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SEE SHEET 2 OF 72, 2 OF 73, & 3 OF 70

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

PROJECT NO. STP 2B24 (350) VRUG
CONTROL: 0912-72-720, ETC.

FED. RD. DIV. NO.	STATE	PROJECT NO.		HIGHWAY	
6	TEXAS	STP 2B24 (350) VRUG		VARIOUS	
STATE DISTRICT	COUNTY	CONTROL	SECTION	JOB	SHEET NO.
HOU	HARRIS	912	72	720, etc.	1A

DESIGN SPEED: VARIOUS
FUNCTIONAL CLASS: VARIOUS
ADT: VARIOUS

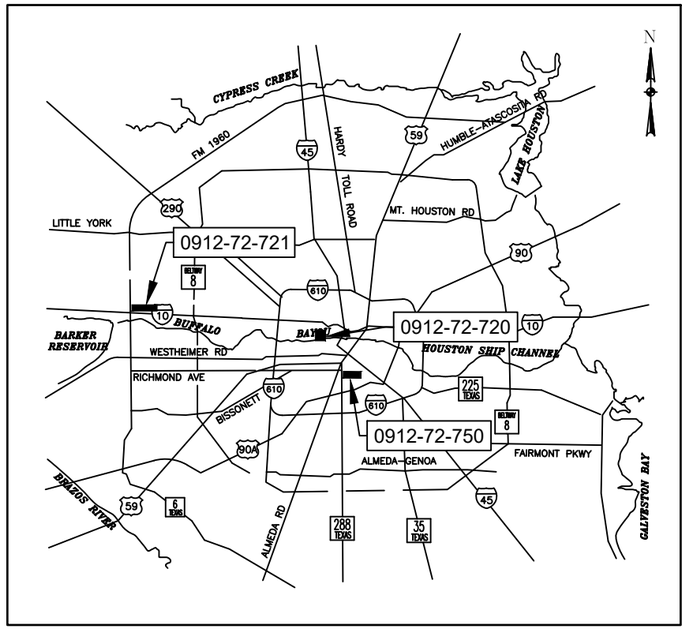
TxDOT SUB-CSJ	COH WBS	TDLR NO.	PROJECT
0912-72-720	N-T05000-0012-7	TABS2024020267	Waugh Safety Improvements (Sheet 1-72)
0912-72-721	N-MD0260-0002-7	TABS2024019870	N. Eldridge Pkwy at N. Dairy Ashford Rd Intersection Improvements (Sheet 1-73)
0912-72-750	N-MD0190-0003-7	TABS2024014638	Brays Bayou Safe Crossings (Sheet 1-70)

CITY OF HOUSTON SYSTEMIC SAFETY PROJECT

PROJECT LENGTH = 6,000 LF = 1.14 MI
BRIDGE = 0 LF = 0.0 MI

HARRIS COUNTY

LIMITS: VARIOUS LOCATIONS WITH IN THE CITY OF HOUSTON FOR THE INSTALLATION OF CROSSWALK STRIPING, STOP BAR STRIPING, CURB RAMPS, SIDEWALK CONNECTIONS, REMOVAL AND REINSTALLATION OF CONCRETE MEDIANS WITH PEDESTRIAN REFUGES, AND TRAFFIC SIGNAL IMPROVEMENT (REFER TO PLAN SET FOR EACH PROJECT FOR DETAILED INFORMATION ON PROJECT LOCATIONS AND LIMITS.)



LOCATION MAP
N.T.S.

THE CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, OFFICE OF THE CITY ENGINEER, 48 HOURS PRIOR TO STARTING WORK ON THIS PROJECT. TELEPHONE NO. (832) 394-9098.

TEXAS 811 NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
WWW.TEXAS811.ORG/ OR
TEXAS811 OR 1-800-344-8377

LETTING DATE: AUGUST 2025

NO EXCEPTIONS
NO RAILROAD CROSSINGS
NO EQUATIONS

NOTES:

1. SPECIFICATIONS ADOPTED BY THE CITY OF HOUSTON (ASSEMBLED/REFERENCED IN PROJECT MANUAL) AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA-1273 - REVISED OCTOBER 23, 2023).
2. ANY DAMAGE TO ANY TRAFFIC SIGNAL COMPONENTS MUST BE REPLACED/REPAIRED BY THE CONTRACTOR. NO SEPARATE PAYMENT.
3. CONTRACTOR SHALL LOCATE ALL STREET LIGHT CABLES/CONDUITS AND AVOID DISTURBING. IF CABLE / CONDUIT IS DISTURBED, REPAIR ACCORDING TO CNP STANDARDS AND CONTACT CNP FOR APPROVED REPAIRS. NO SEPARATE PAY FOR REPAIRS. REFER TO DOCUMENT 01110 IN PROJECT MANUAL.

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STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED FOR LETTING 6/16/2025

DocuSigned by:
Oscar Medrano
PROJECT MANAGER

APPROVED FOR LETTING 6/24/2025

DocuSigned by:
Thomas D. Allbritton, P.E.
0F6F7E74C27D430...
FOR DISTRICT ENGINEER

DATE: 5/30/2025
FILE: C:\VOLUMES\THEGOODMANCORP\TGC-ENGINEERING\00_TGC PROJECT FILES\GSMD123\CAD\HSIP24_TXDOT_COVERPG.DWG

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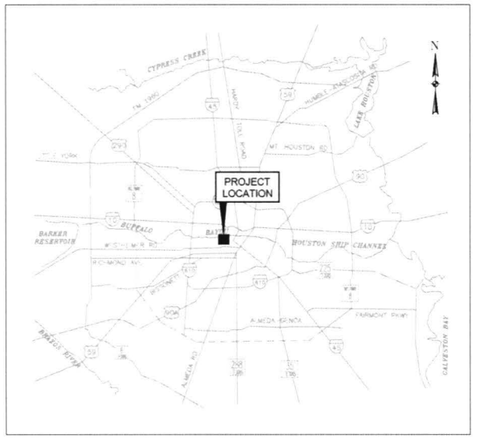
CITY OF HOUSTON SYSTEMIC SAFETY PROJECT

CONSTRUCTION PLANS FOR WAUGH SAFETY IMPROVEMENTS

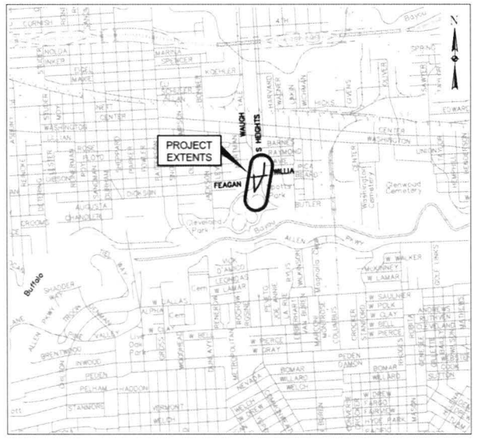
CCSJ NO. 0912-72-720, ETC.

SUB-CSJ NO. 0912-72-720

WBS NO. N-T05000-0012-7



LOCATION MAP
N.T.S.



VICINITY MAP
1:2000

COUNCIL DISTRICT C, H
KEY MAP 492M, 493J
GIMS MAP 5357a

TDLR NO. TABS2024020267

NOTE: ALL WORK IS TO BE CONDUCTED WHOLLY AND ENTIRELY WITHIN THE PUBLIC RIGHT-OF-WAY. CONTRACTOR IS NOT TO ENTER ADJACENT PROPERTIES NOR USE KNOX PARK AND/OR SPOTTS PARK AS TEMPORARY STORAGE OF MATERIALS AND CONSTRUCTION EQUIPMENT.

NOTE: BEFORE TREE PROTECTION AND SITE PREPARATION FOR ANY TREE REMOVAL, CONTACT THE CITY OF HOUSTON URBAN FORESTRY DEPARTMENT AT (832) 395-8459

FLOOD PLAIN INFO:
PER FEMA PANEL NOS. 48201C0670M (JUNE 9, 2014) THE PROJECT AREA IS PARTIALLY LOCATED IN THE X-SHADED ZONE (AREA OF MINIMAL FLOOD HAZARD). BFE IS 37.66'.

THE CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, OFFICE OF THE CITY ENGINEER, 48 HOURS PRIOR TO STARTING WORK ON THIS PROJECT. TELEPHONE NO. (832) 394-9098.

TEXAS 811 NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
WWW.TEXAS811.ORG/ OR
TEXAS811 OR 1-800-344-8377

MAYOR
JOHN WHITMIRE

CONTROLLER
CHRIS HOLLINS

DISTRICT COUNCIL MEMBERS

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

COUNCIL MEMBERS AT–LARGE

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1130 Post Oak Blvd., Suite 2650
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046100
6330 West Loop South, Suite 150,
Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED PROFESSIONAL ENGINEER
5/27/25

NOTE: CITY SIGNATURE VALID FOR ONE YEAR ONLY, AFTER DATE OF SIGNATURE.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

DocuSigned by:
Johana Clark
808098A38F5E457...
6/11/2025

Director of Houston Public Works — Date:

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS & ENGINEERING
ACCEPTED AND FILED
80160
CITY ENGINEER
HOUSTON, TEXAS

SHEET NO 1 of 72

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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.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
KRISTEN JILL HENNINGS
90169
LICENSED
PROFESSIONAL ENGINEER
2/24/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INDEX OF SHEETS

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 80160 CITY DRAWING NUMBER Approval Date 08/31/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 2 OF 72	

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\3 CONSTRUCTION PHASE\REVISIONS\260115_14760-0021-CI-001-GENERAL_REV 2.DWG, 2/24/2026 4:27 PM

GENERAL CONSTRUCTION NOTES

1. UNLESS OTHERWISE NOTED AND APPROVED ON DRAWINGS, CONSTRUCT CIVIL INFRASTRUCTURE IN ACCORDANCE WITH THE EFFECTIVE EDITION OF THE HOUSTON PUBLIC WORKS STANDARD CONSTRUCTION SPECIFICATIONS, STANDARD CONSTRUCTION DETAILS, AND SUPPLEMENTS, ADDENDA AND AMENDMENTS THERETO. THE LATEST EDITION OF THE ABOVE PUBLICATIONS CAN BE FOUND AT: HTTP://WWW.HOUSTONPERMITTINGCENTER.ORG/OFFICE-CITY-ENGINEER/DESIGN-AND-CONSTRUCTION-STANDARDS.
2. THE DESIGN MUST BE CONSISTENT WITH THE EFFECTIVE EDITION OF HOUSTON PUBLIC WORKS INFRASTRUCTURE DESIGN MANUAL AND TCEQ (TEXAS COMMISSION ON ENVIRONMENTAL QUALITY) REQUIREMENTS.
3. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. UTILITIES MARKED WITHIN THE PUBLIC RIGHT OF WAY OR IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, RULE §18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE EFFECTIVE EDITION OF HOUSTON PUBLIC WORKS, STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEM, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC, REFERENCED ABOVE AND SUPPLEMENTS, ADDENDA AND AMENDMENTS THERETO, AT NO ADDITIONAL COST TO THE CITY OF HOUSTON.
5. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER AND/OR CITY INSPECTOR, 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 AND TO THE SATISFACTION OF THE OWNING AUTHORITY.
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 AS-BUILT DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.

ADDITIONAL GENERAL CONSTRUCTION NOTES

17. THE CONTRACTOR SHALL RETURN ALL EXISTING FACILITIES TO EXISTING OR BETTER CONDITION UNLESS OTHERWISE NOTED AT NO ADDITIONAL COST TO THE OWNER.
18. CONTRACTOR TO FOLLOW CONSTRUCTION DETAILS IF DRAWINGS DEVIATE FROM CITY OF HOUSTON STANDARDS.
19. CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY CITY OF HOUSTON, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITIES AND/OR CULVERTS WITHIN CITY OF HOUSTON ROAD RIGHTS-OF-WAY.

URBAN FORESTRY NOTES

1. CONTRACTOR AND PROJECT INSPECTOR TO MEET WITH PARKS DEPARTMENT / URBAN FORESTRY BEFORE STARTING CONSTRUCTION TO DISCUSS TREE PROTECTION AND REMOVAL. CONTACT URBAN FORESTRY AT (832)395-8459.

UTILITY NOTES

CAUTION: UNDERGROUND GAS FACILITIES

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

- WHEN CENTERPOINT ENERGY PIPELINE MARKINGS ARE NOT VISIBLE, CALL (713) 207-5463 OR (713) 945-8037 (7:00 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 CENTER POINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
- WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
- FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-2111 OR (713) 207-4200.

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

WARNING: OVERHEAD ELECTRICAL LINES

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 TEN (10) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.

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

ACTIVITIES ON/OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

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

WARNING: UNDERGROUND ELECTRICAL UTILITIES

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

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

AT&T TEXAS/SWBT FACILITIES

1. THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 911) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES, THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.
6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER KEVIN RAY AT (713) 614-1983 OR E-MAIL HIM AT KR7896@ATT.COM IF CABLE LOCATE REQUETS ARE NOT COMPLETED FOR OUR AT&T TEXAS/SWBT FACILITIES.

STREET & BRIDGE CONSTRUCTION NOTES

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

STORM SEWER CONSTRUCTION NOTES

1. STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 2317-02, 02317-3, 02317-05, 02317-06, AND 02317-07 (JULY 2019) AS APPLICABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. ALL STORM SEWER CONSTRUCTED IN SIDELOT EASMENT SHALL BE R.C.P (C-76, CLASSIII) AND SHALL BE EMBEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 AS APPLICABLE.
3. ALL SEWER UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT/C.Y. STABLIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL.
4. ALL TRENCH BACKFILL SHALL BE IN 8'LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN EACH LIFT, AND MECHINICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMACTION TEST (ASTM D-698/AASHTO T99).
5. CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.
6. ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24"AND LARGER R.C.P. (C-76, CLASS III).
7. ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8"BRICK WALLS UNLESS OTHERWISE NOTED.
8. MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 48-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES. MINIMUM VERTICAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 24-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES.
9. ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02086-ADJUSTING MANHOLES, INLETS, AND VALVE BOXES TO GRADE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK.
11. ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.
12. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

SWPPP CONSTRUCTION NOTES

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

METRO GENERAL NOTES

1. CONTRACTOR SHALL NOTIFY METRO AT 713-615-6195 TWO WEEKS PRIOR TO MOBILIZING TO THE PROJECT SITE TO COORDINATE IMPACTS TO BUS OPERATIONS DURING CONSTRUCTION.
2. CONTRACTOR SHALL CONTACT FACILITIES MAINTENANCE AT 713-615-6195 OR FACILITIESMAINTENANCE@RIDEMETRO.ORG 14 WORKING DAYS PRIOR TO PLANNED IMPACTS TO EXISTING METRO BUS STOPS TO SCHEDULE THE REMOVAL OF ANY BENCHES, WASTE RECEPTACLES, AND SIGNS AS REQUIRED.
3. CONTRACTOR SHALL NOTIFY METRO AT LEAST 72 HOURS PRIOR TO PLACEMENT OF CONCRETE SUBSLAB FOR PAVERS AT BUS STOP AND ALLOW METRO TO INSPECT THE SLAB FORM FOUNDATION PRIOR TO PLACEMENT OF CONCRETE.
4. CONTRACTOR SHALL COORDINATE WITH METRO, AS NECESSARY, FOR INSTALLATION OF VARIOUS FEATURES AT FINISHED BUS STOP LOCATIONS.
5. THERE ARE NOTICE, INSPECTION, AND TRAINING REQUIREMENTS ASSOCIATED WITH THIS WORK THAT ARE IN ADDITION TO THE GENERAL REQUIREMENTS. SEE METRO "ADJACENT CONSTRUCTION PROJECT MANUAL."
6. THE AUTHORITY SHALL BE RESPONSIBLE FOR DESIGN SUBMITTALS AS INDICATED IN SECTION 1.3C, 1.3D, AND 2.0 (EXCEPT 3.3I) OF THE "ADJACENT CONSTRUCTION PROJECT MANUAL." CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OTHER METRO SUBMITTALS AND APPROVALS.
7. METRO REQUIRES TRAINING FOR EVERYONE WORKING WITHIN THE SAFETY ZONE. THIS PROJECT INCLUDES WORK IN THE SAFETY ZONE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAINING.
8. THE DIRECT METRO POINT OF CONTACT FOR ANY CONSTRUCTION RELATED QUESTIONS, INCLUDING FLAGGING, IS JOSE CASTELLANOS AT 713-739-3727 OR JOSE.CASTELLANOS@RIDEMETRO.ORG.
9. CONTRACTOR SHALL COORDINATE WITH METRO TO REMOVE EXISTING AMENITIES.
10. BUS STOPS SHALL BE CONSTRUCTION PER CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL AND MEET CURRENT ADA REQUIREMENTS.

METRO'S NOTES FOR WORK ADJACENT TO BUS STOPS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY METRO FACILITIES DAMAGED DURING CONSTRUCTION. IF THE CONTRACTOR CANNOT IMMEDIATELY MAKE THE REPAIRS TO METRO'S SATISFACTION, METRO WILL MAKE THE REPAIRS AND BILL THE COST TO THE CONTRACTOR.
2. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY IN THE FIELD THAT THERE ARE NO CONFLICTS WITH OUR ELECTRICAL POWER, FIBER OPTICS, COMMUNICATION, SIGNALING, HIGH VOLTAGE CABLES OR ANY OTHER METRO INFRASTRUCTURE.
3. THE CONTRACTOR SHALL HAND EXCAVATE IN THE VICINITY OF COMMUNICATION AND POWER LINES FEEDING THE METRO SYSTEM.
4. THE CONTRACTOR SHALL CONTACT THE DIRECTOR OF UNIVERSAL ACCESSIBILITY, TIM MILLS BY EMAIL AT TM144@RIDEMETRO.ORG OR BY PHONE 713-739-6861 ONE WEEK PRIOR TO CONSTRUCTION. METRO MAY ASSIGN AN INSPECTOR TO ASSURE NO DAMAGES ARE MADE TO METRO'S FACILITIES. UNIVERSAL ACCESSIBILITY WILL COORDINATE ANY PERMANENT OR TEMPORARY IMPACT ON BUS STOPS, SHELTERS AND SIDEWALK TO MAINTAIN ACCESSIBILITY.
5. THE CONTRACTOR SHALL CONTACT METRO BUS OPERATIONS A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO CONSTRUCTION IMPACTING BUS STOPS AND BUS ROUTES. THE CONTACT INFORMATION IS CARL TAYLOR, CARL.TAYLOR@RIDEMETRO.ORG 713-615-7219 OR SHIRLEY MITCHELL, SHIRLEY.MITCHELL@RIDEMETRO.ORG 713-615-7212.
6. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY BUS STOP FACILITIES NEEDED, EXCEPT FOR BUS STOP SIGNS, AT NO COST TO METRO AND SHALL RESTORE ANY AFFECTED BUS STOPS PER COH IDM AND MEET CURRENT AMERICAN DISABILITY ACT (ADA) REQUIREMENTS AS REQUIRED BY LOCAL, STATE AND FEDERAL CODE AND REQUIREMENTS. NO BUS STOP SHALL BE PERMANENTLY REMOVED WITHOUT APPROVAL FROM METRO.

PAVING CONSTRUCTION NOTES

1. PAVEMENT SHALL BE IN ACCORDANCE WITH THE FOLLOWING CITY OF HOUSTON DOCUMENTS: "STANDARD CONSTRUCTION SPECIFICATIONS" AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATERLINES, STORM DRAINAGE AND STREET PAVING".
2. THE CONTRACTOR(S) SHALL NOTIFY CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORK AND ENGINEERING, OFFICE OF THE CITY ENGINEER, 48 HOURS PRIOR TO START OF WORK ON THIS PROJECT. TEL. NO. 832-394-9098, FAX NO. 832-395-4424.
3. ALL RETURNS SHALL HAVE A 25-FOOT RADIUS AT FACE OF CURB UNLESS OTHERWISE NOTED.
4. GUIDELINES SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" SHALL BE OBSERVED.
5. ALL INTERSECTIONS SHALL BE CONSTRUCTED WITH WHEELCHAIR RAMPS IN ACCORDANCE WITH THE GOVERNOR'S OFFICE OF TRAFFIC SAFETY MEMORANDUM DATED MAY 6, 1976. (HIGHWAY SAFETY ACT – 1973 SECTION 288). SEE CITY OF HOUSTON ACCESSIBLE COMPLIANT CURB RAMPS AND LANDINGS DETAIL. ALL WHEELCHAIR RAMPS SHALL COMPLY WITH CURRENT "THE AMERICANS WITH DISABILITIES ACT" (A.D.A.,) SPECIFICATIONS. RAMPS TO BE COLORED WITH A COLOR TO BE DETERMINED BY THE ENGINEER CONFORMING TO ASTM-C979.
6. ALL FILL IN EXISTING OR PROPOSED CITY OF HOUSTON RIGHT-OF-WAY, INCLUDING BACKDRESSING BEHIND THE CURB, SHALL BE PLACED IN MAXIMUM LOOSE LIFTS OF EIGHT INCHES (8") OR LESS AND COMPACTED TO 95% OF MAXIMUM DENSITY AT -3% TO +5% MOISTURE CONTENT AS DETERMINED BY AASHTO TEST METHOD T-99.
7. ALL CONCRETE PAVEMENT TO BE 26 TO 42-FOOT WIDE BACK-TO-BACK TWELVE (12) INCH THICK REINFORCED CONCRETE WITH SIX (6) INCH REINFORCED CONCRETE CURBS, UNLESS OTHERWISE NOTED. CONCRETE MIX SHALL BE AS SPECIFIED.
8. PAVEMENT REINFORCEMENT FOR REINF. CONCRETE SHALL BE #5, GRADE 60 STEEL REBARS ON 16-INCH CENTERS FOR LONGITUDINAL STEEL AND ON 36-INCH CENTERS FOR TRANSVERSE STEEL. REINFORCEMENT SHALL BE PLACED ON CHAIRS SPACED 36" CENTER TO CENTER. BENT BARS SHALL BE GRADE 40.
9. REFER TO THE LATEST CITY OF HOUSTON PAVEMENT MARKING DETAILS.
10. SIDEWALK BULLNOSES CONSTRUCTED IN ESPLANADES SHALL BE SIX INCHES (6") THICK WITH SURFACE COLORED BLACK, WHEN CURBS ARE TEN FEET (10') AND LESS IN WIDTH FROM FACE-TO-FACE OF CURBS. FOR CONCRETE ROADWAYS, SURFACE SHALL BE COLORED BLACK. FOR ASPHALT ROADWAYS, SURFACE SHALL BE UNCOLORED.

TRAFFIC CONSTRUCTION NOTES

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

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

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

GRADING CONSTRUCTION NOTES

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

CONSTRUCTION SEQU

TRAFFIC SIGNAL GENERAL NOTES:

1. ALL EQUIPMENT / MATERIALS AND CONSTRUCTION SHALL MEET OR EXCEED THE REQUIREMENTS CONTAINED IN THE CURRENT CITY OF HOUSTON STANDARD SPECIFICATIONS AND STANDARD DRAWINGS. THE PROJECT SPECIFIC SPECIFICATIONS AND THE PLANS.
2. ALL ELECTRICAL WORK SHALL BE IN CONFORMANCE WITH THE PROVISIONS AND REQUIREMENTS OF THE CITY ELECTRICAL CODE.
3. ALL SIGNS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
4. THE CONTRACTOR SHALL ARRANGE THE INSTALLATION OF SIGNALS, POLES AND CONDUIT SO AS TO PERMIT THE CONTINUOUS MOVEMENT OF TRAFFIC IN ALL DIRECTIONS AT ALL TIMES. THE CONTRACTOR SHALL NOT CLOSE MORE THAN ONE LANE OF A ROADWAY AT ONE TIME WITHOUT PRIOR APPROVAL OF THE CITY.
5. THE CONTRACTOR SHALL CLEAN UP AND REMOVE FROM THE WORK AREA ALL LOOSE MATERIAL RESULTING FROM CONTRACT OPERATIONS EACH DAY PRIOR TO WORK BEING SUSPENDED FOR THAT DAY.
6. THE CONTRACTOR SHALL CONTACT THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE TO ARRANGE FOR METER AND ELECTRICAL SERVICE CONNECTION FROM THE POWER COMPANY.
7. ALL PEDESTRIAN PUSH BUTTON ASSEMBLIES SHALL MEET ADA REQUIREMENTS. THE SIGNS THAT SHALL BE USED ARE IDENTIFIED IN THE TMUTCD AS R10-3E. CITY OF HOUSTON STANDARDS FOR PEDESTRIAN FACILITIES SHALL BE MET IN ADDITION TO ANY TEXAS ACCESSIBILITY STANDARDS BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR).
8. PEDESTRIANS PUSH BUTTONS SHALL BE SEPARATED BY A MINIMUM OF 10 FEET. EXCEPTIONS ONLY AS SPECIFIED BY THE ENGINEER WITH AUTHORIZATION FROM THE APPROVED CITY OF HOUSTON REPRESENTATIVE.
9. OVERHEAD STREET NAME SIGNS SHALL BE INSTALLED SUCH THAT THE BOTTOM OF THE SIGN IS NO LESS THAN 17 FEET ABOVE THE ROADWAY PAVEMENT OR NO LESS THAN 16 FEET ABOVE THE FINISHED GRADE BEYOND THE SHOULDER.
10. THE LOCATION OF EACH NEW POLE FOUNDATION, PULL BOX, CONTROLLER CABINET FOUNDATION, UPS CABINET FOUNDATION AND ELECTRIC SERVICE PEDESTAL FOUNDATION SHALL BE MARKED IN THE FIELD AS SHOWN ON THE PLANS. THE EXACT LOCATION SHALL BE APPROVED BY THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE PRIOR TO BEGINNING INSTALLATION OF THE FOUNDATION.
11. NO POLES SHALL BE LOCATED IN WHEELCHAIR RAMPS OR SUCH THAT THEY ARE AN OBSTRUCTION TO PEDESTRIANS OR WHEELCHAIRS.
12. THE TOP OF THE POLE FOUNDATION SHALL BE LEVELED WITH THE FINISHED GRADE. IF THE SLOPE OR SHOULDER DROPS OFF FROM FINISHED GRADE, THE CONTRACTOR SHALL GRADE AROUND POLE FOUNDATION. THE TOP OF THE FOUNDATION SHALL EXTEND NO MORE THAN 4 INCHES ABOVE SURROUNDING GRADE. GROUTING SHALL BE USED TO FILL ANY GAP BETWEEN THE POLE BASE AND FOUNDATION.
13. POLES SHALL BE LOCATED SUCH THAT ALL PORTIONS OF THE POLES AND ATTACHED EQUIPMENT HAVE CLEARANCES FROM OVERHEAD UTILITIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL UTILITY AND THE NATIONAL ELECTRICAL SAFETY CODE (NESC).
14. ALL CONCRETE USED FOR TRAFFIC SIGNAL POLE AND CABINET FOUNDATIONS SHALL BE CLASS 'A' (REFER TO THE CITY OF HOUSTON SPECIFICATION FOR CONCRETE).
15. MAST ARM AND STRAIN POLES SHALL NOT BE INSTALLED ON THE FOUNDATIONS LESS THAN SEVEN DAYS AFTER THE PLACEMENT OF THE CONCRETE FOR THE FOUNDATION.
16. ANCHOR BOLTS FOR SIGNAL POLES SHALL BE SET SO THAT TWO ARE IN COMPRESSION AND TWO ARE IN TENSION, PRIOR TO THE INSTALLATION OF THE NUT, THE THREADS OF THE ANCHOR BOLT SHALL BE COATED WITH PIPE JOINT COMPOUND.
17. ALL UNDERGROUND CONSTRUCTION (CONDUIT, FOUNDATIONS AND PULL BOXES) FOR THE INTERSECTION SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF POLES, SIGNALS AND CABINETS. THE CONTRACTOR SHALL NOT PROCEED TO ABOVE GROUND WORK UNTIL THE ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE HAD CONFIRMED THAT THE MATERIALS FOR A COMPLETE INSTALLATION ARE AVAILABLE.
18. UNDERGROUND CONDUIT FOR SIGNAL CABLE SHALL BE EITHER RIGID STEEL, HOT-DIPPED GALVANIZED CONDUIT OR SCHEDULE 80 ELECTRICAL PVC CONDUIT OF THE DIAMETER SHOWN ON THE PLANS, UNLESS OTHERWISE NOTED. ALL COUPLINGS AND CONNECTIONS SHALL BE TIGHT AND WATERPROOF.
19. ALL ABOVE GROUND CONDUIT FOR SIGNAL CABLE AND INTERCONNECT MEDIA SHALL BE HOT DIPPED GALVANIZED STEEL RIGID METAL CONDUIT OF THE DIAMETERS SHOWN ON THE PLANS, UNLESS OTHERWISE NOTED. ALL COUPLINGS AND CONNECTIONS SHALL BE TIGHT AND WATERPROOF.
20. ONLY NEW CONDUIT AND CABLE SHALL BE INSTALLED.
21. CONDUIT INSTALLED UNDER EXISTING PAVED DRIVEWAYS, ROADWAYS OR SIDEWALKS, WHICH ARE NOT SCHEDULED TO BE RECONSTRUCTED AS PART OF THIS PROJECT, SHALL BE INSTALLED BY MEANS OF BORING. THE CONTRACTOR SHALL NOT CUT OPEN ANY STREET OR DRIVEWAY FOR CONDUIT INSTALLATION WITHOUT THE PRIOR APPROVAL OF THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE.
22. CONDUIT NOT PLACED UNDER PAVED DRIVEWAYS, ROADWAY PAVEMENT OR SIDEWALK MAY BE PLACED BY CUTTING A TRENCH, INSTALLING THE CONDUIT AND BACKFILLING. ANY TRENCHING FOR CONDUIT WIDER THAN THREE (3) INCHES SHALL BE RESODDED.
23. PULL BOXES SHALL NOT BE INSTALLED WITHIN CONCRETE CURB ACCESS RAMPS. IN ADDITION, ANY PULL BOXES INSTALLED BEHIND CURBS SHALL BE INSTALLED BETWEEN THE CURB AND THE PROPOSED / FUTURE SIDEWALK OR BEYOND THE PROPOSED / FUTURE SIDEWALK. AN EXCEPTION TO THIS NOTE WOULD BE PULL BOXES INSTALLED IN A MEDIAN. ANY PULL BOXES INSTALLED ALONG AN UNCURBED ROADWAY SHALL BE INSTALLED ADJACENT TO, BUT NOT WITHIN, THE SHOULDER. DRAINAGE AREAS SHOULD BE AVOIDED WHEN PLACING JUNCTION BOXES.
24. A 5/8 IN. X 10 FT. GROUND ROD SHALL BE INSTALLED IN ALL PULL BOXES. A GROUND ROD CLAMP SHALL BE FURNISHED FOR GROUNDING THE GROUND WIRE.
25. ALL CONDUITS SHALL BE CLEANED BY COMPRESSED AIR AND A PROPERLY SIZED CONDUIT PISTON OR MANDREL SHALL BE PULLED THROUGH THE CONDUIT PRIOR TO CABLE INSTALLATION.
26. WHEN PULLING TRAFFIC SIGNAL SYSTEM CABLES THROUGH CONDUIT, THE CABLES SHALL BE LUBRICATED WITH A LUBRICANT NORMALLY USED FOR THIS PURPOSE. ANY ABRASION TO ANY CONDUCTOR INSULATION WHICH OCCURS WHILE PULLING CABLE FOR THE TRAFFIC SIGNAL SYSTEM WILL BE CAUSE FOR THE IMMEDIATE REJECTION OF THE CABLE. IF THIS OCCURS, THE CONTRACTOR SHALL REMOVE AND REPLACE THE ENTIRE CABLE RUN AT THEIR EXPENSE.
27. A MINIMUM OF THREE (3) FEET OF EACH WIRE AND CABLE MEASURED FROM THE TOP OF THE PULL BOX SHALL BE LEFT IN EACH PULL BOX AND AT EACH POLE BASE.
28. ALL CABLES SHALL BE STRIPPED, FORMED AND TERMINATED IN A NEAT AND UNIFORM MANNER WHETHER IN THE SIGNAL HEAD OR CONTROLLER CABINET. ALL CABLE SHALL BE BROUGHT INTO THE TERMINAL HOUSING OF SIGNALS AND/OR CONTROLLER CABINETS AND A SUFFICIENT LENGTH OF CABLE SHALL BE LEFT SO THAT ALL TERMINAL CONNECTIONS MAY BE MADE WITHOUT THE NECESSITY OF SPLICING THE CABLE.
29. THE HIGH VOLTAGE CABLES SHOULD BE SEPARATED FROM THE LOW VOLTAGE CABLES EXCEPT IN ENCLOSURES.
30. NO LOOP DETECTOR SHALL BE CUT IN A PARALLEL EXPANSION JOINT. LOOPS CUT ACROSS EXPANSION JOINTS SHALL HAVE A SLACK IN THE CABLE FOR EXPANSION.
31. ALL VEHICLE ROADWAY DETECTION LOOP CABLES SHALL BE #14 AWG IMSA 51-5-1985 CABLE. LEAD-IN CABLES SHALL BE #16 AWG IMSA 50-2-1984 CABLE. NO SPLICES SHALL BE ALLOWED IN THE ROADWAY DETECTION LOOP CABLE EXCEPT AT THE PULL BOX ADJACENT TO LOOP. THE DETECTOR LEAD-IN CABLE SHALL NOT BE SPLICED.
32. DETECTION LOOP SAW CUTS SHALL BE FLUSHED WITH WATER UNDER PRESSURE AND THEN DRIED WITH AIR UNDER PRESSURE.
33. THERE SHALL BE NO SPLICING IN CONDUCTORS EXCEPT FOR THE NECESSARY SPLICE BETWEEN ROADWAY LOOP WIRE AND DETECTOR LEAD-IN CABLE IN THE PULL BOX ADJACENT TO THE DETECTOR. THESE SPLICES SHALL BE WATERPROOF AND SHALL BE IN COMPLIANCE WITH THE CITY OF HOUSTON STANDARD DRAWINGS FOR TRAFFIC SIGNAL CONSTRUCTION. THESE SPLICES SHALL BE MADE BY THE CONTRACTOR. DO NOT GROUND THE CABLE SHIELD AT THE PULL BOX.
34. TWO #10 AWG-XHHW CONDUCTORS SHALL BE INSTALLED FROM EACH LUMINAIRE TO THE SERVICE PEDESTAL, LEAVING THREE FEET OF SLACK FOR EACH CONDUCTOR (MEASURED FROM THE TOP OF THE PULL BOX) IN EACH PULL BOX. ROUTE FOUR CONDUCTORS TO THE LUMINAIRE WITH THE PHOTOELECTRIC CELL. AN IN-LINE FUSE SHALL BE INSTALLED FOR EACH LUMINAIRE IN THE ASSOCIATED PULL BOX.
35. THE EMERGENCY VEHICLE PRE-EMPTION SENSOR CABLE SHALL BE OPTICOM DETECTOR CABLE MODEL NO. 138. THE CABLE SHALL NOT BE SPLICED.
36. ALL VEHICLE AND PEDESTRIAN INDICATIONS SHALL BE LED.
37. THE CONTRACTOR SHALL BAG ALL NEWLY INSTALLED VEHICULAR AND/OR PEDESTRIAN TRAFFIC SIGNAL HEADS WITH BURLAP OR OTHER APPROVED MATERIAL UNTIL THE FINAL INSPECTION AND ACCEPTANCE BY THE CITY TRAFFIC ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE. THE BURLAP OR OTHER APPROVED MATERIAL/DEVICE SHALL COMPLETELY COVER THE TRAFFIC SIGNAL HEAD AND SHALL OBSCURE THE VIEW OF THE TRAFFIC SIGNAL INDICATIONS SO THAT THEY CANNOT BE SEEN UNTIL THE TRAFFIC SIGNAL IS PLACED IN OPERATION. DURING CONSTRUCTION, THE TRAFFIC SIGNAL WILL BE DE-ENERGIZED WHILE NOT IN USE FOR TESTING.
38. THE TRAFFIC SIGNAL OPERATION AT EXISTING SIGNALIZED INTERSECTIONS SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT.
39. ALL STRIPING AND PAVEMENT MARKINGS ARE TO BE DONE UNDER THIS CONTRACT AND SHALL BE IN PLACE PRIOR TO THE ACTIVATION OF THE TRAFFIC SIGNAL. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL STOP LINES PRIOR TO THE INSTALLATION OF LOOP DETECTORS.
40. ALL CROSSWALK MARKINGS SHALL BE 10-FT. WIDE, FROM INSIDE OF MARKINGS, FOLLOWING CITY OF HOUSTON STANDARD DETAILS
41. ALL CONSTRUCTION SIGNING AND CONSTRUCTION TRAFFIC CONTROL DEVICES SHALL BE IN CONFORMANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

PRIVATE UTILITY NOTES
CAUTION: SBC CABLES

1. THE LOCATION OF SBC 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 HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.
2. THE CONTRACTOR SHALL CALL 311 (PUBLIC UNDERGROUND UTILITY) OR 811 (PRIVATE UNDERGROUND UTILITY) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND UTILITY LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN (18) INCHES OF THE INDICATED LOCATION OF SBC FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE SBC FACILITIES.
4. WHEN SBC FACILITIES ARE EXPOSED, THE CONTRACTOR SHALL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES, THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.

RESPONSIBILITIES:

1. THE CONTRACTOR SHALL SUPPLY AND INSTALL THE FOLLOWING EQUIPMENT AND MATERIALS AS SPECIFIED IN THE PLANS: STEEL POLE ANCHOR BOLTS (WITH NUTS AND WASHERS), CONCRETE POLE FOUNDATIONS WITH REINFORCEMENT (WHERE SPECIFIED), TRAFFIC SIGNAL CONTROLLER CABINET(S) WITH CONTROLLER(S) AND ALL AUXILIARY EQUIPMENT, CONTROLLER CABINET CONCRETE FOUNDATION(S), CONCRETE PULL BOXES, ELECTRICAL CONDUIT, GROUND RODS AND CONNECTORS, BARE BOND WIRE AND ALL OTHER CONDUCTORS, POLES, MAST ARMS, TRAFFIC SIGNALS AND MOUNTING ASSEMBLIES, PEDESTRIAN SIGNALS AND MOUNTING ASSEMBLIES, PEDESTRIAN PUSH BUTTON STATIONS WITH SIGNS, LUMINARIES, PHOTOCELLS, ELECTRIC SERVICE PEDESTAL(S) AND CONCRETE FOUNDATION(S), VIDEO DETECTION SYSTEM EQUIPMENT, VEHICLE DETECTION LOOPS, AND ALL OTHER APPURTENANCES NECESSARY FOR THE OPERATION OF THE TRAFFIC SIGNAL INSTALLATION(S), EXCEPT AS MODIFIED IN THE PLANS. (MODIFY THE LIST OF MATERIALS AS APPROPRIATE)
2. THE CONTRACTOR SHALL DELIVER THE CONTROLLER CABINET(S) WITH THE CONTROLLER(S) AND AUXILIARY EQUIPMENT SPECIFIED IN THE PLANS TO THE CITY OF HOUSTON TRAFFIC OPERATIONS CENTER, 2200 PATTERSON STREET FOR TESTING, A MINIMUM OF THREE WEEKS PRIOR TO THE INSTALLATION(S) AT THE INTERSECTION(S). CONTACT THE TRAFFIC MAINTENANCE BRANCH AT LEAST 2 WORKING DAYS PRIOR TO THE DELIVERY OF THE CONTROLLER CABINET(S) TO THE CITY OF HOUSTON. THE CONTRACTOR SHALL PICK UP AND TRANSPORT THE CONTROLLER CABINET(S) FROM THE CITY OF HOUSTON TRAFFIC OPERATIONS CENTER TO THE INTERSECTION(S) AFTER CITY OF HOUSTON STAFF HAS TESTED THE EQUIPMENT AND APPROVED IT FOR INSTALLATION.
3. THE CONTRACTOR SHALL INSTALL EACH TRAFFIC CONTROLLER CABINET ON ITS FOUNDATION AND ROUTE ALL OF THE CONDUCTORS INTO THE CONTROLLER CABINET. CONDUCTORS SHALL BE TERMINATED IN THE CABINET BY THE CONTRACTOR UNDER THE OBSERVATION OF AN APPROVED CITY OF HOUSTON REPRESENTATIVE.
4. THE CONTRACTOR SHALL CAREFULLY DISASSEMBLE AND SALVAGE ALL EXISTING TRAFFIC SIGNAL AND STREET LIGHTING EQUIPMENT THAT IS NOT TO REMAIN OR BE RELOCATED. ALL OF THE EQUIPMENT TO BE INSPECTED BY TRAFFIC OPERATIONS INSPECTOR TO IDENTIFY SALVAGE ITEMS. ITEMS TO BE SALVAGED SHALL BE RETURNED TO THE CITY OF HOUSTON TRAFFIC OPERATIONS CENTER, 2200 PATTERSON STREET, OR UPPER BRAES, 18211 WEST HOUSTONCENTER BLVD., AND UNLOADED BY THE CONTRACTOR. CONTACT THE TRAFFIC MAINTENANCE BRANCH AT LEAST 2 WORKING DAYS PRIOR TO RETURNING THE EQUIPMENT. ALL NON-SALVAGE ITEMS TO BE DELIVERED BY THE CONTRACTOR TO AN APPROVED CITY OF HOUSTON RECYCLE FACILITY.
5. THE CONTRACTOR SHALL SALVAGE AND REPLANT ANY LANDSCAPING VEGETATION THAT MAY BE DAMAGED BY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM AN APPROVED CITY OF HOUSTON REPRESENTATIVE BEFORE ANY PLANTS ARE MOVED.
6. THE CONTRACTOR SHALL REPAIR/RESTORE ANY LANDSCAPE IRRIGATION COMPONENTS DAMAGED BY CONSTRUCTION ACTIVITY TO THEIR ORIGINAL CONDITION.
7. THE LOCATION OF PUBLIC AND PRIVATE UTILITIES IS SHOWN IN AN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES TO UTILITIES THAT ARE THE RESULT OF HIS FAILURE TO EXACTLY LOCATE AND PRESERVE UNDERGROUND FACILITIES.

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

Mike Brower — 05/29/25 (Date)

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

Mike Brower — 05/29/25 (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.

Marc F Johnson — 5/29/25 (Date)

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-2578 & 10046100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS — VICTORIA M. MACALINO — 142304 — LICENSED PROFESSIONAL ENGINEER — 5/27/25
Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

GENERAL NOTES
SHEET 1 OF 2

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED AND FILED
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PO#	
TOMS MATHEW	
SHEET NO. 4 OF 72	

CITY SECRETARY HOUSTON TEXAS

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-CI-001-GENERAL.DWG, 5/27/2025 5:59 PM

SUMMARY OF QUANTITIES

Item No.	Section No.	Item Description	UOM	Quantity	
GENERAL					
1	01502	Mobilization (Includes Insurance and Bonds)	LS	1	* NOTE 1
2	01555	Traffic Control And Regulation (Including Lane Closures, Signage, Etc.)	LS	1	* NOTE 1
3	01555	Flagmen (Including Uniformed Officer)	LS	1	* NOTE 1
3a	01562	Tree and Plant Protection	EA	25	
4	02233	Remove Existing Tree (All Sizes)	EA	1	
5	01570	Storm Water Pollution Prevention Control (Including Furnish & Install, Inspection, Maintenance and Removal)	LS	1	* NOTE 1
7	02086	Adjust Existing Meter Box, Valve, or Pull Box to New Grade, Complete in Place	EA	1	
8	02233	Clearing And Grubbing	AC	0.38	
11	02922	Furnish and Install Sodding	SY	1,318	

Item No.	Section No.	Item Description	UOM	Quantity
DEMOLITION				
12	02221	Remove and Dispose Existing Sidewalks, Curb Ramps, Driveways, and Islands, With or Without Pavers, All Depths and Materials	SY	264
13	02221	Remove and Dispose Existing Pavement With or Without Base	SY	1,027
14	02221	Remove and Dispose Existing Concrete Curb or Curb and Gutter	LF	237
16	02221	Remove and Dispose Existing Retaining Wall/Curbing on Sidewalk, All Color, Shapes, Sizes, and Materials	CY	2

Item No.	Section No.	Item Description	UOM	Quantity
TRAFFIC SIGNAL				
17	02582	Furnish and Install 25-ft Powder Coated Mast Arm Pole Assembly with Foundation (Including Luminaire Arm and 106 Watt LED Luminaire), Complete in Place	EA	1
18	02582	Furnish and Install 30-ft Powder Coated Mast Arm Pole Assembly with Foundation (Including Luminaire Arm and 106 Watt LED Luminaire), Complete in Place	EA	2
19	02582	Furnish and Install 40-ft Powder Coated Mast Arm Pole Assembly with Foundation (Including Luminaire Arm and 106 Watt LED Luminaire), Complete in Place	EA	3
21a	02582	Furnish and Install 50-ft. Mast Arm Pole Assembly with Foundation (Including Luminaire Arm and 115 Watt LED Luminaire and Photocell), Complete in Place	EA	1
22	02590	Furnish and Install Traffic Singal Pole Luminaire (106 watt LED), Complete in Place	EA	7
25	16715	Furnish and Install 3-Section Vehicle Signal Head Assembly (R<Y<G) (Horizontal) (H3) (YLW REFL BDR) with back plate, Complete In Place	EA	15
27a	16715	Furnish and Install 5-Section Vehicle Signal Head Assembly (RY<Y<GG) (Horizontal) (H5L) (YLW REFL BDR), Complete in Place	EA	2
27b	16715	Furnish and Install 5-Section Vehicle Signal Head Assembly (RYG<Y<G) (Horizontal) (V5L) (YLW REFL BDR), Complete in Place	EA	2
28	16711	Furnish and Install Conduit, 1-inch SCH 80 PVC Trench (Include bond wire and pull tape), Complete in Place	LF	230
29	16711	Furnish and Install Conduit, 2-inch SCH 80 PVC Trench (Include bond wire and pull tape), Complete in Place	LF	2,075
30	16711	Furnish and Install Conduit, 2-inch SCH 80 PVC Bore (Include bond wire and pull tape), Complete in Place	LF	20
31	16711	Furnish and Install Conduit, 3-inch SCH 80 PVC Trench (Include bond wire and pull tape), Complete in Place	LF	330
32	16711	Furnish and Install Conduit, 3-inch SCH 80 PVC Bore (Include bond wire and pull tape), Complete in Place	LF	610
33	16711	Furnish and Install Conduit, 4-inch SCH 80 PVC Trench (Include bond wire and pull tape), Complete in Place	LF	215
34	16711	Furnish and Install Conduit, 4-inch SCH 80 PVC Bore (Include bond wire and pull tape), Complete in Place	LF	540
36	16720	Furnish and Install Traffic Signal Cables, 3/C-#14 AWG SOLID CABLE, Complete in Place	LF	4,310
37	16720	Furnish and Install Opticom Cables, 3/C-#20 (Shield), Complete in Place	LF	2,350
38	16720	Furnish and Install Traffic Signal Cables, 5/C-#14 AWG SOLID CABLE, Complete in Place	LF	4,390
39	16720	Furnish and Install Traffic Signal Cables, 7/C-#14 AWG SOLID CABLE, Complete in Place	LF	6,275
40	16720	Furnish and Install #8 AWG, Bare Bond, SOLID COPPER BARE WIRE Complete in Place	LF	3,750
41	16720	Furnish and Install #8 AWG, Bare Ground, Complete in Place	LF	10
42	16720	Furnish and Install #10 AWG XHHW Luminaire Wire, Complete in Place	LF	5,600
43	16720	Furnish and Install #10 AWG XHHW Luminaire Photo Cell Wire, Complete in Place	LF	140
44	16720	Furnish and Install #12 AWG XHHW Luminaire Ground Wire, Complete in Place	LF	2,520
45	16720	Furnish and Install #14 AWG (IMSA 50-2-1985) Wire, Complete in Place	LF	14,500
46	16720	Furnish and Install #4 AWG XHHW Thin Service Wire (SP1 AND SP2), Complete in Place	LF	500
47	16710	Furnish and Install Type "A" Pull Box with Apron, Gravel and Ground Rod, Complete in Place	EA	17
48	16710	Furnish and Install Type "B" Pull Box with Apron, Gravel and Ground Rod, Complete in Place	EA	8
49	16710	Furnish and Install Type "C" Pull Box with Apron, Gravel and Ground Rod, Complete in Place	EA	1
50	02582	Furnish and Install 15' Pedestrian Pole with Foundation, Complete In Place	EA	11
51	16719	Furnish and Install LED Pedestrian Signal Head Assembly (Symbolic)(Countdown), Complete in Place	EA	16
52	16750	Furnish and Install Accessible Pedestrian Push Button Station (left or right), Complete in Place	EA	16
53	02893	Furnish and Install Overhead Street Name Signs, Complete in Place	EA	7
54	02893	Furnish and Install Sign "One Way", R6-2 (30"x36"), Complete in Place	EA	2
55	02893	Furnish and Install Sign "Left Turn Yield On Green", R10-12 (30"x36"), Complete in Place	EA	7
58	16727	Furnish and Install Traffic Signal Sawcut Loop Detector (RLW+ LOOPS), Complete in Place	LF	2,320
61	16739/16743	Furnish and Install Cellular Modem, Bluetooth Reader, and Antenna, Complete in Place	EA	1
62	02893	Furnish and Install Electrical Service Pedestal Assembly with Foundation ("Square D" Breakers Included), Complete in Place	EA	1
63	16730/16731	Furnish and Install ITS Controller Cabinet Assembly (Mode 340 ITS)(Type 2070LX) With Foundation (with Apron and Polymer Base), Complete in Place	EA	1
64	16732	Furnish, Install, and Program Uninterruptible Power Supply, Complete in Place	EA	1
65	16733	Furnish and Install Field Hardened Ethernet Switch (Six Copper Ports and Two Fiber Optic Ports), Complete in Place	EA	1
66	16785	Furnish and Install GPS Serial Communication Module, Complete in Place	EA	1
67	16724	Furnish and Install Emergency Vehicle Preemption System, Complete in Place	EA	1

Item No.	Section No.	Item Description	UOM	Quantity
PAVING				
69	02771	Furnish and Install 6"-9" Curb (doweled on), Complete in Place	LF	1,352
71	02771	Furnish and Install Monolithic Curb and Gutter, Complete in Place	LF	34
72	02772	Furnish and Install Concrete Curbed Medians and Directional Islands/ Raised Concrete Islands, Complete in Place	SY	22
73	02775	Furnish and Install Wheelchair Ramp (including ramp, bottom landing, detectable warning, curbs, header)	SF	1,084
75	02775	Furnish and Install 4 ½-inch Thick Concrete Sidewalk, Complete in Place	SF	3,412
76	02317	Furnish and Install Select Fill, Complete in Place	CY	180
77	02775	Furnish and Install Truncated Dome Detectable Warning Surfaces, Complete in Place (not part of Wheelchair Ramp)	SF	259
78	See Plans	Furnish and Install Retaining Wall/Curbing on Back of Sidewalk, All Heights, Complete in Place	LF	261

Item No.	Section No.	Item Description	UOM	Quantity
PAVEMENT MARKING AND SIGNAGE				
80	01554	Traffic Control and Street Signs - Furnish and Install **Ground Mounted Sign Assembly** (Include Sign(s), Plaque(s), Pole(s), Foundation, Mounting(s), and Hardware, Complete in Place)	EA	15
81	01554	Traffic Control and Street Signs - Furnish and Install **Ground Mounted Sign Assembly** (Include Sign(s), Plaque(s), Pole(s), Foundation, Mounting(s), and Hardware, and **Solar Warning Beacons**, Complete in Place)	EA	1
82	01554	Traffic Control and Street Signs - Furnish and Install Existing Sign on New Pole (Include Mounting(s), and Hardware, Complete in Place)	EA	7
87	01554	Traffic Control and Street Signs - Furnish and Install New Sign on Existing Pole (Include Mounting(s), and Hardware, Complete in Place)	EA	1
88	01582	Build Houston Forward Project Identification Signs (Include Fabrication, Installation, Maintenance and Removal)	EA	2
89	01554	Remove and Dispose Existing Sign Assembly, Including Pole and Foundation	EA	11
90	02762	Blast Cleaning of Pavement Markings- Lines All Width	LF	1,000
92	02764	Raised Pavement Markers - Type II-A-A- Furnish and Install, Complete in Place	EA	36
93	02764	Raised Pavement Markers - Type II-C-R- Furnish and Install, Complete in Place	EA	56
94	02767	Reflectorized Yellow Paint on Curb- Furnish and Install, Complete in Place	LF	20
95	02765	Thermoplastic Pavement Markings - All Arrows, Words And Numbers- Furnish and Install, Complete in Place	EA	13
98	02767	Thermoplastic Pavement Markings - WS4- Furnish and Install, Complete in Place	LF	133
99	02767	Thermoplastic Pavement Markings - WS6- Furnish and Install, Complete in Place	LF	172
100	02767	Thermoplastic Pavement Markings - WS12- Furnish and Install, Complete in Place	LF	900
101	02767	Thermoplastic Pavement Markings - WS24- Furnish and Install, Complete in Place	LF	972
102	02767	Thermoplastic Pavement Markings - WB4- Furnish and Install, Complete in Place	LF	700
104	02767	Thermoplastic Pavement Markings - YS24- Furnish and Install, Complete in Place	LF	42
105	02767	Thermoplastic Pavement Markings - YDS4- Furnish and Install, Complete in Place	LF	455

Item No.	Section No.	Item Description	UOM	Quantity
STORM SEWER ITEMS				
106	02633	Type C Inlet- Furnish and Install, Complete in Place	EA	2
107	02633	Remove Existing Inlet Top and Cap Inlet Below Grade, All Depths, Complete in Place	EA	1
108	02663	Remove Existing Inlet Top and Convert to Junction Box with Grate Top, All Depth, Complete in Place	EA	1
109	02631	18-inch by 28.5-inch Arch Pipe Storm Sewer by Open Cut, Complete in Place	LF	11
110	02631	24-inch diameter Storm Sewer by Open-Cut-Complete in Place	LF	10

Item No.	Section No.	Item Description	UOM	Quantity
EXTRA WORK				
111		OMITTED		
112	02221	Removal of Miscellaneous Concrete and Masonry	SY	10
113	02318	Hand Excavation	CY	10
114	02318	Machine Excavation	CY	10
115	02318	Excavation Around Obstructions	CY	10
116	02318	Placement of Backfill Material	CY	10
117	02318	Cement Stabilized Sand	SY	10
120	See Plans	Remove, Salvage, and Replace Existing Retaining Wall Pavers	LF	25

Item No.	Section No.	Item Description	UOM	Quantity	
CASH ALLOWANCE					
121	Allowance	Permit Fees (FMO Floodway, Street Cut, Etc.)	LS	1	* NOTE 1
122	Allowance	Streetlighting Modifications (By CenterPoint Energy)	LS	1	* NOTE 1

NOTE:
1. LUMP SUM ITEMS ARE TO BE PAID IN RESPECT TO THIS PROJECT ONLY.
2. INLET PROTECT BARRIERS ARE INCLUDED AS PART STORM WATER POLLUTION PREVENTION PLAN ITEM AND TO BE QUANTIFIED PER PROJECT LOCATION.

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS — KRISTEN JILL HENNINGS — 90169 — LICENSED — PROFESSIONAL ENGINEER — 2/27/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SUMMARY OF QUANTITIES

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	TOMS MATHEW
SHEET NO.	5 OF 72

FOR CITY OF HOUSTON USE ONLY

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
80160
CITY DRAWING NUMBER
Approval Date 08/31/26
HOUSTON TX

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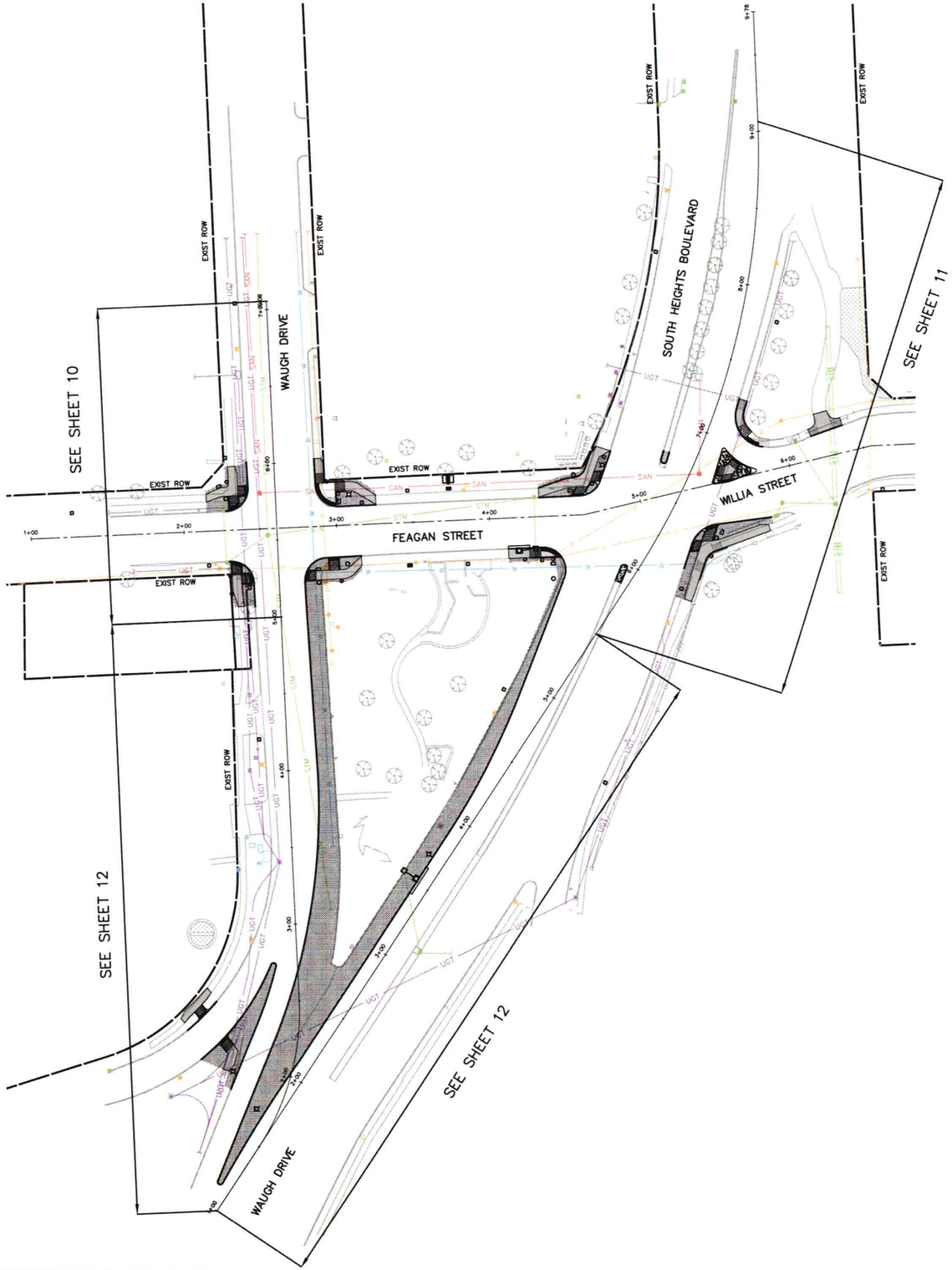

NO.	DATE	REVISION	APP.

0 10 20 40 80 120

SCALE: 1" = 40'

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY

Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-25290 & 10046300
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713.777.3337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

OVERALL LAYOUT

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012-7
DRAWING SCALE
AS NOTED
CITY OF HOUSTON POC
TOMS MATHEW
SHEET NO. 6 OF 72

FOR CITY OF HOUSTON USE ONLY

80160

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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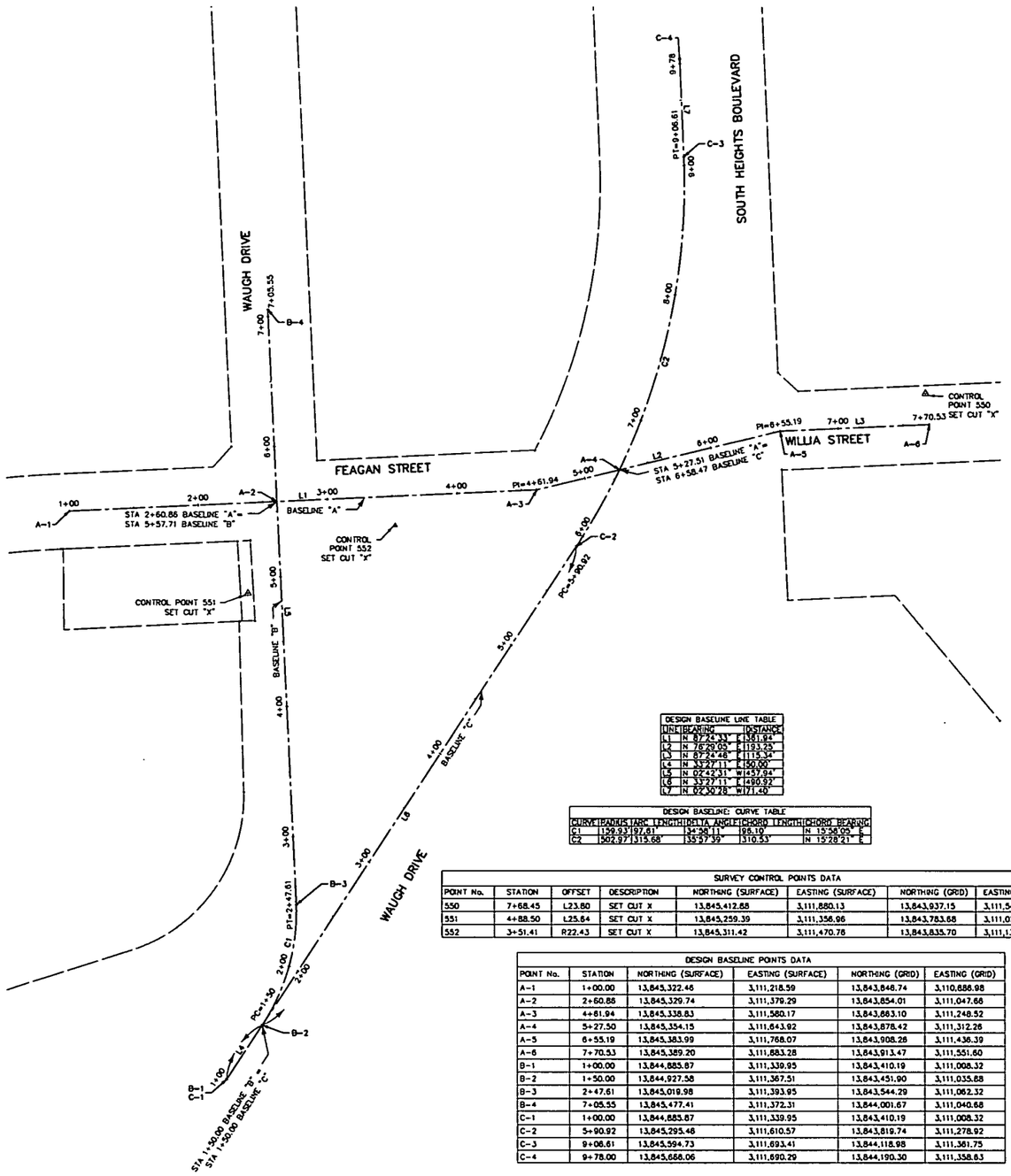
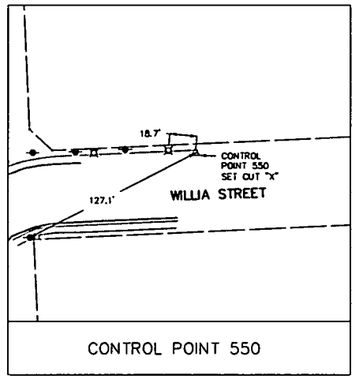
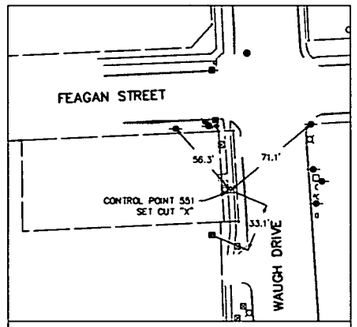




CONTROL POINT 550



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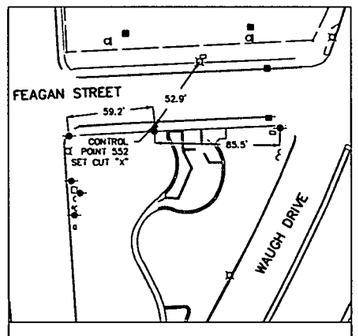


CONTROL POINT 552

DESIGN BASELINE LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 87°24'11" E	1361.84'
L2	N 76°29'05" E	1193.25'
L3	N 87°24'48" E	1115.34'
L4	N 33°27'11" E	150.00'
L5	N 02°42'31" W	1457.94'
L6	N 33°27'11" E	1490.92'
L7	N 02°30'28" W	171.40'

DESIGN BASELINE CURVE TABLE						
CURVE	RADIUS	TANG. LENGTH	DELTA ANGLE	CHORD LENGTH	CHORD BEARING	
C1	159.93'	97.61'	34°58'11"	96.10'	N 15°58'05"	E
C2	602.97'	315.68'	35°57'39"	310.53'	N 15°28'21"	E

SURVEY CONTROL POINTS DATA

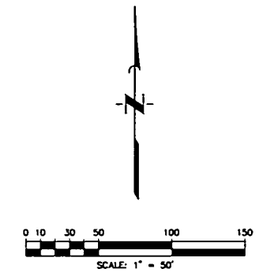
POINT No.	STATION	OFFSET	DESCRIPTION	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION
550	7+68.45	L23.60	SET CUT X	13,845,412.88	3,111,880.13	13,843,937.15	3,111,548.45	52.06
551	4+88.50	L25.64	SET CUT X	13,845,259.39	3,111,356.96	13,843,783.68	3,111,025.33	52.36
552	3+51.41	R22.43	SET CUT X	13,845,311.42	3,111,470.76	13,843,835.70	3,111,139.12	50.94

DESIGN BASELINE POINTS DATA

POINT No.	STATION	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
A-1	1+00.00	13,845,322.46	3,111,218.59	13,843,846.74	3,110,886.98
A-2	2+60.88	13,845,329.74	3,111,379.29	13,843,854.01	3,111,047.66
A-3	4+61.94	13,845,338.83	3,111,580.17	13,843,863.10	3,111,248.52
A-4	5+27.50	13,845,354.15	3,111,643.92	13,843,878.42	3,111,312.26
A-5	6+55.19	13,845,383.99	3,111,768.07	13,843,908.26	3,111,436.39
A-6	7+70.53	13,845,389.20	3,111,883.28	13,843,913.47	3,111,551.60
B-1	1+00.00	13,844,885.87	3,111,339.95	13,843,410.19	3,111,008.32
B-2	1+50.00	13,844,927.58	3,111,367.51	13,843,451.90	3,111,035.88
B-3	2+47.61	13,845,019.98	3,111,393.95	13,843,544.29	3,111,062.32
B-4	7+05.55	13,845,477.41	3,111,372.31	13,844,001.67	3,111,040.68
C-1	1+00.00	13,844,885.87	3,111,339.95	13,843,410.19	3,111,008.32
C-2	5+90.92	13,845,295.46	3,111,610.57	13,843,819.74	3,111,278.92
C-3	9+08.61	13,845,594.73	3,111,693.41	13,844,118.98	3,111,361.75
C-4	9+78.00	13,845,666.06	3,111,690.29	13,844,190.30	3,111,358.63

LEGEND

- ■ TYPE "B" INLET
- △ CONTROL POINT
- ⊠ ELECTRICAL CONTROL BOX
- ⊸ FLUSH VALVE
- ■ GRATE INLET
- ‹ GUY ANCHOR
- ⌶ LIGHT POLE
- ⊸ POWER POLE
- □ WATER METER
- ——·——·—— DESIGN BASELINE
- A-x DESIGN BASELINE "A" POINT NUMBER
- B-x DESIGN BASELINE "B" POINT NUMBER
- C-x DESIGN BASELINE "C" POINT NUMBER



NO.	DATE	REVISION	APP.

BENCHMARK:

Harris County Floodplain Reference Mark No. 210065 located on the east side of South Heights Boulevard on a bridge crossing Buffalo Bayou (W-100-00-00), approximately 600 feet south of the intersection of South Heights Boulevard and Memorial Drive Published elevation= 41.84 feet, NAVD 88, 2001 Adjustment.

GENERAL NOTES:

Bearings and coordinates shown hereon are based on the Texas Coordinate System of 1983, South Central Zone.

All distances and coordinates shown hereon are on SURFACE (unless otherwise noted) and may be converted to GRID using the combined scale factor of 0.9998934137.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046300
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS REGISTERED MATTHEW W. BRAZZEL 6140 PROFESSIONAL LAND SURVEYOR
3-21-2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

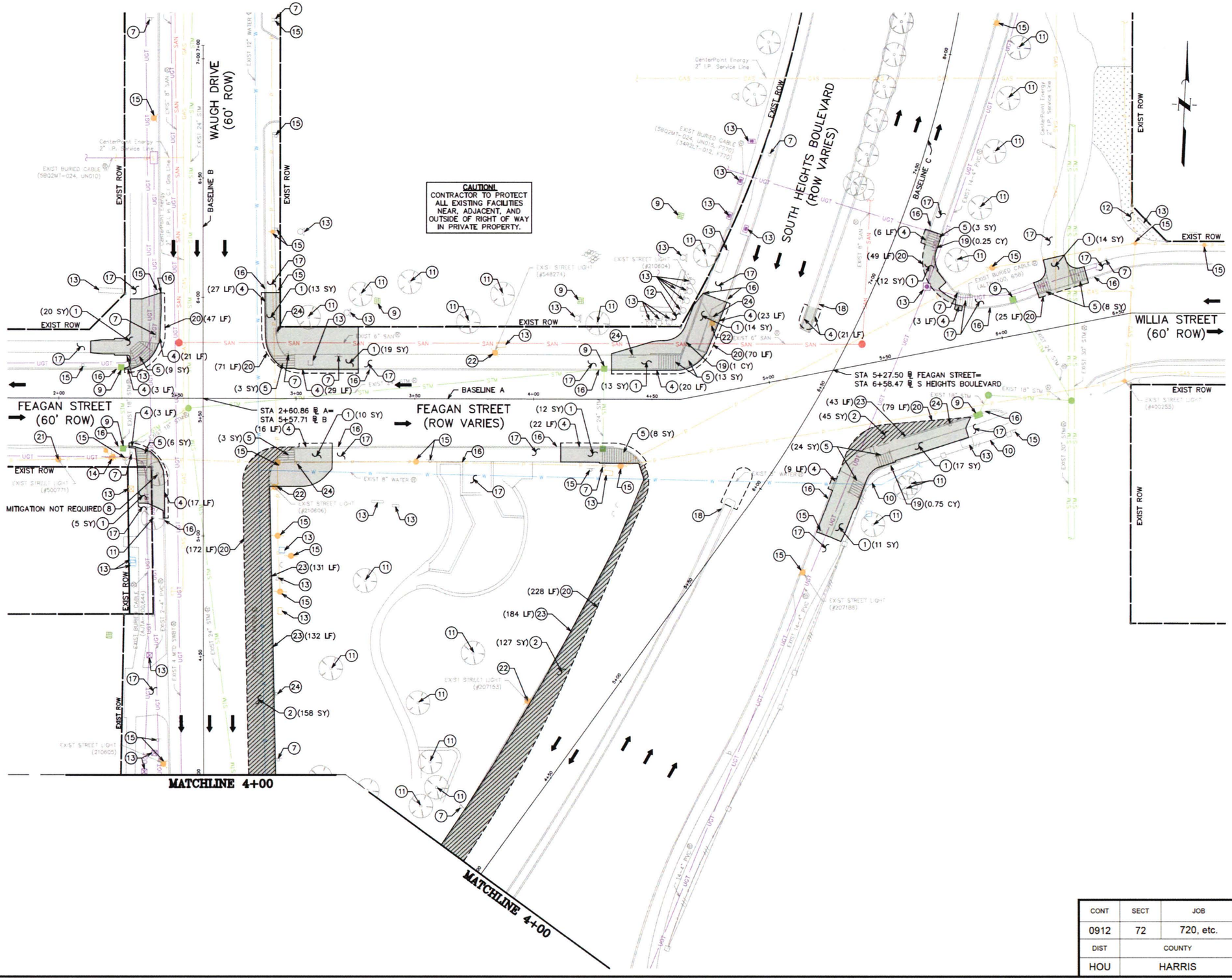
SURVEY CONTROL MAP

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	TOMS MATHEW
SHEET NO.	7 OF 72

FOR CITY OF HOUSTON USE ONLY
ACCEPTED AND FILED
80160
HOUSTON, TEXAS

K:\14760\14760-0021-01 1-0338 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-CI-008-SURVEY CONTROL.DWG, 2/24/2025 5:18 PM



LEGEND

- DEMOLITION AREA
- DIRECTION OF TRAVEL
- REMOVE CONC PAVING AND BASE

GENERAL NOTES

A. SCOPE OF WORK INDICATED WITHIN SHADED AREA. EXISTING FEATURES OUTSIDE SHADED AREA TO REMAIN UNLESS NOTED OTHERWISE.
B. CONTRACTOR IS TO PROTECT THE FACE OF ALL EXISTING BUILDINGS AND STRUCTURES. DAMAGE TO BUILDING/STRUCTURE SHALL BE REPAIRED/REPLACED AT CONTRACTOR'S EXPENSE.
C. EXISTING PUBLIC UTILITY STRUCTURES (METER AND VALVE VAULTS, JUNCTION BOXES, CLEAN OUTS, FIRE HYDRANTS, ETC.) IN USE IN THE AREA OF DEMOLITION ARE TO BE PROTECTED AND REMAIN OPERATIONAL DURING DEMOLITION, UNLESS NOTED OTHERWISE. ELEVATION OF COVER OF UTILITY STRUCTURE IS TO BE ADJUSTED TO BE LEVEL WITH NEW PAVING. PRIVATE UTILITY MANHOLES ARE TO BE ADJUSTED BY OTHERS.
D. CONTRACTOR IS TO PROTECT ALL IRRIGATION SYSTEM COMPONENTS DURING DEMOLITION OPERATIONS UNLESS NOTED OTHERWISE. ANY IRRIGATION SYSTEM COMPONENTS DAMAGED AS A RESULT OF DEMOLITION OPERATIONS SHALL BE REPLACED TO SATISFACTION OF OWNER AT CONTRACTOR'S EXPENSE.
E. CONTRACTOR TO PROTECT ALL FACILITIES NOT SPECIFICALLY CALLED OUT FOR DEMOLITION.
F. CONTRACTOR NOT TO ENTER PRIVATE PROPERTY TO PERFORM PROTECTIONS UNTIL A RIGHT-OF-ENTRY FORM IS SECURED FROM THE PROPERTY OWNERS.
G. SAWCUT QUANTITIES ARE FOR CONTRACTOR REFERENCE ONLY
H. CURB REMOVAL IS INCIDENTAL TO PAVEMENT REMOVAL PER COH SPEC 02221

KEY NOTES

1. REMOVE CONC SW
2. REMOVE CONC PAVING AND BASE (INCLUDING CONC CURB)
3. REMOVE GRAVEL, GRASS, AND/OR SOIL
4. REMOVE CONC CURB/CURB AND GUTTER
5. REMOVE CURB RAMP W/ OR W/OUT TRUNCATED DOME PAVERS
6. REMOVE RAISED CONC PAD/ISLAND/MEDIAN W/ OR W/OUT PAVEMENT BASE
7. REMOVE SIGN AND/OR POLE
8. REMOVE EXIST TREE
9. PROTECT EXIST INLET
10. PROTECT EXIST FENCE
11. PROTECT EXIST TREE
12. PROTECT EXIST PLANTING AND IRRIGATION
13. PROTECT EXIST STRUCTURE
14. PROTECT EXIST FIRE HYDRANT
15. PROTECT EXIST STREET LIGHT/TRAFFIC SIGN/POLE
16. PROTECT EXIST CURB/RETAINING WALL
17. PROTECT EXIST SW/RAMP/DWY/METRO BUS STOP
18. PROTECT RAISED CONC PAD/ISLAND/MEDIAN
19. REMOVE EXIST RETAINING WALL
20. LIMIT OF PAVING REMOVAL – SAWCUT
21. REMOVE EXIST STREET LIGHT AND PROTECT EXIST POLE
22. REMOVE EXIST STREET LIGHT AND POLE
23. REMOVE CONC CURB/CURB AND GUTTER (FOR CONTRACTOR REFERENCE ONLY)
24. SIGN TO BE RELOCATED (SEE PAVEMENT MARKING SHEETS)

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046300
6350 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT FEAGAN ST & S. HEIGHTS BLVD AT FEAGAN ST DEMOLITION PLAN

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED / NOTED
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON PGE	
TOMS MATHEW	
SHEET NO. 8 OF 72	HOUSTON, TEXAS

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LEGEND

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- DIRECTION OF TRAVEL
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NO.	DATE	REVISION	APP.

0 5 10 20 40 80
SCALE: 1" = 20'

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
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Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10096300
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT S. HEIGHTS BLVD
DEMOLITION PLAN

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 9 OF 72	

ACCEPTED FOR CITY OF HOUSTON
80160
CITY ENGINEER
HOUSTON, TEXAS

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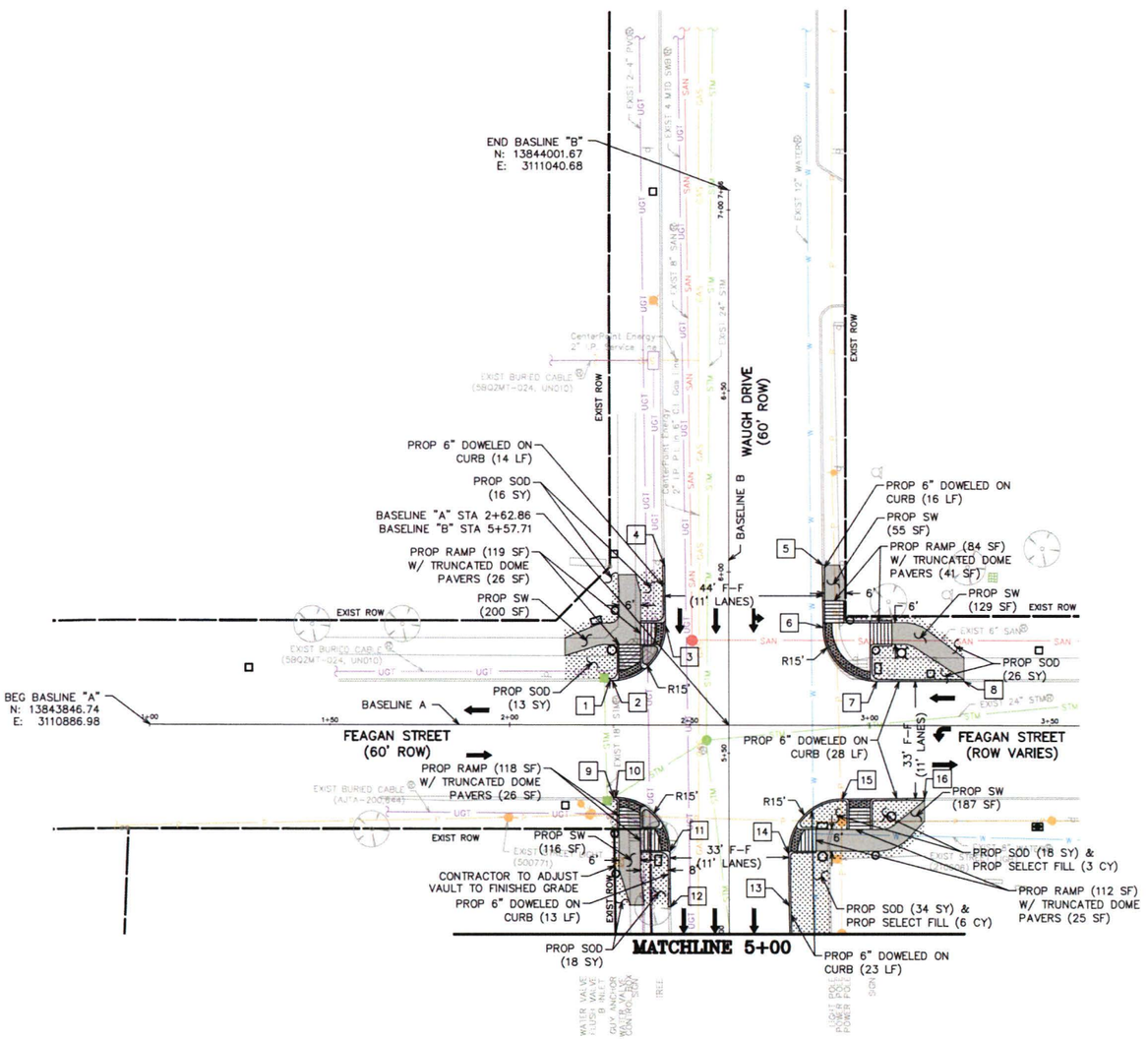

BASELINE B		
Point	Station	Offset
1	5+69.95	32.93' LT
2	5+69.96	32.46' LT
3	5+85.18	17.52' LT
4	6+01.79	17.77' LT
5	6+01.97	26.06' RT
6	5+84.60	26.25' RT
7	5+69.76	41.22' RT
8	5+69.73	65.37' RT
9	5+37.70	32.04' LT
10	5+37.71	31.50' LT
11	5+22.83	16.39' LT
12	5+07.52	16.26' LT
13	5+07.80	16.74' RT
14	5+22.16	16.62' RT
15	5+37.29	31.47' RT
16	5+37.51	54.39' RT

PAVING LEGEND

- PROP SIDEWALK
- PROP SOD TO MATCH EXIST
- PROP TRUNCATED DOMES
- [X] STATION AND OFFSET (SEE THIS SHEET)
- (A) MATCH EXISTING SW (SEE THIS SHEET)

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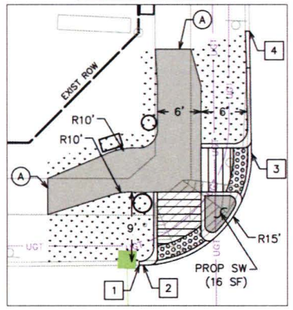
G. MATCH EXISTING ELEVATIONS UNLESS NOTED OTHERWISE.

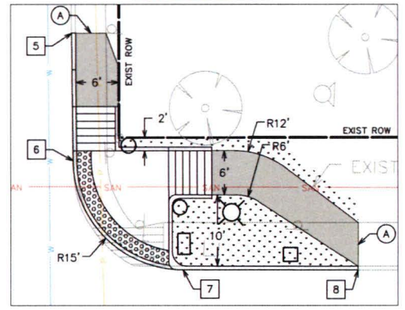
NO.	DATE	REVISION	APP.

NOTE: CORNER DETAILS ARE SHOWN AT 1:10 SCALE

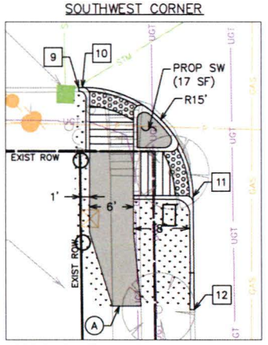
NORTHWEST CORNER



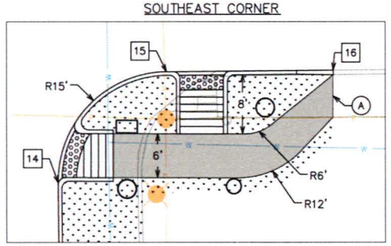
NORTHEAST CORNER



SOUTHWEST CORNER



SOUTHEAST CORNER



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

VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower — 05/29/25 — Date

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

Mike Brower — 05/29/25 — 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.

Marc F Johnson — 5/29/25 — Date

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046200
6550 West Loop South, Suite 150, Bellaire, TX 77401
713.777.3337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS — VICTORIA M. MACALINO — 142304 — LICENSED PROFESSIONAL ENGINEER — 5/27/25
Victoria M Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT FEAGAN ST PAVING

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED AND FILED
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON PSC	
TOMS MATHEW	
SHEET NO. 10 OF 72	

PAUL C. WACKER — 142304 — LICENSED PROFESSIONAL ENGINEER — STATE OF TEXAS — CITY PROJECT ENGINEER — HOUSTON, TEXAS

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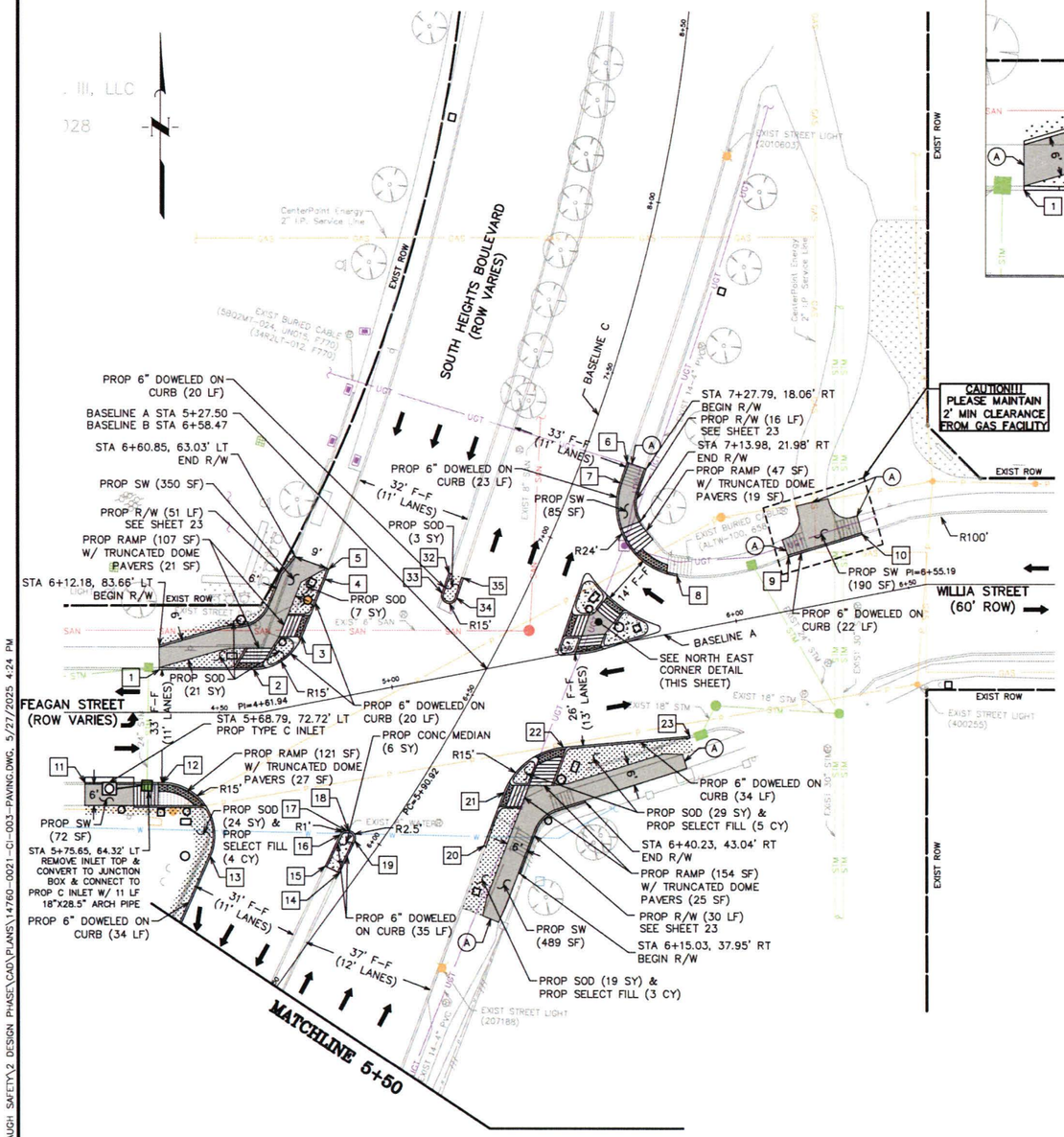
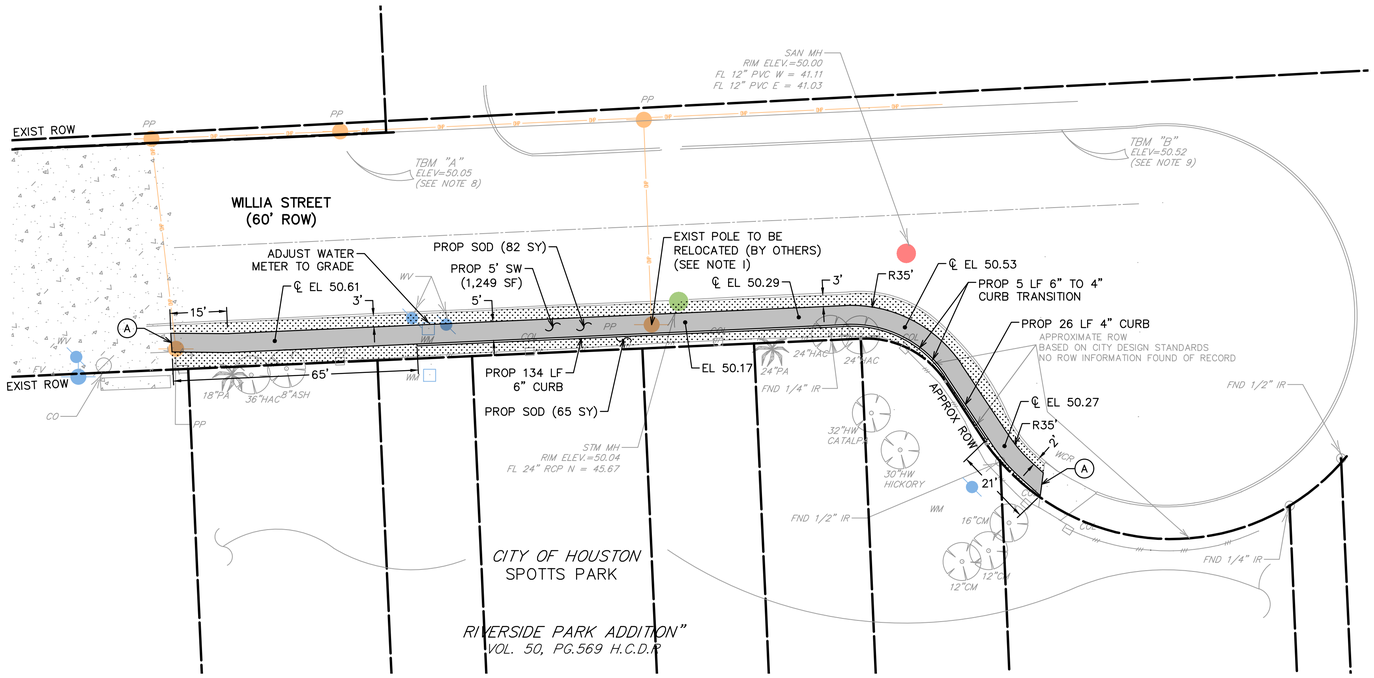
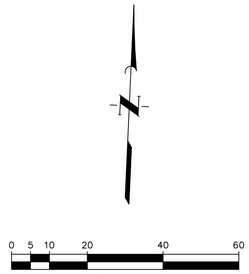
NOTE: CORNER DETAILS ARE SHOWN AT 1:10 SCALE


SOUTH HEIGHTS BOULEVARD (ROW VARIES)
EXIST ROW
BASELINE C
BASELINE A
BASELINE B
PROP 6" DOWELED ON CURB (20 LF)
BASELINE A STA 5+27.50
BASELINE B STA 6+58.47
STA 6+60.85, 63.03' LT END R/W
PROP SW (350 SF)
PROP R/W (51 LF) SEE SHEET 23
PROP RAMP (107 SF) W/ TRUNCATED DOME PAVERS (21 SF)
STA 6+12.18, 83.66' LT BEGIN R/W
PROP SOD (7 SY)
PROP SOD (21 SY)
PROP 6" DOWELED ON CURB (20 LF)
STA 5+68.79, 72.72' LT PROP TYPE C INLET
FEAGAN STREET (ROW VARIES)
PROP 6" DOWELED ON CURB (23 LF)
PROP SOD (3 SY)
PROP SW (85 SF)
STA 7+27.79, 18.06' RT BEGIN R/W
PROP R/W (16 LF) SEE SHEET 23
STA 7+13.98, 21.98' RT END R/W
PROP RAMP (47 SF) W/ TRUNCATED DOME PAVERS (19 SF)
CAUTION!!! PLEASE MAINTAIN 2' MIN CLEARANCE FROM GAS FACILITY
PROP SW PI=6+55.19 (190 SF)
PROP 6" DOWELED ON CURB (22 LF)
WILLIA STREET (60' ROW)
SEE NORTH EAST CORNER DETAIL (THIS SHEET)
PROP CONC MEDIAN (6 SY)
PROP RAMP (121 SF) W/ TRUNCATED DOME PAVERS (27 SF)
PROP SOD (24 SY) & PROP SELECT FILL (4 CY)
PROP SW (72 SF)
STA 5+75.65, 64.32' LT REMOVE INLET TOP & CONVERT TO JUNCTION BOX & CONNECT TO PROP C INLET W/ 11 LF 18"X28.5" ARCH PIPE
PROP 6" DOWELED ON CURB (34 LF)
PROP 6" DOWELED ON CURB (35 LF)
PROP SOD (29 SY) & PROP SELECT FILL (5 CY)
STA 6+40.23, 43.04' RT END R/W
PROP RAMP (154 SF) W/ TRUNCATED DOME PAVERS (25 SF)
PROP R/W (30 LF) SEE SHEET 23
STA 6+15.03, 37.95' RT BEGIN R/W
PROP SW (489 SF)
PROP SOD (19 SY) & PROP SELECT FILL (3 CY)
MATCHLINE 5+50
EXIST STREET LIGHT (20106033)
EXIST STREET LIGHT (400255)
EXIST STREET LIGHT (207188)
CenterPoint Energy 2" I.P. Service Line
EXIST BURIED CABLE (5932VLT-024, UNDIS, F770) (3462LT-012, F770)
EXIST 18" STM
EXIST 30" STM
EXIST 6" SAN
EXIST 14.4" Pvc
EXIST 8" WATER
EXIST BURIED CABLE (ALTW-65N)
EXIST 12" HYDR
EXIST 8" SAN
EXIST 6" SAN
EXIST 8" STM
EXIST 10" STM
EXIST 24" STM
EXIST 36" STM
EXIST 42" STM
EXIST 48" STM
EXIST 54" STM
EXIST 60" STM
EXIST 66" STM
EXIST 72" STM
EXIST 78" STM
EXIST 84" STM
EXIST 90" STM
EXIST 96" STM
EXIST 102" STM
EXIST 108" STM
EXIST





PAVING LEGEND

- PROP SIDEWALK
- PROP SOD TO MATCH EXIST
- PROP TRUNCATED DOMES
- (X) STATION AND OFFSET (SEE THIS SHEET)
- (A) MATCH EXISTING SW (SEE THIS SHEET)

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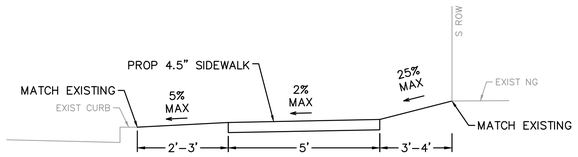
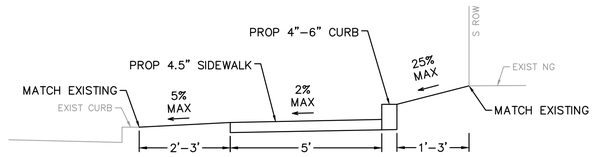
G. MATCH EXISTING ELEVATIONS UNLESS NOTED OTHERWISE.
H. REFER TO CITY STANDARD DETAIL 02751-01 – CONCRETE PAVEMENT DETAILS FOR DETAILS ON PROPOSED SIDEWALK.
I. COORDINATION IS UNDERWAY WITH CENTERPOINT FOR THE RELOCATION OF THIS POLE.

NO.	DATE	REVISION	APP.



TYPICAL SIDEWALK SECTION
N.T.S.



TYPICAL SIDEWALK SECTION WITH CURB
N.T.S.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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

VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower — 05/29/25 (Date)

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

Mike Brower — 05/29/25 (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.

Marc F Johnson — 5/29/25 (Date)

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors Reg. Nos. F-23290 & 10046100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
KRISTEN JILL HENNINGS
90169
LICENSED
PROFESSIONAL ENGINEER
11/21/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WILLIA ST SIDEWALK

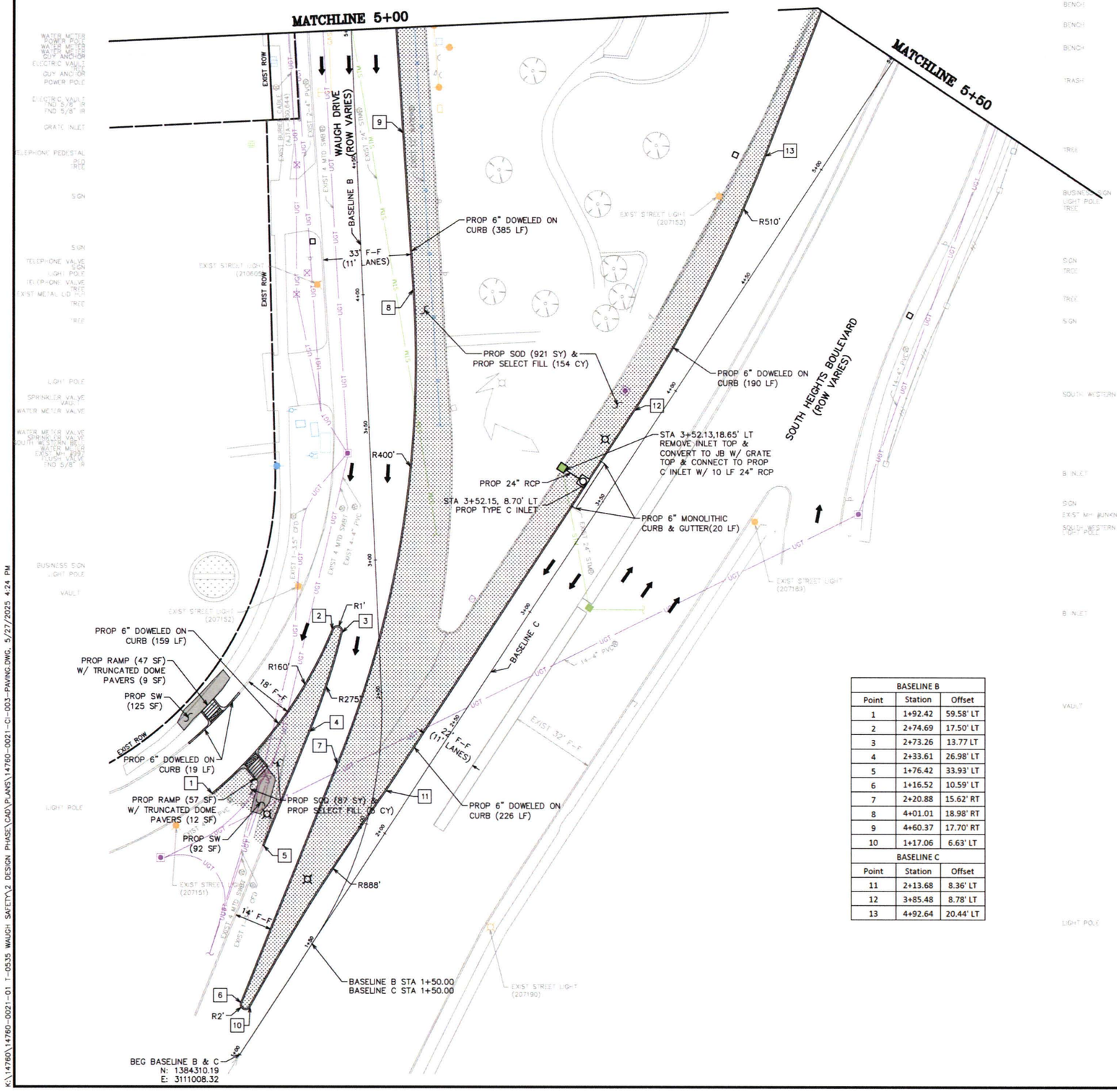
WAUGH SAFETY IMPROVEMENTS

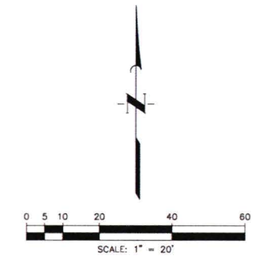
WBS NUMBER
N-T05000-0012-7
DRAWING SCALE
AS NOTED
CITY OF HOUSTON POC
TOMS MATHEW
SHEET NO. 11A OF 72

FOR CITY OF HOUSTON USE ONLY

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
80160
CITY DRAWING NUMBER
Approval Date 08/31/26
HOUSTON TX

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-CI-003-PAVING_WILLIA SW.DWG, 11/20/2025 2:47 PM





PAVING LEGEND

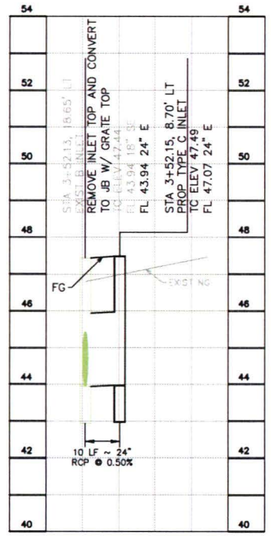
- PROP SIDEWALK
- PROP SOD TO MATCH EXIST
- PROP TRUNCATED DOMES
- [X] STATION AND OFFSET (SEE THIS SHEET)
- (A) MATCH EXISTING SW (SEE THIS SHEET)

GENERAL NOTES

A. CONTRACTOR IS TO PROTECT THE FACE OF ALL EXISTING BUILDINGS AND STRUCTURES. DAMAGE TO BUILDING/STRUCTURE SHALL BE REPAIRED/REPLACED AT CONTRACTOR'S EXPENSE.
B. EXISTING PUBLIC UTILITY STRUCTURES (METER AND VALVE VAULTS, JUNCTION BOXES, CLEAN OUTS, FIRE HYDRANTS, ETC.) IN USE IN THE AREA OF DEMOLITION ARE TO BE PROTECTED AND REMAIN OPERATIONAL DURING DEMOLITION, UNLESS NOTED OTHERWISE. ELEVATION OF COVER OF UTILITY STRUCTURE IS TO BE ADJUSTED TO BE LEVEL WITH NEW PAVING. PRIVATE UTILITY MANHOLES ARE TO BE ADJUSTED BY OTHERS.
C. STREET LIGHTS AND TRAFFIC SIGNALS TO REMAIN OPERATIONAL DURING CONSTRUCTION. INSTALL TEMPORARY SIGNALIZATION ACCORDING TO TEMPORARY SIGNAL PLAN.
D. CONTRACTOR IS TO PROTECT ALL IRRIGATION SYSTEM COMPONENTS DURING DEMOLITION OPERATIONS UNLESS NOTED OTHERWISE. ANY IRRIGATION SYSTEM COMPONENTS DAMAGED AS A RESULT OF DEMOLITION OPERATIONS SHALL BE REPLACED TO SATISFACTION OF OWNER AT CONTRACTOR'S EXPENSE.
E. CONTRACTOR TO PROTECT ALL FACILITIES NOT SPECIFICALLY CALLED OUT FOR DEMOLITION.
F. CONTRACTOR TO COORDINATE WITH CITY OF HOUSTON URBAN FORESTER AT (832)395-8459 PRIOR TO WORK BENEATH EXISTING MATURE TREES FOR ANY ADDITIONAL TREE PROTECTION REQUIREMENTS.
G. MATCH EXISTING ELEVATIONS UNLESS NOTED OTHERWISE.

NO.	DATE	REVIS ON	APP.

S HEIGHTS BOULEVARD 3+52.15



BASELINE B		
Point	Station	Offset
1	1+92.42	59.58' LT
2	2+74.69	17.50' LT
3	2+73.26	13.77 LT
4	2+33.61	26.98' LT
5	1+76.42	33.93' LT
6	1+16.52	10.59' LT
7	2+20.88	15.62' RT
8	4+01.01	18.98' RT
9	4+60.37	17.70' RT
10	1+17.06	6.63' LT
BASELINE C		
Point	Station	Offset
11	2+13.68	8.36' LT
12	3+85.48	8.78' LT
13	4+92.64	20.44' LT

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046200
6550 West Loop South, Suite 130, Bellaire, TX 77401
713.777.5357

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FB NO. 3124, Pages 1-4

STATE OF TEXAS — VICTORIA M. MACALINO — 142304 — LICENSED PROFESSIONAL ENGINEER — 5/27/25
Victoria M Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

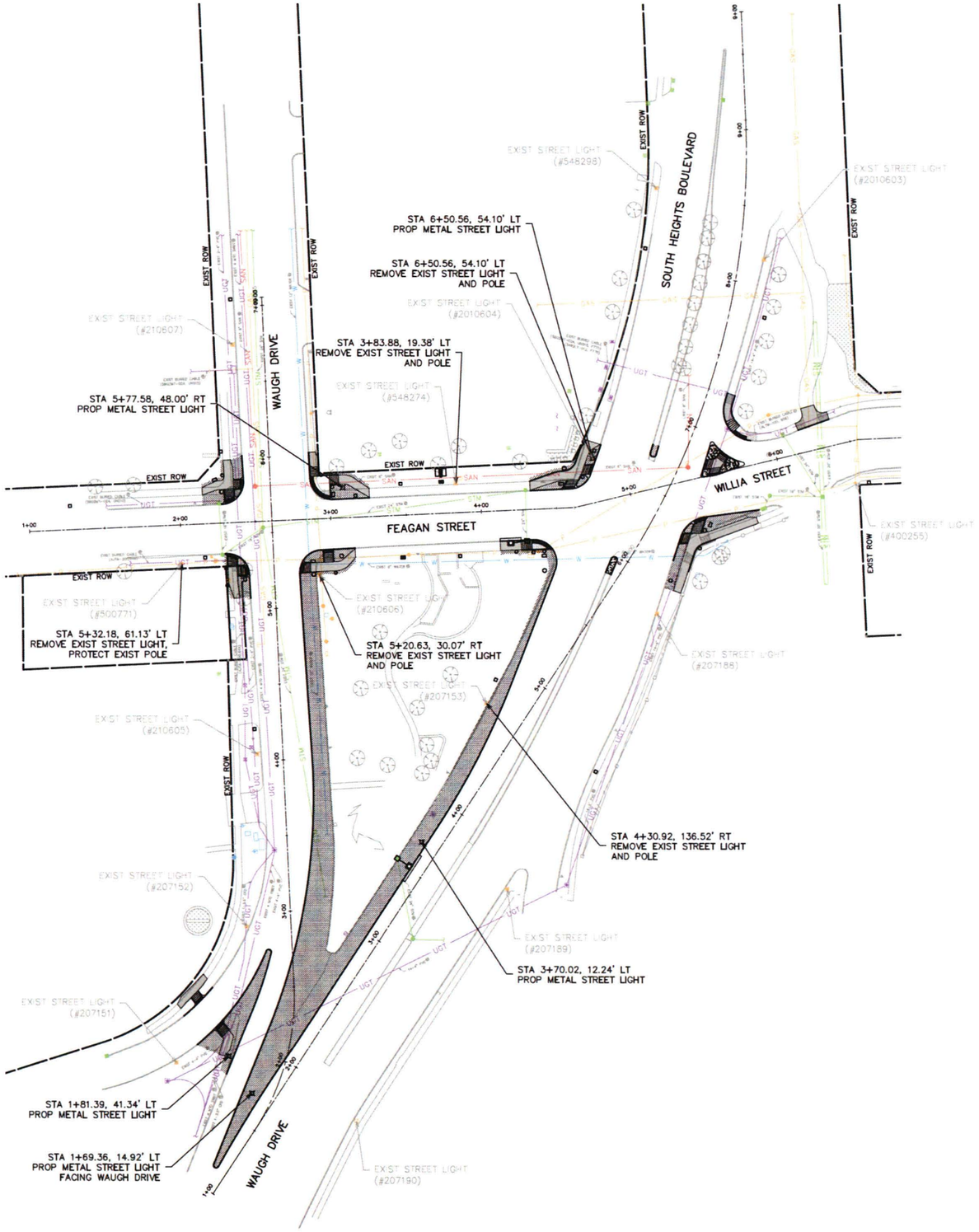
WAUGH DR AT S. HEIGHTS BLVD PAVING & DRAINAGE

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED AND FILED
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 12 OF 72	

PUBLIC WORKS & ENGINEERING — HOUSTON TEXAS

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-GI-003-PAVING.DWG, 5/27/2025 4:24 PM



NO.	DATE	REVISION	APP.

0 10 20 40 80 120
SCALE: 1" = 40'

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-25290 & 10046300
6350 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MAGALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

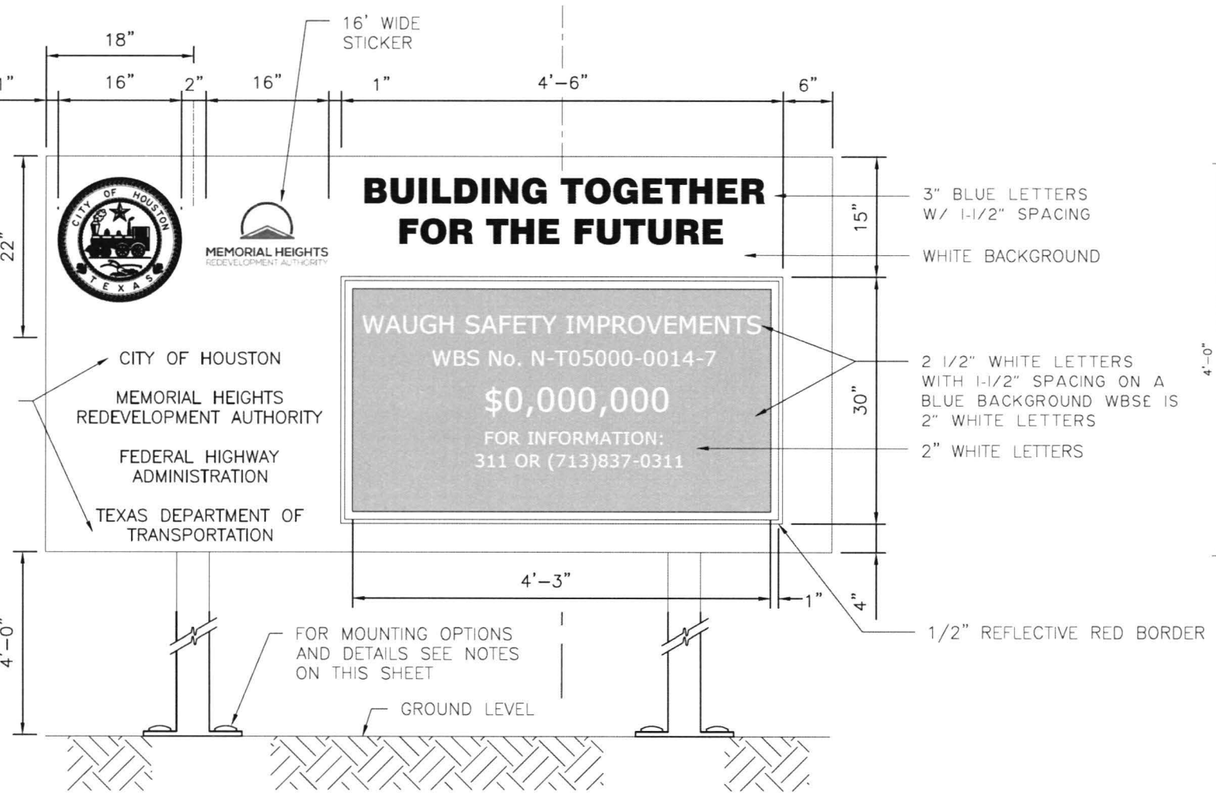
STREET LIGHTING LAYOUT

WAUGH SAFETY IMPROVEMENTS

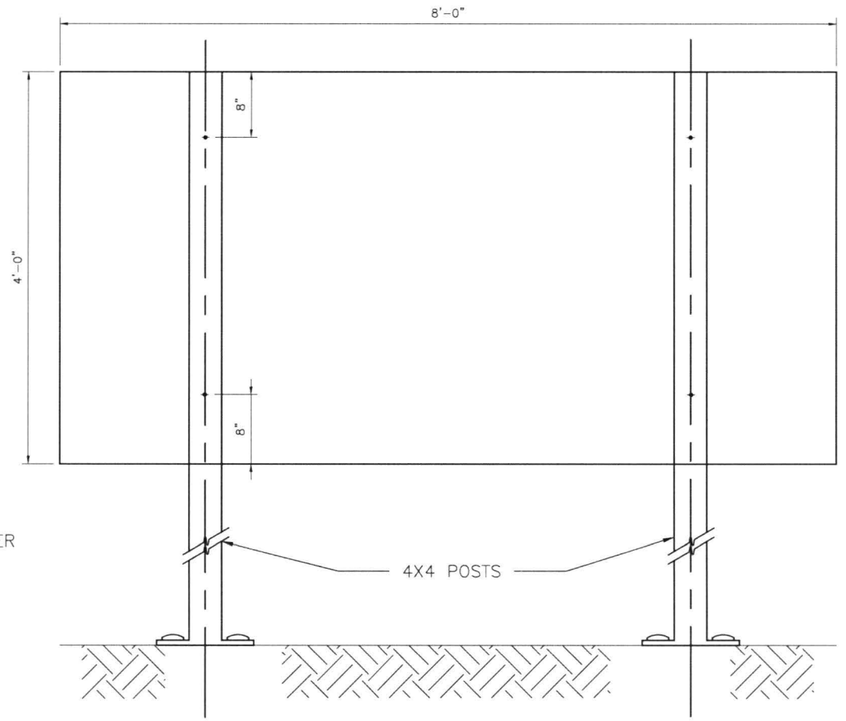
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON PM	
TOMS MATHEW	
SHEET NO. 13 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-CI-009-STREETLIGHTS.DWG, 5/27/2025 4:20 PM



FRONT VIEW



BACK VIEW

NOTES:

1. ALLOWABLE POST INSTALLATION METHODS ARE: CONCRETE FOOTING, SURFACE MOUNTING, SKID MOUNTING AND PILE DRIVEN POSTS.
2. FOR POST INSTALLATION WITH CONCRETE FOOTING, REFER TO DETAIL 01554–01.
3. FOR SURFACE MOUNTED POST INSTALLATION, REFER TO DETAIL 01554–02.
4. FOR SKID MOUNTING REQUIREMENTS REFER TO SPECIFICATION 10582.
5. PILE DRIVEN POSTS MUST BE DRIVEN TO A MINIMUM DEPTH OF 4–FEET INTO EXISTING GROUND.
6. LAYOUT, TEXT SIZE, AND OVERALL DESIGN OF THE SIGN WILL BE THE RESPONSIBILITY OF THE BUILD HOUSTON COORDINATOR.
7. ALL SIGN POSTS, SIGN TUBING, AND SIGN FASTENERS SHALL BE GALVANIZED STEEL PER SPECIFICATION 01582.

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046200
6350 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5357

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CONSTRUCTION SIGN DETAIL

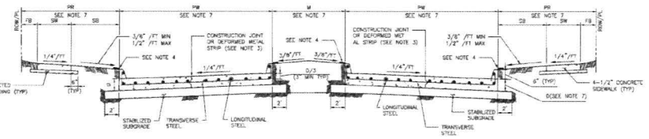
WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

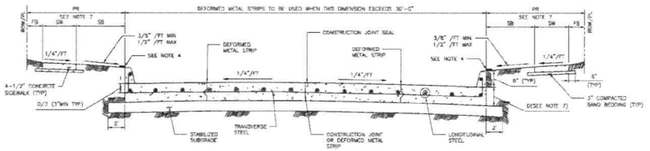
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON ROC	
TOMS MATHEW	
SHEET NO. 14 OF 17	

ACCEPTED AND FILED
HOUSTON, TEXAS

K:\14760\14760-0021-01 I-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-CI-004-DETAILS.DWG, 5/27/2025 1:19 PM



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 (T) WITH MAXIMUM TRANSVERSE CONTROL JOINT SPACING = 20'-0"
MAXIMUM EXPANSION JOINT SPACING = 80'-0"
f'c = 4,000 PSI FOR DAYS AND FY = 60,000 PSI

PAVEMENT THICKNESS "T" (IN)	PAVEMENT WIDTH "PW" (FT)	LONGITUDINAL STEEL									TRANSVERSE 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	–	–	–	–	–	–	28	–	–
7	28	17	18.75	4.00	–	–	–	–	–	–	26	–	–
7	30	18	18.00	3.00	–	–	–	–	–	–	26	–	–
7	36	20	17.75	3.00	–	–	–	–	–	–	26	–	–
7	37	20	18.25	3.00	–	–	–	–	–	–	26	–	–
7	41	22	18.00	3.50	–	–	–	–	–	–	26	–	–
7	43	23	17.75	3.75	–	–	–	–	–	–	26	–	–
8	23	20	13.50	2.75	13	24.50	3.0	–	–	–	26	28	–
8	24	21	13.36	2.50	17	23.00	4.0	–	–	–	26	26	–
8	30	27	16.00	4.00	18	24.25	4.0	–	–	–	26	26	–
8	36	28	15.75	3.25	19	23.00	3.0	–	–	–	30	36	–
8	44	24	15.75	4.00	23	24.75	4.0	–	–	–	30	36	–
8	45	25	15.75	2.25	23	24.25	3.0	–	–	–	30	36	–
9	25	22	14.08	3.00	14	22.50	4.0	–	–	–	24	36	–
9	34	31	13.50	2.00	19	22.25	3.5	–	–	–	30	38	–
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	38	13.75	2.75	25	21.75	3.0	–	–	–	24	38	–
9	45	39	14.06	4.00	26	21.25	4.5	–	–	–	24	36	–
10	25	24	12.71	3.50	17	19.25	4.0	–	–	–	36	36	28
10	34	33	12.56	4.00	21	28.00	4.0	–	–	–	30	36	36
10	35	34	12.56	3.75	23	18.75	4.0	–	–	–	30	36	30
10	36	35	12.90	3.50	24	18.50	3.0	–	–	–	30	36	28
10	44	44	13.06	4.00	29	18.56	4.5	–	–	–	24	30	38
10	45	44	12.50	3.00	29	19.06	3.0	–	–	–	24	38	28
11	25	27	11.25	3.00	17	18.25	4.0	12	24.75	3	36	36	38
11	34	36	11.56	3.75	24	17.58	2.5	17	23.00	4	24	36	36
11	35	37	11.56	3.50	24	18.06	3.0	17	23.75	4	24	38	38
11	36	40	11.06	2.00	25	17.75	3.0	17	24.50	4	24	38	30
11	44	48	11.125	2.50	30	18.00	3.0	21	26.00	4	24	36	36
11	45	49	11.125	3.00	31	17.75	4.0	22	25.50	3	24	38	38
12	25	–	–	–	19	16.25	4.0	15	24.50	3	36	36	38
12	34	–	–	–	26	16.00	4.0	18	23.50	4	24	38	38
12	35	–	–	–	26	16.50	4.0	19	23.00	3	24	36	30
12	36	–	–	–	27	16.25	4.5	20	27.25	4.5	24	38	38
12	44	–	–	–	33	16.26	4.0	24	27.50	5	24	30	38
12	45	–	–	–	35	15.79	3.0	25	27.25	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 SOWING 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 COH REQUIREMENTS, ENGINEER SHALL OBTAIN A VARIANCE FROM THE CITY ENGINEER.
7. REFER TO CONTRACT DRAWINGS FOR PAVEMENT WIDTH (PW) AND PAVEMENT THICKNESS (T), MEDIAN (W), PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02751-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

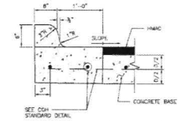
CONCRETE PAVEMENT DETAILS

FOR CITY OF HOUSTON USE ONLY

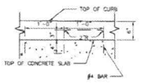
DRAWING SCALE
NOT TO SCALE

NO.	DATE	REVISION	APP.

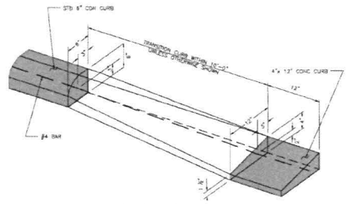
DISCLAIMER:
THE STANDARD IS DEFINED BY THE STATE ENGINEERING PRACTICE ACT. THE SEVEN PARAMETERS ON THE STANDARD DO NOT SUPPORT BE ADHERED AS OF THE SAFETY CRITERIA ASSOCIATED WITH THESE ITEMS. THE ENGINEER OF RECORD (EOR) IS SOLELY RESPONSIBLE FOR THE DESIGN AND SAFETY OF THE PROJECT. THE EOR IS RESPONSIBLE FOR THE SAFETY OF THE PUBLIC AND CONTRACTOR PERSONNEL AND SHALL DESIGN ACCORDINGLY. THE CITY OF HOUSTON (COH) HAS LIMITED REQUIREMENTS FOR SAFETY AND CONSIDERATIONS, AND IT IS THE RESPONSIBILITY OF THE EOR TO ADDRESS ANY SAFETY CONCERNS. THE COH DOES NOT ASSUME ANY RESPONSIBILITY FOR THE EOR'S DESIGN REQUIREMENTS AND IT IS THE EOR'S RESPONSIBILITY TO ENSURE THAT THE DESIGN COMPLIES WITH ALL APPLICABLE LAWS, CODES, AND REGULATIONS. THE EOR SHALL INDEMNIFY AND HOLD HARMLESS THE CITY OF HOUSTON, ITS OFFICIALS, EMPLOYEES, AND AGENTS FROM ANY CLAIMS, LIABILITIES, OR DAMAGES RESULTING FROM THE USE OF THIS STANDARD.



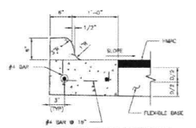
ESPLANADE CURB CONNECTED TO CONCRETE BASE



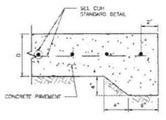
ALTERNATE CONCRETE CURB REINFORCEMENT



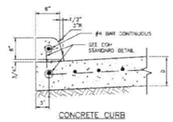
CURB TRANSITION
(SEE NOTES)



ESPLANADE CURB CONNECTED TO FLEXIBLE BASE

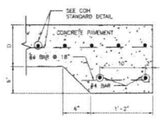


STANDARD CONCRETE PAVING HEADER

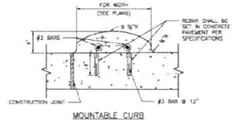


CONCRETE CURB

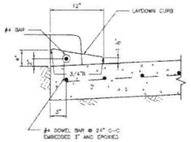
WHEN CONCRETE CURB IS TO BE PLACED EXISTING CONCRETE USE BASE
#4 BAR @ 18x12" LONG DOWELED AND SET IN EPOXY GROUT.
SET #4 DOWEL BARS, 25" LONG AT 12" C-C WHEN PAVEMENT SECTION POURED.



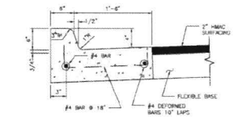
STANDARD RAILROAD HEADER



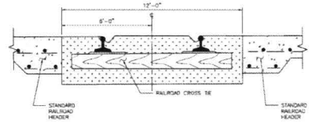
MOUNTABLE CURB



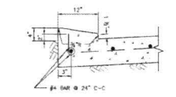
4-INCH x 12-INCH TRANSITION CURB
(SEE NOTES)



MONOLITHIC CURB AND GUTTER



STANDARD RAILROAD CROSSING – SINGLE TRACK



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

4"x12" MONOLITHIC AND TRANSITION CURB NOTES:

1. 8-INCH CONCRETE CURB TO BE CONSTRUCTED ON ALL ESPLANADES, ISLANDS, NON-RESIDENTIAL STREETS, AND RESIDENTIAL STREETS.
2. TRANSITIONS FROM 8- INCH CONCRETE CURB TO 4-INCH x 12-INCH CONCRETE CURB SHALL BE MADE OVER A DISTANCE OF 12'-0". UNLESS OTHERWISE SHOWN, IF CAST "IN-SITU" 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.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
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

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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713-850-9000

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SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING DETAILS
SHEET 1 OF 5

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 15 OF 72	

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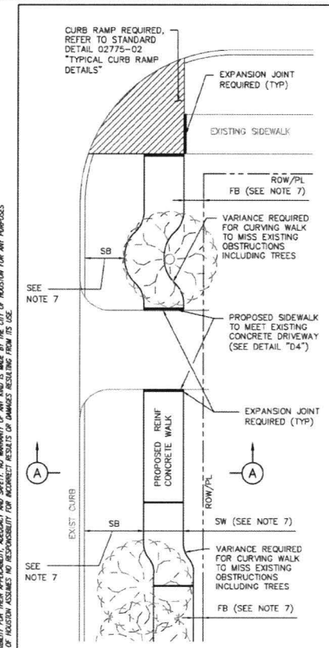
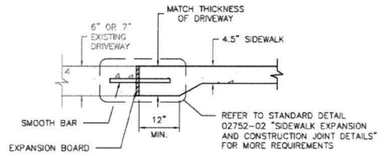


PLAN VIEW

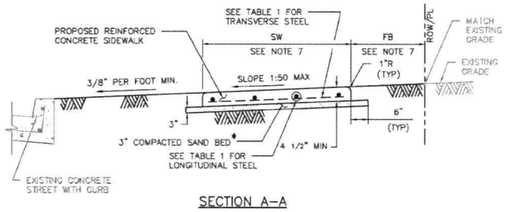


DETAIL D4
DRIVEWAY/SIDEWALK HEADER

TABLE 1

REINFORCING STEEL INFORMATION
FOR 4 ½ " THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
f'c = 3,500 PSI AND fy = 60,000 PSI
REFER TO CONTRACT DRAWINGS FOR SIDEWALKS WIDER THAN 6 FEET.

SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL			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

*SAND BED IS INCIDENTAL TO THE INSTALLATION OF THE PROPOSED SIDEWALK

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:

Digitally signed by Sukal Kanuar — CITY ENGINEER
Digitally signed by KHANG NGUYEN — CITY TRAFFIC ENGINEER
Digitally signed by Carol Haddock — DIRECTOR OF HPW

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

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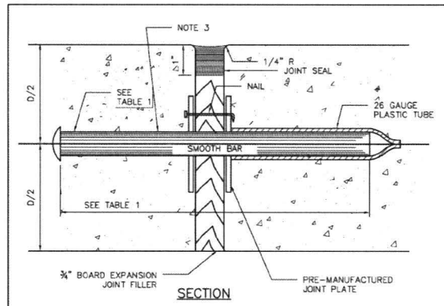
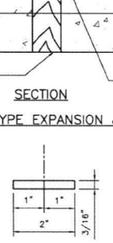
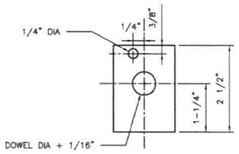


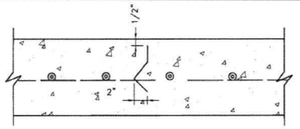
SECTION
DOWEL TYPE EXPANSION JOINT



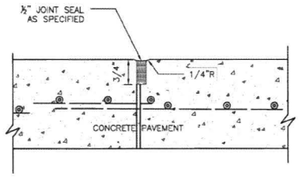
PLAN VIEW
JOINT PLATE



ELEVATION VIEW
JOINT PLATE



SECTION
DEFORMED METAL STRIP



SECTION
CONSTRUCTION JOINT SEAL

TABLE 1

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

NOTES:

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PAVEMENT EXPANSION AND CONSTRUCTION JOINT DETAILS
(SCALE: NOT TO SCALE)

APPROVED BY:

Digitally signed by Sukal Kanuar — CITY ENGINEER
Digitally signed by KHANG NGUYEN — CITY TRAFFIC ENGINEER
Digitally signed by Carol Haddock — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 02752-01

NO.	DATE	REVISION	APP.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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STATE OF TEXAS — VICTORIA M. MACALINO — 142304 — LICENSED PROFESSIONAL ENGINEER — 5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING DETAILS
SHEET 2 OF 5

WAUGH SAFETY IMPROVEMENTS

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N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON PCO	
TOMS MATHEW	
SHEET NO. 16 OF 72	

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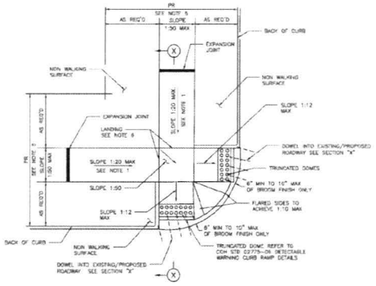
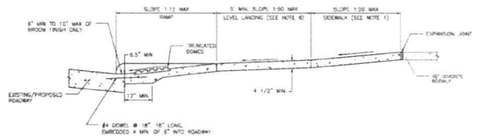


STREETS WITH NON- WALKING SURFACE BEHIND CURB
SEE NOTE-7



SECTION X-X

NOTES:

1. REPLACE EXISTING SIDEWALK FROM LEVEL LANDING AS NECESSARY TO ACHIEVE 1:20 SLOPE
2. BROOM FINISH IS MEASURED FROM FACE OF CURB
3. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
4. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON UNLESS NOTED OTHERWISE.
5. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR) WIDTH.
6. MINIMUM 5'x5' LANDING PAD ACCORDING TO ADA REQUIREMENTS. WHEN THE APPROACHING SIDEWALK IS WIDER THAN 5', THE LANDING PAD AND RAMP WIDTH MUST MATCH THE SIDEWALK WIDTH.
7. FOR STREETS WITH WALKABLE SURFACES IMMEDIATELY BEHIND THE CURB A FLARE IS REQUIRED ON BOTH SIDES OF THE RAMP.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF. DATE: NOV-27-2023	DWG. NO. 02775-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CURB RAMP DETAILS

	FOR CITY OF HOUSTON USE ONLY
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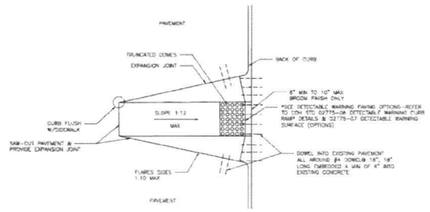
NOT TO SCALE	

ELEVATION
LOOKING UP RAMP



CURB RAMP CONSTRUCTION FOR EXISTING PAVEMENT

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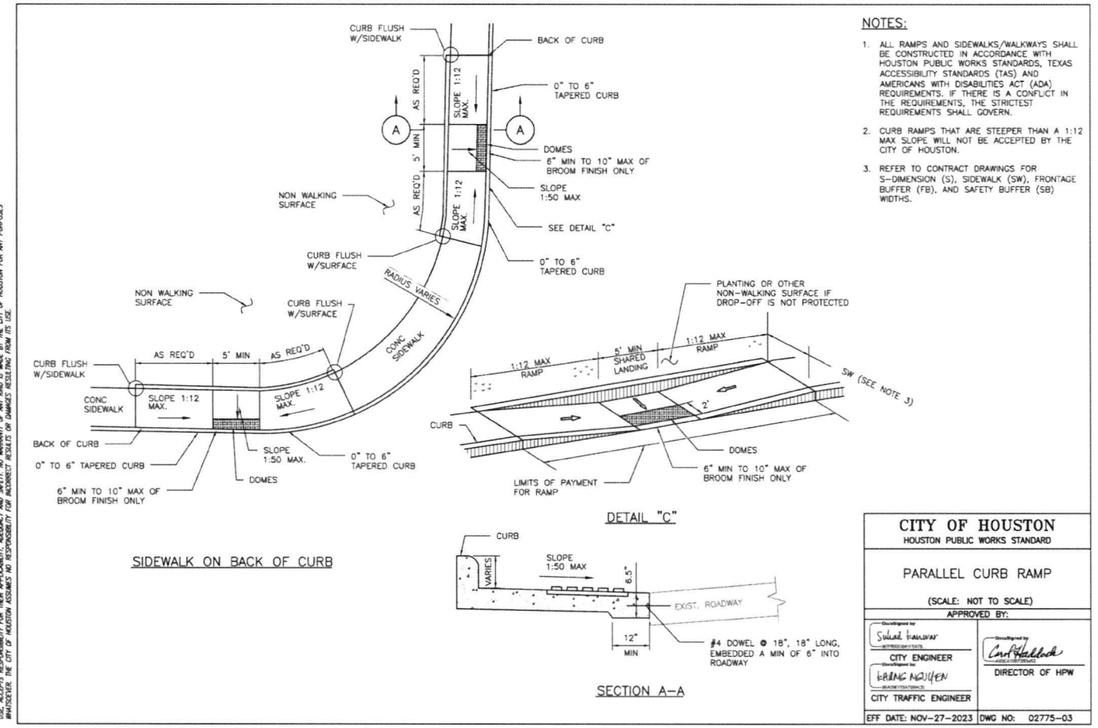

SIDEWALK ON BACK OF CURB

NOTES:

1. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
2. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
3. REFER TO CONTRACT DRAWINGS FOR S-DIMENSION (S), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.

DETAIL "C"

SECTION A-A

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PARALLEL CURB RAMP

(SCALE: NOT TO SCALE)

APPROVED BY:	
CITY ENGINEER	DIRECTOR OF HPW
CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 02775-03

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FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING DETAILS
SHEET 3 OF 5

WAUGH SAFETY IMPROVEMENTS

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DIST	COUNTY		
HOU	HARRIS		

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DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON DOC	
TOMS MATHEW	
SHEET NO. 17 OF 72	

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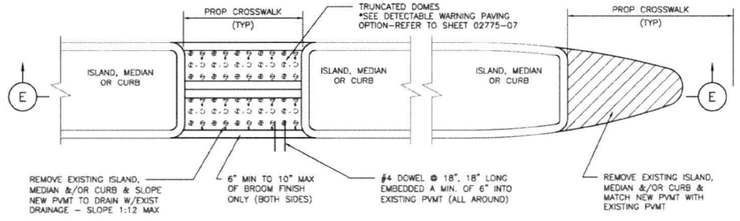

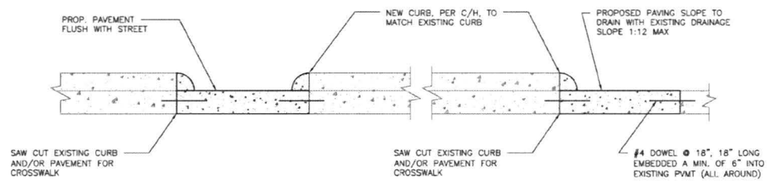

SECTION E-E
FOR ISLAND, MEDIAN, OR CURB MODIFICATIONS FOR CROSSWALKS

NOTES:

1. SEE COH STANDARD DETAIL FOR PAVEMENT MARKING DETAILS.
2. 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.
3. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CURB MODIFICATION FOR CURB RAMPS & CROSSWALKS

(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER — DIRECTOR OF HPW

CITY TRAFFIC ENGINEER

EFF DATE: NOV-27-2023 | DWG NO: 02775-04

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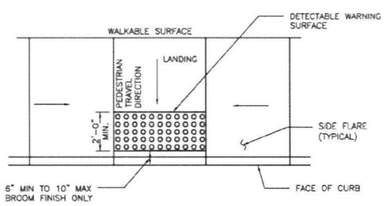
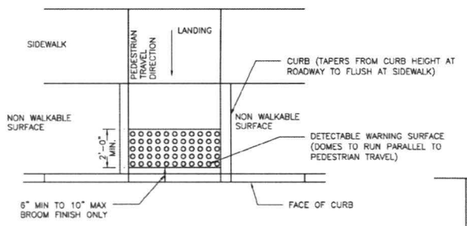
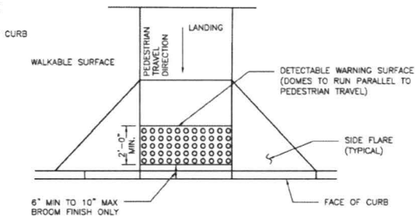


TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE





TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN

GENERAL NOTES FOR DETECTABLE WARNINGS:

1. DETECTABLE WARNING SURFACES MUST BE FULLY ADA COMPLIANT.
2. ALL NEW CURB RAMPS MUST CONTAIN A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES. THE SURFACE MUST CONTRAST VISUALLY WITH ADJOINING SURFACE, INCLUDING SIDE FLARES. FURNISH DARK BROWN OR DARK RED DETECTABLE WARNING SURFACE ADJACENT TO UNCOLORED CONCRETE, UNLESS SPECIFIED ELSEWHERE IN THE PLANS.
3. DETECTABLE WARNING SURFACES MUST MAINTAIN A SLIP RESISTANCE WITH FA-VALUE OF EQUAL TO OR GREATER THAN 0.8.
4. DETECTABLE WARNING SURFACES MUST MAINTAIN A WATER ABSORPTION RATE OF LESS THAN 1%. DETECTABLE WARNING SHALL NOT ALLOW WATER TO ACCUMULATE.
5. DETECTABLE WARNINGS INSTALLED INTO FRESH CONCRETE SHALL BE WITHOUT VOIDS AND UTILIZING AN ACCEPTABLE ANCHORING SYSTEM.
6. ALIGN TRUNCATED DOMES IN THE DIRECTION OF PEDESTRIAN TRAVEL WHEN ENTERING THE STREET.
7. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.
8. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6" MIN TO 10" MAX FROM THE DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.
9. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
10. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DETECTABLE WARNING CURB RAMP DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER — DIRECTOR OF HPW

CITY TRAFFIC ENGINEER

EFF DATE: NOV-27-2023 | DWG NO: 02775-06

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NO.	DATE	REVISION	APP.

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1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

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6350 West Loop South, Suite 150, Bellaire, TX 77401
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STATE OF TEXAS — VICTORIA M. MACALINO — 142304 — LICENSED PROFESSIONAL ENGINEER — 5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING DETAILS
SHEET 4 OF 5

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PO	TOMS MATHEW
SHEET NO.	18 OF 72

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80160

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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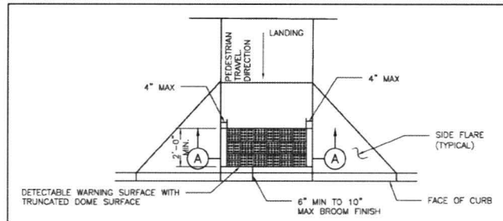
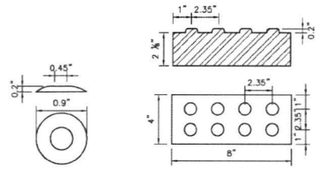


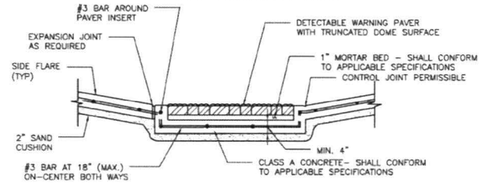
PLAN VIEW

DETECTABLE WARNING SURFACE



DETAIL

DETECTABLE WARNING PAVER



SECTION A-A

PAVER

DETAIL A-5

NOTES:

GENERAL NOTES

1. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
2. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

PAVERS

1. FURNISH DETECTABLE WARNING SURFACE UNITS MEETING ALL REQUIREMENTS OF ASTM C-936, C-33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.
2. LAY FULL-SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING POWER UNITS USING A POWER SAW.

POLYMER CONCRETE

1. DETECTABLE WARNING TILES SHALL BE MADE OF POLYMER CONCRETE MATERIALS.
2. DETECTABLE WARNING TILES SHALL BE INSTALLED INTO FRESH CONCRETE (CAST-IN-PLACE) UTILIZING AN ANCHORING SYSTEM.
3. DETECTABLE WARNING TILES SHALL BE OF TERRACOTTA (BRICK-RED) COLOR AND COLORED THROUGHOUT TO GUARANTEE THE ADA REQUIRED COLOR CONTRAST.
4. DETECTABLE WARNING TILES SHALL MEET OR EXCEED THE FOLLOWING ASTM-BASED "STANDARDS" FOR CONCRETE MATERIALS.
   A. COMPRESSION STRENGTH > 12,500 PSI PER ASTM C 39-04
   B. WATER ABSORPTION < 0.25% PER ASTM C 97-09

PADS

1. FURNISH REQUIREMENTS OF ADAAG (MARCH 2003).
2. OTHER MATERIALS MAY BE USED IF APPROVED BY THE CITY ENGINEER

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CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
DETECTABLE WARNING SURFACE (OPTIONS) (SCALE: NOT TO SCALE)	
APPROVED BY:	
Digitally signed by Sukal Kanuar CITY ENGINEER	Digitally signed by Carl Haddock DIRECTOR OF HPW
Digitally signed by HSING NGUYEN CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 02775-07

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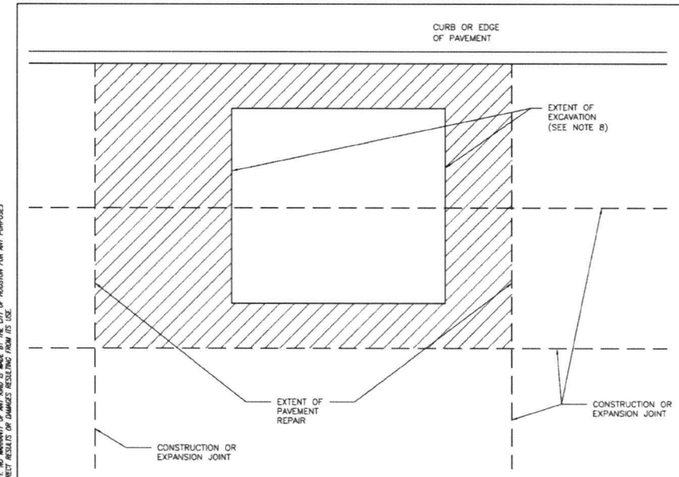

NOTES:

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).

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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:	
Digitally signed by Sukal Kanuar CITY ENGINEER	Digitally signed by Carl Haddock DIRECTOR OF HPW
Digitally signed by HSING NGUYEN CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 02951-01

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6750 West Loop South, Suite 150, Bellaire, TX 77401
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STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING DETAILS
SHEET 5 OF 5

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON PO	
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SHEET NO. 19 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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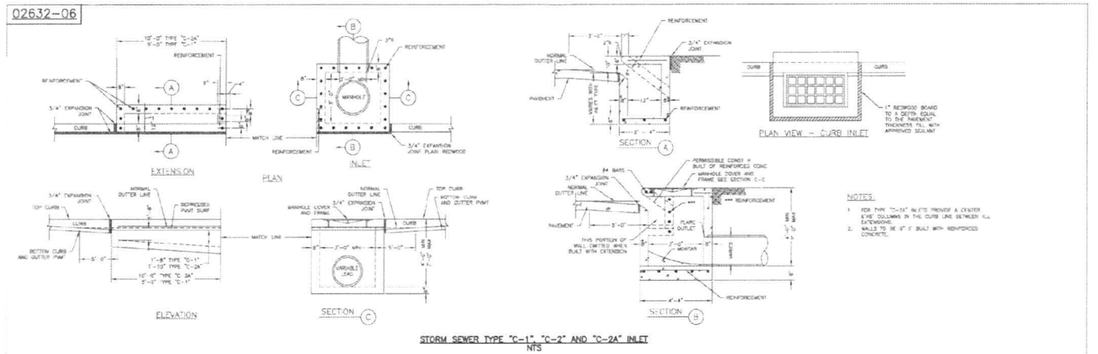
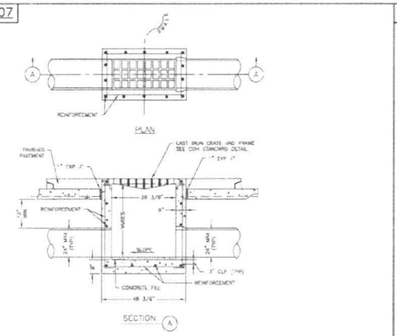


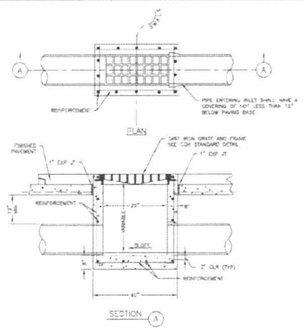
STORM SEWER TYPE "C-1", "C-2" AND "C-2A" INLET
NTS

02632-07



STORM SEWER TYPE "D" INLET
NTS

02632-08



STORM SEWER TYPE "D-1" INLET
NTS

FIRM INFORMATION | ENGINEER'S SEAL

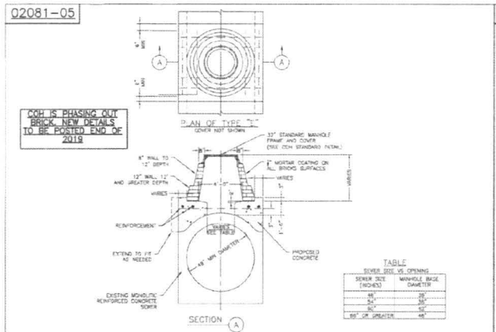
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02632-06 THROUGH 08

APPROVED BY — CITY ENGINEER
APPROVED BY — PUBLIC WORKS DIRECTOR
APPROVED BY — DIRECTOR
EFFECTIVE DATE: JUL-01-2018
FOR CITY OF HOUSTON USE ONLY

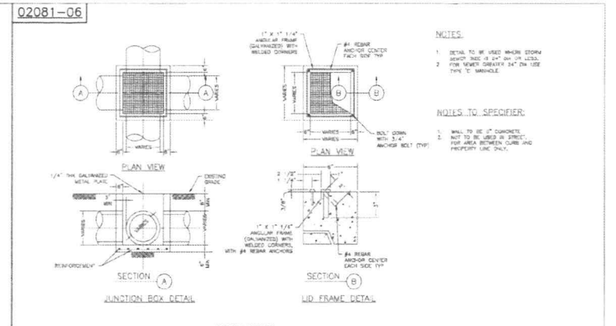
SHEET NO.

02081-05



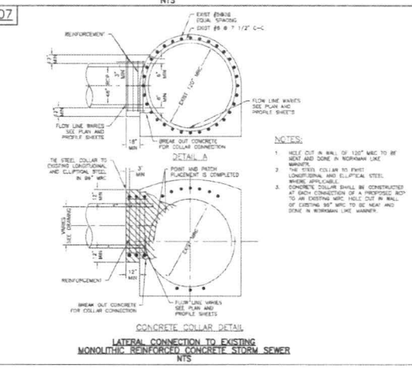
STORM SEWER MANHOLE TYPE "C" FOR EXISTING MONOLITIC REINFORCED CONCRETE 48" DIAMETER AND GREATER
NTS

02081-06



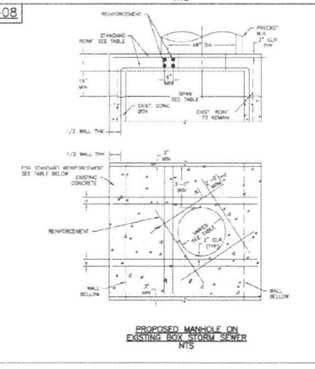
STORM SEWER
JUNCTION BOX WITH LID OR GRATE TOP FOR MAXIMUM OF 24" DIAMETER STORM SEWERS
NTS

02081-07



LATERAL CONNECTION TO EXISTING MONOLITHIC REINFORCED CONCRETE STORM SEWER
NTS

02081-08



NTS

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02081-05 THROUGH 08

APPROVED BY — CITY ENGINEER
APPROVED BY — PUBLIC WORKS DIRECTOR
APPROVED BY — DIRECTOR
EFFECTIVE DATE: JUL-01-2018
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NO.	DATE	REVISION	APP.

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0912	72	720, etc.	VARIOUS
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HOU	HARRIS		

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STATE OF TEXAS — VICTORIA M. MACALINO — 142304 — LICENSED PROFESSIONAL ENGINEER — 5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER DETAIL

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	TOMS MATHEW
SHEET NO.	20 OF 72

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ACCEPTED
80160
CITY OF HOUSTON
HOUSTON, TEXAS

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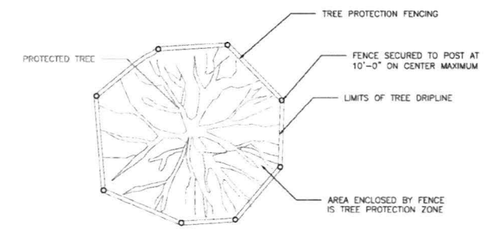
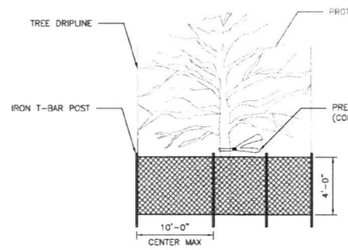
NOTES:

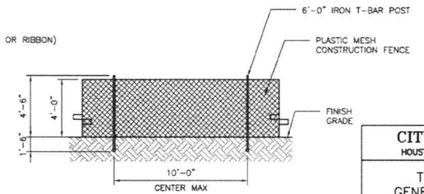
FENCE LOCATION MAY BE ADJUSTED TO ACTUAL SITE CONDITIONS.



PLAN VIEW
TREE PROTECTION FENCING DETAIL



FRONT VIEW
TREE PROTECTION FENCING DETAIL



DETAIL B-4
PROTECTIVE PLASTIC MESH FENCE

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TREE PROTECTION
GENERAL REQUIREMENTS

(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER	DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01562-01

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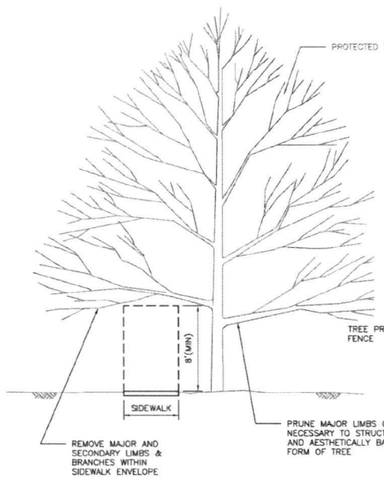
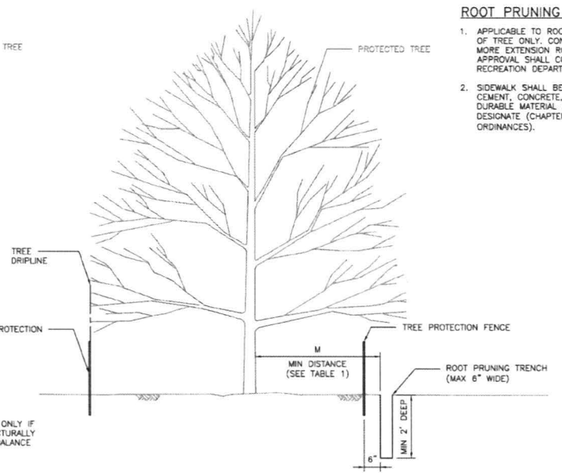


TREE PRUNING



ROOT PRUNING DETAIL

ROOT PRUNING NOTE:

1. APPLICABLE TO ROOT PRUNING ON ONE SIDE OF TREE ONLY. CONSULT CITY ARBORIST FOR MORE EXTENSION ROOT PRUNING. FINAL APPROVAL SHALL COME FROM PARKS AND RECREATION DEPARTMENT.
2. SIDEWALK SHALL BE CONSTRUCTED OF EITHER CEMENT, CONCRETE, ASPHALT OR OTHER DURABLE MATERIAL AS THE COUNCIL MAY DESIGNATE (CHAPTER 40-91, CODE OF ORDINANCES).

TABLE 1
"M" DISTANCE TABLE

TREE TRUNK DIA. (IN)	*MINIMUM DISTANCE 'M'
< 6"	3 FEET
6" ≤ DIA. ≤ 20"	0.75 FEET PER DIA.-INCH
> 20"	CONSULT CITY ARBORIST

*MINIMUM DISTANCE FROM TREE TRUNK TO EDGE OF TRENCH

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TREE PROTECTION
TREE AND ROOT PRUNING

(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER	DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01562-02

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

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STATE OF TEXAS — VICTORIA M. MACALINO — 142304 — LICENSED PROFESSIONAL ENGINEER — 5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TREE PROTECTION DETAILS
SHEET 1 OF 2

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED
DRAWING SCALE:	80160
AS NOTED	
CITY OF HOUSTON PM	
TOMS MATHEW	
SHEET NO. 21 OF 72	

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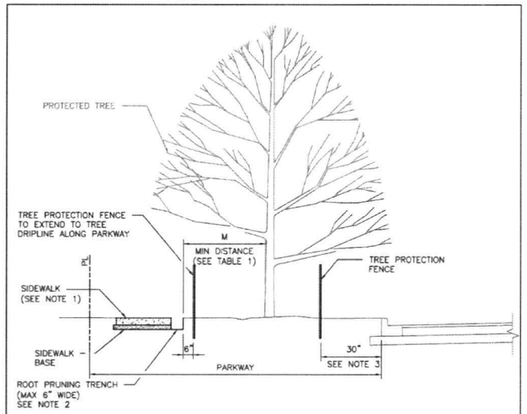

TABLE 1 "M" DISTANCE TABLE	
TREE TRUNK DIA. (IN)	*MINIMUM DISTANCE 'M'
< 6"	3 FEET
6" ≤ DIA. ≤ 20"	0.75 FEET PER DIA.-INCH
> 20"	CONSULT CITY ARBORIST

*MINIMUM DISTANCE FROM TREE TRUNK TO EDGE OF TRENCH

NOTES:

1. SIDEWALK SHALL BE CONSTRUCTED OF EITHER CEMENT, CONCRETE, ASPHALT OR OTHER DURABLE MATERIAL AS THE COUNCIL MAY DESIGNATE (CHAPTER 40-91, CODE OF ORDINANCES).
2. TRENCHING DEPTH SHALL BE TO THE ANTICIPATED BOTTOM OF SIDEWALK AND BASE MATERIAL FOR SIDEWALK ROOT PRUNING, ROOTS LOWER THAN SIDEWALK SHALL NOT BE PRUNED.
3. FENCES SHALL BE PLACED 30" BACK OF EXISTING CURB OR EDGE OF PAVEMENT WHERE ROOT PRUNING OR ZERO CURB CUT BACK IS NOT SPECIFIED.

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	
TREE PROTECTION/ IN SIDEWALK REPAIRS IN PARKWAY AREAS (SCALE: NOT TO SCALE)	
APPROVED BY:	
Sukhat Kasuwar CITY ENGINEER	Carl Haddock DIRECTOR OF HPW
EFF DATE: NOV-27-2023	DWG NO: 01562-03

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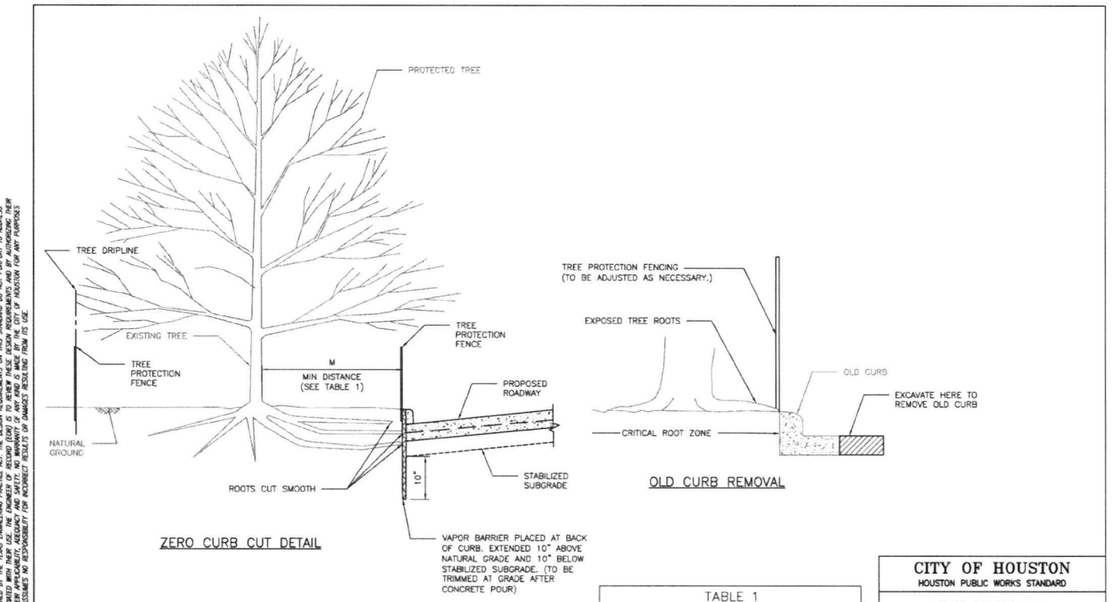

ZERO CURB CUT DETAIL

OLD CURB REMOVAL

TABLE 1 "M" DISTANCE TABLE	
TREE TRUNK DIA. (IN)	*MINIMUM DISTANCE 'M'
< 6"	3 FEET
6" ≤ DIA. ≤ 20"	0.75 FEET PER DIA.-INCH
> 20"	CONSULT CITY ARBORIST

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	
TREE PROTECTION ZERO CURB CUT (SCALE: NOT TO SCALE)	
APPROVED BY:	
Sukhat Kasuwar CITY ENGINEER	Carl Haddock DIRECTOR OF HPW
EFF DATE: NOV-27-2023	DWG NO: 01562-04

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-21296 & 10096300
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

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FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED PROFESSIONAL ENGINEER
5/27/25
Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TREE PROTECTION DETAILS
SHEET 2 OF 2

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED AND FILED
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 22 OF 72	

HOUSTON, TEXAS

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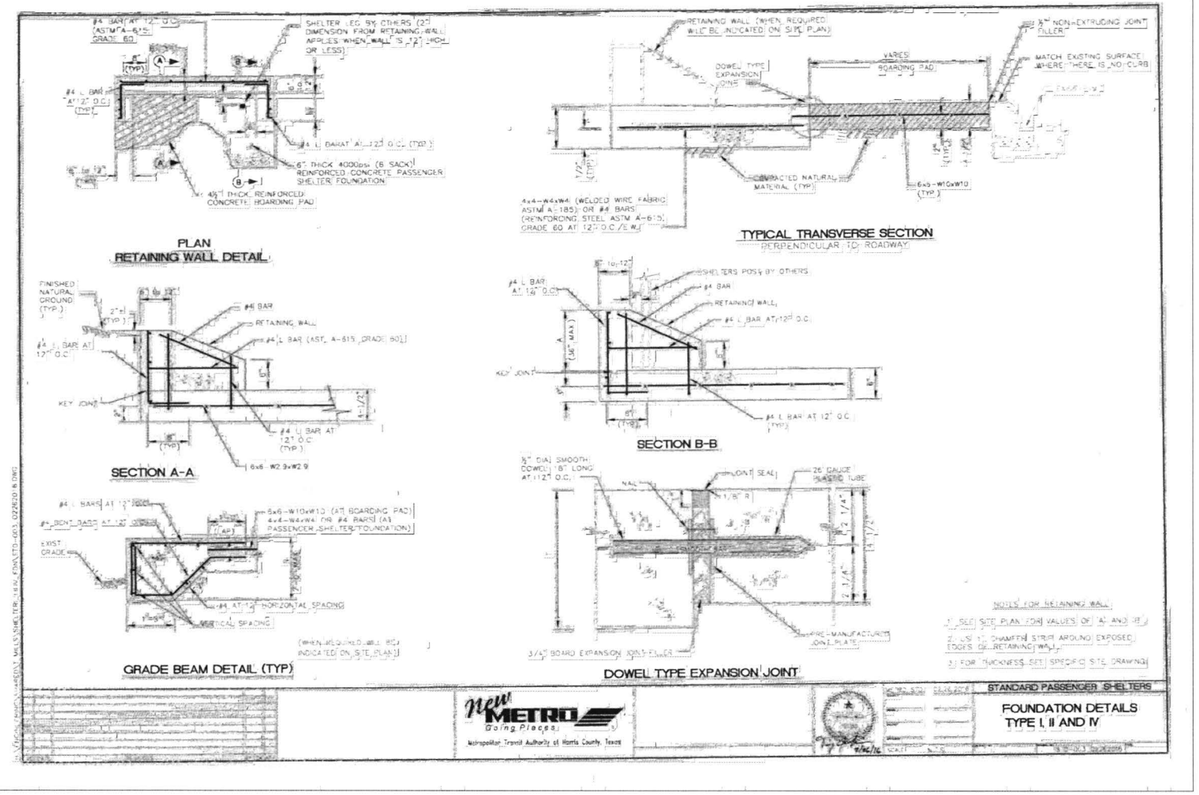

NO.	DATE	REVISION	APP.

