE (P)
- POWER POLE W/DOWN GUY (P)

EXISTING PROFILE VIEW

- NORTH OR EAST PROPERTY LINE
- SOUTH OR WEST PROPERTY LINE
- NORTH OR EAST CURB
- SOUTH OR WEST CURB
- NORTH OR EAST DITCH
- SOUTH OR WEST DITCH
- NORTH OR EAST NATURAL GROUND
- SOUTH OR WEST NATURAL GROUND
- NORTH OR EAST CULVERT (CULVERT)
- SOUTH OR WEST CULVERT (CULVERT)
- CENTERLINE OF ROW
- CENTERPOINT ENERGY CONDUIT (UGP, CENTERPOINT ENERGY CONDUIT)
- GAS LINE (GAS, GAS LINE)
- WESTERN UNION (DGP, WESTERN UNION)
- AT&T CONDUIT (UGT, AT&T CONDUIT)
- WATER LINE (20" (AND SMALLER) WATER LINE; 24" (LARGER THAN 20") WATER)
- SANITARY SEWER LINE (24" (AND SMALLER) SANITARY SEWER; 30" (LARGER THAN 24") SANITARY SEWER)
- STORM SEWER LINE (24" (AND SMALLER) STORM SEWER; 30" (LARGER THAN 24") STORM SEWER)
- SANITARY SEWER FORCE MAIN (FM)
- RECLAIMED WATER LINE (RWL)
- NON–POTABLE WATER LINE (NPW)
- CENTERPOINT ENERGY MANHOLE (UGP)
- AT&T MANHOLE (UGT)
- WATER LINE MANHOLE
- SANITARY SEWER MANHOLE & CLEANOUT (SAN)
- STORM SEWER MANHOLE (STM)
- STORM SEWER INLET (STM)

PROPOSED PLAN VIEW

- PAVING HEADER
- BUILDING, RESIDENTIAL (RES. 1–STORY BR. BLDG.)
- BUILDING, COMMERCIAL (COMM. 1–STORY BR. BLDG.)
- TREE
- HEDGE
- IRON PIPE OR IRON ROD MONUMENT (3/4" IP)
- POINT OF INTERSECTION (PI)
- POINT OF CURVE (PC)
- POINT OF TANGENCY (PT)
- POWER POLE (P)
- POWER POLE W/DOWN GUY (P)

PROPOSED PROFILE VIEW

- NORTH OR EAST PROPERTY LINE
- SOUTH OR WEST PROPERTY LINE
- NORTH OR EAST CURB
- SOUTH OR WEST CURB
- NORTH OR EAST DITCH
- SOUTH OR WEST DITCH
- NORTH OR EAST NATURAL GROUND
- SOUTH OR WEST NATURAL GROUND
- NORTH OR EAST CULVERT (CULVERT)
- SOUTH OR WEST CULVERT (CULVERT)
- CENTERLINE OF ROW
- CENTERPOINT ENERGY CONDUIT (UGP, CENTERPOINT ENERGY CONDUIT)
- GAS LINE (GAS, GAS LINE)
- WESTERN UNION (DGP, WESTERN UNION)
- AT&T CONDUIT (UGT, AT&T CONDUIT)
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- AT&T MANHOLE (UGT)
- WATER LINE MANHOLE
- SANITARY SEWER MANHOLE & CLEANOUT (SAN)
- STORM SEWER MANHOLE (STM)
- STORM SEWER INLET (STM)

MISC STANDARD ELEMENTS

- COH NORTH ARROW (N)
- COH BAR SCALE (0' 10' 20' 40'; SCALE: 1"=20')
- REVISION CLOUD/DELTA (1)
- DETAIL/SECTION TITLE (1 VIEW TITLE, SCALE: 1:1)
- SECTION CALLOUT (1 / XX)
- DETAIL CALLOUT (1 / XX)

NO.	DATE	REVISION	APP.

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3700 W Sam Houston Pkwy S Houston, TX 77042

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HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

SYMBOLS AND ABBREVIATIONS

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CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 3 OF 57	

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FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\GENERAL NOTES.dwg

PRIVATE UTILITY NOTES:

AT&T TEXAS/ SWBT FACILITIES:

1. THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.
6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER ROOSEVELT LEE JR. AT (713) 567-4552 OR EMAIL HIM AT RL7259@ATT.COM, IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATING NEAR OUR AT&T TEXAS/SWBT FACILITIES.

CENTERPOINT ENERGY NOTES:

CAUTION: UNDERGROUND GAS FACILITIES

1. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.
   - -WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL 713-945-8036 OR 713-945-8037 (7:00 AM TO 4:30 PM) 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 713-659-3552 OR 713-207-4200
2. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL LINES:

1. OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:
   - -ANY ACTIVITY WHERE PERSONS 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.
2. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT 713-207-2222.

ACTIVITIES ON/OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

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

STANDARD NOTES FOR CONSTRUCTION DRAWINGS (HCFCD):

1. OBTAIN AND COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE, AND FEDERAL PERMITS AND APPROVALS, WITH ASSISTANCE FROM ENGINEER, IF NECESSARY. OBTAIN PERMIT (CERTIFICATION) FROM HARRIS COUNTY ENGINEER TO ENTER HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY.
2. NOTIFY THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S PROPERTY MANAGEMENT DEPARTMENT IN WRITING AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. SUBMIT THE HCFCD 48 HOUR PRE-CONSTRUCTION NOTIFICATION FORM, A COPY OF THE APPROVED CONSTRUCTION DRAWINGS, AND A COPY OF THE CORPS OF ENGINEERS INDIVIDUAL SECTION 404 PERMIT, IF APPLICABLE, TO HCFCD, 9900 NORTHWEST FREEWAY, HOUSTON, TEXAS 77092, ATTN: PROPERTY MANAGEMENT DEPT. BY HAND DELIVERY, OR FAX TO 713-684-4129 (FAX NUMBER).
3. ENGINEER SHALL SUBMIT CERTIFICATION LETTER AND RECORD DRAWINGS TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S PROPERTY MANAGEMENT DEPARTMENT REQUESTING INSPECTION OF ITEMS CONSTRUCTED IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. PRIOR TO REQUESTING INSPECTION, THE DRAINAGE RIGHT-OF-WAY AND/OR EASEMENTS SHALL BE STAKED AND FLAGGED.
4. PROTECT, MAINTAIN, AND RESTORE EXISTING BACKSLOPE DRAINAGE SYSTEMS.
5. BACKSLOPE SWALE AND INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
6. ESTABLISH TURF GRASS ON ALL DISTURBED AREAS WITHIN THE CHANNEL OR DETENTION RIGHT-OF-WAY, EXCEPT THE CHANNEL BOTTOM AND WHERE STRUCTURAL EROSION MEASURES ARE USED. MINIMUM ACCEPTANCE CRITERIA ARE 75% COVERAGE OF LIVE BERMUDA GRASS AND NO EROSION OR RILLS DEEPER THAN 4".
7. BACKFILL IN ACCORDANCE WITH THE HARRIS COUNTY FLOOD CONTROL DISTRICT STANDARD SPECIFICATION, SECTION 02315 - EXCAVATING AND BACKFILLING, OR EQUIVALENT.
8. EXCAVATE CHANNEL FLOWLINE TO DESIGN ELEVATION AS SHOWN ON PLANS AND DOWNSTREAM, AS NECESSARY, TO ENSURE NO WATER REMAINS IN THE FACILITY (STORM SEWER, LATERAL CHANNEL, OR DRY BOTTOM DETENTION BASIN) DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL, SO THE FACILITY WILL FUNCTION AS INTENDED. FOR WET BOTTOM DETENTION BASINS, ENSURE NO WATER IS ABOVE THE DESIGN LEVEL IN THE WET BOTTOM DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL.
9. MAINTAIN FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORE CHANNEL TO ORIGINAL CONDITION.
10. REMOVE ALL EXCAVATED MATERIAL FROM THE HARRIS COUNTY FLOOD CONTROL DISTRICT OR DRAINAGE RIGHT-OF-WAY. NO FILL IS TO BE PLACED WITHIN A DESIGNATED FLOOD PLAIN AREA WITHOUT FIRST OBTAINING A FILL PERMIT FROM THE APPROPRIATE JURISDICTIONAL AUTHORITY.

GENERAL NOTES - METRO:

1. CONTRACTOR SHALL NOTIFY METRO AT 713-615-6195 TWO WEEKS PRIOR TO DISTURBING EXISTING BUS STOPS.

1. CONTRACTOR SHALL COORDINATE WITH METRO TO REMOVE EXISTING AMENITIES.

2. BUS STOPS SHALL CONSTRUCTED PER CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL AND MEET CURRENT ADA REQUIREMENTS

HARRIS COUNTY:

RECORD DRAWINGS TO BE SUBMITTED TO THE HARRIS COUNTY ENGINEERING DEPARTMENT PERMITS OFFICE. THESE DRAWINGS CAN BE SUBMITTED TO ACCEPTANCE@ENG.HCTX.NET

APPENDIX D - CONSTRUCTION NOTES TO BE ON ALL PROJECTS

1. WATER LINES, WASTEWATER COLLECTION SYSTEMS AND STORM DRAINAGE SYSTEMS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON'S DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "DESIGN MANUAL, STANDARD CONSTRUCTION SPECIFICATIONS, AND DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING".
2. ALL STORM SEWER WILL BE REINFORCED CONCRETE (C76 CLASS III) AND SHALL BE INSTALLED, BEDDED AND BACKFILLED IN ACCORDANCE WITH THE CITY OF HOUSTON'S DRAWINGS 02317-02, 02317-03, 02317-05, 02317-06 AND 02317-07 AS APPLICABLE.
3. ALL STORM SEWERS CONSTRUCTED INSIDE LOT BASEMENTS SHALL BE R.C.P., MINIMUM TWENTY (20) FOOT WIDE EASEMENTS SHALL BE PROVIDED.
4. AN ALTERNATIVE TO CEMENT STABILIZED SAND MAY BE USED AS BACKFILL FOR PIPES FIFTY FOUR (54) INCH AND LARGER, FROM 1-FOOT ABOVE THE TOP OF THE PIPE TO THE BOTTOM OF THE SUBGRADE. CONTRACTOR MAY BACKFILL WITH SUITABLE MATERIAL, PROVIDED THE BACKFILL MATERIAL IS PLACED IN EIGHT (8) INCH LIFTS AND MECHANICALLY COMPACTED TO NINETY-FIVE (95)% STANDARD PROCTOR DENSITY. TESTS SHALL BE TAKEN AT ONE HUNDRED (100) FOOT INTERVALS ON EACH LIFT. BEDDING AND BACKFILL TO ONE (1) FOOT ABOVE THE TOP OF THE PIPE SHALL BE CEMENT-STABILIZED SAND.
5. ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH EIGHT (8) INCH BRICK WALLS UNLESS OTHERWISE NOTED.
6. THE CONTRACTOR(S) SHALL NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT - PERMIT OFFICE TWENTY-FOUR (24) HOURS IN ADVANCE OF COMMENCING UTILITY AND/OR PAVING CONSTRUCTION AT (713) 274-3823 AND WRITTEN NOTIFICATION FORTY EIGHT (48) HOURS IN ADVANCE OF COMMENCING CONSTRUCTION AT 10555 NORTHWEST FREEWAY, SUITE 144, HOUSTON, TX 77092.
7. PAVING SHALL BE IN ACCORDANCE WITH THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE" AND/OR AMENDMENTS OF THE SAME.
8. GUIDELINES SET FORTH IN THE LATEST EDITION OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, TMUCD WITH REVISIONS" SHALL BE OBSERVED.
9. OWNER OR OWNER'S AGENT TO OBTAIN ALL PERMITS REQUIRED BY THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR FLOODPLAIN MANAGEMENT" PRIOR TO STARTING CONSTRUCTION.
10. OWNER OR OWNER'S AGENT TO OBTAIN ALL NOTIFICATIONS REQUIRED BY HARRIS COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITIES AND/OR CULVERTS WITHIN HARRIS COUNTY AND HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHTS-OF-WAY.

APPENDIX E - CONSTRUCTION NOTES INVOLVING UTILITIES AND PAVING WORK LOCATED WITHIN A PUBLIC RIGHT-OF-WAY

1. NOTE: "NOTIFICATIONS ISSUED BY HARRIS COUNTY ENGINEERING DEPARTMENT - PERMITS OFFICE IS REQUIRED FOR PROPOSED WORK WITHIN HARRIS COUNTY RIGHT-OF-WAY. THE PROJECT MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED NOTIFICATION. BE ADVISED THAT A NOTIFICATION MUST BE OBTAINED SEPARATELY FROM SITE DEVELOPMENT PERMIT PACKAGE. FOR ADDITIONAL INFORMATION, PLEASE VISIT HTTP://WWW.ENG.HCTX.NET/PERMITS/PUBLIC-REVIEW-CODE/PUBLIC-PLAN-REVIEW/NOTIFICATION-OF-CONSTRUCTION-IN-THE-ROW OR CONTACT PUBLIC REVIEW INSPECTIONS DEPARTMENT @ (713)-274-3931)".

GENERAL CONSTRUCTION NOTES:

1. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS "STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING" AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING PUBLISHED BY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING.
2. THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT WAS CONDUCTED IN ACCORDANCE WITH CHAPTER 11 OF THE LATEST EDITION OF THE PUBLICATIONS INFRASTRUCTURE DESIGN MANUAL PUBLISHED BY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING. SOILS REPORT WAS PREPARED BY GEOTEST ENGINEERING, INC. REPORT NO. 1140223001, DATED SEPTEMBER 14, 2017.
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. 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 CITY OF HOUSTON, HOUSTON PUBLIC WORKS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING REFERENCED ABOVE, AT NO ADDITIONAL COST.
5. 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 SHALL BE VERIFIED BY THE CONSTRUCTION INSPECTOR PRIOR TO SUBMISSION TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.
10. FOR ANY AREAS WHERE CONSTRUCTION ACTIVITIES MAY CONFLICT WITH STREET LIGHTING POLES OR UNDERGROUND CABLES, CONTRACTOR SHALL CONTACT DAVID DIGGS WITH CENTERPOINT ENERGY AT 713-945-3022 A MINIMUM OF ONE WEEK PRIOR TO SCHEDULED CONSTRUCTION ACTIVITIES.
11. CONTRACTOR SHALL PROTECT AND MAINTAIN SERVICE IN ALL EXISTING SEWER LINES DURING CONSTRUCTION AND ONLY TRANSFER SERVICE ONCE PROPOSED SEWER IS INSTALLED AND OPERATIONAL.
12. PRIOR TO ABANDONMENT, ALL EXISTING SANITARY SEWERS INCLUDING 30" SHALL BE TV'ED. ALL EXISTING CONNECTIONS SHALL BE REROUTED TO THE PROPOSED LINE.
13. CONTRACTOR SHALL SCHEDULE WORK AS TO MINIMIZE NOISE DISTURBANCES TO RESIDENTS AND BUSINESSES. WORKING HOURS SHALL CONFORM TO ALL STANDARD CITY OF HOUSTON ORDINANCES. 7AM-7PM MON-SATURDAY SPECIAL REQUEST FOR HOLIDAYS AND AFTER HOURS.
14. CONTRACTOR SHALL REMOVE/REPLACE INLET PROTECTION BEFORE/AFTER SEVERE RAIN EVENT AS REQUESTED BY THE CITY OF HOUSTON. COSTS SHALL BE INCIDENTAL TO CONTRACT.
15. ALL PAVEMENT RESTORATION SHALL COMPLY WITH THE STREET CUT DETAILS 02951-02 OR 02951-01, 02951-03, AS APPLICABLE DEPENDING ON THE TYPE OF PAVEMENT.
16. CONTRACTOR SHALL SECURE SHAFTS WITH FENCING, LOW PROFILE BARRIERS, AND PLATES.
17. CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM CITY OF HOUSTON PROJECT MANAGER PRIOR TO STORING ANY MATERIAL OR EQUIPMENT ON MEDIANS.

NO.	DATE	REVISION	APP.

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

INTERIM REVIEW ONLY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, PERMIT OR REGULATORY APPROVAL PURPOSES. THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF
GREGORY J. HENRY
91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

GENERAL NOTES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 4 OF 57	

1. PAVING

(FOR EXISTING OR PROPOSED HC PUBLIC R.O.W.)

CONCRETE

DESIGN THICKNESS OF PAVING	STABILIZED SUBGRADE DEPTH	DESIGN STRENGTH OF CONCRETE	STEEL SPACING		REINFORCE STEEL SIZE
(IN.)	(IN.)	(PSI)	LONG. (IN.)	TRANS. (IN.)	(#4 MIN.)

ASPHALT

DESIGN SURFACE COURSE THICKNESS	DESIGN SURFACE COURSE TYPE	DESIGN BASE COURSE THICKNESS	DESIGN BASE COURSE TYPE	STABILIZED SUBGRADE DEPTH	STABILIZED SUBGRADE TYPE
(IN.)	(MATERIAL)	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)

DRIVEWAYS (IN EXISTING OR PROPOSED HC PUBLIC R.O.W.)

I. NUMBER OF DRIVEWAY APPROACHES PROPOSED INCLUDING WIDENING OR REPAVING EXISTING DRIVEWAYS

DRWY	WIDTH	MATERIAL	CULVERT (Y/N)	CULVERT LENGTH	NEAREST CROSS-STREET	DISTANCE TO CROSS-STREET

II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET(S): _____

III. ADDITIONAL DRIVEWAY TABLE (AS APPLICABLE) APPEARS ON SHEET(S): _____

FIRE APPARATUS ACCESS ROAD

☐ REQUIRED AND SHOWN ON SHEET(S): _____
☐ NOT REQUIRED DUE TO: _____

CURBING

☐ STANDARD 6" CURBING PROPOSED
☐ 4" x 12" CURBING PROPOSED EXCEPT AT MEDIANS AND ISLANDS

2. TRAFFIC

I. MEDIAN CUTS
☐ MEDIAN MODIFICATIONS ARE SHOWN ON SHEET(S): _____
☐ NO MEDIAN CUT OR RELOCATION IS PROPOSED

II. LEFT / RIGHT TURN LANE
☐ LEFT / RIGHT TURN LANE IS SHOWN ON SHEET(S): _____
☐ NO LEFT / RIGHT TURN LANE IS PROPOSED

III. TRAFFIC CONTROL PLAN
☐ TRAFFIC CONTROL SHOWN ON SHEET(S): _____
☐ NO WORK IN HC RIGHT OF WAY

IV. TRAFFIC SIGNAL
☐ EXISTING TRAFFIC SIGNAL DEVICES (BOXES AND LOOPS) SHOWN ON SHEET(S): _____
☐ NEW ☐ REBUILT ☐ MODIFIED TRAFFIC SIGNAL SHOWN ON SHEET(S): _____
☐ HC FIBER PRESENT
☐ NO TRAFFIC SIGNAL

V. TRAFFIC IMPACT ANALYSIS
☐ TRAFFIC IMPACT ANALYSIS APPROVED ON DATE: _____ PROJECT NO.: _____
☐ NO TRAFFIC IMPACT ANALYSIS REQUIRED AND HC APPROVED
☐ NO NEW TRIPS GENERATED

VI. TRAFFIC VARIANCE
☐ TRAFFIC VARIANCE APPROVED ON DATE: _____ PROJECT NO.: _____

3. DESCRIPTION OF PROPERTY

I. LEGAL DESCRIPTION
A. ACREAGE: _____
B. ☐ SUBDIVISION: _____
☐ SURVEY & ABSTRACT: _____
C. ADJACENT ROADS: _____

II. PLATTING
A. SUBDIVISION PLAT (CHECK APPLICABLE)
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT
☐ EXEMPT FROM PLAT / REPLAT
PLAT NAME: _____

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

NOTE: FINAL CPC101 REQUIRED FOR PLAN APPROVAL, RECORDED PLAT REQUIRED FOR FINAL INSPECTION.

III. JURISDICTIONS
☐ CITY OF _____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ

IV. HCAD ACCOUNT NOS. (ALL)
_____

V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.)
☐ REQUIRED PER PLANNING COMMISSION / HC REGULATIONS SHOWN ON SHEET(S): _____
☐ NOT REQUIRED PER PLANNING COMMISSION / HC REGULATIONS

4. RESIDENTIAL / SUBDIVISION / STREET DEDICATION DRAINAGE

I. PROPOSED DRAINAGE SYSTEM TYPE
☐ STORM SEWER
☐ ROADSIDE DITCH
☐ LOW IMPACT DEVELOPMENT (LID)

II. DESIGN METHOD USED
☐ CITY OF HOUSTON _____YEAR FREQUENCY
☐ OTHER: _____

III. DRAINAGE SYSTEM OUTFALLS DIRECTLY TO EXISTING
☐ DETENTION BASIN (APPROVED HC PROJECT NO.): _____ DETENTION BASIN MAINTAINED BY: _____
☐ HCFCD DRAINAGE DITCH UNIT NO.: _____
☐ HC ROADSIDE DITCH (ROAD NAME): _____
☐ HC STORM SEWER (APPROVED HC PROJECT NO.): _____

IV. HC OUTFALL CALCULATIONS

☐ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF FRONTAGE = _____ (CFS)
PROPOSED OUTFALL RATE: _____(CFS), CALCULATIONS PROVIDED ON SHEET(S): _____

☐STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____(CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED HC PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____(CFS), CALCULATIONS PROVIDED ON SHEET(S): _____

V. DETENTION PROVIDED BY
☐DETENTION BASIN IS PART THIS PLAN SET. SERVICE AREA MAP IS ON SHEET(S): _____
☐REGIONAL DETENTION BASIN SYSTEM (APPROVED HC PROJECT NO.): _____

PROPOSED STORM SEWER IS SUBMERGED (AGREEMENT MUST BE PROVIDED).
STATIC W.S.E. @ OUTFALL IS _____

5. COMMERCIAL / OTHER SITE DRAINAGE

I. PROPOSED DRAINAGE AREA
☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (NET NEW DEVELOPED AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)

II. DETENTION VOLUME

NEW AREA _____ x * = _____ ACRE FEET
DETENTION REQUIRED

*☐ .65 (CHANNEL)
*☐ .75 (STM SWR)
*☐ 1.00 (RD. DITCH)
*☐ OTHER:

PROPOSED DETENTION VOLUME = _____ACRE FEET
PROPOSED DETENTION VOLUME CALCULATIONS ARE SHOWN ON SHEET(S): _____
DETENTION VOLUME PROVIDED BY EXISTING DETENTION BASIN
APPROVED HC PROJECT NO.: _____
DETENTION BASIN SERVICE AREA MAP IS PROVIDED ON SHEET(S): _____

III. OUTFALL
OUTFALL TO ☐ HC ROADSIDE DITCH
☐ EXISTING HC STORM SEWER
☐ OTHER _____

☐HC ROADSIDE DITCH OUTFALL:
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET(S): _____
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF FRONTAGE = _____(CFS)

☐HC STORM SEWER OUTFALL:
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____(CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED HC PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____(CFS), CALCULATIONS PROVIDED ON SHEET(S): _____

IV. PUMPED DETENTION FACILITIES
VOLUME THAT GRAVITY FLOWS: _____ ACRE FEET
VOLUME THAT IS PUMPED: _____ ACRE FEET
ENTRANCE VELOCITY INTO ROADSIDE DITCH OR STORM SEWER: _____
PUMP SPECIFICATIONS AND AUTOMATIC SHUTOFF PLAN FOR ROADSIDE DITCH & STORM SEWER OUTFALLS APPEAR ON SHEET(S): _____

V. FLOW RESTRICTOR SIZE
OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____
ON SHEET(S): _____

6. OFFSITE SHEET FLOW (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMMODATIONS ARE SHOWN ON SHEET(S): _____

TOTAL ACREAGE = _____ (AC.)
TOTAL DISCHARGE = _____ (CFS)

☐ ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT.
☐ SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

7. STORMWATER QUALITY

I. SWPPP: CONSTRUCTION MEASURES (COMPLETE FOR ALL PROJECTS)
NUMBER OF ACRES DISTURBED: _____
☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S): _____
☐ DISTURBS <1AC. N/A

II. APPLICABILITY FOR PERMANENT FEATURES (COMPLETE FOR ALL PROJECTS)

EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL, WITHIN A LARGER COMMON PLAN OF DEVELOPMENT OR SALE, LESS THAN 5 ACRES.
THIS EXEMPTION IS VERIFIED WITH THE PLAT AND/OR GENERAL PLAN ON THE PROPERTY.

EXEMPT REDEVELOPMENT:
☐ THE INCREASE IN THE TOTAL AMOUNT OF IMPERVIOUS SURFACE, CURRENT PROJECT AND ANY SINCE 10/01/2001, ON A PREVIOUSLY DEVELOPED 5 ACRE OR LARGER PARCEL, INDIVIDUALLY AND/OR CONTIGUOUSLY OWNED, IS LESS THAN 1 ACRE.
NEW IMPERVIOUS:

CURRENT PROJECT	PREVIOUS PROJECT(S) TOTAL	TOTAL (CURRENT+PREVIOUS)

EXEMPT GRANDFATHERED:
☐ DRAINAGE FROM THIS PROJECT OUTFALLS DIRECTLY INTO AN EXISTING AND APPROVED DRAINAGE SYSTEM PRIOR TO 10/01/2001 WITH NO NEW DETENTION REQUIREMENT. INCLUDE THE ORIGINAL DRAINAGE AREA MAP OF THAT SYSTEM FOR VERIFICATION.
D.A. MAP NAME: _____ DATE: _____ APPROVED HC PROJECT NO.: _____

III. GENERAL
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____ (ONLY COMPLETE IF OUTSIDE OF UNINCORPORATED HARRIS COUNTY)
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY:
☐ EXISTING SWQMP
PROJECT TITLE: _____
HC PROJECT NO.: _____ HC SWQ PERMIT NO.: _____
SWQ SERVICE AREA MAP INCLUDED ON SHEET(S): _____
☐ INDUSTRIAL PERMITTING. (IAC AND SUPPORTING DOCUMENTATION MUST BE SUBMITTED)
PERMIT NO: _____

IF THE PROJECT IS NOT EXEMPT, OUTSIDE OF HARRIS COUNTY'S JURISDICTION, OR COVERED BY AN EXISTING SWQMP, A STORMWATER QUALITY MANAGEMENT PLAN IS REQUIRED.

IV. PERMANENT SWQ FEATURES (COMPLETE IF NOT EXEMPT)
☐ SITE PLAN ON SHEET(S): _____
☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY, LID) DETAILS AND CALCULATIONS APPEAR ON SHEET(S): _____
☐ BASIN STRUCTURE USED (WET, DRY, WETLANDS)
STRUCTURAL CONTROL IN BASIN: _____
DETAILS/CALCULATIONS ON SHEET(S): _____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
DETAILS/CALCULATIONS ON SHEET(S): _____
☐ OTHER(S):
STRUCTURAL CONTROL(S): _____
DETAILS/CALCULATIONS ON SHEET(S): _____

8. FLOODPLAIN STATUS

I. GENERAL INFORMATION
FIRM PANEL(S) FOR PROPERTY: _____
FIRM PANEL(S) DATE: _____
STATUS OF PROPERTY ON MAP
☐ ENTIRELY LOCATED IN UNSHADED ZONE X
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY A ZONE OR SHADED ZONE X, DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL _____) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET(S): _____

II. 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.) _____

III. FLOODPLAIN DETERMINATION BASED ON GROUND ELEVATION
☐ PROPERTY LIES ENTIRELY ABOVE THE 1% BASE FLOOD LEVEL AND IN SHADED ZONE X
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE 1% BASE FLOOD LEVEL

IV. FLOODPLAIN STORAGE SUMMARY (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FLOODPLAIN AS DELINEATED BY FIRM PANEL)
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.): BELOW 0.2% BASE FLOOD ELEVATION_____(2001 ADJ.)_____ CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN: BELOW 0.2% BASE FLOOD ELEVATION_____ (2001 ADJ.)_____ CUBIC YARDS
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET(S): _____

9. WATER AND WASTEWATER

I. COMMERCIAL PROJECTS
DOES THE PROPERTY HAVE UTILITIES?
☐ PROPOSED ☐ EXISTING ☐ NO
CHECK APPLICABLE
☐ PUBLIC WATER & SANITARY
☐ PRIVATE WATER WELL & SEPTIC SYSTEM
☐ PUBLIC WATER & PRIVATE SEPTIC SYSTEM
☐ PRIVATE WATER WELL & PUBLIC SANITARY
☐ LETTER FROM THE DISTRICT / MUNICIPALITY AUTHORIZING MUNICIPALITY AUTHORIZING SERVICE & CONNECTION.
UTILITY DISTRICT / MUNICIPALITY NAME: _____
☐ PROPOSED OR EXISTING SEPTIC TANK(S) AND DISPOSAL AREA(S) SHOWN ON SHEET(S): _____
☐ ALL EXISTING AND PROPOSED UTILITIES ACCURATELY SHOWN & LABELED ON THE SITE PLANS.

NOTE: SEPTIC SYSTEMS REQUIRE HC WASTEWATER REVIEW
HC SEPTIC PERMIT/REQUEST NO. _____

NOTE: DEDICATED UNDERGROUND FIRE LINES MUST BE SUBMITTED TO THE HARRIS COUNTY FIRE PROTECTION GROUP FOR REVIEW AND PERMITTING BY THE UNDERGROUND FIRE LINE CONTRACTOR. CIVIL REVIEW DOES ***NOT*** REVIEW OR APPROVE UNDERGROUND FIRE LINES FOR THE FIRE PROTECTION SYSTEMS.

WASTEWATER TREATMENT PLANTS

HC WWTP REVIEW:
☐ NEW WWTP SITE OR REHAB / EXPANSION OF AN EXISTING WWTP SITE
☐ HARRIS COUNTY DOMESTIC WASTEWATER TREATMENT PLANT EXPRESS REVIEW SHEET ATTACHED AND COMPLETED ACCORDING TO INSTRUCTIONS

10. SIDEWALKS

☐ SIDEWALKS ARE PROPOSED IN THIS DEVELOPMENT
☐ NO SIDEWALKS ARE PROPOSED IN THIS DEVELOPMENT

11. LANDSCAPING

☐ COMMERCIAL BUILDING(S) PROPOSED AND LANDSCAPING SHOWN ON SHEET(S): _____
☐ NO COMMERCIAL BUILDING(S) PROPOSED

12. PERMITS REQUIRED

☐ STORM WATER QUALITY
☐ ORIGINAL ☐ AMENDMENT TO PERMIT NO.: _____
☐ SEPTIC (EXISTING) ☐ SEPTIC (PROPOSED)
☐ CIVIL SITE WORK (PHASE II PERMIT CLASS I (UNSHADED X ZONE))
☐ CIVIL SITE WORK (PHASE II PERMIT CLASS II (ALL OTHER ZONES))
☐ DRIVEWAY WITH CULVERT ☐ DRIVEWAY WITH CURB AND GUTTER
☐ BUILDING(S) IS A CRITICAL FACILITY
☐ BUILDING PERMITS (NO. OF BUILDINGS = _____)
☐ SUBDIVISION INFRASTRUCTURE PHASE II (NO. OF LOTS = _____)
☐ NOTICE OF DETENTION AFFIDAVIT REQUIRED
☐ MUD MAINTENANCE AGREEMENT REQUIRED
☐ STREET DEDICATION

WORK IN HARRIS COUNTY R.O.W.
☐ UTILITY WORK _____
☐ TURN LANE _____
☐ OTHER CONSTRUCTION _____

VIOLATIONS
☐ EXISTING VIOLATIONS ON PROPERTY
VIOLATION NUMBER(S): _____

NOTES:
A PERMIT IS REQUIRED FOR EACH SCOPE OF WORK ON SITE.
A R.O.W. NOTIFICATION IS REQUIRED FOR EACH SCOPE OF WORK IN HC OR HCFCD R.O.W.

BENCHMARK REQUIREMENTS FOR PROPOSED BRIDGES AND OR NEW RESIDENTIAL SUBDIVISIONS

When the County Engineer has determined that a new benchmark will be required to be established for the proposed project, the developer shall be required to install a benchmark per section 8.0, part 2 of the Harris County Infrastructure Regulations.

Is a new Benchmark required for this project? (*to be determined by Harris County*) [__] yes [__] no

If a new Benchmark is required, the proposed benchmark information is shown on sheet(s): ____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

Development constructed or placed in accordance with these plans will comply with all provisions of the Regulations of Harris County, Texas for Floodplain Management.

No net fill is allowed in the flood plain and no fill is allowed in the floodway.

FOUNDATION NOTES: (*Applies to only buildings or building additions requiring a class II permit*)

All water heaters, furnaces, air conditioning units, electrical distribution panels, and any other mechanical or electrical equipment must be elevated in accordance with Section 4.05 of Harris County Floodplain regulations.

Any electrical circuit serving a light switch or outlet located below the base (100-year) flood elevation shall be dropped from above and be on a separate breaker.

All materials used below the (100-year) base flood elevation are an approved FEMA Technical Bulletin 2-08 as Class 5 water-resistant, and approved in accordance with FEMA Technical Bulletin 1-08 for foundation openings.

Critical facilities located in the 0.2% or 500yr floodplain or 1% or 100yr floodplain shall have the lowest floor elevated to 3 feet or more above the 0.2% flood elevation, or 24 inches above the crown of the adjacent road, which ever results in a higher elevation.

Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.

Access routes elevated to or above the level of the base flood shall be provided to all critical facilities to the extent possible.

A completed as-built certificate must be submitted after the structure is complete and before it is occupied.

The County Engineer's Office will post a final inspection notice on the structure once all requirements have been met.

No fill may be used to elevate structures in the 1% or 100yr flood plain. Structures may be constructed on an open foundation, such as piers, or on continuous foundation walls with properly sized and located openings. All foundations are required to be designed by a registered professional engineer.

All structures shall be designed to withstand a three second gust basic wind speed of 120mph.

*Completed ***Elevation Certificates** to be submitted: one at permitting, a second after the slab is poured or sub-floor is installed and before the framing starts, and a third is required once construction is finished. *(PER CURRENT FIRM PANEL)*

HARRIS COUNTY OFFICE OF THE COUNTY ENGINEER - PERMIT OFFICE NOTE:

THE PERMIT MANAGER SIGNATURE REPRESENTS THE FOLLOWING:
- THE COMPLETION OF REVIEW OF THESE PLANS
- INTERPOSE NO OBJECTION TO THE PROPOSED DESIGN ON PRIVATE PROPERTY
- APPROVAL OF WORK IN HARRIS COUNTY MAINTAINED RIGHT OF WAY
- APPROVAL OF WORK IN PROPOSED HARRIS COUNTY RIGHT OF WAY THAT IS TO BE ACCEPTED BY THE COUNTY

HCOCE SIGNATURE BLOCK:

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, _____, 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. I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE PLANS IN THEIR ENTIRETY ARE DESIGNED PER THE HARRIS COUNTY ENGINEERING STANDARDS, REGULATIONS, AND GUIDELINES UNLESS PROVIDED A VARIANCE BY THE COUNTY ENGINEER OR HIS DESIGNEE. SHOULD IT BE DEEMED BY HCED STAFF, THAT THE PLANS DO NOT MEET THE COUNTY'S STANDARDS, REGULATIONS AND GUIDELINES AND DID NOT RECEIVE AN APPROVED VARIANCE, THE APPROVAL OF SAID PLANS BECOMES NULL AND VOID AND THE DESIGN PLANS MUST BE CORRECTED AT NO CHARGE TO THE COUNTY.

[SEAL]

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS _____ THRU _____

_____ _____
SIGNATURE DATE

REVISIONS

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

REV. NO.	DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	HC APPROVED DATE	HC INITIAL

HC PROJECT NO. _____ HCFCD PROJECT NO. _____ SHEET NUMBER ___ OF ___

HARRIS COUNTY
OFFICE OF THE COUNTY ENGINEER
REVIEW SHEET

VERSION 21.0 FEBRUARY 20, 2025

LAN™
Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

INTERIM REVIEW ONLY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, PERMIT OR REGULATORY APPROVAL PURPOSES. THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF
GREGORY J. HENRY
91826
LICENSED ENGINEER
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

HARRIS COUNTY EXPRESS REVIEW SHEET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 5 OF 57	

1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

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

B. KEY MAP: _____

C. ADDRESS: _____

II. LEGAL DESCRIPTION

A. ACREAGE: _____

B. ☐ SUBDIVISION: _____

☐ SURVEY & ABSTRACT: _____

C. ADJACENT ROADS: _____

III. PLATTING

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

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

PLAT NAME: _____

IV. JURISDICTIONS

☐ CITY OF _____
☐ 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 _____

III. DETENTION VOLUME & OUTFALL

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

IV. STORMWATER DETENTION BASIN INFORMATION

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 DESIGN ACCOMODATIONS ARE SHOWN ON SHEET _____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = _____
TOTAL DISCHARGE = _____

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

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) _____

☐ 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 CALCULATIONSAPPEAR ON SHEET(S)_____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: _____
FIRM PANEL(S) DATE: _____
STATUS OF PROPERTY ON MAP
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X".
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL_____) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET_____

ELEVATION INFORMATION
BENCHMARK USED
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT *(2001 ADJ.)* _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION

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

III. FLOODPLAIN STORAGE SUMMARY

(APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN).

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

5. WORK IN HCFCD RIGHT-OF-WAY

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

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

II. USACE ENVIRONMENTAL PERMIT

☐ US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER(S) _____
☐ US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
☐ OTHER
☐ NO PERMITS REQUIRED
EXPLAIN: _____

III. REFERENCE / BASIS OF DETERMINATION

☐ ENVIRONMENTAL CONSULTANT REPORT
BY _____
REPORT TITLE _____
REPORT DATE _____
☐ OTHER _____

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 _____ OF THESE PLANS.

