

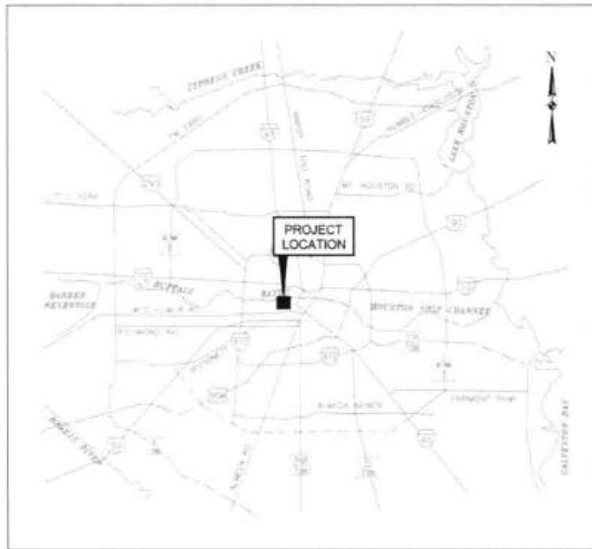
CITY OF HOUSTON SYSTEMIC SAFETY PROJECT

CONSTRUCTION PLANS FOR WAUGH SAFETY IMPROVEMENTS

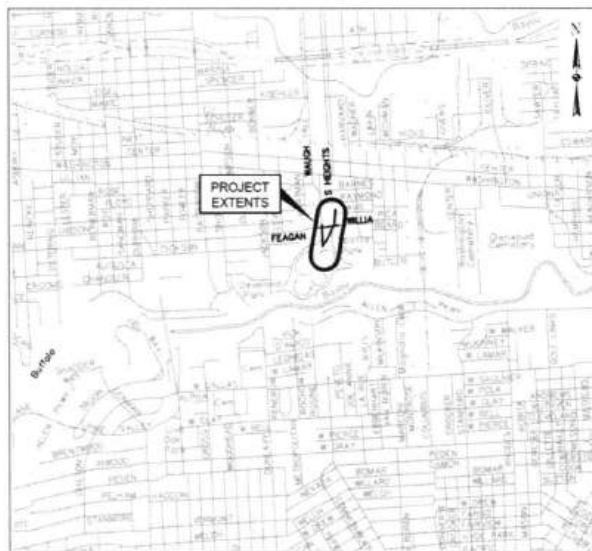
CCSJ NO. 0912-72-720, ETC.

SUB-CSJ NO. 0912-72-720

WBS NO. N-T05000-0012-7

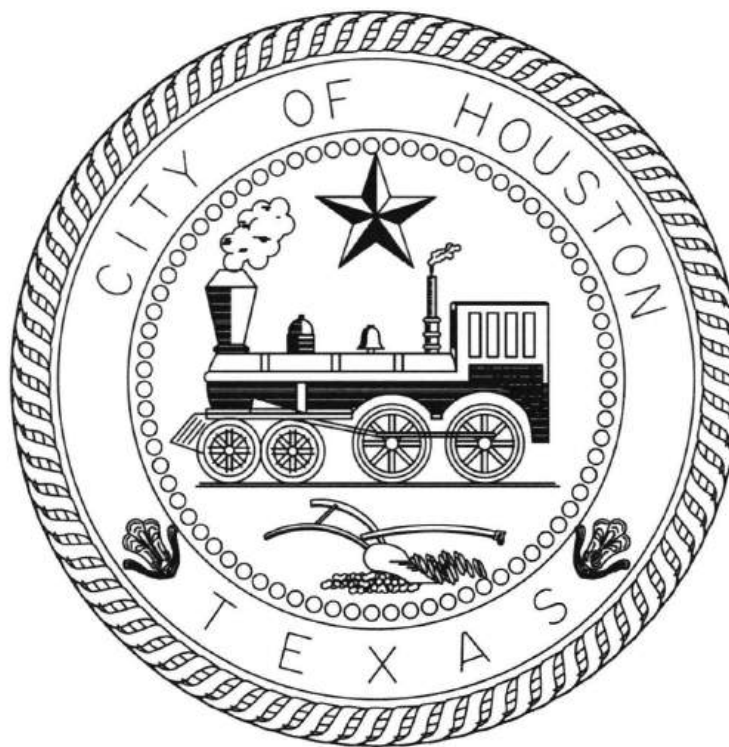


LOCATION MAP
N.T.S.



VICINITY MAP
1:2000

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



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	

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

 1130 Post Oak Blvd., Suite 2650 Houston, Texas 77056 713-850-9000	 Texas Board of Professional Engineers and Land Surveyors Reg. Nos. F-23290 & 10045199 6330 West Loop South, Suite 150, Dallas, TX 77401 713.777.5337	 Victoria M. Macalino
SURVEYED BY: QUIDDITY FB NO. 3124, Pages 1-4		FOR CITY OF HOUSTON USE ONLY
NOTE: CITY SIGNATURE VALID FOR ONE YEAR ONLY, AFTER DATE OF SIGNATURE. CITY OF HOUSTON HOUSTON PUBLIC WORKS		
DocuSigned by: 80808A38F5E457 Director of Houston Public Works		Date: 6/11/2025
SHEET NO 1 of 72		

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...

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.

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 1-800-343-6003 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- 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.

- 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.

- 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.

- WARNING: UNDERGROUND ELECTRICAL UTILITIES
THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-343-6003 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 CONTRACTOR IS RESPONSIBLE MAKING THEIR OWN DETERMINATIONS AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THEREOF.

AT&T TEXAS/SNET FACILITIES

- 1. THE LOCATIONS OF AT&T TEXAS/SNET 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.

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 SEEDDED AND FERTILIZED WITHIN 10 WORKING DAYS.

STORM SEWER CONSTRUCTION NOTES

- 1. STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-78, CLASS III) AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 2317-02, 02317-3, 02317-04, 02317-06, AND 02317-07 (AUG. 2016) AS APPLICABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

SWPPP CONSTRUCTION NOTES

- 1. CONTRACTOR SHALL IMPLEMENT EROSION 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.

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".

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.

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.

METRO GENERAL NOTES

- 1. CONTRACTOR SHALL NOTIFY METRO AT 713-615-6193 TWO WEEKS PRIOR TO MOBILIZING TO THE PROJECT SITE TO COORDINATE IMPACTS TO BUS OPERATIONS DURING CONSTRUCTION.

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.

ABBREVIATIONS

Table with 4 columns: Abbreviation, Description, Abbreviation, Description. Includes terms like ASP, BLDG, CONC, DIMS, DP, DW, etc.

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 Browne 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 Browne 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 logo and seal of the State of Texas Professional Engineer, Victoria M. Macalino, No. 142304, 07/27/25.

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

GENERAL NOTES
SHEET 1 OF 2 80160

WAUGH SAFETY IMPROVEMENTS

Table with columns: WBS NUMBER, DRAWING SCALE, CITY OF HOUSTON PROJECT NO., SHEET NO. Includes drawing number 80160 and sheet number 3 OF 72.

Table with columns: CONT, SECT, JOB, HIGHWAY, DIST, COUNTY, HOU, HARRIS.