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Houston, Texas 77056
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STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

METRO FOUNDATION DETAIL

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-3	
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON PROJECT MANAGER	
TOMS MATHEW	
SHEET NO. 23 OF 72	

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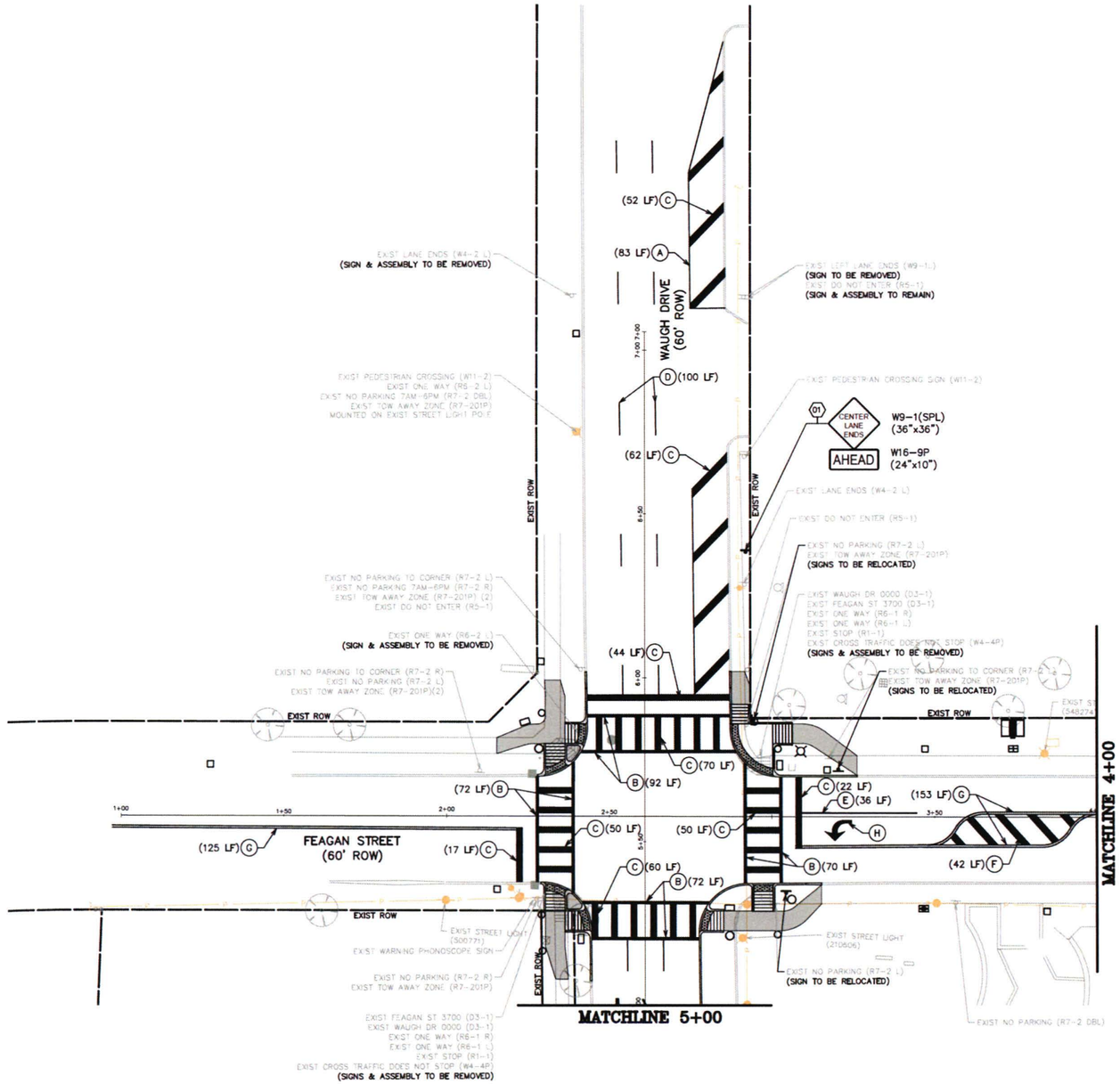
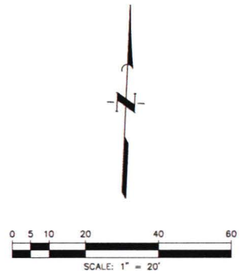
PAVEMENT MARKING LEGEND

- (A) WS4
- (B) WS12
- (C) WS24
- (D) WB4-R40
- (E) WS6-R20
- (F) YS24
- (G) YDS4-A40/A40
- (H) WS LEFT TURN ARROW
- (J) WS RIGHT TURN ARROW
- (K) WS WORD
- (L) WS6
- (M) WS ARROW
- (N)

NO.	DATE	REVISION	APP.





CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

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STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

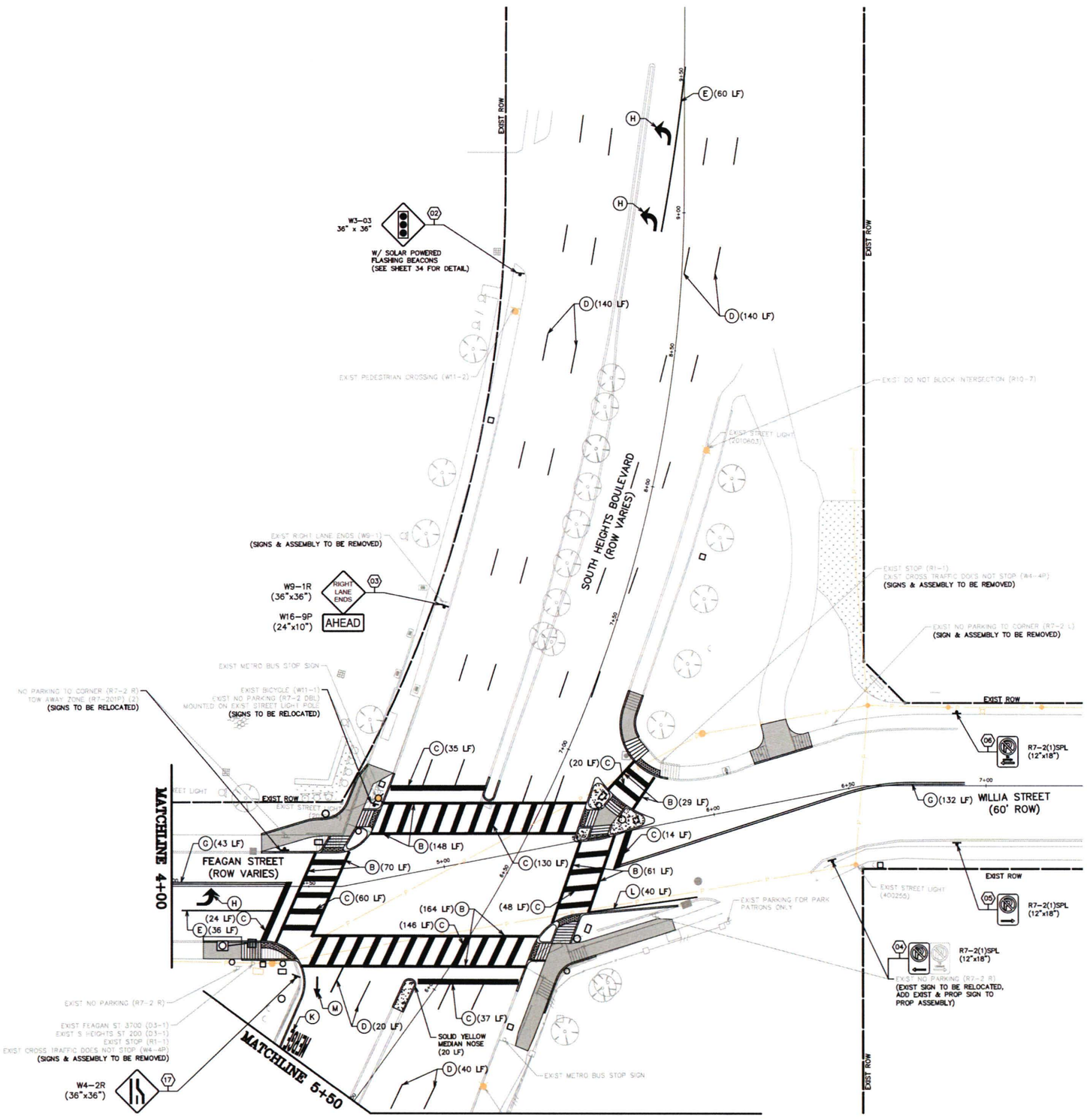
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT FEAGAN ST PAVEMENT MARKING & SIGNAGE

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED AS PLANS
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PM	
TOMS MATHEW	
SHEET NO. 24 OF 72	

HOUSTON, TEXAS



PAVEMENT MARKING LEGEND

- (A) WS4
- (B) WS12
- (C) WS24
- (D) WB4-R40
- (E) WS6-R20
- (F) YS24
- (G) YDS4-A40/A40
- (H) WS LEFT TURN ARROW
- (J) WS RIGHT TURN ARROW
- (K) WS WORD
- (L) WS6
- (M) WS ARROW
- (N)

NO.	DATE	REVISION	APP.

N

0 5 10 20 40 60

SCALE: 1" = 20'

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
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Texas Board of Professional Engineers and Land Surveyors: Reg. Nos. F-25290 & 10046200
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STATE OF TEXAS
VICTORIA M. MACALINO
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LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

S. HEIGHTS BLVD AT FEAGAN ST PAVEMENT MARKING & SIGNAGE

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED NOTED
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 25 OF 72	

HOUSTON, TEXAS

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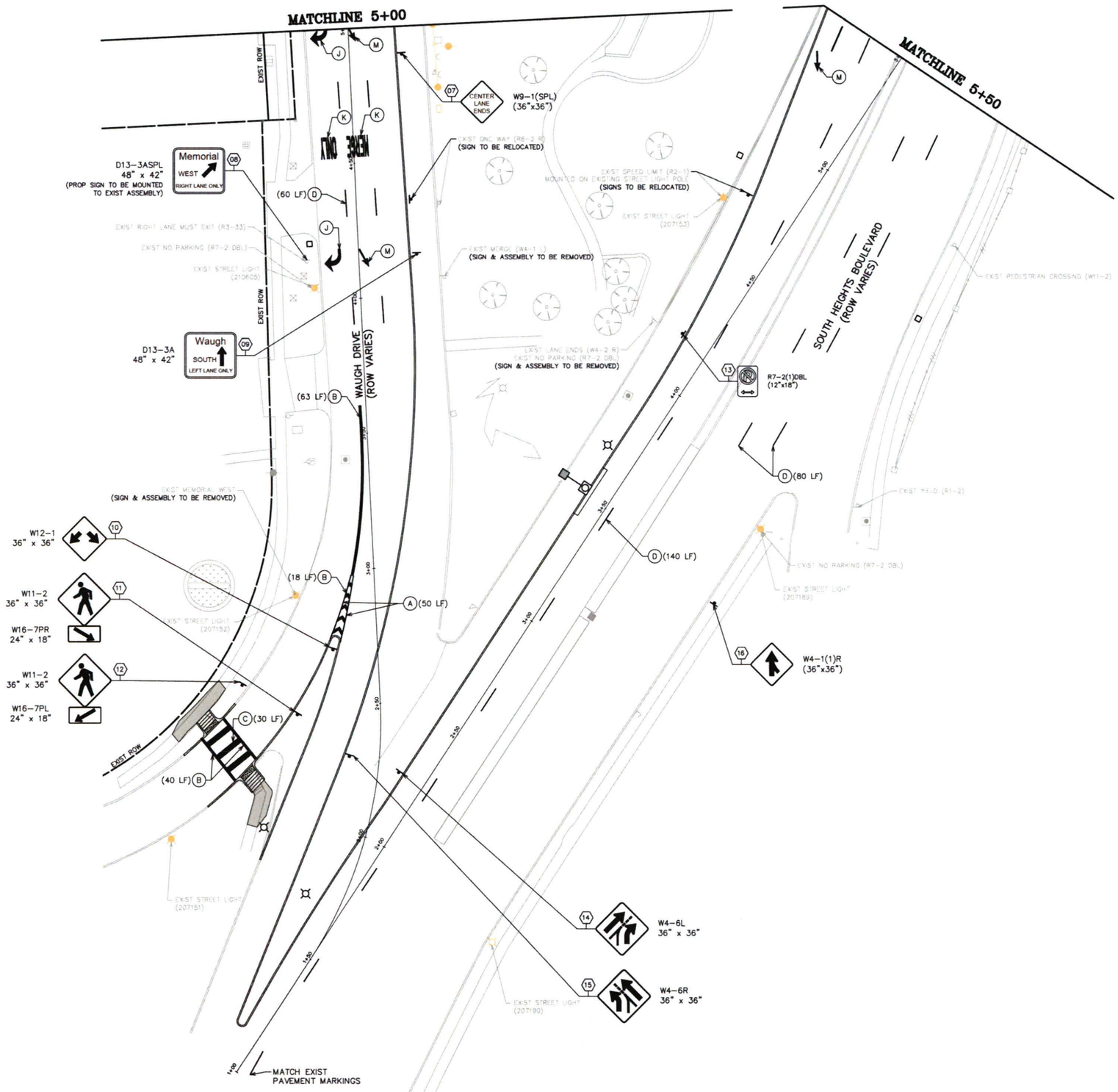

PAVEMENT MARKING LEGEND

- (A) WS4
- (B) WS12
- (C) WS24
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- (H) WS LEFT TURN ARROW
- (J) WS RIGHT TURN ARROW
- (K) WS WORD
- (L) WS6
- (M) WS ARROW
- (N)

NO.	DATE	REVISION	APP.

0 5 10 20 40 60

SCALE: 1" = 20'

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY

Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046100
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713.777.5337

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STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
8/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT S. HEIGHTS BLVD PAVEMENT MARKING & SIGNAGE

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-4	
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON DOC	
TOMS MATHEW	
SHEET NO. 26 OF 72	

80160

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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DESCRIPTION AND APPLICATION OF PAVEMENT MARKING LINES

LINE SERIES	COLOR	DESCRIPTION	WIDTH (INCHES)	TYPICAL APPLICATIONS
WB	WHITE	BROKEN (10' STRIPE W/30' GAP)	4"	LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS PERMITTED.
WS	WHITE	SOLID	4"	EDGE LINES TO DELINEATE THE RIGHT EDGE OF THE ROADWAY.
			6"	LEFT EDGE OF BICYCLE LANE AND LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS DISCOURAGED.
			12"	PERPENDICULAR CROSSWALK LINES.
			24"	STOP BARS AT INTERSECTIONS (SIGNALIZED AND UNSIGNALIZED).
				HATCHING AT HIGH VISIBILITY CROSSWALKS.
			12", 24"	DIAGONAL HATCHING USED IN GORES BETWEEN SAME DIRECTION OF TRAVEL LANES.
WG	WHITE	GUIDE (2' STRIPE W/6' GAP)	6"	GUIDE LINES THROUGH INTERSECTIONS.
				TAPER LINES FOR TURN LANES.
				GUIDE LINES FOR BICYCLE LANES.
YS	YELLOW	SOLID	4"	EDGE LINES TO DELINEATE THE LEFT EDGE OF A DIVIDED ROADWAY, A ONE-WAY ROAD, OR RAMP.
			6"	BIDIRECTIONAL BICYCLE LANE PAVEMENT MARKING.
			12", 24"	DIAGONAL HATCHING USED IN GORES BETWEEN OPPOSING DIRECTION OF TRAVEL LANES.
YDS	YELLOW	DOUBLE SOLID	4" - (4") - 4" (GAP)	CENTERLINE THAT SEPARATES OPPOSING TRAVEL LANES AND DELINEATION OF MEDIAN ISLANDS.
YDB	YELLOW	DOUBLE BROKEN	4" - (4") - 4" (GAP)	DEFINES THE EDGES OF CENTER REVERSIBLE LANES THAT ARE USED AS TWLTLS DURING INTERMITTENT PERIODS.
YB	YELLOW	BROKEN (10' STRIPE W/30' GAP)	4"	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YB (BIKE)	YELLOW	BROKEN (3' STRIPE W/9' GAP)	4"	SEPARATES BICYCLE TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YSB	YELLOW	SOLID & BROKEN BROKEN (10' STRIPE W/30' GAP)	4" - (4") - 4" (GAP)	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN ONE DIRECTION AND PROHIBITED IN THE OPPOSITE DIRECTION.
				USED FOR EDGE OF TWO-WAY LEFT TURN LANES (TWLTL).
BICYCLE GREEN	GREEN	SOLID COLORED PAVEMENT	VARIES	PED/BIKE CROSSING
				VEHICLE / BIKE / CONFLICT AREA
YIELD LINE	WHITE	TRIANGLE	18" x 24"	MID-BLOCK CROSSING.

DESCRIPTION AND APPLICATION OF REFLECTIVE RAISED PAVEMENT MARKERS (RPM)

RRPM TYPES	COLOR	COH SPEC. SEC. 02764 EQUIVALENT	DESCRIPTION
C	CLEAR	TYPE I-C	APPROACH FACE THAT REFLECTS WHITE LIGHT, AND THE OTHER SIDE DOES NOT REFLECT.
R	CLEAR & RED	TYPE II-C-R	APPROACH FACE THAT REFLECTS WHITE LIGHT, AND THE OTHER SIDE REFLECTS RED LIGHT.
A	AMBER & AMBER	TYPE II-A-A	APPROACH FACE AND THE OTHER SIDE BOTH REFLECT AMBER LIGHT.

LINE STYLE DESIGNATION : YSB4 - A40/A40

- COLOR
- PATTERN
- WIDTH OF STRIPE
- RPM SPACING
- RPM TYPE
- RPM SPACING
- RPM TYPE

GENERAL PAVEMENT MARKING NOTES:

1. PRIOR TO START OF CONSTRUCTION, ALL EXISTING PAVEMENT MARKINGS WITHIN THE AREA OF CONSTRUCTION SHALL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING ALL EXISTING PAVEMENT MARKINGS AND LANE CONFIGURATIONS WILL BE DUPLICATED AGAIN. THIS REVIEW CAN BE DONE IN CONJUNCTION WITH SIGN INVENTORY. THE CONTRACTOR IS HELD ACCOUNTABLE FOR EXISTING AND TEMPORARY CONSTRUCTION PAVEMENT MARKINGS THROUGHOUT THE PROJECT AND AT THE PROJECT'S COMPLETION.
2. ALL PAVEMENT MARKINGS SHALL CONFORM TO CITY OF HOUSTON STANDARDS AND SPECIFICATIONS AND GENERAL GUIDELINES OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
3. THE PERMANENT PAVEMENT MARKINGS MAY BE MODIFIED AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
4. THE DESIGN SPEED FOR THE ROAD IS: _____. THE POSTED SPEED LIMIT IS: _____.
5. ALL LANE DIMENSIONS ARE FROM CENTER OF LANE LINE, CENTER OF DOUBLE LANE LINE, FACE OF CURB, OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
6. THE PAVEMENT MARKING DRAWINGS ARE SCHEMATIC ONLY. THE CONTRACTOR SHALL FOLLOW ALL DIMENSIONS, DETAILS, AND STANDARDS WHEN INSTALLING PAVEMENT MARKINGS AND SYMBOLS.
7. THE FINAL LONGITUDINAL STRIPINGS SHALL BE 60 MIL (0.060") THICK HOT-SPRAYED THERMOPLASTIC PLACED OVER THE TEMPORARY STRIPING WITHIN 14 TO 30 CALENDAR DAYS AFTER COMPLETION OF THE FINAL PAVEMENT SURFACE, OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER. ALL OTHER PAVEMENT MARKINGS SHALL BE APPLIED AT THE SAME TIME. TEMPORARY STRIPING SHALL BE WATER BASED PAINT.
8. ALL FINAL TRANSVERSE MARKINGS SHALL BE 90 MIL (0.090") HOT-SPRAYED THERMOPLASTIC. ALL PAVEMENT ARROWS AND LEGENDS SHALL ALSO BE 90 MIL (0.090") HOT-SPRAYED THERMOPLASTIC. PREFORMED THERMOPLASTIC APPLICATIONS MAY BE USED IF ONLY APPROVED BY THE CITY TRAFFIC ENGINEER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT AND INSTALLATION OF PAVEMENT MARKINGS OF FINAL SURFACE COURSE FOLLOWING CONTROL POINTS THAT HAVE BEEN SET NO MORE THAN 50 FEET APART ALONG THE LINES TO BE IMPLEMENTED. IN TANGENT SECTIONS OF A ROAD WHERE THE PAVEMENT MARKING PATTERN DOES NOT CHANGE, CONTROL POINTS CAN BE SET AT 200 FEET SPACING. THE LAYOUT AND INSPECTION OF ALL PAVEMENT MARKINGS SHALL BE APPROVED BY CITY OF HOUSTON REPRESENTATIVE PRIOR TO THE APPLICATION OF MATERIALS.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE FINAL SURFACE COURSE IS PLACED SO THAT THE STRIPING IS OFFSET NO MORE THAN ONE FOOT CLEAR OF THE CONSTRUCTION JOINT, UNLESS OTHERWISE DIRECTED BY THE CITY TRAFFIC ENGINEER.
11. ALL RAISED PAVEMENT MARKERS (RPMS) SHALL BE INSTALLED SO THAT THE REFLECTIVE FACE OF EACH MARKER IS FACING THE DIRECTION OF TRAFFIC AND IS PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW. TYPE C PAVEMENT MARKERS SHALL BE INSTALLED SO THAT THE CLEAR FACE OF EACH MARKER IS FACING THE APPROACHING TRAFFIC FLOW AND PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW.
12. ALL REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED IN ACCORDANCE TO CITY OF HOUSTON STANDARD SPECIFICATION 02782. APPLYING OVER EXISTING PAVEMENT MARKINGS DOES NOT CONSTITUTE AS APPROVED OBLITERATION METHOD.
13. THE ENGINEER OF RECORD SHALL BE REQUIRED TO PRODUCE AS-BUILT OF PAVEMENT MARKING PLANS WITHIN 30 DAYS AFTER COMPLETION OF PAVEMENT MARKING IMPLEMENTATION.
14. BLUE RPMS MAY BE PLACED ADJACENT TO FIRE HYDRANTS WITH THE APPROVAL OF THE CITY TRAFFIC ENGINEER.
15. FOR ALL CONSTRUCTION, ALL PAVEMENT MARKINGS AND SIGNING SHALL BE INSTALLED AND SHALL BE PAID BY THE PROJECT OWNER/DEVELOPER.
16. FINAL INSPECTION AND ACCEPTANCE OF PAVEMENT MARKINGS SHALL BE PERFORMED BY TRANSPORTATION & DRAINAGE OPERATION REPRESENTATIVE (713-803-3054).

POSTED SPEED LIMIT 35 MPH

APPROVED BY:	APPROVED BY:
Signed by: Sohail Bawaar	Signed by: KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Signed by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PAVEMENT MARKINGS GENERAL NOTES AND LEGENDS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
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STATE OF TEXAS — VICTORIA M. MACALINO — 142304 — LICENSED PROFESSIONAL ENGINEER — 5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE DETAILS SHEET 1 OF 9

WAUGH SAFETY IMPROVEMENTS

	FOR CITY OF HOUSTON USE ONLY
WBS NUMBER	
N-T05000-0012-7	
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 27 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

CITY OF HOUSTON PUBLIC WORKS AND ENGINEERING — CITY DRAWING NUMBER — HOUSTON, TEXAS

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

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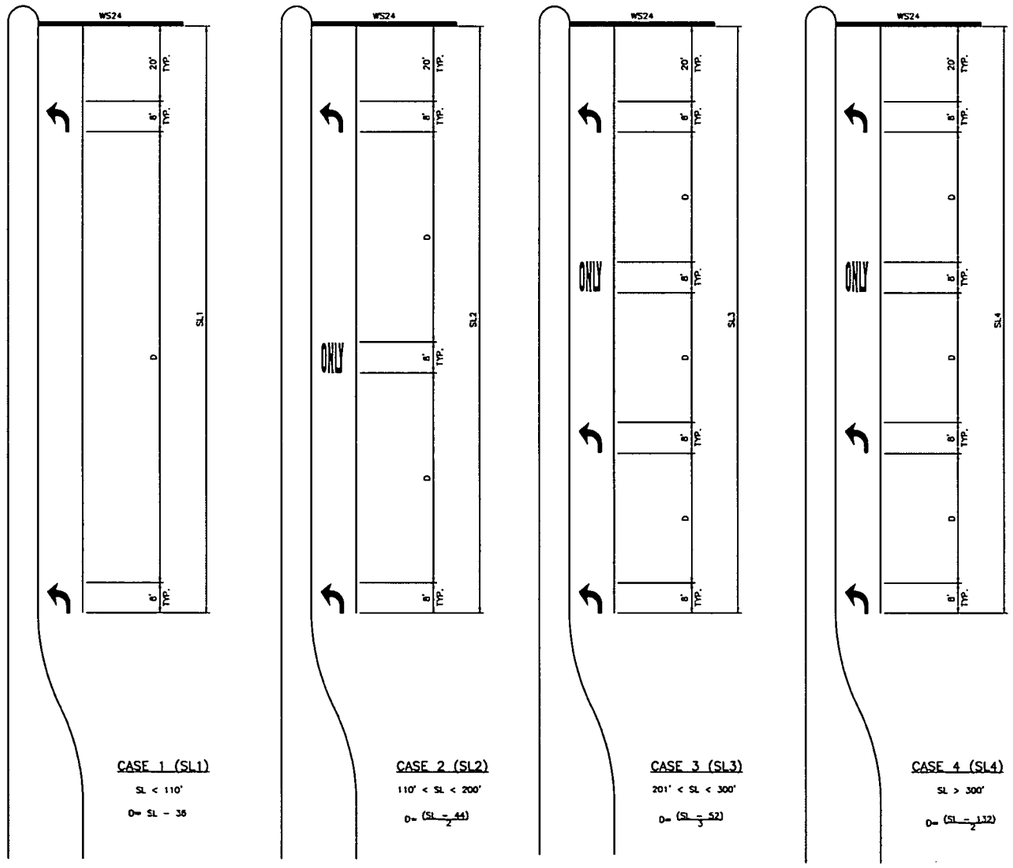

CASE 1 (SL1)
SL < 110'
D= SL - 36

CASE 2 (SL2)
110' < SL < 200'
D= (SL − 44)/2

CASE 3 (SL3)
201' < SL < 300'
D= (SL − 52)/3

CASE 4 (SL4)
SL > 300'
D= (SL − 132)/2

KEY (FOR TURN LANES ONLY):

SL - STORAGE LENGTH (FEET)

D - DISTANCE BETWEEN ARROWS AND/OR WORDS (FEET)

GENERAL NOTES:

1. ALL CASES AND DETAILS ALSO APPLY TO RIGHT-TURN LANES.
2. FOR DUAL-TURN LANES, DIMENSIONS SHALL BE THE SAME FOR EACH LANE.
3. SL DIMENSION IS FROM BACK OF STOP LINE TO END OF TURN LANE.
   NOTE: DO NOT INCLUDE TAPER LENGTH.
4. PAVEMENT ARROWS AND "ONLY" LEGEND MARKINGS ARE TYPICALLY USED AT ALL SIGNALIZED INTERSECTIONS AND AT ALL UNSIGNALIZED INTERSECTIONS THAT HAVE TURN LANES.
5. MINIMUM SL= 100'. SL MAY BE LESS THAN 100 FEET ONLY BY APPROVAL OF THE CITY TRAFFIC ENGINEER.

APPROVED BY:	APPROVED BY:
Sidak Kanwar	Lorne Howlett
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 0276D-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

LEFT/RIGHT-TURN "ONLY" AND ARROW SPACING

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290 & 10194344
8corr Wood Lane South, Suite 130, Bellaire, TX 77401
713.777.3337

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FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

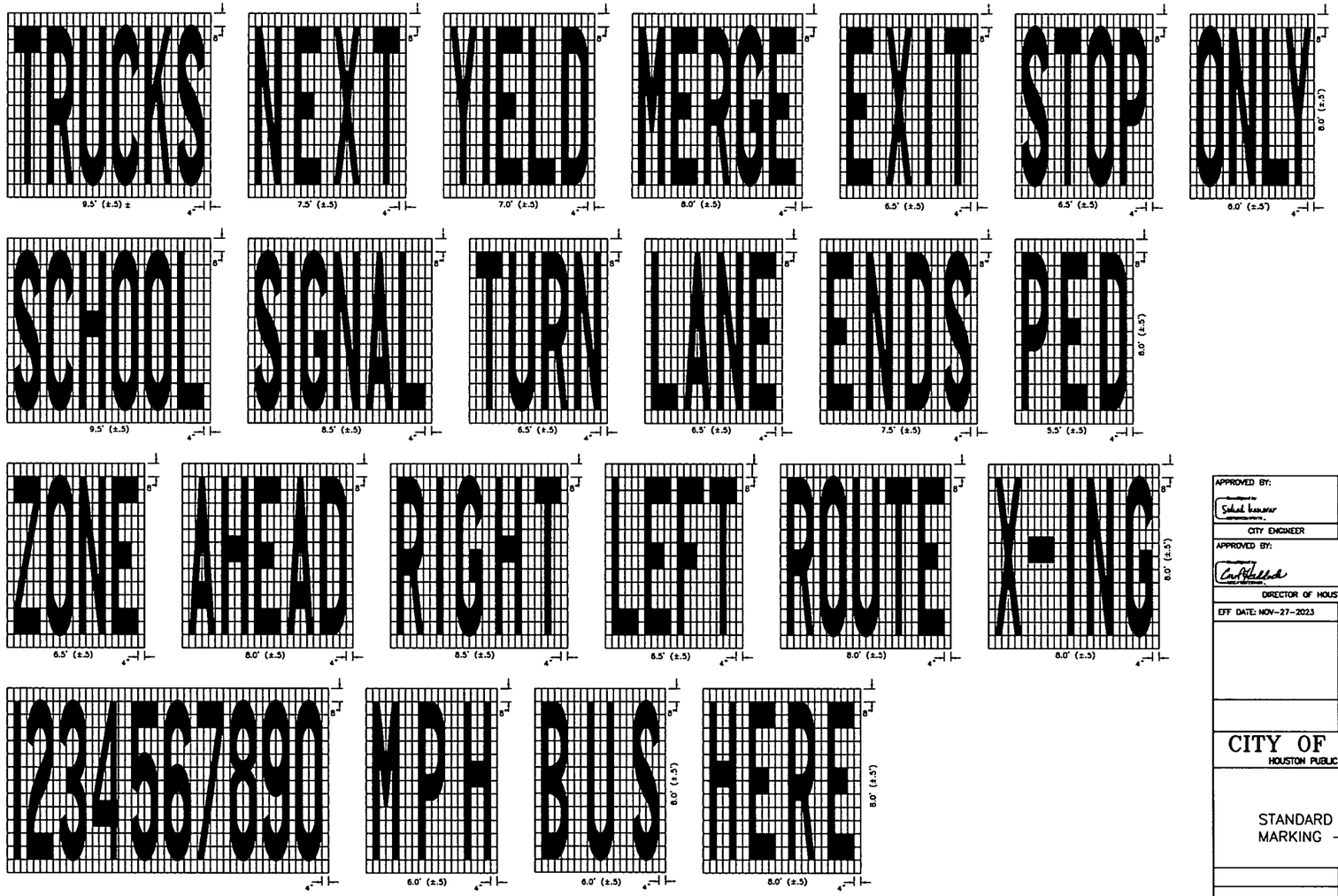
PAVEMENT MARKING & SIGNAGE
DETAILS SHEET 2 OF 9

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 28 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-CI-004-DETAILS.DWG, 5/27/2025 4:18 PM



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NO.	DATE	REVISION	APP.

APPROVED BY:	APPROVED BY:
Sohail Kaunar	Lorenz Houlihan
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-03

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKING – (WORDS)

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-621266 & 10094300
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

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STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25
Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE DETAILS SHEET 3 OF 9

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	80160
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 29 OF 72	

CITY DRAINAGE ENGINEER
HOUSTON, TEXAS

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-CI-004-DETAILS.DWG, 5/27/2025 4:18 PM

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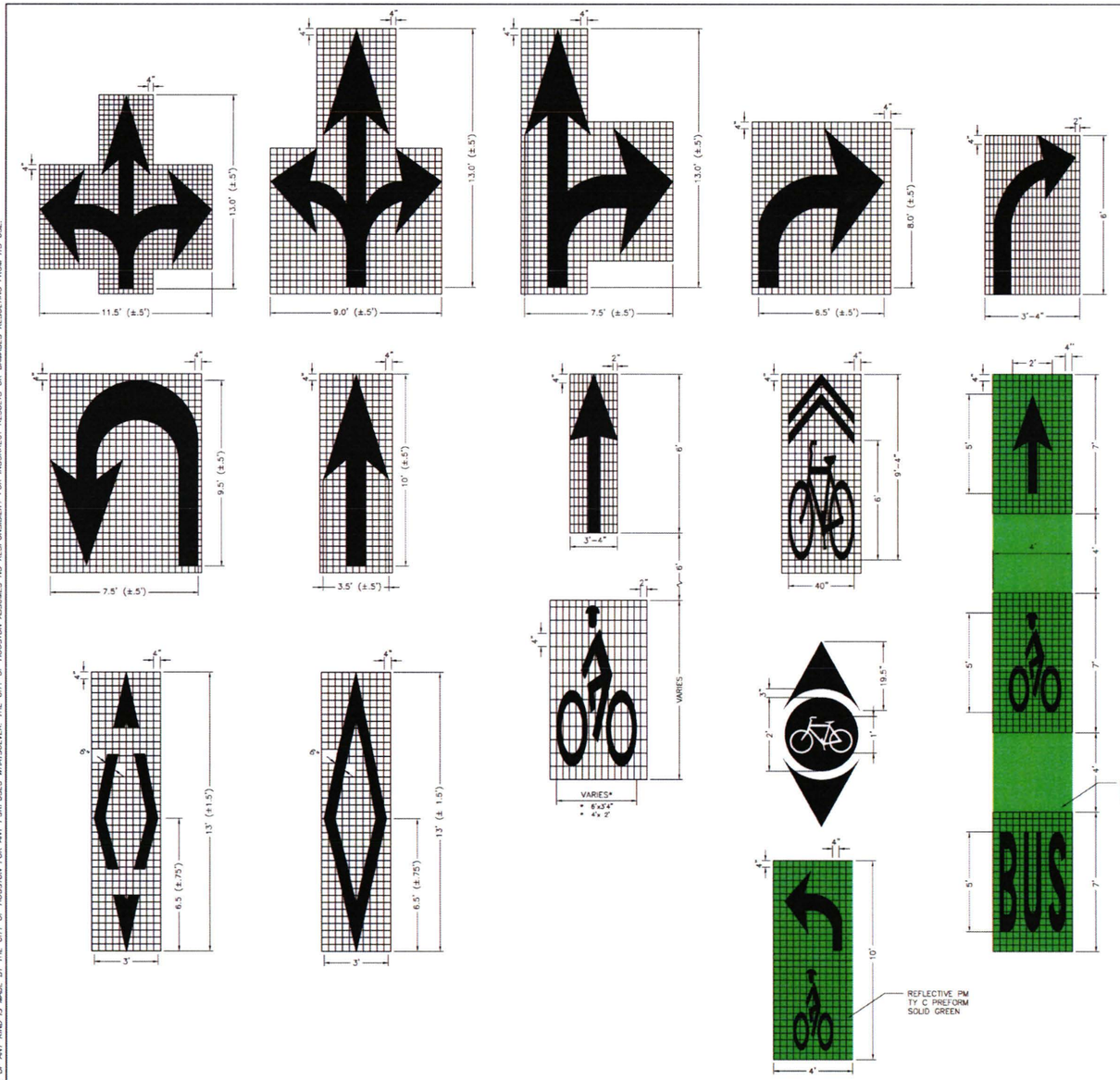

NOTES FOR PAVEMENT MARKINGS "SYMBOLS" AND "ARROWS":

1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.
2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION; SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR REDUCTION BELOW ONE-THIRD OF STANDARD SIZES.
3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET, OR AS INDICATED ON THE PLANS.
4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:

   A. REGULATOR
      STOP
      RIGHT (LEFT) TURN ONLY, SYMBOL ARROWS.

   B. WARNING
      STOP AHEAD
      SIGNAL AHEAD
      SCHOOL
      SCHOOL X-ING
      PED X-ING
      R X R (SEE SHEET 02760-08 DETAILS
      OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR SPECIAL CONDITIONS.

5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.
6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES (ALL-WAY STOP).
7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VII OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
8. SPACING BETWEEN STANDARD SIZE LETTERS SHOULD BE 4 INCHES (MIN). THE WIDTH OF NON-STANDARD SIZE LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES. APPROVAL BY CITY TRAFFIC ENGINEER. SPECIAL PERMISSION NEEDED FOR NON-STANDARD SIZE "LETTER" AND/OR "ARROWS".
9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. SINGLE TURN ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".
10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED IN THE DESIGN PLANS.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKING - SYMBOLS

FOR CITY OF HOUSTON USE ONLY

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NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046300
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE
DETAILS SHEET 4 OF 9

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED AND FILED
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 30 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-C1-004-DETAILS.DWG, 5/27/2025 4:18 PM

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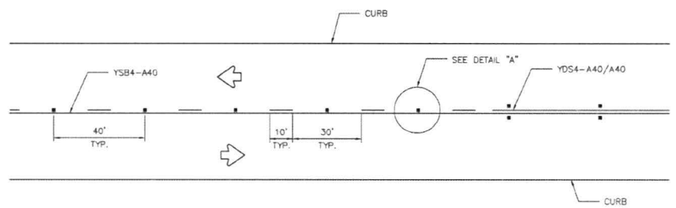
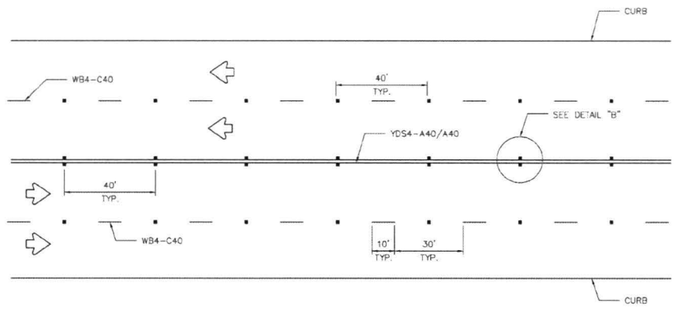
CENTERLINE & FOR ALL TWO LANE STREETS WITH PASSING ZONE

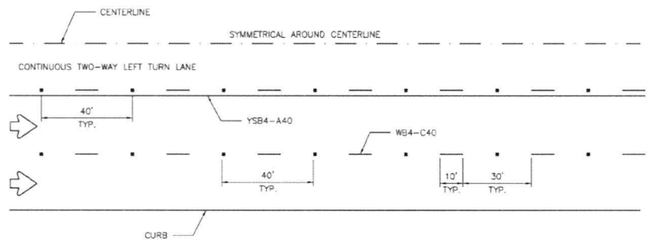


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY STREETS

RRPM TYPE C, CLEAR FACE TOWARD NORMAL TRAFFIC, SHALL BE PLACED ON 40-FOOT CENTERS.

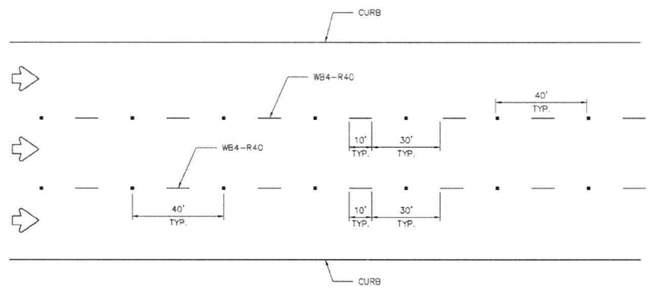


CENTERLINE & LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY MULTILANE STREET

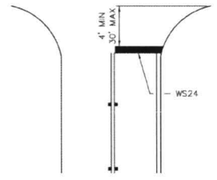
RRPM TYPE R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG-WAY TRAFFIC.



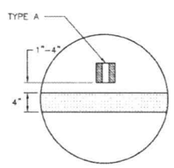
GENERAL NOTES:

1. EDGELINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED IN ALL CASES, HOWEVER SHALL BE PLACED AS DIRECTED BY CITY TRAFFIC ENGINEER.
2. THE TRAVELED WAY INCLUDES ONLY THAT PORTION OF THE ROADWAY USED FOR VEHICULAR TRAVEL AND NOT THE PARKING LANES, SIDEWALKS, BERMS AND SHOULDERS. THE TRAVELED WAYS SHALL BE MEASURED FROM THE INSIDE OF EDGELINE TO INSIDE OF EDGELINE OF A TWO LANE ROADWAY.
3. ALL RAISED PAVEMENT MARKERS PLACED IN BROKEN LINES SHALL BE PLACED IN LINE WITH AND MIDWAY BETWEEN THE STRIPES.
4. ON CONCRETE PAVEMENTS THE RAISED PAVEMENT MARKERS SHOULD BE PLACED TO ONE SIDE OF THE LONGITUDINAL JOINTS.
5. ALL PAVEMENT MARKING MATERIAL SHALL MEET THE REQUIRED MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF HOUSTON STANDARD SPECIFICATIONS.

GUIDE FOR PLACEMENT OF STOP LINES & CENTERLINE



DETAIL "A"



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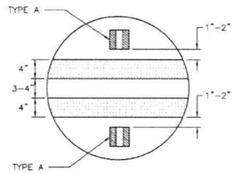
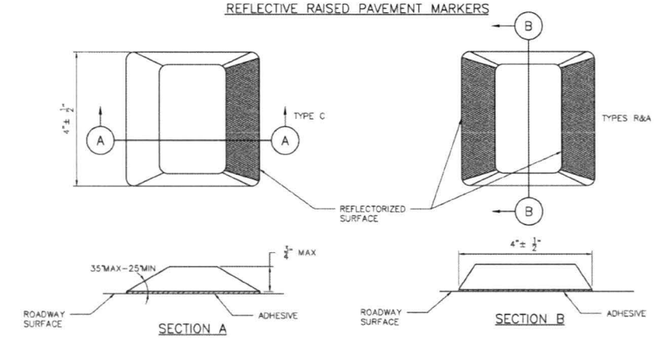


REFLECTIVE RAISED PAVEMENT MARKERS



APPROVED BY:	APPROVED BY:
Signed by: Sukut Iravanar	Signed by: LIEMNG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Signed by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-05

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE

	FOR CITY OF HOUSTON USE ONLY
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NOT TO SCALE	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

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FB NO. 3124, Pages 1-4

STATE OF TEXAS — VICTORIA M. MACALINO — 142304 — LICENSED PROFESSIONAL ENGINEER — 5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE DETAILS SHEET 5 OF 9

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012	80160
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PDC	
TOMS MATHEW	
SHEET NO. 31 OF 72	

NO.	DATE	REVISION	APP.

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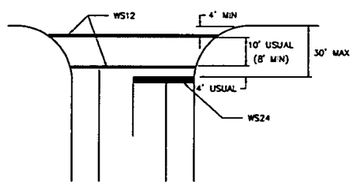
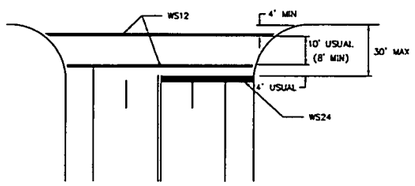
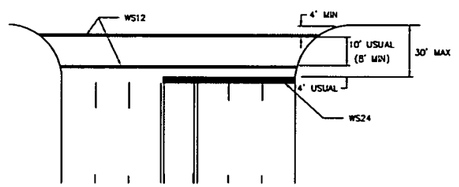
TWO LANES WITH SHOULDERS



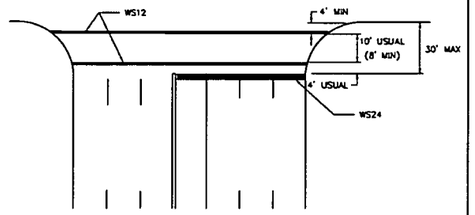
FOUR LANES WITH SHOULDERS



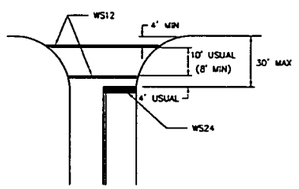
MULTI – LANES



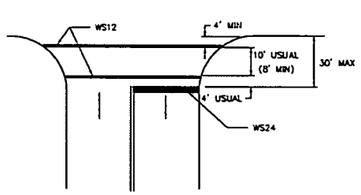
MULTI – LANE WITH MEDIAN



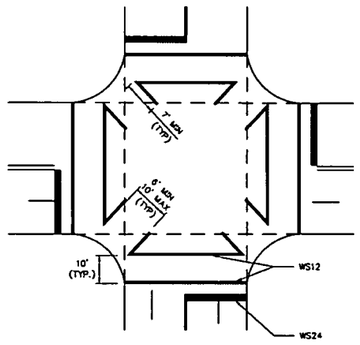
TWO LANES



FOUR LANES



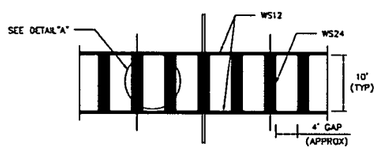
EXCLUSIVE PEDESTRIAN PHASE



NOTES:

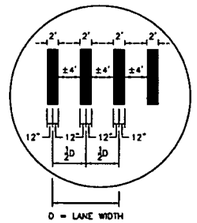
1. CROSSWALKS AND STOP LINES SHALL BE WHITE.
2. "D" IS EQUAL TO ONE HALF THE WIDTH OF TRAVEL LANE.

HIGH VISIBILITY CROSSWALK DETAIL

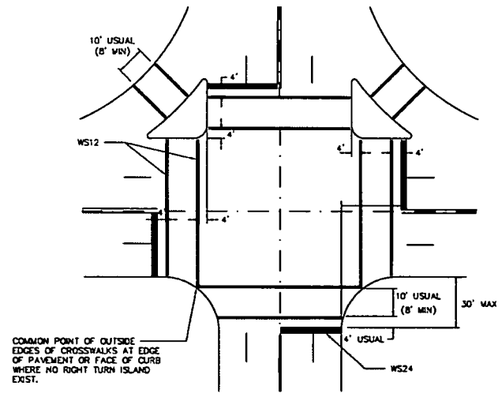


TYPICALLY USED AT SIGNALIZED AND NON-SIGNALIZED CROSSINGS ON COLLECTOR AND ARTERIAL ROADWAYS AND AT LOCATIONS REQUIRING EXTRA EMPHASIS.

DETAIL "A"



INTERSECTION WITH RIGHT – TURN ISLANDS



APPROVED BY:	APPROVED BY:
Soheil Kanavar	Hang Nguyen
CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:
Carl Haddock
DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023	DWG NO: 02760-12

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CROSSWALK DETAILS

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DRAWING SCALE	
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NO.	DATE	REVISION	APP.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-21296 & 10194300
6230 West Loop South, Suite 250, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25
Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE
DETAILS SHEET 6 OF 9

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR COH USE ONLY
N-T05000-0012	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON EOC	
TOMS MATHEW	
SHEET NO. 32 OF 72	

RECEIVED
PUBLIC WORKS
80160
HOUSTON, TEXAS

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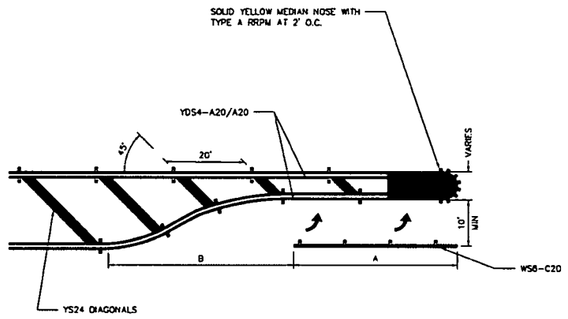
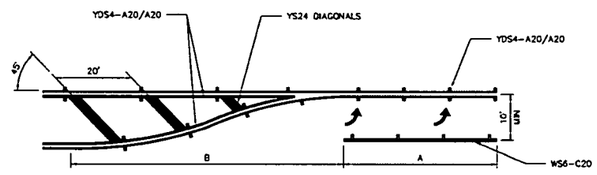
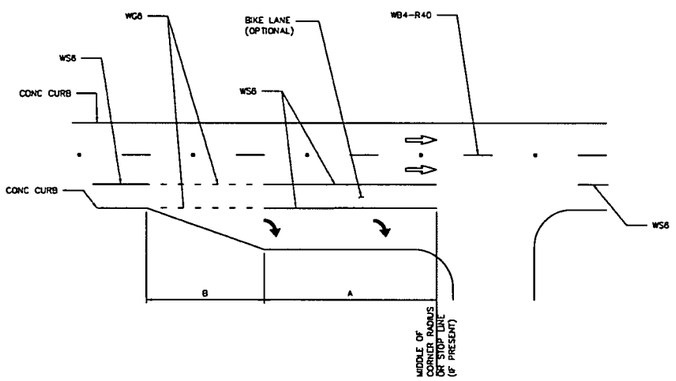
PAINTED MEDIAN LEFT TURN BAY DETAILS





UNSIGNALIZED RIGHT-TURN LANE



GENERAL NOTES:

1. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS OR APPROXIMATE CALCULATIONS.
2. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS REFER TO 02760-02 - LEFT/RIGHT TURN "ONLY" AND ARROW SPACING.
3. REFER TO APPLICABLE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE AND LEFT-TURN & RIGHT-TURN LANE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKINGS.
4. REFER TO BICYCLE LANE PAVEMENT MARKINGS STANDARD FOR TYPE AND PLACEMENT.

LEFT TURN BAY NOTES:

1. LEFT TURN BAY DIMENSIONS
   A = 150' MINIMUM AT INTERSECTION OF TWO (2) MAJOR STREETS WHEN PRACTICAL.
   = 100' MINIMUM AT ALL OTHER INTERSECTIONS.

   B = 100' MINIMUM ON STRAIGHT ROADWAYS.
   *TAPER LENGTH MAY BE SHORTER IF IT IS ON A HORIZONTAL CURVE TO THE LEFT.
   *TAPER LENGTH MAY BE LONGER IF CURVE IS TO THE RIGHT.
2. DIMENSIONS SHALL BE ADJUSTED AS DETERMINED BY CITY OF HOUSTON TRAFFIC ENGINEER.
3. REFER TO CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL (FIGURE 10.8) FOR DETAILS.

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.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-14

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

LEFT TURN LANE &
RIGHT TURN LANE DESIGN

SHEET 02 OF 02

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NO.	DATE	REVISION	APP.

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Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. F-23290 & 10046300
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE
DETAILS SHEET 7 OF 9

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED AND FILED
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON REC	
TOMS MATHEW	
SHEET NO. 33 OF 71	

PUBLIC WORKS & ENGINEERING
CITY SECRETARY
HOUSTON, TEXAS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-C1-004-DETAILS.DWG, 5/27/2025 4:18 PM

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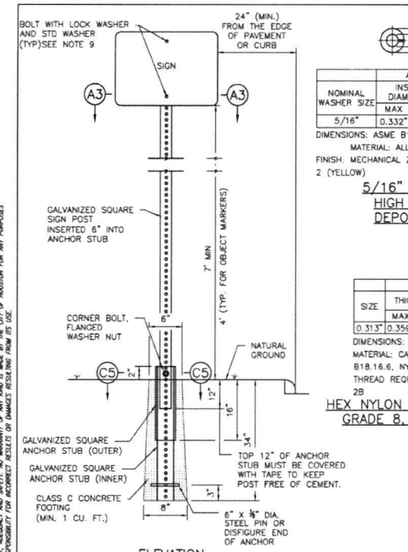
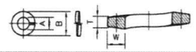


ELEVATION

TYPICAL GROUND SIGN INSTALLATION PERFORATED SQUARE METAL TUBING

TABLE A	
GALVANIZED SQUARE SIGN POST (PERFORATED)	1-3/4"x1-3/4" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PREFORATAED) (INNER)	2"x2"x36" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PERFORATED) (OUTER)	2 1/4" x 2 1/4" x 18" (14 GAUGE)



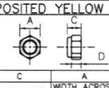
NOMINAL WASHER SIZE	A INSIDE DIAMETER MAX	A INSIDE DIAMETER MIN	B OUTSIDE DIAMETER MAX	T MEAN SECTION (THICKNESS)	W SECTION WIDTH
5/16"	0.332"	0.314"	0.583"	0.078"	0.125"

DIMENSIONS: ASME B18.21.1

MATERIAL: ALLOY STEEL PER ASME B18.21.1

FINISH: MECHANICAL ZINC PER ASTM B695, CLASS 5, TYPE 2 (YELLOW)

5/16" SPLIT LOCK WASHER, HIGH ALLOY MECHANICAL DEPOSITED YELLOW SINK



SIZE	C THICKNESS MAX	C THICKNESS MIN	A WIDTH ACROSS FLATS MAX	A WIDTH ACROSS FLATS MIN	D HEX HEIGHT MIN
0.313"	0.359"	0.329"	0.502"	0.489"	0.250"

DIMENSIONS: ASME B18.16.6

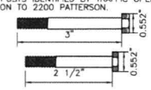
MATERIAL: CARBON STEEL, GRADE 8 PER ASME B18.16.6, NYLON

THREAD REQUIREMENTS: ASME B1.1 UNC & UNF CLASS 2B

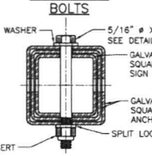
HEX NYLON INSERT LOCKNUTS (NE), GRADE 8, YELLOW ZINC PLATED

NOTES:

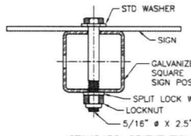
1. THE EXISTING SIGNS LOCATED ON PUBLIC CONSTRUCTION SITE ARE THE PROPERTY OF THE CITY OF HOUSTON. THROUGHOUT THE PERIOD OF THE CONTRACT, THE CONTRACTOR SHALL PROTECT THESE SIGNS SUCH THAT THEY ARE NOT DAMAGED IN THE COURSE OF CONSTRUCTION ACTIVITY. SUCH PROTECTION SHALL INCLUDE THE PERIOD AFTER SIGNS ARE REMOVED FROM INSTALLATION AND STORED BY THE CONTRACTOR OR DELIVERED TO THE TRAFFIC OPERATIONS CENTER (2200 PATTERSON). THE GENERAL TRAFFIC SUPERINTENDENT (832-395-6771) MUST BE NOTIFIED 48 HOURS IN ADVANCE PRIOR TO DELIVERY.
2. AFTER SIGNS ARE REMOVED FROM INSTALLATION AND ARE BEING STORED BY THE CONTRACTOR, THE CONTRACTOR SHALL CONTACT THE TRAFFIC OPERATIONS DIVISION OF HOUSTON PUBLIC WORKS (832-395-6771) AND ARRANGE FOR A CONVENIENT TIME TO DELIVER ONLY CITY SIGNS AND POSTS IDENTIFIED BY TRAFFIC OPERATIONS DIVISION TO 2200 PATTERSON.
3. PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIGN SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC. THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE PROJECTS COMPLETION.
4. ALL GROUND MOUNTED STOP SIGNS, WARNING SIGNS, AND OTHER REGULATORY SIGNS SHALL USE AT A MINIMUM HIGH INTENSITY PRISMATIC REFLECTIVE SHEETING.
5. ALL OVERHEAD SIGNS SHALL USE DIAMOND GRADE REFLECTIVE SHEETING.
6. ALL OTHER SIGNS SHALL USE SUPER ENGINEER GRADE SHEETING.
7. ALL BLANKS TO BE INSTALLED SHALL BE ALUMINUM ALLOY 6061-T-6 OR 5052-H38 IN ACCORDANCE WITH ASTM B209.
8. ALL HOLES SHALL BE 13/16" DIAMETER DRILLED OR PUNCHED AS SHOWN ON EACH BLANK DETAIL AND SHALL BE FREE OF BURRS AND / OR ROUGH EDGES. WHERE NON-STANDARD ORIENTATION OF SIGN IS USED, ENLARGE HOLE IN SIGN POST AT SIGN CONNECTION NOT GREATER THAN 11/16" IN DIAMETER.
9. BOLT SIZE REQUIREMENTS FOR SIGN CONNECTION:
   - 9.1. STANDARD ORIENTATION = 5/16" DIA X 2 1/2" BOLT
   - 9.2. NON STANDARD ORIENTATION = 5/16" DIA X 3" BOLT
10. SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON EACH DETAIL ON SHEET 01554-06.
11. ALL SIGN BLANKS ARE TO BE ETCHED, DEGREASED, AND HAVE A COATING MEETING THE REQUIREMENTS OF ASTM B449, CLASS 2, OR ASTM B921, CLASS 2. PRIOR TO APPLICATION OF LEGENDS.
12. ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN CONFORMANCE TO THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND STANDARD HIGHWAY SIGNS LATEST EDITION.



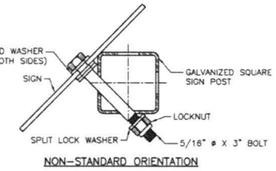
SECTION D5 BOLTS



SECTION C5 CORNER BOLT



STANDARD ORIENTATION

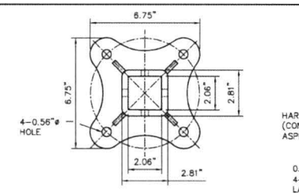


NON-STANDARD ORIENTATION

SECTION A3: SIGN CONNECTION DETAILS

CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
GENERAL NOTES AND GROUND MOUNTING SIGN (SCALE: NOT TO SCALE)	
APPROVED BY:	
Sukut Vaswani CITY ENGINEER	Carl Haddock DIRECTOR OF HPW
Hang Nguyen CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 01554-01

DocuSign Envelope ID: CB71C116-B716-4899-A5EE-0D2F2CC55AF8



TOP VIEW

SIDE VIEW

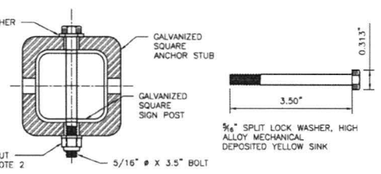
TYPICAL HARD SURFACE INSTALLATION GALVANIZED SIGN BASE

NOTES:

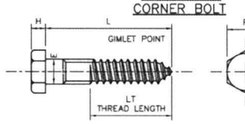
1. REFER TO COH STD DWG 01554-01 FOR SIGN AND POST REQUIREMENTS.
2. REFER TO DETAIL "C5" ON COH STD DWG 01554-01 FOR NUT AND BOLT REQUIREMENTS.

BASE PLATE NOTES:

1. MATERIAL: ASTM A-536 GRADE 65-45-12 DUCTILE IRON
2. HOT DIP GALVANIZE PER ASTM A-153
3. ALL DIMENSIONS ARE IN INCHES



SECTION C1 CORNER BOLT



DIAMETER	E BODY DIAMETER MAX	E BODY DIAMETER MIN	F WIDTH ACROSS FLATS MAX	F WIDTH ACROSS FLATS MIN	G WIDTH ACRSS CORNERS MAX	G WIDTH ACRSS CORNERS MIN	H HEIGHT MAX	H HEIGHT MIN	L LENGTH	LT THREAD LENGTH
1/2"	0.515"	0.482"	0.750"	0.725"	0.866"	0.826"	0.364"	0.302"	4.00"	3.84"

MATERIAL:PER A307 GRADE A

COATING: HOT DIP ZINC PER ASTM F2329 OR IN ACCORDANCE WITH CLASS C OF ASTM A153 AND CLASS D FOR 3/8" DIAMETER AND LESS

4" HEX LAG SCREWS, HOT DIPPED GALVANIZED

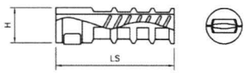
SAE FLAT WASHERS									
	ID			OD			THICKNESS - TH		
SIZE	BASIC	TOLERANCE PLUS	TOLERANCE MINUS	BASIC	TOLERANCE PLUS	TOLERANCE MINUS	BASIC	MAX	MIN
1/2"	0.531	0.015"	0.005"	1.062"	0.030"	0.007"	0.95"	0.121"	0.74"

DIMENSIONS: ASME B18.21.1, TYPE A PLAIN WASHERS

MATERIAL: CARBON STEEL

FINISH: Fe/Zn 3AT PER ASTM F1941

1/2" FLAT WASHERS, LOW CARBON, SAE, ZINC PLATED



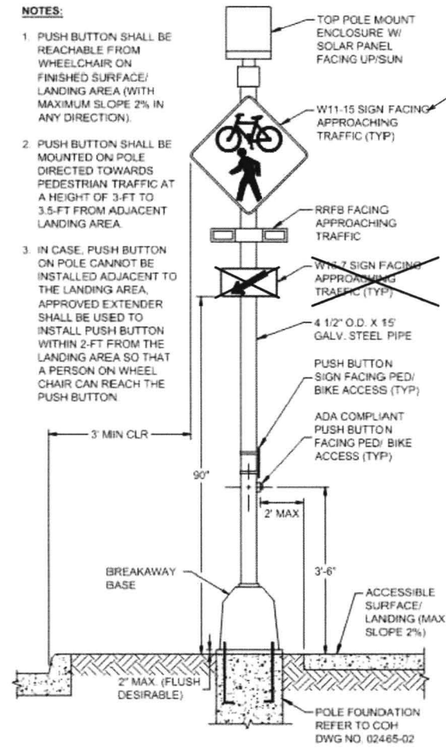
TH LAG THREAD SIZE	LS LENGTH OF SHIELD NOMINAL	H DRILLED HOLE SIZE	L BOLT LENGTH REQ
1/2"	3.00"	0.75"	4.00"

ANCHOR LAG SHIELD - ZINC ALLOY

CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
SIGN BASE HARD SURFACE MOUNTING DETAILS (SCALE: NOT TO SCALE)	
APPROVED BY:	
Sukut Vaswani CITY ENGINEER	Carl Haddock DIRECTOR OF HPW
Hang Nguyen CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 01554-02

NOTES:

1. PUSH BUTTON SHALL BE REACHABLE FROM WHEELCHAIR ON FINISHED SURFACE/ LANDING AREA (WITH MAXIMUM SLOPE 2% IN ANY DIRECTION).
2. PUSH BUTTON SHALL BE MOUNTED ON POLE DIRECTED TOWARDS PEDESTRIAN TRAFFIC AT A HEIGHT OF 3-FT TO 3.5-FT FROM ADJACENT LANDING AREA.
3. IN CASE, PUSH BUTTON ON POLE CANNOT BE INSTALLED ADJACENT TO THE LANDING AREA, APPROVED EXTENDER SHALL BE USED TO INSTALL PUSH BUTTON WITHIN 2-FT FROM THE LANDING AREA SO THAT A PERSON ON WHEEL CHAIR CAN REACH THE PUSH BUTTON.



SOLAR-POWERED FLASHING BEACON ASSEMBLY (COMPLETE)

NTS

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STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE DETAILS SHEET 8 OF 9

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY ACCEPTED AS NOTED
N-T05000-0012-7	80160
DRAWING SCALE: AS NOTED	
CITY OF HOUSTON PE: TOMS MATHEW	
SHEET NO. 34 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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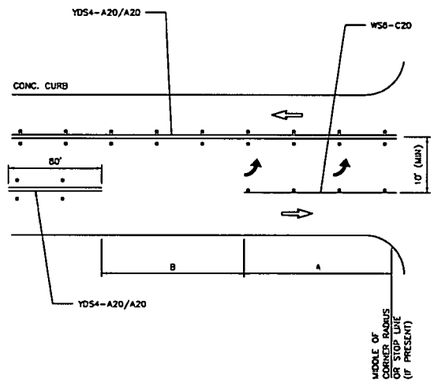
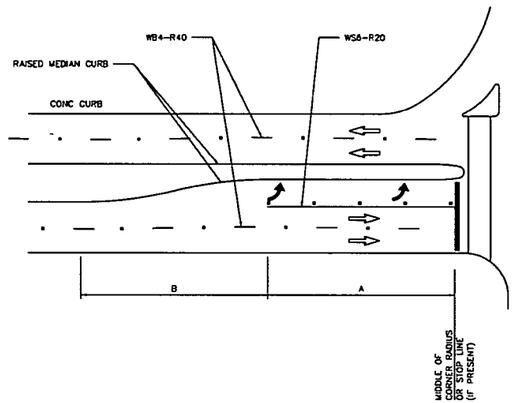
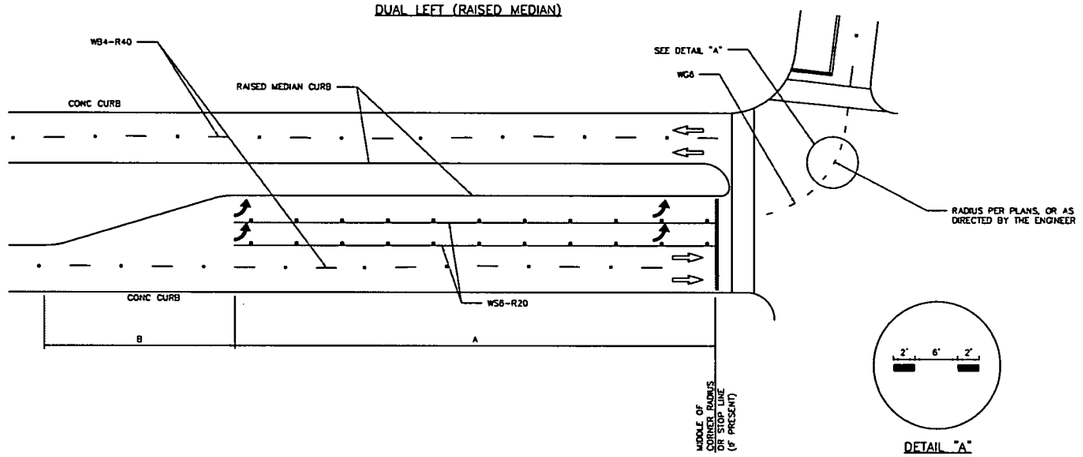
LEFT-TURN LANE



LEFT-TURN LANE (RAISED MEDIAN)



DUAL LEFT (RAISED MEDIAN)



DETAIL "A"

GENERAL NOTES:

1. THE DIMENSIONS GIVEN FOR DUAL LEFT (RAISED MEDIAN) ON THIS SHEET ARE ALSO APPLICABLE FOR DUAL RIGHT-TURN LANES.
2. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS.
3. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS REFER TO 02760-02 - LEFT/RIGHT TURN "ONLY" AND ARROW SPACING.
4. REFER TO APPLICABLE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE AND LEFT- TURN & RIGHT-TURN LANE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKINGS.
5. REFER TO BICYCLE LANE PAVEMENT MARKINGS STANDARD FOR TYPE AND PLACEMENT.

LEFT TURN BAY NOTES:

1. LEFT TURN BAY DIMENSIONS
   A = 150' MINIMUM AT INTERSECTION OF TWO (2) MAJOR STREETS WHEN PRACTICAL.
   = 100' MINIMUM AT ALL OTHER INTERSECTIONS.

   B = 100' MINIMUM ON STRAIGHT ROADWAYS.
   *TAPER LENGTH MAY BE SHORTER IF IT IS ON A HORIZONTAL CURVE TO THE LEFT.
   *TAPER LENGTH MAY BE LONGER IF CURVE IS TO THE RIGHT.
2. DIMENSIONS SHALL BE ADJUSTED AS DETERMINED BY CITY OF HOUSTON TRAFFIC ENGINEER.
3. REFER TO CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL (FIGURE 10.8) FOR DETAILS.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-13

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

LEFT-TURN LANE &
RIGHT-TURN LANE DESIGN

SHEET 01 OF 02

FOR CITY OF HOUSTON USE ONLY

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713-850-9000

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Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23298 & 10094200
4236 West Loop South, Suite 150, Bellaire, TX 77401
713.777.3337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING DETAILS

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED AS NOTED
DRAWING SCALE	80160
AS NOTED	CITY OF HOUSTON PO
TOMS MATHEW	CITY DRAINAGE SECTION
SHEET NO. 35 OF 72	HOUSTON, TEXAS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

K:\14780\14780-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14780-0021-01-004-DETAILS.DWG, 5/27/2025 4:18 PM

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN DESIGNATION	SIGN CONTENT	SIGN DIMENSIONS (IN INCHES)	SQUARE POST	STREETLIGHT MOUNT	SIGNAL MOUNT	ROUND POST (PERMISSION NEEDED FROM CITY TRAFFIC ENGINEER)	Posts (1 or 2)	SIGN AREA SQ FT. (FOR INFORMATION ONLY, NOT INTENDED FOR BID)
24	1	W9-1(SPL)	CENTER LANE ENDS	36 x 36	✓				1	11.00
	1	W16-9P	AHEAD (PLAQUE)	24 x 12						
25	2	W3-3	SYMBOL - SIGNALIZED INTERSECTION AHEAD	30 x 30	✓				1	9.00
	3	W9-1R	RIGHT LANE ENDS	36 x 36	✓				1	11.00
	3	W16-9P	AHEAD (PLAQUE)	24 x 12						
	4	R7-2(1)SPL	NO PARKING SYMBOL - <ABOVE LEFT ARROW>	12 x 18	✓				1	1.50
	5	R7-2(1)SPL	NO PARKING SYMBOL - <ABOVE RIGHT ARROW>	12 x 18	✓				1	1.50
	6	R7-2(1)SPL	NO PARKING SYMBOL - TO CORNER<ABOVE LEFT ARROW>	12 x 18	✓				1	1.50
	17	W4-2R	SYMBOL - LANE ENDS, MERGE RIGHT	36 x 36	✓				1	3.00
26	7	W9-1(SPL)	CENTER LANE ENDS	36 x 36	✓				1	9.00
	8	D13-3A	FREEWAY ENTRANCE <ARRW - SLANTED DOWN>	48 x 42		✓				14.00
	9	D13-3A	FREEWAY ENTRANCE <ARRW - SLANTED DOWN>	48 x 42	✓				1	14.00
	10	W12-1	SYMBOL - PASS OBSTRUCTION EITHER SIDE	36 x 36	✓				1	9.00
	11	W11-2	SYMBOL - BE ALERT FOR PEDESTIRANS	36 x 36	✓				1	10.50
	11	W16-7PR	<ARROW - SLANTED RIGHT> (PLAQUE)	24 x 18						
	12	W11-2	SYMBOL - BE ALERT FOR PEDESTIRANS	36 x 36	✓				1	10.50
	12	W16-7PL	<ARROW - SLANTED LEFT> (PLAQUE)	24 x 18						
	13	R7-2(1)DBL	NO PARKING SYMBOL - TO CORNER<ABOVE DOUBLE ARROW>	12 x 18	✓				1	1.50
	14	W4-6R	SYMBOL - ENTERING RDWY RIGHT, ADDED LANE	36 x 36	✓				1	9.00
	15	W4-6L	SYMBOL - ENTERING RDWY LEFT, ADDED LANE	36 x 36	✓				1	9.00
	16	W4-1R	SYMBOL - MERGE AHEAD RIGHT	36 x 36	✓				1	9.00

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23298 & 10046300
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SUMMARY OF SIGNS

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 38 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

PROFESSIONAL ENGINEER
80160
CITY OF HOUSTON
HOUSTON, TEXAS

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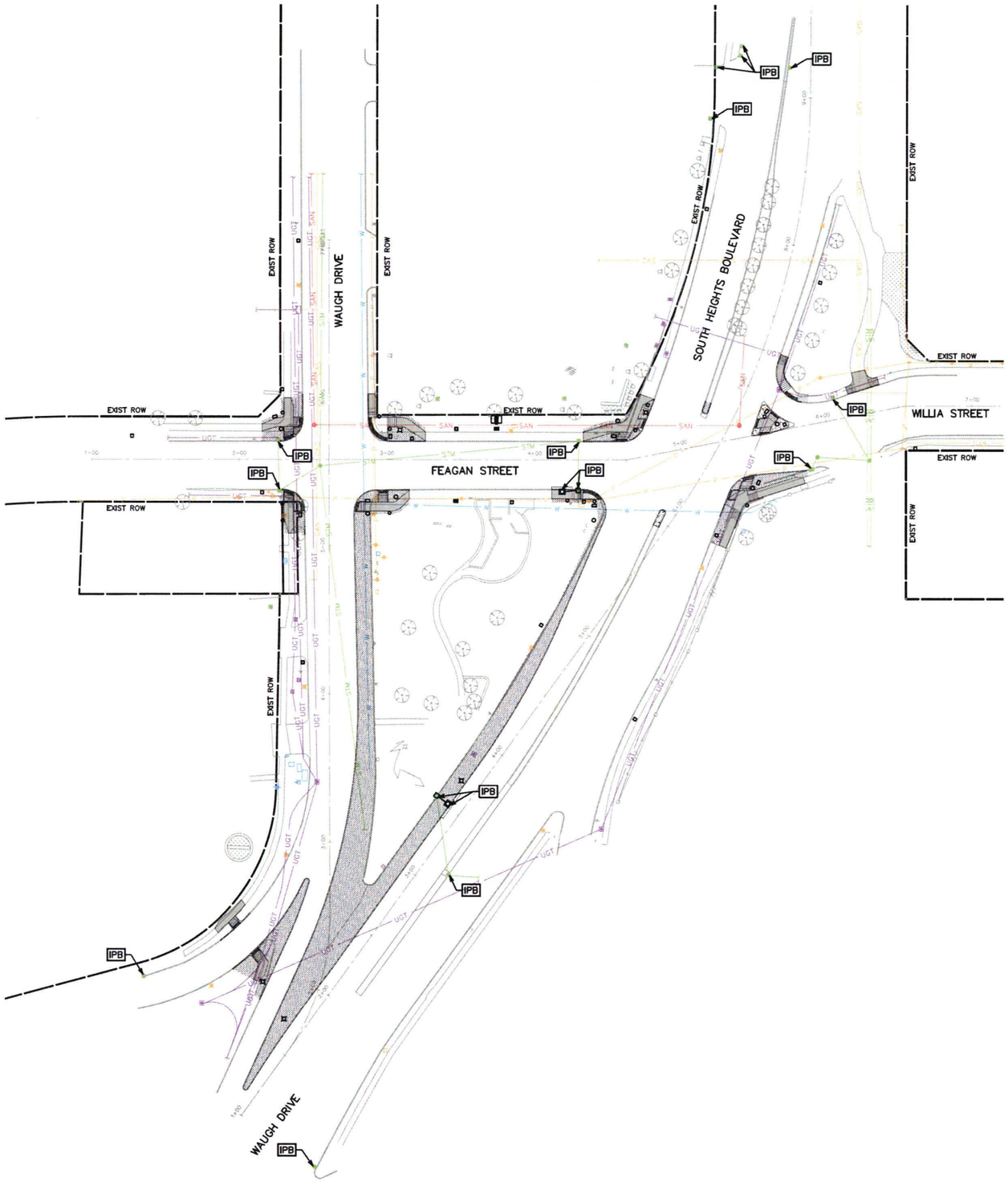

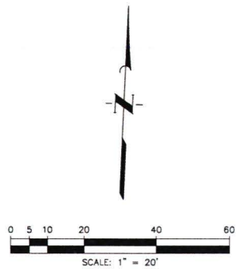

LEGEND

- IPB — INLET PROTECTION BARRIERS
- RFB — REINFORCED FABRIC BARRIER
- SC — STABILIZED CONSTRUCTION ENTRANCE/EXIT

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10064100
6550 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS — VICTORIA M. MACALINO — 142304 — LICENSED PROFESSIONAL ENGINEER — 5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM WATER POLLUTION PREVENTION PLAN

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED AND FILED
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 37 OF 72	

PUBLIC UTILITY — CITY OF HOUSTON — HOUSTON, TEXAS

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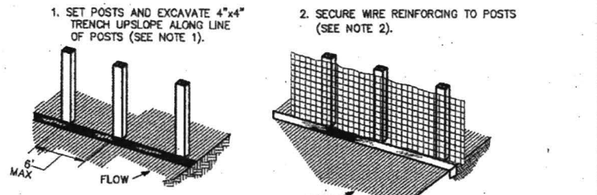
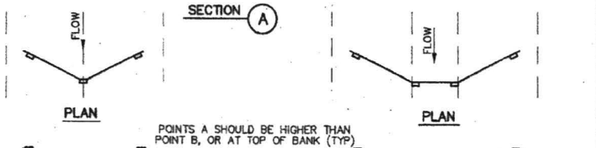
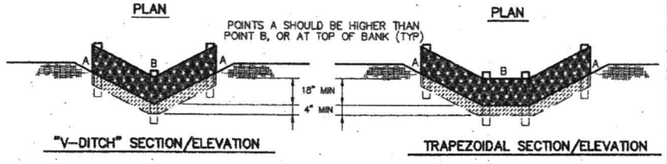




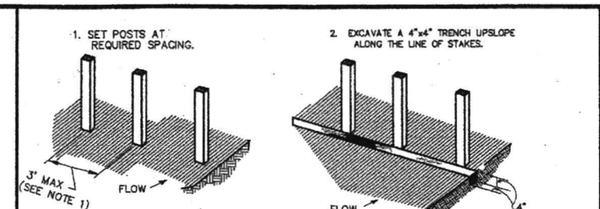


CONSTRUCTION NOTES:

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

X—(RFB)—X
SYMBOL

REINFORCED FILTER FABRIC BARRIER

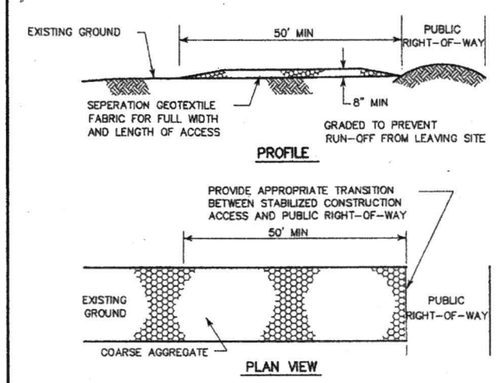


CONSTRUCTION NOTES:

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

X—(FF)—X
SYMBOL

FILTER FABRIC BARRIER

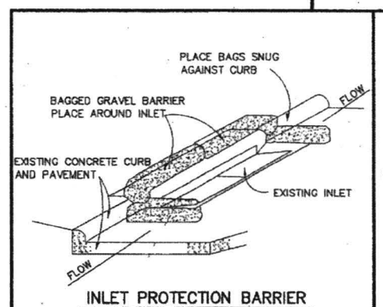


CONSTRUCTION NOTES:

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

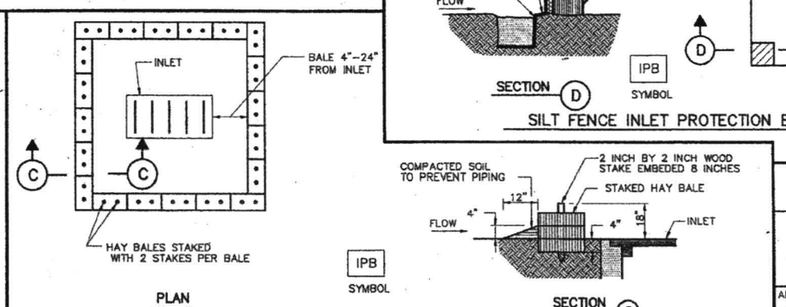
SC
SYMBOL

STABILIZED CONSTRUCTION ACCESS

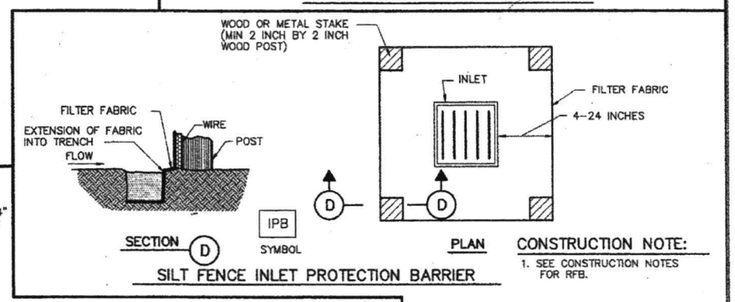


INLET PROTECTION BARRIER

(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER



HAY BALE INLET PROTECTION BARRIER



SILT FENCE INLET PROTECTION BARRIER

CONSTRUCTION NOTE:

1. SEE CONSTRUCTION NOTES FOR RFB.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS
(NOT TO SCALE)

APPROVED	APPROVED
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 01571-01

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-25290 & 10046300
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM WATER POLLUTION PREVENTION PLAN DETAILS

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 38 OF 72	

80160

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I. STORMWATER POLLUTION PREVENTION

1. ☑ It is not anticipated that any erosion, sedimentation, or environmental control devices will be needed on this project. The Contractor must still implement appropriate practices to prevent pollution from construction activities from reaching waters of the state. If it becomes necessary to implement control devices, payment for that work must be in accordance with Item 506 Article 4. 4, "Change in the Work".

2. ☐ The project will disturb less than 1 acre of soil and has EPICs that require the implementation of erosion, sedimentation, or environmental control devices. The SWP3 summary sheet and associated plan information has been developed and included in the plans. Additional documentation must be maintained during construction in accordance with Department policy.

3. ☐ The project will disturb 1 acres or more of soil therefore requires the implementation of erosion, sedimentation, or environmental control devices. The SWP3 summary Sheet and associated plan information has been developed and included in the plans. Additional documentation must be maintained during construction in accordance with Department policy and Texas Commission on Environmental Quality Construction General Permit (TXR150000) requirements.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS

United States Army Corps of Engineers (USACE) Permit is required for filling, dredging, excavating or other work in water bodies, rivers, creeks, streams, wetlands or wet areas. The Contractor must adhere to all of the terms and general conditions associated with the following permit(s). If additional work not represented in the plans is required, contact the Engineer immediately.

☒ No United States Army Corps (USACE) Permit Required

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) without a Pre-Construction Notification (PCN). Project specific permit was not issued by USACE, therefore is not in the plan set. The USACE general conditions are attached to this EPIC.

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) with a Pre-Construction Notification (PCN). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set. The USACE general conditions are attached to this EPIC.

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Individual Permit (IP). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set.

☐ Work would be authorized by the United States Army Corps of Engineers (USACE) permit. The project specific permit issued by the USACE will be provided to the contractor.

United States Coast Guard (USCG) Permit is required for projects that involve the construction or modification (including changes to lighting) of a bridge or causeway across a water body determined to be navigable by the United States Coast Guard (USCG) under Section 9 of the Rivers and Harbors Act. If additional work not represented in the plans is required, contact the Engineer immediately.

☒ No United States Coast Guard (USCG) Coordination Required

☐ United States Coast Guard (USCG) Permit

☐ United States Coast Guard (USCG) Exemption

No Additional Comments

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the area and contact the Engineer immediately.

No Additional Comments

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Refer to TxDOT Standard Specifications in order to comply with requirements for invasive species, beneficial landscaping and tree/brush removal.

No Additional Comments

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) of 1918 states it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a permit issued by the Department of the Interior. If work occurs during the general nesting season (February 15 to September 30) this includes, but is not limited to, the following: demolition or repairs of structures (bridges, culverts, retaining walls, etc.) or vegetation removal, contact the Engineer and the District point of contact (POC, brooke.bowman@txdot.gov or 281-687-1614) to request a bird survey before starting work. Survey results remain valid starting the survey day plus the following three calendar days. If active nests, including ground-nesting species, are identified on site, a 75-ft buffer zone will be delineated by a Field Biologist. Do not commence work inside this zone until a Field Biologist determines the nests inactive. During the general non-nesting season (October 1 to February 14), take appropriate steps to prevent nesting activities on infrastructure before the next nesting season. These preventative methods include vegetation removal, removal of inactive nests, installation of approved exclusion devices, or application of approved repellant per manufacturer's standards. If nesting birds are found outside the general nesting season, the MBTA and Texas Parks and Wildlife Code 64 still apply. Contact the District MBTA POC immediately.

For any bird related questions, contact the District MBTA POC. (See below for Field Biologist and Ornithologist qualifications)

No Additional Comments

Field Biologist, Ornithologist – a field biologist is defined as an individual qualified to perform field investigations, presence/absence surveys and habitat surveys for protected avian species or species of concern. A mandatory bachelor's degree in biology or a related science is required. At a minimum, the Field Biologist, Ornithologist, shall have completed and reported a minimum of three presence/absence and habitat surveys for protected avian species in the past five years. A minimum of three projects must have been conducted in Texas. Surveys shall have been performed for documentation of species in accordance with a protocol approved by USFWS or TPWD, or following generally accepted methodologies.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

For all projects the Contractor will comply with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace Ensure that all workers are provided with personal protective equipment appropriate for any hazradous materials used.

Obtain and keep on-site Safety Data Sheets (SDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bareground and covered, for products which maybe hazardous. Maintain product labelling as required by the act. Pollutant housekeeping is also required in accordance with items listed in Section I of this EPIC sheet.

Maintain an adequate supply of on-site spill response materials, as indicated in the SDS. In the event of a spill, take actions to mitigate the spill as indicated on the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and bleanup of all product spills.
Responsibility for Hazardous Materials: Except in cases where the generation of hazardous materials are introduced by the Contractor on any work done by the Contractor on state-owned or controlled sites, the Contractor is not the generator of hazardous materials indentified in the ROW as shown in the plans or as discovered during construction.

Contact the Engineer if any of the following are detected:
* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
*Evidence of leaching or seepage of substances.

No Additional Comments

DATE: Feb 20, 2026
FILE:

Version 2.2

Texas Department of Transportation | TxDOT Houston District

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
JOB 80160
CITY DRAWING NUMBER
Approval Date 08/27/26
Agent Willia

FILE: EPIC Sheet.dgn	DN:	CK:	DW:	CK:
© TxDOT: October 2025	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72		
UPDATED template to 10/2025 Design Division Standard	DIST	COUNTY		SHEET NO.
	HOU	Harris		39 OF 72

VI. HAZARDOUS MATERIALS CONTINUED.

Demolition Activities - Does the project involve the demolition of any bridge class structure (not including buried culverts) for the purpose of replacement or permanent removal?

1. ☑ No - no further action required for demolition activities.

2. ☐ Yes - the Contractor must provide the dates for demolition to the Engineer at least 30 days in advance, to allow the Department sufficient time to prepare and submit the pre-demolition notification to the DSHS at least 10 working days prior to the scheduled demolition.

Asbestos Concerns:

1. ☐ The project does not involve and bridge rehabilitation or replaements, No further action required for bridge asbestos concerns.

2. ☐ The project involves bridge rehabilitation or replacements. The asbestos inspection results are negative. No abatement action is required.

3. ☐ The project involves bridge rehabilitation or replacements. The asbestos inspection results are positive and asbestos abatement is required.

Asbestos is located at the following (Structure ID and Station ID):

For positive asbestos results, the following action will apply:

☐ The Department has retained a DSHS licensed asbestos abatement contractor under a separate contract to perform the abatement, provide DSHS abatement notification, and perform asbestos management activities. This work must occur prior to the Contractor commencing any work that might disturb asbestos.

☐ The Department has included the work to perform the abatement, provide DSHS abatement notification, and perform asbestos management activities in this contract under Item 6.10 and related Special Provision and Special Specification. The Contractor must perform abatement work prior to commencing any work that might disturb asbestos.

VI. HAZARDOUS MATERIALS CONTINUED

Lead Paint Concerns - The project involves demolition or repair work that could require cutting, torch cutting, welding, or abrasive blasting of painted steel.

1. ☑ No - no further action required for lead paint concerns
2. ☐ Yes - the lead paint inspection result are negative. No action required for lead paint concerns.
3. ☐ Yes - the lead paint inspection results are positive. Lead is at the following locations and concentrations:

Location (Location/Structure ID) Concentration (PPM)

For positive lead results, the following action will apply:

☐ The work is under Item 446 (Field Cleaning & Painting Steel), management of hazardous materials is addressed in the specification and additional mitigation is not required.

☐ The lead concentration of the coating is known to be less than 90 ppm (Consumer Product Safety Commission threshold for paint to be designated as lead-containing), additional mitigation is not required.

☐ Mitigation for lead hazards is required in accordance with OSHA. The Contractor must provide mitigation as part of this contract. Mitigation may include stripping back of paint from steel at cut points or other areas where paint will be disturbed. The Contractor may select other OSHA-compliant controls or work practices instead of paint stripping to mitigate lead hazards. Manage painted steel in accordance with Section 12.2.5.5 of the Design Build Specifications.

☐ Mitigation for lead hazards is required in accordance with OSHA. The Department will provide lead paint removal. The Contractor must notify the Engineer of locations where paint-disturbing activities will occur at least 90 days prior to the work, to allow sufficient time for the Department to remove the paint. Manage painted steel in accordance with Standard Specification Item 6.10, Painted Steel Requirements.

VII. OTHER ENVIRONMENTAL ISSUES

No Additional Required Actions

VII. OTHER ENVIRONMENTAL ISSUES

HOUSTON
PUBLIC WORKS
ACCEPTED AND FILED
80160
CITY DRAWING NUMBER
Approval Date 08/27/26
HOUSTON TX

Texas Department of Transportation

TxDOT Houston District

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: EPIC Additional Comment Sheet.dgn	DN:		CK:	DW:	CK:
© TxDOT: October 2025	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0912	72	720	Feagan/Willia	
	DIST	COUNTY		SHEET NO.	
	HOU	Harris		39A OF 72	

DATE:
FILE:

DocuSign Envelope ID: C87FC116-8716-4886-A5E8-6D3F3CC56AF4

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 WITH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
2. ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM THE LATEST VERSION OF THE TMUTCD.
3. NO LANES SHALL BE CLOSED DURING THE HOURS OF 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM MONDAY THRU FRIDAY WITHOUT APPROVAL OF THE CITY TRAFFIC ENGINEER.
4. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00 PM TO 7:00 AM.
5. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF THROUGH LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS. TRAFFIC CONTROL PLANS SHALL INCLUDE ONE-WAY AND/OR DETOUR PLANS. CONTRACTOR SHALL MAINTAIN ADA COMPLIANT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO ALL THE BUS STOPS.
6. CONTRACTOR SHALL MAINTAIN TRAFFIC LANES AND DETOURS ACCORDING TO TRAFFIC CONTROL PLANS DURING WORKING HOURS.
7. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, AND OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.
8. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT AN ALTERNATE SET OF TRAFFIC CONTROL PLANS TO THE CITY OF HOUSTON PROJECT MANAGER FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION. THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SHALL BE SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. OFFICE OF CITY ENGINEER, MOBILITY PERMITS SECTION REPRESENTATIVE APPROVAL IS REQUIRED TO ACCEPT THE PROPOSED CHANGES.
9. CONTRACTOR SHALL SECURE LANE/SIDEWALK/BICYCLE FACILITY CLOSURE PERMITS FROM OFFICE OF CITY ENGINEER (MOBILITY PERMIT SECTION AT https://apps.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.

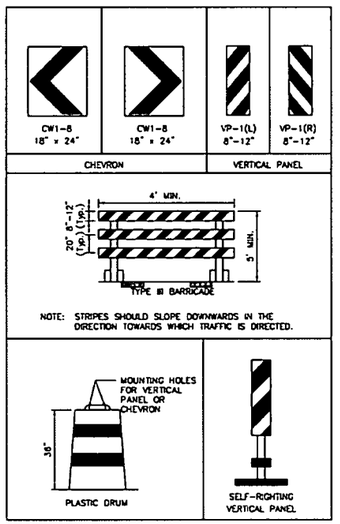
J. SPACING MAY BE ADJUSTED TO PROVIDE DRIVEWAYS, INTERSECTIONS AND /OR MEDIAN OPENINGS.

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

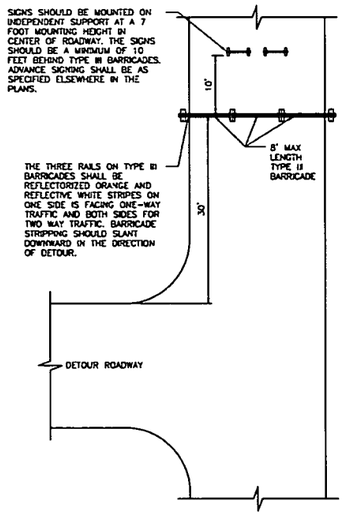
POSTED SPEED (MPH)	SIGN SPACING "X" (FEET)	MIN. DESIRABLE TAPER LENGTH "L"			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	120'	150'	165'	180'	30'	60'-75'
35	160'	205'	225'	245'	35'	70'-90'
40	240'	265'	295'	320'	40'	80'-100'
45	320'	450'	495'	540'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

APPROVED BY:	APPROVED BY:
Deborah Kammer	Heng Ngwen
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED 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

DRAWING SCALE
NOT TO SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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713-850-9000

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STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED
PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

NOTES CHANNELIZING DEVICES AND BARRICADES

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 40 OF 72	

CITY DRAWING NO.
HOUSTON, TEXAS

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 (TOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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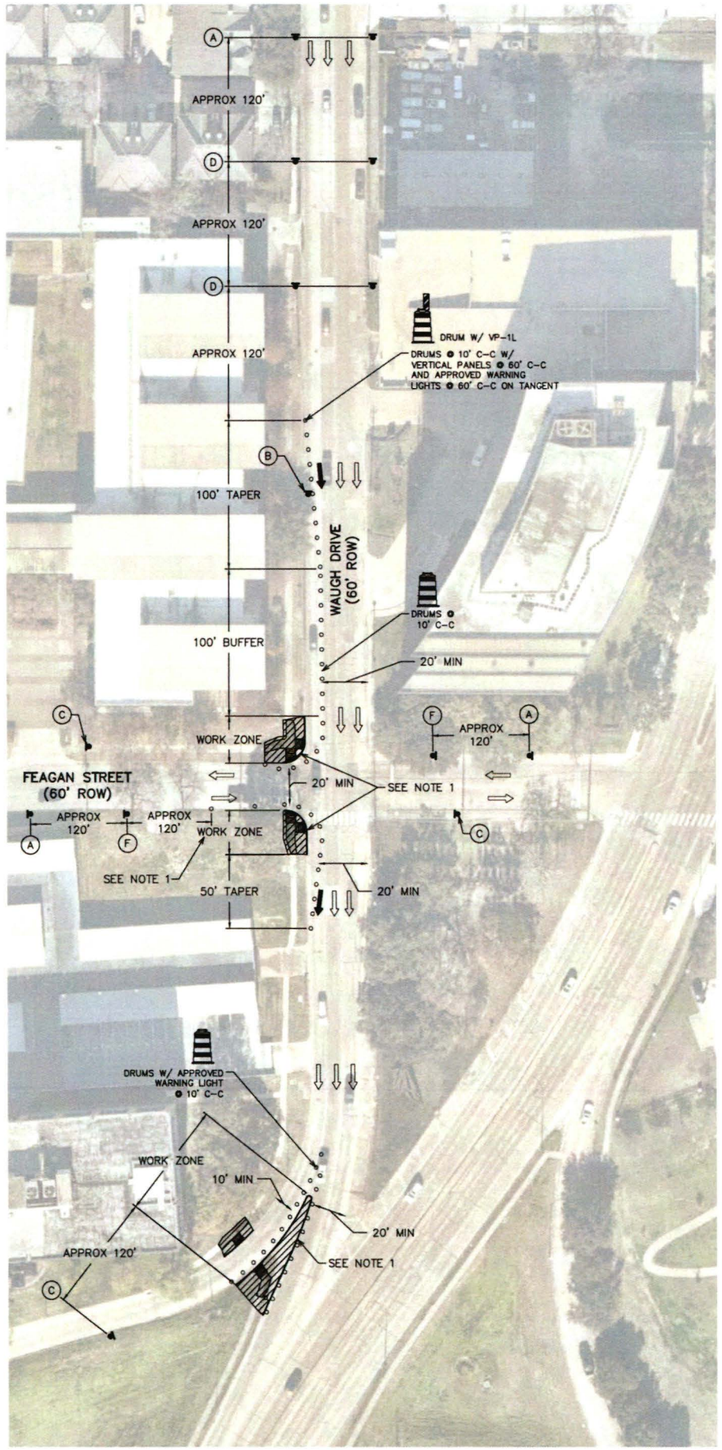
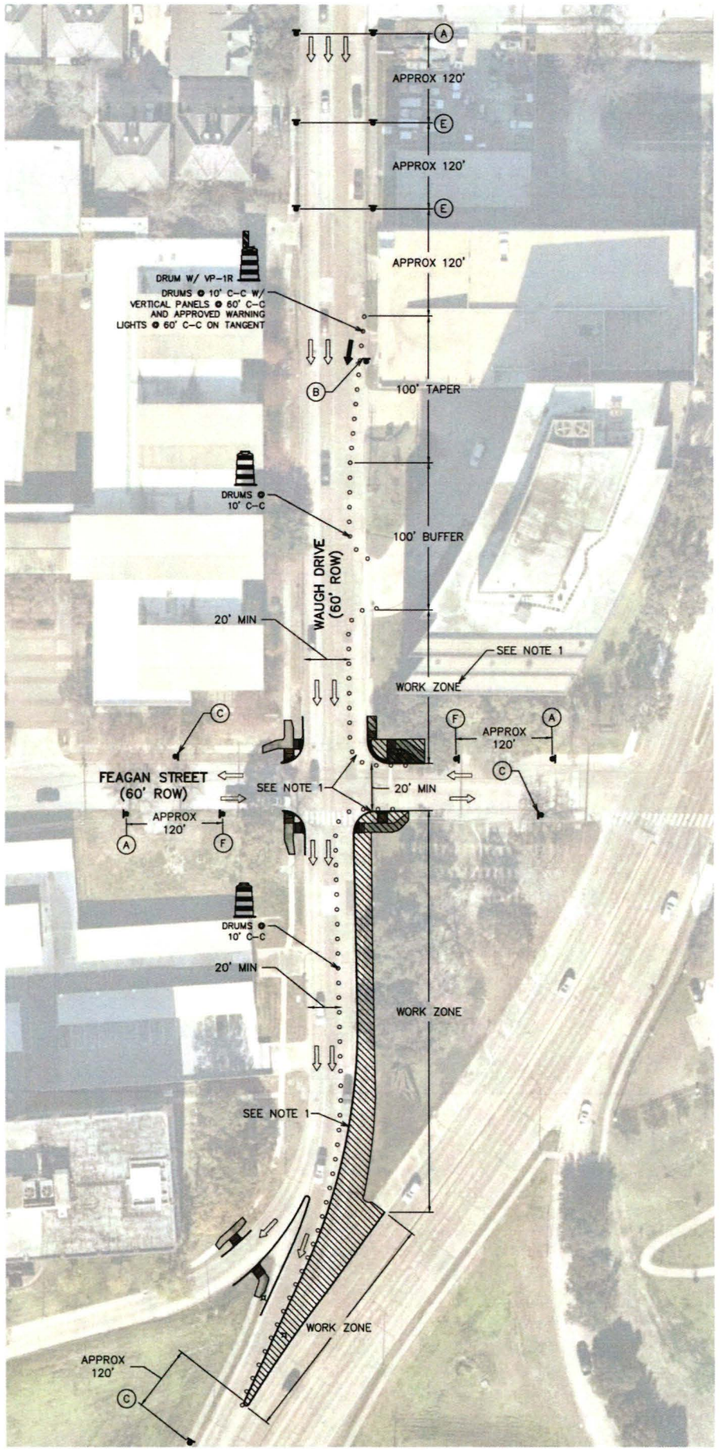
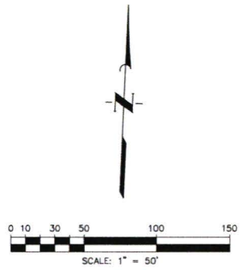


WAUGH AT FEAGAN STREET (WAUGH WEST CORNER WORK)



WAUGH AT FEAGAN STREET (WAUGH EAST CORNER WORK)



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LEGEND

- CONSTRUCTION AREA A
- CONSTRUCTION AREA B
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION

TEMPORARY PAVEMENT MARKING LEGEND

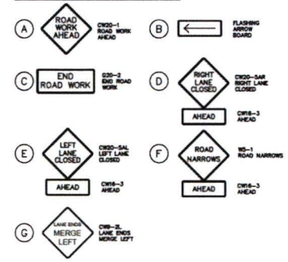
① 4" TEMPORARY CONSTRUCTION (REMOVE) PAVEMENT MARKING (WHITE BROKEN)

POSTED SPEED LIMIT 35 MPH

GENERAL NOTES

1. WORK SHALL BE LIMITED TO ONE SIDE OF WAUGH DRIVE AT A TIME. CONSTRUCTION OF BOTH CORNERS SHALL NOT BE CONCURRENT.

TEMPORARY SIGNAGE LEGEND



NO.	DATE	REVS ON	APP.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

80160

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046100
6550 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

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STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED PROFESSIONAL ENGINEER
6/27/25
Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT FEAGAN ST TRAFFIC CONTROL PLAN

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0022-7	
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 41 OF 1	

80160

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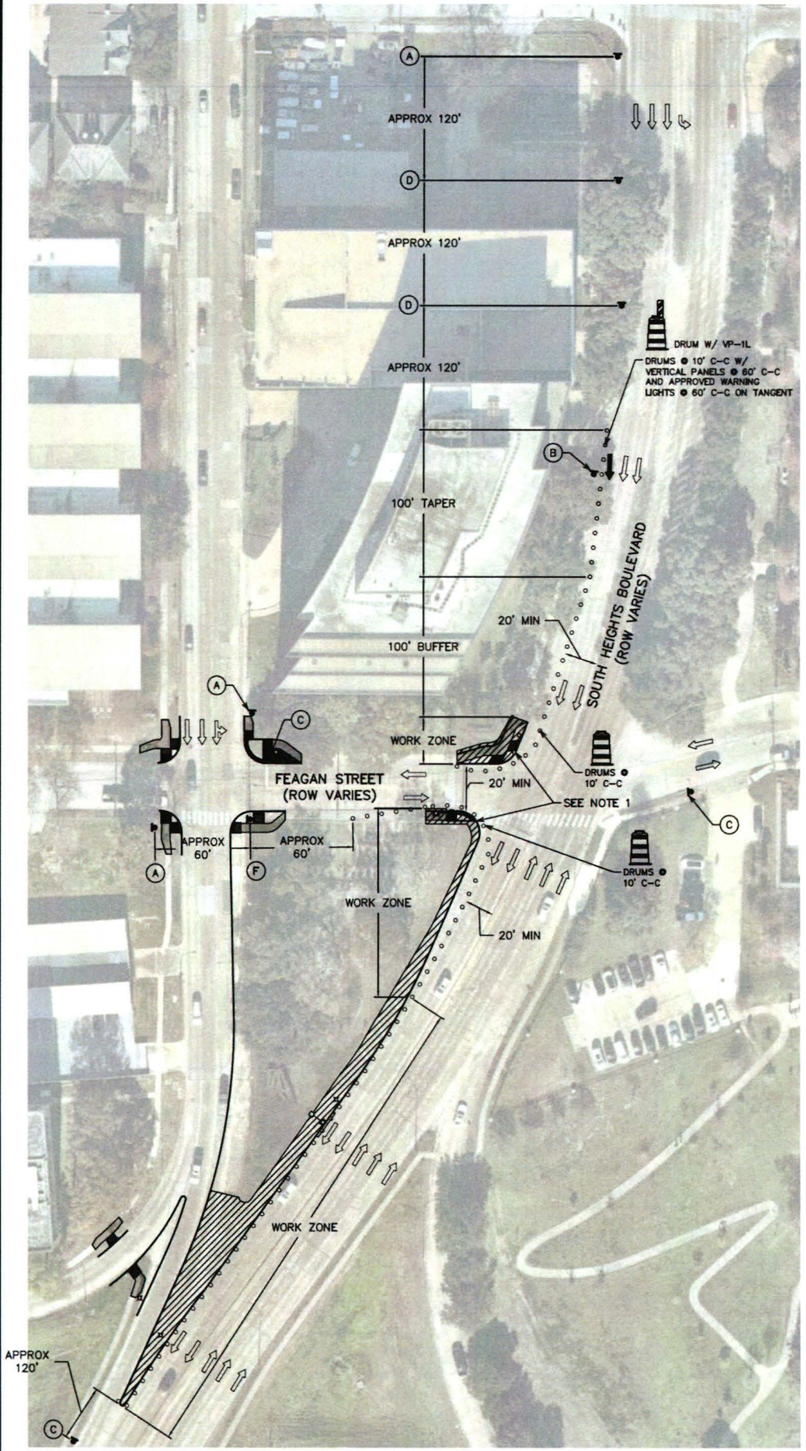
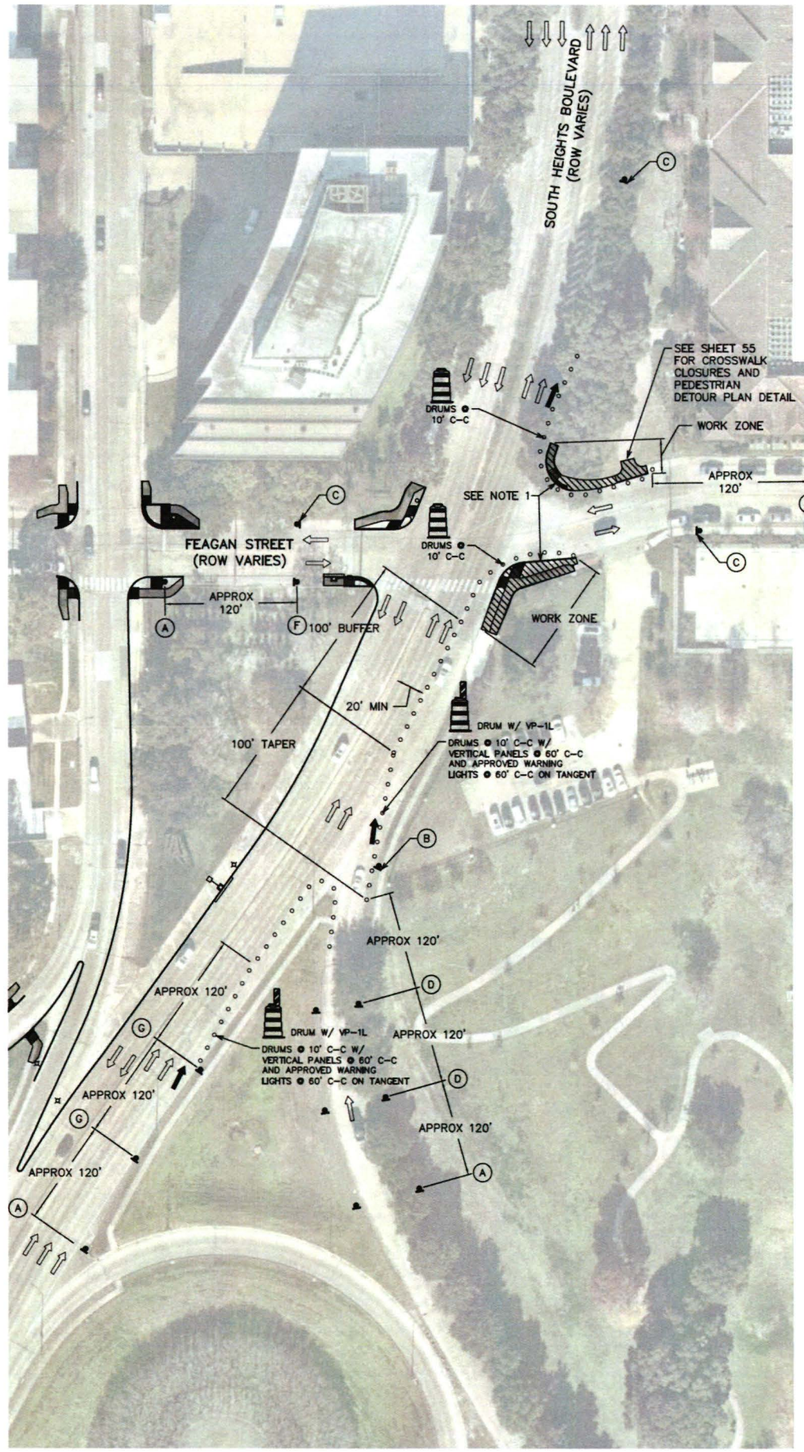
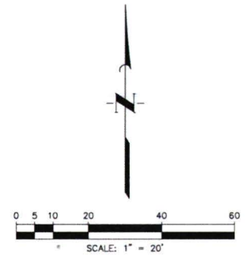


SOUTH HEIGHTS AT FEAGAN STREET (SOUTH HEIGHTS WEST CORNER WORK)



SOUTH HEIGHTS AT FEAGAN STREET (SOUTH HEIGHTS EAST CORNER WORK)



AERIAL IMAGERY IS FOR REFERENCE ONLY AND MAY NOT LINE UP EXACTLY WITH FEATURES SHOWN

LEGEND

- CONSTRUCTION AREA A
- CONSTRUCTION AREA B
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION

TEMPORARY PAVEMENT MARKING LEGEND

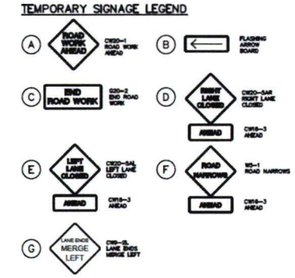
① 4" TEMPORARY CONSTRUCTION (REMOVE) PAVEMENT MARKING (WHITE BROKEN)

POSTED SPEED LIMIT 35 MPH

GENERAL NOTES

1. WORK SHALL BE LIMITED TO ONE SIDE OF SOUTH HEIGHTS BOULEVARD AT A TIME. CONSTRUCTION OF BOTH CORNERS SHALL NOT BE CONCURRENT.

TEMPORARY SIGNAGE LEGEND



NO.	DATE	REVISION	APP.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
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PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

S. HEIGHTS BLVD AT FEAGAN ST
TRAFFIC CONTROL PLAN

WAUGH SAFETY IMPROVEMENTS

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N-T05000-0012-7	80160
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 42 OF 72	

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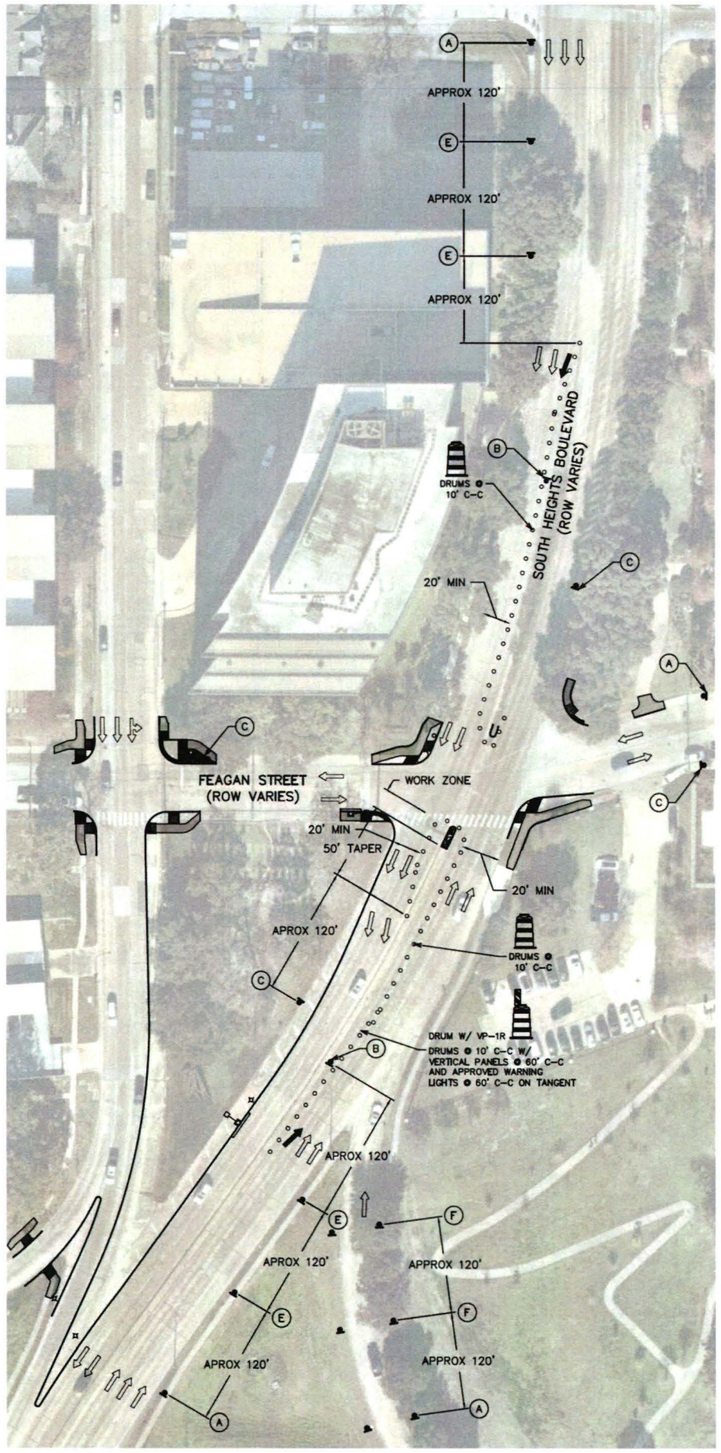
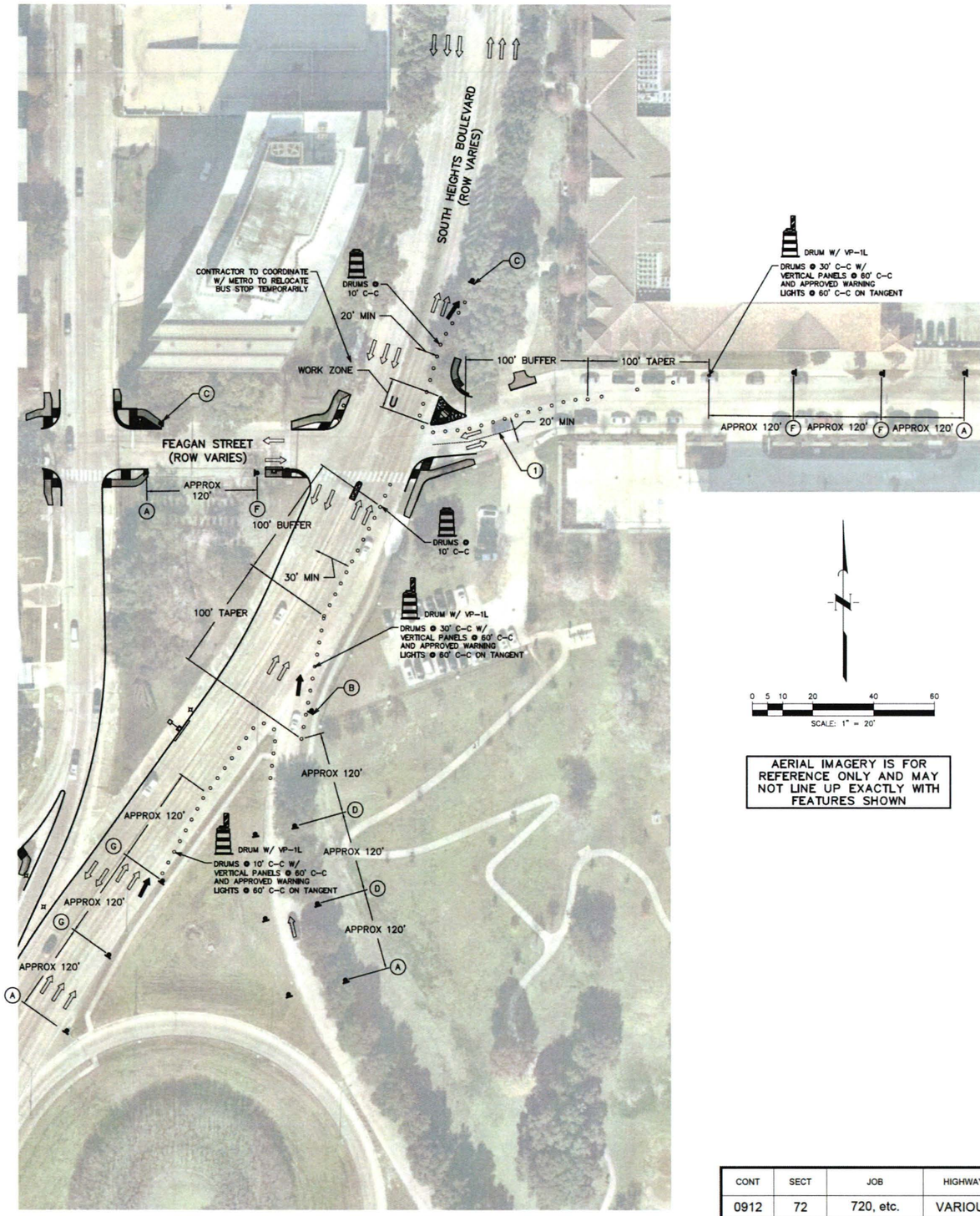


SOUTH HEIGHTS AT FEAGAN STREET (MEDIAN WORK)



SOUTH HEIGHTS AT FEAGAN STREET (DIRECTIONAL ISLAND WORK)

LEGEND

- CONSTRUCTION AREA A
- CONSTRUCTION AREA B
- EXIST TRAFFIC DIRECTION
- PROP TRAFFIC DIRECTION

TEMPORARY PAVEMENT MARKING LEGEND

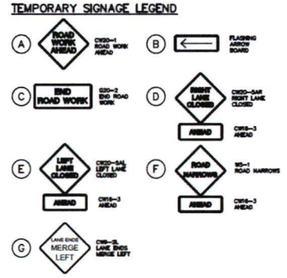
① TEMPORARY REMOVABLE BUTTONS

POSTED SPEED LIMIT 35 MPH

GENERAL NOTES

1. WORK SHALL BE LIMITED TO ONE SIDE OF SOUTH HEIGHTS BOULEVARD AT A TIME. CONSTRUCTION OF BOTH CORNERS SHALL NOT BE CONCURRENT.

TEMPORARY SIGNAGE LEGEND



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1980 Post Oak Blvd., Suite 1380
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713-850-9000

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STATE OF TEXAS
VICTORIA M. MADALINO
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LICENSED PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

S. HEIGHTS BLVD AT FEAGAN ST MEDIAN WORK TRAFFIC CONTROL PLAN

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	TOMS MATHEW
SHEET NO.	43 OF 72

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80160
CITY OF HOUSTON, TEXAS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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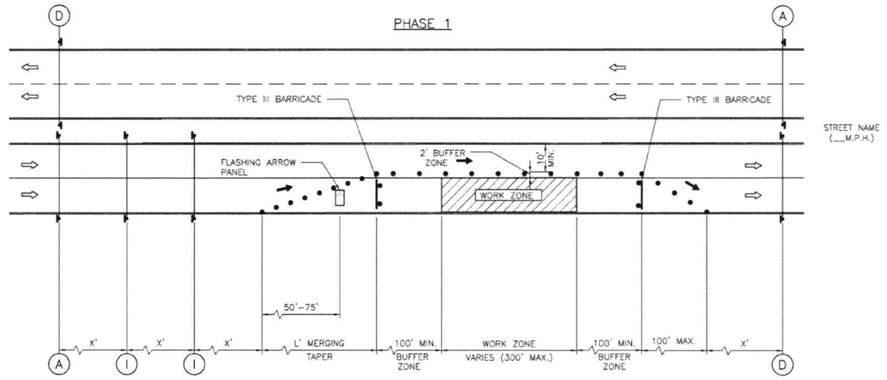
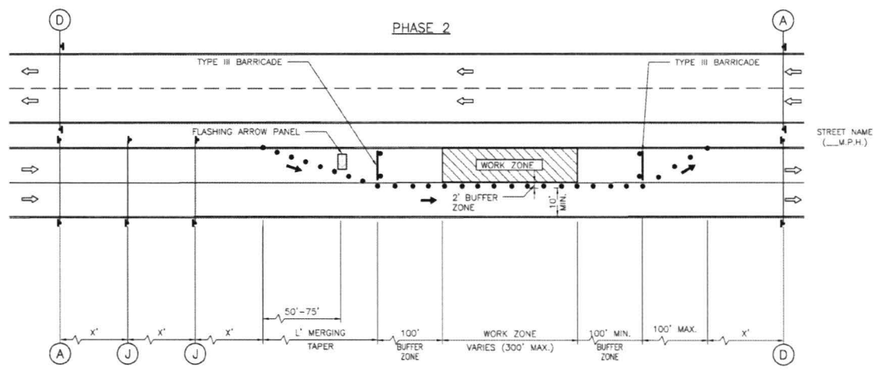
A	D	I	J
ROAD WORK AHEAD CW20-1	END ROAD WORK G20-2	RIGHT LANE CLOSED AHEAD CW20-5(2) CW16-3	LEFT LANE CLOSED AHEAD CW20-5(1) CW16-3

PHASE 1



PHASE 2



LEGEND:

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

NOTES:

1. RETURN TAPERS AND DOWNSTREAM BARRICADES ARE OPTIONAL ON A DIVIDED ROADWAY SECTION.
2. DOUBLE SIGNS SHALL BE USED ONLY ON ROADWAYS WITH MEDIANS.
3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.

APPROVED BY:	APPROVED BY:
Docusigned by: Sukat Kalyani	Docusigned by: HANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Docusigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP ONE LANE CLOSURE
PHASE 1 & 2

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

NO.	DATE	REVISION	APP.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 100464200
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS
VICTORIA M. MACALINO
142304
LICENSED PROFESSIONAL ENGINEER
5/27/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP DETAIL

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	80160
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PO#	
TOMS MATHEW	
SHEET NO. 44 OF 72	

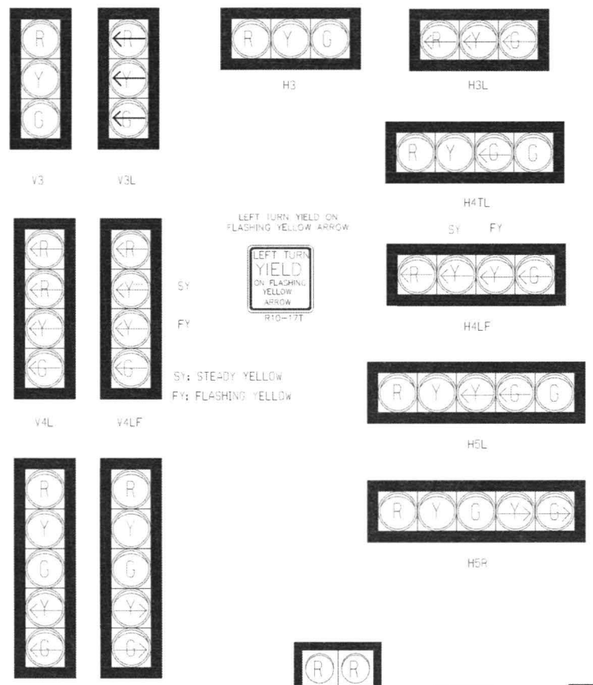
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

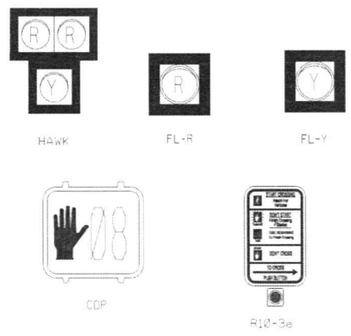
DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND, BY AUTHORIZING THEIR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

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-CI-006-TCP.DWG, 5/27/2025 4:19 PM

	NEW	EXISTING
TRAFFIC SIGNAL POLE	○	○
PEDESTAL POLE	○	○
POLE W/MAST ARM	○———	○- - - - - - - - - - - - - - - -
VEHICLE SIGNAL HEAD	▼	▽
VEHICLE SIGNAL HEAD W/BACK PLATE	▼	▽
PEDESTRIAN SIGNAL HEAD	⊟	⊟
PEDESTRIAN PUSH BUTTON	⊡	⊡
PULL BOX - TYPE A	◇	◇
PULL BOX - TYPE B	▭	[ ]
PULL BOX - TYPE C	▭	[ ]
PULL BOX - TYPE B W/EXTENSION	⊠	⊠
CONDUIT	- - -	———
VIDEO DETECTION CAMERA	▭	▭
PRE-EMPT SENSOR	⚷	⚷
LUMINAIRE	⊡	⊡
LUMINAIRE W/PHOTO CELL	⊡	⊡
CONTROLLER CABINET W/ UPS	▮	▮
METERED POWER PEDESTAL	◆	◆
POLE MOUNTED METER	●—	○—
FIBER OPTIC CONDUIT	—FO—	—FO—
MAST ARM SIGN	⊥	⊥
LOOP DETECTOR	⬡	⬡
SPP RADIO	⊠	⊠
WiMAX ANTENNA	•	○
RADAR DETECTOR	•	•
CCTV CAMERA	◉	◉

SIGNAL TYPES





TRAFFIC CONTROL GENERAL NOTE:

1. USE ONLY NON-RIGID MATERIAL ON PLASTIC DRUMS.

TRAFFIC SIGNAL HEADS NOTE:

ALL VEHICLE TRAFFIC SIGNAL HEAD TYPES HAVE 12-INCH LED LENSES

NOTE:

1. THE CONTRACTOR SHALL UTILIZE THE 2023 CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING – TRAFFIC OPERATIONS DIVISION TRAFFIC SIGNAL DETAILS (02465 SERIES, 12582 SERIES, 02893 SERIES, 16700, 16710, 16727, 16737, 16738, 16742), AS WELL AS CONTROLLER AND CABINET SPECIFICATION #16730 AND 16731, UPS SPECIFICATION #16732, GPS SPECIFICATION # 16785, 2023 SIGN POST AND SIGN DETAILS (01554 SERIES), 2023 PAVEMENT MARKING DETAILS (02760 SERIES), AND 2023 TCP DETAILS (01555 SERIES).
2. THESE STANDARD DETAILS ARE AVAILABLE FROM THE CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING TRAFFIC OPERATIONS DIVISION, OR BY GOING TO THE CITY OF HOUSTON WEBSITE LINK BELOW:

–HTTPS://WWW.HOUSTONPERMITTINGCENTER.ORG/OFFICE–CITY–ENGINEER/DESIGN–AND–CONSTRUCTION–STANDARDS

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

N/A
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.

N/A
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.

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046300
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Kyle Cooper P.E., PTOE 6/17/2025
STATE OF TEXAS
TYLER H. COWSER
147988
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL HARWARE LEGEND

WAUGH SAFETY IMPROVEMENTS

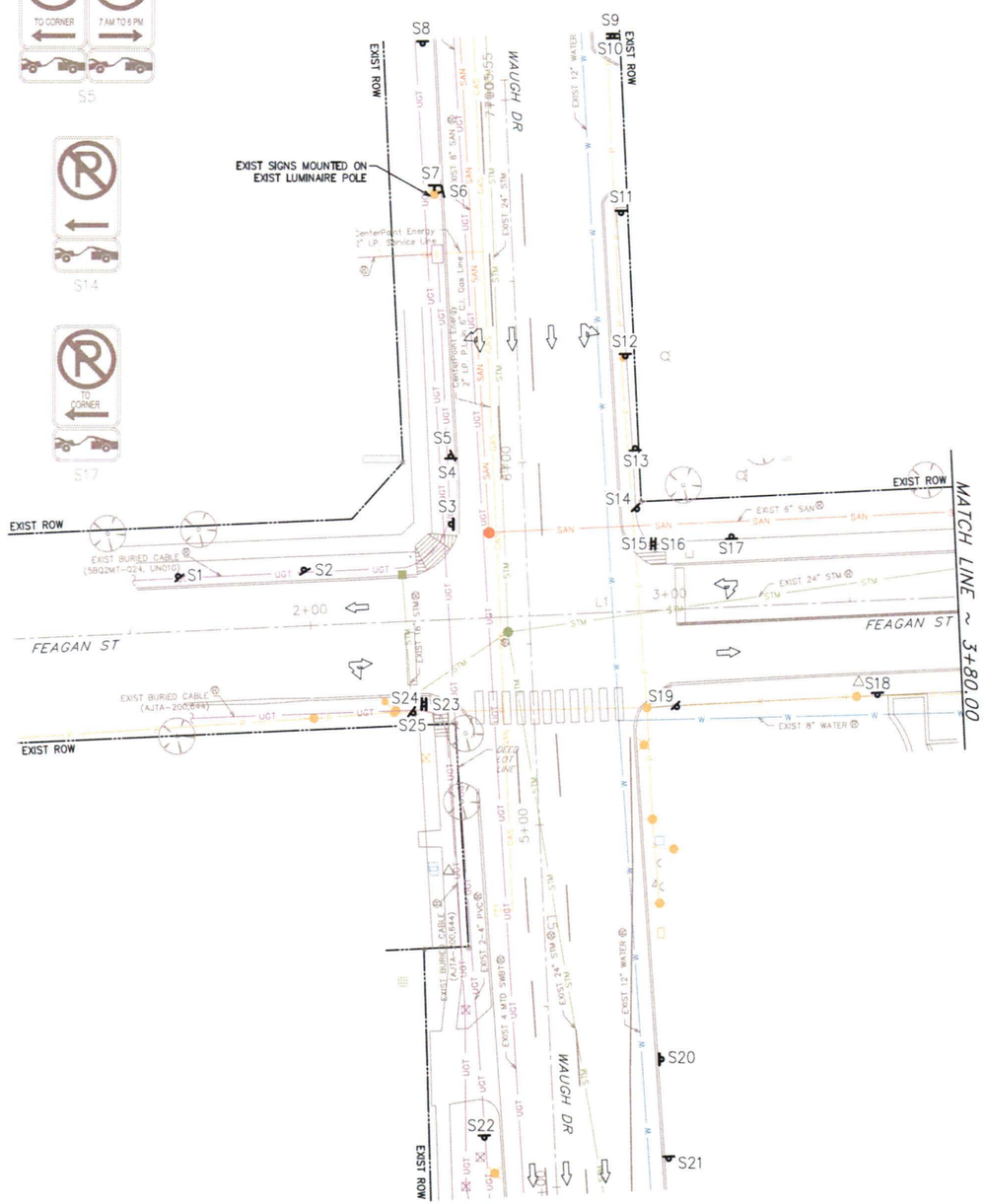
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

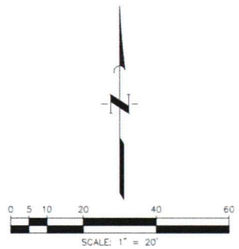
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	80160
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 45 OF 72	

RECEIVED
JUL 17 2025
HOUSTON, TEXAS

K:\14760\14760-0001-01 T-0435 WAUGH SAFETY\2 DESIGN (PHASE CAD)\TRAFFIC\MASTER SIGNAL DESIGN FILE_DWG, 6/17/2025 4:56 PM

EXISTING GROUND MOUNTED SIGN LEGEND





LEGEND

- STREET LIGHT
- GROUND MOUNTED SIGN
- POLE MOUNTED SIGN
- LANE ASSIGNMENT ARROW

UTILITY LEGEND

- W — EXIST WATER LINE
- STM — EXIST STORM SEWER LINE
- OHP — EXIST OVERHEAD POWER LINE
- GAS — EXIST GASLINE
- UGT — EXIST UNDERGROUND TELEPHONE LINE
- SAN — EXIST SANITARY SEWER LINE

NO.	DATE	REVISION	APP.

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower — 05/29/25 (Date)

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

Signature valid for six months.

Mike Brower — 05/29/25 (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.

Marc F Johnson — 5/29/25 (Date)

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-25280 & 10046100
8330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

John Cowser P.E., PTOE 8/7/2025
STATE OF TEXAS — TYLER H. COWSER — 147989 — LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR/S. HEIGHTS BLVD AT FEAGAN ST EXISTING LAYOUT

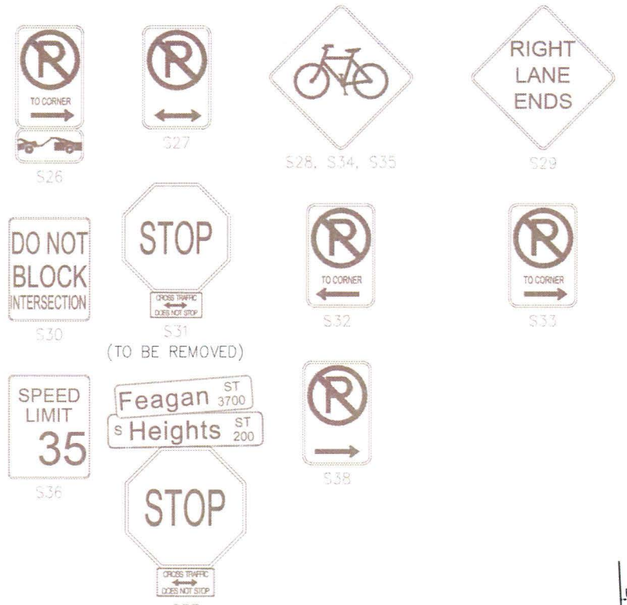
WAUGH SAFETY IMPROVEMENTS

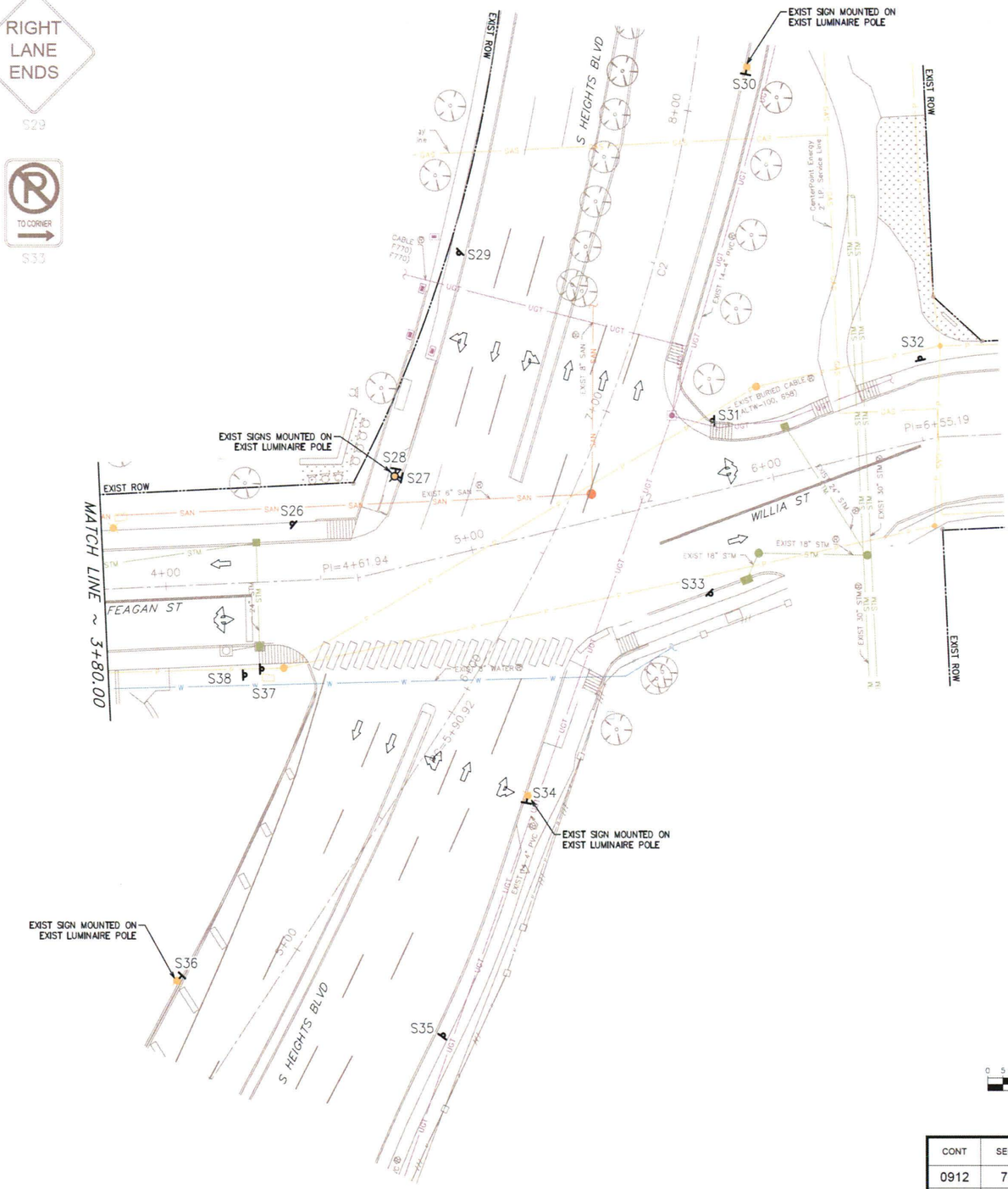
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

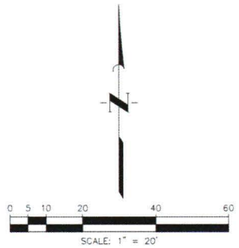
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON PIC	
TOMS MATHEW	
SHEET NO. 46 OF 72	HOUSTON, TEXAS

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\TRAFFIC\MASTER SIGNAL DESIGN FILE_DWG, 5/7/2025 4:56 PM

EXISTING GROUND MOUNTED SIGN LEGEND







LEGEND

- STREET LIGHT
- GROUND MOUNTED SIGN
- POLE MOUNTED SIGN
- LANE ASSIGNMENT ARROW

UTILITY LEGEND

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713-850-9000

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8330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., PTOE 6/17/2025
STATE OF TEXAS — TYLER H. COWSER — 147088 — LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR/S. HEIGHTS BLVD
AT FEAGAN ST
EXISTING LAYOUT

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

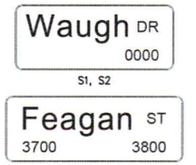
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012	
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON PDC	
TOMS MATHEW	
SHEET NO. 47 OF 72	

PUBLIC CONVENIENCE AND REQUIREMENT — APPROVED — CITY OF HOUSTON, TEXAS

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\TRAFFIC\MASTER SIGNAL DESIGN FILE.DWG, 5/7/2025 4:56 PM

S1 = STREET NAME "Waugh Dr", BLOCK NUMBER 0000
S2 = STREET NAME "Waugh Dr", BLOCK NUMBER 0000
S3 = STREET NAME "Feagan St", BLOCK NUMBER 3700 & 3800
S4 = R10-12 (30"x36") SIGN, "LEFT TURN YIELD ON GREEN BALL"
S5 = R6-2L (24"x30") SIGN, "ONE WAY"
S6 = R6-2R (24"x30") SIGN, "ONE WAY"

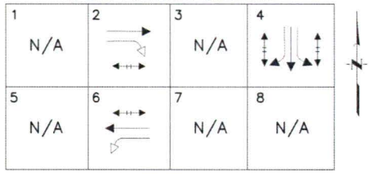
PROPOSED MAST ARM SIGNS



PROPOSED TRAFFIC SIGNAL HEADS
(W/ BLACK BACK PLATE & YELLOW RETROREFLECTIVE BORDER)

ø2, ø4, ø6

NEMA PHASING DIAGRAM



TRAFFIC PHASE
PEDESTRIAN PHASE

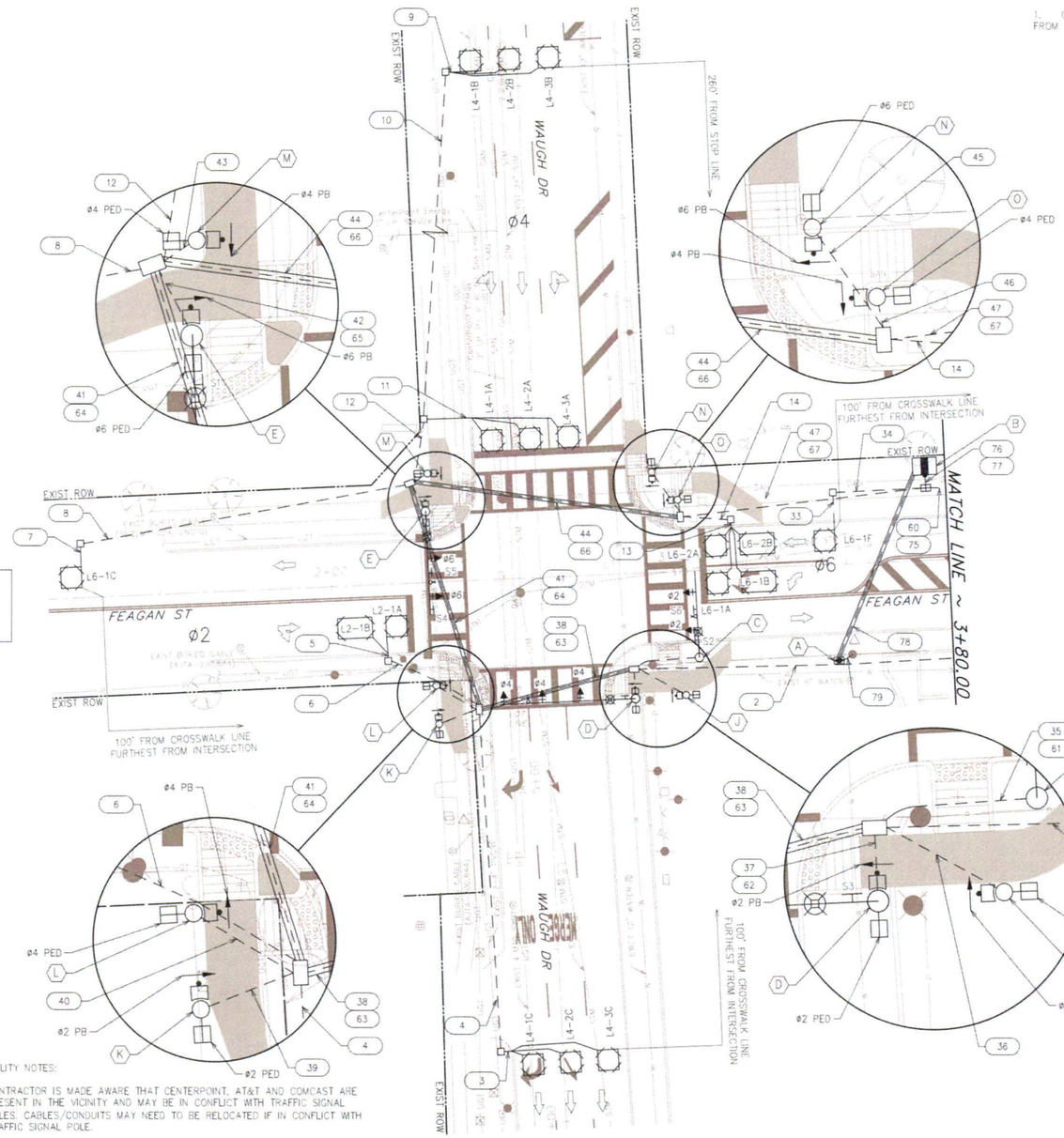
POSTED SPEED LIMIT

WAUGH DR = 35 MPH
FEAGAN ST = 30 MPH

STOP LINE AND DETECTOR LOCATIONS		
ITEM BY DIRECTION	STATION WAUGH DR	OFFSET
WESTBOUND		
STOP LINE @ GUTTER	5+69.65	36.17' RT
STOP LINE @ CENTERLINE	5+47.83	36.42' RT
PHASE 6 PRESENCE LOOP		
L6-1A LEADING EDGE (6'X6')	5+53.81	CENTERED IN LANE
L6-1B LEADING EDGE (6'X10')	10' FROM STOP BAR	CENTERED IN LANE
L6-2A LEADING EDGE (6'X6')	5+64.80	CENTERED IN LANE
L6-2B LEADING EDGE (6'X10)	10' FROM STOP BAR	CENTERED IN LANE
PHASE 6 PULSE LOOP		
L6-1C LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE
L6-1F LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE
EASTBOUND		
STOP LINE @ GUTTER	5+37.70	38.53' LT
STOP LINE @ CENTERLINE	5+54.41	38.49' LT
PHASE 2 PRESENCE LOOP		
L2-1A LEADING EDGE (6'X6')	5+45.53	CENTERED IN LANE
L2-1B LEADING EDGE (6'X10')	10' FROM STOP BAR	CENTERED IN LANE
SOUTHBOUND		
STOP LINE @ GUTTER (RT)	5+93.95	15.38' RT
STOP LINE @ GUTTER (LT)	5+93.95	17.65' LT
PHASE 4 CALL LOOP		
L4-1A LEADING EDGE (6'X6')	5+94.95	CENTERED IN LANE
L4-2A LEADING EDGE (6'X6')	5+94.95	CENTERED IN LANE
L4-3A LEADING EDGE (6'X6')	5+94.95	CENTERED IN LANE
L4-1B LEADING EDGE (6'X6')	260' FROM STOP BAR	CENTERED IN LANE
L4-2B LEADING EDGE (6'X6')	260' FROM STOP BAR	CENTERED IN LANE
L4-3B LEADING EDGE (6'X6')	260' FROM STOP BAR	CENTERED IN LANE
PHASE 4 PULSE LOOP		
L4-1C LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE
L4-2C LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE
L4-3C LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE

COMMUNICATION SYSTEM NOTE:

1. ALL INTELLIGENT TRANSPORTATION SYSTEMS (ITS) INFRASTRUCTURE MUST BE FIELD VERIFIED AND INCLUDED ON ALL DESIGN PLANS. ITS INFRASTRUCTURE INCLUDES, BUT NOT LIMITED TO, FIBER OPTIC CABLE, COPPER, ETHERNET SWITCHES, WIMAX, BLUETOOTH EQUIPMENT, CCTV CAMERAS, ETC. A FIELD HARDENED MANAGED ETHERNET SWITCH MUST BE INCLUDED FOR ANY NEW OR MODIFIED SIGNALIZED INTERSECTION(S). CONTACT TRAFFIC OPERATIONS DIVISION/ITS SECTION FOR COMPATIBILITY QUESTIONS WITH CITY OF HOUSTON COMMUNICATION INFRASTRUCTURE.



UTILITY NOTES:

CONTRACTOR IS MADE AWARE THAT CENTERPOINT, AT&T AND COMCAST ARE PRESENT IN THE VICINITY AND MAY BE IN CONFLICT WITH TRAFFIC SIGNAL POLES. CABLES/CONDUITS MAY NEED TO BE RELOCATED IF IN CONFLICT WITH TRAFFIC SIGNAL POLE.

WATERLINE NOTES:

1. THE CONTRACTOR SHALL MAINTAIN 4' HORIZONTAL CLEARANCE AND 6" VERTICAL CLEARANCE BETWEEN WATERLINE AND ANY CONCRETE FOUNDATION FOR STREET TRAFFIC LIGHTS, SIGNS, AND PANEL BOARD FOUNDATION SIGNS. IF REQUIRED, OFFSET WATERLINES IN COORDINATION WITH DWO.

2. NO ELECTRICAL OR SIGNAL PULL BOX TO BE INSTALLED ABOVE WATERLINES. IF REQUIRED, OFFSET WATERLINES IN COORDINATION WITH DWO.

SPECIAL NOTES:

1. CONFIRM FINAL PLACEMENT OF PULLBOXES WITH CONSTRUCTION MANAGER.

2. CELLULAR MODEM, BLUETOOTH READER, AND ANTENNA TO BE INSTALLED PER COMMUNICATION INSTALLATION DETAILS.

3. ADDITIONAL PEDESTRIAN CCU MODULE IS NEEDED TO ACCOMMODATE ONE CABINET OPERATING TWO INTERSECTIONS. ADDITIONAL FOUR CHANNEL OPTICOM CARD IS REQUIRED.

CENTERPOINT OVERHEAD POWER LINES:

1. CONTRACTOR IS MADE AWARE THAT THE OVERHEAD POWER LINES WILL BE IN CONFLICT WITH SIGNAL POLES WITH LUMINAIRE ARMS. CONTRACTOR MUST COORDINATE AND NOTIFY CPE TO REMOVE/ADJUST THEIR FACILITIES TWELVE (12) WEEKS IN ADVANCE OF ANY CONSTRUCTION ACTIVITIES ON PROPOSED SIGNALS.

CENTERPOINT GAS LINES:

1. CONTRACTOR SHALL MAINTAIN 2FT MINIMUM CLEARANCE FROM ALL EXISTING GAS LINES.

LEGEND

- PEDESTAL POLE
- POLE W/MAST ARM
- LUMINAIRE
- VEHICLE SIGNAL HEAD W/ BLK BACK PLATE & YLW RETROREFL BDR
- PEDESTRIAN SIGNAL HEAD
- PEDESTRIAN PUSH BUTTON
- PULL BOX - TYPE A
- PULL BOX - TYPE B
- PULL BOX - TYPE C
- CONDUIT
- CONDUIT (BORED)
- PRE-EMPT SENSOR
- CONTROLLER CABINET W/ UPS
- METERED POWER PEDESTAL
- MAST ARM SIGN
- SAW-CUT LOOP DETECTOR
- LANE ASSIGNMENT ARROW

NO.	DATE	REVISION	APP

NOTICE:
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Tyler Cowser P.E., PTOE 6/17/2025
TYLER H. COWSER
147989
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR/S. HEIGHTS BLVD AT FEAGAN ST TRAFFIC SIGNAL PLAN

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PO	TOMS MATHEW
SHEET NO.	48 OF 72

FOR CITY OF HOUSTON USE ONLY
ACCEPTED AS NOTED
80160
REGISTERED ENGINEER
HOUSTON, TEXAS

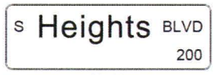
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

SCALE: 1" = 20'

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE CAD\TRAFFIC\MASTER SIGNAL DESIGN FILE_DWG, 6/17/2025 5:41 PM

S7 = STREET NAME "S Heights Blvd", BLOCK NUMBER 200
S8 = STREET NAME "Feagan St", BLOCK NUMBER 3700
S9 = STREET NAME "S Heights Blvd", BLOCK NUMBER 200
S10 = STREET NAME "Feagan St", BLOCK NUMBER 3700
S11 = R10-12 (30"x36") SIGN, "LEFT TURN YIELD ON GREEN BALL"
S12 = R10-12 (30"x36") SIGN, "LEFT TURN YIELD ON GREEN BALL"
S13 = R10-12 (30"x36") SIGN, "LEFT TURN YIELD ON GREEN BALL"
S14 = R10-12 (30"x36") SIGN, "LEFT TURN YIELD ON GREEN BALL"
S15 = R10-12 (30"x36") SIGN, "LEFT TURN YIELD ON GREEN BALL"
S16 = R10-12 (30"x36") SIGN, "LEFT TURN YIELD ON GREEN BALL"

PROPOSED MAST ARM SIGNS



S7, S9

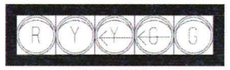
S8, S10

R10-12
30" x 36"

S11, S12
S13, S14
S15, S16

PROPOSED TRAFFIC SIGNAL HEADS
(W/ BLACK BACK PLATE & YELLOW RETROREFLECTIVE BORDER)

ø2, ø4, ø6, ø8



ø3/ø8, ø4/ø7

ø3/ø8(V), ø4/ø7(V)

POSTED SPEED LIMIT

S HEIGHTS BLVD = 35 MPH
FEAGAN ST = 30 MPH

STOP LINE AND DETECTOR LOCATIONS

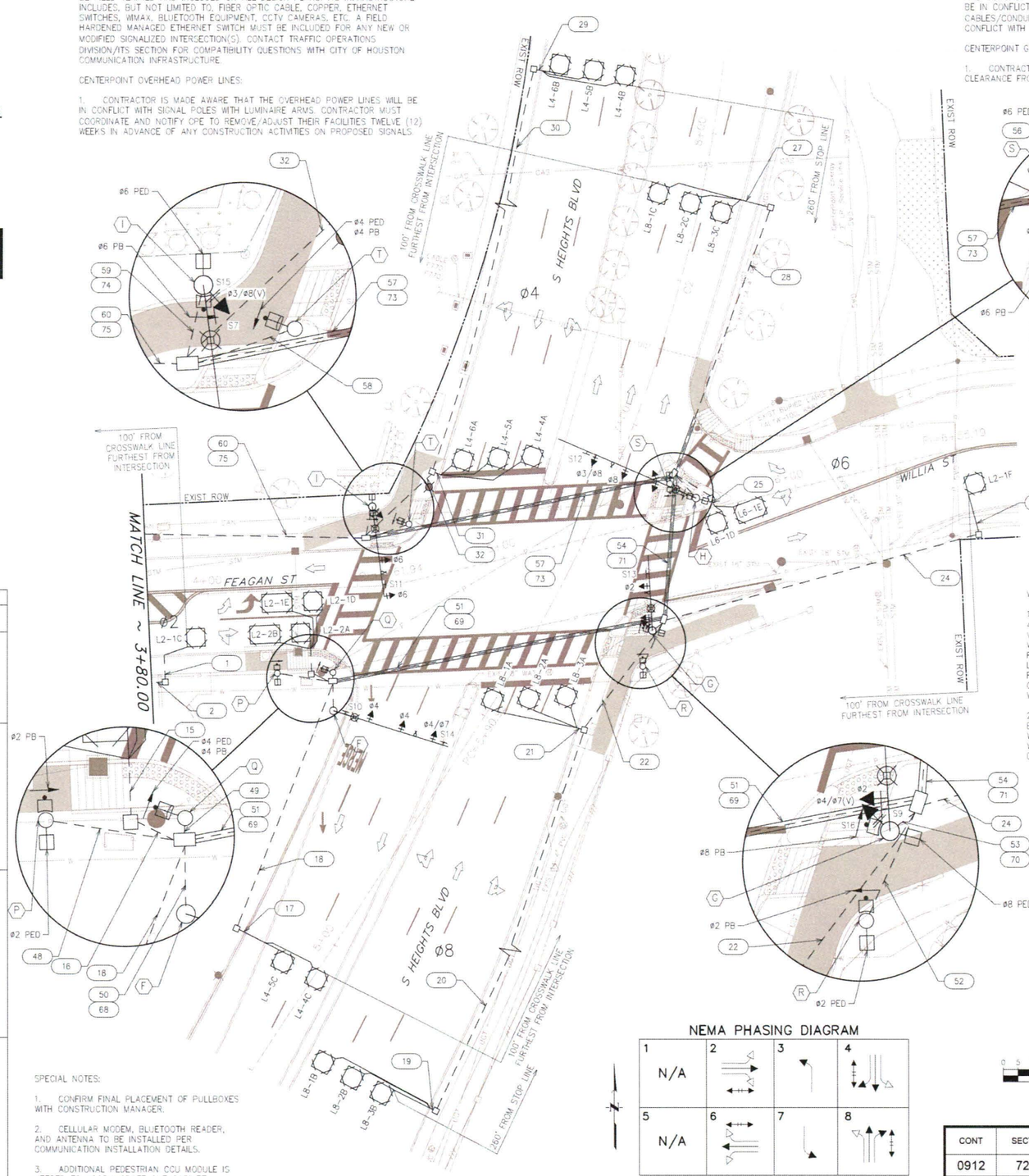
ITEM BY DIRECTION	STATION S HEIGHTS BLVD	OFFSET
WESTBOUND		
STOP LINE @ GUTTER	6+82.87	32.38' RT
STOP LINE @ CENTERLINE	6+69.61	34.21' RT
PHASE 6 PRESENCE LOOP		
L6-1D LEADING EDGE (6'X6')	6+78.91	CENTERED IN LANE
L6-1E LEADING EDGE (6'X10')	10' FROM STOP BAR	CENTERED IN LANE
EASTBOUND		
STOP LINE @ GUTTER	5+77.50	60.67' LT
STOP LINE @ CENTERLINE	5+89.53	63.27' LT
PHASE 2 PRESENCE LOOP		
L2-1D LEADING EDGE (6'X6')	5+93.19	CENTERED IN LANE
L2-1E LEADING EDGE (6'X10)	10' FROM STOP BAR	CENTERED IN LANE
L2-2A LEADING EDGE (6'X6')	5+81.91	CENTERED IN LANE
L2-2B LEADING EDGE (6'X10)	10' FROM STOP BAR	CENTERED IN LANE
PHASE 2 PULSE LOOP		
L2-1C LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE
L2-1F LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE
SOUTHBOUND		
STOP LINE @ GUTTER	6+56.56	51.99' LT
STOP LINE @ CENTERLINE	6+73.92	21.34' LT
PHASE 4 PRESENCE LOOP		
L4-4A LEADING EDGE (6'X6')	6+73.40	CENTERED IN LANE
L4-5A LEADING EDGE (6'X6')	6+67.86	CENTERED IN LANE
L4-6A LEADING EDGE (6'X6')	6+61.79	CENTERED IN LANE
L4-4B LEADING EDGE (6'X6')	260' FROM STOP BAR	CENTERED IN LANE
L4-5B LEADING EDGE (6'X6')	260' FROM STOP BAR	CENTERED IN LANE
L4-6B LEADING EDGE (6'X6')	260' FROM STOP BAR	CENTERED IN LANE
PHASE 4 PULSE LOOP		
L4-4C LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE
L4-5C LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE
NORTHBOUND		
STOP LINE @ GUTTER	6+18.95	23.88' RT
STOP LINE @ CENTERLINE	5+91.82	16.25' LT
PHASE 8 PRESENCE LOOP		
L8-1A LEADING EDGE (6'X6')	5+99.83	CENTERED IN LANE
L8-2A LEADING EDGE (6'X6')	6+6.58	CENTERED IN LANE
L8-3A LEADING EDGE (6'X6')	6+13.50	CENTERED IN LANE
L8-1B LEADING EDGE (6'X6')	260' FROM STOP BAR	CENTERED IN LANE
L8-2B LEADING EDGE (6'X6')	260' FROM STOP BAR	CENTERED IN LANE
L8-3B LEADING EDGE (6'X6')	260' FROM STOP BAR	CENTERED IN LANE
PHASE 8 PULSE LOOP		
L8-1C LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE
L8-2C LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE
L8-3C LEADING EDGE (6'X6')	100' FROM CROSSWALK	CENTERED IN LANE

COMMUNICATION SYSTEM NOTE:

1. ALL INTELLIGENT TRANSPORTATION SYSTEMS (ITS) INFRASTRUCTURE MUST BE FIELD VERIFIED AND INCLUDED ON ALL DESIGN PLANS. ITS INFRASTRUCTURE INCLUDES, BUT NOT LIMITED TO, FIBER OPTIC CABLE, COPPER, ETHERNET SWITCHES, WIMAX, BLUETOOTH EQUIPMENT, CCTV CAMERAS, ETC. A FIELD HARDENED MANAGED ETHERNET SWITCH MUST BE INCLUDED FOR ANY NEW OR MODIFIED SIGNALIZED INTERSECTION(S). CONTACT TRAFFIC OPERATIONS DIVISION/ITS SECTION FOR COMPATIBILITY QUESTIONS WITH CITY OF HOUSTON COMMUNICATION INFRASTRUCTURE.