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

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

VII. REFER TO THE FOLLOWING PLAN SHEETS: _____
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)

STORMWATER DRAINAGE DESIGN REPORT
REPORT TITLE _____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

GEOTECHNICAL INVESTIGATION REPORT
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 _____

HCFCD SIGNATURE BLOCK

PROJECT NAME: _____
ADDRESS: _____
WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION
BY_____
FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY

APPROVED:
BY_____
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY

APPROVED:
BY_____
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY

NO REVIEW REQUIRED:
BY_____
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:
_____
_____
_____
_____
_____

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

ENGINEER'S CERTIFICATION

I, _____ , 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 _____ THRU _____ .

SEAL

_____ _____
SIGNATURE DATE

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 PROJECT NO. SHEET NUMBER ___ OF ___

HARRIS COUNTY
FLOOD CONTROL DISTRICT
REVIEW SHEET

VERSION 1.0 OCTOBER 2019

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

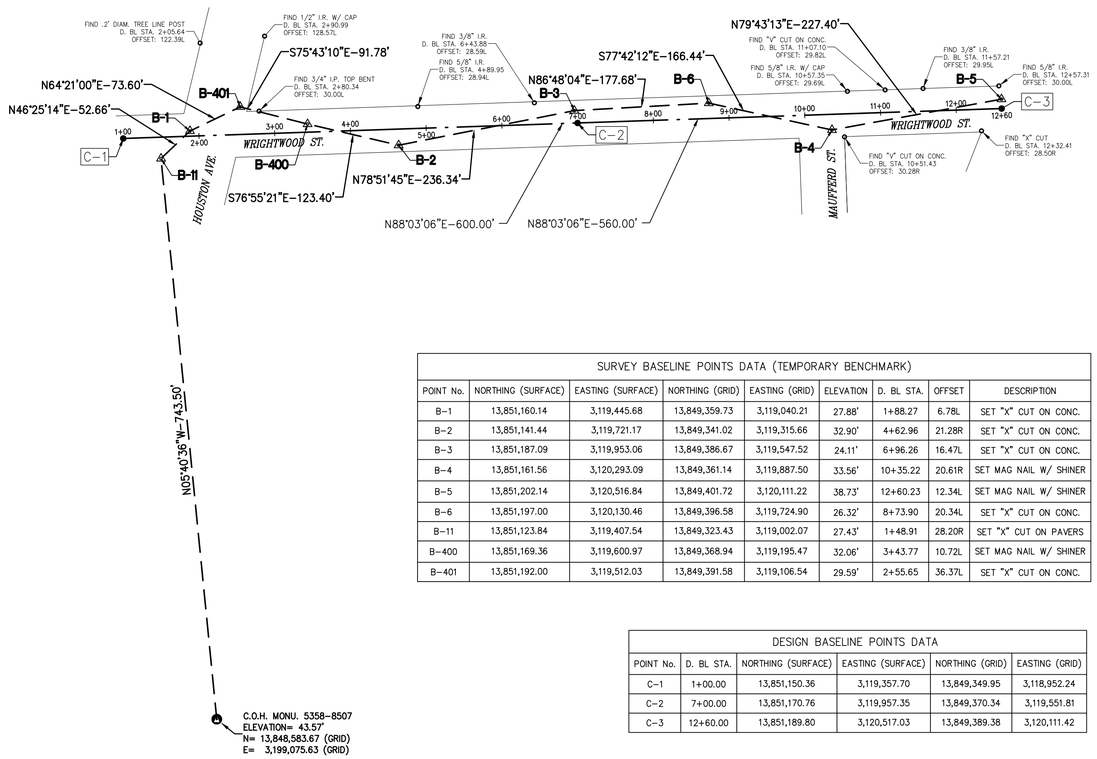
INTERIM REVIEW ONLY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, PERMIT OR REGULATORY APPROVAL PURPOSES. THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF
GREGORY J. HENRY
91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2014

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

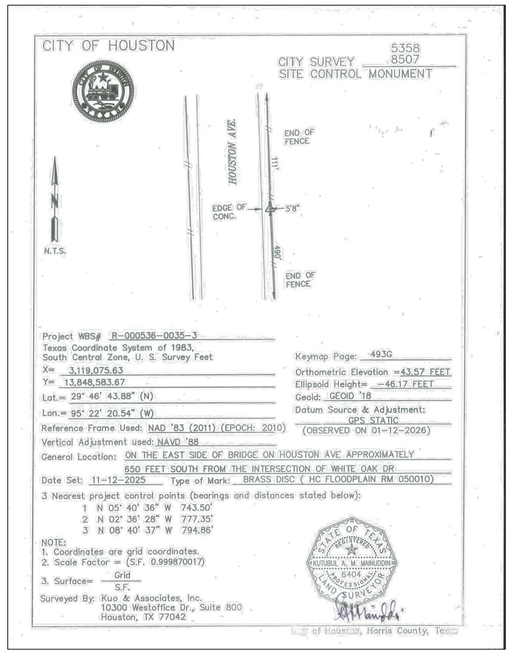
HARRIS COUNTY
FLOOD CONTROL REVIEW SHEET

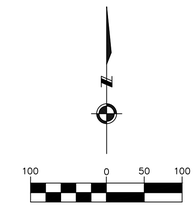
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 6 OF 57	



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-1	13,851,160.14	3,119,445.68	13,849,359.73	3,119,040.21	27.88'	1+88.27	6.78L	SET "X" CUT ON CONC.
B-2	13,851,141.44	3,119,721.17	13,849,341.02	3,119,315.66	32.90'	4+62.96	21.28R	SET "X" CUT ON CONC.
B-3	13,851,187.09	3,119,953.06	13,849,386.67	3,119,547.52	24.11'	6+96.26	16.47L	SET "X" CUT ON CONC.
B-4	13,851,161.56	3,120,293.09	13,849,361.14	3,119,887.50	33.56'	10+35.22	20.61R	SET MAG NAIL W/ SHINER
B-5	13,851,202.14	3,120,516.84	13,849,401.72	3,120,111.22	38.73'	12+60.23	12.34L	SET MAG NAIL W/ SHINER
B-6	13,851,197.00	3,120,130.46	13,849,396.58	3,119,724.90	26.32'	8+73.90	20.34L	SET "X" CUT ON CONC.
B-11	13,851,123.84	3,119,407.54	13,849,323.43	3,119,002.07	27.43'	1+48.91	28.20R	SET "X" CUT ON PAVERS
B-400	13,851,169.36	3,119,600.97	13,849,368.94	3,119,195.47	32.06'	3+43.77	10.72L	SET MAG NAIL W/ SHINER
B-401	13,851,192.00	3,119,512.03	13,849,391.58	3,119,106.54	29.59'	2+55.65	36.37L	SET "X" CUT ON CONC.

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,851,150.36	3,119,357.70	13,849,349.95	3,118,952.24
C-2	7+00.00	13,851,170.76	3,119,957.35	13,849,370.34	3,119,551.81
C-3	12+60.00	13,851,189.80	3,120,517.03	13,849,389.38	3,120,111.42





NO.	DATE	REVISION	APP.

BENCHMARK:

CITY OF HOUSTON MONUMENT 5358-8507 (ALSO FLOODPLAIN REFERENCE MARK 050010), A BRASS DISK IN CONCRETE, LOCATED ON THE EAST SIDE OF BRIDGE ON HOUSTON AVE APPROXIMATELY 650 FEET SOUTH FROM THE INTERSECTION OF WHITE OAK DR

ELEV. 43.57 FEET NAVD 1988 (GEOID '18)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED NOVEMBER 19, 2025.

NOTE:

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

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

LEGEND:

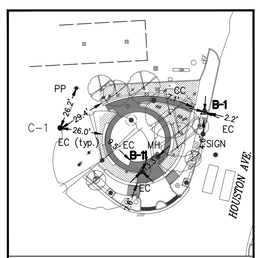
- B-X SURVEY CONTROL POINT NUMBER
- C-X DESIGN BASELINE POINT NUMBER
- SURVEY CONTROL POINT
- DESIGN BASELINE POINT
- CITY OF HOUSTON MONUMENT
- D. BL: DESIGN BASELINE
- S. BL: SURVEY BASELINE

EXIST. TOPOGRAPHIC LEGEND

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

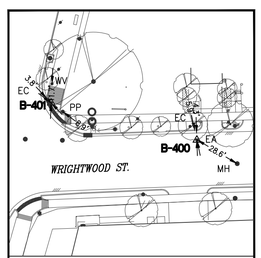
ABBREVIATIONS

FH – FIRE HYDRANT
FC – FENCE CORNER
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
WM – WATER METER
CC – CONCRETE CORNER
EA – EDGE OF ASPHALT



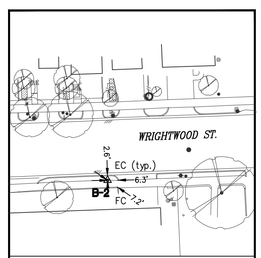
C-1, T.B.M. B-1 & B-11

N.T.S.



T.B.M. B-400 & B-401

N.T.S.



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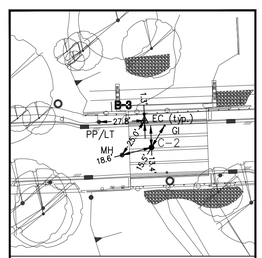

C-2 & T.B.M. B-3

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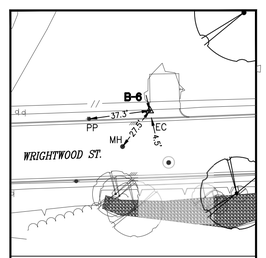

T.B.M. B-6

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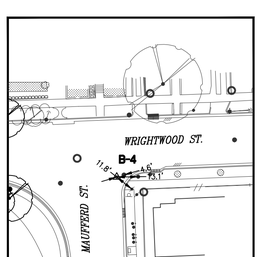

T.B.M. B-4

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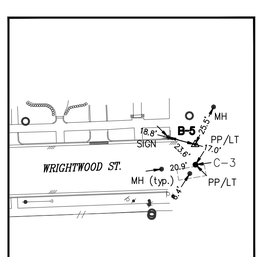

C-3 & T.B.M. B-5

N.T.S.

KUO & ASSOCIATES
ENGINEERING • SURVEYING
10300 Westoffice Dr., Suite 800, Houston, Texas 77042
Tel: 713-975-8769, Fax: 713-975-0920, www.kuoassociates.com
TBPELS Engineering Firm Reg. No. F-4578
TBPELS Surveying Firm Reg. No. 10075600

SURVEYED BY:
KUO & ASSOCIATES, LLC.
FB NO. 6408

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TEXAS REG. NO.: 6404

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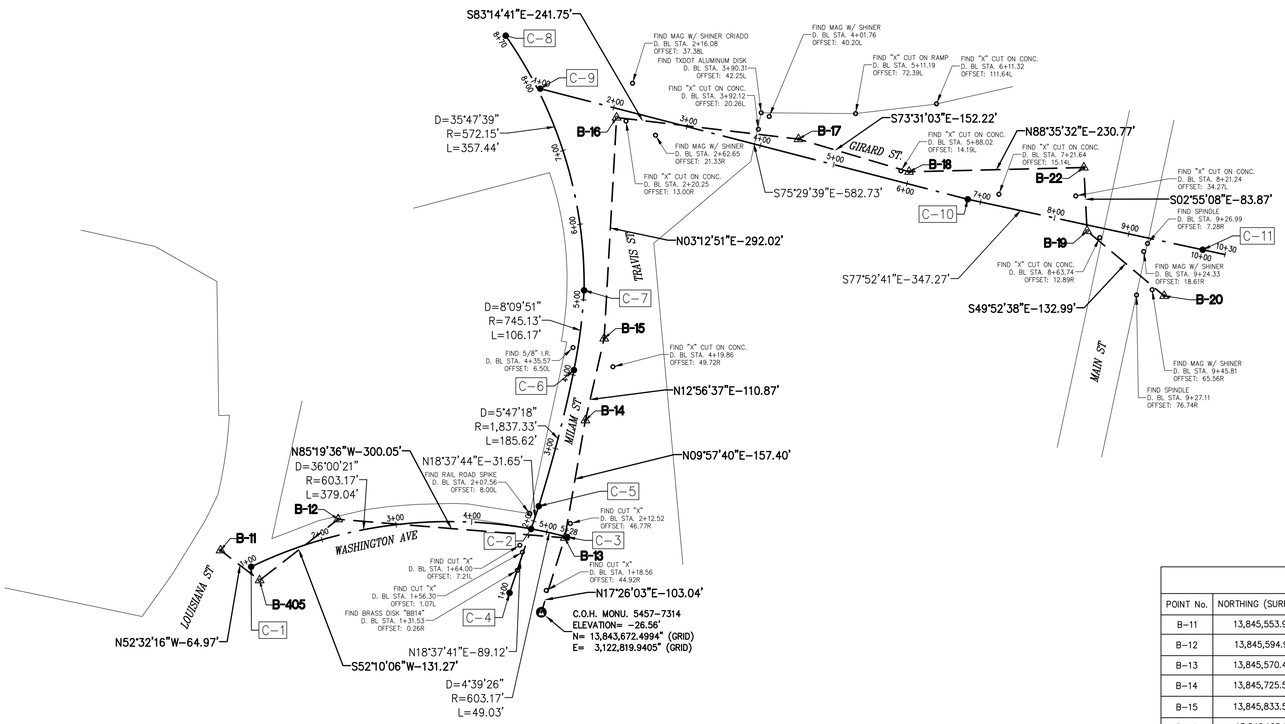
CITY OF HOUSTON

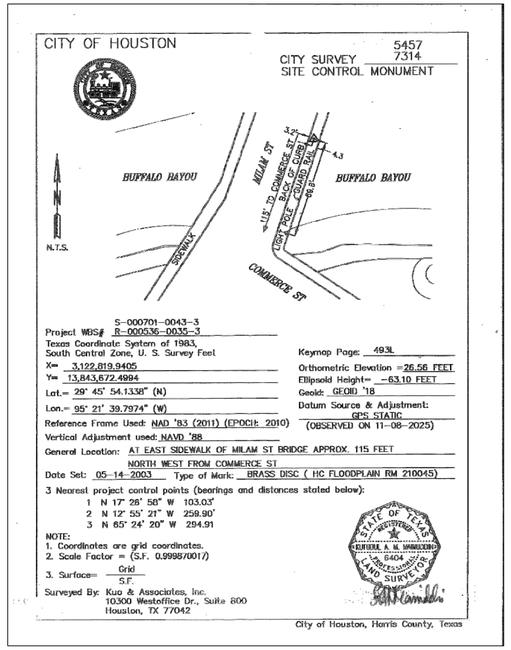
HOUSTON PUBLIC WORKS

UNIVERSITY OF HOUSTON-DOWNTOWN SSO ELIMINATION

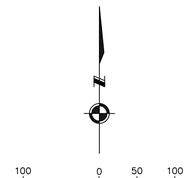
SURVEY CONTROL MAP
(SHEET 1 OF 1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
NIEL BARNSDALE, P.E.	
SHEET NO. 7 OF 57	





NO.	DATE	REVISION	APP.



BENCHMARK:

CITY OF HOUSTON MONUMENT 5457-7314 (ALSO FLOODPLAIN REFERENCE MARK 210045), A BRASS DISK IN CONCRETE, LOCATED ON EAST SIDE OF MILAM ST TRAVEL APPOXIMATELY 100 FEET NORTH FROM THE INTERSECTION OF COMMERCE ST

ELEV. 26.56 FEET NAVD 1988 (GEOID '18)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED NOVEMBER 8, 2025.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 210045) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988, (GEOID '18) IS 0.21'

NAVD 1988, 2001 ADJ. ELEVATION
= NAVD 1988 (GEOID '18) ELEVATION - 0.21 FT

NOTE:

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

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

LEGEND:

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

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)

POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION	ALIGNMENT
B-11	13,845,553.92	3,122,802.50	13,843,754.23	3,122,396.59	26.58'	–	–	SET "X" CUT ON CONC.	WASHINGTON AVE
B-12	13,845,594.91	3,122,957.75	13,843,795.22	3,122,551.82	26.28'	2+27.29	20.49L	SET MAG W/ SHINER	WASHINGTON AVE
B-13	13,845,570.47	3,123,256.80	13,843,770.78	3,122,850.83	25.94'	5+25.02	1.87R	SET "X" CUT ON CONC.	WASHINGTON AVE
B-14	13,845,725.50	3,123,284.03	13,843,925.79	3,122,878.06	22.04'	3+45.39	29.16R	SET MAG W/ SHINER	MILAM ST
B-15	13,845,833.55	3,123,308.86	13,844,033.83	3,122,902.89	18.38'	4+53.14	32.47R	SET MAG W/ SHINER	MILAM ST
B-16	13,846,125.11	3,123,325.24	13,844,325.35	3,122,919.26	22.21'	2+07.07	11.66R	SET "X" CUT ON CONC.	GIRARD ST
B-17	13,846,096.67	3,123,565.31	13,844,296.92	3,123,159.30	31.91'	4+46.62	20.94L	SET "X" CUT ON CONC.	GIRARD ST
B-18	13,846,053.48	3,123,711.28	13,844,253.73	3,123,305.25	32.10'	5+98.75	15.69L	SET "X" CUT ON CONC.	GIRARD ST
B-19	13,845,975.40	3,123,946.24	13,844,175.66	3,123,540.19	31.93'	8+45.60	7.83R	SET MAG W/ SHINER	GIRARD ST
B-20	13,845,889.69	3,124,047.94	13,844,089.96	3,123,641.87	33.17'	9+63.03	70.27R	FIND MAG W/ SHINER	GIRARD ST
B-22	13,846,059.15	3,123,941.97	13,844,259.40	3,123,535.91	31.29'	8+23.84	73.16L	SET "X" CUT ON CONC.	GIRARD ST
B-405	13,845,514.40	3,122,854.07	13,843,714.72	3,122,448.15	26.70'	1+02.38	20.92R	SET "X" CUT ON CONC.	WASHINGTON AVE

DESIGN BASELINE POINTS DATA

POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,845,532.26	3,122,842.92	13,843,732.58	3,122,437.01
C-2	4+79.04	13,845,582.21	3,123,212.40	13,843,782.52	3,122,806.44
C-3	5+28.07	13,845,571.49	3,123,260.23	13,843,771.80	3,122,854.26
C-4	1+00.00	13,845,497.76	3,123,183.93	13,843,698.08	3,122,777.97
C-5	2+20.77	13,845,612.20	3,123,222.51	13,843,812.51	3,122,816.54
C-6	4+06.39	13,845,791.84	3,123,268.93	13,843,992.12	3,122,862.96
C-7	5+12.56	13,845,897.07	3,123,282.35	13,844,097.34	3,122,876.38
C-8	8+70.00	13,846,233.16	3,123,178.89	13,844,433.38	3,122,772.93
C-9	1+00.00	13,846,163.22	3,123,224.50	13,844,363.45	3,122,818.53
C-10	6+82.73	13,846,017.26	3,123,788.65	13,844,217.51	3,123,382.61
C-11	10+00.00	13,845,950.63	3,124,098.85	13,844,150.90	3,123,692.77

LAN

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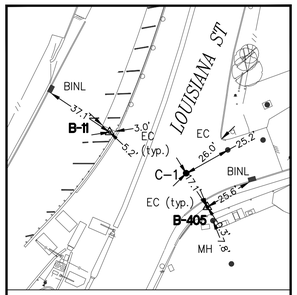
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

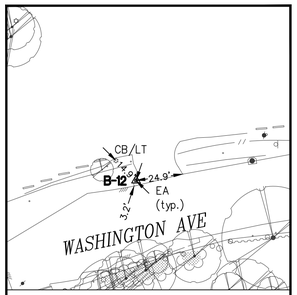
UNIVERSITY OF HOUSTON-DOWNTOWN SSO ELIMINATION

SURVEY CONTROL MAP
(SHEET 1 OF 2)

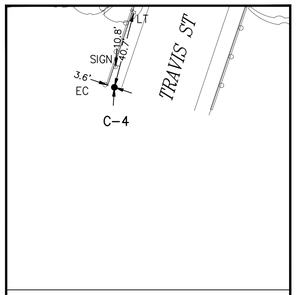
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
NIEL BARNSDALE, P.E.	
SHEET NO. 8 OF 57	



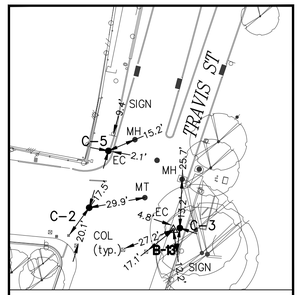
C–1 & T.B.M. B–11 & B–405



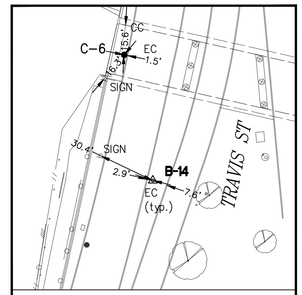
T.B.M. B–12



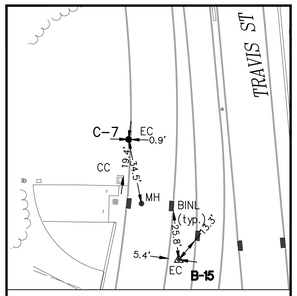
C–4



C–2, C–3, C–5 & T.B.M. B–13



C–6 & T.B.M. B–14



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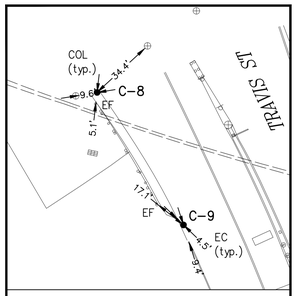

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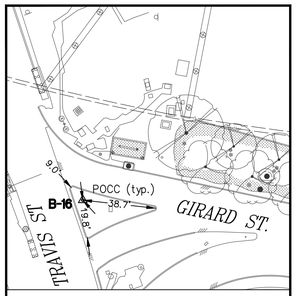

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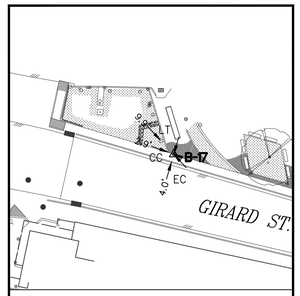

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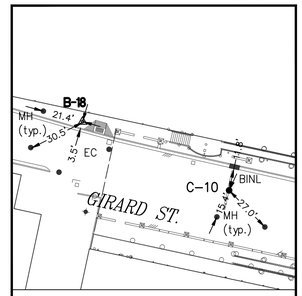
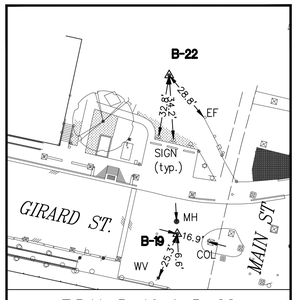
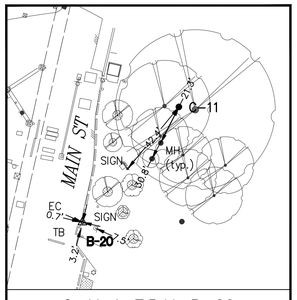


C–10 & T.B.M. B–16



T.B.M. B–19 & B–22



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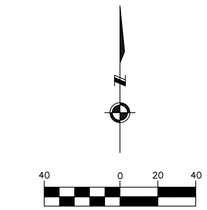

EXIST. TOPOGRAPHIC LEGEND

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

ABBREVIATIONS

FH – FIRE HYDRANT
FC – FENCE CORNER
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
WM – WATER METER
BINL – BB INLET
CB/LT – CONCRETE SLAB / LIGHT
COL – COLUMN
CC – CONCRETE CORNER
EF – EDGE OF FENCE
POCC – POINT OF CURVE OF CONCRETE
TB – TELECOM BOX

NO.	DATE	REVISION	APP.

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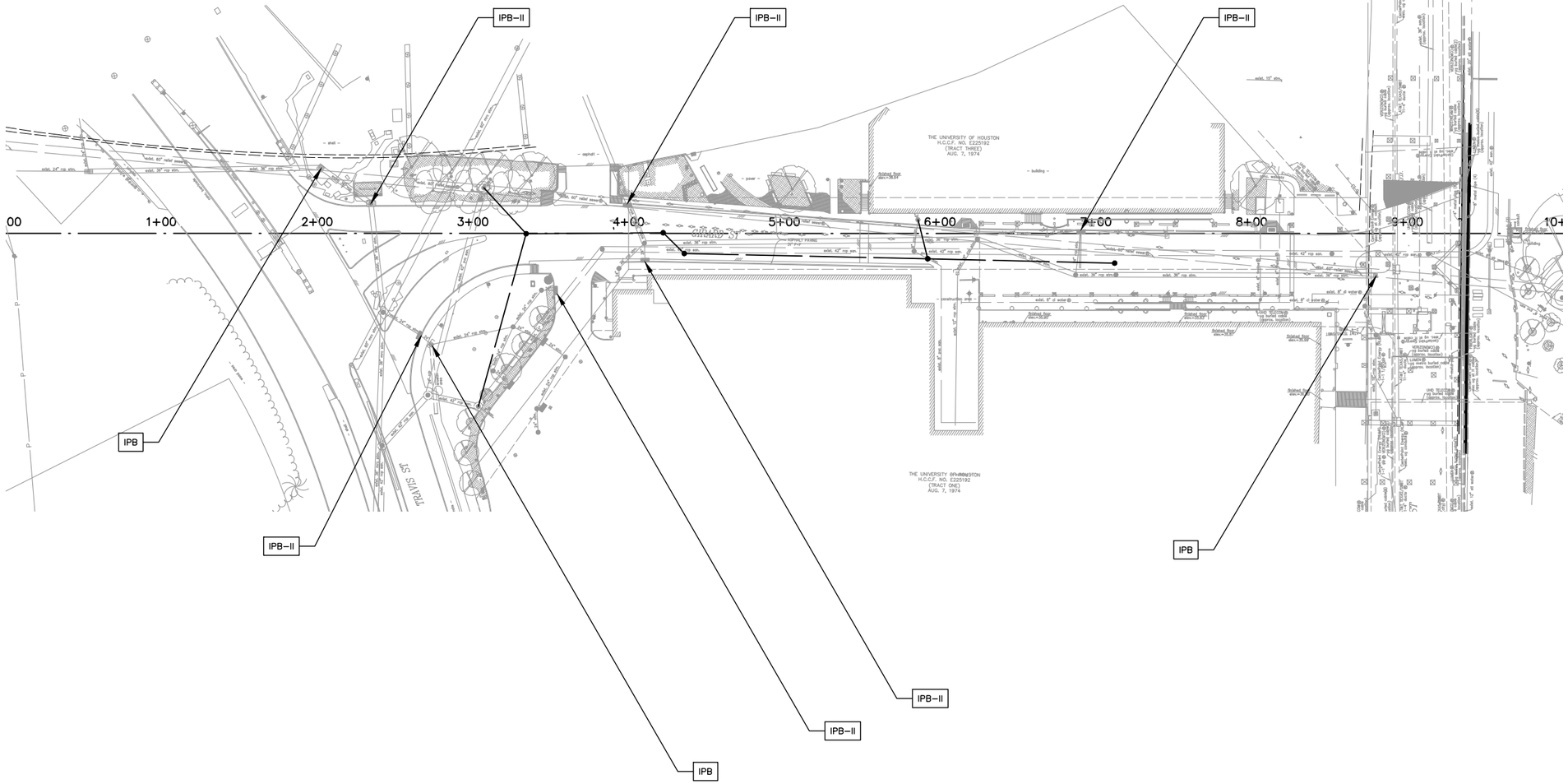
SURVEY CONTROL MAP
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000536–0035–3	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
NIEL BARNSDALE, P.E.	
SHEET NO. 9 OF 57	



0 10 20 40 80 100

HALF SIZE | HORIZ: 1"=80' VERT: 1"=8'
FULL SIZE | HORIZ: 1"=40' VERT: 1"=4'

NO.	DATE	REVISION	APP.

LEGEND

- LIMITS OF REINFORCED FILTER FABRIC BARRIER (RFB)
- IPB–II — INLET PROTECTION BARRIER FOR STAGE II INLET
- IPB — HAY BALE INLET PROTECTION BARRIER

ZARINKELK ENGINEERING SERVICES, INC.
617 Caroline St.
Houston, TX 77002
Phone (832) 242-2426
FAX (832) 242-2445
TEXAS REGISTRATION NO: F-4270

SURVEYED BY: MBCO ENGINEERING, LLC
FB NO. 000000

FOR INTERIM REVIEW ONLY

DOCUMENT INCOMPLETE:
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ENGINEER: MICHAEL BAGSTAD, P.E.
P.E. SERIAL No. 81193
DATE: 4/24/2026

WRIGHTWOOD SOS ELIMINATION

STORM WATER POLLUTION PREVENTION PLAN

GIRARD STREET

STA 00+00.00 TO STA 10+00.00

WBS NUMBER
R-000536-0035-3
DRAWING SCALE
CITY OF HOUSTON PM
SAMSON D'SILVA, P.E.
SHEET NO. 10 OF 57

PLOTTED: 4/24/2026 4:53 PM
PLOT STYLE: LAN-COH.ctb
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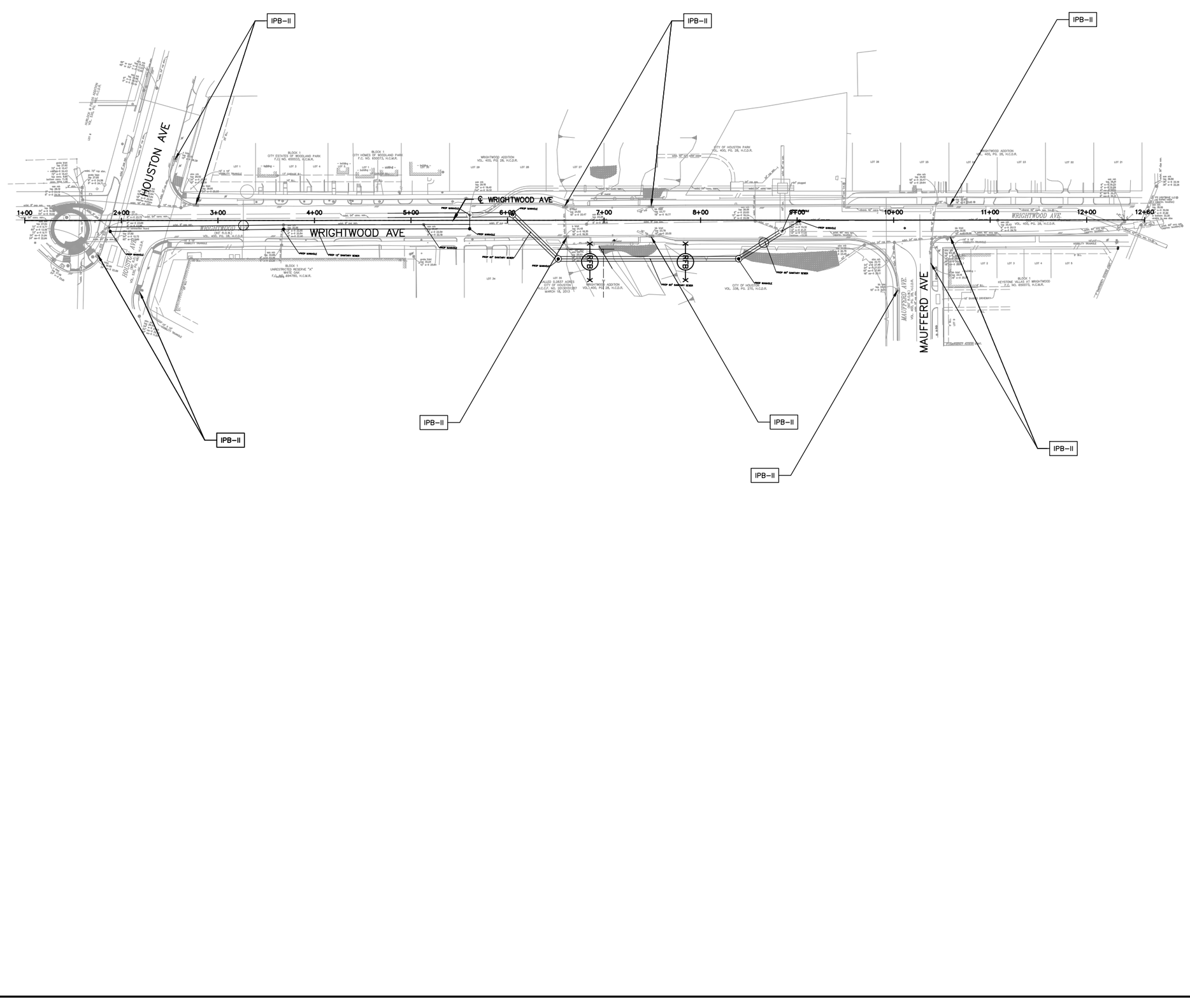

0 25 50 100 150

HALF SIZE HORIZ: 1"=100' VERT: 1"=10'
FULL SIZE HORIZ: 1"=50' VERT: 1"=5'

NO.	DATE	REVISION	APP.

LEGEND

- LIMITS OF REINFORCED FILTER FABRIC BARRIER
- IPB–II — INLET PROTECTION BARRIER FOR STAGE II INLET
- IPB — HAY BALE INLET PROTECTION BARRIER

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ENGINEER: MICHAEL BAGSTAD, P.E.
P.E. SERIAL No. 81193
DATE: 4/24/2026

WRIGHTWOOD SOS ELIMINATION
STORM WATER POLLUTION PREVENTION PLAN

WRIGHTWOOD AVE
STA 00+00.00 TO STA 12+60.00

WBS NUMBER
R-000536-0035-3
DRAWING SCALE
CITY OF HOUSTON PM
SAMSON D'SILVA, P.E.
SHEET NO. 11 OF 57

PLOTTED: 4/24/2026 4:53 PM
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PLOT STYLE: LAN-COH.ctb
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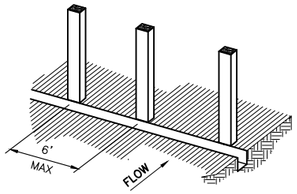
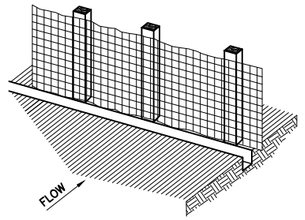
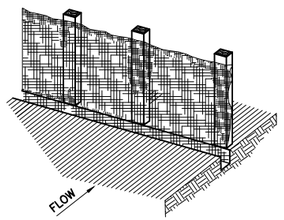
1. SET POSTS AND EXCAVATE 4"x4" TRENCH UPSLOPE ALONG LINE OF POSTS (SEE NOTE 1).



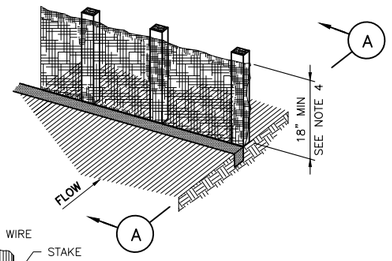
2. SECURE WIRE REINFORCING TO POSTS (SEE NOTE 2).

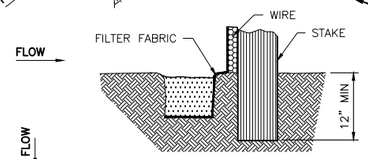


3. ATTACH FILTER MATERIAL TO WIRE REINFORCING AND EXTEND IT INTO THE TRENCH (SEE NOTE 3).

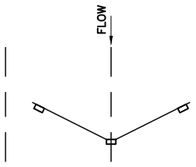


4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

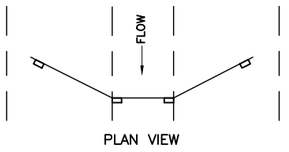




SECTION A–A
EXTENSION OF FABRIC INTO TRENCH

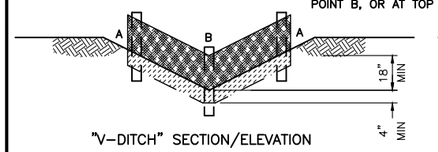


PLAN VIEW

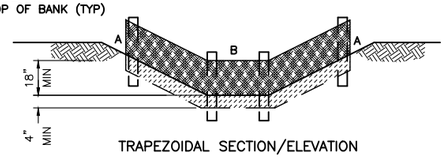


PLAN VIEW

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



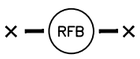
"V–DITCH" SECTION/ELEVATION



TRAPEZOIDAL SECTION/ELEVATION

CONSTRUCTION NOTES:

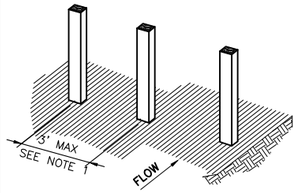
1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE COH STANDARD SPECIFICATION 01570 FOR FILTER FABRIC BARRIER.



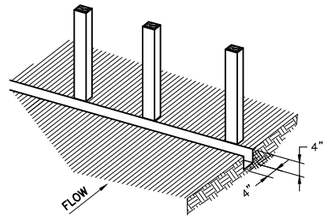
SYMBOL

REINFORCED FILTER FABRIC BARRIER

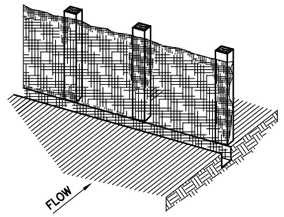
1. SET POSTS AT REQUIRED SPACING.



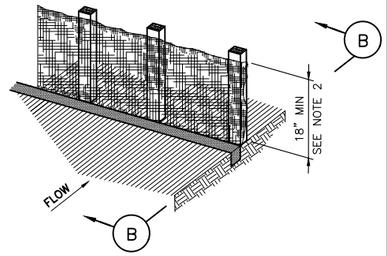
2. EXCAVATE A 4"x4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.