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TRAFFIC SIGNAL GENERAL NOTES:

- 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.
- ALL ELECTRICAL WORK SHALL BE IN CONFORMANCE WITH THE PROVISIONS AND REQUIREMENTS OF THE CITY ELECTRICAL CODE.
- ALL SIGNS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- 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.
- 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.
- 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.
- ALL PEDESTRIAN PUSH BUTTON ASSEMBLIES SHALL MEET ADA REQUIREMENTS. THE SIGNS THAT SHALL BE USED ARE IDENTIFIED IN THE MUTED AS R10-2E. CITY OF HOUSTON STANDARDS FOR PEDESTRIAN FACILITIES SHALL BE MET IN ACCORD TO ANY TEXAS ACCESSIBILITY STANDARDS BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION (DOLR).
- PEDESTRIAN 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.
- 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.
- 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.
- NO POLES SHALL BE LOCATED IN WHEELCHAIR RAMPS OR SUCH THAT THEY ARE AN OBSTRUCTION TO PEDESTRIANS OR WHEELCHAIRS.
- THE TOP OF THE POLE FOUNDATION SHALL BE LEVELLED WITH THE FINISHED GRADE. IF THE SLOPE OR SHOULDER DROPS OFF FROM FINISHED GRADE, THE CONTRACTOR SHALL GRADE 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.
- 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 (NEC).
- ALL CONCRETE USED FOR TRAFFIC SIGNAL POLE AND CABINET FOUNDATIONS SHALL BE CLASS 'A' (REFER TO THE CITY OF HOUSTON SPECIFICATION FOR CONCRETE).
- 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.
- 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 STRINGS OF THE ANCHOR BOLT SHALL BE COATED WITH PIPE JOINT COMPOUND.
- ALL UNDERGROUND CONSTRUCTION (CONDUIT, FOUNDATIONS AND PULL BOXES) FOR THE INTERSECTION SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF POLES, SIGNALS AND CABINETS. THE CONTRACTOR SHALL NOT PROCEED TO ABOVE GROUND WORK UNTIL THE ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE HAS CONFIRMED THAT THE MATERIALS FOR A COMPLETE INSTALLATION ARE AVAILABLE.
- UNDERGROUND CONDUIT FOR SIGNAL CABLE SHALL BE EITHER RIBBON 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.
- ALL ABOVE GROUND CONDUIT FOR SIGNAL CABLE AND INTERCONNECT MEDIA SHALL BE HOT DIPPED GALVANIZED STEEL RIBBON METAL CONDUIT OF THE DIAMETERS SHOWN ON THE PLANS, UNLESS OTHERWISE NOTED. ALL COUPLINGS AND CONNECTIONS SHALL BE TIGHT AND WATERPROOF.
- ONLY NEW CONDUIT AND CABLE SHALL BE INSTALLED.
- 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.
- CONDUIT NOT PLACED UNDER PAVED DRIVEWAYS, ROADWAY PAVEMENT OR SIDEWALK SHALL BE PLACED BY CUTTING A TRENCH, INSTALLING THE CONDUIT AND BACKFILLING. ANY TRENCHING FOR CONDUIT NEARER THAN THREE (3) INCHES SHALL BE RECORDED.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- THE HIGH VOLTAGE CABLES SHOULD BE SEPARATED FROM THE LOW VOLTAGE CABLES EXCEPT IN ENCLOSURES.
- 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.
- ALL VEHICLE ROADWAY DETECTION LOOP CABLES SHALL BE #14 AWG MSA 91-5-1985 CABLE LEAD-IN CABLES SHALL BE #16 AWG MSA 30-2-1984 CABLE. NO SPICES 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.
- DETECTION LOOP SAW CUTS SHALL BE FLUSHED WITH WATER UNDER PRESSURE AND THEN DRIED WITH AIR UNDER PRESSURE.
- THERE SHALL BE NO SPACING IN CONDUCTORS EXCEPT FOR THE NECESSARY SPICE BETWEEN ROADWAY LOOP WIRE AND DETECTOR LEAD-IN CABLE IN THE PULL BOX ADJACENT TO THE DETECTOR. THESE SPICES SHALL BE WATERPROOF AND SHALL BE IN COMPLIANCE WITH THE CITY OF HOUSTON STANDARD DRAWINGS FOR TRAFFIC SIGNAL CONSTRUCTION. THESE SPICES SHALL BE MADE BY THE CONTRACTOR. DO NOT GROUND THE CABLE SHIELD AT THE PULL BOX.
- TWO #16 AWG-1984 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.
- THE EMERGENCY VEHICLE PRE-EMPTION SENSOR CABLE SHALL BE OPTICON DETECTOR CABLE MODEL NO. 130. THE CABLE SHALL NOT BE SPliced.
- ALL VEHICLE AND PEDESTRIAN INDICATORS SHALL BE LED.
- 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 OBLSCURE THE VIEW OF THE TRAFFIC SIGNAL INDICATORS 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.
- THE TRAFFIC SIGNAL OPERATION AT EXISTING SIGNALIZED INTERSECTIONS SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT.
- 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.
- ALL CROSSWALK MARKINGS SHALL BE 10-FT. WIDE, FROM INSIDE OF MARKINGS, FOLLOWING CITY OF HOUSTON STANDARD DETAILS.
- 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: SSC CABLES

- THE LOCATION OF SSC 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.
- 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.
- WHEN EXCAVATING WITHIN EIGHTEEN (18) INCHES OF THE INDICATED LOCATION OF SSC FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE SSC FACILITIES.
- WHEN SSC 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:

- 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, LUMINAIRES, 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. (COPY THE LIST OF MATERIALS AS APPROPRIATE)
- 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 INTERSECTIONS, 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 INTERSECTIONS AFTER CITY OF HOUSTON STAFF HAS TESTED THE EQUIPMENT AND APPROVED IT FOR INSTALLATION.
- 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.
- 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 SUBJECT TO IDENTIFY SALVAGE ITEMS. ITEMS TO BE SALVAGED SHALL BE RETURNED TO THE CITY OF HOUSTON TRAFFIC OPERATIONS CENTER, 2200 PATTERSON STREET OR UPPER BRAD, 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.
- 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.
- 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 FACILITIES.

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NO.	DATE	REVISION	APP.

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brown 05/29/25
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Houston, Texas 77056
713-850-9000

 QUIDDITY <small>Team Based Professional Engineers and Land Surveyors Reg. No. P-20064-00000 8030 West Loop South, Suite 170, Dallas, TX 75241 714-771-0300</small>	 VICTORIA M. MACALINO 142904 LICENSED PROFESSIONAL ENGINEER 5/27/25 <i>Victoria Macalino</i>

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

GENERAL NOTES
SHEET 1 OF 2

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PROJECT NUMBER	80160
TCMS MATHEW	
SHEET NO.	4 OF 72

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



SUMMARY OF QUANTITIES

Item No.	Section No.	Item Description	UOM	Quantity
GENERAL				
1	01502	Mobilization (includes Insurance and Bonds)	LS	1
2	01555	Traffic Control And Regulation (Including Lane Closures, Signage, Etc.)	LS	1
3	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
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
11	02912	Furnish and Install Sodding	SF	1,236