CENTERPOINT OVERHEAD POWER LINES:

1. CONTRACTOR IS MADE AWARE THAT THE OVERHEAD POWER LINES WILL BE IN CONFLICT WITH SIGNAL POLES WITH LUMINAIRE ARMS. CONTRACTOR MUST COORDINATE AND NOTIFY CPE TO REMOVE/ADJUST THEIR FACILITIES TWELVE (12) WEEKS IN ADVANCE OF ANY CONSTRUCTION ACTIVITIES ON PROPOSED SIGNALS.



SPECIAL NOTES:

1. CONFIRM FINAL PLACEMENT OF PULLBOXES WITH CONSTRUCTION MANAGER.
2. CELLULAR MODEM, BLUETOOTH READER, AND ANTENNA TO BE INSTALLED PER COMMUNICATION INSTALLATION DETAILS.
3. ADDITIONAL PEDESTRIAN CCU MODULE IS NEEDED TO ACCOMMODATE ONE CABINET OPERATING TWO INTERSECTIONS. ADDITIONAL FOUR CHANNEL OPTICOM CARD IS REQUIRED.

NEMA PHASING DIAGRAM

1 N/A	2	3	4
5 N/A	6	7	8

TRAFFIC PHASE
PEDESTRIAN PHASE

UTILITY NOTES:

CONTRACTOR IS MADE AWARE THAT CENTERPOINT, AT&T AND COMCAST ARE PRESENT IN THE VICINITY AND MAY BE IN CONFLICT WITH TRAFFIC SIGNAL POLES. CABLES/CONDUITS MAY NEED TO BE RELOCATED IF IN CONFLICT WITH TRAFFIC SIGNAL POLE.

CENTERPOINT GAS LINES:

1. CONTRACTOR SHALL MAINTAIN 2FT MINIMUM CLEARANCE FROM ALL EXISTING GAS LINES.

WATERLINE NOTES:

1. THE CONTRACTOR SHALL MAINTAIN 4' HORIZONTAL CLEARANCE AND 6" VERTICAL CLEARANCE BETWEEN WATERLINE AND ANY CONCRETE FOUNDATION FOR STREET TRAFFIC LIGHTS, SIGNS, AND PANEL BOARD FOUNDATION SIGNS. IF REQUIRED, OFFSET WATERLINES IN COORDINATION WITH DWO.
2. NO ELECTRICAL OR SIGNAL PULL BOX TO BE INSTALLED ABOVE WATERLINES. IF REQUIRED, OFFSET WATERLINES IN COORDINATION WITH DWO.

LEGEND

- PEDESTAL POLE
- POLE W/MAST ARM
- LUMINAIRE
- VEHICLE SIGNAL HEAD W/ BLK BACK PLATE & YLW RETROREFL BDR
- PEDESTRIAN SIGNAL HEAD
- PEDESTRIAN PUSH BUTTON
- PULL BOX - TYPE A
- PULL BOX - TYPE B
- PULL BOX - TYPE C
- CONDUIT
- CONDUIT (BORED)
- PRE-EMPT SENSOR
- CONTROLLER CABINET W/ UPS
- METERED POWER PEDESTAL
- MAST ARM SIGN
- SAW-CUT LOOP DETECTOR
- LANE ASSIGNMENT ARROW

NO.	DATE	REVISION	APP

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower 05/29/25
Date

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

Mike Brower 05/29/25
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.

Marc F Johnson 5/29/25
Date

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

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Houston, Texas 77056
713-850-9000

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713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., PTOE 6/17/2025
STATE OF TEXAS
TYLER H. COWSER
147988
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR/S. HEIGHTS BLVD
AT FEAGAN ST
TRAFFIC SIGNAL PLAN

WAUGH SAFETY IMPROVEMENTS

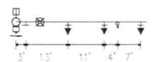
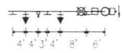
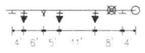
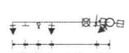
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 49 OF 72	

SCALE: 1" = 20'

A:\14760\14760-0021-001 T-05315 WAUGH SAFETY\2 DESIGN PHASE\CAD\TRAFFIC\MASTER SIGNAL DESIGN FILE_DWG, 6/17/2025 5:41 PM

POLE SCHEDULE

POLE NUMBER	POLE TYPE	MAST ARM SIGNALS				LUMINAIRE TYPE	PED PB TYPE/SIGN	REMARKS	LOCATION	STANDARDS
		SIGNAL	LUMINAIRE	MOUNTING	FACE					
(C)	TYPE 2	40'	N.T.S. 15'	2 – ASTROBRAC	2 – H3	106 WATT SYSTEM MAX. LED COBRA LUMINAIRE	–	PRE-EMPT SENSOR SIGNS: S2 = STREET NAME S6 = R6-2R (24"x30")	POLE C: STA 5+32.42, 45.1' RT WAUGH DRIVE ℄	01554-11 02465-01 02582-01 02582-02 02582-03 02893-01
(D) 	TYPE 2	40'	N.T.S. 15'	3 – ASTROBRAC 1 – SIDE OF POLE	3 – H3 1 – CDP	106 WATT SYSTEM MAX. LED COBRA LUMINAIRE	POLARA NAVIGATOR R10-3E (R)	PRE-EMPT SENSOR SIGNS: S3 = STREET NAME	POLE D: STA 5+21.34, 26.0' RT WAUGH DRIVE ℄	01554-11 02465-01 02582-01 02582-02 02582-03 02893-01
(E) 	TYPE 1	30'	N.T.S. 15'	2 – ASTROBRAC 1 – SIDE OF POLE	2 – H3 1 – CDP	106 WATT SYSTEM MAX. LED COBRA LUMINAIRE	POLARA NAVIGATOR R10-3E (L)	PRE-EMPT SENSOR SIGNS: S1 = STREET NAME S4 = R10-12 (30"x36") S5 = R6-2L (24"X30")	POLE E: STA 5+78.40, 32.5' LT WAUGH DRIVE ℄	01554-11 02465-01 02582-01 02582-02 02582-03 02893-01
(F) 	TYPE 2	40'	N.T.S. 15'	3 – ASTROBRAC	2 – H3 1 – H5L	106 WATT SYSTEM MAX. LED COBRA LUMINAIRE	–	PRE-EMPT SENSOR SIGNS: S10 = STREET NAME S14 = R10-12 (30"x36")	POLE F: STA 5+64.58, 43.0' LT S HEIGHTS BLVD ℄	01554-11 02465-01 02582-01 02582-02 02582-03 02893-01
(G)	TYPE 1	25'	N.T.S. 15'	2 – ASTROBRAC 2 – SIDE OF POLE	2 – H3 1 – V5L 1 – CDP	106 WATT SYSTEM MAX. LED COBRA LUMINAIRE	POLARA NAVIGATOR R10-3E (L)	PRE-EMPT SENSOR SIGNS: S9 = STREET NAME S13 = R10-12 (30"x36") S16 = R10-12 (30"x36")	POLE G: STA 6+42.09, 33.8' RT S HEIGHTS BLVD ℄	01554-11 02465-01 02582-01 02582-02 02582-03 02893-01
(H)	TYPE 2	50'	N.T.S. 15'	4 – ASTROBRAC 1 – SIDE OF POLE	3 – H3 1 – H5L 1 – CDP	106 WATT SYSTEM MAX. LED COBRA LUMINAIRE	POLARA NAVIGATOR R10-3E (R)	PRE-EMPT SENSOR SIGNS: S8 = STREET NAME S12 = R10-12 (30"x36")	POLE H: STA 6+85.38, 28.4' RT S HEIGHTS BLVD ℄	01554-11 02465-01 02582-01 02582-02 02582-03 02893-01
(I) 	TYPE 1	30'	N.T.S. 15'	2 – ASTROBRAC 2 – SIDE OF POLE	2 – H3 1 – V5L 1 – CDP	106 WATT SYSTEM MAX. LED COBRA LUMINAIRE	POLARA NAVIGATOR R10-3E (R)	PRE-EMPT SENSOR SIGNS: S7 = STREET NAME S11 = R10-12 (30"x36") S15 = R10-12 (30"x36")	POLE I: STA 6+31.82, 67.8' LT S HEIGHTS BLVD ℄	01554-11 02465-01 02582-01 02582-02 02582-03 02893-01
(J)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10-3E (L)	–	POLE J: STA 5+21.69, 40.75' RT WAUGH DRIVE ℄	02465-02 02582-01 02893-01
(K)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10-3E (L)	–	POLE K: STA 5+16.61, 31.5' LT WAUGH DRIVE ℄	02465-02 02582-01 02893-01
(L)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10-3E (R)	–	POLE L: STA 5+27.74, 31.8' LT WAUGH DRIVE ℄	02465-02 02582-01 02893-01
(M)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10-3E (L)	–	POLE M: STA 5+89.31, 31.6' LT WAUGH DRIVE ℄	02465-02 02582-01 02893-01
(N)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10-3E (L)	–	POLE N: STA 5+86.65, 33.8' RT WAUGH DRIVE ℄	02465-02 02582-01 02893-01
(O)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10-3E (R)	–	POLE O: STA 5+78.27, 40.9' RT WAUGH DRIVE ℄	02465-02 02582-01 02893-01
(P)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10-3E (L)	–	POLE P: STA 5+64.62, 65.4' LT S HEIGHTS BLVD ℄	02465-02 02582-01 02893-01

NOTES:

1. ALL SIGNAL HEADS WILL BE 12" WITH LOUVERED, BLACK BACK PLATES AND YELLOW RETROREFLECTIVE BORDER.

2. ALL TRAFFIC SIGNAL POLES, LUMINAIRE ARMS, AND MAST ARMS SHALL BE POWDER COATED MATTE BLACK.

NO.	DATE	REVISION	APP

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N/A
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Signature valid for six months.

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713-850-9000

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SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Dowser P.E., PTOE 6/17/2025
STATE OF TEXAS
TYLER H. DOWSER
147969
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR/S. HEIGHTS BLVD
AT FEAGAN ST
TRAFFIC SIGNAL POLE
SCHEDULE

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012	
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 50 OF	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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POLE SCHEDULE

POLE NUMBER	POLE TYPE	MAST ARM		SIGNALS		LUMINAIRE TYPE	PED PB TYPE/SIGN	REMARKS	LOCATION	STANDARDS
		SIGNAL	LUMINAIRE	MOUNTING	FACE					
(Q)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10–3E (L)	–	POLE Q: STA 5+75.09, 50.1' LT S HEIGHTS BLVD ℄	02465–02 02582–01 02893–01
(R)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10–3E (R)	–	POLE R: STA 6+30.93, 36.6' RT S HEIGHTS BLVD ℄	02465–02 02582–01 02893–01
(S)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10–3E (L)	–	POLE S: STA 6+86.33, 18.4' RT S HEIGHTS BLVD ℄	02465–02 02582–01 02893–01
(T)	PED POLE 15'	–	–	1 – SIDE OF POLE	1 – CDP	–	POLARA NAVIGATOR R10–3E (R)	–	POLE T: STA 6+35.88, 54.3' LT S HEIGHTS BLVD ℄	02465–02 02582–01 02893–01

TRAFFIC SIGNAL CONTROLLER

CABINET	TYPE	CONTROLLER	AUX. CONTROL	REMARKS	LOCATION	STANDARDS
(A)	METERED PEDESTAL SERVICE UL TYPE 3R	METERED PEDESTAL SERVICE WITH ONE 30 AMP AND ONE 60 AMP BREAKER AND PHOTOCELL	–	PROVIDE METER SOCKET WINDOW 4" H X 6" W POWER SOURCE: CENTERPOINT PROVIDE STREET LIGHTING PHOTO CELL ON TRAFFIC SIGNAL SERVICE PANEL	STA 5+29.55, 85.7' RT (TO CENTER OF METER) WAUGH DRIVE ℄	02893–02
(B)	TYPE 340 ITS W/ POLYMER BASE (2' HEIGHT) STANDARD SPECIFICATION 16730–03	2070 LX CONTROLLER UNIT WITH 2070–1C CPU MODULE W/ GPS SERIAL COMMUNICATIONS MODULE AND UPS SYSTEM	–	1 APCC–M APCC 4 CHANNEL OUTPUTS 1 EX–240 EXPANSION CARD 4 CHANNEL 1 APCC–SPP APCC SERIAL PORT PROTOCOL (DIGITAL RADIO) 1 APCC–ACC–1 APCC ACCESSORY, ISOLATOR 1 KIT–MTG/MOUNTING KIT STANDARD SPECIFICATION 16730 & 16731 UNINTERRUPTIBLE POWER SUPPLY STANDARD SPECIFICATION 16732 FIELD HARDENED ETHERNET SWITCH (SIX COPPER PORTS AND TWO FIBER OPTIC PORTS) STANDARD SPECIFICATION 16733 CELLULAR MODEM, BLUETOOTH READER, AND ANTENNA GPS SERIAL COMMUNICATIONS MODULE STANDARD SPECIFICATION 16785	STA 5+84.66, 113.27' RT (TO CENTER OF CAB.) WAUGH DRIVE ℄	16730–03

NOTES:

1. ALL SIGNAL HEADS WILL BE 12" WITH LOUVERED, BLACK BACK PLATES AND YELLOW RETROREFLECTIVE BORDER.

2. ALL TRAFFIC SIGNAL POLES, LUMINAIRE ARMS, AND MAST ARMS SHALL BE POWDER COATED MATTE BLACK.

NO.	DATE	REVISION	APP'D

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STATE OF TEXAS
TYLER H. COWSER
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LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR/S. HEIGHTS BLVD
AT FEAGAN ST
TRAFFIC SIGNAL POLE SCHEDULE

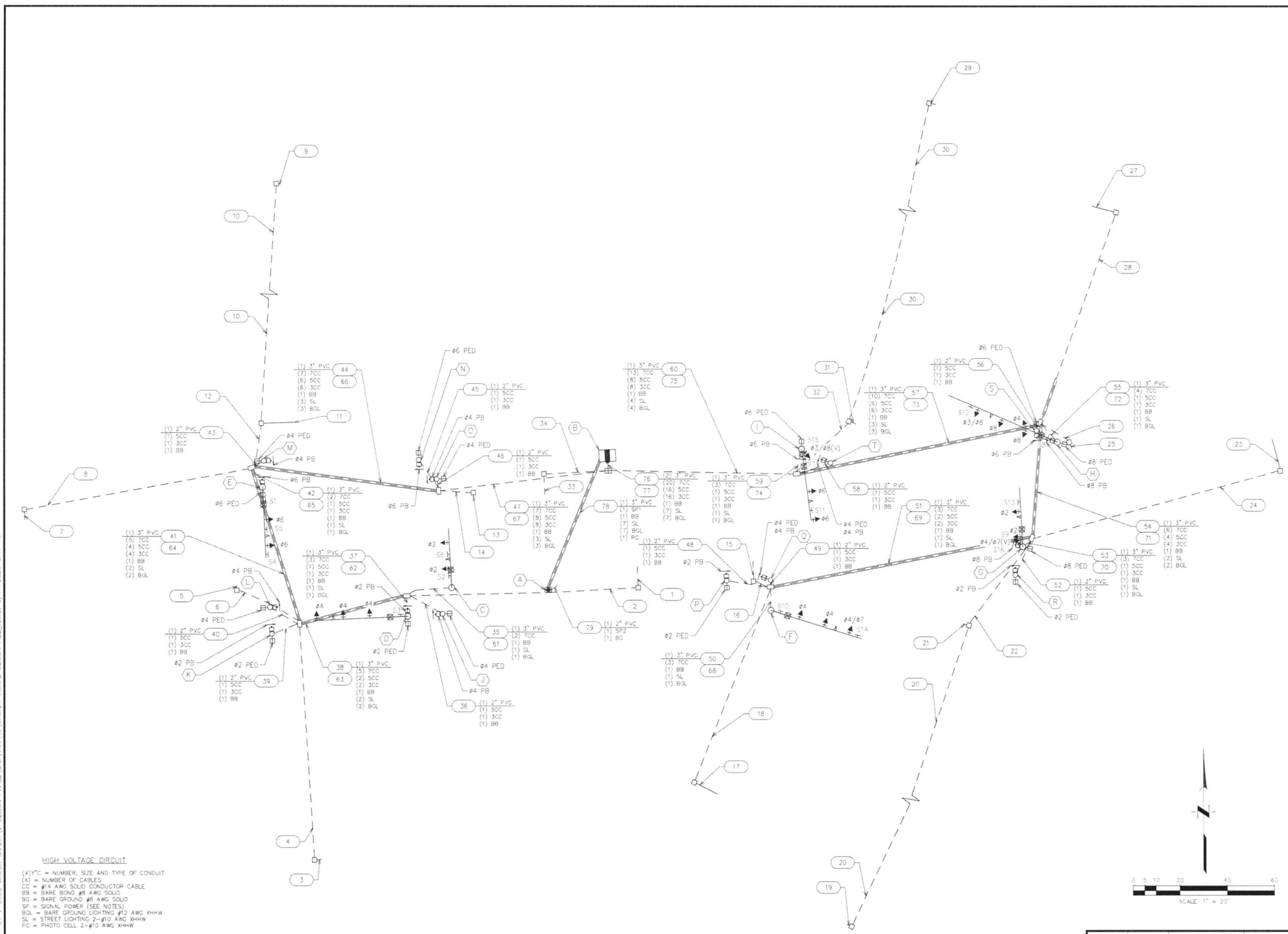
WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 51 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

PROFESSIONAL ENGINEER
TYLER H. COWSER
147969
STATE OF TEXAS
6/17/2025
HOUSTON, TEXAS

K:\14760\14760-0021-01 T-05535 WAUGH SAFETY\2 DESIGN PHASE\CAD\TRAFFIC\MASTER SIGNAL DESIGN FILE.DWG, 6/17/2025 1:41 PM



HIGH VOLTAGE CIRCUIT

(X)Y'C = NUMBER, SIZE AND TYPE OF CONDUIT
(X) = NUMBER OF CABLES
CC = #4 AWG SOLID CONDUCTOR CABLE
BB = BARE BOND #8 AWG SOLID
BG = BARE GROUND #8 AWG SOLID
SP = SIGNAL POWER (SEE NOTES)
BGL = BARE GROUND LIGHTING #12 AWG XHHW
SL = STREET LIGHTING 2-#10 AWG XHHW
PC = PHOTO CELL 2-#10 AWG XHHW

NOTES:
SP1 SHALL CONSIST OF: 6-#4 AWG XHHW
2 - WHITE
1 - BLACK
1 - RED
2 - GREEN

SP2 SHALL CONSIST OF: 3-#4 AWG XHHW WIRE WITH GROUND

LEGEND

- PEDESTAL POLE
- POLE W/MAST ARM
- LUMINAIRE
- VEHICLE SIGNAL HEAD W/ BLK BACK PLATE & YLW RETROREFL BDR
- PEDESTRIAN SIGNAL HEAD
- PEDESTRIAN PUSH BUTTON
- PULL BOX - TYPE A
- PULL BOX - TYPE B
- PULL BOX - TYPE C
- CONDUIT
- CONDUIT (BORED)
- PRE-EMPT SENSOR
- CONTROLLER CABINET W/ UPS
- METERED POWER PEDESTAL
- MAST ARM SIGN
- SAW-CUT LOOP DETECTOR
- LANE ASSIGNMENT ARROW

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Mike Brower — 05/29/25
Date

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Signature valid for six months.

Mike Brower — 05/29/25
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.

Marc F Johnson — 5/29/25
Date

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-25290 & 10046100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., Proj 6/17/2025
STATE OF TEXAS
TYLER H. DOWSER
147989
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR/S. HEIGHTS BLVD AT FEAGAN ST CABLE SCHEDULE

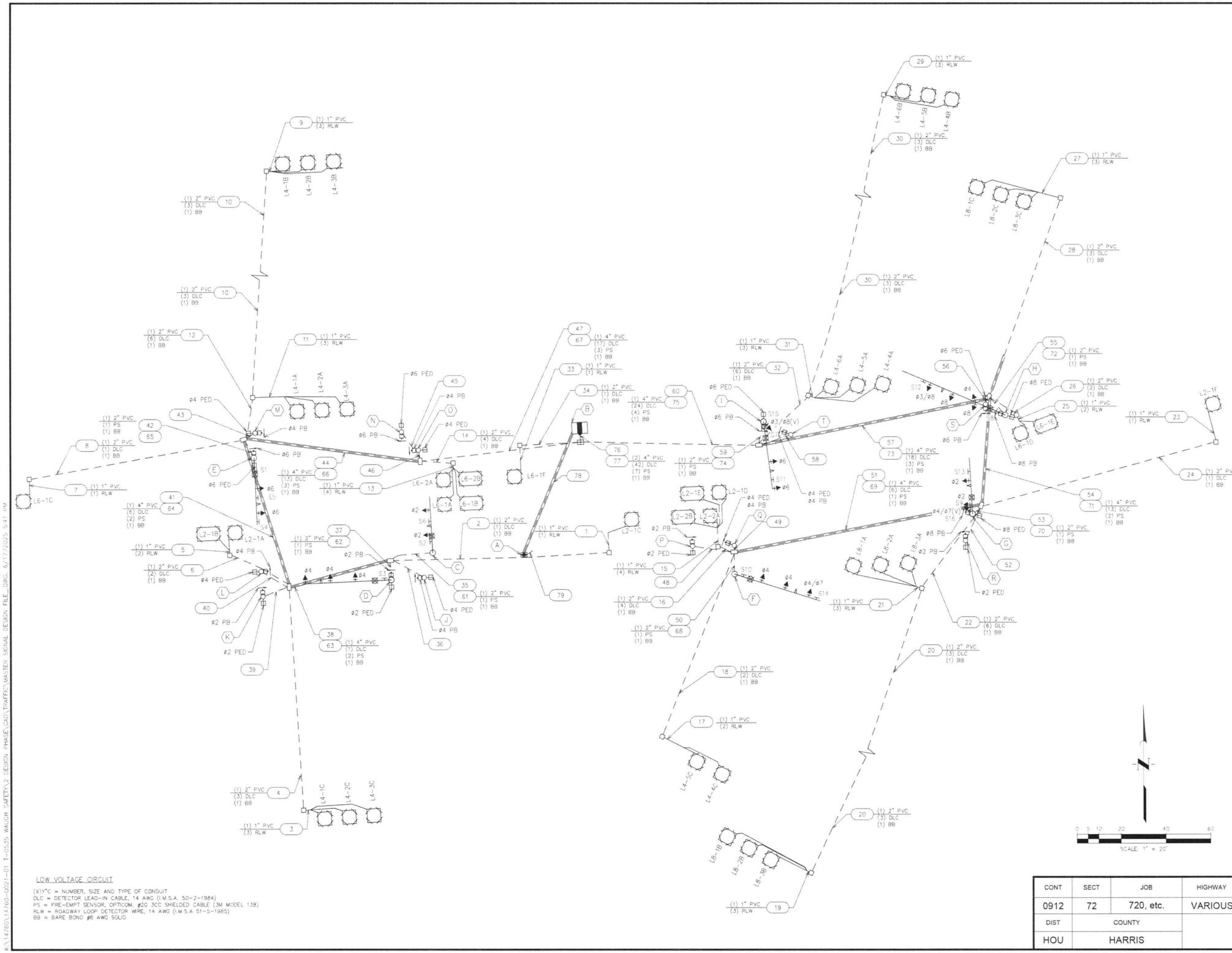
WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012	
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON PDC	
TOMS MATHEW	
SHEET NO. 52 OF 72	

REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
TYLER H. DOWSER
147989
LICENSED PROFESSIONAL ENGINEER
HOUSTON, TEXAS

K:\14760\1760-002-01 T-0515 WAUGH SAFETY\2 DESIGN PHASE\CAD\TRAFFIC\MASTER SIGNAL DESIGN FILE.dwg, 6/17/2025 1:41 PM



LOW VOLTAGE CIRCUIT

(X)Y"C = NUMBER, SIZE AND TYPE OF CONDUIT
DLC = DETECTOR LEAD-IN CABLE, 14 AWG (I.M.S.A. 50-2-1984)
PS = PRE-EMPT SENSOR, OPTICOM, ø20 3CC SHIELDED CABLE (3M MODEL 138)
RLW = ROADWAY LOOP DETECTOR WIRE, 14 AWG (I.M.S.A 51-5-1985)
BB = BARE BOND #6 AWG SOLID

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

LEGEND

- PEDESTAL POLE
- POLE W/MAST ARM
- LUMINAIRE
- VEHICLE SIGNAL HEAD W/ BLK BACK PLATE & YLW RETROREFL BDR
- PEDESTRIAN SIGNAL HEAD
- PEDESTRIAN PUSH BUTTON
- PULL BOX - TYPE A
- PULL BOX - TYPE B
- PULL BOX - TYPE C
- CONDUIT
- CONDUIT (BORED)
- PRE-EMPT SENSOR
- CONTROLLER CABINET W/ UPS
- METERED POWER PEDESTAL
- MAST ARM SIGN
- SAW-CUT LOOP DETECTOR
- LANE ASSIGNMENT ARROW

NO.	DATE	REVISION	APP'D

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

VERIFICATION OF PRIVATE UTILITY LINES

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6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Lyle Cowan P.E., Proj. 6/17/2025
STATE OF TEXAS
TYLER H. COWSER
147988
LICENSED
PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR/S. HEIGHTS BLVD
AT FEAGAN ST
CABLE SCHEDULE

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PCO	
TOMS MATHEW	
SHEET NO. 53 OF 72	

PUBLIC WORKS & ENGINEERING
HOUSTON, TEXAS

K:\14760\14760-0001-01 T-0035 WAUGH SAFETY\2 DESIGN PHASE\CAD\TRAFFIC\WASTER SIGNAL DESIGN FILE_DWG, 6/17/2025 5:41 PM

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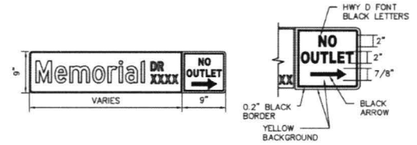
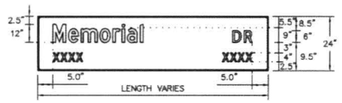
POST MOUNTED STREET NAME SIGN W/ NO OUTLET SIGN



D3 – POST MOUNTED STREET NAME SIGN

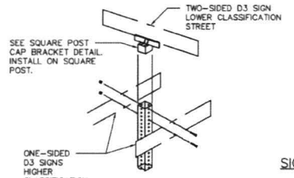
OVERHEAD STREET NAME SIGN DETAIL



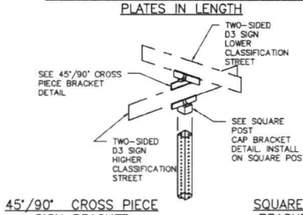
D3 – STREET NAME SIGN

	POST–MOUNTED SIGN	OVERHEAD SIGN
HEIGHT	9"	24"
LENGTH	30" MIN 48" MAX 6" INCREMENTS OF LENGTH	10" MAX 2' INCREMENT OF LENGTH
THICKNESS	0.125"	0.080"
SUBSTREATE	ALLUMINUM ALLOY, 5052–H38 (ASTM B–209)	
SIGN FACE MATERIALS	GREEN FILM OVER DIAMOND GRADE VIP SHEETING	
LEGENDS AND SYMBOLS	HIGHWAY GOTHIC SERIES D (USUAL) HIGHWAY GOTHIC SERIES C OR B FOR MAXIMUM LENGTH SIGN BLACK	
COLOR	LETTERS–WHITE REFLECTIVE BORDER–WHITE REFLECTIVE BACKGROUND–GREEN REFLECTIVE	

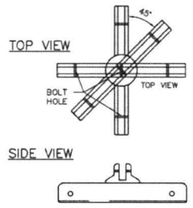
D3 SIGNS GREATER THAN 42" PLATES IN LENGTH



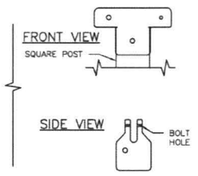
D3 SIGNS LESS THAN OR EQUAL TO 42" PLATES IN LENGTH



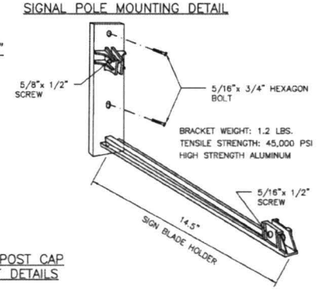
45°/90° CROSS PIECE SIGN BRACKET



SQUARE POST CAP BRACKET DETAILS



SIGNAL POLE MOUNTING DETAIL



NOTES:

1. TYPICAL SIGN PLATE SHOULD BE 30" MAX.
2. LONGER SIGN PLATE MUST BE APPROVED BY THE CITY TRAFFIC ENGINEER.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STREET NAME SIGN AND SIGN MOUNTING

(SCALE: NOT TO SCALE)

APPROVED BY:

Developed by: Sohail Kausar — CITY ENGINEER
Developed by: Carl Haddock — DIRECTOR OF HPW
Approved by: Liang Hsuyen — CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 DWG NO: 01554–03

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

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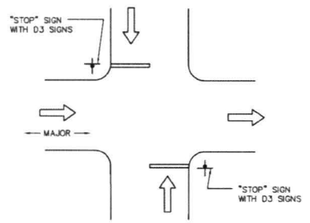
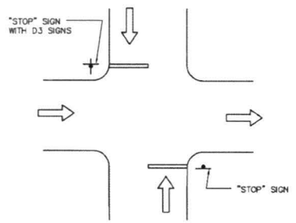
TYPICAL SIGN PLACEMENT



TWO–WAY STOP
AND ONE–WAY OPERATION
ON MAJOR/LOCAL INTERSECTION



TWO–WAY STOP
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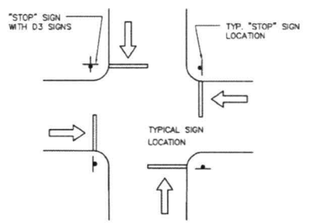
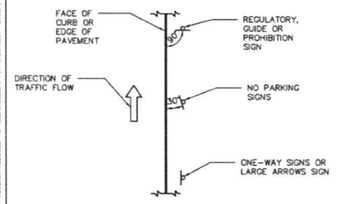
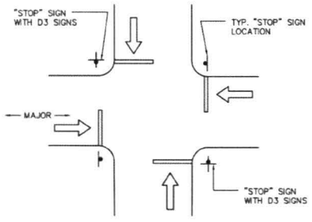


FOUR–WAY STOP CONTROL
ON LOCAL/LOCAL INTERSECTION



MAST ARM INSTALLATION
REFER TO TRAFFIC SIGNAL DETAILS
FOR ADDITIONAL INFORMATION.



FOUR–WAY STOP CONTROL
ON MAJOR/LOCAL INTERSECTION

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL SIGN PLACEMENT

(SCALE: NOT TO SCALE)

APPROVED BY:

Developed by: Sohail Kausar — CITY ENGINEER
Developed by: Carl Haddock — DIRECTOR OF HPW
Approved by: Liang Hsuyen — CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 DWG NO: 01554–07

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NO.	DATE	REVISION	APP.

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VERIFICATION OF PRIVATE UTILITY LINES

N/A
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.

N/A
Date
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713-850-9000

QUIDDITY
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6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., Proj 8/17/2025
STATE OF TEXAS — TYLER H. COWSER — 147989 — LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 1 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-4	ACCEPTED BY PUBLIC WORKS
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PROJ.	
TOMS MATHEW	
SHEET NO. 54 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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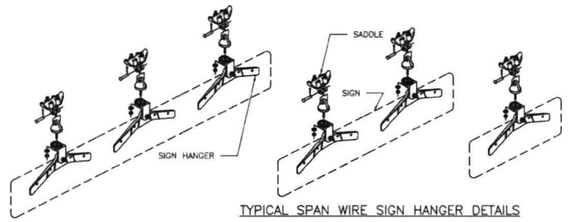
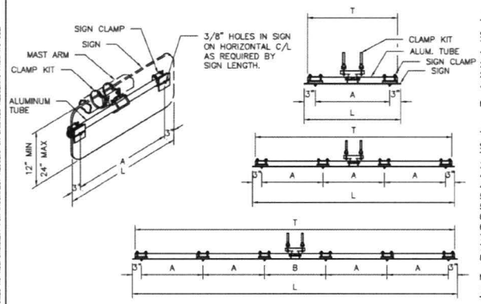


TYPICAL SPAN WIRE SIGN HANGER DETAILS

NOTES:

1. CONTRACTOR SHALL USE PELCO PARTS OR AN APPROVED EQUAL.
2. CONTRACTOR SHALL FURNISH ALL HARDWARE FOR A COMPLETE INSTALLATION.
3. THE 90 DEGREE SPAN WIRE CLAMPS (SADDLES) ARE ATTACHED TO TETHERS (SWAY CABLES).
4. CONTRACTOR SHALL FURNISH ONE (1) ADJUSTABLE FREE SWINGING SIGN HANGER PER STREET NAME SIGN SMALLER THAN 3'-0". SIGNS 3'-0" TO 6'-0" REQUIRE TWO (2) HANGERS. SIGNS LARGER THAN 6'-0" REQUIRE THREE (3) HANGERS.
5. SEE SIGN MOUNTING SERIES FOR STREET NAME SIGN DETAILS.



TYPICAL MAST ARM SIGN MOUNT DETAILS

SIGNS (1'-6" TO 3'-0" LONG)

SIGN LENGTH (L)	TUBE LENGTH (T)	A
1'-6"	16"	12"
2'-0"	22"	18"
2'-6"	28"	24"
3'-0"	34"	30"

MAXIMUM SIGN HEIGHT: 48"

SIGNS (3'-6" TO 8'-0" LONG)

SIGN LENGTH (L)	TUBE LENGTH (T)	A
3'-6"	40"	12"
4'-0"	46"	14"
4'-6"	52"	16"
5'-0"	58"	18"
5'-6"	64"	20"
6'-0"	70"	22"
6'-6"	76"	24"
7'-0"	82"	26"
7'-6"	88"	28"
8'-0"	94"	30"

MAXIMUM SIGN HEIGHT: 24"

SIGNS (8'-6" TO 10'-0" LONG)

SIGN LENGTH (L)	TUBE LENGTH (T)	A	B
8'-6"	100"	19"	20"
9'-0"	106"	20"	22"
9'-6"	112"	21"	24"
10'-0"	118"	22"	26"

MAXIMUM SIGN HEIGHT: 16"

SIGN SQUARE FOOTAGE NOT TO EXCEED ROTATIONAL RESISTANCE CAPACITY DEFINED BY MOUNTING HARDWARE MANUFACTURER.

SIGN CLAMP DETAIL

GUSSETED TUBE CROSS SECTION

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

OVERHEAD STREET NAME SIGN MOUNTING DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER	CITY TRAFFIC ENGINEER	DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01554-11

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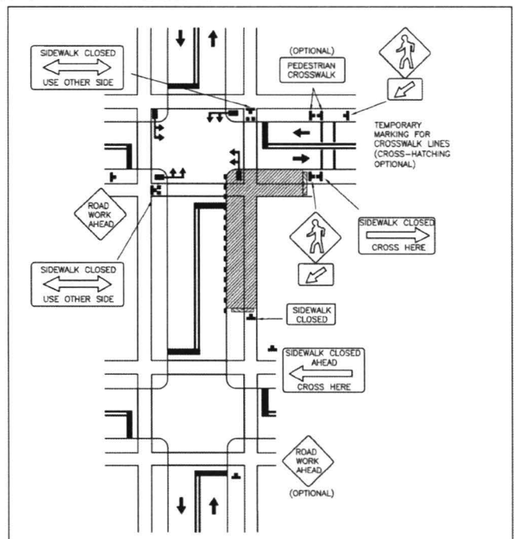

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CROSSWALK CLOSURES AND PEDESTRIAN DETOURS

(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER	CITY TRAFFIC ENGINEER	DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01555-16

NO.	DATE	REVISION	APP.

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SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., PTOE 8/17/2025
STATE OF TEXAS
TYLER H. COWSER
147989
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 2 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	TOMS MATHEW
SHEET NO.	55 OF 72

FOR CITY OF HOUSTON USE ONLY
80160

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
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HOU	HARRIS		

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FOUDATION DESIGN TABLE									
POLE MARK	DRILLED SHAFT DIA.	REINFORCING STEEL		DRILLED SHAFT LENGTH FT.	BOLT CIRCLE DIA.	FOUNDATION DESIGN LOADS (1)			TYPICAL APPLICATION
		VERT. BARS	SPIRAL & PITCH			MOMENT K-FT.	SHEAR KIPS	TORQUE K-FT.	
HOU 1	30"	8-#9 BAR	#3 BAR @9"	14'-0"	18"	72.2	3.4	51.9	MAST ARM ASSEMBLY (25'-35') IN COHESIVE SOILS
HOU 2	30"	8-#9 BAR	#3 BAR @9"	18'-0"	18"	89.9	4.0	98.0	MAST ARM ASSEMBLY (40'-55') IN COHESIVE SOILS MAST ARM ASSEMBLY (25'-55') IN NON-COHESIVE SOILS

FOUNDATION DESIGN TABLE NOTES:

(1) FOUNDATION DESIGN LOADS ARE THE ALLOWABLE MOMENTS, SHEARS AND TORQUES AT THE TOP OF THE FOUNDATION.

(2) CONSTRUCT IN ACCORDANCE WITH CITY OF HOUSTON SPECIFICATION SECTION 02465, "DRILLED SHAFT FOUNDATIONS".

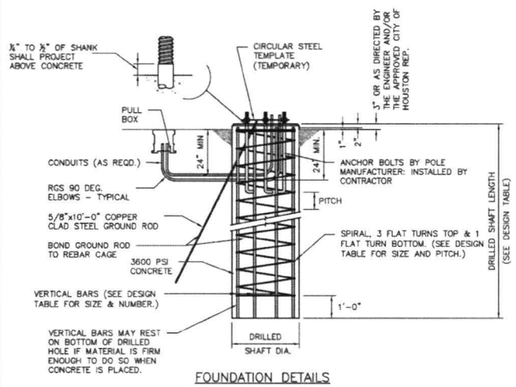
(3) FOUNDATION DESIGN IS BASED UPON AN UNDRAINED SHEAR STRENGTH OF 1500 PSF FOR COHESIVE SOILS AND A TEXAS CONE PENETROMETER MINIMUM OF 10 BLOWS/FOOT IN NON-COHESIVE SOILS. WHERE COHESIVE AND NON-COHESIVE LAYERS EXIST WITHIN THE SPECIFIED SHAFT LENGTH, THE NON-COHESIVE SOILS SHALL GOVERN. LOWER SOIL PARAMETERS WILL REQUIRE A SPECIAL DESIGN.

GENERAL NOTES:

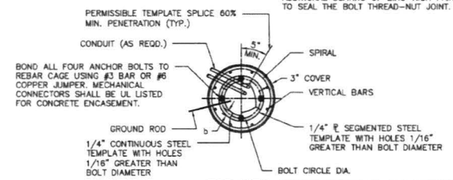
1. DESIGN IS FOR CITY OF HOUSTON STANDARD TRAFFIC SIGNAL MAST ARM SUPPORT STRUCTURES BY VALMONT INDUSTRIES, INC.
2. DESIGN CONFORMS TO 2001 AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARES AND TRAFFIC SIGNALS" AND INTERIM REVISIONS THERETO FOR A 90 MPH WIND ZONE WITH A 1.3 GUST FACTOR AND ACI "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-02).
3. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
4. CONCRETE SHALL BE 6 SACK, 3600 PSI.
5. ALL ANCHOR BOLTS SHALL BE GALVANIZED THE ENTIRE LENGTH OF BOLT. EXPOSED NUTS AND WASHERS SHALL ALSO BE GALVANIZED.

INSTALLATION PROCEDURE

THREADS OF ANCHOR BOLTS SHALL BE COATED WITH PIPE JOINT COMPOUND PRIOR TO INSTALLATION OF UPPER NUTS WHEN ERECTING POLE. AFTER POLE IS PLUMBED AND IN PERMANENT ALIGNMENT, THE EXPOSED THREADS OF PAINTED BOLTS SHALL BE CLEANED AND AN ADDITIONAL COATING OF ZINC-RICH PAINT APPLIED TO SEAL THE BOLT THREAD-NUT JOINT.



FOUNDATION DETAILS



TOP VIEW

NOTE:

1. b = MINIMUM STEEL TEMPLATE WIDTH EQUAL TO TWO TIMES ANCHOR BOLT DIAMETER.
2. STEEL TEMPLATE MAY BE OF CONTINUOUS WIDTH OR SEGMENTED WIDTH.
3. SEE FOUNDATION DESIGN TABLE FOR BOLT CIRCLE DIAMETER.
4. BOLTS SHOULD BE CHECKED FOR PLUMB AFTER CONCRETE IS POURED AND BEFORE INITIAL SET.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DRILLED SHAFT FOUNDATIONS

(SCALE: NOT TO SCALE)

APPROVED BY:

Digitally signed by Sahal Kaisar — CITY ENGINEER
Digitally signed by Carol Haddock — DIRECTOR OF HPW
Digitally signed by KHANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV-27-2023 DWG NO: 02465-01

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ASSUMES RESPONSIBILITY FOR CORRECT DESIGN AND DETAILING OF ALL ITEMS SHOWN. THE USE OF THIS STANDARD BY ANY PARTY OTHER THAN THE CITY OF HOUSTON (COH) OR ITS CONSULTANTS IS AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO THE COH. BY AUTHORIZING THEIR USE, THE EOR AGREES TO INDEMNIFY AND HOLD HARMLESS THE COH AND ITS OFFICERS, AGENTS AND EMPLOYEES FROM ANY AND ALL CLAIMS, LOSSES, DAMAGES, CAUSES OF ACTION, SUITS AND LIABILITY OF EVERY KIND, INCLUDING EXPENSES OF LITIGATION, COURT COSTS AND ATTORNEY'S FEES, FOR INJURY TO OR DEATH OF ANY PERSON, OR FOR DAMAGE TO ANY PROPERTY, ARISING OUT OF OR IN CONNECTION WITH THE USE OF THIS STANDARD FOR ANY PURPOSE. WHATSOEVER, THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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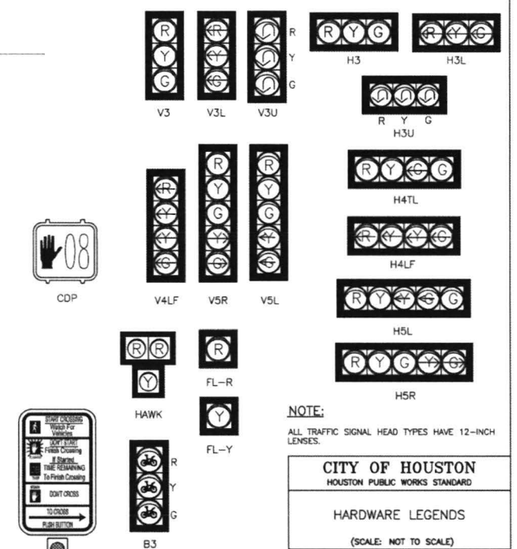
	NEW	EXISTING
TRAFFIC SIGNAL POLE	○	○
PEDESTAL POLE	○	○
POLE W/MAST ARM	○———	○- - - -
VEHICLE SIGNAL HEAD	↓	↓
VEHICLE SIGNAL HEAD W/BACK PLATE	↓	↓
PEDESTRIAN SIGNAL HEAD	⊟	⊟
PEDESTRIAN PUSH BUTTON	⊡	⊡
PULL BOX - TYPE A	◇	◇
PULL BOX - TYPE B	▭	▭
PULL BOX - TYPE C	⊞	⊞
PULL BOX - TYPE B W/EXTENSION	⊠	⊠
CONDUIT	——	——
VIDEO DETECTION CAMERA	⊡	⊡
PRE-EMPT SENSOR	⊼	⊼
LUMINAIRE	⊗	⊗
LUMINAIRE W/PHOTO CELL	⊗	⊗
CONTROLLER CABINET	▮	▮
METERED POWER PEDESTAL	▣	▣
POLE MOUNTED METER	●—	○—
FIBER OPTIC CONDUIT	—FO—	—FO—
MAST ARM SIGN	⊥	⊥

SIGNAL TYPES



NOTE:

ALL TRAFFIC SIGNAL HEAD TYPES HAVE 12-INCH LENSES.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

HARDWARE LEGENDS

(SCALE: NOT TO SCALE)

APPROVED BY:

Digitally signed by Sahal Kaisar — CITY ENGINEER
Digitally signed by Carol Haddock — DIRECTOR OF HPW
Digitally signed by KHANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV-27-2023 DWG NO: 02893-01

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

N/A — 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.

N/A — 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.

N/A — Date

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 100416200
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., PTOE 6/17/2025
STATE OF TEXAS — TYLER H. COWSER — 147989 — LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 3 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	TOMS MATHEW
SHEET NO.	56 OF 72

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

FORMERLY BY HOUSTON USE ONLY
80160

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\TRAFFIC\TRAFFIC STANDARDS.DWG, 2/26/2025 1:41 PM

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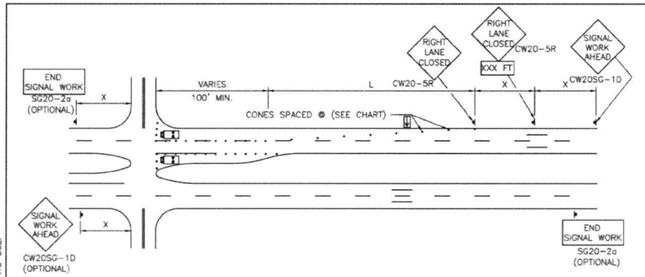
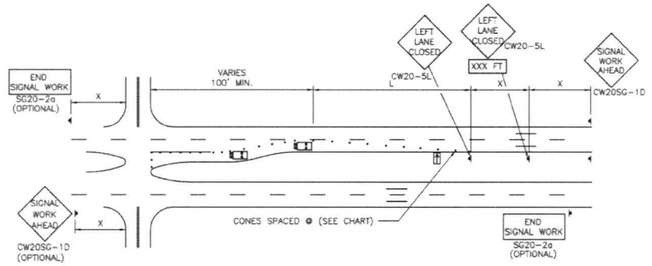
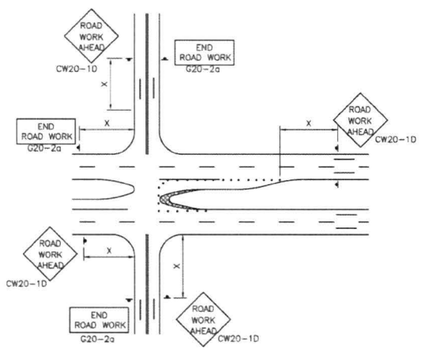


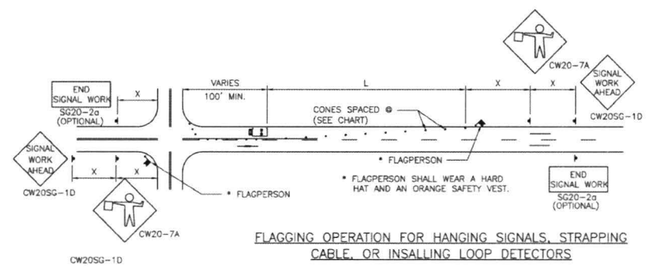
ONE LANE CLOSURE W/ RIGHT LANE AND/OR LEFT TURN LANE CLOSED



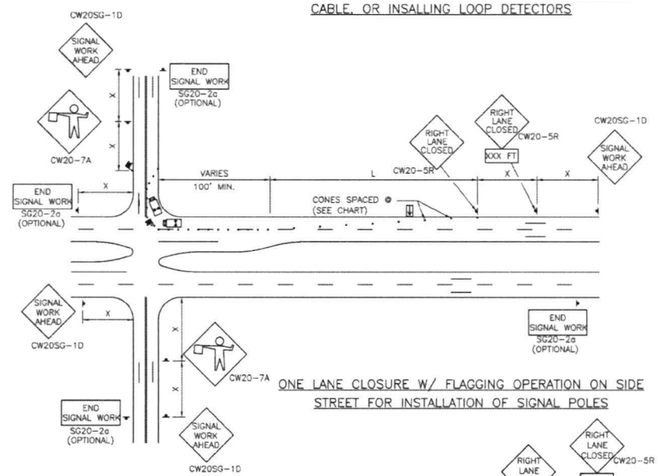
ONE LANE CLOSURE W/ LEFT LANE AND/OR LEFT TURN LANE CLOSED



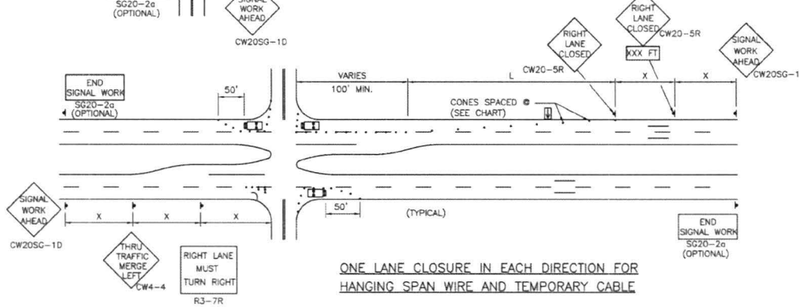
MEDIAN NOSE MODIFICATION



FLAGGING OPERATION FOR HANGING SIGNALS, STRAPPING CABLE, OR INSALLING LOOP DETECTORS



ONE LANE CLOSURE W/ FLAGGING OPERATION ON SIDE STREET FOR INSTALLATION OF SIGNAL POLES



ONE LANE CLOSURE IN EACH DIRECTION FOR HANGING SPAN WIRE AND TEMPORARY CABLE

TYPICAL TRANSITION LENGTHS

SUGGESTED MAXIMUM SPACING OF DEVICES

POSTED SPEED	FORMULA	MINIMUM DESIRABLE TAPER LENGTHS **			SUGGESTED MAXIMUM SPACING OF DEVICE		MINIMUM SIGN SPACING X DISTANCE
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT	
30	$L=WS^2/60$	150'	165'	180'	30'	60'–75'	120'
35		205'	225'	245'	35'	70'–90'	160'
40		265'	295'	320'	40'	80'100'	240'
45		450'	495'	540'	45'	90'–110'	320'
50	$L=WS$	500'	550'	600'	50'	100'–125'	400'
55		550'	605'	660'	55'	100'–140'	500'
60		600'	660'	720'	60'	120'–150'	600'

** TAPER LENGTHS HAVE BEEN ROUNDED OFF
L=LENGTH OF TAPER (FT.)
W=WIDTH OF OFFSET (FT.)
S=POSTED SPEED(MPH)

NOTES:

1. ALL TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.
2. THE MINIMUM LANE WIDTH ALLOWED IS 10 FEET. THE MINIMUM BUFFER ZONE BETWEEN THE WORK ZONE AND ADJACENT TRAFFIC IS 2 FEET.
3. FLORESCENT ORANGE SHALL BE THE BACKGROUND COLOR ON ALL WORK ZONE SIGNS.
4. THE CONTRACTOR SHALL REMOVE ADVANCE SIGNS WHEN NO CONSTRUCTION OPERATIONS ARE UNDERWAY.
5. OBSTRUCTIONS OR HAZARDS AT THE WORK AREA SHALL BE CLEARLY MARKED AND DELINEATED AT ALL TIMES.
6. ALL HOLES, TRENCHES OR OTHER HAZARDOUS AREAS SHALL BE ADEQUATELY PROTECTED BY LIGHTS OR OTHER PROTECTIVE DEVICES.
7. TRENCHES SHALL BE COVERED OR SURROUNDED WITH ORANGE PLASTIC CONSTRUCTION FENCE AS DIRECTED BY THE ENGINEER.
8. FLAGGER AND FCW20-7a SIGN MAY BE REQUIRED ACCORDING TO FIELD CONDITIONS.
9. VEHICLES PARKED IN ROADWAY SHALL BE EQUIPPED WITH TWO STROBES.

LEGEND:

HEAVY WORK VEHICLE

FLASHING ARROW PANEL

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 01555–13

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TRAFFIC CONTROL PLAN FOR SIGNAL CONSTRUCTION

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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VERIFICATION OF PRIVATE UTILITY LINES

N/A
Date

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

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NA
Date

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MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-12280 & 10046200
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

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FB NO. 3124, Pages 1-4

STATE OF TEXAS
TYLER H. COWSER
147989
LICENSED PROFESSIONAL ENGINEER
Tyler Cowser P.E., PTOE
6/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 4 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 57 OF 72	

80160
CITY DRAWING NUMBER

NO.	DATE	REVISION	APP.

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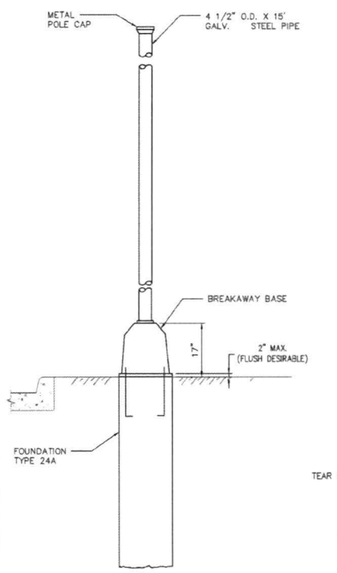
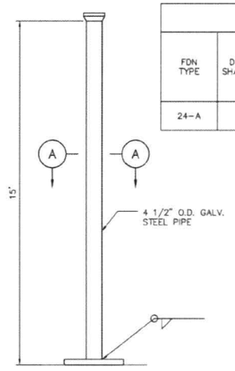




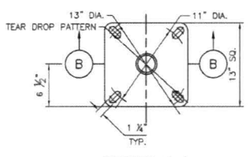
PEDESTAL POLE

FOUNDATION DESIGN TABLE										
FDN. TYPE	DRILLED SHAFT DIA.	REINFORCING STEEL		DRILLED SHAFT LENGTH FT	ANCHOR BOLT DESIGN (SEE NOTE 5)				FOUNDATION DESIGN LOAD (SEE NOTE 6)	
		VERT. BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER 10 BLOWS/ FT	ANCHOR BOLT DIA.	FY (KSI)	BOLT CIR. DIA.	ANCHOR TYPE	MOMENT K-FT	SHEAR KIPS
24-A	24"	4-#5 BARS	#2 BAR AT 12"	6	3/4"	36	*13"	1	10	1

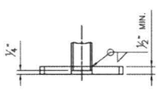
* 10 1/2" B.C. FOR PUSH BUTTON POLE

ANCHOR BOLT & TEMPLATE SIZES						
BOLT DIA. IN.	**BOLT LENGTH	TOP THREAD	BOTT. THREAD	BOLT CIRCLE	R_2	R_1
3/4"	1'-6"	3"	–	13"	7 1/8"	5 5/8"

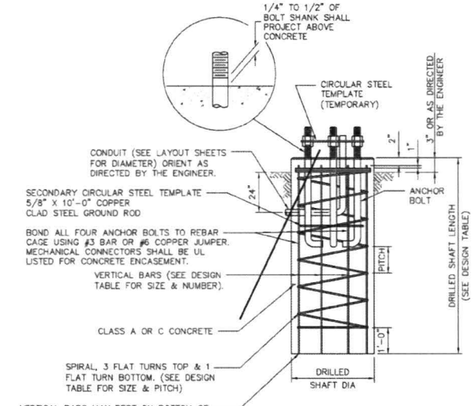
** MIN DIMENSIONS GIVEN, LONGER BOLTS ARE ACCEPTABLE.



SECTION A-A



SECTION B-B

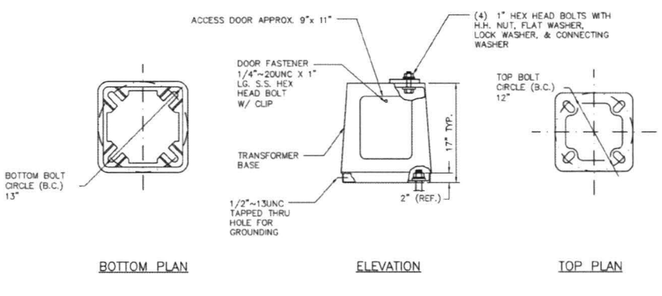


ELEVATION

FOUNDATION DETAILS

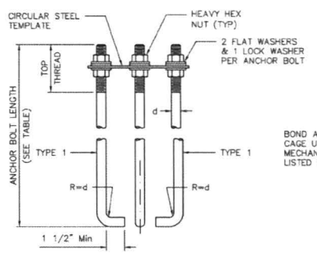
GENERAL NOTES

1. DESIGN CONFORMS TO 1994 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS AND INTERIM REVISIONS THERETO.
2. CONCRETE SHALL BE CLASS A OR C.
3. THREADS FOR ANCHOR BOLTS AND NUTS SHALL BE ROLLED OR CUT THREADS OF UNIFIED NATIONAL COARSE THREAD SERIES EXCEPT FOR A193B7 BOLTS WHICH SHALL HAVE 8 PITCH THREAD SERIES. BOLTS AND NUTS SHALL HAVE CLASS 2A AND 2B FIT TOLERANCES. GALVANIZED NUTS SHALL BE TAPPED AFTER GALVANIZING.
4. ANCHOR BOLTS THAT ARE 1" IN DIAMETER OR LESS SHALL CONFORM TO ASTM A36. GALVANIZE ALL ANCHOR BOLTS UNLESS OTHERWISE NOTED. EXPOSED NUTS SHALL BE GALVANIZED OR COATED WITH ZINC-RICH PAINT. WASHERS SHALL BE GALVANIZED. TEMPLATES AND EMBEDED NUTS NEED NOT BE GALVANIZED.
5. ANCHOR BOLT DESIGN DEVELOPS THE FOUNDATION CAPACITY GIVEN UNDER FOUNDATION DESIGN LOADS.
6. FOUNDATION DESIGN LOADS ARE THE ALLOWABLE MOMENTS AND SHEARS AT THE BASE OF THE STRUCTURE.
7. ANCHOR BOLT ASSEMBLY INSTALLATION PROCEDURE
   - 7.1. THREADS OF ANCHOR BOLTS SHALL BE COATED WITH PIPE JOINT COMPOUND PRIOR TO INSTALLATION OF UPPER NUTS WHEN ERECTING POLE. AFTER POLE IS PLUMBED AND IN PERMANENT ALIGNMENT, THE EXPOSED THREADS OF PAINTED BOLTS SHALL BE CLEANED AND AN ADDITIONAL COATING OF ZINC-RICH PAINT APPLIED TO SEAL THE BOLT THREAD-NUT JOINT.
8. DETAILS DEPICTED ON THIS SHEET SHOW A TYPICAL PEDESTAL POLE ASSEMBLY WITH A DRILLED SHAFT FOUNDATION.
9. USE 24 IN. DRILLED SHAFT FOUNDATION AS SHOWN.
10. PROVIDE BREAKAWAY FUSE HOLDER WITH DOUBLE-POLE HOUSING. ENSURE FUSE HOLDER IS POLARIZED, WATER-RESISTANT, UL RECOGNIZED, AND RATED FOR 30A MAXIMUM CURRENT CAPACITY AT 600V OR LESS. PROVIDE BREAKAWAY FUSE HOLDER FROM MANUFACTURER'S PRE-QUALIFIED BY TXDOT TRAFFIC OPERATIONS DIVISION. SEE https://www.txdot.gov/business/resources/materials/material-producer-list.html FOR LIST OF PRE-QUALIFIED MANUFACTURERS. CATEGORY IS "ROADWAY ILLUMINATION AND ELECTRICAL SUPPLIES." PROVIDE 10 AMP TIME DELAY FUSES.
11. POLE SHAFT SHALL BE ONE PIECE. ALUMINUM CONDUIT WILL NOT DEVELOP THE NECESSARY STRENGTH AND WILL NOT BE ALLOWED. IN HIGH WINDS, USE A POLE AND BASE COLLAR ASSEMBLY TO ADD STRENGTH AND PREVENT LOOSENING ON CONNECTION.
12. PER MANUFACTURER'S RECOMMENDATIONS, ENGAGE ALL THREADS ON THE PEDESTAL POLE BASE AND PIPE UNLESS THE PIPE IS FULLY SEATED INTO BASE.
13. PROVIDE NON-FUSED WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS FOR BREAKAWAY POLES (BUSSMANN HET, LITTELFUSE LET, FERRAZ-SHAWMUT FEBN, OR APPROVED EQUAL).
14. PROVIDE SIGNAL HEADS AND MOUNTING AS SHOWN ELSEWHERE ON THE PLANS.

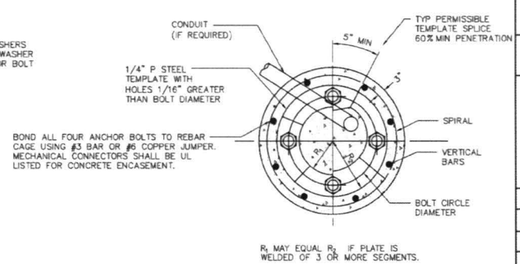


BOTTOM PLAN ELEVATION TOP PLAN

BREAKAWAY BASE DETAILS



HOOKED ANCHOR (TYPE 1)



R_t MAY EQUAL R_b IF PLATE IS WELDED OF 3 OR MORE SEGMENTS.

TOP VIEW

APPROVED BY:	APPROVED BY:
Signed by: Suhail Kanuar	Signed by: KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Signed by: Carl Hubbuch	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02465-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PEDESTAL/PUSHBUTTON POLE
DRILLED SHAFT FOUNDATION

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

NO.	DATE	REVISION	APP

NOTICE:
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MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10096100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., PTOE 6/17/2025
STATE OF TEXAS
TYLER H. COWSER
147988
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 5 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PQC	
TOMS MATHEW	
SHEET NO. 58 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

80160

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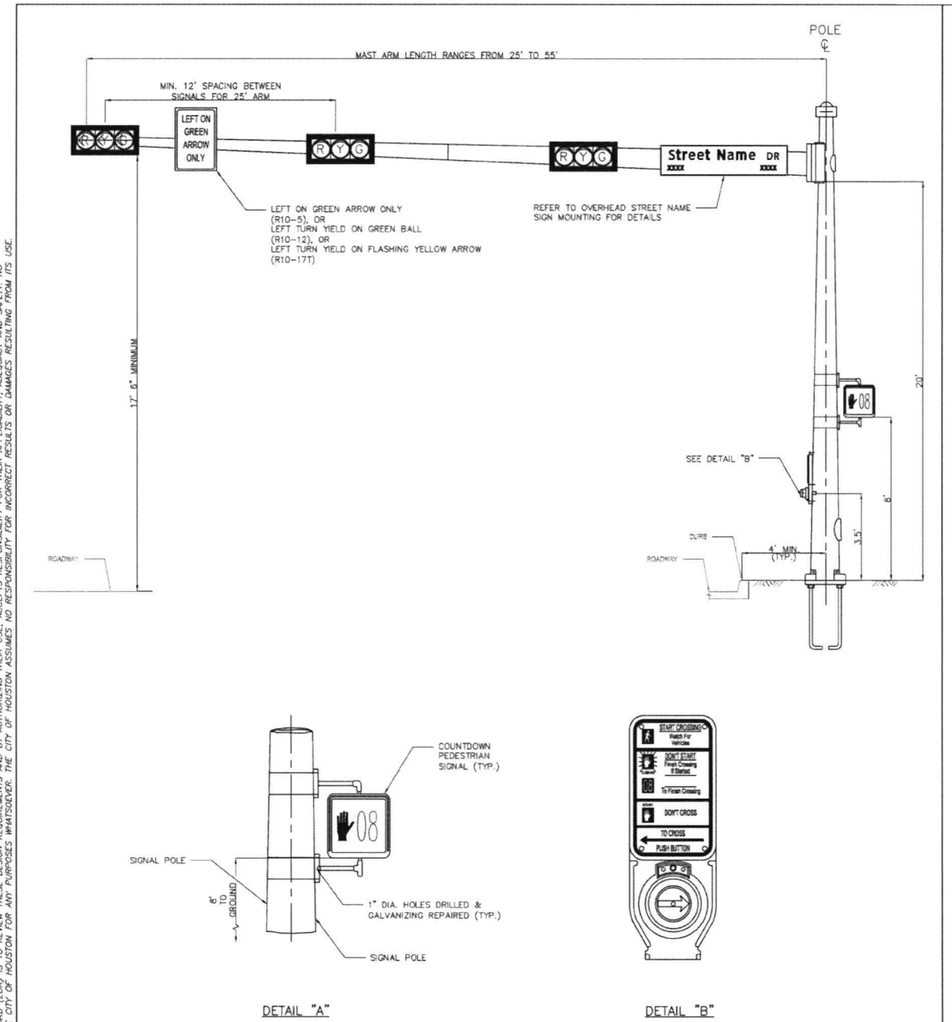
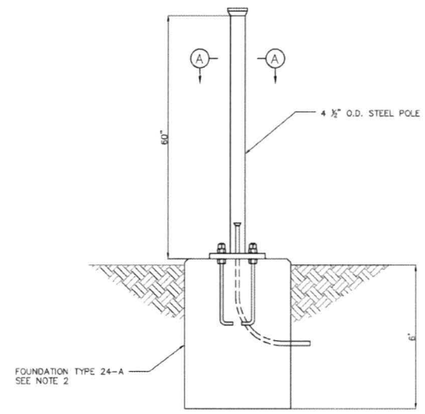


DETAIL "A"

TYPICAL PEDESTRIAN SIGNAL HEAD ON TRAFFIC POLE

DETAIL "B"

2-WIRE POLARA NAVIGATOR PUSH BUTTON STATION WITH R10-3e SIGN

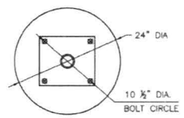


ELEVATION VIEW

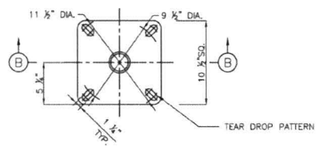
PEDESTRIAN PUSH BUTTON POLE

NOTE:

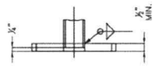
1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS STATED ON CITY OF HOUSTON STANDARD DETAIL 02465-02 "PEDESTAL/PUSH BUTTON POLE DRILLED SHAFT FOUNDATION".
2. REFER TO CITY OF HOUSTON STANDARD DETAIL 02465-02 "PEDESTAL/PUSHBTTON POLE DRILLED SHAFT FOUNDATION" FOR ANCHOR BOLT DETAILS.



FOUNDATION PLAN



SECTION A-A



SECTION B-B

APPROVED BY:	APPROVED BY:
Salud Ibarzabal	Hailing Nguyen
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02582-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL MAST ARM/POLE FIXTURE CONFIGURATION

FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE
NOT TO SCALE

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STATE OF TEXAS
TYLER H. DOWSER
147989
LICENSED PROFESSIONAL ENGINEER
Tyler Dowser P.E., Proe 6/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 6 OF 19

WAUGH SAFETY IMPROVEMENTS

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N-T05000-0012-7	
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AS NOTED	
CITY OF HOUSTON PE	
TOMS MATHEW	
SHEET NO. 59 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

DISCLAIMER:
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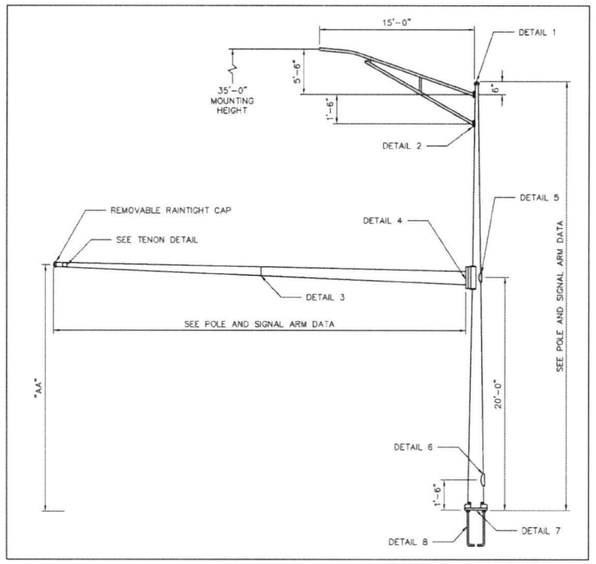
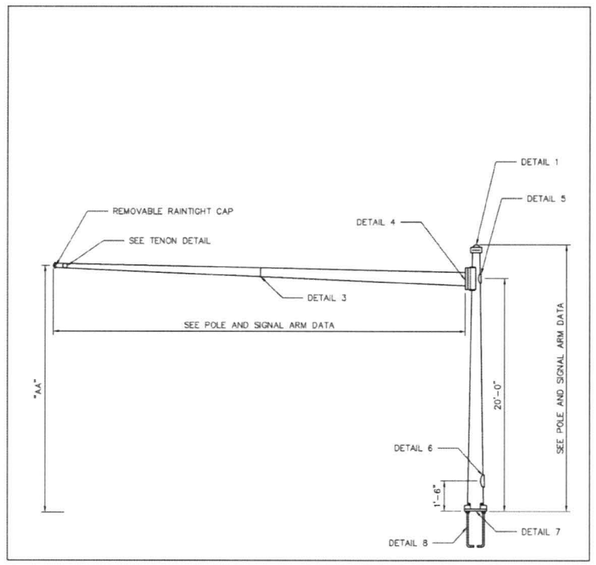
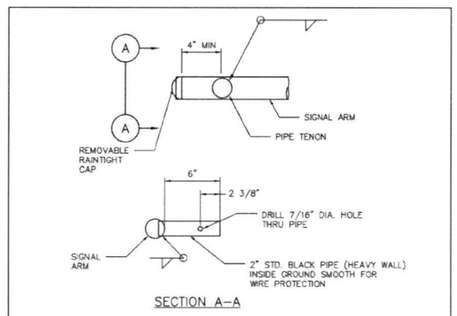






SECTION A–A

TENON DETAIL

ALTHOUGH RARE, VIBRATIONS SEVERE ENOUGH TO CAUSE DAMAGE CAN OCCASIONALLY OCCUR IN STRUCTURES OF ALL TYPES. BECAUSE THEY ARE INFLUENCED BY MANY INTERACTING VARIABLES, VIBRATIONS ARE GENERALLY UNPREDICTABLE. THE USER'S MAINTENANCE PROGRAM SHOULD INCLUDE OBSERVATION FOR EXCESSIVE VIBRATION AND EXAMINATION FOR ANY STRUCTURAL DAMAGE OR BOLT LOOSENING. ARMS SHALL BE VISUALLY INSPECTED IN 5 TO 20 MPH WIND CONDITIONS AFTER SIGNAL HEAD INSTALLATION AND, IF VERTICAL MOVEMENTS WITH A TOTAL EXCURSION (MAXIMUM POSITIVE TO MAXIMUM NEGATIVE) OF MORE THAN APPROXIMATELY 8 INCHES ARE OBSERVED AT ARM TIP, DAMPING DEVICES OR OTHER MEANS SHALL BE FITTED TO THE ARM(S). THE NECESSARY DAMPING DEVICE(S) OR OTHER REMEDIAL MEASURES SHALL BE AS RECOMMENDED BY THE CONTRACTOR. EXCESSIVE VIBRATIONS SHALL NOT BE ALLOWED TO CONTINUE FOR MORE THAN 2 DAYS.

VIBRATION DISCLAIMER

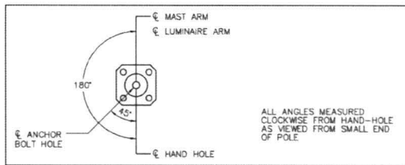
POLE AND MAST ARM DATA

DESIGNATION KEY			POLE TUBE						POLE BASE				ANCHOR BOLT				SIGNAL ARM TUBE				
POLE SERIES	POLE TYPE	SIGNAL ARM SPAN (FT)	BASE DIA. (IN)	TOP DIA. (IN) WITH LUM ARM	TOP DIA. (IN) WITHOUT LUM ARM	LENGTH (FT) WITH LUM ARM	LENGTH (FT) WITHOUT LUM ARM	GAUGE OR THK. (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE / SLOT "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GAUGE OR THICK (IN)	SPAN (FT)	TIP HEIGHT "AA" (FT)
HOU	1	25	13.00	8.80	10.00	30.00	21.50	3	19.00	18.00	2.25	2.50	2.25	89.00	7.00	9.00	8.00	3.50	7	25.00	20.2
		30															9.00	4.80	7	30.00	20.3
		35															10.00	5.10	7	35.00	20.3
HOU	2	40	13.00	8.80	10.00	30.00	21.50	0.375									10.50	4.90	7	40.00	20.3
		45															10.14	3.84	3	45.00	20.4
		50															11.00	4.00	3	50.00	20.4
		55															11.50	4.16	DET 3	55.00	20.5

MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
POLE SHAFT – 3 GAUGE	A595 GR.A	55	MAST ARM CONN. BOLTS	F3125 GR A325*	
POLE SHAFT – 0.375"	A572 GR.55	55	LUM. ARM CONN. BOLTS	SAE GR.5	36
MAST ARM SHAFT	A595 GR.A	55	ANCHOR BOLTS	F1554 GR.55	55
LUMINAIRE ARM SHAFT	2" SCH. 80 PIPE		GALVANIZING	A123 & A153	
ARM ATTACHMENT PLATE	A36	36			
BASEPLATE	A36	36			

*LUBRICATE IN FIELD IF NECESSARY IN LIEU OF THE REQUIREMENTS IN F3125 GR.A325.



RADIAL INDEX

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02582–02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TRAFFIC SIGNAL STRUCTURES

SHEET 01 OF 02

FOR CITY OF HOUSTON USE ONLY

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LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 7 OF 19

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012	80160
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AS NOTED	
CITY OF HOUSTON PUBLIC WORKS	
TOMS MATHEW	
SHEET NO. 60 OF 72	

PROFESSIONAL ENGINEER
HOUSTON, TEXAS

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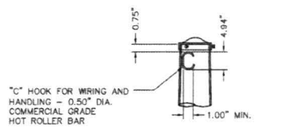
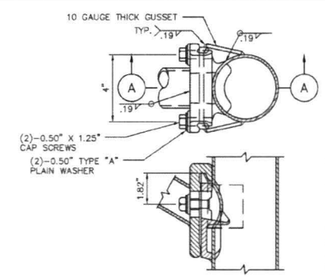
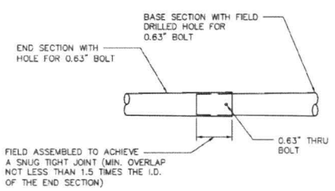


DETAIL 1 | POLE TOP

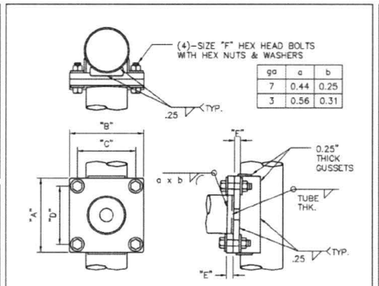


DETAIL 2 | LUMINAIRE ARM ATTACHMENT



ITEM	BASE SECTION		END SECTION	
	LENGTH	GAUGE	LENGTH	GAUGE
55.00'	26.42'	3	30.71'	7

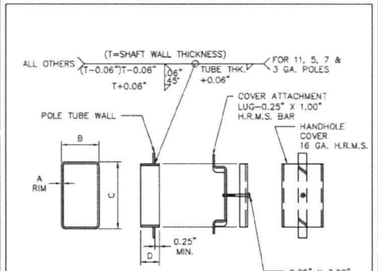
DETAIL 3 | SIGNAL ARM SLIP JOINT



ga	a	b
7	0.44	0.25
3	0.56	0.31

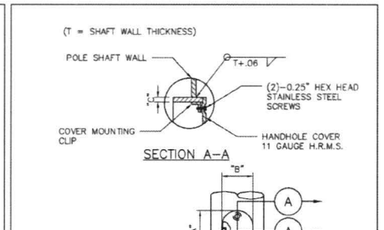
POLE TYPE	"A"	"B"	"C"	"D"	"E"	"F"
1	17.75"	17.75"	14.50"	14.50"	1.50"	1.25" X 4.50"
2	18.75"	18.75"	15.00"	15.00"	1.75"	1.50" X 5.25"

DETAIL 4 | SIGNAL ARM ATTACHMENT



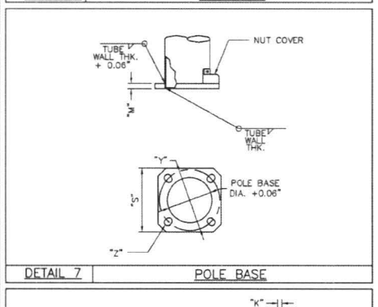
POLE TYPE	A	B	C	D
1	7 GA.	3.00"	5.00"	1.50"
2	0.50"	4.00"	6.00"	2.50"

DETAIL 5 | HANDHOLE

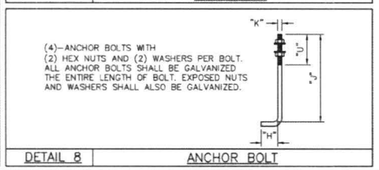


POLE TYPE	A	B	C
1	7.56"	5.19"	0.280"
2	7.31"	5.63"	0.432"

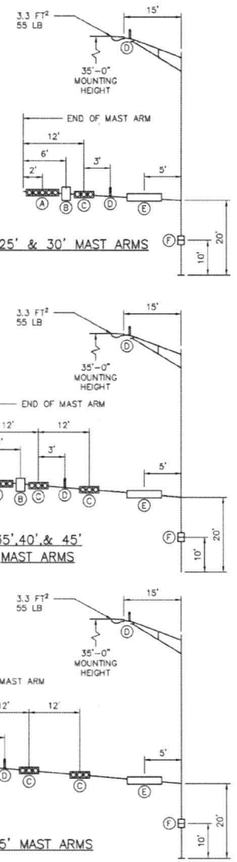
DETAIL 6 | HANDHOLE



DETAIL 7 | POLE BASE



DETAIL 8 | ANCHOR BOLT



DESIGN NOTE:

DESIGNS ARE BASED ON THE LOADING CHART SHOWN ON THIS DRAWING AND ARE IN ACCORDANCE WITH MATERIALS AND ALLOWABLE STRESS REQUIREMENTS OF THE 1994 AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" FOR A 90 MPH WIND ZONE WITH A 1.3 GUST FACTOR.

DEVICE	DESCRIPTION	PROJ. AREA (FT²)	WEIGHT (LBS)
A	12"–5 SEC. SIGNAL WITH BACKPLATES	13.33	96
B	30" X 36" SIGNAL ARM MOUNTED SIGN	7.50	15
C	12"–3 SEC. SIGNAL WITH BACKPLATES	8.67	53
D	VIVDS CAMERA	1.00	15
E	24" X 72" STREET NAME SIGN	12.00	30
F	PEDESTRIAN SIGNAL	4.00	40

MAXIMUM LOADING INFORMATION

APPROVED BY:	APPROVED BY:
Signed by: Sohail Bawani	Signed by: KEVING MATHEW
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Signed by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02582–03

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TRAFFIC SIGNAL STRUCTURES

SHEET 02 OF 02

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SHEET 8 OF 19

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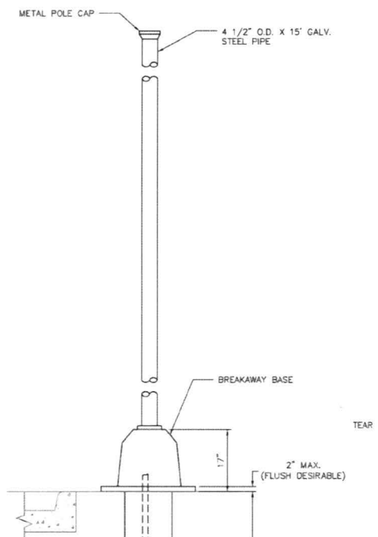
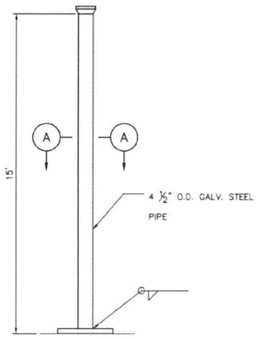
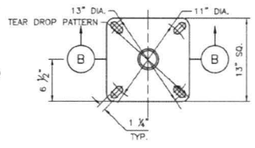




PEDESTAL POLE



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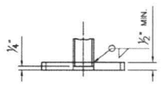

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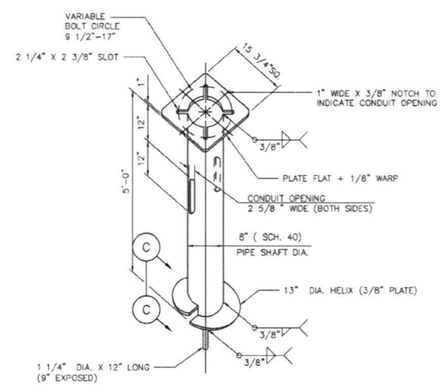
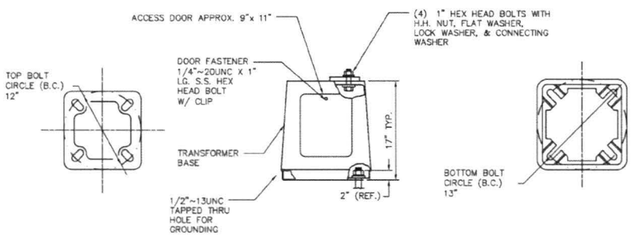
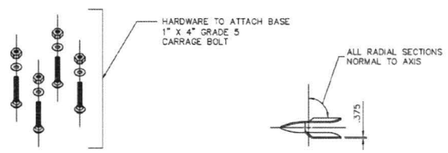


SCREW ANCHOR FOUNDATION DETAIL

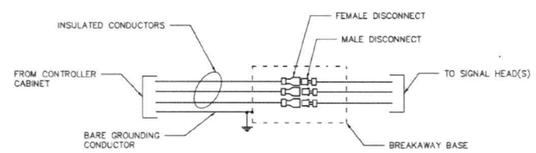


TOP PLAN ELEVATION BOTTOM PLAN

BREAKAWAY BASE DETAILS



HARDWARE DETAIL VIEW C



BREAKAWAY IN–LINE FUSE HOLDERS

NOTES:

1. DETAILS DEPICTED ON THIS SHEET SHOW A TYPICAL PEDESTAL POLE ASSEMBLY WITH SCREW–IN ANCHOR FOUNDATION TO BE UTILIZED FOR SCHOOL ZONE FLASHERS ONLY.
2. THE PEDESTAL POLE ASSEMBLY DEPICTED ON THIS SHEET IS DESIGNED FOR SIGNAL HEADS WHERE ELECTRICAL POWER IS NEEDED WITH A BREAKAWAY POLE.
3. PROVIDE BREAKAWAY FUSE HOLDER WITH DOUBLE–POLE HOUSING. ENSURE FUSE HOLDER IS POLARIZED, WATER–RESISTANT, UL RECOGNIZED, AND RATED FOR 30A MAXIMUM CURRENT CAPACITY AT 600V OR LESS. PROVIDE BREAKAWAY FUSE HOLDER FROM MANUFACTURERS PRE–QUALIFIED BY TXDOT TRAFFIC OPERATIONS DIVISION. SEE https://www.txdot.gov/business/resources/materials/material–producer–list.html FOR LIST OF PRE–QUALIFIED MANUFACTURERS. CATEGORY IS ROADWAY ILLUMINATION AND ELECTRICAL SUPPLIES. PROVIDE 10 AMP TIME DELAY FUSES.
4. UNLESS OTHERWISE SHOWN ON THE PLANS, PROVIDE POLE SHAFT AND BREAKAWAY BASE IN ACCORDANCE WITH THE REQUIREMENTS LISTED IN TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT) STANDARD SPECIFICATION ITEM "PEDESTAL POLE ASSEMBLIES".
5. SEE TxDOT SPECIAL SPECIFICATION 4923 (SS 4923),"SCREW–IN TYPE ANCHOR FOUNDATIONS" FOR FURTHER REQUIREMENTS.
6. PROVIDE SIGNAL HEADS AND MOUNTING AS SHOWN ELSEWHERE ON THE PLANS.
7. CONDUIT IN FOUNDATION AND WITHIN 6 IN. OF FOUNDATION IS SUBSIDIARY TO STANDARD SPECIFICATION ITEM, "PEDESTAL POLE ASSEMBLIES".
8. POLE SHAFT SHALL BE ONE PIECE. ALUMINUM CONDUIT WILL NOT DEVELOP THE NECESSARY STRENGTH AND WILL NOT BE ALLOWED. IN HIGH WINDS, USE A POLE AND BASE COLLAR ASSEMBLY TO ADD STRENGTH AND PREVENT LOOSENING ON CONNECTION.
9. PER MANUFACTURER'S RECOMMENDATIONS, ENGAGE ALL THREADS ON THE PEDESTAL POLE BASE AND PIPE UNLESS THE PIPE IS FULLY SEATED INTO BASE.
10. PROVIDE NON–FUSED WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS FOR BREAKAWAY POLES.(BUSSMANN HET, LITTELFUSE LET, FERRAZ–SHAWMUT FEBN, OR APPROVED EQUAL).

APPROVED BY:	APPROVED BY:
Signed by: Sukul Kanwar	Signed by: LIEMING NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Signed by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02582–04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PEDESTAL POLE WITH SCREW–IN ANCHOR FOUNDATION
(FOR SCHOOL ZONE FLASHERS ONLY)

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

NO.	DATE	REVISION	APP

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VERIFICATION OF PRIVATE UTILITY LINES

N/A
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.

N/A
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.

N/A
Date
Approved for AT&T underground conduit facilities only
Signature valid for one year.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-21290 & 10046100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., Prof. 6/17/2025
STATE OF TEXAS · TYLER H. COWSER · 147989 · LICENSED · PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 9 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PROJ	
TOMS MATHEW	
SHEET NO. 62 OF 72	

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. THE ENGINEER IN RESPONSIBLE CHARGE IS TO DETERMINE THE APPROPRIATENESS OF THE STANDARD FOR EACH USE AND IS RESPONSIBLE FOR ADJUSTING FOR SITE CONDITIONS AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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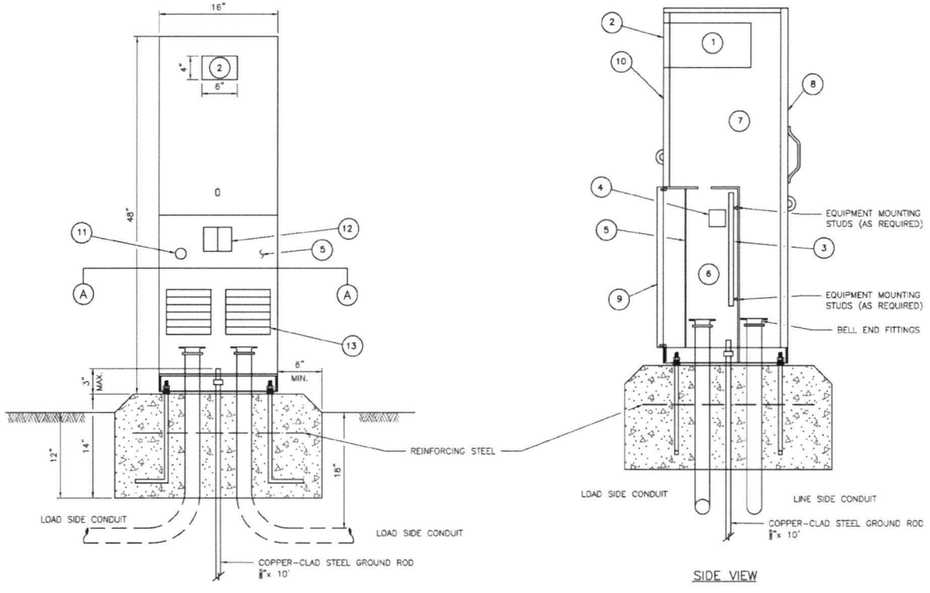
WARNING: IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT IN ANY WAY. IT IS A VIOLATION OF ANY LAW TO MAKE, BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER.

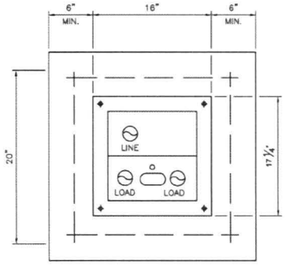


FRONT VIEW

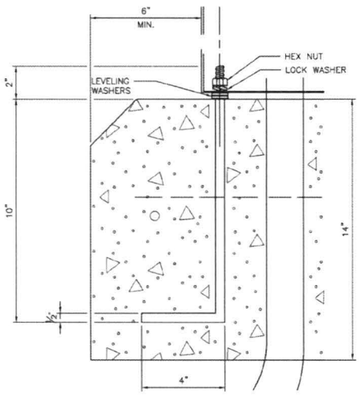
NOTE: ELLS IN FOUNDATION ARE RIGID METAL, SIZE CALLED FOR ON THE PLANS. EXTENSION CONDUITS FROM THESE ELLS MAY BE PVC, PROVIDED ENDS OF RIGID METAL CONDUITS ARE MORE THAN 2 IN. BELOW TOP OF CONCRETE FOUNDATION. WHERE EXTENSION CONDUITS ARE METAL, GROUNDING BUSHING MUST BE INSTALLED AND A BONDING JUMPER PROPERLY TERMINATED.

SIDE VIEW

TY C SHOWN, TY A SIMILAR EXCEPT THAT TY A SHALL HAVE INDIVIDUAL CIRCUIT BREAKERS MOUNTED ON AN EQUIPMENT MOUNTING PANEL. CB HANDLES SHALL PROTRUDE THROUGH HINGED DEADFRONT TRIM.



SECTION A–A



ANCHOR BOLT DETAIL

GENERAL NOTES:

1. THE PEDESTAL SERVICE SHALL BE UL TYPE 3R, AND SHALL BE CONSTRUCTED OF A MINIMUM OF 12 GAUGE STAINLESS STEEL OR ALUMINUM AS REQUIRED. STAINLESS STEEL SHALL NOT BE PAINTED. FOR ALUMINUM, THE FINISH SHALL BE AN ELECTROSTATIC APPLIED POLY-URETHANE BAKED ON POWDER, LIGHT GREEN IN COLOR, OR COLOR AS SHOWN ELSEWHERE AND AS APPROVED BY THE ENGINEER. THE FRONT OF THE INTERIOR DEAD FRONT TRIM SHALL BE PERMANENTLY LABELED, "DANGER HIGH VOLTAGE" WITH OSHA STYLE LABEL. THE EXTERIOR OF THE PEDESTAL SERVICE DOOR SHALL BE PERMANENTLY LABELED WITH A PLACARD AS TO ITS USE (I.E. ROADWAY LIGHTING, TRAFFIC SIGNALS, ETC.). PLACARD SHALL BE NEAT AND PROFESSIONAL IN APPEARANCE. LETTERING SHALL BE 1" MINIMUM HEIGHT.
2. UTILITY ACCESS DOOR SHALL HAVE STAINLESS STEEL PIANO HINGE AND PROVISIONS FOR PADLOCKING.
3. PEDESTAL DOOR SHALL HAVE STAINLESS STEEL PIANO HINGE AND STAINLESS STEEL LATCH WITH PROVISIONS FOR PADLOCKING.
4. METER ACCESS SHALL BE HINGED AND CAPABLE OF PADLOCKING.
5. ALL MOUNTING HARDWARE AND INSTALLATION DETAILS OF SERVICES SHALL BE IN ACCORDANCE WITH UTILITY COMPANY SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE LOCAL UTILITY COMPANY AND OBTAINING THEIR APPROVAL OF PEDESTAL DETAILS PRIOR TO MAKING SUBMITTAL TO THE CITY AND PRIOR TO CONSTRUCTING THE ELECTRICAL PEDESTAL SERVICE. ANY CHANGES REQUIRED BY THE UTILITY COMPANY SHALL BE NOTED ON THE SUBMITTALS.
6. METER SOCKET SHALL BE A MINIMUM OF 100 AMP RATING AND SHALL COMPLY WITH THE LOCAL UTILITY REQUIREMENTS.
7. PHOTOELECTRIC CONTROL SHALL MEET THE REQUIREMENTS AS SHOWN ON ED(5). SHIELD TO CONTROL STRAY LIGHT IS ALLOWABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER OPERATION OF THE PHOTO-ELECTRIC CONTROL. THE CONTRACTOR SHALL MOVE AND/OR ADJUST OR SHIELD THE PHOTOCELL FROM STRAY OR AMBIENT NIGHTTIME LIGHT OR SHALL MAKE ANY OTHER ADJUSTMENTS REQUIRED FOR PROPER OPERATION. THE PHOTOCELL SHALL FACE NORTH WHEN PRACTICABLE. UNLESS OTHERWISE SHOWN ON THE PLANS, THE PHOTOCELL SHALL TURN ON THE ILLUMINATION SYSTEM AT 1.0 +(−) 0.5 FOOTCANDLE AND TURN OFF THE ILLUMINATION SYSTEM AT TWO FOOTCANDLES HIGHER THAN TURN ON.
8. THE CONTROL STATION (H-O-A SWITCH) SHALL BE AS SHOWN ON TxDOT STANDARD ED(5) EXCEPT THAT H-O-A SWITCH OPERATING HANDLE SHALL PROTRUDE THROUGH HINGED DEADFRONT TRIM AND NEMA 1 ENCLOSURE WILL NOT BE REQUIRED.
9. CONCRETE FOR PEDESTAL SERVICE FOUNDATION SHALL BE CLASS A OR C , AND SHALL BE IN ACCORDANCE WITH TxDOT ITEM 420, "CONCRETE STRUCTURES", EXCEPT THAT CONCRETE WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED INCIDENTAL.
10. REINFORCING STEEL SHALL BE #4 REBAR IN ACCORDANCE WITH TxDOT ITEM 440, "REINFORCING STEEL".
11. ANCHOR BOLTS SHALL BE A36M55 IN ACCORDANCE WITH ITEM 449, "ANCHOR BOLTS". ANCHOR BOLTS SHALL BE ½ INCH X 12 INCHES X 4 INCHES (DIA. X LENGTH X HOOK LENGTH).
12. ALL CONDUIT AND CONDUCTORS ATTACHED TO THE PEDESTAL SERVICE AND WITHIN 12 INCHES OF THE PEDESTAL SERVICE WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE PEDESTAL SERVICE. ALL SERVICE CONDUIT AND CONDUCTORS FROM THE UTILITY COMPANY TRANSFORMER TO A POINT 12 INCHES FROM THE THE PEDESTAL SERVICE SHALL BE PAID FOR SEPARATELY. SERVICE CONDUIT SHALL BE THE SIZE AND TYPE AS SHOWN IN THE ELECTRICAL SERVICE DATA.
13. DIMENSIONS MAY VARY TO ACCOMODATE REQUIRED EQUIPMENT, UTILITY COMPANY REQUIREMENTS, OR MANUFACTURER'S STANDARD EQUIPMENT DIMENSIONS. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL, SIX (6) COPIES OF BROCHURES AND/OR DRAWINGS OF THE PEDESTAL SERVICE TO BE SUPPLIED, INCLUDING ACTUAL DIMENSIONS, AND A PAINT COLOR SAMPLE.
14. A SEPARATE ENCLOSURE AS SHOWN ON TxDOT STANDARD ED(4) OR ED(5) FOR PHOTOCELL SHALL NOT BE USED FOR PEDESTAL SERVICES. PHOTOCELL SHALL BE INSTALLED AS SHOWN HERE.
15. THE PEDESTAL DOOR SHALL HAVE A MECHANICALLY ATTACHED DATA POCKET ON THE INSIDE. POCKET SHALL BE EITHER METAL OR THERMOPLASTIC AND SHALL MEASURE AT LEAST 12 INCHES BY 12 INCHES. THE CONTRACTOR SHALL PREPARE AND SUBMIT A SCHEMATIC DRAWING UNIQUE TO AN INDIVIDUAL SERVICE. THE APPROVED DRAWING SHALL BE LAMINATED AND PLACED IN THE DOCUMENT POCKET OF THE SERVICE AT THE TIME OF SHIPMENT TO THE JOB SITE. ALL APPLICABLE WIRING DIAGRAMS AND PLAN SHEET LAYOUTS FOR ALL EQUIPMENT AND BRANCH BREAKER CIRCUITS SUPPLIED BY THAT SERVICE SHALL ALSO BE LAMINATED AND PLACED IN THE DOCUMENT POCKET PRIOR TO SHIPPING.
16. GROUND ROD CLAMP TO BE UL LISTED FOR DIRECT BURIAL. ALL NON-CONDUCTIVE COATING TO BE REMOVED FROM GROUND ROD WIRE TO BE #6 AWG SOLID COPPER. METAL CONDUIT ELLS TO HAVE GROUNDING BUSHING AND BONDING JUMPERS CORRECTLY INSTALLED.
17. ALL CONDUITS ENTERING ENCLOSURES FROM UNDERGROUND MUST BE SEALED. SILICONE SHALL NOT BE ALLOWED.
18. ALL CONDUCTORS SHALL BE MEGGED AND PULL TESTED. TRAFFIC SIGNAL CABLE NOT TO BE MEGGED AFTER CONNECTION, AS ELECTRONICS WILL BE DAMAGED.
19. TOP OF CONCRETE FOUNDATION TO BE FINISHED IN A NEAT AND WORKMAN LIKE MANNER. IF LEVELING WASHERS ARE USED, NO MORE THAN ⅛ IN. HEIGHT SHALL BE USED AT ANY ONE CORNER. MAXIMUM DIP OR RISE IN FOUNDATION IS NOT TO EXCEED ⅛ IN PER FOOT. WHEN PROPERLY INSTALLED, TOP OF SERVICE ENCLOSURE SHALL READ LEVEL FRONT TO BACK AND SIDE TO SIDE WITHIN ¼ IN. ROCKING OR MOVEMENT OF THE SERVICE ENCLOSURE SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE STATE.
20. LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL NOT BE ALLOWED ON PS TYPE SERVICES.

LEGEND:

1. METER SOCKET, (WHEN REQUIRED)
2. METER SOCKET 4" x 6" PLEXIGLASS WINDOW INSTALLED IN THE LID.
3. EQUIPMENT MOUNTING PANEL
4. PHOTO ELECTRIC CONTROL WINDOW, (WHEN REQUIRED)
5. HINGED DEADFRONT TRIM
6. LOAD SIDE CONDUIT AREA
7. LINE SIDE CONDUIT AREA
8. UTILITY ACCESS DOOR, WITH HANDLE
9. PEDESTAL DOOR
10. HINGED METER ACCESS
11. CONTROL STATION (H-O-A SWITCH)
12. MAIN DISCONNECT
13. BRANCH CIRCUIT BREAKERS

APPROVED BY:	APPROVED BY:
Digitally signed by Sohail Iravanian	Digitally signed by WENG MOHEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Digitally signed by Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02893-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

NO.	DATE	REVISION	APP.

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

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Signature valid for six months.

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

STATE OF TEXAS — TYLER H. COWSER — 147089 — LICENSED PROFESSIONAL ENGINEER
Tyler Cowser P.E., Proj 6/17/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 10 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	CITY OF HOUSTON USE ONLY
N-T05000-0012	
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON ENG.	
TOMS MATHEW	
SHEET NO. 63 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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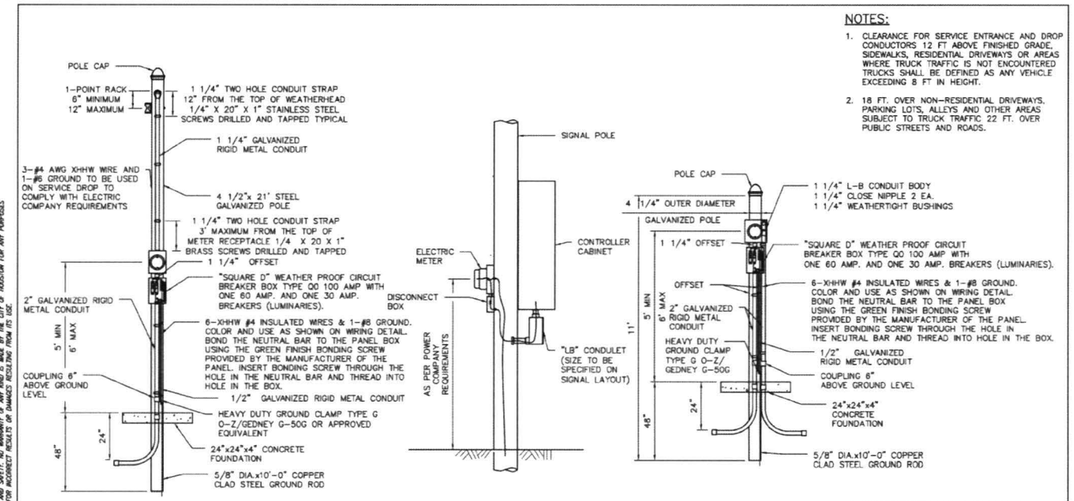

NOTES:

1. CLEARANCE FOR SERVICE ENTRANCE AND DROP CONDUCTORS 12 FT ABOVE FINISHED GRADE, SIDEWALKS, RESIDENTIAL DRIVEWAYS OR AREAS WHERE TRUCK TRAFFIC IS NOT ENCOUNTERED TRUCKS SHALL BE DEFINED AS ANY VEHICLE EXCEEDING 8 FT IN HEIGHT.
2. 18 FT. OVER NON-RESIDENTIAL DRIVEWAYS, PARKING LOTS, ALLEYS AND OTHER AREAS SUBJECT TO TRUCK TRAFFIC. 22 FT. OVER PUBLIC STREETS AND ROADS.

DISCLAIMER:
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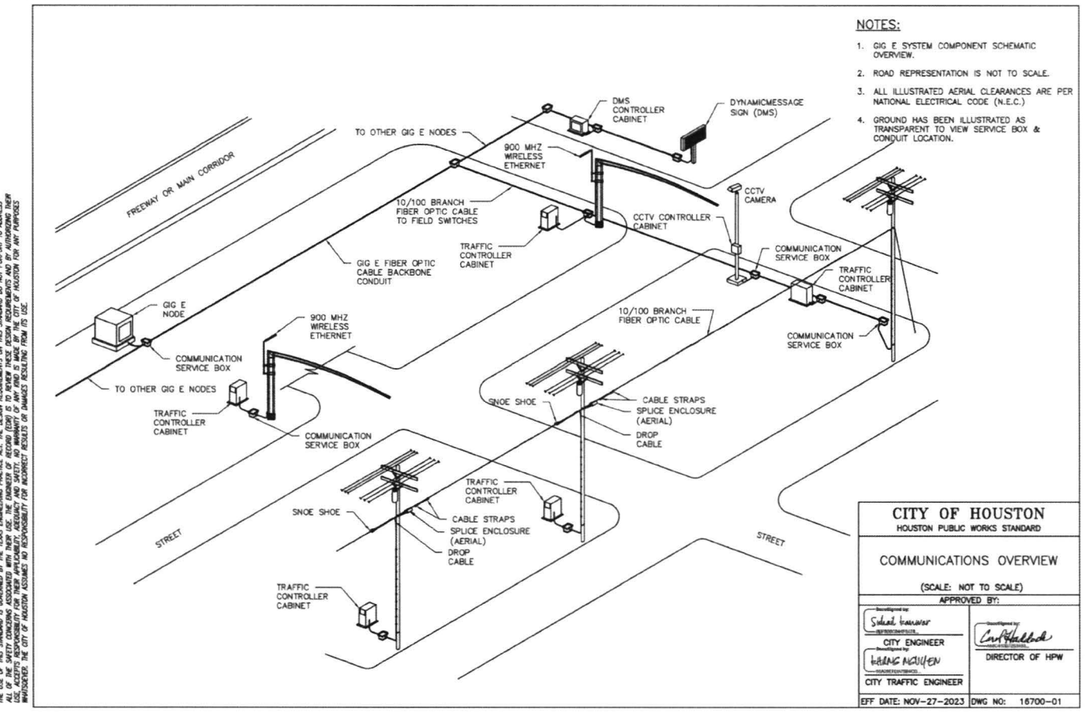
CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
METER LOOP (SCALE: NOT TO SCALE)	
APPROVED BY:	
Recommended by: Sukut Kasvaiwar CITY ENGINEER Recommended by: Hailing Nguyen CITY TRAFFIC ENGINEER	Concurred by: Carol Haddock DIRECTOR OF HPW
EFF DATE: NOV-27-2023	DWG NO: 02893-03

DocuSign Envelope ID: 9B122261-CF05-457B-9A85-2650F40B66D5



NOTES:

1. GIG E SYSTEM COMPONENT SCHEMATIC OVERVIEW.
2. ROAD REPRESENTATION IS NOT TO SCALE.
3. ALL ILLUSTRATED AERIAL CLEARANCES ARE PER NATIONAL ELECTRICAL CODE (N.E.C.)
4. GROUND HAS BEEN ILLUSTRATED AS TRANSPARENT TO VIEW SERVICE BOX & CONDUIT LOCATION.

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CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
COMMUNICATIONS OVERVIEW (SCALE: NOT TO SCALE)	
APPROVED BY:	
Recommended by: Sukut Kasvaiwar CITY ENGINEER Recommended by: Hailing Nguyen CITY TRAFFIC ENGINEER	Concurred by: Carol Haddock DIRECTOR OF HPW
EFF DATE: NOV-27-2023	DWG NO: 16700-01

NO.	DATE	REVISION	APP

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QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., Proj 6/17/2025
STATE OF TEXAS
TYLER H. COWSER
147989
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 11 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PDC	TOMS MATHEW
SHEET NO.	64 OF 72

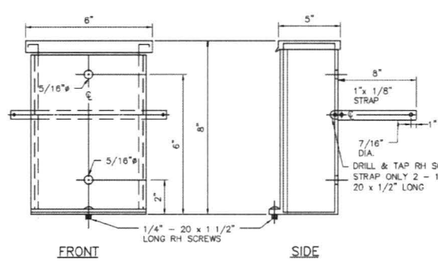
FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS & ENGINEERING
80160
CITY DRAWING NUMBER
HOUSTON, TEXAS

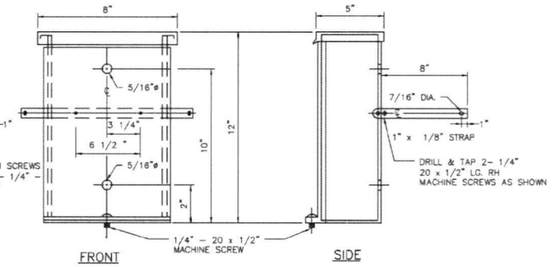
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

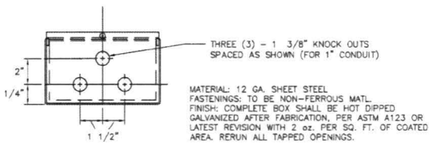
K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\TRAFFIC\TRAFFIC STANDARDS DWG, 2/26/2025 1:41 PM

DocuSign Envelope ID: 98122261-CF05-4579-4A65-3550F43B68D5

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 DUTY OF THE USER TO ESTABLISH APPROPRIATE SAFETY AND HEALTH PRACTICES AND TO DETERMINE THE APPLICABILITY OF REGULATORY LIMITATIONS PRIOR TO USE. THE CITY OF HOUSTON GIVES 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.

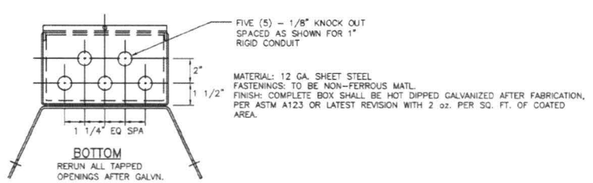






MATERIAL: 12 GA. SHEET STEEL
FASTENINGS: TO BE NON–FERROUS MATL.
FINISH: COMPLETE BOX SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION, PER ASTM A123 OR LATEST REVISION WITH 2 oz. PER SQ. FT. OF COATED AREA. RERUN ALL TAPPED OPENINGS.

RAINTIGHT JUNCTION BOX
8" X 6" X 5" O.A. DIM.
3 – 1 /8" BOTTOM K.O.



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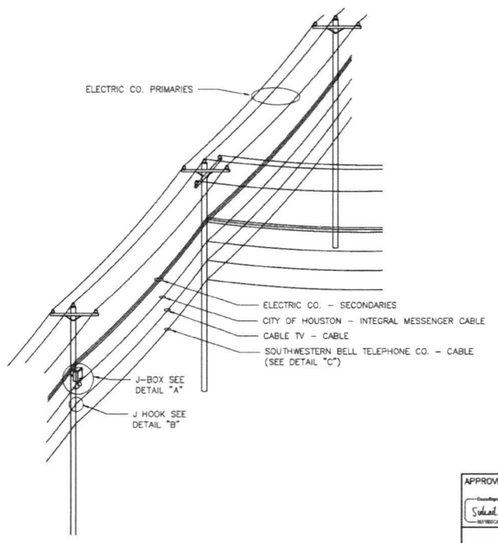
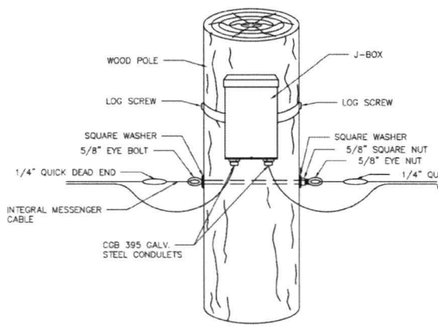
RAINTIGHT JUNCTION BOX
8" X 5" X 12" O.A. DIM.
5 – 1 3/8" BOTTOM K.O.

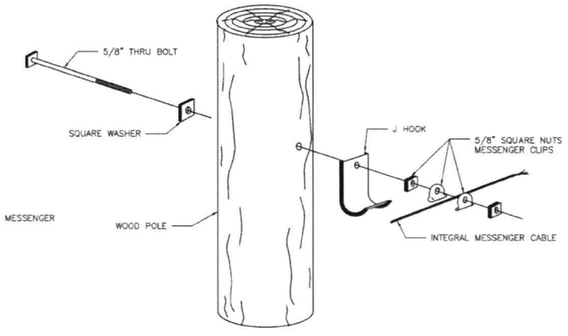


NOTES:

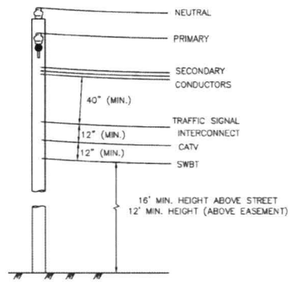
CONTRACTOR SHALL TRIM TREES AND APPLY WOOD PRESERVATIVE AS DIRECTED BY ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE.



DETAIL A



DETAIL B



DETAIL C

APPROVED BY:	APPROVED BY:
Sohail Kanwar	Kelang Nguyen
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02893–04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

HARDWARE INTERCONNECT DETAILS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

NO.	DATE	REVISION	APP

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

N/A
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.

N/A
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.

N/A
Date
Approved for AT&T underground conduit facilities only
Signature valid for one year

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
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713.777.5337

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Tyler Cowser P.E., Prin. 6/17/2025
STATE OF TEXAS · TYLER H. COWSER · 147989 · LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 12 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 65 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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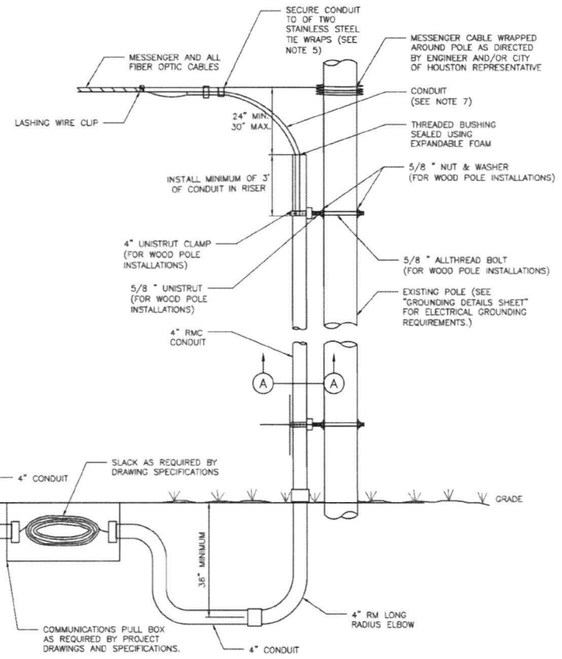
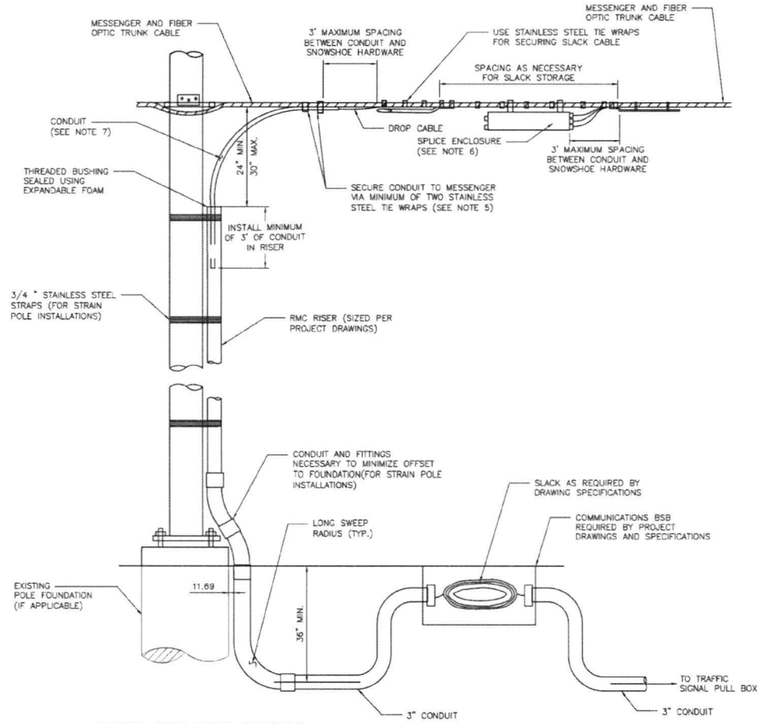
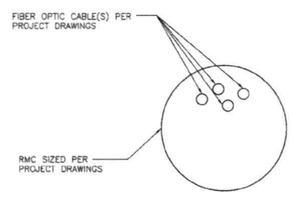
WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR DAMAGES RESULTING FROM THE USE OF THIS STANDARD.



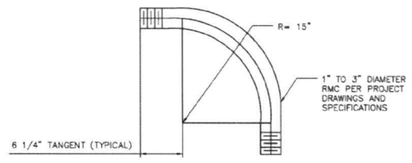
TYPICAL RIGID RISER ASSEMBLY
FOR TRUNK FIBER
AERIAL TO UNDERGROUND TRANSITIONS



TYPICAL RIGID RISER ASSEMBLY
FOR FIBER OPTIC DROP CABLE INSTALLATION



SECTION A–A



LONG RADIUS ELBOW DETAIL

NOTES:

1. THIS DETAIL SHALL BE UTILIZED WHERE APPLICABLE FOR ALL AERIAL SLACK STORAGE, AERIAL TO UNDERGROUND TRUNK CABLE TRANSITIONS, AND AERIAL SPLICING ACTIVITIES FOR TRUNK AND DROP CABLE INSTALLATIONS.
2. CABLE STORAGE AND MANAGEMENT WITHIN FIELD CABINETS SHALL BE PERFORMED BY SECURING FIBER OPTIC CABLE SLACK AND CONNECTORS IN THE TOP OF THE CABINETS.
3. MINIMUM BEND RADII FOR ALL CONDUIT AND CONDUIT FITTINGS SHALL CONFORM TO THE REQUIREMENTS ESTABLISHED IN THE "LONG RADIUS ELBOW DETAIL" DRAWING.
4. SLACK CABLE STORAGE REQUIREMENTS SHALL BE IN ACCORDANCE WITH PROJECT DRAWINGS AND SPECIFICATIONS. SNOWSHOE HARDWARE UTILIZED SHALL BE MOORE OPTITRACK PART# MFSR24-HCK OR APPROVED EQUAL.
5. ALL TRUNK CABLE NOT DESIGNATED FOR SLACK STORAGE OR SPLICING ACTIVITIES SHALL BE OVERLASHED TO THE MESSENGER CABLE. ALL OTHER CABLE SHALL BE ATTACHED AERIALLY USING STAINLESS STEEL TIE WRAPS (PANDUIT PART# MLT 4H-LP OR APPROVED EQUAL).
6. SPLICE ENCLOSURES USED SHALL BE PART# 3M 2178 LS, L, OR LL AS NECESSARY TO ACCOMMODATE CABLES TO BE SPLICED. ALL CABLES SHALL ENTER THE ENCLOSURE FROM THE SAME END AND SHALL BE SPLICED IN BUTT CONFIGURATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE.
7. TWO CONDUITS MAY BE REQUIRED BY THE PROJECT DRAWINGS.
8. NO SPLICE CLOSURES OR SLACK STORAGE SHALL BE LOCATED OVER PUBLIC OR PRIVATE TRAVEL WAYS.
9. ALL REQUIRED HARDWARE AND CONDUIT SHALL BE GALVANIZED.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02893-05

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TRUNK FIBER AERIAL TO UNDERGROUND TRANSITIONS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

NO.	DATE	REVISION	APP.

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VERIFICATION OF PRIVATE UTILITY LINES

N/A
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.

N/A
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.

N/A
Date
Approved for AT&T underground conduit facilities only.
Signature valid for one year.

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
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6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., Prog 6/17/2025
STATE OF TEXAS TYLER H. COWSER 147989 LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 13 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012	ACCEPTED
DRAWING SCALE	
AS NOTED	80160
CITY OF HOUSTON DOG	
TOMS MATHEW	
SHEET NO. 66 OF 1	

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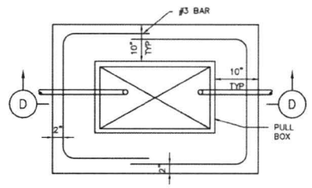
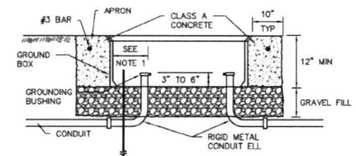


PLAN VIEW

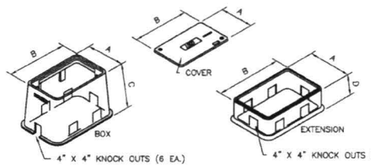


SECTION D-D

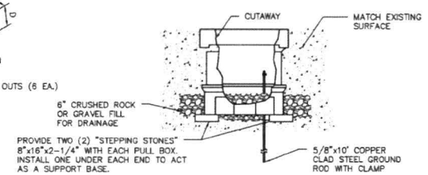
APRON FOR PULL BOXES

NOTES:

1. FINAL POSITION OF END OF CONDUIT SHALL NOT EXCEED ONE-HALF THE DISTANCE TO THE SIDE OF BOX OPPOSITE THE CONDUIT ENTRY.
2. PLACE GRAVEL "UNDER" THE BOX, NOT "IN" THE BOX. GRAVEL SHOULD NOT ENCROACH ON THE INTERIOR VOLUME OF THE BOX.
3. INSTALL BUSHING ON THE UPPER END OF ALL ELLS.
4. PROVIDE A 5/8" GROUND ROD IN ALL PULL BOXES AND CONNECT IT TO ANY AND ALL EQUIPMENT GROUNDING CONDUCTORS USING A LISTED CONNECTOR.
5. MAINTAIN SUFFICIENT SPACE BETWEEN ALL CONDUITS SO AS TO ALLOW FOR PROPER INSTALLATION OF BUSHINGS.
6. ALL CONDUITS SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER.
7. ALL CONDUITS INSTALLED IN THE GROUND BOX SHALL BE SEALED AFTER COMPLETION OF CONDUCTOR INSTALLATION AND ANY REQUIRED PULL TESTS. SILICONE SHALL NOT BE USED AS THE SEALANT.

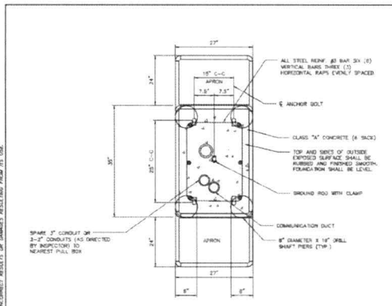


NOMINAL DIMENSIONS FOR TRAFFIC SIGNAL PULL BOXES				
TYPE	A	B	C	D
DETECTOR TYPE A	13"	18"	24"	12"
TRAFFIC SIGNAL TYPE B	17"	30"	24"	12"
COMMUNICATION TYPE C	26"	38"	24"	12"

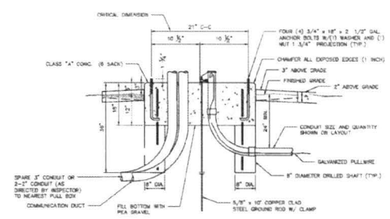


SIDE VIEW
ELECTRICAL PULL BOX ASSEMBLY

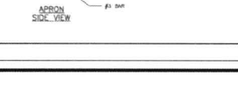
CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
PULL BOXES (SCALE: NOT TO SCALE)	
APPROVED BY:	
Digitally signed by Suhail Kanwar CITY ENGINEER	Digitally signed by Carol Haddock DIRECTOR OF HPW
Digitally signed by HEENG NGUYEN CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 16710-01



342-HOUSING 1 DETAIL
TOP VIEW



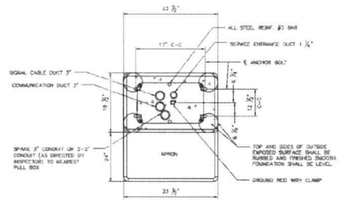
342-HOUSING 1 DETAIL
SIDE VIEW



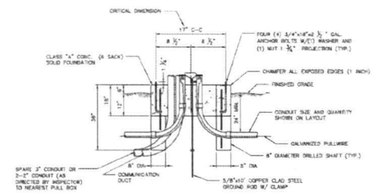
APRON
SIDE VIEW

NOTES:

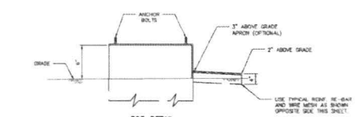
1. ALL CONDUIT ELBOWS TO BE PVS



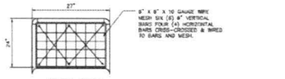
303 DETAIL



303 DETAIL
SIDE VIEW



303 DETAIL



APRON DETAIL
TOP VIEW

APPROVED BY:	APPROVED BY:
Suhail Kanwar CITY ENGINEER	Heeng Nguyen CITY TRAFFIC ENGINEER
APPROVED BY: Carol Haddock DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 16730-01

CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
CONTROLLER FOUNDATIONS	SHEET 01 OF 03
DRAWING SCALE NOT TO SCALE	FOR CITY OF HOUSTON USE ONLY

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
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TYLER H. COWSER
147989
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 14 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	ACCEPTED
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CITY OF HOUSTON ENG.	
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SHEET NO. 67 OF 72	

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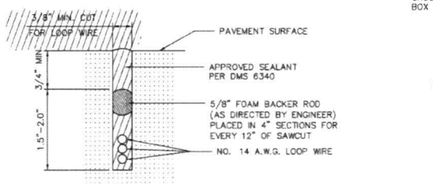
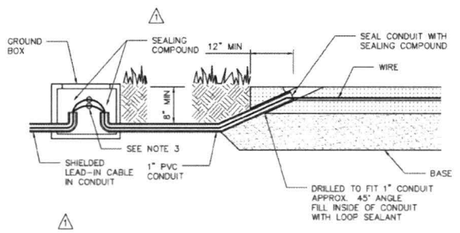
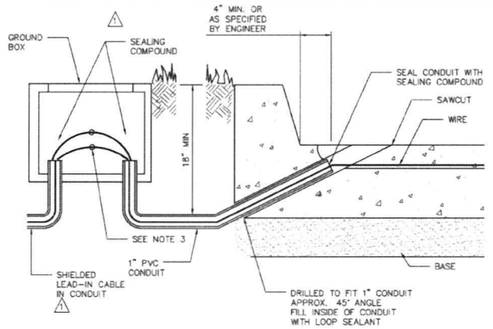


LOOP SAW CUT CROSS-SECTION

* SAWCUTS IN BRIDGE DECKS ARE TYPICALLY 1" DEPTH MAXIMUM SAWCUTS IN BRIDGE DECKS AND ACROSS EXPANSION JOINTS SHALL BE AS APPROVED BY ENGINEER



TYPICAL LEAD IN CONFIGURATION (WITHOUT CURBING)



TYPICAL LEAD IN CONFIGURATION (WITH CURBING)

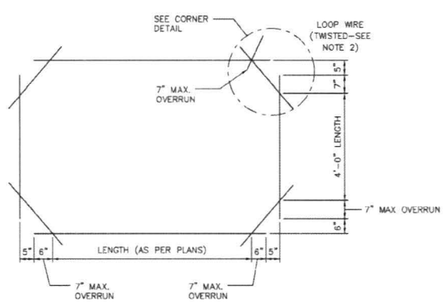
GENERAL NOTES:

1. THE PAVEMENT CUT IS TO BE MADE WITH A CONCRETE SAW TO NEAT LINES AND LOOSE MATERIAL REMOVED. THE CUT SHALL BE CLEAN AND DRY WHEN THE WIRE AND SEALING COMPOUND IS PLACED.
2. LOOP WIRE SHALL BE 14 AWG STRANDED TYPE XHHW. WIRE FROM THE LOOP TO THE GROUND BOX SHALL BE TWISTED A MINIMUM OF 5 TURNS PER FOOT. NO SPLICES SHALL BE PERMITTED IN THE LOOP OR IN THE RUN TO THE GROUND BOX.
3. THE HOME RUN CABLE FROM THE PULL BOX TO THE CONTROLLER SHALL BE IMSA 50-2 SHIELDED CABLE AND SHALL BE SOLDERED TO THE LOOP WIRE. THE SOLDER JOINTS SHALL BE SEALED WITH SCOTCHCAST OR OTHER METHOD ACCEPTABLE TO THE ENGINEER. THE SHIELD SHALL BE GROUNDED ONLY AT THE CONTROLLER END. LOOP HOME RUN CABLE SHALL BE TWO CONDUCTOR 14 AWG SHIELDED, TYPE XHHW.
4. ALL WIRE PLACED IN THE SAW CUT SHALL BE SEALED BY FULLY ENCAPSULATING IT IN A SEALANT ACCEPTABLE TO THE ENGINEER. SEALING COMPOUND SHALL BE IN ACCORDANCE WITH DMS 6340.
5. THE LOOP LOCATION, CONFIGURATION AND NUMBER OF TURNS SHALL BE AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

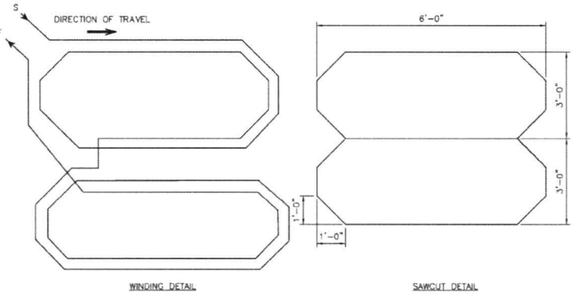
RECOMMENDED NUMBER OF TURNS FOR LOOP DETECTORS

LOOPS PERIMETER SIZE (FT.)	NUMBER OF TURNS	APPROXIMATE LOOP SIZES INCLUDED
24' or Less	3 or 4	5' x 5', 6' x 6'
25' - 110'	2 or 3	6' x 10', 6' x 45'
110' or More	1 or 2	6' x 50' or Longer

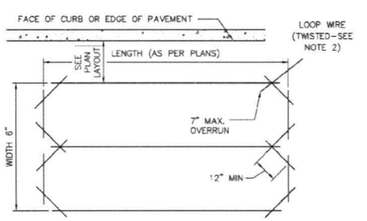
6. A SEPARATE SAW CUT SHALL BE MADE FROM EACH LOOP TO THE EDGE OF PAVEMENT OR AS SPECIFIED BY THE ENGINEER.
7. SPLICES BETWEEN THE LOOP LEAD-IN CABLE AND LOOP DETECTOR SHALL BE MADE ONLY IN THE GROUND BOX NEAR THE LOOP IT IS SERVING.
8. CIRCULAR LOOPS MAY USE PREWOUND LOOPS ENCASED IN CONTINUOUS PVC TUBING. SAWCUT WIDTH MAY BE ADJUSTED TO ACCOMMODATE TUBING.
9. THE LEAD-IN WIRE IN THE CIRCULAR LOOP SHALL BE COILED AT THE 3 INCH DRILLED CORNER TO REDUCE BENDING STRESS.
10. LOOP DUCT MAY BE USED AS SPECIFIED BY ENGINEER. FOR ADDITIONAL INFORMATION REFER TO "TEXAS TRAFFIC SIGNAL DETECTOR" MANUAL, TTI REPORT 1163-1.
11. ROUND CORNERS OF ACUTE ANGLES TO PREVENT DAMAGE TO CONDUCTORS.
12. INSTALL 3 TURNS WHEN ONLY ONE TYPE D LOOP IS ON A SINGLE CHANNEL. INSTALL 5 TURNS WHEN ONE TYPE D IS CONNECTED W/3-6'X6' LOOPS ON A SINGLE CHANNEL.



RECTANGULAR

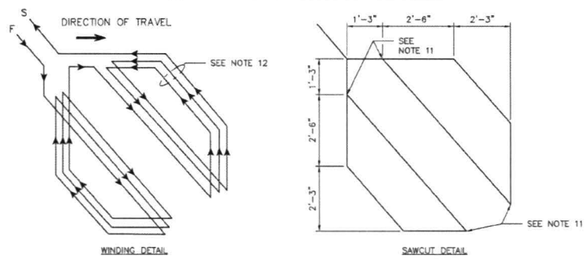


QUADRUPOLE (Q) TYPE LOOP DETECTOR CONFIGURATION



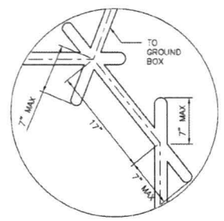
QUADRAPOLE

TYPICAL VEHICULAR LOOP DETECTOR LAYOUT
(AS SPECIFIED IN PLANS)

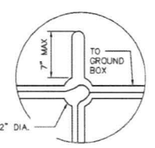


DIAGONAL SLASHED (D) TYPE LOOP DETECTOR CONFIGURATION

TYPICAL BICYCLE LOOP DETECTOR LAYOUT
(AS SPECIFIED IN PLANS. SEE PAVEMENT MARKINGS DETAILS FOR LOCATION RELATIVE TO BICYCLE SYMBOL)



RECTANGULAR & HEXIGON LOOP
SAWCUT CORNER DETAIL
7" OVERRUN BASED ON 24" DIAMETER SAW BLADE



RECTANGULAR & HEXIGON LOOP (ALT.)
DRILLED CORNER DETAIL

TYPICAL CORNER DETAILS

APPROVED BY:	APPROVED BY:
Signed by: Sohail Faruqui	Signed by: HIEN NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Signed by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 16727-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

LOOP DETECTOR INSTALLATION DETAILS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

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

N/A
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.

N/A
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.

N/A
Date

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10046100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., PTOE 6/17/2025
STATE OF TEXAS
TYLER H. COWSER
147089
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 15 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PE	
TOMS MATHEW	
SHEET NO. 68 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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 PROPER APPLICABILITY, ADEQUACY, AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSE WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\TRAFFIC\TRAFFIC STANDARDS DWG, 2/26/2025 1:41 PM

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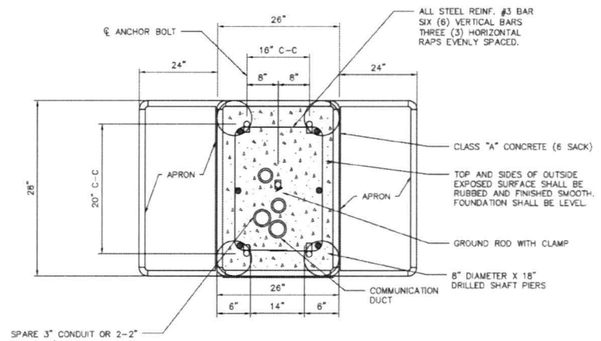
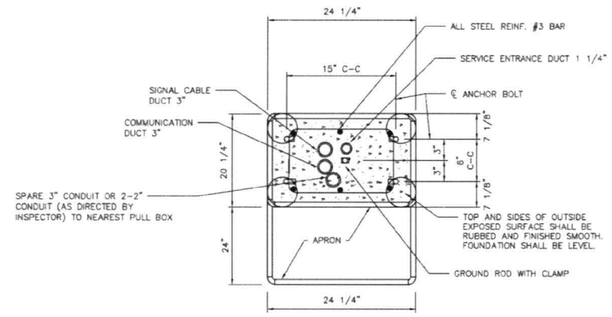


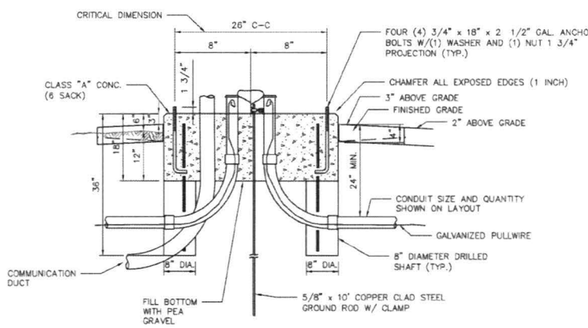
336 DETAIL
TOP VIEW



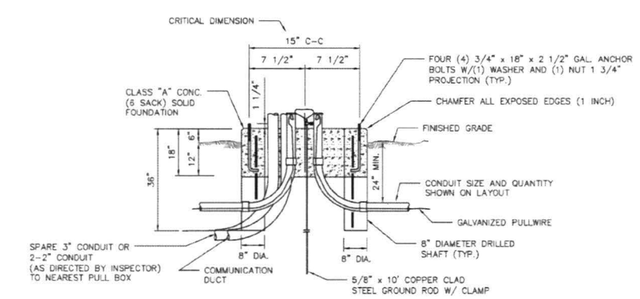
MODEL ITS 346 AND ATC 356i DETAIL
TOP VIEW

NOTES:

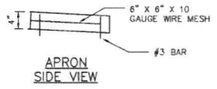
1. APRON TO BE INSTALLED IF NEEDED.



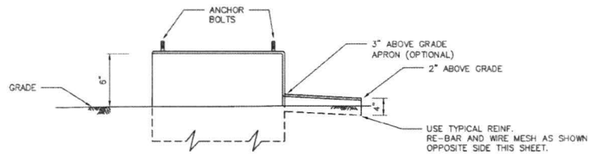
336 DETAIL
SIDE VIEW



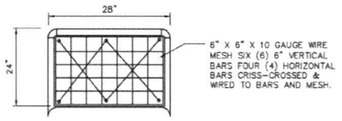
MODEL ITS 346 AND ATC 356i DETAIL
SIDE VIEW



APRON
SIDE VIEW



MODEL ITS 346 AND ATC 356i DETAIL



APRON DETAIL
TOP VIEW

APPROVED BY:	APPROVED BY:
Signed by: Suhail Kanuwar	Signed by: HIEN NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Signed by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 16730-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONTROLLER FOUNDATIONS

SHEET 02 OF 03

DRAWING SCALE	FOR CITY OF HOUSTON USE ONLY
NOT TO SCALE	

NO.	DATE	REVISION	APP.

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

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

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Date
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification).
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N/A
Date
Approved for AT&T underground conduit facilities only
Signature valid for one year.

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-21280 & 10046100
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Taylor Cowser P.E., PTOE 6/17/2025
STATE OF TEXAS
TYLER H. COWSER
147089
LICENSED
PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 16 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012	
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PDC	
TOMS MATHEW	
SHEET NO. 69 OF 72	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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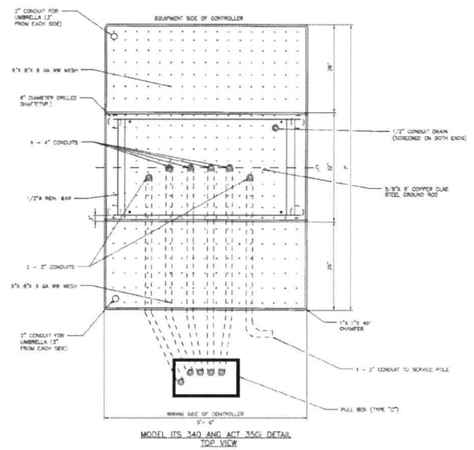
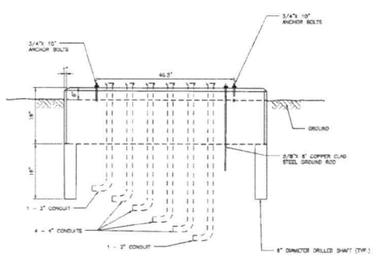
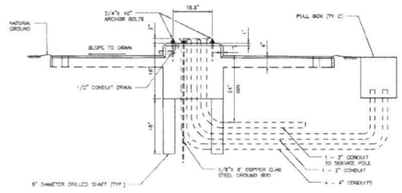


MODEL ITS 340 AND ACT 350i DETAIL
TOP VIEW



MODEL ITS 340 AND 350i DETAIL
FRONT VIEW



MODEL ITS 340 AND 350i DETAIL
SIDE VIEW

NOTES:

1. ALL CONCRETE TO BE IN ACCORDANCE WITH CITY OF HOUSTON SPECIFICATION SECTION 03310.
2. SET THE TOP OF THE STEP OF THE CONTROLLER FOUNDATION NO LOWER THAN THE LEVEL OF THE SURROUNDING GROUND. ANY NECESSARY ADJUSTMENT SHALL BE APPROVED BY THE ENGINEER.
3. CENTER THE CABINET ON THE FOUNDATION.
4. THE FOUNDATION SHALL BE SUPPORTED BY UNDISTURBED SOIL OR BY SOIL THAT HAS BEEN COMPACTED TO 95% PROCTOR DENSITY IN 6" LIFTS.
5. ALL CONDUIT ELBOWS TO BE RGS.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:
DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023 | DWG NO: 16730-03

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONTROLLER FOUNDATIONS

SHEET 3 OF 3

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
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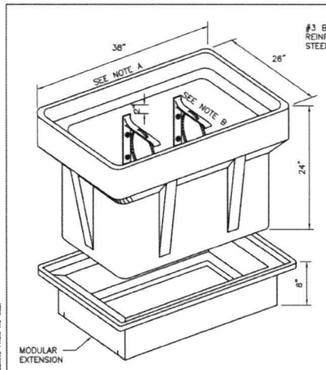
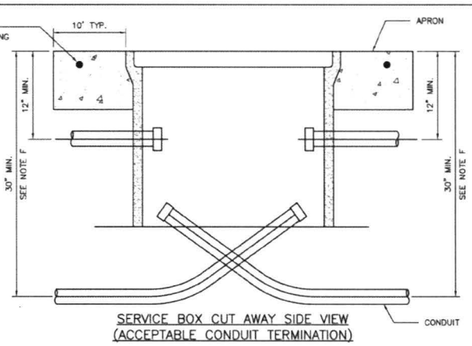




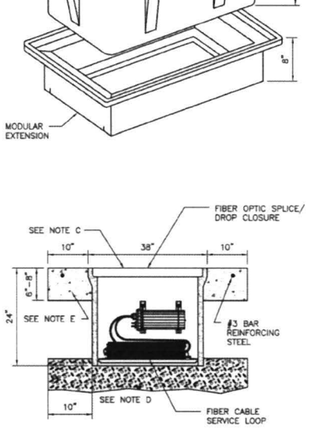
SERVICE BOX CUT AWAY SIDE VIEW
(ACCEPTABLE CONDUIT TERMINATION)

LEGEND

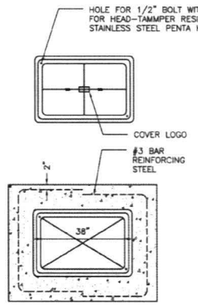
A. SPLICE CLOSURE BRACKET PROVIDES MINIMUM LID CLEARANCE OF 2" AND SUPPORTS FIBER OPTIC SPLICE CLOSURE(8" DIA. X 24" LONG AT 18 LBS).
B. NYLON TIES
C. HEAVY DUTY REMOVABLE LID WITH LOCKING PROVISIONS, PROVIDING 15,000 LB. OVER 10" SQUARE STATIC LOAD SUPPORT.
D. 6" TO 8" OF GROUND OR CRUSHED ROCK BED FOR DRAINAGE.
E. CONCRETE APRON: 3,000 PSI AS REQUIRED FOR THE LOCATION.(DRIVE, SIDEWALK, PARKING LOT OR AREAS OF LIGHT TRAFFIC).
F. CONDUIT BURIAL DEPTH SHALL BE 30" MIN. OR 12" (+/-2") MEASURED TO THE CENTERLINE OF THE CONDUIT.

NOTE:

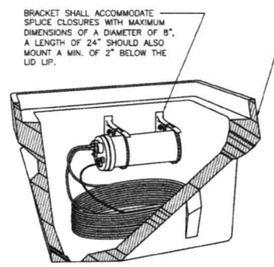
THE CROSS SECTION VIEW OF BOX IN ORDER TO VIEW DROP CLOSURE AND CABLE CONTAINED WITHIN.



CROSS SECTION VIEW
INSTALLED COMMUNICATION
SERVICE BOX DETAIL



TOP VIEW
COMMUNICATION SERVICE BOX DETAIL



CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

COMMUNICATIONS SERVICE BOX DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER	DIRECTOR OF HPW
CITY TRAFFIC ENGINEER	

EFF DATE: NOV-27-2023 | DWG NO: 16737-01

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

NO.	DATE	REVISION	APP.

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VERIFICATION OF PRIVATE UTILITY LINES

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

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

1980 Post Oak Blvd., Suite 1380
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6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., Proj 6/17/2025
STATE OF TEXAS
TYLER H. COWSER
147989
LICENSED
PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 17 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 70 OF 72	

PROFESSIONAL ENGINEER
HOUSTON, TEXAS

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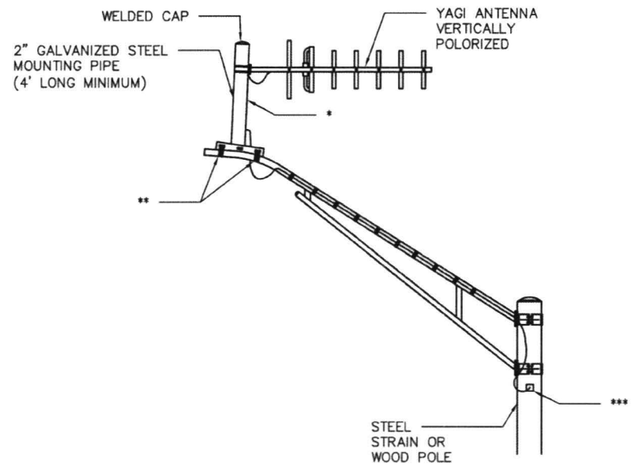
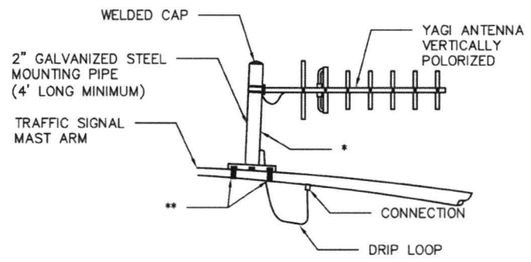


LUMINAIRE ARM MOUNT

* 4.0' PIPE EXTENSION WHEN MOUNTED ON TRAFFIC SIGNAL MAST ARM OR LUMINAIRE ARM.

** 5/8" (MIN.) STAINLESS STEEL BANDING 2 PLACES MIN.

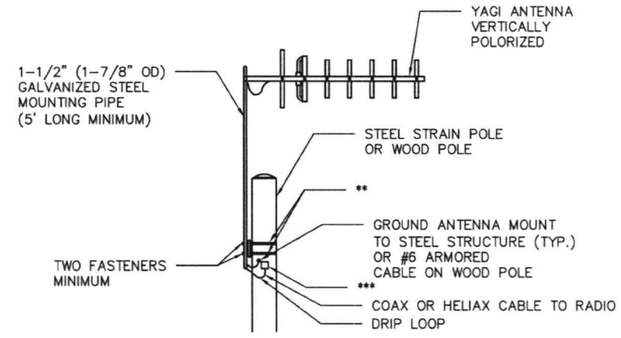
*** ENTRY INTO STEEL POLE OR CONDUIT WEATHERHEAD ON WOOD POLE



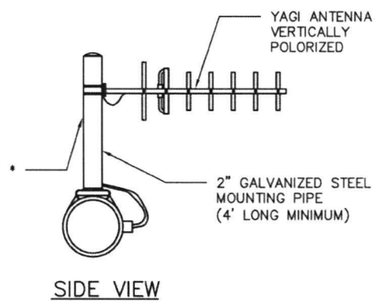
MAST ARM MOUNT

NOTES:

1. MOUNT ANTENNAS TO PROVIDE THE HIGHEST LEVEL OF RELIABILITY BETWEEN SENDING AND RECEIVING UNITS.
2. PERFORM A PATH STUDY TO DETERMINE EXACT MOUNTING LOCATION OF ANTENNAS BY RADIO SUPPLIER.
3. INSTALL ANTENNAS AS DETAILED OR AS DIRECTED BY THE SPREAD SPECTRUM RADIO SUPPLIER.
4. FURNISH MOUNTING BRACKETS FOR ANTENNAS ATTACHED TO VERTICAL PIPE AS RECOMMENDED BY SPREAD SPECTRUM RADIO SUPPLIER.
5. UNLESS NOTED, USE 5/8" STAINLESS STEEL BANDING MATERIAL TO INSTALL ANTENNA MOUNTS.
6. PROVIDE WATER TIGHT CABLE ENTRY AND EXIT POINTS IN THE TRAFFIC SIGNAL MAST ARM AND/OR POLES.
7. FOR SPREAD SPECTRUM COAX OR HELIAX CABLE ATTACHED TO LUMINAIRE ARM, PROVIDE UV STABILIZED TIE-WRAP THAT IS APPROVED FOR OUTDOOR USE.



POLE MOUNT



SIDE VIEW

BAND MOUNT BRACKET DETAIL

CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
ANTENNA MOUNTING DETAILS (SCALE: NOT TO SCALE)	
APPROVED BY:	
DocuSigned by: Sukait Kanwar CITY ENGINEER	DocuSigned by: Carol Haddock DIRECTOR OF HPW
DocuSigned by: KHANG NGUYEN CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 16738-01

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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

N/A
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.

N/A
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.

NA
Date

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. P-21280 & 10096300
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., PTOE 6/17/2025
STATE OF TEXAS
TYLER H. COWSER
147088
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 18 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 71 OF 72	

80160

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

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Fiber Optic Cable Installation - Material List		
Item	*Description*	*Quantity*
1	Fiber Optic Cable	1
2	Single Fiber Distribution Unit with SC connector	1
3	Shelf mounting on DIN rail	2
4	Fiber cable jumper	4
5	Ethernet cable	LF
6	Managed Field Hardened Ehternet Switch (1)	1
7	Meraki Router (2)	1
8	Battery Backup Unit	1
9	Bluetooth reader (2) and antenna	1

Cellular Modem Installation - Material List		
Item	*Description*	*Quantity*
1	Managed Field Hardened Ehternet Switch (1)	1
2	Meraki Router (2)	1
3	Bluetooth reader (2) and antenna	1
4	Battery Backup Unit	1
5	Ethernet cable	LF
6	Shelf mounting on DIN rail	2

Note:
(1) - Managed Field Hardened Ethernet switch shall be compatible with existing COH ITS infrastructure. Contractor shall be responsible for all compatibility testing and providing results to COH ITS Section. Proposed equipment different from the current standard. Contact COH ITS Section (713.881.3000) for more information.
(2) - Bluetooth reader, Router and Air-card shall be provided by COH ITS Section.

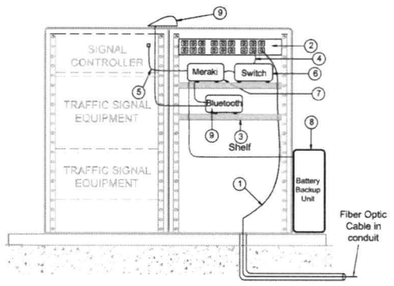
Notes

All existing and propose Intelligent Transportation Systems (ITS) infrastructure must be field verified and included on all design plans. ITS infrastructure includes, but not limited to, fiber optic cable, copper cable, Ethernet switches, Bluetooth equipment, CCTV cameras, Dynamic Message Sign, midblock counter, etc. Any interruption of ITS operations requires City of Houston Transportation and Drainage Operation/ITS section approval at a minimum of one (1) week in advance. Contact City's ITS Section for questions regarding ITS infrastructure, communication equipment and interruption approval request at 713-881-3000.

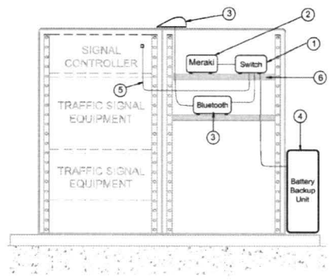
For a modified or reconstructed signalized intersection, all existing ITS infrastructure must be shown on design plan and kept operational during construction. If there is no existing ITS communication devices, new devices shall be installed and included in the design. If there is existing ITS communication devices, all devices shall be relocated to proposed cabinet with the exceptions of switches and fiber distribution unit, if applicable. All ITS infrastructure shall be designed and installed as outlined in the Communication details. Contact City's ITS section for compatibility questions with City of Houston communication infrastructure.

For a proposed/new signalized intersection, new ITS communication infrastructure and Communication Details must be included in the design plans. All ITS communication devices shall be furnished and installed by the contractor with the exceptions of Bluetooth reader, Router and Air-card (Cellular card). The proposed ITS equipment must meet the latest City of Houston specifications and design details. Please contact the City's ITS section for equipment specific questions and/or Communication Details at 713.881.3000.

Fiber Optic Cable Installation Detail



Cellular Installation Detail



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

Communication Installation Details

FILE: Communication Installation.dwg
GFB NO.
DATE: 01-26-2021
SCALE: NTS
CITY OF HOUSTON P.N.
P.M.
SHEET NO. 1 OF 1

NO.	DATE	REVISION	APP.

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

N/A
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.

N/A
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.

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY
1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 100461-00
6330 West Loop South, Suite 150, Bellaire, TX 77401
713.777.5337

SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

Tyler Cowser P.E., PTOE 6/17/2025
STATE OF TEXAS
TYLER H. COWSER
147989
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS

SHEET 19 OF 19

WAUGH SAFETY IMPROVEMENTS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T05000-0012	
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON EDOC	
TOMS MATHEW	
SHEET NO. 72 OF 72	

REGISTERED PROFESSIONAL ENGINEER
TYLER H. COWSER
147989
6/17/2025
STATE OF TEXAS

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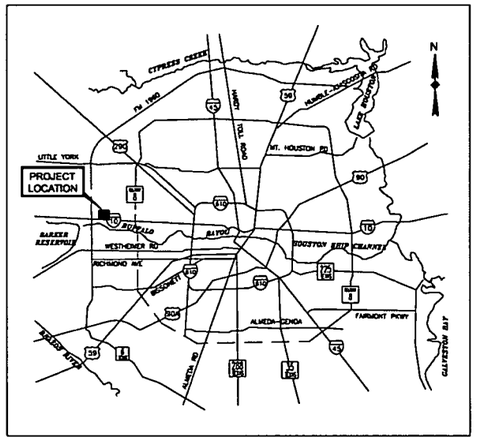
CITY OF HOUSTON SYSTEMIC SAFETY PROJECT

CONSTRUCTION PLANS FOR N. ELDRIDGE AT N. DAIRY ASHFORD/PARK ROW INTERSECTION DESIGN

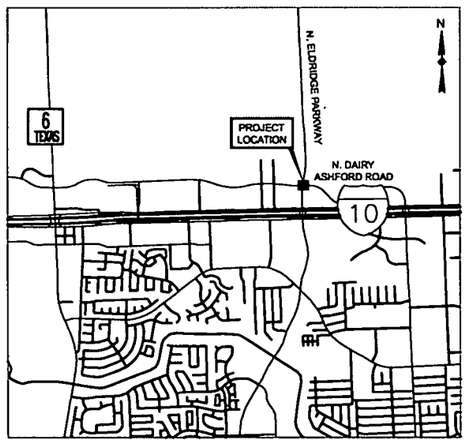
CSJ NO: 0912-72-721

Street Name	AADT	Speed Limit
N. Eldridge Parkway	28,653	35 MPH
N. Dairy Ashford	6,484	35 MPH

WBS NO. N-MD0260-0002-7



LOCATION MAP
N.T.S.



VICINITY MAP
N.T.S.

COUNCIL DISTRICT A

KEY MAP NOS 448Y, 488C
GIMS MAP NOS 4758b, 4758d

TDLR NO. TABS2024019870

FLOOD PLAIN INFO:
PER FEMA PANEL NO. 48201C0640M (NOVEMBER 15, 2019) THE PROJECT AREA IS LOCATED WITHIN ZONE X (AREA OF MINIMAL FLOOD HAZARD). BFE IS NOT PROVIDED.

THE CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, OFFICE OF THE CITY ENGINEER, 48 HOURS PRIOR TO STARTING WORK ON THIS PROJECT. TELEPHONE NO. (832) 394-9098.

TEXAS 811 NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
WWW.TEXAS811.ORG/ OR
TEXAS811 OR 1-800-344-8377

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower Date 05/22/25
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.
Signature valid for six months.

Mike Brower Date 05/22/25
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.

Marlon Smither Date 05/27/2025
Approved for AT&T underground conduit facilities only.
Signature valid for one year.

MAYOR
JOHN WHITMIRE

CONTROLLER
CHRIS HOLLINS

DISTRICT COUNCIL MEMBERS

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

COUNCIL MEMBERS AT-LARGE

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

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 Main Street, Suite 850
Houston, TX 77002
TEL (713) 270-8145
TBPE Registration No. F-3158

SURVEYED BY: N/A
FB NO. N/A

NOTE: CITY SIGNATURE VALID FOR ONE YEAR ONLY, AFTER DATE OF SIGNATURE.

Sarah L. Wetmore 6/24/2025
STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED
PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS
CITY OF HOUSTON POINT OF CONTACT: ARCHIE BLANCO

DocuSigned by:
Johana Clark
808098A38F5E457...
6/25/2025
Director of Houston Public Works Date:

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
ACCEPTED AND FILED
80162
CITY DRAWING NUMBER
HOUSTON, TEXAS

SHEET NO 1 of 73

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SHEET NO.	SHEET TITLE
GENERAL	
1	COVER SHEET
2	SHEET INDEX
3	GENERAL NOTES
4	QUANTITY TAKE OFF SHEETS
5–6	EXISTING CONDITIONS
TRAFFIC CONTROL PLAN	
7–10	COH STANDARD DETAILS TRAFFIC CONTROL PLAN DETAILS
11	TRAFFIC CONTROL PLAN NORTHERN MEDIAN WORK
12	TRAFFIC CONTROL PLAN SOUTHERN MEDIAN WORK
12–14	TEMPORARY TRAFFIC SIGNAL LAYOUT SHEETS
DEMOLITION PLAN	
15–16	DEMOLITION PLAN SHEETS
PAVING	
17–18	PAVING LAYOUT SHEETS
19–29	COH STANDARD DETAILS CONCRETE PAVEMENT DETAILS
DRAINAGE	
30	STORM SEWER LAYOUT
31	COH STANDARD DETAILS STORM SEWER DETAIL
32	OMITTED
SIGNAGE AND PAVEMENT MARKINGS PLANS	
33–34	SIGNAGE AND PAVEMENT MARKING LAYOUT SHEETS
35–42	COH STANDARD DETAILS PAVEMENT MARKING SHEETS
TRAFFIC SIGNAL PLANS	
43	EXISTING SIGNAL LAYOUTT
44–45	PROPOSED SIGNAL
46	POLE SCHEDULE
47	HIGH VOLTAGE SCHEMATIC
48	LOW VOLTAGE SCHEMATIC
49	PROPOSED SIGNAL WIRING LEGEND
50–62	COH STANDARD DETAILS TRAFFIC SIGNAL DETAILS
STORM WATER POLLUTION PREVENTION PLAN	
63–64	SWPPP LAYOUT SHEETS
65	COH STANDARD DETAILS SWPPP DETAIL
66	EPIC SHEET
STREETLIGHTS PLAN	
67–68	STREETLIGHTS PLAN PROPOSED CONDITION SHEETS
69	PROJECT IDENTIFICATION SIGN
LANDSCAPING AND IRRIGATION PLANS	
70	TREE PROTECTION & LANDSCAPE DEMO
71	TREE PROTECTION DETAILS & NOTES
72	LAYOUT & CONSTRUCTION PLAN
73	CONSTRUCTION DETAILS

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED
PROFESSIONAL ENGINEER
9/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SHEET INDEX

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	ACCEPTED AND FILED
DRAWING SCALE	
AS NOTED	80162
CITY OF HOUSTON PM	DRAWING NUMBER
JIADA HUANG	HOUSTON, TEXAS
SHEET NO. 2 OF 73	

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GENERAL NOTES – INSIDE CITY LIMITS

1. Unless otherwise noted and approved on Drawings, construct civil infrastructure in accordance with the effective edition of the Houston Public Works Standard Construction Specifications, Standard Construction Details, and supplements, addenda and amendments thereto. The latest edition of the above publications can be found at: http://www.houstonpermittingcenter.org/office-city-engineer/design-and-construction-standards.
2. The design must be consistent with the effective edition of Houston Public Works Infrastructure Design Manual and TCEQ (Texas Commission on Environmental Quality) requirements.
3. Utilities presented on these drawings are shown based on the best available information. Contractor shall verify the exact locations in the field prior to commencing construction. Contractor shall notify Texas One Call at 713-223-4567/811 or 800-344-8377 and Lone Star Notification Center at 800-669-8344 at least 48 hours before proceeding with any excavation. Utilities marked within the public right of way or in easements shall comply with TAC Title 16, Port 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 effective edition of Houston Public Works, Standard Construction Specifications for Wastewater Collection System, Water Lines, Storm Drainage, Street Paving, and Traffic and Standard Construction Details for Wastewater Collection Systems, Water Lines, Storm Drainage, Street Paving, and Traffic, referenced above and supplements, addenda and amendments thereto, at no additional cost to the City of Houston.
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 and to the satisfaction of the owning authority.
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 as-built drawings will be submitted to the Design Consultant who will make the changes on the original tracings, label each sheet in the set as "Record Drawings", and return it to the Office of the City Engineer.