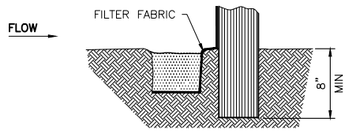


3. ATTACH FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.

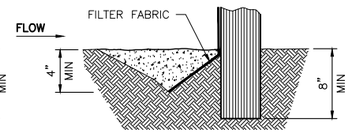


4. BACKFILL AND COMPACT THE EXCAVATED SOIL.





SECTION B–B
EXTENSION OF FABRIC INTO TRENCH



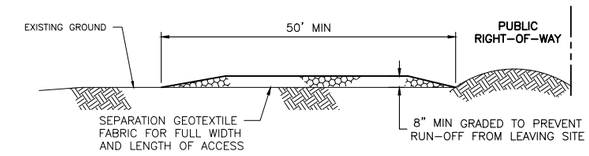
SECTION B–B
ALTERNATE
V–TRENCH EXTENSION OF FABRIC INTO TRENCH

CONSTRUCTION NOTES:

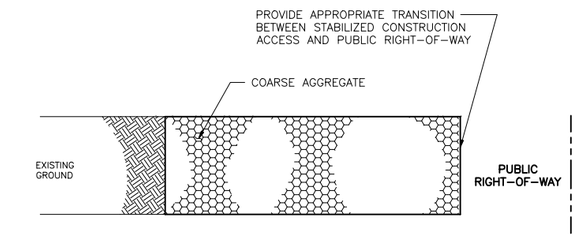
1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL HAVE A MIN HEIGHT OF 18 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 01570 FOR FILTER FABRIC BARRIER.

SYMBOL

FILTER FABRIC BARRIER



PROFILE



PLAN VIEW

CONSTRUCTION NOTES:

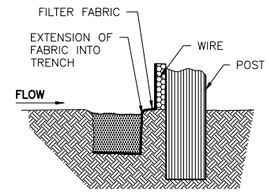
1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION ACCESS, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE WASHING AREA.
6. COH STANDARD SPECIFICATION 01575 FOR STABILIZED CONSTRUCTION ACCESS.
7. STABILIZED CONSTRUCTION ACCESS SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.

SYMBOL

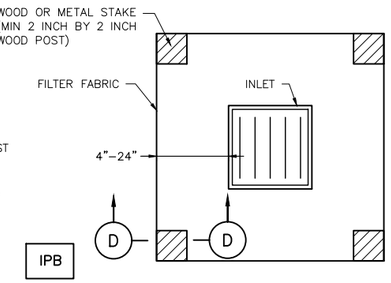
STABILIZED CONSTRUCTION ACCESS

CONSTRUCTION NOTES:

1. SEE CONSTRUCTION NOTES FOR RFB.



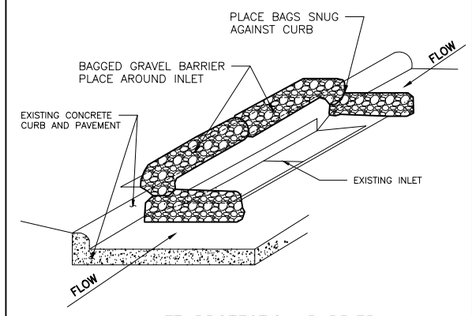
SECTION D–D



SYMBOL

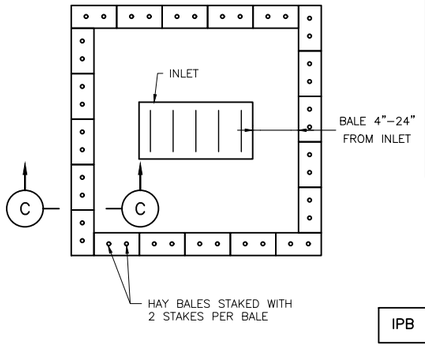
PLAN VIEW

SILT FENCE INLET PROTECTION BARRIER



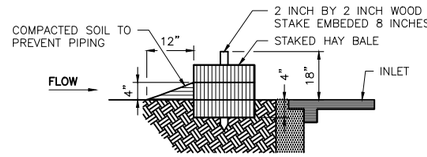
INLET PROTECTION BARRIER

(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER



PLAN VIEW

SYMBOL



SECTION C–C

HAY BALE INLET PROTECTION BARRIER

NO.	DATE	REVISION	APP.

SWTP
Southeast Water Transmission Program
MAR–02–2026 01570–01

ZARINKELK ENGINEERING SERVICES, INC.
617 Caroline St.
Houston, TX 77002
Phone (832) 242-2426
FAX (832) 242-2445
TEXAS REGISTRATION NO: F-4270

SURVEYED BY: MBCO ENGINEERING, LLC
FB NO. 000000

FOR INTERIM REVIEW ONLY

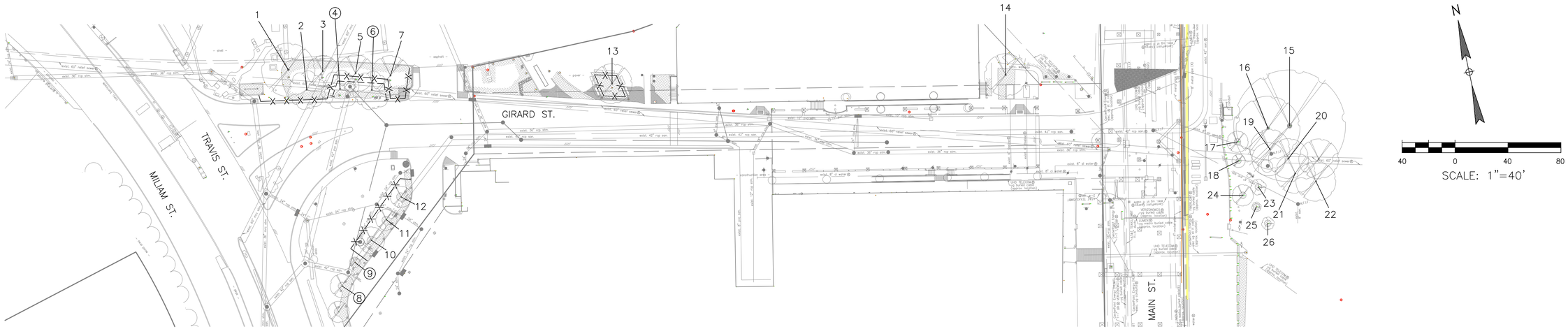
DOCUMENT INCOMPLETE: NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

ENGINEER: MICHAEL BAGSTAD, P.E.
P.E. SERIAL No. 81193
DATE: 4/24/2026

WRIGHTWOOD SOS ELIMINATION

STORMWATER POLLUTION PREVENTION PLAN DETAILS

WBS NUMBER	
R–000536–0035–3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
SAMSON D'SILVA, P.E.	
SHEET NO. 12 OF 57	



Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Girard Street					
1	315 N Main	16" Live Oak	Protected	Crowded	Fence
2	315 N Main	17" Crepe Myrtle	Not protected		Fence
3	315 N Main	12" Live Oak	Protected	Crowded	Root prune for manhole, Fence, Clearance prune
4	315 N Main	16" Crepe Myrtle	Not protected	Remove for manhole	Remove tree, No mitigation/replacement required
5	315 N Main	15" Live Oak	Protected	Crowded	Root prune for manhole, Fence, Clearance prune
6	315 N Main	16" Crepe Myrtle	Not protected	Remove for manhole	Remove tree, No mitigation/replacement required
7	315 N Main	18" Live Oak	Protected	Crowded	Root prune for manhole, Fence, Clearance prune
8	315 N Main	9" Live Oak	Protected	Remove for manhole	Remove tree, Provide 9" in mitigation/replacement
9	315 N Main	4" Live Oak	Protected	Remove for walk	Remove tree, Provide 4" in mitigation/replacement
10	315 N Main	11" Live Oak	Protected		Fence
11	315 N Main	9" Live Oak	Protected		Fence
12	315 N Main	9" Live Oak	Protected		Fence
13	315 N Main	15" Live Oak	Protected	Restricted Growspace	Fence
14	315 N Main	17" Magnolia	Protected	Not impacted	
15	White Oak Bayou Greenway	26" Arizona Ash	Protected	Not impacted	
16	White Oak Bayou Greenway	12" Mulberry	Not protected		
17	White Oak Bayou Greenway	7" Baldcypress	Protected	Not impacted	
18	White Oak Bayou Greenway	7" Baldcypress	Protected	Not impacted	
19	White Oak Bayou Greenway	15" Mulberry	Not protected		
20	White Oak Bayou Greenway	14" Shumard Oak	Protected	Not impacted	
21	White Oak Bayou Greenway	12" Shumard Oak	Protected	Not impacted	
22	White Oak Bayou Greenway	18" Arizona Ash	Not protected		
23	White Oak Bayou Greenway	4" Crepe Myrtle	Not protected		
24	White Oak Bayou Greenway	7" Baldcypress	Protected	Not impacted	
25	White Oak Bayou Greenway	6" Crepe Myrtle	Not protected		
26	White Oak Bayou Greenway	6" Crepe Myrtle	Not protected		

NOTE:

1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED JANUARY 2026. 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.

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- –X–X– — TREE PROTECTION FENCE
- ⊢ – – ⊣ — ROOT PRUNING TRENCH

NO.	DATE	REVISION	APP.

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

APPROVED:

LAN
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042
WWW.LAN-INC.COM
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P–6408

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

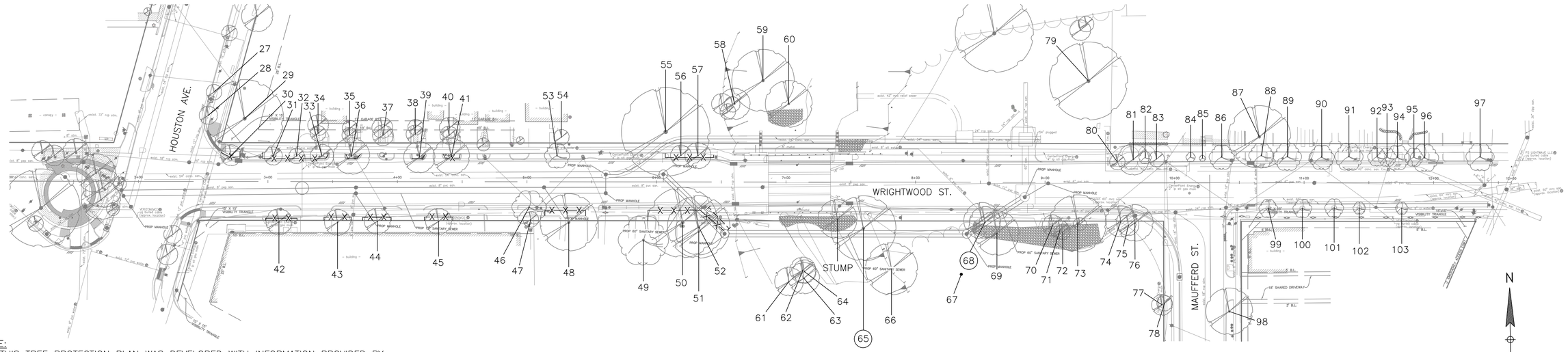
WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

TREE PROTECTION PLAN

SHEET 1 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000536–0035–3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
NIEL BARNSDALE, P.E.	
SHEET NO. 13 OF 57	

C:\Users\Ned\Desktop\UPCOMING PROJECTS\LAN WRIGHTWOOD\LAN WRIGHTWOOD TP-1.dwg plotted on Apr 20, 2026 – 5:32pm



NOTE:

1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED MARCH 2026. 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.

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Wrightwood Street					
27	1424 Wrightwood	7" Live Oak	Protected	Not impacted	
28	1424 Wrightwood	9" Live Oak	Protected	Not impacted	
29	1424 Wrightwood	28" Pecan	Protected	Not impacted	
30	1424 Wrightwood	10" Mexican Sycamore	Protected	Topped by CPE	Fence, Clearance prune
31	1424 Wrightwood	9" Mexican Sycamore	Protected	Topped by CPE	Fence, Clearance prune
32	1424 Wrightwood	7" Mexican Sycamore	Protected	Topped by CPE	Fence, Clearance prune
33	1424 Wrightwood	12" Mexican Sycamore	Protected	Topped by CPE	Fence, Clearance prune
34	1420 Wrightwood	7" Japanese Blueberry	Not protected	Private tree	
35	1420 Wrightwood	5" Japanese Blueberry	Not protected	80% dieback, Private tree	
36	1416 Wrightwood	14" Mexican Sycamore	Protected	Topped by CPE	Fence, Clearance prune
37	1416 Wrightwood	9" Japanese Blueberry	Not protected	Private tree	
38	1412 Wrightwood	8" Japanese Blueberry	Not protected	Private tree	
39	1412 Wrightwood	13" Mexican Sycamore	Protected	Topped by CPE	Fence, Clearance prune
40	1410 Wrightwood	6" Japanese Blueberry	Not protected	Private tree	
41	1408 Wrightwood	13" Mexican Sycamore	Protected	Topped by CPE	Fence, Clearance prune
42	2520 Houston Ave	11" Live Oak	Protected	New construction impacts, poor condition	Fence, Clearance prune
43	2520 Houston Ave	10" Live Oak	Protected	New construction impacts, poor condition	Fence, Clearance prune
44	2520 Houston Ave	12" Live Oak	Protected	New construction impacts, poor condition	Fence, Clearance prune
45	2520 Houston Ave	12" Live Oak	Protected	New construction impacts, poor condition	Fence, Clearance prune
46	1405 Wrightwood	10" Crepe Myrtle	Not protected		
47	1405 Wrightwood	2" Mulberry	Protected		Fence
48	1405 Wrightwood	23" Pecan	Protected	Corridor Tree	Fence
49	1403 Wrightwood	22" Crepe Myrtle	Not protected	Private tree	
50	N/A	19" American Elm	Protected	Corridor Tree	Fence, Clearance prune
51	N/A	14" Green Ash	Not protected	Private tree	Fence, Clearance prune, Root prune for sewer line
52	N/A	16" Chinaberry	Not protected	Private tree	Fence, Clearance prune, Root prune for sewer line
53	1404 Wrightwood	14" Crepe Myrtle	Not protected		
54	1404 Wrightwood	7" Live Oak	Not protected	Private tree	
55	N/A	37" Chinaberry	Not protected	Private tree, Poor, Decay	
56	N/A	9" Red Maple	Protected	Topped by CPE, Trunk decay	Fence, Clearance prune
57	N/A	11" Red Maple	Protected	Topped by CPE, Trunk decay	Fence, Clearance prune
58	N/A	15" Sugarberry	Not protected	Private tree	
59	N/A	27" Sycamore	Protected	Corridor Tree, Broken top, Not impacted	
60	N/A	17" Green Ash	Not protected	Private tree	
61	N/A	10" Sugarberry	Not protected	Private tree	
62	N/A	18" Sycamore	Protected	Private tree, Not impacted	
63	N/A	16" Box Elder	Not protected	Private tree, Not impacted	
64	N/A	14" Sycamore	Not protected	Private tree, Not impacted	
65	N/A	25" Box Elder	Not protected	Large trunk wound, Easement tree, Remove for sanitary	Remove tree, No mitigation/replacement required
66	N/A	23" Box Elder	Not protected	Private tree, Not impacted	
67	N/A	43" Sycamore	Protected	Corridor tree, Broken top, Not impacted	
68	N/A	9" Chinaberry	Not protected	Remove for sanitary	Remove tree, No mitigation/replacement required
69	N/A	16" Tallow	Not protected	Private tree	Clearance prune
70	N/A	10" Mulberry	Not protected	Private tree, Not impacted	
71	N/A	8" China Berry	Not protected	Private tree, Not impacted	
72	N/A	8" China Berry	Not protected	Private tree, Not impacted	
73	N/A	14" China Berry	Not protected	Private tree, Not impacted	
74	N/A	14" China Berry	Not protected	Private tree, Not impacted	
75	N/A	12" Box Elder	Not protected	Private tree, Not impacted	
76	N/A	15" China Berry	Not protected	Private tree, Not impacted	
77	N/A	10" Sugarberry	Not protected	Private tree, Not impacted	
78	N/A	7" Pecan	Protected	Not impacted, Topped	
79	N/A	23" Chinaberry	Not protected	Private tree, Not impacted	
80	N/A	4" Lead Tree	Not protected	Not impacted	
81	N/A	5" Crepe Myrtle	Not protected	Not impacted	
82	N/A	5" Crepe Myrtle	Not protected	Not impacted	
83	N/A	5" Crepe Myrtle	Not protected	Not impacted	
84	1220 Wrightwood	4" Crepe Myrtle	Not protected	Not impacted	
85	1220 Wrightwood	4" Crepe Myrtle	Not protected	Not impacted	
86	1220 Wrightwood	13" Crepe Myrtle	Not protected	Not impacted	
87	1218 Wrightwood	21" Live Oak	Protected	Corridor Tree, Private tree, Not impacted	
88	1218 Wrightwood	16" Crepe Myrtle	Not protected		
89	1218 Wrightwood	16" Crepe Myrtle	Not protected		
90	1216 Wrightwood	15" Crepe Myrtle	Not protected		
91	1216 Wrightwood	15" Crepe Myrtle	Not protected		
92	1214 Wrightwood	13" Crepe Myrtle	Not protected		
93	1214 Wrightwood	13" Crepe Myrtle	Not protected		
94	1214 Wrightwood	13" Crepe Myrtle	Not protected		
95	1214 Wrightwood	13" Crepe Myrtle	Not protected		
96	1214 Wrightwood	13" Crepe Myrtle	Not protected		
97	1212 Wrightwood	16" Crepe Myrtle	Not protected		
98	2400 Maufferd	14" Live Oak	Protected	Stump sprouts, Not impacted	
99	2400 Maufferd	14" Crepe Myrtle	Not protected		
100	1200 Wrightwood	14" Crepe Myrtle	Not protected		
101	1209 Wrightwood	14" Crepe Myrtle	Not protected		
102	1215 Wrightwood	14" Crepe Myrtle	Not protected		
103	1205 Wrightwood	14" Crepe Myrtle	Not protected		

NO.	DATE	REVISION	APP.

40 0 40 80

SCALE: 1"=40'

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- –X–X– — TREE PROTECTION FENCE
- ⊢ — — ⊣ — ROOT PRUNING TRENCH

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

APPROVED:

LAN
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042
WWW.LAN-INC.COM
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P–6408

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

TREE PROTECTION PLAN

SHEET 2 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000536–0035–3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
NIEL BARNSDALE, P.E.	
SHEET NO. 14 OF 57	

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Tree Removal List

Tree No.	Location	Description	Replacement requirement
4	315 N Main	16" Crepe Myrtle	0
6	315 N Main	16" Crepe Myrtle	0
8	315 N Main	9" Live Oak	9
9	315 N Main	4" Live Oak	4
65	N/A	25" Box Elder	0
68	N/A	9" Chinaberry	0
		TOTAL REPLACEMENT INCHES REQUIRED	**13**

Tree Replacement List

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

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

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

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

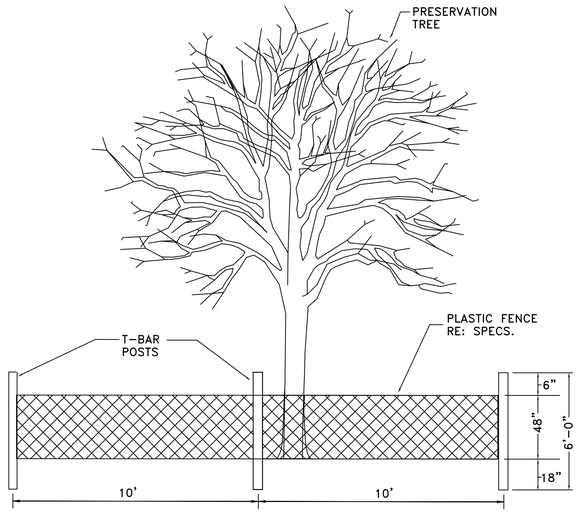
Cash Allowance Due Parks from HPW for Balance of Mitigation Not Planted on Project

	Required Mitigation total	Mitigation rate/inch	
0-5.99"	4	$ 297.98	$ 1,191.92
6-11.99"	9	496.64	$ 4,469.76
12" +		662.19	$ -
		TOTAL REQUIRED MITIGATION FEE	**$ 5,661.68**

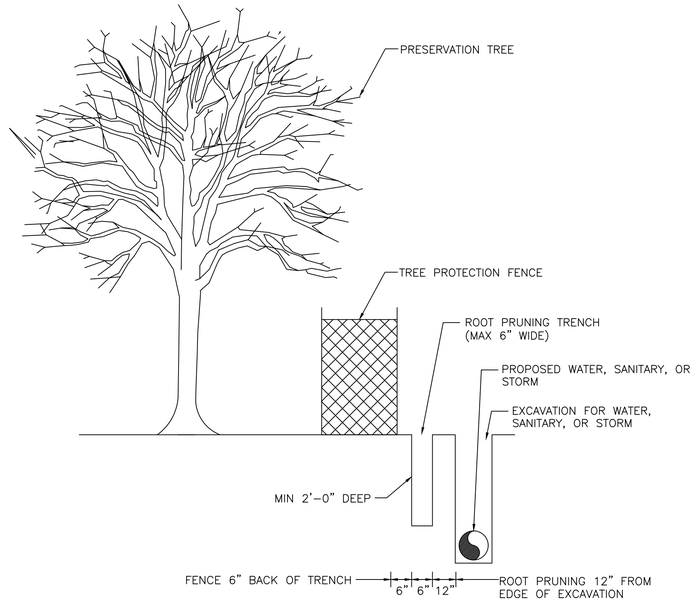
Arboriculturally Significant Tree List

Tree No.	Location	Description
29	1424 Wrightwood	28" Pecan
55	N/A	37" Chinaberry
59	N/A	27" Sycamore
65	N/A	25" Box Elder
67	N/A	43" Sycamore

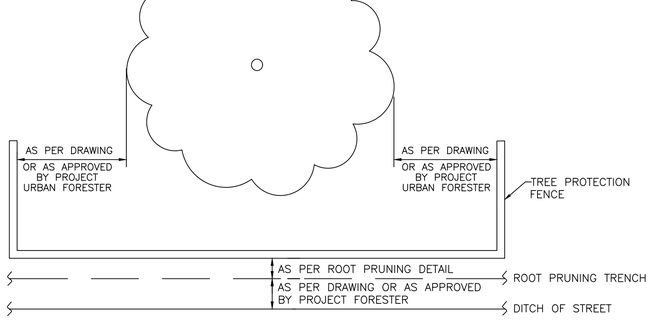
Trees Identified by City of Houston Forestry/Parks & Recreation Department as Arboriculturally Significant are identified here and/or in treatment schedule included on TPP sheets. Arboriculturally Significant trees are to be pruned under direct supervision of City of Houston Forestry. Minimal pruning 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.



TREE PROTECTION FENCING DETAIL A
NOT TO SCALE



ROOT PRUNE FOR WATER, SANITARY, OR STORM LINE
NOT TO SCALE



TREE PROTECTION FENCING DETAIL B
NOT TO SCALE

NO.	DATE	REVISION	APP.

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

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TEXAS REGISTERED ENGINEERING FIRM F-2614

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FB NO. P-6408

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

TREE PROTECTION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000536-0035-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
NIEL BARNSDALE, P.E.	
SHEET NO.15 OF 57	

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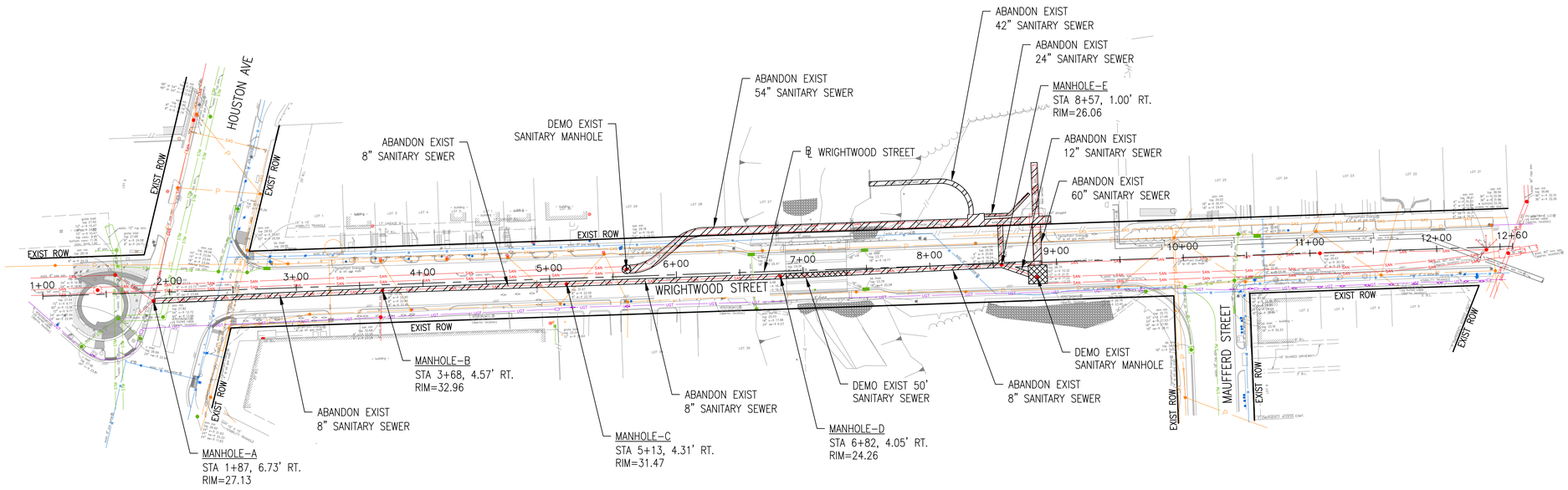
PLOT STYLE: KAI-COH Color.ctb PLOTTED: 4/24/2026 4:27 PM
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\DEMOLITION-Wrightwood St.dwg



LEGEND:

GROUT AND ABANDON EXIST SANITARY SEWER

DEMO SANITARY SEWER

N

0' 50' 100'
SCALE IN FEET

NO.	DATE	REVISION	APP.

BENCHMARK:
CITY OF HOUSTON MONUMENT 5358-8507, A BRASS DISK CONCRETE, LOCATED APPOXIMATELY 650 FEET SOUTH FROM THE INTERSECTION OF HOUSTON AVE. AND WHITE OAK DR ON THE EAST SIDE OF BRIDGE.

ELEV.43.57 FEET NAVD 1988 (GEOID '18)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2025.

VERTICAL DATUM ADJUSTMENT.

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARKS (RM 050010) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM 1988, (GEOID '18) IS 0.31' NAVD 1988, 2001 ADJ. ELEVATION=NAVD 1988 (GEOID '18) ELEVATION – 0.31 FT

T.B.M #1:

SET "X" CUT ON CONCRETE LOCATED ON THE WEST SIDE OF THE INTERSECTION OF HOUSTON AVE WRIGHTWOOD BLVD.
ELEV. 27.88 FEET

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASE ON TEXAS STATE PLANE COORDINATES SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

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Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

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91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

DEMOLITION PLAN WRIGHTWOOD STREET

NOTES:

1. REMOVE TOP 4 FEET OF EXISTING SANITARY SEWER MANHOLE.
2. GROUT AND ABANDONMENT TO FOLLOW THE INSTALLATION AND ACTIVATION OF PROP 6", 12" & 60" SANITARY SEWER LINE.
3. SEE SPECIFICATION 02222 FOR GROUT AND ABANDONMENT PROCEDURES.

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
1"=50'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 16 OF 57	

PLOTTED: 4/24/2026 4:27 PM
PLOT STYLE: KAI-COH Color.ctb
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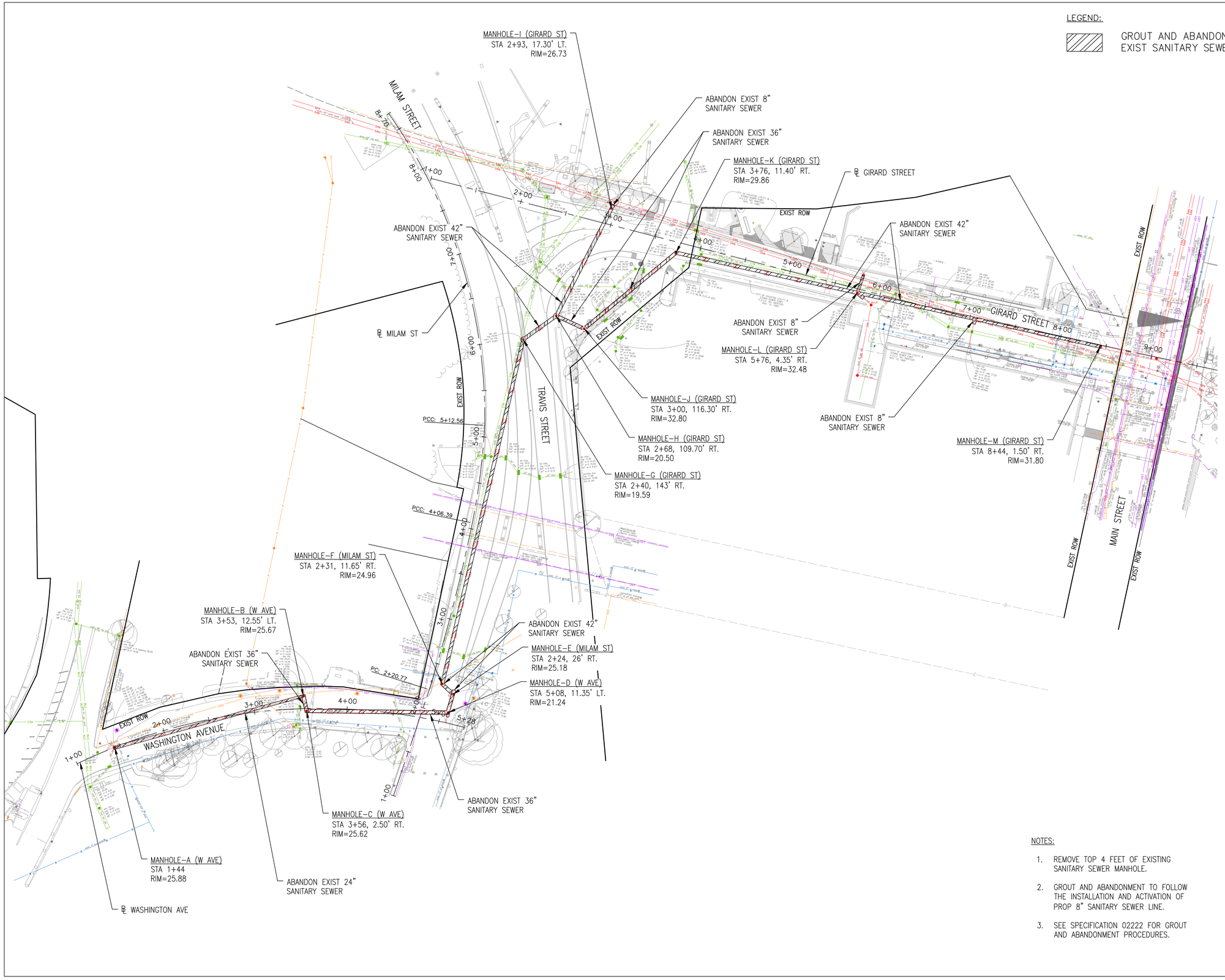

LEGEND:

GROUT AND ABANDON EXIST SANITARY SEWER

0' 50' 100'
SCALE IN FEET

N

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CITY OF HOUSTON MONUMENT 5358-8507, A BRASS DISK CONCRETE, LOCATED APPOXIMATELY 650 FEET SOUTH FROM THE INTERSECTION OF HOUSTON AVE. AND WHITE OAK DR ON THE EAST SIDE OF BRIDGE.

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SET "X" CUT ON CONCRETE LOCATED ON THE WEST SIDE OF THE INTERSECTION OF HOUSTON AVE WRIGHTWOOD BLVD.
ELEV. 27.88 FEET

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NOTES:

1. REMOVE TOP 4 FEET OF EXISTING SANITARY SEWER MANHOLE.
2. GROUT AND ABANDONMENT TO FOLLOW THE INSTALLATION AND ACTIVATION OF PROP 8" SANITARY SEWER LINE.
3. SEE SPECIFICATION 02222 FOR GROUT AND ABANDONMENT PROCEDURES.

NO.	DATE	REVISION	APP.

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91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

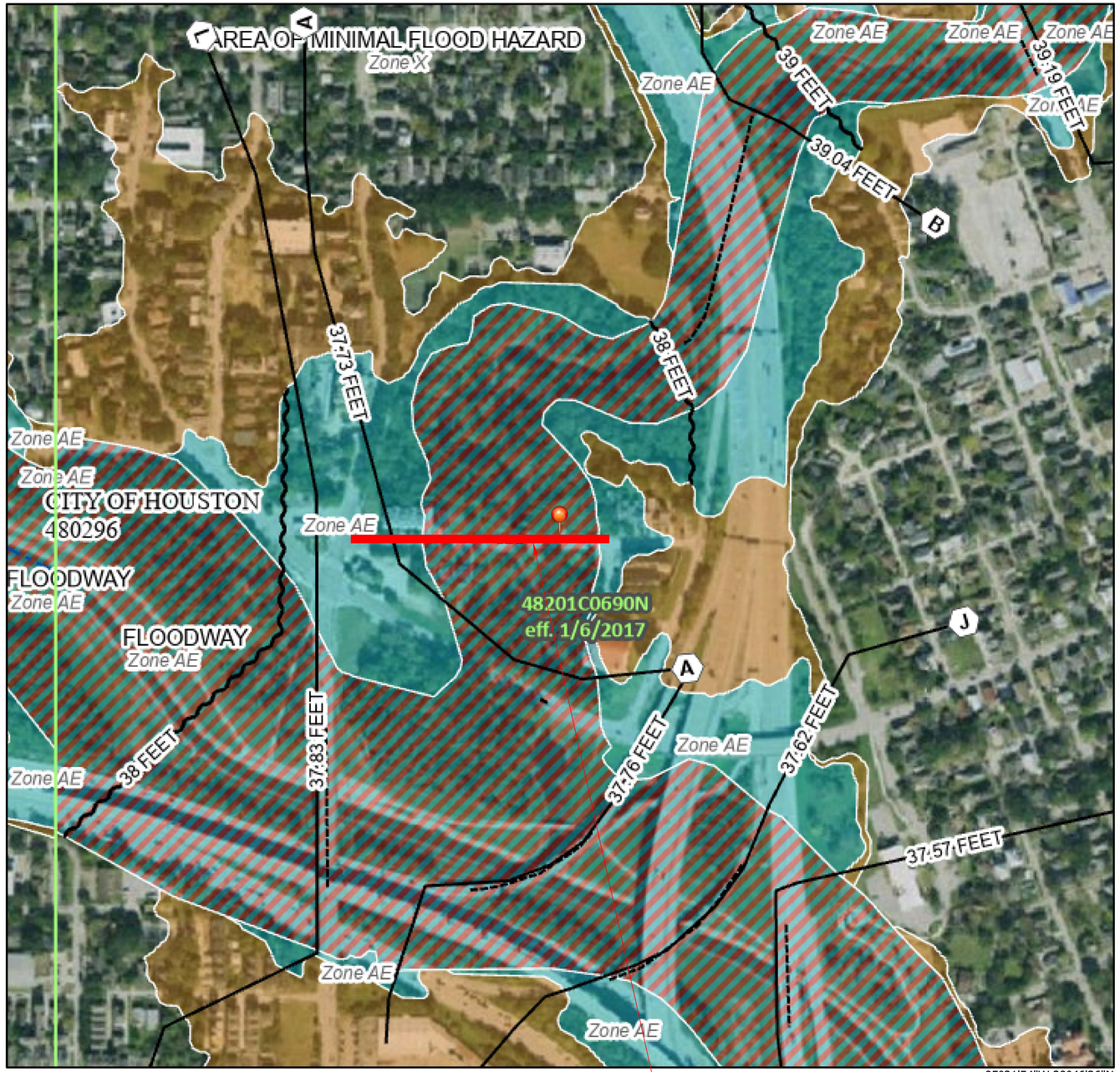
WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

DEMOLITION PLAN
GIRARD STREET, MILAM STREET AND WASHINGTON AVENUE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
1"=50'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 17 OF 57	

National Flood Hazard Layer FIRMette

95°22'32"W 29°47'7"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

95°21'54"W 29°46'36"N

Basemap Imagery Source: USGS National Map 2023

Project Location

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/28/2026 at 9:05 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NO.	DATE	REVISION	APP.