* NOTE 1
* NOTE 1
* NOTE 1

Item No.	Section No.	Item Description	UOM	Quantity
DEMOLITION				
12	02221	Remove and Dispose Existing Sidewalks, Curb Ramps, Driveways, and Islands, With or Without Pavement, All Depths and Materials	SF	264
13	02221	Remove and Dispose Existing Pavement With or Without Base	SF	1,027
14	02221	Remove and Dispose Existing Concrete Curb or Curb and Outer	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 Signal Pole Luminaire (100 watt LED), Complete in Place	EA	7
25	16735	Furnish and Install 3-Section Vehicle Signal Head Assembly (R-Y-G) (Horizontal) (H3) (Y/W REF, BDR) with back plate, Complete in Place	EA	35
27a	16735	Furnish and Install 5-Section Vehicle Signal Head Assembly (R-Y-G) (Horizontal) (H5) (Y/W REF, BDR), Complete in Place	EA	2
27b	16735	Furnish and Install 5-Section Vehicle Signal Head Assembly (R-Y-G) (Horizontal) (H5) (Y/W REF, BDR), Complete in Place	EA	2
28	16731	Furnish and Install Conduit, 1-inch SCH 80 PVC trench (include bond wire and pull tape), Complete in Place	LF	230
29	16731	Furnish and Install Conduit, 2-inch SCH 80 PVC trench (include bond wire and pull tape), Complete in Place	LF	2,075
30	16731	Furnish and Install Conduit, 2-inch SCH 80 PVC bore (include bond wire and pull tape), Complete in Place	LF	20
31	16731	Furnish and Install Conduit, 3-inch SCH 80 PVC trench (include bond wire and pull tape), Complete in Place	LF	330
32	16731	Furnish and Install Conduit, 3-inch SCH 80 PVC bore (include bond wire and pull tape), Complete in Place	LF	610
33	16731	Furnish and Install Conduit, 4-inch SCH 80 PVC trench (include bond wire and pull tape), Complete in Place	LF	715
34	16731	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, 3/4" #14 AWG SQUID CABLE, Complete in Place	LF	4,310
37	16720	Furnish and Install Opticom Cables, 3/4" #20 (Shield), Complete in Place	LF	2,350
38	16720	Furnish and Install Traffic Signal Cables, 5/8" #14 AWG SQUID CABLE, Complete in Place	LF	4,390
39	16720	Furnish and Install Traffic Signal Cables, 7/8" #14 AWG SQUID CABLE, Complete in Place	LF	6,555
40	16720	Furnish and Install #8 AWG Bare Bond, SQUID 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 (MSA 50-2-1985) Wire, Complete in Place	LF	14,500
46	16720	Furnish and Install #8 AWG XHHW This Service Wire (SP1 AND SP2), Complete in Place	LF	500
47	16730	Furnish and Install Type "A" Pull Box with Agron, Gravel and Ground Rod, Complete in Place	EA	17
48	16730	Furnish and Install Type "B" Pull Box with Agron, Gravel and Ground Rod, Complete in Place	EA	8
49	16730	Furnish and Install Type "C" Pull Box with Agron, 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	16739	Furnish and Install LED Pedestrian Signal Head Assembly (Symbolic) (Countdown), Complete in Place	EA	16
52	16740	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", 48" x 36", Complete in Place	EA	2
55	02893	Furnish and Install Sign "Left Turn Yield On Green", 48" x 36", Complete in Place	EA	7
58	16727	Furnish and Install Traffic Signal Sawcut Loop Detector (RW+ LOOP), 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 (Model 340 ITS) (Type 2070X) with Foundation (with Agron and Pull wire 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"-8" Curb (bowed on), Complete in Place	LF	1,352
71	02771	Furnish and Install Monolithic Curb and Outer, Complete in Place	LF	34
72	02772	Furnish and Install Concrete Curb Medians and Directional Islands/ Raised Concrete Islands, Complete in Place	SF	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 1/2-inch Thick Concrete Sidewalk, Complete in Place	SF	2,163
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	97

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 Signs, Plaques, Poles, Foundation, Mountings), and Hardware, Complete in Place	EA	15
81	01554	Traffic Control and Street Signs - Furnish and Install Ground Mounted Sign Assembly (Include Signs, Plaques, Poles, Foundation, Mountings), 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 Mountings), and Hardware, Complete in Place	EA	7
87	01554	Traffic Control and Street Signs - Furnish and Install New Sign on Existing Pole (Include Mountings), 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	Blank Clearing 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 - W54- Furnish and Install, Complete in Place	LF	133
99	02767	Thermoplastic Pavement Markings - W36- Furnish and Install, Complete in Place	LF	172
100	02767	Thermoplastic Pavement Markings - W512- Furnish and Install, Complete in Place	LF	900
101	02767	Thermoplastic Pavement Markings - W524- Furnish and Install, Complete in Place	LF	972
102	02767	Thermoplastic Pavement Markings - W8A- Furnish and Install, Complete in Place	LF	700
104	02767	Thermoplastic Pavement Markings - Y524- Furnish and Install, Complete in Place	LF	42
105	02767	Thermoplastic Pavement Markings - YD54- 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 Gate 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	01555	Uniformed Peace Officers and Flagmen	LS	1
112	02221	Removal of Miscellaneous Concrete and Masonry	SF	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	SF	10
120	See Plans	Remove, Salvage, and Replace Existing Retaining Wall Pavement	LF	25


Item No.	Section No.	Item Description	UOM	Quantity
CASH ALLOWANCE				
121	Allowance	Permit Fees (PMD Roadway, Street Cut, Etc.)	LS	1
122	Allowance	Strengthening Modifications (By CenterPoint Energy)	LS	1

* NOTE 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.

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NO. DATE REVISION APP.



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



142904
6/17/25

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SUMMARY OF QUANTITIES

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012-7

DRAWING SCALE
AS NOTED

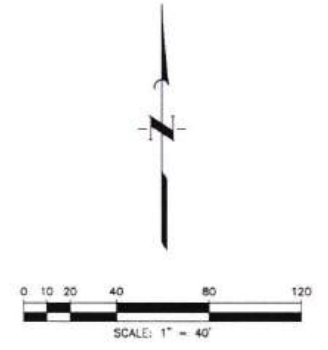
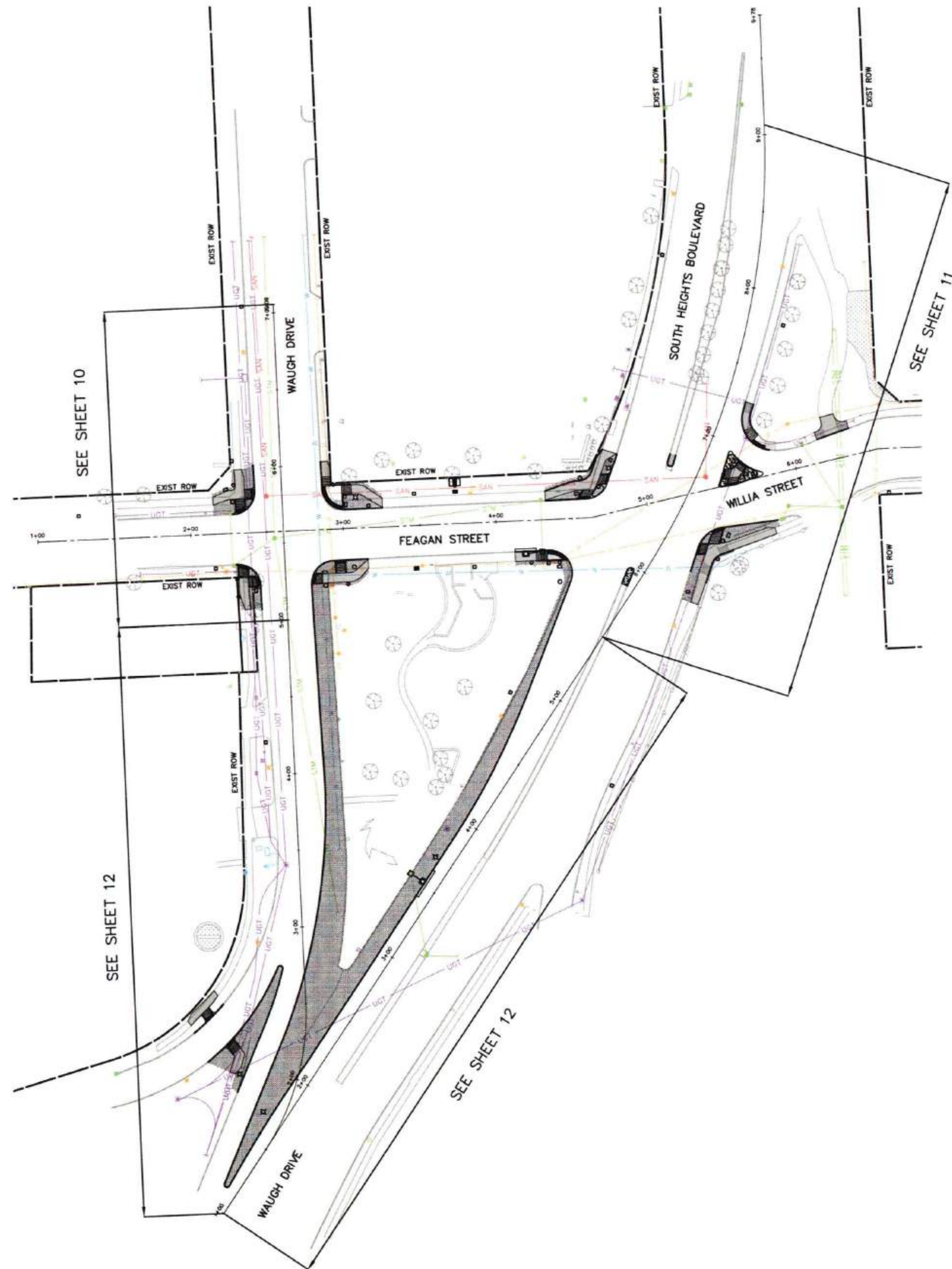
CITY OF HOUSTON PROJECT NO.
TOMS MATHEW