STREET & BRIDGE CONSTRUCTION NOTES

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

TRAFFIC SIGNAL GENERAL NOTES

1. ALL EQUIPMENT / MATERIALS AND CONSTRUCTION SHALL MEET OR EXCEED THE REQUIREMENTS CONTAINED IN THE CURRENT CITY OF HOUSTON STANDARD SPECIFICATIONS AND STANDARD DRAWINGS, THE PROJECT SPECIFIC SPECIFICATIONS AND THE PLANS.
2. ALL ELECTRICAL WORK SHALL BE IN CONFORMANCE WITH THE PROVISIONS AND REQUIREMENTS OF THE CITY ELECTRICAL CODE.
3. ALL SIGNS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
4. THE CONTRACTOR SHALL ARRANGE THE INSTALLATION OF SIGNALS, POLES AND CONDUIT SO AS TO PERMIT THE CONTINUOUS MOVEMENT OF TRAFFIC IN ALL DIRECTIONS AT ALL TIMES. THE CONTRACTOR SHALL NOT CLOSE MORE THAN ONE LANE OF A ROADWAY AT ONE TIME WITHOUT PRIOR APPROVAL OF THE CITY.
5. THE CONTRACTOR SHALL CLEAN UP AND REMOVE FROM THE WORK AREA ALL LOOSE MATERIAL RESULTING FROM CONTRACT OPERATIONS EACH DAY PRIOR TO WORK BEING SUSPENDED FOR THAT DAY.
6. THE CONTRACTOR SHALL CONTACT THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE TO ARRANGE FOR METER AND ELECTRICAL SERVICE CONNECTION FROM THE POWER COMPANY.
7. ALL PEDESTRIAN PUSH BUTTON ASSEMBLIES SHALL MEET ADA REQUIREMENTS. THE SIGNS THAT SHALL BE USED ARE IDENTIFIED IN THE TMUTCD AS R10-3E. CITY OF HOUSTON STANDARDS FOR PEDESTRIAN FACILITIES SHALL BE MET IN ADDITION TO ANY TEXAS ACCESSIBILITY STANDARDS BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR).
8. PEDESTRIANS PUSH BUTTONS SHALL BE SEPARATED BY A MINIMUM OF 10 FEET. EXCEPTIONS ONLY AS SPECIFIED BY THE ENGINEER WITH AUTHORIZATION FROM THE APPROVED CITY OF HOUSTON REPRESENTATIVE.
9. OVERHEAD STREET NAME SIGNS SHALL BE INSTALLED SUCH THAT THE BOTTOM OF THE SIGN IS NO LESS THAN 17 FEET ABOVE THE ROADWAY PAVEMENT OR NO LESS THAN 16 FEET ABOVE THE FINISHED GRADE BEYOND THE SHOULDER.
10. THE LOCATION OF EACH NEW POLE FOUNDATION, PULL BOX, CONTROLLER CABINET FOUNDATION, UPS CABINET FOUNDATION AND ELECTRIC SERVICE PEDESTAL FOUNDATION SHALL BE MARKED IN THE FIELD AS SHOWN ON THE PLANS. THE EXACT LOCATION SHALL BE APPROVED BY THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE PRIOR TO BEGINNING INSTALLATION OF THE FOUNDATION.
11. NO POLES SHALL BE LOCATED IN WHEELCHAIR RAMPS OR SUCH THAT THEY ARE AN OBSTRUCTION TO PEDESTRIANS OR WHEELCHAIRS.
12. THE TOP OF THE POLE FOUNDATION SHALL BE LEVELED WITH THE FINISHED GRADE. IF THE SLOPE OR SHOULDER DROPS OFF FROM FINISHED GRADE, THE CONTRACTOR SHALL GRADE AROUND POLE FOUNDATION. THE TOP OF THE FOUNDATION SHALL EXTEND NO MORE THAN 4 INCHES ABOVE SURROUNDING GRADE. GROUTING SHALL BE USED TO FILL ANY GAP BETWEEN THE POLE BASE AND FOUNDATION.
13. POLES SHALL BE LOCATED SUCH THAT ALL PORTIONS OF THE POLES AND ATTACHED EQUIPMENT HAVE CLEARANCES FROM OVERHEAD UTILITIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL UTILITY AND THE NATIONAL ELECTRICAL SAFETY CODE (NESC).
14. ALL CONCRETE USED FOR TRAFFIC SIGNAL POLE AND CABINET FOUNDATIONS SHALL BE CLASS "A"(REFER TO THE CITY OF HOUSTON SPECIFICATION FOR CONCRETE).
15. MAST ARM AND STRAIN POLES SHALL NOT BE INSTALLED ON THE FOUNDATIONS LESS THAN SEVEN DAYS AFTER THE PLACEMENT OF THE CONCRETE FOR THE FOUNDATION.
16. ANCHOR BOLTS FOR SIGNAL POLES SHALL BE SET SO THAT TWO ARE IN COMPRESSION AND TWO ARE IN TENSION. PRIOR TO THE INSTALLATION OF THE NUT, THE THREADS OF THE ANCHOR BOLT SHALL BE COATED WITH PIPE JOINT COMPOUND.
17. ALL UNDERGROUND CONSTRUCTION (CONDUIT, FOUNDATIONS AND PULL BOXES) FOR THE INTERSECTION SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF POLES, SIGNALS AND CABINETS. THE CONTRACTOR SHALL NOT PROCEED TO ABOVE GROUND WORK UNTIL THE ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE HAD CONFIRMED THAT THE MATERIALS FOR A COMPLETE INSTALLATION ARE AVAILABLE.
18. UNDERGROUND CONDUIT FOR SIGNAL CABLE SHALL BE EITHER RIGID STEEL, HOT-DIPPED GALVANIZED CONDUIT OR SCHEDULE 80 ELECTRICAL PVC CONDUIT OF THE DIAMETER SHOWN ON THE PLANS, UNLESS OTHERWISE NOTED. ALL COUPLINGS AND CONNECTIONS SHALL BE TIGHT AND WATERPROOF.
19. ALL ABOVE GROUND CONDUIT FOR SIGNAL CABLE AND INTERCONNECT MEDIA SHALL BE HOT DIPPED GALVANIZED STEEL RIGID METAL CONDUIT OF THE DIAMETERS SHOWN ON THE PLANS, UNLESS OTHERWISE NOTED. ALL COUPLINGS AND CONNECTIONS SHALL BE TIGHT AND WATERPROOF.
20. ONLY NEW CONDUIT AND CABLE SHALL BE INSTALLED.
21. CONDUIT INSTALLED UNDER EXISTING PAVED DRIVEWAYS, ROADWAYS OR SIDEWALKS, WHICH ARE NOT SCHEDULED TO BE RECONSTRUCTED AS PART OF THIS PROJECT, SHALL BE INSTALLED BY MEANS OF BORING. THE CONTRACTOR SHALL NOT CUT OPEN ANY STREET OR DRIVEWAY FOR CONDUIT INSTALLATION WITHOUT THE PRIOR APPROVAL OF THE ENGINEER AND/OR THE APPROVED CITY OF HOUSTON REPRESENTATIVE.
22. CONDUIT NOT PLACED UNDER PAVED DRIVEWAYS, ROADWAY PAVEMENT OR SIDEWALK MAY BE PLACED BY CUTTING A TRENCH, INSTALLING THE CONDUIT AND BACKFILLING. ANY TRENCHING FOR CONDUIT WIDER THAN THREE (3) INCHES SHALL BE RESODDED.
23. PULL BOXES SHALL NOT BE INSTALLED WITHIN CONCRETE CURB ACCESS RAMPS. IN ADDITION, ANY PULL BOXES INSTALLED BEHIND CURBS SHALL BE INSTALLED BETWEEN THE CURB AND THE PROPOSED / FUTURE SIDEWALK OR BEYOND THE PROPOSED / FUTURE SIDEWALK. AN EXCEPTION TO THIS NOTE WOULD BE PULL BOXES INSTALLED IN A MEDIAN. ANY PULL BOXES INSTALLED ALONG AN UNCURBED ROADWAY SHALL BE INSTALLED ADJACENT TO, BUT NOT WITHIN, THE SHOULDER. DRAINAGE AREAS SHOULD BE AVOIDED WHEN PLACING JUNCTION BOXES.
24. A 5/8 IN. X 10 FT. GROUND ROD SHALL BE INSTALLED IN ALL PULL BOXES. A GROUND ROD CLAMP SHALL BE FURNISHED FOR GROUNDING THE GROUND WIRE.
25. ALL CONDUITS SHALL BE CLEANED BY COMPRESSED AIR AND A PROPERLY SIZED CONDUIT PISTON OR MANDREL SHALL BE PULLED THROUGH THE CONDUIT PRIOR TO CABLE INSTALLATION.
26. WHEN PULLING TRAFFIC SIGNAL SYSTEM CABLES THROUGH CONDUIT, THE CABLES SHALL BE LUBRICATED WITH A LUBRICANT NORMALLY USED FOR THIS PURPOSE. ANY ABRASION TO ANY CONDUCTOR INSULATION WHICH OCCURS WHILE PULLING CABLE FOR THE TRAFFIC SIGNAL SYSTEM WILL BE CAUSE FOR THE IMMEDIATE REJECTION OF THE CABLE. IF THIS OCCURS, THE CONTRACTOR SHALL REMOVE AND REPLACE THE ENTIRE CABLE RUN AT THEIR EXPENSE.
27. A MINIMUM OF THREE (3) FEET OF EACH WIRE AND CABLE MEASURED FROM THE TOP OF THE PULL BOX SHALL BE LEFT IN EACH PULL BOX AND AT EACH POLE BASE.
28. ALL CABLES SHALL BE STRIPPED, FORMED AND TERMINATED IN A NEAT AND UNIFORM MANNER WHETHER IN THE SIGNAL HEAD OR CONTROLLER CABINET. ALL CABLE SHALL BE BROUGHT INTO THE TERMINAL HOUSING OF SIGNALS AND/OR CONTROLLER CABINETS AND A SUFFICIENT LENGTH OF CABLE SHALL BE LEFT SO THAT ALL TERMINAL CONNECTIONS MAY BE MADE WITHOUT THE NECESSITY OF SPLICING THE CABLE.
29. THE HIGH VOLTAGE CABLES SHOULD BE SEPARATED FROM THE LOW VOLTAGE CABLES EXCEPT IN ENCLOSURES.
30. NO LOOP DETECTOR SHALL BE CUT IN A PARALLEL EXPANSION JOINT. LOOPS CUT ACROSS EXPANSION JOINTS SHALL HAVE A SLACK IN THE CABLE FOR EXPANSION.
31. ALL VEHICLE ROADWAY DETECTION LOOP CABLES SHALL BE #14 AWG IMSA 51-5-1985 CABLE. LEAD-IN CABLES SHALL BE #16 AWG IMSA 50-2-1984 CABLE. NO SPLICES SHALL BE ALLOWED IN THE ROADWAY DETECTION LOOP CABLE EXCEPT AT THE PULL BOX ADJACENT TO LOOP. THE DETECTOR LEAD-IN CABLE SHALL NOT BE SPLICED.
32. DETECTION LOOP SAW CUTS SHALL BE FLUSHED WITH WATER UNDER PRESSURE AND THEN DRIED WITH AIR UNDER PRESSURE.
33. THERE SHALL BE NO SPLICING IN CONDUCTORS EXCEPT FOR THE NECESSARY SPLICE BETWEEN ROADWAY LOOP WIRE AND DETECTOR LEAD-IN CABLE IN THE PULL BOX ADJACENT TO THE DETECTOR. THESE SPLICES SHALL BE WATERPROOF AND SHALL BE IN COMPLIANCE WITH THE CITY OF HOUSTON STANDARD DRAWINGS FOR TRAFFIC SIGNAL CONSTRUCTION. THESE SPLICES SHALL BE MADE BY THE CONTRACTOR. DO NOT GROUND THE CABLE SHIELD AT THE PULL BOX.
34. TWO #10 AWG-XHHW CONDUCTORS SHALL BE INSTALLED FROM EACH LUMINAIRE TO THE SERVICE PEDESTAL, LEAVING THREE FEET OF SLACK FOR EACH CONDUCTOR (MEASURED FROM THE TOP OF THE PULL BOX) IN EACH PULL BOX. ROUTE FOUR CONDUCTORS TO THE LUMINAIRE WITH THE PHOTOELECTRIC CELL. AN IN-LINE FUSE SHALL BE INSTALLED FOR EACH LUMINAIRE IN THE ASSOCIATED PULL BOX.

TRAFFIC SIGNAL GENERAL NOTES CONT'D

35. THE EMERGENCY VEHICLE PRE-EMPTION SENSOR CABLE SHALL BE OPTICOM DETECTOR CABLE MODEL NO. 138. THE CABLE SHALL NOT BE SPLICED.
36. ALL VEHICLE AND PEDESTRIAN INDICATIONS SHALL BE LED.
37. THE CONTRACTOR SHALL BAG ALL NEWLY INSTALLED VEHICULAR AND/OR PEDESTRIAN TRAFFIC SIGNAL HEADS WITH BURLAP OR OTHER APPROVED MATERIAL UNTIL THE FINAL INSPECTION AND ACCEPTANCE BY THE CITY TRAFFIC ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE. THE BURLAP OR OTHER APPROVED MATERIAL/DEVICE SHALL COMPLETELY COVER THE TRAFFIC SIGNAL HEAD AND SHALL OBSCURE THE VIEW OF THE TRAFFIC SIGNAL INDICATIONS SO THAT THEY CANNOT BE SEEN UNTIL THE TRAFFIC SIGNAL IS PLACED IN OPERATION. DURING CONSTRUCTION, THE TRAFFIC SIGNAL WILL BE DE-ENERGIZED WHILE NOT IN USE FOR TESTING.
38. THE TRAFFIC SIGNAL OPERATION AT EXISTING SIGNALIZED INTERSECTIONS SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT.
39. ALL STRIPING AND PAVEMENT MARKINGS ARE TO BE DONE UNDER THIS CONTRACT AND SHALL BE IN PLACE PRIOR TO THE ACTIVATION OF THE TRAFFIC SIGNAL. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL STOP LINES PRIOR TO THE INSTALLATION OF LOOP DETECTORS.
40. ALL CROSSWALK MARKINGS SHALL BE 10-FT. WIDE, FROM INSIDE OF MARKINGS, FOLLOWING CITY OF HOUSTON STANDARD DETAILS
41. ALL CONSTRUCTION SIGNING AND CONSTRUCTION TRAFFIC CONTROL DEVICES SHALL BE IN CONFORMANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

PRIVATE UTILITY NOTES

CAUTION: SBC CABLES

1. THE LOCATION OF SBC 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 HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.
2. THE CONTRACTOR SHALL CALL 311 (PUBLIC UNDERGROUND UTILITY) AND 811 (PRIVATE UNDERGROUND UTILITY) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND UTILITY LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN (18) INCHES OF THE INDICATED LOCATION OF SBC FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE SBC FACILITIES.
4. WHEN SBC FACILITIES ARE EXPOSED, THE CONTRACTOR SHALL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES, THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.

CAUTION: UNDERGROUND GAS FACILITIES

1. LOCATIONS OF CENTERPOINT ENERGY GAS MAIN LINES (TO INCLUDE UNIT GAS TRANSMISSION AND/OR INDUSTRIAL GAS SUPPLY CORPORATION WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. THE CONTRACTOR SHALL CONTACT LONE STAR NOTIFICATION CENTER AT (713) 223-4567 OR 1-800-669-8344 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO MAIN AND SERVICE LINES FIELD LOCATED.
2. WHEN CENTERPOINT ENERGY GAS PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 967-8037 (7:00 AM TO 4:30 PM) FOR STATUS OF LINE LOCATION REQUESTS BEFORE EXCAVATION BEGINS.
3. WHEN EXCAVATING WITHIN EIGHTEEN (18) INCHES OF THE INDICATED LOCATION OF CENTERPOINT ENERGY GAS FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NONMECHANIZED EXCAVATION PROCEDURES.
4. WHEN CENTERPOINT ENERGY GAS FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
5. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL FACILITIES

1. OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE HAVE NOT ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW SECTION 752, HEALTH & SAFETY CODE, FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED, CALL CENTERPOINT ENERGY ELECTRIC AT (713) 207-7777.
2. CONTRACTOR TO NOTIFY LONE STAR NOTIFICATION CENTER AT (713) 223-4567, 48 HOURS BEFORE STARTING WORK IN STREET RIGHT-OF-WAY OR EASEMENTS.

RESPONSIBILITIES:

1. THE CONTRACTOR SHALL SUPPLY AND INSTALL THE FOLLOWING EQUIPMENT AND MATERIALS AS SPECIFIED IN THE PLANS: STEEL POLE ANCHOR BOLTS (WITH NUTS AND WASHERS), CONCRETE POLE FOUNDATIONS WITH REINFORCEMENT (WHERE SPECIFIED), TRAFFIC SIGNAL CONTROLLER CABINET(S) WITH CONTROLLER(S) AND ALL AUXILIARY EQUIPMENT, CONTROLLER CABINET CONCRETE FOUNDATION(S), CONCRETE PULL BOXES, ELECTRICAL CONDUIT, GROUND RODS AND CONNECTORS, BARE BOND WIRE AND ALL OTHER CONDUCTORS, POLES, MAST ARMS, TRAFFIC SIGNALS AND MOUNTING ASSEMBLIES, PEDESTRIAN SIGNALS AND MOUNTING ASSEMBLIES, PEDESTRIAN PUSH BUTTON STATIONS WITH SIGNS, LUMINARIES, PHOTOCELLS, ELECTRIC SERVICE PEDESTAL(S) AND CONCRETE FOUNDATION(S), VIDEO DETECTION SYSTEM EQUIPMENT, VEHICLE DETECTION LOOPS, AND ALL OTHER APPURTENANCES NECESSARY FOR THE OPERATION OF THE TRAFFIC SIGNAL INSTALLATION(S), EXCEPT AS MODIFIED IN THE PLANS. (MODIFY THE LIST OF MATERIALS AS APPROPRIATE)
2. NOTE 2 OMITTED
3. THE CONTRACTOR SHALL DELIVER THE CONTROLLER CABINET(S) WITH THE CONTROLLER(S) AND AUXILIARY EQUIPMENT SPECIFIED IN THE PLANS TO THE CITY OF HOUSTON TRAFFIC OPERATIONS CENTER, 2200 PATTERSON STREET FOR TESTING, A MINIMUM OF THREE WEEKS PRIOR TO THE INSTALLATION(S) AT THE INTERSECTION(S). CONTACT THE TRAFFIC MAINTENANCE BRANCH AT LEAST 2 WORKING DAYS PRIOR TO THE DELIVERY OF THE CONTROLLER CABINET(S) TO THE CITY OF HOUSTON. THE CONTRACTOR SHALL PICK UP AND TRANSPORT THE CONTROLLER CABINET(S) FROM THE CITY OF HOUSTON TRAFFIC OPERATIONS CENTER TO THE INTERSECTION(S) AFTER CITY OF HOUSTON STAFF HAS TESTED THE EQUIPMENT AND APPROVED IT FOR INSTALLATION.
4. THE CONTRACTOR SHALL INSTALL EACH TRAFFIC CONTROLLER CABINET ON ITS FOUNDATION AND ROUTE ALL OF THE CONDUCTORS INTO THE CONTROLLER CABINET. CONDUCTORS SHALL BE TERMINATED IN THE CABINET BY THE CONTRACTOR UNDER THE OBSERVATION OF AN APPROVED CITY OF HOUSTON REPRESENTATIVE.
5. THE CONTRACTOR SHALL CAREFULLY DISASSEMBLE AND SALVAGE ALL EXISTING TRAFFIC SIGNAL AND STREET LIGHTING EQUIPMENT THAT IS NOT TO REMAIN OR BE RELOCATED. ALL OF THE EQUIPMENT TO BE INSPECTED BY TRAFFIC OPERATIONS INSPECTOR TO IDENTIFY SALVAGE ITEMS. ITEMS TO BE SALVAGED SHALL BE RETURNED TO THE CITY OF HOUSTON TRAFFIC OPERATIONS CENTER, 2200 PATTERSON STREET, OR UPPER BRAES, 18211 WEST HOUSTONCENTER BLVD., AND UNLOADED BY THE CONTRACTOR. CONTACT THE TRAFFIC MAINTENANCE BRANCH AT LEAST 2 WORKING DAYS PRIOR TO RETURNING THE EQUIPMENT. ALL NON-SALVAGE ITEMS TO BE DELIVERED BY THE CONTRACTOR TO AN APPROVED CITY OF HOUSTON RECYCLE FACILITY.
6. THE CONTRACTOR SHALL SALVAGE AND REPLANT ANY LANDSCAPING VEGETATION THAT MAY BE DAMAGED BY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM AN APPROVED CITY OF HOUSTON REPRESENTATIVE BEFORE ANY PLANTS ARE MOVED.
7. THE CONTRACTOR SHALL REPAIR/RESTORE ANY LANDSCAPE IRRIGATION COMPONENTS DAMAGED BY CONSTRUCTION ACTIVITY TO THEIR ORIGINAL CONDITION.

THE LOCATION OF PUBLIC AND PRIVATE UTILITIES IS SHOWN IN AN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES TO UTILITIES THAT ARE THE RESULT OF HIS FAILURE TO EXACTLY LOCATE AND PRESERVE UNDERGROUND FACILIT

TRAFFIC NOTES

Contractor or owner shall submit traffic control plans with the Mobility Permit application. The plans shall be drawn to scale and sealed by a licensed professional engineer in the state of Texas.
The general notes that shall be included on the traffic control plan can be found in Chapter 15 (15.12 Traffic Control Plan) of the City of Houston?s (City) Infrastructure Design Manual (IDM). Below are several key notes from the IDM to be aware of:

1. The Contractor shall provide and install traffic control devices in conformance with Part VI of the Texas Manual on Uniform Traffic Control Devices (TMUTCD) latest edition with revisions during the entire construction period.
2. No work shall be performed in residential areas from 7:00PM to 7:00AM.
3. Contractor shall maintain approved number of lanes of traffic in each direction during construction working hours. Traffic Control plans shall include one-way and/or detour plans. Contractor shall maintain ADA complaint pedestrian access to bus stops and adequate bus access to the bus stop.
4. Contractor shall cover open pavement excavations for minor utility work with anchored steel plates during non-working hours, open lanes for normal traffic flow when feasible.
5. Contractor shall secure roadway/sidewalk/street/bicycle facility permits as described in City of Houston ordinance, Chapter 40; Streets & sidewalks, section 40-361 from Houston Permitting Center (Mobility Permit Section at https://geohub.houstontx.gov) before implementing the traffic control plan. The application must be submitted at least ten business days prior to the implementation of the traffic control plan and/or beginning construction work. The Contractor shall provide traffic control plans, construction sequencing, and construction schedule with the application.
6. Contractor shall have approved traffic control plan and permit at the job site for inspection at all times
7. Access to driveways adjacent to the construction work zone shall be maintained at all times as much as possible. Additional cones and/or delineators may be required to delineate the driveway access route through the construction work zone. A minimum of one travel lane shall be maintained across the driveway, unless prior written approval is obtained from the City of Houston.
8. Additional off duty police officers/flaggers may be requested to direct traffic when lanes are blocked at the direction of the City even if they are not specifically identified on the project plans.

SWPPP NOTES

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

METRO HOUSTON

1. THE CONTRACTOR SHALL CONTACT METRO BUS OPERATIONS BY EMAIL TEN (10) BUSINESS DAYS IN ADVANCE OF WORK SCHEDULED THAT WOULD IMPACT A METRO BUS OR RAIL LINE. EMAILS SHALL BE SENT TO ZELMA.RIDLEY@RIDEMETRO.ORG, TANGEE.MOBLEY@RIDEMETRO.ORG AND CARL.TAYLOR@RIDEMETRO.ORG, CARBON COPIED TO COH PROJECT MANAGER, CALL METRO AT (713) 635-4000 WITH QUESTIONS.

DETAILS

1. CITY OF HOUSTON STANDARD DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATERLINES, STORM DRAINAGE, AND STREET PAVING ARE INCORPORATED IN PLANS BE REFERENCE AS IF COPIED VERBATIM. STANDARD DETAILS ARE AVAILABLE FOR DOWNLOAD AT THE FOLLOWING WEB ADDRESS https://www.houstonpermittingcenter.org/office-city-engineer/design-and-construction-standards
2. DETAILS INCLUDED IN PLAN SET SUPERCEDE RELATED COH STANDARD DETAILS.

ATT TEXAS/SWBT PRIVATE UTILITY NOTES

1. THE LOCATIONS OF ATT TEXAS/SWBT FACILITIES ARE SHOWN IN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. THE CONTRACTOR HOLDS RESPONSIBILITY FOR ANY AND ALL DAMAGE WHICH MIGHT BE OCCASIONED BY 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 ATT TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED BY NON-MECHANIZED EXCAVATION PROCEDURES.
4. WHEN ATT 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 ATT TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THOSE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.
6. PLEASE CONTACT THE ATT TEXAS DAMAGE PREVENTION MANAGER ROOSEVELT LEE JR. AT (713) 567-4552 OR EMAIL HI AT RL7259@ATT.COM, IF THERE ARE ANY QUESTIONS ABOUT BORING OR EXCAVATING NEAR ATT TEXAS/SWBT FACILITIES.

CENTERPOINT ENERGY PRIVATE UTILITY NOTES

CAUTION: UNDERGROUND GAS FACILITIES

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

Item No.	Section No.	Item Description	UOM	Quantity
B1. GENERAL				
1	01502	Mobilization (Includes Insurance and Bonds)	LS	1
2	01555	Traffic Control And Regulation (Including Lane Closures, Signage, Etc.)	LS	1
3	01555	Flagmen (Including Uniformed Officer)	LS	1
4	01562	Tree and Plant Protection	EA	6
6	01570	Storm Water Pollution Prevention Control (Including Furnish & Install, Inspection, Maintenance and Removal)	LS	1
7	02086	Adjust Existing Manhole Frame and Inlets to Grade, Complete in Place	EA	1
8	02086	Adjust Existing Meter Box, Valve, or Pull Box to New Grade, Complete in Place	EA	1
9	02233	Clearing And Grubbing	AC	0.8
12	02922	Furnish and Install Sodding	SY	300
B2. DEMOLITION				
13	02221	Remove and Dispose Existing Sidewalks, Curb Ramps, Driveways, and Islands, With or Without Pavers, All Depths and Materials	SY	260
14	02221	Remove and Dispose Existing Pavement With or Without Base	SY	90
18	02221	Remove and Dispose Existing Concrete Curb or Curb and Gutter	LF	322
B3. TRAFFIC SIGNAL				
23	02582	Furnish and Install 40-ft Powder Coated Mast Arm Pole Assembly with Foundation (Including Luminaire Arm and 106 Watt LED Luminaire), Complete in Place	EA	1
24	02582	Furnish and Install 50-ft Powder Coated Mast Arm Pole Assembly with Foundation (Including Luminaire Arm and 106 Watt LED Luminaire), Complete in Place	EA	0
25	02582	Furnish and Install 45-ft. Mast Arm Pole Assembly with Foundation (Including Luminaire Arm and 115 Watt LED Luminaire and Photocell), Complete in Place	EA	2
26	02582	Furnish and Install 55-ft. Mast Arm Pole Assembly with Foundation (Including Luminaire Arm and 115 Watt LED Luminaire and Photocell), Complete in Place	EA	1
27	16715	Furnish and Install 3-Section Vehicle Signal Head Assembly (<R<Y<G) (Horizontal) (H3L) with back plate, Complete In Place	EA	3
28	16715	Furnish and Install 3-Section Vehicle Signal Head Assembly (<R<Y<G) (Vertical) (V3L) with back plate, Complete In Place	EA	2
29	16715	Furnish and Install 3-Section Vehicle Signal Head Assembly (R<Y<G) (Horizontal) (H3) (YLW REFL BDR) with back plate, Complete In Place	EA	9
31	16715	Furnish and Install 4-Section Vehicle Signal Head Assembly (RY<GG) (Horizontal) (H4TL) (YLW REFL BDR) with back plate, Complete in Place	EA	2
33	16715	Furnish and Install 4-Section Vehicle Signal Head Assembly (RY<GG) (Vertical) (V4TL) (YLW REFL BDR) with back plate, Complete in Place	EA	2
34	16715	Furnish and Install 5-Section Vehicle Signal Head Assembly (<R<Y<G<Y<G) (Horizontal) (H5R) with back plate, Complete In Place	EA	1
35	16711	Furnish and Install Conduit, 1-inch SCH 80 PVC Trench (Include bond wire and pull tape), Complete in Place	LF	70
36	16711	Furnish and Install Conduit, 2-inch SCH 80 PVC Trench (Include bond wire and pull tape), Complete in Place	LF	1840
37	16711	Furnish and Install Conduit, 2-inch SCH 80 PVC Bore (Include bond wire and pull tape), Complete in Place	LF	0
38	16711	Furnish and Install Conduit, 3-inch SCH 80 PVC Trench (Include bond wire and pull tape), Complete in Place	LF	70
39	16711	Furnish and Install Conduit, 3-inch SCH 80 PVC Bore (Include bond wire and pull tape), Complete in Place	LF	400
40	16711	Furnish and Install Conduit, 4-inch SCH 80 PVC Trench (Include bond wire and pull tape), Complete in Place	LF	90
41	16711	Furnish and Install Conduit, 4-inch SCH 80 PVC Bore (Include bond wire and pull tape), Complete in Place	LF	520
42	16720	Furnish and Install Traffic Signal Cables, 2/C-#14 (Shield) (DLC+50), Complete in Place	LF	10430
43	16720	Furnish and Install Traffic Signal Cables, 3/C-#14 AWG SOLID CABLE, Complete in Place	LF	1310
44	16720	Furnish and Install Opticom Cables, 3/C-#20 (Shield), Complete in Place	LF	1320
45	16720	Furnish and Install Traffic Signal Cables, 5/C-#14 AWG SOLID CABLE, Complete in Place	LF	1360
46	16720	Furnish and Install Traffic Signal Cables, 7/C-#14 AWG SOLID CABLE, Complete in Place	LF	3930
47	16720	Furnish and Install #8 AWG, Bare Bond, SOLID COPPER BARE WIRE Complete in Place	LF	2640
48	16720	Furnish and Install #8 AWG, Bare Ground, Complete in Place	LF	80
49	16720	Furnish and Install #10 AWG XHHW Luminaire Wire ,Complete in Place	LF	1850
51	16720	Furnish and Install #12 AWG XHHW Luminaire Ground Wire, Complete in Place	LF	500
52	16720	Furnish and Install #14 AWG (IMSA 50-2-1985) Wire, Complete in Place	LF	10210
53	16720	Furnish and Install #4 AWG XHHW Thin Service Wire (SP1 AND SP2), Complete in Place	LF	400
54	16710	Furnish and Install Type "A" Pull Box with Apron, Gravel and Ground Rod, Complete in Place	EA	12
55	16710	Furnish and Install Type "B" Pull Box with Apron, Gravel and Ground Rod, Complete in Place	EA	4
56	16710	Furnish and Install Type "C" Pull Box with Apron, Gravel and Ground Rod, Complete in Place	EA	1
58	02582	Furnish and Install 15' Pedestrian Pole with Foundation, Complete In Place	EA	6
59	16719	Furnish and Install LED Pedestrian Signal Head Assembly (Symbolic)(Countdown), Complete in Place	EA	8
60	16750	Furnish and Install Accessible Pedestrian Push Button Station (left or right), Complete in Place	EA	8
61	02893	Furnish and Install Overhead Street Name Signs, Complete in Place	EA	4
65	02983	Furnish and Install Sign "Left Turn Yield On Green Arrow Only", R10-5 (30"x36"), Complete in Place	EA	7
66	02983	Furnish and Install Sign Lane Control, R3-8L/R (30"x30"), Complete in Place	EA	3
67	02983	Furnish and Install Sign No U-Turn, R3-4 (36"x36"), Complete in Place	EA	1
68	16727	Furnish and Install Traffic Signal Sawcut Loop Detector (RLW+ LOOPS), Complete in Place	LF	2396
69	16727	Furnish and Install Two Channel Detector Amplifiers, Complete in Place	EA	4
70	02893	Remove and Salvage Existing Traffic Signal System (Including Foundations and Signs)	EA	1
71	16739/16743	Furnish and Install Cellular Modem, Bluetooth Reader, and Antenna, Complete in Place	EA	1
72	02893	Furnish and Install Electrical Service Pedestal Assembly with Foundation ("Square D" Breakers Included), Complete in Place	EA	1
73	16730/16731	Furnish and Install ITS Controller Cabinet Assembly (Mode 340 ITS)(Type 2070LX) With Foundation (with Apron and Polymer Base), Complete in Place	EA	1
74	16732	Furnish, Install, and Program Uninterruptible Power Supply, Complete in Place	EA	1
75	16733	Furnish and Install Field Hardened Ethernet Switch (Six Copper Ports and Two Fiber Optic Ports), Complete in Place	EA	1
76	16785	Furnish and Install GPS Serial Communication Module, Complete in Place	EA	1
77	16724	Furnish and Install Emergency Vehicle Preemption System, Complete in Place	EA	1
79	02893	Temporary Signal Modifications During Construction	LS	1
B4. PAVING				
80	02771	Furnish and Install 6"-9" Curb (doweled on), Complete in Place	LF	885
83	02772	Furnish and Install Concrete Curbed Medians and Directional Islands/ Raised Concrete Islands, Complete in Place	SY	30
84	02775	Furnish and Install Wheelchair Ramp (including ramp, bottom landing, detectable warning, curbs, header)	SF	1847
86	02775	Furnish and Install 4 ½-inch Thick Concrete Sidewalk, Complete in Place	SF	611
87	02317	Furnish and Install Select Fill, Complete in Place	CY	130
88	02775	Furnish and Install Truncated Dome Detectable Warning Surfaces, Complete in Place (not part of Wheelchair Ramp)	SF	120
B5. PAVEMENT MARKING AND SIGNAGE				
92	01554	Traffic Control and Street Signs - Furnish and Install **Ground Mounted Sign Assembly** (Include Sign(s), Plaque(s), Pole(s), Foundation, Mounting(s), and Hardware, Complete in Place)	EA	8
96	01554	Traffic Control and Street Signs - Furnish and Install Existing Sign on Another Existing Pole (Include Mounting(s), and Hardware, Complete in Place)	EA	1
98	01556	Traffic Control and Street Signs - Relocate existing sign(s) with pole on Ground (Include Mounting(s), and Hardware, Removal of existing pole & foundation, Complete in Place)	EA	2
100	01582	Build Houston Forward Project Identification Signs (Include Fabrication, Installation, Maintenance and Removal)	EA	2
101	01554	Remove and Dispose Existing Sign Assembly, Including Pole and Foundation	EA	1
102	02762	Blast Cleaning of Pavement Markings- Lines All Width	LF	4007
103	02762	Blast Cleaning of Pavement - All Symbols And Words	EA	17
105	02764	Raised Pavement Markers - Type II-C-R- Furnish and Install, Complete in Place	EA	109
106	02767	Reflectorized Yellow Paint on Curb- Furnish and Install, Complete in Place	LF	45
107	02765	Thermoplastic Pavement Markings - All Arrows, Words And Numbers- Furnish and Install, Complete in Place	EA	30
109	02765	Preformed Pavement Markings - Type C -Bike & Ped Crossing - All Color- Furnish and Install, Complete in Place	SF	1248
111	02767	Thermoplastic Pavement Markings - WS6- Furnish and Install, Complete in Place	LF	2800
113	02767	Thermoplastic Pavement Markings - WS24- Furnish and Install, Complete in Place	LF	165
114	02767	Thermoplastic Pavement Markings - WB4- Furnish and Install, Complete in Place	LF	500
115	02767	Thermoplastic Pavement Markings - WG6- Furnish and Install, Complete in Place	LF	1025

Item No.	Section No.	Item Description	UOM	Quantity
B6. STORM SEWER ITEMS				
121	02663	Remove Existing Junction Box Grate Top with Lid Top, Complete in Place	EA	1
C. EXTRA WORK				
125	02221	Extra Removal of Miscellaneous Concrete and Masonry	SY	10
126	02318	Extra Hand Excavation	CY	10
127	02318	Extra Machine Excavation	CY	10
128	02318	Excavation Around Obstructions	CY	10
129	02318	Extra Placement of Backfill Material	CY	5
131	See Plans	Concrete Pavers (Field)	SY	167
132	See Plans	Concrete Pavers at Back of Curb	SY	43
133	02811	Landscape Irrigation (Includes Repair)	LS	1
134	02581	Furnish and Install CenterPoint Street Light Conduit (2" PVC), w/ stub ups	LF	700
135	02581	Install CenterPoint Street Ligh Pull Box	EA	4
D. CASH ALLOWANCE				
136	Allowance	Permit Fees (FMO Floodway, Street Cut, Etc.)	LS	1
137	Allowance	Streetlighting Modifications (By CenterPoint Energy)	LS	1

NOTE:
1. LUMP SUM (LS) ARE TO BE PAID IN RESPECT TO THIS PROJECT ONLY

NO.	DATE	REVISION	APP.

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
2/11/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

QUANTITY TAKE OFF SHEETS

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	HOUSTON PUBLIC WORKS ACCEPTED AND FILED
AS NOTED	80162 CITY DRAWING NUMBER
CITY OF HOUSTON POC	Approval Date 08/27/26
JIADA HUANG	HOUSTON TX
SHEET NO. 4 OF 73	

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EXISTING SPEED LIMITS
N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

N. ELDRIDGE PARKWAY CENTERLINE GEOMETRICS

Element	Sta Start	Northing Start	Easting Start	Length	Radius	Chord Direction
Line 1	210+00.000	13849061.21	3041178.013	56.599	–	N00°11'54.776"W
Line 2	210+56.599	13849117.81	3041177.817	80.546	–	N00°58'32.289"E
Line 3	211+37.145	13849198.34	3041179.188	18.712	–	N02°08'13.746"E
Line 4	212+37.037	13849217.04	3041179.886	99.892	–	N03°40'16.466"E
Line 5	212+61.055	13849316.73	3041186.282	24.018	–	N06°03'42.440"E
Line 6	212+81.419	13849340.61	3041188.818	20.364	–	N07°33'30.946"E
Line 7	217+81.419	13849360.80	3041191.497	500.000	–	N12°30'42.941"E

NOTE:
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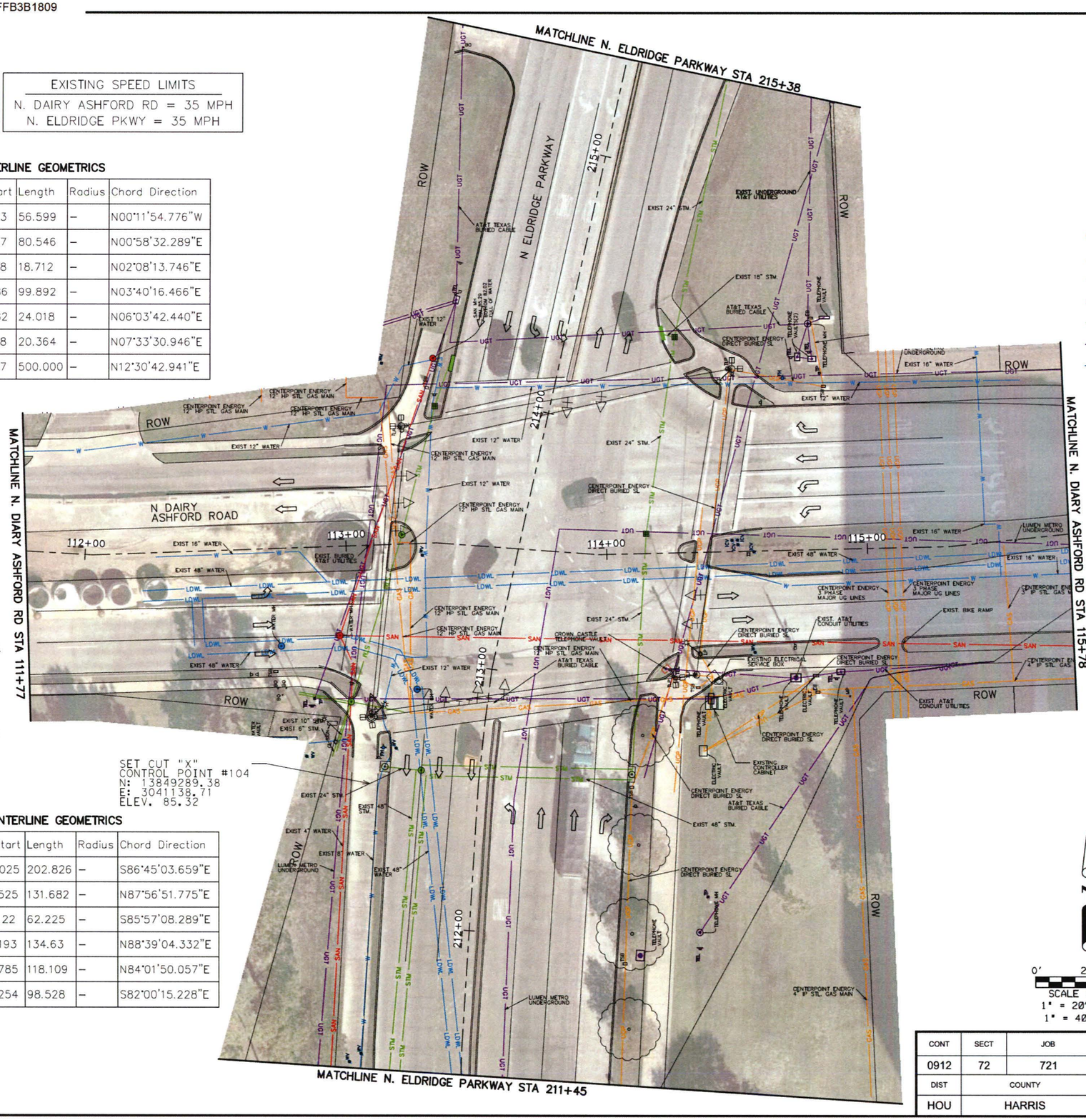
2. THE CONTRACTOR SHALL LOCATE/EXPOSE ALL UTILITIES THAT MAY BE IN CONFLICT WITH SIGNAL POLE LOCATIONS BY HAND EXCAVATION PRIOR TO CONSTRUCTION. IF UTILITIES ARE IN CONFLICT, THE ENGINEER WILL BE CONTACTED TO FIND AN ALTERNATE LOCATION FOR THE SIGNAL POLES.

N. DAIRY ASHFORD ROAD CENTERLINE GEOMETRICS

Element	Sta Start	Northing Start	Easting Start	Length	Radius	Chord Direction
Line 1	110+00.000	13849415.63	3040836.025	202.826	–	S86°45'03.659"E
Line 2	112+02.826	13849404.13	3041038.525	131.682	–	N87°56'51.775"E
Line 3	112+65.051	13849408.85	3041170.122	62.225	–	S85°57'08.289"E
Line 4	113+99.681	13849404.46	3041232.193	134.63	–	N88°39'04.332"E
Line 5	115+17.790	13849407.63	3041366.785	118.109	–	N84°01'50.057"E
Line 6	116+16.318	13849419.91	3041484.254	98.528	–	S82°00'15.228"E



LEGEND

- EXISTING SIGNAL POLE
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING PEDESTRIAN POLE
- EXISTING PULL BOX
- EXISTING GROUND BOX
- EXISTING CONTROLLER CABINET
- EXISTING ELECTRICAL SERVICE PEDESTAL
- EXISTING SIGNAL HEAD
- GAS — EXISTING GAS LINE
- LDWL — EXISTING LARGE DIAMETER WATER LINE
- UCP — EXISTING POWER – UNDERGROUND
- SAN — EXISTING SANITARY SEWER
- STM — EXISTING STORM SEWER
- UGT — EXISTING TELECOMM LINE – UNDERGOUND
- W — EXISTING WATER LINE

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

VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower — Date 05/22/25
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.
Signature valid for six months.

Mike Brower — Date 05/22/25
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.

Marlon Smither — Date 05/27/2025
Approved for AT&T underground conduit facilities only.
Signature valid for one year.

energy corridor™
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tei Planning + Design
712 MAIN STREET, SUITE 950
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TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

EXISTING CONDITIONS
SHEET 1 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	ACCEPTED AND FILED
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AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 5 OF 73	

HOUSTON, TEXAS

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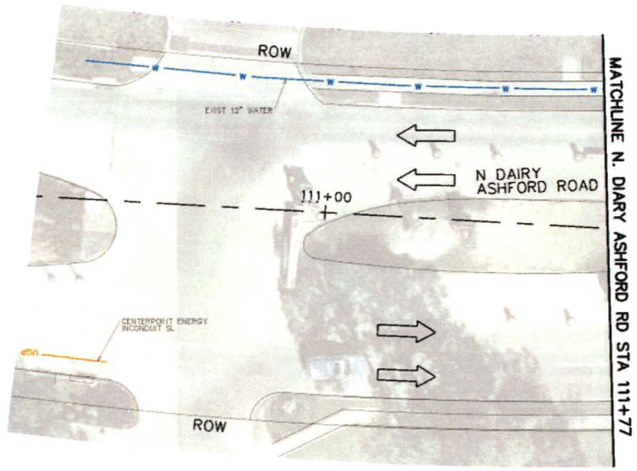

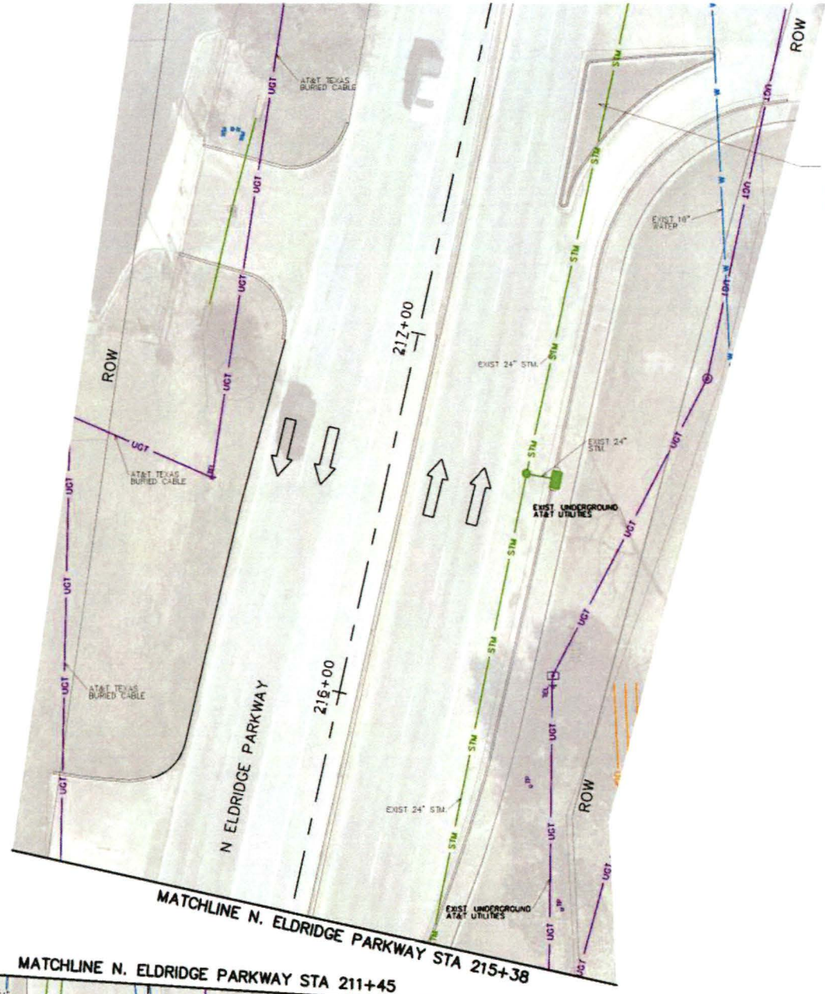

SET CUT "X"
CONTROL POINT #105
N: 13849786.00
E: 3041321.37
ELEV. 87.49

LEGEND

- EXISTING SIGNAL POLE
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING PEDESTRIAN POLE
- EXISTING PULL BOX
- EXISTING GROUND BOX
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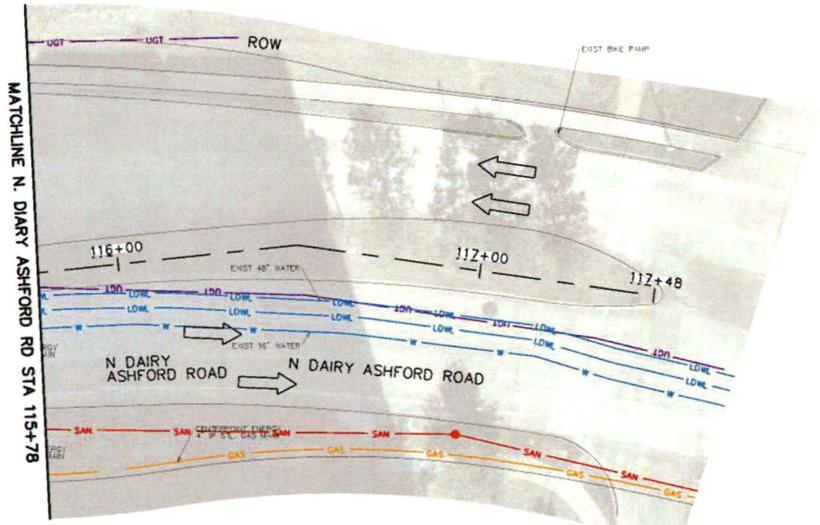

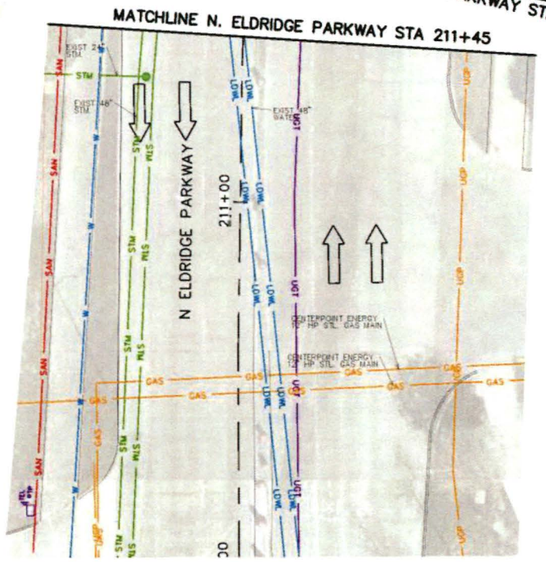

DESIGN SPEEDS FOR
LOOP DETECTOR SET BACK
N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

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N

0' 20' 40'
SCALE IN FEET
1" = 40' FOR 22X34
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CONT	SECT	JOB	HIGHWAY
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6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

EXISTING CONDITIONS
SHEET 2 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	
N-MD0260-0002-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 6 OF 13	

FOR CITY OF HOUSTON USE ONLY
ACCEPTED AND FILED
80162
HOUSTON, TEXAS

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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 WITH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
2. ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM THE LATEST VERSION OF THE TMUTCD.
3. NO LANES SHALL BE CLOSED DURING THE HOURS OF 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM MONDAY THRU FRIDAY WITHOUT APPROVAL OF THE CITY TRAFFIC ENGINEER.
4. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00 PM TO 7:00 AM.
5. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF THROUGH LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS. TRAFFIC CONTROL PLANS SHALL INCLUDE ONE-WAY AND/OR DETOUR PLANS. CONTRACTOR SHALL MAINTAIN ADA COMPLIANT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO ALL THE BUS STOPS.
6. CONTRACTOR SHALL MAINTAIN TRAFFIC LANES AND DETOURS ACCORDING TO TRAFFIC CONTROL PLANS DURING WORKING HOURS.
7. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, AND OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.
8. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT AN ALTERNATE SET OF TRAFFIC CONTROL PLANS TO THE CITY OF HOUSTON PROJECT MANAGER FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION. THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SHALL BE SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. OFFICE OF CITY ENGINEER, MOBILITY PERMITS SECTION REPRESENTATIVE APPROVAL IS REQUIRED TO ACCEPT THE PROPOSED CHANGES.
9. CONTRACTOR SHALL SECURE LANE/SIDEWALK/BICYCLE FACILITY CLOSURE PERMITS FROM OFFICE OF CITY ENGINEER (MOBILITY PERMIT SECTION AT https://apps.houstontx.gov/pws/) 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 (832-393-8590) 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.

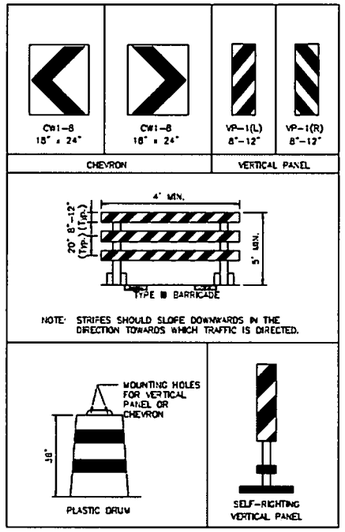
J. SPACING MAY BE ADJUSTED TO PROVIDE DRIVEWAYS, INTERSECTIONS AND /OR MEDIAN OPENINGS.

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

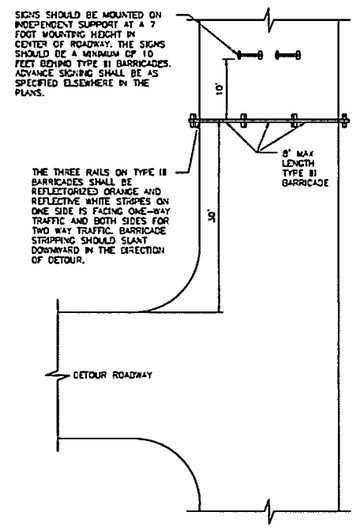
POSTED SPEED (MPH)	DISTANCE "D" (FEET)
30	200
35	250
40	305
45	360
50	425
55	495



CHANNELIZATION AND BARRICADES

LEGEND:

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



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

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
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

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CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
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CITY OF HOUSTON STANDARD DETAILS
TRAFFIC CONTROL PLAN DETAIL 1 OF 4

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 7 OF 73	

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HOUSTON, TEXAS

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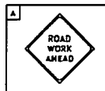
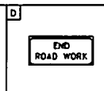
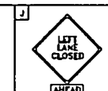
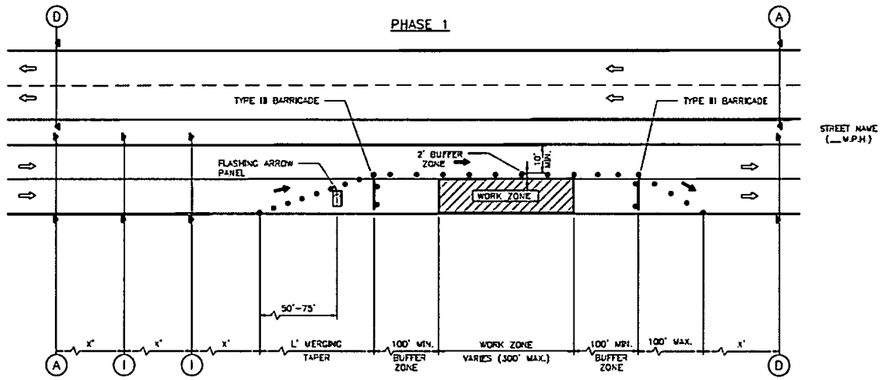
			
CW20-1	G20-2	CW20-5(2) CW16-3	CW20-5(1) CW16-3

PHASE 1



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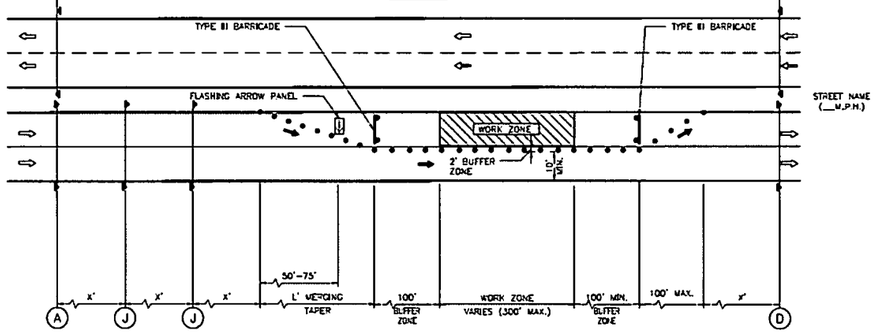

LEGEND:

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

NOTES:

1. RETURN TAPERS AND DOWNSTREAM BARRICADES ARE OPTIONAL ON A DIVIDED ROADWAY SECTION.
2. DOUBLE SIGNS SHALL BE USED ONLY ON ROADWAYS WITH MEDIANS.
3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.

APPROVED BY:	APPROVED BY:
Sahid Kaisar	Lesley Nellen
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP ONE LANE CLOSURE
PHASE 1 & 2

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CITY OF HOUSTON STANDARD DETAILS
TRAFFIC CONTROL PLAN DETAIL 2 OF 4

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

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SHEET NO. 8 OF 73	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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PROFESSIONAL ENGINEER
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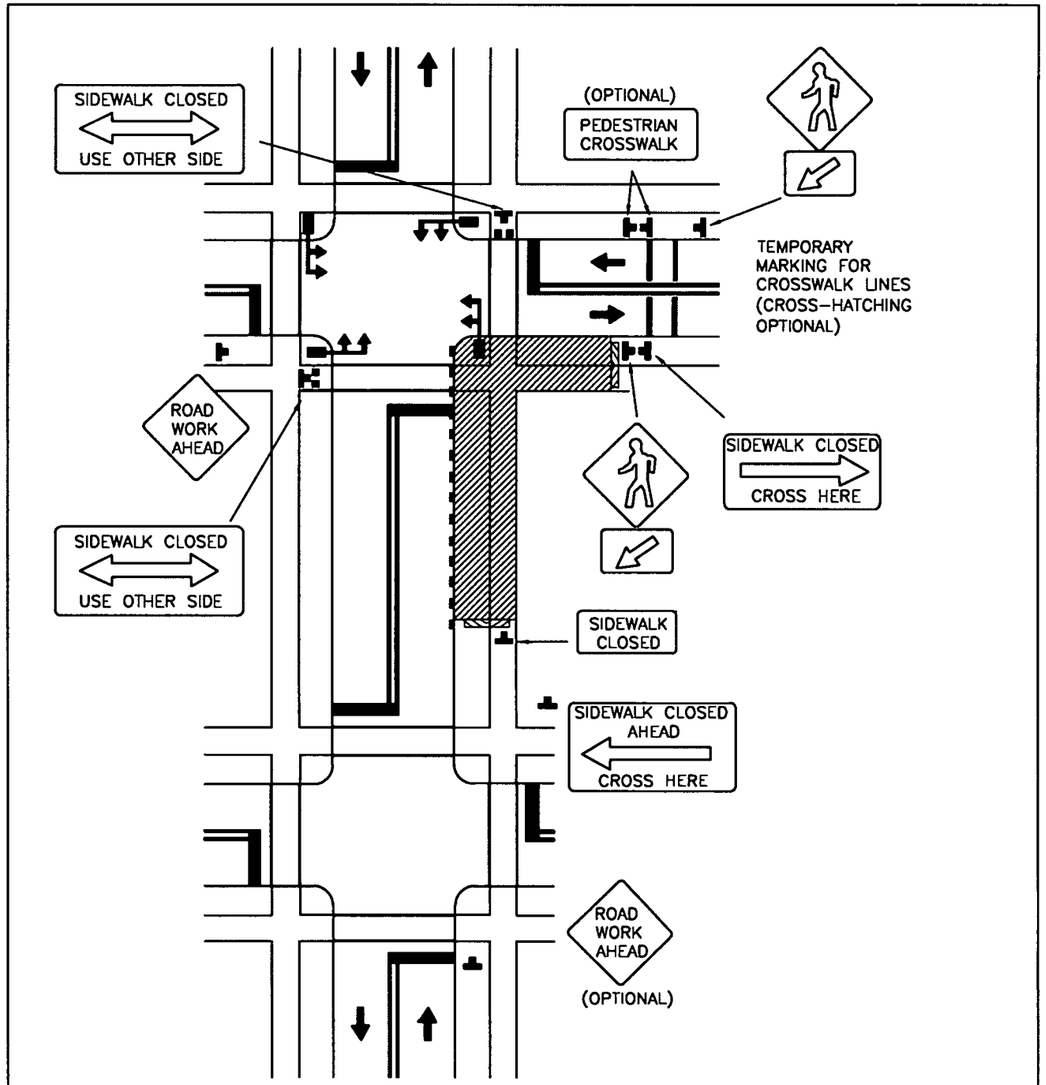

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APPROVED BY:

CITY ENGINEER	CITY TRAFFIC ENGINEER	DIRECTOR OF HPW
DocuSigned by: Subait Kanwar 0EFBB0C041F5478	DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD	DocuSigned by: Carol Haddock A03C410B7283453...

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CROSSWALK CLOSURES AND PEDESTRIAN DETOURS

(SCALE: NOT TO SCALE)

EFF DATE: NOV-27-2023 | DWG NO: 01555-16

CONT	SECT	JOB	HIGHWAY
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STATE OF TEXAS
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6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC CONTROL PLAN DETAIL 3 OF 4

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PROJECT MANAGER	
JIADA HUANG	
SHEET NO. 9 OF 73	

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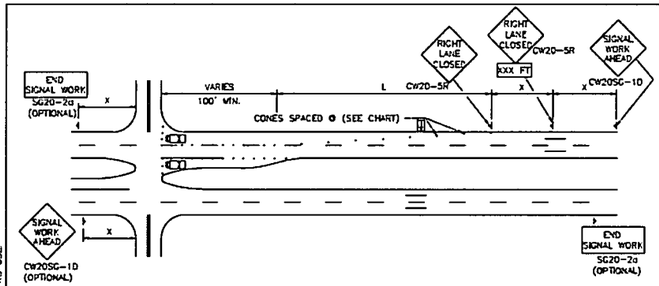
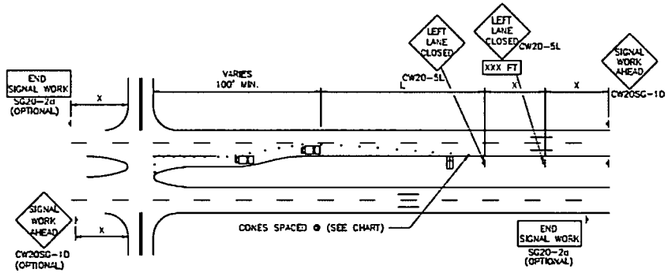
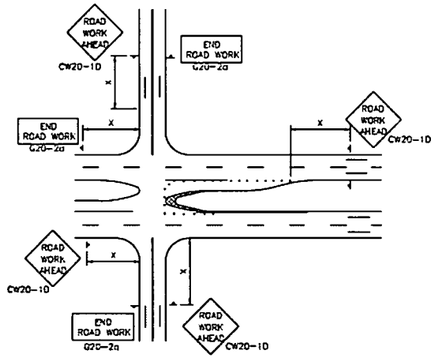


ONE LANE CLOSURE W/ RIGHT LANE AND/OR LEFT TURN LANE CLOSED



ONE LANE CLOSURE W/ LEFT LANE AND/OR LEFT TURN LANE CLOSED



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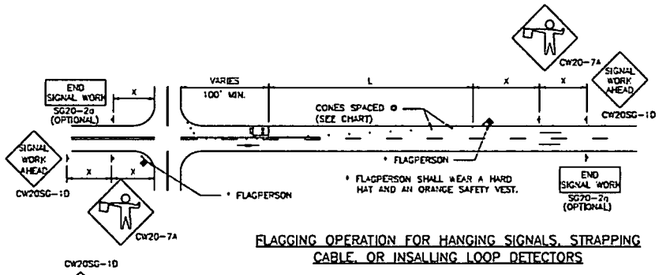
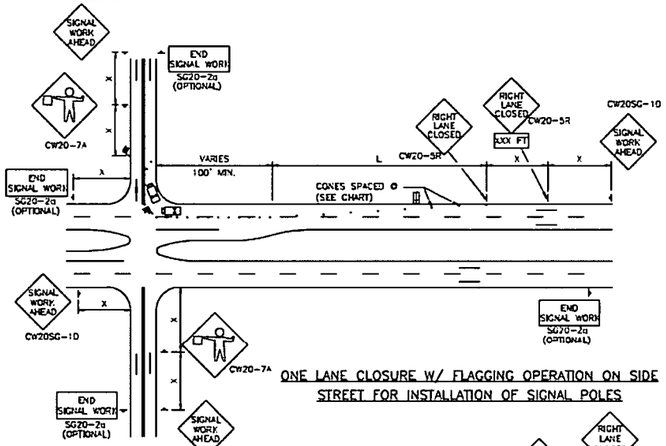
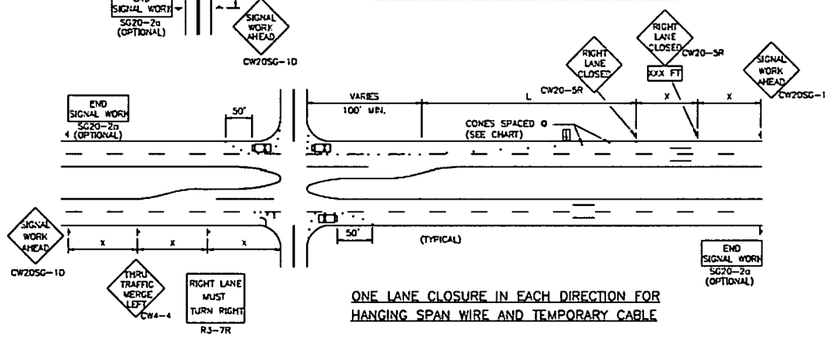


FLAGGING OPERATION FOR HANGING SIGNALS, STRAPPING CABLE, OR INSALLING LOOP DETECTORS



ONE LANE CLOSURE W/ FLAGGING OPERATION ON SIDE STREET FOR INSTALLATION OF SIGNAL POLES



ONE LANE CLOSURE IN EACH DIRECTION FOR HANGING SPAN WIRE AND TEMPORARY CABLE

TYPICAL TRANSITION LENGTHS

SUGGESTED MAXIMUM SPACING OF DEVICES

POSTED SPEED	FORMULA	MINIMUM DESIRABLE TAPER LENGTHS **			SUGGESTED MAXIMUM SPACING OF DEVICE		MINIMUM SIGN SPACING X DISTANCE
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT	
30	L=WS²/60	150'	165'	180'	30'	60'-75'	120'
35		205'	225'	245'	35'	70'-90'	160'
40		255'	295'	320'	40'	80'100'	240'
45	L=WS	450'	495'	540'	45'	90'-110'	320'
50		500'	550'	600'	50'	100'-125'	400'
55		550'	605'	660'	55'	100'-140'	500'
60		600'	660'	720'	60'	120'-150'	600'

** TAPER LENGTHS HAVE BEEN ROUNDED OFF
L=LENGTH OF TAPER (FT.)
W=WIDTH OF OFFSET (FT.)
S=POSTED SPEED(MPH)

NOTES:

1. ALL TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.
2. THE MINIMUM LANE WIDTH ALLOWED IS 10 FEET. THE MINIMUM BUFFER ZONE BETWEEN THE WORK ZONE AND ADJACENT TRAFFIC IS 2 FEET.
3. FLORESCENT ORANGE SHALL BE THE BACKGROUND COLOR ON ALL WORK ZONE SIGNS.
4. THE CONTRACTOR SHALL REMOVE ADVANCE SIGNS WHEN NO CONSTRUCTION OPERATIONS ARE UNDERWAY.
5. OBSTRUCTIONS OR HAZARDS AT THE WORK AREA SHALL BE CLEARLY MARKED AND DELINEATED AT ALL TIMES.
6. ALL HOLES, TRENCHES OR OTHER HAZARDOUS AREAS SHALL BE ADEQUATELY PROTECTED BY LIGHTS OR OTHER PROTECTIVE DEVICES.
7. TRENCHES SHALL BE COVERED OR SURROUNDED WITH ORANGE PLASTIC CONSTRUCTION FENCE AS DIRECTED BY THE ENGINEER.
8. FLAGGER AND FCW20-7a SIGN MAY BE REQUIRED ACCORDING TO FIELD CONDITIONS.
9. VEHICLES PARKED IN ROADWAY SHALL BE EQUIPPED WITH TWO STROBES.

LEGEND:

HEAVY WORK VEHICLE

FLASHING ARROW PANEL

APPROVED BY:	APPROVED BY:
Signed [illegible]	[illegible]
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-13

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TRAFFIC CONTROL PLAN FOR SIGNAL CONSTRUCTION

DRAWING SCALE
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FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
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CITY OF HOUSTON STANDARD DETAILS
TRAFFIC CONTROL PLAN DETAIL 4 OF 4

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY-ASHFORD

WBS NUMBER	N-MD0260-0002-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	JIADA HUANG
SHEET NO.	10 OF 73

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REGISTERED ENGINEER
HOUSTON, TEXAS

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EXISTING SPEED LIMITS
N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

① ROAD WORK AHEAD
CW20-1D
36x36

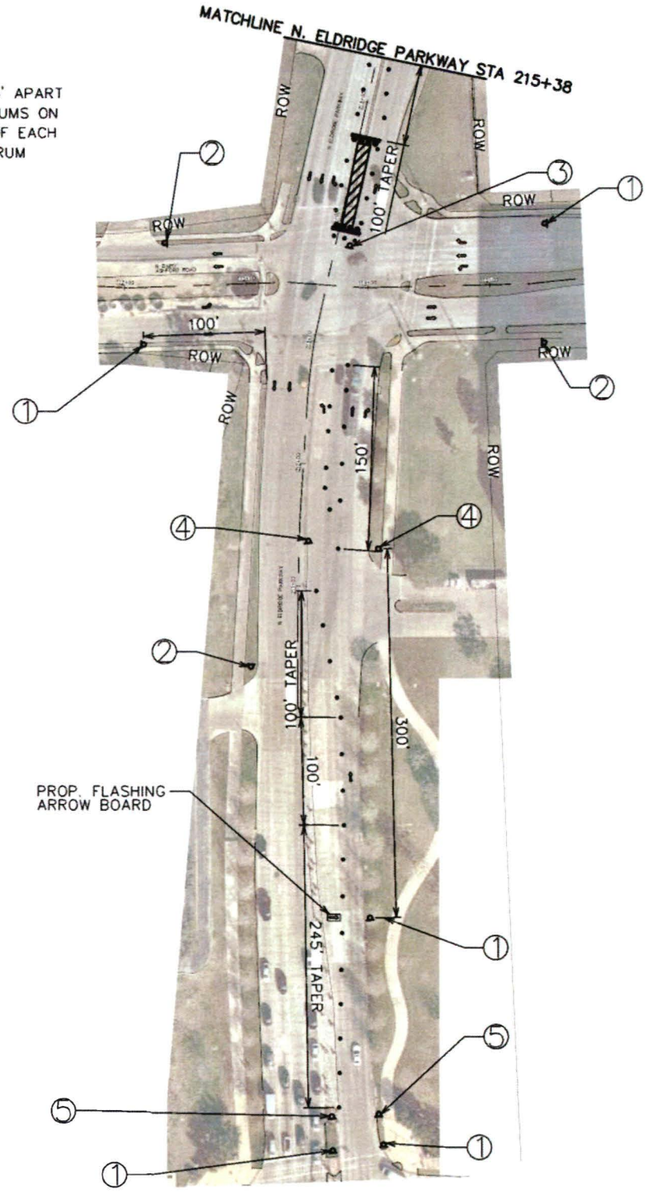
② END ROAD WORK
G20-2
24x18

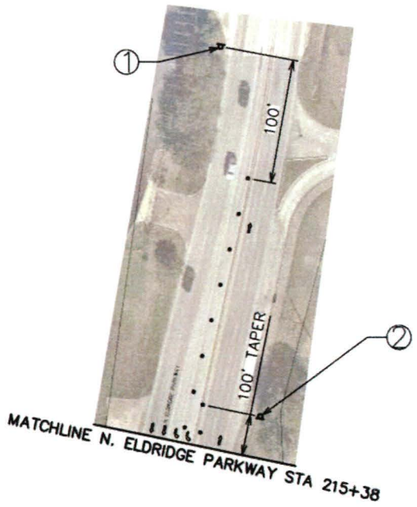
③
R4-7
24x30

④ LEFT LANE MUST TURN LEFT
R3-7L
36x36

⑤ LEFT LANE CLOSED
CW20-5TL
36x36

NOTE
1. CONTRACTOR TO PLACE ADDITIONAL CW20-1 SIGNS 100' SOUTH AND 100' EAST OF TAPER
2. CHANNELIZING DEVICES SPACED 35' APART
3. CHEVERONS TO BE PLACED ON DRUMS ON SHIFTING TAPERS AT THE START OF EACH TAPER AND EVERY THIRD (3RD) DRUM THEREAFTER





LEGEND
- SIGN POST
- TYPE 3 BARRICADE
- DRUM BARREL
- WORK AREA

NOTES
1. ALL SIGNS AND BARRICADES MUST BE RETROREFLECTIVE.

SCALE IN FEET
1" = 60' FOR 22X34
1" = 120' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN
NORTHERN MEDIAN WORK

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002	
DRAWING SCALE	80162
AS NOTED	
CITY OF HOUSTON PE	
JIADA HUANG	
SHEET NO. 11 OF 73	

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EXISTING SPEED LIMITS
N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

① ROAD WORK AHEAD
CW20-1D
36x36

② END ROAD WORK
G20-2
24x18

③
R4-7
24x30

④ LEFT LANE MUST TURN LEFT
R3-7L
36x36

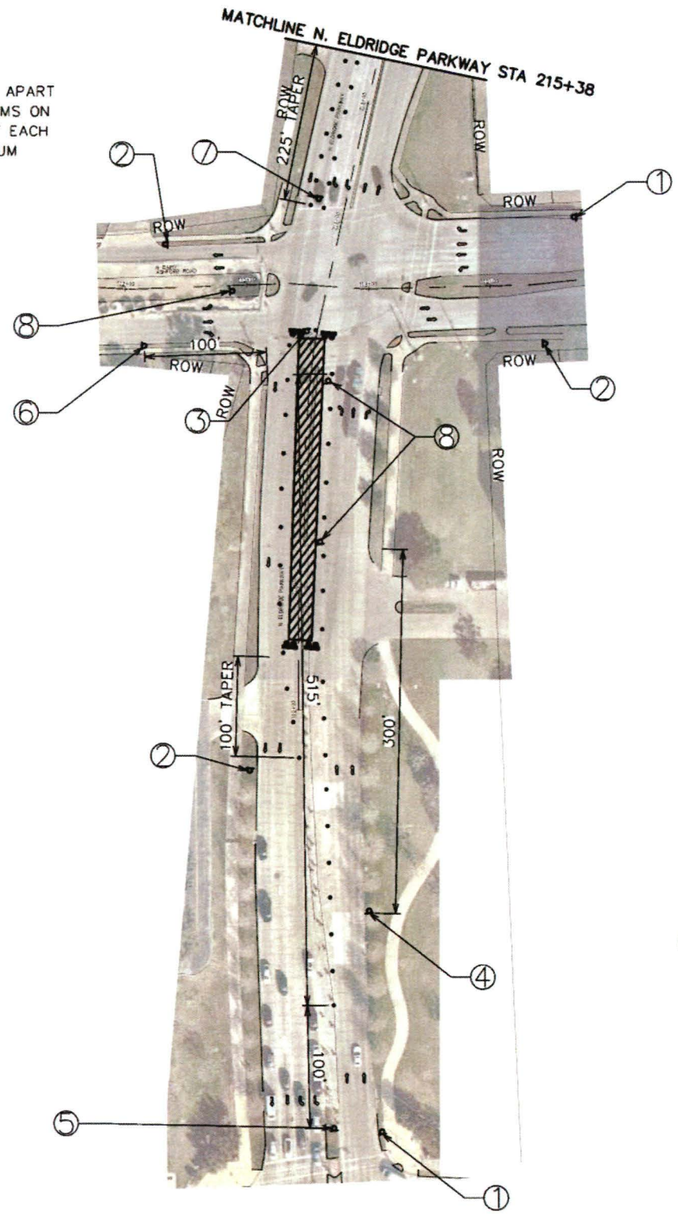
⑤ LEFT LANE CLOSED
CW20-5TL
36x36

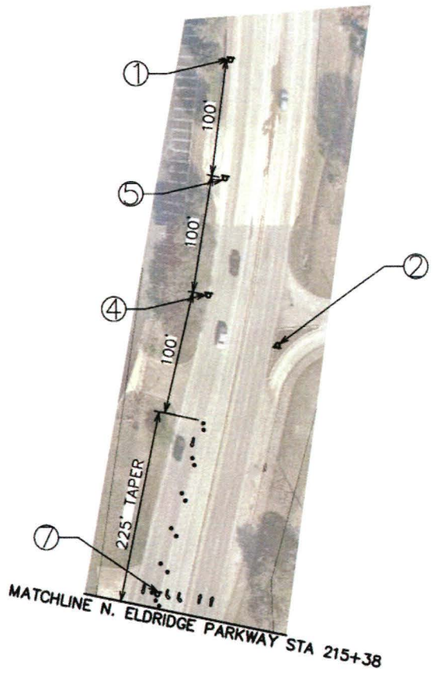
⑥ RIGHT LANE MUST TURN RIGHT
R3-7R
36x36

⑦ ONLY | ONLY
R3-8LL
36x36

⑧ ONLY | ONLY
R3-8LS
36x30

NOTE
1. CONTRACTOR TO PLACE CW20-1 SIGN 200' WEST OF INTERSECTION
2. CHANNELIZING DEVICES SPACED 35' APART
3. CHEVERONS TO BE PLACED ON DRUMS ON SHIFTING TAPERS AT THE START OF EACH TAPER AND EVERY THIRD (3RD) DRUM THEREAFTER





LEGEND
- SIGN POST
- TYPE 3 BARRICADE
- DRUM BARREL
- WORK AREA

NOTES
1. ALL SIGNS AND BARRICADES MUST BE RETROREFLECTIVE.
2. DIAGONAL DIVERTERS TO BE CONSTRUCTED BEFORE WORK ON N ELDRIDGE PARKWAY

0' 60' 120'
SCALE IN FEET
1" = 60' FOR 22X34
1" = 120' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN
SOUTHERN MEDIAN WORK

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PO	
JIADA HUANG	
SHEET NO. 12 OF 73	

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EXISTING SPEED LIMITS

N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

EXISTING SIGNAL HEADS

5-SECTION HORIZONTAL
12" LED H5R SIGNAL HEAD

ø10

4-SECTION HORIZONTAL
12" LED H4LF SIGNAL HEAD

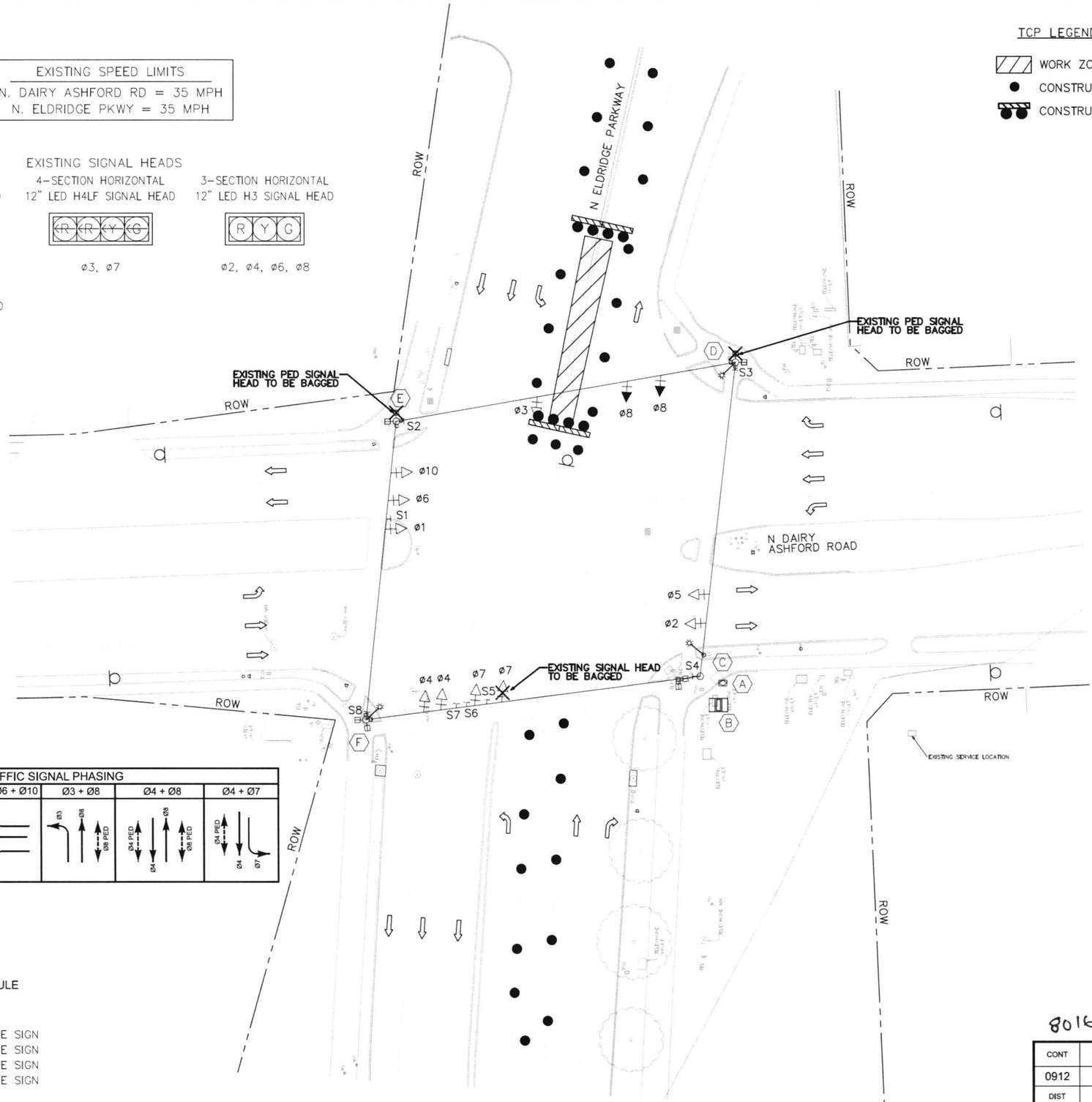
ø3, ø7

3-SECTION HORIZONTAL
12" LED H3 SIGNAL HEAD

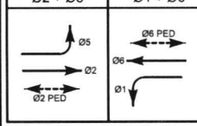
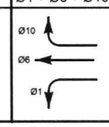
ø2, ø4, ø6, ø8

4-SECTION HORIZONTAL
12" LED H4TL SIGNAL HEAD

ø1, ø5



TRAFFIC SIGNAL PHASING

Ø2 + Ø5	Ø1 + Ø6	Ø1 + Ø6 + Ø10	Ø3 + Ø8	Ø4 + Ø8	Ø4 + Ø7
					

EXISTING SIGN SCHEDULE

S1, S6 = EXISTING R3-8
S5, S7 = EXISTING R3-4
S2 = EXISTING STREET NAME SIGN
S3 = EXISTING STREET NAME SIGN
S4 = EXISTING STREET NAME SIGN
S8 = EXISTING STREET NAME SIGN

TCP LEGEND

- WORK ZONE
- CONSTRUCTION BARREL
- CONSTRUCTION BARRICADE

LEGEND

- EXISTING SIGNAL POLE
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING PEDESTRIAN POLE
- EXISTING PULL BOX
- EXISTING GROUND BOX
- EXISTING CONTROLLER CABINET
- EXISTING ELECTRICAL SERVICE PEDESTAL
- EXISTING SIGNAL HEAD
- RELOCATED SIGNAL HEAD
- BAGGED SIGNAL HEAD
- BAGGED PEDESTRIAN SIGNAL HEAD

POLE AND CABINET SCHEDULE

- (A) EXISTING ELECTRICAL SERVICE
- (B) EXISITNG SIGNAL CABINET
- (C) EXISTING STRAIN POLE
- (D) EXISTING STRAIN POLE
- (E) EXISTING STRAIN POLE
- (F) EXISTING STRAIN POLE

NOTES:
1. CONTRACTOR TO USE EXISTING TRAFFIC SIGNAL IN PHASES 1 AND 2 OF TCP.

N

0' 20' 40'
SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

80162

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/26/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TEMPORARY SIGNAL LAYOUT
NORTHERN MEDIAN WORK

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	N-MD0260-0002-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	JIADA HUANG
SHEET NO.	13 OF 73

FOR CITY OF HOUSTON USE ONLY
80162

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EXISTING SPEED LIMITS
N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

EXISTING SIGNAL HEADS

5-SECTION HORIZONTAL
12" LED H5R SIGNAL HEAD

ø10

4-SECTION HORIZONTAL
12" LED H4LF SIGNAL HEAD

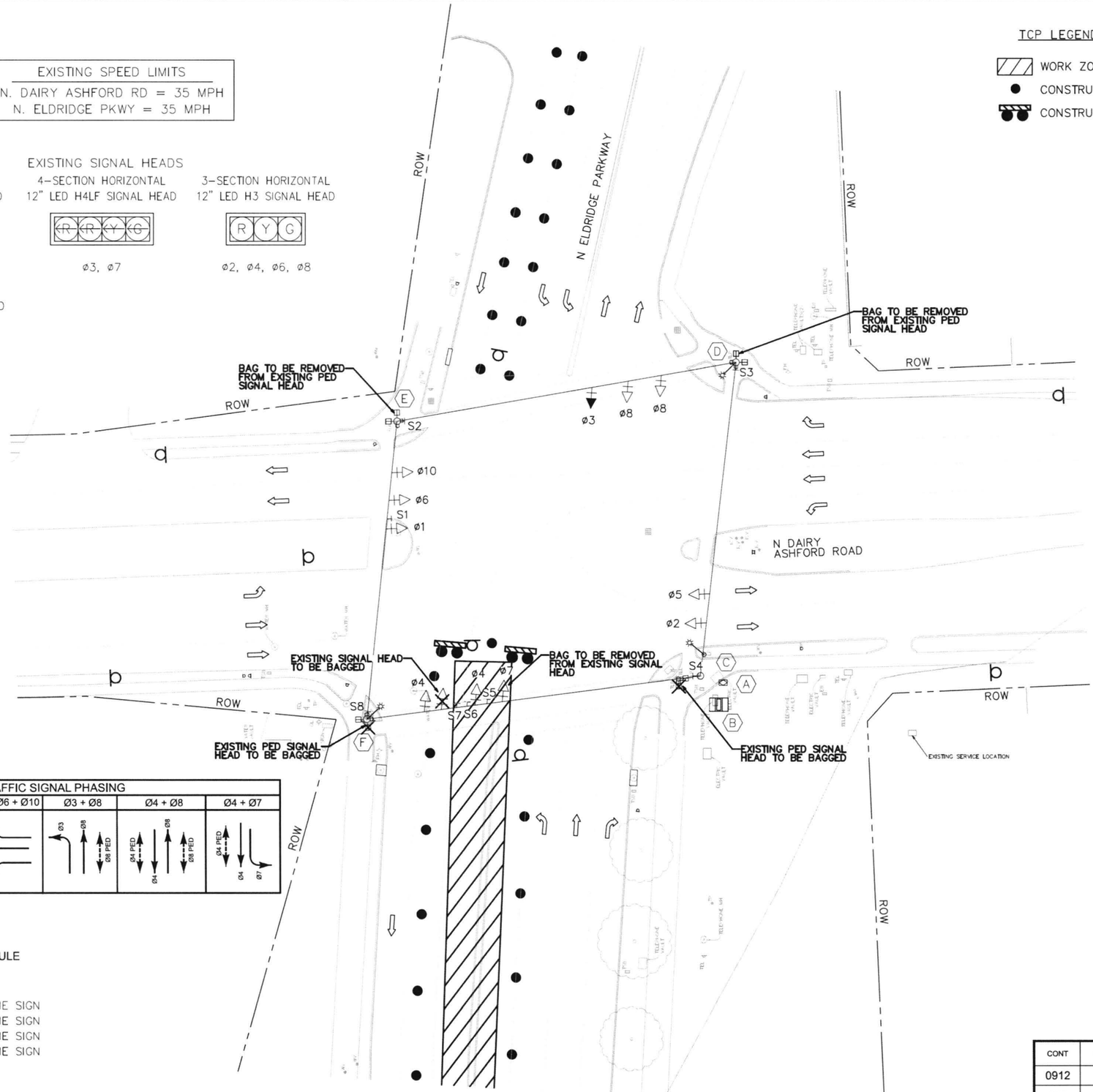
ø3, ø7

3-SECTION HORIZONTAL
12" LED H3 SIGNAL HEAD

ø2, ø4, ø6, ø8

4-SECTION HORIZONTAL
12" LED H4TL SIGNAL HEAD

ø1, ø5



TCP LEGEND

- WORK ZONE
- CONSTRUCTION BARREL
- CONSTRUCTION BARRICADE

LEGEND

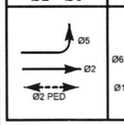
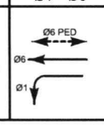
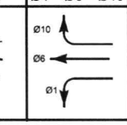
- EXISTING SIGNAL POLE
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING PEDESTRIAN POLE
- EXISTING PULL BOX
- EXISTING GROUND BOX
- EXISTING CONTROLLER CABINET
- EXISTING ELECTRICAL SERVICE PEDESTAL
- EXISTING SIGNAL HEAD
- RELOCATED SIGNAL HEAD
- BAGGED SIGNAL HEAD
- BAGGED PEDESTRIAN SIGNAL HEAD

POLE AND CABINET SCHEDULE

- (A) EXISTING ELECTRICAL SERVICE
- (B) EXISITNG SIGNAL CABINET
- (C) EXISTING STRAIN POLE
- (D) EXISTING STRAIN POLE
- (E) EXISTING STRAIN POLE
- (F) EXISTING STRAIN POLE

NOTES:
1. CONTRACTOR TO USE EXISTING TRAFFIC SIGNAL IN PHASES 1 AND 2 OF TCP.

TRAFFIC SIGNAL PHASING

Ø2 + Ø5	Ø1 + Ø6	Ø1 + Ø6 + Ø10	Ø3 + Ø8	Ø4 + Ø8	Ø4 + Ø7
					

EXISTING SIGN SCHEDULE

S1, S6 = EXISTING R3-8
S5, S7 = EXISTING R3-4
S2 = EXISTING STREET NAME SIGN
S3 = EXISTING STREET NAME SIGN
S4 = EXISTING STREET NAME SIGN
S8 = EXISTING STREET NAME SIGN

0' 20' 40'
SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/26/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TEMPORARY SIGNAL LAYOUT
SOUTHERN MEDIAN WORK

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON EOC	
JIADA HUANG	
SHEET NO. 14 OF 19	

RECEIVED
HOUSTON, TEXAS

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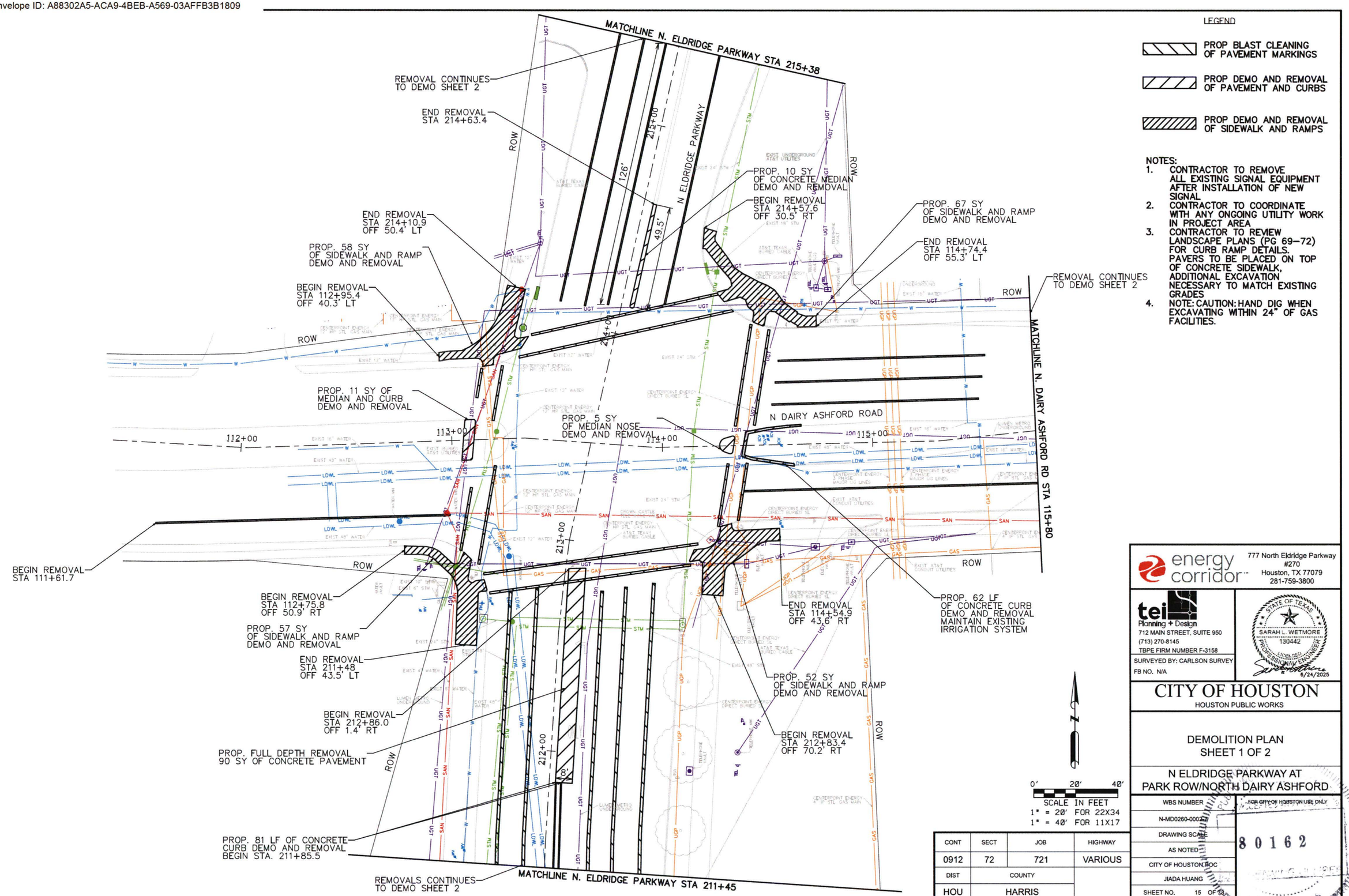

LEGEND

- PROP BLAST CLEANING OF PAVEMENT MARKINGS
- PROP DEMO AND REMOVAL OF PAVEMENT AND CURBS
- PROP DEMO AND REMOVAL OF SIDEWALK AND RAMPS

NOTES:

1. CONTRACTOR TO REMOVE ALL EXISTING SIGNAL EQUIPMENT AFTER INSTALLATION OF NEW SIGNAL
2. CONTRACTOR TO COORDINATE WITH ANY ONGOING UTILITY WORK IN PROJECT AREA
3. CONTRACTOR TO REVIEW LANDSCAPE PLANS (PG 69–72) FOR CURB RAMP DETAILS. PAVERS TO BE PLACED ON TOP OF CONCRETE SIDEWALK, ADDITIONAL EXCAVATION NECESSARY TO MATCH EXISTING GRADES
4. NOTE: CAUTION: HAND DIG WHEN EXCAVATING WITHIN 24" OF GAS FACILITIES.

SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17
0' 20' 40'

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

DEMOLITION PLAN SHEET 1 OF 2

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	N-MD0260-0002-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON, ROC	JIADA HUANG
SHEET NO.	15 OF 15

FOR CITY OF HOUSTON USE ONLY
ACCEPTED
80162
HOUSTON, TEXAS

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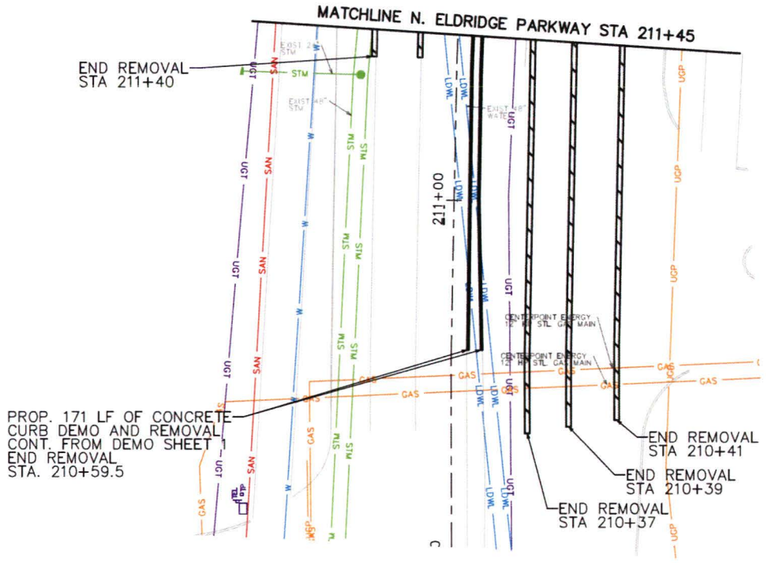

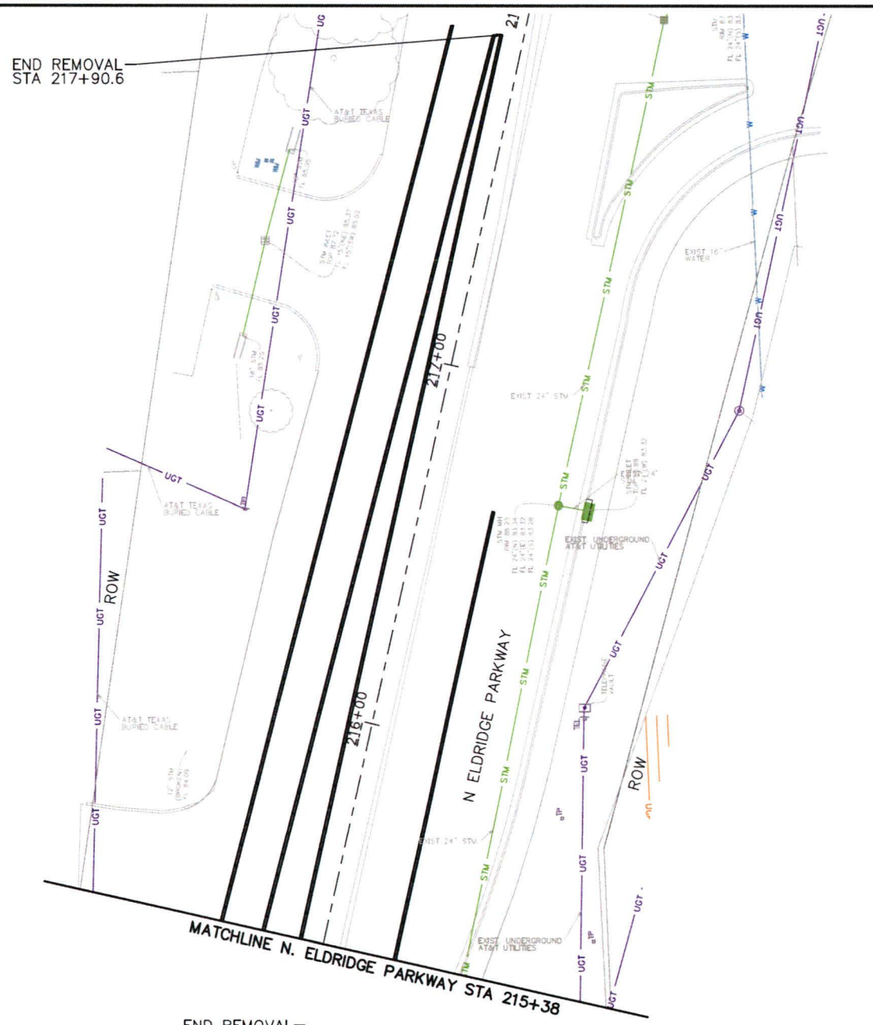

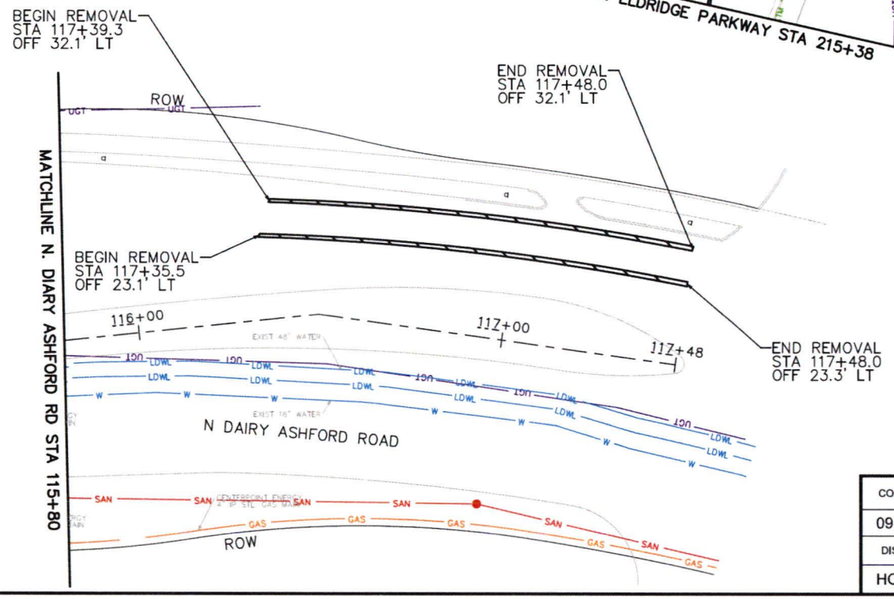

LEGEND

- PROP BLAST CLEANING OF PAVEMENT MARKINGS
- PROP DEMO AND REMOVAL OF PAVEMENT AND CURBS
- PROP DEMO AND REMOVAL OF SIDEWALK AND RAMPS

NOTE: CAUTION: HAND DIG WHEN EXCAVATING WITHIN 24" OF GAS FACILITIES.

0' 20' 40'
SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor
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#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

DEMOLITION PLAN
SHEET 2 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	80162
AS NOTED	
CITY OF HOUSTON PIC	
JIADA HUANG	
SHEET NO. 16 OF 73	

PROFESSIONAL ENGINEER
HOUSTON, TEXAS

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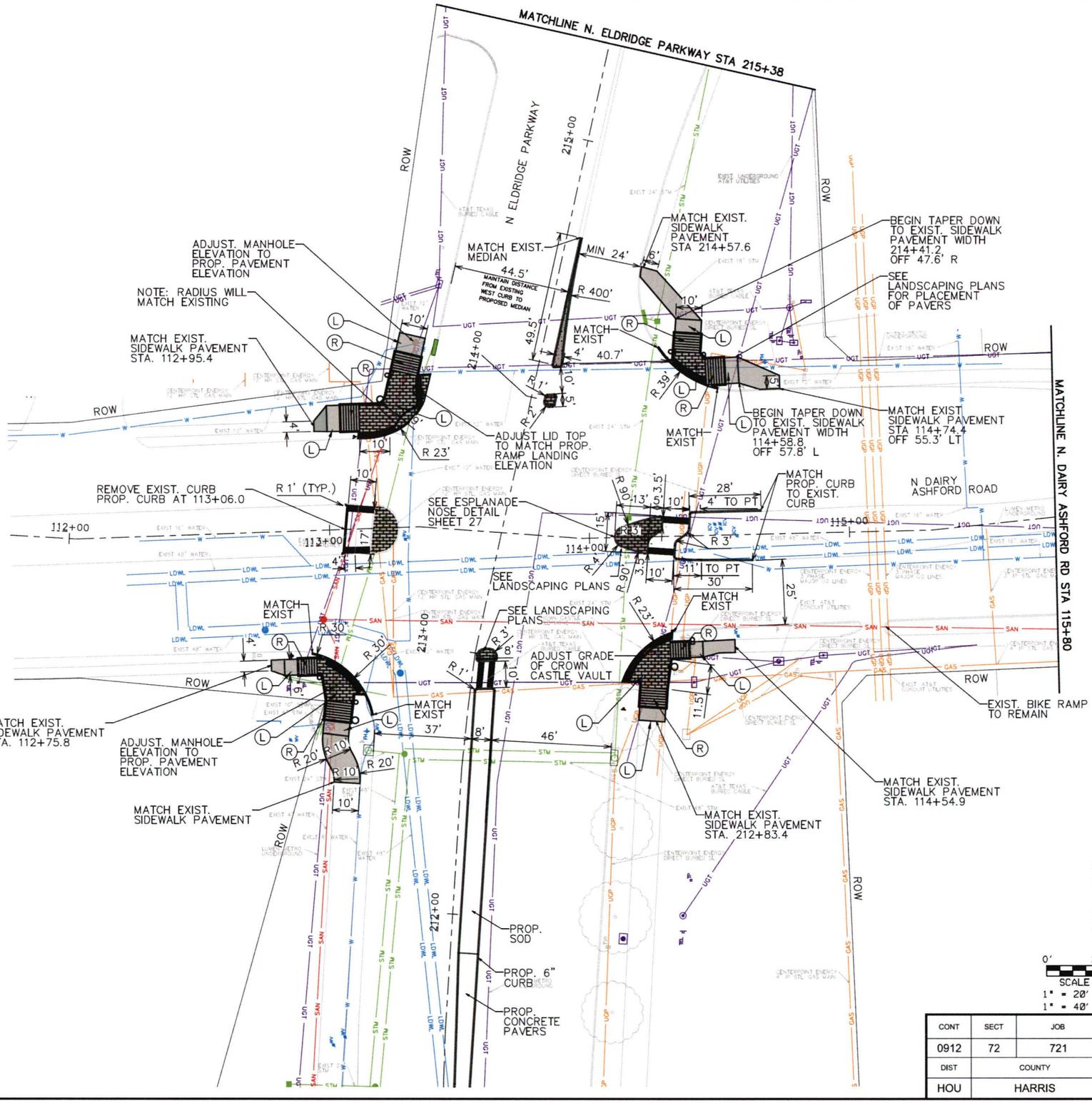
NOTE:
1. CONTRACTOR TO ENSURE LANDINGS WILL BE PLACED ADJACENT TO PUSH BUTTONS
2. CONTRACTOR TO REVIEW LANDSCAPE PLANS (PG 69-72) FOR CURB RAMP DETAILS. PAVERS TO BE PLACED ON TOP OF CONCRETE SIDEWALK. ADDITIONAL EXCAVATION NECESSARY TO MATCH EXISTING GRADES
3. ALL RAMP AND MEDIAN FORM WORK TO BE CHECKED BY EOR PRIOR TO CONCRETE WORK BEGINNING
4. CAUTION: HAND DIG WHEN EXCAVATING WITHIN 24" OF GAS FACILITIES



LEGEND

- PROPOSED SIDEWALK (4.5" DEPTH)
- PROPOSED CONCRETE MEDIAN
- PROPOSED CONCRETE PAVERS SEE LANDSCAPE FOR PAVING DETAILS
- PROPOSED 6" CURB (DOWELED-ON)
- PROPOSED DETECTABLE WARNING SEE LANDSCAPE FOR DETAILS
- (R) RAMP AREA: MAX 8.3% GRADE IN INDICATED DIRECTION
- (L) LANDING AREA: MAX 2% GRADE
- SIGNAL POLE
- PEDESTRIAN PUSH BUTTON

0' 20' 40'
SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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

VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower — Date 05/22/25
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.
Signature valid for six months.

Mike Brower — Date 05/22/25
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.

Marlon Smither — Date 05/27/2025
Approved for AT&T underground conduit facilities only. Signature valid for one year.

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Houston, TX 77079
281-759-3800

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(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING LAYOUT
SHEET 1 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	ACCEPTED
DRAWING SCALE	80162
AS NOTED	
CITY OF HOUSTON PGE	
JIADA HUANG	
SHEET NO. 17 OF 73	

ACCEPTED
80162
HOUSTON, TEXAS

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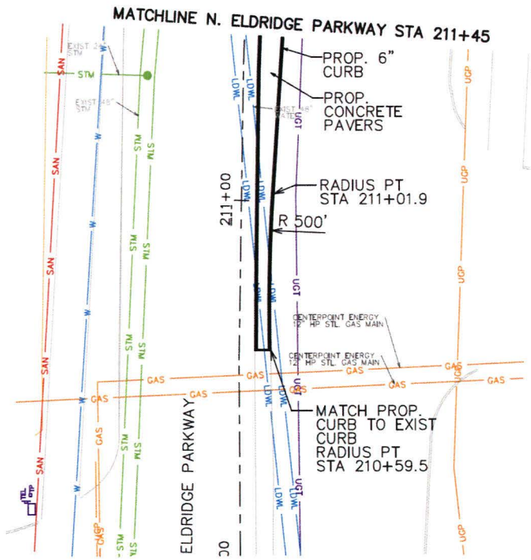
LEGEND

- PROPOSED SIDEWALK (4.5" DEPTH)
- PROPOSED CONCRETE MEDIAN
- PROPOSED 6" CURB (DOWELED-ON)
- PROPOSED DETECTABLE WARNING
- (R) RAMP AREA: MAX 8.3% GRADE IN INDICATED DIRECTION
- (L) LANDING AREA: MAX 2% GRADE
- O SIGNAL POLE
- PEDESTRIAN PUSH BUTTON



NOTE: CAUTION: HAND DIG WHEN EXCAVATING WITHIN 24" OF GAS FACILITIES.

DESIGN SPEEDS FOR LOOP DETECTOR SET BACK

N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

0' 20' 40'
SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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Houston, TX 77079
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712 MAIN STREET, SUITE 950
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TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING LAYOUT
SHEET 2 OF 2

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 18 OF 73	

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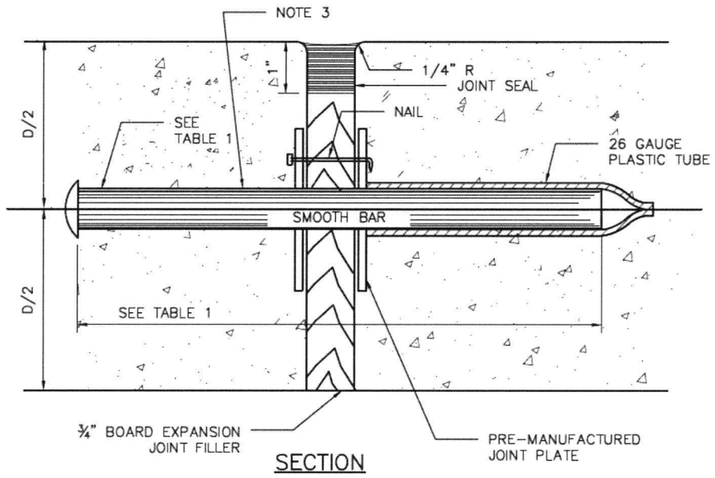
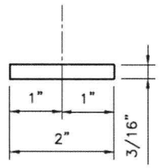


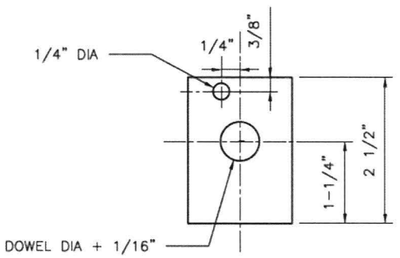
SECTION

DOWEL TYPE EXPANSION JOINT



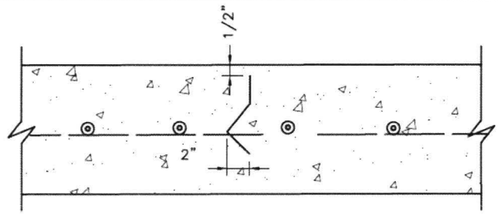
PLAN VIEW

JOINT PLATE



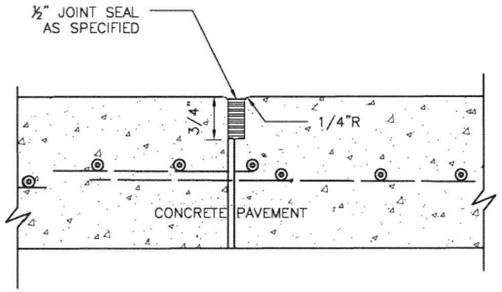
ELEVATION VIEW

JOINT PLATE



SECTION

DEFORMED METAL STRIP



SECTION

CONSTRUCTION JOINT SEAL

TABLE 1

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

NOTES:

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

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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: Carol Haddock — DIRECTOR OF HPW

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV-27-2023 | DWG NO: 02752-01

energy corridor™
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tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS — SARAH L. WETMORE — 130442 — LICENSED PROFESSIONAL ENGINEER — 6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 1 OF 11

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 19 OF 73	

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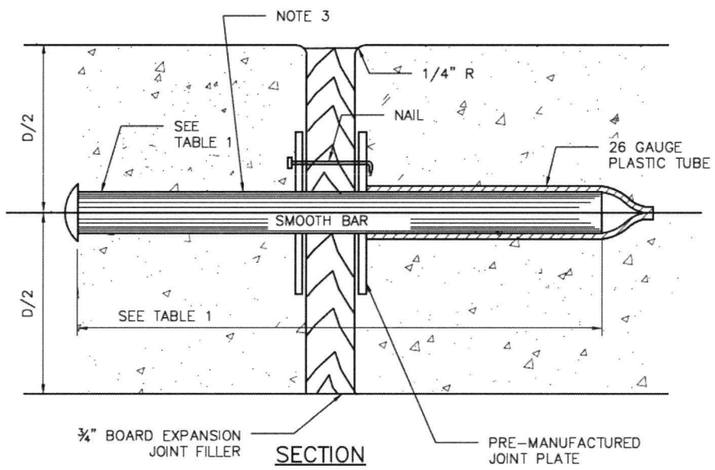
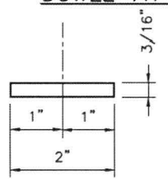


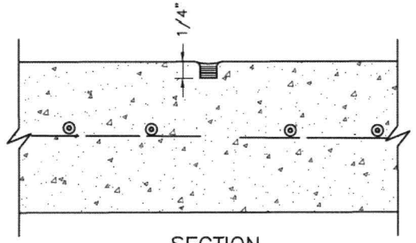
SECTION

DOWEL TYPE EXPANSION JOINT



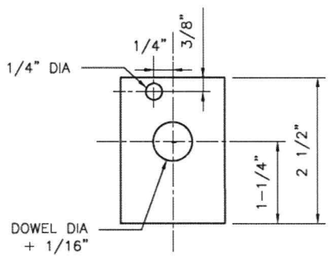
PLAN VIEW

JOINT PLATE



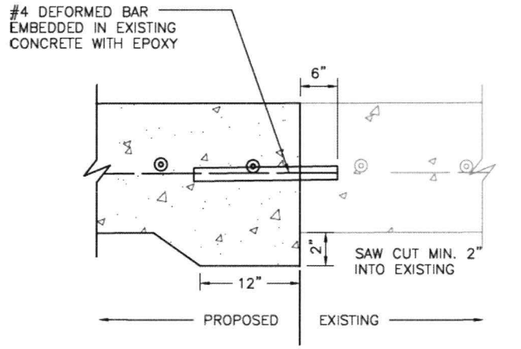
SECTION

CONTROL JOINT



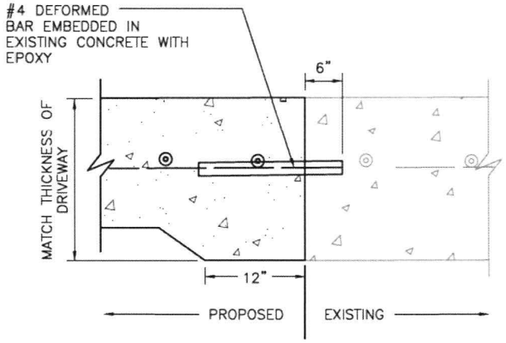
ELEVATION VIEW

JOINT PLATE



SECTION

SIDEWALK TO EXISTING SIDEWALK



SECTION

SIDEWALK TO EXISTING DRIVEWAY

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: KHANG NGUYEN — CITY TRAFFIC ENGINEER

DocuSigned by: Carl Haddock — DIRECTOR OF HPW

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

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS — SARAH L. WETMORE — 130442 — LICENSED PROFESSIONAL ENGINEER — 6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 2 OF 11

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	* FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PDC	
JIADA HUANG	
SHEET NO. 20 OF 73	

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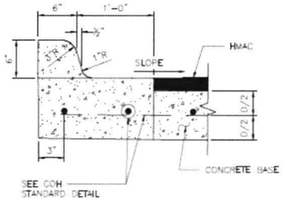
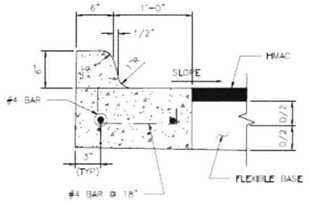
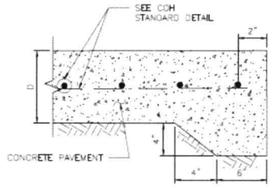


ESPLANADE CURB CONNECTED TO CONCRETE BASE

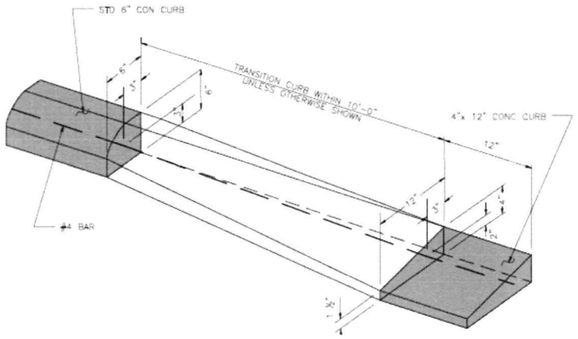
ALTERNATE CONCRETE CURB REINFORCEMENT



ESPLANADE CURB CONNECTED TO FLEXIBLE BASE

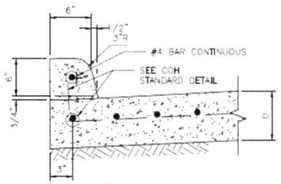


STANDARD CONCRETE PAVING HEADER



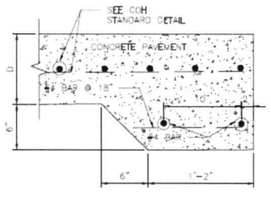
CURB TRANSITION

(SEE NOTES)

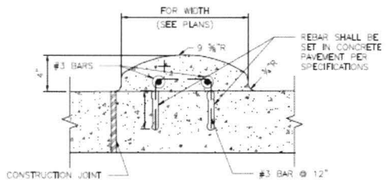


CONCRETE CURB

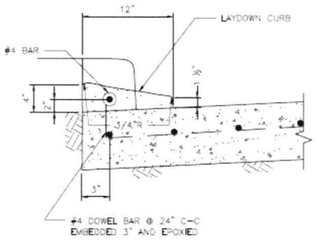
WHEN CONCRETE CURB IS TO BE PLACED EXISTING CONCRETE USE BASE #4 BAR @ 18"x10" LONG, DOWELED AND SET IN EPOXY GROUT SET #4 DOWEL BARS, 25" LONG AT 12" C-C WHEN PAVEMENT SECTION POURED.



STANDARD RAILROAD HEADER



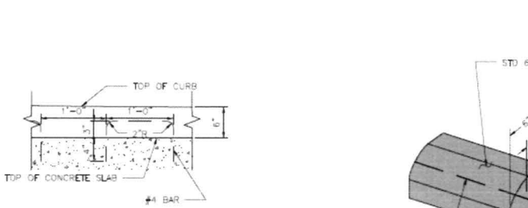
MOUNTABLE CURB



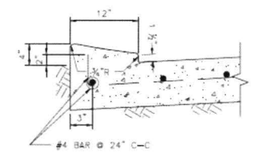
4-INCH x 12-INCH TRANSITION CURB

(SEE NOTES)

MONOLITHIC CURB AND GUTTER



STANDARD RAILROAD CROSSING – SINGLE TRACK



4-INCH x 12-INCH MONOLITHIC CURB

(SEE NOTES)

4"x12" MONOLITHIC AND TRANSITION CURB NOTES:

1. 6-INCH CONCRETE CURB TO BE CONSTRUCTED ON ALL ESPLANADES, ISLANDS, NON-RESIDENTIAL STREETS, AND RESIDENTIAL STREETS.
2. TRANSITIONS FROM 6- INCH CONCRETE CURB TO 4-INCH x 12-INCH CONCRETE CURB TO BE ACCOMPLISHED WITHIN 10 FEET, UNLESS OTHERWISE SHOWN. IF THE 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.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
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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DRAWING SCALE: NOT TO SCALE	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
Signature
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 3 OF 11

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE: AS NOTED	80162
CITY OF HOUSTON PQE: JIADA HUANG	
SHEET NO. 21 OF 73	

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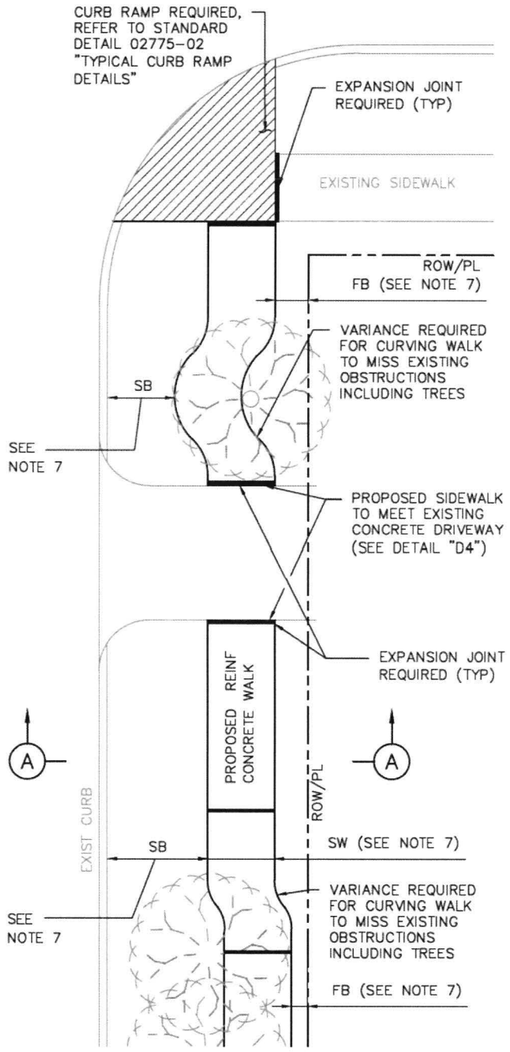
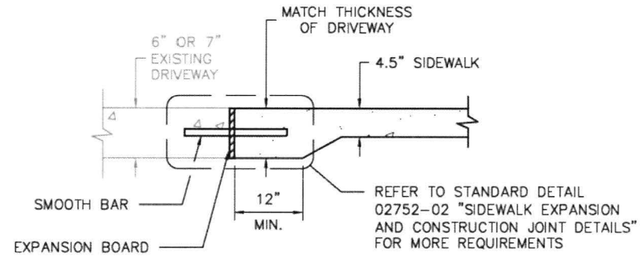


PLAN VIEW

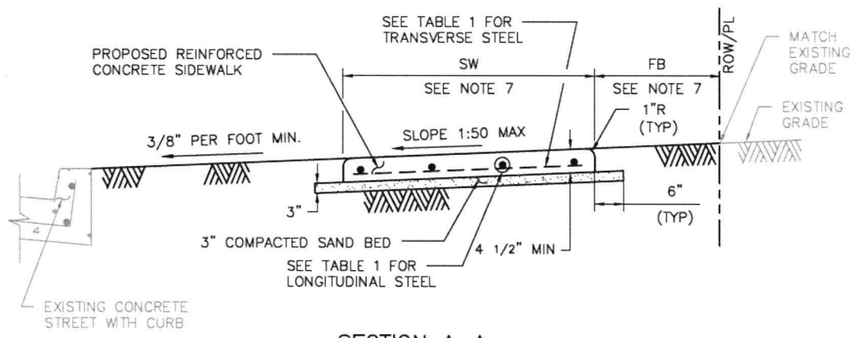


DETAIL D4
DRIVEWAY/SIDEWALK HEADER

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

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

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#270
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TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS — SARAH L. WETMORE — 130442 — LICENSED PROFESSIONAL ENGINEER — 6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 4 OF 11

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 22 OF 73	

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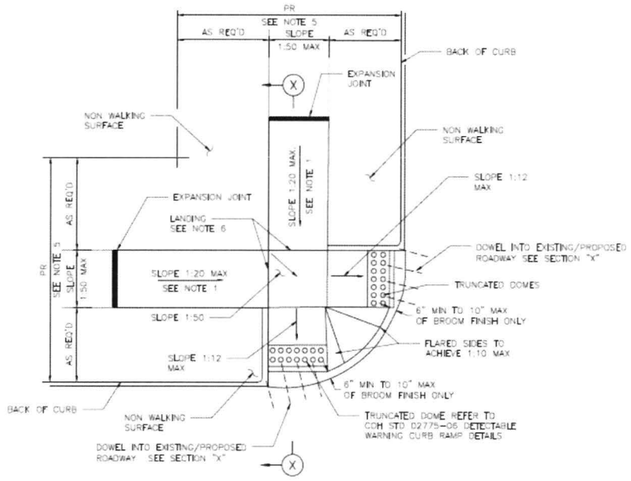
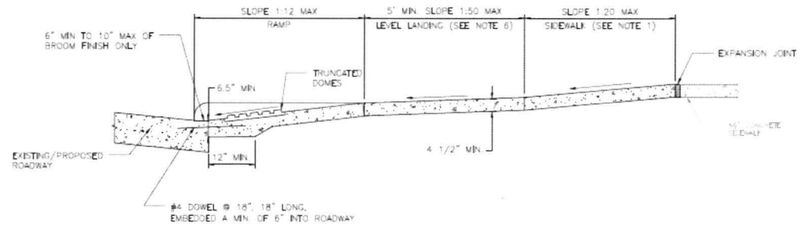


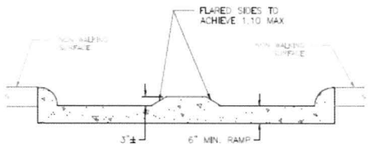
STREETS WITH NON– WALKING SURFACE BEHIND CURB
SEE NOTE–7



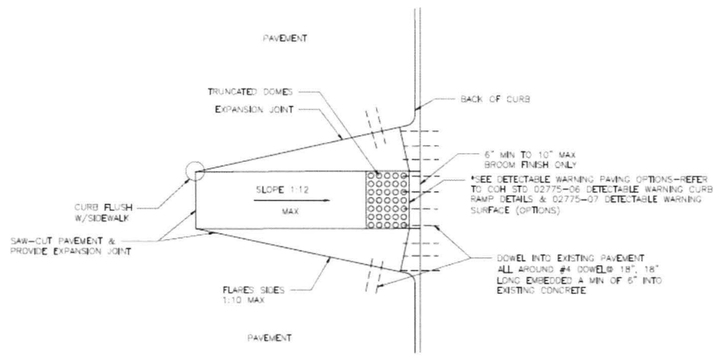
SECTION X–X

NOTES:

1. REPLACE EXISTING SIDEWALK FROM LEVEL LANDING AS NECESSARY TO ACHIEVE 1:20 SLOPE.
2. BROOM FINISH IS MEASURED FROM FACE OF CURB.
3. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
4. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON UNLESS NOTED OTHERWISE.
5. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR) WIDTH.
6. MINIMUM 5'X5' LANDING PAD ACCORDING TO ADA REQUIREMENTS. WHEN THE APPROACHING SIDEWALK IS WIDER THAN 5', THE LANDING PAD AND RAMP WIDTH MUST MATCH THE SIDEWALK WIDTH.
7. FOR STREETS WITH WALKABLE SURFACES IMMEDIATELY BEHIND THE CURB A FLARE IS REQUIRED ON BOTH SIDES OF THE RAMP.



ELEVATION
LOOKING UP RAMP



CURB RAMP CONSTRUCTION FOR EXISTING PAVEMENT

APPROVED BY:	APPROVED BY:
Developed by Sukai Kanwar	Developed by [illegible]
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Developed by [illegible]	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02775–02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CURB RAMP DETAILS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
Signature
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 5 OF 11

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0028-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON DOC	
JIADA HUANG	
SHEET NO. 23 OF 73	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

80162

REGISTERED
PROFESSIONAL ENGINEER
STATE OF TEXAS

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD ARE THE MINIMUM REQUIREMENTS FOR THE CONDITIONS ANTICIPATED. IT IS THE RESPONSIBILITY OF THE ENGINEER TO ADJUST THE DESIGN AS NECESSARY TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THIS DESIGN. THE ENGINEER IS RESPONSIBLE FOR THE PROPER SELECTION AND USE OF THIS STANDARD. IN NO EVENT SHALL THE CITY OF HOUSTON BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM ITS USE. THE CITY OF HOUSTON MAKES 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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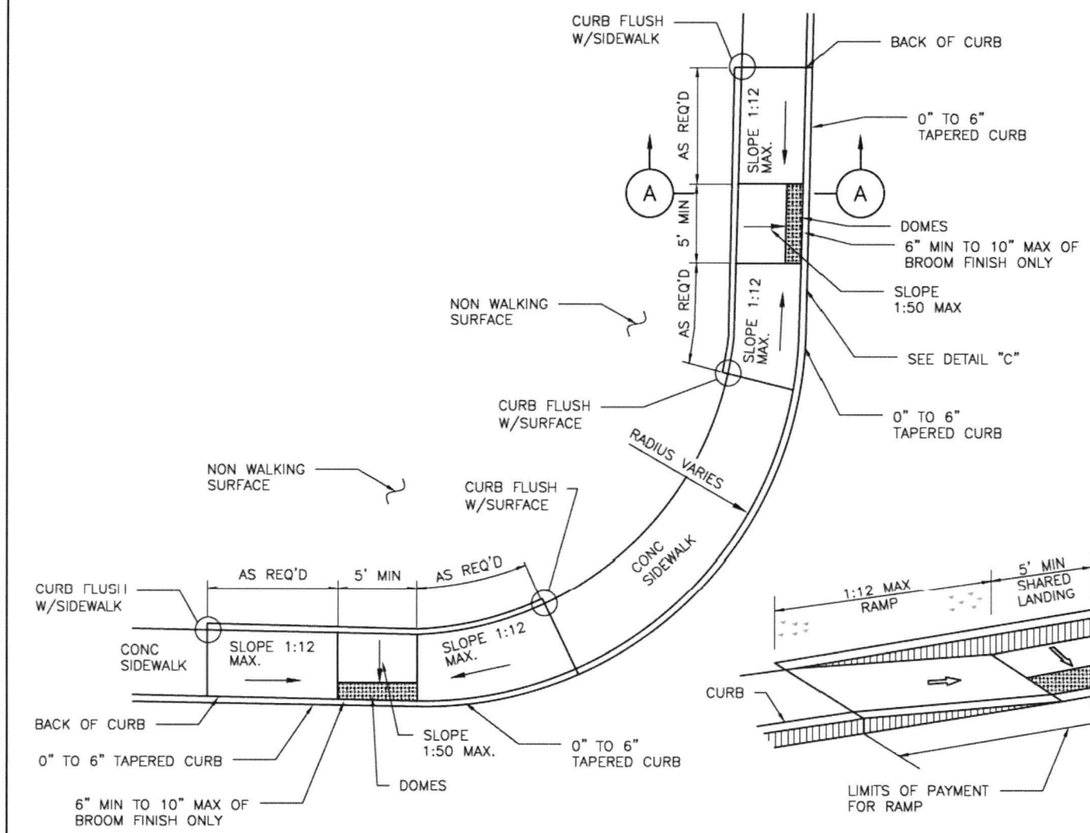
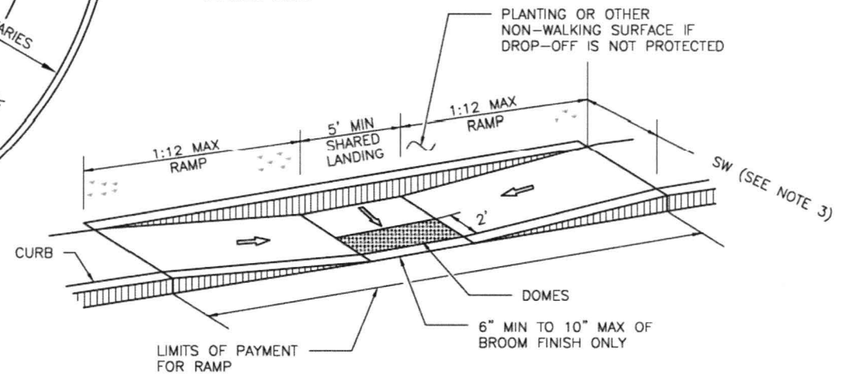
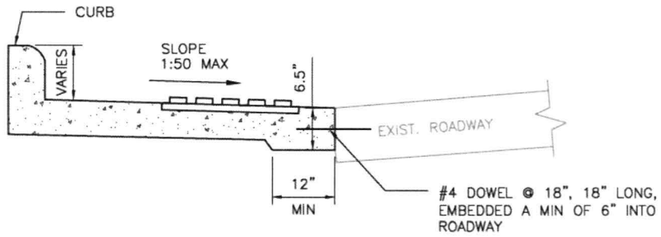


SIDEWALK ON BACK OF CURB



DETAIL "C"



SECTION A–A

NOTES:

1. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
2. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
3. REFER TO CONTRACT DRAWINGS FOR S–DIMENSION (S), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PARALLEL CURB RAMP

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sukrit Kanwar — CITY ENGINEER

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

DocuSigned by: Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV–27–2023 | DWG NO: 02775–03

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 6 OF 11

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002	ACCEPTED AND FILED
DRAWING SCALE	
AS NOTED	80162
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 24 OF 73	

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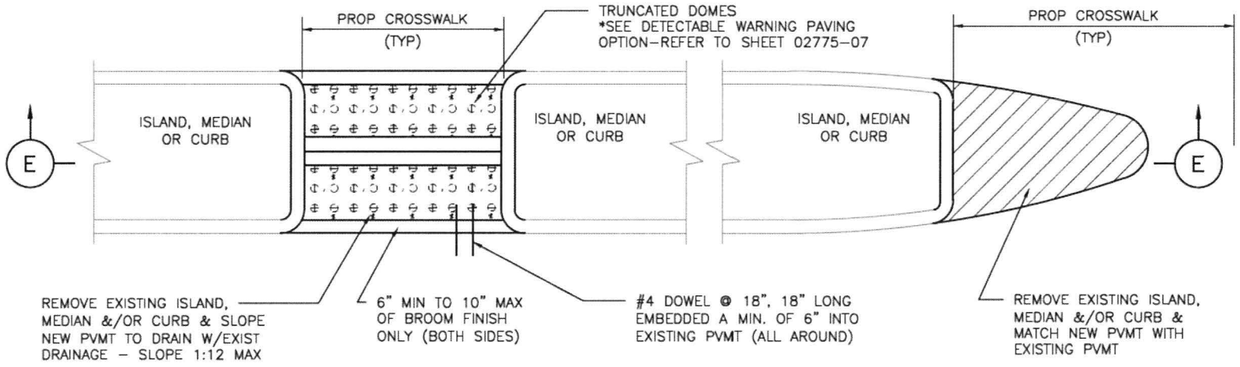

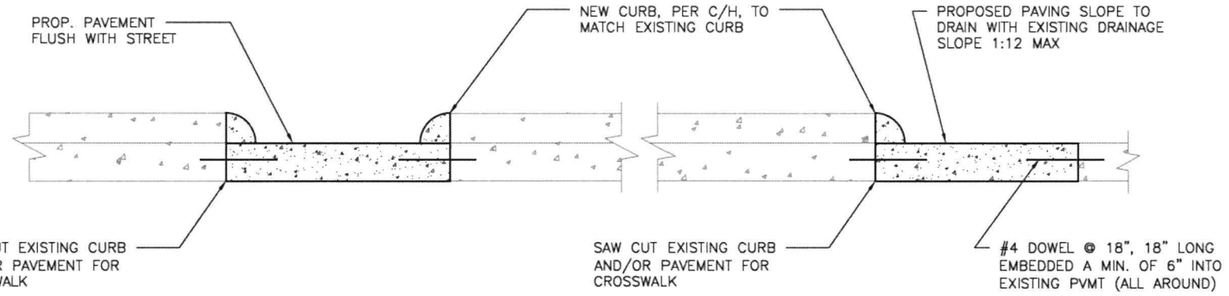

SECTION E–E
FOR ISLAND, MEDIAN, OR CURB MODIFICATIONS FOR CROSSWALKS

NOTES:

1. SEE COH STANDARD DETAIL FOR PAVEMENT MARKING DETAILS.
2. 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.
3. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CURB MODIFICATION FOR CURB RAMPS & CROSSWALKS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER

DocuSigned by: Carol Haddock — DIRECTOR OF HPW

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 | DWG NO: 02775–04

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 7 OF 11

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	N-MD0260-0002-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	JIADA HUANG
SHEET NO.	25 OF 73

FOR CITY OF HOUSTON USE ONLY
ACCEPTED
80162

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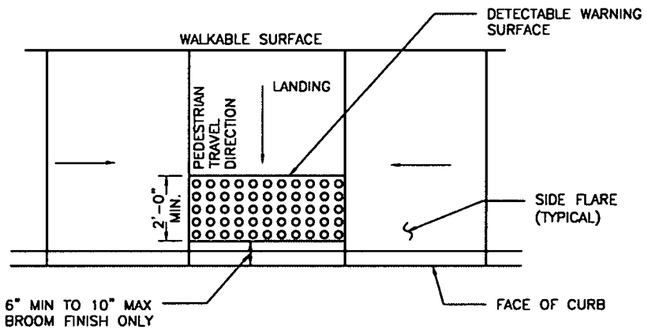
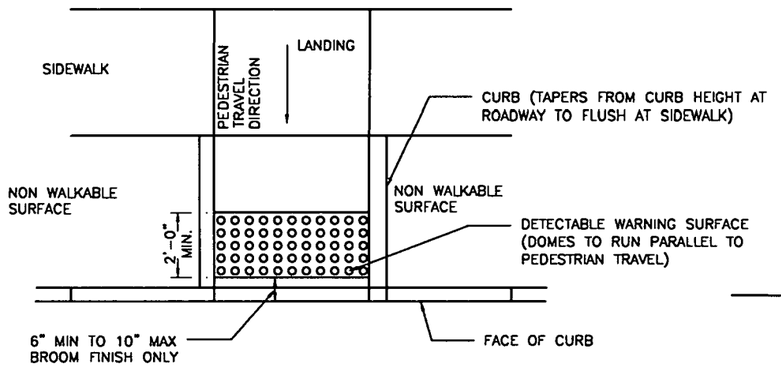
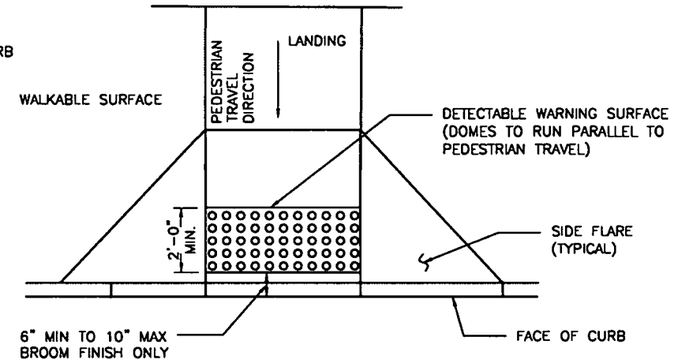


TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE





TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN

GENERAL NOTES FOR DETECTABLE WARNINGS:

1. DETECTABLE WARNING SURFACES MUST BE FULLY ADA COMPLIANT.
2. ALL NEW CURB RAMPS MUST CONTAIN A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES. THE SURFACE MUST CONTRAST VISUALLY WITH ADJOINING SURFACE, INCLUDING SIDE FLARES. FURNISH DARK BROWN OR DARK RED DETECTABLE WARNING SURFACE ADJACENT TO UNCOLORED CONCRETE, UNLESS SPECIFIED ELSEWHERE IN THE PLANS.
3. DETECTABLE WARNING SURFACES MUST MAINTAIN A SLIP RESISTANCE WITH FA-VALUE OF EQUAL TO OR GREATER THAN 0.8.
4. DETECTABLE WARNING SURFACES MUST MAINTAIN A WATER ABSORPTION RATE OF LESS THAN 1%. DETECTABLE WARNING SHALL NOT ALLOW WATER TO ACCUMULATE.
5. DETECTABLE WARNINGS INSTALLED INTO FRESH CONCRETE SHALL BE WITHOUT VOIDS AND UTILIZING AN ACCEPTABLE ANCHORING SYSTEM.
6. ALIGN TRUNCATED DOMES IN THE DIRECTION OF PEDESTRIAN TRAVEL WHEN ENTERING THE STREET.
7. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.
8. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6" MIN TO 10" MAX FROM THE DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.
9. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
10. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DETECTABLE WARNING CURB RAMP DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: 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: 02775-06

energy corridor™ 777 North Eldridge Parkway #270 Houston, TX 77079 281-759-3800

tei Planning + Design 712 MAIN STREET, SUITE 950 (713) 270-8145 TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY FB NO. N/A

STATE OF TEXAS SARAH L. WETMORE 130442 LICENSED PROFESSIONAL ENGINEER 6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 8 OF 11

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE: AS NOTED	80162
CITY OF HOUSTON PO	
JIADA HUANG	
SHEET NO. 26 OF 73	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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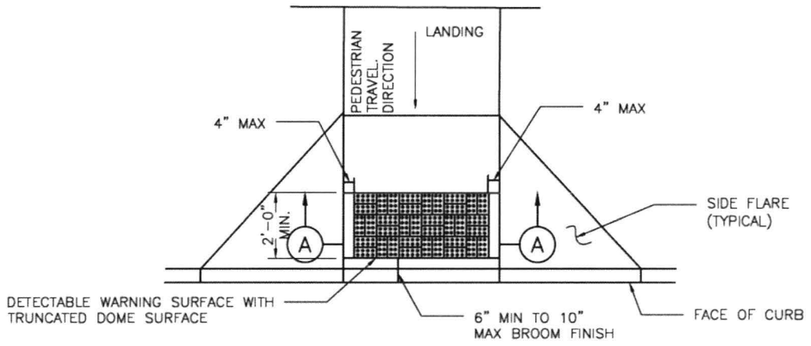
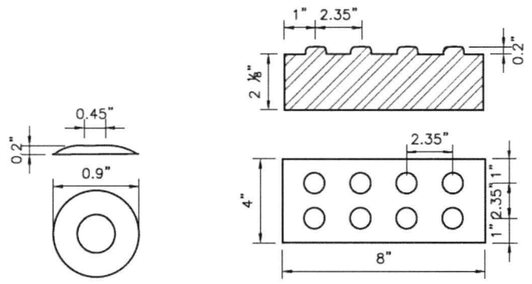


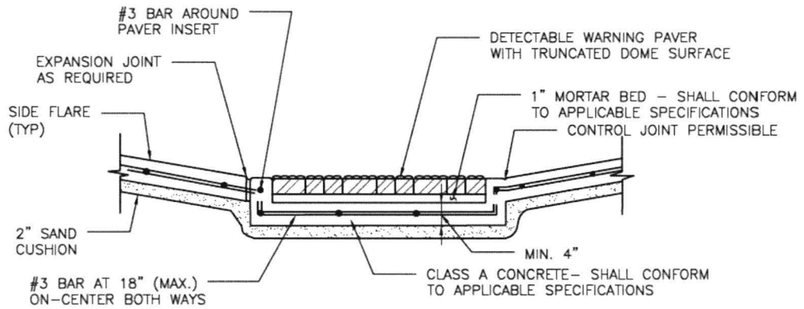
PLAN VIEW

DETECTABLE WARNING SURFACE



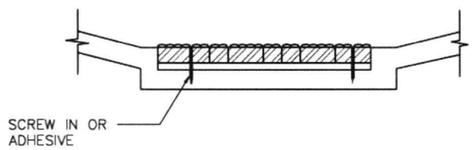
DETAIL

DETECTABLE WARNING PAVER



SECTION A–A

PAVER



DETAIL A–5

NOTES:

GENERAL NOTES

1. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
2. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

PAVERS

1. FURNISH DETECTABLE WARNING SURFACE UNITS MEETING ALL REQUIREMENTS OF ASTM C–936, C–33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.
2. LAY FULL–SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING POWER UNITS USING A POWER SAW.

POLYMER CONCRETE

1. DETECTABLE WARNING TILES SHALL BE MADE OF POLYMER CONCRETE MATERIALS.
2. DETECTABLE WARNING TILES SHALL BE INSTALLED INTO FRESH CONCRETE (CAST–IN–PLACE) UTILIZING AN ANCHORING SYSTEM.
3. DETECTABLE WARNING TILES SHALL BE OF TERRACOTTA (BRICK–RED) COLOR AND COLORED THROUGHOUT TO GUARANTEE THE ADA REQUIRED COLOR CONTRAST.
4. DETECTABLE WARNING TILES SHALL MEET OR EXCEED THE FOLLOWING ASTM–BASED "STANDARDS" FOR CONCRETE MATERIALS.
   A. COMPRESSION STRENGTH > 12,500 PSI PER ASTM C 39–04
   B. WATER ABSORPTION < 0.25% PER ASTM C 97–09

PADS

1. FURNISH REQUIREMENTS OF ADAAG (MARCH 2003).
2. OTHER MATERIALS MAY BE USED IF APPROVED BY THE CITY ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DETECTABLE WARNING SURFACE (OPTIONS)

(SCALE: NOT TO SCALE)

APPROVED BY:

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

EFF DATE: NOV–27–2023 | DWG NO: 02775–07

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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777 North Eldridge Parkway
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Houston, TX 77079
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tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS — SARAH L. WETMORE — 130442 — LICENSED PROFESSIONAL ENGINEER — 6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 9 OF 11

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY-ASHFORD

WBS NUMBER	N-MD0260-0002-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	JIADA HUANG
SHEET NO.	27 OF 73

FOR CITY OF HOUSTON USE ONLY
ACCEPTED APPROVED
80162

DISCLAIMER:
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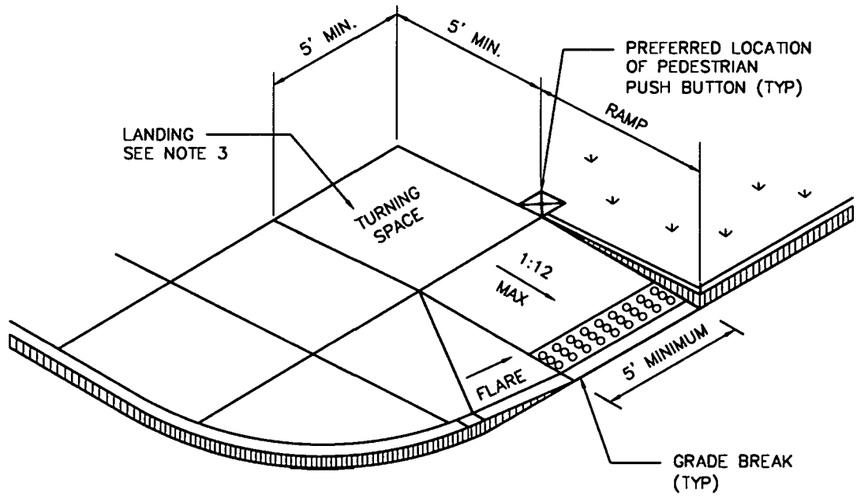

NOTES:

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2. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
3. MINIMUM 5'x5' LANDING PAD ACCORDING TO ADA REQUIREMENTS. WHEN THE APPROACHING SIDEWALK IS WIDER THAN 5', THE LANDING PAD AND RAMP WIDTH MUST MATCH THE SIDEWALK WIDTH.

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.

APPROVED BY:

CITY ENGINEER	CITY TRAFFIC ENGINEER	DIRECTOR OF HPW
DocuSigned by: Suhail Kanwar DEFB80C541F5478	DocuSigned by: KHANG NGUYEN 95A29EFDA7584CD	DocuSigned by: Carol Haddock A03C410B72B3453...

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PERPENDICULAR CURB RAMP

(SCALE: NOT TO SCALE)

EFF DATE: NOV-27-2023 | DWG NO: 02775-09

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-6145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 10 OF 11

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY ACCEPTED
N-MD0260-0002-7	
DRAWING SCALE	
AS NOTED	80162
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 28 OF 73	

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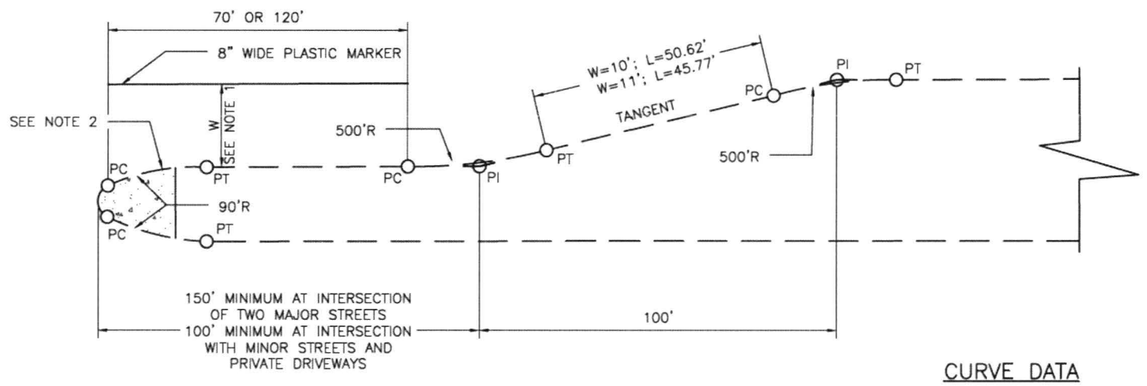


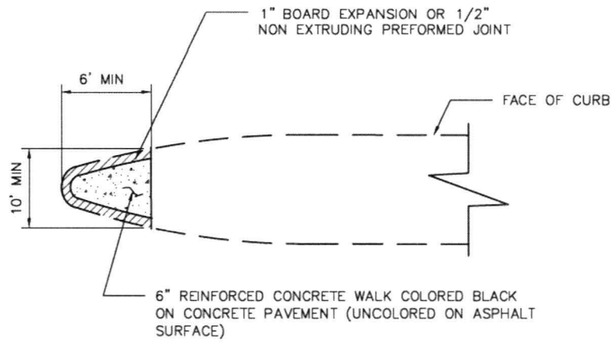
DETAIL OF LEFT TURN LANE

CURVE DATA

W=10' R=500' Δ = 5°42'38.14" L = 49.83' T=24.94'	W=11' R=500' Δ = 6°16'38.27" L = 54.78' T=27.42'

NOTES:

1. 10 FT FOR 80 FT ROW; 11 FT FOR 100 FT ROW.
2. FOR MEDIANS WITH BULLET NOSE CONFIGURATION, PAINT CURB WITH YELLOW REFLECTORIZED PAINT AROUND THE ESPLANADE NOSE TO THE PT OF THE 90 FT R. FOR MEDIANS WITHOUT BULLET NOSE CONFIGURATION, PAINT CURB FROM PC TO PT AND 30 FT BACK OF PC/PT.



ESPLANADE NOSE

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

ESPLANADE NOSE AND LEFT TURN DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER

DocuSigned by: Carol Haddock — DIRECTOR OF HPW

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV-27-2023 | DWG NO: 02772-01

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tei Planning + Design
712 MAIN STREET, SUITE 950
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TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
CONCRETE PAVEMENT DETAIL 11 OF 11

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 29 OF 73	

RECEIVED
JUL 24 2025
HOUSTON, TEXAS

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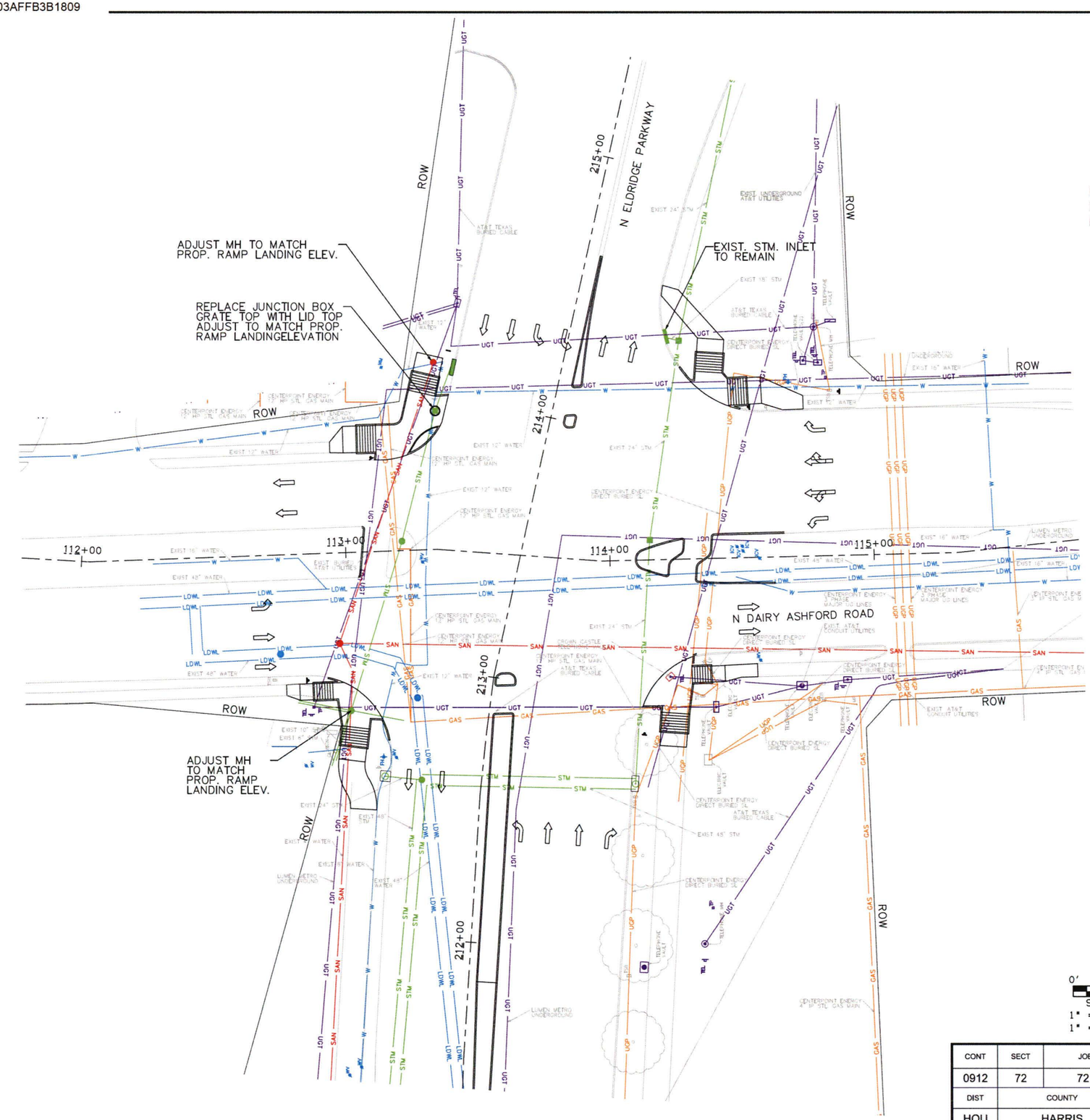

NOTE: CAUTION: HAND DIG WHEN EXCAVATING WITHIN 24" OF GAS FACILITIES.

0' 20' 40'
SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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

VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower Date 05/22/25
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.
Signature valid for six months.

Mike Brower Date 05/22/25
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.

Marlon Smither Date 05/27/2025
Approved for AT&T underground conduit facilities only.
Signature valid for one year.

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#270
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tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER LAYOUT

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	PLANS ACCEPTED AND FILED
DRAWING SCALE	80162
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 30 OF 73	

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02081-05

COH IS PHASING OUT BRICK. NEW DETAILS TO BE POSTED END OF 2019

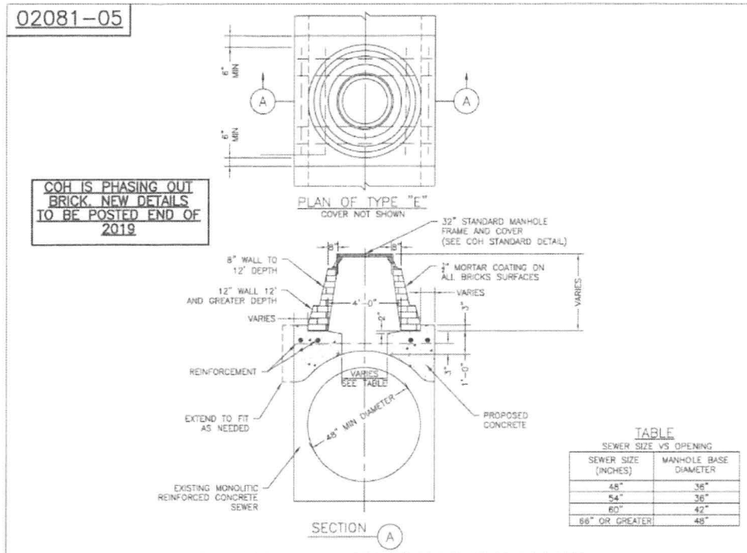
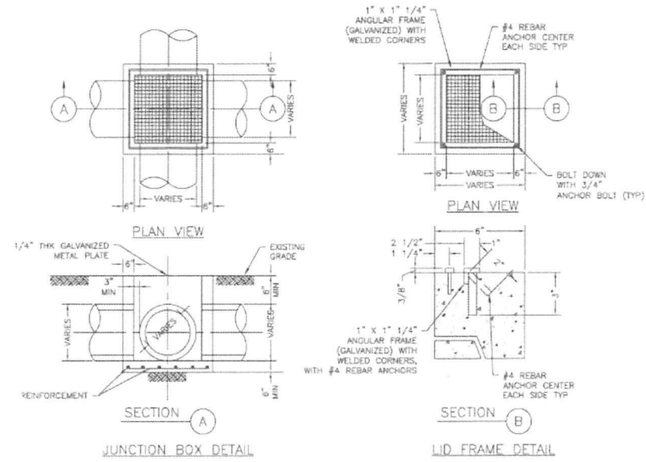


TABLE
SEWER SIZE VS OPENING

SEWER SIZE (INCHES)	MANHOLE BASE DIAMETER
48"	36"
54"	36"
60"	42"
66" OR GREATER	48"

STORM SEWER MANHOLE TYPE 'E' FOR EXISTING MONOLITIC REINFORCED CONCRETE 48" DIAMETER AND GREATER
NTS

02081-06



NOTES:

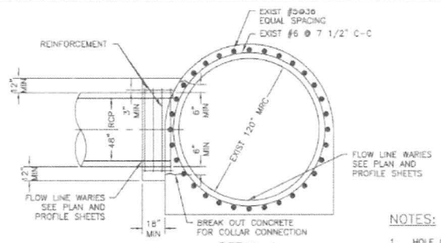
1. DETAIL TO BE USED WHERE STORM SEWER SIZE IS 24" DIA OR LESS.
2. FOR SEWER GREATER 24" DIA USE TYPE 'C' MANHOLE.

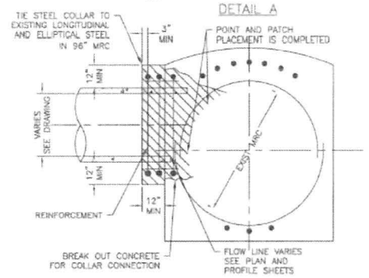
NOTES TO SPECIFIER:

1. WALL TO BE 6" CONCRETE.
2. NOT TO BE USED IN STREET. FOR AREA BETWEEN CURB AND PROPERTY LINE ONLY.

STORM SEWER
JUNCTION BOX WITH LID OR GRATE TOP
FOR MAXIMUM OF 24" DIAMETER STORM SEWE4R5
NTS

02081-07



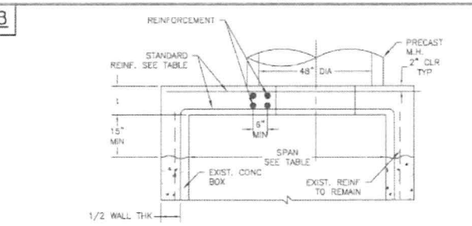


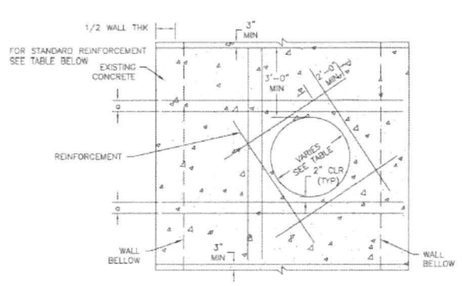
NOTES:

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

LATERAL CONNECTION TO EXISTING MONOLITHIC REINFORCED CONCRETE STORM SEWER
NTS

02081-08





PROPOSED MANHOLE ON EXISTING BOX STORM SEWER
NTS

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02081-05 THROUGH 08

APPROVED BY: _____ CITY ENGINEER
APPROVED BY: _____ DEPUTY DIRECTOR
APPROVED BY: _____ DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY

SHEET NO.