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3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

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Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

WRIGHTWOOD STREET FLOODPLAIN MAP

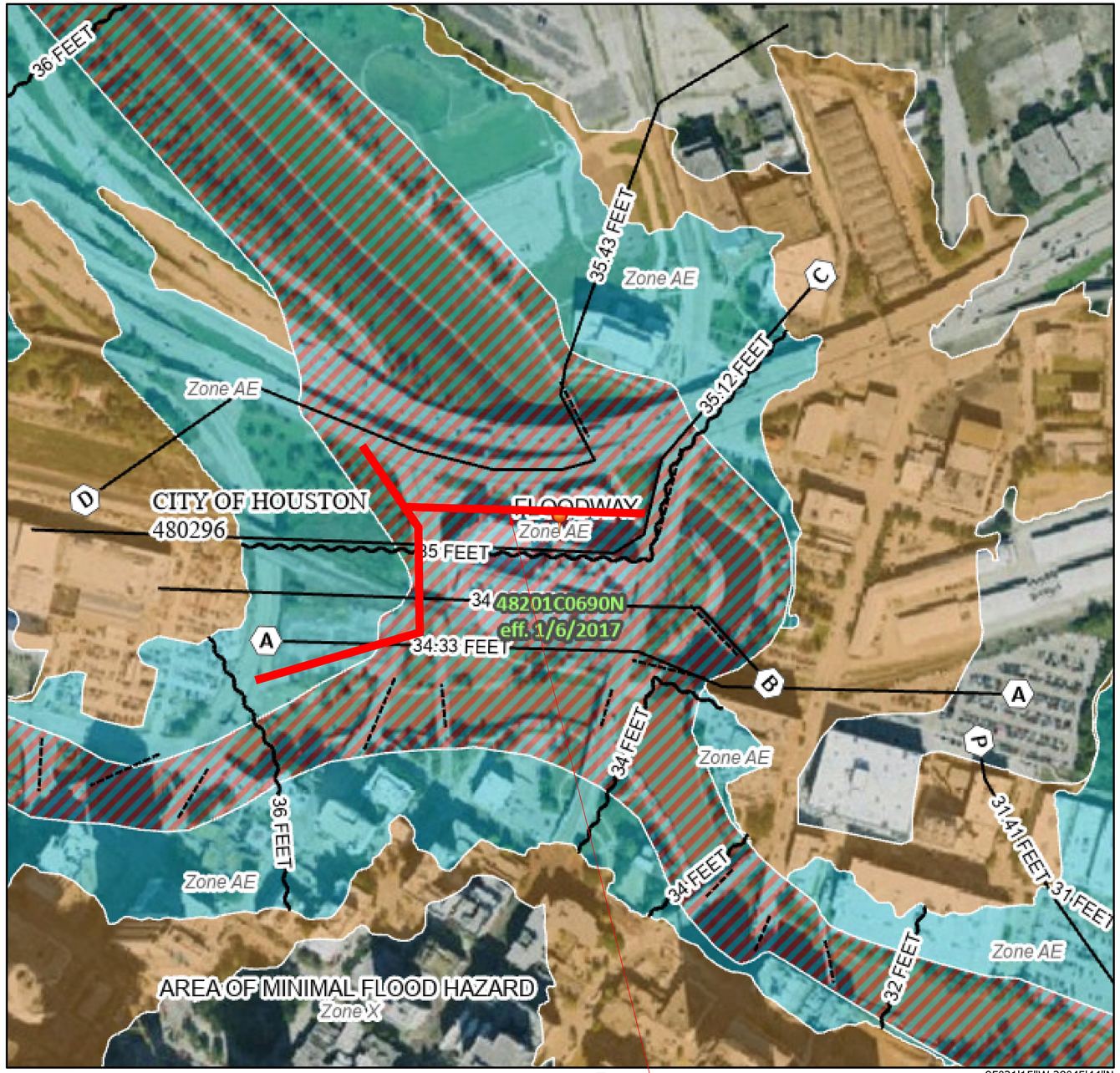
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 18 OF 57	

PLOTTED: 4/24/2026 4:27 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Fema Maps.dwg

National Flood Hazard Layer FIRMette

FEMA

95°21'53"W 29°46'15"N



95°21'15"W 29°45'44"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

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SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
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- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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NO.	DATE	REVISION	APP.

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04/15/2026
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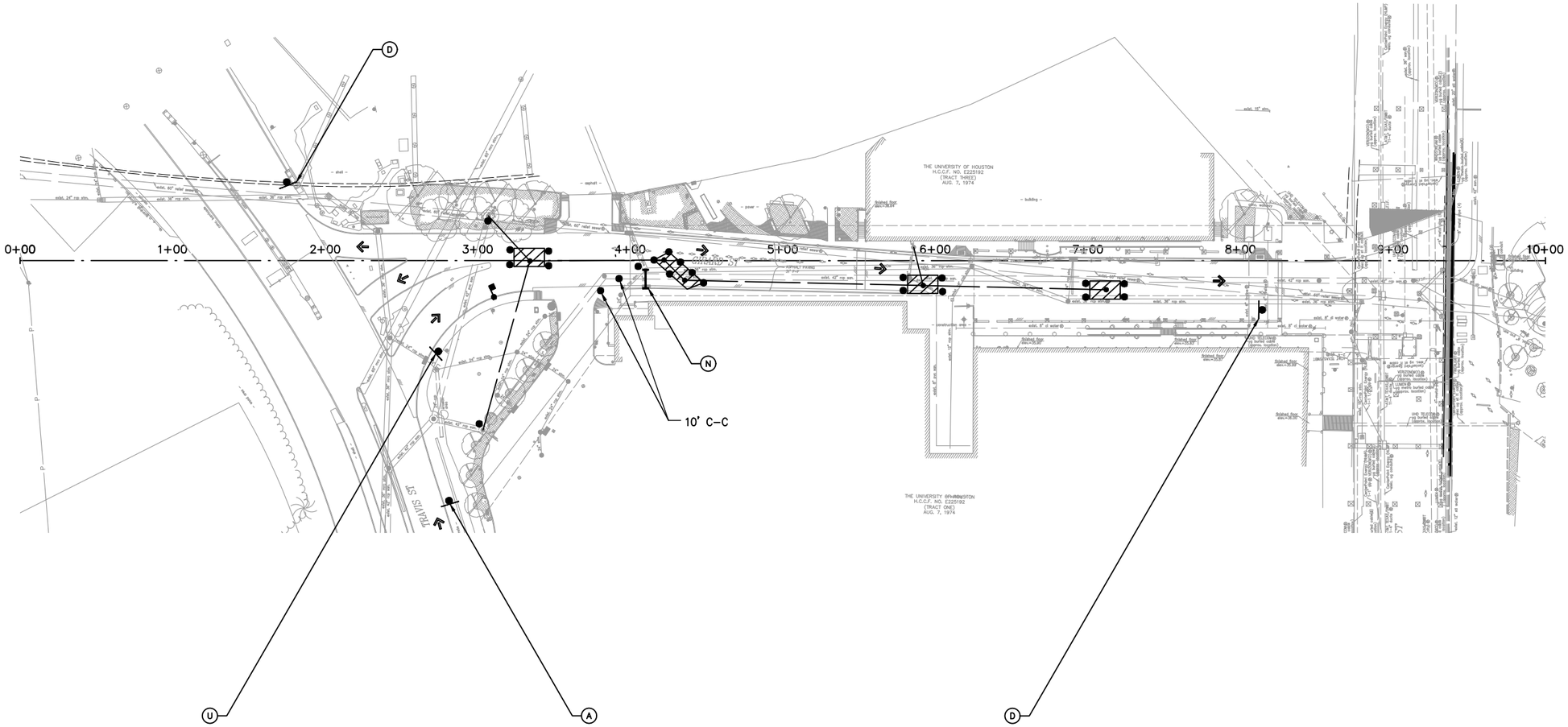
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

GIRARD STREET
FLOODPLAIN MAP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 19 OF 57	

PLOTTED: 4/24/2026 4:27 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Fema Maps.dwg



0 10 20 40 80 100

HALF SIZE | HORIZ: 1"=80' VERT: 1"=8'
FULL SIZE | HORIZ: 1"=40' VERT: 1"=4'

NO.	DATE	REVISION	APP.

LEGEND:

- WORK AREA
- DRUM
- FLAGGER
- TRAFFIC CONSTRUCTION SIGNS
- TYPE III BARRICADE WITH 2 TYPE "A" WARNING LIGHTS
- DIRECTION OF TRAFFIC FLOW

NOTES:

KEEP THE DRIVEWAY ACCESS ALL THE TIME.

NOTES:

1. CONTRACTOR SHALL USE FLAGGING OPERATION AS PER LATEST TEXAS MUTCD FOR INGRESS AND EGRESS OF CONSTRUCTION VEHICLES FROM CONSTRUCTION AREA.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS.
3. FOR ONE LANE CLOSURE, SEE STANDARD DETAILS FOR INFORMATION.
4. SEE TRAFFIC CONTROL NOTES FOR SIGN SPACING.
5. OPEN THE LANE AT THE END OF WORKDAY.

TCP:

1. INSTALL TCP DEVICES AS PER PLAN
2. INSTALSWPPP MGASURES AS PER PLAN
3. REMOVE AND DISPOSE OF EXIST. PAVEMENT IN THE WORK
4. CONSTRUCT PROP SANTRY SEWER AND PROP. MANHOLE
5. CONSTRUCT PROP PAVEMENT IN WORK AREA.
6. INSTALL PAVEMENT MARKING AND SIGNS.
7. INSTALL PERMENENT SWPPP MEGSUES.
8. CLEAN PROJECT AREA AND MOVE OUT.

A ROAD WORK AHEAD C20-1	B ROAD CLOSED AHEAD C20-3	C DETOUR AHEAD C20-2	D END ROAD WORK G20-2	E WRIGHTWOOD AVE DETOUR M4-9R	F WRIGHTWOOD AVE DETOUR M4-9L	G END DETOUR M4-8A	H WRIGHTWOOD AVE DETOUR M4-9S	I RIGHT LANE CLOSED AHEAD CW20-5(2) CW16-3	J LEFT LANE CLOSED AHEAD CW20-5(1) CW16-3
K ONE WAY R6-2(L)	L ONE WAY R6-2(R)	M DO NOT ENTER R5-1	N ROAD CLOSED R11-2	O DETOUR M4-10(L)	P R3-1	Q R3-2	R BEGIN ONE WAY R6-6	T ONE LANE ROAD AHEAD CW20-4	U CW20-7

ZARINKELK ENGINEERING SERVICES, INC.
617 Caroline St.
Houston, TX 77002
Phone (832) 242-2426
FAX (832) 242-2445
TEXAS REGISTRATION NO: F-4270

SURVEYED BY: MBCO ENGINEERING, LLC
FB NO. 000000

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DOCUMENT INCOMPLETE: NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

ENGINEER: MICHAEL BAGSTAD, P.E.
P.E. SERIAL No. 81193
DATE: 4/24/2026

WRIGHTWOOD SOS ELIMINATION
TRAFFIC CONTROL PLAN

GIRARD STREET
STA 00+00.00 TO STA 10+00.00

WBS NUMBER	
R-000536-0035-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
SAMSON D'SILVA, P.E.	
SHEET NO. 20 OF 57	

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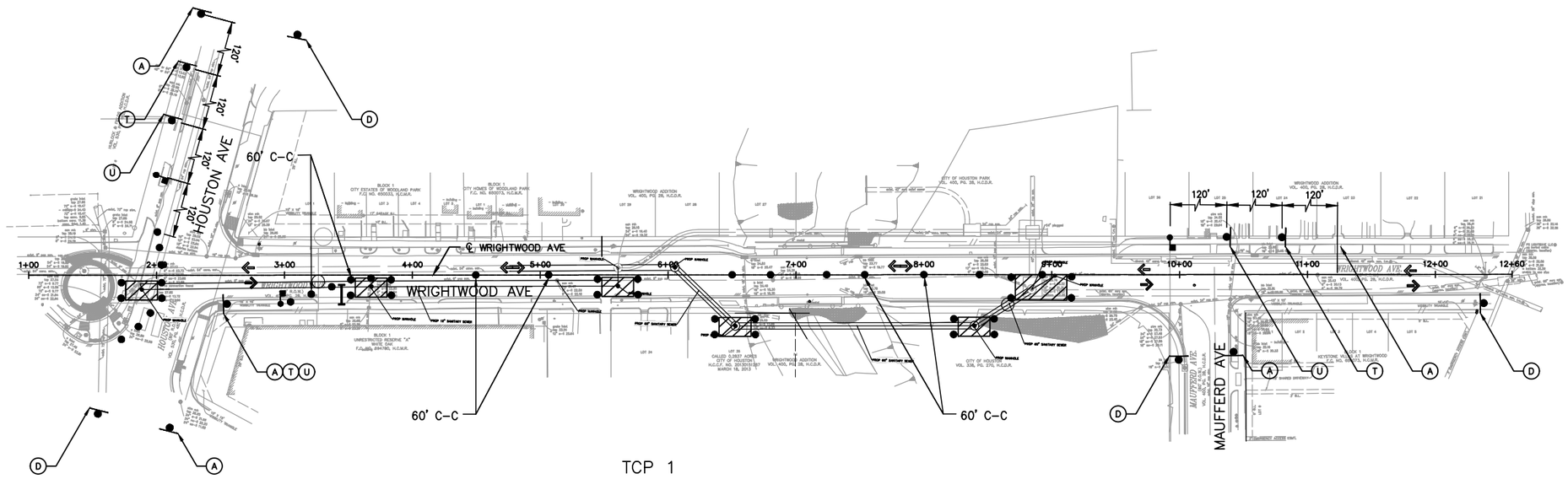
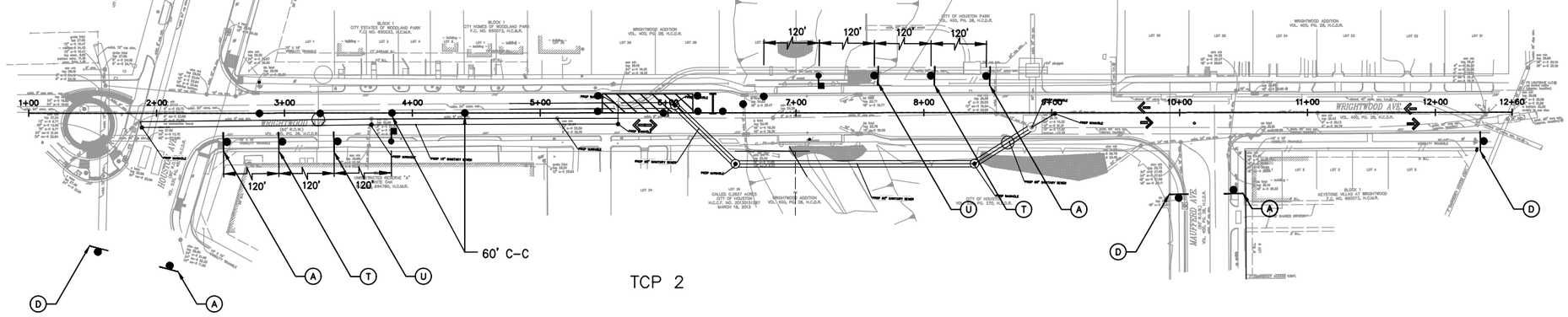


TCP 1



TCP 2

TCP:

1. INSTALL TCP DEVICES AS PER PLAN
2. INSTALSWPPP MGASURES AS PER PLAN
3. REMOVE AND DISPOSE OF EXIST. PAVEMENT IN THE WORK
4. CONSTRUCT PROP SANTRY SEWER AND PROP. MANHOLE
5. CONSTRUCT PROP PAVEMENT IN WORK AREA.
6. INSTALL PAVEMENT MARKING AND SIGNS.
7. INSTALL PERMENENT SWPPP MEGSUES.
8. CLEAN PROJECT AREA AND MOVE OUT.

A ROAD WORK AHEAD C20-1	B ROAD CLOSED AHEAD C20-3	C DETOUR AHEAD C20-2	D END ROAD WORK G20-2	E WRIGHTWOOD AVE DETOUR M4-9R	F WRIGHTWOOD AVE DETOUR M4-9L	G END DETOUR M4-8A	H WRIGHTWOOD AVE DETOUR M4-9S	I RIGHT LANE CLOSED AHEAD CW20-5(2) CW16-3	J LEFT LANE CLOSED AHEAD CW20-5(1) CW16-3
K ONE WAY R6-2(L)	L ONE WAY R6-2(R)	M DO NOT ENTER R5-1	N ROAD CLOSED R11-2	O DETOUR M4-10(L)	P R3-1	Q R3-2	R BEGIN ONE WAY R6-6	T ONE LANE ROAD AHEAD CW20-4	U CW20-7

LEGEND:

- WORK AREA – TCP 1
- WORK AREA – TCP 2
- DRUM
- FLAGGER
- TRAFFIC CONSTRUCTION SIGNS
- TYPE III BARRICADE WITH 2 TYPE "A" WARNING LIGHTS
- DIRECTION OF TRAFFIC FLOW

NOTES:

KEEP THE DRIVEWAY ACCESS ALL THE TIME.

NOTES:

1. CONTRACTOR SHALL USE FLAGGING OPERATION AS PER LATEST TEXAS MUTCD FOR INGRESS AND EGRESS OF CONSTRUCTION VEHICLES FROM CONSTRUCTION AREA.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS.
3. FOR ONE LANE CLOSURE, SEE STANDARD DETAILS FOR INFORMATION.
4. SEE TRAFFIC CONTROL NOTES FOR SIGN SPACING.
5. OPEN THE LANE AT THE END OF WORKDAY.

0 25 50 100 150

HALF SIZE HORIZ: 1"=100' VERT: 1"=10' FULL SIZE HORIZ: 1"=50' VERT: 1"=5'

NO.	DATE	REVISION	APP.

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WRIGHTWOOD SOS ELIMINATION

TRAFFIC CONTROL PLAN

WRIGHTWOOD AVE
STA 00+00.00 TO STA 12+60.00

WBS NUMBER	
R-000536-0035-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
SAMSON D'SILVA, P.E.	
SHEET NO. 21 OF 57	

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GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) LATEST EDITION WITIH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
2. ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM THE LATEST VERSION OF THE TMUTCD.
3. NO LANES SHALL BE CLOSED DURING THE HOURS OF 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM MONDAY THRU FRIDAY WITHOUT APPROVAL OF THE CITY TRAFFIC ENGINEER.
4. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00 PM TO 7:00 AM.
5. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF THROUGH LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS. TRAFFIC CONTROL PLANS SHALL INCLUDE ONE-WAY AND/OR DETOUR PLANS. CONTRACTOR SHALL MAINTAIN ADA COMPLIANT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO ALL THE BUS STOPS.
6. CONTRACTOR SHALL MAINTAIN TRAFFIC LANES AND DETOURS ACCORDING TO TRAFFIC CONTROL PLANS DURING WORKING HOURS.
7. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, AND OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.
8. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT AN ALTERNATE SET OF TRAFFIC CONTROL PLANS TO THE CITY OF HOUSTON PROJECT MANAGER FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION. THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SHALL BE SCALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. OFFICE OF CITY ENGINEER, MOBILITY PERMITS SECTION REPRESENTATIVE APPROVAL IS REQUIRED TO ACCEPT THE PROPOSED CHANGES.
9. CONTRACTOR SHALL SECURE LANE/SIDEWALK/BICYCLE FACILITY CLOSURE PERMITS FROM OFFICE OF CITY ENGINEER (MOBILITY PERMIT SECTION AT https://geohub.houstontx.gov) BEFORE IMPLEMENTING THE TRAFFIC CONTROL PLAN. THE APPLICATION MUST BE SUBMITTED AT LEAST TEN DAYS PRIOR TO THE IMPLEMENTATION OF THE TRAFFIC CONTROL PLAN AND/OR BEGINNING CONSTRUCTION WORK. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS, CONSTRUCTION SEQUENCING, AND CONSTRUCTION SCHEDULE WITH THE APPLICATION.
10. CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES.
11. DURING PAVEMENT SURFACE RESTORATION PROJECTS; THE CONTRACTOR SHALL NOT OPEN CLOSED LANES UNTIL THE PAVEMENT SURFACE HAS CURED ENOUGH TO ALLOW VEHICULAR TRAFFIC ACCORDING TO CITY OF HOUSTON STANDARD SPECIFICATIONS.
12. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND COORDINATING ALL CONSTRUCTION ACTIVITIES WITH STAKE HOLDERS IN THE VICINITY INCLUDING EMERGENCY RESPONSE AGENCIES SUCH AS HOUSTON POLICE DEPARTMENT, HOUSTON FIRE DEPARTMENT, AND METROPOLITAN TRANSIT AUTHORITY.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ISSUING ALL WORK DIRECTIVES TO ALL SUB-CONTRACTORS, UTILITY COMPANIES, AND ALL OTHER ENTITIES PERFORMING CONSTRUCTION WORK ASSOCIATED WITH THE PROJECT.
14. NOTHING IN THESE NOTES OR PLANS SHALL RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT; INCLUDING SAFETY OF ALL MODES OF TRANSPORTATION, PERSONS, AND PROPERTY, AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO WORKING HOURS.
15. THE OFFICE OF CITY ENGINEER (MOBILITY PERMITS GROUP) PER THE DIRECTION OF THE CITY TRAFFIC ENGINEER HAVE THE RIGHT TO DEMAND THE INSTALLATION OF ADDITIONAL TRAFFIC CONTROL DEVICES OR MODIFICATIONS OF THESE PLANS AND NOTES, AS DEEMED NECESSARY TO PROMOTE THE SAFE AND ORDERLY FLOW OF TRAFFIC, INCLUDING PEDESTRIANS AND BICYCLES, THROUGH THE CONSTRUCTION WORK ZONE. THE CONTRACTOR SHALL COMPLY WITH THESE ADDITIONAL REQUESTS OR MODIFICATIONS WITH DUE DILIGENCE.
16. ALL EXISTING TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE MAINTAINED IN VISIBLE LOCATIONS DURING CONSTRUCTION UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER. THE CONTRACTOR SHALL RESTORE OR REPLACE (AT THE DISCRETION OF THE CITY TRAFFIC ENGINEER) ANY PAVEMENT MARKING OR SIGNING DAMAGE DURING CONSTRUCTION OPERATIONS, INCLUDING RAISED PAVEMENT MARKERS (RPMS).
17. WHEN ENTERING OR LEAVING ROADWAYS CARRYING PUBLIC TRAFFIC, THE CONTRACTOR'S EQUIPMENT, WHETHER EMPTY OR LOADED SHALL IN ALL CASES YIELD TO PUBLIC TRAFFIC WITH THE ASSISTANCE OF CONTRACTOR PROVIDED CERTIFIED FLAGGER/PEACE OFFICER.
18. ACCESS TO DRIVEWAYS ADJACENT TO THE CONSTRUCTION WORK ZONE SHALL BE MAINTAINED AT ALL TIMES AS MUCH AS POSSIBLE. ADDITIONAL CONES AND/OR DELINEATORS MAY BE REQUIRED TO DELINEATE THE DRIVEWAY ACCESS ROUTE THROUGH THE CONSTRUCTION WORK ZONE. A MINIMUM OF ONE TRAVEL LANE SHALL BE MAINTAINED ACROSS THE DRIVEWAYS, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER.
19. SPILLAGE RESULTING FROM HAULING OPERATIONS ALONG OR ACROSS ANY PUBLIC TRAVELED WAY SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
20. THE CONTRACTOR SHALL SUBMIT AN APPLICATION FOR TEMPORARY PARKING RESTRICTIONS IF THERE ARE PARKING METERS LOCATED AT THE PROPOSED LANE CLOSURES FROM PARKING MANAGEMENT DIVISION (832-393-8690) AT LEAST TEN BUSINESS DAYS BEFORE IMPLEMENTATION OF LANE CLOSURES. IN ADDITION, TEMPORARY NO PARKING SIGNS SHALL BE POSTED 24 HOURS PRIOR TO COMMENCEMENT OF WORK.
21. ADDITIONAL OFF DUTY OFFICERS/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED AT THE DISCRETION OF THE CITY PROJECT MANAGER EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS.
22. THE CONTRACTOR SHALL REPLACE WITHIN 72 HOURS, ALL TRAFFIC SIGNAL LOOP DETECTORS DAMAGED DURING CONSTRUCTION.
23. IN GENERAL, A SOLAR POWERED FLASHING ARROW BOARD SHALL BE REQUIRED ON ALL MAJOR THOROUGHFARE LANES CLOSURES. EXCEPTIONS TO FLASHING ARROW BOARDS AND/OR IMPLEMENTATION ON RESIDENTIAL LANE CLOSURES SHALL BE APPROVED BY CITY TRAFFIC ENGINEER.
24. APPROVED TRAFFIC CONTROL PLAN SHALL BE IN PLACE BEFORE STARTING ANY EXCAVATION.
25. WATER FILLED BARRIERS CAN BE USED AS INSTRUCTED BY THE ENGINEER AND APPROVED BY THE CITY FOR PROJECTS WHERE SPACE IS LIMITED AND HEAVY EQUIPMENT TO PLACE CONCRETE BARRIERS IS NOT FEASIBLE. WATER FILLED BARRIERS SHALL NOT BE USED ON ROADWAYS WITH A POSTED SPEED LIMIT MORE THAN 45 MPH.
26. WATER FILLED BARRIERS MUST BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S REQUIREMENTS AND ROUTINELY INSPECTED FOR DEFECTS.
27. IF WATER FILLED BARRIER IS PROVIDED, USE ENVIRONMENTALLY SAFE ANTI-FREEZING AGENT IN THE WATER WHEN IT IS APPLICABLE PER MANUFACTURER SPECIFICATIONS AND RECOVER AGENT WHEN THE BARRIER IS DRAINED.
28. DISPOSE OF WATER AND AGENT PROPERLY. DO NOT DRAIN WATER FILLED BARRIER INTO OR ACROSS AN EXISTING TRAVEL LANE.
29. PROVIDE BARRIER UNITS THAT ARE CAPABLE OF BEING LIFTED AND MOVED WHEN FILLED IF DRAINING IS NOT POSSIBLE.
30. PROVIDE WATER FILLED BARRIER THAT ACTS AS ITS OWN FREE STANDING, NON-REDIRECTIVE END TREATMENT.
31. WHEN WATER FILLED BARRIERS ARE USED TO CHANNELIZE PEDESTRIANS, THEY MUST HAVE A CONTINUOUS DETECTABLE BOTTOM FOR USERS OF LONG CANES AND THE TOP OF THE UNIT SHALL NOT BE LESS THAN 32 INCHES IN HEIGHT.
32. ANY CLOSURE OF A PEDESTRIAN OR BICYCLE FACILITY SHALL REQUIRE THE SHORTEST DETOUR THAT MAINTAINS THE SAFETY OF PEDESTRIAN AND/OR BICYCLISTS.

SPACING FOR CHANNELIZING DEVICES

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

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

C. PLASTIC DRUMS ON RADII @ 35' C –C.

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

E. PLASTIC DRUMS IN FRONT OF CONSTRUCTION ZONE @ 20' C – C WITH VERTICAL PANEL AT 40' C – C AND APPROVED WARNING LIGHT @ 40' C – C (FOR OVERNIGHT CLOSURE).

F. CONCRETE TRAFFIC BARRIER (CTB) OR LOW PROFILE CONCRETE TRAFFIC BARRIER (LPCTB) WITH APPROVED REFLECTORS @ 10' C – C IF PAVEMENT DROP IS GREATER THAN 1 FOOT.

G. PLASTIC DRUMS W/GUARD RAIL MOUNTED.

H. SELF- RIGHTING VERTICAL PANEL SPACING.
- 4 LANES TO 2 LANES UNDIVIDED ROADWAY SECTION @ 20' C – C.
- 4 LANES DIVIDED ROADWAY TO ONE SIDE TWO WAY ROADWAY @ 20' C – C.
- LEFT LANE AND RIGHT LANE STORAGE BAYS @ 15' C – C.

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

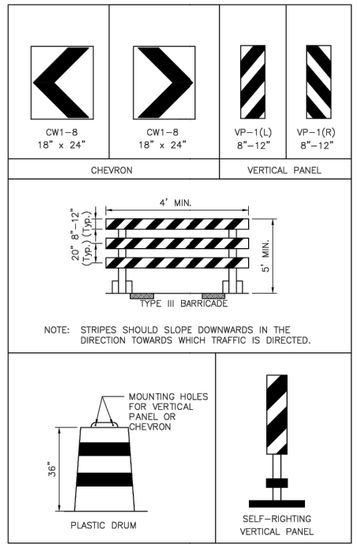
J. SPACING MAY BE ADJUSTED TO PROVIDE DRIVEWAYS, INTERSECTIONS AND /OR MEDIAN OPENINGS.

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

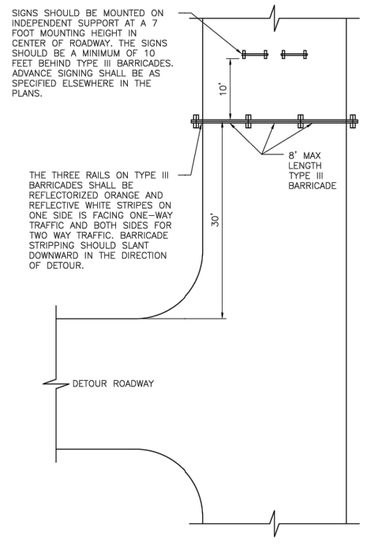
POSTED SPEED (MPH)	SIGN SPACING "X" (FEET)	MIN. DESIRABLE TAPER LENGTH "L"			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	120'	150'	165'	180'	30'	60'–75'
35	160'	205'	225'	245'	35'	70'–90'
40	240'	265'	295'	320'	40'	80'–100'
45	320'	450'	495'	540'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

TABLE C4 – STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

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



CHANNELIZATION AND BARRICADES



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

LEGEND:

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

NO.	DATE	REVISION	APP.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sohail Kauwar	DocuSigned by: LONG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:
DocuSigned by: Carol Haddock
DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV–27–2023 | DWG NO: 01555–01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP NOTES CHANNELIZING DEVICES AND BARRICADES

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

SWTP
Surface Water Transmission Program

ZARINKELK ENGINEERING SERVICES, INC.
617 Caroline St.
Houston, TX 77002
Phone (832) 242-2426
FAX (832) 242-2445
TEXAS REGISTRATION NO: F-4270

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P.E. SERIAL No. 81193
DATE: 4/24/2026

SURVEYED BY: MBCO ENGINEERING, LLC
FB NO. 000000

WRIGHTWOOD SOS ELIMINATION

TCP NOTES CHANNELIZING DEVICES AND BARRICADES

WBS NUMBER
R–000536–0035–3
DRAWING SCALE
CITY OF HOUSTON PM
SAMSON D'SILVA, P.E.
SHEET NO. 22 OF 57

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 USING THIS STANDARD TO ADDRESS SUCH CONCERNS FOR THE PROJECT AT HAND. THE ENGINEER USING THIS STANDARD IS ALSO RESPONSIBLE TO DETERMINE THE APPROPRIATENESS OF THIS STANDARD FOR EACH APPLICATION. THE USE OF THIS STANDARD IS AT THE ENGINEER'S SOLE RISK AND IT IS NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.
WHETHER ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR ANY WARRANTY OF ANY KIND

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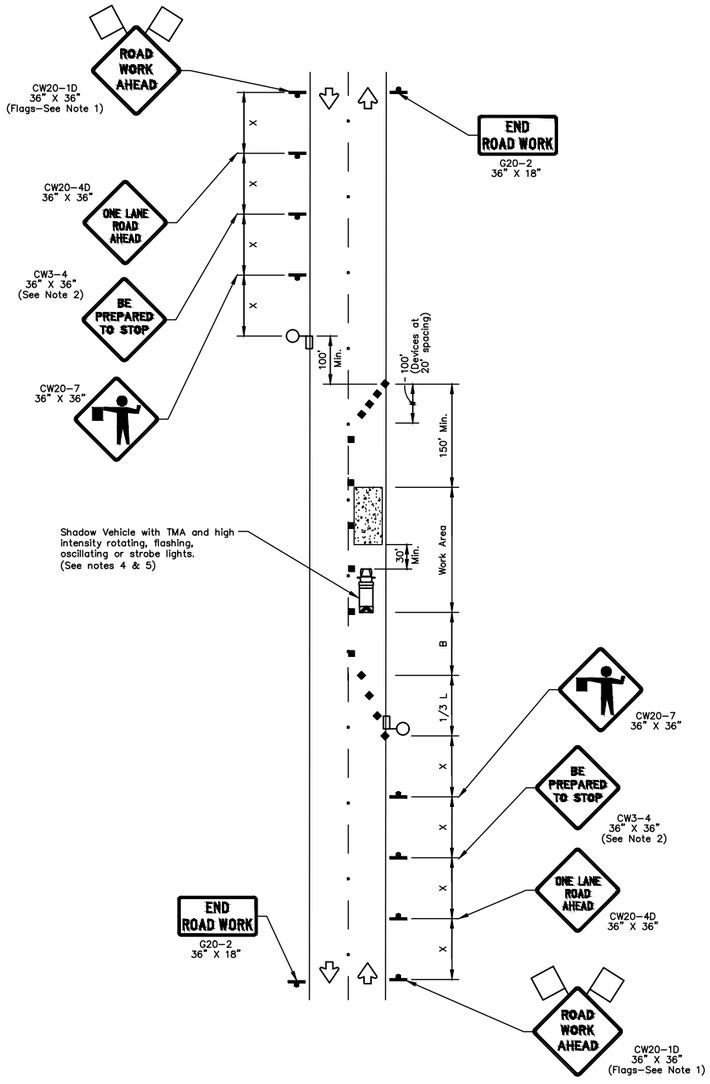
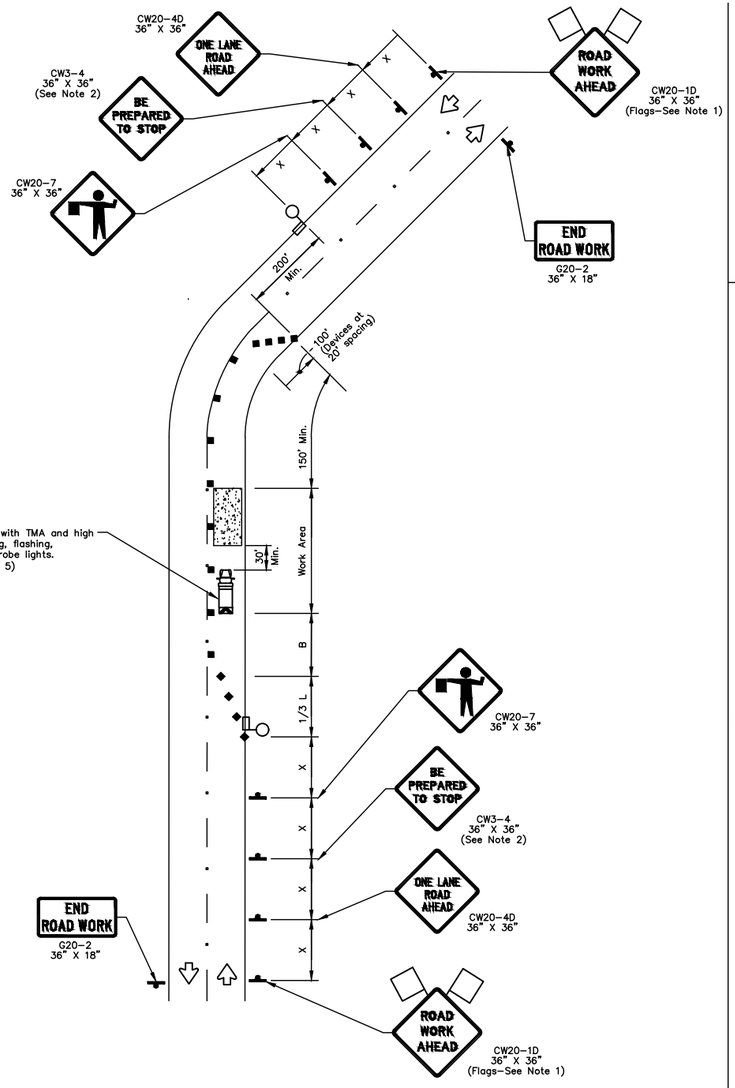


ONE-LANE TWO-WAY SINGLE LANE CLOSURE
CONTROL WITH FLAGGERS
(ON STRAIGHT SECTION OF ROADWAY)



ONE-LANE TWO-WAY SINGLE LANE CLOSURE
CONTROL WITH FLAGGERS
(ON CURVED SECTION OF ROADWAY)

TRAFFIC CONTROL PLAN SECTION SHALL BE COMPLETED BY ENGINEER

ROADWAY	POSTED SPEED	TAPER LENGTH	SPACING CHANNELIZING DEVICES		SIGN SPACING	BUFFER SPACE
			TAPER	TANGENT		

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths "L" * *			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L=WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

GENERAL NOTES

1. Flags attached to signs where shown are OPTIONAL.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol are OPTIONAL.
3. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
6. 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 construction.
7. Flaggers should use two-way radios or other methods of communication to control traffic.
8. Length of work space should be based on the ability of flaggers to communicate.
9. If the work space is located near horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distances to the flogger and a queue of stopped vehicles (see table above).
10. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.
12. No lanes shall be blocked from 7am to 9am and 4pm to 6:30pm Monday thru Friday.
13. Off duty uniformed law enforcement officers required to direct traffic when applicable.
14. If project is within 400 feet from a signalized intersection, the Contractor shall contact Harris County Engineering Department, Traffic Signal Maintenance at (713) 881-3210 five (5) days prior to the start of construction.

NO.	DATE	REVISION	APP.

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WRIGHTWOOD SOS ELIMINATION

(ONE-LANE, TWO WAY OPERATION)

WBS NUMBER
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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 ITS USE. IT IS THE RESPONSIBILITY OF THE DESIGNER TO ADOPT SITE SPECIFIC DESIGNS AS REQUIRED. THE USE OF THIS STANDARD IS AT THE SOLE RISK OF THE PERSON OR ENTITY USING OR MODIFYING IT. ANY RELIANCE ON THIS STANDARD IS EXPRESSLY AT THE USER'S OWN RISK. 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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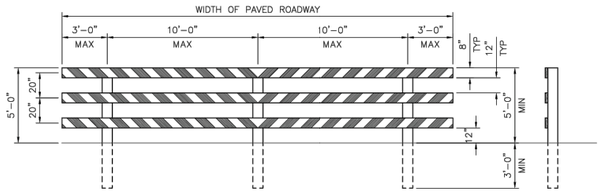
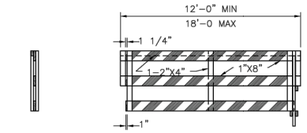
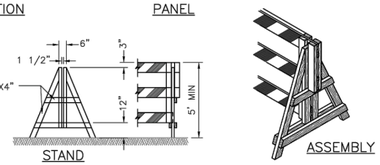


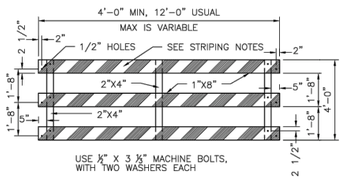
TYPE III BARRICADE
FOR END OF ROAD

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

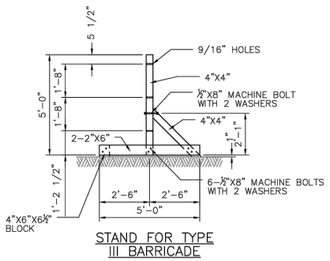




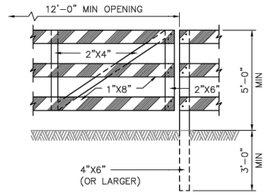
DEMOUNTABLE TYPE III BARRICADE



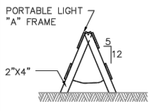
PANEL FOR TYPE III BARRICADE



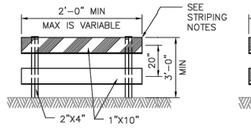
STAND FOR TYPE III BARRICADE



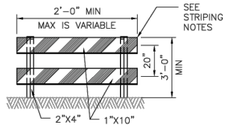
GATE FOR TYPE III BARRICADE



"A" FRAME



TYPE I



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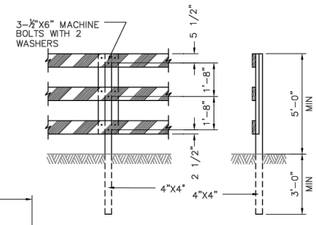
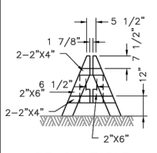


POST FOR TYPE III BARRICADE



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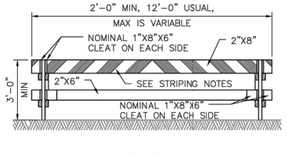

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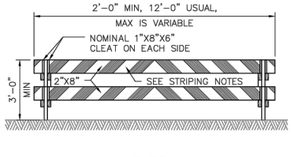
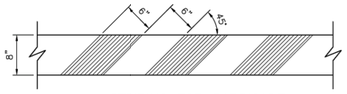


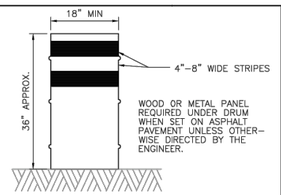
TYPE II



STRIPING FOR BARRICADE

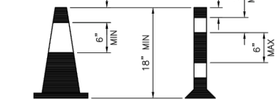
BARRICADE NOTES:

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 RELFECTIVITY 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.