SHEET NO. 5 OF 72

80160

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

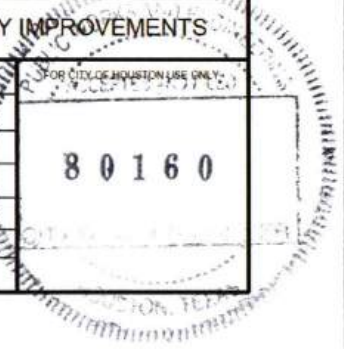
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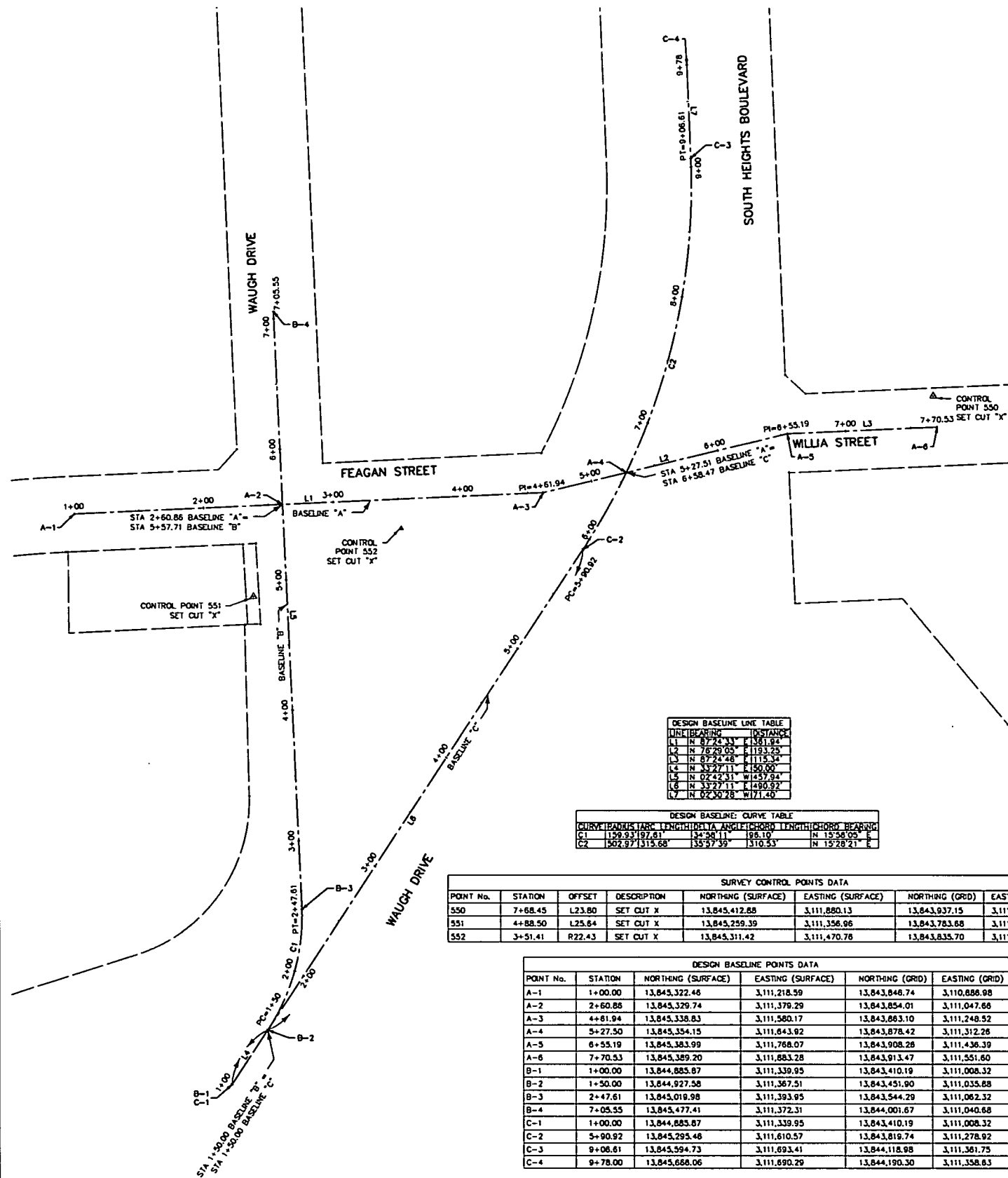
NO.	DATE	REVISION	APP.

<p>1980 Post Oak Blvd., Suite 1380 Houston, Texas 77056 713-850-9000</p>	
<p>Quiddity Texas Board of Professional Engineers and Land Surveyors Reg. No. P-2226 & 22822-22 6330 West Loop South, Suite 200, Dallas, TX 75240 713-777-5597</p>	<p>VICTORIA M. MACALINO 142304 PROFESSIONAL ENGINEER 5/27/25 <i>Victoria Macalino</i></p>
<p>SURVEYED BY: QUIDDITY FB NO. 3124, Pages 1-4</p>	
<p>CITY OF HOUSTON HOUSTON PUBLIC WORKS</p>	
<p>OVERALL LAYOUT</p>	
<p>WAUGH SAFETY IMPROVEMENTS</p>	
<p>WBS NUMBER N-T05000-0012-7</p>	
<p>DRAWING SCALE AS NOTED</p>	
<p>CITY OF HOUSTON POC TOMS MATHEW</p>	
<p>SHEET NO. 6 OF 72</p>	