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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tei Planning + Design
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TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
STORM SEWER DETAIL 1 OF 1

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 31 OF 73	

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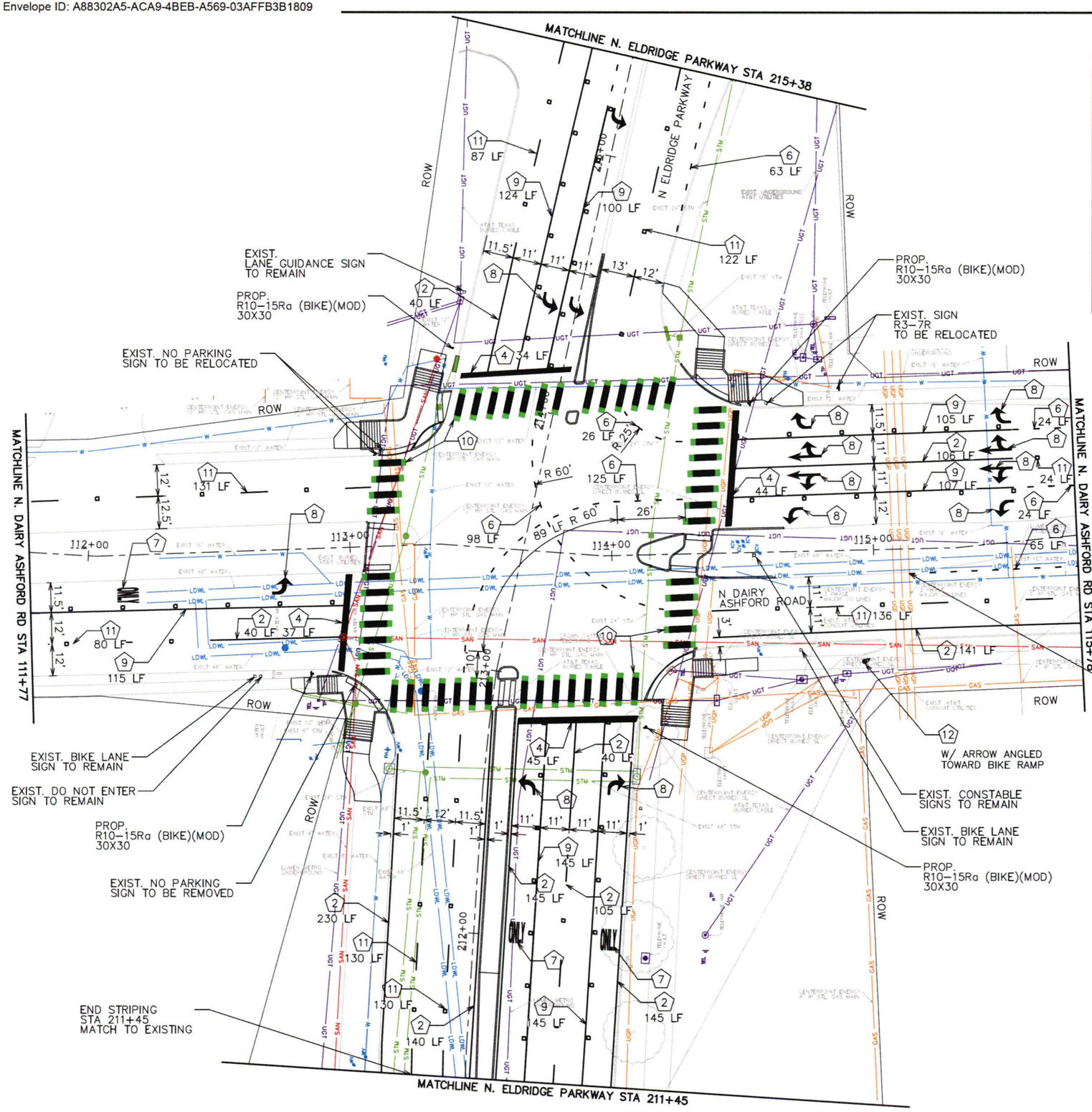

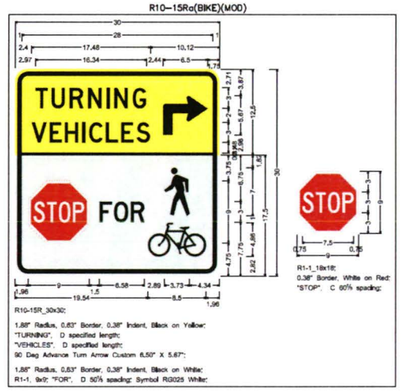

LEGEND

1. WS4
2. WS6
3. WS12
4. WS24
5. YS4
6. WG6
7. WS WORD
8. WS ARROW
9. WS6 – R20
10. TRAIL CROSSING
11. WSB4 – R40
12. BIKE DOT

NOTES:
1. PROP. YELLOW MEDIAN PAINT TO BE ADDED TO ALL MEDIAN NOSE CURBS
2. CONTRACTOR TO CENTER CROSSWALKS OUTSIDE OF WHEEL PATHS AND ALONG LANE LINES
3. STREET NAME SIGN DETAILS SHOWN IN PROPOSED SIGNAL SHEET 45

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VERIFICATION OF PRIVATE UTILITY LINES

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Signature valid for six months.

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energy corridor
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Houston, TX 77079
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tei Planning + Design
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SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SIGNS AND PAVEMENT MARKINGS LAYOUT
SHEET 1 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	ACCEPTED
DRAWING SCALE	
AS NOTED	80162
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 33 OF 75	

0′ 20′ 40′
SCALE IN FEET
1" = 20′ FOR 22X34
1" = 40′ FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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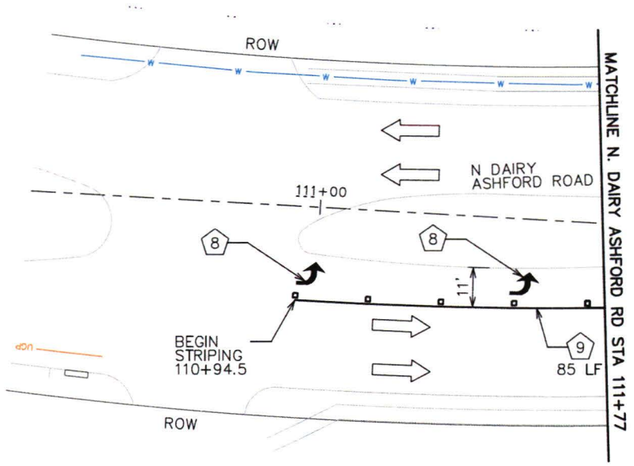

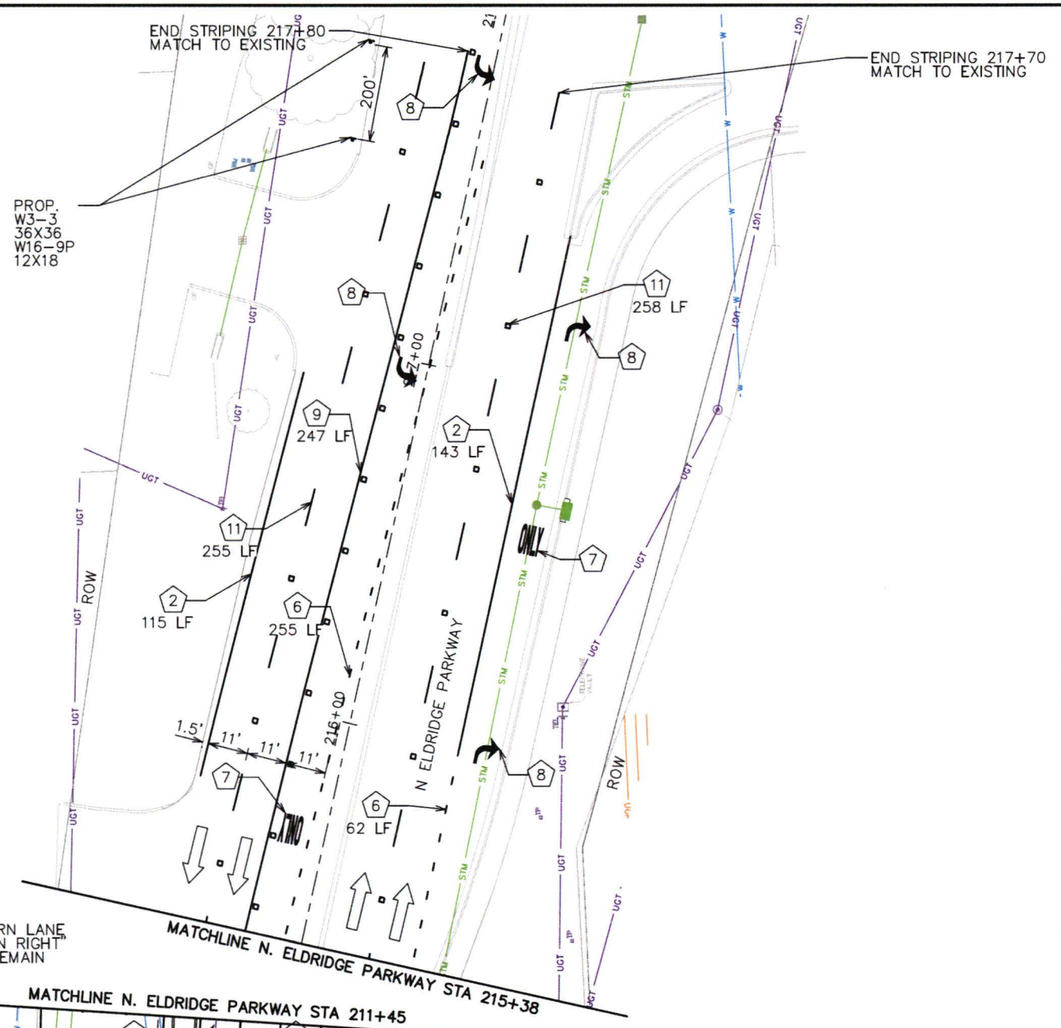

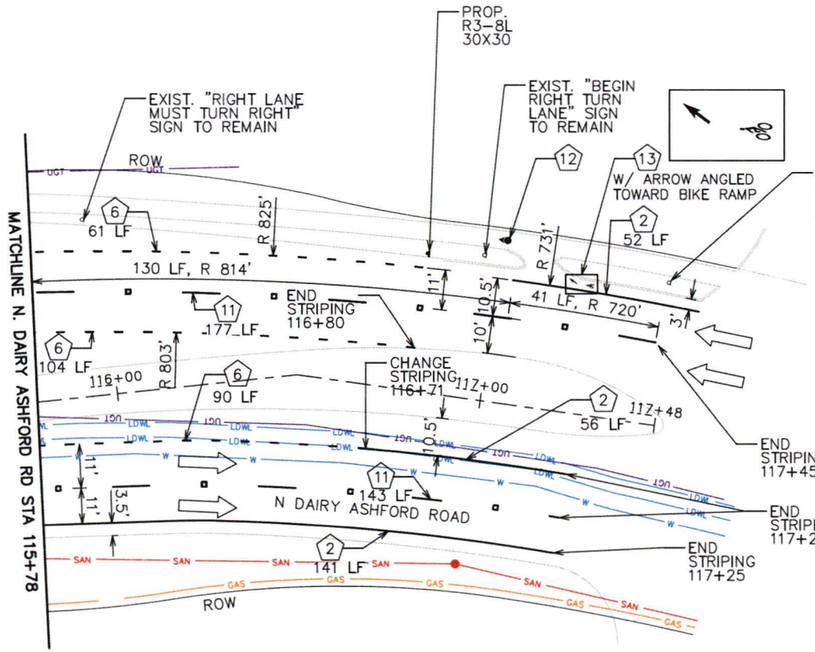

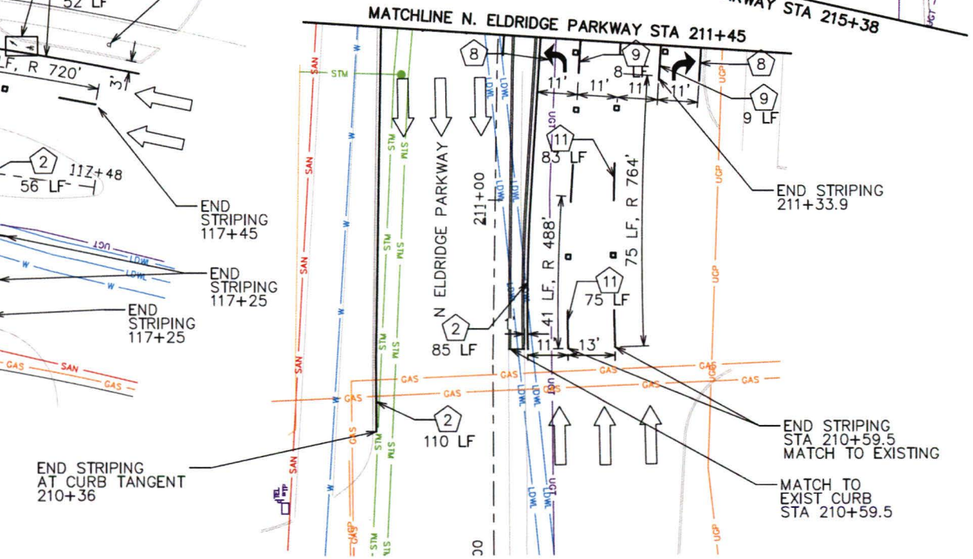

LEGEND

1. WS4
2. WS6
3. WS12
4. WS24
5. YS4
6. WG6
7. WS WORD
8. WS ARROW
9. WS6 – R20
10. TRAIL CROSSING
11. WSB4 – R40
12. BIKE DOT
13. BIKE WITH ARROW

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FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SIGNS AND PAVEMENT MARKINGS LAYOUT
SHEET 2 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	
AS NOTED	80162
CITY OF HOUSTON PO	
JIADA HUANG	
SHEET NO. 34 OF 73	

0' 20' 40'
SCALE IN FEET
1" = 20' FOR 22X34
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CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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DISCLAIMER:
THE USE OF THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH ITS USE OR ALL THE REQUIREMENTS FOR SAFE CONSTRUCTION PRACTICES. IT IS THE RESPONSIBILITY OF THE USER TO ESTABLISH APPROPRIATE SAFETY AND HEALTH PRACTICES AND TO DETERMINE THE APPLICABILITY OF ANY LIMITATIONS PRIOR TO USE.
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD ARE INTENDED FOR USE BY A LICENSED PROFESSIONAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN AND WHO MUST EXERCISE INDEPENDENT ENGINEERING JUDGMENT IN THE USE OF THIS STANDARD.
THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.
WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER.

DESCRIPTION AND APPLICATION OF PAVEMENT MARKING LINES				
LINE SERIES	COLOR	DESCRIPTION	WIDTH (INCHES)	TYPICAL APPLICATIONS
WB	WHITE	BROKEN (10' STRIPE W/30' GAP)	4"	LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS PERMITTED.
WS	WHITE	SOLID	4"	EDGE LINES TO DELINEATE THE RIGHT EDGE OF THE ROADWAY.
			6"	LEFT EDGE OF BICYCLE LANE AND LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS DISCOURAGED.
			12"	PERPENDICULAR CROSSWALK LINES.
			24"	STOP BARS AT INTERSECTIONS (SIGNALIZED AND UNSIGNALIZED).
				HATCHING AT HIGH VISIBILITY CROSSWALKS.
			12", 24"	DIAGONAL HATCHING USED IN GORES BETWEEN SAME DIRECTION OF TRAVEL LANES.
WG	WHITE	GUIDE (2' STRIPE W/6' GAP)	6"	GUIDE LINES THROUGH INTERSECTIONS.
				TAPER LINES FOR TURN LANES.
				GUIDE LINES FOR BICYCLE LANES.
YS	YELLOW	SOLID	4"	EDGE LINES TO DELINEATE THE LEFT EDGE OF A DIVIDED ROADWAY, A ONE-WAY ROAD, OR RAMP.
			8"	BIDIRECTIONAL BICYCLE LANE PAVEMENT MARKING.
			12", 24"	DIAGONAL HATCHING USED IN GORES BETWEEN OPPOSING DIRECTION OF TRAVEL LANES.
YDS	YELLOW	DOUBLE SOLID	4" – (4") – 4" (GAP)	CENTERLINE THAT SEPARATES OPPOSING TRAVEL LANES AND DELINEATION OF MEDIAN ISLANDS.
YDB	YELLOW	DOUBLE BROKEN	4" – (4") – 4" (GAP)	DEFINES THE EDGES OF CENTER REVERSIBLE LANES THAT ARE USED AS TAILTLS DURING INTERMITTENT PERIODS.
YB	YELLOW	BROKEN (10' STRIPE W/30' GAP)	4"	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YB (BIKE)	YELLOW	BROKEN (3' STRIPE W/9' GAP)	4"	SEPARATES BICYCLE TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YSB	YELLOW	SOLID & BROKEN BROKEN (10' STRIPE W/30' GAP)	4" – (4") – 4" (GAP)	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN ONE DIRECTION AND PROHIBITED IN THE OPPOSITE DIRECTION.
				USED FOR EDGE OF TWO-WAY LEFT TURN LANES (TALTL).
BICYCLE GREEN	GREEN	SOLID COLORED PAVEMENT	VARIES	PED/BIKE CROSSING
				VEHICLE / BIKE/ CONFLICT AREA
YIELD LINE	WHITE	TRIANGLE	16" x 24"	MID-BLOCK CROSSING.

DESCRIPTION AND APPLICATION OF REFLECTIVE RAISED PAVEMENT MARKERS (RPM)			
RRPM TYPES	COLOR	COH SPEC. SEC. 02764 EQUIVALENT	DESCRIPTION
C	CLEAR	TYPE I-C	APPROACH FACE THAT REFLECTS WHITE LIGHT, AND THE OTHER SIDE DOES NOT REFLECT.
R	CLEAR & RED	TYPE II-C-R	APPROACH FACE THAT REFLECTS WHITE LIGHT, AND THE OTHER SIDE REFLECTS RED LIGHT.
A	AMBER & AMBER	TYPE II-A-A	APPROACH FACE AND THE OTHER SIDE BOTH REFLECT AMBER LIGHT.

LINE STYLE DESIGNATION : YSB4 – A40/A40

- YSB4: COLOR / PATTERN / WIDTH OF STRIPE
- A40/A40: RPM SPACING / RPM TYPE / RPM SPACING / RPM TYPE

GENERAL PAVEMENT MARKING NOTES:

1. PRIOR TO START OF CONSTRUCTION, ALL EXISTING PAVEMENT MARKINGS WITHIN THE AREA OF CONSTRUCTION SHALL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING ALL EXISTING PAVEMENT MARKINGS AND LANE CONFIGURATIONS WILL BE DUPLICATED AGAIN. THIS REVIEW CAN BE DONE IN CONJUNCTION WITH SIGN INVENTORY. THE CONTRACTOR IS HELD ACCOUNTABLE FOR EXISTING AND TEMPORARY CONSTRUCTION PAVEMENT MARKINGS THROUGHOUT THE PROJECT AND AT THE PROJECT'S COMPLETION.
2. ALL PAVEMENT MARKINGS SHALL CONFORM TO CITY OF HOUSTON STANDARDS AND SPECIFICATIONS AND GENERAL GUIDELINES OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
3. THE PERMANENT PAVEMENT MARKINGS MAY BE MODIFIED AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
4. THE DESIGN SPEED FOR THE ROAD IS: _____ THE POSTED SPEED LIMIT IS: _____.
5. ALL LANE DIMENSIONS ARE FROM CENTER OF LANE LINE, CENTER OF DOUBLE LANE LINE, FACE OF CURB, OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
6. THE PAVEMENT MARKING DRAWINGS ARE SCHEMATIC ONLY. THE CONTRACTOR SHALL FOLLOW ALL DIMENSIONS, DETAILS, AND STANDARDS WHEN INSTALLING PAVEMENT MARKINGS AND SYMBOLS.
7. THE FINAL LONGITUDINAL STRIPINGS SHALL BE 60 MIL (0.060") THICK HOT-SPRAYED THERMOPLASTIC PLACED OVER THE TEMPORARY STRIPING WITHIN 14 TO 30 CALENDAR DAYS AFTER COMPLETION OF THE FINAL PAVEMENT SURFACE, OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER. ALL OTHER PAVEMENT MARKINGS SHALL BE APPLIED AT THE SAME TIME. TEMPORARY STRIPING SHALL BE WATER BASED PAINT.
8. ALL FINAL TRANSVERSE MARKINGS SHALL BE 90 MIL (0.090") HOT-SPRAYED THERMOPLASTIC. ALL PAVEMENT ARROWS AND LEGENDS SHALL ALSO BE 90 MIL (0.090") HOT-SPRAYED THERMOPLASTIC. PREFORMED THERMOPLASTIC APPLICATIONS MAY BE USED IF ONLY APPROVED BY THE CITY TRAFFIC ENGINEER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT AND INSTALLATION OF PAVEMENT MARKINGS OF FINAL SURFACE COURSE FOLLOWING CONTROL POINTS THAT HAVE BEEN SET NO MORE THAN 50 FEET APART ALONG THE LINES TO BE IMPLEMENTED. IN TANGENT SECTIONS OF A ROAD WHERE THE PAVEMENT MARKING PATTERN DOES NOT CHANGE, CONTROL POINTS CAN BE SET AT 200 FEET SPACING. THE LAYOUT AND INSPECTION OF ALL PAVEMENT MARKINGS SHALL BE APPROVED BY CITY OF HOUSTON REPRESENTATIVE PRIOR TO THE APPLICATION OF MATERIALS.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE FINAL SURFACE COURSE IS PLACED SO THAT THE STRIPING IS OFFSET NO MORE THAN ONE FOOT CLEAR OF THE CONSTRUCTION JOINT, UNLESS OTHERWISE DIRECTED BY THE CITY TRAFFIC ENGINEER.
11. ALL RAISED PAVEMENT MARKERS (RPMS) SHALL BE INSTALLED SO THAT THE REFLECTIVE FACE OF EACH MARKER IS FACING THE DIRECTION OF TRAFFIC AND IS PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW. TYPE C PAVEMENT MARKERS SHALL BE INSTALLED SO THAT THE CLEAR FACE OF EACH MARKER IS FACING THE APPROACHING TRAFFIC FLOW AND PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW.
12. ALL REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED IN ACCORDANCE TO CITY OF HOUSTON STANDARD SPECIFICATION 02782. APPLYING OVER EXISTING PAVEMENT MARKINGS DOES NOT CONSTITUTE AS APPROVED OBLITERATION METHOD.
13. THE ENGINEER OF RECORD SHALL BE REQUIRED TO PRODUCE AS-BUILT OF PAVEMENT MARKING PLANS WITHIN 30 DAYS AFTER COMPLETION OF PAVEMENT MARKING IMPLEMENTATION.
14. BLUE RPMS MAY BE PLACED ADJACENT TO FIRE HYDRANTS WITH THE APPROVAL OF THE CITY TRAFFIC ENGINEER.
15. FOR ALL CONSTRUCTION, ALL PAVEMENT MARKINGS AND SIGNING SHALL BE INSTALLED AND SHALL BE PAID BY THE PROJECT OWNER/DEVELOPER.
16. FINAL INSPECTION AND ACCEPTANCE OF PAVEMENT MARKINGS SHALL BE PERFORMED BY TRANSPORTATION & DRAINAGE OPERATION REPRESENTATIVE (713-803-3054).

APPROVED BY:	APPROVED BY:
Sukul Kanwar	Lupine Hoffer
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PAVEMENT MARKINGS GENERAL NOTES AND LEGENDS

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor™
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712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
PAVEMENT MARKINGS SHEET 1 OF 8

N ELDRIDGE PARKWAY AT, PARK ROW/NORTHDAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	ACCEPTED NOTED
DRAWING SCALE	80162
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 35 OF 73	

CITY DRAWING FILE
HOUSTON, TEXAS

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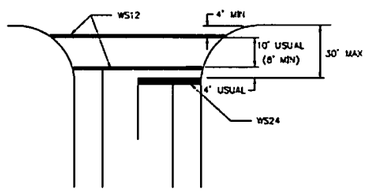
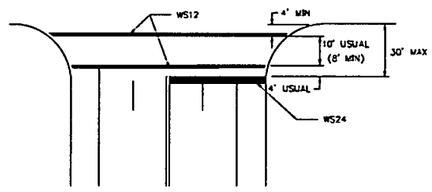
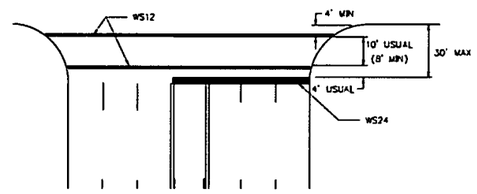
TWO LANES WITH SHOULDERS



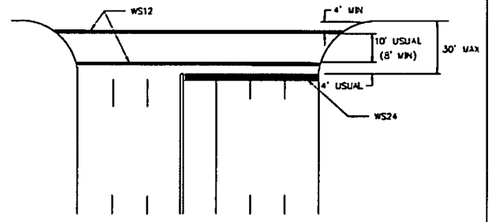
FOUR LANES WITH SHOULDERS



MULTI – LANES



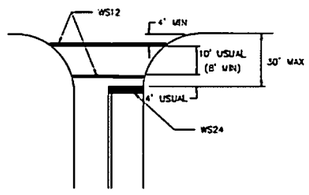
MULTI – LANE WITH MEDIAN



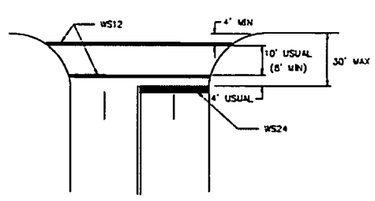
NOTES:

1. CROSSWALKS AND STOP LINES SHALL BE WHITE.
2. "D" IS EQUAL TO ONE HALF THE WIDTH OF TRAVEL LANE.

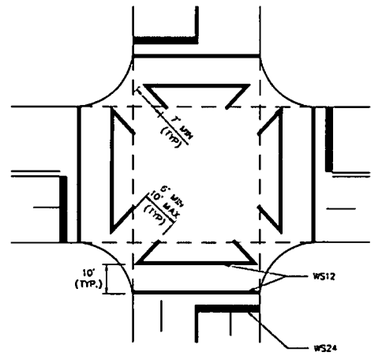
TWO LANES



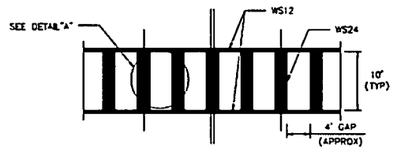
FOUR LANES



EXCLUSIVE PEDESTRIAN PHASE

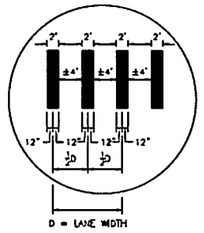


HIGH VISIBILITY CROSSWALK DETAIL

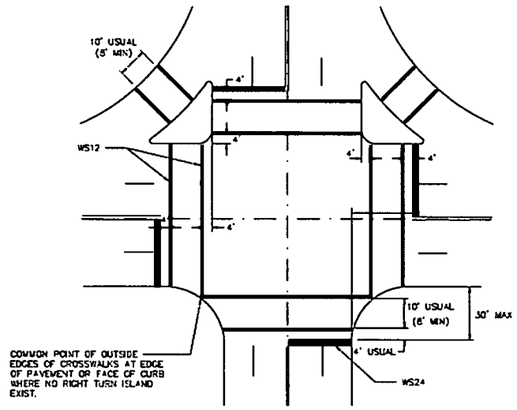


TYPICALLY USED AT SIGNALIZED AND NON-SIGNALIZED CROSSINGS ON COLLECTOR AND ARTERIAL ROADWAYS AND AT LOCATIONS REQUIRING EXTRA EMPHASIS.

DETAIL "A"



INTERSECTION WITH RIGHT – TURN ISLANDS



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APPROVED BY:	APPROVED BY:
Salad Kamwar	Kevin Hawley
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-12

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CROSSWALK DETAILS

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
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CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
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712 MAIN STREET, SUITE 950
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TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
PAVEMENT MARKINGS SHEET 2 OF 8

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY-ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	80162
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 38 OF 73	

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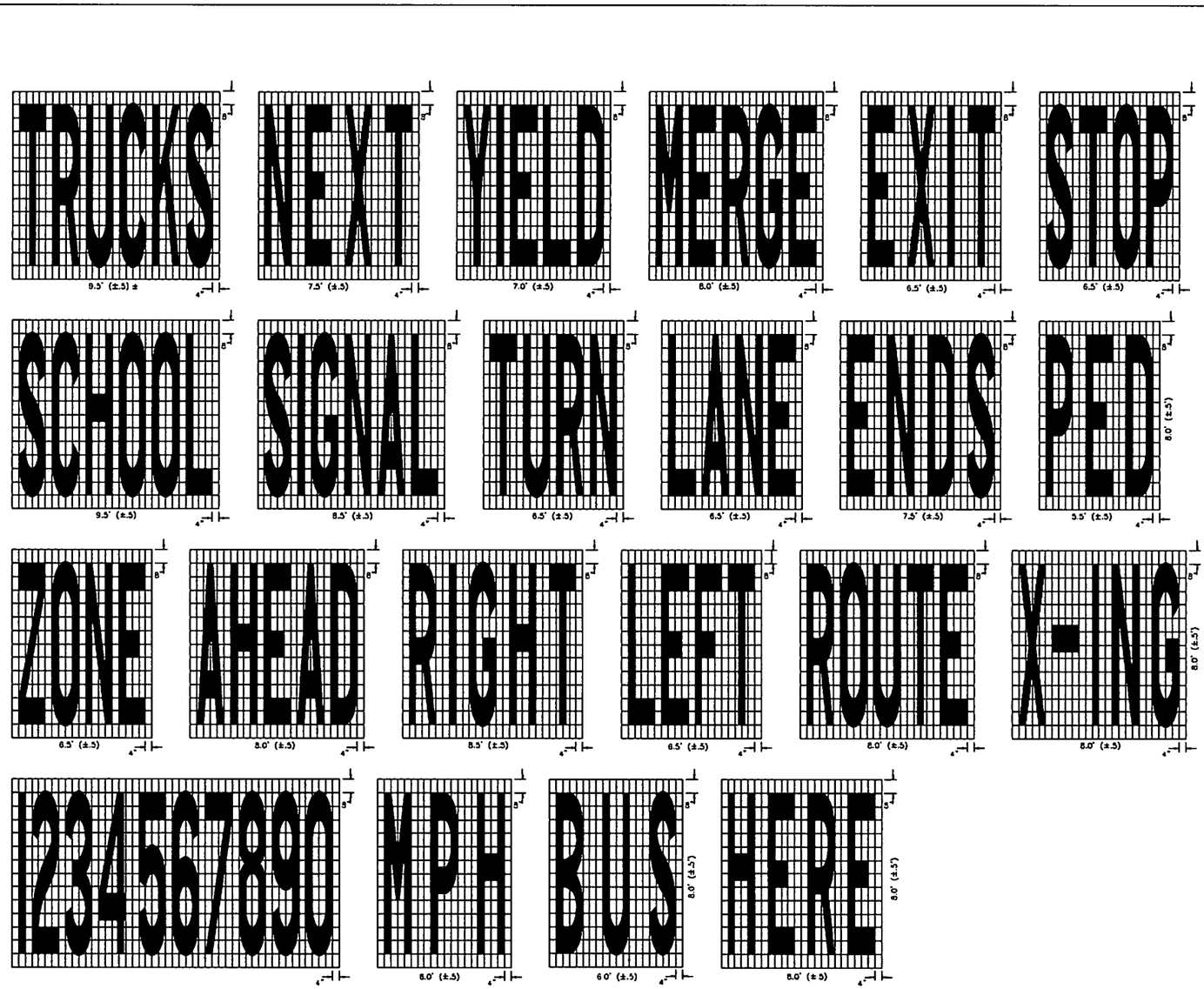

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APPROVED BY:	APPROVED BY:
Developed by Sukul Kanwar	Developed by KEVIN HOLDEN
CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:
Developed by Carol Ellinger Haddock
DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023	DWG NO: 02760-03

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKING – (WORDS)

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CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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281-759-3800

tei Planning + Design
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TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED
PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
PAVEMENT MARKINGS SHEET 3 OF 8

N ELDRIDGE PARKWAY AT
PARK ROW/NORTHDAIRY ASHFORD

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N-MD0260-0002-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PO	
JIADA HUANG	
SHEET NO. 37 OF 73	

80162

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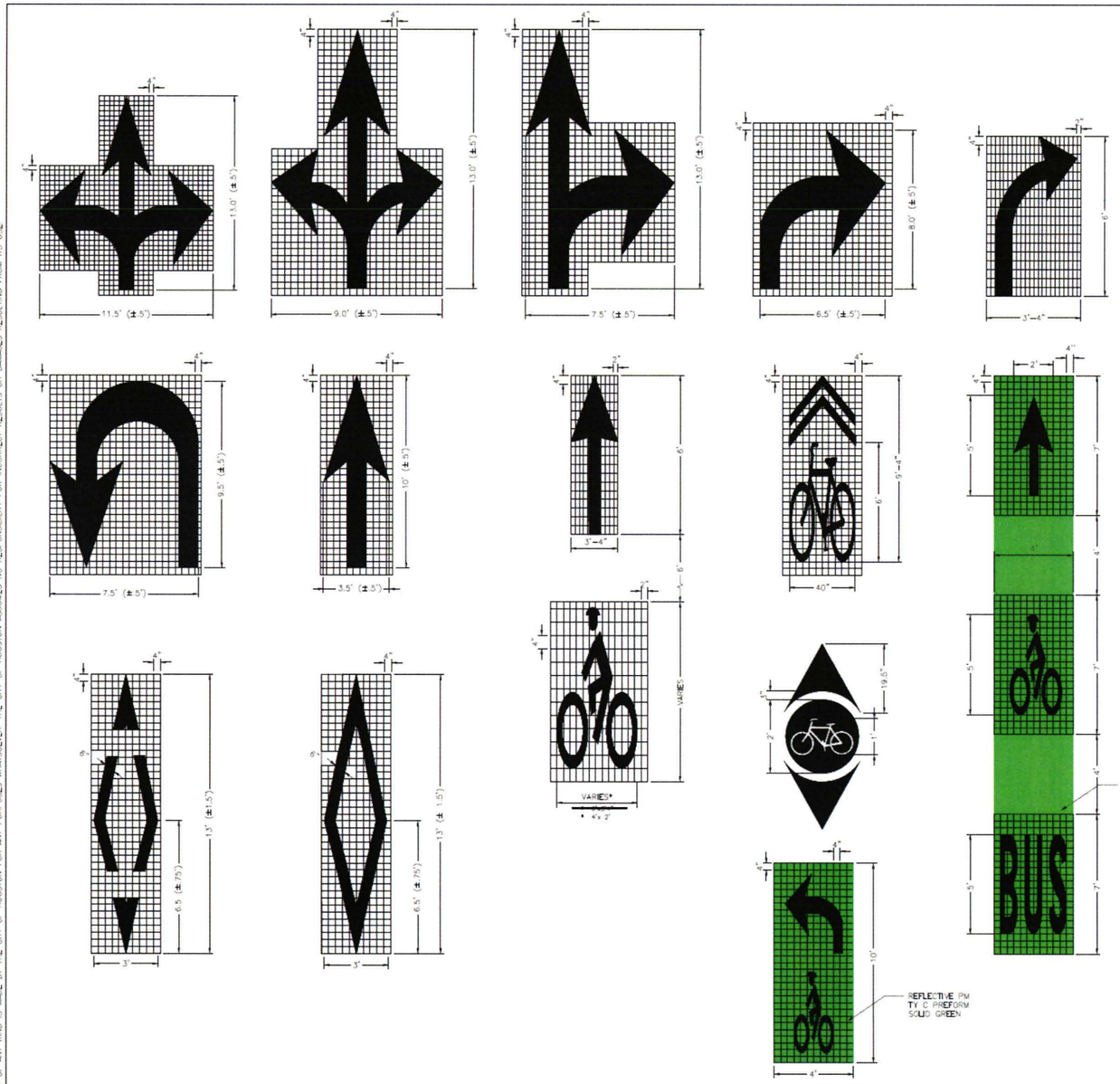

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NOTES FOR PAVEMENT MARKINGS "SYMBOLS" AND "ARROWS":

1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.
2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION; SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR REDUCTION BELOW ONE-THIRD OF STANDARD SIZES.
3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET, OR AS INDICATED ON THE PLANS.
4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:

   A. REGULATOR
      STOP
      RIGHT (LEFT) TURN ONLY, SYMBOL ARROWS.

   B. WARNING
      STOP AHEAD
      SIGNAL AHEAD
      SCHOOL
      SCHOOL X-ING
      PED X-ING
      R X R (SEE SHEET 02760-08 DETAILS
      OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR SPECIAL CONDITIONS.

5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.
6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES (ALL-WAY STOP).
7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VII OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
8. SPACING BETWEEN STANDARD SIZE LETTERS SHOULD BE 4 INCHES (MIN). THE WIDTH OF NON-STANDARD SIZE LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES. APPROVAL BY CITY TRAFFIC ENGINEER, SPECIAL PERMISSION NEEDED FOR NON-STANDARD SIZE "LETTER" AND/OR "ARROWS".
9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. SINGLE TURN ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".
10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED IN THE DESIGN PLANS.

APPROVED BY:	APPROVED BY:
Salad Kanwar	Bobby Newton
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKING - SYMBOLS

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
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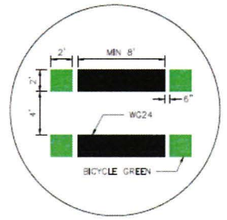
TRAIL CROSSING



CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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FB NO. N/A

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130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
PAVEMENT MARKINGS SHEET 4 OF 8

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE: AS NOTED	
CITY OF HOUSTON POC: JIADA HUANG	
SHEET NO. 38 OF 73	

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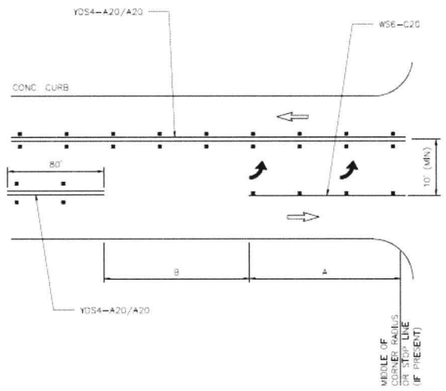
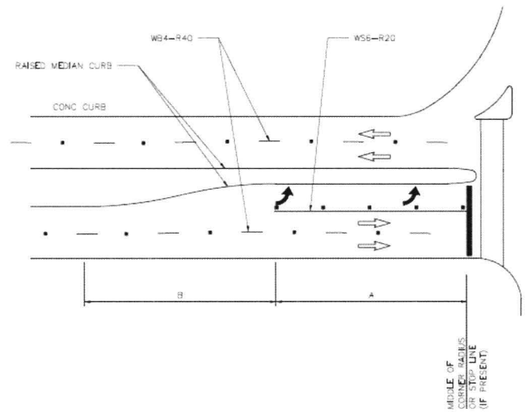
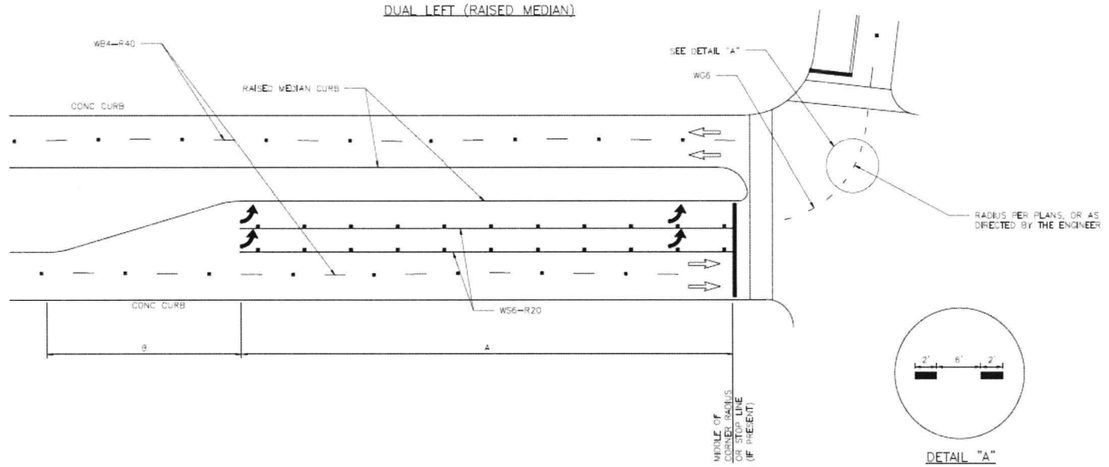
LEFT-TURN LANE



LEFT-TURN LANE (RAISED MEDIAN)



DUAL LEFT (RAISED MEDIAN)



DETAIL "A"

GENERAL NOTES:

1. THE DIMENSIONS GIVEN FOR DUAL LEFT (RAISED MEDIAN) ON THIS SHEET ARE ALSO APPLICABLE FOR DUAL RIGHT-TURN LANES.
2. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS.
3. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS REFER TO 02760-02 - LEFT/RIGHT TURN "ONLY" AND ARROW SPACING.
4. REFER TO APPLICABLE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE AND LEFT- TURN & RIGHT-TURN LANE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKINGS.
5. REFER TO BICYCLE LANE PAVEMENT MARKINGS STANDARD FOR TYPE AND PLACEMENT.

LEFT TURN BAY NOTES:

1. LEFT TURN BAY DIMENSIONS:
   A = 150' MINIMUM AT INTERSECTION OF TWO (2) MAJOR STREETS WHEN PRACTICAL.
   = 100' MINIMUM AT ALL OTHER INTERSECTIONS.

   B = 100' MINIMUM ON STRAIGHT ROADWAYS.
   *TAPER LENGTH MAY BE SHORTER IF IT IS ON A HORIZONTAL CURVE TO THE LEFT.
   *TAPER LENGTH MAY BE LONGER IF CURVE IS TO THE RIGHT.
2. DIMENSIONS SHALL BE ADJUSTED AS DETERMINED BY CITY OF HOUSTON TRAFFIC ENGINEER.
3. REFER TO CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL (FIGURE 10.6) FOR DETAILS.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:

DIRECTOR OF HOUSTON PUBLIC WORKS

EFF. DATE: NOV-27-2023	DWG NO: 02760-13

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

LEFT-TURN LANE & RIGHT-TURN LANE DESIGN

SHEET 01 OF 02

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE

NOT TO SCALE

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
PAVEMENT MARKINGS SHEET 5 OF 8

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 39 OF 73	

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 IS RESPONSIBLE FOR THE DESIGN OF TRAFFIC CONTROL PLANS, SITE PLANS, AND OTHER PROJECT SPECIFIC DOCUMENTS. USE OF THIS STANDARD IS THE RESPONSIBILITY OF THE ENGINEER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE IN ANY CAPACITY.

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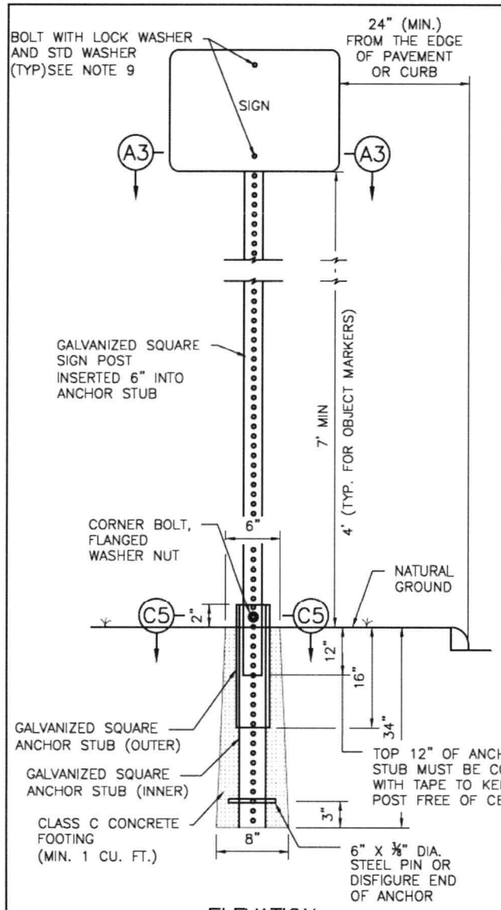
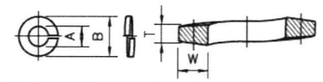


ELEVATION

TYPICAL GROUND SIGN INSTALLATION
PERFORATED SQUARE METAL TUBING

TABLE A	
GALVANIZED SQUARE SIGN POST (PERFORATED)	1-3/4"x-1-3/4" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PREFORATAED) (INNER)	2"x2"x36" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PERFORATED) (OUTER)	2 1/4" x 2 1/4" x 18" (14 GAUGE)



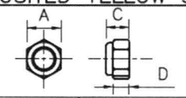
NOMINAL WASHER SIZE	A INSIDE DIAMETER MAX	A INSIDE DIAMETER MIN	B OUTSIDE DIAMETER MAX	T MEAN SECTION (THICKNESS)	W SECTION WIDTH
5/16"	0.332"	0.314"	0.583"	0.078"	0.125"

DIMENSIONS: ASME B18.21.1

MATERIAL: ALLOY STEEL PER ASME B18.21.1

FINISH: MECHANICAL ZINC PER ASTM B695, CLASS 5, TYPE 2 (YELLOW)

5/16" SPLIT LOCK WASHER, HIGH ALLOY MECHANICAL DEPOSITED YELLOW SINK



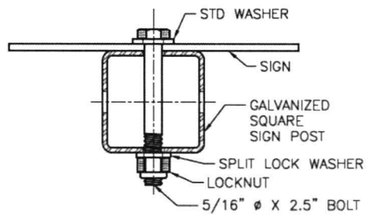
SIZE	C THICKNESS MAX	C THICKNESS MIN	A WIDTH ACROSS FLATS MAX	A WIDTH ACROSS FLATS MIN	D HEX HEIGHT MIN
0.313"	0.359"	0.329"	0.502"	0.489"	0.250"

DIMENSIONS: ASME B18.16.6

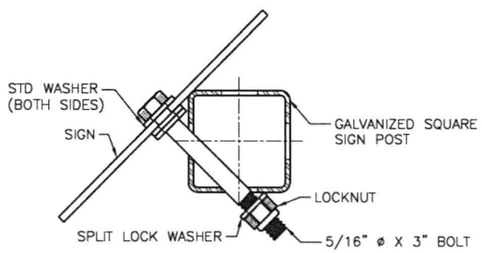
MATERIAL: CARBON STEEL, GRADE 8 PER ASME B18.16.6, NYLON ⅝

THREAD REQUIREMENTS: ASME B1.1 UNC & UNF CLASS 2B

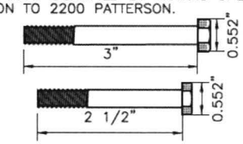
HEX NYLON INSERT LOCKNUTS (NE), GRADE 8, YELLOW ZINC PLATED



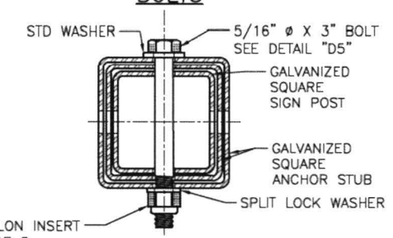
STANDARD ORIENTATION



NON-STANDARD ORIENTATION



SECTION D5
BOLTS



SECTION C5
CORNER BOLT

NOTES:

1. THE EXISTING SIGNS LOCATED ON PUBLIC CONSTRUCTION SITE ARE THE PROPERTY OF THE CITY OF HOUSTON. THROUGHOUT THE PERIOD OF THE CONTRACT, THE CONTRACTOR SHALL PROTECT THESE SIGNS SUCH THAT THEY ARE NOT DAMAGED IN THE COURSE OF CONSTRUCTION ACTIVITY. SUCH PROTECTION SHALL INCLUDE THE PERIOD AFTER SIGNS ARE REMOVED FROM INSTALLATION AND STORED BY THE CONTRACTOR OR DELIVERED TO THE TRAFFIC OPERATIONS CENTER (2200 PATTERSON). THE GENERAL TRAFFIC SUPERINTENDENT (832-395-6771) MUST BE NOTIFIED 48 HOURS IN ADVANCE PRIOR TO DELIVERY.
2. AFTER SIGNS ARE REMOVED FROM INSTALLATION AND ARE BEING STORED BY THE CONTRACTOR, THE CONTRACTOR SHALL CONTACT THE TRAFFIC OPERATIONS DIVISION OF HOUSTON PUBLIC WORKS (832-395-6771) AND ARRANGE FOR A CONVENIENT TIME TO DELIVER ONLY CITY SIGNS AND POSTS IDENTIFIED BY TRAFFIC OPERATIONS DIVISION TO 2200 PATTERSON.
3. PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIGN SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC. THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE PROJECTS COMPLETION.
4. ALL GROUND MOUNTED STOP SIGNS, WARNING SIGNS, AND OTHER REGULATORY SIGNS SHALL USE AT A MINIMUM HIGH INTENSITY PRISMATIC REFLECTIVE SHEETING.
5. ALL OVERHEAD SIGNS SHALL USE DIAMOND GRADE REFLECTIVE SHEETING.
6. ALL OTHER SIGNS SHALL USE SUPER ENGINEER GRADE SHEETING.
7. ALL BLANKS TO BE INSTALLED SHALL BE ALUMINUM ALLOY 6061-T-6 OR 5052-H38 IN ACCORDANCE WITH ASTM B209.
8. ALL HOLES SHALL BE ⅜" DIAMETER DRILLED OR PUNCHED AS SHOWN ON EACH BLANK DETAIL AND SHALL BE FREE OF BURRS AND / OR ROUGH EDGES. WHERE NON-STANDARD ORIENTATION OF SIGN IS USED, ENLARGE HOLE IN SIGN POST AT SIGN CONNECTION NOT GREATER THAN 11/16" IN DIAMETER.
9. BOLT SIZE REQUIREMENTS FOR SIGN CONNECTION:
   - 9.1. STANDARD ORIENTATION = 5/16" DIA X 2 1/2" BOLT
   - 9.2. NON STANDARD ORIENTATION = 5/16" DIA X 3" BOLT
10. SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON EACH DETAIL ON SHEET 01554-06.
11. ALL SIGN BLANKS ARE TO BE ETCHED, DEGREASED, AND HAVE A COATING MEETING THE REQUIREMENTS OF ASTM B449, CLASS 2, OR ASTM B921, CLASS 2. PRIOR TO APPLICATION OF LEGENDS.
12. ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN CONFORMANCE TO THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND STANDARD HIGHWAY SIGNS LATEST EDITION.

SECTION A3: SIGN CONNECTION DETAILS

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

GENERAL NOTES AND GROUND MOUNTING SIGN

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sukul Kanwar — CITY ENGINEER

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

DocuSigned by: Carol Haddock — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01554-01

energy corridor
777 North Eldridge Parkway #270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS — SARAH L. WETMORE — 130442 — LICENSED PROFESSIONAL ENGINEER — 6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
PAVEMENT MARKINGS SHEET 6 OF 8

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	ACCEPTED ANY
DRAWING SCALE	80162
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 40 OF 73	

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

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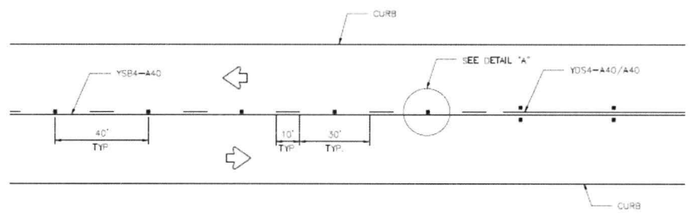
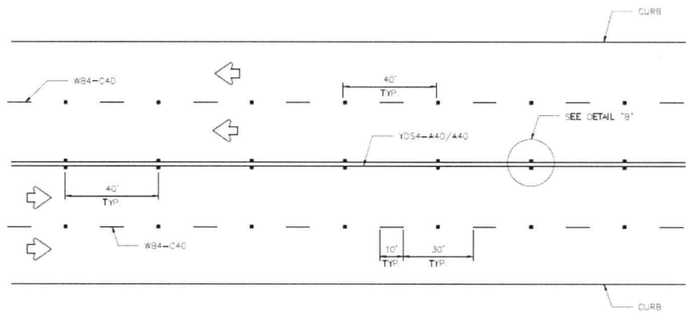
CENTERLINE & FOR ALL TWO LANE STREETS WITH PASSING ZONE

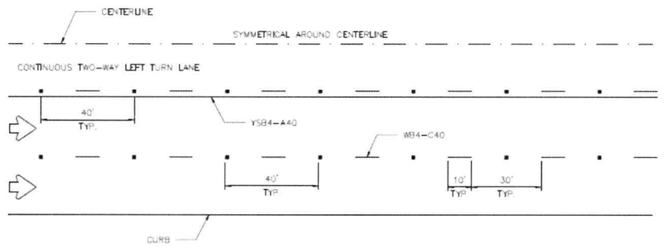


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY STREETS

RRPM TYPE C, CLEAR FACE TOWARD NORMAL TRAFFIC, SHALL BE PLACED ON 40-FOOT CENTERS

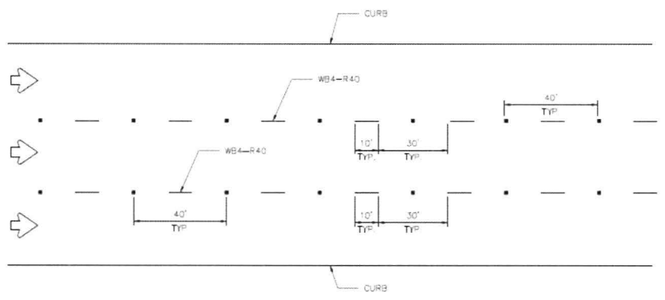


CENTERLINE & LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY MULTILANE STREET

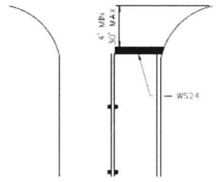
RRPM TYPE R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG-WAY TRAFFIC



GENERAL NOTES:

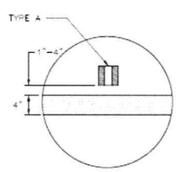
1. EDGELINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED IN ALL CASES, HOWEVER SHALL BE PLACED AS DIRECTED BY CITY TRAFFIC ENGINEER.
2. THE TRAVELED WAY INCLUDES ONLY THAT PORTION OF THE ROADWAY USED FOR VEHICULAR TRAVEL AND NOT THE PARKING LANES, SIDEWALKS, BERMS AND SHOULDERS. THE TRAVELED WAYS SHALL BE MEASURED FROM THE INSIDE OF EDGELINE TO INSIDE OF EDGELINE OF A TWO LANE ROADWAY.
3. ALL RAISED PAVEMENT MARKERS PLACED IN BROKEN LINES SHALL BE PLACED IN LINE WITH AND MIDWAY BETWEEN THE STRIPES.
4. ON CONCRETE PAVEMENTS THE RAISED PAVEMENT MARKERS SHOULD BE PLACED TO ONE SIDE OF THE LONGITUDINAL JOINTS.
5. ALL PAVEMENT MARKING MATERIAL SHALL MEET THE REQUIRED MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF HOUSTON STANDARD SPECIFICATIONS.

GUIDE FOR PLACEMENT OF STOP LINES & CENTERLINE

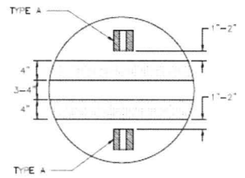


APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-05

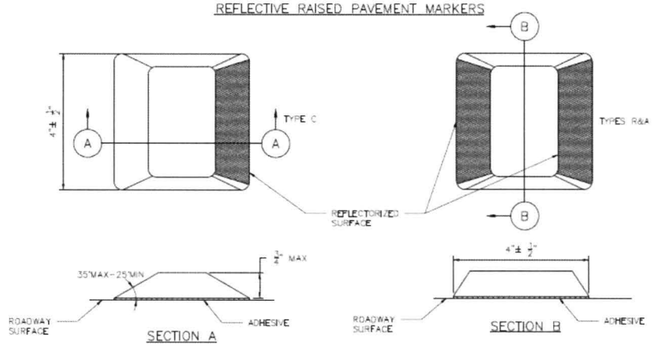
DETAIL "A"



DETAIL "B"



REFLECTIVE RAISED PAVEMENT MARKERS



CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE:	
NOT TO SCALE	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
PAVEMENT MARKINGS SHEET 7 OF 8

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-4	ACCEPTED WITH EXCEPTIONS
DRAWING SCALE:	80162
AS NOTED	
CITY OF HOUSTON DOC	
JIADA HUANG	
SHEET NO. 41 OF 73	

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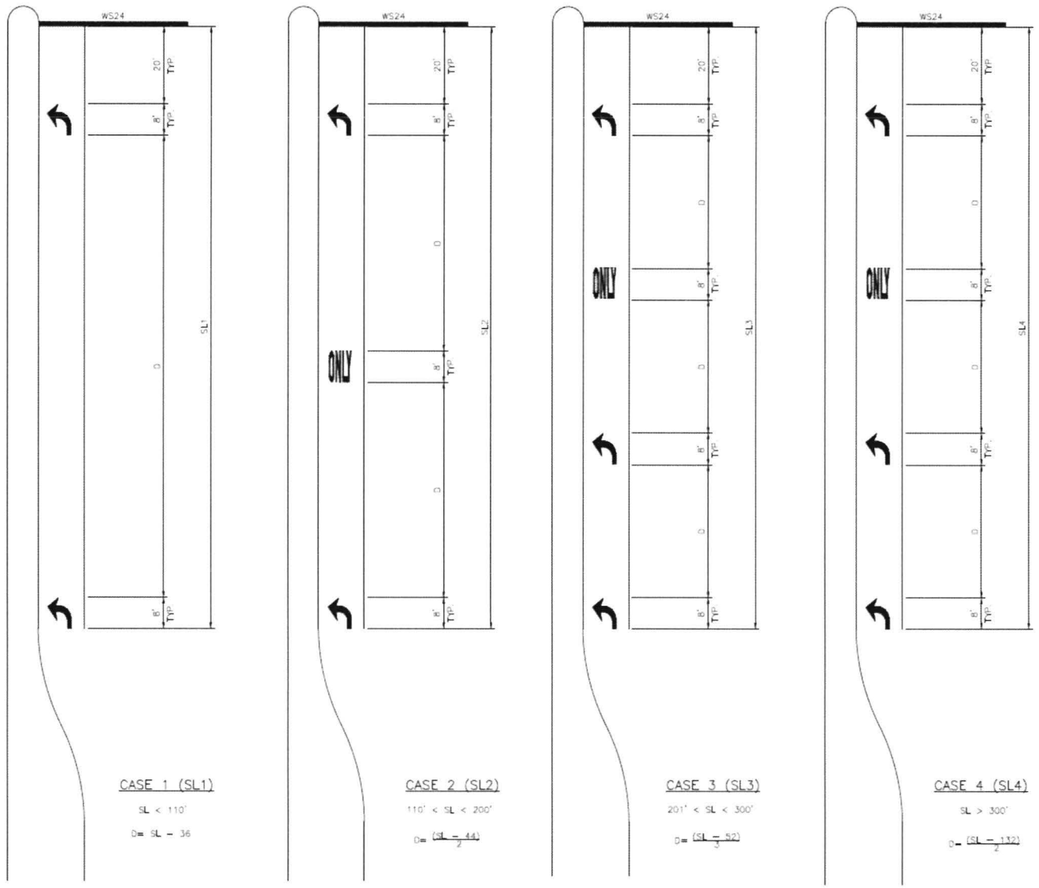

CASE 1 (SL1)

SL < 110'

D= SL - 36

CASE 2 (SL2)

110' < SL < 200'

$D = \frac{(SL - 44)}{2}$

CASE 3 (SL3)

201' < SL < 300'

$D = \frac{(SL - 52)}{3}$

CASE 4 (SL4)

SL > 300'

$D = \frac{(SL - 132)}{2}$

KEY (FOR TURN LANES ONLY):

SL = STORAGE LENGTH (FEET)

D = DISTANCE BETWEEN ARROWS AND/OR WORDS (FEET)

GENERAL NOTES:

1. ALL CASES AND DETAILS ALSO APPLY TO RIGHT-TURN LANES.
2. FOR DUAL-TURN LANES, DIMENSIONS SHALL BE THE SAME FOR EACH LANE.
3. SL DIMENSION IS FROM BACK OF STOP LINE TO END OF TURN LANE.
   NOTE: DO NOT INCLUDE TAPER LENGTH.
4. PAVEMENT ARROWS AND "ONLY" LEGEND MARKINGS ARE TYPICALLY USED AT ALL SIGNALIZED INTERSECTIONS AND AT ALL UNSIGNALIZED INTERSECTIONS THAT HAVE TURN LANES.
5. MINIMUM SL= 100'. SL MAY BE LESS THAN 100 FEET ONLY BY APPROVAL OF THE CITY TRAFFIC ENGINEER.

APPROVED BY:	APPROVED BY:
Salad Kaddas	Greg Nguyen
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF. DATE: NOV-27-2023	DWG. NO: 02760-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

LEFT/RIGHT-TURN "ONLY" AND ARROW SPACING

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED
PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
PAVEMENT MARKINGS SHEET 8 OF 8

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 42 OF 73	

80162

DISCLAIMER:
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EXISTING SPEED LIMITS
N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

EXISTING SIGNAL HEADS

5-SECTION HORIZONTAL
12" LED H5R SIGNAL HEAD

ø10

4-SECTION HORIZONTAL
12" LED H4LF SIGNAL HEAD

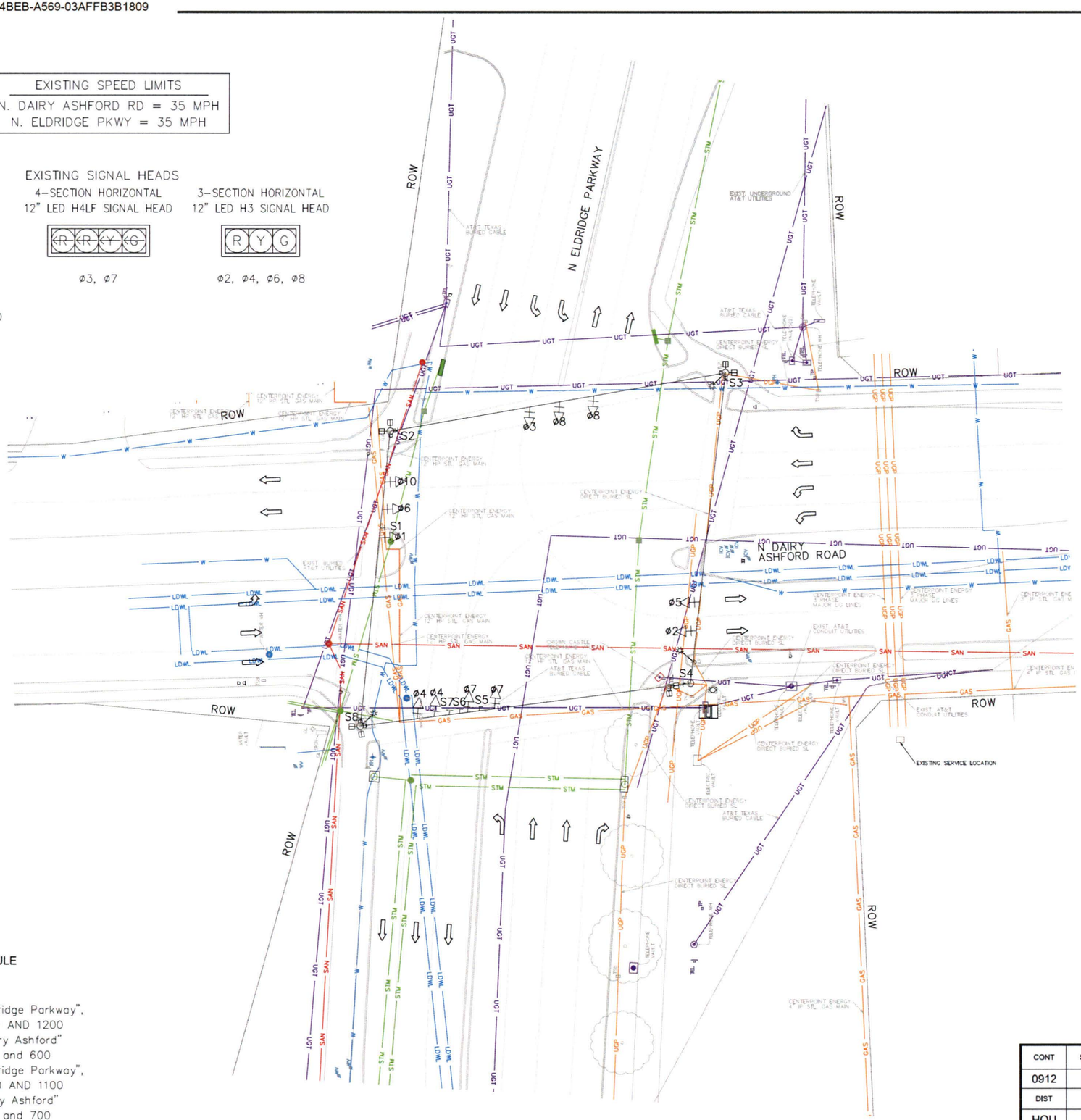
ø3, ø7

3-SECTION HORIZONTAL
12" LED H3 SIGNAL HEAD

ø2, ø4, ø6, ø8

4-SECTION HORIZONTAL
12" LED H4TL SIGNAL HEAD

ø1, ø5



LEGEND

- EXISTING SIGNAL POLE
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING PEDESTRIAN POLE
- EXISTING PULL BOX
- EXISTING GROUND BOX
- EXISTING CONTROLLER CABINET
- EXISTING ELECTRICAL SERVICE PEDESTAL
- EXISTING SIGNAL HEAD

EXISTING SIGN SCHEDULE

S1, S6 = R3-8
S5, S7 = R3-4
S2 = STREET NAME "N. Eldridge Parkway",
BLOCK NUMBERS 1100 AND 1200
S3 = STREET NAME "N. Dairy Ashford"
BLOCK NUMBERS 700 and 600
S4 = STREET NAME "N. Eldridge Parkway",
BLOCK NUMBERS 1200 AND 1100
S8 = STREET NAME "N Dairy Ashford"
BLOCK NUMBERS 600 and 700

NOTE: EXISTING STREET NAME SIGNS TO BE SALVAGED AND REUSED

0' 20' 40'
SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

EXISTING SIGNAL LAYOUT

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 43 OF 73	

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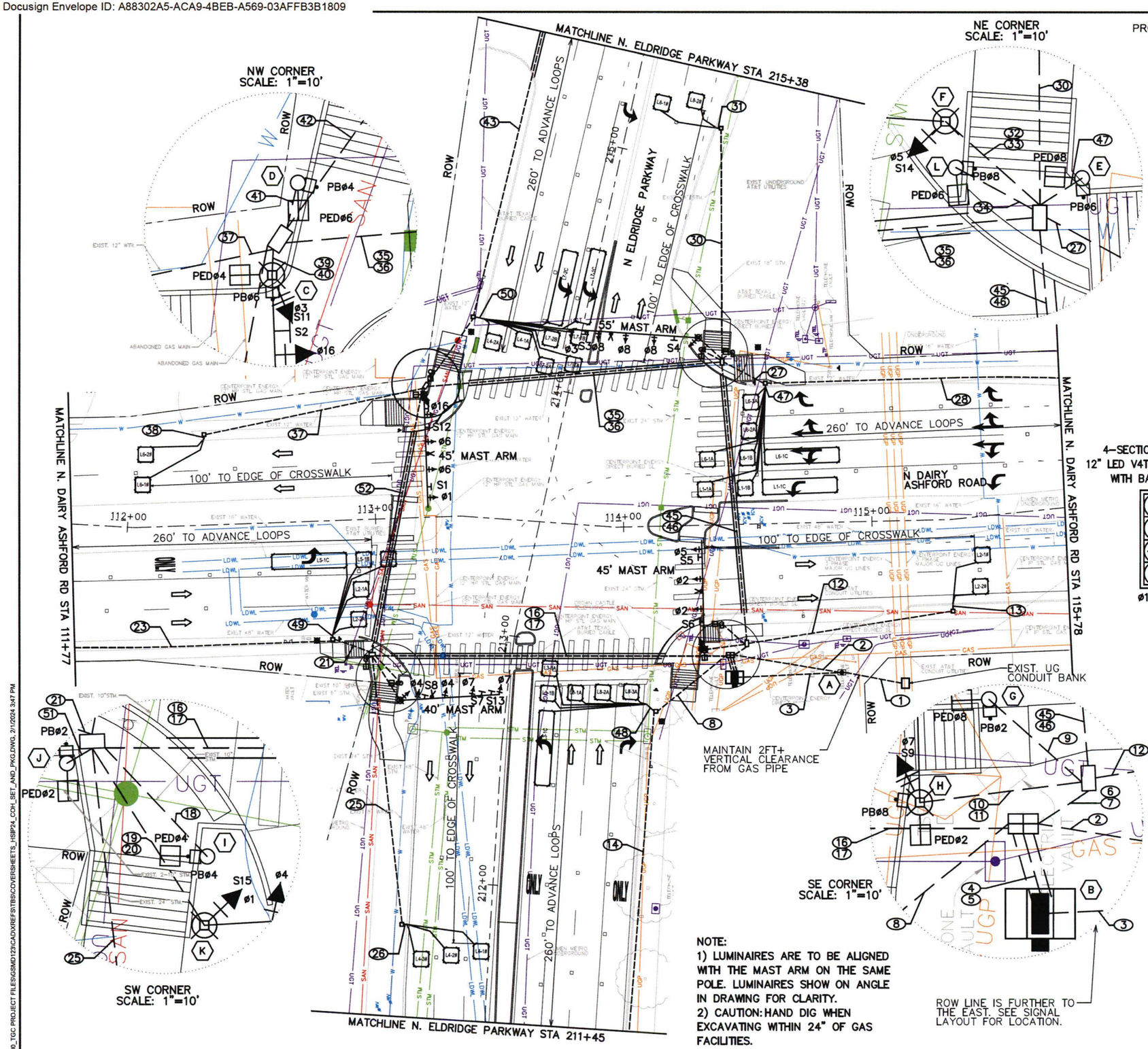

PROPOSED SIGNAL HEAD SCHEDULE

3–SECTION HORIZONTAL 12" LED H3 SIGNAL HEAD WITH BACK PLATE

R Y G

⌀2, ⌀4, ⌀6, ⌀8

4–SECTION HORIZONTAL 12" LED H4TL SIGNAL HEAD WITH BACK PLATE

R Y G G

⌀1, ⌀5

5–SECTION HORIZONTAL 12" LED H5R SIGNAL HEAD WITH BACK PLATE

R Y G Y G

⌀16

3–SECTION HORIZONTAL 12" LED H3L SIGNAL HEAD WITH BACK PLATE

R Y G

⌀3, ⌀7

4–SECTION VERTICAL 12" LED V4TL SIGNAL HEAD WITH BACK PLATE

R Y G G

⌀1, ⌀5

3–SECTION VERTICAL 12" LED V3L SIGNAL HEAD WITH BACK PLATE

R Y G

⌀3, ⌀7

LEGEND

- PROPOSED SIGNAL HEAD
- PROPOSED SIGNAL HEAD W/ SIGN
- PROPOSED OPTICOM
- PROPOSED POLE W/ MAST ARM
- PROPOSED PEDESTRIAN SIGNAL HEAD
- PROPOSED PEDESTRIAN PUSH BUTTON
- PROPOSED PEDESTAL POLE
- PROPOSED PULL BOX – TYPE A
- PROPOSED PULL BOX – TYPE B
- PROPOSED PULL BOX – TYPE C
- PROPOSED CONDUIT (TRENCH)
- PROPOSED CONDUIT (BORE)
- PROPOSED LUMINAIRE
- PROPOSED MAST ARM SIGN
- PROPOSED TYPE 340 CABINET W/ BBU AND 2070LX CONTROLLER
- PROPOSED ELECTRICAL SERVICE
- LX-XX PROPOSED 6'X6' SAW–CUT DETECTOR
- LX-XX PROPOSED 6'X30' SAW–CUT DETECTOR
- EXISTING PAD–MOUNTED TRANSFORMER

DESIGN SPEEDS FOR LOOP DETECTOR SET BACK
N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

NOTE: STREET NAME SIGNS TO BE PROVIDED BY OTHERS. CONTACT MICHAEL JACKSON (281) 759–3800. DETAIL FOR STREET NAME SIGN SHOWN ON "STREET NAME SIGN DETAIL" SHEET.

PROPOSED SIGN SCHEDULE

S1 = R3–8L LANE CONTROL
S2 = N ELDRIDGE PARKWAY STREET NAME WITH ECD BRANDING, BLOCK NUMBERS 1100 AND 1200
S3, S5, S7, S9, S11, S14, S15 = R10–5 "LEFT TURN ON GREEN ARROW ONLY"
S4 = N DAIRY ASHFORD STREET NAME WITH ECD BRANDING, BLOCK NUMBERS 700 AND 600
S6 = N ELDRIDGE PARKWAY STREET NAME WITH ECD BRANDING, BLOCK NUMBERS 1200 AND 1100
S8 = N DAIRY ASHFORD STREET NAME WITH ECD BRANDING, BLOCK NUMBERS 600 AND 700
S12 = R3–8R LANE CONTROL
S13 = R3–4 NO U–TURN

NOTE:
1) LUMINAIRES ARE TO BE ALIGNED WITH THE MAST ARM ON THE SAME POLE. LUMINAIRES SHOW ON ANGLE IN DRAWING FOR CLARITY.
2) CAUTION: HAND DIG WHEN EXCAVATING WITHIN 24" OF GAS FACILITIES.

SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PROPOSED SIGNAL
SHEET 1 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PDC	
JIADA HUANG	
SHEET NO. 44 OF 73	

PROFESSIONAL ENGINEER
HOUSTON, TEXAS

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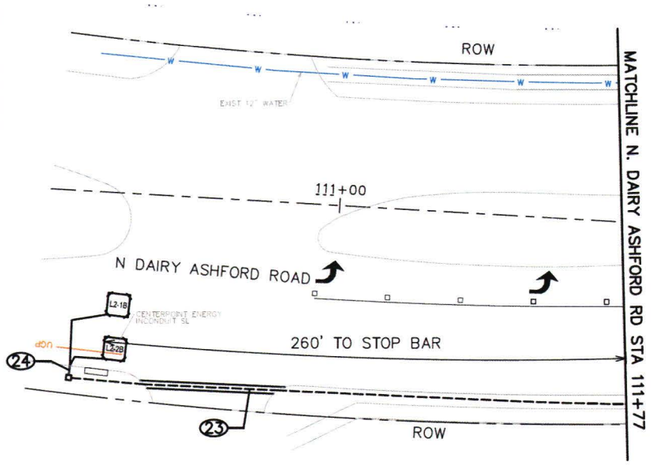
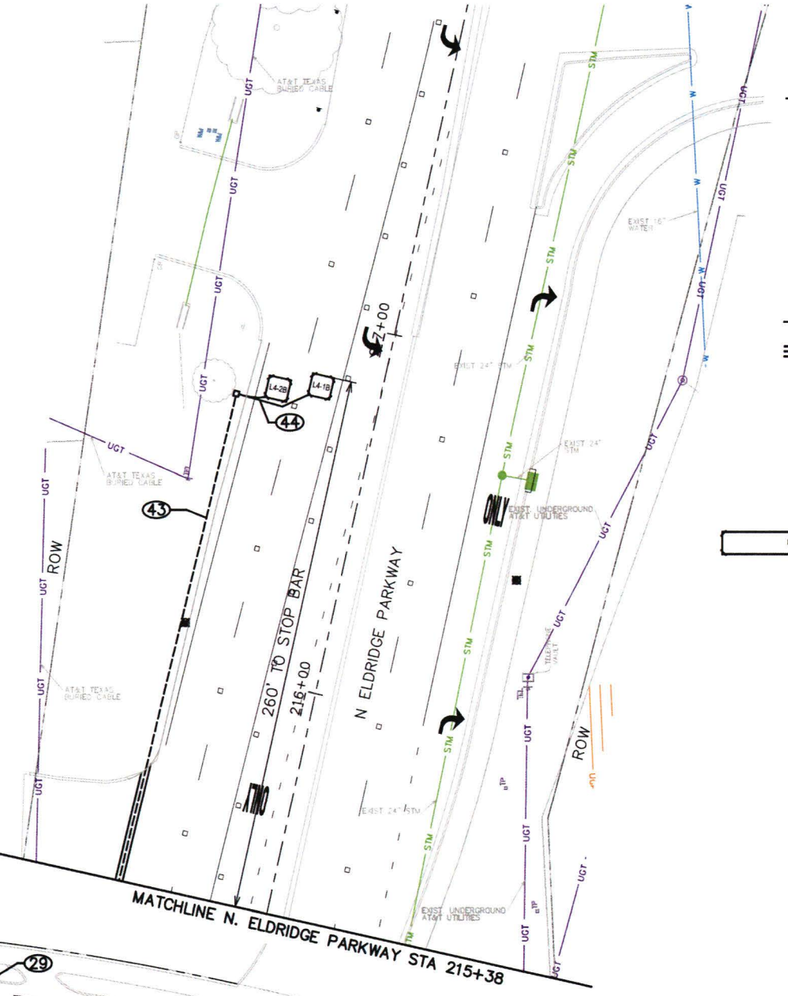


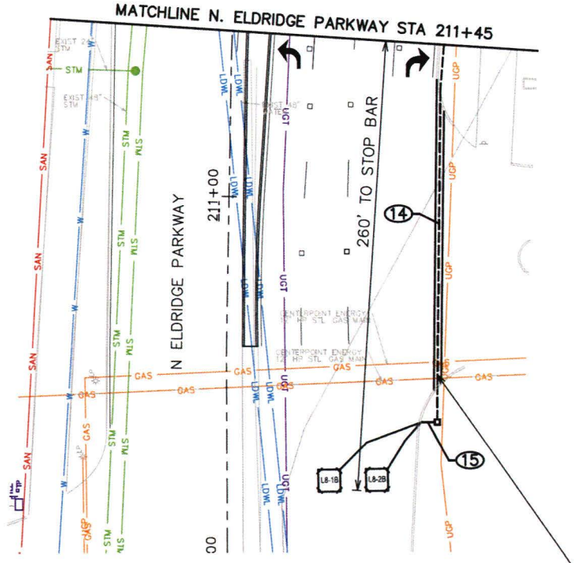
NOTE: CAUTION: HAND DIG WHEN EXCAVATING WITHIN 24" OF GAS FACILITIES.

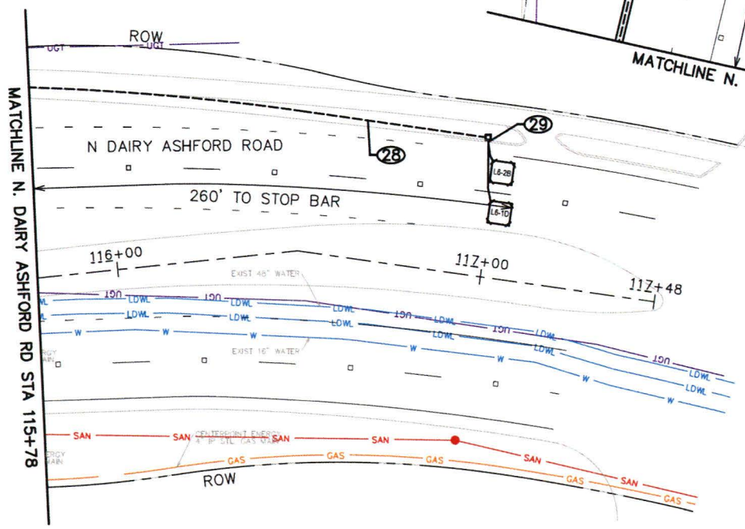
PROPOSED TRAFFIC SIGNAL PHASING					
Ø2 + Ø5	Ø1 + Ø6	Ø1 + Ø6 + Ø16	Ø4 + Ø7 + Ø16	Ø4 + Ø8	Ø3 + Ø8
Ø5, Ø2, Ø2 PED	Ø6 PED, Ø6, Ø1	Ø16, Ø6, Ø1	Ø4 PED, Ø4, Ø7, Ø16	Ø4 PED, Ø4, Ø8, Ø8 PED	Ø3, Ø8, Ø8 PED



LEGEND

- PROPOSED SIGNAL HEAD
- PROPOSED OPTICOM
- PROPOSED POLE W/ MAST ARM
- PROPOSED PEDESTRIAN SIGNAL HEAD
- PROPOSED PEDESTRIAN PUSH BUTTON
- PROPOSED PEDESTAL POLE
- PROPOSED PULL BOX – TYPE A
- PROPOSED PULL BOX – TYPE B
- PROPOSED PULL BOX – TYPE C
- PROPOSED CONDUIT (TRENCH)
- PROPOSED CONDUIT (BORE)
- PROPOSED LUMINAIRE
- PROPOSED MAST ARM SIGN
- PROPOSED CONTROLLER CABINET
- PROPOSED ELECTRICAL SERVICE
- PROPOSED 6'X6' SAW-CUT DETECTOR (LX-XX)
- PROPOSED 6'X30' SAW-CUT DETECTOR (LX-XX)





MAINTAIN 2FT+ VERTICAL CLEARANCE FROM GAS PIPE

DESIGN SPEEDS FOR LOOP DETECTOR SET BACK
N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

0' 20' 40'
SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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712 MAIN STREET, SUITE 950
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SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PROPOSED SIGNAL
SHEET 2 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-4	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PIC	
JIADA HUANG	
SHEET NO. 45 OF 73	

RECEIVED
HOUSTON, TEXAS

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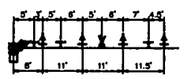
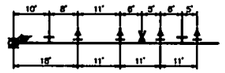
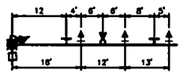
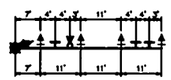
POLE SCHEDULE

POLE NUMBER	POLE TYPE	ATTACHMENTS STRAIN	ATTACHMENTS LUMIN	SIGNALS MTG.	SIGNALS FACE	LUMINAIRE TYPE	PED PB TYPE/SIGN	REMARKS	LOCATION	STANDARDS
(C) 	TYPE 2	45' MAST ARM	YES	4–ASTROBRAC 1–SIDE OF POLE 1–PED	1–H5R 2–H3 1–H4TL 1–CDP 1–V3L	106 WATT SYSTEM MAX LED COBRA HEAD LUMINAIRE	POLARA NAVIGATOR R10–3e(R)	SIGN 1 – R3–8L (30"X30") SIGN 2 – STREET NAME SIGN 11 – R10–5 (30"X36") SIGN 12 – R3–8R (30"X30") PRE–EMPT SENSOR	STA 113+21.2 OFF 49.1' LT	02893–01 02582–01 02582–02 02582–03 02465–01 02465–02 01554–11
(D)	15' PED POLE	–	–	1–PED	1–CDP	–	POLARA NAVIGATOR R10–3e(L)	–	STA 113+24.1 OFF 58.2' LT	02893–01 02465–02 02582–01
(E)	15' PED POLE	–	–	1–PED	1–CDP	–	POLARA NAVIGATOR R10–3e(L)	–	STA 114+45.5 OFF 69.0' LT	02893–01 02465–02 02582–01
(F) 	TYPE 2	55' MAST ARM	YES	4–ASTROBRAC 1–SIDE OF POLE	3–H3 1–H3L 1–V4TL	106 WATT SYSTEM MAX LED COBRA HEAD LUMINAIRE	–	SIGN 3 – R10–5 (30"X36") SIGN 4 – STREET NAME SIGN 14 – R10–5 (30"X36") PRE–EMPT SENSOR	STA 114+31.8 OFF 74.9' LT	02893–01 02582–01 02582–02 02582–03 02465–01 02465–02 01554–11
(G)	15' PED POLE	–	–	1–PED	1–CDP	–	POLARA NAVIGATOR R10–3e(L)	–	STA 114+38.6 OFF 39.6' RT	02893–01 02465–02 02582–01
(H) 	TYPE 2	45' MAST ARM	YES	3–ASTROBRAC 1–SIDE OF POLE 1–PED	2–H3 1–H3L 1–V3L 1–CDP	106 WATT SYSTEM MAX LED COBRA HEAD LUMINAIRE	POLARA NAVIGATOR R10–3e(L)	SIGN 5 – R10–5 (30"X36") SIGN 6 – STREET NAME SIGN 9 – R10–5 (30"X36") PRE–EMPT SENSOR	STA 114+31.4 OFF 49.8' RT	02893–01 02582–01 02582–02 02582–03 02465–01 02465–02 01554–11
(I)	15' PED POLE	–	–	1–PED	1–CDP	–	POLARA NAVIGATOR R10–3e(L)	–	STA 113+07.8 OFF 66.0' RT	02893–01 02465–02 02582–01
(J)	15' PED POLE	–	–	1–PED	1–CDP	–	POLARA NAVIGATOR R10–3e(L)	–	STA 112+94.0 OFF 56.2' RT	02893–01 02465–02 02582–01
(K) 	TYPE 2	40' MAST ARM	YES	4–ASTROBRAC 1–SIDE OF POLE	2–H3 2–H3L 1–V4TL	106 WATT SYSTEM MAX LED COBRA HEAD LUMINAIRE	–	SIGN 7 – R10–5 (30"X36") SIGN 8 – STREET NAME SIGN 13 – R3–4 (36"X36") SIGN 15 – R10–5 (30"X36") PRE–EMPT SENSOR	STA 113+07.3 OFF 72.9' RT	02893–01 02582–01 02582–02 02582–03 02465–01 02465–02 01554–11
(L)	15' PED POLE	–	–	1–PED	1–CDP	–	POLARA NAVIGATOR R10–3e(L)	–	STA 114+32.8 OFF 70.3' LT	02893–01 02465–02 02582–01

TRAFFIC SIGNAL CONTROLLER

CABINET	TYPE	CONTROLLER	AUX. CONTROL	REMARKS	LOCATION	STANDARDS
(A)	UL TYPE 3R	METERED SERVICE PEDESTAL WITH 30 AMP & 60 AMP CIRCUIT BREAKERS STREET LIGHTS PHOTOCELL TO ADD TO SERVICE PANEL	–	–	STA 114+86.4 OFF 60.2' RT (CENTER)	02893–02
(B)	TYPE 340 ITS	2070LX CONTROLLER WITH 2070–1C CPU MODULE, GPS SERIAL COMMUNICATIONS MODULE, AND UPS BBS	–	– STANDARD SPECS 16730, 16731 – UNINTERRUPTED POWER SUPPLY STANDARD SPEC 16732 GPS SERIAL COMMUNICATION MODULE STANDARD SPEC 16785 – CELLULAR COMMUNICATION COMMUNICATION INSTALLATION DETAILS	STA 114+43.2 OFF 61.2' RT (CENTER)	16730–03

DETECTION ZONES		
ITEM BY DIRECTION	STATION	OFFSET
EASTBOUND		
PH 5 CALL ZONE L5–1A LEADING EDGE (6'x6')	STA 113+07.6	OFF 16.2' RT
PH 5 CALL ZONE L5–1B LEADING EDGE (6'X6')	STA 112+97.6	OFF 16.1' RT
PH 2 CALL ZONE L2–1A LEADING EDGE (6'x6')	STA 112+96.2	OFF 28.0' RT
PH 2 CALL ZONE L2–2A LEADING EDGE (6'x6')	STA 112+94.8	OFF 40.0' RT
PH 5 CALL ZONE L5–1C LEADING EDGE (6'x30')	STA 112+87.6	OFF 16.0' RT
PH 2 CALL ZONE L2–1B LEADING EDGE (6'x6')	STA 110+44.0	OFF 30.7' RT
PH 2 CALL ZONE L2–2B LEADING EDGE (6'x6')	STA 110+43.7	OFF 42.8' RT
PH 2 CALL ZONE L2–1# LEADING EDGE (6'x6')	STA 115+45.4	OFF 15.6' RT
PH 2 CALL ZONE L2–2# LEADING EDGE (6'x6')	STA 115+43.8	OFF 28.2' RT
WESTBOUND		
PH 1 CALL ZONE L1–1A LEADING EDGE (6'x6')	STA 114+30.3	OFF 14.2' LT
PH 6 CALL ZONE L6–1A LEADING EDGE (6'x6')	STA 114+31.4	OFF 26.2' LT
PH 1 CALL ZONE L1–1B LEADING EDGE (6'X6')	STA 114+46.3	OFF 14.4' LT
PH 6 CALL ZONE L6–1B LEADING EDGE (6'x6')	STA 114+47.3	OFF 26.4' LT
PH 6 CALL ZONE L6–2A LEADING EDGE (6'x6')	STA 114+48.3	OFF 37.3' LT
PH 6 CALL ZONE L6–3A LEADING EDGE (6'x6')	STA 114+49.4	OFF 48.8' LT
PH 1 CALL ZONE L1–1C LEADING EDGE (6'x30')	STA 114+56.3	OFF 14.6' LT
PH 6 CALL ZONE L6–1C LEADING EDGE (6'x30')	STA 114+57.4	OFF 26.6' LT
PH 6 CALL ZONE L6–1D LEADING EDGE (6'x6')	STA 116+99.8	OFF 17.9' LT
PH 6 CALL ZONE L6–2B LEADING EDGE (6'x6')	STA 116+98.9	OFF 28.9' LT
PH 6 CALL ZONE L6–1# LEADING EDGE (6'x6')	STA 112+02.2	OFF 17.0' LT
PH 6 CALL ZONE L6–2# LEADING EDGE (6'x6')	STA 112+02.7	OFF 29.2' LT
NORTHBOUND		
PH 3 CALL ZONE L3–1A LEADING EDGE (6'x6')	STA 212+92.2	OFF 15.6' RT
PH 3 CALL ZONE L3–1B LEADING EDGE (6'X6')	STA 212+82.2	OFF 16.2' RT
PH 8 CALL ZONE L8–1A LEADING EDGE (6'x6')	STA 212+83.9	OFF 27.1' RT
PH 8 CALL ZONE L8–2A LEADING EDGE (6'x6')	STA 212+84.5	OFF 38.0' RT
PH 8 CALL ZONE L8–3A LEADING EDGE (6'x6')	STA 212+87.2	OFF 49.3' RT
PH 3 CALL ZONE L3–1C LEADING EDGE (6'x30')	STA 212+71.8	OFF 16.7' RT
PH 8 CALL ZONE L8–1B LEADING EDGE (6'x6')	STA 210+25.6	OFF 28.0' RT
PH 8 CALL ZONE L8–2B LEADING EDGE (6'x6')	STA 210+25.8	OFF 41.0' RT
PH 8 CALL ZONE L8–1# LEADING EDGE (6'x6')	STA 215+24.2	OFF 11.7' RT
PH 8 CALL ZONE L8–2# LEADING EDGE (6'x6')	STA 215+28.0	OFF 24.6' RT
SOUTHBOUND		
PH 7 CALL ZONE L7–1A LEADING EDGE (6'x6')	STA 214+08.4	OFF 0.5' LT
PH 7 CALL ZONE L7–2A LEADING EDGE (6'x6')	STA 214+05.5	OFF 11.4' LT
PH 7 CALL ZONE L7–1B LEADING EDGE (6'X6')	STA 214+19.4	OFF 0.5' LT
PH 7 CALL ZONE L7–2B LEADING EDGE (6'x6')	STA 214+16.5	OFF 11.4' LT
PH 4 CALL ZONE L4–1A LEADING EDGE (6'x6')	STA 214+13.4	OFF 22.4' LT
PH 4 CALL ZONE L4–2A LEADING EDGE (6'x6')	STA 214+10.1	OFF 34.0' LT
PH 7 CALL ZONE L7–1C LEADING EDGE (6'x30')	STA 214+28.4	OFF 0.4' LT
PH 7 CALL ZONE L7–2C LEADING EDGE (6'x30')	STA 214+25.5	OFF 11.4' LT
PH 4 CALL ZONE L4–1B LEADING EDGE (6'x6')	STA 216+78.8	OFF 16.6' LT
PH 4 CALL ZONE L4–2B LEADING EDGE (6'x6')	STA 216+75.7	OFF 28.0' LT
PH 4 CALL ZONE L4–1# LEADING EDGE (6'x6')	STA 211+70.2	OFF 3.0' LT
PH 4 CALL ZONE L4–2# LEADING EDGE (6'x6')	STA 211+67.9	OFF 14.9' LT
PH 4 CALL ZONE L4–3# LEADING EDGE (6'x6')	STA 211+65.5	OFF 26.8' LT

NOTE:
1. STATION AND OFFSET BASED ON N DAIRY ASHFORD RD CENTERLINE.
2. STREET NAME SIGNS WITH ECD BRANDING TO BE PROVIDED BY OTHERS CONTACT MICHAEL JACKSON (281) 759–3800

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED
PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

POLE SCHEDULE

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	N-MD0260-0002-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	JIADA HUANG
SHEET NO.	48 OF 73

FOR OFFICE BOOSTON USE ONLY
80162

PUBLIC WORKS
HOUSTON, TEXAS

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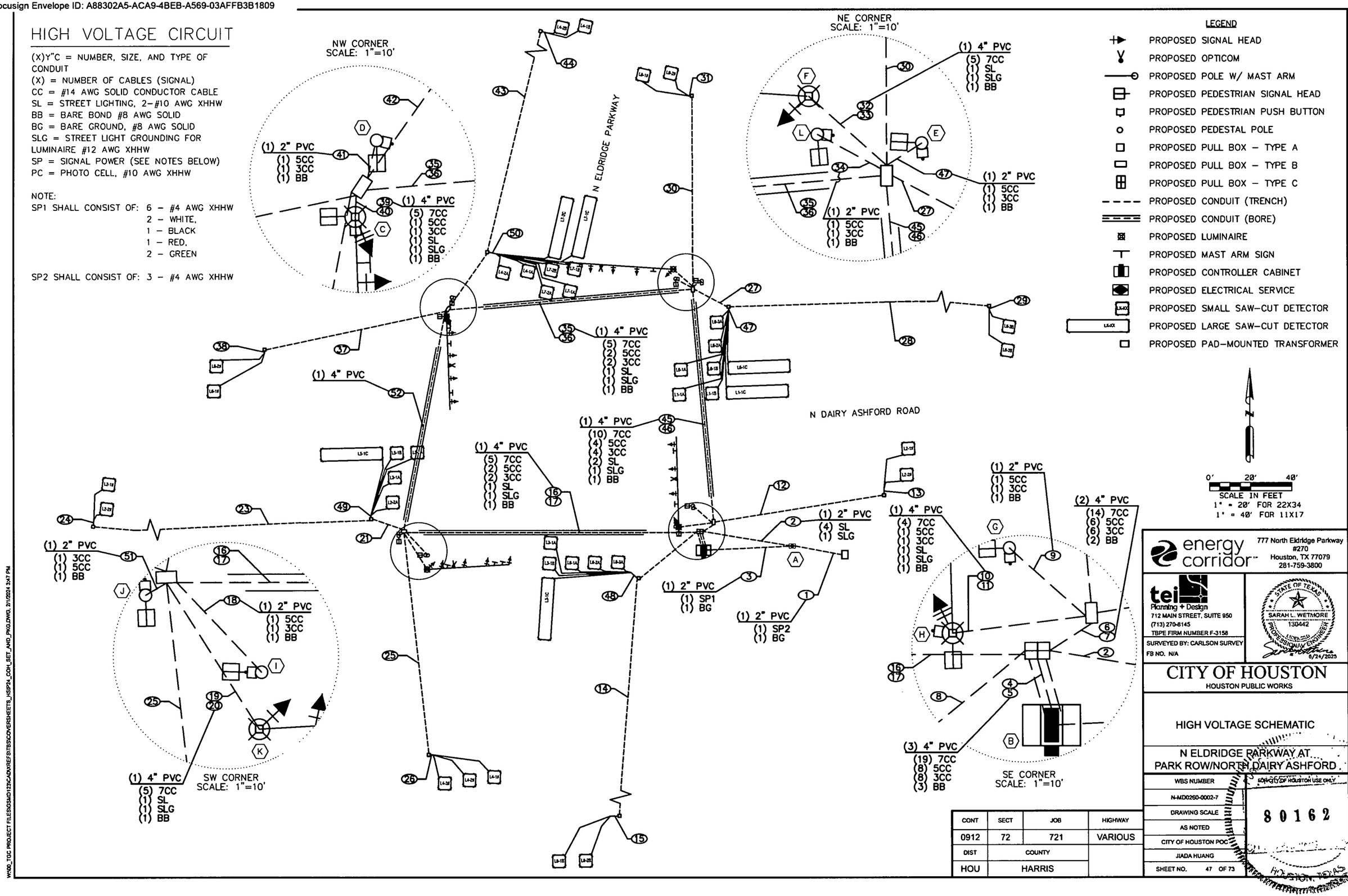
HIGH VOLTAGE CIRCUIT

(X)Y"C = NUMBER, SIZE, AND TYPE OF CONDUIT
(X) = NUMBER OF CABLES (SIGNAL)
CC = #14 AWG SOLID CONDUCTOR CABLE
SL = STREET LIGHTING, 2-#10 AWG XHHW
BB = BARE BOND #8 AWG SOLID
BG = BARE GROUND, #8 AWG SOLID
SLG = STREET LIGHT GROUNDING FOR LUMINAIRE #12 AWG XHHW
SP = SIGNAL POWER (SEE NOTES BELOW)
PC = PHOTO CELL, #10 AWG XHHW

NOTE:
SP1 SHALL CONSIST OF: 6 - #4 AWG XHHW
2 - WHITE,
1 - BLACK
1 - RED,
2 - GREEN

SP2 SHALL CONSIST OF: 3 - #4 AWG XHHW



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STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED
PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

HIGH VOLTAGE SCHEMATIC

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	80162
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 47 OF 73	

HOUSTON, TEXAS

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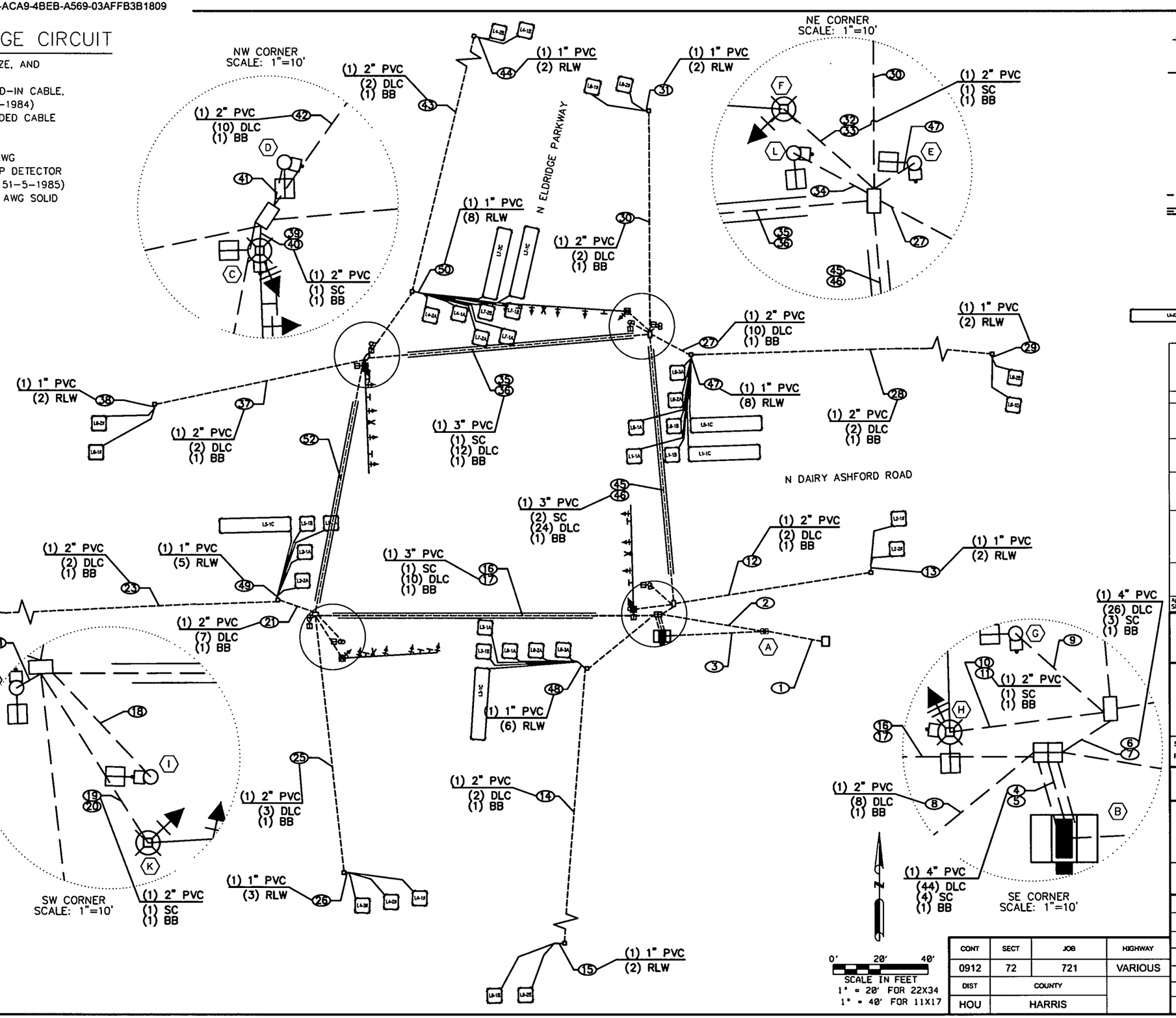
LOW VOLTAGE CIRCUIT

(X)Y"C = NUMBER, SIZE, AND TYPE OF CONDUIT
DLC = DETECTOR LEAD-IN CABLE, #14 AWG (IMSA 50-2-1984)
SC = #20 3CC-SHIELDED CABLE (3M MODEL 138)
VC = VIVDS CABLE
CAT5 = CAT5E #24 AWG
RLW = ROADWAY LOOP DETECTOR WIRE, #14 AWG (IMSA 51-5-1985)
BB = BARE BOND #8 AWG SOLID



LEGEND

- PROPOSED SIGNAL HEAD
- PROPOSED OPTICOM
- PROPOSED POLE W/ MAST ARM
- PROPOSED PEDESTRIAN SIGNAL HEAD
- PROPOSED PEDESTRIAN PUSH BUTTON
- PROPOSED PEDESTAL POLE
- PROPOSED PULL BOX – TYPE A
- PROPOSED PULL BOX – TYPE B
- PROPOSED PULL BOX – TYPE C
- PROPOSED CONDUIT (TRENCH)
- PROPOSED CONDUIT (BORE)
- PROPOSED LUMINAIRE
- PROPOSED MAST ARM SIGN
- PROPOSED CONTROLLER CABINET
- PROPOSED ELECTRICAL SERVICE
- PROPOSED SMALL SAW-CUT DETECTOR
- PROPOSED LARGE SAW-CUT DETECTOR
- PROPOSED PAD-MOUNTED TRANSFORMER

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

VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower Date 05/22/25

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

Signature valid for six months.

Mike Brower Date 05/22/25

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.

Marlon Smither Date 05/27/2025

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

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-6145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED
PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LOW VOLTAGE SCHEMATIC

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER
N-MD0260-0002
DRAWING SCALE
AS NOTED
CITY OF HOUSTON PE
JIADA HUANG
SHEET NO. 48 OF 73

CITY OF HOUSTON USE ONLY
80162
HOUSTON, TEXAS

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CONDUIT AND CONDUCTOR RUNS

RUN NO.	CONDUIT														CONDUCTORS										CABLES								LOOP			
	PVC														POWER				GROUND				LUMINAIRE		PEDESTRIAN				SIGNAL		PRE-EMPT		LOOP		LEAD-IN	
	1" (SCHD 80)		2" (SCHD 80)				3" (SCHD 80)				4" (SCHD 80)				6-#4 AWG XHHW		3-#4 AWG XHHW		#8 AWG SOLID		#12 AWG XHHW		2-#10 AWG XHHW		#14/3C		#14/5C		#14/7C		#20/3C		#14 AWG (IMSA 51-5-1985)		#14 AWG (IMSA 51-2-1984)	
	NO.	TRENCH	NO.	TRENCH	NO.	BORE	NO.	TRENCH	NO.	BORE	NO.	TRENCH	NO.	BORE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF
1			1	25													1	25	1	25																
2			1	50																	1	50	4	50												
3			1	45											1	45			1	45																
4											2	10							2	10											4	10			44	10
5											3	10							3	10					8	10	8	10	19	10						
6											1	10							1	10											3	10			26	10
7											2	10							2	10					6	10	6	10	14	10						
8	1	40																	1	40															8	40
9			1	15															1	15					1	15	1	15								
10											1	20							1	20	1	20	1	20	1	20	1	20	4	20						
11			1	20															1	20											1	20				
12			1	85															1	85															2	85
13	1	5																															2	5		
14			1	240															1	240															2	240
15	1	5																															2	5		
16													1	150					1	150	1	150	1	150	2	150	2	150	5	150						
17									1	150									1	150											1	150			10	150
18			1	25															1	25					1	25	1	25								
19			1	25															1	25											1	25				
20											1	25							1	25	1	25	1	25					5	25						
21			1	20															1	20															7	20
22																																				
23			1	260															1	260															2	260
24	1	5																															2	5		
25			1	110															1	110															3	110
26	1	5																															3	5		
27							1	20											1	20															10	20
28			1	260															1	260															2	260
29	1	5																															2	5		
30			1	105															1	105															2	105
31	1	5																															2	5		
32											1	15							1	15	1	15	1	15					5	15						
33			1	15															1	15											1	15				
34			1	10															1	10					1	10	1	10								
35													1	125					1	125	1	125	1	125	2	125	2	125	5	125						
36									1	125									1	125											1	125			12	125
37			1	90															1	90															2	90
38	1	5																															2	5		
39											1	5							1	5	1	5	1	5	1	5	1	5	5	5						
40			1	5															1	5											1	5				
41			1	5															1	5					1	5	1	5								
42							1	35											1	35															10	35
43			1	260															1	260															2	260
44	1	5																															2	5		
45													1	120					1	120	1	120	2	120	4	120	4	120	10	120						
46									1	120									1	120											2	120			24	120
47	1	10																															8	10		
48	1	5																															6	5		
49	1	5																															5	5		
50	1	5																															8	5		
51			1	5															1	5					1	5	1	5								
52													1	120																						
Pole C																							1	35	1	5	1	10	5	65	1	65				
Pole D																									1	5	1	10								
Pole E																									1	5	1	10								
Pole F																							1	35					5	75	1	75				
Pole G																									1	5	1	10								
Pole H																							1	35	1	5	1	10	4	65	1	65				
Pole I																									1	5	1	10								
Pole J																									1	5	1	10								
Pole K																							1	35					5	60	1	60				
Pole L																									1	5	1	10								
TOTAL (LF)	105		1675		0		55		395		145		515		45		25		2655		510		920		1295		1335		4470		915		260		10520	

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TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PROPOSED SIGNAL WIRING LEGEND

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PO	
JIADA HUANG	
SHEET NO. 49 OF 73	

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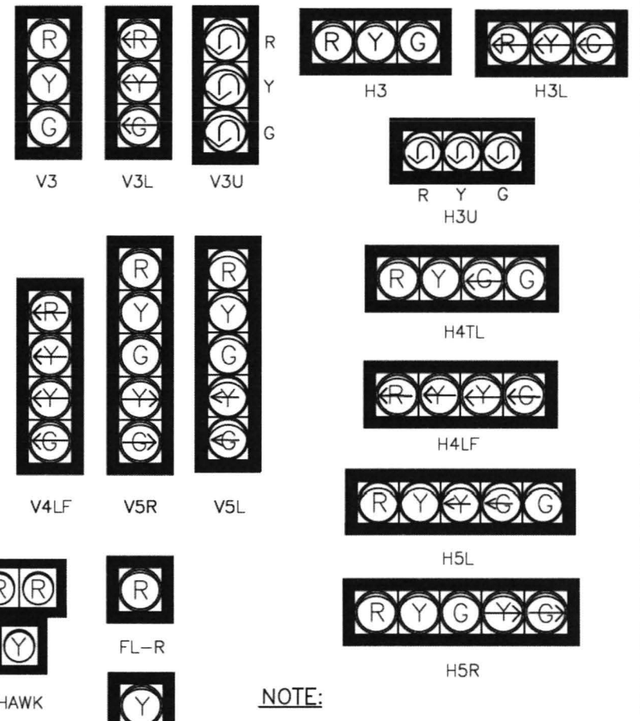
	NEW	EXISTING
TRAFFIC SIGNAL POLE	○	○
PEDESTAL POLE	○	○
POLE W/MAST ARM	⊖———	⊖———
VEHICLE SIGNAL HEAD	↓	↓
VEHICLE SIGNAL HEAD W/BACK PLATE	↓	↓
PEDESTRIAN SIGNAL HEAD	⊟	⊟
PEDESTRIAN PUSH BUTTON	⊡	⊡
PULL BOX – TYPE A	◇	◇
PULL BOX – TYPE B	▭	▭
PULL BOX – TYPE C	⊞	⊞
PULL BOX – TYPE B W/EXTENSION	⊠	⊠
CONDUIT	——	——
VIDEO DETECTION CAMERA	▭	▭
PRE–EMPT SENSOR		
LUMINAIRE	⊗	⊗
LUMINAIRE W/PHOTO CELL	⊗	⊗
CONTROLLER CABINET	▮▯	▮▯
METERED POWER PEDESTAL	◈	◈
POLE MOUNTED METER	●⊸	○⊸
FIBER OPTIC CONDUIT	—FO—	— FO —
MAST ARM SIGN	⊥	⊥

SIGNAL TYPES



NOTE:

ALL TRAFFIC SIGNAL HEAD TYPES HAVE 12–INCH LENSES.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

HARDWARE LEGENDS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sukait Kanwar — CITY ENGINEER

DocuSigned by: Carol Haddock — DIRECTOR OF HPW

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 | DWG NO: 02893–01

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor
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281-759-3800

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TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 1 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	N-MD0260-0002-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	JIADA HUANG
SHEET NO.	50 OF 73

FOR CITY OF HOUSTON USE ONLY
80162

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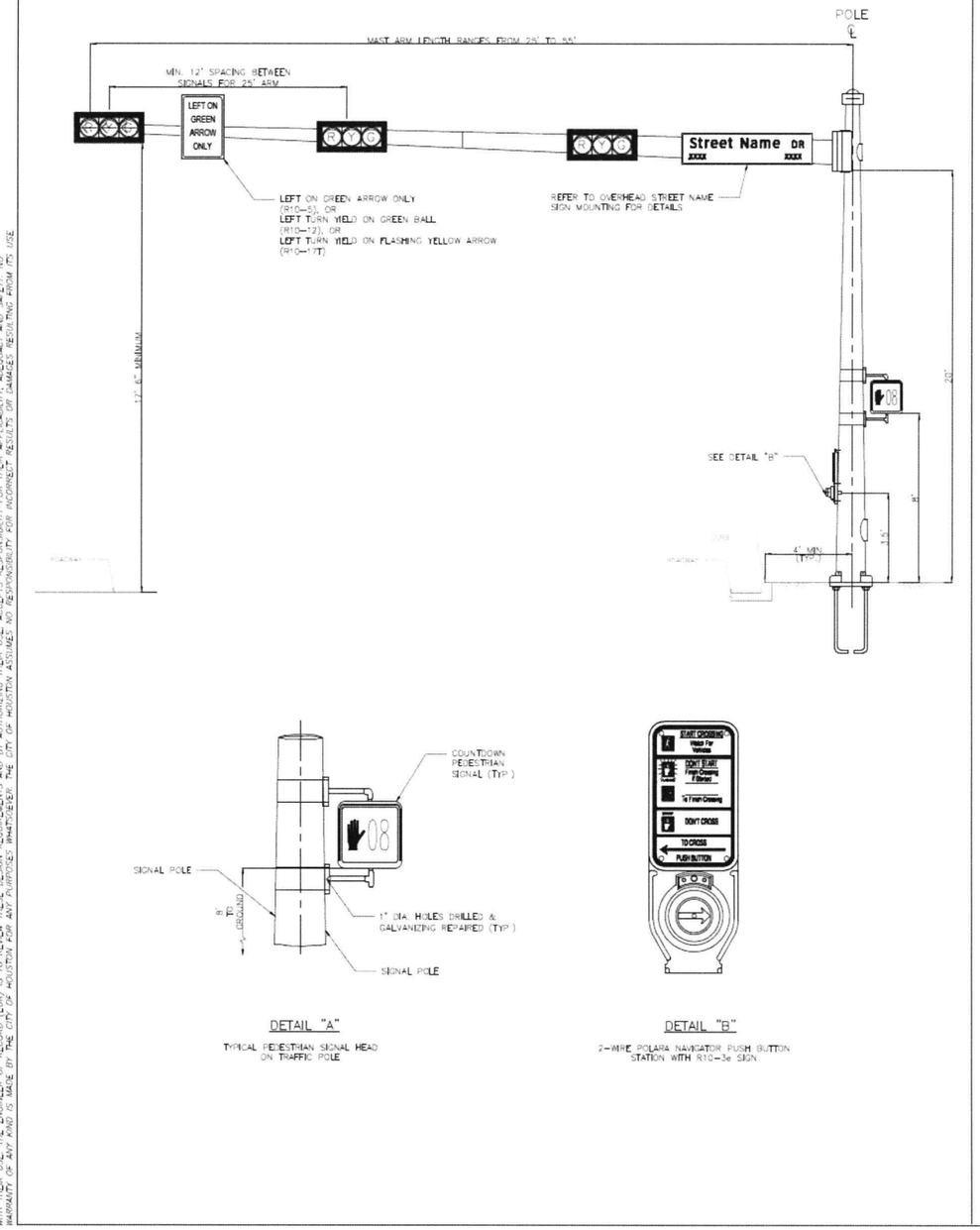
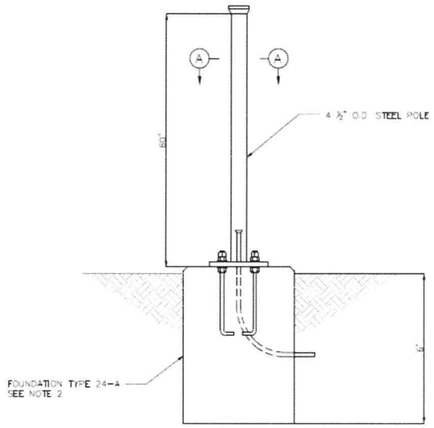


DETAIL "A"

TYPICAL PEDESTRIAN SIGNAL HEAD ON TRAFFIC POLE

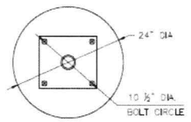
DETAIL "B"

2-MIRE POLARA NAVIGATOR PUSH BUTTON STATION WITH R10-3e SIGN

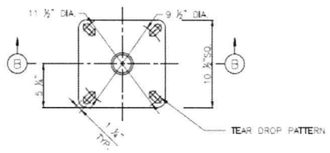


ELEVATION VIEW

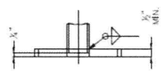
PEDESTRIAN PUSH BUTTON POLE



FOUNDATION PLAN



SECTION A–A



SECTION B–B

NOTE:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS STATED ON CITY OF HOUSTON STANDARD DETAIL 02465-02 "PEDESTAL/PUSH BUTTON POLE DRILLED SHAFT FOUNDATION".
2. REFER TO CITY OF HOUSTON STANDARD DETAIL 02465-02 "PEDESTAL/PUSHBUTTON POLE DRILLED SHAFT FOUNDATION" FOR ANCHOR BOLT DETAILS.

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF. DATE: NOV-27-2023	DWG. NO: 02582-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL MAST ARM/POLE FIXTURE CONFIGURATION

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor
777 North Eldridge Parkway
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SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 2 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	80162
AS NOTED	
CITY OF HOUSTON DOC	
JIADA HUANG	
SHEET NO. 51 OF 73	

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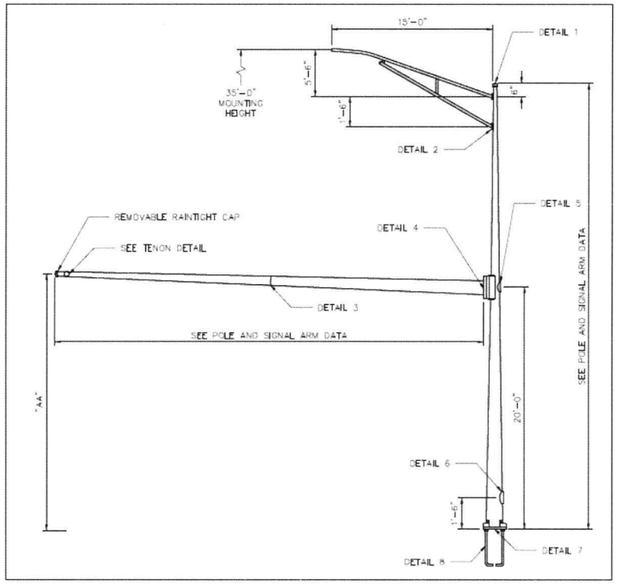
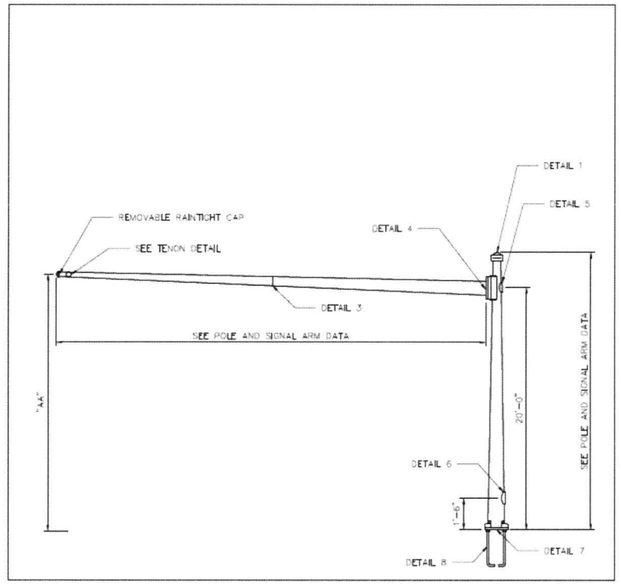
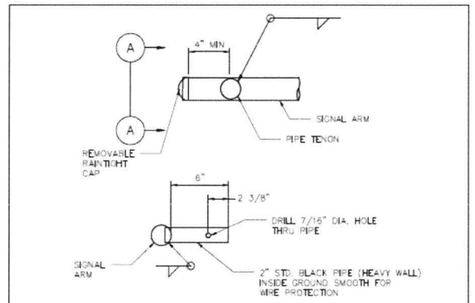






TENON DETAIL

ALTHOUGH RARE, VIBRATIONS SEVERE ENOUGH TO CAUSE DAMAGE CAN OCCASIONALLY OCCUR IN STRUCTURES OF ALL TYPES. BECAUSE THEY ARE INFLUENCED BY MANY INTERACTING VARIABLES, VIBRATIONS ARE GENERALLY UNPREDICTABLE. THE USER'S MAINTENANCE PROGRAM SHOULD INCLUDE OBSERVATION FOR EXCESSIVE VIBRATION AND EXAMINATION FOR ANY STRUCTURAL DAMAGE OR BOLT LOOSENING. ARMS SHALL BE VISUALLY INSPECTED IN 5 TO 20 MPH WIND CONDITIONS AFTER SIGNAL HEAD INSTALLATION AND, IF VERTICAL MOVEMENTS WITH A TOTAL EXCURSION (MAXIMUM POSITIVE TO MAXIMUM NEGATIVE) OF MORE THAN APPROXIMATELY 8 INCHES ARE OBSERVED AT ARM TIP, DAMPING DEVICES OR OTHER MEANS SHALL BE FITTED TO THE ARM(S). THE NECESSARY DAMPING DEVICE(S) OR OTHER REMEDIAL MEASURES SHALL BE AS RECOMMENDED BY THE CONTRACTOR. EXCESSIVE VIBRATIONS SHALL NOT BE ALLOWED TO CONTINUE FOR MORE THAN 2 DAYS.

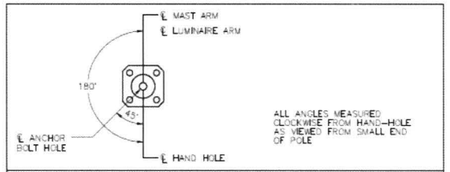
VIBRATION DISCLAIMER

POLE AND MAST ARM DATA

DESIGNATION KEY			POLE TUBE						POLE BASE				ANCHOR BOLT				SIGNAL ARM TUBE				
POLE SERIES	POLE TYPE	SIGNAL ARM SPAN (FT)	BASE DIA (IN)	TOP DIA (IN) WITH LUM ARM	TOP DIA (IN) WITHOUT LUM ARM	LENGTH (FT) WITH LUM ARM	LENGTH (FT) WITHOUT LUM ARM	GAUGE OR THK (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE / SLOT "Z" (IN)	DIA "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "L" (IN)	FIXED END DIA (IN)	FREE END DIA (IN)	GAUGE OR THICK (IN)	SPAN (FT)	TIP HEIGHT "AA" (FT)
HOU	1	25	13.00	8.80	10.00	30.00	21.50	3	19.00	18.00	2.25	2.50	2.25	89.00	7.00	9.00	8.00	3.50	7	25.00	20.2
		30															9.00	4.80	7	30.00	20.3
		35															10.00	5.10	7	35.00	20.3
HOU	2	40	13.00	8.80	10.00	30.00	21.50	0.375									10.50	4.90	7	40.00	20.3
		45															10.14	3.84	3	45.00	20.4
		50															11.00	4.00	3	50.00	20.4
		55															11.50	4.16	DET 3	55.00	20.5

MATERIAL DATA						
COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
POLE SHAFT – 3 GAUGE	A595 GR.A	55	MAST ARM CONN. BOLTS	F3125 GR A325*	
POLE SHAFT – 0.375"	A572 GR.55	55	LUM. ARM CONN. BOLTS	SAE GR.5	36
MAST ARM SHAFT	A595 GR.A	55	ANCHOR BOLTS	F1554 GR.55	55
LUMINAIRE ARM SHAFT	2" SCH. 80 PIPE		GALVANIZING	A123 & A153	
ARM ATTACHMENT PLATE	A36	36			
BASEPLATE	A36	36			

*LUBRICATE IN FIELD IF NECESSARY IN LIEU OF THE REQUIREMENTS IN F3125 GR.A325



RADIAL INDEX

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF. DATE: NOV-27-2023	DWG. NO: 02582-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TRAFFIC SIGNAL STRUCTURES

SHEET 01 OF 02

DRAWING SCALE
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energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 3 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-4	
DRAWING SCALE	
AS NOTED	80162
CITY OF HOUSTON STDC	
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SHEET NO. 52 OF 73	

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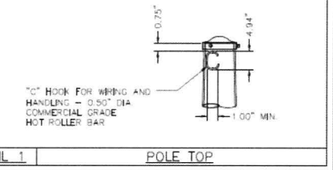
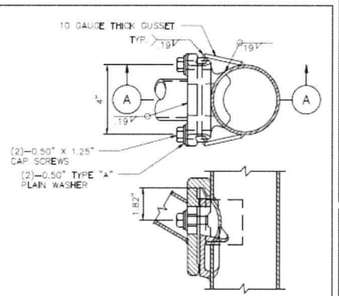
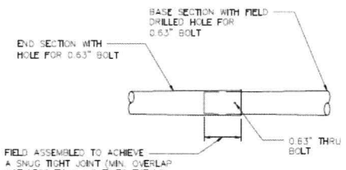


DETAIL 1 | POLE TOP

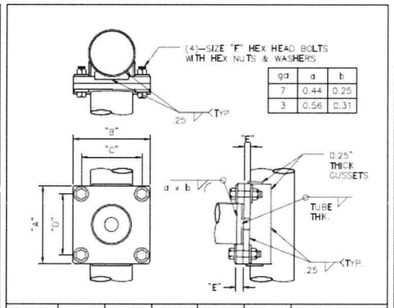


DETAIL 2 | LUMINAIRE ARM ATTACHMENT



ITEM	BASE SECTION		END SECTION	
	LENGTH	GAUGE	LENGTH	GAUGE
55.00'	26.42'	3	30.71'	7

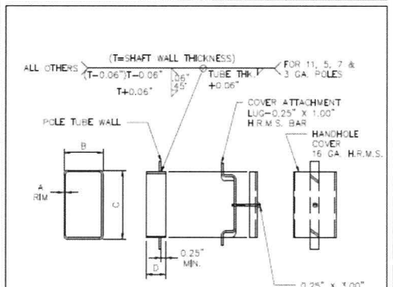
DETAIL 3 | SIGNAL ARM SLIP JOINT



ga	a	b
7	.044	0.25
3	.056	0.31

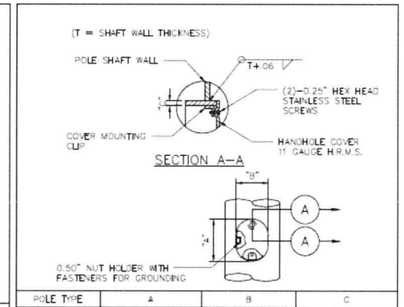
POLE TYPE	"A"	"B"	"C"	"D"	"E"	"F"
1	17.75"	17.75"	14.50"	14.50"	1.50"	1.25" X 4.50"
2	18.75"	18.75"	15.00"	15.00"	1.75"	1.50" X 5.25"

DETAIL 4 | SIGNAL ARM ATTACHMENT



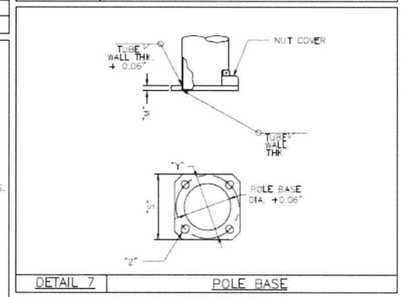
POLE TYPE	A	B	C	D
1	7 GA	3.00"	5.00"	1.50"
2	0.50"	4.00"	6.00"	2.50"

DETAIL 5 | HANDHOLE



POLE TYPE	A	B	C
1	7.56"	5.19"	0.280"
2	7.31"	5.63"	0.432"

DETAIL 6 | HANDHOLE



DETAIL 7 | POLE BASE

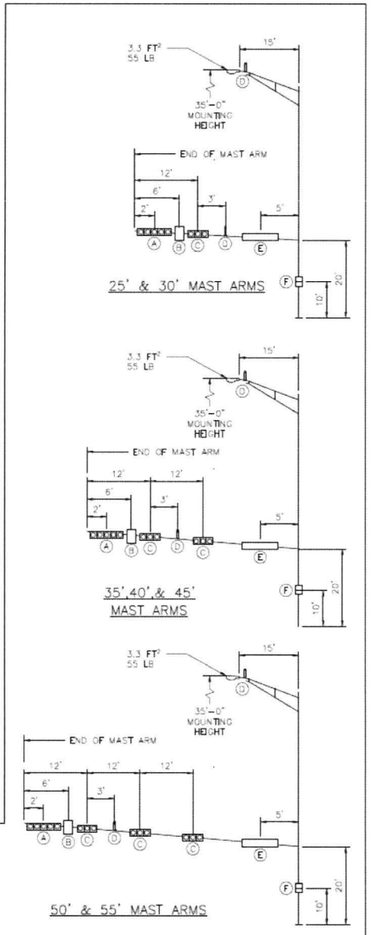
DETAIL 8 | ANCHOR BOLT

DESIGN NOTE:

DESIGNS ARE BASED ON THE LOADING CHART SHOWN ON THIS DRAWING AND ARE IN ACCORDANCE WITH MATERIALS AND ALLOWABLE STRESS REQUIREMENTS OF THE 1994 AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" FOR A 90 MPH WIND ZONE WITH A 1.3 GUST FACTOR.

DEVICE	DESCRIPTION	PROJ. AREA (FT²)	WEIGHT (LBS)
A	12"-5 SEC. SIGNAL WITH BACKPLATES	13.33	96
B	30" X 36" SIGNAL ARM MOUNTED SIGN	7.50	15
C	12"-3 SEC. SIGNAL WITH BACKPLATES	8.67	53
D	VIVOS CAMERA	1.00	15
E	24" X 72" STREET NAME SIGN	12.00	30
F	PEDESTRIAN SIGNAL	4.00	40

MAXIMUM LOADING INFORMATION



APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF. DATE: NOV-27-2023	DWG NO: 02582-03

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TRAFFIC SIGNAL STRUCTURES

SHEET 02 OF 02

DRAWING SCALE
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Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED
PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 4 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON DOC	
JIADA HUANG	
SHEET NO. 53 OF 73	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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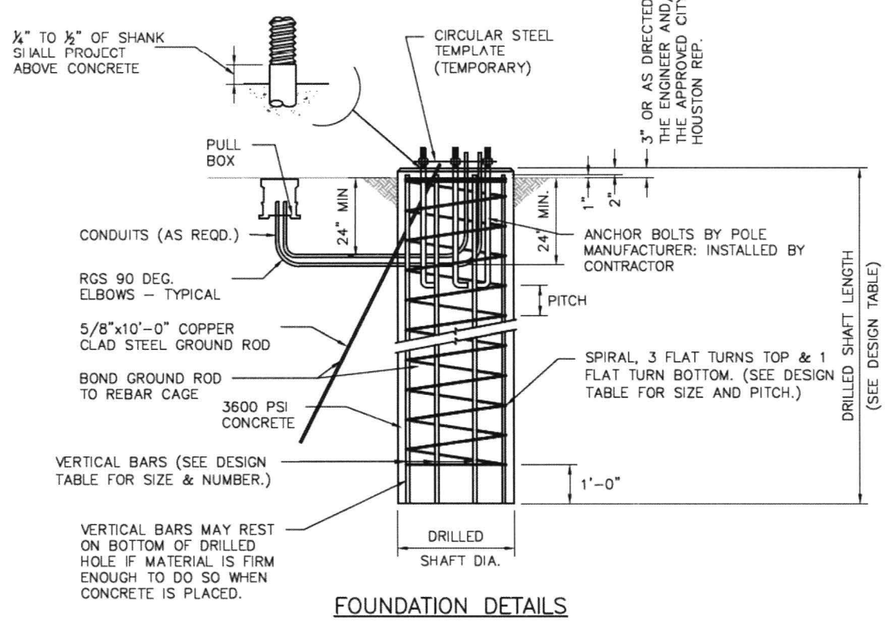
FOUDATION DESIGN TABLE									
POLE MARK	DRILLED SHAFT DIA.	REINFORCING STEEL		DRILLED SHAFT LENGTH FT.	BOLT CIRCLE DIA.	FOUNDATION DESIGN LOADS (1)			TYPICAL APPLICATION
		VERT. BARS	SPIRAL & PITCH			MOMENT K-FT.	SHEAR KIPS	TORQUE K-FT.	
HOU 1	30"	8-#9 BAR	#3 BAR @9"	14'-0"	18"	72.2	3.4	51.9	MAST ARM ASSEMBLY (25'-35') IN COHESIVE SOILS
HOU 2	30"	8-#9 BAR	#3 BAR @9"	18'-0"	18"	89.9	4.0	98.0	MAST ARM ASSEMBLY (40'-55') IN COHESIVE SOILS MAST ARM ASSEMBLY (25'-55') IN NON-COHESIVE SOILS

FOUNDATION DESIGN TABLE NOTES:

(1) FOUNDATION DESIGN LOADS ARE THE ALLOWABLE MOMENTS, SHEARS AND TORQUES AT THE TOP OF THE FOUNDATION.

(2) CONSTRUCT IN ACCORDANCE WITH CITY OF HOUSTON SPECIFICATION SECTION 02465, "DRILLED SHAFT FOUNDATIONS".

(3) FOUNDATION DESIGN IS BASED UPON AN UNDRAINED SHEAR STRENGTH OF 1500 PSF FOR COHESIVE SOILS AND A TEXAS CONE PENETROMETER MINIMUM OF 10 BLOWS/FOOT IN NON-COHESIVE SOILS. WHERE COHESIVE AND NON-COHESIVE LAYERS EXIST WITHIN THE SPECIFIED SHAFT LENGTH, THE NON-COHESIVE SOILS SHALL GOVERN. LOWER SOIL PARAMETERS WILL REQUIRE A SPECIAL DESIGN.



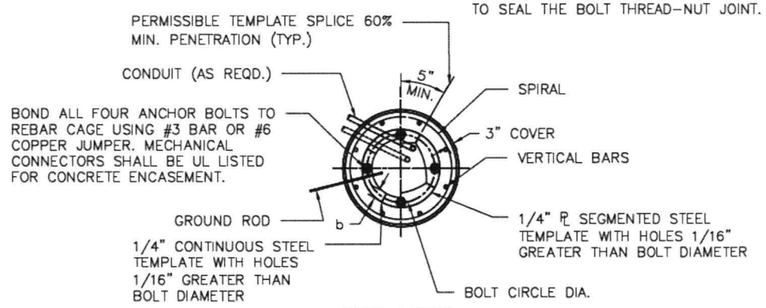
FOUNDATION DETAILS

GENERAL NOTES:

1. DESIGN IS FOR CITY OF HOUSTON STANDARD TRAFFIC SIGNAL MAST ARM SUPPORT STRUCTURES BY VALMONT INDUSTRIES, INC.
2. DESIGN CONFORMS TO 2001 AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" AND INTERIM REVISIONS THERETO FOR A 90 MPH WIND ZONE WITH A 1.3 GUST FACTOR AND ACI "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-02).
3. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
4. CONCRETE SHALL BE 6 SACK, 3600 PSI.
5. ALL ANCHOR BOLTS SHALL BE GALVANIZED THE ENTIRE LENGTH OF BOLT. EXPOSED NUTS AND WASHERS SHALL ALSO BE GALVANIZED.

INSTALLATION PROCEDURE

THREADS OF ANCHOR BOLTS SHALL BE COATED WITH PIPE JOINT COMPOUND PRIOR TO INSTALLATION OF UPPER NUTS WHEN ERECTING POLE. AFTER POLE IS PLUMBED AND IN PERMANENT ALIGNMENT, THE EXPOSED THREADS OF PAINTED BOLTS SHALL BE CLEANED AND AN ADDITIONAL COATING OF ZINC-RICH PAINT APPLIED TO SEAL THE BOLT THREAD-NUT JOINT.



TOP VIEW

NOTE:

1. b = MINIMUM STEEL TEMPLATE WIDTH EQUAL TO TWO TIMES ANCHOR BOLT DIAMETER.
2. STEEL TEMPLATE MAY BE OF CONTINUOUS WIDTH OR SEGMENTED WIDTH.
3. SEE FOUNDATION DESIGN TABLE FOR BOLT CIRCLE DIAMETER.
4. BOLTS SHOULD BE CHECKED FOR PLUMB AFTER CONCRETE IS POURED AND BEFORE INITIAL SET.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DRILLED SHAFT FOUNDATIONS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER

DocuSigned by: Carol Haddock — DIRECTOR OF HPW

DocuSigned by: HANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV-27-2023 | DWG NO: 02465-01

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS — SARAH L. WETMORE — 130442 — LICENSED PROFESSIONAL ENGINEER — 6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 5 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE: AS NOTED	80162
CITY OF HOUSTON POC: JIADA HUANG	
SHEET NO. 54 OF 73	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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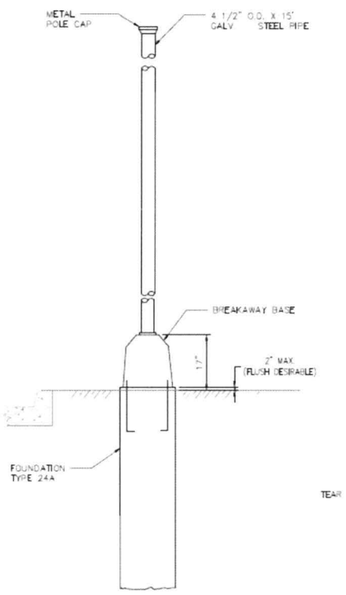
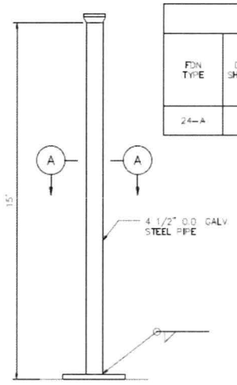




PEDESTAL POLE

FOUNDATION DESIGN TABLE										
FDN. TYPE	DRILLED SHAFT DIA.	REINFORCING STEEL		DRILLED SHAFT LENGTH FT	ANCHOR BOLT DESIGN (SEE NOTE 5)				FOUNDATION DESIGN LOAD (SEE NOTE 6)	
		VERT. BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER 10 BLOWS/ FT	ANCHOR BOLT DIA	FY (KSI)	BOLT CIR. DIA	ANCHOR TYPE	MOMENT K-FT	SHEAR KIPS
24-A	24"	4-#6 BARS	#2 BAR AT 12"	6	3/4"	36	*13"	1	10	1

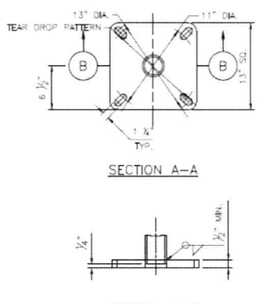
* 10 1/2" B.C. FOR PUSH BUTTON POLE

ANCHOR BOLT & TEMPLATE SIZES						
BOLT DIA IN.	**BOLT LENGTH	TOP THREAD	BOTT. THREAD	BOLT CIRCLE	R_2	R_1
3/4"	1'-6"	3"	–	13"	7 1/8"	5 5/8"

** MIN. DIMENSIONS GIVEN, LONGER BOLTS ARE ACCEPTABLE

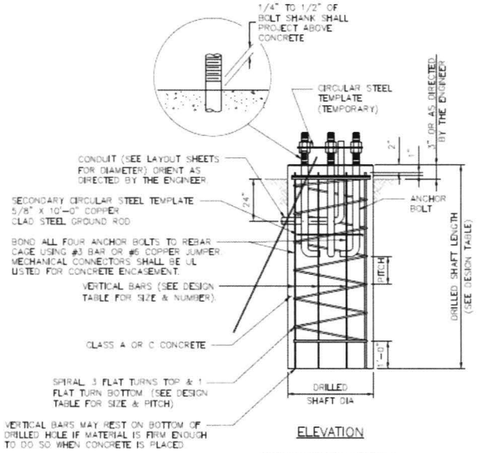
GENERAL NOTES

1. DESIGN CONFORMS TO 1994 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS AND INTERIM REVISIONS THERETO.
2. CONCRETE SHALL BE CLASS A OR C.
3. THREADS FOR ANCHOR BOLTS AND NUTS SHALL BE ROLLED OR CUT THREADS OF UNIFIED NATIONAL COARSE THREAD SERIES EXCEPT FOR A19387 BOLTS WHICH SHALL HAVE 8 PITCH THREAD SERIES. BOLTS AND NUTS SHALL HAVE CLASS 2A AND 2B FIT TOLERANCES. GALVANIZED NUTS SHALL BE TAPPED AFTER GALVANIZING.
4. ANCHOR BOLTS THAT ARE 1" IN DIAMETER OR LESS SHALL CONFORM TO ASTM A36. GALVANIZE ALL ANCHOR BOLTS UNLESS OTHERWISE NOTED. EXPOSED NUTS SHALL BE GALVANIZED OR COATED WITH ZINC-RICH PAINT. WASHERS SHALL BE GALVANIZED. TEMPLATES AND EMBEDDED NUTS NEED NOT BE GALVANIZED.
5. ANCHOR BOLT DESIGN DEVELOPS THE FOUNDATION CAPACITY GIVEN UNDER FOUNDATION DESIGN LOADS.
6. FOUNDATION DESIGN LOADS ARE THE ALLOWABLE MOMENTS AND SHEARS AT THE BASE OF THE STRUCTURE.
7. ANCHOR BOLT ASSEMBLY INSTALLATION PROCEDURE
   7.1. THREADS OF ANCHOR BOLTS SHALL BE COATED WITH PIPE JOINT COMPOUND PRIOR TO INSTALLATION OF UPPER NUTS WHEN ERECTING POLE AFTER POLE IS PLUMBED AND IN PERMANENT ALIGNMENT, THE EXPOSED THREADS OF PAINTED BOLTS SHALL BE CLEANED AND AN ADDITIONAL COATING OF ZINC-RICH PAINT APPLIED TO SEAL THE BOLT THREAD-NUT JOINT.
8. DETAILS DEPICTED ON THIS SHEET SHOW A TYPICAL PEDESTAL POLE ASSEMBLY WITH A DRILLED SHAFT FOUNDATION.
9. USE 24 IN. DRILLED SHAFT FOUNDATION AS SHOWN.
10. PROVIDE BREAKAWAY FUSE HOLDER WITH DOUBLE-POLE HOUSING. ENSURE FUSE HOLDER IS POLARIZED, WATER-RESISTANT, UL RECOGNIZED, AND RATED FOR 30A MAXIMUM CURRENT CAPACITY AT 600V OR LESS. PROVIDE BREAKAWAY FUSE HOLDER FROM MANUFACTURERS PRE-QUALIFIED BY TXDOT TRAFFIC OPERATIONS DIVISION. SEE https://www.txdot.gov/business/resources/materials/material-producer-list.html FOR LIST OF PRE-QUALIFIED MANUFACTURERS. CATEGORY IS "ROADWAY ILLUMINATION AND ELECTRICAL SUPPLIES." PROVIDE 10 AMP TIME DELAY FUSES.
11. POLE SHAFT SHALL BE ONE PIECE. ALUMINUM CONDUIT WILL NOT DEVELOP THE NECESSARY STRENGTH AND WILL NOT BE ALLOWED IN HIGH WINDS. USE A POLE AND BASE COLLAR ASSEMBLY TO ADD STRENGTH AND PREVENT LOOSENING ON CONNECTION.
12. PER MANUFACTURER'S RECOMMENDATIONS, ENGAGE ALL THREADS ON THE PEDESTAL POLE BASE AND PIPE UNLESS THE PIPE IS FULLY SEATED INTO BASE.
13. PROVIDE NON-FUSED, WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS FOR BREAKAWAY POLES. (BUSSMANN HET, LITTELFUSE LET, FERRAZ-SHAWMUT FEBN, OR APPROVED EQUAL).
14. PROVIDE SIGNAL HEADS AND MOUNTING AS SHOWN ELSEWHERE ON THE PLANS.



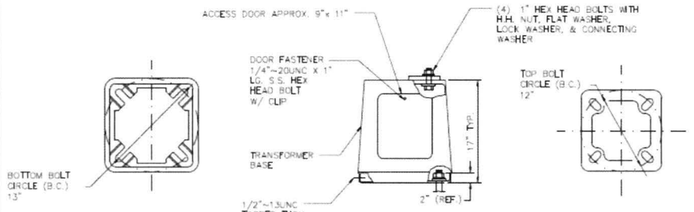
SECTION A-A

SECTION B-B



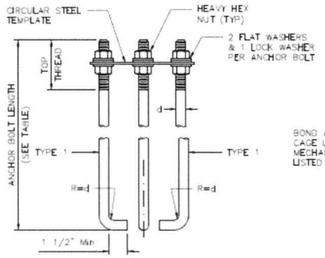
ELEVATION

FOUNDATION DETAILS

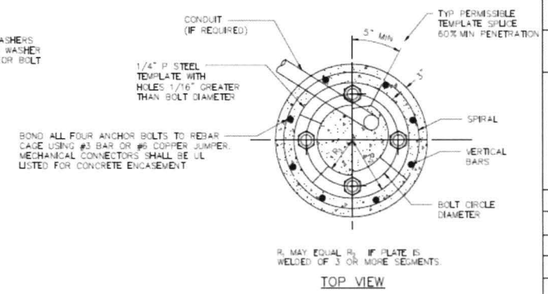


BOTTOM PLAN ELEVATION TOP PLAN

BREAKAWAY BASE DETAILS



HOOKED ANCHOR (TYPE 1)



TOP VIEW

APPROVED BY:	APPROVED BY:
Developed by Sabal Kumar	Developed by Kenneth Hoffpauir
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Developed by Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF. DATE: NOV-27-2023	DWG NO: 02465-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PEDESTAL/PUSHBUTTON POLE DRILLED SHAFT FOUNDATION

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NOT TO SCALE	

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CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 6 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 55 OF 73	

80162

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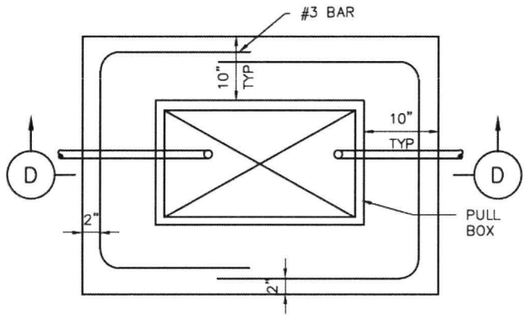
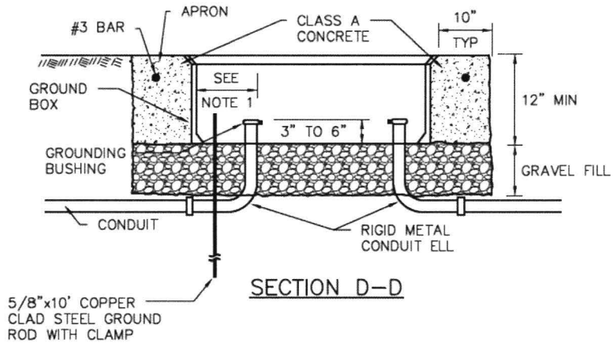


PLAN VIEW

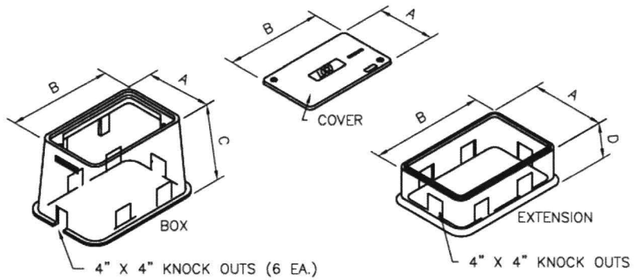


SECTION D–D

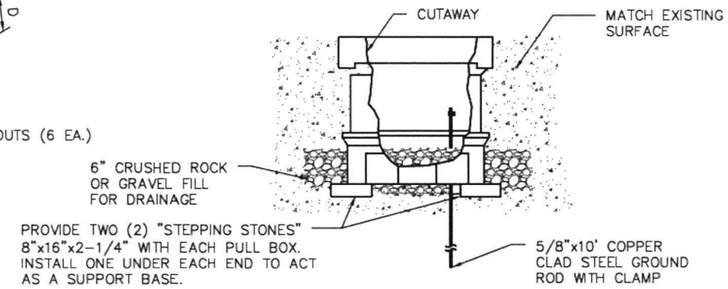
APRON FOR PULL BOXES

NOTES:

1. FINAL POSITION OF END OF CONDUIT SHALL NOT EXCEED ONE–HALF THE DISTANCE TO THE SIDE OF BOX OPPOSITE THE CONDUIT ENTRY.
2. PLACE GRAVEL "UNDER" THE BOX, NOT "IN" THE BOX. GRAVEL SHOULD NOT ENCROACH ON THE INTERIOR VOLUME OF THE BOX.
3. INSTALL BUSHING ON THE UPPER END OF ALL ELLS.
4. PROVIDE A 5/8" GROUND ROD IN ALL PULL BOXES AND CONNECT IT TO ANY AND ALL EQUIPMENT GROUNDING CONDUCTORS USING A LISTED CONNECTOR.
5. MAINTAIN SUFFICIENT SPACE BETWEEN ALL CONDUITS SO AS TO ALLOW FOR PROPER INSTALLATION OF BUSHINGS.
6. ALL CONDUITS SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER.
7. ALL CONDUITS INSTALLED IN THE GROUND BOX SHALL BE SEALED AFTER COMPLETION OF CONDUCTOR INSTALLATION AND ANY REQUIRED PULL TESTS. SILICONE SHALL NOT BE USED AS THE SEALANT.



NOMINAL DIMENSIONS FOR TRAFFIC SIGNAL PULL BOXES				
TYPE	A	B	C	D
DETECTOR TYPE A	13"	18"	24"	12"
TRAFFIC SIGNAL TYPE B	17"	30"	24"	12"
COMMUNICATION TYPE C	26"	38"	24"	12"



SIDE VIEW
ELECTRICAL PULL BOX ASSEMBLY

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PULL BOXES

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER

DocuSigned by: Carol Haddock — DIRECTOR OF HPW

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 | DWG NO: 16710–01

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TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS — SARAH L. WETMORE — 130442 — LICENSED PROFESSIONAL ENGINEER — 6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 7 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY ACCEPTED
N-MD0260-0002-7	
DRAWING SCALE	
AS NOTED	80162
CITY OF HOUSTON PO	
JIADA HUANG	
SHEET NO. 56 OF 73	

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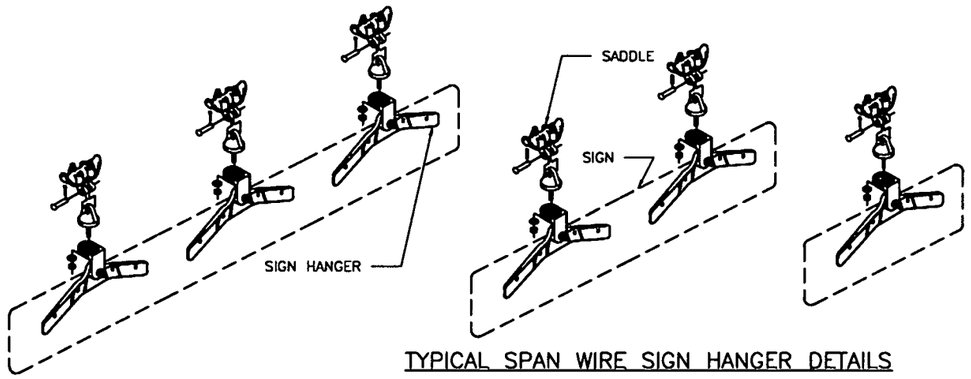
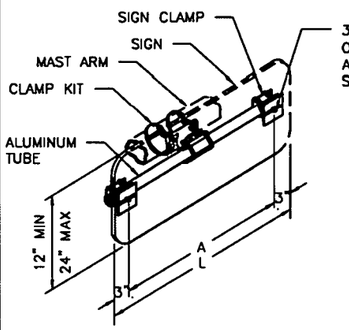
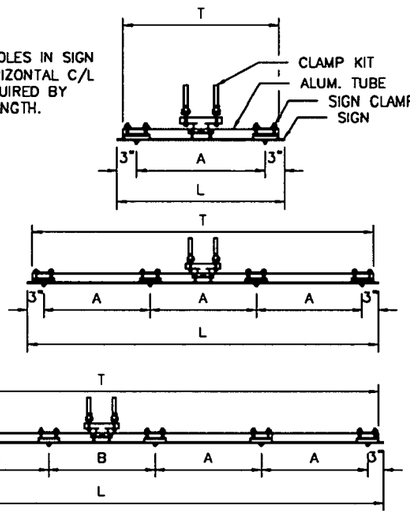


TYPICAL SPAN WIRE SIGN HANGER DETAILS

NOTES:

1. CONTRACTOR SHALL USE PELCO PARTS OR AN APPROVED EQUAL.
2. CONTRACTOR SHALL FURNISH ALL HARDWARE FOR A COMPLETE INSTALLATION.
3. THE 90 DEGREE SPAN WIRE CLAMPS (SADDLES) ARE ATTACHED TO TETHERS (SWAY CABLES).
4. CONTRACTOR SHALL FURNISH ONE (1) ADJUSTABLE FREE SWINGING SIGN HANGER PER STREET NAME SIGN SMALLER THAN 3'–0". SIGNS 3'–0" TO 6'–0" REQUIRE TWO (2) HANGERS. SIGNS LARGER THAN 6'–0" REQUIRE THREE (3) HANGERS.
5. SEE SIGN MOUNTING SERIES FOR STREET NAME SIGN DETAILS.





TYPICAL MAST ARM SIGN MOUNT DETAILS

SIGNS (1'–6" TO 3'–0" LONG)

SIGN LENGTH (L)	TUBE LENGTH (T)	A
1'–6"	16"	12"
2'–0"	22"	18"
2'–6"	28"	24"
3'–0"	34"	30"

MAXIMUM SIGN HEIGHT: 48"

SIGNS (3'–6" TO 8'–0" LONG)

SIGN LENGTH (L)	TUBE LENGTH (T)	A
3'–6"	40"	12"
4'–0"	46"	14"
4'–6"	52"	16"
5'–0"	58"	18"
5'–6"	64"	20"
6'–0"	70"	22"
6'–6"	76"	24"
7'–0"	82"	26"
7'–6"	88"	28"
8'–0"	94"	30"

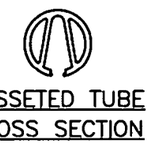
MAXIMUM SIGN HEIGHT: 24"

SIGNS (8'–6" TO 10'–0" LONG)

SIGN LENGTH (L)	TUBE LENGTH (T)	A	B
8'–6"	100"	19"	20"
9'–0"	106"	20"	22"
9'–6"	112"	21"	24"
10'–0"	118"	22"	26"

MAXIMUM SIGN HEIGHT: 16"

SIGN SQUARE FOOTAGE NOT TO EXCEED ROTATIONAL RESISTANCE CAPACITY DEFINED BY MOUNTING HARDWARE MANUFACTURER.



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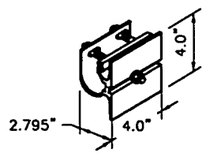

SIGN CLAMP DETAIL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

OVERHEAD STREET NAME SIGN MOUNTING DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER

DocuSigned by: Carl Haddock — DIRECTOR OF HPW

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 | DWG NO: 01554–11

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FB NO. N/A

STATE OF TEXAS — SARAH L. WETMORE — 130442 — LICENSED PROFESSIONAL ENGINEER — 6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 8 OF 13

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	ACCEPTED NOTED
DRAWING SCALE	80162
AS NOTED	
CITY OF HOUSTON PO	
JIADA HUANG	
SHEET NO. 57 OF 73	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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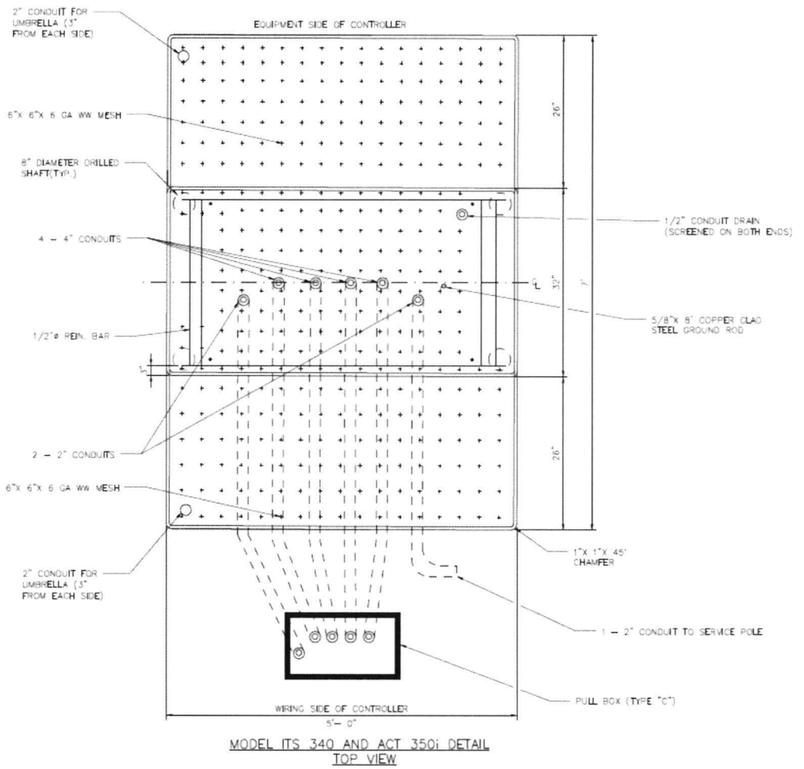
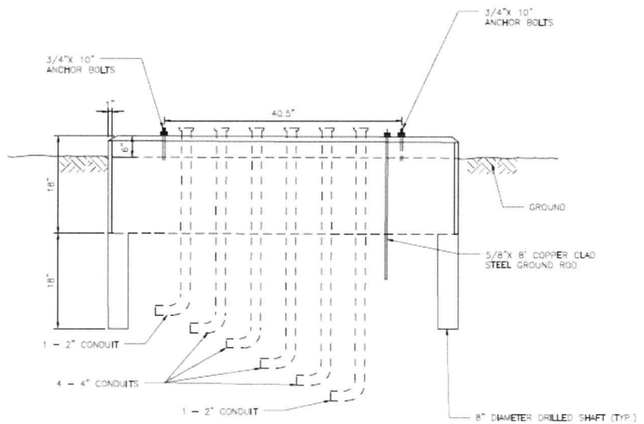
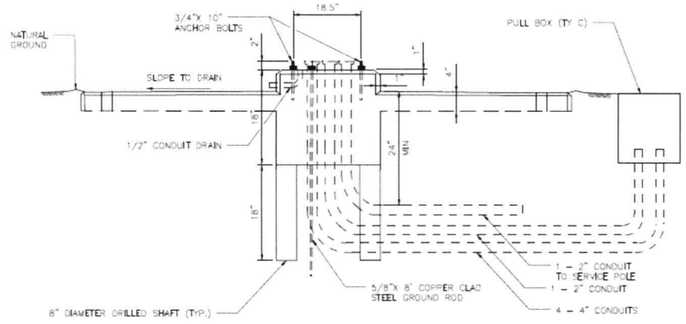


MODEL ITS 340 AND ACT 350i DETAIL
TOP VIEW



MODEL ITS 340 AND 350i DETAIL
FRONT VIEW



MODEL ITS 340 AND 350i DETAIL
SIDE VIEW

NOTES:

1. ALL CONCRETE TO BE IN ACCORDANCE WITH CITY OF HOUSTON SPECIFICATION SECTION 03310.
2. SET THE TOP OF THE STEP OF THE CONTROLLER FOUNDATION NO LOWER THAN THE LEVEL OF THE PAVEMENT SURFACE. ANY NECESSARY ADJUSTMENT SHALL BE APPROVED BY THE ENGINEER.
3. CENTER THE CABINET ON THE FOUNDATION.
4. THE FOUNDATION SHALL BE SUPPORTED BY UNDISTURBED SOIL OR BY SOIL THAT HAS BEEN COMPACTED TO 90% PROCTOR DENSITY IN 6" LIFTS.
5. ALL CONDUIT ELBOWS TO BE RGS.