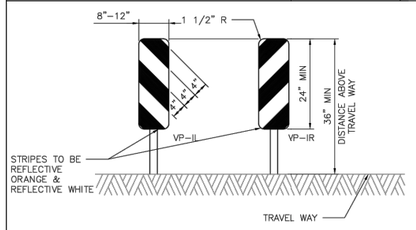
DRUMS

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-I VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.



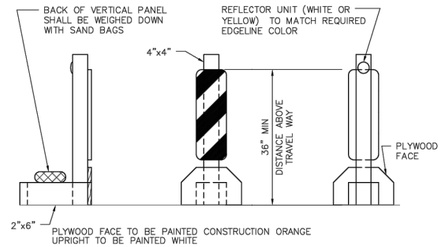
CONES

1. TRAFFIC CONES AND TUBULAR MARKERS SHALL BE A MIN OF 18" INCHES IN HEIGHT WITH A BROADENED BASE AND MAY BE MADE OF VARIOUS MATERIALS TO WITHSTAND IMPACT WITHOUT DAMAGE TO THEMSELVES OR TO VEHICLES. LARGER SIZES SHOULD BE USED ON FREEWAYS AND OTHER ROADWAYS WHERE SPEED ARE RELATIVELY HIGH OR WHERE EVER MORE CONSPICUOUS GUIDANCE IS NEEDED, ORANGE SHALL BE THE PREDOMINANT COLOR ON CONES AND TUBULAR MARKERS. THEY SHOULD BE KEPT CLEAN AND BRIGHT FOR MAX TARGET VALUE. FOR NIGHT TIME USE THEY SHALL BE RELFECTORIZED 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: Sukul Kanwar	DocuSigned by: LONG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-14

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

BARRICADE AND CHANNELIZING DEVICES

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

NO.	DATE	REVISION	APP.

SWTP
Surface Water Transmission Program

ZARINKELK ENGINEERING SERVICES, INC.
617 Caroline St.
Houston, TX 77002
Phone (832) 242-2426
FAX (832) 242-2445
TEXAS REGISTRATION NO: F-4270

FOR INTERIM REVIEW ONLY

DOCUMENT INCOMPLETE; NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

ENGINEER: MICHAEL BAGSTAD, P.E.
P.E. SERIAL No. 81193
DATE: 4/24/2026

SURVEYED BY: MBCO ENGINEERING, LLC
FB NO. 000000

WRIGHTWOOD SOS ELIMINATION

BARRICADE AND CHANNELIZING DEVICES

WBS NUMBER
R-000536-0035-3
DRAWING SCALE
CITY OF HOUSTON PM
SAMSON D'SILVA, P.E.
SHEET NO. 24 OF 57

PLOTTED: 4/24/2026 4:28 PM
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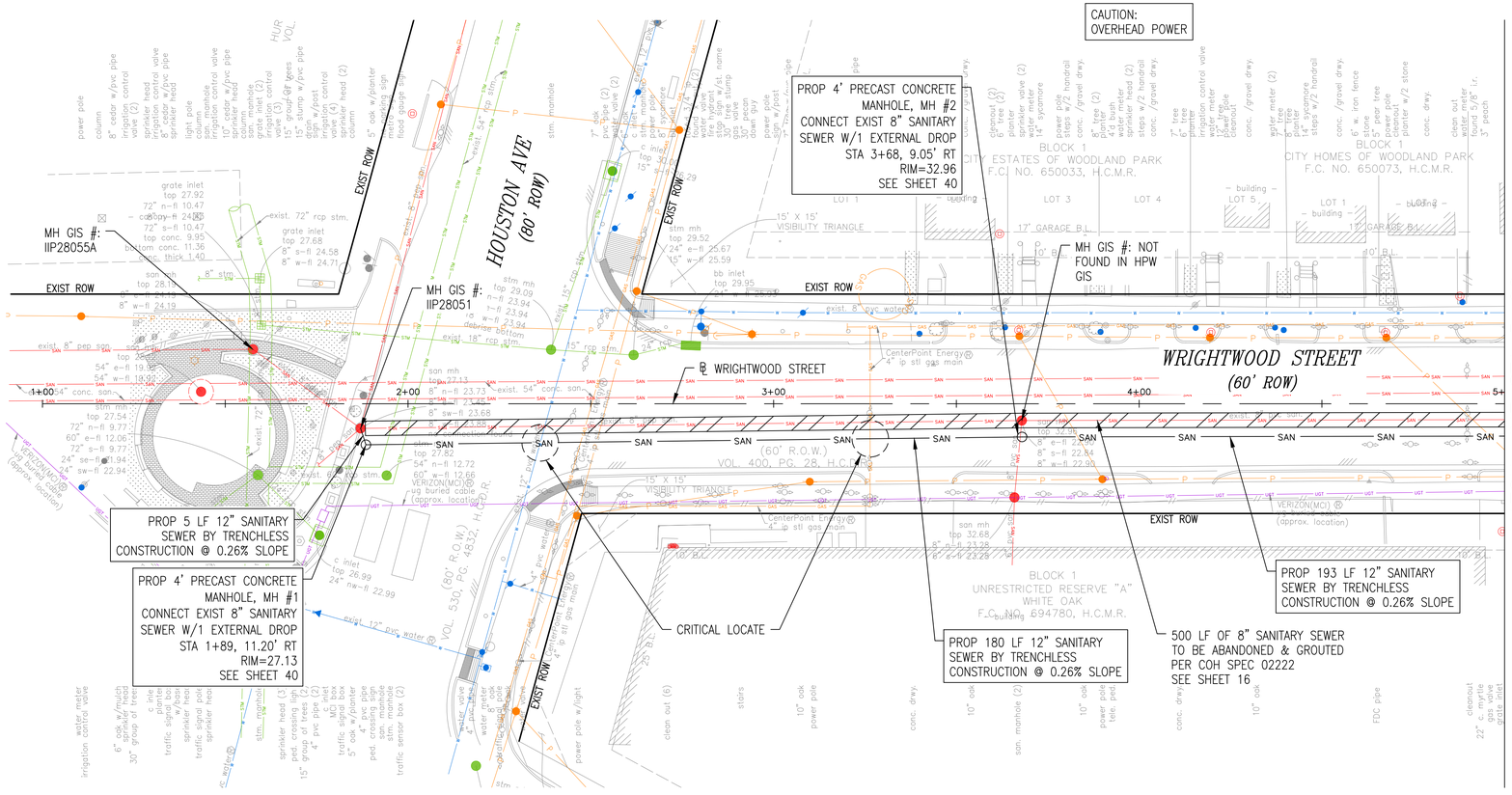

NOTES:

1. REMOVE TOP 4 FEET OF EXIST SANITARY SEWER MANHOLE.
2. GROUT AND ABANDONMENT TO FOLLOW THE INSTALLATION AND ACTIVATION OF PROP 6", 12" & 60" SANITARY SEWER LINE.
3. SEE SPECIFICATION 02222 FOR GROUT AND ABANDONMENT PROCEDURES.

N

0' 20' 40'
HORIZ:1"=20'

NO.	DATE	REVISION	APP.

BENCHMARK:
CITY OF HOUSTON MONUMENT 5358-8507, A BRASS DISK CONCRETE, LOCATED APPOXIMATELY 650 FEET SOUTH FROM THE INTERSECTION OF HOUSTON AVE. AND WHITE OAK DR ON THE EAST SIDE OF BRIDGE.

ELEV.43.57 FEET NAVD 1988 (GEOID '18)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2025.

VERTICAL DATUM ADJUSTMENT.

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARKS (RM 050010) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM 1988, (GEOID '18) IS 0.31' NAVD 1988, 2001 ADJ. ELEVATION=NAVD 1988 (GEOID '18) ELEVATION – 0.31 FT

T.B.M #1:

SET "X" CUT ON CONCRETE LOCATED ON THE WEST SIDE OF THE INTERSECTION OF HOUSTON AVE WRIGHTWOOD BLVD.
ELEV. 27.88 FEET

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASE ON TEXAS STATE PLANE COORDINATES SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

LAN™
Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

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GREGORY J. HENRY
91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

WRIGHTWOOD STREET PLAN BEGIN TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 25 OF 57	

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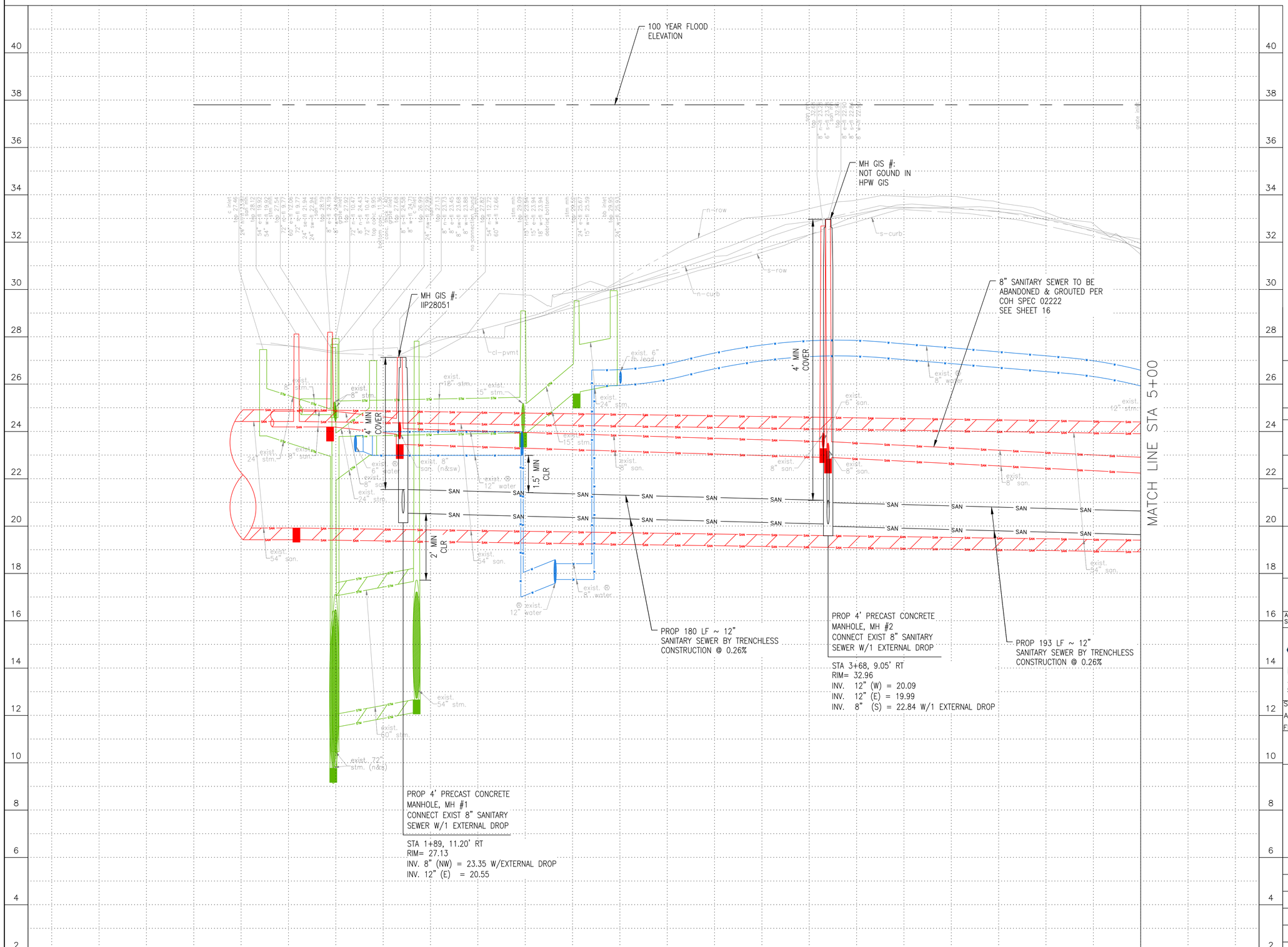

N

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GREGORY J. HENRY
91826
LICENSE NUMBER
04/15/2026
DATE
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

WRIGHTWOOD STREET PROFILE
BEGIN TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. **26** OF 57	

PLOTTED: 4/24/2026 4:28 PM
PLOT STYLE: KAI-COH Color.ctb
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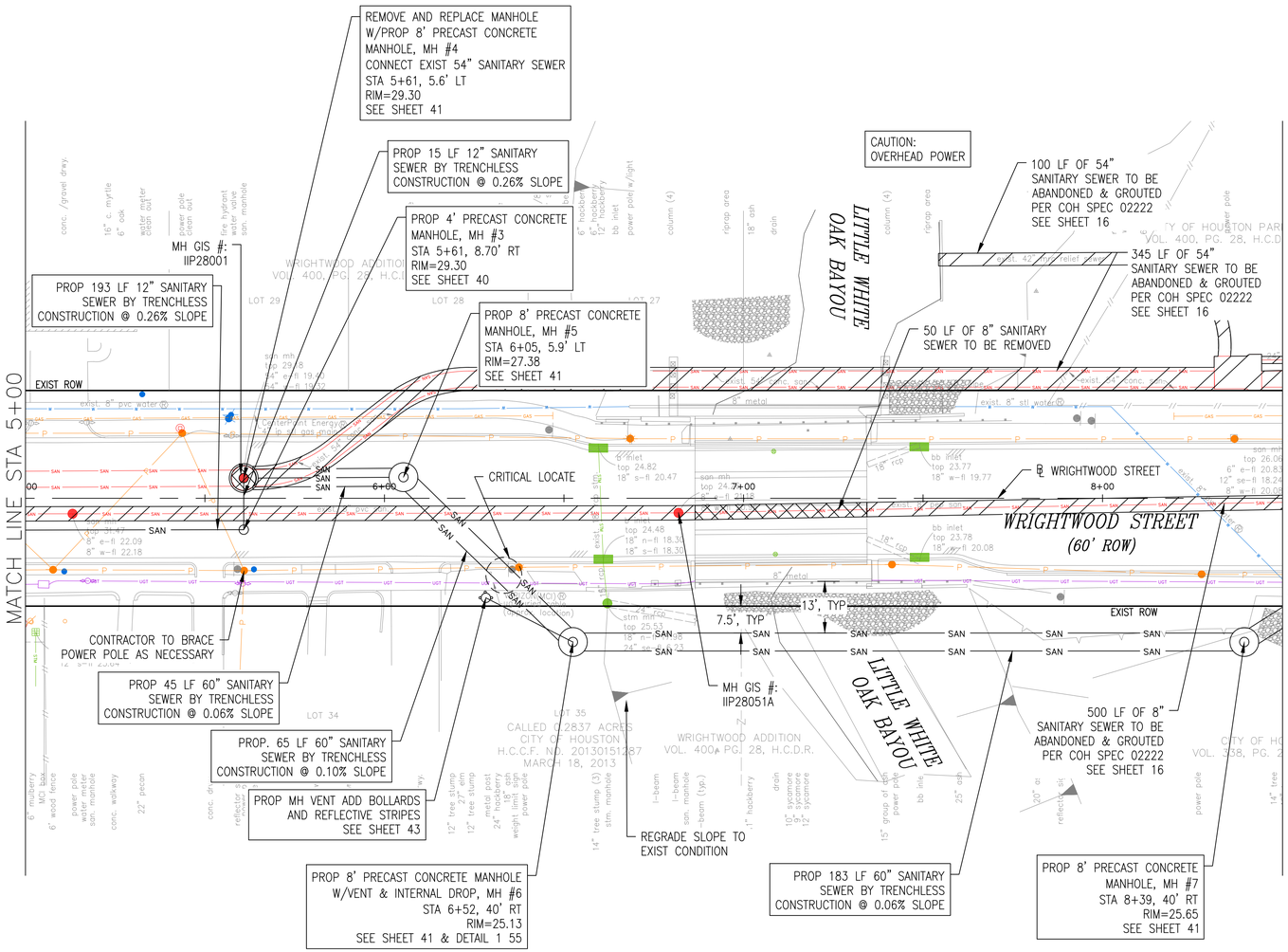

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FB NO. P-6408

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GREGORY J. HENRY
91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

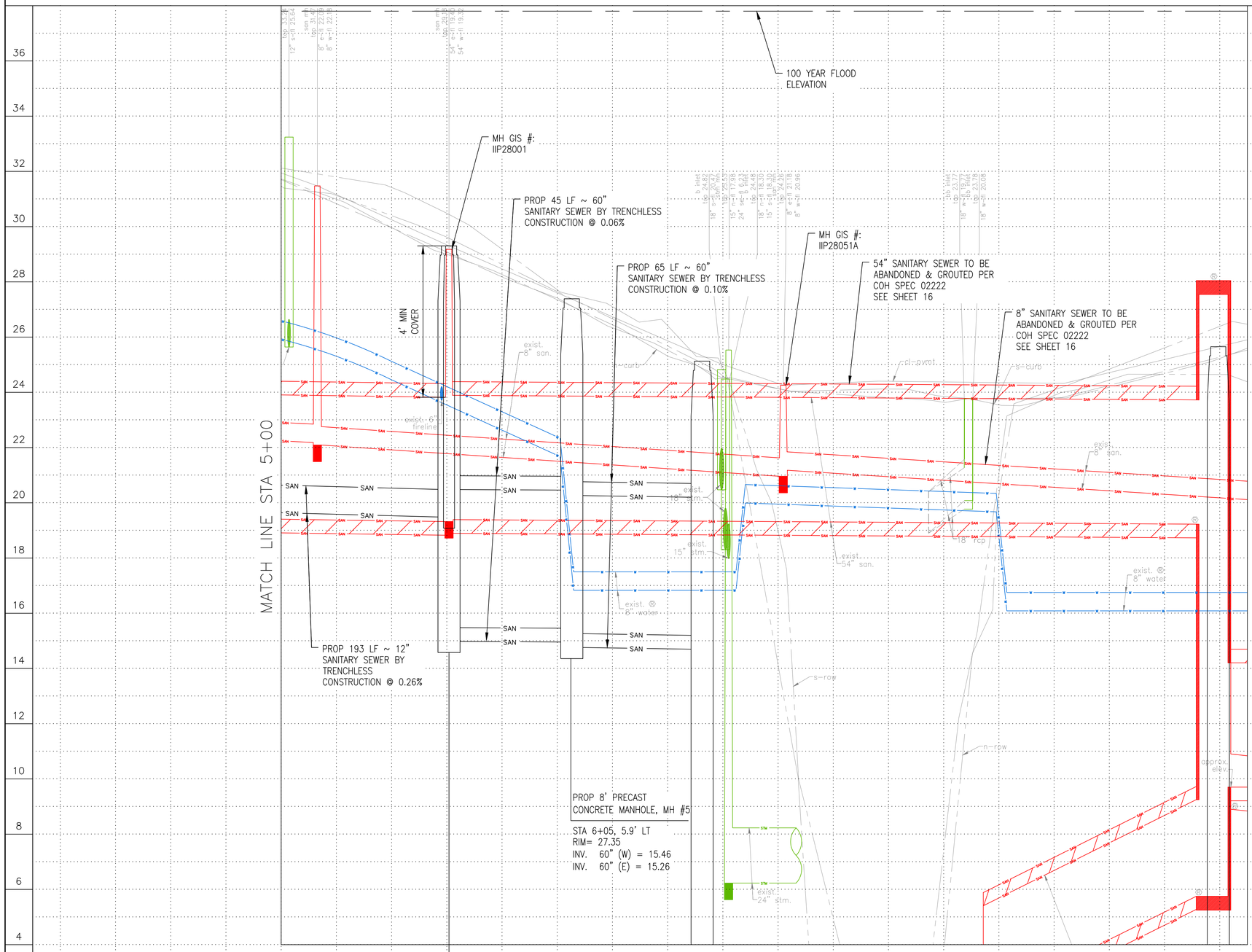
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

WRIGHTWOOD STREET PLAN STA 5+00 TO STA 8+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 27 OF 57	

PLOTTED: 4/24/2026 4:28 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Plan & Profile-Wrightwood St.dwg



MATCH LINE ELEVATION (4)
VERTICAL PROFILE CONTINUATION

PROP 4' PRECAST CONCRETE MANHOLE, MH #3

STA 5+61, 8.70' RT
RIM = 29.30
INV. 12" (W) = 19.48
INV. 12" (N) = 19.38

PROP 8' PRECAST CONCRETE MANHOLE, MH #4
CONNECT EXIST 54" SANITARY SEWER

STA 5+61, 5.6' LT
RIM = 29.30
INV. 12" (S) = 19.34
INV. 60" (E) = 15.48
INV. 54" (W) = 19.32

N

0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

LAN™
Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

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04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

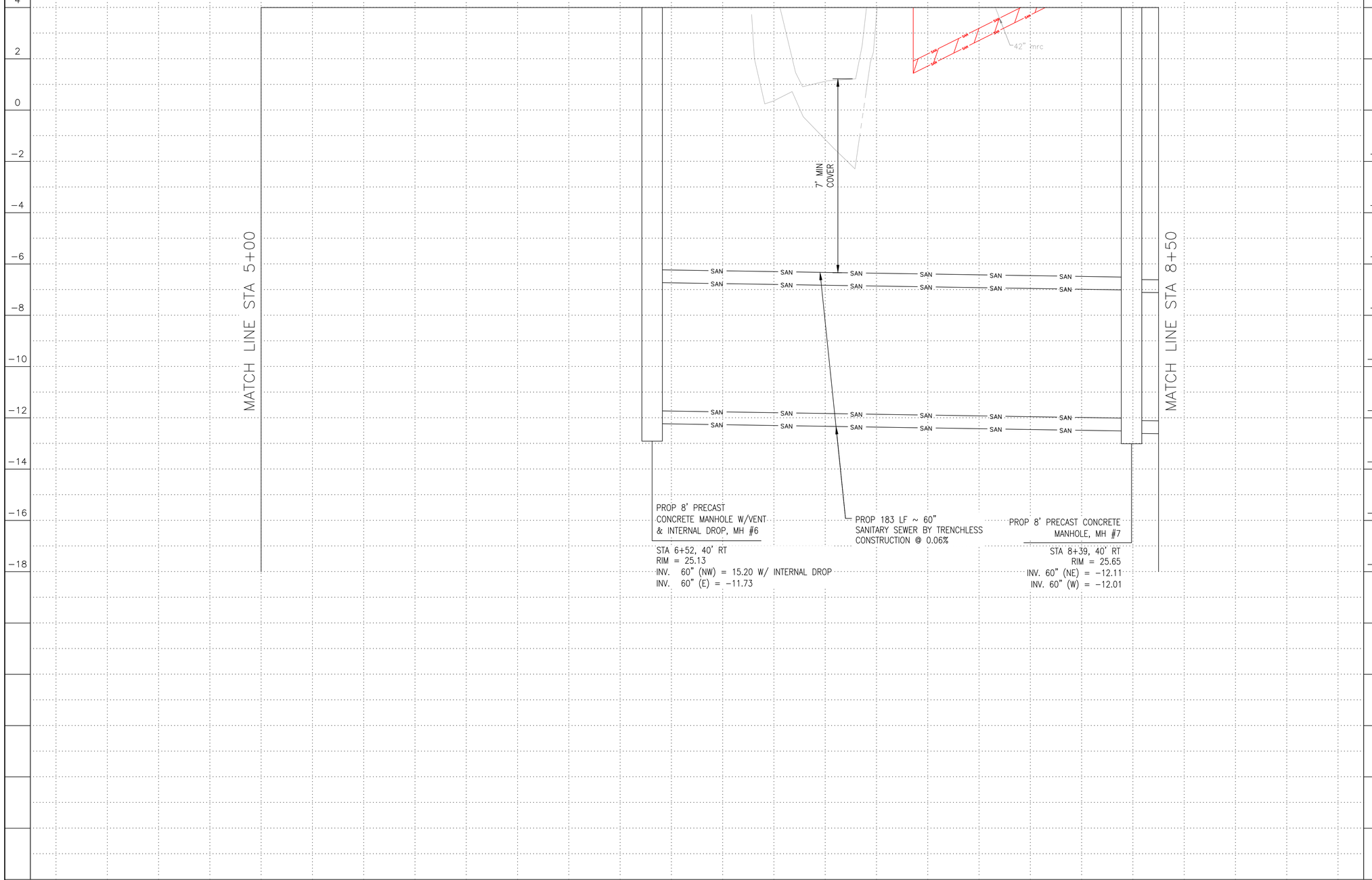
WRIGHTWOOD STREET PROFILE
STA 5+00 TO STA 8+50

(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 28 OF 57	

PLOTTED: 4/24/2026 4:28 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Plan & Profile-Wrightwood St.dwg

MATCH LINE ELEVATION (4)
VERTICAL PROFILE CONTINUATION



N

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HORIZ:1"=20'
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NO.	DATE	REVISION	APP.

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LICENSED ENGINEER
04/15/2026
DATE
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Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

WRIGHTWOOD STREET PROFILE (CONT.) STA 5+00 TO STA 8+50

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. **29** OF 57	

PLOTTED: 4/24/2026 4:28 PM
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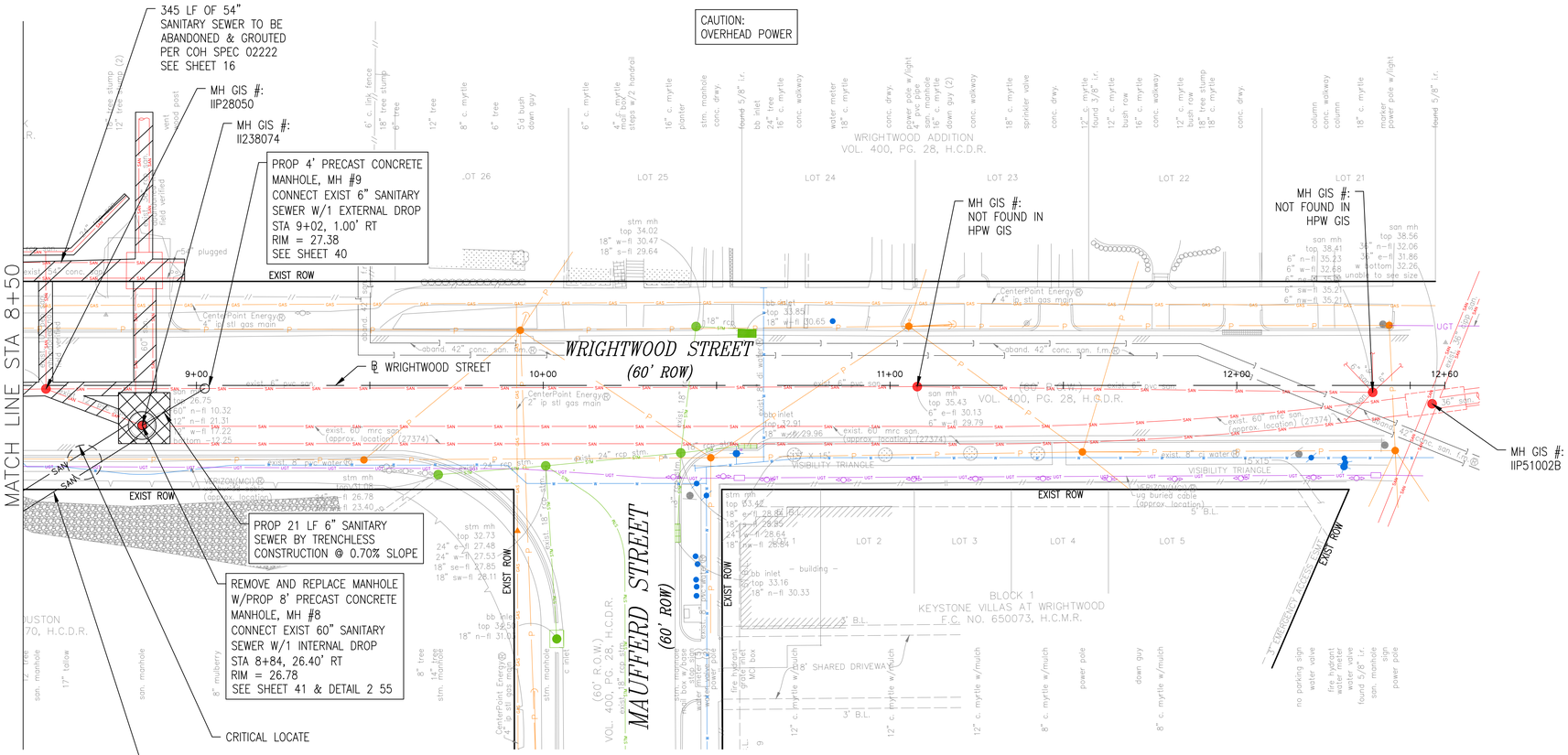

NOTES:

1. REMOVE TOP 4 FEET OF EXIST SANITARY SEWER MANHOLE.
2. GROUT AND ABANDONMENT TO FOLLOW THE INSTALLATION AND ACTIVATION OF PROP 6", 12" & 60" SANITARY SEWER LINE.
3. SEE SPECIFICATION 02222 FOR GROUT AND ABANDONMENT PROCEDURES.

N

0' 20' 40'
HORIZ:1"=20'

NO.	DATE	REVISION	APP.

BENCHMARK:
CITY OF HOUSTON MONUMENT 5358-8507, A BRASS DISK CONCRETE, LOCATED APPOXIMATELY 650 FEET SOUTH FROM THE INTERSECTION OF HOUSTON AVE. AND WHITE OAK DR ON THE EAST SIDE OF BRIDGE.

ELEV.43.57 FEET NAVD 1988 (GEOID '18)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2025.

VERTICAL DATUM ADJUSTMENT.

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARKS (RM 050010) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM 1988, (GEOID '18) IS 0.31'
NAVD 1988, 2001 ADJ. ELEVATION=NAVD 1988 (GEOID '18) ELEVATION – 0.31 FT

T.B.M #1:

SET "X" CUT ON CONCRETE LOCATED ON THE WEST SIDE OF THE INTERSECTION OF HOUSTON AVE WRIGHTWOOD BLVD.
ELEV. 27.88 FEET

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASE ON TEXAS STATE PLANE COORDINATES SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

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3700 W Sam Houston Pkwy S Houston, TX 77042

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FB NO. P-6408

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91826
LICENSED PROFESSIONAL ENGINEER
04/15/2026
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

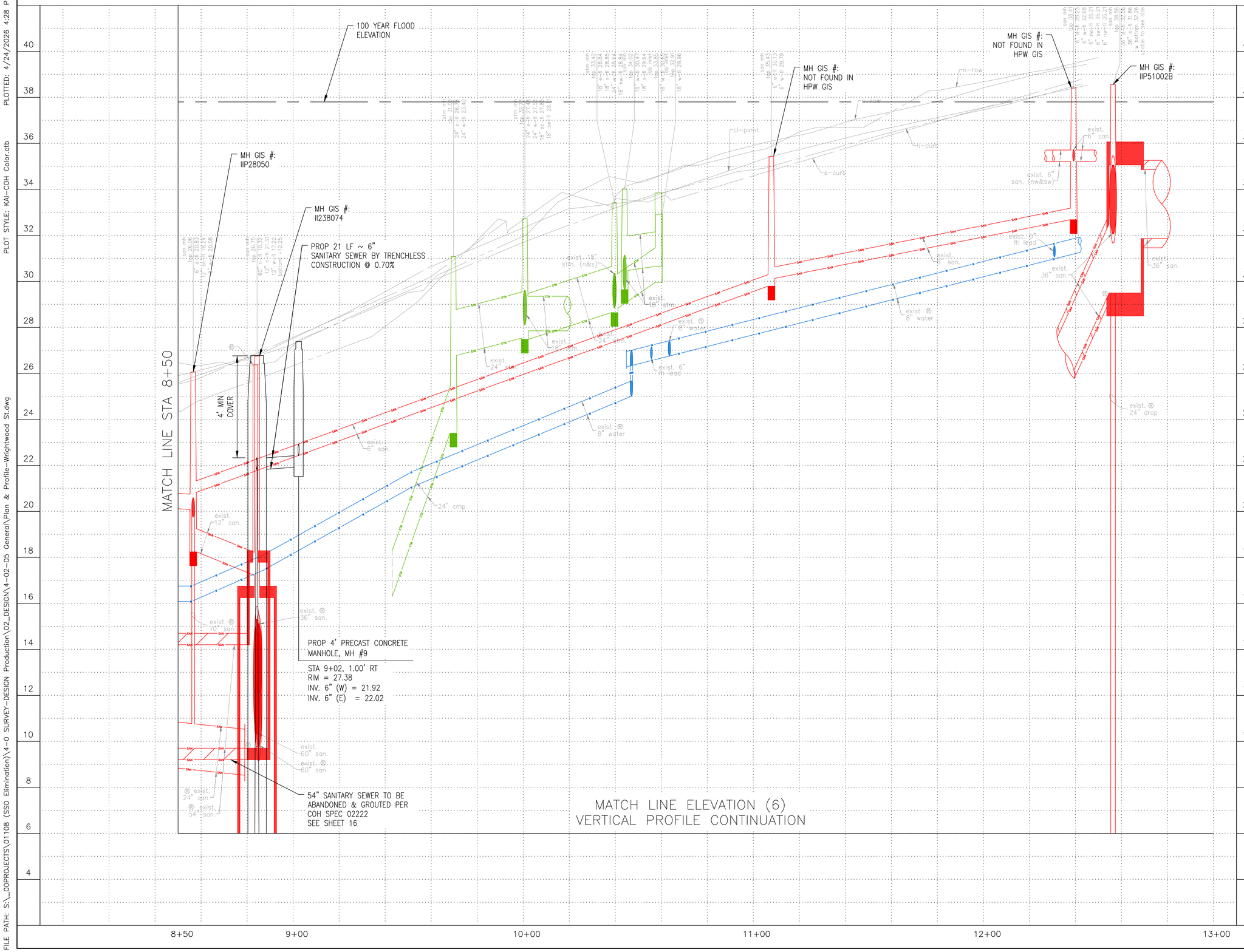
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

WRIGHTWOOD STREET PLAN STA 8+50 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 30 OF 57	

PLOTTED: 4/24/2026 4:28 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Plan & Profile-Wrightwood St.dwg



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91876
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

WRIGHTWOOD STREET PROFILE STA 8+50 TO END

(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 31 OF 57	

PLOTTED: 4/24/2026 4:28 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Plan & Profile-Wrightwood St.dwg

MATCH LINE ELEVATION (6)
VERTICAL PROFILE CONTINUATION

MATCH LINE STA 8+50

SAN
SAN

PROP 53 LF ~ 60"
SANITARY SEWER BY TRENCHLESS
CONSTRUCTION @ 0.06%

PROP 8' PRECAST CONCRETE
MANHOLE, MH #8
CONNECT EXIST 60" SANITARY
SEWER W/1 INTERNAL DROP

STA 8+84, 26.40' RT
RIM = 26.78
INV. 60" (SW) = -12.15
INV. 60" (E) = -12.25
INV. 6" (NE) = 21.83 W/1 INTERNAL DROP

exist. @
60" san. (P27374)

6
4
2
0
-2
-4
-6
-8
-10
-12
-14

8+50
9+00
10+00
11+00
12+00
13+00

N

0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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GREGORY J. HENRY
Name
91826
Texas License Number
04/15/2026
Date
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

WRIGHTWOOD STREET PROFILE (CONT.)
STA 8+50 TO END

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 32 OF 57	

PLOT STYLE: KAI-COH Color.ctb PLOTTED: 4/24/2026 4:28 PM
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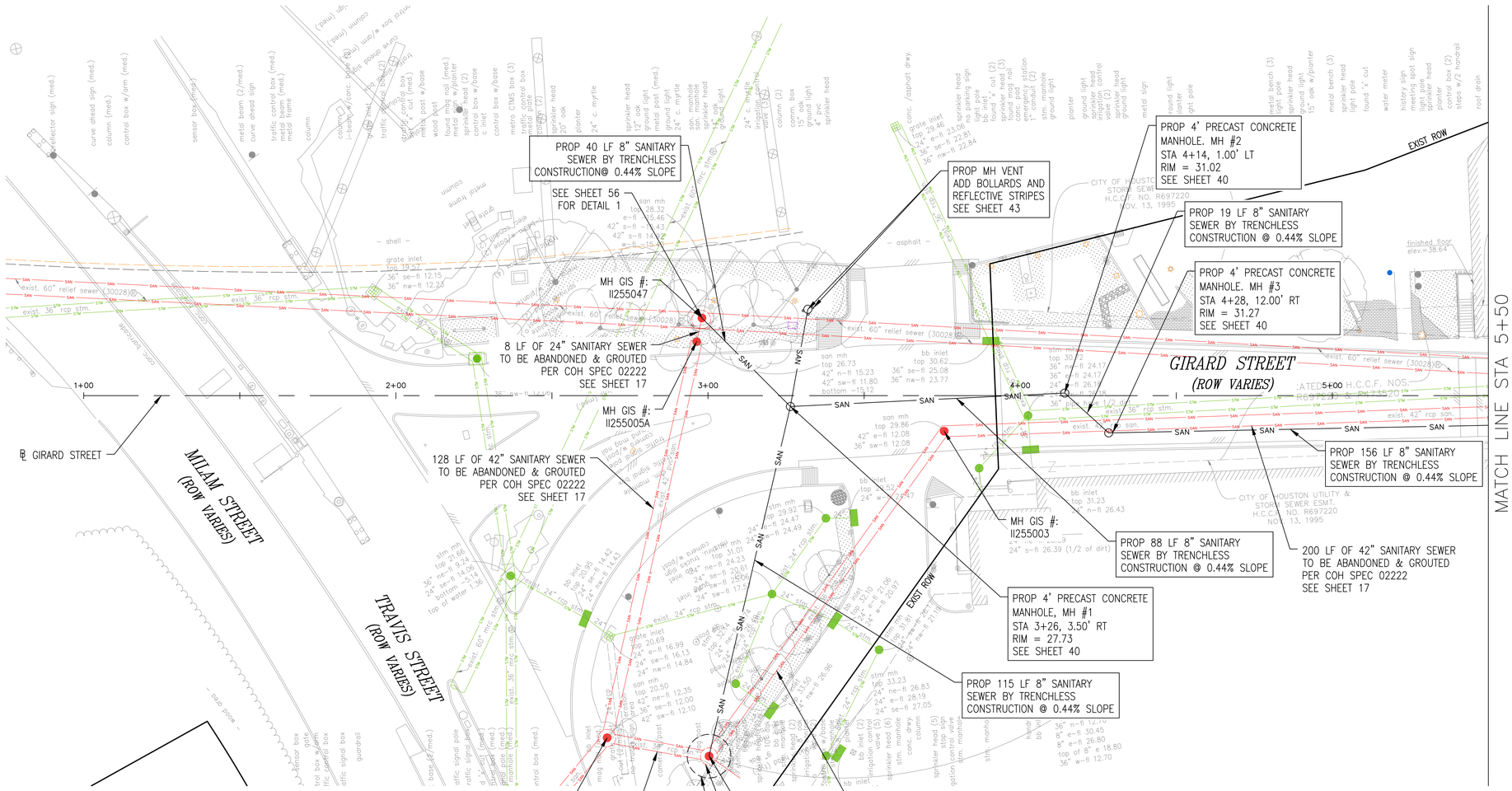

NOTES:

1. REMOVE TOP 4 FEET OF EXISTING 42" SANITARY SEWER MANHOLE.
2. GROUT AND ABANDONMENT TO FOLLOW THE INSTALLATION AND ACTIVATION OF PROP 8" SANITARY SEWER LINE.
3. SEE SPECIFICATION 02222 FOR GROUT AND ABANDONMENT PROCEDURES.
4. NO KNOWN POTABLE WATER SERVICE CONNECTIONS.