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



K:\1760\1760-0021-01 1-0535 WAUGH SAFETY\2 DESIGN PHASE\CAO\PLANS\4760-0021-C1-008-SURVEY CONTROL.DWG, 2/24/2023 3:18 PM

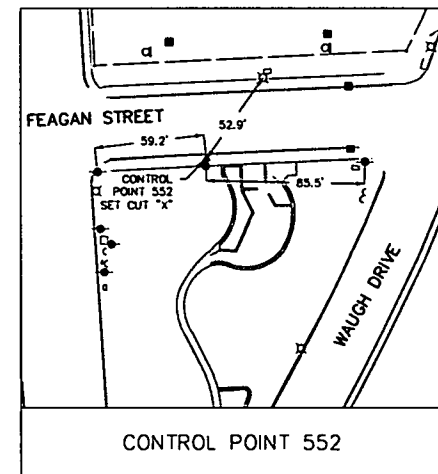
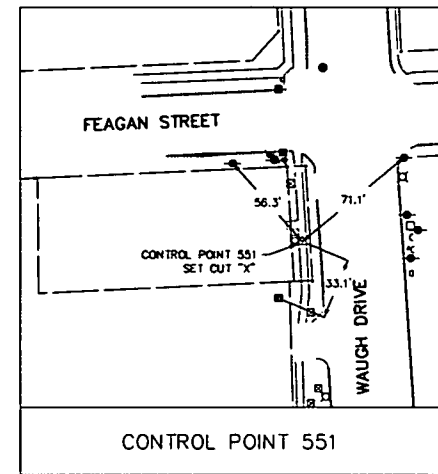
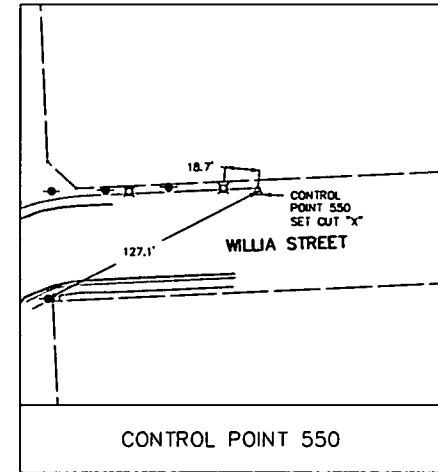


LINE	BEARING	DISTANCE
L1	N 87°24'31"	1381.94
L2	N 76°20'05"	1193.25
L3	N 87°24'48"	1115.34
L4	N 33°27'11"	1500.00
L5	N 02°42'31"	1457.94
L6	N 33°27'11"	1490.92
L7	N 62°30'28"	1171.40

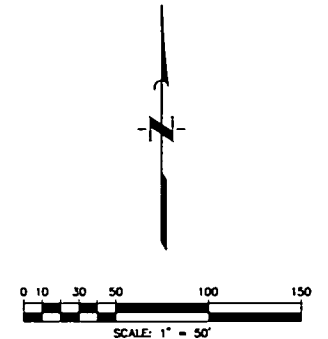
CURVE	BEARING	ARC LENGTH	DELTA	ANGLE	CHORD	CHORD BEARING
C1	129.93	197.61	134.98	111.19	195.10	N 15°58'05" E
C2	302.97	1315.68	135.97	39.31	1310.53	N 15°28'21" E

POINT No.	STATION	OFFSET	DESCRIPTION	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION
550	7+68.45	L23.80	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	L25.84	SET CUT X	13,845,259.39	3,111,356.06	13,843,783.68	3,111,025.33	52.36
552	3+51.41	R22.43	SET CUT X	13,845,311.42	3,111,470.78	13,843,835.70	3,111,139.12	50.94

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+60.86	13,845,329.74	3,111,378.29	13,843,854.01	3,111,047.66
A-3	4+81.94	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	3,111,843.92	13,843,878.42	3,111,312.28
A-5	6+55.19	13,845,383.99	3,111,768.07	13,843,908.28	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	13,845,295.48	3,111,610.57	13,843,819.74	3,111,278.92
C-3	9+08.61	13,845,594.73	3,111,893.41	13,844,118.98	3,111,381.75
C-4	9+78.00	13,845,666.06	3,111,890.29	13,844,190.30	3,111,358.83



- 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



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 herein are based on the Texas Coordinate System of 1983, South Central Zone.
All distances and coordinates shown herein are on SURFACE (unless otherwise noted) and may be converted to GRID using the combined scale factor of 0.999834137.

NO.	DATE	REVISION	APP.

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors, Reg. No. 12728 & 80942
620 West Loop South, Suite 170, Houston, TX 77024
713.271.5577

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

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

SURVEY CONTROL MAP

WAUGH SAFETY IMPROVEMENTS

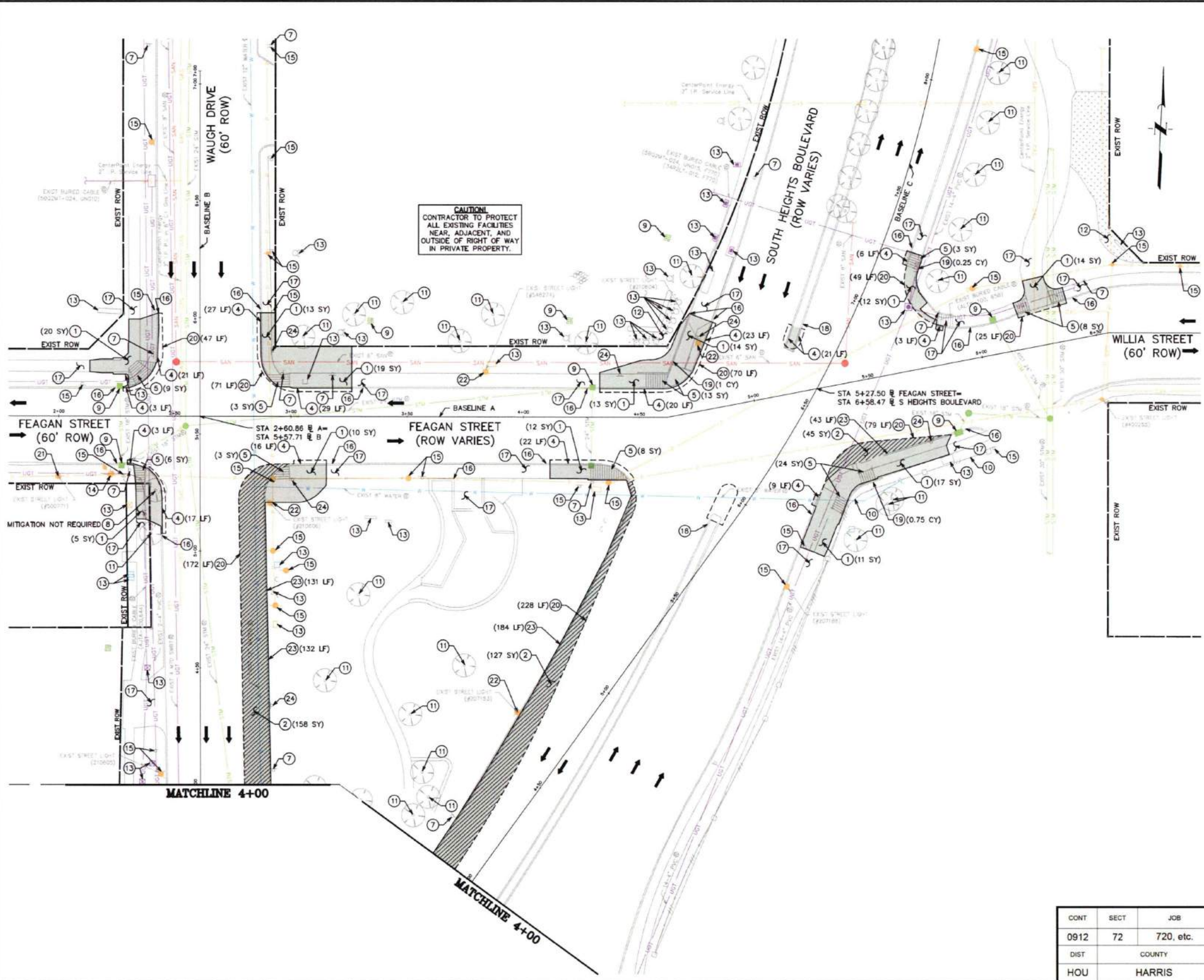
WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PROJECT	TOMS MATHEW
SHEET NO.	7 OF 72