APPROVED BY:	APPROVED BY:
Signed by: Sylvia Lawson	Signed by: Lloyd Neuhaus
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Signed by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF. DATE: NOV-27-2023	DWG. NO: 16730-03

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONTROLLER FOUNDATIONS

SHEET 3 OF 3

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FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
Signature
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 9 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 58 OF 73	

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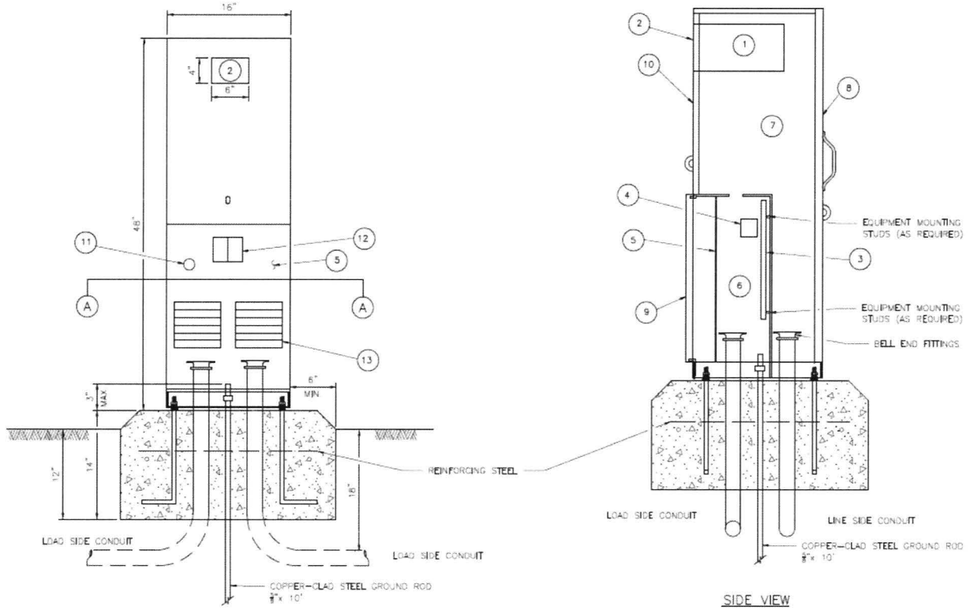
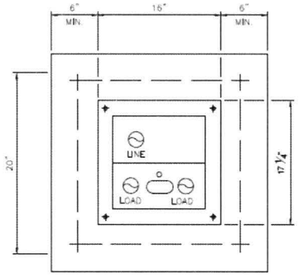


SIDE VIEW

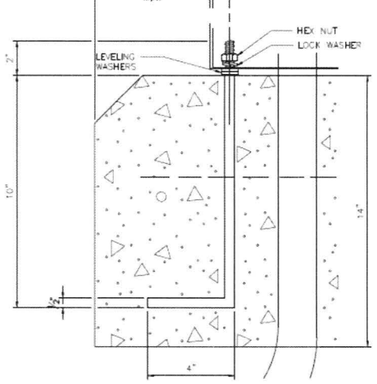
NOTE: ELLS IN FOUNDATION ARE RIGID METAL SIZE CALLED FOR ON THE PLANS. EXTENSION CONDUITS FROM THESE ELLS MAY BE PVC, PROVIDED ENDS OF RIGID METAL CONDUITS ARE MORE THAN 2 IN. BELOW TOP OF CONCRETE FOUNDATION. WHERE EXTENSION CONDUITS ARE METAL, GROUNDING BUSHING MUST BE INSTALLED AND A BONDING JUMPER PROPERLY TERMINATED.

FRONT VIEW

TY C SHOWN. TY A SIMILAR EXCEPT THAT TY A SHALL HAVE INDIVIDUAL CIRCUIT BREAKERS MOUNTED ON AN EQUIPMENT MOUNTING PANEL. CB HANDLES SHALL PROTRUDE THROUGH HINGED DEADFRONT TRIM.



SECTION A–A



ANCHOR BOLT DETAIL

GENERAL NOTES:

1. THE PEDESTAL SERVICE SHALL BE UL TYPE 3R, AND SHALL BE CONSTRUCTED OF A MINIMUM OF 12 GAUGE STAINLESS STEEL OR ALUMINUM AS REQUIRED. STAINLESS STEEL SHALL NOT BE PAINTED. FOR ALUMINUM, THE FINISH SHALL BE AN ELECTROSTATIC APPLIED POLY–URETHANE BAKED ON POWDER, LIGHT GREEN IN COLOR, OR COLOR AS SHOWN ELSEWHERE AND AS APPROVED BY THE ENGINEER. THE FRONT OF THE INTERIOR DEAD FRONT TRIM SHALL BE PERMANENTLY LABELED, "DANGER HIGH VOLTAGE" WITH OSHA STYLE LABEL. THE EXTERIOR OF THE PEDESTAL SERVICE DOOR SHALL BE PERMANENTLY LABELED WITH A PLACARD AS TO ITS USE (I.E. ROADWAY LIGHTING, TRAFFIC SIGNALS, ETC.). PLACARD SHALL BE NEAT AND PROFESSIONAL IN APPEARANCE. LETTERING SHALL BE 1" MINIMUM HEIGHT.
2. UTILITY ACCESS DOOR SHALL HAVE STAINLESS STEEL PIANO HINGE AND PROVISIONS FOR PADLOCKING.
3. PEDESTAL DOOR SHALL HAVE STAINLESS STEEL PIANO HINGE AND STAINLESS STEEL LATCH WITH PROVISIONS FOR PADLOCKING.
4. METER ACCESS SHALL BE HINGED AND CAPABLE OF PADLOCKING.
5. ALL MOUNTING HARDWARE AND INSTALLATION DETAILS OF SERVICES SHALL BE IN ACCORDANCE WITH UTILITY COMPANY SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE LOCAL UTILITY COMPANY AND OBTAINING THEIR APPROVAL OF PEDESTAL DETAILS PRIOR TO MAKING SUBMITTAL TO THE CITY AND PRIOR TO CONSTRUCTING THE ELECTRICAL PEDESTAL SERVICE. ANY CHANGES REQUIRED BY THE UTILITY COMPANY SHALL BE NOTED ON THE SUBMITTALS.
6. METER SOCKET SHALL BE A MINIMUM OF 100 AMP RATING AND SHALL COMPLY WITH THE LOCAL UTILITY REQUIREMENTS.
7. PHOTOELECTRIC CONTROL SHALL MEET THE REQUIREMENTS AS SHOWN ON ED(5). SHIELD TO CONTROL STRAY LIGHT IS ALLOWABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER OPERATION OF THE PHOTO–ELECTRIC CONTROL. THE CONTRACTOR SHALL MOVE AND/OR ADJUST OR SHIELD THE PHOTOCELL FROM STRAY OR AMBIENT NIGHTTIME LIGHT OR SHALL MAKE ANY OTHER ADJUSTMENTS REQUIRED FOR PROPER OPERATION. THE PHOTOCELL SHALL FACE NORTH WHEN PRACTICABLE. UNLESS OTHERWISE SHOWN ON THE PLANS, THE PHOTOCELL SHALL TURN ON THE ILLUMINATION SYSTEM AT 1.0 +(–) 0.5 FOOTCANDLE AND TURN OFF THE ILLUMINATION SYSTEM AT TWO FOOTCANDLES HIGHER THAN TURN ON.
8. THE CONTROL STATION (H–O–A SWITCH) SHALL BE AS SHOWN ON TxDOT STANDARD ED(5) EXCEPT THAT H–O–A SWITCH OPERATING HANDLE SHALL PROTRUDE THROUGH HINGED DEADFRONT TRIM AND NEMA 1 ENCLOSURE WILL NOT BE REQUIRED.
9. CONCRETE FOR PEDESTAL SERVICE FOUNDATION SHALL BE CLASS A OR C, AND SHALL BE IN ACCORDANCE WITH TxDOT ITEM 420, "CONCRETE STRUCTURES", EXCEPT THAT CONCRETE WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED INCIDENTAL.
10. REINFORCING STEEL SHALL BE #4 REBAR IN ACCORDANCE WITH TxDOT ITEM 440, "REINFORCING STEEL."
11. ANCHOR BOLTS SHALL BE A36M55 IN ACCORDANCE WITH ITEM 449, "ANCHOR BOLTS". ANCHOR BOLTS SHALL BE ½ INCH X 12 INCHES X 4 INCHES (DIA. X LENGTH X HOOK LENGTH).
12. ALL CONDUIT AND CONDUCTORS ATTACHED TO THE PEDESTAL SERVICE AND WITHIN 12 INCHES OF THE PEDESTAL SERVICE WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE PEDESTAL SERVICE. ALL SERVICE CONDUIT AND CONDUCTORS FROM THE UTILITY COMPANY TRANSFORMER TO A POINT 12 INCHES FROM THE THE PEDESTAL SERVICE SHALL BE PAID FOR SEPARATELY. SERVICE CONDUIT SHALL BE THE SIZE AND TYPE AS SHOWN IN THE ELECTRICAL SERVICE DATA.
13. DIMENSIONS MAY VARY TO ACCOMODATE REQUIRED EQUIPMENT, UTILITY COMPANY REQUIREMENTS, OR MANUFACTURER'S STANDARD EQUIPMENT DIMENSIONS. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL, SIX (6) COPIES OF BROCHURES AND/OR DRAWINGS OF THE PEDESTAL SERVICE TO BE SUPPLIED, INCLUDING ACTUAL DIMENSIONS, AND A PAINT COLOR SAMPLE.
14. A SEPARATE ENCLOSURE AS SHOWN ON TxDOT STANDARD ED(4) OR ED(5) FOR PHOTOCELL SHALL NOT BE USED FOR PEDESTAL SERVICES. PHOTOCELL SHALL BE INSTALLED AS SHOWN HERE.
15. THE PEDESTAL DOOR SHALL HAVE A MECHANICALLY ATTACHED DATA POCKET ON THE INSIDE. POCKET SHALL BE EITHER METAL OR THERMOPLASTIC AND SHALL MEASURE AT LEAST 12 INCHES BY 12 INCHES. THE CONTRACTOR SHALL PREPARE AND SUBMIT A SCHEMATIC DRAWING UNIQUE TO AN INDIVIDUAL SERVICE. THE APPROVED DRAWING SHALL BE LAMINATED AND PLACED IN THE DOCUMENT POCKET OF THE SERVICE AT THE TIME OF SHIPMENT TO THE JOB SITE. ALL APPLICABLE WIRING DIAGRAMS AND PLAN SHEET LAYOUTS FOR ALL EQUIPMENT AND BRANCH BREAKER CIRCUITS SUPPLIED BY THAT SERVICE SHALL ALSO BE LAMINATED AND PLACED IN THE DOCUMENT POCKET PRIOR TO SHIPPING.
16. GROUND ROD CLAMP TO BE UL LISTED FOR DIRECT BURIAL. ALL NON–CONDUCTIVE COATING TO BE REMOVED FROM GROUND ROD WIRE TO BE #6 AWG SOLID COPPER. METAL CONDUIT ELLS TO HAVE GROUNDING BUSHING AND BONDING JUMPERS CORRECTLY INSTALLED.
17. ALL CONDUITS ENTERING ENCLOSURES FROM UNDERGROUND MUST BE SEALED. SILICONE SHALL NOT BE ALLOWED.
18. ALL CONDUCTORS SHALL BE MEGGED AND PULL TESTED. TRAFFIC SIGNAL CABLE NOT TO BE MEGGED AFTER CONNECTION, AS ELECTRONICS WILL BE DAMAGED.
19. TOP OF CONCRETE FOUNDATION TO BE FINISHED IN A NEAT AND WORKMAN LIKE MANNER. IF LEVELING WASHERS ARE USED, NO MORE THAN ¾ IN. HEIGHT SHALL BE USED AT ANY ONE CORNER. MAXIMUM DIP OR RISE IN FOUNDATION IS NOT TO EXCEED ⅛ IN. PER FOOT. WHEN PROPERLY INSTALLED, TOP OF SERVICE ENCLOSURE SHALL READ LEVEL FRONT TO BACK AND SIDE TO SIDE WITHIN ¼ IN. ROCKING OR MOVEMENT OF THE SERVICE ENCLOSURE SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE STATE.
20. LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL NOT BE ALLOWED ON PS TYPE SERVICES.

LEGEND:

1. METER SOCKET, (WHEN REQUIRED)
2. METER SOCKET 4" x 6" PLEXIGLASS WINDOW INSTALLED IN THE LID.
3. EQUIPMENT MOUNTING PANEL
4. PHOTO ELECTRIC CONTROL WINDOW, (WHEN REQUIRED)
5. HINGED DEADFRONT TRIM
6. LOAD SIDE CONDUIT AREA
7. LINE SIDE CONDUIT AREA
8. UTILITY ACCESS DOOR, WITH HANDLE
9. PEDESTAL DOOR
10. HINGED METER ACCESS
11. CONTROL STATION (H–O–A SWITCH)
12. MAIN DISCONNECT
13. BRANCH CIRCUIT BREAKERS

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02893–02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

energy corridor™
777 North Eldridge Parkway #270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 10 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 59 OF 73	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

80162

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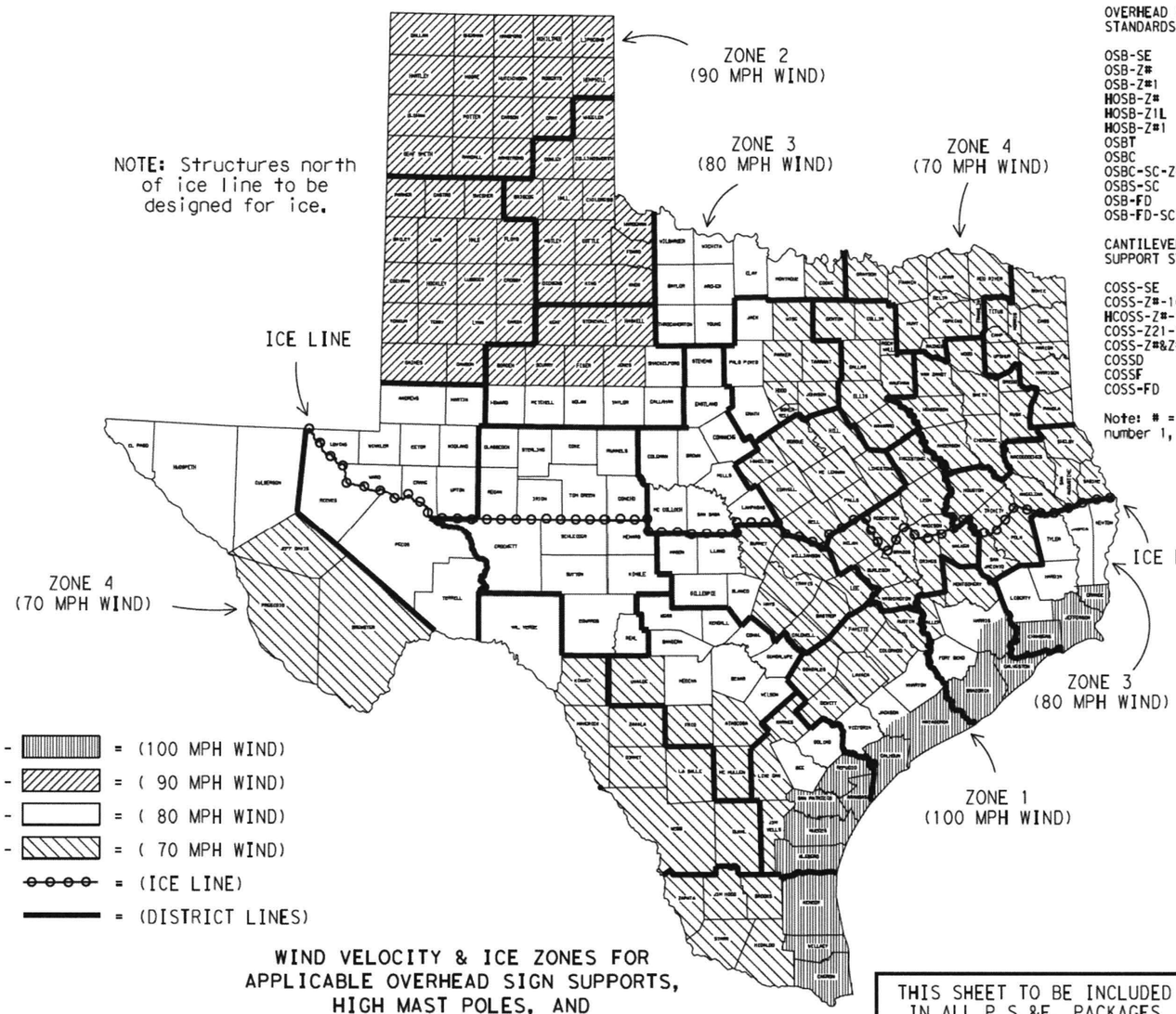

LEGEND

ZONE 1 - = (100 MPH WIND)
ZONE 2 - = (90 MPH WIND)
ZONE 3 - = (80 MPH WIND)
ZONE 4 - = (70 MPH WIND)
= (ICE LINE)
= (DISTRICT LINES)

WIND VELOCITY & ICE ZONES FOR APPLICABLE OVERHEAD SIGN SUPPORTS, HIGH MAST POLES, AND TRAFFIC SIGNAL POLES

Based on 50 Year Mean Recurrence Interval of Fastest Mile Wind Velocity at 33 feet height.

DATE:
FILE:

THIS SHEET TO BE INCLUDED IN ALL P.S.&E. PACKAGES CONTAINING ONE OR MORE OF THE APPLICABLE STANDARD SHEETS LISTED HEREON

APPLICABLE STANDARDS SHEETS

OVERHEAD SIGN BRIDGE STANDARDS:

OSB-SE
OSB-Z#
OSB-Z#1
HOSB-Z#
HOSB-Z1L
HOSB-Z#1
OSBT
OSBC
OSBC-SC-Z#
OSBS-SC
OSB-FD
OSB-FD-SC

CANTILEVER OVERHEAD SIGN SUPPORT STANDARDS:

COSS-SE
COSS-Z#-10
HCOSS-Z#-10
COSS-Z21-10
COSS-Z#&Z#1-10
COSSD
COSSF
COSS-FD

Note: # = Wind Zone number 1, 2, 3 or 4

HIGH MAST ILLUMINATION POLE STANDARDS:

HMIP-98
HMIF-98

WALKWAYS AND BRACKETS STANDARDS:

SWW
SB(SWL-1)

TRAFFIC SIGNAL POLE STANDARDS:

SP-80
SP-100
SMA-80
SMA-100
DMA-80
DMA-100
MA-C
MAC(ILSN)
MAD-D
TS-FD
LUM-A
CFA
LMA
TS-C
MA-DPD

FOR HARRIS CO. ONLY
Zone line is just North of US 90, around on the North, West and South sides of IH 610 and down the West side of SH 288.

FOR JACKSON CO. ONLY
Zone line is just North of SH 616.

Texas Department of Transportation | Traffic Operations Division Standard

WIND VELOCITY AND ICE ZONES

WV & IZ-14

FILE: windfce.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1996	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-14-&same ifce of applicable standards; restricting use to aerials, re-positing for Fastest Mile wind speeds.	DIST	COUNTY		SHEET NO.

30

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 11 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PO	
JIADA HUANG	
SHEET NO. 60 OF 73	

80162

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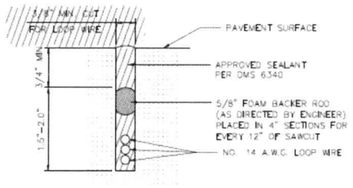
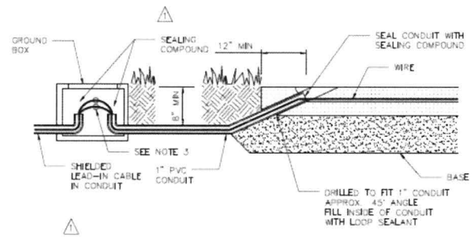
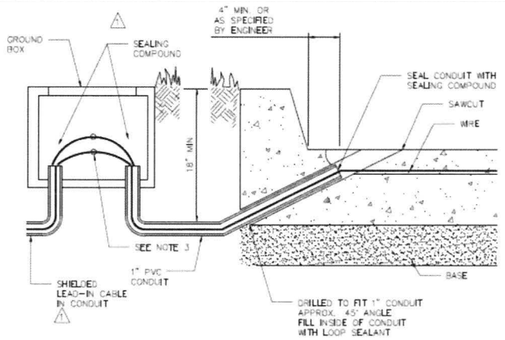


LOOP SAW CUT CROSS–SECTION

* SAWCUTS IN BRIDGE DECKS ARE TYPICALLY 1" DEPTH MAXIMUM SAWCUTS IN BRIDGE DECKS AND ACROSS EXPANSION JOINTS SHALL BE AS APPROVED BY ENGINEER



TYPICAL LEAD IN CONFIGURATION
(WITHOUT CURBING)



TYPICAL LEAD IN CONFIGURATION
(WITH CURBING)

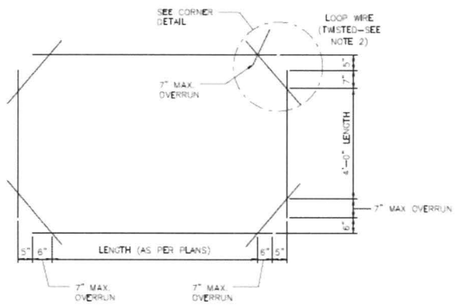
GENERAL NOTES:

1. THE PAVEMENT CUT IS TO BE MADE WITH A CONCRETE SAW TO NEAT LINES AND LOOSE MATERIAL REMOVED. THE CUT SHALL BE CLEAN AND DRY WHEN THE WIRE AND SEALING COMPOUND IS PLACED.
2. LOOP WIRE SHALL BE 14 AWG STRANDED TYPE XHHW. WIRE FROM THE LOOP TO THE GROUND BOX SHALL BE TWISTED A MINIMUM OF 5 TURNS PER FOOT. NO SPLICES SHALL BE PERMITTED IN THE LOOP OR IN THE RUN TO THE GROUND BOX.
3. THE HOME RUN CABLE FROM THE PULL BOX TO THE CONTROLLER SHALL BE IMSA 50–2 SHIELDED CABLE AND SHALL BE SOLDERED TO THE LOOP WIRE. THE SOLDER JOINTS SHALL BE SEALED WITH SCOTCHCAST OR OTHER METHOD ACCEPTABLE TO THE ENGINEER. THE SHIELD SHALL BE GROUNDED ONLY AT THE CONTROLLER END. LOOP HOME RUN CABLE SHALL BE TWO CONDUCTOR 14 AWG SHIELDED, TYPE XHHW.
4. ALL WIRE PLACED IN THE SAW CUT SHALL BE SEALED BY FULLY ENCAPSULATING IT IN A SEALANT ACCEPTABLE TO THE ENGINEER. SEALING COMPOUND SHALL BE IN ACCORDANCE WITH DMS 6340.
5. THE LOOP LOCATION, CONFIGURATION AND NUMBER OF TURNS SHALL BE AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

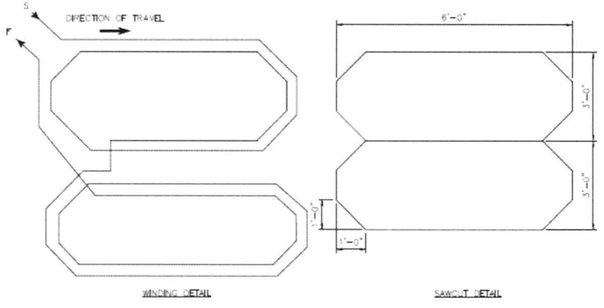
RECOMMENDED NUMBER OF TURNS FOR LOOP DETECTORS

LOOPS PERIMETER SIZE (FT.)	NUMBER OF TURNS	APPROXIMATE LOOP SIZES INCLUDED
24' or Less	3 or 4	5' x 5', 6' x 6'
25' – 110'	2 or 3	6' x 10', 6' x 45'
110' or More	1 or 2	6' x 50' or Longer

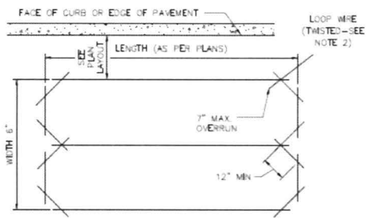
6. A SEPARATE SAW CUT SHALL BE MADE FROM EACH LOOP TO THE EDGE OF PAVEMENT OR AS SPECIFIED BY THE ENGINEER.
7. SPLICES BETWEEN THE LOOP LEAD-IN CABLE AND LOOP DETECTOR SHALL BE MADE ONLY IN THE GROUND BOX NEAR THE LOOP IT IS SERVING.
8. CIRCULAR LOOPS MAY USE PREWOUND LOOPS ENCASED IN CONTINUOUS PVC TUBING. SAWCUT WIDTH MAY BE ADJUSTED TO ACCOMMODATE TUBING.
9. THE LEAD-IN WIRE IN THE CIRCULAR LOOP SHALL BE COILED AT THE 3 INCH DRILLED CORNER TO REDUCE BENDING STRESS.
10. LOOP DUCT MAY BE USED AS SPECIFIED BY ENGINEER. FOR ADDITIONAL INFORMATION REFER TO "TEXAS TRAFFIC SIGNAL DETECTOR" MANUAL, TTI REPORT 1165–1.
11. ROUND CORNERS OF ACUTE ANGLES TO PREVENT DAMAGE TO CONDUCTORS.
12. INSTALL 3 TURNS WHEN ONLY ONE TYPE D LOOP IS ON A SINGLE CHANNEL. INSTALL 5 TURNS WHEN ONE TYPE D IS CONNECTED W/3–6'X6' LOOPS ON A SINGLE CHANNEL.



RECTANGULAR

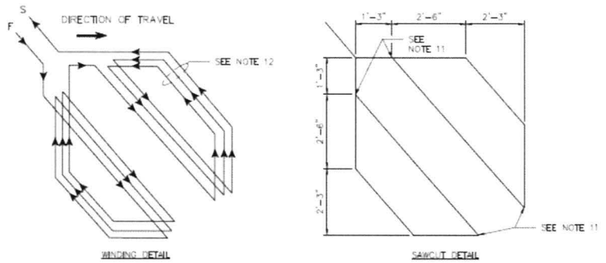


QUADRUPOLE (Q) TYPE LOOP DETECTOR CONFIGURATION



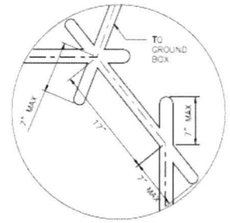
QUADRAPOLE

TYPICAL VEHICULAR LOOP DETECTOR LAYOUT
(AS SPECIFIED IN PLANS)

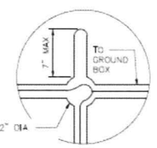


DIAGONAL SLASHED (D) TYPE LOOP DETECTOR CONFIGURATION

TYPICAL BICYCLE LOOP DETECTOR LAYOUT
(AS SPECIFIED IN PLANS. SEE PAVEMENT MARKINGS DETAILS FOR LOCATION RELATIVE TO BICYCLE SYMBOL)



RECTANGULAR & HEXIGON LOOP
SAWCUT CORNER DETAIL
7" OVERRUN BASED ON 24" DIAMETER SAW BLADE



RECTANGULAR & HEXIGON LOOP (ALT.)
DRILLED CORNER DETAIL

TYPICAL CORNER DETAILS

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 16727–01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

LOOP DETECTOR
INSTALLATION DETAILS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 12 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 61 OF 73	

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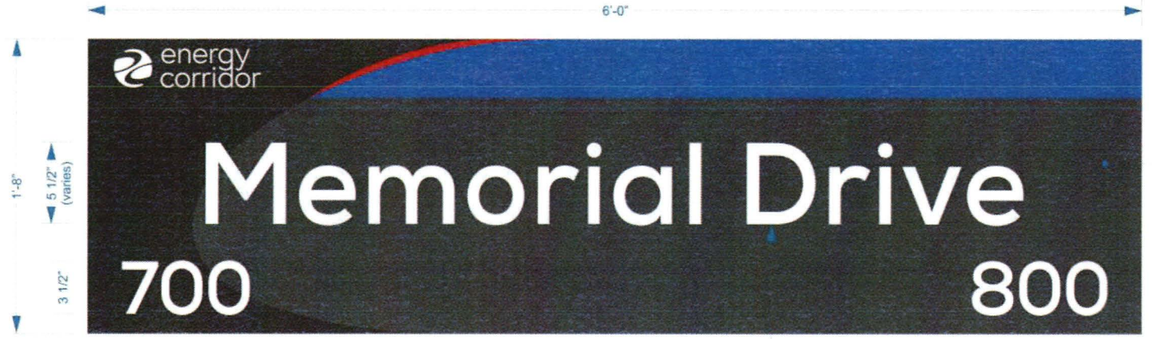
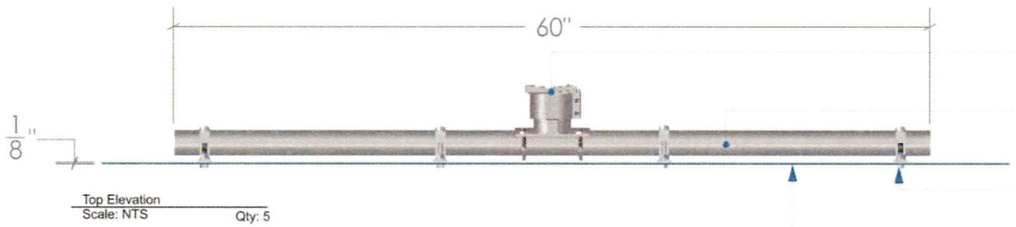


Layout Example - (Produce Layouts from Message Schedule)
Scale: 1 1/2" = 1'-0" Qty: 5

1/8" Aluminum Panel(s)
Back Painted to match: FF Super Silver II
w/ Single-sided Full-Color Digital Print Vinyl Graphics w/ UV laminate
White copy to be: High Grade Reflective White Vinyl

Single-Line of copy
To Fit: Shrink Text Size to a minimum of 3 3/4" Height and
Truncate Road Types ("Drive" to "Dr.", "Parkway" to "Pkwy", etc.)
& "North" "South" "East" "West" to "N" "S" "E" "W"



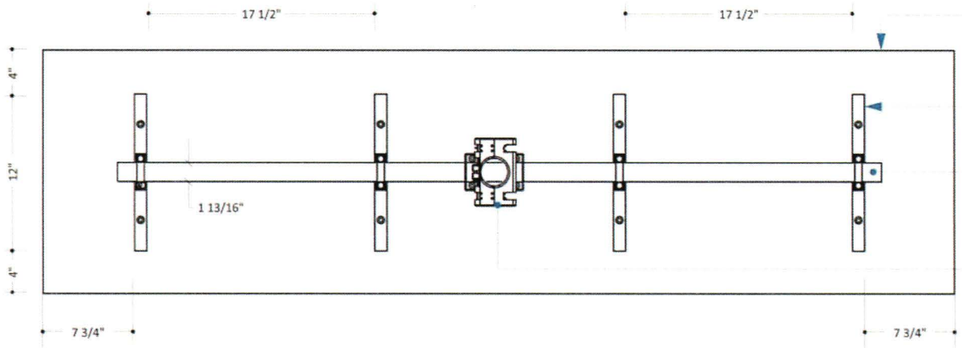
Top Elevation
Scale: NTS Qty: 5

Chapel Hill bracket assembly #5624
Painted to match: FF Super Silver II
If possible, re-use existing bracket(s)

1 1/2" Sch 40 Aluminum pipe
Painted: brushed aluminum

16" Bracket clamp #7157
Painted to match: FF Super Silver II
If possible, re-use existing bracket(s)

1/8" Aluminum Panel(s)
Back Painted to match: FF Super Silver II
w/ Single-sided Full-coverage Digital Print Vinyl Graphics
White copy to be: High Grade Reflective White Vinyl



Back Elevation
Scale: NTS Qty: 5

1/8" Aluminum Panel(s)
Back Painted to match: FF Super Silver II
w/ Single-sided Full-coverage Digital Print Vinyl Graphics
White copy to be: High Grade Reflective White Vinyl

"16" Bracket clamp #7157
Painted to match: FF Super Silver II
If possible, re-use existing bracket(s)

1 1/2" Sch 40 Aluminum pipe
Painted to match: FF Super Silver II

Chapel Hill bracket assembly #5624
Painted: FF Super Silver II
If possible, re-use existing bracket(s)

Project Name

Energy Corridor
Additional Signs

NEC
SIGNAGE + ARCHITECTURAL PRODUCTS
1122 Lauder Road
Houston, Texas 77039
281-987-1144 Tel
281-987-9443 Fax

Install Address:
Various - Energy Corridor

Sales Person:
Anthony Richards

Scale: As Shown

Date: 11-25-24

Artist: Jason Lennon

Drawing No: **240588**

Fabrication Approval

Customer:

Representative:

Management:

Revisions

1		5	
2		6	
3		7	
4		8	

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This sign is intended to be installed in accordance with the requirements of Article 600 of the National Electrical Code and/or other applicable local codes. This includes proper grounding and bonding of the sign.

The location of the disconnect switch after installation shall comply with Article 600.36(A)(1) of the National Electrical Code.

Page Name:

Type D.1
Details

Page No:

E.2

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
TRAFFIC SIGNAL DETAIL 13 OF 13

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 62 OF 73	

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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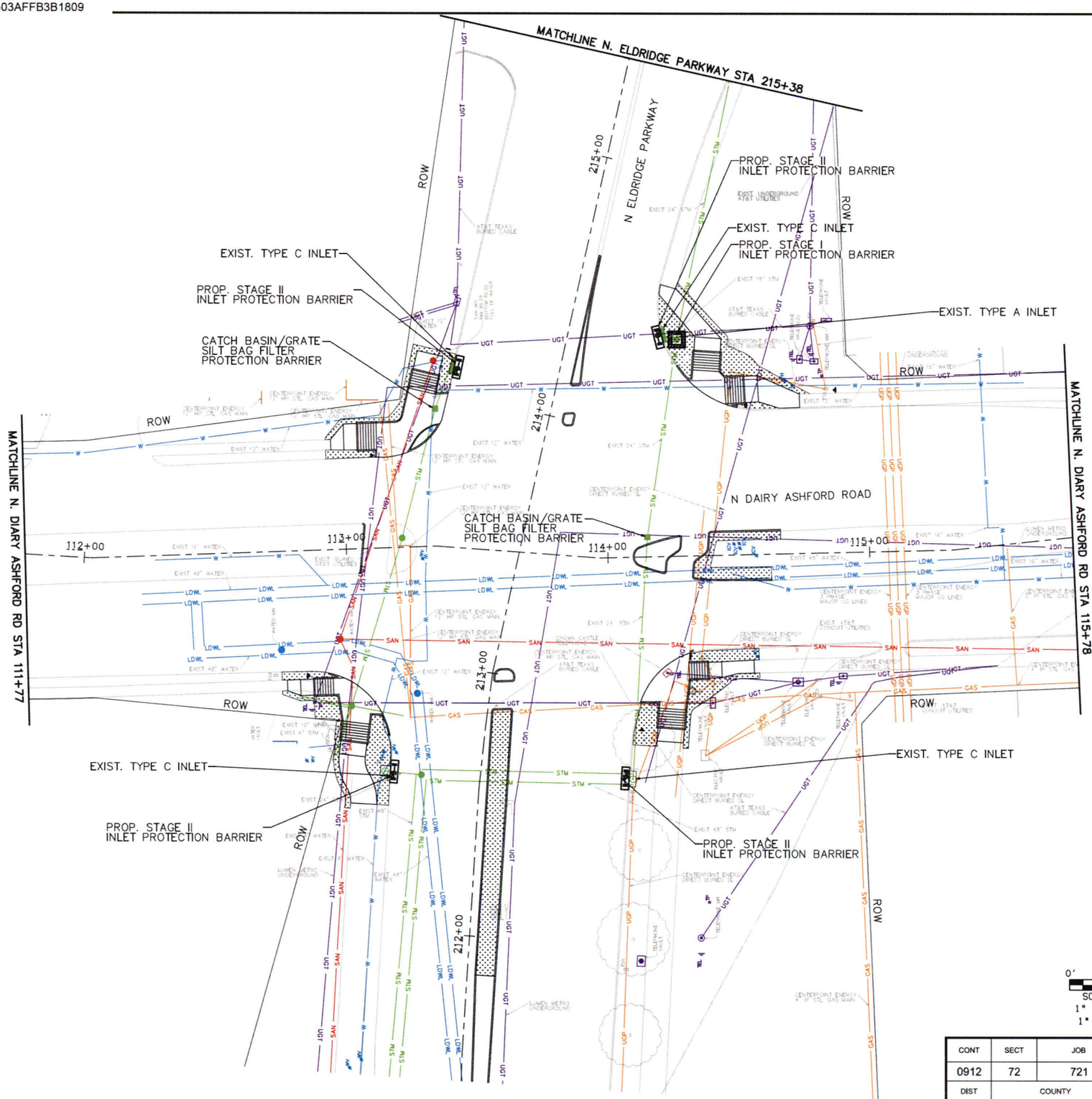

LEGEND

- PROPOSED INLET PROTECTION BARRIER STAGE I
- PROPOSED INLET PROTECTION BARRIER STAGE II
- PROPOSED SOD

0′ 20′ 40′
SCALE IN FEET
1" = 40′ FOR 22X34
1" = 80′ FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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

VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower Date 05/22/25
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.
Signature valid for six months.

Mike Brower Date 05/22/25
CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification).
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Marlon Smither Date 05/27/2025
Approved for AT&T underground conduit facilities only.
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energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158

SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SWPPP LAYOUT
SHEET 1 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-1	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 63 OF 73	

80162

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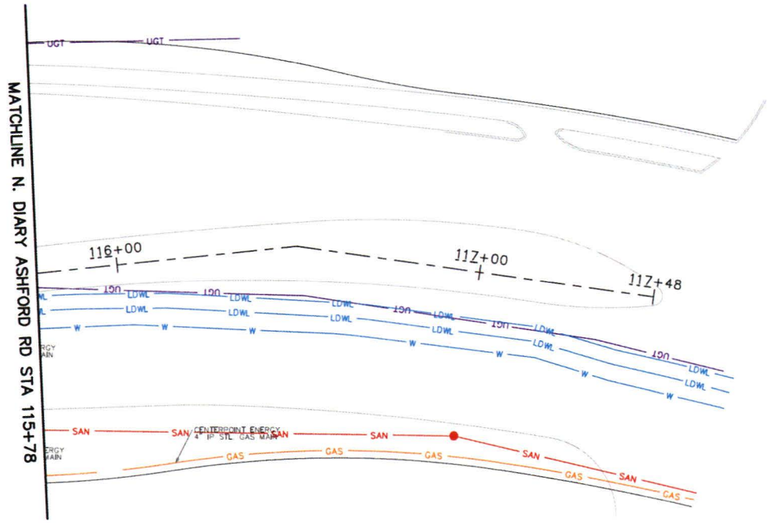

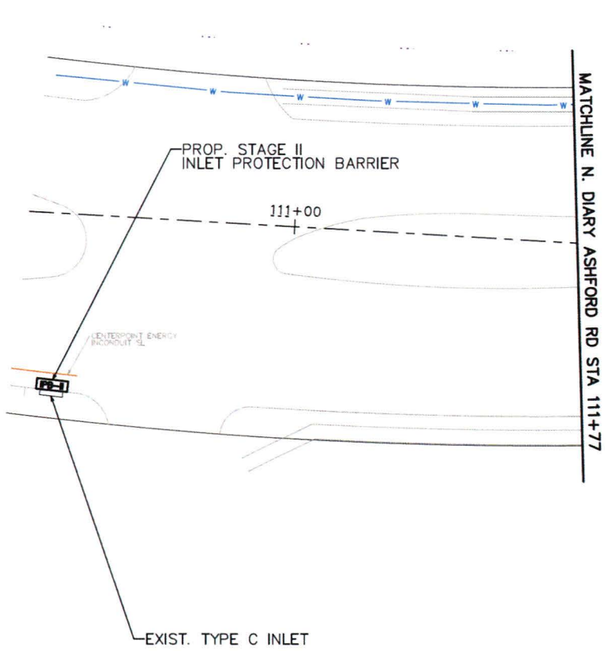

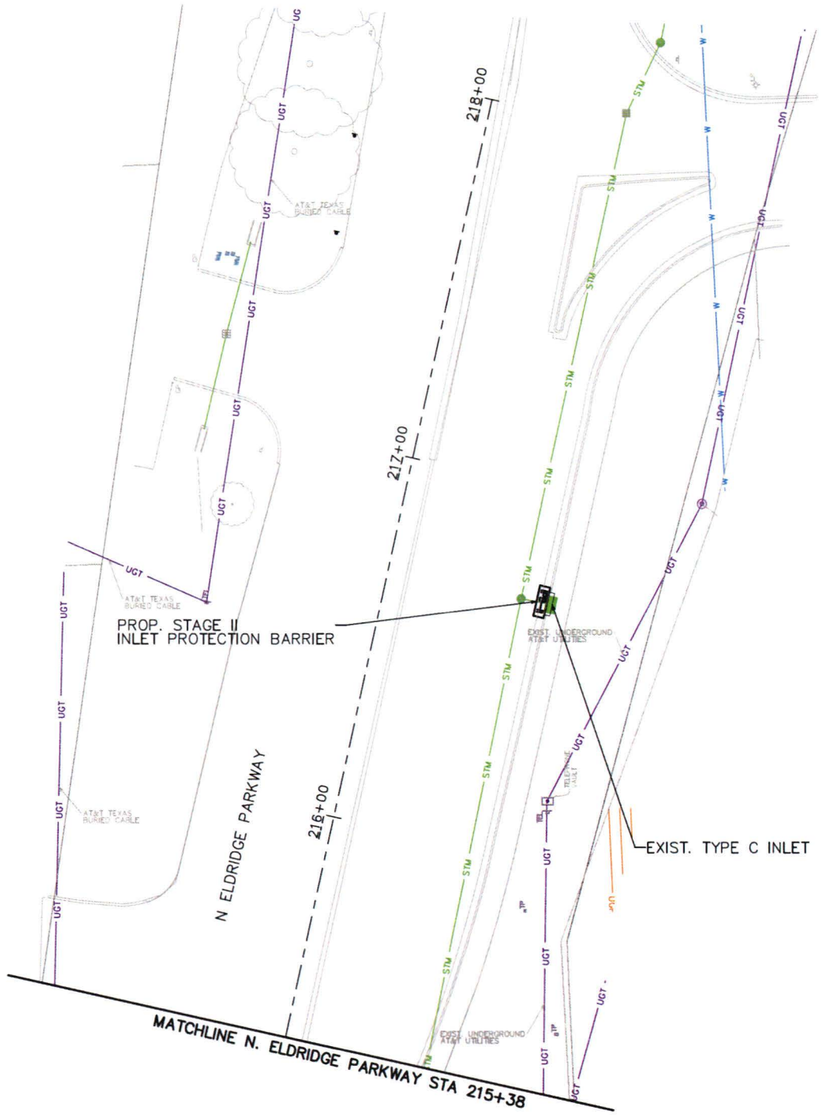

LEGEND

- PROPOSED INLET PROTECTION BARRIER STAGE I
- PROPOSED INLET PROTECTION BARRIER STAGE II
- PROPOSED SOD

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6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SWPPP LAYOUT
SHEET 2 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

0' 20' 40'
SCALE IN FEET
1" = 40' FOR 22X34
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CONT	SECT	JOB	HIGHWAY
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DIST	COUNTY		
HOU	HARRIS		

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N-MD0260-0002-7	80162
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AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 64 OF 73	

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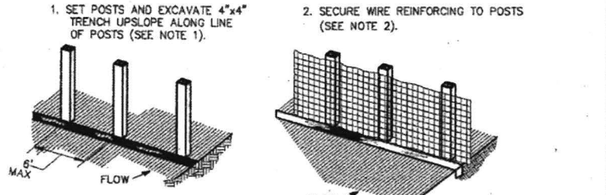
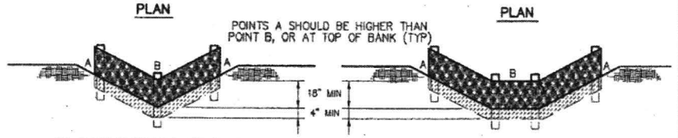


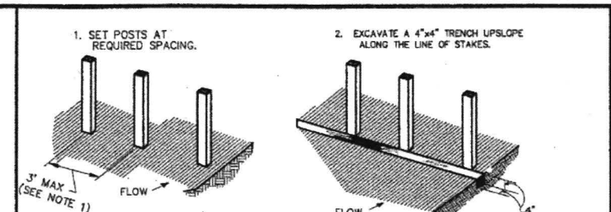


CONSTRUCTION NOTES:

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

X—(RFB)—X SYMBOL

REINFORCED FILTER FABRIC BARRIER

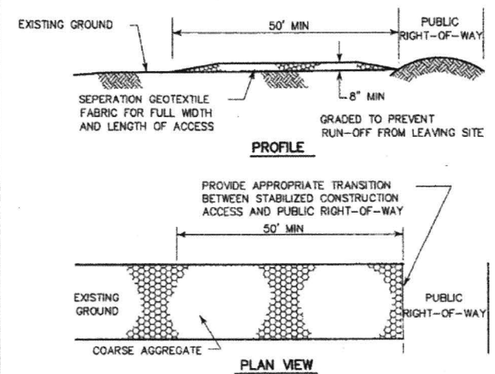


CONSTRUCTION NOTES:

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

X—(FF)—X SYMBOL

FILTER FABRIC BARRIER

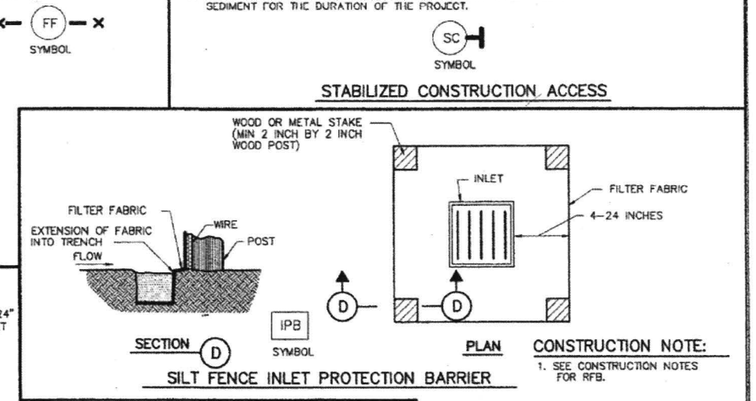


CONSTRUCTION NOTES:

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

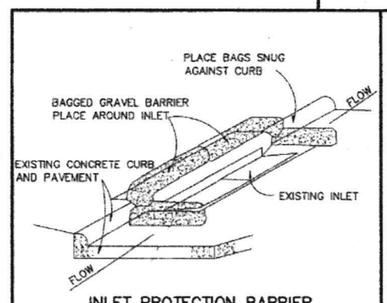
SC SYMBOL

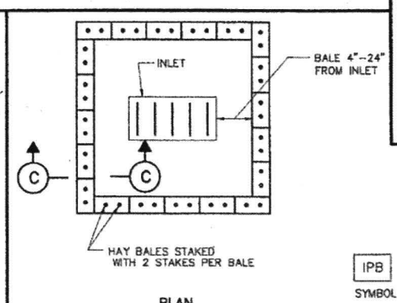
STABILIZED CONSTRUCTION ACCESS

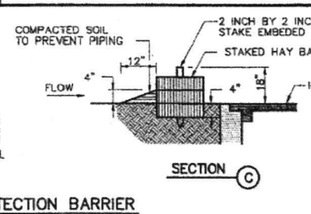


CONSTRUCTION NOTE:

1. SEE CONSTRUCTION NOTES FOR RFB.







HAY BALE INLET PROTECTION BARRIER

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS
(NOT TO SCALE)

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

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

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON STANDARD DETAILS
SWPPP DETAIL

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	80162
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
JIADA HUANG	
SHEET NO. 65 OF 73	

RECEIVED
JUL 26 2024
HOUSTON, TEXAS

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Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit is required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506. Refer to the TxDOT SWP3 Summary Sheets, SWP3 Binder Template, and Form 2118.

No Additional Comments

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS

United States Army Corps of Engineers (USACE) Permit is required for filling, dredging, excavating or other work in water bodies, rivers, creeks, streams, wetlands or wet areas. The Contractor must adhere to all of the terms and general conditions associated with the following permit(s). If additional work not represented in the plans is required, contact the Engineer immediately.

☒ No United States Army Corps (USACE) Permit Required

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) without a Pre-Construction Notification (PCN). Project specific permit was not issued by USACE, therefore is not in the plan set. The USACE general conditions are in the "General Notes."

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) with a Pre-Construction Notification (PCN). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set. The USACE general conditions are in the "General Notes."

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Individual Permit (IP). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set.

☐ Work would be authorized by the United States Army Corps of Engineers (USACE) permit. The project specific permit issued by the USACE will be provided to the contractor.

United States Coast Guard (USCG) Permit is required for projects that involve the construction or modification (including changes to lighting) of a bridge or causeway across a water body determined to be navigable by the United States Coast Guard (USCG) under Section 9 of the Rivers and Harbors Act. If additional work not represented in the plans is required, contact the Engineer immediately.

☒ No United States Coast Guard (USCG) Coordination Required

☐ United States Coast Guard (USCG) Permit

☐ United States Coast Guard (USCG) Exemption

No Additional Comments

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the area and contact the Engineer immediately.

Additional Comments

In compliance with the Section 106 PA, the Antiquities Code of Texas, and the MOU, TxDOT historians determined project activities do not affect historic properties. Individual project coordination with SHPO is not required. The APE is the existing ROW; there are no sensitive property types.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Refer to TxDOT Standard Specifications in order to comply with requirements for invasive species, beneficial landscaping and tree/brush removal.

No Additional Comments

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS

If any of the listed species below are observed, cease work in the area, do not disturb species or habitat and contact the Engineer immediately.

The work may not remove active nests (from bridges, structures, or vegetation adjacent to the roadway, etc.) during nesting season (February 15 to October 1). If removal of structures or vegetation is necessary during the nesting season, the Contractor shall conduct a bird survey no more than 3 days in advance of the clearing/demolish start date. All bird surveys shall be conducted by a Field Biologist and adhere to the guidance document "Avoiding Migratory Birds and Handling Potential Violations" found in the TxDOT Environmental Compliance Toolkits at the time of the survey. (See below for Field Biologist and Ornithologist qualifications)

No Additional Comments

Field Biologist, Ornithologist – a field biologist is defined as an individual qualified to perform field investigations, presence/absence surveys and habitat surveys for protected avian species or species of concern. A mandatory bachelor's degree in biology or a related science is required. At a minimum, the Field Biologist, Ornithologist, shall have completed and reported a minimum of three presence/absence and habitat surveys for protected avian species in the past five years. A minimum of three projects must have been conducted in Texas. Surveys shall have been performed for documentation of species in accordance with a protocol approved by USFWS or TPWD, or following generally accepted methodologies.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

Refer to TxDOT Standard Specifications in the event potentially contaminated materials are observed, such as dead or distressed vegetation, trash disposal areas, drums, canisters, barrels, leaching or seepage of substances, unusual smells or odors, or stained soil, cease work in the area and contact the Engineer immediately.

No Additional Comments

VII. OTHER ENVIRONMENTAL ISSUES

Comments:

Texas Department of Transportation | TxDOT Houston District

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: EPIC Sheet.dgn	DN:	CK:	DW:	CK:
© TxDOT: March 2017	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	12	721	Eldridge Pwky
UPDATED section V, text and added definition (10/17) ADDED USCG and USACE notes in Section VII (04/18)	DIST	COUNTY		SHEET NO.
	12	Harris		68 of 73

DATE: Mar 14, 2024
FILE:

Version 2.2

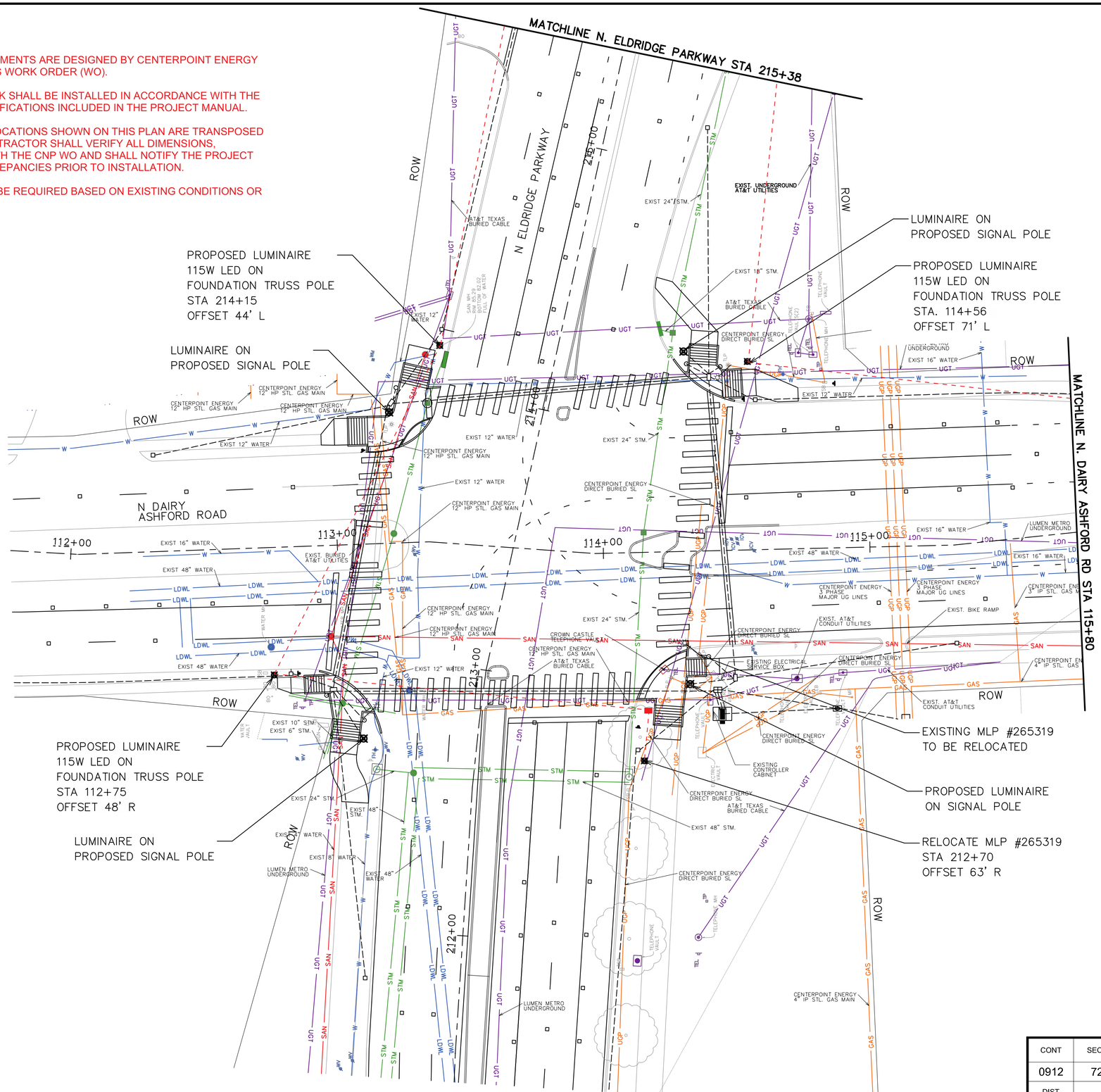
STREETLIGHTING NOTES:

1. STREETLIGHTING IMPROVEMENTS ARE DESIGNED BY CENTERPOINT ENERGY (CNP) AND INCLUDED IN CNP'S WORK ORDER (WO).

2. ALL STREETLIGHTING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CNP WO AND WITH THE SPECIFICATIONS INCLUDED IN THE PROJECT MANUAL.

3. CONDUIT AND PULL BOX LOCATIONS SHOWN ON THIS PLAN ARE TRANSPOSED FROM THE CNP WO. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LOCATIONS, AND DETAILS WITH THE CNP WO AND SHALL NOTIFY THE PROJECT MANAGER (PM) OF ANY DISCREPANCIES PRIOR TO INSTALLATION.

4. FIELD ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING CONDITIONS OR CNP DIRECTION.



LEGEND

- EXISTING STREETLIGHT
- PROPOSED STREETLIGHT WITH FOUNDATION
- CNP Underground conductor per CNP streetlight specifications. Field adjustments may be required.
- CNP pull box per CNP streetlight specifications. Provided by CNP. Field adjustments may be required.

NOTE: CAUTION: HAND DIG WHEN EXCAVATING WITHIN 24" OF GAS FACILITIES.

NOTICE:
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SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS — SARAH L. WETMORE — 130442 — LICENSED PROFESSIONAL ENGINEER — 6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STREETLIGHT PLAN PROPOSED CONDITIONS SHEET 1 OF 2

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	N-MD0260-0002-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	JIADA HUANG
SHEET NO.	67 OF 73

FOR CITY OF HOUSTON USE ONLY

HOUSTON PUBLIC WORKS ACCEPTED AND FILED
80162 CITY DRAWING NUMBER
Approval Date 08/27/26
HOUSTON TX

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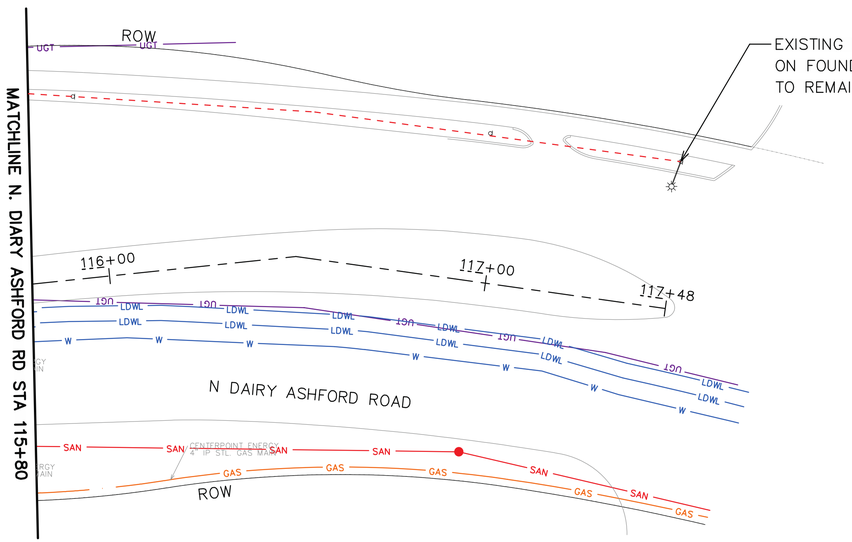

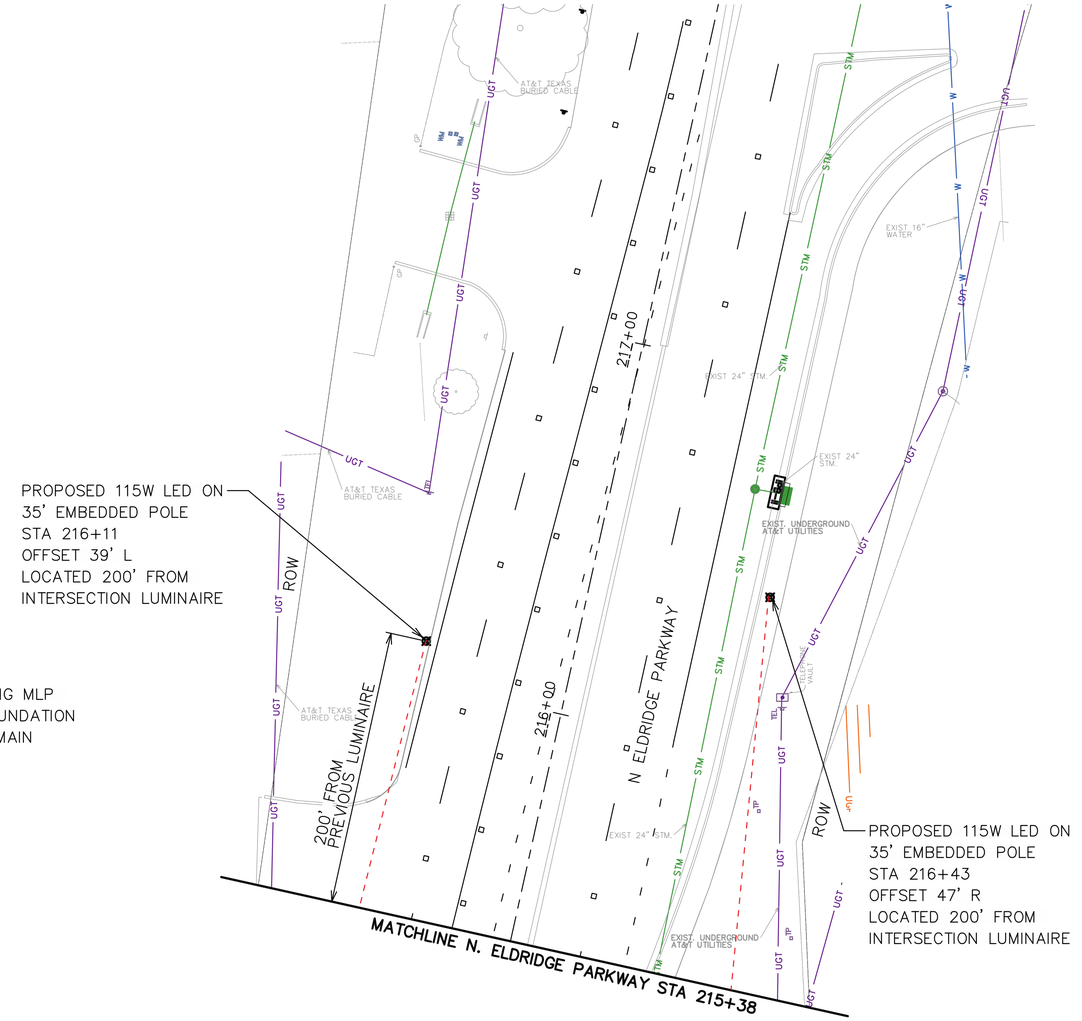

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DESIGN SPEEDS FOR
LOOP DETECTOR SET BACK
N. DAIRY ASHFORD RD = 35 MPH
N. ELDRIDGE PKWY = 35 MPH

0' 20' 40'
SCALE IN FEET
1" = 20' FOR 22X34
1" = 40' FOR 11X17

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
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SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STREETLIGHT PLAN
PROPOSED CONDITIONS
SHEET 2 OF 2

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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SHEET NO. 68 OF 73	

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
80162
CITY DRAWING NUMBER
Approval Date 08/27/26
HOUSTON TX

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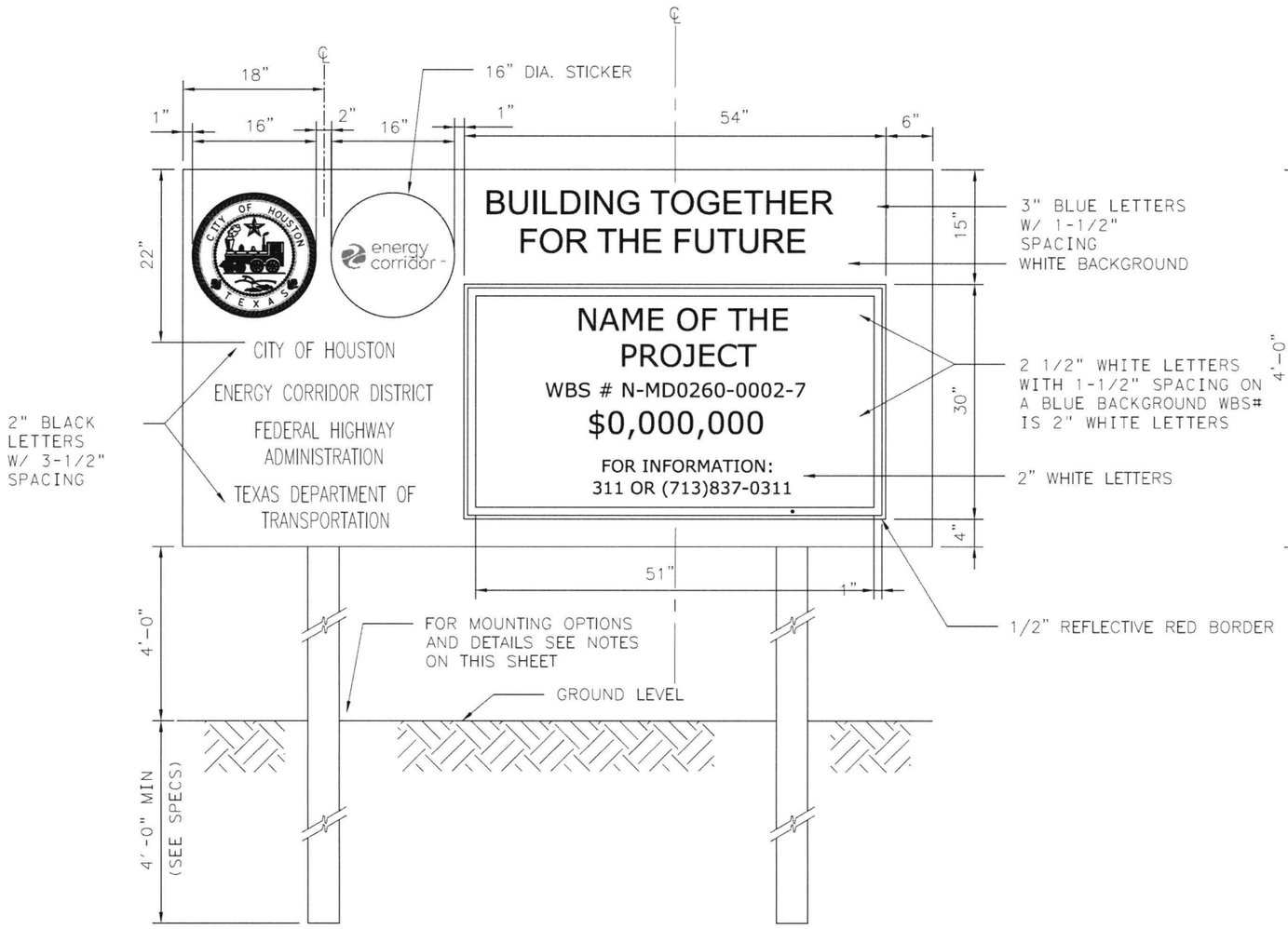
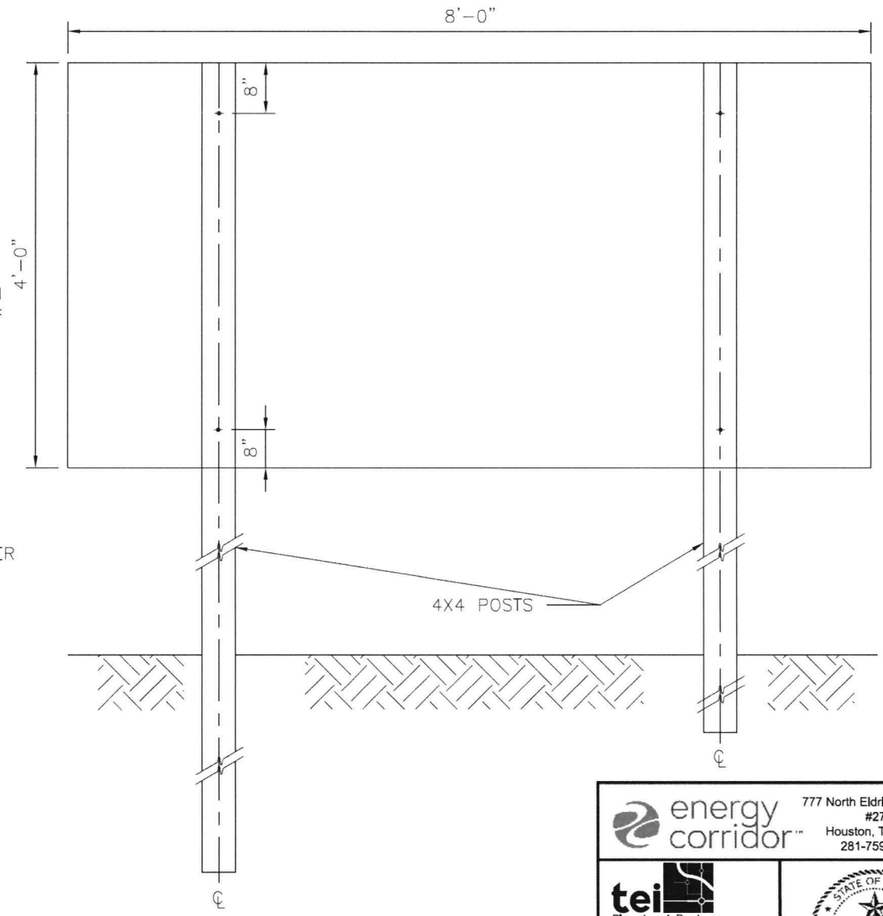


FRONT VIEW



BACK VIEW

NOTES:
1. ALLOWABLE POST INSTALLATION METHODS ARE: CONCRETE FOOTING, SURFACE MOUNTING, SKID MOUNTING AND PILE DRIVEN POSTS.

2. FOR POST INSTALLATION WITH CONCRETE FOOTINGS, REFER TO DETAIL 01554–01

3. FOR SURFACE MOUNTED POST INSTALLATION, REFER TO DETAIL 01554–02

4. FOR SKID MOUNTING REQUIREMENTS REFER TO SPECIFICATION 10582.

5. PILE DIRVEN POSTS MUST BE DRIVEN TO A MINIMUM DEPTH OF 4–FEET INTO EXISTING GROUND.

6. LAYOUT, TEXT SIDE, AND OVERALL DESIGN OF THE SIGN WILL BE RESPONSIBILITY OF THE BUILD HOUSTON COORDINATOR.

7. ALL SIGN POSTS, SIGN TUBING, AND SIGN FASTENERS SHALL BE GALVANIZED STEEL PER SPECIFICATION 01582.

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

tei Planning + Design
712 MAIN STREET, SUITE 950
(713) 270-8145
TBPE FIRM NUMBER F-3158
SURVEYED BY: CARLSON SURVEY
FB NO. N/A

STATE OF TEXAS
SARAH L. WETMORE
130442
LICENSED PROFESSIONAL ENGINEER
6/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PROJECT IDENTIFICATION SIGN

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
DRAWING SCALE	
AS NOTED	80162
CITY OF HOUSTON PIC	
JIADA HUANG	
SHEET NO. 69 OF 73	

RECEIVED
JUL 08 2025
HOUSTON, TEXAS

W:\00_TGC PROJECT FILES\GSM0123\CAD\XREFS\TBS\COVERSHEETS_HSIP24_COH_SET_AND_PKG.DWG, 2/1/2024 3:47 PM

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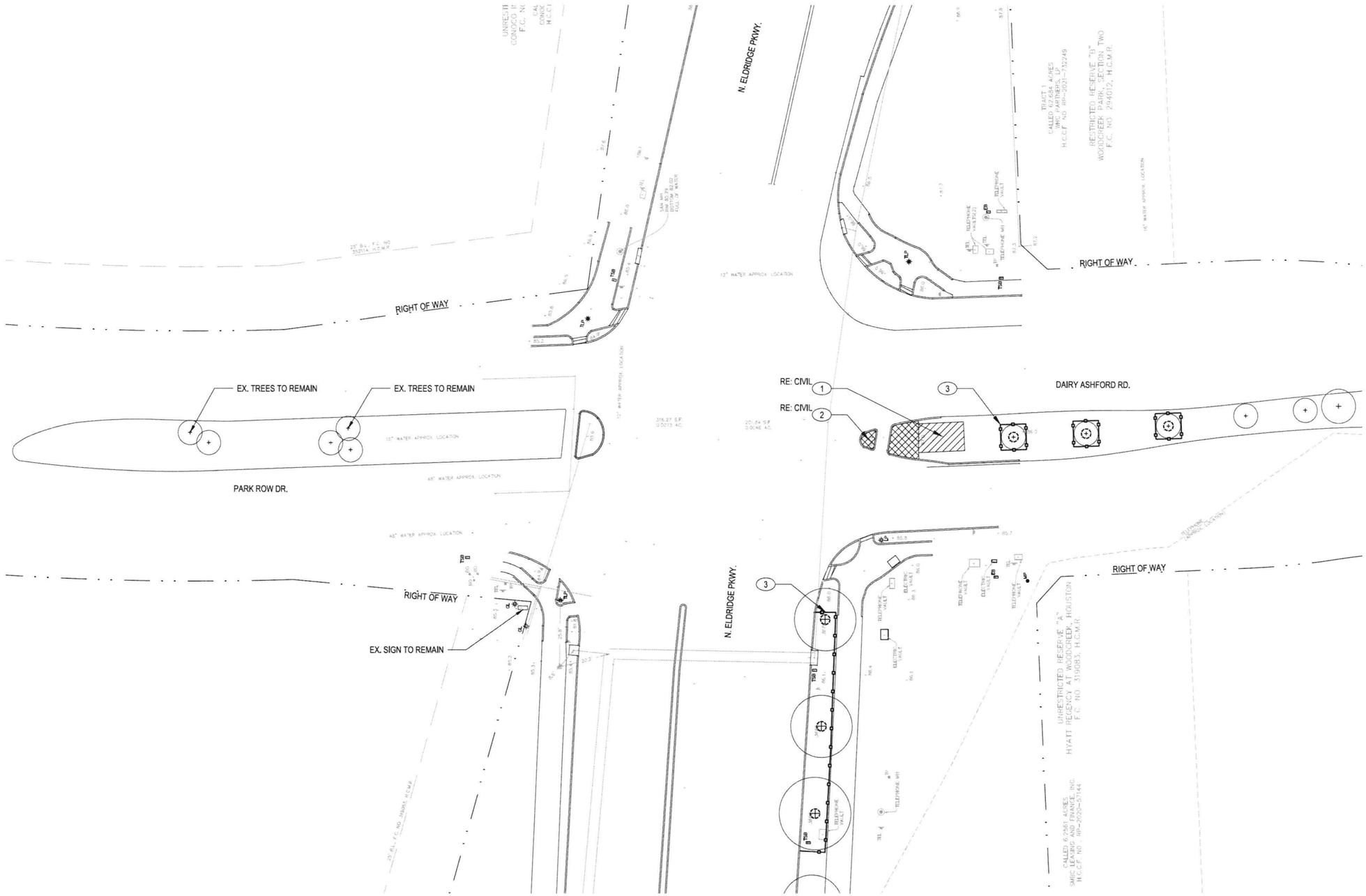

DEMOLITION LEGEND	
SYMBOLS	TYPE
1	EXISTING GROUNDCOVER & SEASONAL COLOR TO BE REMOVED. RE: CIVIL FOR EXTENTS
2	EXISTING SHRUBS TO BE REMOVED. RE: CIVIL FOR EXTENTS

TREE PROTECTION LEGEND	
+	EXISTING TREE TO REMAIN, TYP.
3	TREE PROTECTION FENCE RE: A/L1.02
	TREE PLANKING RE: D/L1.02

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

N

0 20 40 60

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor™
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

CLARK CONDON
HOUSTON TX TYLER TX CLARKCONDON.COM

SURVEYED BY: FB
NO. 000000

REGISTERED LANDSCAPE ARCHITECT ANDREW KONYHA 2858 STATE OF TEXAS
5/23/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TREE PROTECTION & LANDSCAPE DEMO

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-4	ACCEPTED
1" = 20'	
AS NOTED	80162
CITY OF HOUSTON POC	
JOSE LAGUNA	
SHEET NO. L1.01 70 OF 73	

J:\ENERGY CORRIDOR N. DAIRY ASHFORD 123-1484.0 WORKING FILES\4.2 CADM.22 SHEETS\L1.01 TREE PROTECTION & DEMO.DWG, 5/15/2025 10:48 PM

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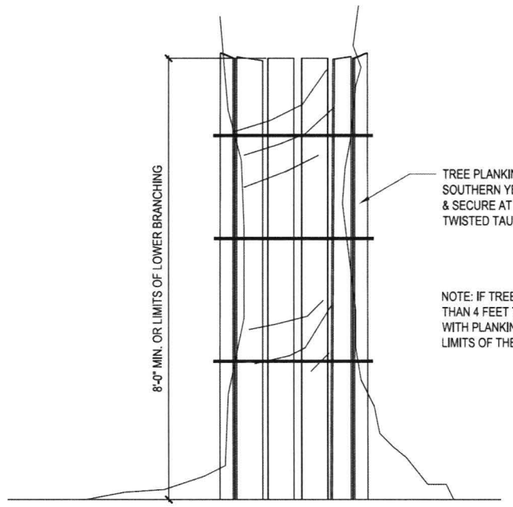
TREE PROTECTION NOTES

1. CONTRACTOR SHALL NOT ALLOW ANY VEHICULAR TRAFFIC, PARKING OF VEHICLES, OR STOCKPILING OF EXCAVATED MATERIAL OR CONSTRUCTION MATERIALS INSIDE OF TREE PROTECTION FENCING OR THE DRIPLINE OF TREES INDICATED TO BE PRESERVED.
2. CONSTRUCTION EQUIPMENT MAY OPERATE WITHIN THE DRIP LINE OF A TREE WHEN NECESSARY FOR THE PERFORMANCE OF INDICATED WORK. SUCH OPERATIONS SHALL BE CONDUCTED WITH SPECIAL CARE TO AVOID DAMAGING THE TREE.
3. WATER TREES INDICATED TO BE PRESERVED AS REQUIRED TO MAINTAIN THEIR HEALTHY GROWTH DURING THE COURSE OF CONSTRUCTION OPERATIONS.
4. PROTECT TREE ROOT SYSTEMS FROM DAMAGE DONE BY STRIPPING AND REGRADING. ALL EXCAVATION AND GRADING WORK SHALL BE DONE BY HAND TOOLS WHILE WORKING WITHIN TREE DRIPLINES.
5. PROTECT TREE ROOT SYSTEMS FROM DAMAGE DUE TO NOXIOUS MATERIALS IN SOLUTION CAUSED BY RUN-OFF OR SPILLAGE DURING MIXING AND PLACEMENT OF CONSTRUCTION MATERIALS, OR DRAINAGE FROM STORED MATERIALS.
6. MAINTAIN TREE PROTECTION FENCING IN GOOD CONDITION AT ALL TIMES. TREE PROTECTION FENCING SHALL BE IN PLACE PRIOR TO BEGINNING ANY WORK AND SHALL NOT BE REMOVED UNTIL ALL CONSTRICTION WORK IS COMPLETE.
7. SELECTED PRUNING SHALL BE PERFORMED AT THE DIRECTION OF OWNER'S REPRESENTATIVE. CONTRACTOR SHALL CLEAR ALL DEAD AND DELETERIOUS MATERIALS FROM THE SITE.

DEMOLITION NOTES

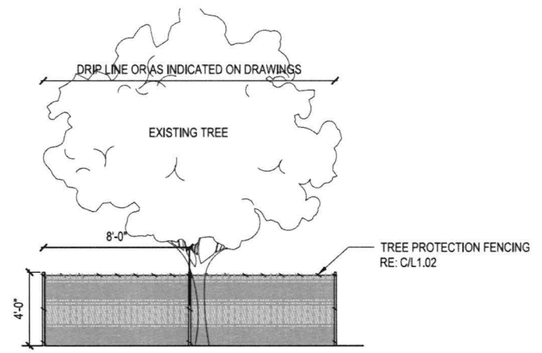
1. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UTILITIES PRIOR TO COMMENCING WORK. NOTIFY VARIOUS UTILITY COMPANIES A MINIMUM OF 48 HOURS PRIOR TO COMMENCING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR THE REPAIR OF ANY UTILITIES DAMAGED DURING CONSTRUCTION.
3. CONTRACTOR SHALL CONTACT OWNER FOR FIRST RIGHT TO REFUSAL FOR SALVAGE OF MATERIALS. ALL OTHER DEMOLISHED MATERIALS SHALL BE DISPOSED OF IN A LEGAL FASHION.
4. CONTRACTOR SHALL REPAIR AT NO COST TO THE OWNER ANY DAMAGE TO CURBS OR STREETS CAUSED BY CONSTRUCTION. REPAIRS TO BE IN ACCORDANCE WITH CITY OF HOUSTON STANDARDS.
5. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT ALL SPECIFIED EXISTING TREES ON SITE.
6. CONTRACTOR SHALL NOT PARK VEHICLES OR EQUIPMENT OR STOCKPILE MATERIALS UNDER THE DRIP LINE OF EXISTING TREES.
7. CONTRACTOR SHALL PROVIDE FOR ROUTINE MAINTENANCE IN AREAS OF CONSTRUCTION.
8. CONTRACTOR SHALL REPAIR DAMAGE TO GRADES AND LAWN CAUSED BY DEMOLITION.

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



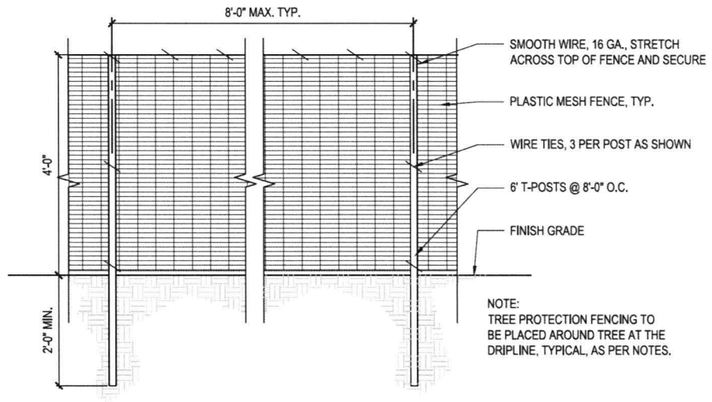
D TREE PLANKING

3/4" = 1'-0"



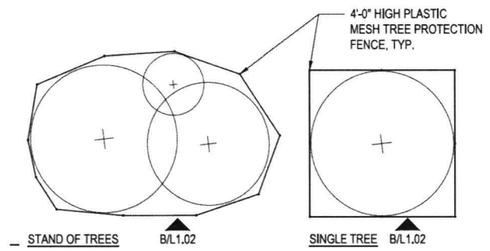
B TREE PROTECTION FENCING - ELEVATION

1/4" = 1'-0"



C TREE PROTECTION FENCE - PLASTIC MESH

3/4" = 1'-0"



A TREE PROTECTION FENCE - PLAN

1/8" = 1'-0"

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

CLARK CONDON

REGISTERED LANDSCAPE ARCHITECT ANDREW KONTRA 2855 STATE OF TEXAS 5/23/2025

SURVEYED BY: FB
NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TREE PROTECTION DETAILS & NOTES

N ELDRIDGE PARKWAY AT PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
1" = 20'	80162
AS NOTED	
CITY OF HOUSTON PW	
JOSE LAGUNA	
SHEET NO. L1.02 71 OF 73	

J:\ENERGY CORRIDOR N. DAIRY ASHFORD 123-1484.0 WORKING FILES\4.2 CAD\4.22 SHEETS\L1.02 TREE PROTECTION & DEMO DETAILS.DWG, 5/15/2025 10:50 PM

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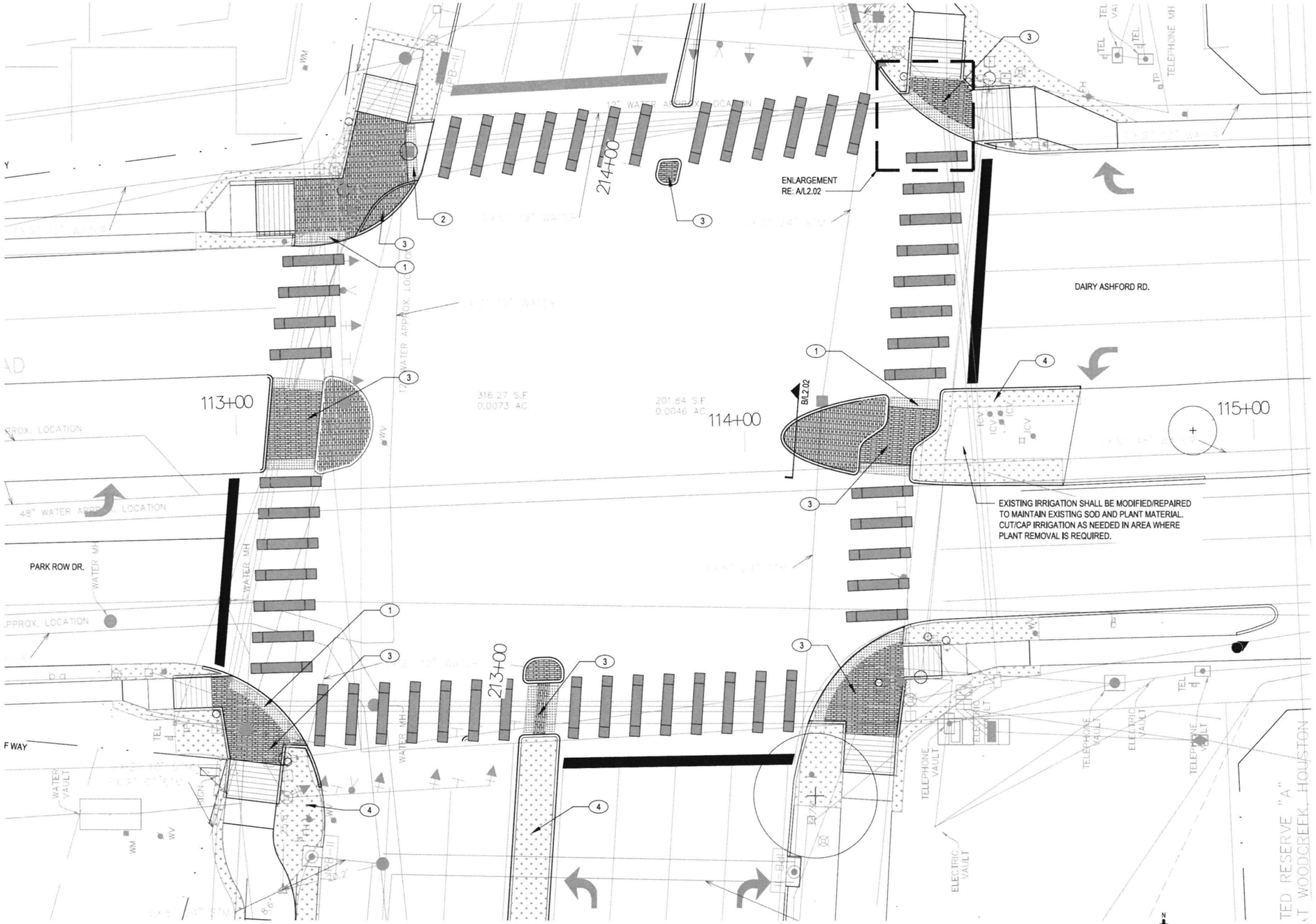

KEYNOTE LEGEND	
KEY	MATERIAL
1	TRUNCATED DOME PAVER RE: D/L2.02, SIM.
2	TRUNCATED DOME PAVER AT RAMP, RE: D/L2.02
3	CONCRETE PAVER RE: A/L2.02
4	SOLID SOD, RE: CIVIL
SYMBOLS	
ALIGN TYP.	ALIGN
℄	CENTERLINE

NOTE:
- SEE CIVIL PLANS FOR RAMP & CONCRETE WALK LAYOUT, DETAILS & NOTES.
- RE: CONCRETE PAVER DETAILS & MATERIAL SCHEDULE FOR TYPE, SIZE, AND PATTERN.
- EX. IRRIGATION SHALL BE REPAIRED WHERE REQUIRED TO MAINTAIN EXISTING PLANT MATERIAL AND SOD. CUT/CAP IRRIGATION WITHIN DEMOLITION AREAS WHERE IRRIGATION WILL NOT BE REQUIRED.

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

N
0 20 40 60

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

CLARK CONDON

SURVEYED BY: FB
NO. 000000

REGISTERED LANDSCAPE ARCHITECT ANDREW KONTRA 2858 STATE OF TEXAS
6/23/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LAYOUT & CONSTRUCTION PLAN

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0260-0002-7	
1" = 20'	80162
AS NOTED	
CITY OF HOUSTON PROJ.	
JOSE LAGUNA	
SHEET NO. L2.01 72 OF 73	

J:\ENERGY CORRIDOR N. DAIRY ASHFORD 123-1484.0 WORKING FILES\4.2 CAD\4.22 SHEETS\L2.01 LAYOUT & CONSTRUCTION PLAN.DWG, 6/23/2025 3:37 PM

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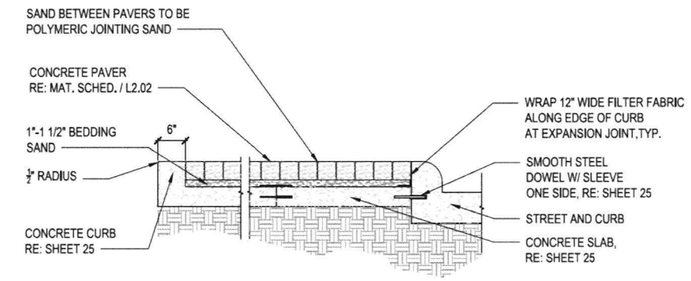
CONSTRUCTION NOTES

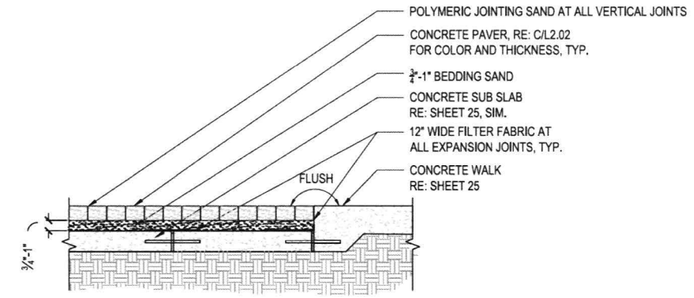
1. ALL DIMENSIONS ARE FROM FACE OF CURB AND CENTERLINE OF WALK.
2. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL EXISTING GRADES DAMAGED DURING CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING ANY DAMAGED UTILITIES AT NO ADDITIONAL COST TO THE OWNER.
4. EXISTING UNDERGROUND UTILITIES ARE NOT SHOWN CONTRACTOR TO CONTACT 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UTILITIES FIELD LOCATED.
5. ALL CONSTRUCTION TO COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES.
6. CONTRACTOR TO COORDINATE WORK WITH OTHER TRADES ON THE PROJECT.
7. CONTRACTOR SHALL BE FAMILIAR WITH ACTUAL SITE CONDITIONS BEFORE PROCEEDING WITH WORK.
8. ANY DISCREPANCIES BETWEEN ACTUAL SITE CONDITIONS AND THE CONSTRUCTION DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNERS REPRESENTATIVE IN A TIMELY MANNER TO NOT ADVERSELY AFFECT PROGRESS OF WORK.

MATERIAL SCHEDULE		
MATERIAL	SPECIFICATION	SUPPLIER AND CONTACT
TRUNCATED DOME PAVER	CITYSCAPE ADA 6" X 12", 60MM, CHARCOAL GRAY, STACKED RUNNING BOND	KEYSTONE HARDSCAPES, DAVE HASNESS (512) 787-1247
CONCRETE PAVER TYPE 1	VERONA 6" X 18", 80MM, PEWTER GRAY, RUNNING BOND	
CONCRETE PAVER TYPE 2	VERONA 3" X 12",80 MM, CHARCOAL GRAY, RUNNING BOND	



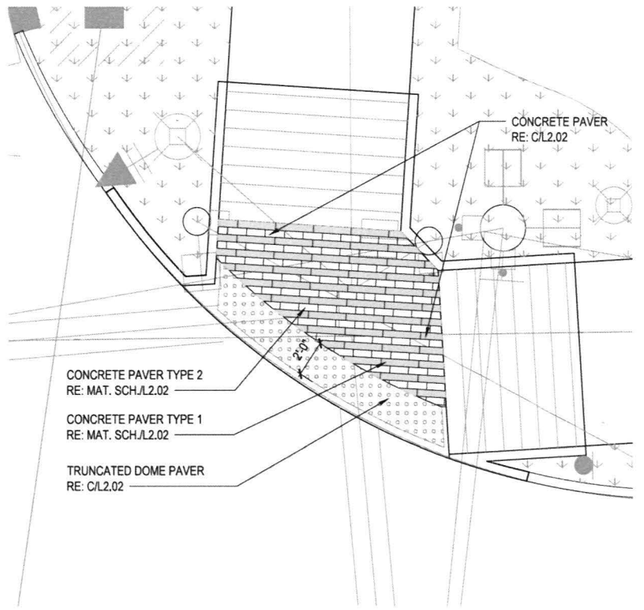
B PAVERS AT MEDIAN - SECTION

3/4" = 1'-0"



C PAVER @ CONC. PAVING - SECTION

3/4" = 1'-0"



A CORNER ENLARGEMENT - PLAN

1/4" = 1'-0"

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

energy corridor
777 North Eldridge Parkway
#270
Houston, TX 77079
281-759-3800

CLARK CONDON

SURVEYED BY: FB
NO. 000000

REGISTERED LANDSCAPE ARCHITECT ANDREW KONYHA 2858 STATE OF TEXAS 6/23/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CONSTRUCTION DETAILS

N ELDRIDGE PARKWAY AT
PARK ROW/NORTH DAIRY ASHFORD

WBS NUMBER
N-MD0260-0002-7
1" = 20'
AS NOTED
CITY OF HOUSTON PO
JOSE LAGUNA
SHEET NO. L2.02 73 OF 73

FOR CITY OF HOUSTON USE ONLY
ACCEPTED
80162
HOUSTON, TEXAS

CONT	SECT	JOB	HIGHWAY
0912	72	721	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

J:\ENERGY CORRIDOR N. DAIRY ASHFORD 123-149v4.0 WORKING FILES\4.2 CAD\4.22 SHEETS\L2.02 CONSTRUCTION DETAILS.DWG, 6/23/2025 3:36 PM

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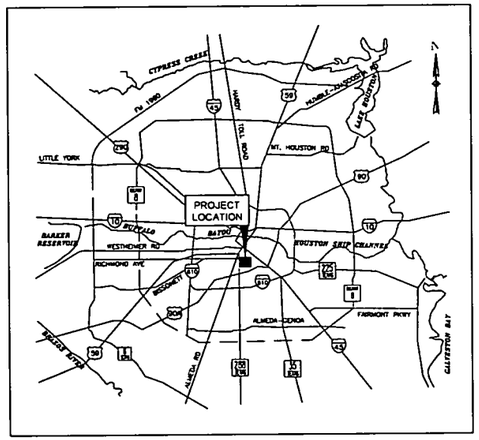
CITY OF HOUSTON SYSTEMIC SAFETY PROJECT

CONSTRUCTION PLANS FOR BRAYS BAYOU SAFE CROSSINGS

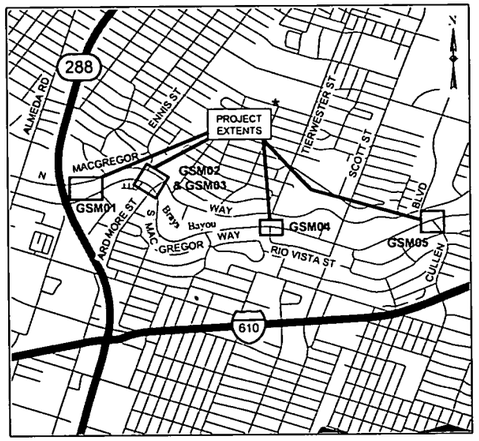
CSJ: 0912-72-720, ETC.

SUB-CSJ: 0912-72-750

WBS NO. N-MD0190-0003-7



LOCATION MAP
N.T.S.



VICINITY MAP
N.T.S.

COUNCIL DISTRICT D

KEY MAP NOS 533F, 533G, 533H
GIMS MAP NO 5355b, 5455a, 5455c, 5455b, 5455d

TDLR NO. TABS2024014638

Street Name	AADT (2022)	Speed Limit
N Macgregor Way (Near Hwy 288)	8,734	35 MPH
Ardmore St	3,890	35 MPH
S Macgregor Way (Near Hwy 288)	6647	30 MPH
S Macgregor Way (Near Rio Vista St)	2,952	30 MPH
S Macgregor Way (Near Cullen Blvd)	993	30 MPH

FLOOD PLAIN INFO:
PER FEMA PANEL NOS. 48201C0860L (JUNE 18, 2007) AND 48201C0880M (JANUARY 6, 2017) THE PROJECT AREA IS LOCATED WITHIN A FLOODWAY (BRAYS BAYOU) AND ZONES X (AREA OF MINIMAL FLOOD HAZARD) AND AE (100-YR FLOOD ZONE). BFE IS NOT PROVIDED.

THE CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, OFFICE OF THE CITY ENGINEER, 48 HOURS PRIOR TO STARTING WORK ON THIS PROJECT. TELEPHONE NO. (832) 394-9098.

TEXAS 811 NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
WWW.TEXAS811.ORG/ OR
TEXAS811 OR 1-800-344-8377

MAYOR
JOHN WHITMIRE

CONTROLLER
CHRIS HOLLINS

DISTRICT
COUNCIL MEMBERS

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

COUNCIL MEMBERS
AT-LARGE

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

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

THE GOODMAN CORPORATION
3200 TRAVIS, SUITE 200
HOUSTON, TEXAS 77006
www.TheGoodmanCorp.com
(713) 951-7951
TBPE/LS Firm Registration No. 13190

SURVEYED BY:
KUO & associates, Inc.
Consulting Engineers & Surveyors
10300 Westoffice Dr., Suite 800
Houston, TX 77042
Tel: (713) 975-8769
Fax: (713) 975-0920
www.kuoassociates.com
TX Engineering Firm Reg. No. F-4578
TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

NOTE: CITY SIGNATURE VALID FOR ONE YEAR ONLY, AFTER DATE OF SIGNATURE.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

DocuSigned by:
Johana Clark
808098A38F5E457...
Director of Houston Public Works

6/16/2025
Date.

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING
ACCEPTED
80114
CITY ENGINEER
HOUSTON, TEXAS

SHEET NO 1 of 70

C:\VOLUMES\THEGOODMANCORP\TGC-ENGINEERING\00_TGC PROJECT FILES\GSM\D12\CAD\GSM\D12\3_HSP24_COVERS_INDEX_DETAILS.DWG, 5/30/2025 1:20 PM

1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

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

B. KEY MAP: 533F, 533G & 533H

C. ADDRESS: 3203 N MacGregor Way, Houston, TX 77004 *Adjacent Address

II. LEGAL DESCRIPTION

A. ACREAGE: _____

B. ☒ SUBDIVISION: Riverside Terrace

☐ SURVEY & ABSTRACT: _____

C. ADJACENT ROADS: SH288, N MacGregor Way, S MacGregor Way, Ardmore St, Rio Vista St, Cullen Blvd

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

V. HCAD ACCOUNT NOS. (ALL)

N/A, City Right-of-Way

2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

☐ NEW DEVELOPMENT AREA: _____
☒ RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): 0.13 ACRE
☒ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION DETENTION PROVIDED WITHIN THE CITY ROW IN SWALES ALONG SIDEWALK SOUTH OF N MACGREGOR WAY.

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 CITY OF HOUSTON IDM 2023 FIGURE 9.2- MINIMUM DETENTION RATE CHART

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		DCTES	
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: 48201C0860L, 48201C0880M
FIRM PANEL(S) DATE: 6/18/2007, 1/6/2017
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. 8) (1% BASE FLOOD LEVEL 38, 37, 36, 35.3) (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 A.D.) RM 040070, ELEV. 37.62 FT NAVD88, 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.) 38-FT CUBIC YARDS 0

B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN: BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) 38-FT CUBIC YARDS 0 INCLUDING CALCULATIONS)

C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET 8

5. WORK IN HCFCD RIGHT-OF-WAY

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

A. BOND/NOTIFICATION INFORMATION
☒ HCFCD WATERSHED Brays Bayou
☒ HCFCD UNIT No. D100-00-00
☐ NUMBER OF OUTFALLS _____
☐ UTILITY CROSSING
☐ ROADWAY BRIDGE/CULVERT CROSSING
☐ FILL ACTIVITY
☐ REHABILITATION OF CHANNEL
☐ MAINTENANCE
☐ TEMPORARY CROSSING
☐ TRAIL (LENGTH) _____
☒ OTHER PAVING SIDEWALK WITH CONCRETE TO TIE INTO SH288 SERVICE RD.(8,200-SF)
COST OF WORK IN HCFCD ROW $110,000

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: The project does not discharge dredged or fill material into waters of the United States.

III. REFERENCE / BASIS OF DETERMINATION

☐ ENVIRONMENTAL CONSULTANT REPORT
BY _____
REPORT TITLE _____
REPORT DATE _____
Provided engineering calculations to determine no fill within the bayou
☒ OTHER flood way and "no rise certificate" for the City of Houston permit approval.

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 5 OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET 44 OF THESE PLANS.

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

VII. REFER TO THE FOLLOWING PLAN SHEETS: 19 & 30
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): INTERLOCAL HIKE AND BIKE TRAIL AGREEMENT 2018-0426
☐ HCFCD MAINTENANCE _____
☐ TURF ESTABLISHMENT _____
☐ OTHER _____

ACCEPTED
PUBLIC WORKS AND ENGINEERING
80114
CITY DRAINAGE
HOUSTON, TEXAS

HCFCD SIGNATURE BLOCK

PROJECT NAME: GREATER SOUTHEAST MANAGEMENT DISTRICT IMPROVEMENTS OF SIDEWALKS AND STREET CROSSINGS FOR BRAYS BAYOU SAFE CROSSINGS

ADDRESS: 3203 N MacGregor Way, Houston, TX 77004 *Adjacent 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 WITHIN EXISTING HCFCD RIGHT-OF-WAY

BY _____ 07/09/2024 PMM
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY
APPROVED:

BY _____
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY
NO REVIEW REQUIRED:

BY _____
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:

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

ENGINEER'S CERTIFICATION

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

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

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 70.

SIGNATURE _____ DATE _____

SEAL: STATE OF TEXAS — ASHISH GHOSH — 111103 — LICENSED — PROFESSIONAL ENGINEER — 06/19/2024

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. 2404010186

SHEET NUMBER 2 OF 70

HARRIS COUNTY FLOOD CONTROL DISTRICT REVIEW SHEET

VERSION 1.0 OCTOBER 2019

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NO.	DATE	REVISION	APP.

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

THE GOODMAN CORPORATION
3200 TRAVIS, SUITE 200
HOUSTON, TEXAS 77006
(713) 521-2951

KUO & associates, Inc.

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INDEX OF SHEETS

BRAYS BAYOU BIKE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	80114
AS NOTED	
CITY OF HOUSTON PCO	CITY DRAWING NUMBER
ARCHIE BLANCO	
SHEET NO. 3 OF 70	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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GENERAL NOTES

1. UNLESS OTHERWISE NOTED AND APPROVED ON DRAWINGS, CONSTRUCT CIVIL INFRASTRUCTURE IN ACCORDANCE WITH THE EFFECTIVE EDITION OF THE HOUSTON PUBLIC WORKS STANDARD CONSTRUCTION SPECIFICATIONS, STANDARD CONSTRUCTION DETAILS, AND SUPPLEMENTS, ADDENDA AND AMENDMENTS THERETO. THE LATEST EDITION OF THE ABOVE PUBLICATIONS CAN BE FOUND AT: http://www.houstonpermittingcenter.org/office-city-engineer/design-and-construction-standards.
2. THE DESIGN MUST BE CONSISTENT WITH THE EFFECTIVE EDITION OF HOUSTON PUBLIC WORKS INFRASTRUCTURE DESIGN MANUAL AND TCEQ (TEXAS COMMISSION ON ENVIRONMENTAL QUALITY) REQUIREMENTS.
3. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. UTILITIES MARKED WITHIN THE PUBLIC RIGHT OF WAY OR IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, RULE §18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE EFFECTIVE EDITION OF HOUSTON PUBLIC WORKS, STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEM, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC, REFERENCED ABOVE AND SUPPLEMENTS, ADDENDA AND AMENDMENTS THERETO, AT NO ADDITIONAL COST TO THE CITY OF HOUSTON.
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 AND TO THE SATISFACTION OF THE OWNING AUTHORITY.
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 AS-BUILT DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.

METROPOLITAN TRANSIT AUTHORITY OF HARRIS COUNTY (METRO) NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY METRO FACILITIES DAMAGED DURING CONSTRUCTION. IF THE CONTRACTOR CANNOT IMMEDIATELY MAKE REPAIRS TO METRO SATISFACTION, METRO WILL MAKE THE REPAIRS AND BILL THE COST TO THE CONTRACTOR.
2. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY IN THE FIELD THAT THERE ARE NO CONFLICTS WITH ELECTRICAL POWER, FIBER OPTICS, COMMUNICATION, SIGNALING, HIGH VOLTAGE CABLES OR ANY OTHER METRO INFRASTRUCTURE.
3. THE CONTRACTOR SHALL "HAND EXCAVATE" IN THE VICINITY OF COMMUNICATION AND POWER LINES FEEDING THE METRO SYSTEM.
4. THE CONTRACTOR SHALL CONTACT THE DIRECTOR OF UNIVERSAL ACCESSIBILITY, TIM MILLS, BY EMAIL TM14@RIDEMETRO.ORG OR PHONE (713) 739-6861 ONE WEEK PRIOR TO CONSTRUCTION. METRO MAY ASSIGN AN INSPECTOR TO ENSURE NO DAMAGES ARE MADE TO METRO'S FACILITIES. UNIVERSAL ACCESSIBILITY WILL COORDINATE ANY PERMANENT OR TEMPORARY IMPACT ON BUS STOPS, SHELTERS OR SIDEWALK TO MAINTAIN ACCESSIBILITY.
5. THE CONTRACTOR SHALL CONTACT METRO BUS OPERATIONS A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO CONSTRUCTION IMPACTING BUS STOPS OR ROUTES. THE METRO POINTS OF CONTACT ARE CARL TAYLOR, CARL.TAYLOR@RIDEMETRO.ORG, (713) 615-7219, AND SHIRLEY MITCHELL, SHIRLEY.MITCHELL@RIDEMETRO.ORG, (713) 615-7212.
6. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY BUS STOP FACILITIES NEEDED, EXCEPT FOR BUS STOP SIGNS, AT NO COST TO METRO AND SHALL RESTORE ANY AFFECTED BUS STOPS PER CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL AND MEET CURRENT AMERICAN DISABILITY ACT (ADA) REQUIREMENTS IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL CODE AND REQUIREMENTS. NO BUS STOP SHALL BE PERMANENTLY REMOVED WITHOUT APPROVAL FROM METRO.

CENTERPOINT ENERGY NOTES:

CAUTION: UNDERGROUND GAS FACILITIES

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

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

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

WARNING: OVERHEAD ELECTRICAL LINES

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

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

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

ACTIVITIES ON/OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

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

WARNING: UNDERGROUND ELECTRICAL UTILITIES

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

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

AT&T TEXAS/SWBT FACILITIES

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 ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.
6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER KEVIN RAY AT (713) 614-1983 OR E-MAIL HIM AT kr7896@att.com, IF CABLE LOCATE REQUESTS ARE NOT COMPLETED FOR OUR AT&T TEXAS/SWBT FACILITIES.

STORM WATER POLLUTION PREVENTION NOTES

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.
2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.
3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FORM THE EXCAVATED AREA.
4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.
5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

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

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

TREE PROTECTION NOTES

1. CONTRACTOR SHALL INSTALL TREE PROTECTION FENCING AT ANY/ALL LOCATIONS WHERE EXISTING TREES ARE WITHIN 15' OF PROPOSED IMPROVEMENTS. TREE PROTECTION SHALL BE AT A CONTINUOUS DISTANCE FROM THE DRIP LINE. TREE PROTECTION MATERIALS SHALL BE AS SPECIFIED IN DETAILS 01562-01 AND 01562-03. SEE GENERAL DETAILS.
2. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF ANY DEMOLITION AND/OR SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
3. ALL GRADING AND EXCAVATION WITHIN TREE ROOT ZONE AREAS SHALL BE DONE BY HAND TO MINIMIZE ROOT DAMAGE AND SOIL COMPACTION.
4. NO OPEN CUT WITHIN 15' OF TREES.

STREET AND BRIDGE CONSTRUCTION NOTES

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

STORM CONSTRUCTION NOTES

1. STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 2317-02, 02317-3, 02317-05, 02317-06, AND 02317-07 (JULY 2019) AS APPLICABLE UNLESS OTHERWISW SHOWN ON THE DRAWINGS.
2. ALL STORM SEWER CONSTRUCTED IN SIDELOT EASMENT SHALL BE R.C.P (C-76, CLASSIII) AND SHALL BE EMBEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 AS APPLICABLE.
3. ALL SEWER UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT/C.Y. STABLIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL.
4. ALL TRENCH BACKFILL SHALL BE IN 8" LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN EACH LIFT, AND MECHNICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMACTION TEST (ASTM D-698/AASHTO T99).
5. CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.
6. ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24" AND LARGER R.C.P. (C-76, CLASSIII).
7. ALL PRPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.
8. MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 48-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES. MINIMUM VERTICAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 24-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES.
9. ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02086-ADJUSTING MANHOLES, INLETS, AND VALAVE BOXES TO GRADE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK.
11. ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.
12. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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

Mike Brower — Date 06/10/25

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

Signature valid for six months.

Mike Brower — Date 06/10/25

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

Signature valid for six months.

Brian L Hill — 06/10/25 Date

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

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

THE GOODMAN CORPORATION
3200 TRAVIS, SUITE 200
HOUSTON, TEXAS 77006
(713) 951-7931

KUO

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

GENERAL NOTES

BRAYS BAYOU CORE CROSSINGS

WBS NUMBER	N-MD0190-0003-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PROJECT NO.	ARCHIE BLANCO
SHEET NO.	4 OF 70

FOR CITY OF HOUSTON USE ONLY
80114
CITY ENGINEER
HOUSTON, TEXAS

C:\VOLUMES\THEGOODMAN\SCRIPTOC-ENGINEER\WORK_TOC PROJECT FILES\SM01123\CADGSM0123_PLANS.DWG, 3/6/2025 1:40 PM

CONSTRUCTION NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE AND NOTIFYING THE ENGINEER OF ANY CHANGES IN SITE CONDITIONS THAT MAY IMPACT THE PROPOSED IMPROVEMENT PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL PROTECT EXISTING UTILITIES.
3. NOT ALL LEGEND ITEMS ARE APPLICABLE TO ALL SHEETS.
4. THE CONTRACTOR SHALL PROTECT ALL TREES IF NOT SPECIFICALLY MARKED FOR REMOVAL OR PRUNING. INSTALL TREE PROTECTION FENCE AROUND THE TREES TO BE PROTECTED, AND MAINTAIN DURING THE CONSTRUCTION WORK. BEFORE TREE PROTECTION AND SITE PREPARATION FOR ANY TREE REMOVAL, THE CONTRACTOR SHALL CONTACT THE CITY OF HOUSTON URBAN FORESTRY DEPARTMENT AT (832)395–8459. .
5. CONTRACTOR SHALL NOT REMOVE OR ALTER ANY ITEM WITHIN THE PRIVATE PROPERTY UNLESS SPECIFICALLY NOTED ON THE PLAN.
6. FOR WORK ADJACENT TO EXISTING STRUCTURES, UTILITIES, FENCE/WALL, ETC., WHICH IS NOT MARKED FOR REMOVAL OR RELOCATION, THE CONTRACTOR SHALL EXERCISE UTMOST CAUTION NOT TO DISTURB THE EXISTING ELEMENTS. IF DAMAGED DURING CONSTRUCTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIX THE DAMAGED ELEMENT TO MATCH ORIGINAL CONDITION OR MAKE IT BETTER.
7. EXISTING GROUND CONDITIONS ARE SUCH THAT STORM RUNOFF SHEET FLOWS FROM RESIDENTIAL PROPERTIES TO THE ROADWAY AND THEN INTO THE EXISTING CURB INLETS. THIS SHALL REMAIN UNCHANGED DURING AND AFTER CONSTRUCTION.
8. EXISTING DRAINAGE TO REMAIN UNCHANGED. PROPOSED SIDEWALK SHALL NOT IMPEDE SURFACE RUNOFF NOR CREATE PONDING AT ANY POINT ALONG PROPOSED ALIGNMENT, EXCEPT AT THE PROPOSED SWALES.
9. CONTRACTOR IS RESPONSIBLE FOR SELECTING ACTUAL ENTRANCE/EXIT LOCATIONS AND MAKING PROPER ARRANGEMENTS TO AVOID UTILITY, FACILITY AND TRAFFIC CONFLICTS AS REQUIRED. CRANE MAT OR SIMILAR DEVICES SHALL BE USED AS NEEDED.
10. CONTRACTOR SHALL TAKE PROPER PRECAUTIONS TO AVOID TRACKING SOIL & DEBRIS ONTO ROADWAY AND IS RESPONSIBLE FOR REMOVING ANY SOIL & DEBRIS INCIDENTAL TO CONSTRUCTION FROM ROADWAY AS SOON AS PRACTICABLE.
11. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND UTILIZING CONCRETE WASHOUT AREA/ CONTAINMENT DURING CONSTRUCTION AWAY FROM ROADWAY, STORM INLETS AND OPEN DITCHES. THE CONTRACTOR SHALL COLLECT 100% OF CONCRETE WASH WATER AND SOLIDS AND DISPOSE OFF LEGALLY AND IN ACCORDANCE WITH THE CITY CODE REQUIREMENTS.
12. INLET PROTECTION BARRIERS (SAND TUBE, SILT SACK OR SIMILAR) SHALL BE USED ON HARD SURFACES (E.G. CONCRETE DITCH EMBANKMENT AND ROADWAYS) WHERE SILT FENCE CANNOT BE INSTALLED. EXISTING CURB INLETS ADJACENT AND DOWNSTREAM TO THE PROJECT SHALL BE PROTECTED, INCLUDING THOSE ACROSS THE STREET. NOT ALL INLETS ARE SHOWN ON PLAN.
13. CONTRACTOR SHALL MINIMIZE DISTURBANCE OF EXISTING SURFACE DUE TO CONSTRUCTION WORK, MATERIAL STORAGE AND TRANSPORTATION OF MATERIAL AND EQUIPMENT. CONTRACTOR IS RESPONSIBLE FOR RESURFACING DISTURBED AREAS TO MATCH EXISTING CONDITIONS OR MAKE IT BETTER.
14. WATER METER/VALVE/SURFACE APPURTENANCE THAT IS IN CONFLICT WITH THE PROPOSED WORK TO BE BROUGHT TO GRADE.
15. UTILITY BOXES AND/OR MANHOLES/HANDHOLES LOCATED ON PROPOSED SIDEWALKS SHALL BE MADE FLUSH WITH FINISHED SURFACE, OR RELOCATED TO AVOID CONFLICT. COORDINATE WITH THE UTILITY OWNER PRIOR TO CONCRETE WORK. HEAVY DUTY MANHOLES OR COVERS SHALL BE USED ON SIDEWALKS AND ROADWAYS.
16. EXISTING POWER POLE, SIGNAL POLE ETC. ADJACENT TO THE PROPOSED WORK SHALL REMAIN UNDISTURBED UNLESS NOTED OTHERWISE.
17. NOTIFY ENGINEER PRIOR PROCEEDING WITH DEMOLITION/CONSTRUCTION WORK IF THERE IS A CONFLICT.
18. SAWCUT EXISTING CONCRETE WITHOUT DAMAGING THE PORTION THAT SHALL REMAIN IN PLACE. UTILIZE DOWEL TO CONNECT EXISTING CONCRETE SLAB/CURB TO NEW CONCRETE SLAB/CURB. FLUSH NEW CONCRETE SURFACE WITH EXISTING CONCRETE SURFACE.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE TRAFFIC SIGNALS INFRASTRUCTURES. THE CONTRACTOR SHALL REPLACE OR REPAIR TO ITS ORIGINAL CONDITIONS ANY PARTS DAMAGED DURING CONSTRUCTION, INCLUDING BUT NOT LIMITED TO DETECTION, SIGNAL WIRES, PEDESTRIAN SIGNALS AND PUSH BUTTONS, SIGNAL AND PEDESTRIAN POLES, MAST ARMS, CABINET, POWER SUPPLY TO THE CABINET, SIGNAL HEADS, RAMPS, SIGNS AND PAVEMENT MARKINGS.
20. SIDEWALKS ARE TO BE CONSTRUCTED SEPARATELY TO MAINTAIN PEDESTRIAN ACCESS AND TRANSIT ACCESS TO ADJACENT DESTINATIONS AT ALL TIMES. AT NO TIME, ON ANY SECTION OF THE PROJECT CORRIDOR, SHALL SIDEWALKS, ON EITHER SIDE OF THE PROJECT CORRIDOR, BE BLOCKED. FOR WORK AT THE INTERSECTION, ONE CORNER SHALL BE WORKED ON AT A TIME AND ALTERNATE ACCESS SHALL BE PROVIDED TO ALLOW ACCESS TO THE ADJACENT PROPERTIES AND FACILITIES.
21. CONTRACTOR IS RESPONSIBLE FOR ACQUIRING THE CITY PERMIT AND WRITTEN APPROVAL FROM PROJECT ENGINEER ON TRAFFIC CONTROL PLAN BEFORE MOBILIZING FOR THE PROJECT. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM THE PROJECT ENGINEER FOR LANE CLOSURE SCHEDULE AND DURATION PRIOR IMPLEMENTATION.
22. THE PROJECT INCLUDES STREET LIGHTING IMPROVEMENTS BY CENTERPOINT ENERGY (CNP) THROUGH AN AGREEMENT WITH THE CITY OF HOUSTON. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH CNP AND SCHEDULE WORK AROUND CNP'S WORK TO AVOID REWORK. THE CONTRACTOR MAY NEED TO SCHEDULE MOBILIZATION OF WORK AFTER COMPLETION OF STREET LIGHTING IMPROVEMENT WORK, IF NEEDED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF THERE IS ANY CONFLICT WITH PROPOSED IMPROVEMENT.
23. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH AT&T AND COMCAST, AND SUPPORT THEIR UTILITY RELOCATION WORK DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF THERE IS ANY CONFLICT WITH PROPOSED IMPROVEMENT.
24. IN CASE OF CONFLICTING REQUIREMENTS BY VARIOUS JURISDICTIONS, MOST STRINGENT REQUIREMENTS WILL APPLY. NOTIFY ENGINEER IMMEDIATELY AS SOON AS SUCH CONFLICT IS NOTICED.

STANDARD HCFCD NOTES FOR CONSTRUCTION DRAWINGS:

1. OBTAIN AND COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE, AND FEDERAL PERMITS AND APPROVALS, WITH ASSISTANCE FROM ENGINEER, IF NECESSARY. OBTAIN PERMIT (CERTIFICATION) FROM HARRIS COUNTY ENGINEER TO ENTER HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT–OF–WAY.
2. NOTIFY THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S DEVELOPMENT COORDINATION AND INSPECTION DEPARTMENT IN WRITING AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. SUBMIT THE HCFCD 48 HOUR PRE–CONSTRUCTION NOTIFICATION FORM, A COPY OF THE APPROVED CONSTRUCTION DRAWINGS, AND A COPY OF THE CORPS OF ENGINEERS INDIVIDUAL SECTION 404 PERMIT OR COMPLIANCE WITH NATIONWIDE PERMIT, IF APPLICABLE, TO HCFCD, 9900 NORTHWEST FREEWAY, HOUSTON, TEXAS 77092, ATTN: DEVELOPMENT COORDINATION AND INSPECTION DEPT. BY HAND DELIVERY, BY EMAIL DCID@HCFCD.ORG, OR FAXTO713–684–4129 (FAX NUMBER).
3. ENGINEER SHALL SUBMIT CERTIFICATION LETTER AND RECORD DRAWINGS TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S DEVELOPMENT COORDINATION AND INSPECTION SECTION REQUESTING INSPECTION OF ITEMS CONSTRUCTED IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT–OF–WAY. PRIOR TO REQUESTING INSPECTION, THE DRAINAGE RIGHT–OF–WAY AND/OR EASEMENTS SHALL BE STAKED AND FLAGGED.
4. PROTECT, MAINTAIN, AND RESTORE EXISTING BACK SLOPE DRAINAGE SYSTEMS.
5. BACK SLOPE SWALE AND INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
6. ESTABLISH TURF GRASS ON ALL DISTURBED AREAS WITHIN THE CHANNEL OR DETENTION RIGHT–OF–WAY, EXCEPT THE CHANNEL BOTTOM AND WHERE STRUCTURAL EROSION MEASURES ARE USED. MINIMUM ACCEPTANCE CRITERIA ARE 75% COVERAGE OF LIVE BERMUDA GRASS AND NO EROSION OR RILLS DEEPER THAN 4".
7. PERFORM ALL ACTIVITIES WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT–OF–WAY IN ACCORDANCE WITH THE MOST RECENT HARRIS COUNTY FLOOD CONTROL DISTRICT STANDARD SPECIFICATIONS BOOK.
8. EXCAVATE CHANNEL FLOW LINE 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 FLOODPLAIN AREA WITHOUT FIRST OBTAINING A FILL PERMIT FROM THE APPROPRIATE JURISDICTIONAL AUTHORITY.

SHEET REFERENCES:

1. REFER TO SHEET 3 AND 4 FOR GENERAL NOTES, CONSTRUCTION NOTES, LEGENDS AND ABBREVIATIONS.
2. REFER TO SHEETS 9 AND 10 FOR SURVEY CONTROLS, COORDINATES, BENCHMARK, AND ALIGNMENT INFORMATION.
3. REFER TO SHEET 25 THRU 27 FOR WATERLINE REPLACEMENT PLANS.
4. REFER TO SHEET 33 THRU 58 FOR LANDSCAPING PLAN AND DETAILS SHEET.
5. REFER TO SHEETS 63 FOR TRAFFIC CONTROL LAYOUT AND NOTES. FOR WORK ON W TIDWELL RD, SINGLE LANE CLOSURE OR FLAGGER SHALL BE UTILIZED FOR TRAFFIC CONTROL. CONFORM TO TMUTCD REQUIREMENTS FOR ILLUMINATION AND FLASHING WARNING LIGHTS DURING PERIODS OF DARKNESS.
6. REFER TO SHEET 67 AND 67A FOR EROSION AND SEDIMENT CONTROL PLAN.
7. REFER TO SHEET 69 FOR METRO BUS PAD DETAILS AND NOTES.

CONSTRUCTION SEQUENCE:

THE CONTRACTOR SHALL INSTALL TRAFFIC SIGNALS PRIOR TO CONSTRUCTING CURB RAMPS AND ROADWAY CROSSINGS. THESE FACILITIES SHALL ONLY BE OPENED FOR USE ONCE THE SIGNALS ARE FULLY OPERATIONAL TO ENSURE THE SAFETY OF PEDESTRIANS AND BICYCLISTS.

ABBREVIATIONS:

&	AND
@	AT
ABND	ABANDONED
AC	ACRE / ASBESTOS CEMENT
AI/VR	AIR INLET / VACUUM RELIEF
APPROX	APPROXIMATELY
AMS	ARDMORE ST
ASPH	ASPHALT
AVE	AVENUE
B/B	BACK TO BACK
BBGW	BRAYS BAYOU GREENWAY
BC	BACK OF CURB
BFV	BUTTERFLY VALVE
BL	BASELINE / BUILDING LINE
BLDG	BUILDING
BLVD	BOULEVARD
CL	CENTER LINE
CLB	CULLEN BLVD
C/C	CENTER TO CENTER
CMP	CORRUGATED METAL PIPE
CIP	CAST IRON PIPE
CLR	CLEAR / CLEARANCE
CO	CLEAN OUT
COH	CITY OF HOUSTON
CONC	CONCRETE
CONSTR	CONSTRUCTION
CNP	CENTERPOINT ENERGY
CSJ	CONTROL SECTION JOB NUMBER
CTRT	COLUMBIA TAP RAIL TRAIL
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DRIVE
DWG	DRAWING
DWS	DETECTABLE WARNING SURFACE
DWY	DRIVEWAY
E	EAST
EL	ELEVATION
EP	EDGE OF PAVEMENT
ESMT	EASEMENT
EXST	EXISTING
FC	FACE OF CURB
F/F	FACE TO FACE
FH	FIRE HYDRANT
FL	FLOW LINE
FM	FORCE MAIN
FNDN	FOUNDATION
FT	FEET
GV	GATE VALVE
GV&B	GATE VALVE AND BOX
HCFCD	HARRIS COUNTY FLOOD CONTROL DISTRICT
HDPE	HIGH–DENSITY POLYETHYLENE
HSIP	HIGHWAY SAFETY IMPROVEMENT PROGRAM
HGL	HYDRAULIC GRADE LINE
HH	HAND HOLE
HP	HIGH PRESSURE
INCL	INCLUDE/INCLUDING
INV	INVERT
IP	IRON PIPE
IR	IRON ROD
JB	JUNCTION BOX
JT	JOINT
JUNCT	JUNCTION
LF	LINEAR FEET
LN	LANE
LPT	LOW POINT
LT	LEFT / LIGHT
LS	LUMP SUM
MAX	MAXIMUM
METRO	METROPOLITAN TRANSIT AUTHORITY
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MPL	METAL POLE LIGHT
N	NORTH
NA	NOT APPLICABLE
NAVD	NORTH AMERICAN VERTICAL DATUM
NFIF	NOT FOUND IN FIELD
NG	NATURAL GROUND
NMW	N MAGREGOR WAY
NO	NUMBER
NTS	NOT TO SCALE
OFS	OFFSET
OH	OVERHEAD
PAV	PAVEMENT
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVATURE
PERM	PERMANENT
PGL	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PNT	POINT
PP	POWER POLE
PRC	POINT OF REVERSE CURVATURE
PROP	PROPOSED
PSI	POUND PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE PIPE / POINT OF VERTICAL CURVATURE
PVMT	PAVEMENT
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
R	RADIUS
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REFL	REFLECTIVE
REINF	REINFORCED
RVS	RIO VISTA ST
RJ	RESTRAINED JOINT
ROW	RIGHT OF WAY
RR	RAILROAD
RPM	REFLECTIVE RAISED PAVEMENT MARKERS
RT	RIGHT
S	SOUTH
SAN	SANITARY
SCHED	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SMW	S MACGREGOR WAY
SS	SANITARY SEWER
SSE	SANITARY SEWER EASEMENT
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STM	STORM
SWBT	SOUTHWESTERN BELL TELEPHONE
SWR	SEWER
SY	SQUARE YARD
TAN	TANGENT
TBM	TEMPORARY BENCHMARK
TEMP	TEMPORARY
TOB	TOP OF BANK
TOC	TOP OF CURB
TOP	TOP OF PAVEMENT
TOS	TOE OF SLOPE / TOP OF STACK
TS&V	TAPPING SLEEVE AND VALVE
TXDOT	TEXAS DEPARTMENT OF TRANSPORTATION
TYP	TYPICAL
UE	UTILITY EASEMENT
UG	UNDERGROUND
VERT	VERTICAL
VC	VERTICAL CURVE
VPI	VERTICAL POINT OF INTERSECTION
W	WEST
W/	WITH
WL	WATER LINE
WLE	WATER LINE EASEMENT
WM	WATER METER
WP	WOOD POLE
WPL	WOOD POLE LIGHT
WSEL	WATER SURFACE ELEVATION
WV	WATER VALVE
WWTP	WASTE WATER TREATMENT PLANT

LEGEND(EXISTING SURVEY):

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- REFERENCE INFORMATION (FROM RECORD DRAWING)
- SBC MANHOLE
- SIGN
- SIGNAL POLE
- SPRINKLER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE–CREPE MYRTLE
- TREE–PINE
- UTILITY MARK
- WATER METER
- WATER VALVE
- BOREHOLE
- BRUSH ROW
- DITCH/SWALE CENTER LINE
- EASEMENT OR BUILDING LINE
- FENCE
- GAS LINE
- GUARD RAIL
- HEDGE ROW OR TREE LINE
- HIGH BANK
- OVERHEAD POWER LINE WITH OR W/O CABLE
- SANITARY SEWER LINE
- SANITARY FORCE MAIN
- STORM LINE
- TELEPHONE LINE
- UG STREET LIGHT CABLE
- WATER LINE

LEGEND (PROPOSED IMPROVEMENTS):

- INSTALL SIDEWALK
- INSTALL DETECTABLE WARNING SURFACE
- INSTALL RAMP
- INSTALL SOD
- INSTALL REFL PVMT MARKING
- INSTALL TREE PROTECTION
- 2% SLOPE / FLOW DIRECTION
- R15' RADIUS 15-FT
- INSTALL CURBED MEDIAN/RAISED ISLAND/CURB EXTENSION
- EXISTING TRAVEL WAY (NOT PAVEMENT MARKING)

REMOVAL LEGEND

- AREA OF DISTURBANCE
- REMOVE CONCRETE CURB
- REMOVE ITEM AS NOTED
- REMOVE CONCRETE SIDEWALK/ ASPHALT DRIVEWAY/MEDIAN
- XX REMOVAL QUANTITY
- IPS INLET PROTECTION BARRIER / SAND TUBE
- RSF REINFORCED SILT FENCE
- ECL EROSION CONTROL LOG

NO.	DATE	REVISION	APP.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
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01/30/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CONSTRUCTION NOTES, LEGENDS AND ABBREVIATIONS

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	N-MD0190-0003-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	ARCHIE BLANCO
SHEET NO.	5 OF 70

FOR CITY OF HOUSTON USE ONLY

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
80114
CITY DRAWING NUMBER
Approval Date 08/27/26
HOUSTON TX

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SUMMARY OF QUANTITIES

Item No.	Section No.	Item Description	UOM	Quantity
B1. GENERAL				
1	01502	Mobilization (Includes Insurance and Bonds)	LS	1
2	01555	Traffic Control And Regulation (Including Lane Closures, Signage, Etc.)	LS	1
3	01555	Flagmen (including Uniformed Officer)	LS	1
4	01562	Tree and Plant Protection	EA	27
5	01570	Storm Water Pollution Prevention Control (Including Furnish & Install, Inspection, Maintenance and Removal)	LS	1
6	02233	Clearing And Grubbing	AC	0.35
7	05501	Metal Fabrications- Install Galvanized Steel Bollard	EA	1
8	09901	Protective Coatings- Reflectorized Paint on Bollard	EA	2
9	02922	Furnish and Install Sodding	SY	754
B2. DEMOLITION				
10	02221	Remove and Dispose Existing Sidewalks, Curb Ramps, Driveways, and Islands, With or Without Pavers, All Depths and Materials	SY	104
11	02221	Remove and Dispose Existing Concrete Curb or Curb and Gutter	LF	63
B3. TRAFFIC SIGNAL				
12	02890	Furnish and Install Rectangular Rapid Flashing Beacon (2-Way Solar), Complete in Place	EA	4
B4. PAVING				
13	02771	Furnish and Install Monolithic Curb, Complete in Place	LF	60
14	02771	Furnish and Install Monolithic Curb and Gutter, Complete in Place	LF	33
15	02775	Furnish and Install 4 ½-inch Thick Concrete Sidewalk, Complete in Place	SF	4,905
16	02317	Furnish and Install Select Fill, Complete in Place	CY	2
17	02775	Furnish and Install Truncated Dome Detectable Warning Surfaces, Complete in Place (not part of Wheelchair Ramp)	SF	33
18	02315	Roadway Excavation (Minor Grading for Swale), Complete in Place	CY	130
19	02922	Furnish and Install Clean Bank Sand Wrapped in Geotextile Fabric (at the bottom of Swale), complete in place	CY	34
B5. PAVEMENT MARKING AND SIGNAGE				
20	01554	Traffic Control and Street Signs - Furnish and Install **Ground Mounted Sign Assembly** (Include Sign(s), Plaque(s), Pole(s), Foundation, Mounting(s), and Hardware, Complete in Place)	EA	7
21	01555	Traffic Control and Street Signs - Furnish and Install Hard Surface Mounted Sign Assembly (Include Sign(s), Plaque(s), Pole(s), Foundation, Mounting(s), and Hardware, Complete in Place)	EA	1
22	01554	Traffic Control and Street Signs - Furnish and Install Existing Sign on Another Existing Pole (Include Mounting(s), and Hardware, Complete in Place)	EA	2
23	01555	Traffic Control and Street Signs - Relocate existing sign(s) with Pole on Hard Surface (Include Mounting(s), and Hardware, Removal of existing pole & foundation, Complete in Place)	EA	4
24	01555	Traffic Control and Street Signs - Relocate existing sign(s) with pole on Ground (Include Mounting(s), and Hardware, Removal of existing pole & foundation, Complete in Place)	EA	1
25	01580	Project Identification Signs (Include Fabrication, Installation, Maintenance and Removal)	EA	2
26	01554	Remove and Dispose Existing Sign Assembly, Including Pole and Foundation	EA	5
27	02762	Blast Cleaning of Pavement Markings- Lines All Width	LF	866
28	02767	Reflectorized Yellow Paint on Curb- Furnish and Install, Complete in Place	LF	548
29	02765	Preformed Pavement Markings- All White Bike Symbols- Furnish and Install, Complete in Place	EA	24
30	02765	Preformed Pavement Markings - Type C -Bike & Ped Crossing - All Color- Furnish and Install, Complete in Place	SF	408
31	02767	Thermoplastic Pavement Markings - WS4- Furnish and Install, Complete in Place	LF	563
32	02767	Thermoplastic Pavement Markings - WS12- Furnish and Install, Complete in Place	LF	326
33	02767	Thermoplastic Pavement Markings - WS24- Furnish and Install, Complete in Place	LF	368
34	02767	Thermoplastic Pavement Markings - YDS4- Furnish and Install, Complete in Place	LF	606
C. EXTRA WORK				
35	02318	Hand Excavation	CY	10
36	02318	Machine Excavation	CY	10
37	02318	Excavation Around Obstructions	CY	10
38	02318	Placement of Backfill Material	CY	2
39	02318	Cement Stabilized Sand	SY	10
40	02581	Furnish and Install CenterPoint Street Light Conduit (2" PVC), w/ stub ups & warning tape (warning tape supplied by CNP)	LF	675
41	02581	Install CenterPoint Street Light Pull Box (Pull Box supplied by CNP)	EA	3
D. CASH ALLOWANCE				
42	Allowance	Permit Fees (FMO Floodway, Street Cut, Etc.)	LS	1
43	Allowance	Streetlighting Modifications (By CenterPoint Energy)	LS	1

SUMMARY OF SIGNS

Sheet No.	Sign No.	Sign Designation	Sign Content	Sign Dimensions (Inches)	Square Post	Signal Mount	Round Post (Permission Needed From COH Traffic)	Sign Area (Sq. Ft.) (For info. Only, not for bid)	Signal Post (1 or 2)
27	1	R1-2	YIELD	36x36x36	X			4	1
27	2	R1-5B	STOP HERE FOR PEDESTRIANS	36x36	X			9	1
27	3	R1-5B	STOP HERE FOR PEDESTRIANS	36x36	X			9	1
27	4	W11-2	PEDESTRIAN	36x36	X			9	1
27	5	W11-2	PEDESTRIAN	36x36	X			9	1
27	6	W16-7PL	DIAGONAL ARROW LEFT	24x12	X			2	1
27	7	W16-7PR	DIAGONAL ARROW RIGHT	24x12	X			2	1
28	8	R1-5B	STOP HERE FOR PEDESTRIANS	36x36	X			9	1
28	9	R1-5B	STOP HERE FOR PEDESTRIANS	36x36	X			9	1
28	10	W11-2	PEDESTRIAN	36x36	X			9	1
28	11	W11-2	PEDESTRIAN	36x36	X			9	1
28	12	W16-7PL	DIAGONAL ARROW LEFT	24x12	X			2	1
28	13	W16-7PR	DIAGONAL ARROW RIGHT	24x12	X			2	1
29	14	W11-1	BICYCLE	30x30	X			1	1
29	15	W11-1	BICYCLE	30x30	X			1	1
29	16	W16-9P	AHEAD	24x12	X			2	1
29	17	W16-9P	AHEAD	24x12	X			2	1
30	18	W11-1	BICYCLE	30x30	X			1	1
30	19	W11-1	BICYCLE	30x30	X			1	1
30	20	W16-9P	AHEAD	24x12	X			2	1
30	21	W16-9P	AHEAD	24x12	X			2	1

NOTE: SIGNAL POST SIZE - 1-3/4"x-1-3/4" (14 GAUGE)

TRAFFIC SIGNS

R1-5B
36x36

W11-2
36x36

W16-7PL
24x12

W16-7PR
24x12

W11-1
30x30

W16-9P
24x12

R1-2
36x36x36

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
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02/06/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SUMMARY OF QUANTITIES

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED
DRAWING SCALE	80114 CITY DRAWING NUMBER
AS NOTED	Approval Date 08/27/26
CITY OF HOUSTON POC	HOUSTON TX
ARCHIE BLANCO	
SHEET NO. 6 OF 70	

NO.	DATE	REVISION	APP.

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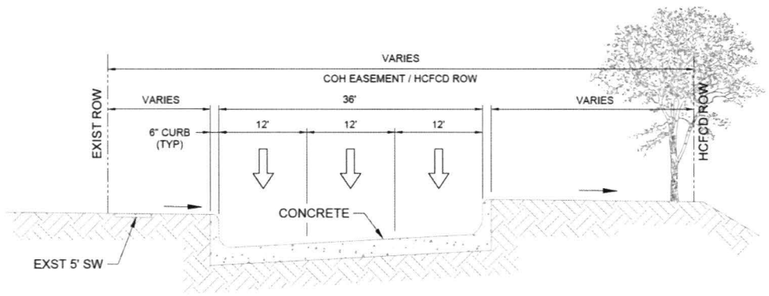
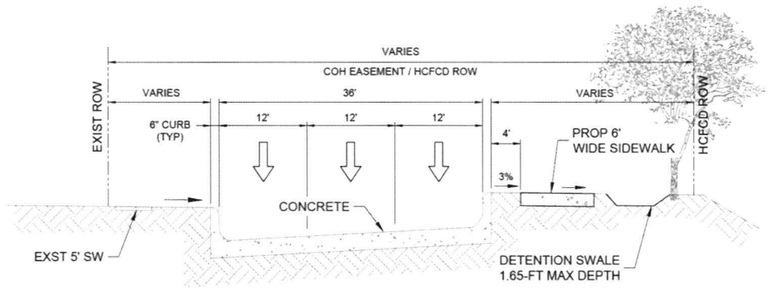


N MACGREGOR WAY - EXISTING TYPICAL SECTION

NTS

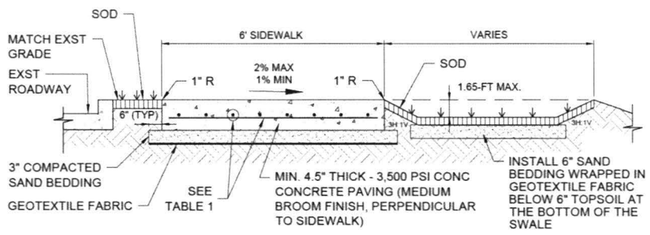
NOTES:

1. TYPICAL SECTIONS PROVIDE GENERAL INFORMATION FOR PROPOSED IMPROVEMENT RELATIVE TO EXISTING CONDITION. REFER TO PLAN SHEETS AND DETAILS FOR PROJECT SPECIFIC INFORMATION.
2. TYPICAL WIDTH OF PROPOSED SIDEWALK IS 6-FT WITH 4-FT SAFETY BUFFER FROM BACK OF CURB. REFER TO THE PLANS FOR ACTUAL LOCATION AND DIMENSION.



N MACGREGOR WAY - PROPOSED TYPICAL SECTION

NTS



CONCRETE SIDEWALK WITH DETENTION SWALE DETAIL

NTS

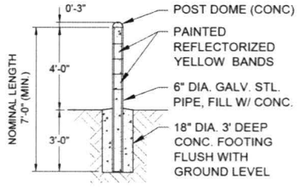
NOTES:

1. REFER TO THE CITY OF HOUSTON SIDEWALK DETAIL FOR ADDITIONAL INFORMATION.
2. REMOVE TOP SOIL AND REGRADE SURFACE TO CREATE SWALE. THE PAYMENT FOR THIS WORK SHALL BE INCLUDED IN CLEAR AND GRUB (SPECIFICATION 02233).
3. BE CAREFUL NOT TO DAMAGE TREE ROOTS.
4. NOTIFY ENGINEER IF IN CONFLICT.
5. INSTALL SOD TO COVER GRADED SURFACE. THE PAYMENT FOR THIS WORK SHALL BE INCLUDED IN SODDING (SPECIFICATION 02922).
6. SIDEWALK OR S.U.P. EXPANSION JOINTS ARE TO BE AT A MAX. SPACING OF 40' AND COINCIDE WITH THE CURB EXPANSION JOINTS, IF ATTACHED. TOOLED OR SAWED CONTRACTION JOINTS ARE NOT ALLOWED.
7. IF SIDEWALK IS INSTALLED ABUTTING CONCRETE CURB, USE #4 DOWEL @ 18", 8" LONG, EMBEDDED A MIN OF 3" INTO CURB.
8. FILL GAP BETWEEN CURB AND SIDEWALK SLAB USING FLEXIBLE EPOXY SEALANT OF MATCHING COLOR APPROVED BY THE ENGINEER.

TABLE 1

REINFORCING STEEL INFORMATION
FOR 4 1/2" THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
FC' = 3,500 PSI AND FY = 60,000 PSI

SIDEWALK REINFORCEMENT INFORMATION					
SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL # 3 BARS			TRANSVERSE STEEL # 3 BARS SPACING (IN)
		NO. BARS	SPACING (IN)	END SPACING (IN)	
4.5	5	3	27	3	48
4.5	6	4	22	3	48
4.5	8	6	18	3	36
5	10	7	19	3	18

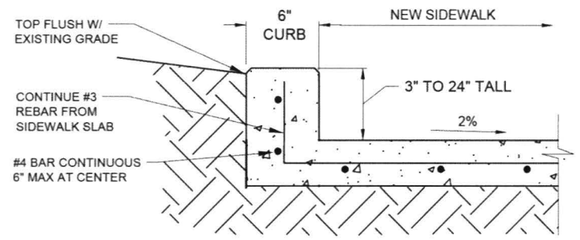


NOTES:

1. BOLLARDS SHALL BE 4" DIAMETER GALVANIZED STEEL PIPE SET IN 36" OF CONCRETE AT LEAST 18" IN DIAMETER. THE INSIDE OF POSTS SHALL ASLO BE FILLED WITH CONCRETE WITH SMOOTH MOUND AS TOP CAP.
2. BOLLARDS SHALL EXTEND ABOVE GROUND TO A MINIMUM OF 4'.
3. PAINT BOLLARDS REFLECTORIZED YELLOW WITH TWO 6" BANDS AS SHOWN.

GALVANIZED STEEL BOLLARD DETAIL

NTS



MONOLITHIC CURB SECTION

NTS

NOTES:

1. CURB SHALL BE INSTALLED, AS SHOWN ON PLANS, TO PROTECT EXISTING GRADE AND STRUCTURES.
2. CONCRETE CURB SHALL BE POURED MONOLITHIC TO THE SIDEWALK SLAB.

NO.	DATE	REVISION	APP.

CONT	SECT	JOB	HIGHWAY
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

TYPICAL SECTIONS AND DETAILS

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	
DRAWING SCALE	80114
AS NOTED	
CITY OF HOUSTON PDC	
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Detention Design for Addition of Impervious Surface:

Length of project corridor =	560 FT
Existing Impervious Surface to be Removed =	618 SQ-FT
Proposed Impervious Surface to be Installed =	5,506 SQ-FT
Increase in Impervious Surface Area =	4,888 SQ-FT
=	**0.11 AC**
Right-of-Way Width =	100 FT
Roadway (Back of Curb to Back of Curb) + Bayou Trail Width =	36 FT
Width of Existing Sidewalk (north side) =	4 FT
Width of Proposed Sidewalk (south side) =	10 FT
Width of Impervious Surface - Post Project =	50 FT
Percent Impervious - Post Project Condition =	50%
Detention Rate per Figure 9.2 (IDM 2023) =	**0.75 AC-FT/AC**
Required Detention for Proposed Improvements =	**0.084 AC-FT**
=	3,666 CU-FT

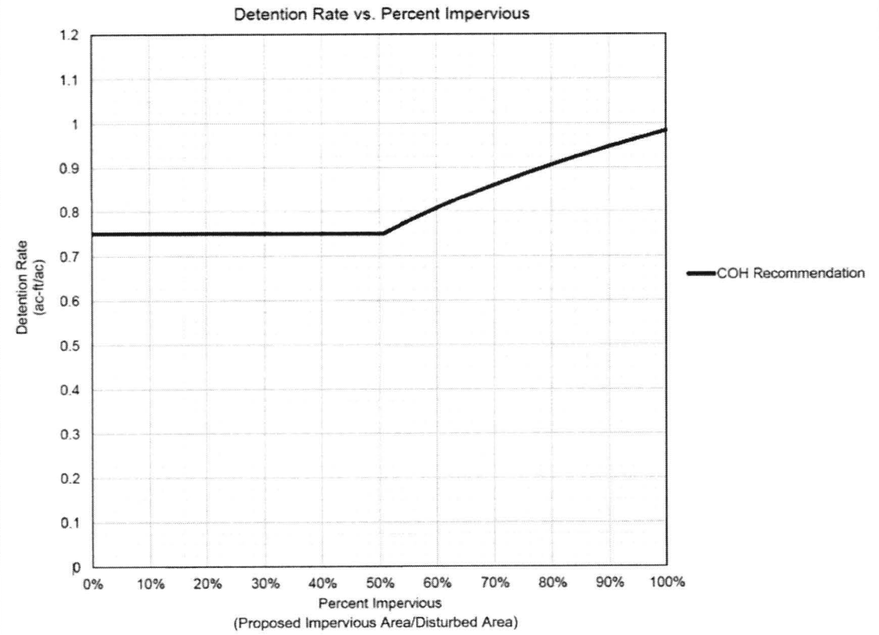
Proposed Area for Detention Swale- Area between new sidewalk/SUP and existing tree line along south side of N Macgregor Way:

Detention-swale concept Design-	
Swale bottom area (from plan) =	1,134.00 SF
Swale top area (from plan) =	3,336.00 SF
Depth =	1.65 FT
Slope 1V =	3.00 H
Total volume of detention provided =	3,687.75 CU-FT
=	**0.085 AC-FT**
Total area required for swale =	3,336.00 SF
	0.077 AC

Cut Fill Volume Calculation:

Cut Volume =	2,897.75 CU-FT	107.32 CY
Fill Volume (providing 6' wide berm on D/S side) =	2,501.10 CU-FT	92.63 CY
Net Volume Change - Excess Cut =	**396.65 CU-FT**	14.69 CY

Figure 9.2 - Minimum Detention Rate Chart



Detention Calculation Summary:

The post development runoff is greater than the pre-development runoff in areas where the impervious area increases. To mitigate the impact on existing storm drainage system, the proposed development provides Storm Water Detention in accordance with the City of Houston IDM 9.2.01.H.

Required Detention =	**0.084 AC-FT**
Detention provided in the project area =	**0.085 AC-FT**
Net Volume Change - Excess Cut =	**396.65 CU-FT**

STORM DRAINAGE DETENTION AND CUT - FILL VOLUME CALCULATIONS

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

DRAINAGE CALCULATIONS

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	80114
AS NOTED	
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 8 OF 70	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
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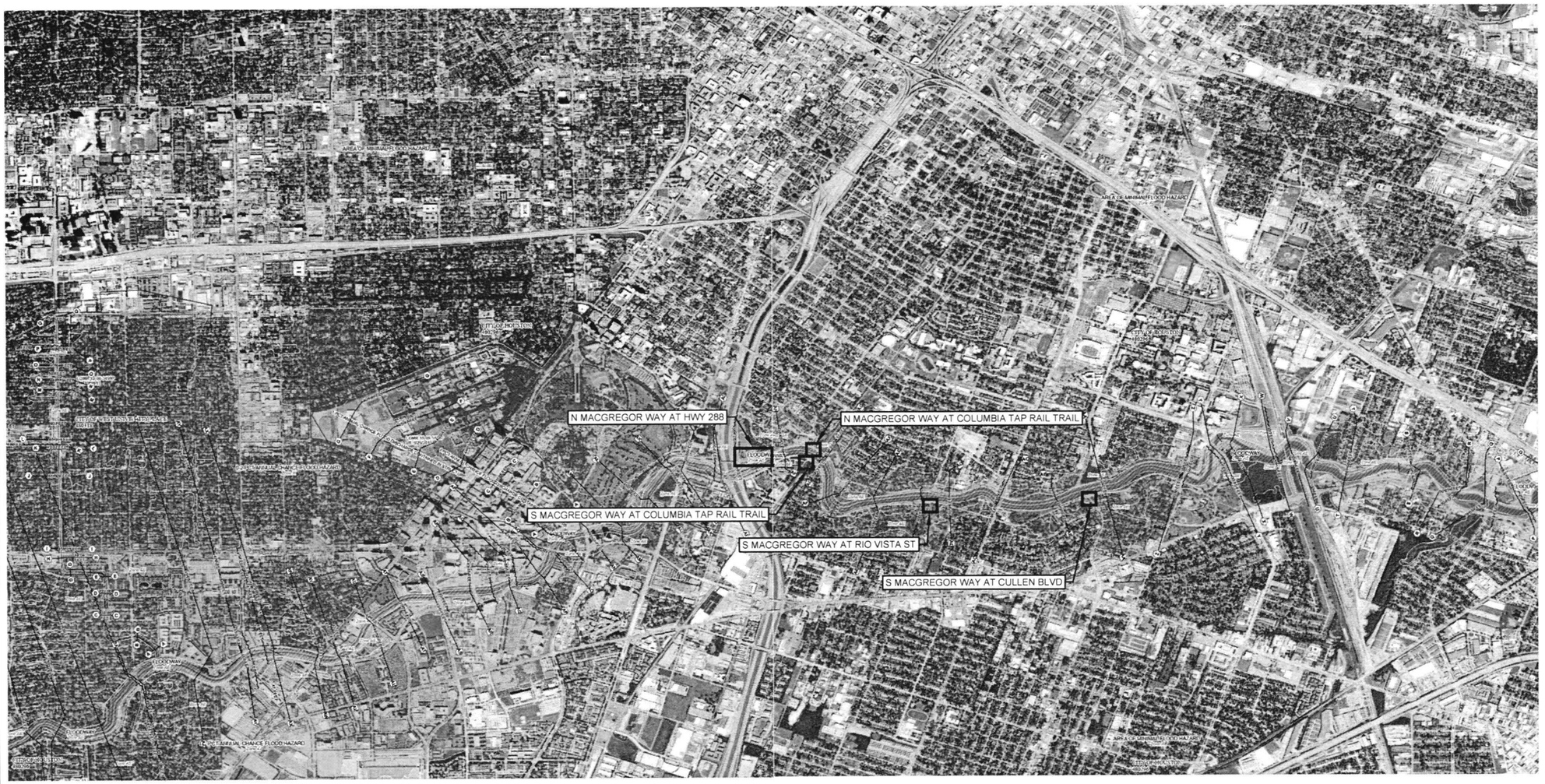

FLOOD HAZARD INFORMATION

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

- SPECIAL FLOOD HAZARD AREAS
  - Without Base Flood Elevation (BFE)
  - With BFE or Depth
  - 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
  - Future Conditions 1% Annual Chance Flood Hazard
  - Area with Reduced Flood Risk due to Levee
  - Area with Flood Risk due to Levee
- NO SCREEN
  - Area of Minimal Flood Hazard
  - Effective LOMRs
- OTHER AREAS
  - Area of Undetermined Flood Hazard
- GENERAL STRUCTURES
  - Channel, Culvert, or Storm Sewer
  - Levee, Dike, or Floodwall
- OTHER FEATURES
  - Cross Sections with 1% Annual Chance
  - Water Surface Elevation
  - Coastal Transect
  - Coastal Transect Baseline
  - Profile Baseline
  - Hydrographic Feature
  - Base Flood Elevation Line (BFE)
  - Limit of Study
  - Jurisdiction Boundary

NOTES TO USERS

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

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

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

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

Basemap information shown on this FIRM was provided in digital format by USGA, Farm Service Agency (FSA). Orthophoto was derived from NAIP, dated April 15, 2018

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 5/7/2024, 10:40 PM, and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Powell Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/7/2024, 10:40 PM, and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Powell Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

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This map image may not contain certain map features described as follows: This map image is void if 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.

SCALE

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

1 inch ~ 1,000 feet 1:12,000
0 500 1,000 2,000 3,000 4,000 Feet
N 0 105 210 420 530 840 Meters

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
PANEL 860 OF 1105

COMMUNITY	NUMBER	PANEL
CITY OF WEST UNIVERSITY PLACE	480658	0860
HARRIS COUNTY UNINCORPORATED AREAS	480287	0860
SOUTHSIDE PLACE	480512	0860

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
PANEL 880 OF 1105

COMMUNITY	NUMBER	PANEL
CITY OF HOUSTON	480296	0880

FEMA
National Flood Insurance Program

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

NO.	DATE	REVISION	APP.

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

THE GOODMAN CORPORATION
3200 TRAVIS, SUITE 200
HOUSTON, TEXAS 77006
www.TheGoodmanCorp.com
(713) 951-7951
TBPELS Firm Registration No. 11756

KUO & associates, Inc.
Consulting Engineers & Surveyors
12330 Westoffice Dr., Suite 900
Houston, TX 77077
Tel.: (713) 975-9799
Fax: (713) 975-0920
www.kuoassociates.com
TX Engineering Firm Reg. No. F-4378
TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

FEMA FLOODPLAIN MAPS

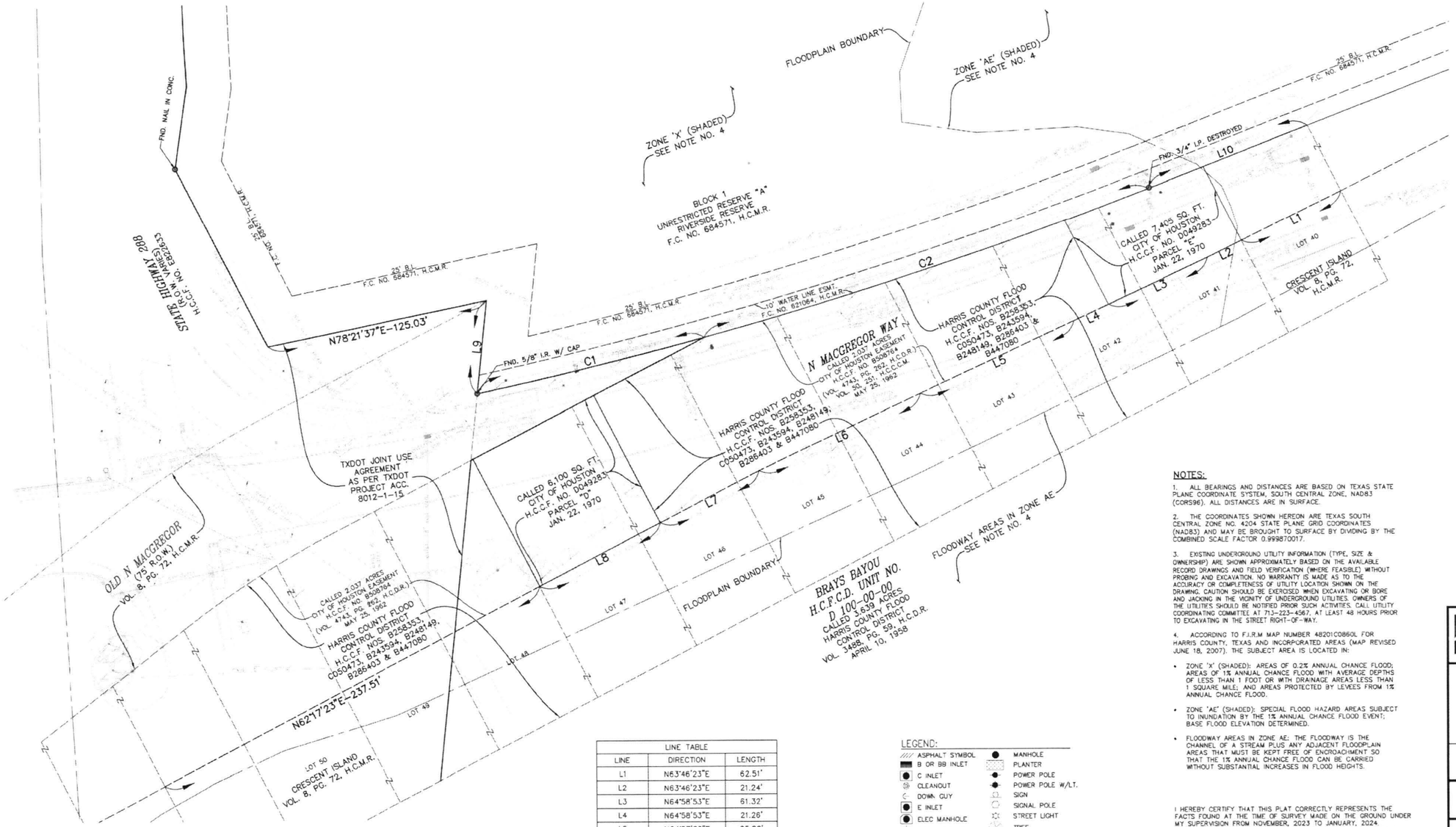
BRAYS BAYOU/SAPE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
ARCHIE BLANCO	
SHEET NO.	9 OF 70

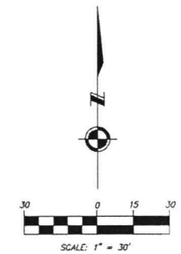
RECEIVED
PUBLIC WORKS
80114
HOUSTON, TEXAS

C:\VOLUMES\THEGOODMANCORP\TGC-ENGINEERING\00_TGC PROJECT FILES\GSMD123\CAD\GSMD123_HSIP24_COVERS_INDEX_DETAILS.DWG, 5/30/2025 1:20 PM

GP. FOSTER SURVEY, A-273



VICINITY MAP KEYMAP: 533 F
N.T.S.



NOTES:

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

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4. ACCORDING TO F.I.R.M MAP NUMBER 48201C0860L FOR HARRIS COUNTY, TEXAS AND INCORPORATED AREAS (MAP REVISED JUNE 18, 2007), THE SUBJECT AREA IS LOCATED IN:

- ZONE 'X' (SHADED): AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD.
- ZONE 'AE' (SHADED): SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT; BASE FLOOD ELEVATION DETERMINED.
- FLOODWAY AREAS IN ZONE AE: THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS.