NO.	DATE	REVISION	APP.

0' 20' 40'
HORIZ:1"=20'

BENCHMARK:
CITY OF HOUSTON MONUMENT 5358-8507, A BRASS DISK CONCRETE, LOCATED APPOXIMATELY 650 FEET SOUTH FROM THE INTERSECTION OF HOUSTON AVE. AND WHITE OAK DR ON THE EAST SIDE OF BRIDGE.

ELEV.43.57 FEET NAVD 1988 (GEOID '18)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED OCTOBER 19, 2025.

VERTICAL DATUM ADJUSTMENT.

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T.B.M #1:

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ELEV. 27.88 FEET

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SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

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04/15/2026
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

GIRARD STREET PLAN
BEGIN TO STA 5+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 33 OF 57	

PLOTTED: 4/24/2026 4:28 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Plan & Profile - Girard.dwg

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LICENSED PROFESSIONAL ENGINEER
04/15/2026
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FB NO. P-6408

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

GIRARD STREET PROFILE
BEGIN TO STA 5+50

(SHEET 1 OF 2)

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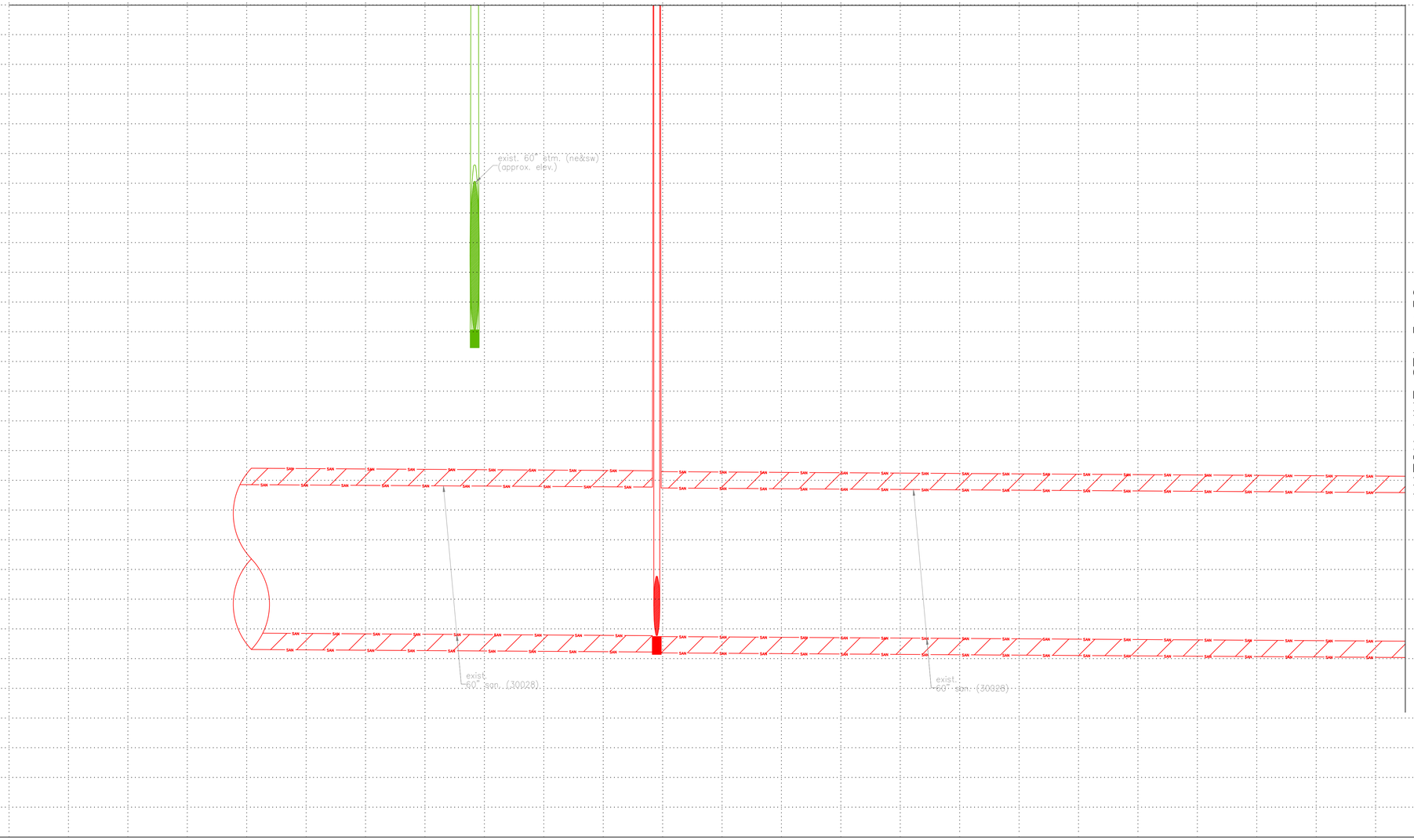
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. **34** OF 57	

PLOTTED: 4/24/2026 4:29 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Plan & Profile - Girard.dwg

MATCH LINE ELEVATION (6)



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WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

GIRARD STREET PROFILE (CONT.)
BEGIN TO STA 5+50

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 35 OF 57	

PLOT STYLE: KAI-COH Color.ctb PLOTTED: 4/24/2026 4:29 PM
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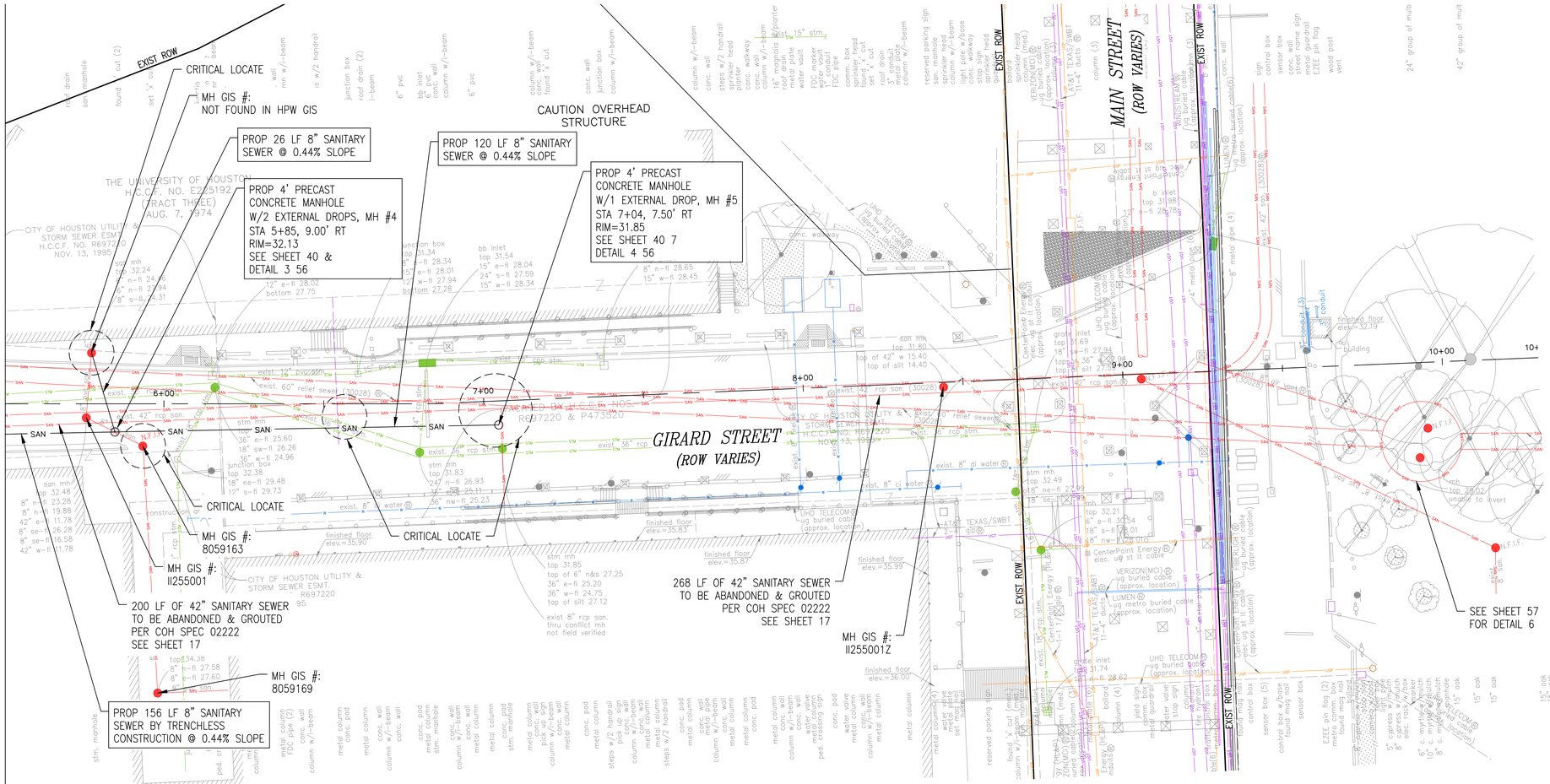

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THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARKS (RM 050010) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM 1988, (GEOID '18) IS 0.31' NAVD 1988, 2001 ADJ. ELEVATION=NAVD 1988 (GEOID '18) ELEVATION – 0.31 FT

T.B.M #1:

SET "X" CUT ON CONCRETE LOCATED ON THE WEST SIDE OF THE INTERSECTION OF HOUSTON AVE WRIGHTWOOD BLVD.
ELEV. 27.88 FEET

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASE ON TEXAS STATE PLANE COORDINATES SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

NOTES:

1. REMOVE TOP 4 FEET OF EXISTING 42" SANITARY SEWER MANHOLE.
2. GROUT AND ABANDONMENT TO FOLLOW THE INSTALLATION AND ACTIVATION OF PROP 8" SANITARY SEWER LINE.
3. SEE SPECIFICATION 02222 FOR GROUT AND ABANDONMENT PROCEDURES.
4. NO KNOWN POTABLE WATER SERVICE CONNECTIONS.

NO.	DATE	REVISION	APP.

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

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GREGORY J. HENRY
91826
04/15/2026
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm T-2874

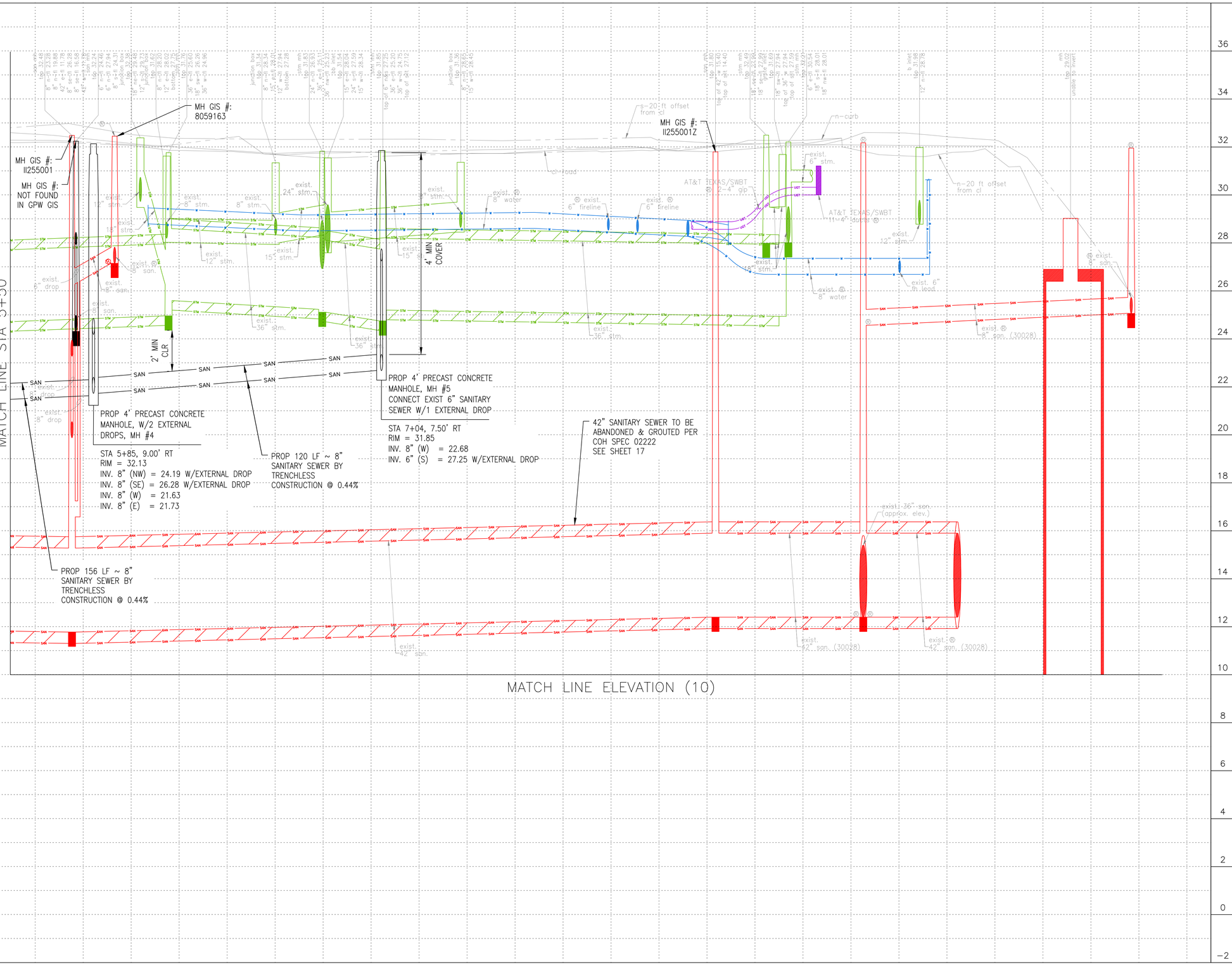
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

GIRARD STREET PLAN STA 5+50 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 36 OF 57	

PLOTTED: 4/24/2026 4:29 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Plan & Profile - Girard.dwg



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

NO.	DATE	REVISION	APP.

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GREGORY J. HENRY
91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

GIRARD STREET PROFILE
STA 5+50 TO END

(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 37 OF 57	

PLOTTED: 4/24/2026 4:29 PM
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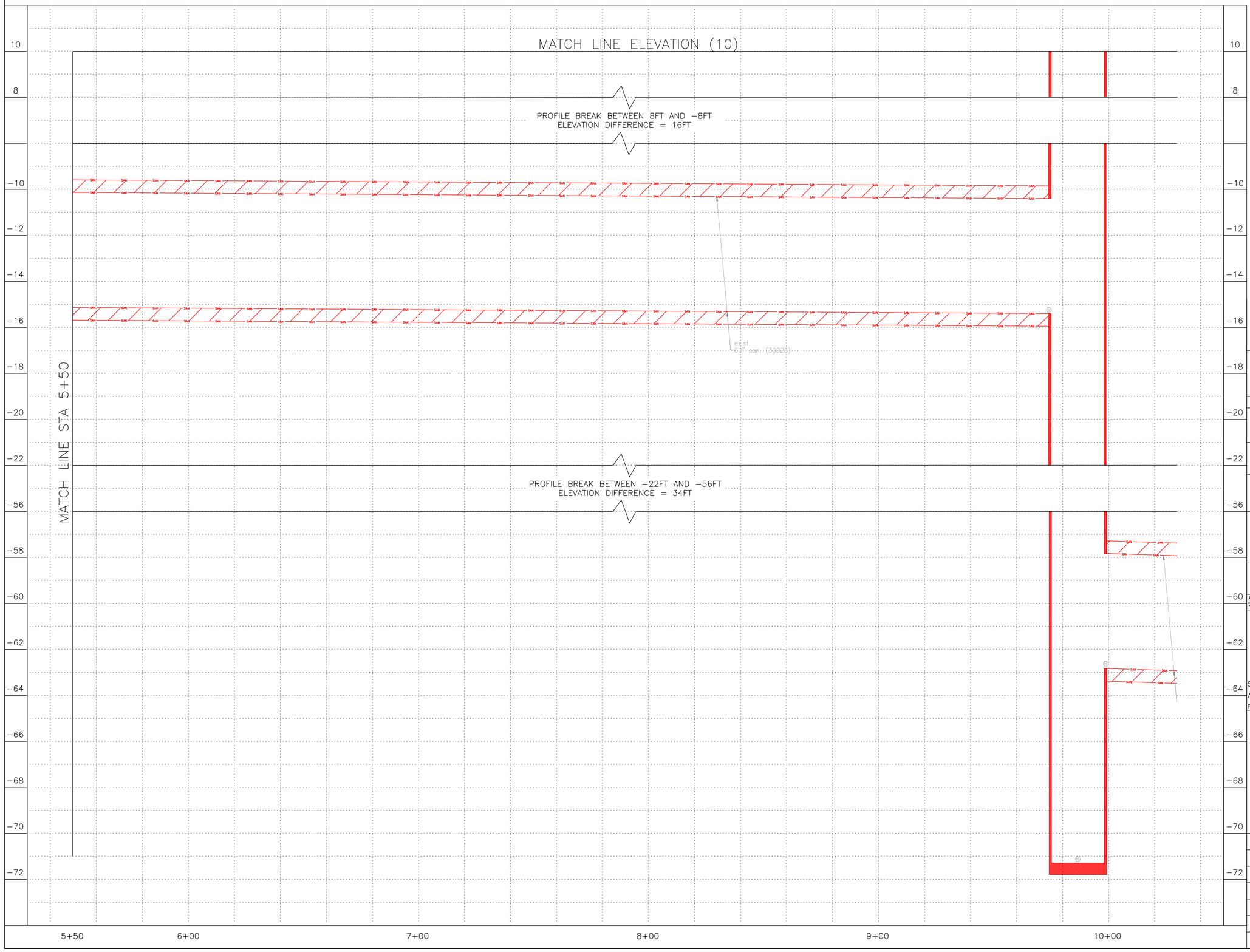

0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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GREGORY J HENRY
91876
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

GIRARD STREET PROFILE (CONT.)
STA 5+50 TO END

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 38 OF 57	

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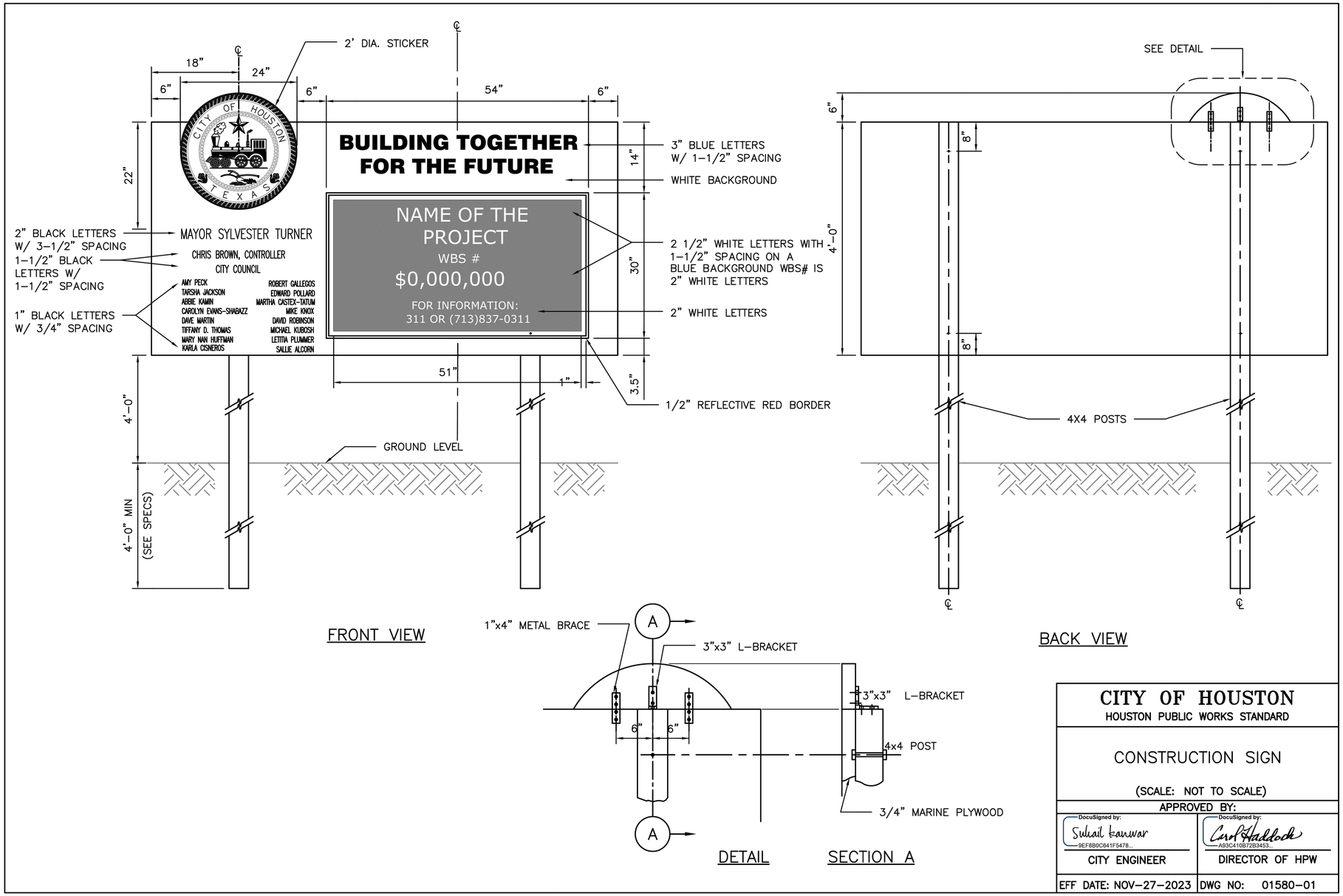

FRONT VIEW

BACK VIEW

DETAIL SECTION A

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.

CITY OF HOUSTON	
HOUSTON PUBLIC WORKS STANDARD	
CONSTRUCTION SIGN	
(SCALE: NOT TO SCALE)	
APPROVED BY:	
DocuSigned by: Suhail Kanwar 9EF880C841F5478...	DocuSigned by: Carol Haddock A93C410B72B3453...
CITY ENGINEER	DIRECTOR OF HPW
EFF DATE: NOV–27–2023	DWG NO: 01580–01

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P–6408

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GREGORY J. HENRY
91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

PROJECT CONSTRUCTION SIGN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000536–0035–3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 39 OF 57	

FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Standard Details.dwg
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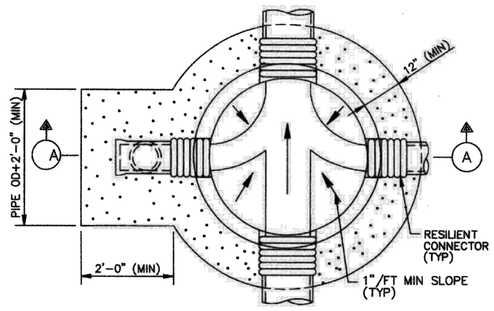
PLOTTED: 4/24/2026 4:29 PM

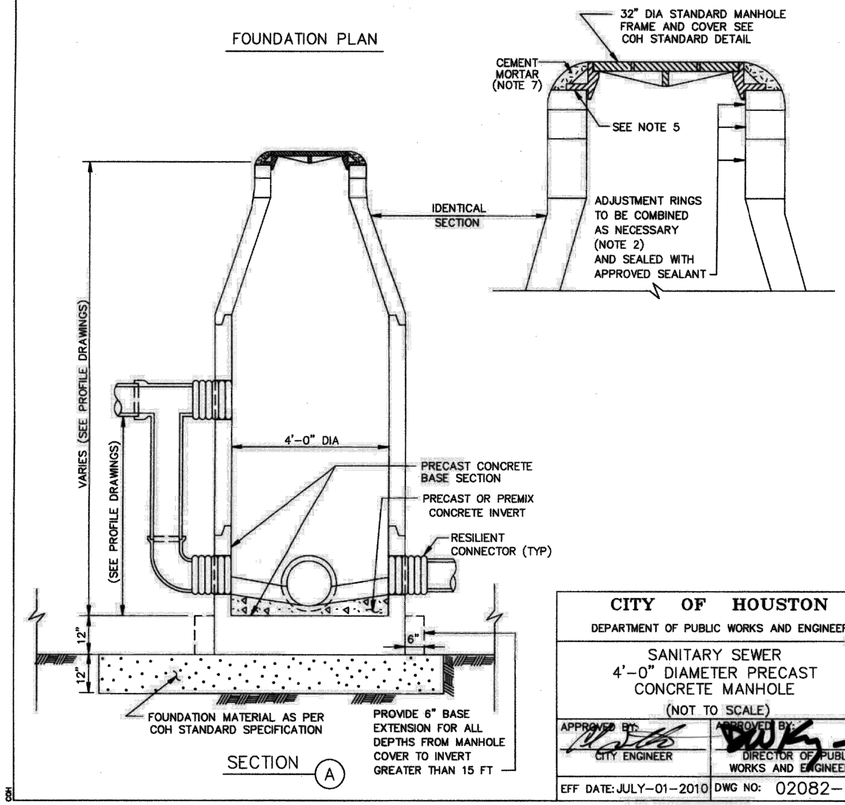
PLOT STYLE: KAI-COH Color.ctb PLOTTED: 4/24/2026 4:29 PM
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Standard Details.dwg

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.



FOUNDATION PLAN



SECTION (A)

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

NOTES:
1. A MANHOLE LOCATED WITHIN A 100-YEAR FLOOD PLAIN MUST BE GASKETED AND BOLTED DOWN TO PREVENT INFLOW.
2. A MANHOLE COVER THAT IS LOCATED IN A ROADWAY MUST MEET OR EXCEED THE AMERICAN ASSOCIATION OF STATE HIGHWAYS AND TRANSPORTATION OFFICIALS STANDARD M-306 FOR LOAD BEARING.
3. A MANHOLE CONNECTED TO PIPES LESS THAN 15 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST HALF THE LARGEST PIPE'S DIAMETER.
4. A MANHOLE CONNECTED TO A PIPE THAT IS AT LEAST 15 INCHES IN DIAMETER BUT NOT MORE THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THREE-FOURTHS OF THE LARGEST PIPE'S DIAMETER.
5. A MANHOLE CONNECTED TO A PIPE THAT IS GREATER THAN 24 INCHES IN IDMATER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THE LARGEST PIPE'S DIAMETER.
6. IN A MANHOLE WITH PIPES OF DIFFERENT SIZES, THE TOPS OF ALL THE PIPES MUST BE AT THE SAME ELEVATION AND FLOW CHANNELS IN THE INVERT MUST BE SLOPED EVENLY FROM PIPE TO PIPE TO PREVENT BACK PRESSURE.
7. A COLLECTION SYSTEM PIPE ENTERING A MANHOLE MOR ETHAN 24 INCHES ABOVE AN INVERT MUST HAVE A DROP PIPE.
8. A MANHOLE-PIPE CONNECTION MUST USE WATERTIGHT, SIZE-ON-SIZE RESILIENT CONNECTORS THAT ALLOW FOR DIFFERENTIAL SETTLEMENT AND MUST CONFORM TO AMERICAN SOCIETY FOR TESTING AND MATERIALS C923.

BENCHING NOTES:
1. A MANHOLE CONNECTED TO A PIPE THAT IS AT LEAST 15 INCHES IN DIAMETER BUT NOT MORE THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THREE-FOURTHS OF THE LARGEST PIPE'S DIAMETER.
2. A MANHOLE CONNECTED TO A PIPE THAT IS GREATER THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THE LARGEST PIPE'S DIAMETER.

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3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

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GREGORY J. HENRY
91976
LICENSED PROFESSIONAL ENGINEER
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
SANITARY SEWER DETAILS

(SHEET 1 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 40 OF 57	

PLOT STYLE: KAI-COH Color.ctb PLOTTED: 4/24/2026 4:29 PM
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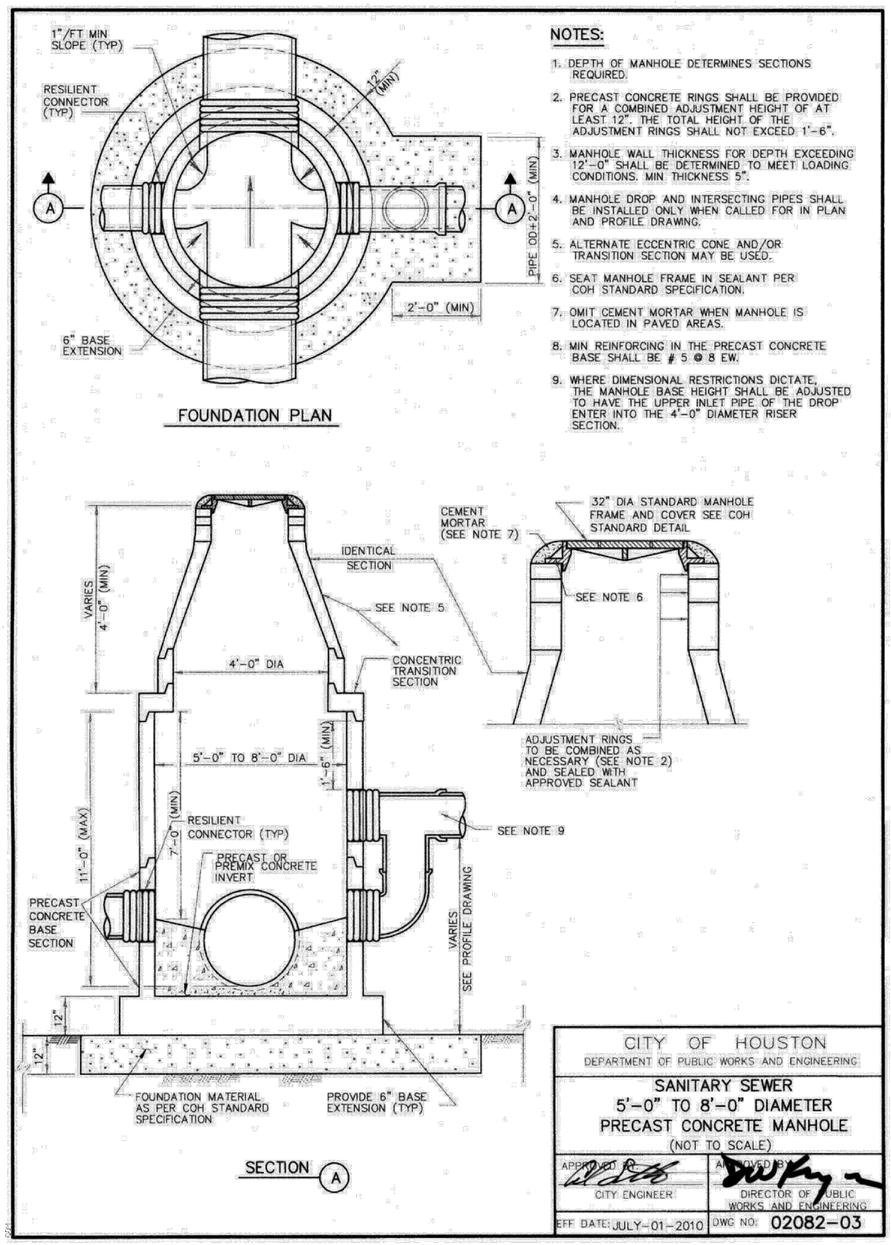


NOTES:

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.

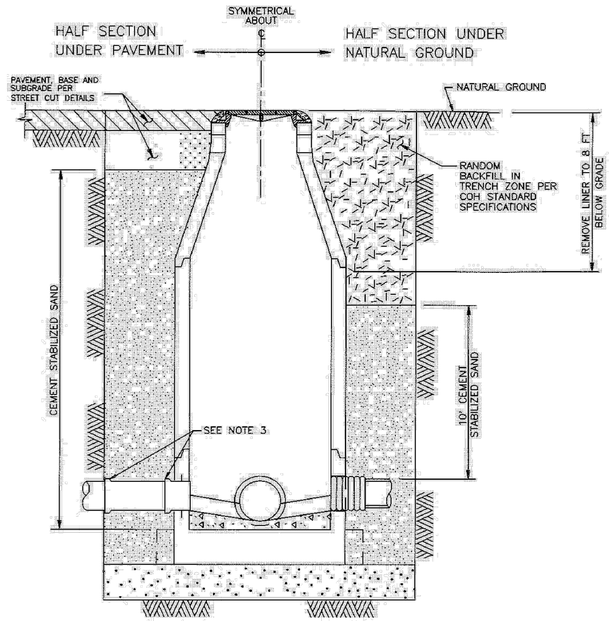
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

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

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: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02317-08

NOTES:

1. A MANHOLE LOCATED WITHIN A 100-YEAR FLOOD PLAIN MUST BE GASKETED AND BOLTED DOWN TO PREVENT INFLOW.
2. A MANHOLE COVER THAT IS LOCATED IN A ROADWAY MUST MEET OR EXCEED THE AMERICAN ASSOCIATION OF STATE HIGHWAYS AND TRANSPORTATION OFFICIALS STANDARD M-306 FOR LOAD BEARING.
3. A MANHOLE CONNECTED TO PIPES LESS THAN 15 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST HALF THE LARGEST PIPE'S DIAMETER.
4. A MANHOLE CONNECTED TO A PIPE THAT IS AT LEAST 15 INCHES IN DIAMETER BUT NOT MORE THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THREE-FOURTHS OF THE LARGEST PIPE'S DIAMETER.
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8. A MANHOLE-PIPE CONNECTION MUST USE WATERTIGHT, SIZE-ON-SIZE RESILIENT CONNECTORS THAT ALLOW FOR DIFFERENTIAL SETTLEMENT AND MUST CONFORM TO AMERICAN SOCIETY FOR TESTING AND MATERIALS C923.

BENCHING NOTES:

1. A MANHOLE CONNECTED TO A PIPE THAT IS AT LEAST 15 INCHES IN DIAMETER BUT NOT MORE THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THREE-FOURTHS OF THE LARGEST PIPE'S DIAMETER.
2. A MANHOLE CONNECTED TO A PIPE THAT IS GREATER THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THE LARGEST PIPE'S DIAMETER.