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

80160

HOUSTON, TEXAS

K:\14760\14760-0021-01 T-0535 WAUGH SAFETY IMPROVEMENTS\2 DESIGN PHASE\CAO\PLANS\14760-0021-CI-002-DEMO.DWG, 5/27/2025 4:16 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 OUTER
 - 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 POLE
 - 22 REMOVE EXIST STREET LIGHT AND POLE
 - 23 REMOVE CONC CURB/CURB AND OUTER (FOR CONTRACTOR REFERENCE ONLY)
 - 24 SIGN TO BE RELOCATED (SEE PAVEMENT MARKING SHEETS)

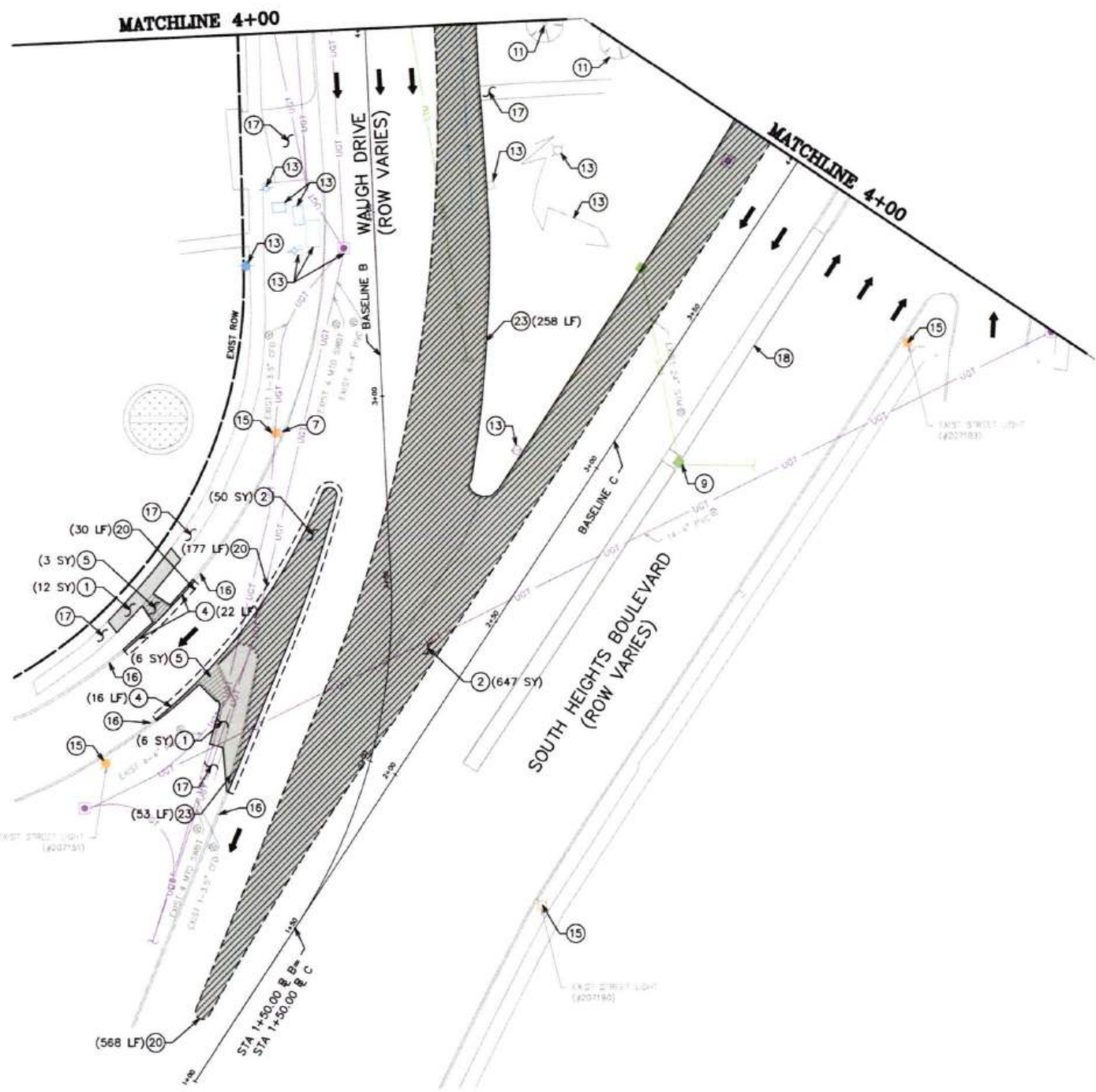


<p>1980 Post Oak Blvd., Suite 1380 Houston, Texas 77056 713-850-9000</p>	
<p>QUIDDITY Three Years of Professional Engineers and Land Surveyors Reg. No. 12026 & 12027 6300 West Loop South, Suite 120, Dallas, TX 75241 713-771-8897</p>	<p>VICTORIA M. MACALINO 142304 REGISTERED PROFESSIONAL ENGINEER 5/27/25</p>
<p>SURVEYED BY: QUIDDITY FB NO. 3124, Pages 1-4</p>	
<p>CITY OF HOUSTON HOUSTON PUBLIC WORKS</p>	
<p>WAUGH DR AT FEAGAN ST & S. HEIGHTS BLVD AT FEAGAN ST DEMOLITION PLAN</p>	
<p>WAUGH SAFETY IMPROVEMENTS</p>	
<p>WBS NUMBER N-T05000-0012-7</p>	<p>FOR CITY OF HOUSTON USE ONLY ACCEPTED - 5/27/25</p>
<p>DRAWING SCALE AS NOTED</p>	<p>80160</p>
<p>CITY OF HOUSTON PROJECT TOMS MATHEW</p>	
<p>SHEET NO. 8 OF 72</p>	

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

NO.	DATE	REVISION	APP.

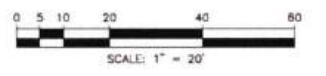
K:\14760\14760-0021-01 1-0535 WAUGH SAFETY\2 DESIGN PHASE\CAD\PLANS\14760-0021-CI-002-DEMO.DWG, 5/27/2025 4:16 PM



- 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 COM 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)



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

QUIDDITY
State Board of Professional Engineers
and Land Surveyors Reg. No. 17208 & 1992026
6780 West Loop South, Suite 200, Houston, TX 77057
713.777.8387

STATE OF TEXAS
VICTORIA M. MACALINO
142804
PROFESSIONAL ENGINEER
5/27/25

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

Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT S. HEIGHTS BLVD
DEMOLITION PLAN