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N63°46'23"E	62.51'
L2	N63°46'23"E	21.24'
L3	N64°58'53"E	61.32'
L4	N64°58'53"E	21.26'
L5	N64°57'23"E	95.08'
L6	N64°50'23"E	100.09'
L7	N62°32'53"E	62.50'
L8	N62°32'53"E	76.25'
L9	S05°47'59"W	52.34'
L10	N68°45'10"E	96.17'

CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	CHORD DIRECTION
C1	130.80'	2,484.00'	3°01'01"	N76°17'58"E-130.78'
C2	251.78'	2,484.00'	6°02'18"	N71°46'18"E-261.66'

LEGEND:

ASPHALT SYMBOL	MANHOLE
B OR BB INLET	PLANTER
C INLET	POWER POLE
CLEANOUT	POWER POLE W/LT.
DOWN GUY	SIGN
E INLET	SIGNAL POLE
ELEC MANHOLE	STREET LIGHT
FIRE HYDRANT	TREE
GAS METER	TREE STUMP
GAS VALVE	TREE-CREPE MYRTLE
GRATE INLET	TREE-PINE
GRATE INLET	WATER METER
MAIL BOX	WATER VALVE
BRUSH ROW	
DITCH/SWALE CENTER LINE	
FENCE	
GAS LINE	
GUARD RAIL	
HEDGE ROW OR TREE LINE	
HIGH BANK	
OVERHEAD POWER LINE	
SANITARY SEWER LINE	
STORM LINE	
TELEPHONE LINE	
UG STREET LIGHT CABLE	
WATER LINE	

ABBREVIATIONS

P.-PROPERTY LINE
Z.-LAND HOOK
A.E.-AERIAL EASEMENT
B.L.-BUILDING LINE
DR.-DRIVE
FND.-FOUND
F.C. NO.-FILM CODE NUMBER
H.C.C.F. NO.-HARRIS COUNTY CLERK'S FILE NUMBER
H.C.C.C.M.-HARRIS COUNTY COMMISSIONER'S COURT MINUTES
H.C.D.R.-HARRIS COUNTY DEED RECORDS
H.C.M.R.-HARRIS COUNTY MAP RECORDS
O.P.R.O.R.P.H.C.-OFFICIAL PUBLIC RECORDS OF REAL PROPERTY HARRIS COUNTY
I.P.-IRON PIPE
I.R.-IRON ROD
RD.-ROAD
R.O.W.-RIGHT OF WAY
S.S.E.-SANITARY SEWER EASEMENT
STM. S.E.-STORM SEWER EASEMENT
U.E.-UTILITY EASEMENT
VOL., PG.-VOLUME AND PAGE
W.L.E.-WATER LINE EASEMENT

I HEREBY CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS THE FACTS FOUND AT THE TIME OF SURVEY MADE ON THE GROUND UNDER MY SUPERVISION FROM NOVEMBER, 2023 TO JANUARY, 2024. THIS SURVEY SUBSTANTIALLY COMPLIES WITH THE CURRENT TEXAS SOCIETY OF PROFESSIONAL SURVEYORS MANUAL OF PRACTICE REQUIREMENTS FOR A CATEGORY 1B, CONDITION III, STANDARD LAND SURVEY.

Ren Chyun Steven Weng 04/30/24

REN CHYUN STEVEN WENG, R.P.L.S.
REGISTERED PROFESSIONAL LAND SURVEYOR STATE OF TEXAS, NO. 6491

STATE OF TEXAS REGISTERED REN CHYUN STEVEN WENG 6491 PROFESSIONAL LAND SURVEYOR

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

NO	DATE	REVISION	APP.

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

THE GOODMAN CORPORATION
3200 TRAVIS, SUITE 200
HOUSTON, TEXAS 77006
www.TheGoodmanCorp.com
(713) 951-7951

KUO

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

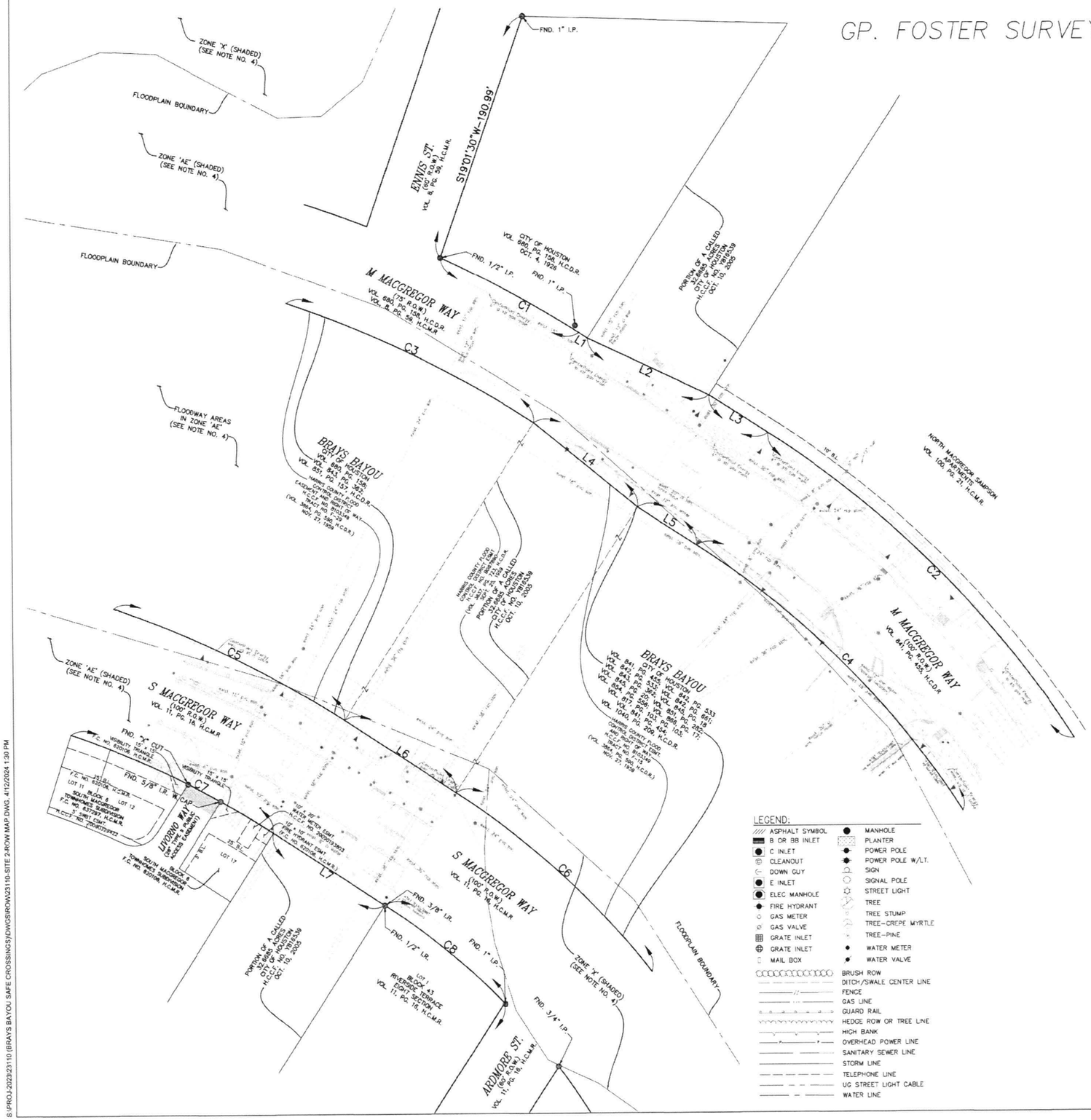
RIGHT OF WAY MAP
N. MACGREGOR WAY @
SH 288 FRONTAGE ROAD

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	ACCEPTED
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON PIC	
ARCHIE BLANCO	
SHEET 10 OF 70	

S:\PROJ-2023\23110 (BRAYS BAYOU SAFE CROSSINGS)\DWGS\ROW\23110-SITE 1-ROW MAP DWG, 4/30/2024 1:14 PM

GP. FOSTER SURVEY, A-273


ZONE 'X' (SHADED) (SEE NOTE NO. 4)
FLOODPLAIN BOUNDARY
ZONE 'AE' (SHADED) (SEE NOTE NO. 4)
FLOODPLAIN BOUNDARY
FLOODWAY AREAS IN ZONE 'AE' (SEE NOTE NO. 4)
ENNIS ST.
(60' R.O.W.)
VOL. 8, PG. 59, H.C.M.R.
S19°01'30"W-190.99'
FND. 1" I.P.
FND. 1/2" I.P.
FND. 1" I.P.
VOL. CITY OF HOUSTON
680, PG. 156,
OCT. 4, 1926
H.C.D.R.
PORTION OF A CALLED
3.7685 ACRES
TRACT
CITY OF HOUSTON
H.C.C.F. NO. Y815839
OCT. 10, 2005
M MACGREGOR WAY
(75' R.O.W.)
VOL. 680, PG. 156, H.C.D.R.
VOL. 8, PG. 59, H.C.M.R.
C1
L1
L2
L3
L4
L5
C2
C3
C4
C5
C6
C7
C8
L6
L7
BRAYS BAYOU
CITY OF HOUSTON
VOL. 841, PG. 333
VOL. 841, PG. 373
VOL. 841, PG. 377
VOL. 841, PG. 381
VOL. 841, PG. 385
VOL. 841, PG. 389
VOL. 841, PG. 393
VOL. 841, PG. 397
VOL. 841, PG. 401
VOL. 841, PG. 405
VOL. 841, PG. 409
VOL. 841, PG. 413
VOL. 841, PG. 417
VOL. 841, PG. 421
VOL. 1040, PG. 709, H.C.D.R.
HARRIS COUNTY FLOOD CONTROL DISTRICT
(VOL. 3804, PG. 105, H.C.D.R.)
(VOL. 3804, PG. 111, H.C.D.R.)
(VOL. 3804, PG. 117, H.C.D.R.)
(VOL. 3804, PG. 123, H.C.D.R.)
(VOL. 3804, PG. 129, H.C.D.R.)
(VOL. 3804, PG. 135, H.C.D.R.)
(VOL. 3804, PG. 141, H.C.D.R.)
(VOL. 3804, PG. 147, H.C.D.R.)
(VOL. 3804, PG.

HENRY THURWATCHER SURVEY, A75

FLOODWAY AREAS IN ZONE 'AE'
SEE NOTE NO. 4

BRAYS BAYOU
CITY OF HOUSTON
VOL. 841, PG. 455; VOL. 842, PG. 533
VOL. 842, PG. 533; VOL. 842, PG. 661;
VOL. 843, PG. 362; VOL. 845, PG. 18
VOL. 845, PG. 20; VOL. 851, PG. 282;
VOL. 854, PG. 556; VOL. 866, PG. 17;
VOL. 817, PG. 103, PG. 103;
VOL. 841, PG. 454;
VOL. 1040, PG. 209, H.C.D.R.
HARRIS COUNTY FLOOD
CONTROL DISTRICT ESMT.
AND RIGHT OF WAY
H.C.C.F. NO. B103349
TRACT NO. F-15
(VOL. 3864, PG. 590, H.C.D.R.)
NOV. 27, 1959

D=16°45'30"
R=1869.14'
L=546.70'
CB=S85°33'23"E
CL=544.76'

FLOODPLAIN BOUNDARY

ZONE 'AE' (SHADED)
SEE NOTE NO. 4

S MACGREGOR WAY
(100' R.O.W.)
AS SHOWN IN PLAT
VOL. 13, PG. 56, H.C.M.R.

D=5°25'41"
R=1769.14'
L=167.61'
CB=N88°45'40"E
CL=167.54'

FND. 3/4" I.R.

FND. 3/4" I.P.

FND. 5/8" I.R. W/ CAP

D=9°23'14"
R=1769.14'
L=289.85'
CB=S81°52'15"E
CL=289.53'

LOT 13
BLOCK 54
RIVERSIDE TERRACE
SECTION 10
VOL. 13, PG. 56, H.C.M.R.

RIO VISTA ST
(60' R.O.W.)
VOL. 13, PG. 56, H.C.M.R.

S01°13'42"W-220.00'

N01°13'42"E-218.93'

LOT 1
BLOCK 55
RIVERSIDE TERRACE
SECTION 10
VOL. 13, PG. 56, H.C.M.R.

FND. 3/4" I.P.

FLOODPLAIN BOUNDARY

ZONE 'AE' (SHADED)
SEE NOTE NO. 4

ZONE 'X' (SHADED)
SEE NOTE NO. 4

FND. 1 1/2" I.P.

ABBREVIATIONS

P—PROPERTY LINE
Z—LAND HOOK
A.E.—AERIAL EASEMENT
B.L.—BUILDING LINE
DR.—DRIVE
FND.—FOUND
F.C. NO.—FILM CODE NUMBER
H.C.C.F. NO.—HARRIS COUNTY CLERK'S FILE NUMBER
H.C.D.R.—HARRIS COUNTY DEED RECORDS
H.C.M.R.—HARRIS COUNTY MAP RECORDS
O.P.R.O.R.P.H.C.—OFFICIAL PUBLIC RECORDS OF REAL PROPERTY HARRIS COUNTY
I.P.—IRON PIPE
I.R.—IRON ROD
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STM. S.E.—STORM SEWER EASEMENT
U.E.—UTILITY EASEMENT
VOL., PG.—VOLUME AND PAGE
W.L.E.—WATER LINE EASEMENT

LEGEND:

ASPHALT SYMBOL	MANHOLE
B OR BB INLET	PLANTER
C INLET	POWER POLE
CLEANOUT	POWER POLE W/LT.
DOWN GUY	SIGN
E INLET	SIGNAL POLE
ELEC MANHOLE	STREET LIGHT
FIRE HYDRANT	TREE
GAS METER	TREE STUMP
GAS VALVE	TREE—CREPE MYRTLE
GRATE INLET	TREE—PINE
GRATE INLET	WATER METER
MAIL BOX	WATER VALVE
BRUSH ROW	
DITCH/SWALE CENTER LINE	
FENCE	
GAS LINE	
GUARD RAIL	
HEDGE ROW OR TREE LINE	
HIGH BANK	
OVERHEAD POWER LINE	
SANITARY SEWER LINE	
STORM LINE	
TELEPHONE LINE	
UG STREET LIGHT CABLE	
WATER LINE	

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04/12/24
REN CHYUN STEVEN WENG, R.P.L.S.
REGISTERED PROFESSIONAL LAND
SURVEYOR STATE OF TEXAS, NO. 6491

STATE OF TEXAS · REGISTERED · REN CHYUN STEVEN WENG · 6491 · PROFESSIONAL LAND SURVEYOR

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

SITE LOCATION

VICINITY MAP KEYMAP: 533 G
N.T.S.

NO.	DATE	REVISION	APP.

N

20 0 10 20
SCALE: 1" = 20'

NOTES:

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4. ACCORDING TO F.I.R.M MAP NUMBER 48201C0880M FOR HARRIS COUNTY, TEXAS AND INCORPORATED AREAS (MAP REVISED JANUARY 6, 2007), THE SUBJECT AREA IS LOCATED IN:

- ZONE 'AE' (SHADED): SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT; BASE FLOOD ELEVATION DETERMINED.

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
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THE GOODMAN CORPORATION
3200 TRAVIS, SUITE 200
HOUSTON, TEXAS 77006
(713) 951-7931

KUO

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

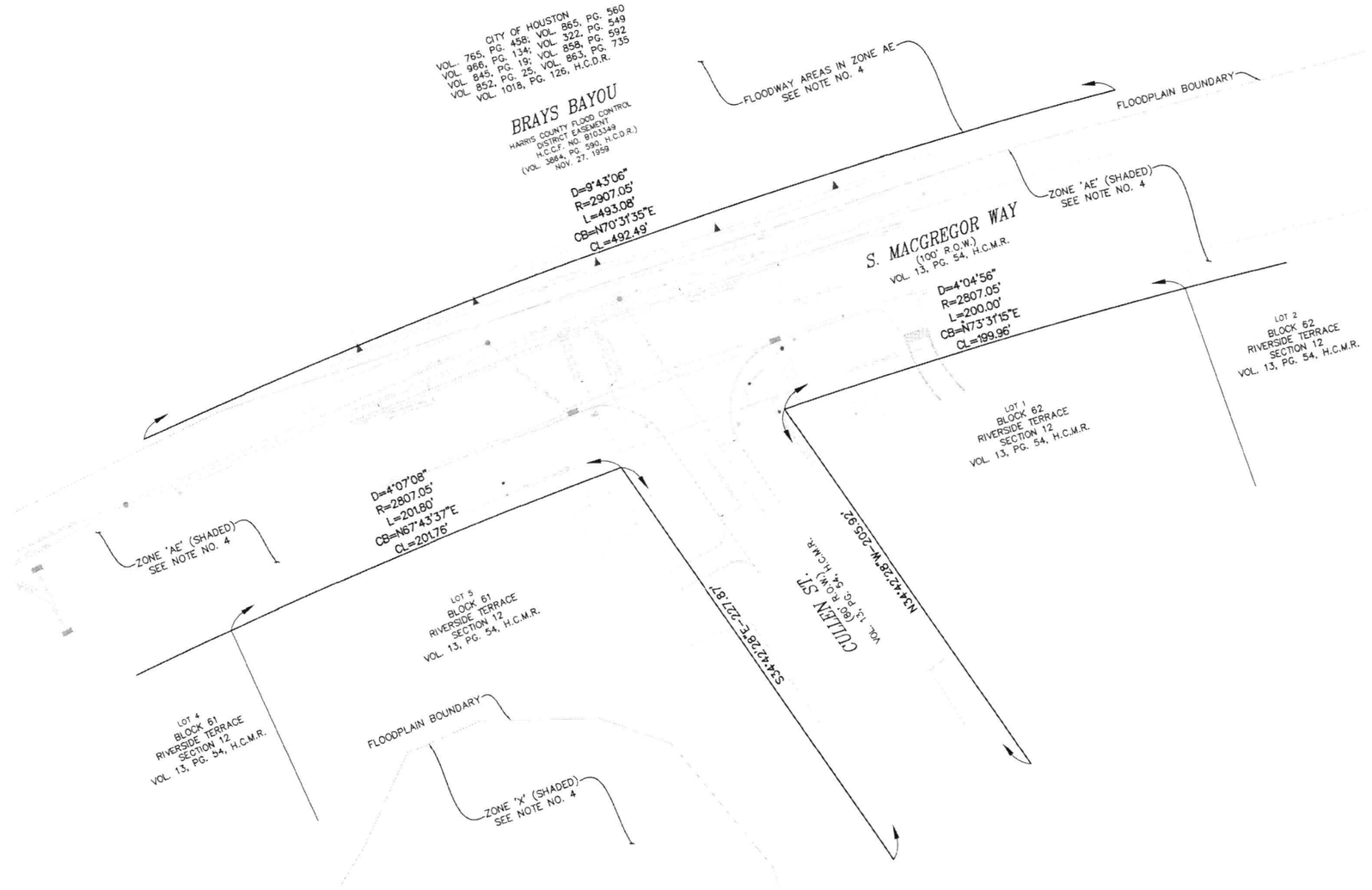
RIGHT OF WAY MAP
S. MACGREGOR WAY @
RIO VISTA STREET

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	80114
AS NOTED	
CITY OF HOUSTON POC	
ARCHIE BLANCO	
SHEET 12 OF 70	

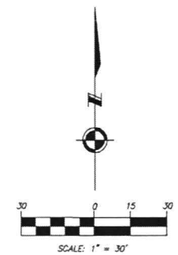
S:\PROJ-2023\23110 (BRAYS BAYOU SAFE CROSSINGS)\DWGS\ROW\23110-SITE 3-ROW MAP DWG, 4/12/2024 1:26 PM

LUKE MOORE SURVEY, A-51



VICINITY MAP KEYMAP: 533 G
N.T.S.

NO.	DATE	REVISION	APP.



LEGEND:

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CLEANOUT	POWER POLE W/LT.
DOWN GUY	SIGN
E INLET	SIGNAL POLE
ELEC MANHOLE	STREET LIGHT
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GAS VALVE	TREE-CREPE MYRTLE
GRATE INLET	TREE-PINE
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MAIL BOX	WATER VALVE
BRUSH ROW	
DITCH/SWALE CENTER LINE	
FENCE	
GAS LINE	
GUARD RAIL	
HEDGE ROW OR TREE LINE	
HIGH BANK	
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STM. S.E.-STORM SEWER EASEMENT
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VOL., PG.-VOLUME AND PAGE
W.L.E.-WATER LINE EASEMENT

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- ZONE 'AE' (SHADED): SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT; BASE FLOOD ELEVATION DETERMINED.
- FLOODWAY AREAS IN ZONE AE: THE FLOODWAY IS THE CHANNEL OF A STREAM PLUS ANY ADJACENT FLOODPLAIN AREAS THAT MUST BE KEPT FREE OF ENCROACHMENT SO THAT THE 1% ANNUAL CHANCE FLOOD CAN BE CARRIED WITHOUT SUBSTANTIAL INCREASES IN FLOOD HEIGHTS.

I HEREBY CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS THE FACTS FOUND AT THE TIME OF SURVEY MADE ON THE GROUND UNDER MY SUPERVISION FROM NOVEMBER, 2023 TO JANUARY, 2024. THIS SURVEY SUBSTANTIALLY COMPLIES WITH THE CURRENT TEXAS SOCIETY OF PROFESSIONAL SURVEYORS MANUAL OF PRACTICE REQUIREMENTS FOR A CATEGORY 1B, CONDITION III, STANDARD LAND SURVEY.

04/12/24
REN CHYUN STEVEN WENG, R.P.L.S.
REGISTERED PROFESSIONAL LAND SURVEYOR STATE OF TEXAS, NO. 6491

STATE OF TEXAS REGISTERED REN CHYUN STEVEN WENG 6491 PROFESSIONAL LAND SURVEYOR

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

THE GOODMAN CORPORATION
3200 TRAVIS, SUITE 300
HOUSTON, TEXAS 77006
(713) 951-7951

KUO

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

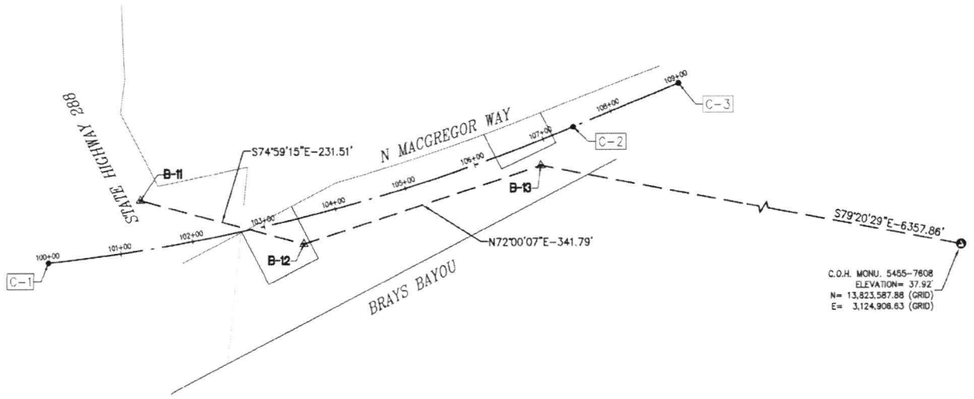
RIGHT OF WAY MAP
S. MACGREGOR WAY @
CULLEN STREET

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	ACCEPTED
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 13 OF 70	

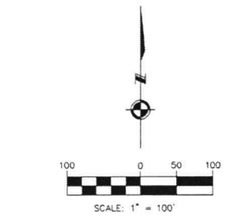
PUBLIC WORKS & ENGINEERING

S:\PROJ-2023\23110 (BRAYS BAYOU) SAFE CROSSINGS\DWGS\ROW\23110-SITE 4-ROW MAP.DWG, 4/12/2024 1:31 PM



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-11	13,826,515.23	3,118,516.02	13,824,718.02	3,118,110.67	44.72'	101+38.08	67.35L	SET 'X' CUT ON CONC.
B-12	13,826,455.26	3,118,739.63	13,824,658.06	3,118,334.25	39.93'	103+46.73	35.76R	SET 1/2" I.R. W/CAP
B-13	13,826,560.87	3,119,064.69	13,824,763.65	3,118,659.27	38.18'	106+84.31	32.38R	SET 'X' CUT ON CONC.

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	100+00.00	13,826,430.48	3,118,389.84	13,824,533.28	3,117,984.50
C-2	107+44.59	13,826,613.47	3,119,108.97	13,824,816.24	3,118,703.54
C-3	109+00.00	13,826,672.89	3,119,252.57	13,824,875.65	3,118,847.12



BENCHMARK:

CITY OF HOUSTON MONUMENT 5455-7608 (ALSO FLOODPLAIN REFERENCE MARK NUMBER 0402701) IS A BRASS DISC STAMPED D100 BM08 LOCATED ON EAST SIDEWALK ON SCOTT STREET BRIDGE APPROXIMATELY 500 FEET NORTH FROM THE INTERSECTION OF S MACGREGOR WAY IN KEYMAP 533H IN THE BRAYS BAYOU WATERSHED

ELEV. 37.92 FEET NAVD 1988, 2001 ADJUSTMENT

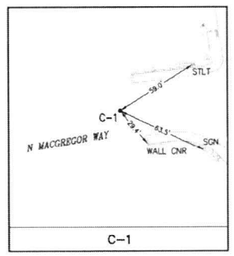
NOTE:

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

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

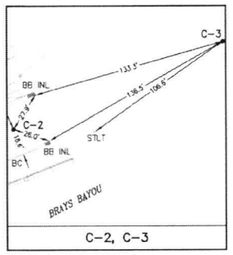
LEGEND:

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



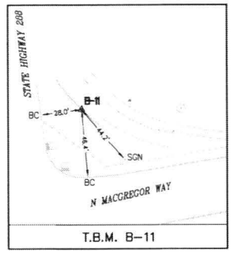
C-1

N.T.S.



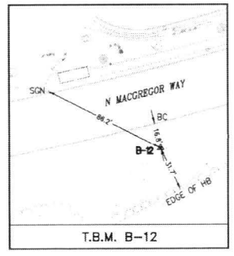
C-2, C-3

N.T.S.



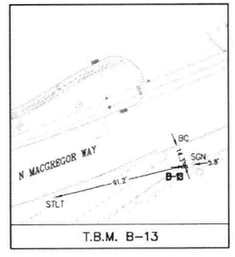
T.B.M. B-11

N.T.S.



T.B.M. B-12

N.T.S.



T.B.M. B-13

N.T.S.

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

BB INL – BB INLET
BC – BACK OF CURB
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

NO.	DATE	REVISION	APP.

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

THE GOODMAN CORPORATION
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Fax: (713) 975-0539
www.kuoassociates.com
TX Engineering Firm Reg. No. F-4578
TX Surveying Firm Reg. No. 10175600

STATE OF TEXAS
REGISTERED
KUTUBUL A. M. MAINUDDIN
6404
PROFESSIONAL
LAND SURVEYOR
10/31/24

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

N MACGREGOR WAY @ STATE HIGHWAY 288 FRONTAGE
SURVEY CONTROL MAP

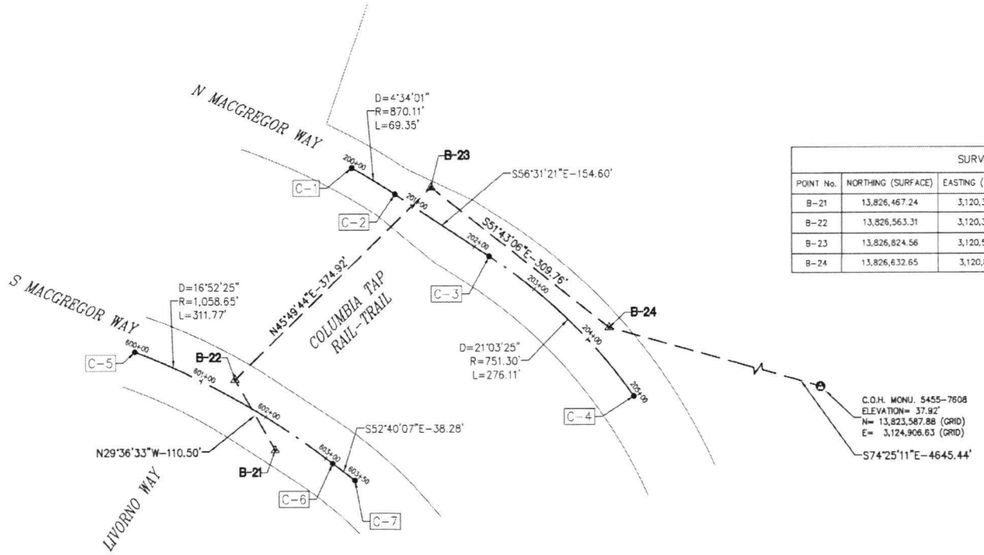
BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	80114
1" = 100'	
CITY OF HOUSTON PC	
ARCHIE BLANCO	
SHEET NO. 14 OF 70	

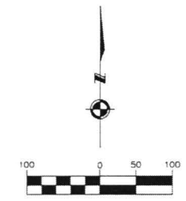
REGISTERED PROFESSIONAL ENGINEER
HOUSTON, TEXAS

S:\PROJ-2023\23110 (BRAYS BAYOU SAFE CROSSINGS)\DWGS\SCM\23110-N MACGREGOR WAY AT SH 288 FRONTAGE\23110-N MACGREGOR WAY AT SH 288 FRONTAGE.DWG, 4/17/2024 4:47 PM



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-21	13,826,467.24	3,120,380.65	13,824,670.03	3,119,975.05	42.18'	602+36.04	31.04R	SET 'X' CUT ON CONC.
B-22	13,826,563.31	3,120,326.05	13,824,766.09	3,119,920.46	39.66'	601+39.23	23.02L	SET 1/2" I.R. W/CAP
B-23	13,826,824.56	3,120,594.96	13,825,027.31	3,120,189.34	41.15'	201+05.68	34.95L	SET 1/2" I.R. W/CAP
B-24	13,826,632.65	3,120,838.11	13,824,835.43	3,120,432.48	39.68'	204+08.30	32.48L	SET 'X' CUT ON CONC.

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	200+00.00	13,826,851.35	3,120,486.07	13,825,054.10	3,120,080.46
C-2	200+69.35	13,826,815.44	3,120,545.39	13,825,018.19	3,120,139.77
C-3	202+23.95	13,826,730.16	3,120,674.34	13,824,932.92	3,120,268.70
C-4	205+00.06	13,826,539.42	3,120,871.82	13,824,742.20	3,120,466.16
C-5	600+00.00	13,826,601.33	3,120,186.70	13,824,804.10	3,119,783.13
C-6	603+11.77	13,826,448.75	3,120,459.30	13,824,651.55	3,120,053.69
C-7	603+50.05	13,826,425.54	3,120,489.73	13,824,628.34	3,120,084.12



BENCHMARK:

CITY OF HOUSTON MONUMENT 5455-7608 (ALSO FLOODPLAIN REFERENCE MARK NUMBER 040070) IS A BRASS DISC STAMPED 0100 BM09 LOCATED ON EAST SIDEWALK ON SCOTT STREET BRIDGE APPROXIMATELY 500 FEET NORTH FROM THE INTERSECTION OF S MACGREGOR WAY IN KEYMAP 533H IN THE BRAYS BAYOU WATERSHED

ELEV. 37.92 FEET, NAVD 1988, 2001 ADJUSTMENT

NOTE:

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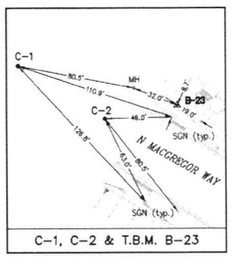
THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

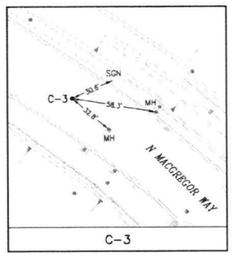
- **B-X** SURVEY CONTROL POINT NUMBER
- C-X DESIGN BASELINE POINT NUMBER
- ▲ SURVEY CONTROL POINT
- • DESIGN BASELINE POINT
- ⊖ CITY OF HOUSTON MONUMENT
- D. BL: DESIGN BASELINE ——·——
- S. BL: SURVEY BASELINE — — —

NO.	DATE	REVISION	APP.



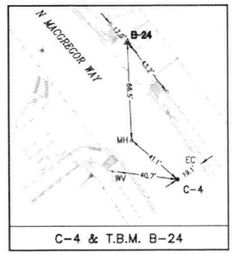
C-1, C-2 & T.B.M. B-23

N.T.S.



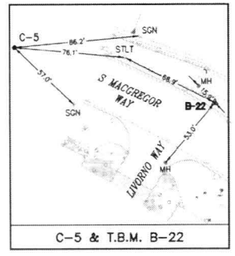
C-3

N.T.S.



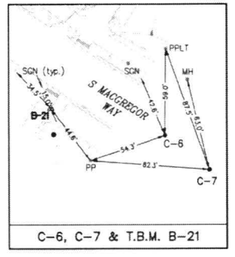
C-4 & T.B.M. B-24

N.T.S.



C-5 & T.B.M. B-22

N.T.S.



C-6, C-7 & T.B.M. B-21

N.T.S.

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
PPLT – POWER POLE W/LIGHT
SGN – SIGN
WM – WATER METER

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
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TX Engineering Firm Reg. No. F-4529
TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
REGISTERED
KUTUBUL A. M. MANJUDIN
6404
PROFESSIONAL
LAND SURVEYOR
06/06/24

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COLUMBIA TAP RAIL @
N MACGREGOR WAY
SURVEY CONTROL MAP

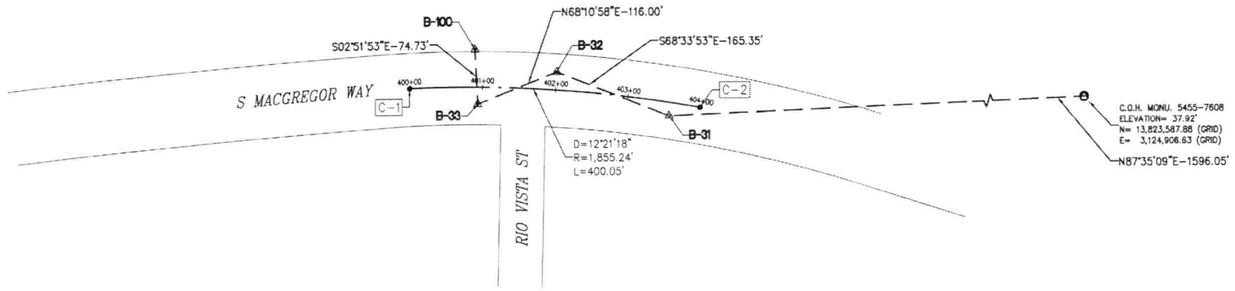
BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
1" = 100'	80114
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 15 OF 70	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

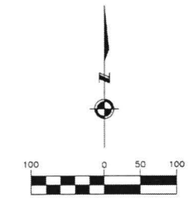
P.E. C... 105...
CITY DRAIN...
HOUSTON, TEXAS

S:\PROJ-202323110 (BRAYS BAYOU SAFE CROSSINGS)\DWG\SCM23110-COLUMBIA TAP RAIL AT N MACGREGOR WAY23110-COLUMBIA TAP RAIL AT N MACGREGOR WAY.DWG, 4/18/2024 8:10 AM



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-31	13,825,317.72	3,123,718.23	13,823,520.66	3,123,312.20	32.52'	403+59.28	18.20R	SET "X" CUT ON INL BB
B-32	13,825,378.15	3,123,564.32	13,823,581.08	3,123,158.31	33.41'	401+99.74	24.49L	SET 1/2" I.R. W/CAP
B-33	13,825,335.04	3,123,456.83	13,823,537.98	3,123,050.63	32.55'	400+93.97	23.09R	SET 1/2" I.R. W/CAP
B-100	13,825,409.68	3,123,452.89	13,823,612.61	3,123,046.90	30.33'	400+89.38	51.50L	SET 60D MAG NAIL

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	400+00.00	13,825,356.99	3,123,362.98	13,823,559.93	3,122,957.00
C-2	404+00.05	13,825,328.91	3,123,751.27	13,823,531.85	3,123,355.23



BENCHMARK:

CITY OF HOUSTON MONUMENT 5455-7608 (ALSO FLOODPLAIN REFERENCE MARK NUMBER 040070) IS A BRASS DISC STAMPED D100 BM09 LOCATED ON EAST SIDEWALK ON SCOTT STREET BRIDGE APPROXIMATELY 500 FEET NORTH FROM THE INTERSECTION OF S MACGREGOR WAY IN KEYMAP 533H IN THE BRAYS BAYOU WATERSHED

ELEV. 37.92 FEET - NAVD 1988, 2001 ADJUSTMENT

NOTE:

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

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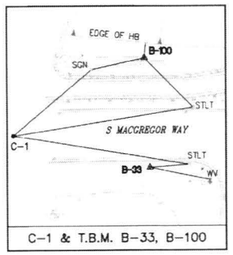
LEGEND:

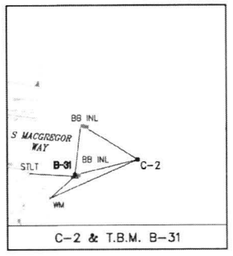
- **B-X** SURVEY CONTROL POINT NUMBER
- C-X DESIGN BASELINE POINT NUMBER
- ▲ SURVEY CONTROL POINT
- • DESIGN BASELINE POINT
- ⊖ CITY OF HOUSTON MONUMENT
- D. BL: DESIGN BASELINE ——·——
- S. BL: SURVEY BASELINE — — —

NO.	DATE	REVISION	APP.



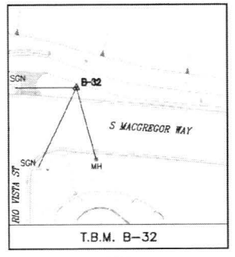
C-1 & T.B.M. B-33, B-100

N.T.S.



C-2 & T.B.M. B-31

N.T.S.



T.B.M. B-32

N.T.S.

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
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- 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

BB INL – BB INLET
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

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
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TX Engineering Firm Reg. No. F-4578
TX Surveying Firm Reg. No. LSF10009

STATE OF TEXAS
REGISTERED
KUTUBUL A. M. MAINUDDIN
6404
PROFESSIONAL
LAND SURVEYOR
10/01/24

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

RIO VISTA @ S MACGREGOR WAY

SURVEY CONTROL MAP

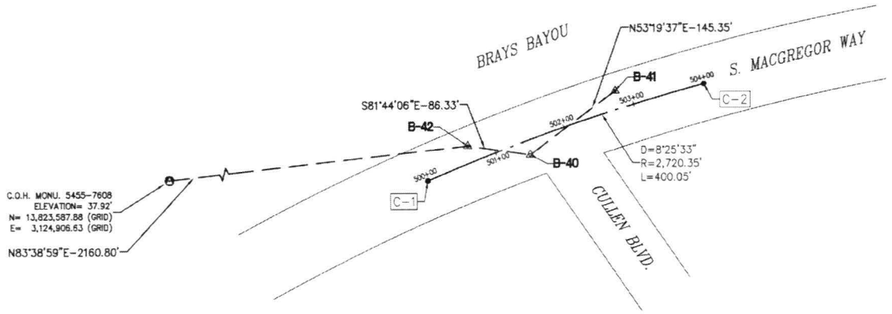
BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY COMMISSION USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
1" = 100'	80114
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 16 OF 70	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

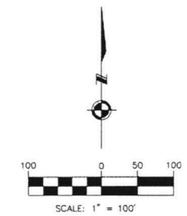
PUBLIC WORKS & ENGINEERING
CITY ENGINEER
HOUSTON, TEXAS

S:\PROJ-2023\23110 (BRAYS BAYOU SAFE CROSSINGS)\DWGS\SCM\23110-RIO VISTA AT S MACGREGOR WAY DWG\23110-RIO VISTA AT S MACGREGOR WAY.DWG, 4/17/2024 4:46 PM



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-40	13,825,611.54	3,127,545.85	13,823,814.44	3,127,139.32	30.06'	501+43.53	19.75R	FND "X" CUT ON INL BB
B-41	13,825,698.35	3,127,662.43	13,823,901.24	3,127,255.88	30.15'	502+81.86	24.57L	SET 1/2 I.R. W/CAP
B-42	13,825,623.95	3,127,460.41	13,823,826.85	3,127,053.89	30.07'	500+68.39	22.69L	SET 1/2 I.R. W/CAP

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	500+00.00	13,825,576.53	3,127,405.81	13,823,779.44	3,126,999.30
C-2	504+00.00	13,825,707.92	3,127,783.23	13,823,910.82	3,127,376.67



NO.	DATE	REVISION	APP.

BENCHMARK:

CITY OF HOUSTON MONUMENT 5455-7608 (ALSO FLOODPLAIN REFERENCE MARK NUMBER 040070) IS A BRASS DISC STAMPED D100 BM09 LOCATED ON EAST SIDEWALK ON SCOTT STREET BRIDGE APPROXIMATELY 500 FEET NORTH FROM THE INTERSECTION OF S MACGREGOR WAY IN KEYMAP 533H IN THE BRAYS BAYOU WATERSHED

ELEV. 37.92 FEET NAVD 1988, 2001 ADJUSTMENT

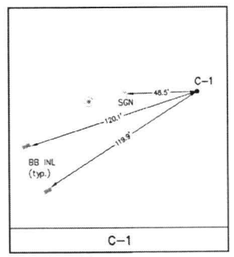
NOTE:

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

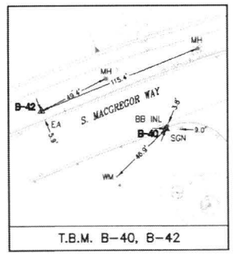
LEGEND:

- **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



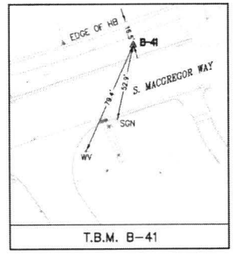
C-1

N.T.S.



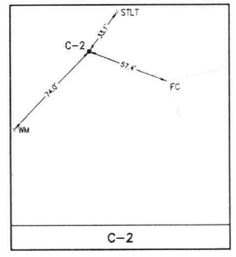
T.B.M. B-40, B-42

N.T.S.



T.B.M. B-41

N.T.S.



C-2

N.T.S.

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- E DR 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

EA - EDGE OF ASPHALT
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

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
REGISTERED
KUTUBUL A. M. MANJUDIN
6404
PROFESSIONAL
LAND SURVEYOR
08/31/24

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CULLEN BOULEVARD @
S MACGREGOR WAY
SURVEY CONTROL MAP

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-3	
DRAWING SCALE	
1" = 100'	80114
CITY OF HOUSTON ENG.	
ARCHIE BLANCO	
SHEET NO. 17 OF 70	

RECOMMENDED FOR APPROVAL
DEPUTY DIRECTOR
DATE

APPROVED
DIRECTOR
DATE

ACCEPTED
CITY ENGINEER
DATE

HOUSTON, TEXAS

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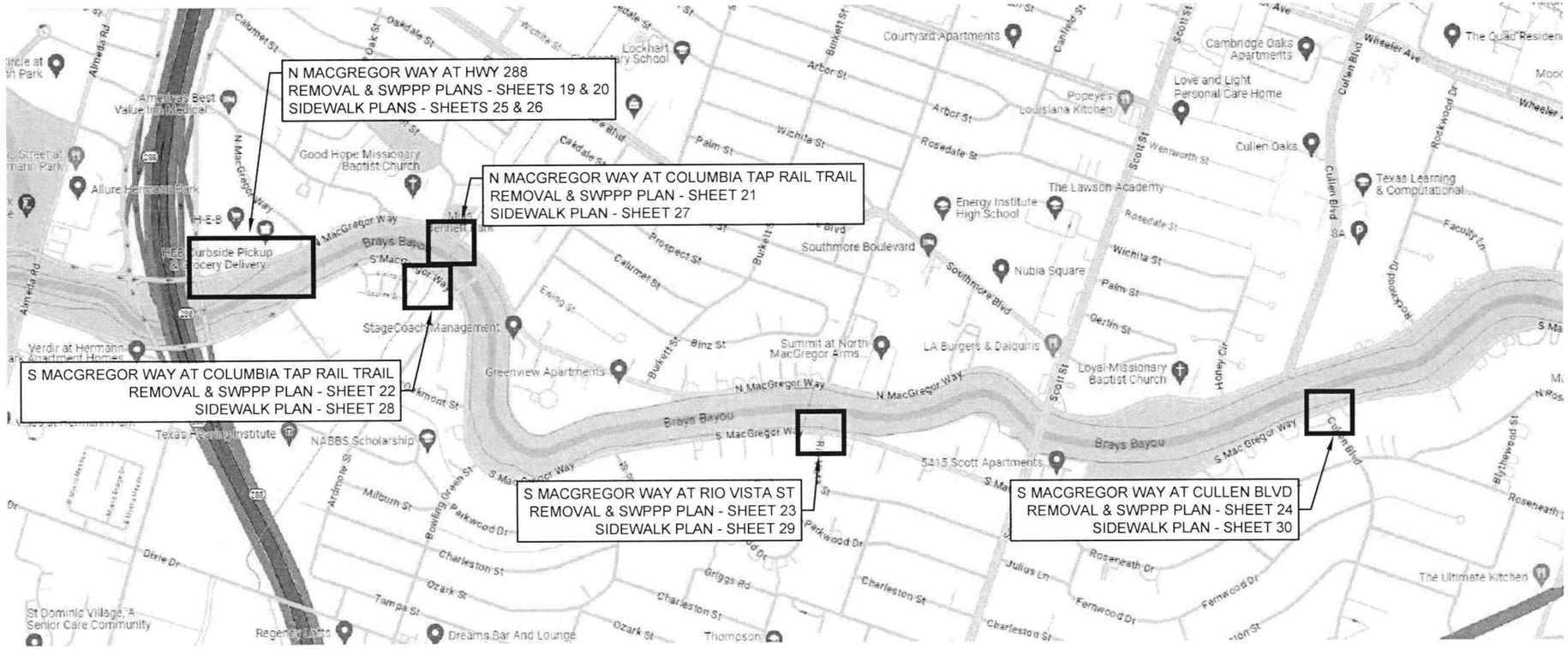

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

NO.	DATE	REVISION	APP.

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TX Surveying Firm Reg. No. 10075600
Consulting Engineers & Surveyors

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

OVERALL LAYOUT

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON DOC.	
ARCHIE BLANCO	
SHEET NO. 18 OF 70	

PUBLIC WORKS AND ENGINEERING
ACCEPTED FOR CONSTRUCTION
DRAWING APPROVAL
HOUSTON, TEXAS

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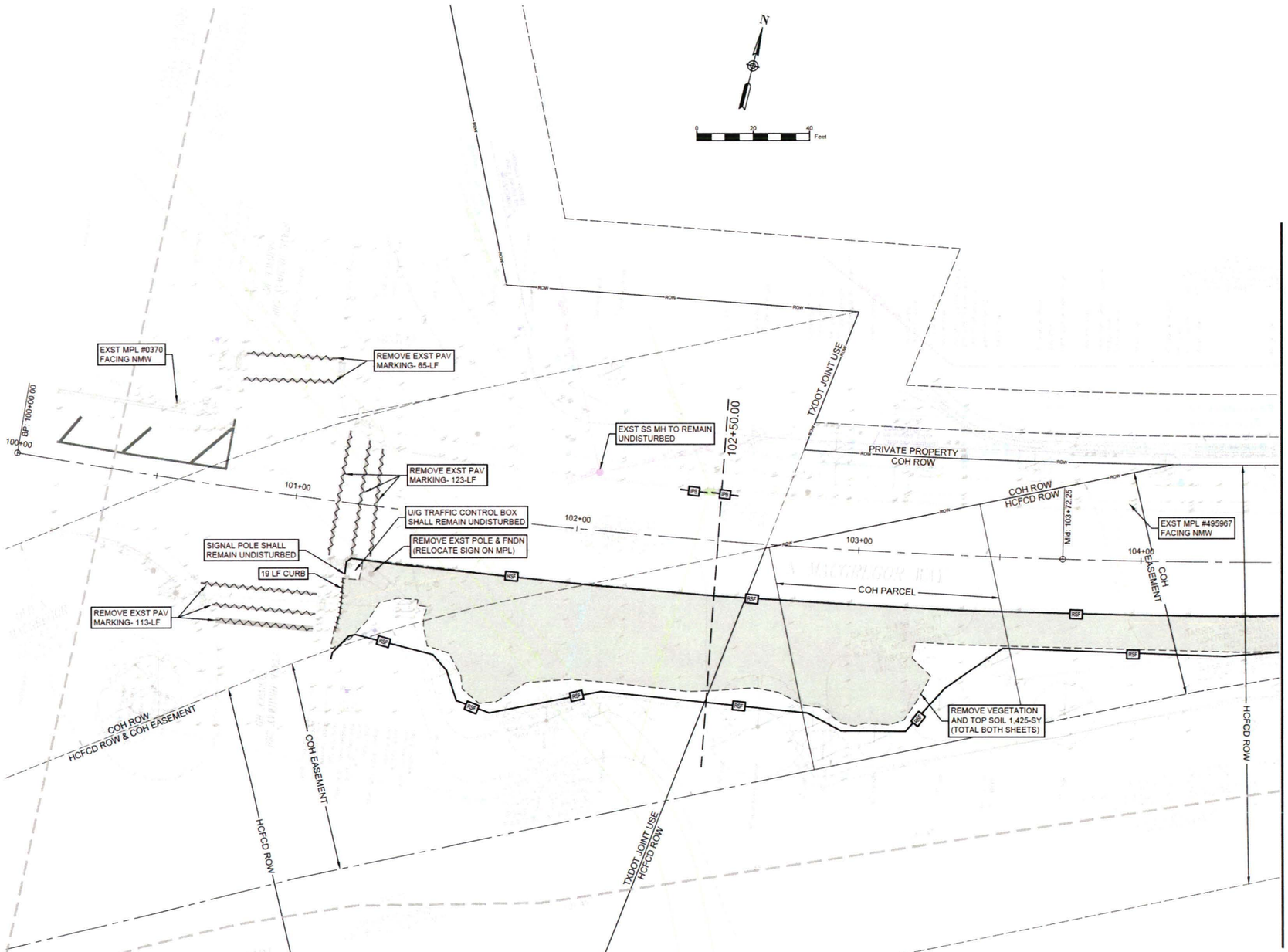

NO.	DATE	REVISION	APP.

REMOVAL LEGEND

- AREA OF DISTURBANCE
- REMOVE CONCRETE CURB
- REMOVE ITEM AS NOTED
- REMOVE CONCRETE SIDEWALK/ ASPHALT DRIVEWAY/MEDIAN
- 80 LF XX — REMOVAL QUANTITY
- 1182 IPB — INLET PROTECTION BARRIER / SAND TUBE
- RSF — REINFORCED SILT FENCE
- ECL — EROSION CONTROL LOG

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

VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower — Date 06/10/25

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

Signature valid for six months.

Mike Brower — Date 06/10/25

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

Signature valid for six months.

Brian L Hill — 06/10/25 Date

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

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5445 Almeda Rd, #503
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TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

REMOVAL & SWPPP PLAN -
N MACGREGOR WAY AT HWY 288 - 1 OF 2

BRAYS BAYOU CAPE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	
DRAWING SCALE	80114
AS NOTED	
CITY OF HOUSTON DOC	
ARCHIE BLANCO	
SHEET NO. 19 OF 70	

PUBLIC WORKS AND ENGINEERING
ACCEPTED
HOUSTON, TEXAS

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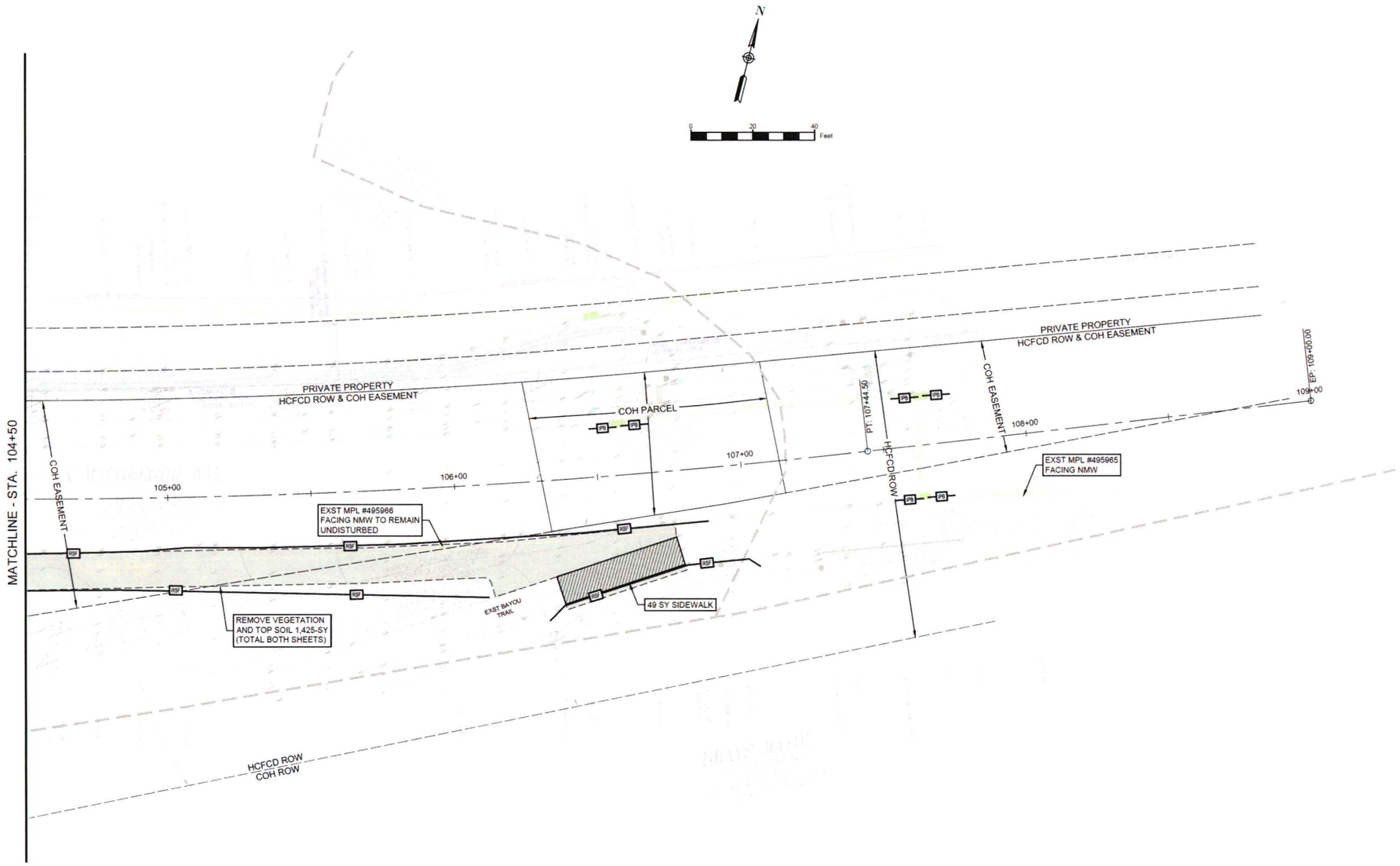

REMOVAL LEGEND

- AREA OF DISTURBANCE
- REMOVE CONCRETE CURB
- REMOVE ITEM AS NOTED
- REMOVE CONCRETE SIDEWALK/ ASPHALT DRIVEWAY/MEDIAN
- 80 LF XX — REMOVAL QUANTITY
- 1182 LF IPB — INLET PROTECTION BARRIER / SAND TUBE
- RSF — REINFORCED SILT FENCE
- ESCL — EROSION CONTROL LOG

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NO.	DATE	REVISION	APP.

HOUSTON SOUTHEAST
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TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
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111103
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05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

REMOVAL & SWPPP PLAN -
N MACGREGOR WAY AT HWY 288 - 2 OF 2

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON PROJECT MANAGER	
ARCHIE BLANCO	
SHEET NO. 20 OF 70	

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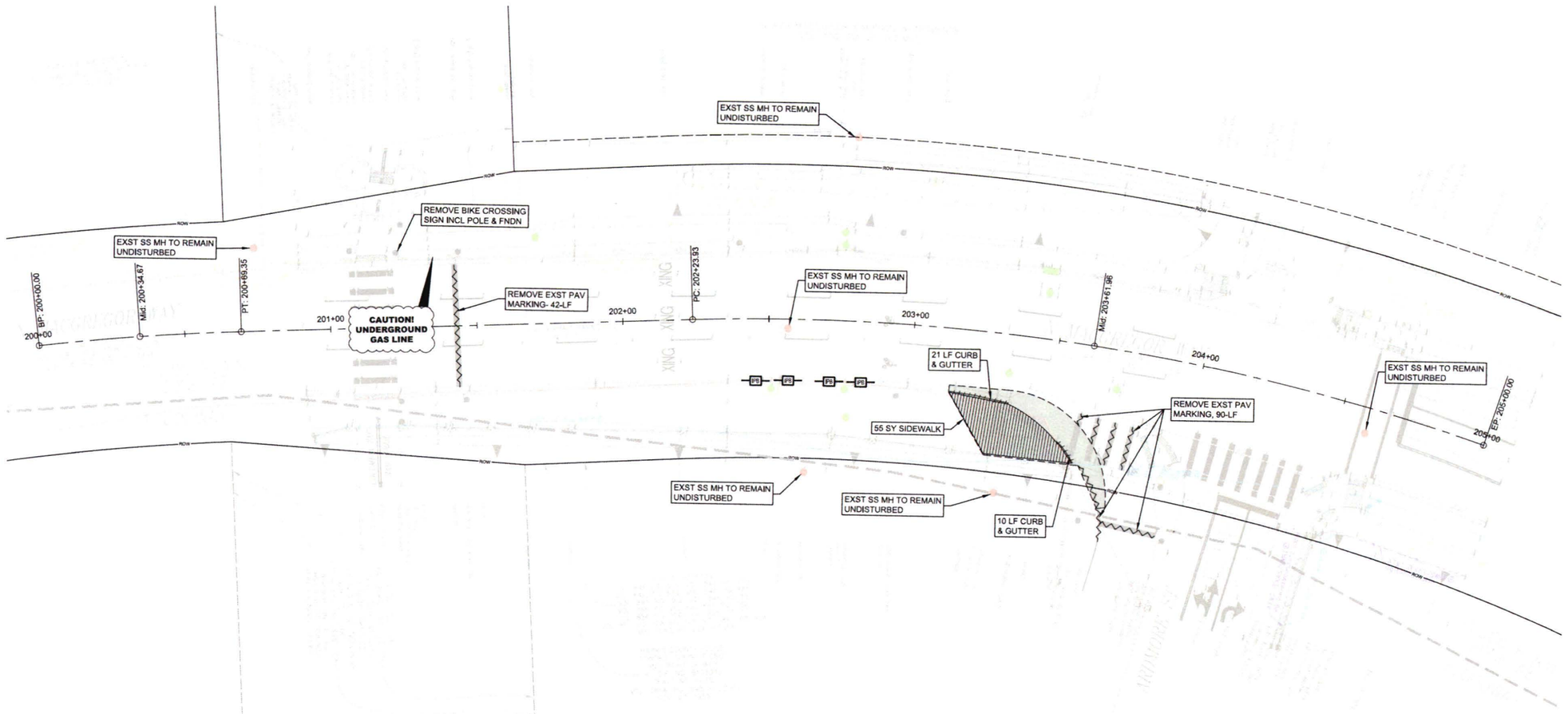

N

0 20 40 Feet

NO.	DATE	REVISION	APP.

REMOVAL LEGEND

- AREA OF DISTURBANCE
- REMOVE CONCRETE CURB
- REMOVE ITEM AS NOTED
- REMOVE CONCRETE SIDEWALK/ ASPHALT DRIVEWAY/MEDIAN
- 40 LF XX — REMOVAL QUANTITY
- IPB — INLET PROTECTION BARRIER / SAND TUBE
- RSF — REINFORCED SILT FENCE
- ECL — EROSION CONTROL LOG

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TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
ASHISH GHOSH
111103
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PROFESSIONAL ENGINEER
06/03/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

REMOVAL & SWPPP PLAN - N MACGREGOR WAY AT COLUMBIA TAP RAIL TRAIL

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	ACCEPTED
DRAWING SCALE	80114
AS NOTED	
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 21 OF 70	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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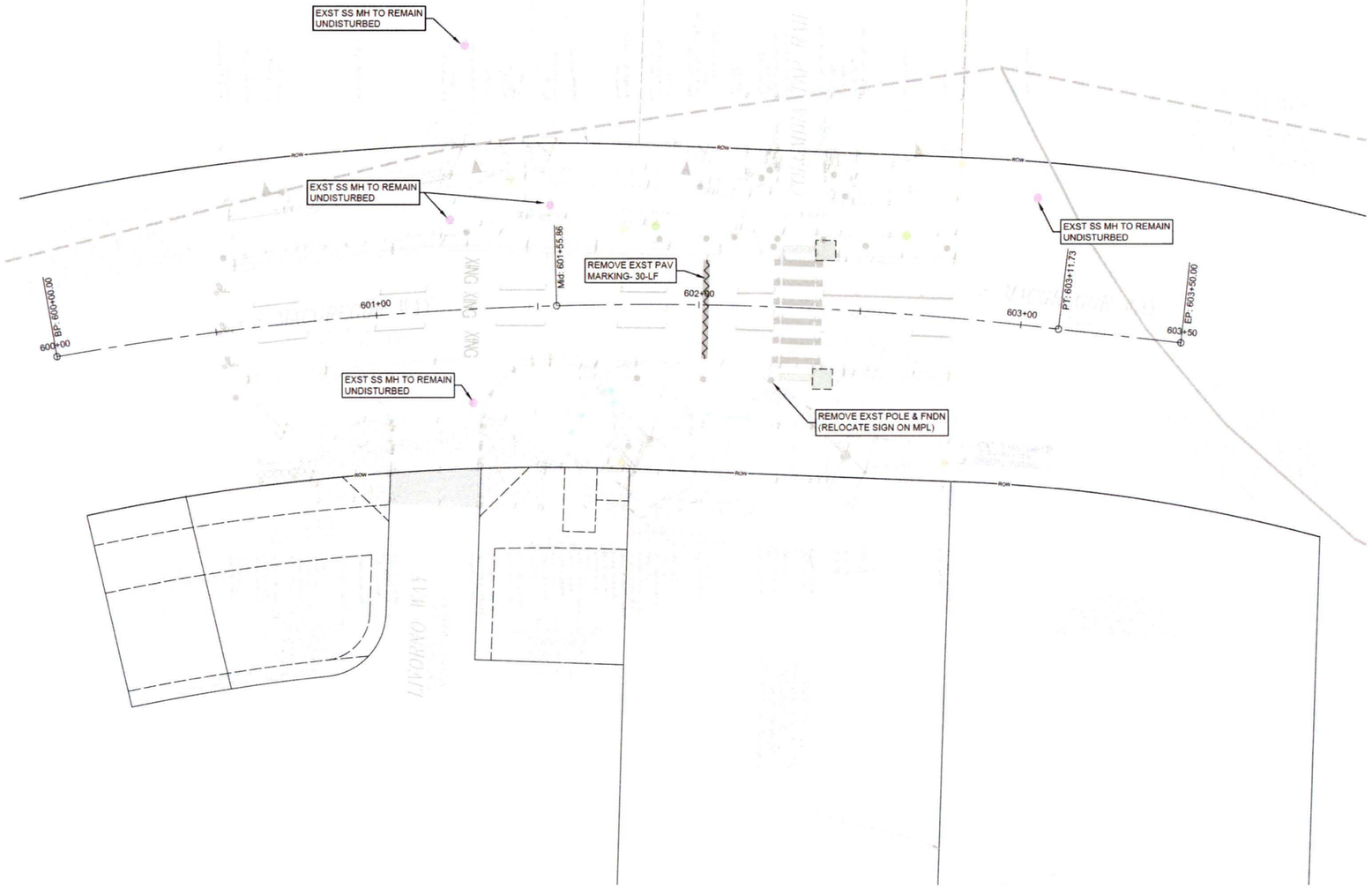

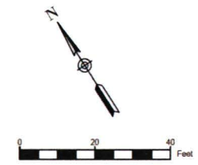

NO.	DATE	REVISION	APP.

REMOVAL LEGEND

- AREA OF DISTURBANCE
- REMOVE CONCRETE CURB
- REMOVE ITEM AS NOTED
- REMOVE CONCRETE SIDEWALK/ ASPHALT DRIVEWAY/MEDIAN
- XX REMOVAL QUANTITY
- IPB INLET PROTECTION BARRIER / SAND TUBE
- RSF REINFORCED SILT FENCE
- ECL EROSION CONTROL LOG

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower Date 06/10/25

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Brian L Hill 06/10/25
Date

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TX Engineering Firm Reg. No. F-4275
TX Surveying Firm Reg. No. 100756-00

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

REMOVAL & SWPPP PLAN -
S MACGREGOR WAY AT
COLUMBIA TAP RAIL TRAIL

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON PM	
ARCHIE BLANCO	
SHEET NO. 22 OF 70	

PUBLIC WORKS & ENGINEERING ACCEPTED
JUN 10 2025
HOUSTON, TEXAS

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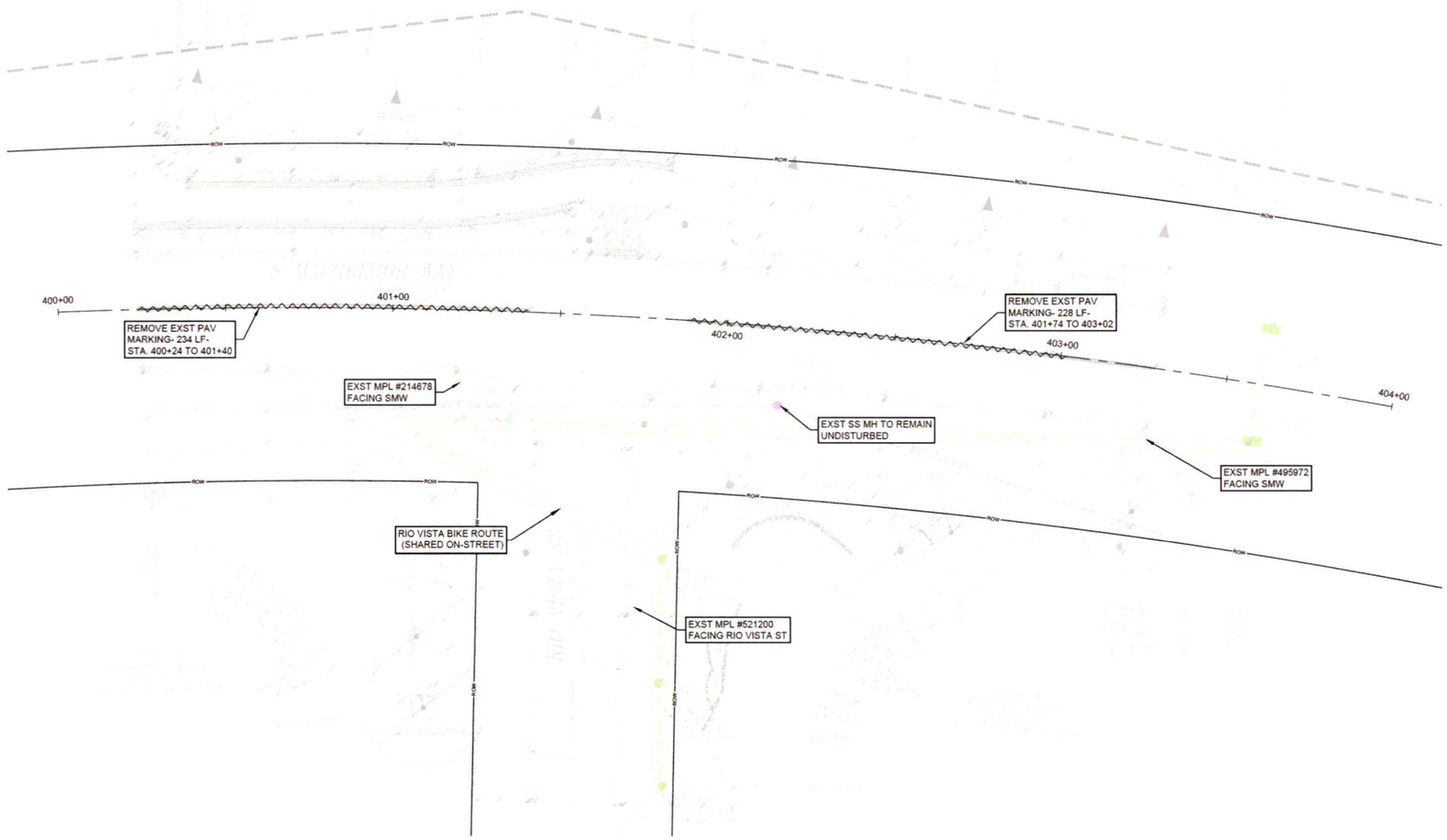

N

0 20 40 Feet

NO.	DATE	REVISION	APP.

REMOVAL LEGEND

- AREA OF DISTURBANCE
- REMOVE CONCRETE CURB
- REMOVE ITEM AS NOTED
- REMOVE CONCRETE SIDEWALK/ ASPHALT DRIVEWAY/MEDIAN
- XX REMOVAL QUANTITY
- IPB INLET PROTECTION BARRIER / SAND TUBE
- RSF REINFORCED SILT FENCE
- ECL EROSION CONTROL LOG

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Brian L Hill 06/10/25 Date

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HOUSTON SOUTHEAST
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STATE OF TEXAS
ASHISH GHOSH
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05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

REMOVAL & SWPPP PLAN -
S MACGREGOR WAY AT RIO VISTA ST

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	80114
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
ARCHIE BLANCO	
SHEET NO. 23 OF 70	

RECEIVED
CITY SECRETARY
HOUSTON, TEXAS

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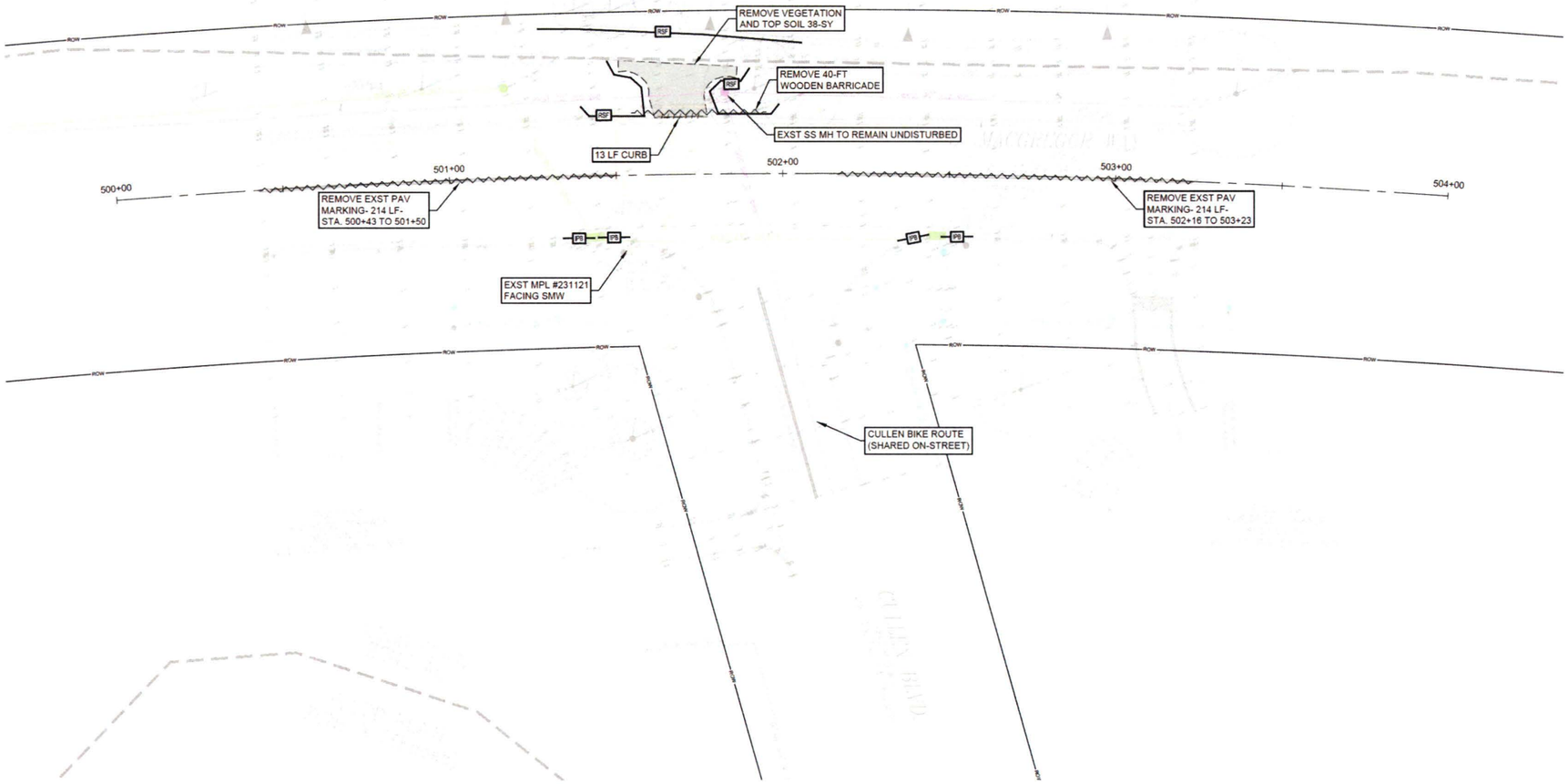

N

0 20 40 Feet

NO.	DATE	REVISION	APP.

REMOVAL LEGEND

- AREA OF DISTURBANCE
- REMOVE CONCRETE CURB
- REMOVE ITEM AS NOTED
- REMOVE CONCRETE SIDEWALK/ ASPHALT DRIVEWAY/MEDIAN
- 40 LF XX REMOVAL QUANTITY
- 85 LF IPS INLET PROTECTION BARRIER / SAND TUBE
- RSF REINFORCED SILT FENCE
- ECL EROSION CONTROL LOG

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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower Date 06/10/25

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Brian L Hill 06/10/25
Date

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05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

REMOVAL & SWPPP PLAN -
S MACGREGOR WAY AT CULLEN BLVD

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 24 OF 70	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

CITY DRAWING NO.
HOUSTON, TEXAS

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STREETLIGHTING NOTES:

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4. FIELD ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING CONDITIONS OR CNP DIRECTION.

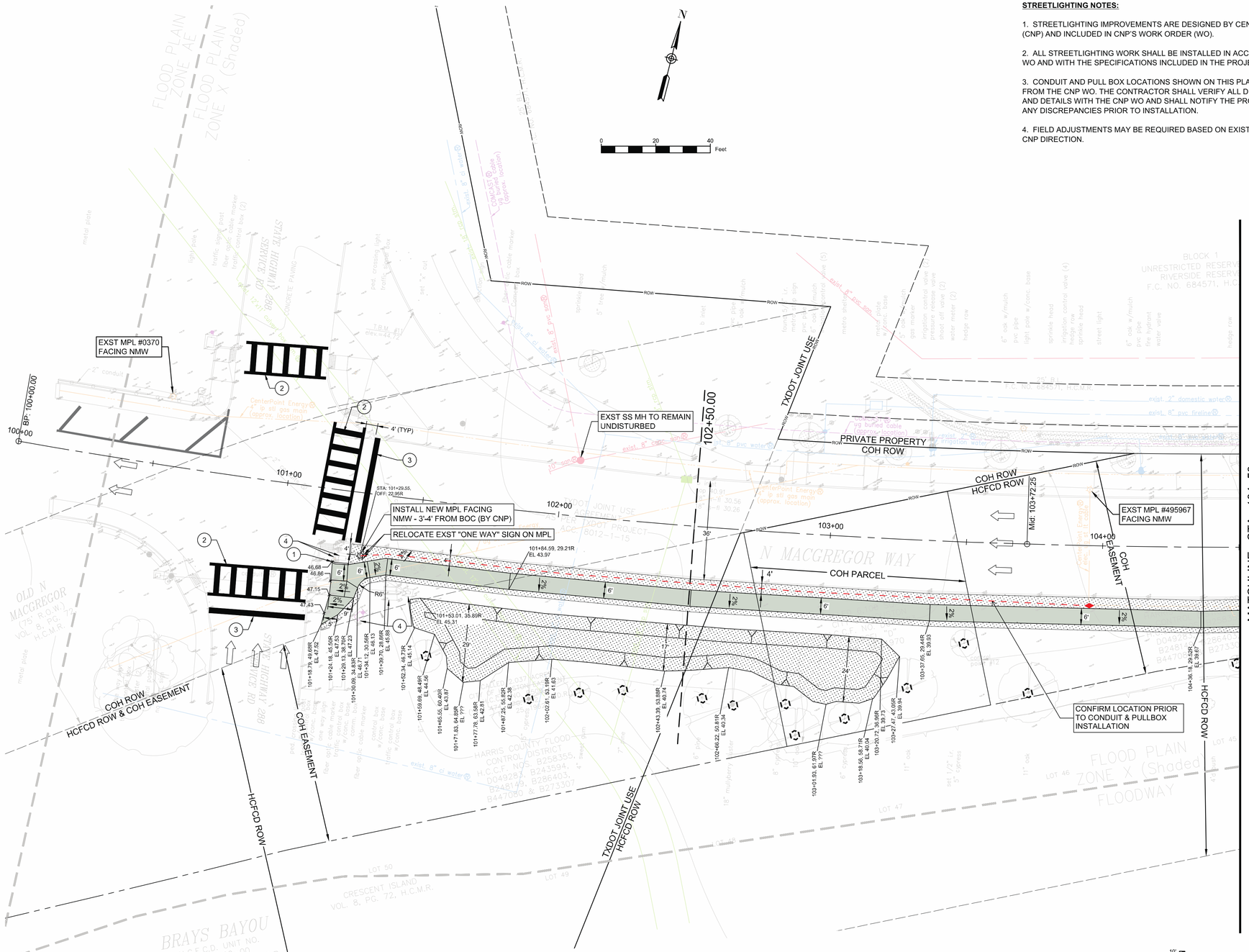
KEY NOTES:

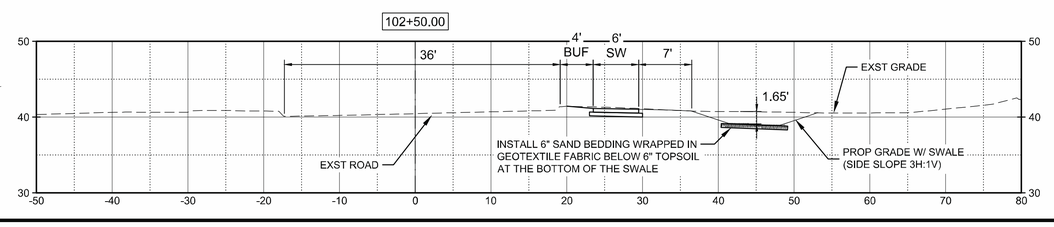
1. INSTALL CONCRETE CURB
2. INSTALL CROSSWALK PVMT MARKING (10-FT WIDE)
3. INSTALL STOP BAR (WS24)
4. PROTECT EXST STRUCTURE

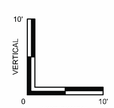
NO.	DATE	REVISION	APP.

LEGEND

- INSTALL SIDEWALK
- INSTALL SOD
- INSTALL TREE PROTECTION
- SLOPE / FLOW DIRECTION
- EXISTING TRAVEL WAY (NOT PAVEMENT MARKING)
- METAL POLE
- CNP PULL BOX FOR STREETLIGHTING
- CNP UNDERGROUND CONDUIT FOR STREETLIGHTING







CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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STATE OF TEXAS
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06/25/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SIDEWALK PLAN - N MACGREGOR WAY AT HWY 288 - 1 OF 2

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	N-MD0190-0003-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	ARCHIE BLANCO
SHEET NO.	25 OF 70

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80114
CITY DRAWING NUMBER
Approval Date 08/31/26
HOUSTON TX

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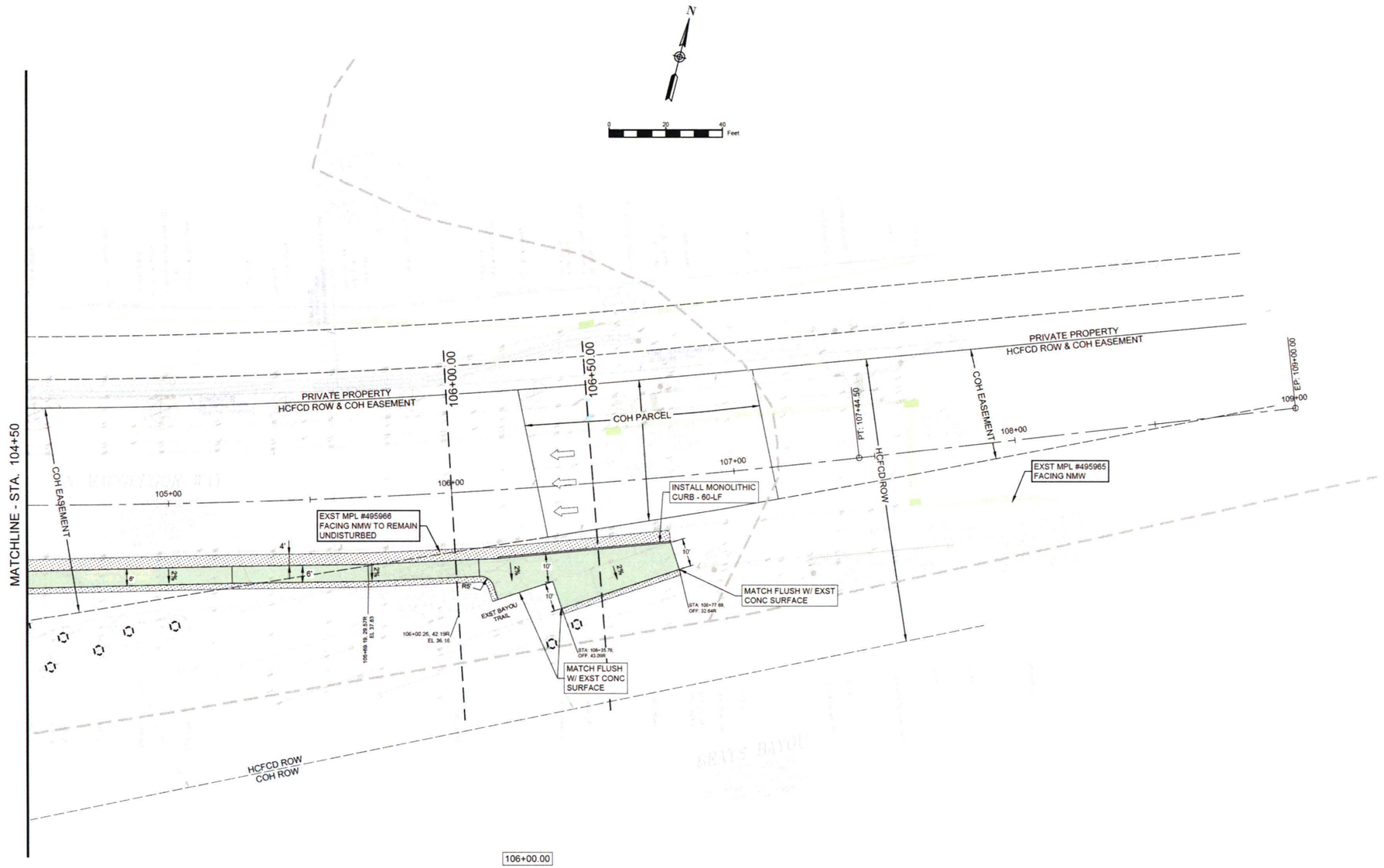

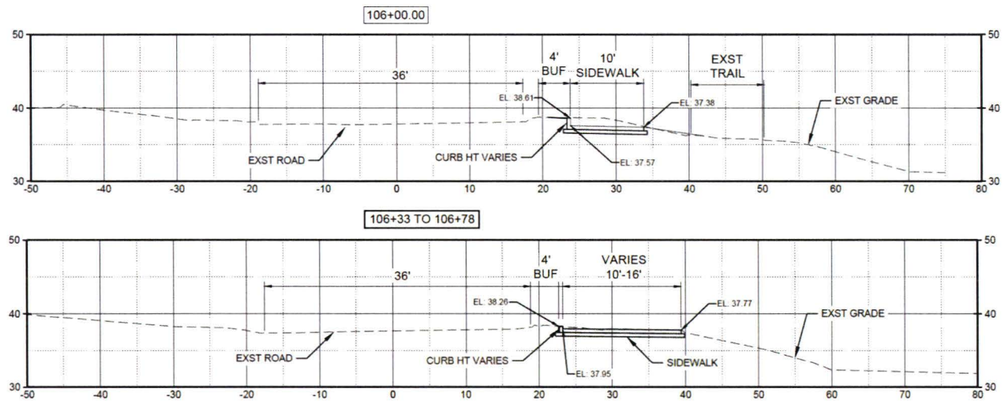

KEY NOTES:

1. INSTALL CONCRETE CURB
2. INSTALL CROSSWALK PVMT MARKING (10-FT WIDE)
3. INSTALL STOP BAR (WS24)
4. PROTECT EXST STRUCTURE

LEGEND

- INSTALL SIDEWALK
- INSTALL TREE PROTECTION
- SLOPE / FLOW DIRECTION
- EXISTING TRAVEL WAY (NOT PAVEMENT MARKING)

NO.	DATE	REVISION	APP.

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05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SIDEWALK PLAN -
N MACGREGOR WAY AT HWY 288 - 2 OF 2

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON PIC	
ARCHIE BLANCO	
SHEET NO. 26 OF 70	

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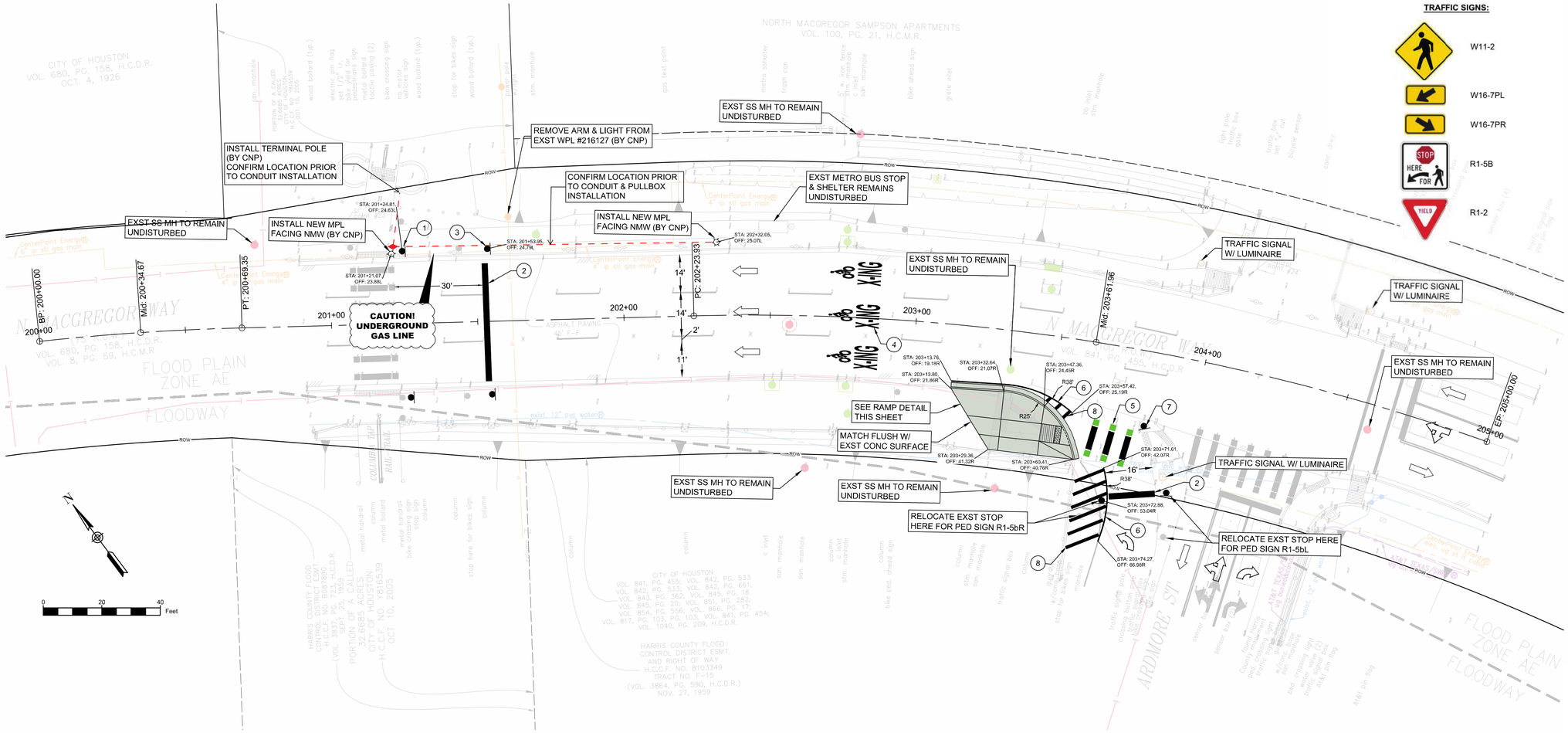


TRAFFIC SIGNS:

W11-2

W16-7PL

W16-7PR

R1-5B

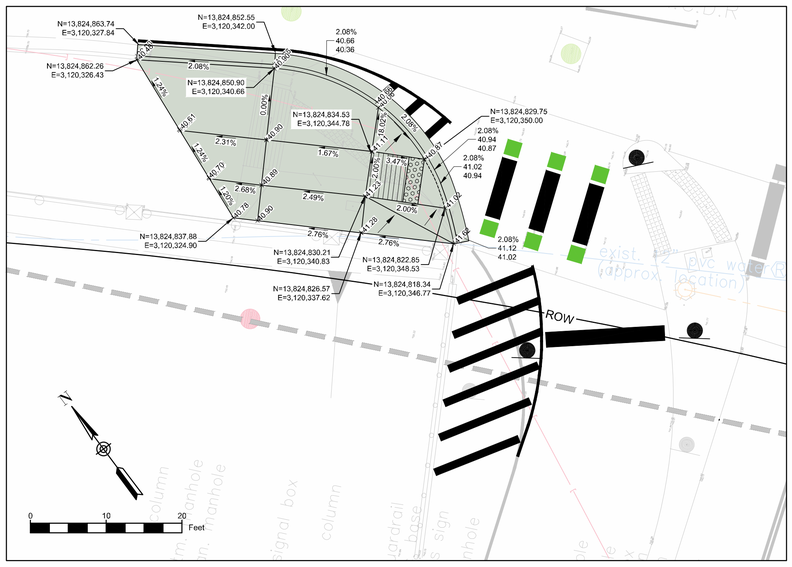
R1-2

KEY NOTES:

1. INSTALL SIGNS (W11-2 & W16-7) WITH RECTANGULAR RAPID-FLASHING BEACONS
2. INSTALL STOP BAR (WS24)
3. INSTALL SIGN (R1-5b)
4. INSTALL PAINTED CROSSING & WARNING MARKER
5. INSTALL CROSSWALK PVMT MARKING (10-FT WIDE)
6. INSTALL PVMT MARKING (WS4)
7. INSTALL YIELD SIGN (R1-2)
8. INSTALL PVMT MARKING (WS12) AT 4-FT SPACING

LEGEND

- INSTALL SIDEWALK
- INSTALL DETECTABLE WARNING SURFACE
- INSTALL RAMP
- INSTALL REFL PVMT MARKING
- EXISTING TRAVEL WAY (NOT PAVEMENT MARKING)
- METAL POLE
- CNP PULL BOX FOR STREETLIGHTING
- CNP UNDERGROUND CONDUIT FOR STREETLIGHTING



RAMP DETAIL

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NO.	DATE	REVISION	APP.

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06/03/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

SIDEWALK PLAN - N MACGREGOR WAY AT COLUMBIA TAP RAIL TRAIL

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	N-MD0190-0003-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	ARCHIE BLANCO
SHEET NO.	27 OF 70

FOR CITY OF HOUSTON USE ONLY

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
80114
CITY DRAWING NUMBER
Approval Date 08/27/26
HOUSTON TX

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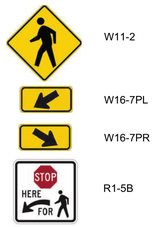
TRAFFIC SIGNS:



KEY NOTES:

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2. INSTALL STOP BAR (WS24)
3. INSTALL SIGN (R1-5b)
4. INSTALL PAINTED CROSSING & WARNING MARKER
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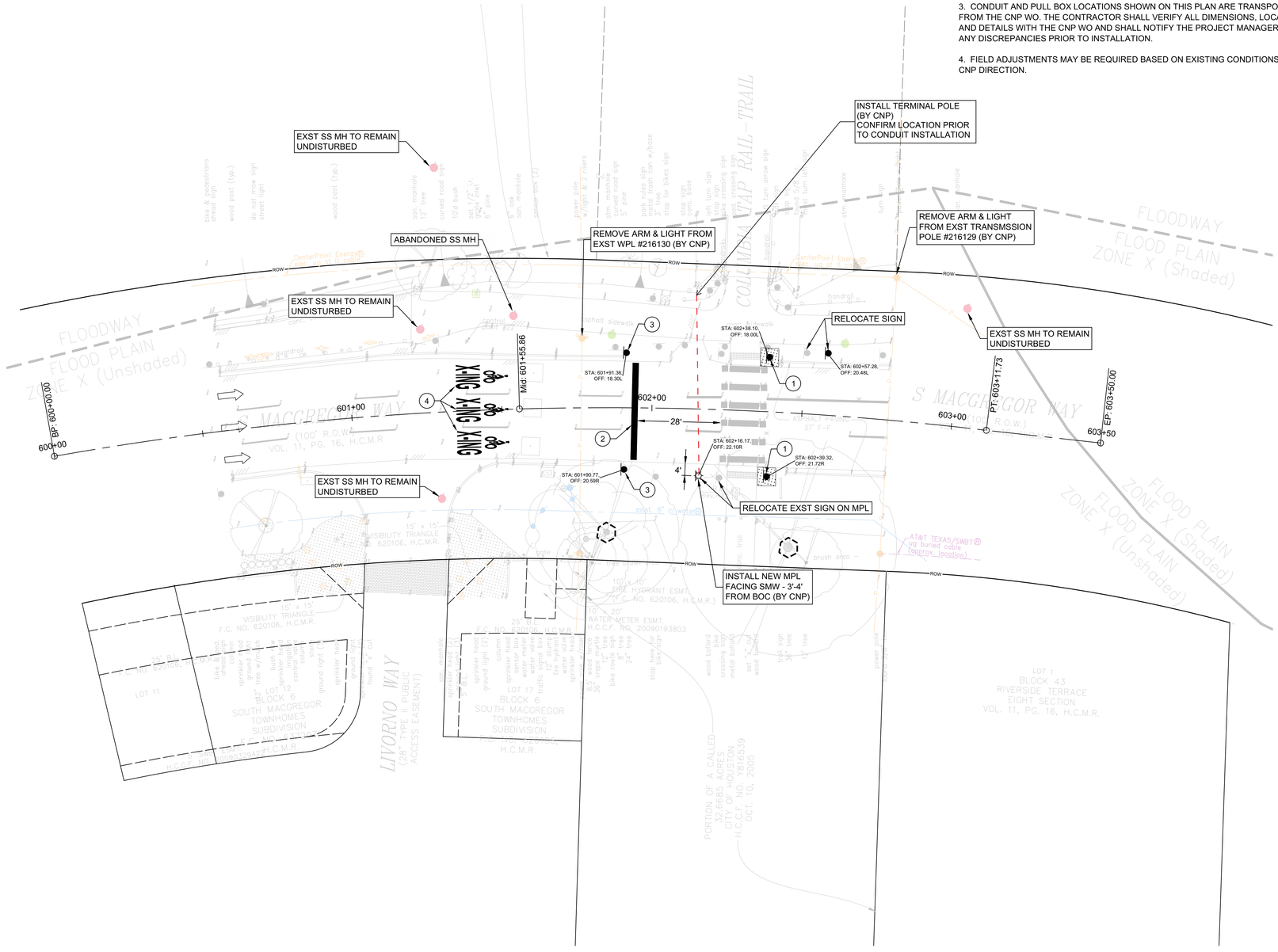
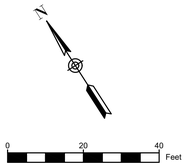
6. INSTALL PVMT MARKING (WS4)
7. INSTALL YIELD SIGN (R1-2)

NO.	DATE	REVISION	APP.





LEGEND

- INSTALL SOD
- INSTALL REFL PVMT MARKING
- INSTALL TREE PROTECTION
- EXISTING TRAVEL WAY (NOT PAVEMENT MARKING)
- METAL POLE
- CNP PULL BOX FOR STREETLIGHTING
- CNP UNDERGROUND CONDUIT FOR STREETLIGHTING

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SIDEWALK PLAN - S MACGREGOR WAY AT COLUMBIA TAP RAIL TRAIL

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER
N-MD0190-0003-7
DRAWING SCALE
AS NOTED
CITY OF HOUSTON POC
ARCHIE BLANCO
SHEET NO. 28 OF 70

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TRAFFIC SIGNS:

W11-1

AHEAD W16-9P

KEY NOTES:

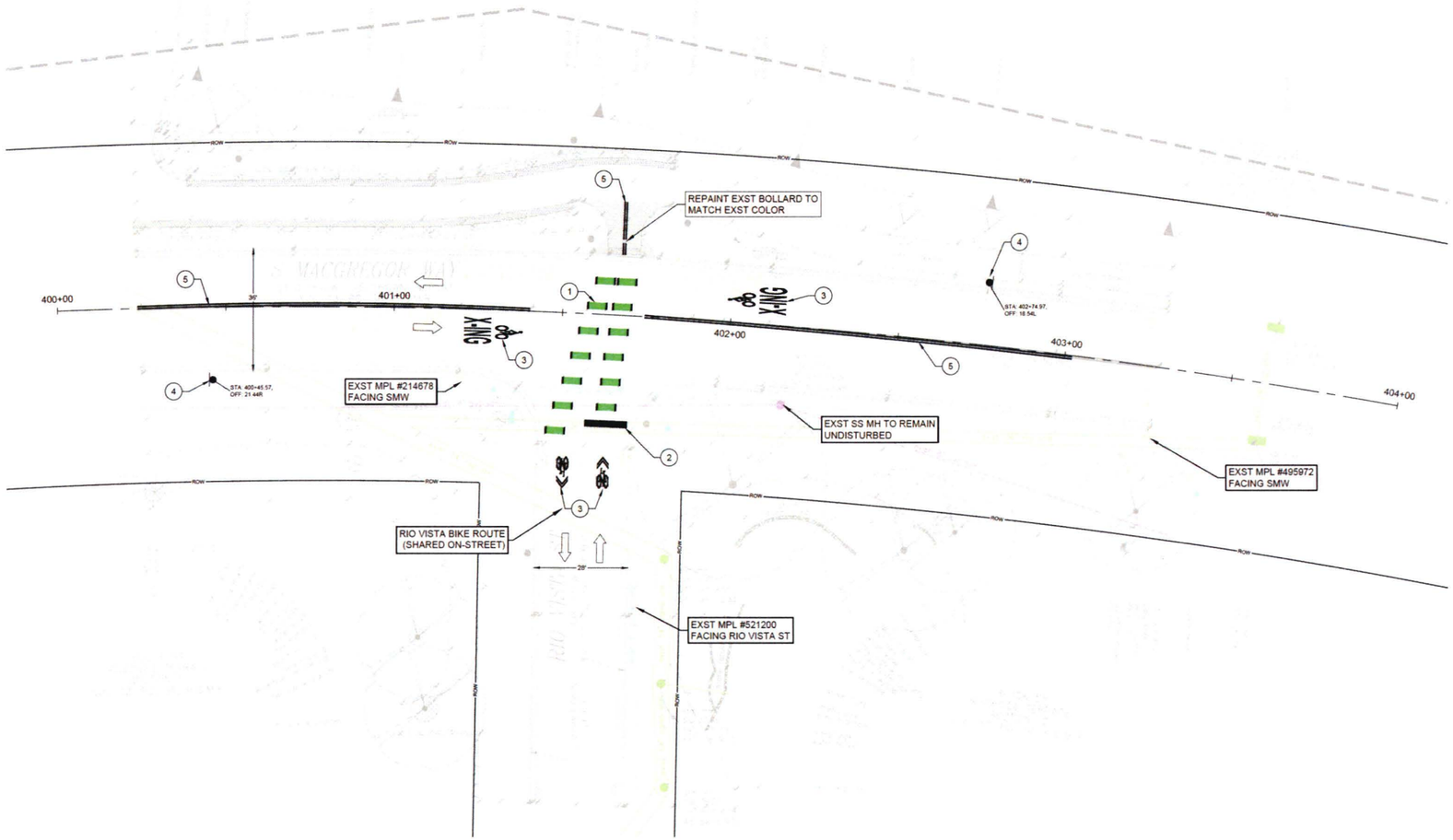
1. INSTALL 6' WIDE BICYCLE GREEN STRIPING
2. INSTALL STOP BAR (WS24)
3. INSTALL PAINTED CROSSING & WARNING MARKER
4. INSTALL SIGNS (W11-1 & W16-9P)
5. INSTALL PVMT MARKING (YDS4)

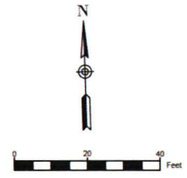
NO.	DATE	REVISION	APP.

LEGEND

INSTALL REFL PVMT MARKING

EXISTING TRAVEL WAY (NOT PAVEMENT MARKING)





CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SIDEWALK PLAN -
S MACGREGOR WAY AT RIO VISTA ST

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	ACCEPTED
DRAWING SCALE	
AS NOTED	80114
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ARCHIE BLANCO	
SHEET NO. 29 OF 70	

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STREETLIGHTING NOTES:

1. STREETLIGHTING IMPROVEMENTS ARE DESIGNED BY CENTERPOINT ENERGY (CNP) AND INCLUDED IN CNP'S WORK ORDER (WO).

2. ALL STREETLIGHTING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CNP WO AND WITH THE SPECIFICATIONS INCLUDED IN THE PROJECT MANUAL.

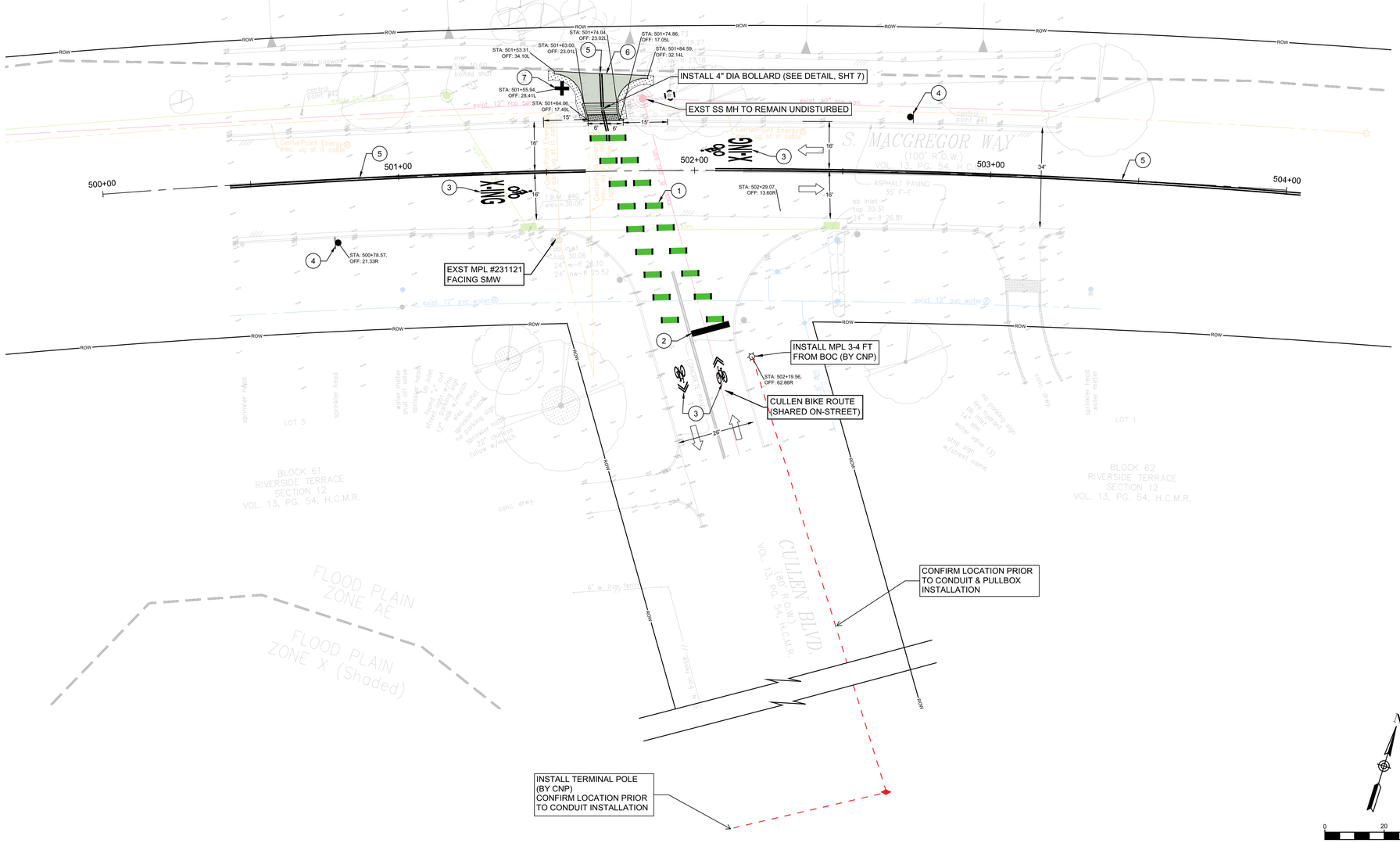
3. CONDUIT AND PULL BOX LOCATIONS SHOWN ON THIS PLAN ARE TRANSPOSED FROM THE CNP WO. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LOCATIONS, AND DETAILS WITH THE CNP WO AND SHALL NOTIFY THE PROJECT MANAGER (PM) OF ANY DISCREPANCIES PRIOR TO INSTALLATION.

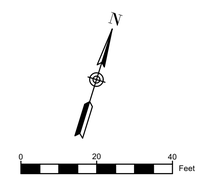
4. FIELD ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING CONDITIONS OR CNP DIRECTION.

TRAFFIC SIGNS:

W11-1

W16-9P





CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

KEY NOTES:

1. INSTALL 6' WIDE BICYCLE GREEN STRIPING
2. INSTALL STOP BAR (WS24)
3. INSTALL PAINTED CROSSING & WARNING MARKER
4. INSTALL SIGNS (W11-1 & W16-9P)
5. INSTALL PVMT MARKING (YDS4)
6. INSTALL NEW CROSSING CONNECTION
7. INSTALL TRAIL GATEWAY MARKER

LEGEND

- INSTALL SIDEWALK
- INSTALL DETECTABLE WARNING SURFACE
- INSTALL RAMP
- INSTALL SOD
- INSTALL REFL PVMT MARKING
- INSTALL TREE PROTECTION
- EXISTING TRAVEL WAY (NOT PAVEMENT MARKING)
- METAL POLE
- CNP PULL BOX FOR STREETLIGHTING
- CNP UNDERGROUND CONDUIT FOR STREETLIGHTING

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

Mike Brower — Date 06/10/25

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

Signature valid for six months.

Mike Brower — Date 06/10/25

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

Signature valid for six months.

Brian L Hill — Date 06/10/25

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

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
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713-942-0500

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TX Engineering Firm Reg. No. F-4578
TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SIDEWALK PLAN - S MACGREGOR WAY AT CULLEN BLVD

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER
N-MD0190-0003-7
DRAWING SCALE
AS NOTED
CITY OF HOUSTON POC
ARCHIE BLANCO
SHEET NO. 30 OF 70

FOR CITY OF HOUSTON USE ONLY

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
80114
CITY DRAWING NUMBER
Approval Date 08/27/26
HOUSTON TX

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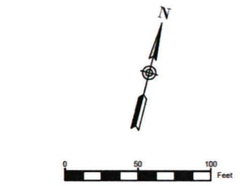

TXDOT COORDINATION NOTE:

PRIOR MOBILIZATION, COORDINATE WITH TXDOT WEST HARRIS AREA OFFICE AT: 713-934-5900. TXDOT CREW IS SCHEDULED TO WORK ALONG NORTH SIDE OF N MACGREGOR WAY WITH TWO LANES CLOSED FROM APRIL 2024 THROUGH JULY 2024 FOR SH-288 DRAINAGE IMPROVEMENT PROJECT.

NOTES:

1. A 10' MINIMUM LANE WIDTH FOR EMERGENCY SHALL BE MAINTAINED BY THE CONTRACTOR AT ALL TIMES. USE FLAGGERS AS NEEDED DURING CONSTRUCTION IN DAY TIME.
2. INSTALL APPROVED CHANNELIZATION DEVICES TO KEEP 10-FT LANE SEPARATE AND OPEN IN EACH DIRECTION DURING NIGHT TIME.
3. INSTALL FLASHERS AND OTHER LIGHTING DEVICES AS REQUIRED AND APPROVED BY THE CITY ENGINEER FOR NIGHT TIME.
4. IF 10-FT MINIMUM LANE WIDTH IN EACH DIRECTION CANNOT BE MAINTAINED, CONTRACTOR SHALL PROVIDE DETOUR FOLLOWING THE STANDARD DETAIL DRAWING NO. 01555-05.
5. BACK OF THE CURB WORK CAN BE PERFORMED WITHOUT LANE CLOSURE WHERE PRACTICAL. LANE CLOSURE WILL REQUIRE APPROVAL FROM THE CITY. LANE CLOSURE IS ALLOWED ONLY BETWEEN 9:00 AM TO 3:30 PM IF APPROVED BY THE CITY.

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6. USE BLAST CLEANING (SAND BLASTING) TO REMOVE OLD PAVEMENT MARKINGS, SO THE MARKING IS THOROUGHLY ELIMINATED.
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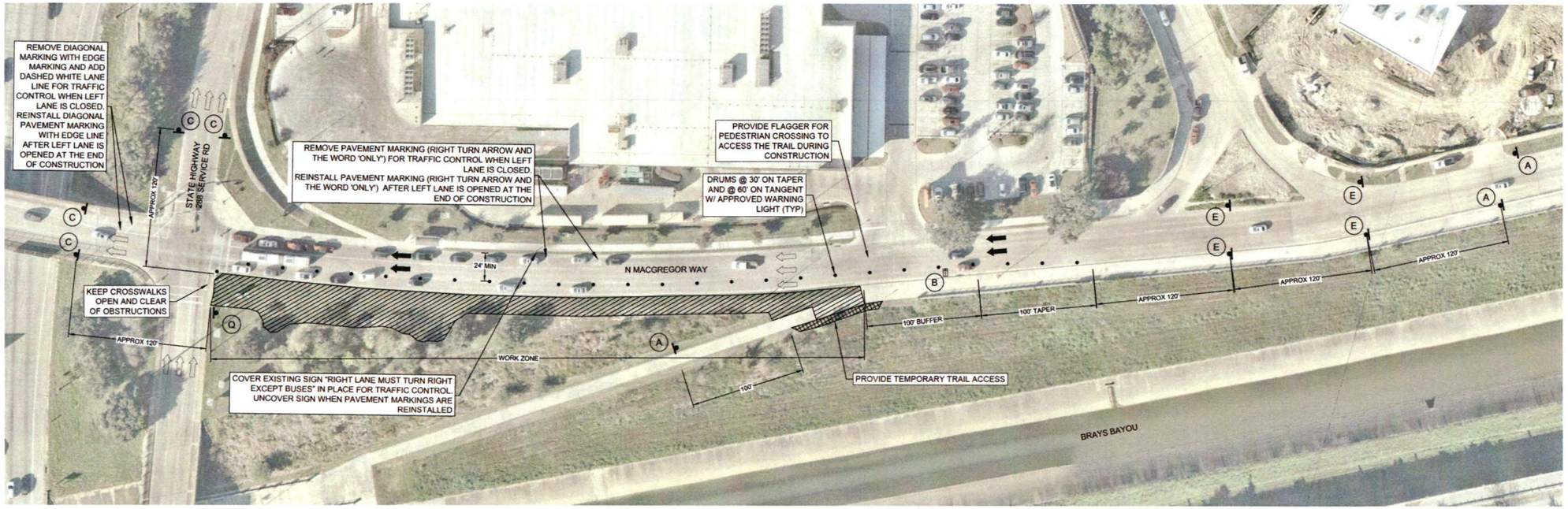
LEGEND:

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

NO.	DATE	REVISION	APP.



TEMPORARY SIGNAGE LEGEND:

A	ROAD WORK AHEAD	CW20-1 ROAD WORK AHEAD, 36" X 36" (30" X 30" FOR PED/BIKE)	B		FLASHING ARROW BOARD
C	END ROAD WORK	G20-2 END ROAD WORK 36" X 18"	D	RIGHT LANE CLOSED AHEAD	CW20-5AR, RIGHT LANE CLOSED 36" X 36" CW16-3 AHEAD 24" X 12"
E	LEFT LANE CLOSED AHEAD	CW20-5AL LEFT LANE CLOSED 36" X 36" CW16-3 AHEAD 24" X 12"	F	RIGHT LANE MUST TURN RIGHT	R3-7R RIGHT LANE MUST TURN RIGHT 30" X 30"
G		R3-1 NO RIGHT TURN 24" X 24"	H		W6-3 TWO WAY TRAFFIC 36" X 36"
J		R3-2 NO LEFT TURN 24" X 24"	K	ONE LANE ROAD	CW20-4 ONE LANE ROAD 36" X 36"
N	DO NOT ENTER	R5-1 DO NOT ENTER 36" X 36"	M	ROAD NARROWS AHEAD	W5-1 ROAD NARROWS 36" X 36" CW16-3, AHEAD
O	SIDEWALK CLOSED	R9-9 SIDEWALK CLOSED 24" X 12"			
Q	SIDEWALK CLOSED USE OTHER SIDE	R9-10 SIDEWALK CLOSED, USE OTHER SIDE 24" X 12"	P	PEDESTRIAN CROSSWALK	R9-8 PEDESTRIAN CROSSWALK 36" X 18"
S	AHEAD	W11-2 PEDESTRIAN SYMBOL 30" X 30" W16-9P AHEAD 24" X 12"	R	SIDEWALK CLOSED CROSS HERE	R9-11AL SIDEWALK CLOSED CROSS HERE 24" X 12"
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STATE OF TEXAS
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06/25/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN -
N MACGREGOR WAY AT HWY 288

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	ACCEPTED JOINTLY
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON POC	
ARCHIE BLANCO	
SHEET NO. 31 OF 70	

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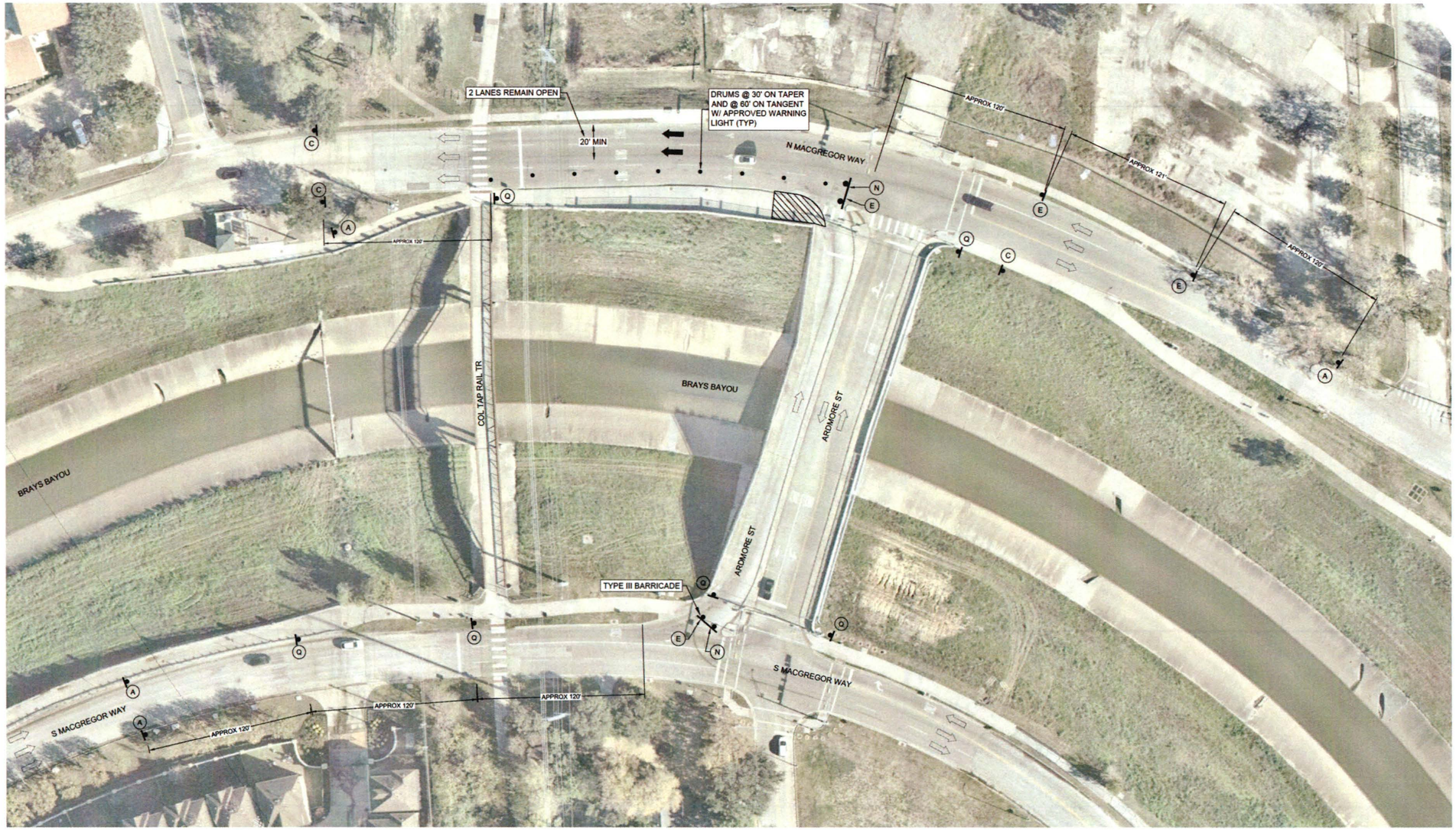

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713-942-0500

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06/25/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN - N MACGREGOR WAY AT COLUMBIA TAP RAIL TRAIL

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-T	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON ATJC	
ARCHIE BLANCO	
SHEET NO. 32 OF 70	

80114

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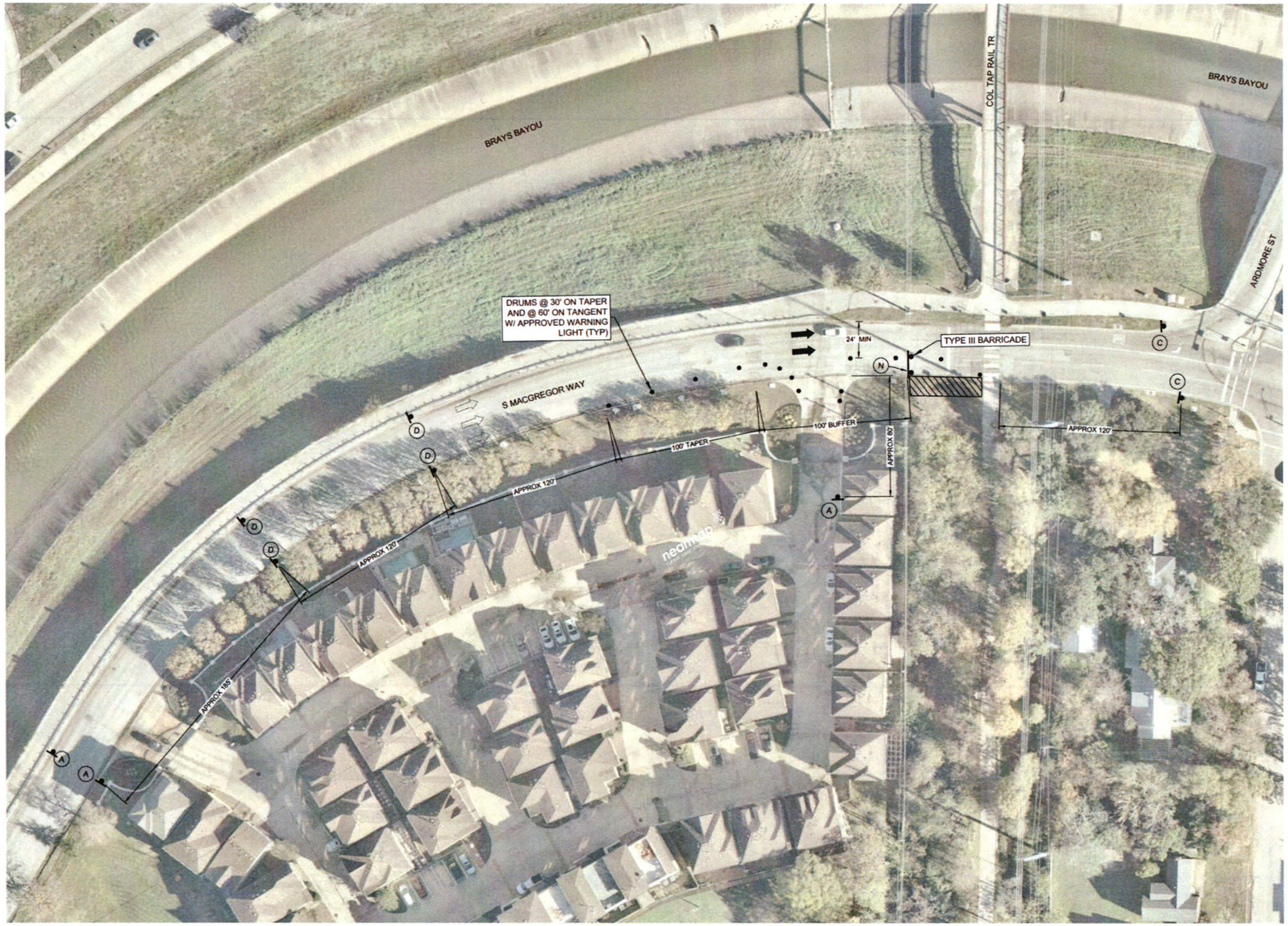
NO.	DATE	REVISION	APP.



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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN -
S MACGREGOR WAY AT
COLUMBIA TAP RAIL TRAIL -
PHASE 1

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	80114
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
ARCHIE BLANCO	
SHEET NO. 33 OF 70	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
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A	ROAD WORK AHEAD	CW20-1 ROAD WORK AHEAD, 36" X 36" (30" X 30" FOR PED/BIKE)	B	FLASHING ARROW BOARD
C	END ROAD WORK	G20-2 END ROAD WORK 36" X 18"	D	RIGHT LANE CLOSED AHEAD — CW20-5AR RIGHT LANE CLOSED 36" X 36"; CW16-3 AHEAD 24" X 12"
E	LEFT LANE CLOSED AHEAD	CW20-5AL LEFT LANE CLOSED 36" X 36"; CW16-3 AHEAD 24" X 12"	F	RIGHT LANE MUST TURN RIGHT — R3-7R RIGHT LANE MUST TURN RIGHT 30" X 30"
G		R3-1 NO RIGHT TURN 24" X 24"	H	W6-3 TWO WAY TRAFFIC 36" X 36"
J		R3-2 NO LEFT TURN 24" X 24"	K	ONE LANE ROAD — CW20-4 ONE LANE ROAD 36" X 36"
N	DO NOT ENTER	R5-1 DO NOT ENTER 30" X 30"	M	ROAD NARROWS AHEAD — W5-1 ROAD NARROWS 36" X 36"
O	SIDEWALK CLOSED	R9-9 SIDEWALK CLOSED 24" X 12"		CW16-3, AHEAD
Q	SIDEWALK CLOSED OTHER SIDE	R9-10 SIDEWALK CLOSED, USE OTHER SIDE 24" X 12"	P	PEDESTRIAN CROSSWALK — R9-8 PEDESTRIAN CROSSWALK 36" X 18"
S	AHEAD	W11-2 PEDESTRIAN SYMBOL 30" X 30"; W16-9P AHEAD 24" X 12"	R	SIDEWALK CLOSED CROSS HERE — R9-11AL SIDEWALK CLOSED, CROSS HERE 24" X 12"
			T	SIDEWALK CLOSED CROSS HERE — R9-11AR SIDEWALK CLOSED, CROSS HERE 24" X 12"
			U	W16-7L ARROW LEFT 24" X 12"
			V	W16-7R ARROW RIGHT 24" X 12"

N

0 40 80 Feet

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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5445 Almeda Rd, #503
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STATE OF TEXAS
ASHISH GHOSH
111103
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PROFESSIONAL ENGINEER
06/25/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN - S MACGREGOR WAY AT COLUMBIA TAP RAIL TRAIL - PHASE 2

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	N-MD0190-0003-T
DRAWING SCALE	AS NOTED
	CITY OF HOUSTON PCE
	ARCHIE BLANCO
SHEET NO.	34 OF 70

CITY OF HOUSTON USE ONLY
80114
CITY DRAWING NUMBER
HOUSTON, TEXAS

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N

0 50 100 Feet

NOTES:

1. A 10' MINIMUM LANE WIDTH FOR EMERGENCY SHALL BE MAINTAINED BY THE CONTRACTOR AT ALL TIMES. USE FLAGGERS AS NEEDED DURING CONSTRUCTION IN DAY TIME.
2. INSTALL APPROVED CHANNELIZATION DEVICES TO KEEP 10-FT LANE SEPARATE AND OPEN IN EACH DIRECTION DURING NIGHT TIME.
3. INSTALL FLASHERS AND OTHER LIGHTING DEVICES AS REQUIRED AND APPROVED BY THE CITY ENGINEER FOR NIGHT TIME.
4. IF 10-FT MINIMUM LANE WIDTH IN EACH DIRECTION CANNOT BE MAINTAINED, CONTRACTOR SHALL PROVIDE DETOUR FOLLOWING THE STANDARD DETAIL DRAWING NO. 01555-05.
5. BACK OF THE CURB WORK CAN BE PERFORMED WITHOUT LANE CLOSURE WHERE PRACTICAL. LANE CLOSURE WILL REQUIRE APPROVAL FROM THE CITY. LANE CLOSURE IS ALLOWED ONLY BETWEEN 9:00 AM TO 3:30 PM IF APPROVED BY THE CITY.

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3. THE CONTRACTOR IS RESPONSIBLE TO USE FLAGGERS AND/OR OFF DUTY POLICE OFFICERS AS REQUIRED FOR TEMPORARY LANE CLOSURES, MOBILIZATION/ DEMOBILIZATION, MATERIAL LOADING/ UNLOADING ETC. THESE ARE NOT SHOWN ON THIS TRAFFIC CONTROL PLAN.
4. WORK SHALL BE LIMITED TO ONE SIDE OF THE STREET AT A TIME. CONSTRUCTION OF BOTH CORNERS SHALL NOT BE CONCURRENT.
5. PUBLIC ALLEY CANNOT BE CLOSED FOR ANY REASON UNLESS APPROVED IN ADVANCE BY THE CITY ENGINEER IN WRITING.
6. USE BLAST CLEANING (SAND BLASTING) TO REMOVE OLD PAVEMENT MARKINGS, SO THE MARKING IS THOROUGHLY ELIMINATED.
7. TRAFFIC CONTROL SHALL REMAIN IN PLACE TIL ALL CONSTRUCTION WORK IS COMPLETE INCLUDING PAVEMENT MARKING AND SIGN INSTALLATION.

LEGEND:

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

NO.	DATE	REVISION	APP.

TEMPORARY SIGNAGE LEGEND:

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C	END ROAD WORK	G20-2 END ROAD WORK 36" X 18"	D	RIGHT LANE CLOSED / AHEAD	CW20-5AR RIGHT LANE CLOSED 36" X 36" CW16-3 AHEAD 24" X 12"
E	LEFT LANE CLOSED / AHEAD	CW20-5AL LEFT LANE CLOSED 36" X 36" CW16-3 AHEAD 24" X 12"	F	RIGHT LANE MUST TURN RIGHT	R3-7R RIGHT LANE MUST TURN RIGHT 30" X 30"
G		R3-1 NO RIGHT TURN 24" X 24"	H		W6-3 TWO WAY TRAFFIC 36" X 36"
J		R3-2 NO LEFT TURN 24" X 24"	K	ONE LANE ROAD	CW20-4 ONE LANE ROAD 36" X 36"
N	DO NOT ENTER	R5-1 DO NOT ENTER 30" X 30"	M	ROAD NARROWS / AHEAD	W5-1 ROAD NARROWS 36" X 36" CW16-3, AHEAD
O	SIDEWALK CLOSED	R9-9 SIDEWALK CLOSED 24" X 12"	P	PEDESTRIAN CROSSWALK	R9-8 PEDESTRIAN CROSSWALK 36" X 18"
Q	SIDEWALK CLOSED / OTHER SIDE	R9-10 SIDEWALK CLOSED, USE OTHER SIDE 24" X 12"	R	SIDEWALK CLOSED / CROSS HERE	R9-11AL SIDEWALK CLOSED, CROSS HERE 24" X 12"
S	AHEAD	W11-2 PEDESTRIAN SYMBOL 30" X 30" W16-9P AHEAD 24" X 12"	T	SIDEWALK CLOSED / CROSS HERE	R9-11AR SIDEWALK CLOSED, CROSS HERE 24" X 12"
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06/25/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN -
S MACGREGOR WAY AT RIO VISTA ST -
PHASE 1

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	80114
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PO#	
ARCHIE BLANCO	
SHEET NO. 35 OF 70	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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N

0 50 100 Feet

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- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NO.	DATE	REVISION	APP.

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C	G20-2 END ROAD WORK 36" X 18"	D	CW20-5AR RIGHT LANE CLOSED 36" X 36" + CW16-3 AHEAD 24" X 12"
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN -
S MACGREGOR WAY AT RIO VISTA ST -
PHASE 2

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON ROC	
ARCHIE BLANCO	
SHEET NO. 36 OF 70	

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N

0 50 100 Feet

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

NO.	DATE	REVISION	APP.

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06/25/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN -
S MACGREGOR WAY AT RIO VISTA ST -
PHASE 3

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON PSC	
ARCHIE BLANCO	
SHEET NO. 37 OF 70	

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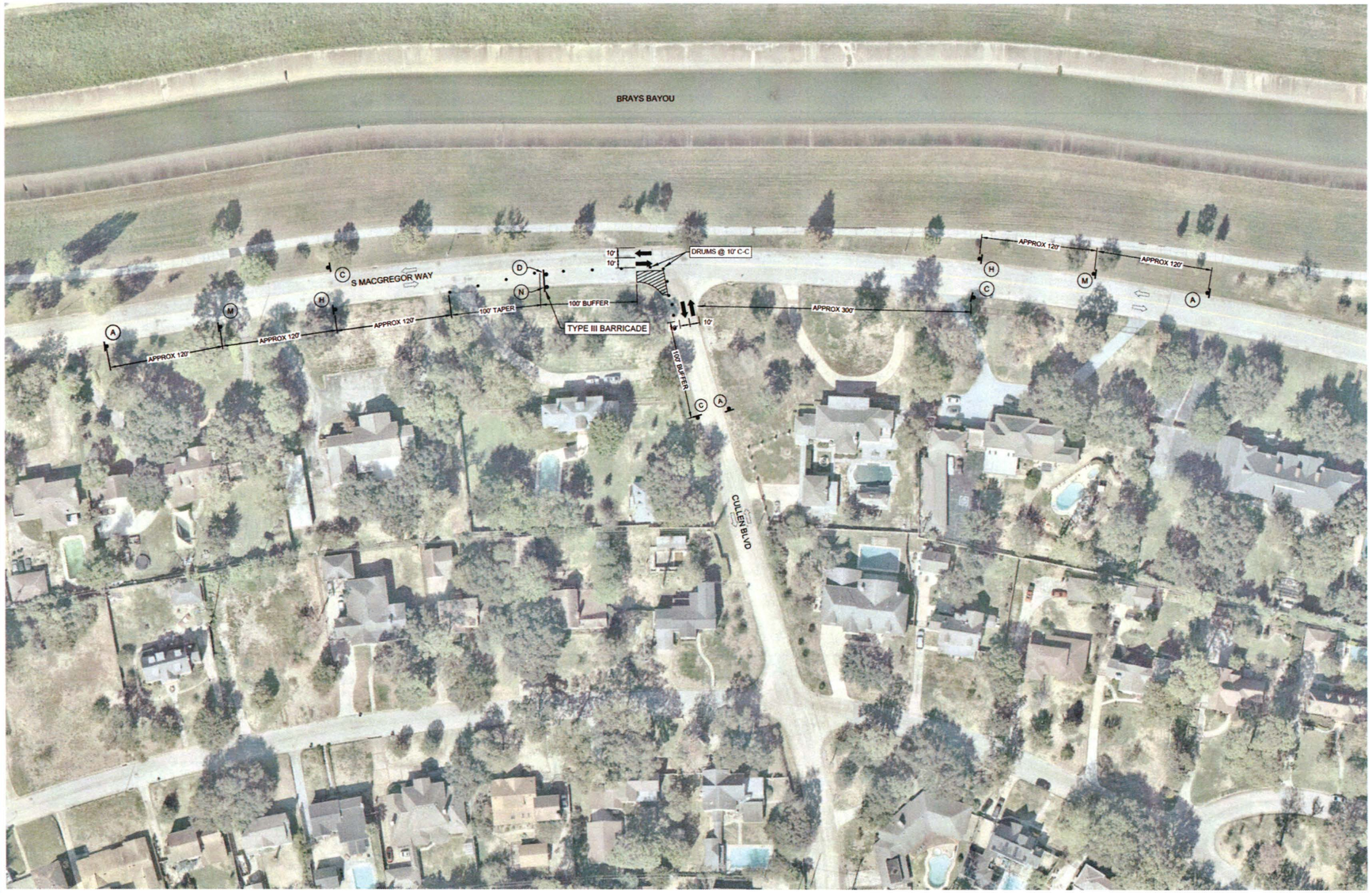

LEGEND:

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- FLASHING ARROW PANEL
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NO.	DATE	REVISION	APP.

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN -
S MACGREGOR WAY AT CULLEN BLVD -
PHASE 1

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON POC	
ARCHIE BLANCO	
SHEET NO. 38 OF 70	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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2. THIS PLAN SHOWS MINIMUM REQUIREMENTS FOR TRAFFIC CONTROLS BASED ON TYPICAL CONSTRUCTION PROCEDURE. THE CONTRACTOR IS RESPONSIBLE TO MAKE ADDITIONAL ARRANGEMENTS AS NEEDED BASED ON THE ACTUAL METHOD ADOPTED AT SITE TO ENSURE SAFETY FOR ALL CONSTRUCTION WORKERS AND ROAD USERS AT ALL TIME.
3. THE CONTRACTOR IS RESPONSIBLE TO USE FLAGGERS AND/OR OFF DUTY POLICE OFFICERS AS REQUIRED FOR TEMPORARY LANE CLOSURES, MOBILIZATION/ DEMOBILIZATION, MATERIAL LOADING/ UNLOADING ETC. THESE ARE NOT SHOWN ON THIS TRAFFIC CONTROL PLAN.
4. WORK SHALL BE LIMITED TO ONE SIDE OF THE STREET AT A TIME. CONSTRUCTION OF BOTH CORNERS SHALL NOT BE CONCURRENT.
5. PUBLIC ALLEY CANNOT BE CLOSED FOR ANY REASON UNLESS APPROVED IN ADVANCE BY THE CITY ENGINEER IN WRITING.
6. USE BLAST CLEANING (SAND BLASTING) TO REMOVE OLD PAVEMENT MARKINGS, SO THE MARKING IS THOROUGHLY ELIMINATED.
7. TRAFFIC CONTROL SHALL REMAIN IN PLACE TIL ALL CONSTRUCTION WORK IS COMPLETE INCLUDING PAVEMENT MARKING AND SIGN INSTALLATION.

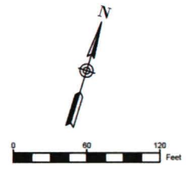
LEGEND:

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

NO.	DATE	REVISION	APP.

TEMPORARY SIGNAGE LEGEND:

A	ROAD WORK AHEAD	CW20-1 ROAD WORK AHEAD, 36" X 36" (30" X 30" FOR PED/BIKE)	B		FLASHING ARROW BOARD
C	END ROAD WORK	G20-2 END ROAD WORK 36" X 18"	D	RIGHT LANE CLOSED AHEAD	CW20-5AR RIGHT LANE CLOSED 36" X 36" / CW16-3 AHEAD 24" X 12"
E	LEFT LANE CLOSED AHEAD	CW20-5AL LEFT LANE CLOSED 36" X 36" / CW16-3 AHEAD 24" X 12"	F	RIGHT LANE MUST TURN RIGHT	R3-7R RIGHT LANE MUST TURN RIGHT 30" X 30"
G		R3-1 NO RIGHT TURN 24" X 24"	H		W6-3 TWO WAY TRAFFIC 36" X 36"
J		R3-2 NO LEFT TURN 24" X 24"	K	ONE LANE ROAD	CW20-4 ONE LANE ROAD 36" X 36"
N	DO NOT ENTER	R5-1 DO NOT ENTER 30" X 30"	M	ROAD NARROWS AHEAD	W5-1 ROAD NARROWS 36" X 36" / CW16-3, AHEAD
O	SIDEWALK CLOSED	R9-9 SIDEWALK CLOSED 24" X 12"			
Q	SIDEWALK CLOSED USE OTHER SIDE	R9-10 SIDEWALK CLOSED, USE OTHER SIDE 24" X 12"	P	PEDESTRIAN CROSSWALK	R9-8 PEDESTRIAN CROSSWALK 36" X 18"
S	AHEAD	W11-2 PEDESTRIAN SYMBOL 30" X 30" / W16-9P AHEAD 24" X 12"	R	SIDEWALK CLOSED CROSS HERE	R9-11AL SIDEWALK CLOSED CROSS HERE 24" X 12"
			T	SIDEWALK CLOSED CROSS HERE	R9-11AR SIDEWALK CLOSED CROSS HERE 24" X 12"
			U		W16-7L ARROW LEFT 24" X 12"
			V		W16-7R ARROW RIGHT 24" X 12"



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713-942-0500

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Fax: (713) 975-9909
www.kuoassociates.com
Consulting Engineers & Surveyors
TX Engineering Firm Reg. No. F-4278
TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
06/25/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN -
S MACGREGOR WAY AT CULLEN BLVD -
PHASE 2

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 39 OF 70	

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

80114

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NOTES:

1. A 10' MINIMUM LANE WIDTH FOR EMERGENCY SHALL BE MAINTAINED BY THE CONTRACTOR AT ALL TIMES. USE FLAGGERS AS NEEDED DURING CONSTRUCTION IN DAY TIME.
2. INSTALL APPROVED CHANNELIZATION DEVICES TO KEEP 10-FT LANE SEPARATE AND OPEN IN EACH DIRECTION DURING NIGHT TIME.
3. INSTALL FLASHERS AND OTHER LIGHTING DEVICES AS REQUIRED AND APPROVED BY THE CITY ENGINEER FOR NIGHT TIME.
4. IF 10-FT MINIMUM LANE WIDTH IN EACH DIRECTION CANNOT BE MAINTAINED, CONTRACTOR SHALL PROVIDE DETOUR FOLLOWING THE STANDARD DETAIL DRAWING NO. 01555-05.
5. BACK OF THE CURB WORK CAN BE PERFORMED WITHOUT LANE CLOSURE WHERE PRACTICAL. LANE CLOSURE WILL REQUIRE APPROVAL FROM THE CITY. LANE CLOSURE IS ALLOWED ONLY BETWEEN 9:00 AM TO 3:30 PM IF APPROVED BY THE CITY.

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NO.	DATE	REVISION	APP.

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N	R5-1 DO NOT ENTER 30" X 30"	M	W5-1 ROAD NARROWS 36" X 36"	
O	R9-9 SIDEWALK CLOSED 24" X 12"			CW16-3, AHEAD
Q	R9-10 SIDEWALK CLOSED, USE OTHER SIDE 24" X 12"	P	R9-8 PEDESTRIAN CROSSWALK 36" X 18"	
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

TRAFFIC CONTROL PLAN -
S MACGREGOR WAY AT CULLEN BLVD -
PHASE 3

BRAYS BAYOU SAFE CROSSINGS

N

0 60 120 Feet

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON POC	
ARCHIE BLANCO	
SHEET NO. 40 OF 70	

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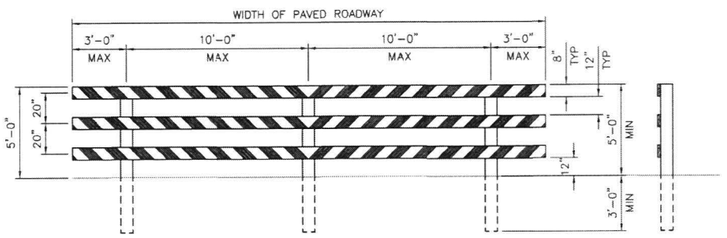
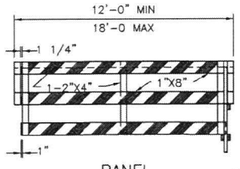
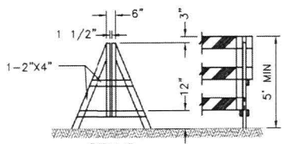
DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH ITS USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE,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

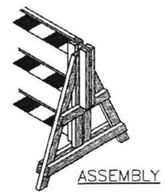


TYPE III BARRICADE FOR END OF ROAD

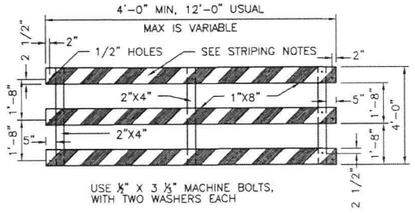
FOR TYPE III BARRICADE FOR END OF ROAD, THE THREE (3) RAILS SHALL BE REFLECTIVE RED AND RELFLECTIVE WHITE STRIPES ON SIDE FACING TRAFFIC.



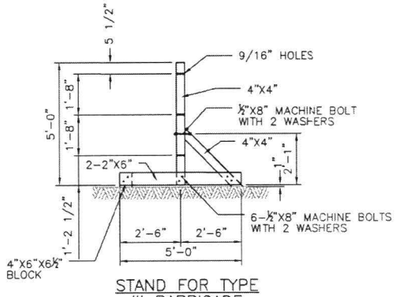




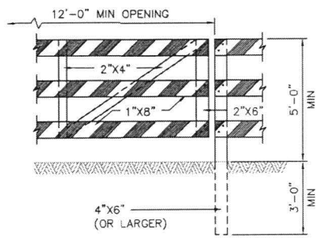
DEMOUNTABLE TYPE III BARRICADE



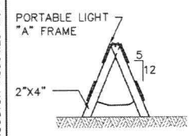
PANEL FOR TYPE III BARRICADE



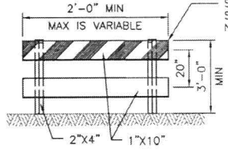
STAND FOR TYPE III BARRICADE



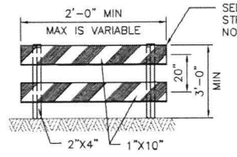
GATE FOR TYPE III BARRICADE



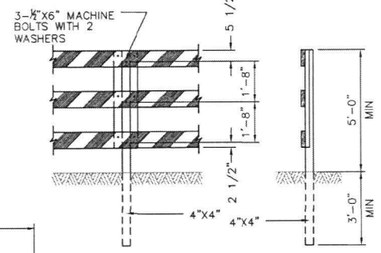
"A" FRAME



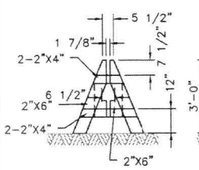
TYPE I



TYPE II



POST FOR TYPE III BARRICADE



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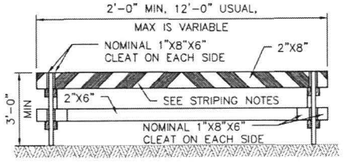
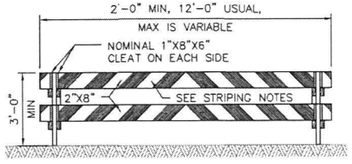


TYPE I



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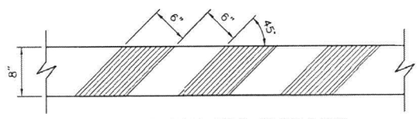
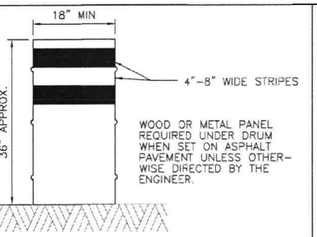


STRIPING FOR BARRICADE

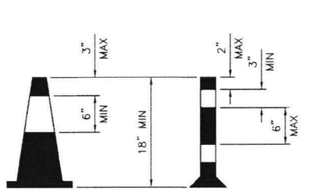
BARRICADE NOTES:

1. THE MOST RECENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND IT'S REVISIONS, SHALL GOVERN THE CONSTRUCTION AND USE OF ALL ITEMS HEREIN DESCRIBED.
2. CHANNELIZATION DEVICES OTHER THAN BARRICADES SHOULD NORMALLY BE USED FOR CHANNELIZATION PURPOSES.
3. BARRICADES SHOULD NORMALLY BE PLACED PERPENDICULAR TO THE TRAFFIC FLOW. OTHER CHANNELIZING DEVICES, SUCH AS DRUMS, VERTICAL PANELS OR PORTABLE BARRIERS, SHOULD BE USED WHERE NEEDED TO SEPARATE TRAFFIC FROM THE WORK AREA. IN ALL CASES, THE BARRICADES SHOULD BE SO LOCATED AS TO MOST ADVANTAGEOUSLY WARN AND DIRECT TRAFFIC.
4. BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL APPROVED BY THE TMUTCD. THE CONSTRUCTION DETAILS SHOWN HEREON ARE TYPICAL AND ARE SUGGESTED DETAILS FOR WOOD SUPPORT SYSTEMS FOR BARRICADES. THE DETAILS OF RAIL WIDTH AND STRIPING, NUMBER AND SPACING OF RAILS, MINIMUM LENGTH AND HEIGHT (ABOVE PAVEMENT) OF RAILS MUST BE ADHERED TO WHEN ALTERNATE DESIGNS ARE USED.
5. BARRICADES ARE TO BE CONSTRUCTED OF CLEAN SOUND MATERIAL. ALL SURFACES ABOVE GROUND, WHICH ARE NOT STRIPED, SHALL BE WHITE EXCEPT THE UNPAINTED GALVANIZED METAL OR ALUMINUM COMPONENTS MAY BE USED. COMPONENTS MADE OF LUMBER SHALL BE PAINTED WITH A MINIMUM OF TWO COATS OF AN APPROVED BRAND OF WHITE PAINT TO SECURE THOROUGH COVERAGE AND A UNIFORM WHITE COLOR.
6. THE REFLECTORIZED WHITE AND REFLECTORIZED ORANGE (REFLECTORIZED RED) STRIPES FOR BARRICADES, DRUMS AND VERTICAL PANELS SHALL BE CONSTRUCTED OF HIGH INTESITY SHEETING AND SHALL BE MAINTAINED TO MEET THE APPEARANCE, COLOR AND REFLECTIVITY REQUIREMENTS SET BY DOTT.
7. THE CONTRACTOR SHALL MAINTAIN EACH BARRICADE IN A CLEAN AND GOOD CONDITION.
8. BARRICADES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND/OR THE ELIMINATION OF THE HAZARD ON ANY SECTION.



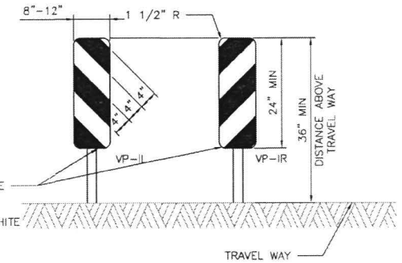
DRUMS

1. DRUMS, SET ON END, AND USED FOR TRAFFIC WARNING OR CHANNELIZATION SHALL BE APPROX 36" IN HEIGHT AND A MIN OF 18" IN DIAMETER. THE CONTRACTOR, AT HIS OPTION, MAY USE DRUMS MADE FROM STEEL BARRELS OR BLACK POLYETHYLENE PLASTIC DRUM LINERS WEIGHING APPROX EIGHT POUNDS EACH. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL, CIRCUMFERENTIAL, REFLECTORIZED ORANGE AND REFLECTORIZED WHITE STRIPES, 4 TO 8 INCHES WIDE. THE FIRST REFLECTORIZED STRIPE SHOULD START WITHIN TWO (2) INCHES OF THE TOP OF THE DRUM. THERE SHALL BE AT LEAST TWO ORANGE AND TWO WHITE STRIPES ON EACH DRUM. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE HORIZONTAL ORANGE AND WHITE STRIPES, THEY SHALL BE NO MORE THAN 2 INCHES WIDE. METAL DRUMS SHALL BE PAINTED BLACK OR ORANGE BEFORE REFLECTORIZED STRIPES ARE ADDED. ALL DRUMS ON PROJECT WILL BE THE SAME COLOR. WHEN DRUMS ARE PLACED IN THE ROADWAY, APPROPIATE WARNING SIGNS SHOULD BE USED. DURING HOURS OF DARKNESS, A FLASHING WARNING LIGHT SHOULD BE PLACED ON DRUMS USED SINGLY AS A WARNING DEVICE. STEADY BURN ELECTRIC LIGHTS OR DELINEATORS SHOULD BE PLACED ON DRUMS USED IN SERIES FOR TRAFFIC CHANNELIZATION. DRUMS SHALL BE WEIGHTED WITH SAND TO THE EXTENT INDICATED IN THE PLANS.
2. CWI-8 CHEVRON SIGNS, CWI-6A ARROW SIGNS OR VP-1 VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.



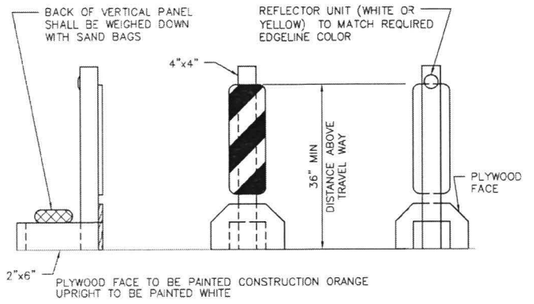
CONES

1. TRAFFIC CONES AND TUBULAR MARKERS SHALL BE A MIN OF 18" INCHES IN HEIGHT WITH A BROADENED BASE AND MAY BE MADE OF VARIOUS MATERIALS TO WITHSTAND IMPACT WITHOUT DAMAGE TO THEMSELVES OR TO VEHICLES. LARGER SIZES SHOULD BE USED ON FREEWAYS AND OTHER ROADWAYS WHERE SPEED ARE RELATIVELY HIGH OR WHERE EVER MORE CONSPICUOUS GUIDANCE IS NEEDED. ORANGE SHALL BE THE PREDOMINANT COLOR ON CONES AND TUBULAR MARKERS. THEY SHOULD BE KEPT CLEAN AND BRIGHT FOR MAX TARGET VALUE. FOR NIGHT TIME USE THEY SHALL BE REFLECTORIZED OR EQUIPPED WITH LIGHTING DEVICES FOR MAX VISIBILITY. REFLECTORIZED MATERIAL SHALL HAVE A SMOOTH, SEALED OUTER SURFACE WHICH WILL DISPLAY THE SAME APPROX COLOR DAY AND NIGHT.
2. REFLECTORIZATION OF TUBULAR MARKERS SHALL BE A MIN OF TWO THREE-INCH BANDS PLACED A MAX OF 2" FROM THE TOP WITH A MAX OF 6" BETWEEN THE BANDS. REFLECTORIZATION OF CONES SHALL BE PROVIDED BY A MIN 6" BAND PLACED A MAX OF 3" FROM THE TOP.
3. CONES OR TUBULAR MARKERS ARE GENERALLY ONLY SUITABLE FOR TEMPORARY USAGE (UP TO 8 HOURS) WITH OTHER CHANNELIZATION DEVICES SUCH AS VERTICAL PANELS OR BARRICADES PREFERRED FOR LONGER TERM USAGE. CARE SHOULD BE TAKEN TO INSURE THAT THEY REMAIN IN THEIR PROPER LOCATION AND IN AN UPRIGHT POSITION.



VERTICAL PANELS (VP)

VERTICAL PANELS ARE NORMALLY USED AS CHANNELIZING DEVICES TO INDICATE TANGENT OR NEARLY TANGENT ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME. IN ADDITION, VERTICAL PANELS SHOULD BE USED AT THE EDGE OF SHOULDER DROP-OFFS AND OTHER SUCH AREAS AS LANE TRANSITIONS WHERE POSITIVE DAY AND NIGHT DELINEATION MAY BE REQUIRED. VERTICAL PANELS SHOULD BE MOUNTED BACK TO BACK IF USED AT THE EDGE OF CUTS ADJACENT TO TWO-WAY TWO LANE ROADWAYS. STRIPES SHOULD ALWAYS SLOPE DOWNWARD TOWARD THE TRAVELED WAY.



TYPICAL PORTABLE VERTICAL PANEL OR DELINEATOR

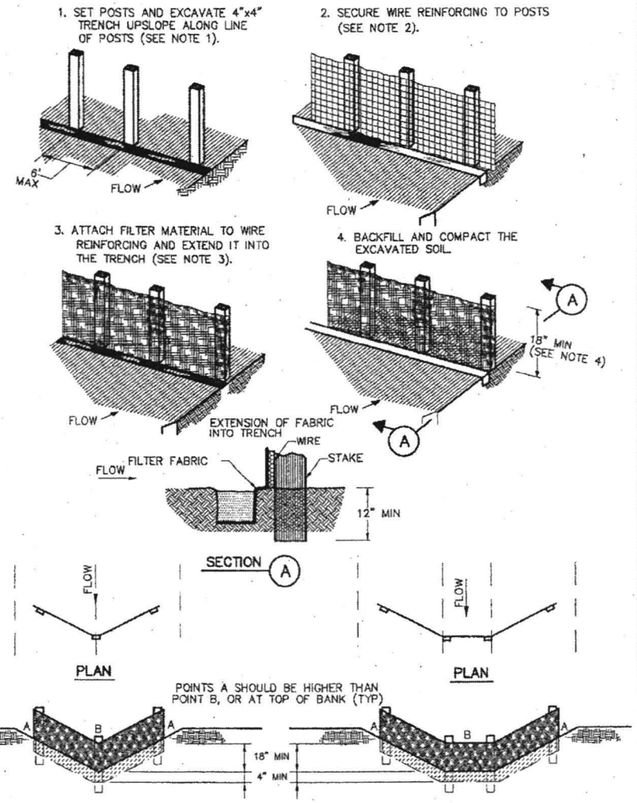
OTHER SIMILAR SUPPORTS MAY BE USED WHEN APPROVED BY TMUTCD AND DIRECTED BY THE CITY OF HOUSTON.