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Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
SANITARY SEWER DETAILS

(SHEET 2 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
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CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 41 OF 57	

PLOTTED: 4/24/2026 4:29 PM
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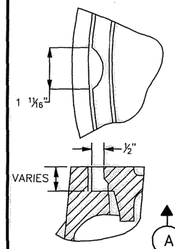
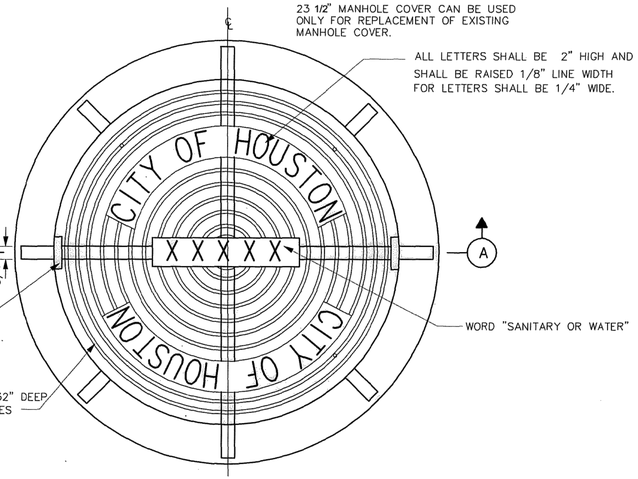
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Standard Details.dwg

TYPE 1
OPEN PICK HOLE



NOTE:
23 1/2" MANHOLE COVER CAN BE USED ONLY FOR REPLACEMENT OF EXISTING MANHOLE COVER.

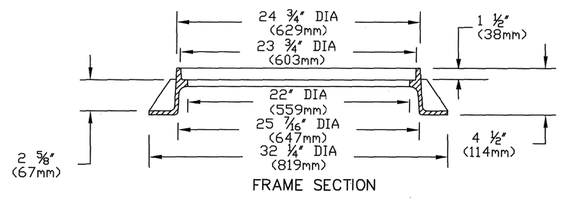


ALL LETTERS SHALL BE 2" HIGH AND SHALL BE RAISED 1/8" LINE WIDTH FOR LETTERS SHALL BE 1/4" WIDE.

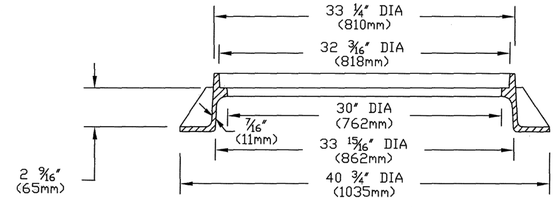
WORD "SANITARY OR WATER"

PLAN

23 1/2" MANHOLE COVER WITH FRAME



FRAME SECTION



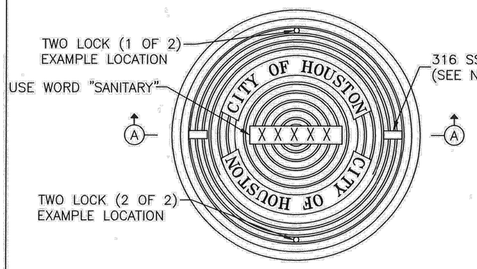
SECTION (A)

32" MANHOLE COVER WITH FRAME

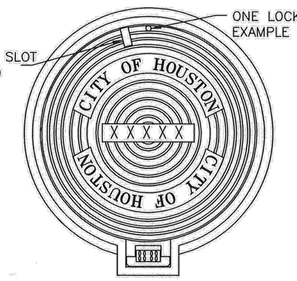
1) NOTE: APPROXIMATE WEIGHTS.
FRAME- 170 LBS 77 kg
COVER- 270 LBS 123 kg
UNIT- 440 LBS 200 kg
2) MATERIAL- GRAY IRON ASTM A48 CL35B
3) CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4) MODEL V-14240 ASY OR APPROVED EQUAL

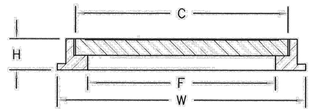
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
SANITARY SEWER AND WATER MANHOLE FRAME AND COVER (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: Dale A. Rudick DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2016	DWG NO: 02090-01

ASSEMBLY VIEW



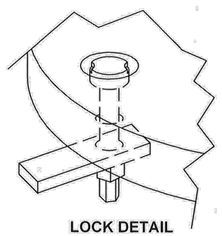
ASSEMBLY VIEW - W/ HINGE



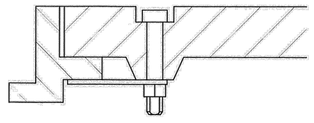


SECTION A-A

COVER SIZE	C IN (MAX)	F IN (EXACT)	H IN (MAX)	W IN (MAX)
32"	35.75	30.00	5.00	41.00



LOCK DETAIL



LOCK CUT AWAY SECTION DETAIL

NOTES:

1. FRAME AND COVER MEETS OR EXCEEDS REQUIREMENTS FOR CITY OF HOUSTON SPECIFICATION 02091 – NON METALLIC FRAMES, GRATES, RINGS, AND COVERS.
2. COVER SHALL HAVE A MINIMUM OF ONE (1) 316 STAINLESS STEEL PICK BAR SLOT MOLDED IN THE COMPOSITE MATRIX.
3. LOCK AND BOLT SHALL BE 316 STAINLESS STEEL AND BE ¼" TURN CAM/PADDLE TYPE.
4. MANHOLE DESIGNS WITHOUT HINGES MUST INCLUDE A MINIMUM OF TWO (2) LOCKS LOCATED ON OPPOSITE EDGES. DESIGNS WITH A HINGE MUST INCLUDE A MINIMUM OF ONE (1) LOCK LOCATED OPPOSITE EDGE OF THE HINGE MECHANISM.
5. MANHOLE INSTALLATIONS WITH HINGES SHALL ORIENT HINGES PARALLEL TO TRAFFIC FLOW DIRECTION. THE HINGE WILL BE LOCATED ON THE APPROACHING DIRECTION OF TRAFFIC.

CITY OF HOUSTON HOUSTON PUBLIC WORKS	
NON-METALLIC MANHOLE FRAME AND COVER (NOT TO SCALE)	
APPROVED BY: Suhail Kanwar CITY ENGINEER	APPROVED BY: Carol Haddock DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 02091-01

NOTES:

1. A MANHOLE LOCATED WITHIN A 100-YEAR FLOOD PLAIN MUST BE GASKETED AND BOLTED DOWN TO PREVENT INFLOW.
2. A MANHOLE COVER THAT IS LOCATED IN A ROADWAY MUST MEET OR EXCEED THE AMERICAN ASSOCIATION OF STATE HIGHWAYS AND TRANSPORTATION OFFICIALS STANDARD M-306 FOR LOAD BEARING.
3. A MANHOLE CONNECTED TO PIPES LESS THAN 15 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST HALF THE LARGEST PIPE'S DIAMETER.
4. A MANHOLE CONNECTED TO A PIPE THAT IS AT LEAST 15 INCHES IN DIAMETER BUT NOT MORE THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THREE-FOURTHS OF THE LARGEST PIPE'S DIAMETER.
5. A MANHOLE CONNECTED TO A PIPE THAT IS GREATER THAN 24 INCHES IN IDMATER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THE LARGEST PIPE'S DIAMETER.
6. IN A MANHOLE WITH PIPES OF DIFFERENT SIZES, THE TOPS OF ALL THE PIPES MUST BE AT THE SAME ELEVATION AND FLOW CHANNELS IN THE INVERT MUST BE SLOPED EVENLY FROM PIPE TO PIPE TO PREVENT BACK PRESSURE.
7. A COLLECTION SYSTEM PIPE ENTERING A MANHOLE MOR ETHAN 24 INCHES ABOVE AN INVERT MUST HAVE A DROP PIPE.
8. A MANHOLE-PIPE CONNECTION MUST USE WATERTIGHT, SIZE-ON-SIZE RESILIENT CONNECTORS THAT ALLOW FOR DIFFERENTIAL SETTLEMENT AND MUST CONFORM TO AMERICAN SOCIETY FOR TESTING AND MATERIALS C923.

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91826
04/15/2026
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
SANITARY SEWER DETAILS

(SHEET 3 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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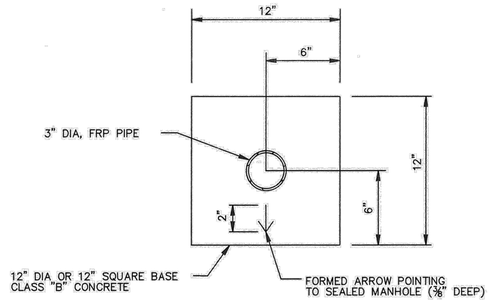
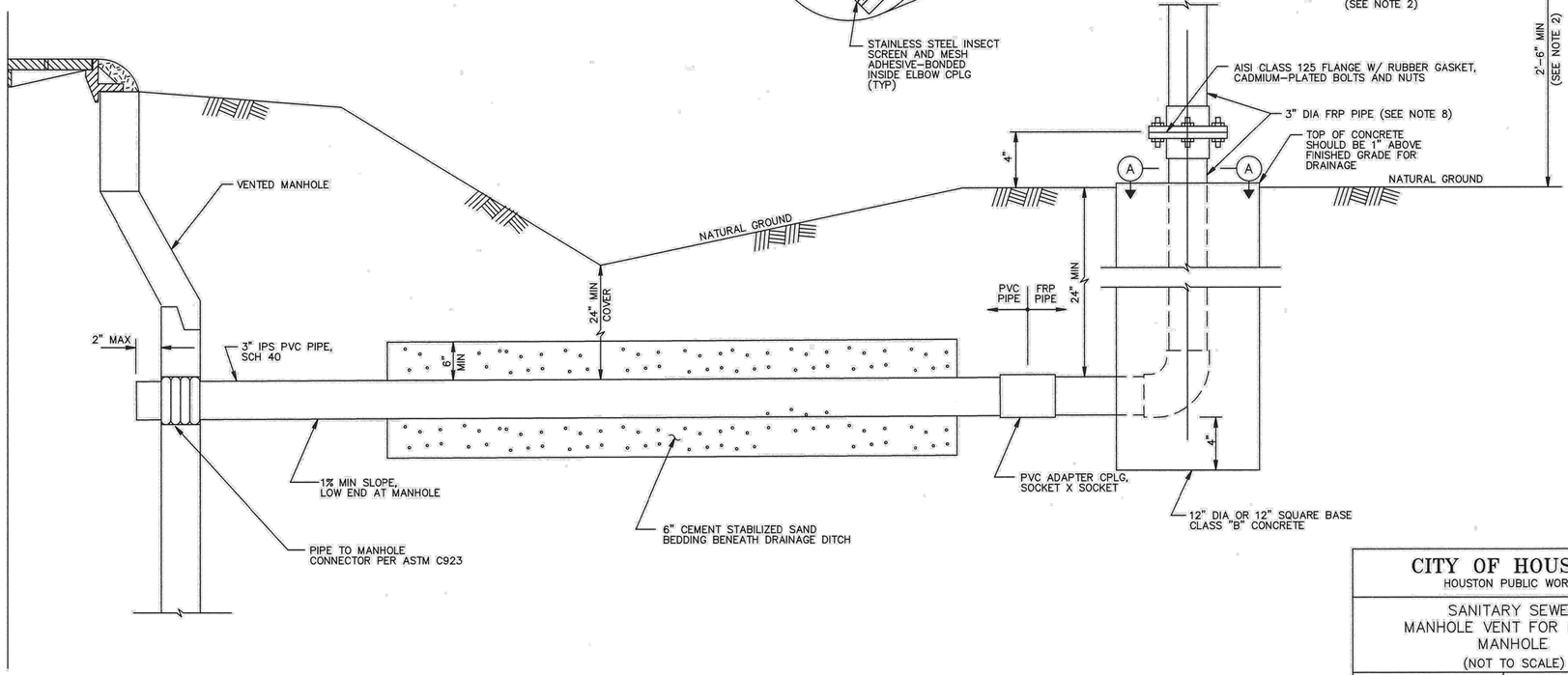
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 42 OF 57	

PLOT STYLE: KAI-COH Color.ctb PLOTTED: 4/24/2026 4:29 PM
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Standard Details.dwg

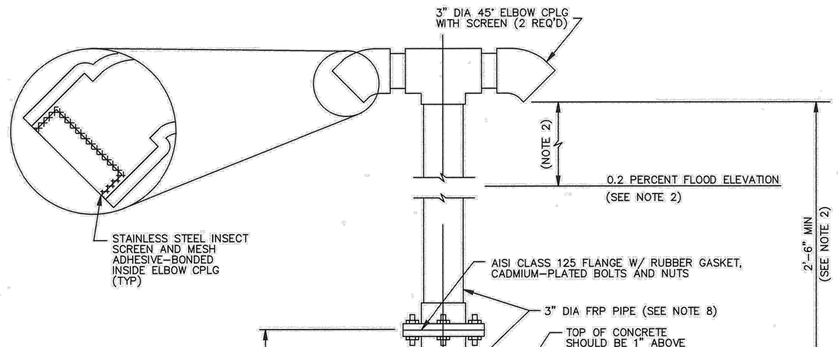


SECTION (A)
CONCRETE FOUNDATION
(SEE NOTE 8)



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

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
SANITARY SEWER DETAILS

(SHEET 4 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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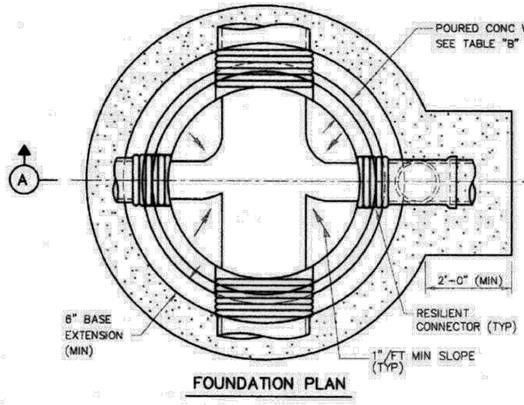
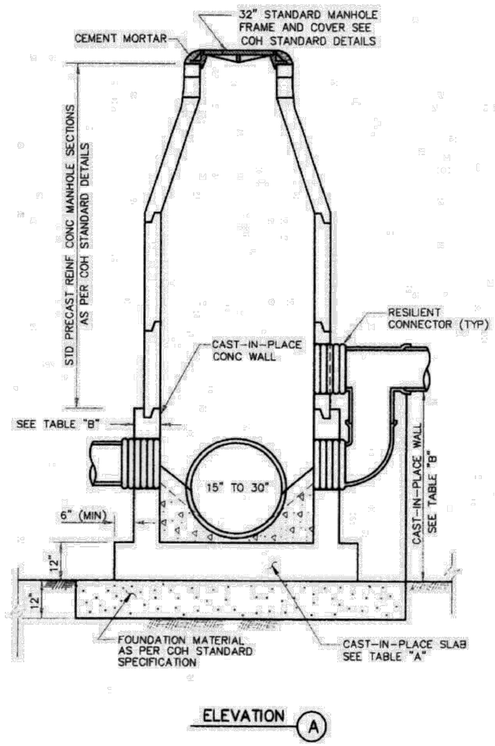


FOUNDATION PLAN



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 @ 6"
	≤ 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"	# 6 @ 10"

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.

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 @ 6"	
	≤ 60	10'-0"	1'-4"	# 6 @ 6"	
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'-0"	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	8'-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'-6"	0'-8"	# 5 @ 12"	# 4 @ 12"
	≤ 25	5'-0"	0'-8"	# 5 @ 10"	
	≤ 30	5'-6"	0'-10"	# 6 @ 12"	
	≤ 40	6'-0"	0'-10"	# 6 @ 12"	

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SANITARY SEWER
PRECAST CONCRETE MANHOLE
WITH CAST-IN-PLACE BASE
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER — DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY-01-2010 DWG NO: 02082-08

NOTES:
1. A MANHOLE LOCATED WITHIN A 100-YEAR FLOOD PLAIN MUST BE GASKETED AND BOLTED DOWN TO PREVENT INFLOW.
2. A MANHOLE COVER THAT IS LOCATED IN A ROADWAY MUST MEET OR EXCEED THE AMERICAN ASSOCIATION OF STATE HIGHWAYS AND TRANSPORTATION OFFICIALS STANDARD M-306 FOR LOAD BEARING.
3. A MANHOLE CONNECTED TO PIPES LESS THAN 15 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST HALF THE LARGEST PIPE'S DIAMETER.
4. A MANHOLE CONNECTED TO A PIPE THAT IS AT LEAST 15 INCHES IN DIAMETER BUT NOT MORE THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THREE-FOURTHS OF THE LARGEST PIPE'S DIAMETER.
5. A MANHOLE CONNECTED TO A PIPE THAT IS GREATER THAN 24 INCHES IN IDMATER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THE LARGEST PIPE'S DIAMETER.
6. IN A MANHOLE WITH PIPES OF DIFFERENT SIZES, THE TOPS OF ALL THE PIPES MUST BE AT THE SAME ELEVATION AND FLOW CHANNELS IN THE INVERT MUST BE SLOPED EVENLY FROM PIPE TO PIPE TO PREVENT BACK PRESSURE.
7. A COLLECTION SYSTEM PIPE ENTERING A MANHOLE MOR ETHAN 24 INCHES ABOVE AN INVERT MUST HAVE A DROP PIPE.
8. A MANHOLE-PIPE CONNECTION MUST USE WATERTIGHT, SIZE-ON-SIZE RESILIENT CONNECTORS THAT ALLOW FOR DIFFERENTIAL SETTLEMENT AND MUST CONFORM TO AMERICAN SOCIETY FOR TESTING AND MATERIALS C923.

BENCHING NOTES:
1. A MANHOLE CONNECTED TO A PIPE THAT IS AT LEAST 15 INCHES IN DIAMETER BUT NOT MORE THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THREE-FOURTHS OF THE LARGEST PIPE'S DIAMETER.
2. A MANHOLE CONNECTED TO A PIPE THAT IS GREATER THAN 24 INCHES IN DIAMETER MUST HAVE A CHANNEL DEPTH EQUAL TO AT LEAST THE LARGEST PIPE'S DIAMETER.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
SANITARY SEWER DETAILS

(SHEET 5 OF 6)

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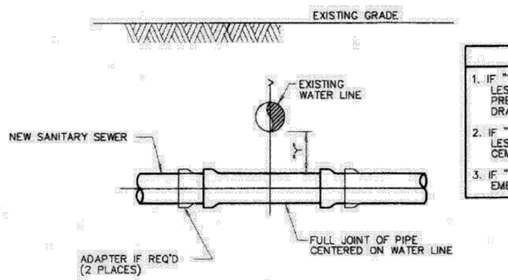


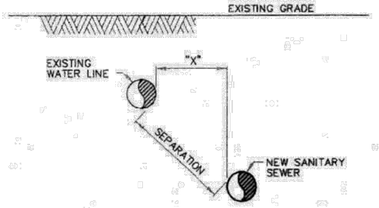
NEW SANITARY SEWER CROSSING EXISTING WATER LINE

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

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91826
04/15/2026
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
SANITARY SEWER DETAILS

(SHEET 6 OF 6)

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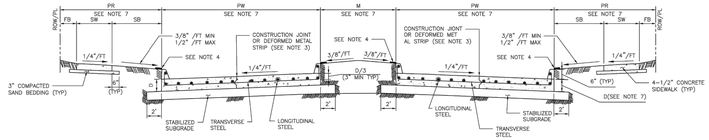
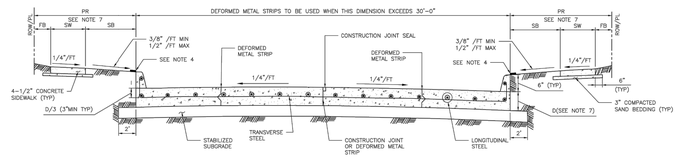


TYPICAL DOUBLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS



TYPICAL SINGLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS

TABLE 1

REINFORCING STEEL BAR SIZES AND SPACINGS FOR VARIOUS PAVEMENT THICKNESSES (D) WITH: MAXIMUM TRANSVERSE CONTROL JOINT SPACING = 20'-0"
MAXIMUM EXPANSION JOINT SPACING = 80'-0"
f'c = 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
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11	34	36	11.50	2.75	24	17.50	2.5	17	25.00	4	24	36	36
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12	25	–	–	–	19	16.25	4.0	13	24.50	3	36	36	36
12	34	–	–	–	26	16.00	4.0	18	23.50	4	24	36	36
12	35	–	–	–	26	16.50	4.0	19	23.00	3	24	36	36
12	36	–	–	–	27	16.25	4.5	20	22.25	4.5	24	36	36
12	44	–	–	–	33	16.25	4.0	24	22.50	5	24	30	36
12	45	–	–	–	35	15.75	3.0	25	22.25	3	24	30	36

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

NOTES:
1. THE MAXIMUM WIDTH BETWEEN LONGITUDINAL JOINTS SHALL NOT EXCEED 15'-0".
2. ALL EARTHEN AREAS ARE TO BE HYDROMULCHED UNLESS SHOWN OTHERWISE ON DRAWINGS.
3. CONTRACTOR MAY SAW CUT IN LIEU OF DEFORMED METAL STRIP.
4. USE STRIP OF SOD GRASS TO PREVENT EROSION UNTIL STAND OF GRASS IS ESTABLISHED.
5. AN EQUAL OR LARGER AREA OF WELDED REINFORCEMENT BAR CONFORMING TO ASTM A497, MAY BE SUBSTITUTED FOR REBARS LISTED IN TABLE 1.
6. IF AVAILABLE ROW IS NOT SUFFICIENT TO ACCOMMODATE SIDEWALK WIDTH (SW) ACCORDING TO LDM 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.

APPROVED BY:	APPROVED BY:
Suhail Kanwar	Hang Nguyen
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carl Hahlbeck	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02751-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONCRETE PAVEMENT DETAILS

FOR CITY OF HOUSTON USE ONLY

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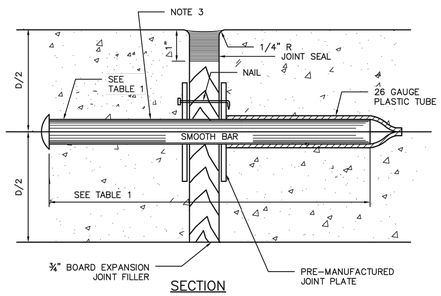
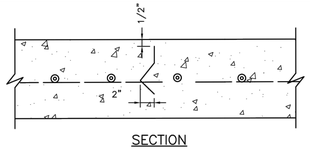


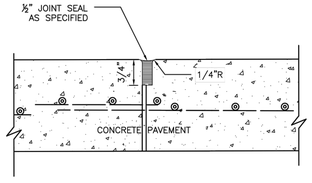
SECTION

DOWEL TYPE EXPANSION JOINT



SECTION

DEFORMED METAL STRIP



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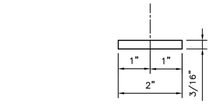
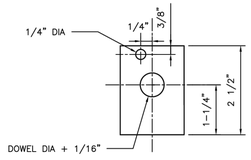
CONSTRUCTION JOINT SEAL



PLAN VIEW

JOINT PLATE



ELEVATION VIEW

JOINT PLATE

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.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PAVEMENT EXPANSION AND CONSTRUCTION JOINT DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:	
DocuSigned by: Suhail Kanwar — CITY ENGINEER	DocuSigned by: Carl Hahlbeck — DIRECTOR OF HPW
DocuSigned by: Hang Nguyen — CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 02752-01

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

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GREGORY J. HENRY
91876
LICENSED ENGINEER
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD PAVING DETAILS

(SHEET 1 OF 2)

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NEIL BARNSDALE, P.E.	
SHEET NO. 46 OF 57	

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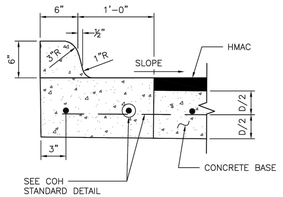
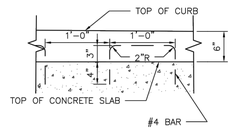
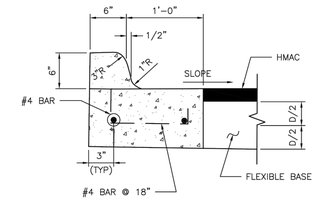


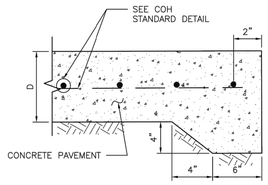
ESPLANADE CURB CONNECTED TO CONCRETE BASE



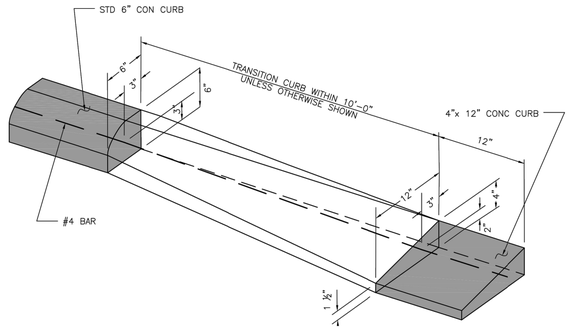
ALTERNATE CONCRETE CURB REINFORCEMENT



ESPLANADE CURB CONNECTED TO FLEXIBLE BASE



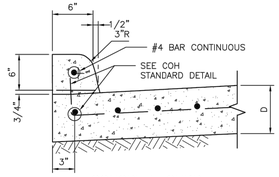
STANDARD CONCRETE PAVING HEADER



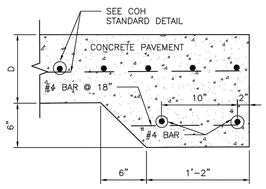
CURB TRANSITION
(SEE NOTES)

4"x12" MONOLITHIC AND TRANSITION CURB NOTES:

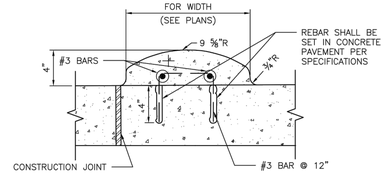
1. 6-INCH CONCRETE CURB TO BE CONSTRUCTED ON ALL ESPLANADES, ISLANDS, NON-RESIDENTIAL STREETS, AND RESIDENTIAL STREETS.
2. TRANSITIONS FROM 6- INCH CONCRETE CURB TO 4-INCH x 12-INCH CONCRETE CURB TO BE ACCOMPLISHED WITHIN 10 FEET, UNLESS OTHERWISE SHOWN. IF THIS 10-FEET TRANSITION CURB IS NOT POURED MONOLITHICALLY WITH THE PAVEMENT, THEN REINFORCING STEEL AS SHOWN IN "4-INCH x 12-INCH TRANSITION CURB" IS TO BE INSTALLED.



CONCRETE CURB

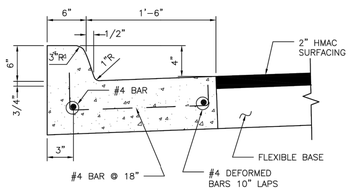


STANDARD RAILROAD HEADER

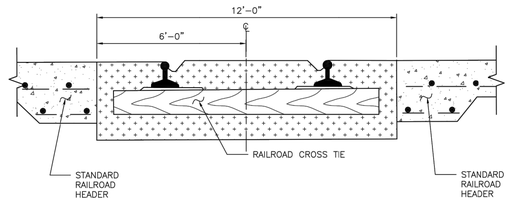


MOUNTABLE CURB

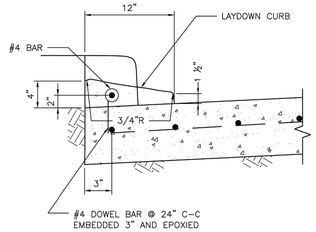
WHEN CONCRETE CURB IS TO BE PLACED EXISTING CONCRETE USE BASE #4 BAR @ 18x10" LONG, DOWELED AND SET IN EPOXY GROUT. SET #4 DOWEL BARS, 25" LONG AT 12" C-C WHEN PAVEMENT SECTION POURED.



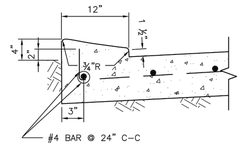
MONOLITHIC CURB AND GUTTER



STANDARD RAILROAD CROSSING - SINGLE TRACK



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



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

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DocuSigned by: Suhail Kauwar 8EF8B0CB41F5478...	DocuSigned by: HUNG NGUYEN 99A2EEFDA7B04CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock 4A5CA16E7DF24A4...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02771-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CURB, CURB AND GUTTER AND HEADER DETAILS

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LAN™ Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

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GREGORY J. HENRY
91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD PAVING DETAILS

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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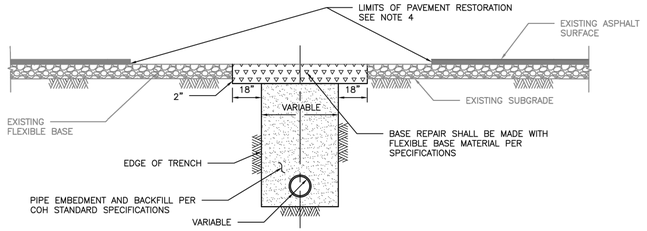
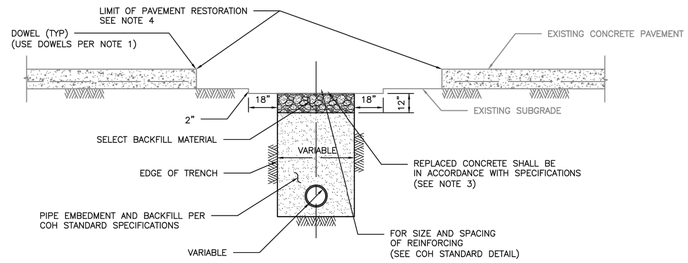


ELEVATION A
REPAIR OF FLEXIBLE BASE PAVEMENT



ELEVATION B
REPAIR OF REINFORCED CONCRETE PAVEMENT

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 WITH ASPHALT, REPLACE WITH 2" MIN HMAC SURFACING.
3. REFER TO STANDARD DETAIL 02751-01 FOR REINFORCING STEEL REQUIREMENTS.
4. REFER TO STANDARD DETAIL 02951-01 THROUGH 03 FOR PAVEMENT RESTORATION LIMITS.

DISCLAIMER:
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PAVEMENT REPAIR DETAIL
FOR STREET CUTS
(FLEX-BASE PAVEMENT & CONCRETE PAVEMENT)
(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER
DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER
DocuSigned by: Carol Haddock — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 02951-04

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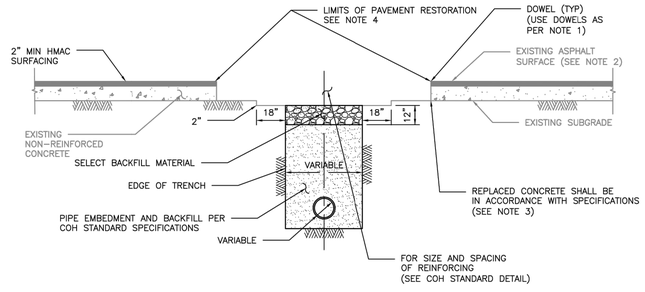
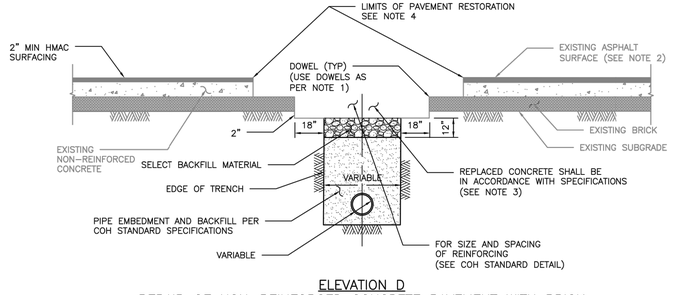


ELEVATION C
REPAIR OF NON-REINFORCED CONCRETE PAVEMENT



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.

DISCLAIMER:
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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: Suhail Kanwar — CITY ENGINEER
DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER
DocuSigned by: Carol Haddock — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 02951-05

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

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GREGORY J. HENRY
91876
Registered Engineer
04/15/2026
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
PAVEMENT REPAIR DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 48 OF 57	

PLOTTED: 4/24/2026 4:30 PM
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Standard Details.dwg

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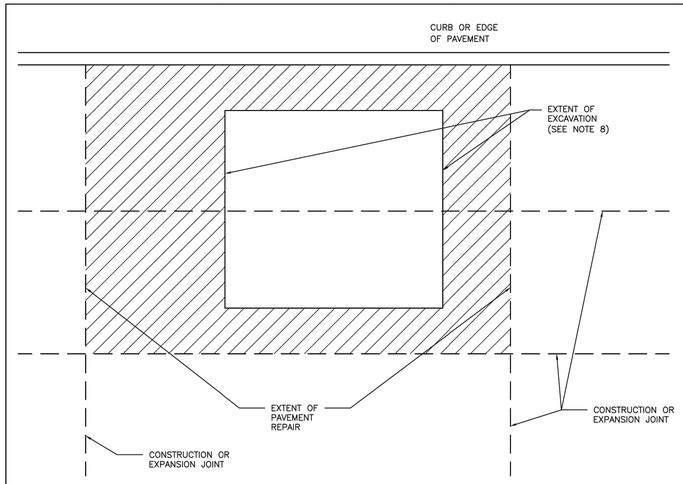

NOTES:

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

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, ACCURACY 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.

CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
STREET CUT FOR CONCRETE PAVEMENT REPLACEMENT/RESTORATION AGE OF PAVEMENT ≤ 5YRS (SCALE: NOT TO SCALE)	
APPROVED BY:	
DocuSigned by: Sukeil Kanwar CITY ENGINEER DocuSigned by: KHANG NGUYEN CITY TRAFFIC ENGINEER	DocuSigned by: Carl Haddock DIRECTOR OF HPW
EFF DATE: NOV–27–2023	DWG NO: 02951–01

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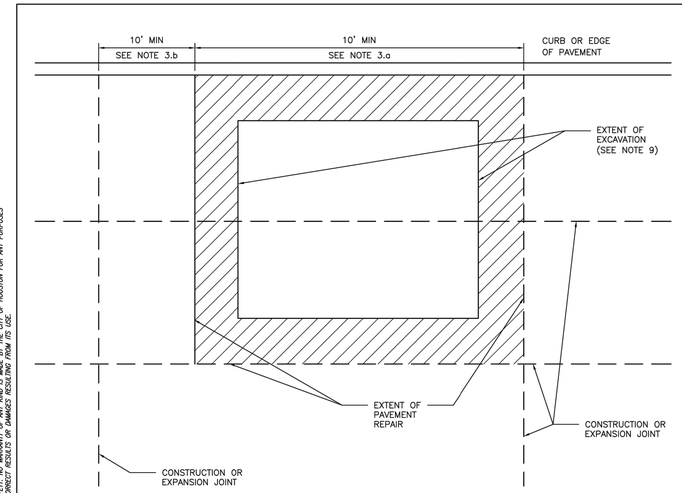

NOTES:

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

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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)	
APPROVED BY:	
DocuSigned by: Sukeil Kanwar CITY ENGINEER DocuSigned by: KHANG NGUYEN CITY TRAFFIC ENGINEER	DocuSigned by: Carl Haddock DIRECTOR OF HPW
EFF DATE: NOV–27–2023	DWG NO: 02951–02

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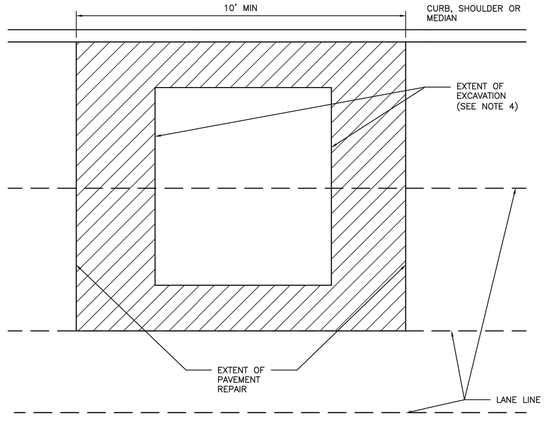

NOTES:

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

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CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
STREET CUT FOR ASPHALT PAVEMENT REPLACEMENT/RESTORATION FOR PAVEMENT OF ALL AGES (SCALE: NOT TO SCALE)	
APPROVED BY:	
DocuSigned by: Sukeil Kanwar CITY ENGINEER DocuSigned by: KHANG NGUYEN CITY TRAFFIC ENGINEER	DocuSigned by: Carl Haddock DIRECTOR OF HPW
EFF DATE: NOV–27–2023	DWG NO: 02951–03

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
STREET CUT DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
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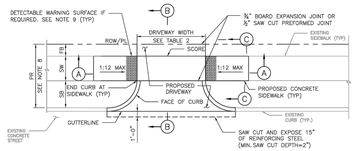
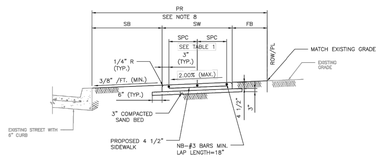
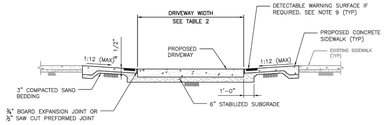


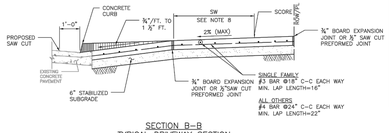
PLAN VIEW
DRIVEWAY



SECTION C–C
TYPICAL SIDEWALK SECTION



SECTION A–A
PROPOSED SIDEWALK THROUGH DRIVEWAY
WITH EXCESSIVE ELEVATION DIFFERENCE
WITH EXISTING SIDEWALK



SECTION B–B
TYPICAL DRIVEWAY SECTION

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 "nB"	SPACING "SPAC" (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	$12^{(3)}$	$16^{(5)}$	$4^{(6)}$	$10^{(6)}$	15	20	10	20
TWO-WAY	$10^{(3)}$	$24^{(4)}$	4	10	$16^{(3)}$	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 ARTICLES 15.2.07.C.1.d.(1) AND 15.2.07.C.1.d.(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 CURRENT 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 (HPW) 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.