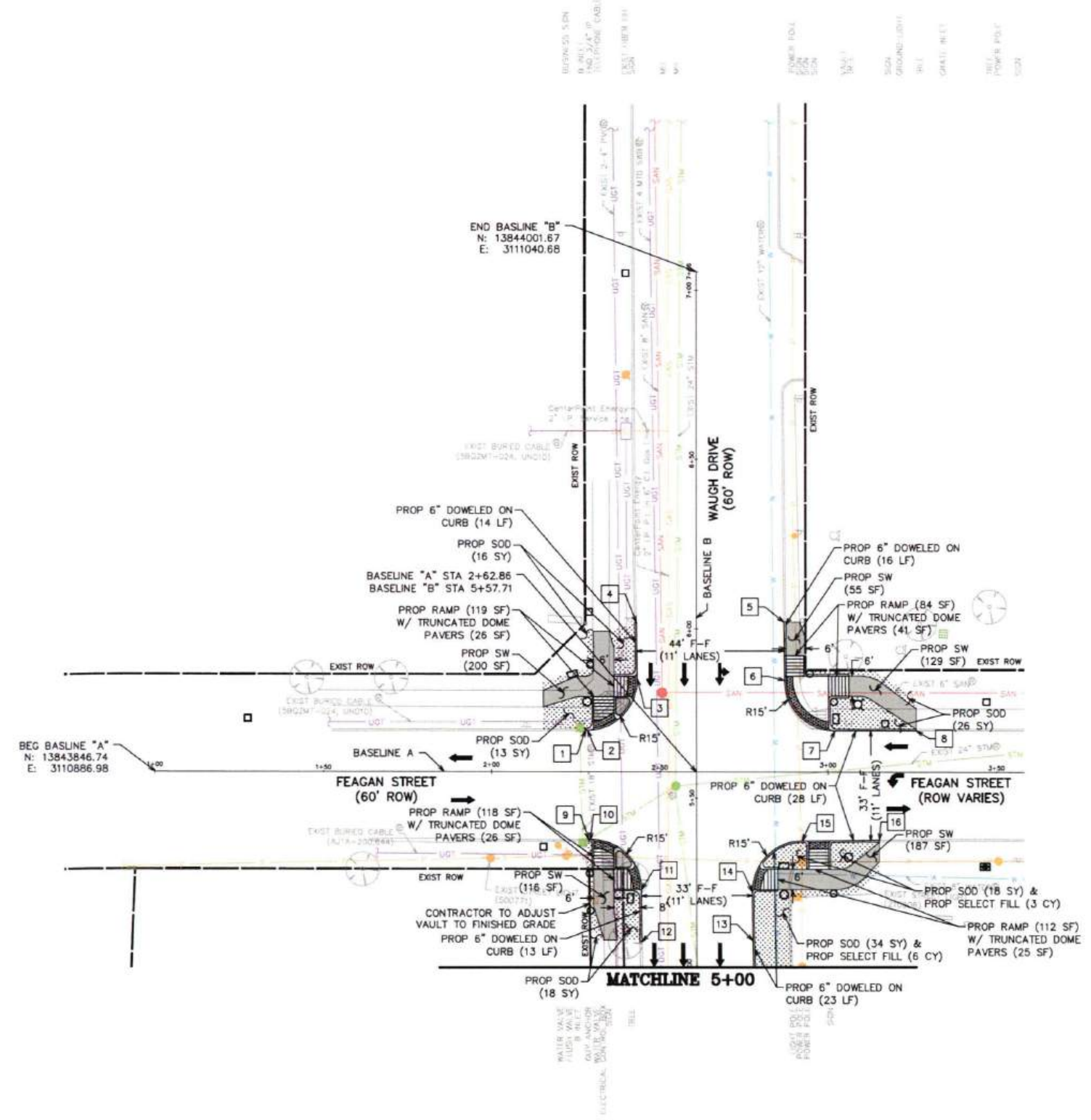
WAUGH SAFETY IMPROVEMENTS

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

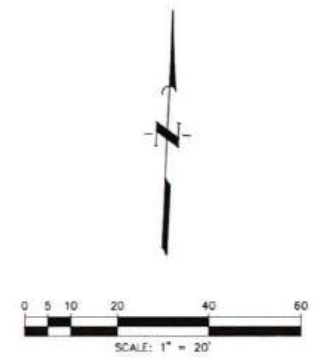
80160

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

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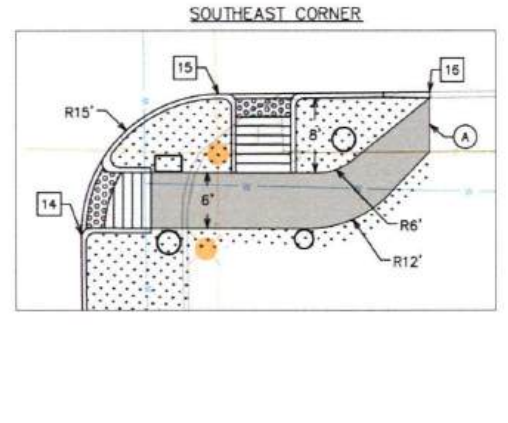
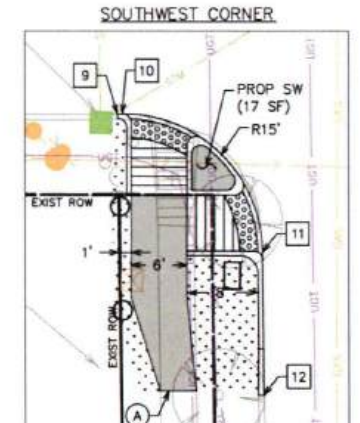
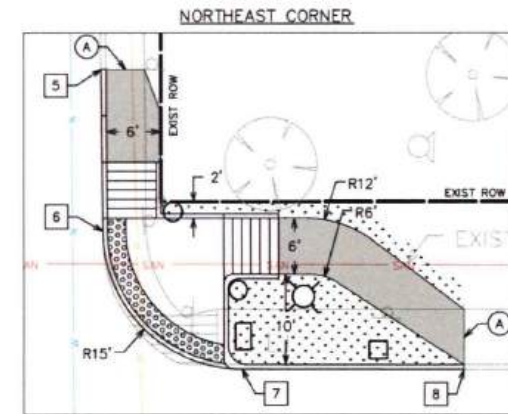
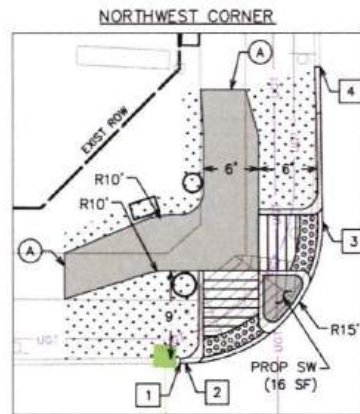
Point	Station	Offset
1	5+69.95	32.93' LT
2	5+69.96	32.46' LT
3	5+85.18	17.52' LT
4	6+01.79	17.77' LT
5	6+01.97	26.06' RT
6	5+84.60	26.25' RT
7	5+69.76	41.22' RT
8	5+69.73	65.37' RT
9	5+37.70	32.04' LT
10	5+37.71	31.50' LT
11	5+22.83	16.39' LT
12	5+07.52	16.26' LT
13	5+07.80	16.74' RT
14	5+22.16	16.62' 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
 - STATION AND OFFSET (SEE THIS SHEET)
 - MATCH EXISTING SW (SEE THIS SHEET)

- GENERAL NOTES**
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 - E. CONTRACTOR TO PROTECT ALL FACILITIES NOT SPECIFICALLY CALLED OUT FOR DEMOLITION.
 - F. CONTRACTOR TO COORDINATE WITH CITY OF HOUSTON URBAN FORESTER AT (832)395-8456 PRIOR TO WORK BENEATH EXISTING MATURE TREES FOR ANY ADDITIONAL TREE PROTECTION REQUIREMENTS.
 - G. MATCH EXISTING ELEVATIONS UNLESS NOTED OTHERWISE.

NOTE: CORNER DETAILS ARE SHOWN AT 1:10 SCALE



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 to 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.