APPROVED BY:	APPROVED BY:
Docusigned by: Sukrit Kumar	Docusigned by: BHING 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

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	SUPERSEDES
DRAWING SCALE	80114
NOT TO SCALE	
CITY OF HOUSTON PO	CITY DRAWING
ARCHIE BLANCO	HOUSTON, TEXAS
SHEET NO. 41 OF 70	

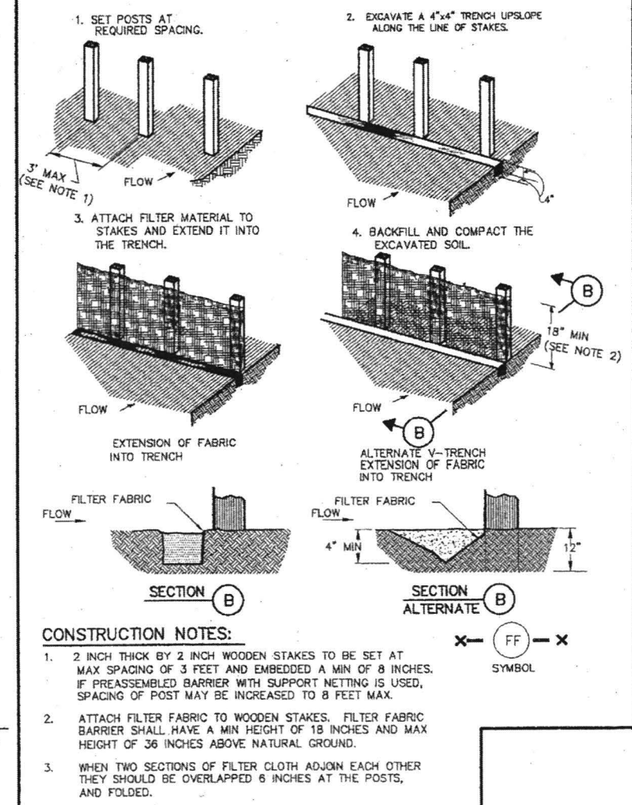


CONSTRUCTION NOTES:

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

SYMBOL

REINFORCED FILTER FABRIC BARRIER

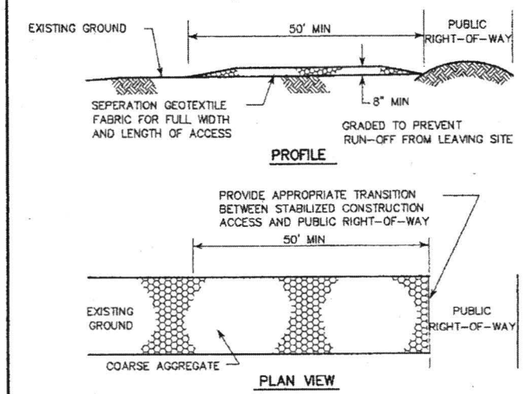


CONSTRUCTION NOTES:

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

SYMBOL

FILTER FABRIC BARRIER

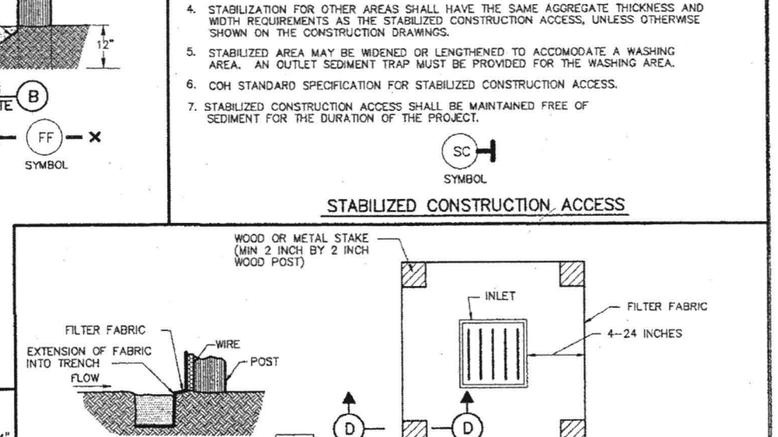


CONSTRUCTION NOTES:

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

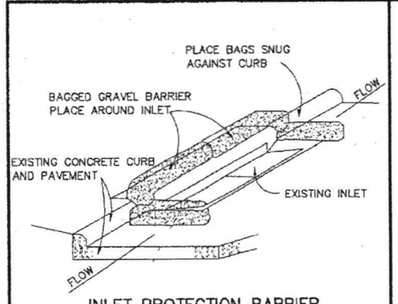
SYMBOL

STABILIZED CONSTRUCTION ACCESS



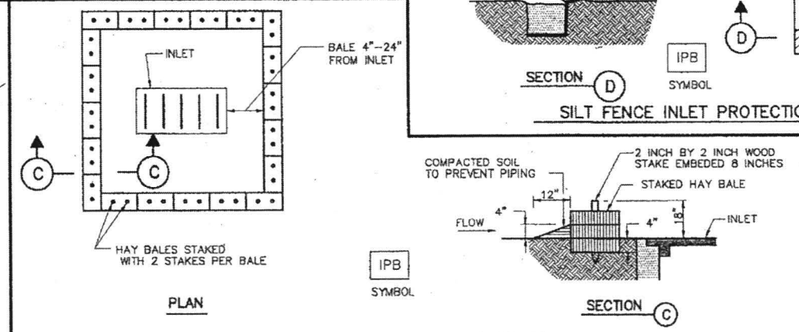
CONSTRUCTION NOTE:

1. SEE CONSTRUCTION NOTES FOR RFB.



INLET PROTECTION BARRIER

(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER



HAY BALE INLET PROTECTION BARRIER

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS

(NOT TO SCALE)

APPROVED	APPROVED
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 01571-01

NO.	DATE	REVISION	APP.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

THE GOODMAN CORPORATION
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TBPELS Firm Registration no. F-1741

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Fax: (713) 975-0920
www.kuoassociates.com
TX Engineering Firm Reg. No.: F-4378
TX Surveying Firm Reg. No.: 10075600
Consulting Engineers & Surveyors

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM WATER POLLUTION PREVENTION PLAN DETAILS

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON POC	
ARCHIE BLANCO	
SHEET NO. 42 OF 70	

RECEIVED
JUN 05 2025
CITY DRAINAGE
HOUSTON, TEXAS

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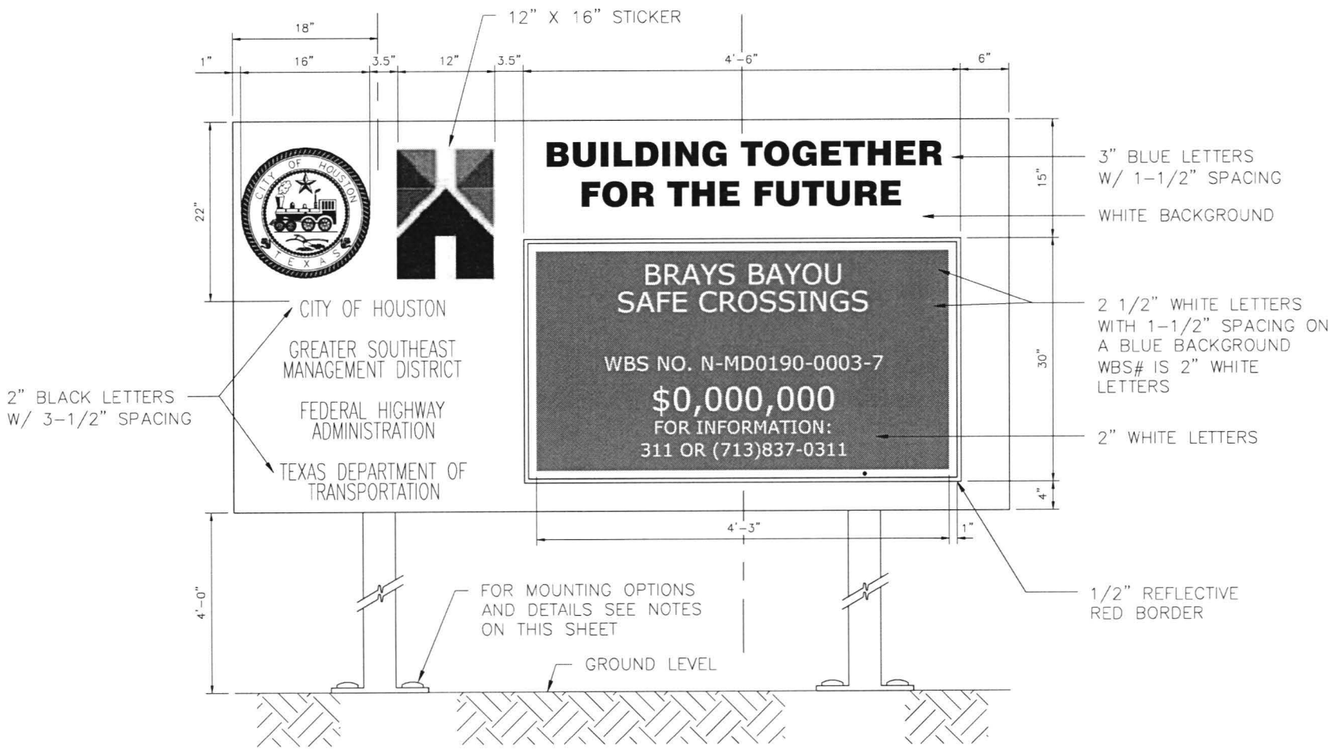
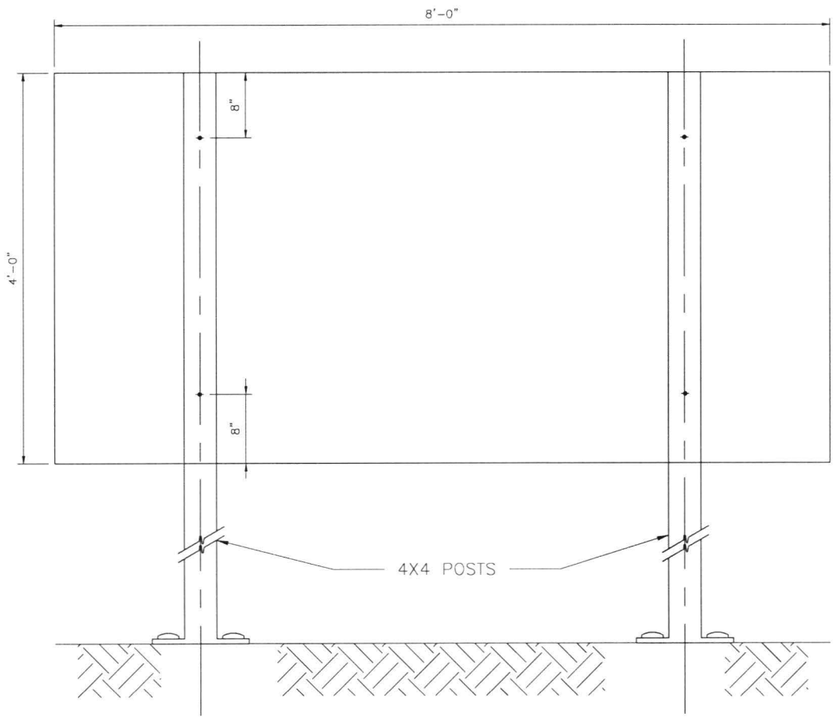


FRONT VIEW



BACK VIEW

NOTES:

1. ALLOWABLE POST INSTALLATION METHODS ARE: CONCRETE FOOTING, SURFACE MOUNTING, SKID MOUNTING AND PILE DRIVEN POSTS.
2. FOR POST INSTALLATION WITH CONCRETE FOOTING, REFER TO DETAIL 01554-01.
3. FOR SURFACE MOUNTED POST INSTALLATION, REFER TO DETAIL 01554-02.
4. FOR SKID MOUNTING REQUIREMENTS REFER TO SPECIFICATION 10582.
5. PILE DRIVEN POSTS MUST BE DRIVEN TO A MINIMUM DEPTH OF 4-FEET INTO EXISTING GROUND.
6. LAYOUT, TEXT SIZE, AND OVERALL DESIGN OF THE SIGN WILL BE THE RESPONSIBILITY OF THE BUILD HOUSTON COORDINATOR.
7. ALL SIGN POSTS, SIGN TUBING, AND SIGN FASTENERS SHALL BE GALVANIZED STEEL PER SPECIFICATION 01582.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

NO	DATE	REVISION	APP

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
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STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PROJECT IDENTIFICATION SIGN

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON PROJECT MANAGER	
ARCHIE BLANCO	
SHEET NO. 43 OF 70	

APPROVED FOR CONSTRUCTION
CITY OF HOUSTON
PUBLIC WORKS
HOUSTON, TEXAS

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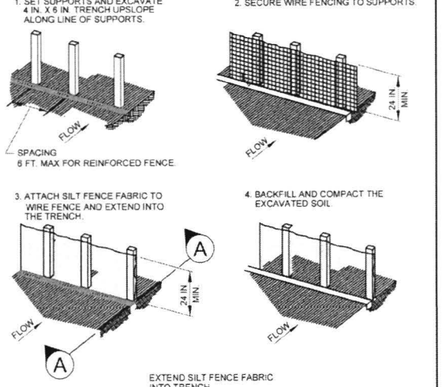
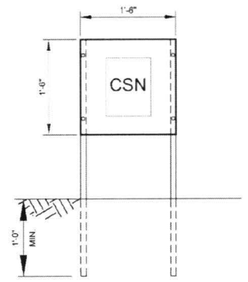


NOTE:
1. SEE SPECIFICATION SECTION NO. 02361-SILT FENCES.

RSF SYMBOL — REINFORCED SILT FENCE

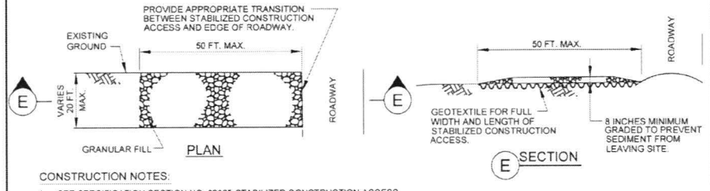
REINFORCED SILT FENCE



NOTE:
CONSTRUCT IN ACCORDANCE WITH HCFCD SPECIFICATION SECTION 01580 - PROJECT SIGNS.

CSN HOLDER

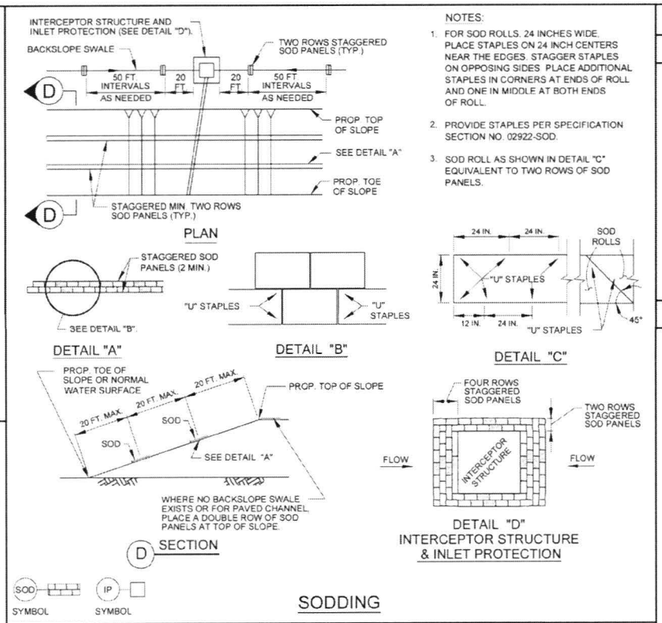
SWPPP / BMP SIGN AND CONSTRUCTION SITE NOTICE HOLDER DETAILS



CONSTRUCTION NOTES:
1. SEE SPECIFICATION SECTION NO. 02365-STABILIZED CONSTRUCTION ACCESS.

STABILIZED CONSTRUCTION ACCESS

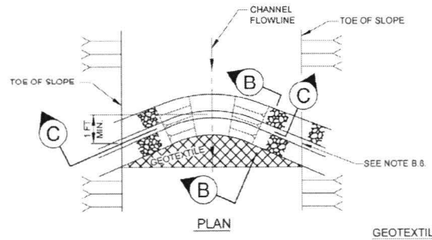
SCA SYMBOL



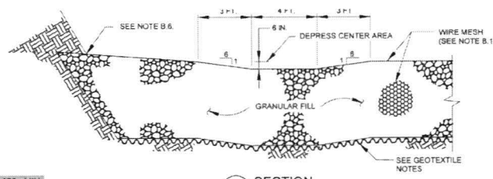
NOTES:
1. FOR SOD ROLLS, 24 INCHES WIDE. PLACE STAPLES ON 24 INCH CENTERS NEAR THE EDGES. STAGGER STAPLES ON OPPOSING SIDES. PLACE ADDITIONAL STAPLES IN CORNERS AT ENDS OF ROLL AND ONE IN MIDDLE AT BOTH ENDS OF ROLL.
2. PROVIDE STAPLES PER SPECIFICATION SECTION NO. 02922-SOD.
3. SOD ROLL AS SHOWN IN DETAIL "C" EQUIVALENT TO TWO ROWS OF SOD PANELS.

SOD SYMBOL — IP SYMBOL

SODDING

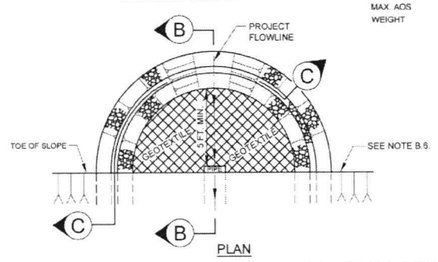


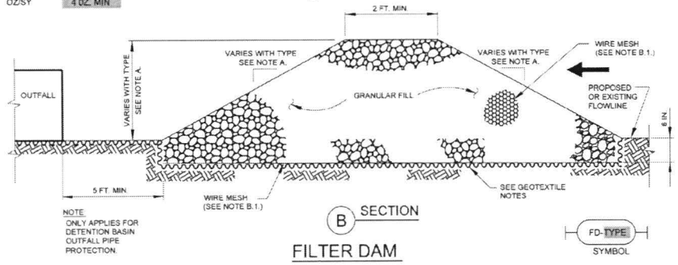
IN-CHANNEL FILTER DAM



GEOTEXTILE NOTES:

MIN. AOS	SIEVE NO.	120 MIN
MAX. AOS	SIEVE NO.	50 MAX
WEIGHT	OZ/SY	4 OZ. MIN





NOTE:
ONLY APPLIES FOR DETENTION BASIN OUTFALL PIPE PROTECTION.

FILTER DAM AT DETENTION BASIN OUTFALL PIPE

FILTER DAM

FD-TYPE SYMBOL

FILTER DAM NOTES:

A. TYPES OF FILTER DAMS.
1. TYPE 1 - NOT USED BY HCFCD
2. TYPE 2 (REINFORCED).
   a. HEIGHT - 18-36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
   c. SLOPES - 2:1 (MAXIMUM).
3. TYPE 3 - NOT USED BY HCFCD
4. TYPE 4 (GABION)
   a. HEIGHT - 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
5. TYPE 5. AS SHOWN ON THE PLANS.

B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.
1. TYPE 2 AND 3 FILTER DAMS. SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
2. GRANULAR FILL.
   a. PLACE ON MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
   b. 3-5 INCHES FOR ROCK FILTER DAM TYPES 2, AND 4. REFER TO GRANULAR FILL IN SPECIFICATION SECTION NO. 02378-RIPRAP AND GRANULAR FILL.
3. WIRE MESH. FOLD AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURE TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
4. IN STREAMS, SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
5. SEE SPECIFICATION SECTION NO. 02364-FILTER DAMS.
6. EMBED ONE FOOT MINIMUM INTO SLOPE AND AT SLOPE RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA.

THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON HCFCD PROJECTS OR PROJECTS TO BE MAINTAINED BY THE HCFCD WHEN COMPLETED BY OTHERS. AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 137.33 (b) AND (c) OF THE TEXAS BOARD OF PROFESSIONAL ENGINEERS.

P.E. SEAL AND SIGNATURE

NO.	DATE	REVISION	APP.

REV	DESCRIPTION	DATE	APPR.

PREPARED:
CHECKED:
APPROVED:

STORMWATER POLLUTION PREVENTION DETAILS

HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 Northwest Freeway
Houston, Texas 77092

DATE: 6-13-18
SCALE: NTS

SHEET NUMBER
OF

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

HCFCD STORMWATER POLLUTION PREVENTION DETAILS

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	ACCEPTED
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	ARCHIE BLANCO
SHEET NO.	44 OF 70

80114
AS-BUILT DRAWING
HOUSTON, TEXAS

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S:\Dashboard Fcg\Build 7\MB Addcad\STANDARD DETAILS PH CIT CHANNEL FCM STEVE F\Stormwater Pollution Prevention Details.dwg

I. STORMWATER POLLUTION PREVENTION

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit is required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506. Refer to the TxDOT SWP3 Summary Sheets, SWP3 Binder Template, and Form 2118.

No Additional Comments

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS

United States Army Corps of Engineers (USACE) Permit is required for filling, dredging, excavating or other work in water bodies, rivers, creeks, streams, wetlands or wet areas. The Contractor must adhere to all of the terms and general conditions associated with the following permit(s). If additional work not represented in the plans is required, contact the Engineer immediately.

☒ No United States Army Corps (USACE) Permit Required

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) without a Pre-Construction Notification (PCN). Project specific permit was not issued by USACE, therefore is not in the plan set. The USACE general conditions are in the "General Notes."

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) with a Pre-Construction Notification (PCN). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set. The USACE general conditions are in the "General Notes."

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Individual Permit (IP). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set.

☐ Work would be authorized by the United States Army Corps of Engineers (USACE) permit. The project specific permit issued by the USACE will be provided to the contractor.

United States Coast Guard (USCG) Permit is required for projects that involve the construction or modification (including changes to lighting) of a bridge or causeway across a water body determined to be navigable by the United States Coast Guard (USCG) under Section 9 of the Rivers and Harbors Act. If additional work not represented in the plans is required, contact the Engineer immediately.

☒ No United States Coast Guard (USCG) Coordination Required

☐ United States Coast Guard (USCG) Permit

☐ United States Coast Guard (USCG) Exemption

No Additional Comments

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the area and contact the Engineer immediately.

No Additional Comments

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Refer to TxDOT Standard Specifications in order to comply with requirements for invasive species, beneficial landscaping and tree/brush removal.

No Additional Comments

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS

If any of the listed species below are observed, cease work in the area, do not disturb species or habitat and contact the Engineer immediately.

The work may not remove active nests (from bridges, structures, or vegetation adjacent to the roadway, etc.) during nesting season (February 15 to October 1). If removal of structures or vegetation is necessary during the nesting season, the Contractor shall conduct a bird survey no more than 3 days in advance of the clearing/demolish start date. All bird surveys shall be conducted by a Field Biologist and adhere to the guidance document "Avoiding Migratory Birds and Handling Potential Violations" found in the TxDOT Environmental Compliance Toolkits at the time of the survey. (See below for Field Biologist and Ornithologist qualifications)

No Additional Comments

Field Biologist, Ornithologist – a field biologist is defined as an individual qualified to perform field investigations, presence/absence surveys and habitat surveys for protected avian species or species of concern. A mandatory bachelor's degree in biology or a related science is required. At a minimum, the Field Biologist, Ornithologist, shall have completed and reported a minimum of three presence/absence and habitat surveys for protected avian species in the past five years. A minimum of three projects must have been conducted in Texas. Surveys shall have been performed for documentation of species in accordance with a protocol approved by USFWS or TPWD, or following generally accepted methodologies.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

Refer to TxDOT Standard Specifications in the event potentially contaminated materials are observed, such as dead or distressed vegetation, trash disposal areas, drums, canisters, barrels, leaching or seepage of substances, unusual smells or odors, or stained soil, cease work in the area and contact the Engineer immediately.

No Additional Comments

VII. OTHER ENVIRONMENTAL ISSUES

Comments:

PUBLIC WORKS
ACCEPTED
80114
CITY DRAWING
HOUSTON, TEXAS

Texas Department of Transportation | TxDOT Houston District

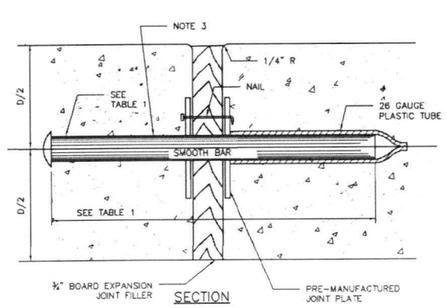
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: EPIC Sheet.dgn	DN:	CK:	DW:	CK:
© TxDOT: March 2017	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	750	N MACGREGOR
UPDATED section V. text and added definition (10/17) ADDED USCG and USACE notes in Section VII (04/18)	DIST	COUNTY		SHEET NO.
	12	HARRIS		45 OF 70

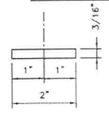
Version 2.2

DATE: Nov 09, 2023
FILE: C:\VOLUMES\THEGOODMANCORP\TGC-ENGINEERING\00_TGC PROJECT FILES\GSM\D123\CADGSM\D123_HSIP24_COVERS_INDEX_DETAILS.DWG, 5/30/2023 1:20 PM



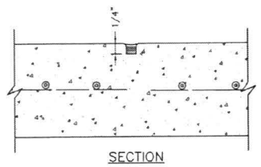
SECTION

DOWEL TYPE EXPANSION JOINT



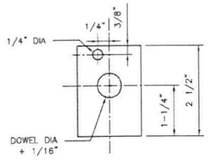
PLAN VIEW

JOINT PLATE



SECTION

CONTROL JOINT

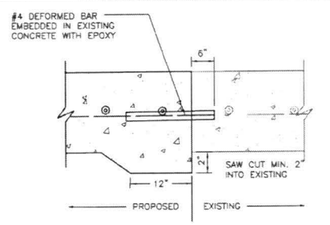


ELEVATION VIEW

JOINT PLATE

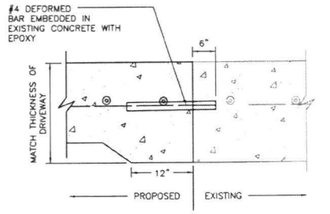
TABLE 1

PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS		
	DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
4 1/2	1/2	18	12
5	1/2	18	12
6	3/4	18	12
7	1	18	12



SECTION

SIDEWALK TO EXISTING SIDEWALK



SECTION

SIDEWALK TO EXISTING DRIVEWAY

NOTES:

1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS.
2. EXPANSION JOINT TO BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED AT A MAXIMUM DISTANCE OF 3 FEET MAXIMUM SPACING FOR CONTROL JOINTS SHALL BE 5 FEET.
3. CENTER DOWEL HORIZONTALLY ON JOINT.
4. CENTER DOWEL VERTICALLY IN CONCRETE AS NEEDED TO MAINTAIN A 2 INCH MINIMUM COVER.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

SIDEWALK EXPANSION AND CONSTRUCTION JOINT DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

Sukat Kannur
CITY ENGINEER

Carol Haddock
DIRECTOR OF HPW

Hueng Nguyen
CITY TRAFFIC ENGINEER

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

NO.	DATE	REVISION	APP.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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STATE OF TEXAS
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PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

02752-02 - SIDEWALK EXPANSION AND CONSTRUCTION JOINT DETAILS

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	N-MD0190-0003-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	ARCHIE BLANCO
SHEET NO.	46 OF 70

FOR CITY OF HOUSTON USE ONLY

80114

CITY DRAWING

HOUSTON, TEXAS

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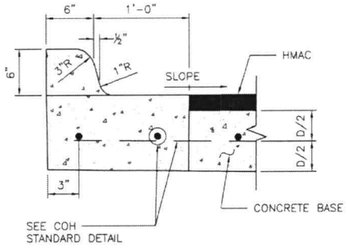
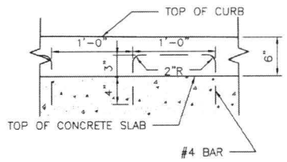
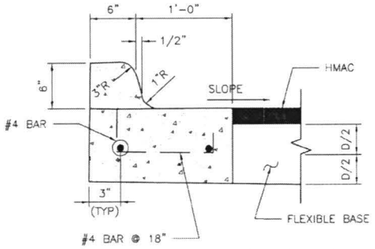


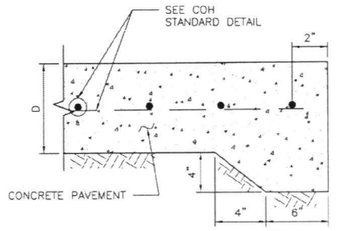
ESPLANADE CURB CONNECTED TO CONCRETE BASE



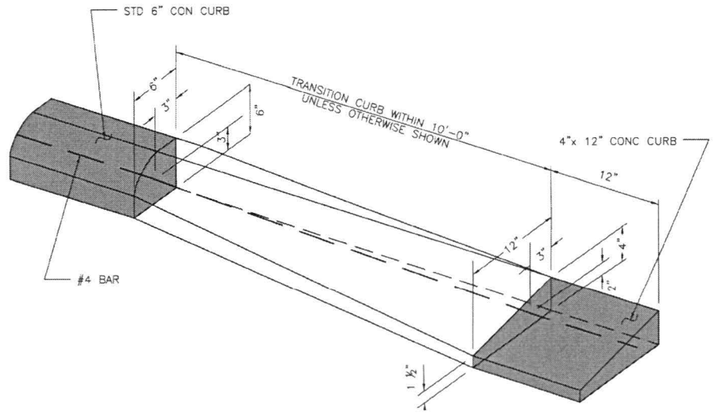
ALTERNATE CONCRETE CURB REINFORCEMENT



ESPLANADE CURB CONNECTED TO FLEXIBLE BASE

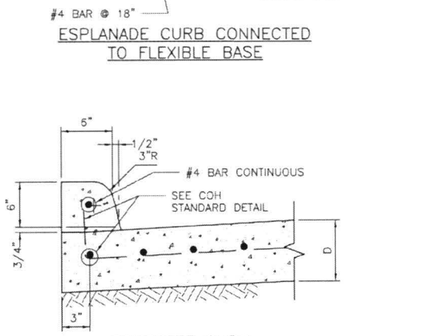


STANDARD CONCRETE PAVING HEADER



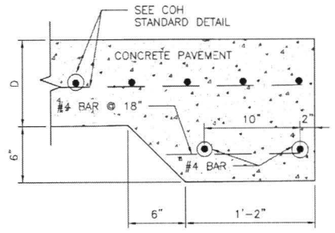
CURB TRANSITION

(SEE NOTES)

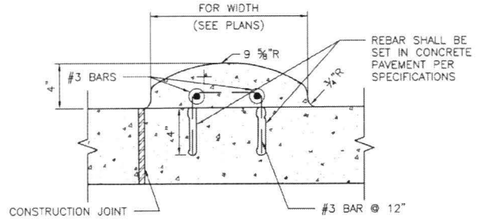


CONCRETE CURB

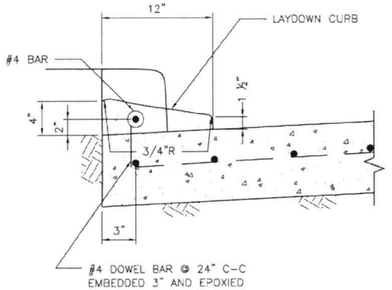
WHEN CONCRETE CURB IS TO BE PLACED EXISTING CONCRETE USE BASE #4 BAR @ 18x10" LONG, DOWELED AND SET IN EPOXY GROUT. SET #4 DOWEL BARS, 25" LONG AT 12" C-C WHEN PAVEMENT SECTION POURED.



STANDARD RAILROAD HEADER

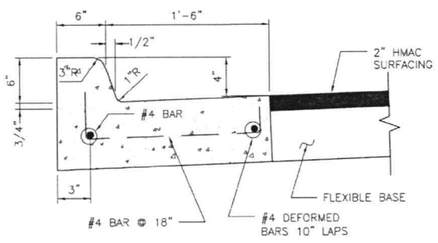


MOUNTABLE CURB

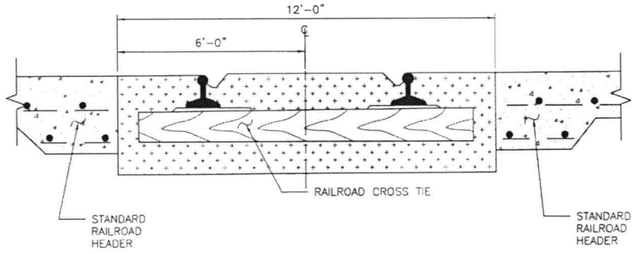


4-INCH x 12-INCH TRANSITION CURB

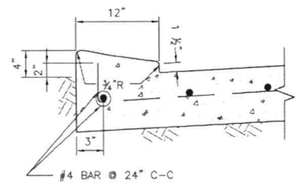
(SEE NOTES)



MONOLITHIC CURB AND GUTTER



STANDARD RAILROAD CROSSING – SINGLE TRACK



4-INCH x 12-INCH MONOLITHIC CURB

(SEE NOTES)

4"x12" MONOLITHIC AND TRANSITION CURB NOTES:

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

APPROVED BY:	APPROVED BY:
Suhail Kanwar	KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carol Haddock	
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

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	80114
DRAWING SCALE	
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ARCHIE BLANCO	
SHEET NO. 47 OF 70	

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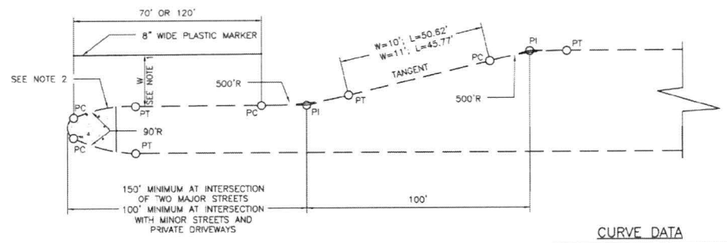
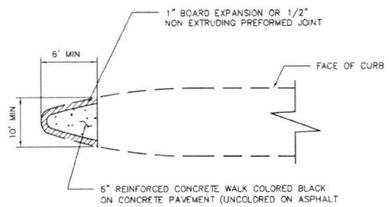


DETAIL OF LEFT TURN LANE

CURVE DATA

W=10' R=500' Δ = 5°42'38.14" L = 49.83' T=24.94'	W=11' R=500' Δ = 6°16'38.27" L = 54.78' T=27.42'



ESPLANADE NOSE

NOTES:

1. 10 FT FOR 80 FT ROW; 11 FT FOR 100 FT ROW.
2. FOR MEDIANS WITH BULLET NOSE CONFIGURATION, PAINT CURB WITH YELLOW REFLECTORIZED PAINT AROUND THE ESPLANADE NOSE TO THE PT OF THE 90 FT R. FOR MEDIANS WITHOUT BULLET NOSE CONFIGURATION, PAINT CURB FROM PC TO PT AND 30 FT BACK OF PC/PT.

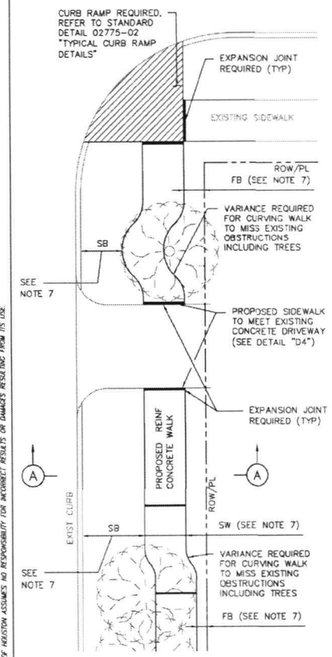
CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

ESPLANADE NOSE AND LEFT TURN DETAILS
(SCALE: NOT TO SCALE)

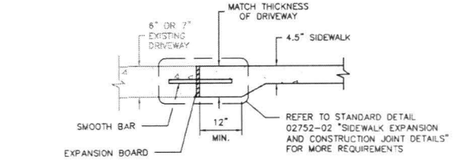
APPROVED BY:

CITY ENGINEER — DIRECTOR OF HPW
CITY TRAFFIC ENGINEER

EFF DATE: NOV-27-2023 | DWG NO: 02772-01



PLAN VIEW

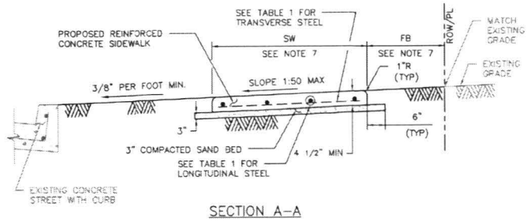


DETAIL D4
DRIVEWAY/SIDEWALK HEADER

TABLE 1

REINFORCING STEEL INFORMATION
FOR 4 ½ " THICK SIDEWALKS
EXPANSION JOINT SPACING = 40 FT
f'_c = 3,500 PSI AND f_y = 60,000 PSI
REFER TO CONTRACT DRAWINGS FOR SIDEWALKS WIDER THAN 6 FEET.

SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL #3 BARS			TRANSVERSE STEEL #3 BARS SPACING (IN)
		NO. OF BARS	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:

CITY ENGINEER — DIRECTOR OF HPW
CITY TRAFFIC ENGINEER

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

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05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

02772-01 - ESPLANADE NOSE AND LEFT TURN DETAILS
02775-01 - TYPICAL SIDEWALK LAYOUT AND DETAILS FOR STREETS WITH CURBS

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	N-MD0190-0003-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	ARCHIE BLANCO
SHEET NO.	48 OF 70

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CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
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HOU	HARRIS		

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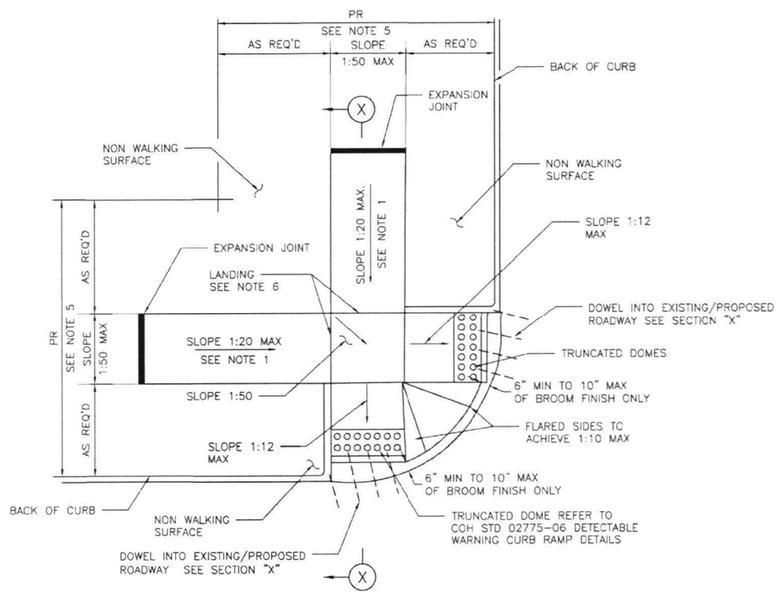
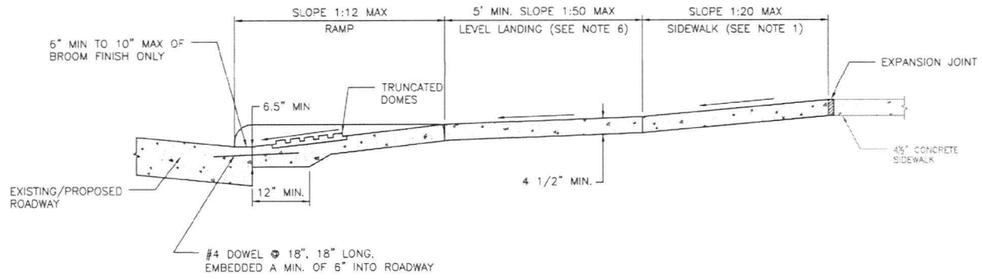


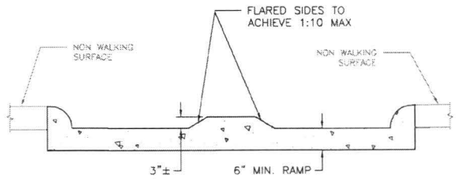
STREETS WITH NON- WALKING SURFACE BEHIND CURB
SEE NOTE-7



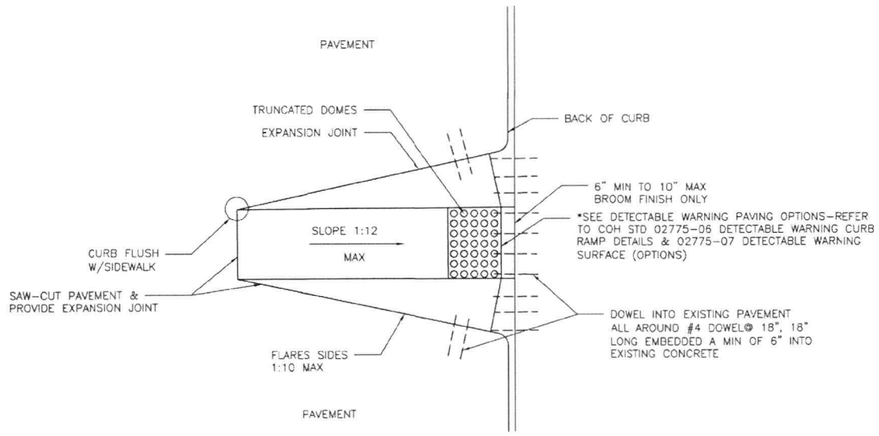
SECTION X-X

NOTES:

1. REPLACE EXISTING SIDEWALK FROM LEVEL LANDING AS NECESSARY TO ACHIEVE 1:20 SLOPE
2. BROOM FINISH IS MEASURED FROM FACE OF CURB.
3. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
4. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON UNLESS NOTED OTHERWISE.
5. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR) WIDTH.
6. MINIMUM 5'x5' LANDING PAD ACCORDING TO ADA REQUIREMENTS. WHEN THE APPROACHING SIDEWALK IS WIDER THAN 5', THE LANDING PAD AND RAMP WIDTH MUST MATCH THE SIDEWALK WIDTH.
7. FOR STREETS WITH WALKABLE SURFACES IMMEDIATELY BEHIND THE CURB A F_ARE IS REQUIRED ON BOTH SIDES OF THE RAMP.



ELEVATION
LOOKING UP RAMP



CURB RAMP CONSTRUCTION FOR EXISTING PAVEMENT

APPROVED BY:	APPROVED BY:
Docusigned by: Suhail Kanwar 90F5B9DC64174A78...	Docusigned by: KHANG NGUYEN 9DA29EFDA758400...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Docusigned by: Curt Hacklock A93C4197189343...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02775-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CURB RAMP DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	80114
NOT TO SCALE	
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 49 OF 70	

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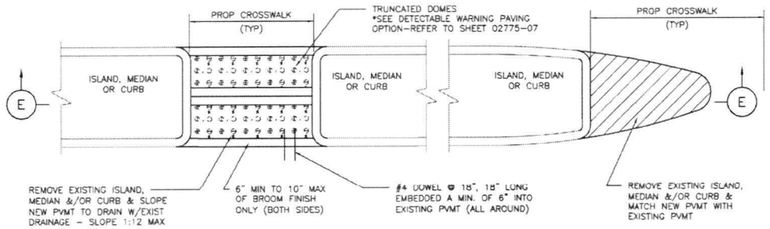
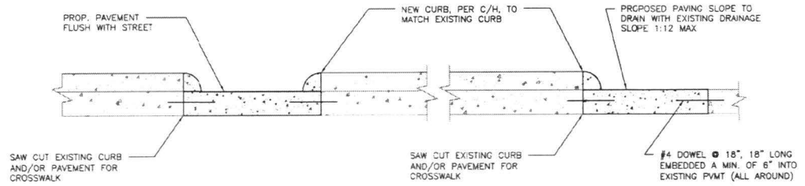




SECTION E-E
FOR ISLAND, MEDIAN, OR CURB MODIFICATIONS FOR CROSSWALKS

NOTES:

1. SEE COH STANDARD DETAIL FOR PAVEMENT MARKING DETAILS.
2. 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.
3. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CURB MODIFICATION FOR CURB RAMPS & CROSSWALKS

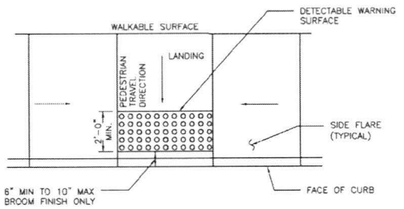
(SCALE: NOT TO SCALE)

APPROVED BY:

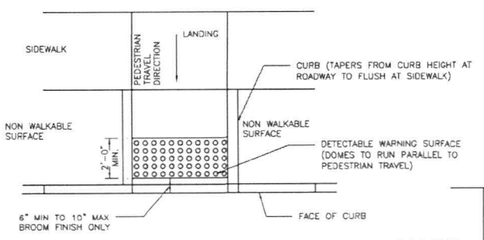
Signed by: Sohail Kanwar — CITY ENGINEER	Signed by: Carl Haddock — DIRECTOR OF HPW
Signed by: HANG NGUYEN — CITY TRAFFIC ENGINEER	

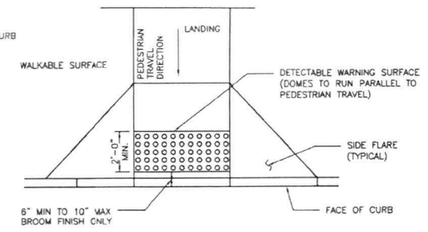
EFF DATE: NOV-27-2023 | DWG NO: 02775-04

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 PREPARE THOSE DESIGN REQUIREMENTS AND IN 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.



TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE





TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN

GENERAL NOTES FOR DETECTABLE WARNINGS:

1. DETECTABLE WARNING SURFACES MUST BE FULLY ADA COMPLIANT.
2. ALL NEW CURB RAMPS MUST CONTAIN A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES. THE SURFACE MUST CONTRAST VISUALLY WITH ADJOINING SURFACE, INCLUDING SIDE FLARES. FURNISH DARK BROWN OR DARK RED DETECTABLE WARNING SURFACE ADJACENT TO UNCOLORED CONCRETE, UNLESS SPECIFIED ELSEWHERE IN THE PLANS.
3. DETECTABLE WARNING SURFACES MUST MAINTAIN A SLIP RESISTANCE WITH FA-VALUE OF EQUAL TO OR GREATER THAN 0.8.
4. DETECTABLE WARNING SURFACES MUST MAINTAIN A WATER ABSORPTION RATE OF LESS THAN 1%. DETECTABLE WARNING SHALL NOT ALLOW WATER TO ACCUMULATE.
5. DETECTABLE WARNINGS INSTALLED INTO FRESH CONCRETE SHALL BE WITHOUT VOIDS AND UTILIZING AN ACCEPTABLE ANCHORING SYSTEM.
6. ALIGN TRUNCATED DOMES IN THE DIRECTION OF PEDESTRIAN TRAVEL WHEN ENTERING THE STREET.
7. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.
8. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6" MIN TO 10" MAX FROM THE DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.
9. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
10. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DETECTABLE WARNING CURB RAMP DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

Signed by: Sohail Kanwar — CITY ENGINEER	Signed by: Carl Haddock — DIRECTOR OF HPW
Signed by: HANG NGUYEN — CITY TRAFFIC ENGINEER	

EFF DATE: NOV-27-2023 | DWG NO: 02775-06

NO	DATE	REVISION	APP.

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5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

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STATE OF TEXAS
ASHISH GHOSH
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PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

02775-04 - CURB MODIFICATION FOR CURB RAMPS & CROSSWALKS
02775-06 - DETECTABLE WARNING CURB RAMP DETAILS

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	ACCEPTED
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON PIC	CITY DRAWING NO.
ARCHIE BLANCO	
SHEET NO. 50 OF 70	

PUBLIC WORKS AND ENGINEERING
HOUSTON, TEXAS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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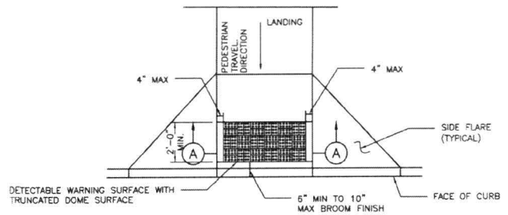
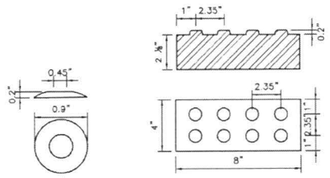


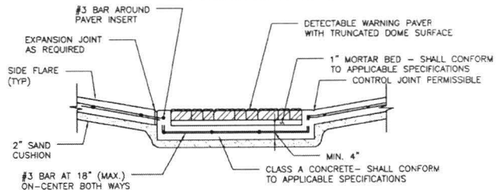
PLAN VIEW

DETECTABLE WARNING SURFACE



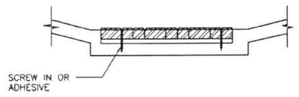
DETAIL

DETECTABLE WARNING PAVER



SECTION A–A

PAVER



DETAIL A–5

NOTES:

GENERAL NOTES

1. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
2. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

PAVERS

1. FURNISH DETECTABLE WARNING SURFACE UNITS MEETING ALL REQUIREMENTS OF ASTM C-936, C-33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.
2. LAY FULL-SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING POWER UNITS USING A POWER SAW.

POLYMER CONCRETE

1. DETECTABLE WARNING TILES SHALL BE MADE OF POLYMER CONCRETE MATERIALS.
2. DETECTABLE WARNING TILES SHALL BE INSTALLED INTO FRESH CONCRETE (CAST-IN-PLACE) UTILIZING AN ANCHORING SYSTEM.
3. DETECTABLE WARNING TILES SHALL BE OF TERRACOTTA (BRICK-RED) COLOR AND COLORED THROUGHOUT TO GUARANTEE THE ADA REQUIRED COLOR CONTRAST.
4. DETECTABLE WARNING TILES SHALL MEET OR EXCEED THE FOLLOWING ASTM-BASED "STANDARDS" FOR CONCRETE MATERIALS.
   A. COMPRESSION STRENGTH > 12,500 PSI PER ASTM C 39-04
   B. WATER ABSORPTION < 0.25% PER ASTM C 97-09

PADS

1. FURNISH REQUIREMENTS OF ADAAG (MARCH 2003).
2. OTHER MATERIALS MAY BE USED IF APPROVED BY THE CITY ENGINEER.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

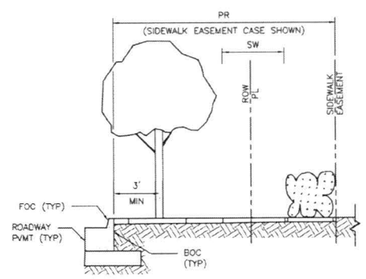
DETECTABLE WARNING SURFACE (OPTIONS)

(SCALE: NOT TO SCALE)

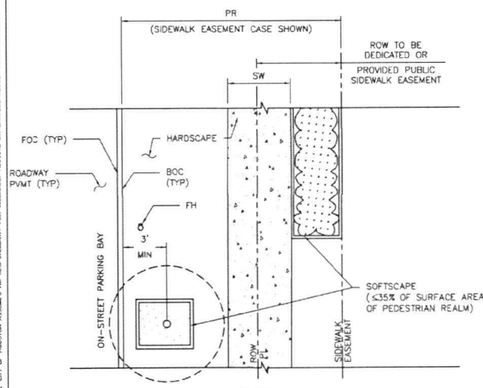
APPROVED BY:

Docusigned by: Sukut Bahiwar — CITY ENGINEER
Docusigned by: Hang Nguyen — CITY TRAFFIC ENGINEER
Docusigned by: Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 02775-07

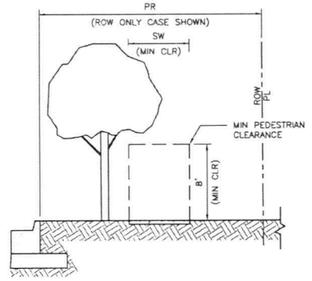


ELEVATION



PLAN

PEDESTRIAN REALM PERFORMANCE STANDARD



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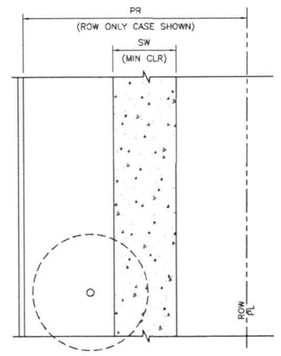

PLAN

SIDEWALK & CLEAR PEDESTRIAN ZONE MANDATORY MINIMUM REQUIREMENT

NOTES

1. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR), AND SIDEWALK (SW) WIDTHS.
2. THE MINIMUM UNOBSTRUCTED VERTICAL CLEARANCE OF A SIDEWALK IS EIGHT (8) FEET AS MEASURED VERTICALLY FROM THE SURFACE OF THE SIDEWALK. FOR VERTICAL CLEARANCE TO IMPROVEMENTS CONSTRUCTED OVER A SIDEWALK WITHIN THE PEDESTRIAN REALM, REFER TO THE CONTRACT DRAWINGS.
3. FOR PEDESTRIAN REALM DESIGN BACKGROUND, REFER TO CHAPTER 42 OF THE CODE OF ORDINANCES, ARTICLE IV – ENHANCED PEDESTRIAN REALM STANDARDS AND THE USERS' GUIDE FOR WALKABLE PLACES AND "TRANSIT-ORIENTED DEVELOPMENT.
4. FOR ADDITIONAL PLANTING REQUIREMENTS, REFER TO CHAPTER 33 OF THE CODE OF ORDINANCES, SECTION 129 – GENERAL PLANTING STANDARDS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

SIDEWALK AND CLEAR ZONE TRANSIT CORRIDOR STREET

(SCALE: NOT TO SCALE)

APPROVED BY:

Docusigned by: Sukut Bahiwar — CITY ENGINEER
Docusigned by: Hang Nguyen — CITY TRAFFIC ENGINEER
Docusigned by: Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 02775-08

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
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HOU	HARRIS		

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05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

02775-07 - DETECTABLE WARNING SURFACE (OPTIONS)
02775-08 - SIDEWALK AND CLEAR ZONE TRANSIT CORRIDOR STREET

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	ACCEPTED
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON POC	CITY DRAWING NUMBER
ARCHIE BLANCO	
SHEET NO. 51 OF 70	

HOUSTON, TEXAS

NO.	DATE	REVISION	APP

DISCLAIMER:
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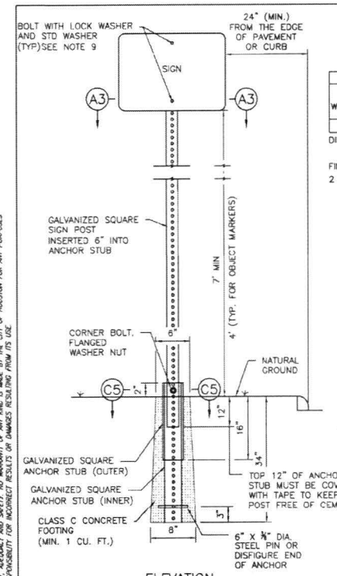
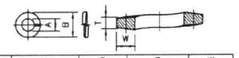


ELEVATION

TYPICAL GROUND SIGN INSTALLATION PERFORATED SQUARE METAL TUBING

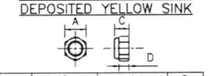
TABLE A	
GALVANIZED SQUARE SIGN POST (PERFORATED)	1-3/4"x-1-3/4" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PREFORATAED) (INNER)	2"x2"x36" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PERFORATED) (OUTER)	2 1/4" x 2 1/4" x 18" (14 GAUGE)



NOMINAL WASHER SIZE	A INSIDE DIAMETER MAX	A INSIDE DIAMETER MIN	B OUTSIDE DIAMETER MAX	T MEAN SECTION (THICKNESS)	W SECTION WIDTH
5/16"	0.332"	0.314"	0.583"	0.078"	0.125"

DIMENSIONS: ASME B18.21.1
MATERIAL: ALLOY STEEL PER ASME B18.21.1
FINISH: MECHANICAL ZINC PER ASTM B695, CLASS 5, TYPE 2 (YELLOW)

5/16" SPLIT LOCK WASHER, HIGH ALLOY MECHANICAL DEPOSITED YELLOW SINK



SIZE	C THICKNESS MAX	C THICKNESS MIN	A WIDTH ACROSS FLATS MAX	A WIDTH ACROSS FLATS MIN	D HEX HEIGHT MIN
0.313"	0.359"	0.329"	0.502"	0.489"	0.250"

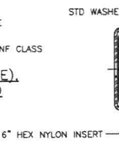
DIMENSIONS: ASME B18.16.6
MATERIAL: CARBON STEEL, GRADE 8 PER ASME B18.16.6, NYLON ⅝
THREAD REQUIREMENTS: ASME B1.1 UNC & UNF CLASS 2B

HEX NYLON INSERT LOCKNUTS (NE), GRADE 8, YELLOW ZINC PLATED

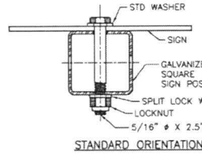
NOTES:

1. THE EXISTING SIGNS LOCATED ON PUBLIC CONSTRUCTION SITE ARE THE PROPERTY OF THE CITY OF HOUSTON. THROUGHOUT THE PERIOD OF THE CONTRACT, THE CONTRACTOR SHALL PROTECT THESE SIGNS SUCH THAT THEY ARE NOT DAMAGED IN THE COURSE OF CONSTRUCTION ACTIVITY. SUCH PROTECTION SHALL INCLUDE THE PERIOD AFTER SIGNS ARE REMOVED FROM INSTALLATION AND STORED BY THE CONTRACTOR OR DELIVERED TO THE TRAFFIC OPERATIONS CENTER (2200 PATTERSON). THE GENERAL TRAFFIC SUPERINTENDENT (832-395-6771) MUST BE NOTIFIED 48 HOURS IN ADVANCE PRIOR TO DELIVERY.
2. AFTER SIGNS ARE REMOVED FROM INSTALLATION AND ARE BEING STORED BY THE CONTRACTOR, THE CONTRACTOR SHALL CONTACT THE TRAFFIC OPERATIONS DIVISION OF HOUSTON PUBLIC WORKS (832-395-6771) AND ARRANGE FOR A CONVENIENT TIME TO DELIVER ONLY CITY SIGNS AND POSTS IDENTIFIED BY TRAFFIC OPERATIONS DIVISION TO 2200 PATTERSON.
3. PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIGN SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC. THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE PROJECTS COMPLETION.
4. ALL GROUND MOUNTED STOP SIGNS, WARNING SIGNS, AND OTHER REGULATORY SIGNS SHALL USE AT A MINIMUM HIGH INTENSITY PRISMATIC REFLECTIVE SHEETING.
5. ALL OVERHEAD SIGNS SHALL USE DIAMOND GRADE REFLECTIVE SHEETING.
6. ALL OTHER SIGNS SHALL USE SUPER ENGINEER GRADE SHEETING.
7. ALL BLANKS TO BE INSTALLED SHALL BE ALUMINUM ALLOY 6061-T-6 OR 5052-H38 IN ACCORDANCE WITH ASTM B209.
8. ALL HOLES SHALL BE ¾" DIAMETER DRILLED OR PUNCHED AS SHOWN ON EACH BLANK DETAIL AND SHALL BE FREE OF BURRS AND / OR ROUGH EDGES. WHERE NON-STANDARD ORIENTATION OF SIGN IS USED, ENLARGE HOLE IN SIGN POST AT SIGN CONNECTION NOT GREATER THAN 11/16" IN DIAMETER.
9. BOLT SIZE REQUIREMENTS FOR SIGN CONNECTION:
   9.1. STANDARD ORIENTATION = 5/16" DIA X 2 1/2" BOLT
   9.2. NON STANDARD ORIENTATION = 5/16" DIA X 3" BOLT
10. SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON EACH DETAIL ON SHEET 01554-06.
11. ALL SIGN BLANKS ARE TO BE ETCHED, DEGREASED, AND HAVE A COATING MEETING THE REQUIREMENTS OF ASTM B449, CLASS 2, OR ASTM B921, CLASS 2, PRIOR TO APPLICATION OF LEGENDS.
12. ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN CONFORMANCE TO THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND STANDARD HIGHWAY SIGNS LATEST EDITION.

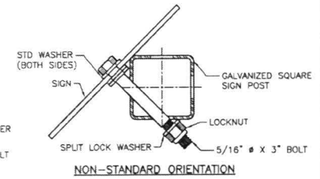
SECTION D5 BOLTS



SECTION C5 CORNER BOLT



STANDARD ORIENTATION



NON-STANDARD ORIENTATION

SECTION A3: SIGN CONNECTION DETAILS

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

GENERAL NOTES AND GROUND MOUNTING SIGN
(SCALE: NOT TO SCALE)

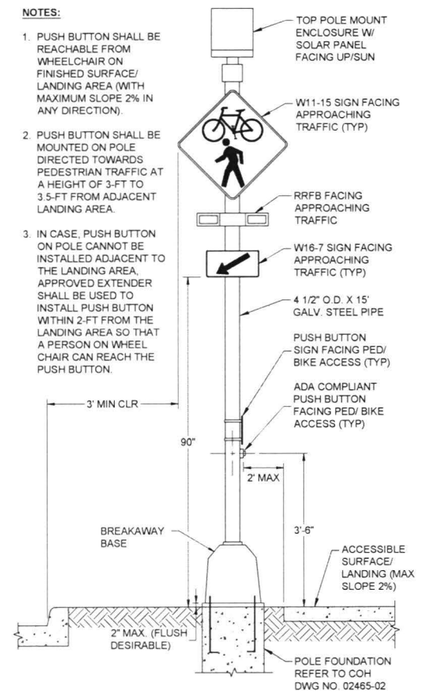
APPROVED BY:

Digitally signed by: Suhail Kanawar — CITY ENGINEER
Digitally signed by: Khang Nguyen — CITY TRAFFIC ENGINEER
Digitally signed by: Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01554-01

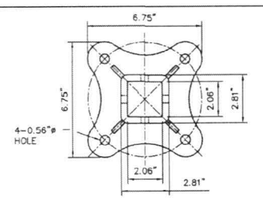
NOTES:

1. PUSH BUTTON SHALL BE REACHABLE FROM WHEELCHAIR ON FINISHED SURFACE/ LANDING AREA (WITH MAXIMUM SLOPE 2% IN ANY DIRECTION).
2. PUSH BUTTON SHALL BE MOUNTED ON POLE DIRECTED TOWARDS PEDESTRIAN TRAFFIC AT A HEIGHT OF 3-FT TO 3.5-FT FROM ADJACENT LANDING AREA.
3. IN CASE, PUSH BUTTON ON POLE CANNOT BE INSTALLED ADJACENT TO THE LANDING AREA, APPROVED EXTENDER SHALL BE USED TO INSTALL PUSH BUTTON WITHIN 2-FT FROM THE LANDING AREA SO THAT A PERSON ON WHEEL CHAIR CAN REACH THE PUSH BUTTON.

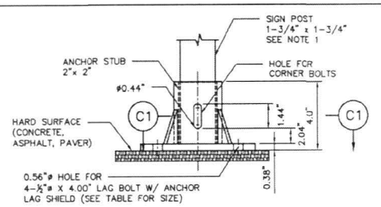


SOLAR-POWERED FLASHING BEACON ASSEMBLY (COMPLETE)

NTS



TOP VIEW



SIDE VIEW

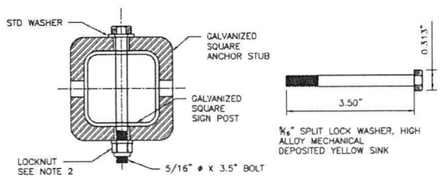
TYPICAL HARD SURFACE INSTALLATION GALVANIZED SIGN BASE

NOTES:

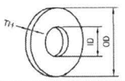
1. REFER TO COH STD DWG 01554-01 FOR SIGN AND POST REQUIREMENTS.
2. REFER TO DETAIL "C5" ON COH STD DWG 01554-01 FOR NUT AND BOLT REQUIREMENTS.

BASE PLATE NOTES:

1. MATERIAL: ASTM A-536 GRADE 65-45-12 DUCTILE IRON
2. HOT DIP GALVANIZE PER ASTM A-153
3. ALL DIMENSIONS ARE IN INCHES



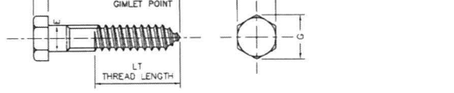
SECTION C1 CORNER BOLT



SAE FLAT WASHERS									
SIZE	ID BASIC	ID TOLERANCE PLUS	ID TOLERANCE MINUS	OD BASIC	OD TOLERANCE PLUS	OD TOLERANCE MINUS	THICKNESS - TH BASIC	THICKNESS - TH MAX	THICKNESS - TH MIN
1/2"	0.531	0.015"	0.005"	1.062"	0.030"	0.007"	0.95"	0.121"	0.74"

DIMENSIONS: ASME B18.21.1, TYPE A PLAIN WASHERS
MATERIAL: CARBON STEEL
FINISH: Fe/Zn 3AT PER ASTM F1941

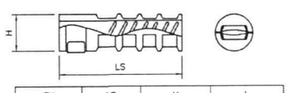
1/2" FLAT WASHERS, LOW CARBON, SAE, ZINC PLATED



DIAMETER	E BODY DIAMETER MAX	E BODY DIAMETER MIN	F WIDTH ACROSS FLATS MAX	F WIDTH ACROSS FLATS MIN	G WIDTH ACRSS CORNERS MAX	G WIDTH ACRSS CORNERS MIN	H HEIGHT MAX	H HEIGHT MIN	L LENGTH	LT THREAD LENGTH
1/2"	0.515"	0.482"	0.750"	0.725"	0.866"	0.826"	0.364"	0.302"	4.00"	3.84"

MATERIAL: PER A307 GRADE A
COATING: HOT DIP ZINC PER ASTM F2329 OR IN ACCORDANCE WITH CLASS C OF ASTM A153 AND CLASS D FOR ⅜" DIAMETER AND LESS

4" HEX LAG SCREWS, HOT DIPPED GALVANIZED



TH LAG THREAD SIZE	LS LENGTH OF SHIELD NOMINAL	H DRILLED HOLE SIZE	L BOLT LENGTH REQ
1/2"	3.00"	0.75"	4.00"

ANCHOR LAG SHIELD - ZINC ALLOY

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

SIGN BASE HARD SURFACE MOUNTING DETAILS
(SCALE: NOT TO SCALE)

APPROVED BY:

Digitally signed by: Suhail Kanawar — CITY ENGINEER
Digitally signed by: Khang Nguyen — CITY TRAFFIC ENGINEER
Digitally signed by: Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01554-02

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

HOUSTON SOUTHEAST
5445 Almeda Rd. #503
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713-942-0500

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STATE OF TEXAS
ASHISH GHOSH
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LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

01554-01 - GENERAL NOTES AND GROUND MOUNTING SIGN
01554-02 - SIGN BASE HARD SURFACE MOUNTING DETAILS
SOLAR-POWERED FLASHING BEACON ASSEMBLY (COMPLETE) DETAIL

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	80114
AS NOTED	
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 52 OF 70	

CITY DRAWING NO.
HOUSTON, TEXAS

NO	DATE	REVISION	APP

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DISCLAIMER:
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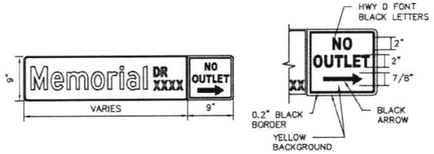
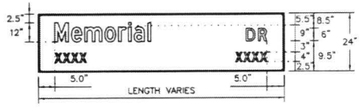
POST MOUNTED STREET NAME SIGN W/ NO OUTLET SIGN



D3 – POST MOUNTED STREET NAME SIGN

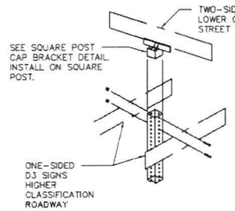
OVERHEAD STREET NAME SIGN DETAIL



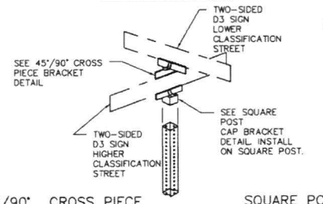
D3 – STREET NAME SIGN

	POST-MOUNTED SIGN	OVERHEAD SIGN
HEIGHT	9"	24"
LENGTH	30" MIN 48" MAX 6" INCREMENTS OF LENGTH	10" MAX 2' INCREMENT OF LENGTH
THICKNESS	0.125"	0.080"
SUBSTREATE	ALLUMINUM ALLOY, 5052-H38 (ASTM B-209)	
SIGN FACE MATERIALS	GREEN FILM OVER DIAMOND GRADE VIP SHEETING	
LEGENDS AND SYMBOLS	HIGHWAY GOTHIC SERIES D (USUAL) HIGHWAY GOTHIC SERIES C OR B FOR MAXIMUM LENGTH SIGN BLACK	
COLOR	LETTERS-WHITE REFLECTIVE BORDER-WHITE REFLECTIVE BACKGROUND-GREEN REFLECTIVE	

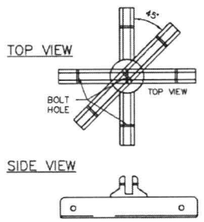
D3 SIGNS GREATER THAN 42" PLATES IN LENGTH



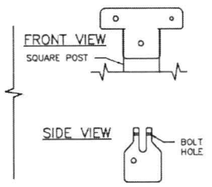
D3 SIGNS LESS THAN OR EQUAL TO 42" PLATES IN LENGTH



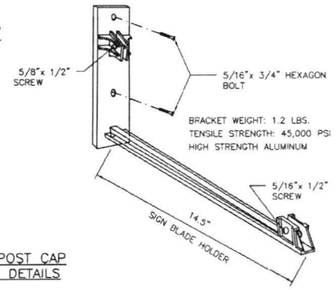
45°/90° CROSS PIECE SIGN BRACKET



SQUARE POST CAP BRACKET DETAILS



SIGNAL POLE MOUNTING DETAIL



NOTES:

1. TYPICAL SIGN PLATE SHOULD BE 30" MAX.
2. LONGER SIGN PLATE MUST BE APPROVED BY THE CITY TRAFFIC ENGINEER.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STREET NAME SIGN AND SIGN MOUNTING

(SCALE: NOT TO SCALE)

APPROVED BY:

Digitally signed by Sukut Kanawar — CITY ENGINEER
Digitally signed by Khang Nguyen — CITY TRAFFIC ENGINEER
Digitally signed by Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01554-03

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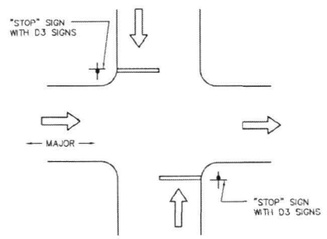
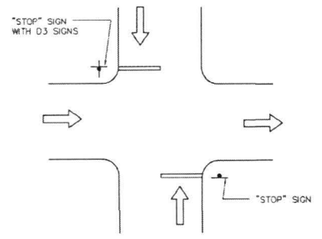
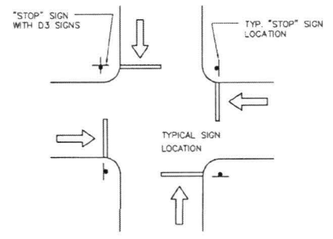
TYPICAL SIGN PLACEMENT



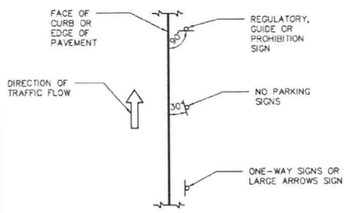
TWO-WAY STOP
AND ONE-WAY OPERATION
ON MAJOR/LOCAL INTERSECTION



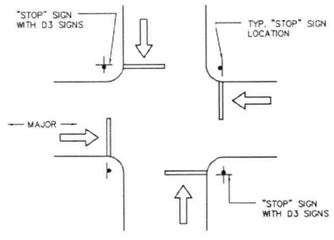
TWO-WAY STOP
AND ONE-WAY OPERATION
ON LOCAL/LOCAL INTERSECTION



FOUR-WAY STOP CONTROL
ON LOCAL/LOCAL INTERSECTION



MAST ARM INSTALLATION
REFER TO TRAFFIC SIGNAL DETAILS
FOR ADDITIONAL INFORMATION.



FOUR-WAY STOP CONTROL
ON MAJOR/LOCAL INTERSECTION

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL SIGN PLACEMENT

(SCALE: NOT TO SCALE)

APPROVED BY:

Digitally signed by Sukut Kanawar — CITY ENGINEER
Digitally signed by Khang Nguyen — CITY TRAFFIC ENGINEER
Digitally signed by Carl Haddock — DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01554-07

NO	DATE	REVISION	APP.

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

01554-03 - STREET NAME SIGN AND SIGN MOUNTING
01554-07 - TYPICAL SIGN PLACEMENT

BRAYS BAYOU SAGE CROSSINGS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	
DRAWING SCALE	80114
AS NOTED	
CITY OF HOUSTON PROJECT	CITY DRAWING
ARCHIE BLANCO	
SHEET NO. 53 OF 70	

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PUBLIC WORKS
HOUSTON, TEXAS

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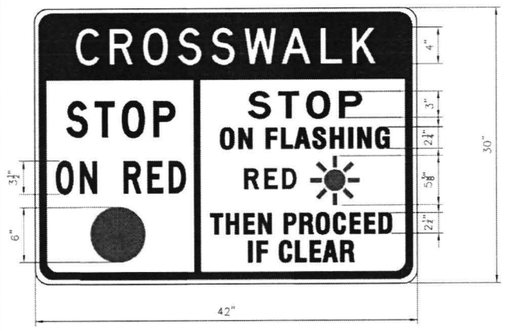
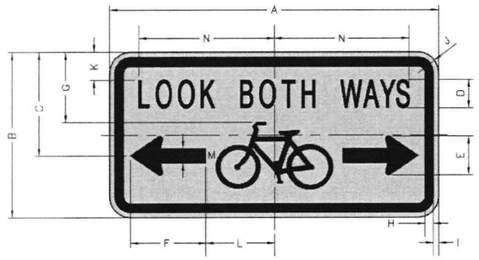


R10 – 23 (COH)

R1–5PB

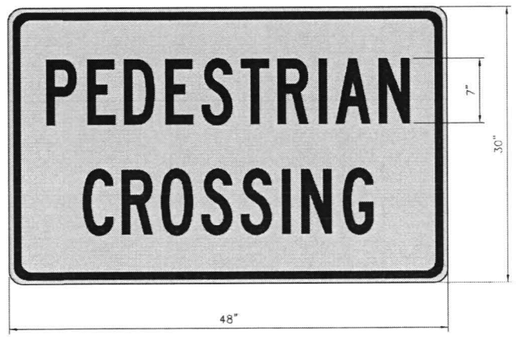
R10 – 15PB



W4–4Pa (BIKE)

A	B	C	D	E	F	G	H	I	J	K	L	M	N
24	12	7.5	2.0	2.5	5.5	5.13	0.6	0.4	1.5	2.0	6.0	1.0	10.0
36	18	11.25	3.0	3.75	8.25	7.75	0.75	0.50	2.25	3.0	7.63	1.50	15.00

BACKGROUND – YELLOW (RETROFLECTIVE)
LEGEND, BORDER – BLACK



W11 – 2 (HAWK)
FLUORESCENT YELLOW/GREEN

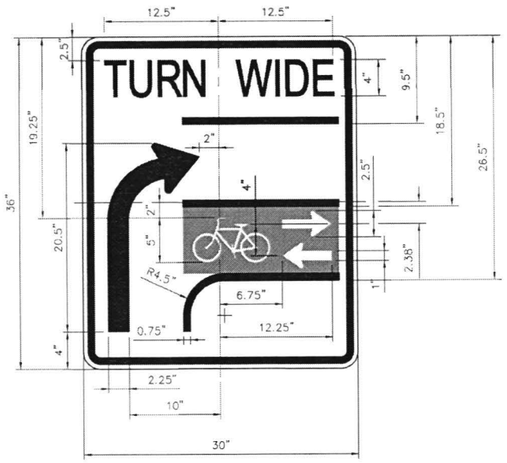
R1–5PBb

R10 – 15PBa

R9–8 (CoH)

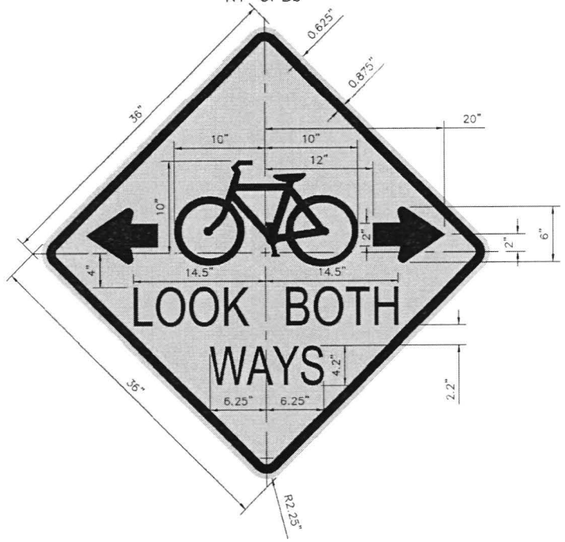
NOTES:

1. USE OF CUSTOM SIGNS MUST BE PRE–APPROVED BY THE CITY TRAFFIC ENGINEER.
2. ALL DIMENSIONS ARE IN INCHES.

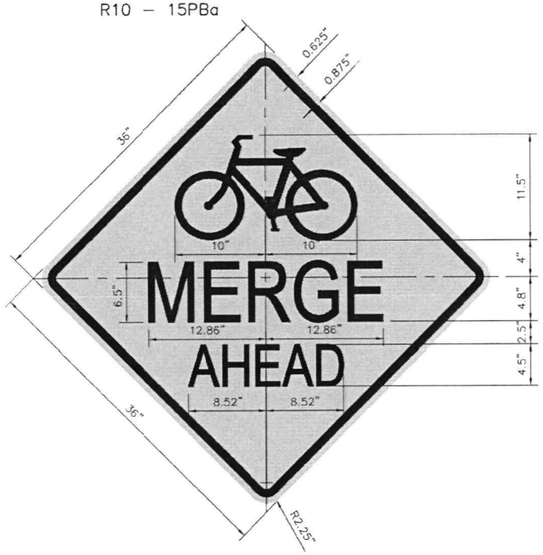


R3–8 (BIKE)

BACKGROUND – WHITE (RETROFLECTIVE)
SYMBOL – GREEN (RETROFLECTIVE)
LEGEND, BORDER – BLACK



W4–4Pb (BIKE)
BACKGROUND – YELLOW (RETROFLECTIVE)
LEGEND, BORDER – BLACK



W11–1 (MERGE)
BACKGROUND – YELLOW (RETROFLECTIVE)
LEGEND, BORDER – BLACK

APPROVED BY:	APPROVED BY:
Docusigned by: Sukrit Kanwar	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: 01554–04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CUSTOM SIGNS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	80114
NOT TO SCALE	
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 54 OF 70	

PUBLIC WORKS
CITY DRAWING
HOUSTON, TEXAS

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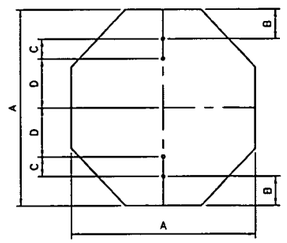
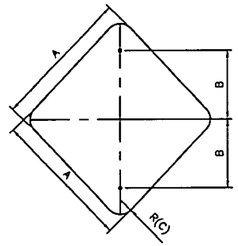


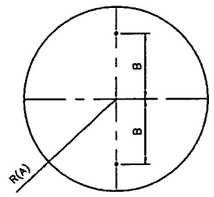
OCTAGONAL

A	B	C	D	T
24	3	3	12	0.08
36	3	3	24	0.08



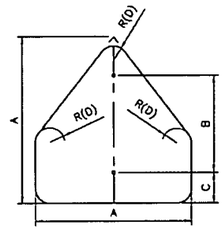
DIAMOND

A	B	C	T
24	12	1 1/2	0.08
30	15	1 1/2	0.08
36	18	1 1/2	0.08



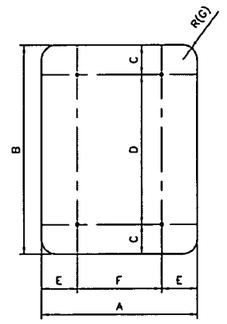
CIRCLE

A	B	T
15	15	0.08
18	12	0.08



PENTAGON (SCHOOL)

A	B	C	D	T
36	24	3	1 1/2	0.08

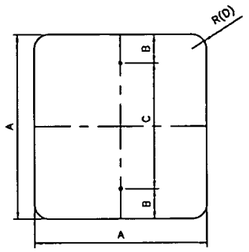


VERTICAL RECTANGLE

A	B	C	D	E	F	G	T
36	48	6	36	6	24	1 1/2	0.08
48	60	6	48	9	30	1 1/2	0.08
18	30	3	24	–	–	1 1/2	0.08

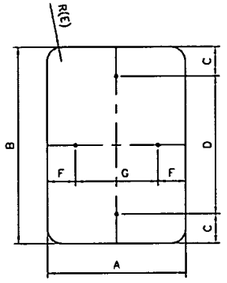
NOTES:

1. A 30" LONG OR GREATER PLATE SHALL BE USED WHEN A "NO OUTLET" SUPPLEMENT IS REQUIRED.
2. THE CITY OF HOUSTON "STOP" AND "YIELD" SIGNS SHALL BE A MINIMUM 36". SPECIAL PERMISSION FROM THE CITY TRAFFIC ENGINEER IS REQUIRED FOR LESS THAN 36" SIGNS.
3. ALL PUNCHED HOLES ARE 3/8"x 1/2" OVAL.
4. ALL CORNER RADII ARE 1 1/2".
5. ALL DIMENSIONS ARE IN INCHES.
6. T = THICKNESS



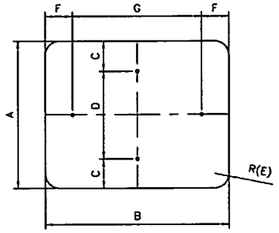
SQUARE (A)

A	B	C	D	T
18	3	12	1 1/2	0.08
24	3	18	1 1/2	0.08
36	3	30	1 1/2	0.08



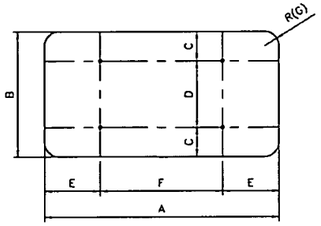
VERTICAL/HORIZONTAL RECTANGLE

A	B	C	D	E	F	G	T
12	18	1 1/2	15	1 1/2	1 1/2	9	0.08
12	36	3	30	1 1/2	1 1/2	9	0.08
18	24	3	18	1 1/2	1 1/2	15	0.08
24	30	3	24	1 1/2	3	18	0.08
24	36	3	30	1 1/2	3	18	0.08
24	48	3	36	1 1/2	3	18	0.08
30	36	3	30	1 1/2	3	24	0.08



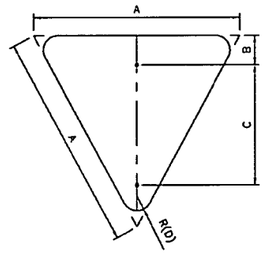
HORIZONTAL/VERTICAL RECTANGLE

A	B	C	D	E	F	G	T
12	6	–	–	1 1/2	1	4	0.08
18	6	–	–	1 1/2	1	4	0.08
12	9	1	10	1 1/2	–	–	0.08
24	12	1 1/2	9	1 1/2	2	8	0.08
24	18	3	12	1 1/2	2	14	0.08
30	24	3	18	1 1/2	3	18	0.08
36	12	1 1/2	9	1 1/2	2	8	0.08



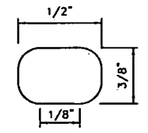
HORIZONTAL RECTANGLE

A	B	C	D	E	F	G	T
36	24	3	18	6	24	1 1/2	0.08
48	24	3	18	9	30	1 1/2	0.08
48	36	6	24	9	30	1 1/2	0.08
60	24	3	18	12	36	1 1/2	0.08
60	36	6	24	12	36	1 1/2	0.08



EQUILATERAL TRIANGLE

A	B	C	D	T
36	3	21	1 1/2	0.08



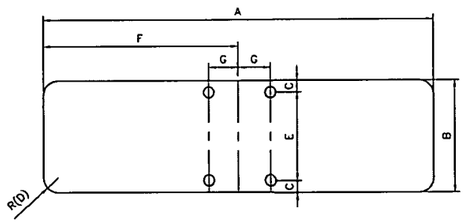


TABLE – D3 SIGNS (BRACKETS)

A	B	C	D	E	F	G	T
30	9	5/16	1 1/2	8 3/8	15	1 3/4	0.125
36	9	5/16	1 1/2	8 3/8	18	1 3/4	0.125
42	9	5/16	1 1/2	8 3/8	21	1 3/4	0.125
48	9	5/16	1 1/2	8 3/8	24	1 3/4	0.125

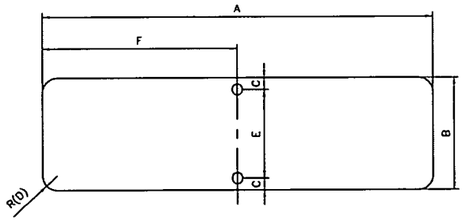


TABLE – D3 SIGNS

A	B	C	D	E	F	T
30	9	1 1/2	1 1/2	6	15	0.125
36	9	1 1/2	1 1/2	6	18	0.125
42	9	1 1/2	1 1/2	6	21	0.125
48	9	1 1/2	1 1/2	6	24	0.125

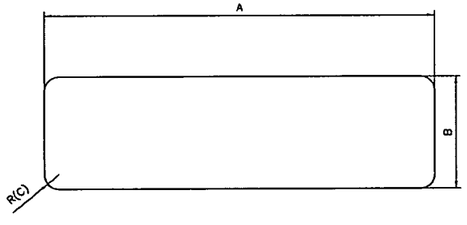


TABLE – D1 SIGNS

A	B	C	T
60	24	1 1/2	0.08
72	24	1 1/2	0.08
84	24	1 1/2	0.08
96	24	1 1/2	0.08

APPROVED BY:	APPROVED BY:
Suhail Kanwar	KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:

Curt Haddock

DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023	DWG NO: 01554-06

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

GROUND MOUNTED SIGN SIZES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	80114
NOT TO SCALE	
CITY OF HOUSTON PO	CITY DRAWING
ARCHIE BLANCO	
SHEET NO. 55 OF 70	

PUBLIC WORKS
RECEIVED
HOUSTON, TEXAS

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

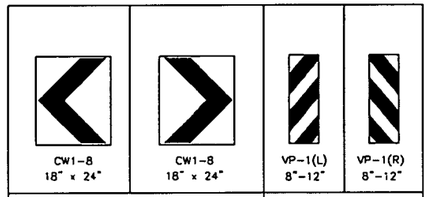
J. SPACING MAY BE ADJUSTED TO PROVIDE DRIVEWAYS, INTERSECTIONS AND /OR MEDIAN OPENINGS.

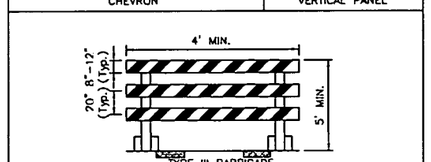
TABLE C3 - TYPICAL SIGN SPACING, TAPER LENGTHS, AND SUGGESTED SPACING OF CHANNELIZATION DEVICES

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'

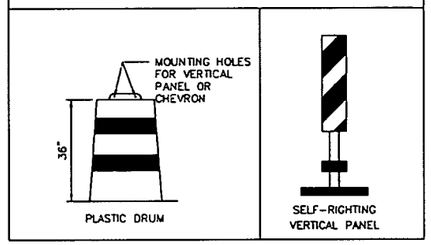
TABLE C4 - STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

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

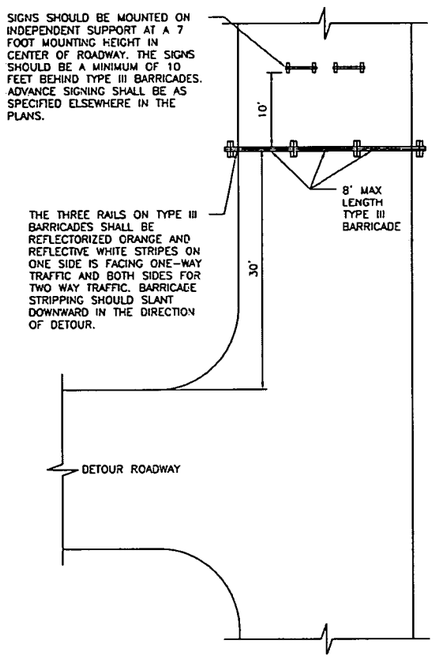




NOTE: STRIPES SHOULD SLOPE DOWNWARDS IN THE DIRECTION TOWARDS WHICH TRAFFIC IS DIRECTED.



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

APPROVED BY:	APPROVED BY:
Developed by: Sulad Kalavar	Developed by: LAING NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER

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

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

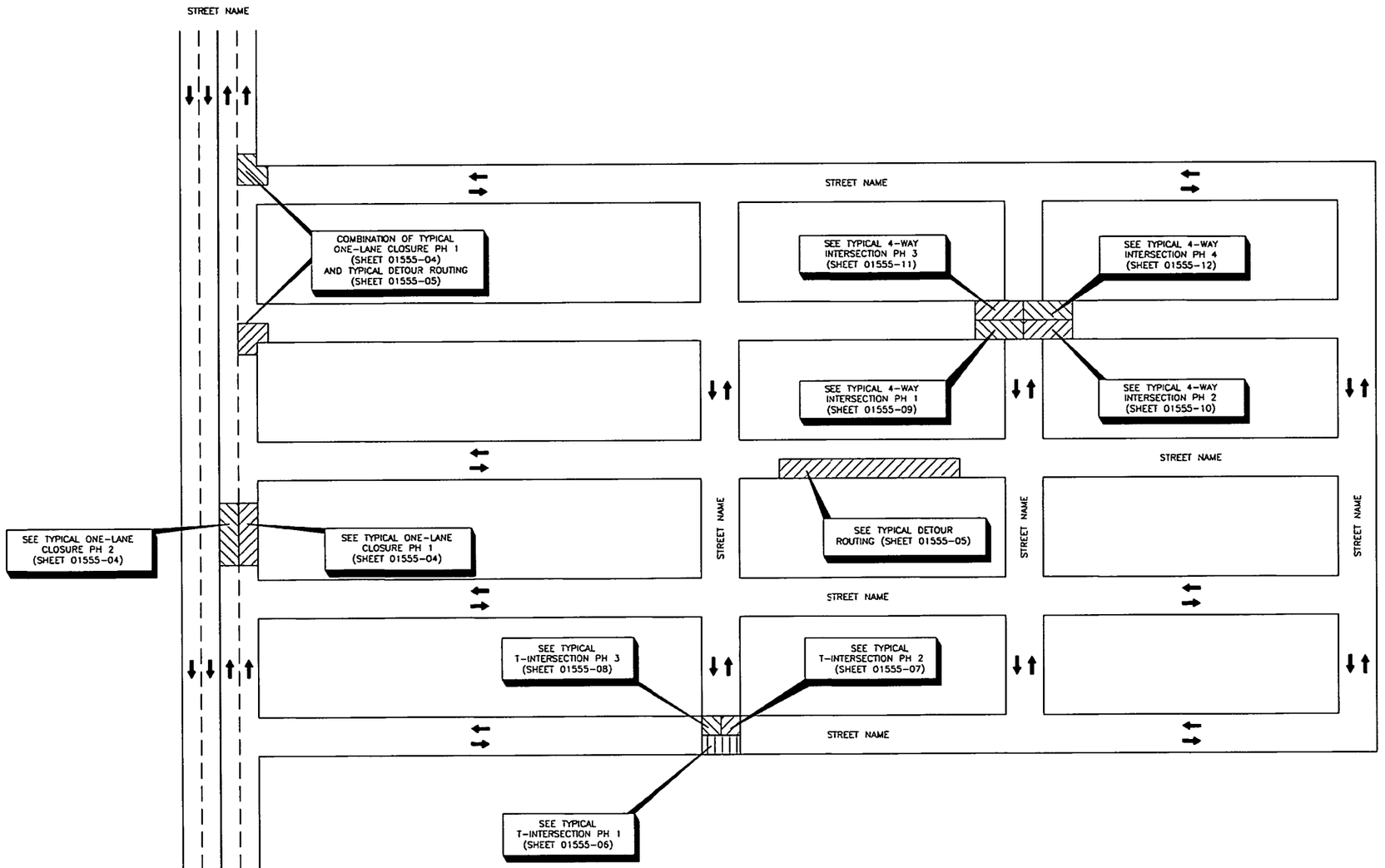
TCP NOTES CHANNELIZING DEVICES AND BARRICADES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	80114
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PO	CITY DRAFTING
ARCHIE BLANCO	
SHEET NO. 56 OF 70	HOUSTON, TEXAS

PUBLIC WORKS

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.

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.



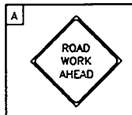
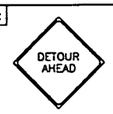
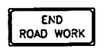
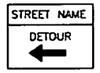
APPROVED BY:	APPROVED BY:
Sidrak Iskander	LIANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-02

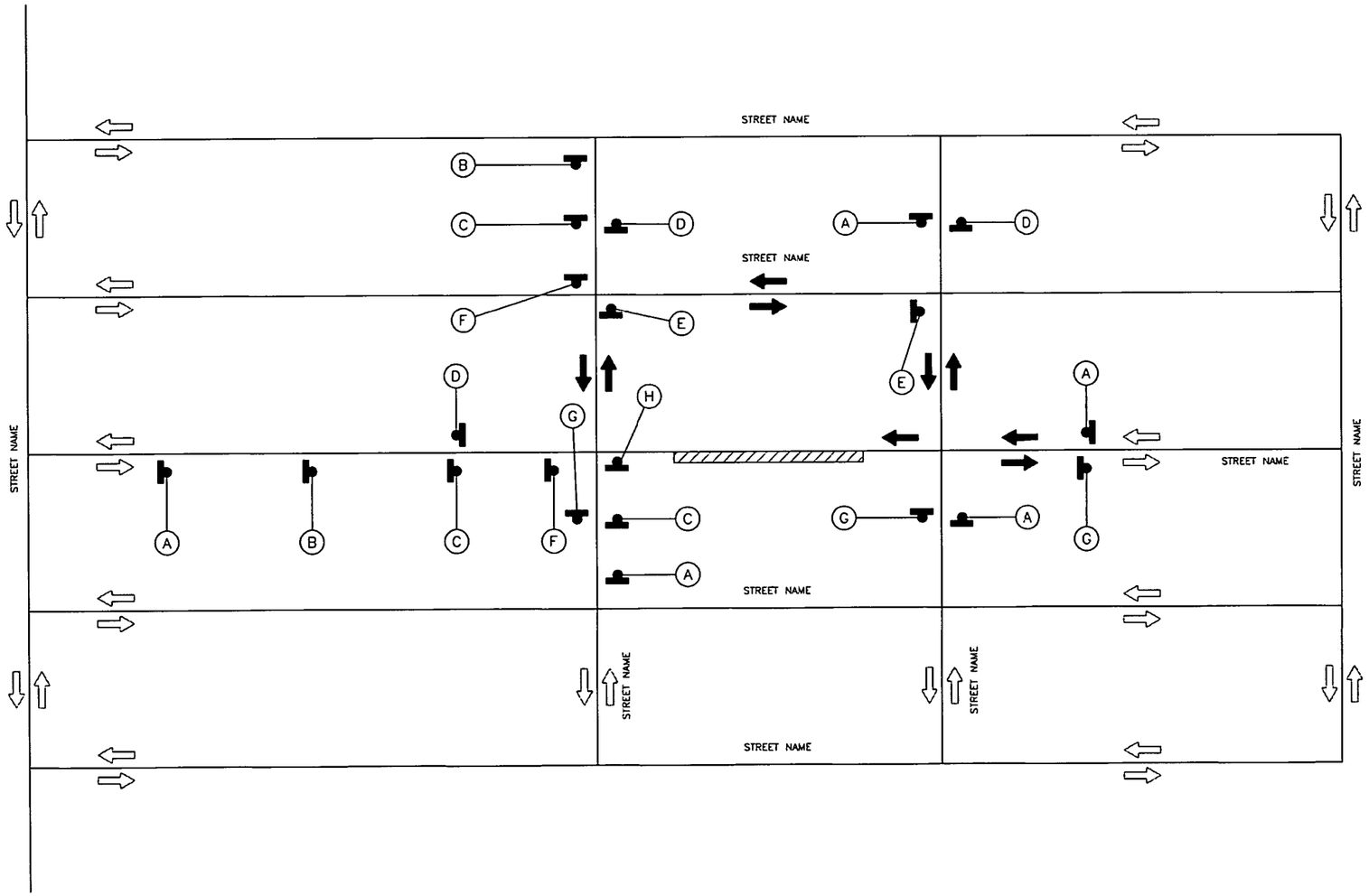
CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP OVERALL TRAFFIC CONTROL LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-	
DRAWING SCALE	80114
NOT TO SCALE	
CITY OF HOUSTON PE	
ARCHIE BLANCO	
SHEET NO. 57 OF 70	

PUBLIC WORKS AND ENGINEERING
APPROVED DRAWING
HOUSTON, TEXAS

A	B	C	D	E	F	G	H
							
CW20-1	CW20-3	CW20-2	G20-2	M4-9R	M4-9L	M4-8a	M4-9T



LEGEND:

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

APPROVED BY:	APPROVED BY:
Sukut Kanwar	LAMNG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-03

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

TRAFFIC CONTROL LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-	
DRAWING SCALE	80114
NOT TO SCALE	
CITY OF HOUSTON P	
ARCHIE BLANCO	
SHEET NO. 58 OF 70	

PUBLIC WORKS
CITY DRAWING
HOUSTON, TEXAS

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

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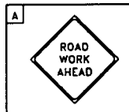
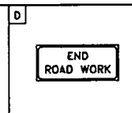
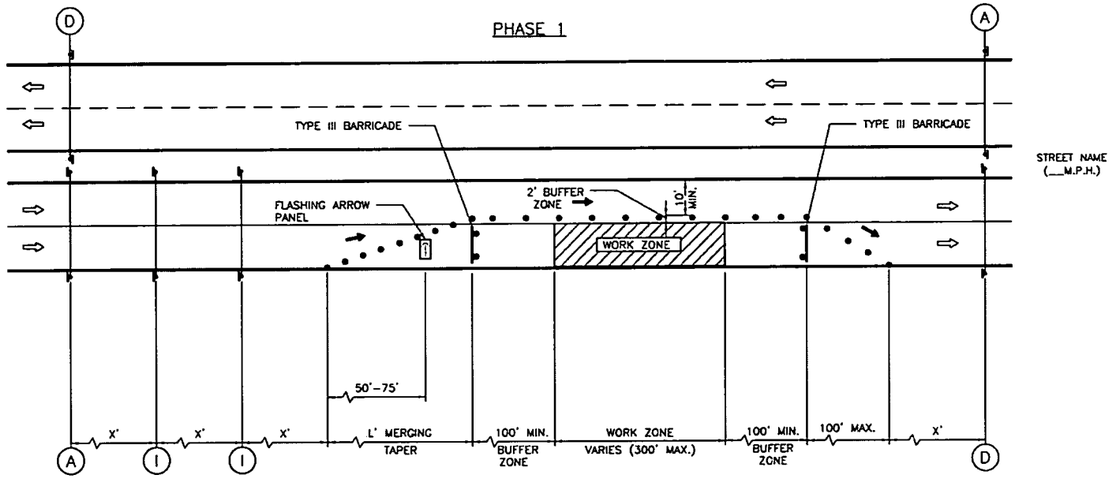
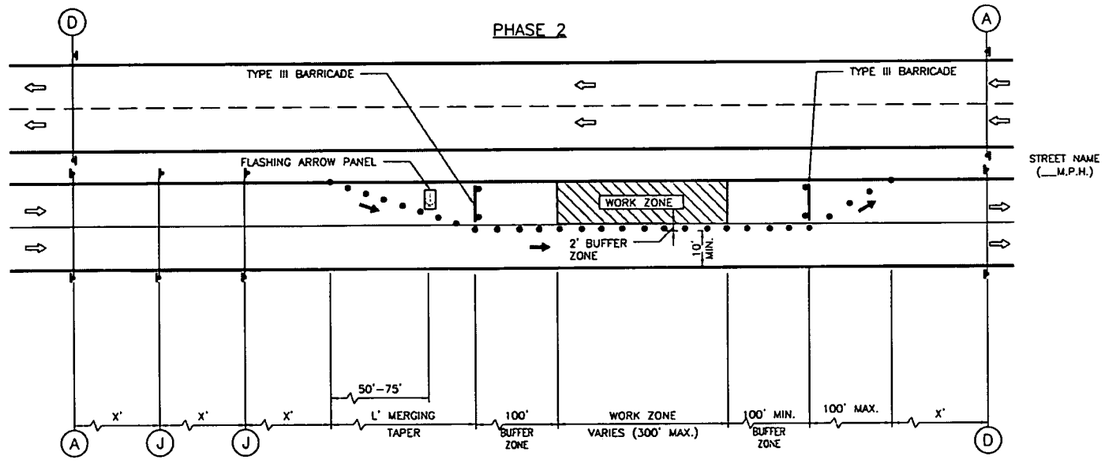
			
CW20-1	G20-2	AHEAD CW20-5(2) CW16-3	AHEAD CW20-5(1) CW16-3





LEGEND:

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

NOTES:

1. RETURN TAPERS AND DOWNSTREAM BARRICADES ARE OPTIONAL ON A DIVIDED ROADWAY SECTION.
2. DOUBLE SIGNS SHALL BE USED ONLY ON ROADWAYS WITH MEDIANS.
3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.

APPROVED BY:	APPROVED BY:
Sukut Iranwar	KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-04

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

TCP ONE LANE CLOSURE PHASE 1 & 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0001	80114
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON DOC	
ARCHIE BLANCO	
SHEET NO. 59 OF 70	

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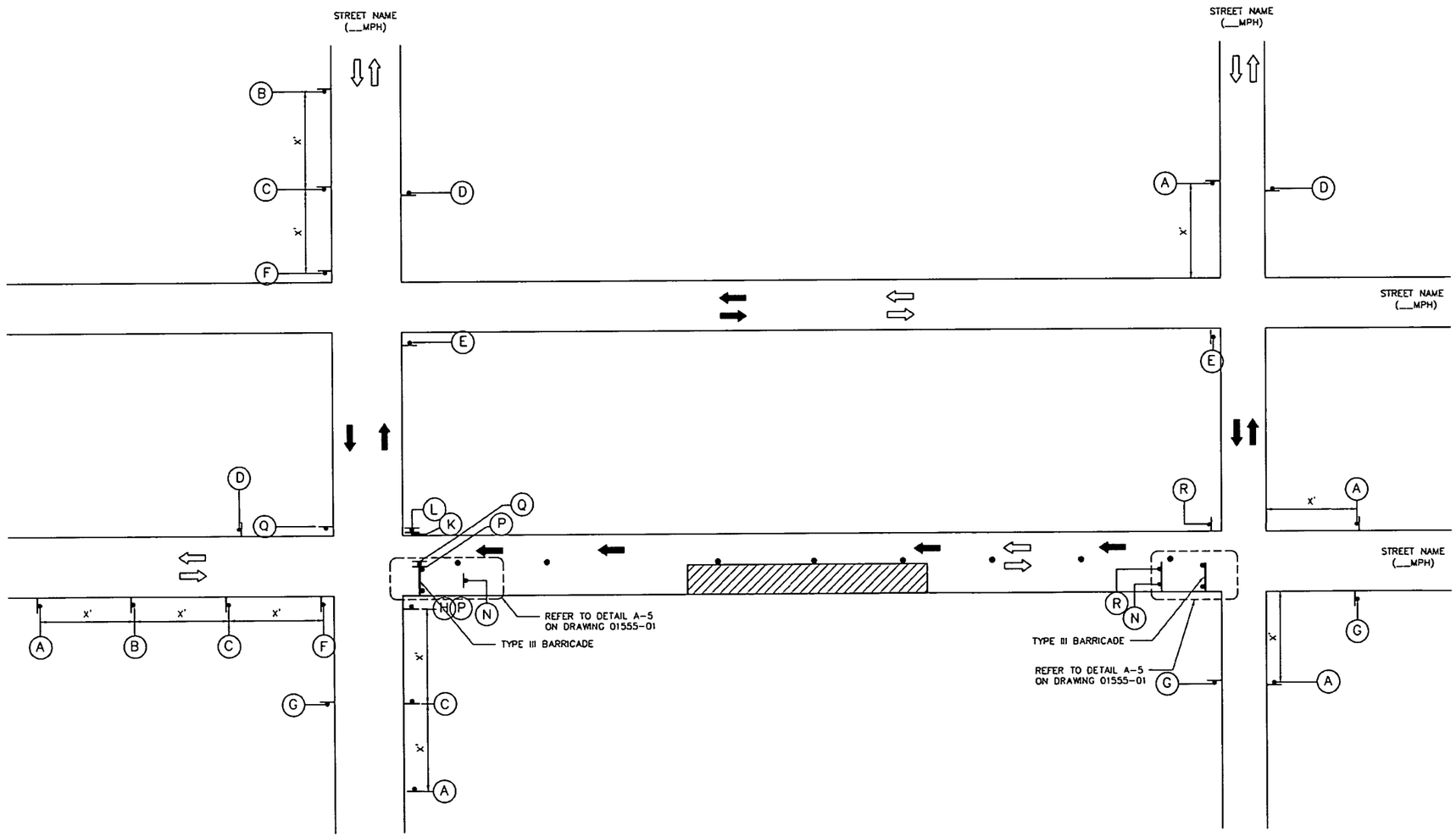
A	B	C	D	E	F	G	H	I	J
ROAD WORK AHEAD	ROAD CLOSED AHEAD	DETOUR AHEAD	END ROAD WORK	STREET NAME / DETOUR →	STREET NAME / DETOUR ←	END DETOUR	STREET NAME / DETOUR ↑	RIGHT LANE CLOSED / AHEAD	LEFT LANE CLOSED / AHEAD
CW20-1	CW20-3	CW20-2	G20-2	M4-9R	M4-9L	M4-8a	M4-9T	CW20-5(2) CW16-3	CW20-5(1) CW16-3

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



LEGEND:

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

NOTES:

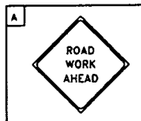
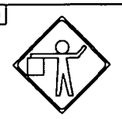
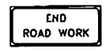
1. A 10' MINIMUM LANE WIDTH FOR EMERGENCY SHALL BE MADE AVAILABLE AND MAINTAINED BY THE CONTRACTOR AT ALL TIMES.
2. FOR DIMENSIONS REFER TO SHEET 01555-01.
3. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.

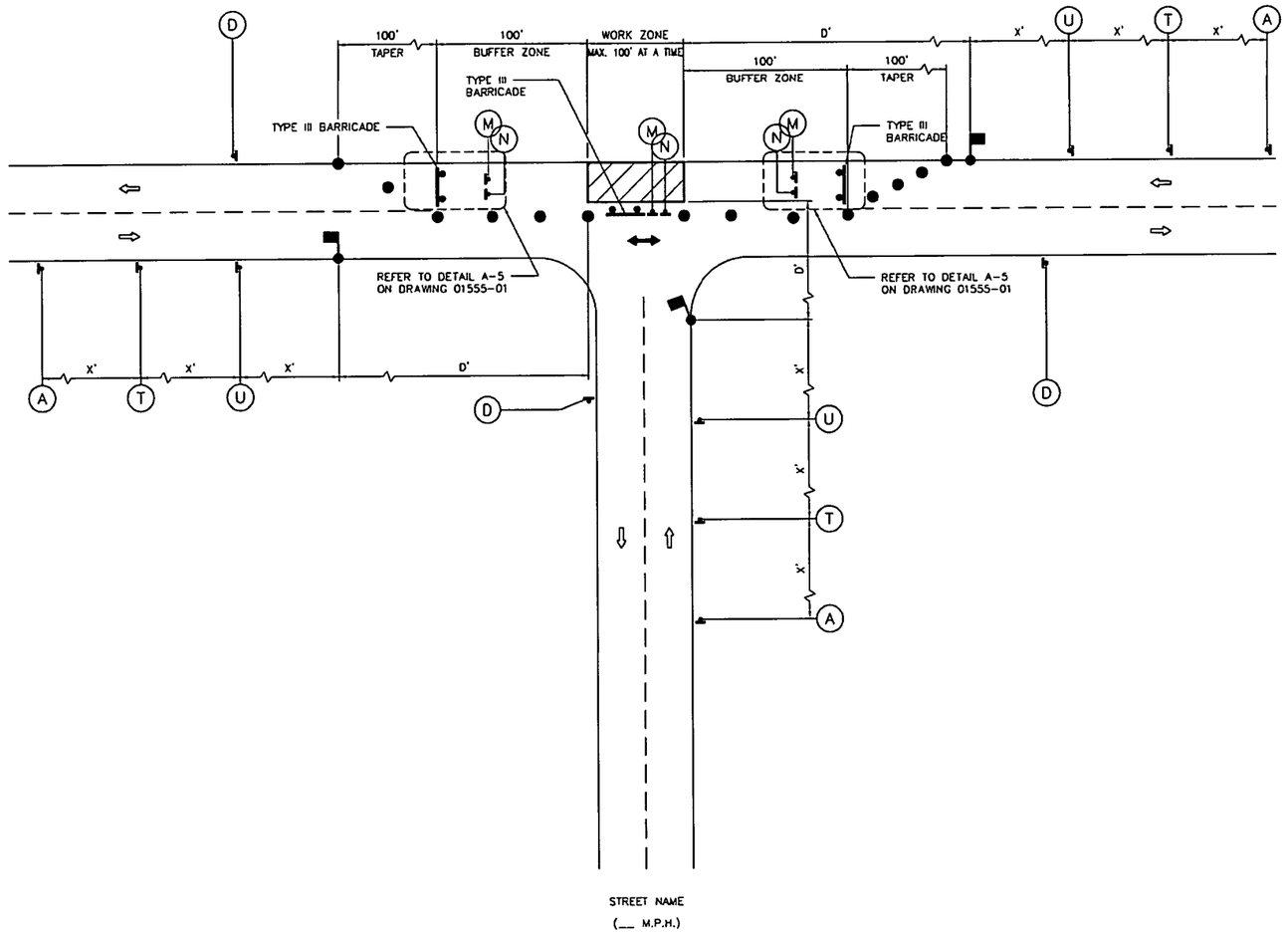
APPROVED BY:	APPROVED BY:
Sukut Kumar	LAMNG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-05

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL DETOUR ROUTING WITH ONE LANE CLOSURE (ONE BLOCK)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0001	
DRAWING SCALE	
NOT TO SCALE	80114
CITY OF HOUSTON EOC	
ARCHIE BLANCO	
SHEET NO. 60 OF	

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



LEGEND:

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

NOTES:

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

APPROVED BY:	APPROVED BY:
Sukat Kanwar	LONG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-06

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A T-INTERSECTION, PHASE 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	ACCEPTED
DRAWING SCALE:	
NOT TO SCALE	80114
CITY OF HOUSTON	CITY DRAWING NUMBER
ARCHIE BLANCO	
SHEET NO. 61 OF	HOUSTON, TEXAS

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. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE. WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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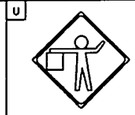
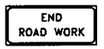
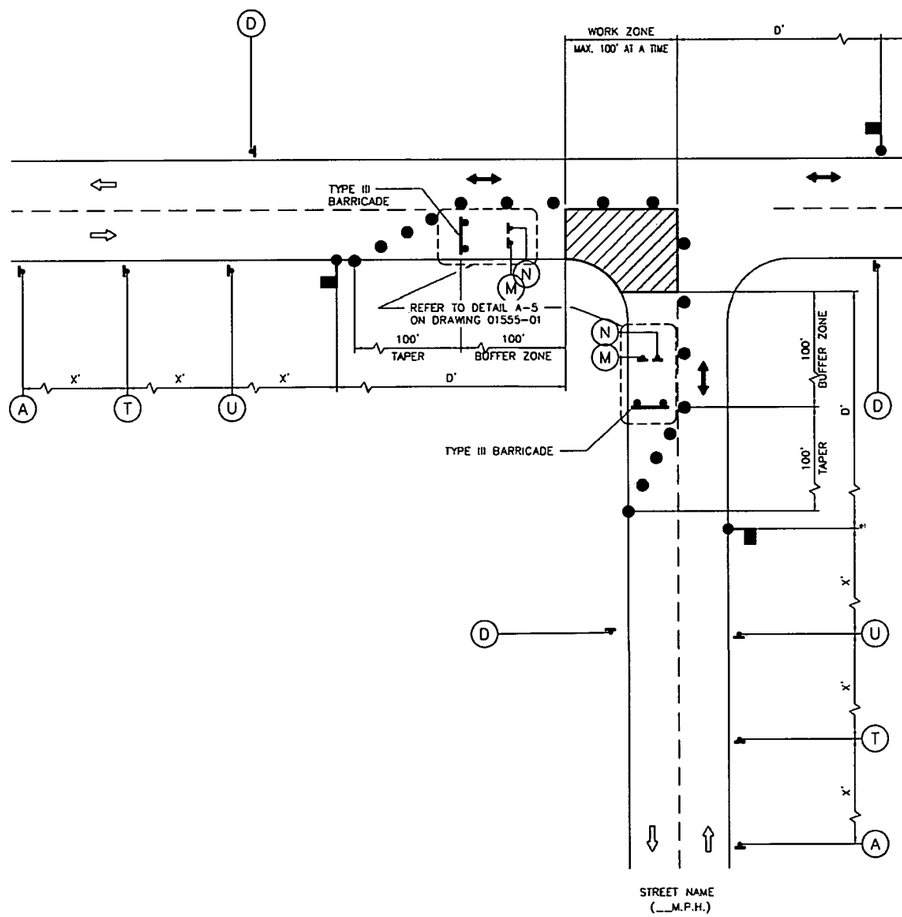
A	T	U	D	M	N
					
CW20-1	CW20-4	CW20-7	G20-2	R5-1	R11-2



LEGEND:

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

NOTES:

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3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.
5. MAX. 100' WORK ZONE AT A TIME.

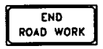
APPROVED BY:	APPROVED BY:
Signed by: Sukat Kanwar	Signed by: HUNG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Signed by: Carl Hallead	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-07

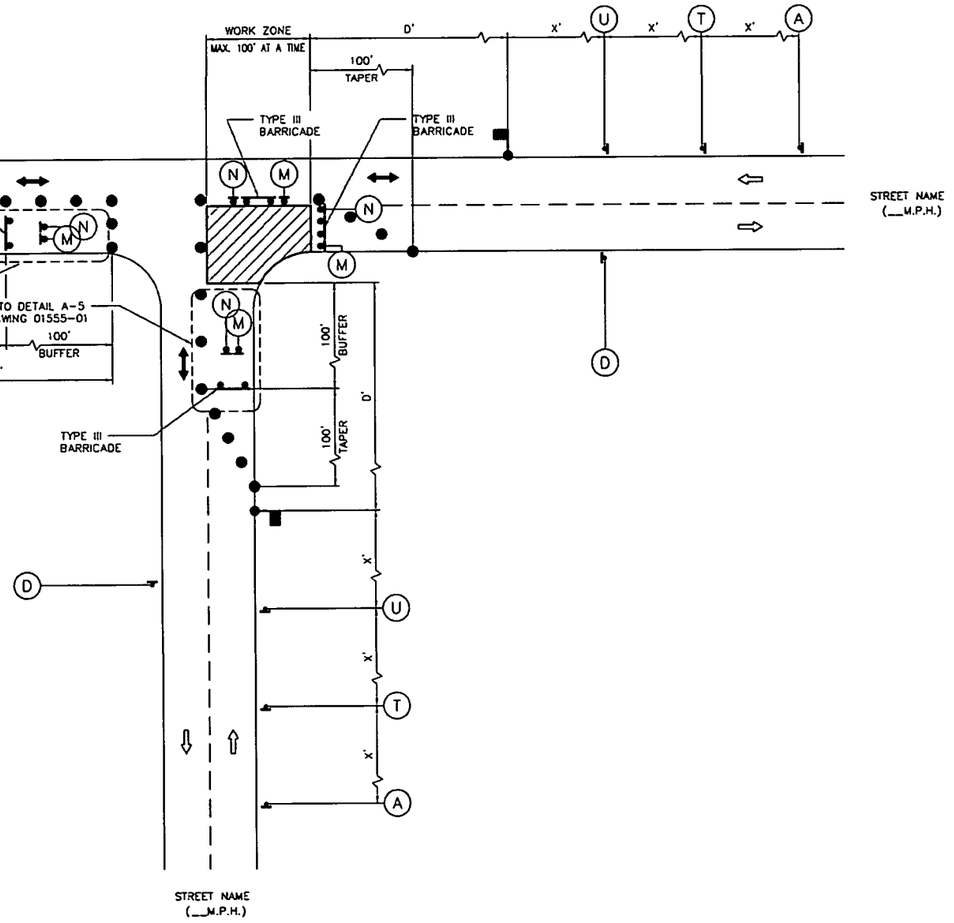
CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A T-INTERSECTION PHASE 2 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	80114
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PO	
ARCHIE BLANCO	
SHEET NO. 62 OF 70	

PUBLIC WORKS ENGINEER
HOUSTON, TEXAS

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



LEGEND:

- SIGN
- FLAGGER
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- BARRICADE
- FLASHING ARROW PANEL
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- EXISTING TRAVEL WAY
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NOTES:

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

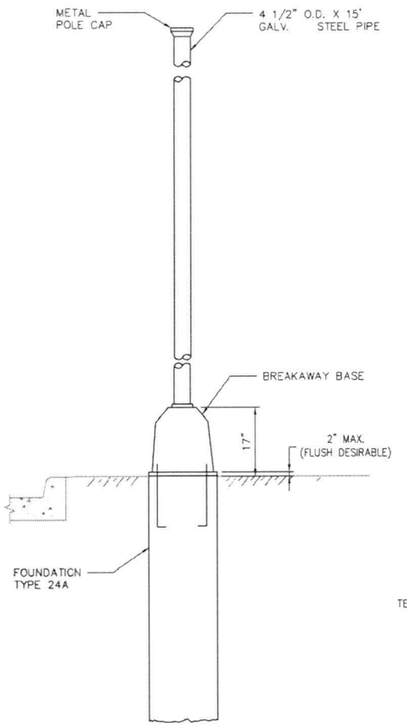
APPROVED BY:	APPROVED BY:
Digitally signed by: Sukut Kanwar	Digitally signed by: LAMAG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Digitally signed by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01553-08

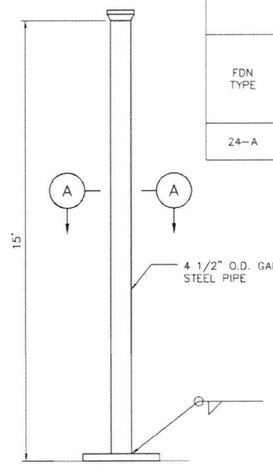
CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A T-INTERSECTION PHASE 1 OF 3

WBS NUMBER	ACCEPTED FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-4	80114
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PROJECT MANAGER	DATE
ARCHIE BLANCO	
SHEET NO. 63 OF 70	HOUSTON, TEXAS

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.





PEDESTAL POLE

FOUNDATION DESIGN TABLE										
FDN TYPE	DRILLED SHAFT DIA.	REINFORCING STEEL		DRILLED SHAFT LENGTH FT	ANCHOR BOLT DESIGN (SEE NOTE 5)				FOUNDATION DESIGN LOAD (SEE NOTE 6)	
		VERT. BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER 10 BLOWS/ FT	ANCHOR BOLT DIA.	FY (KSI)	BOLT CIR. DIA.	ANCHOR TYPE	MOMENT K-FT	SHEAR KIPS
24-A	24"	4-#5 BARS	#2 BAR AT 12"	6	3/4"	36	*13"	1	10	1

* 10 1/2" B.C. FOR PUSH BUTTON POLE

ANCHOR BOLT & TEMPLATE SIZES						
BOLT DIA. IN.	**BOLT LENGTH	TOP THREAD	BOTT. THREAD	BOLT CIRCLE	R_2	R_1
3/4"	1'-6"	3"	-	13"	7 1/8"	5 5/8"

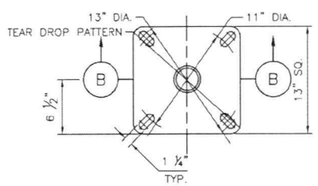
** MIN DIMENSIONS GIVEN, LONGER BOLTS ARE ACCEPTABLE.

GENERAL NOTES

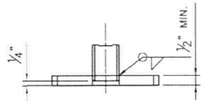
1. DESIGN CONFORMS TO 1994 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS AND INTERIM REVISIONS THERETO.
2. CONCRETE SHALL BE CLASS A OR C.
3. THREADS FOR ANCHOR BOLTS AND NUTS SHALL BE ROLLED OR CUT THREADS OF UNIFIED NATIONAL COARSE THREAD SERIES EXCEPT FOR A193B7 BOLTS WHICH SHALL HAVE 8 PITCH THREAD SERIES. BOLTS AND NUTS SHALL HAVE CLASS 2A AND 2B FIT TOLERANCES. GALVANIZED NUTS SHALL BE TAPPED AFTER GALVANIZING.
4. ANCHOR BOLTS THAT ARE 1" IN DIAMETER OR LESS SHALL CONFORM TO ASTM A36. GALVANIZE ALL ANCHOR BOLTS UNLESS OTHERWISE NOTED. EXPOSED NUTS SHALL BE GALVANIZED OR COATED WITH ZINC-RICH PAINT. WASHERS SHALL BE GALVANIZED. TEMPLATES AND EMBEDED NUTS NEED NOT BE GALVANIZED.
5. ANCHOR BOLT DESIGN DEVELOPS THE FOUNDATION CAPACITY GIVEN UNDER FOUNDATION DESIGN LOADS.
6. FOUNDATION DESIGN LOADS ARE THE ALLOWABLE MOMENTS AND SHEARS AT THE BASE OF THE STRUCTURE.
7. ANCHOR BOLT ASSEMBLY INSTALLATION PROCEDURE

7.1. THREADS OF ANCHOR BOLTS SHALL BE COATED WITH PIPE JOINT COMPOUND PRIOR TO INSTALLATION OF UPPER NUTS WHEN ERECTING POLE. AFTER POLE IS PLUMBED AND IN PERMANENT ALIGNMENT, THE EXPOSED THREADS OF PAINTED BOLTS SHALL BE CLEANED AND AN ADDITIONAL COATING OF ZINC-RICH PAINT APPLIED TO SEAL THE BOLT THREAD-NUT JOINT.

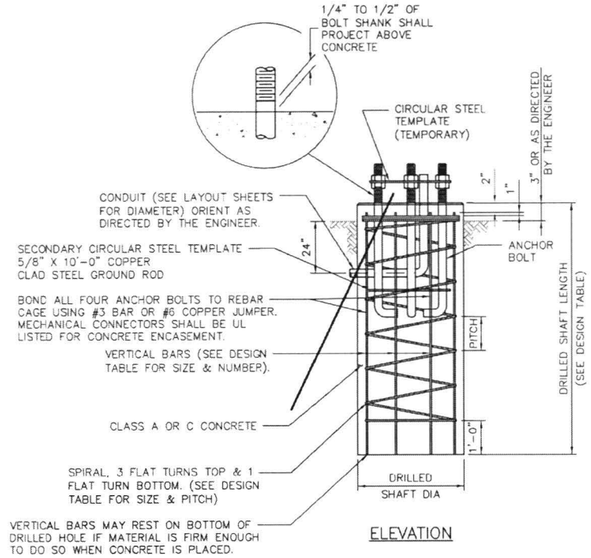
8. DETAILS DEPICTED ON THIS SHEET SHOW A TYPICAL PEDESTAL POLE ASSEMBLY WITH A DRILLED SHAFT FOUNDATION.
9. USE 24 IN. DRILLED SHAFT FOUNDATION AS SHOWN.
10. PROVIDE BREAKAWAY FUSE HOLDER WITH DOUBLE-POLE HOUSING. ENSURE FUSE HOLDER IS POLARIZED, WATER-RESISTANT, UL RECOGNIZED, AND RATED FOR 30A MAXIMUM CURRENT CAPACITY AT 600V OR LESS. PROVIDE BREAKAWAY FUSE HOLDER FROM MANUFACTURERS PRE-QUALIFIED BY TXDOT TRAFFIC OPERATIONS DIVISION. SEE https://www.txdot.gov/business/resources/materials/material-producer-list.html FOR LIST OF PRE-QUALIFIED MANUFACTURERS. CATEGORY IS "ROADWAY ILLUMINATION AND ELECTRICAL SUPPLIES." PROVIDE 10 AMP TIME DELAY FUSES.
11. POLE SHAFT SHALL BE ONE PIECE. ALUMINUM CONDUIT WILL NOT DEVELOP THE NECESSARY STRENGTH AND WILL NOT BE ALLOWED. IN HIGH WINDS, USE A POLE AND BASE COLLAR ASSEMBLY TO ADD STRENGTH AND PREVENT LOOSENING ON CONNECTION.
12. PER MANUFACTURER'S RECOMMENDATIONS, ENGAGE ALL THREADS ON THE PEDESTAL POLE BASE AND PIPE UNLESS THE PIPE IS FULLY SEATED INTO BASE.
13. PROVIDE NON-FUSED WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS FOR BREAKAWAY POLES (BUSSMANN HET, LITTELFUSE LET, FERRAZ-SHAWMUT FEBN, OR APPROVED EQUAL).
14. PROVIDE SIGNAL HEADS AND MOUNTING AS SHOWN ELSEWHERE ON THE PLANS.



SECTION A-A

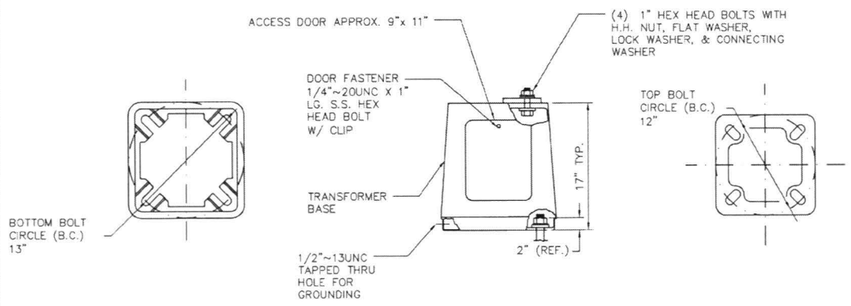


SECTION B-B



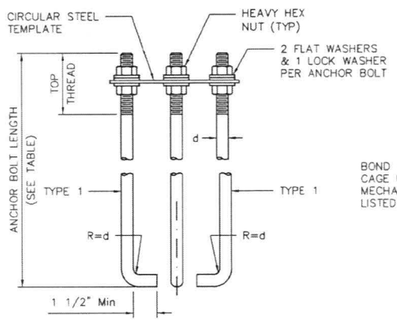
ELEVATION

FOUNDATION DETAILS

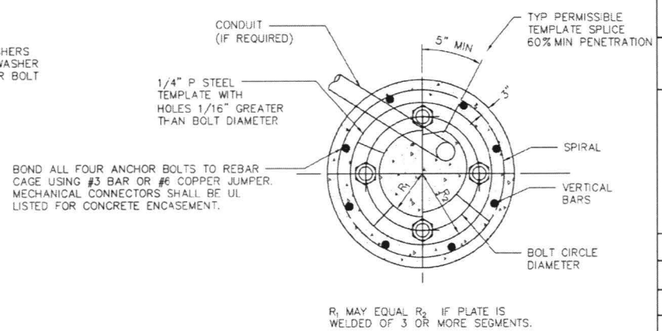


BOTTOM PLAN ELEVATION TOP PLAN

BREAKAWAY BASE DETAILS



HOOKED ANCHOR (TYPE 1)



R_1 MAY EQUAL R_2 IF PLATE IS WELDED OF 3 OR MORE SEGMENTS.

TOP VIEW

APPROVED BY:	APPROVED BY:
DocuSigned by: Sulad Kawwar	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: 02465-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PEDESTAL/PUSHBUTTON POLE DRILLED SHAFT FOUNDATION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	80114
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PUBLIC WORKS	
ARCHIE BLANCO	
SHEET NO. 64 OF 70	

DISCLAIMER:
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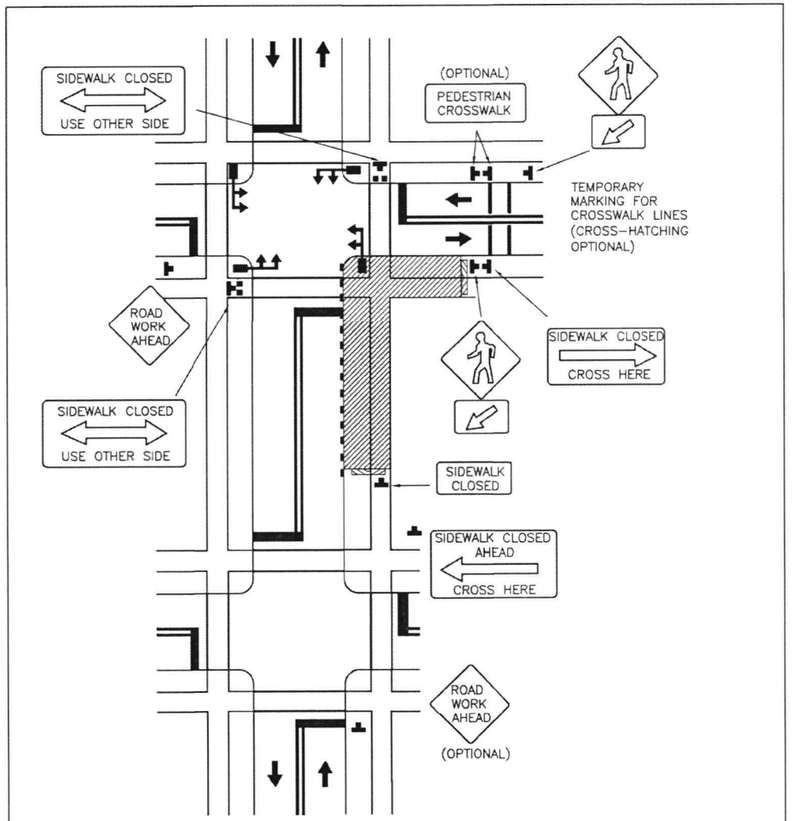

DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR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

APPROVED BY:

CITY ENGINEER	CITY TRAFFIC ENGINEER	DIRECTOR OF HPW
DocuSigned by: Suhail Kanwar 0EF8B0C841F5478...	DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...	DocuSigned by: Carol Haddock A93C4108723D453...

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CROSSWALK CLOSURES AND PEDESTRIAN DETOURS

(SCALE: NOT TO SCALE)

EFF DATE: NOV-27-2023 | DWG NO: 01555-16

NO.	DATE	REVISION	APP.

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

THE GOODMAN CORPORATION
3200 TRAVIS, SUITE 200
HOUSTON, TEXAS 77006
www.TheGoodmanCorp.com
(713) 951-7931
TBPE Firm Registration No. 11756

KUO & Associates, Inc.
Consulting Engineers & Surveyors
10300 Westoffice Dr., Suite 800
Houston, TX 77042
Fax: (713) 975-0920
www.kuoassoc.com
TX Engineering Firm Reg. No. F-4378
TX Surveying Firm Reg. No. 10075600

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

01555-16 - CROSSWALK CLOSURES AND PEDESTRIAN DETOURS

BRAYS BAYOU SAFE CROSSINGS

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
AS NOTED	80114
CITY OF HOUSTON PO	
ARCHIE BLANCO	CITY DRAWING
SHEET NO. 65 OF 70	HOUSTON, TEXAS

C:\VOLUMES\THEGOODMANCORP\TGC-ENGINEERING\00_TGC PROJECT FILES\GSMD123\CADIGSMD123_COH_DETAILS.DWG, 5/30/2025 1:17 PM

DESCRIPTION AND APPLICATION OF PAVEMENT MARKING LINES

LINE SERIES	COLOR	DESCRIPTION	WIDTH (INCHES)	TYPICAL APPLICATIONS
WB	WHITE	BROKEN (10' STRIPE W/30' GAP)	4"	LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS PERMITTED.
WS	WHITE	SOLID	4"	EDGE LINES TO DELINEATE THE RIGHT EDGE OF THE ROADWAY.
			6"	LEFT EDGE OF BICYCLE LANE AND LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS DISCOURAGED.
			12"	PERPENDICULAR CROSSWALK LINES.
			24"	STOP BARS AT INTERSECTIONS (SIGNALIZED AND UNSIGNALIZED).
				HATCHING AT HIGH VISIBILITY CROSSWALKS.
			12", 24"	DIAGONAL HATCHING USED IN GORES BETWEEN SAME DIRECTION OF TRAVEL LANES.
WG	WHITE	GUIDE (2' STRIPE W/6' GAP)	6"	GUIDE LINES THROUGH INTERSECTIONS.
				TAPER LINES FOR TURN LANES.
				GUIDE LINES FOR BICYCLE LANES.
YS	YELLOW	SOLID	4"	EDGE LINES TO DELINEATE THE LEFT EDGE OF A DIVIDED ROADWAY, A ONE-WAY ROAD, OR RAMP.
			6"	BIDIRECTIONAL BICYCLE LANE PAVEMENT MARKING.
			12", 24"	DIAGONAL HATCHING USED IN GORES BETWEEN OPPOSING DIRECTION OF TRAVEL LANES.
YDS	YELLOW	DOUBLE SOLID	4" - (4") - 4" (GAP)	CENTERLINE THAT SEPARATES OPPOSING TRAVEL LANES AND DELINEATION OF MEDIAN ISLANDS.
YDB	YELLOW	DOUBLE BROKEN	4" - (4") - 4" (GAP)	DEFINES THE EDGES OF CENTER REVERSIBLE LANES THAT ARE USED AS TWLTLS DURING INTERMITTENT PERIODS.
YB	YELLOW	BROKEN (10' STRIPE W/30' GAP)	4"	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YB (BIKE)	YELLOW	BROKEN (3' STRIPE W/9' GAP)	4"	SEPARATES BICYCLE TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YSB	YELLOW	SOLID & BROKEN BROKEN (10' STRIPE W/30' GAP)	4" - (4") - 4" (GAP)	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN ONE DIRECTION AND PROHIBITED IN THE OPPOSITE DIRECTION.
				USED FOR EDGE OF TWO-WAY LEFT TURN LANES (TWLTL).
BICYCLE GREEN	GREEN	SOLID COLORED PAVEMENT	VARIES	PED/BIKE CROSSING
				VEHICLE / BIKE/ CONFLICT AREA
YIELD LINE	WHITE	TRIANGLE	16" x 24"	MID-BLOCK CROSSING.

DESCRIPTION AND APPLICATION OF REFLECTIVE RAISED PAVEMENT MARKERS (RPM)

RRPM TYPES	COLOR	COH SPEC. SEC. 02764 EQUIVALENT	DESCRIPTION
C	CLEAR	TYPE I-C	APPROACH FACE THAT REFLECTS WHITE LIGHT, AND THE OTHER SIDE DOES NOT REFLECT.
R	CLEAR & RED	TYPE II-C-R	APPROACH FACE THAT REFLECTS WHITE LIGHT, AND THE OTHER SIDE REFLECTS RED LIGHT.
A	AMBER & AMBER	TYPE II-A-A	APPROACH FACE AND THE OTHER SIDE BOTH REFLECT AMBER LIGHT.

LINE STYLE DESIGNATION : YSB4 - A40/A40

- COLOR
- PATTERN
- WIDTH OF STRIPE
- RPM SPACING
- RPM TYPE
- RPM SPACING
- RPM TYPE

GENERAL PAVEMENT MARKING NOTES:

1. PRIOR TO START OF CONSTRUCTION, ALL EXISTING PAVEMENT MARKINGS WITHIN THE AREA OF CONSTRUCTION SHALL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING ALL EXISTING PAVEMENT MARKINGS AND LANE CONFIGURATIONS WILL BE DUPLICATED AGAIN. THIS REVIEW CAN BE DONE IN CONJUNCTION WITH SIGN INVENTORY. THE CONTRACTOR IS HELD ACCOUNTABLE FOR EXISTING AND TEMPORARY CONSTRUCTION PAVEMENT MARKINGS THROUGHOUT THE PROJECT AND AT THE PROJECT'S COMPLETION.
2. ALL PAVEMENT MARKINGS SHALL CONFORM TO CITY OF HOUSTON STANDARDS AND SPECIFICATIONS AND GENERAL GUIDELINES OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
3. THE PERMANENT PAVEMENT MARKINGS MAY BE MODIFIED AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
4. THE DESIGN SPEED FOR THE ROAD IS: _____. THE POSTED SPEED LIMIT IS: _____.
5. ALL LANE DIMENSIONS ARE FROM CENTER OF LANE LINE, CENTER OF DOUBLE LANE LINE, FACE OF CURB, OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
6. THE PAVEMENT MARKING DRAWINGS ARE SCHEMATIC ONLY. THE CONTRACTOR SHALL FOLLOW ALL DIMENSIONS, DETAILS, AND STANDARDS WHEN INSTALLING PAVEMENT MARKINGS AND SYMBOLS.
7. THE FINAL LONGITUDINAL STRIPINGS SHALL BE 60 MIL (0.060") THICK HOT-SPRAYED THERMOPLASTIC PLACED OVER THE TEMPORARY STRIPING WITHIN 14 TO 30 CALENDAR DAYS AFTER COMPLETION OF THE FINAL PAVEMENT SURFACE, OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER. ALL OTHER PAVEMENT MARKINGS SHALL BE APPLIED AT THE SAME TIME. TEMPORARY STRIPING SHALL BE WATER BASED PAINT.
8. ALL FINAL TRANSVERSE MARKINGS SHALL BE 90 MIL (0.090") HOT-SPRAYED THERMOPLASTIC. ALL PAVEMENT ARROWS AND LEGENDS SHALL ALSO BE 90 MIL (0.090") HOT-SPRAYED THERMOPLASTIC. PREFORMED THERMOPLASTIC APPLICATIONS MAY BE USED IF ONLY APPROVED BY THE CITY TRAFFIC ENGINEER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT AND INSTALLATION OF PAVEMENT MARKINGS OF FINAL SURFACE COURSE FOLLOWING CONTROL POINTS THAT HAVE BEEN SET NO MORE THAN 50 FEET APART ALONG THE LINES TO BE IMPLEMENTED. IN TANGENT SECTIONS OF A ROAD WHERE THE PAVEMENT MARKING PATTERN DOES NOT CHANGE, CONTROL POINTS CAN BE SET AT 200 FEET SPACING. THE LAYOUT AND INSPECTION OF ALL PAVEMENT MARKINGS SHALL BE APPROVED BY CITY OF HOUSTON REPRESENTATIVE PRIOR TO THE APPLICATION OF MATERIALS.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE FINAL SURFACE COURSE IS PLACED SO THAT THE STRIPING IS OFFSET NO MORE THAN ONE FOOT CLEAR OF THE CONSTRUCTION JOINT, UNLESS OTHERWISE DIRECTED BY THE CITY TRAFFIC ENGINEER.
11. ALL RAISED PAVEMENT MARKERS (RPMS) SHALL BE INSTALLED SO THAT THE REFLECTIVE FACE OF EACH MARKER IS FACING THE DIRECTION OF TRAFFIC AND IS PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW. TYPE C PAVEMENT MARKERS SHALL BE INSTALLED SO THAT THE CLEAR FACE OF EACH MARKER IS FACING THE APPROACHING TRAFFIC FLOW AND PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW.
12. ALL REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED IN ACCORDANCE TO CITY OF HOUSTON STANDARD SPECIFICATION 02762. APPLYING OVER EXISTING PAVEMENT MARKINGS DOES NOT CONSTITUTE AS APPROVED OBLITERATION METHOD.
13. THE ENGINEER OF RECORD SHALL BE REQUIRED TO PRODUCE AS-BUILT OF PAVEMENT MARKING PLANS WITHIN 30 DAYS AFTER COMPLETION OF PAVEMENT MARKING IMPLEMENTATION.
14. BLUE RPMS MAY BE PLACED ADJACENT TO FIRE HYDRANTS WITH THE APPROVAL OF THE CITY TRAFFIC ENGINEER.
15. FOR ALL CONSTRUCTION, ALL PAVEMENT MARKINGS AND SIGNING SHALL BE INSTALLED AND SHALL BE PAID BY THE PROJECT OWNER/DEVELOPER.
16. FINAL INSPECTION AND ACCEPTANCE OF PAVEMENT MARKINGS SHALL BE PERFORMED BY TRANSPORTATION & DRAINAGE OPERATION REPRESENTATIVE (713-803-3054).

APPROVED BY:	APPROVED BY:
Sukul Kanwar	LAING NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PAVEMENT MARKINGS GENERAL NOTES AND LEGENDS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	
NOT TO SCALE	80114
CITY OF HOUSTON PUBLIC WORKS	
ARCHIE BLANCO	
SHEET NO. 68 OF 70	

PROFESSIONAL ENGINEER — HOUSTON, TEXAS

DISCLAIMER:
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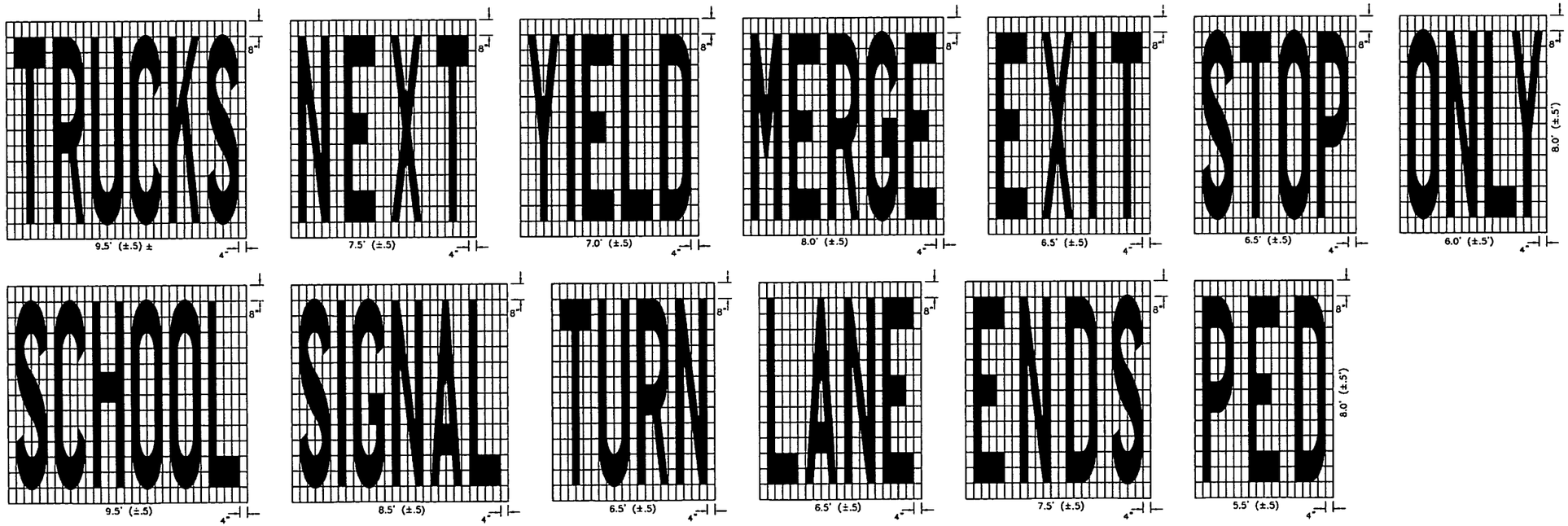

DISCLAIMER:
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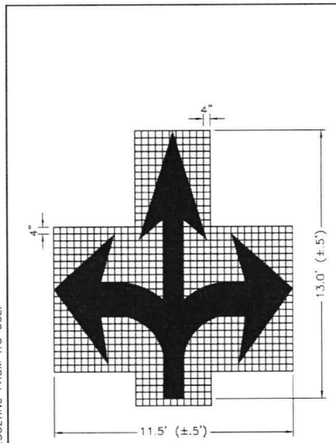
APPROVED BY:	APPROVED BY:
Developed by: Sukut Kunwar	Developed by: KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Developed by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-03

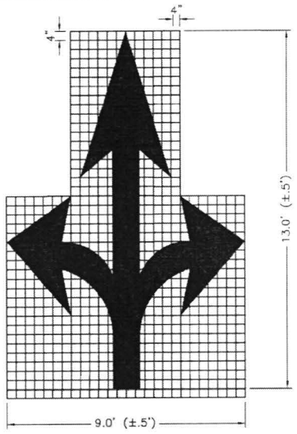
CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

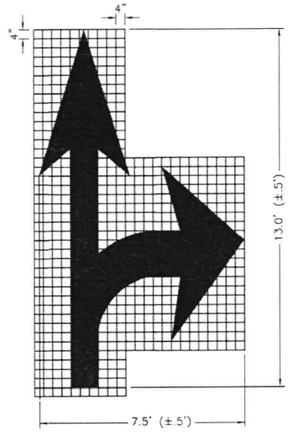
STANDARD PAVEMENT MARKING – (WORDS)

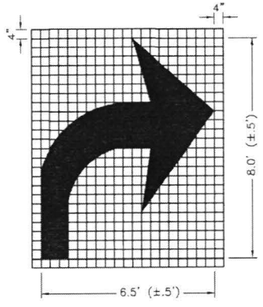
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003-7	
DRAWING SCALE	80114
NOT TO SCALE	
CITY OF HOUSTON PU	CITY DRAWING NUMBER
ARCHIE BLANCO	
SHEET NO. 67 OF 70	

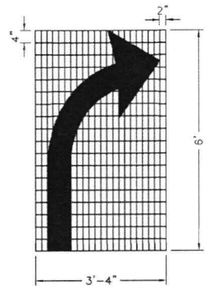
PUBLIC WORKS
HOUSTON, TEXAS

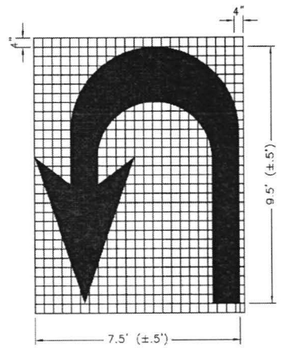


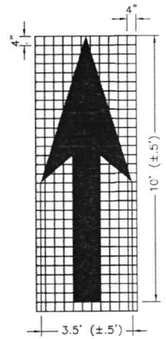


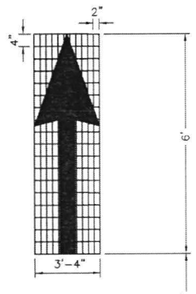


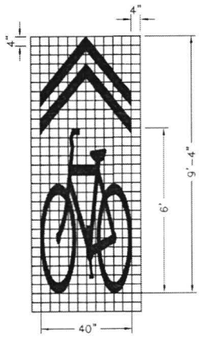


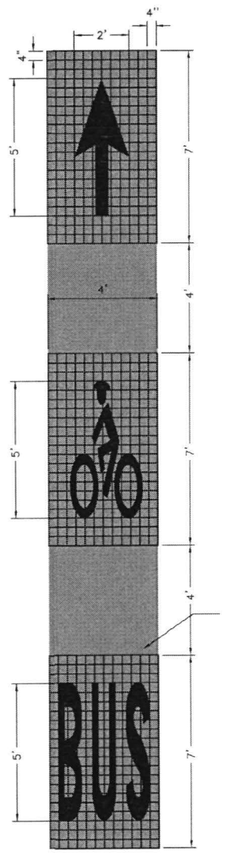


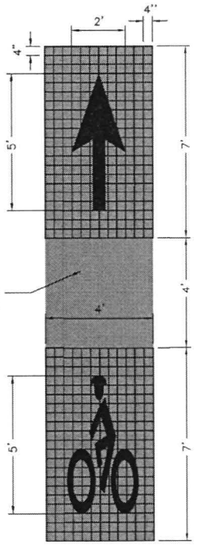


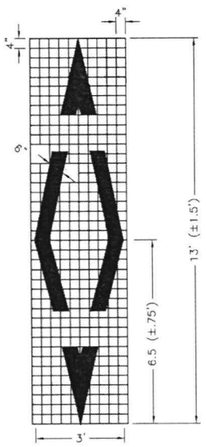


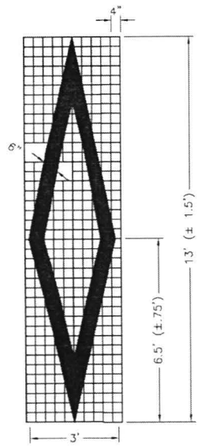


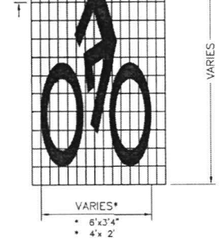


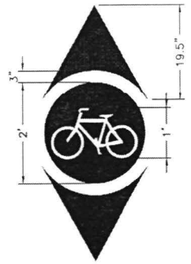


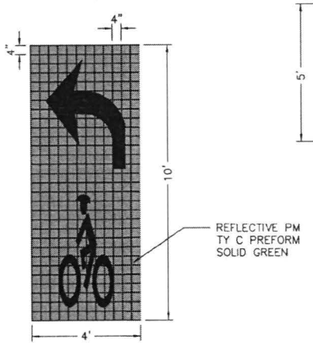












NOTES FOR PAVEMENT MARKINGS "SYMBOLS" AND "ARROWS":

1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.
2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION; SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR REDUCTION BELOW ONE-THIRD OF STANDARD SIZES.
3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET, OR AS INDICATED ON THE PLANS.
4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:

   A. REGULATOR
      STOP
      RIGHT (LEFT) TURN ONLY, SYMBOL ARROWS.

   B. WARNING
      STOP AHEAD
      SIGNAL AHEAD
      SCHOOL
      SCHOOL X-ING
      PED X-ING
      R X R (SEE SHEET 02760-08 DETAILS
      OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR SPECIAL CONDITIONS.

5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.
6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES (ALL-WAY STOP).
7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VII OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
8. SPACING BETWEEN STANDARD SIZE LETTERS SHOULD BE 4 INCHES (MIN). THE WIDTH OF NON-STANDARD SIZE LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES. APPROVAL BY CITY TRAFFIC ENGINEER. SPECIAL PERMISSION NEEDED FOR NON-STANDARD SIZE "LETTER" AND/OR "ARROWS".
9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. SINGLE TURN ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".
10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED IN THE DESIGN PLANS.

APPROVED BY:	APPROVED BY:
Docusigned by: Sukut Kanwar — 9EF6B0E941F547B...	Docusigned by: KHANG NGUYEN — 35A29EFDA71B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:
Docusigned by: Carol Haddock — A93C4198728345...
DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023 | DWG NO: 02760-04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKING SYMBOLS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	80114
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PROJECT MANAGER	
ARCHIE BLANCO	
SHEET NO. 68 OF 70	

RECEIVED — CITY DRAWING — HOUSTON TEXAS

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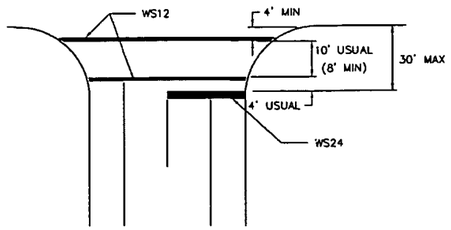
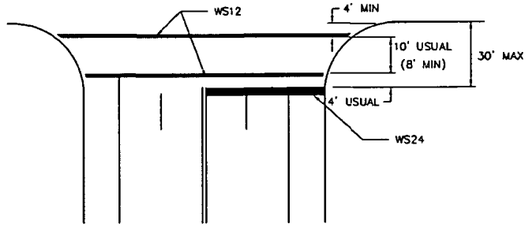
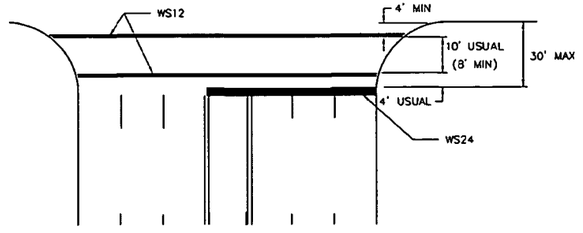
TWO LANES WITH SHOULDERS



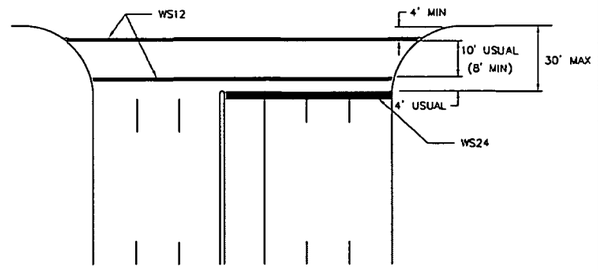
FOUR LANES WITH SHOULDERS



MULTI – LANES



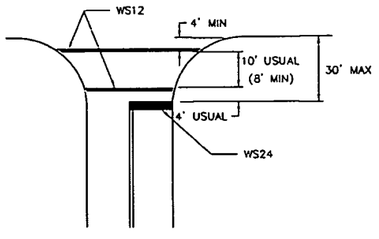
MULTI – LANE WITH MEDIAN



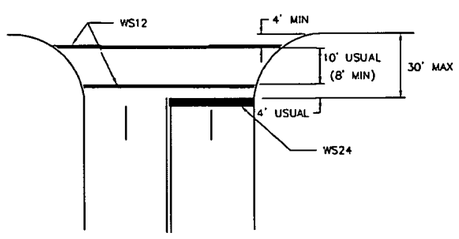
NOTES:

1. CROSSWALKS AND STOP LINES SHALL BE WHITE.
2. "D" IS EQUAL TO ONE HALF THE WIDTH OF TRAVEL LANE.

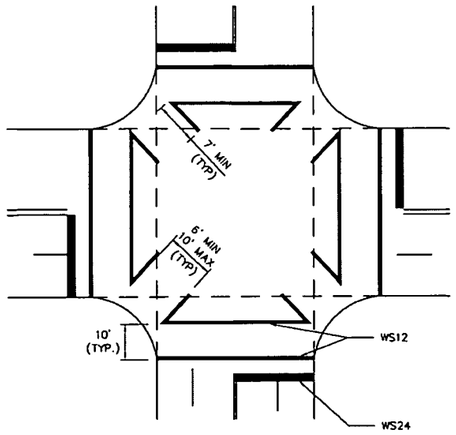
TWO LANES



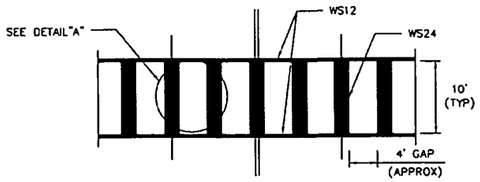
FOUR LANES



EXCLUSIVE PEDESTRIAN PHASE

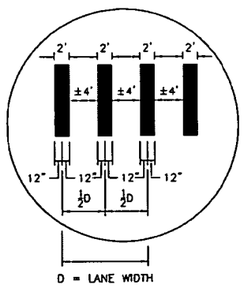


HIGH VISIBILITY
CROSSWALK DETAIL

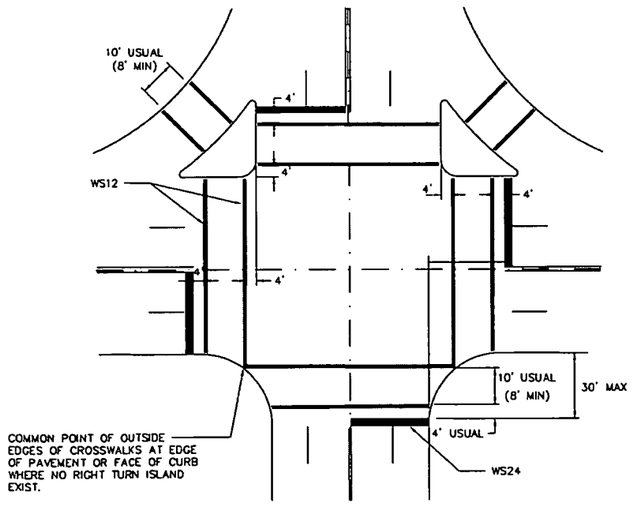


TYPICALLY USED AT SIGNALIZED AND NON-SIGNALIZED CROSSINGS ON COLLECTOR AND ARTERIAL ROADWAYS AND AT LOCATIONS REQUIRING EXTRA EMPHASIS.

DETAIL "A"



INTERSECTION WITH RIGHT – TURN ISLANDS



APPROVED BY:	APPROVED BY:
Sukut Kanwar	BRIAN NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-12

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

TYPICAL CROSSWALK DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-MD0190-0003	
DRAWING SCALE	80114
NOT TO SCALE	
CITY OF HOUSTON PW	CITY DRAWING
ARCHIE BLANCO	
SHEET NO. 69 OF 70	

PUBLIC WORKS
HOUSTON TEXAS

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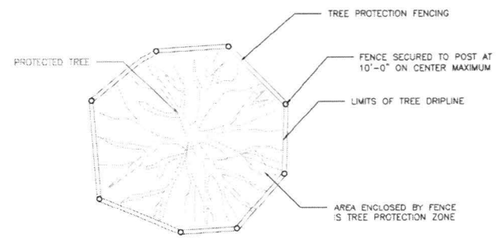
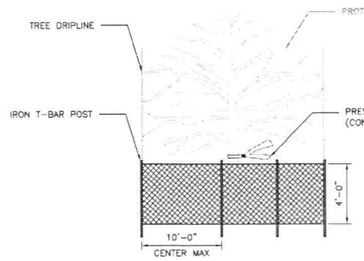
NOTES:

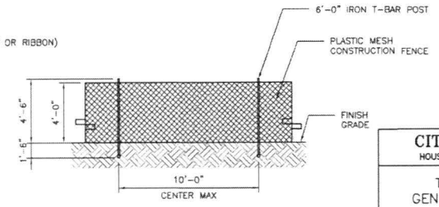
FENCE LOCATION MAY BE ADJUSTED TO ACTUAL SITE CONDITIONS.



PLAN VIEW
TREE PROTECTION FENCING DETAIL



FRONT VIEW
TREE PROTECTION FENCING DETAIL



DETAIL B-4
PROTECTIVE PLASTIC MESH FENCE

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TREE PROTECTION
GENERAL REQUIREMENTS

(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER	DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01562-01

TREE PROTECTION NOTES

1. CONTRACTOR SHALL INSTALL TREE PROTECTION FENCING AT ANY/ALL LOCATIONS WHERE EXISTING TREES ARE WITHIN 15' OF PROPOSED IMPROVEMENTS. TREE PROTECTION SHALL BE CONTINUOUS DISTANCE OF THE DRIP LINE. TREE PROTECTION MATERIALS SHALL BE AS SPECIFIED IN DETAILS 01562-01 AND 01562-02. TREE PROTECTION MEASURES SHALL BE TAKEN IN ACCORDANCE WITH COH STANDARD SPECIFICATION 01562 AND HCFCD STANDARD SPECIFICATION 1566.
2. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF ANY DEMOLITION AND/OR SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
3. ALL GRADING AND EXCAVATION WITHIN TREE ROOT ZONE AREAS SHALL BE DONE BY HAND TO MINIMIZE ROOT DAMAGE AND SOIL COMPACTION.
4. NO OPEN CUT WITHIN 15' OF TREES. SEE ROOT & PRUNING NOTE BELOW AND DETAIL ON THIS SHEET.
5. WHERE PLANS CALL FOR WORK WITHIN 15' OF TREES NOT DESIGNATED FOR REMOVAL, CONTRACTOR SHALL PERFORM ROOT & CLEARANCE PRUNING AND FORM AND POUR CONCRETE WITHOUT DAMAGING ROOTS LARGER THAN 1" DIAMETER. REPORT ANY TREE DAMAGE OR SITUATION PREVENTING PROPER TREE PROTECTION TO PROJECT ENGINEER.
6. EXCAVATION FOR CONCRETE SIDEWALK AND CHECKERPLATE CONNECTIONS WITHIN DRIP LINE OF 30" LIVE OAK TREE DESIGNATED FOR PROTECTION IN PLANS SHALL BE SOLELY BY HAND. CHECKERPLATE SECTIONS SHALL BE NOT LONGER THAN 6' EXCEPT AS APPROVED BY PROJECT ENGINEER. CHECKERPLATE CONNECTIONS SHALL BE INSTALLED AS TO NOT DISTURB ROOTS > 1" DIAMETER TO GREATEST EXTENT POSSIBLE. CONTRACTOR SHALL COORDINATE ARBORIST INSPECTION OF CHECKERPLATE CONNECTIONS PRIOR TO INSTALLING CHECKERPLATE.

NO.	DATE	REVISION	APP

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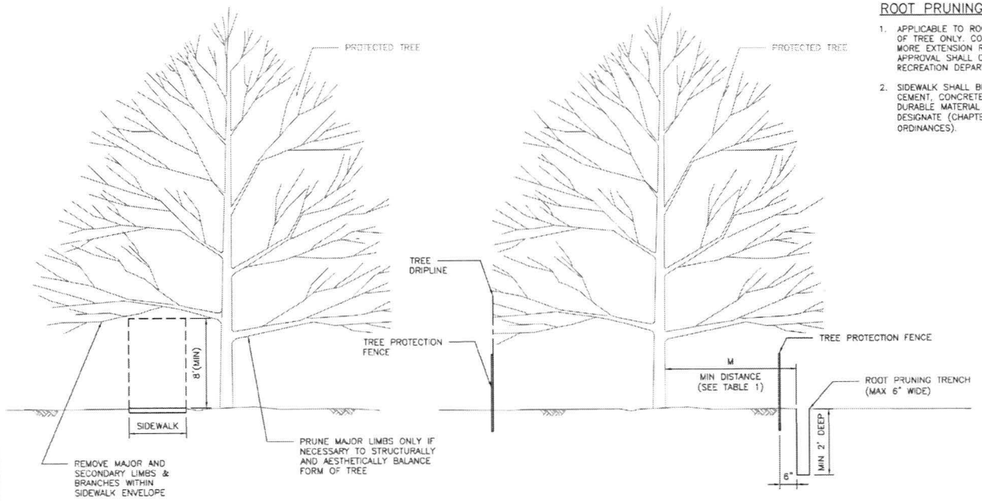

TREE PRUNING

ROOT PRUNING DETAIL

ROOT PRUNING NOTE:

1. APPLICABLE TO ROOT PRUNING ON ONE SIDE OF TREE ONLY. CONSULT CITY ARBORIST FOR MORE EXTENSION ROOT PRUNING. FINAL APPROVAL SHALL COME FROM PARKS AND RECREATION DEPARTMENT.
2. SIDEWALK SHALL BE CONSTRUCTED OF EITHER CEMENT, CONCRETE, ASPHALT OR OTHER DURABLE MATERIAL AS THE COUNCIL MAY DESIGNATE (CHAPTER 40-91, CODE OF ORDINANCES).

TABLE 1
"M" DISTANCE TABLE

TREE TRUNK DIA. (IN)	*MINIMUM DISTANCE 'M'
< 6"	3 FEET
6" ≤ DIA. ≤ 20"	0.75 FEET PER DIA.-INCH
> 20"	CONSULT CITY ARBORIST

*MINIMUM DISTANCE FROM TREE TRUNK TO EDGE OF TRENCH

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TREE PROTECTION
TREE AND ROOT PRUNING

(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER	DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 01562-02

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

HOUSTON SOUTHEAST
5445 Almeda Rd, #503
Houston, TX 77004
713-942-0500

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3200 TRAVIS, SUITE 200
HOUSTON, TEXAS 77006
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(713) 951-7951
TBPELS Firm Registration No. 11756

KUO & associates, Inc.
Consulting Engineers & Surveyors
12000 Westheimer Dr., Suite 600
Houston, TX 77042
Tel: (713) 975-8784
Fax: (713) 975-0920
www.kuoassociates.com
TX Engineering Firm Reg. No. F-4078
TX Surveying Firm Reg. No. 10075500

STATE OF TEXAS
ASHISH GHOSH
111103
LICENSED
PROFESSIONAL ENGINEER
05/30/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

01562-01 - TREE PROTECTION GENERAL REQUIREMENTS
01562-02 - TREE PROTECTION TREE AND ROOT PRUNING

BRAYS BAYOU SAFE CROSSINGS

WBS NUMBER	--FOR CITY OF HOUSTON USE ONLY--
N-MD0190-0001	
DRAWING SCALE	80114
AS NOTED	
CITY OF HOUSTON ENG.	CITY DRAINAGE SECTION
ARCHIE BLANCO	HOUSTON, TEXAS
SHEET NO. 70 OF 70	

C:\VOLUMES\THEGOODMANCORP\TGC-ENGINEERING\00_TGC PROJECT FILES\GSMD123\CAD\GSMD123_COH_DETAILS.DWG, 5/30/2025 1:17 PM