APPROVED BY:	APPROVED BY:
Signed by: [signature]	Signed by: [signature]
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: [signature]	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02754-01B

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DRIVEWAY DETAIL WITH 6" CURBED STREETS

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
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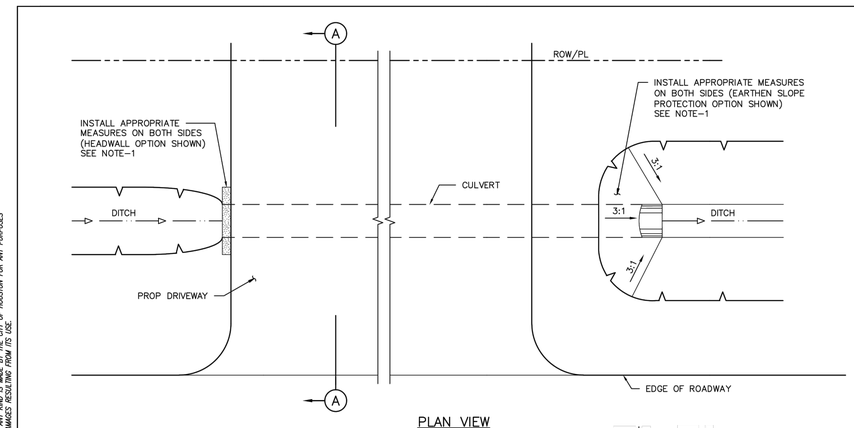
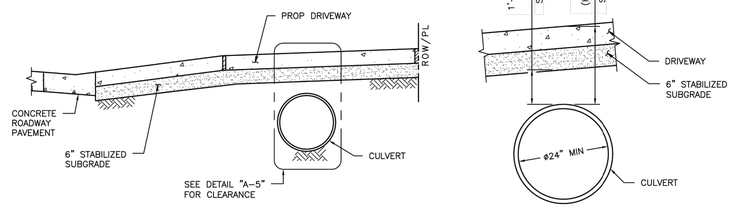


PLAN VIEW
STANDARD OPEN DITCH DRIVEWAY



SECTION A–A
STANDARD PIPE CULVERT CLEARANCE

DETAIL A–5
CULVERT CLEARANCE

NOTES:

1. PIPE CULVERTS SHALL CONFORM TO CHAPTER 9 DESIGN REQUIREMENTS OF THE INFRASTRUCTURE DESIGN MANUAL AND MATERIAL REQUIREMENTS OF STANDARD CONSTRUCTION SPECIFICATION SECTION 02631.
   - 1.1. INSTALL APPROPRIATE MEASURES (E.G., HEADWALLS, SAFETY END TREATMENTS, RIPRAP, SLOPED PAVING, EARTHEN SLOPE PROTECTION, ETC.) AT BOTH SIDES OF INLET AND OUTLET OF A CULVERT AS REQUIRED.
   - 1.2. CURBED OR FLUSH HEADWALL OR SAFETY END TREATMENT SHALL BE PROVIDED FOR COMMERCIAL DRIVEWAY CULVERTS.
   - 1.3. RIP RAP, SLOPED PAVING AND EARTHEN SLOPE PROTECTION ARE ONLY ALLOWED FOR SINGLE FAMILY RESIDENTIAL DRIVEWAY CULVERTS LOCATED ALONG LOCAL STREETS.
   - 1.4. WHERE EARTHEN SLOPE PROTECTION IS SPECIFIED, FACTORS SUCH AS EROSION CONTROL, SOIL AND PIPE STRENGTH TO CARRY ERRANT VEHICLE LOADS SHALL BE DESIGN CONSIDERATIONS.
   - 1.5. WHERE EARTHEN SLOPES ARE SPECIFIED, THE SLOPE SHALL NOT BE STEEPER THAN 3H:1V. THE PIPE END SHALL EXTEND 2 FT MINIMUM BEYOND THE EDGE OF DRIVEWAY PAVEMENT ON EACH SIDE OF THE DRIVEWAY CULVERT.
2. CULVERT SIZE WILL BE APPROVED BY CITY ENGINEER WITH 24" DIAMETER MINIMUM.
3. DRIVEWAY MATERIAL WITHIN THE RIGHT OF WAY SHALL BE CONCRETE OR ASPHALT.
4. FOR MIN COVER REQUIREMENTS FOR THERMOPLASTIC PIPES (HDPE & PP) REFER TO COH STD DETAIL 02317-10G.
5. FOR RCP WHERE STANDARD 1'-0" CLEARANCE IS NOT FEASIBLE, MINIMUM CLEARANCE OF 6" IS ALLOWED WHEN APPROVED BY THE OFFICE OF THE CITY ENGINEER (OCE).
6. DITCH FLOW LINE DIRECTION DEPICTED IS SHOWN AS AN EXAMPLE AND MAY NOT MATCH SITE SPECIFIC CONDITIONS. REFER TO CONTRACT DRAWINGS FOR FLOW LINE DIRECTION AND ELEVATIONS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DRIVEWAYS WITH CULVERTS ON OPEN DITCH TYPE STREETS

(SCALE: NOT TO SCALE)

APPROVED BY:	
Signed by: [signature]	Signed by: [signature]
CITY ENGINEER	DIRECTOR OF HPW
Docusigned by: [signature]	
CITY TRAFFIC ENGINEER	
EFF DATE: MAR-02-2026	DWG NO: 02754-02

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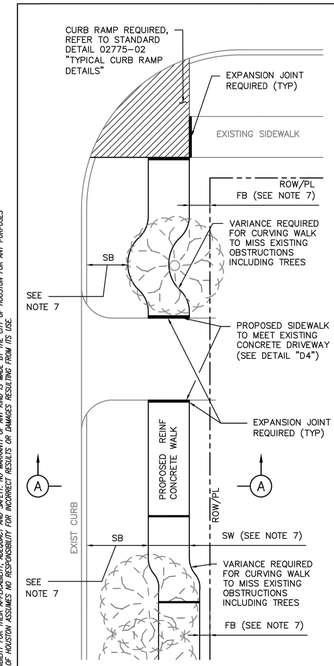
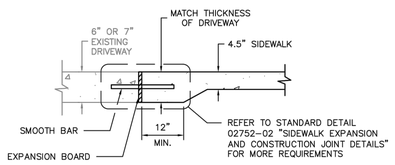


PLAN VIEW

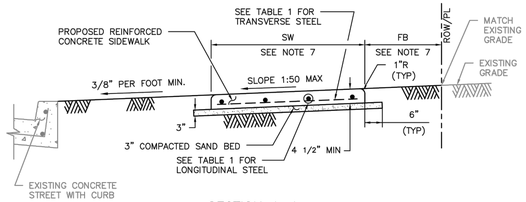


DETAIL D4
DRIVEWAY/SIDEWALK HEADER

TABLE 1

REINFORCING STEEL INFORMATION
FOR 4 ½ " THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
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	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: Suhail Kanwar — CITY ENGINEER
DocuSigned by: Hang Nguyen — CITY TRAFFIC ENGINEER
DocuSigned by: Carl Hallbeck — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 02775-01

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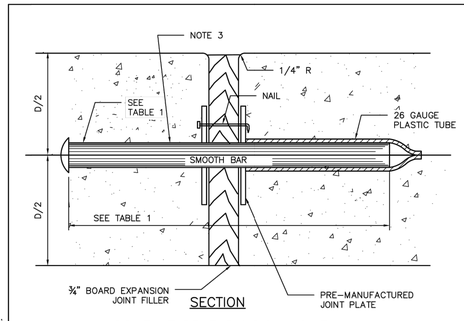
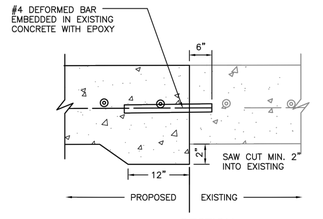
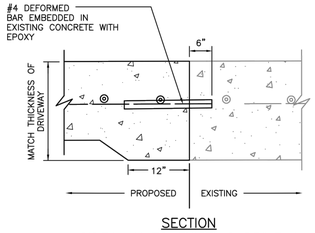


SECTION

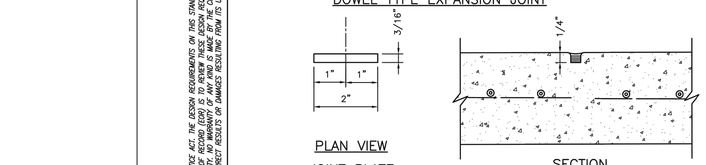
DOWEL TYPE EXPANSION JOINT



SECTION
SIDEWALK TO EXISTING SIDEWALK

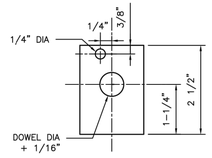


SECTION
SIDEWALK TO EXISTING DRIVEWAY



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

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: Suhail Kanwar — CITY ENGINEER
DocuSigned by: Hang Nguyen — CITY TRAFFIC ENGINEER
DocuSigned by: Carl Hallbeck — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 02752-02

LAN™
Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

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GREGORY J. HENRY
91876
Registered Engineer
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
SIDEWALK DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 51 OF 57	

PLOT STYLE: KAI-COH Color.ctb PLOTTED: 4/24/2026 4:30 PM
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Standard Details.dwg

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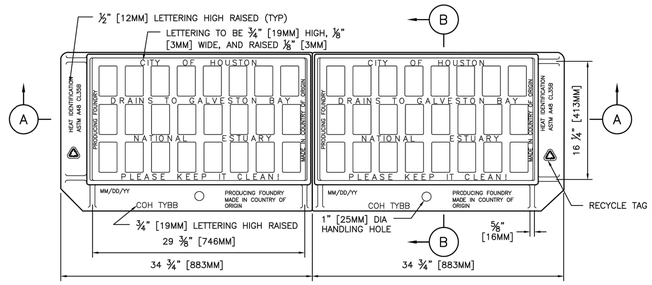
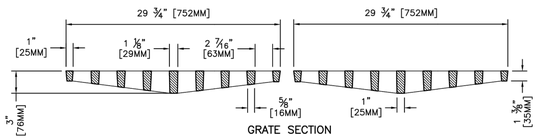
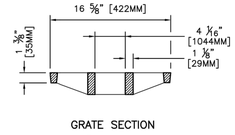


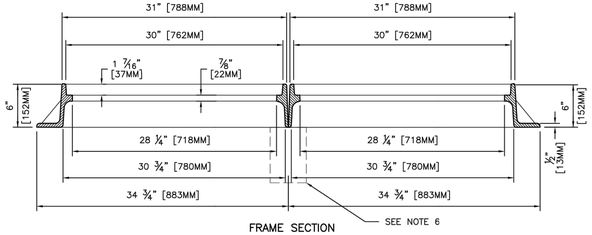
TOP VIEW



GRATE SECTION

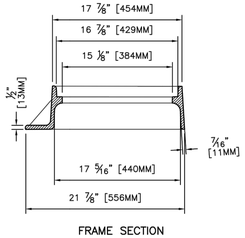


GRATE SECTION



FRAME SECTION

SECTION A–A



FRAME SECTION

SECTION B–B

NOTES:

1. APPROXIMATE WEIGHTS:

   EACH GRATE – 115 LBS (52KGS)
   EACH FRAME – 120 LBS (55KGS)
   EACH UNIT – 235 LBS (107KGS)

2. MATERIAL– GRAY IRON ASTM A48 CL35B.
3. CASTING MUST BE MANUFACTURED AND PROOF TESTED IN ACCORDANCE WITH AASHTO M306.
4. EJ V4243 ASY OR APPROVED EQUAL
   TYPE B–B 480 SQ. IN. [3096 SQ. CM.]
   TYPE B 240 SQ. IN. [1548 SQ. CM.]
5. IDENTIFICATION MARKINGS MUST COMPLY WITH CITY SPECIFICATIONS. MARKINGS NOT SHOWN ON THIS DETAIL MUST BE PLACED ON THE CASTING:
   A. PROVIDE ALL FRAME MARKINGS ON THE TOP SIDE OF THE FRAME.
   B. PROVIDE GRATE AND COVER MARKINGS ON EITHER TOP OR BOTTOM OF CASTING.
6. FOR INLET MAINTENANCE REFER TO COH STD 02632–04. FOR NEW INLET CONSTRUCTION REFER TO COH STD 02633–02.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STORM SEWER FRAME AND GRATE FOR TYPE "B–B" INLET DOUBLE ASSEMBLY
(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER	DIRECTOR OF HPW
EFF DATE: MAR–02–2026	DWG NO: 02090–05

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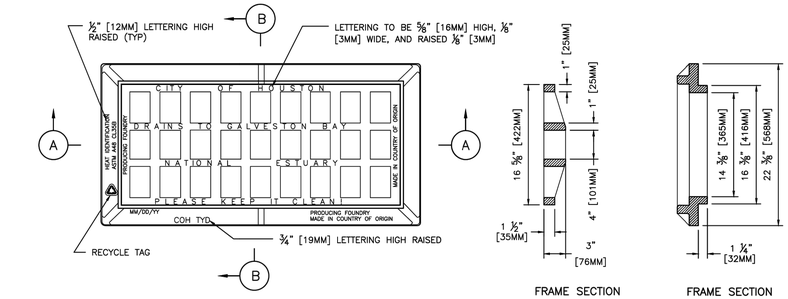


TOP VIEW

FRAME SECTION

FRAME SECTION

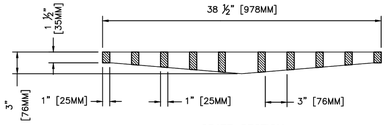
SECTION B–B

NOTES:

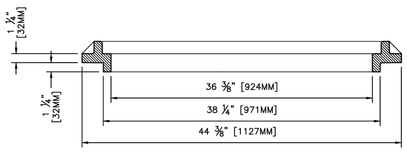
1. APPROXIMATE WEIGHTS:

   GRATE – 125 LBS (57KGS)
   FRAME – 108 LBS (49KGS)
   UNIT – 233 LBS (106KGS)

2. MATERIAL– GRAY IRON ASTM A48 CL35B.
3. CASTING MUST BE MANUFACTURED AND PROOF TESTED IN ACCORDANCE WITH AASHTO M306.
4. OPEN AREA OF GRATE:
   324 SQ. IN. [2090 SQ. CM.].
5. IDENTIFICATION MARKINGS MUST COMPLY WITH CITY SPECIFICATIONS. MARKINGS NOT SHOWN ON THIS DETAIL MUST BE PLACED ON THE CASTING:
   A. PROVIDE ALL FRAME MARKINGS ON THE TOP SIDE OF THE FRAME.
   B. PROVIDE GRATE AND COVER MARKINGS ON EITHER TOP OR BOTTOM OF CASTING.



GRATE SECTION



FRAME SECTION

SECTION A–A

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STORM SEWER TYPE "D" INLET GRATE AND FRAME
(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER	DIRECTOR OF HPW
EFF DATE: MAR–02–2026	DWG NO: 02090–06

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P–6408

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GREGORY J. HENRY
91876
04/15/2026
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
STORM SEWER DETAILS

(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000536–0035–3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 52 OF 57	

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PLOT STYLE: KAI-COH Color.ctb PLOTTED: 4/24/2026 4:30 PM
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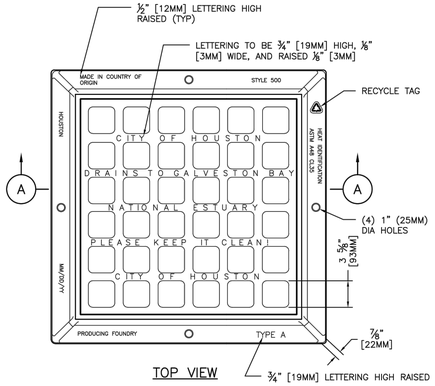
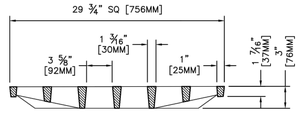


TOP VIEW



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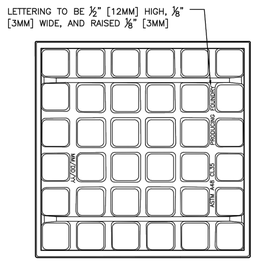
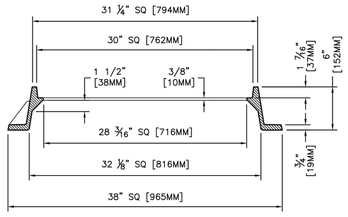


BOTTOM VIEW OF GRATE



FRAME SECTION

SECTION A–A

NOTES:

1. APPROXIMATE WEIGHTS:

   GRATE – 190 LBS (86KG)
   FRAME – 235 LBS (107KG)
   UNIT – 425 LBS (193KG)

2. MATERIAL– GRAY IRON ASTM A48 CL35B.
3. CASTING MUST BE MANUFACTURED AND PROOF TESTED IN ACCORDANCE WITH AASHTO M306.
4. EJ V4880 ASY OR APPROVED EQUAL.
5. OPEN AREA OF GRATE 473 SQ. IN. [3051 SQ.CM.].
6. IDENTIFICATION MARKINGS MUST COMPLY WITH CITY SPECIFICATIONS. MARKINGS NOT SHOWN ON THIS DETAIL MUST BE PLACED ON THE CASTING:

   A. PROVIDE ALL FRAME MARKINGS ON THE TOP SIDE OF THE FRAME.
   B. PROVIDE GRATE AND COVER MARKINGS ON EITHER TOP OR BOTTOM OF CASTING.

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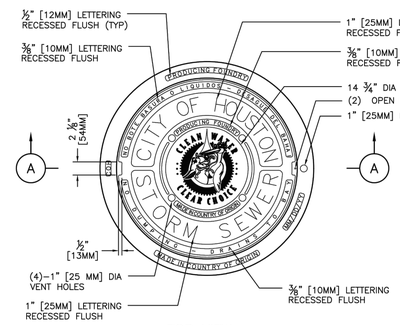
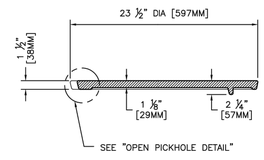
CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
STORM SEWER TYPE "A" INLET GRATE AND FRAME (SCALE: NOT TO SCALE)	
APPROVED BY:	
Signed by: 1BE9B0207DF84DC...	Signed by: 5E4659DFDDF49A8...
CITY ENGINEER	DIRECTOR OF HPW
EFF DATE: MAR-02-2026	DWG NO: 02090-07



TOP VIEW



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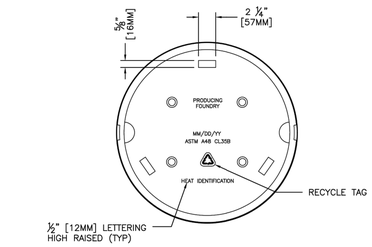
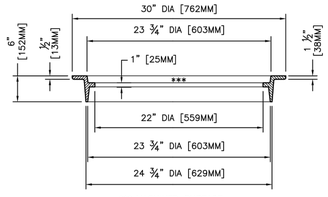


BOTTOM VIEW OF COVER



FRAME SECTION

SECTION A–A

NOTES:

1. APPROXIMATE WEIGHTS:

   FRAME – 120 LBS (55KGS)
   COVER – 130 LBS (59KGS)
   UNIT – 250 LBS (114KGS)

2. MATERIALS – GRAY IRON ASTM A48 CL35B.
3. CASTING MUST BE MANUFACTURED AND PROOF TESTED IN ACCORDANCE WITH AASHTO M306.
4. EJ V1814 ASY OR APPROVED EQUAL.
5. IDENTIFICATION MARKINGS MUST COMPLY WITH CITY SPECIFICATIONS. MARKINGS NOT SHOWN ON THIS DETAIL MUST BE PLACED ON THE CASTING:

   A. PROVIDE ALL FRAME MARKINGS ON THE TOP SIDE OF THE FRAME.
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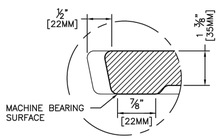

OPEN PICKHOLE DETAIL

CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
STORM SEWER TYPE "C", "C–1" AND "C–2" INLET FRAME AND COVER (SCALE: NOT TO SCALE)	
APPROVED BY:	
Signed by: 1BE9B0207DF84DC...	Signed by: 5E4659DFDDF49A8...
CITY ENGINEER	DIRECTOR OF HPW
EFF DATE: MAR-02-2026	DWG NO: 02090-08

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
FB NO. P-6408

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GREGORY J. HENRY
91876
LICENSED ENGINEER
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

COH STANDARD
STORM SEWER DETAILS

(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 53 OF 57	

FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Standard Details.dwg

PLOT STYLE: KAI-COH Color.ctb

PLOTTED: 4/24/2026 4:30 PM

Lockwood, Andrews & Newnam, Inc.
3700 W Sam Houston Pkwy S Houston, TX 77042

SURVEYED BY: KUO & ASSOCIATES, LLC
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GREGORY J. HENRY
91876
REGISTERED ENGINEER
04/15/2026

Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

TUNNEL AND SPECIAL CONNECTIONS DETAILS

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DRAWING SCALE	
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CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 54 OF 57	

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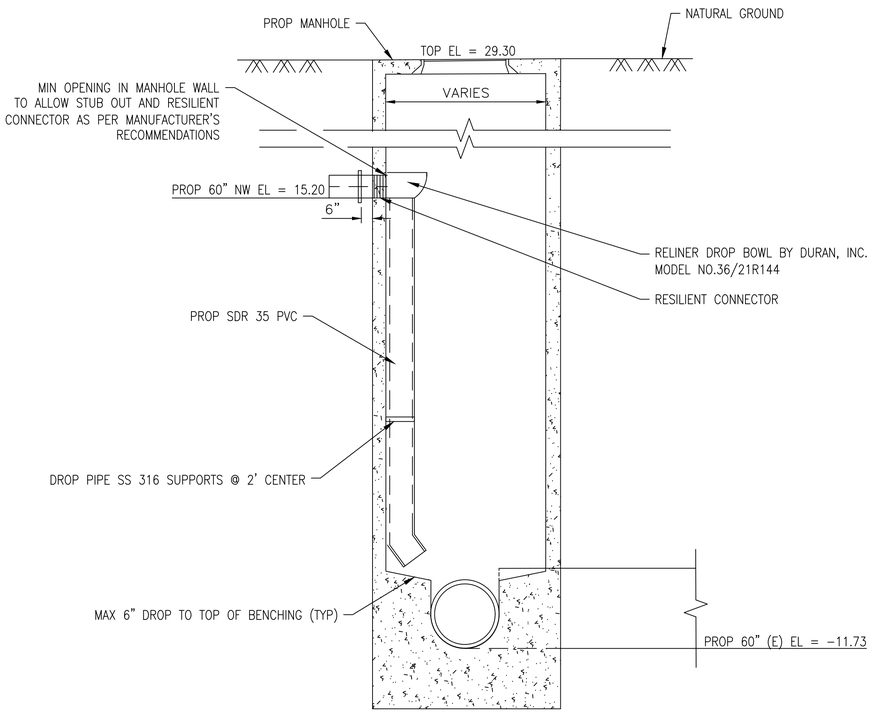
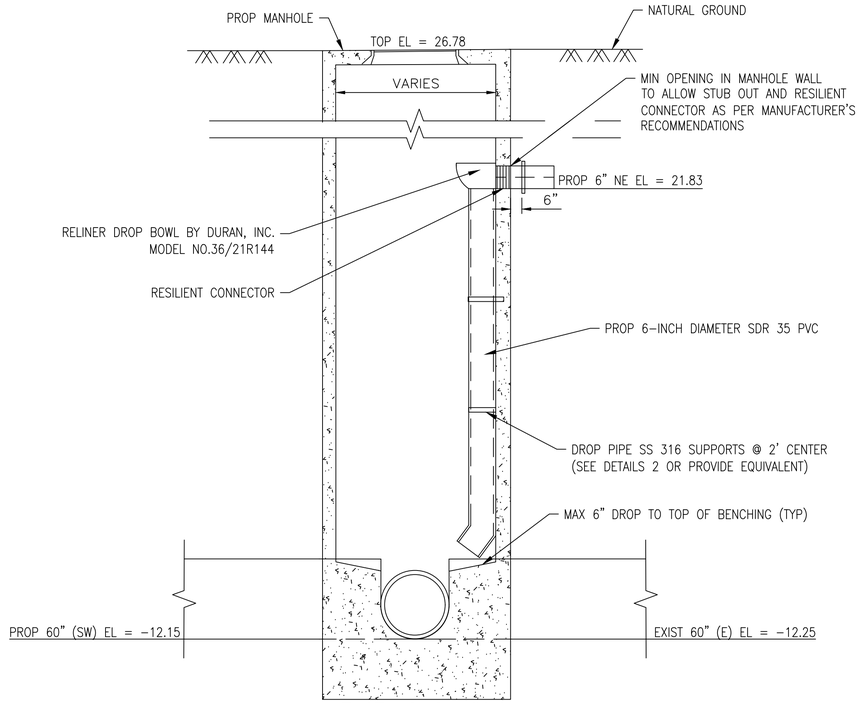
PLOT STYLE: KAI-COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Manhole Detail.dwg



MANHOLE AT STA 6+52 40-FT RT
DETAIL 1
NTS



MANHOLE AT STA 8+84 26.40-FT RT
DETAIL 2
NTS

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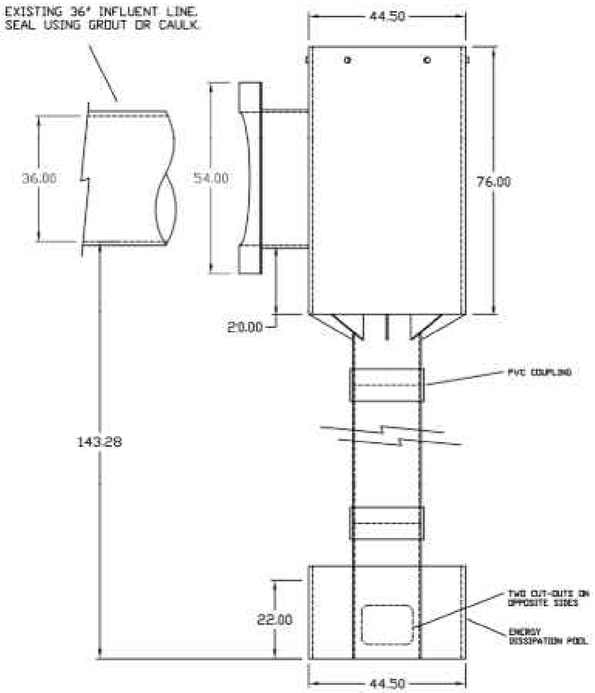
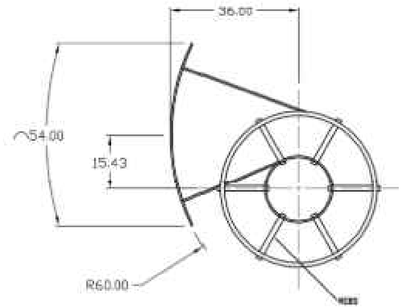


VORTEX APPROX. DRY WEIGHT: **1,400 LBS**

NAME	MATERIAL	PROPERTIES
VORTEX FORM	42" CIOD PVC PIPE AWWA C905	O.D. 44.5"
VORTEX SHAFT	18" CIOD PVC PIPE AWWA C905	O.D. 19.5"
VORTEX EDP	42" CIOD PVC PIPE AWWA C905	O.D. 44.5"

GRAVITY DESIGN



VORTEX DESIGNED FOR A PEAK FLOW OF: **7.94 MGD**
(AS SPECIFIED BY OTHERS)

DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED

REV.	DATE	DESCRIPTION
B	08/21/19	CHANGED FLOW AND MANHOLE SIZE
A	03/15/19	CHANGED INFLUENT SIZE AND DROP HEIGHT

IPEX

CUSTOMER: CITY OF HOUSTON, TX
JORDAN THOMAS-HARRIS - LOCKWOOD, ANDREWS, & NEWNAM

VORTEX FLOW INSERT

DRAWING TITLE: CHELFORD CITY DIVERSION PROJECT - PACKAGE 2
HOUSTON, TX

PART #	DATE	DRAWN BY	SCALE	SHEET	REV
TXKK51-1B	08/21/19	MDB	NTS	1/1	B

FLOW INSERT

NO.	DATE	REVISION	APP.

Lockwood, Andrews & Newnam, Inc.
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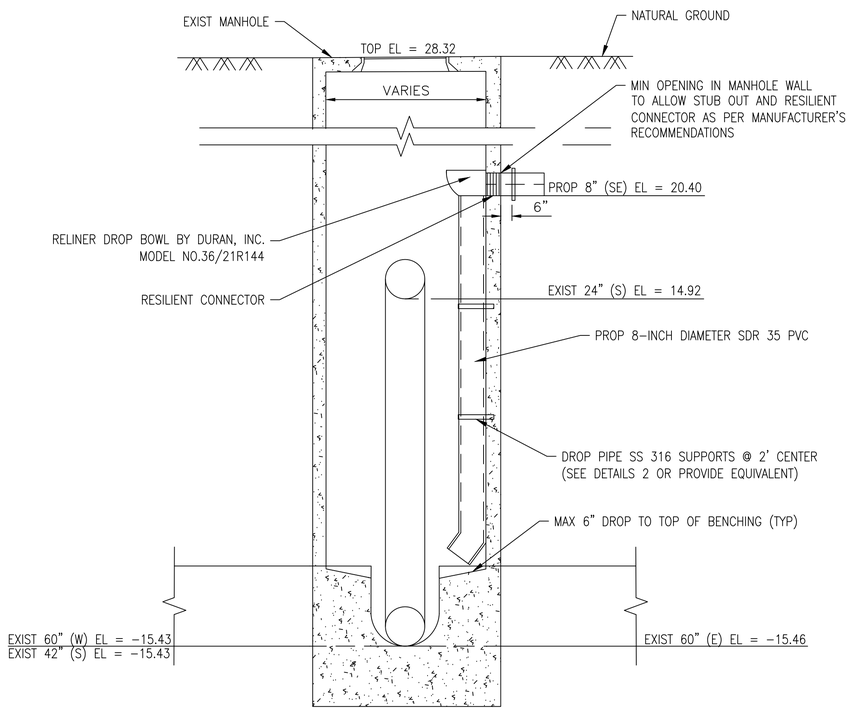
91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

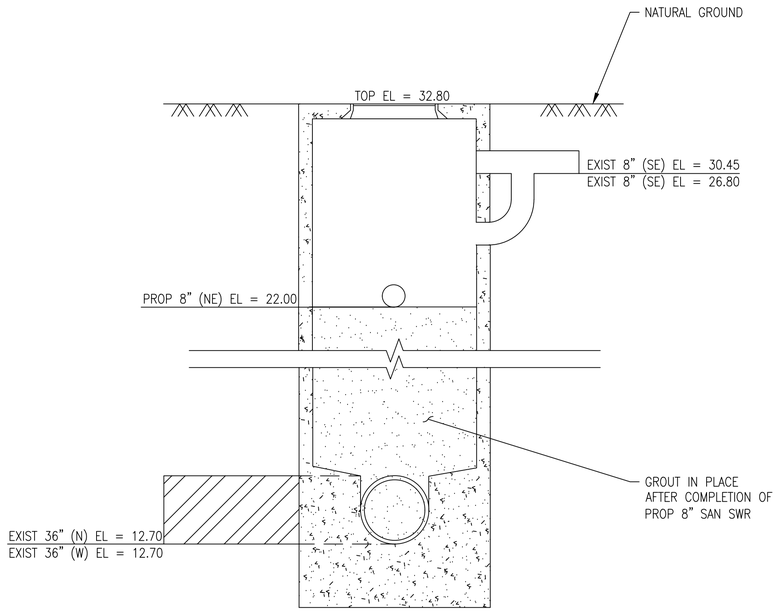
WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

WRIGHTWOOD STREET
NON-STANDARD
MANHOLE DETAIL

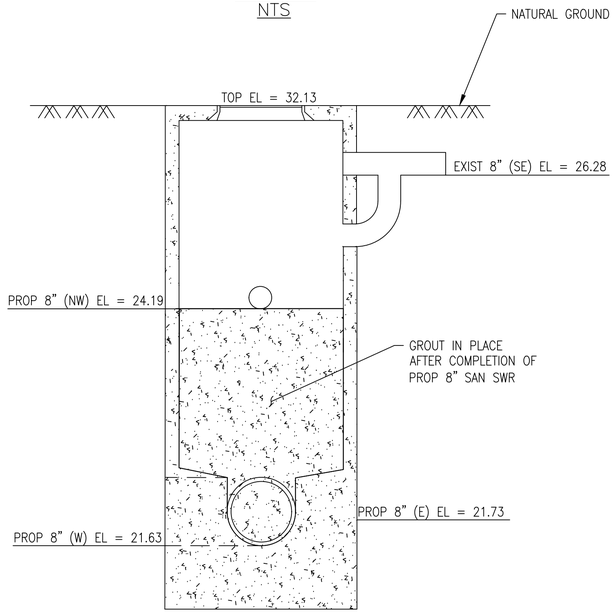
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 55 OF 57	



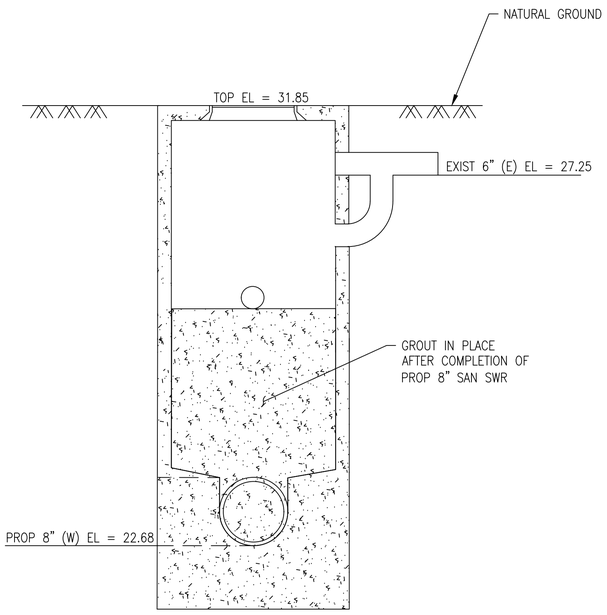
EXISTING MANHOLE AT
STA 2+98 25-FT LT
DETAIL 1
NTS



EXISTING MANHOLE AT
STA 3+00 116-FT RT
DETAIL 2
NTS



PROP 4' PRECAST CONCRETE MANHOLE AT
STA 5+85 9-FT RT
DETAIL 3
NTS



PROP 4' PRECAST CONCRETE MANHOLE AT
STA 7+04 7.50-FT RT
DETAIL 4
NTS

NO.	DATE	REVISION	APP.

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91826
04/15/2026
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

GIRARD STREET
NON-STANDARD
MANHOLE DETAILS
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000536-0035-3	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 56 OF 57	

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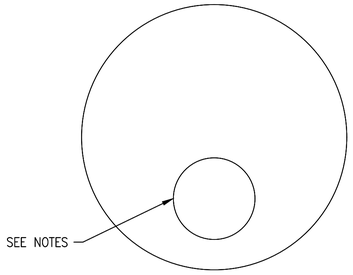
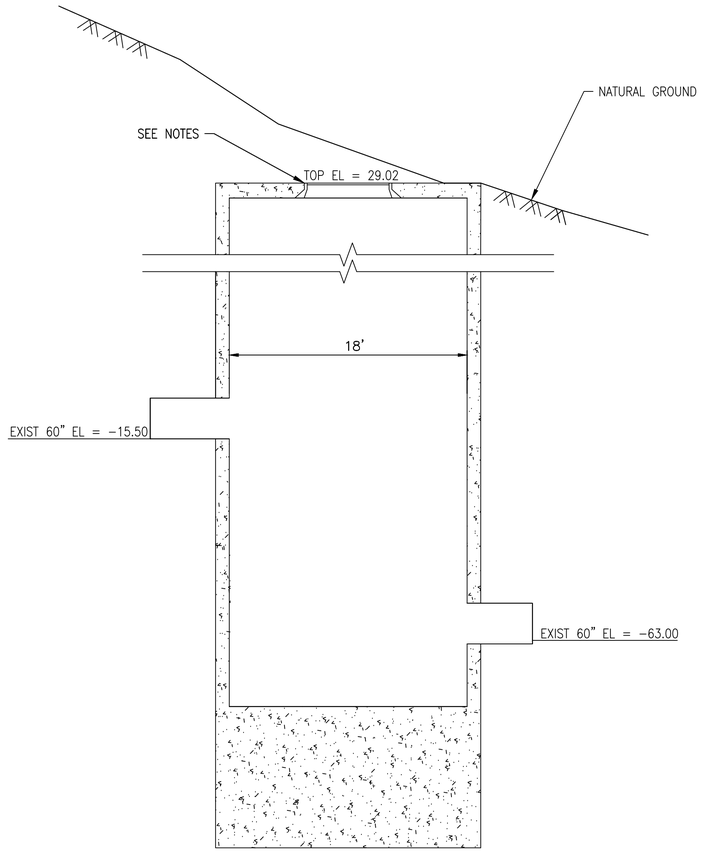
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4-0 SURVEY-DESIGN Production\02_DESIGN\4-02-05 General\Manhole Detail.dwg



EXISTING MANHOLE AT STA 9+92 12–FT RT
PLAN VIEW
DETAIL 5
NTS



EXISTING MANHOLE AT STA 9+92 12–FT RT
BASED ON RECORD DRAWINGS
UNABLE TO INVERT
DETAIL 6
NTS

NOTES:
1. REMOVE AND REPLACE 48" RING AND COVER.
2. INSTALL SAFETY GRATING BENEATH COVER.
3. PROVIDE RING AND COVER ANCHOR (DETAILS TO BE PROVIDED)

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WRIGHTWOOD ST. SEWER AND UHD SEWER IMPROVEMENTS (CD AREAS 2 AND 3)

GIRARD STREET
NON–STANDARD
MANHOLE DETAILS
(SHEET 2 OF 2)

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R–000536–0035–3	
DRAWING SCALE	
N/A	
CITY OF HOUSTON PM	
NEIL BARNSDALE, P.E.	
SHEET NO. 57 OF 57	

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PLOT STYLE: KAI–COH Color.ctb
FILE PATH: S:_00PROJECTS\01108 (SSO Elimination)\4–0 SURVEY–DESIGN Production\02_DESIGN\4–02–05 General\Manhole Detail.dwg