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
4801 West Loop South, Suite 130, Houston, TX 77025
713-773-2821

STATE OF TEXAS
VICTORIA M. MACALINO
142504
LICENSED PROFESSIONAL ENGINEER
5/27/25

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

Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT FEAGAN ST PAVING

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012-7

DRAWING SCALE
AS NOTED

CITY OF HOUSTON
TOMAS MATHEW

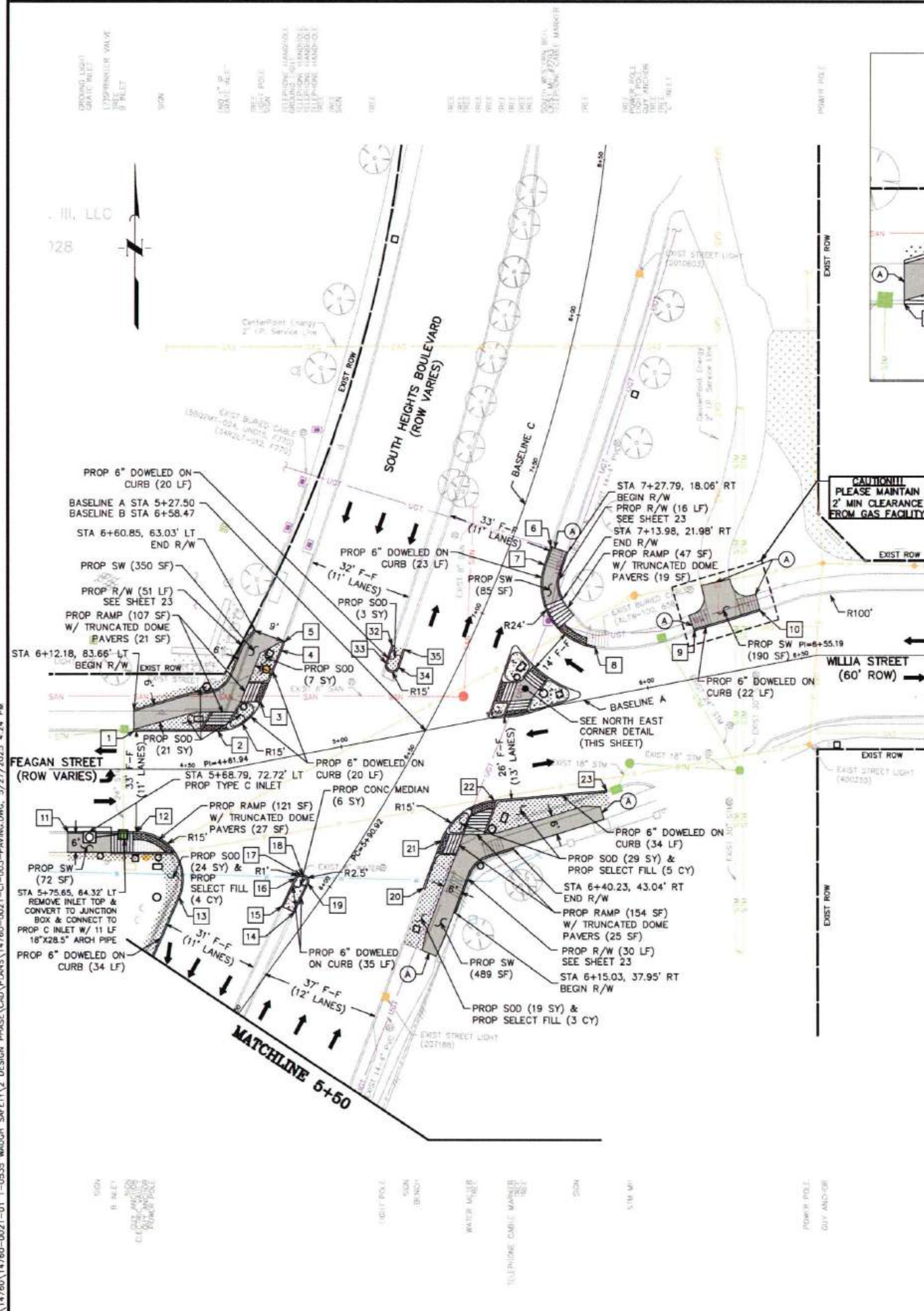
SHEET NO. 10 OF 72

FOR CITY OF HOUSTON USE ONLY
ACCEPTED AND FILED
80160

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

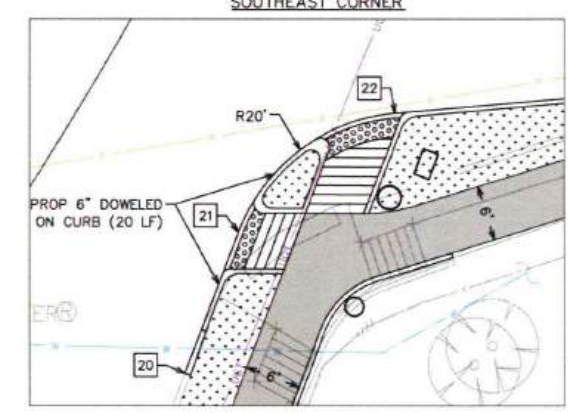
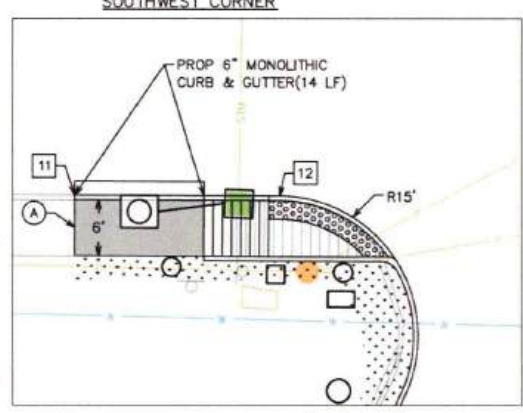
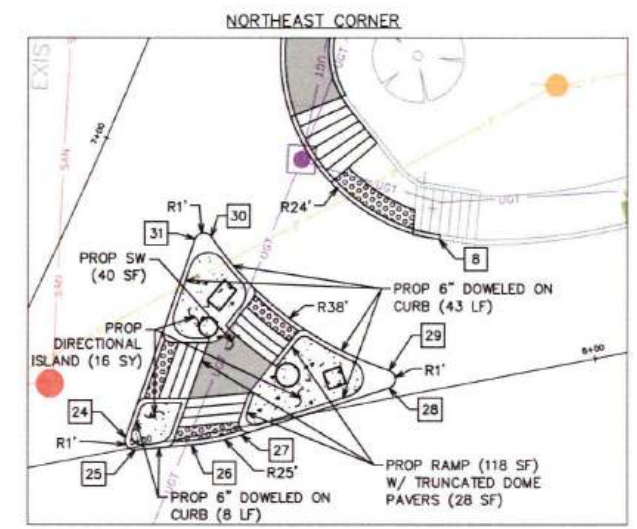
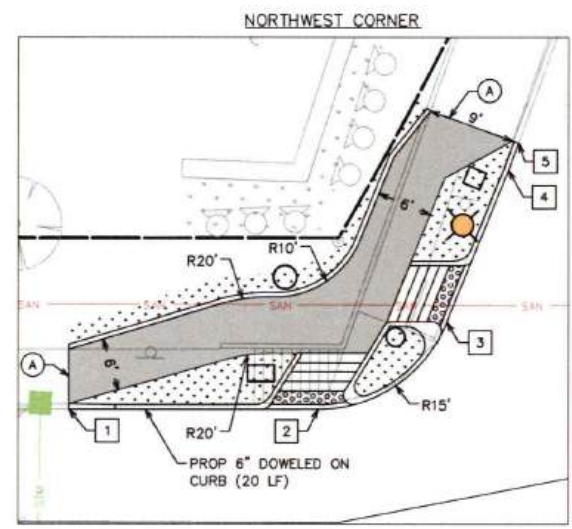
HOUSTON, TEXAS

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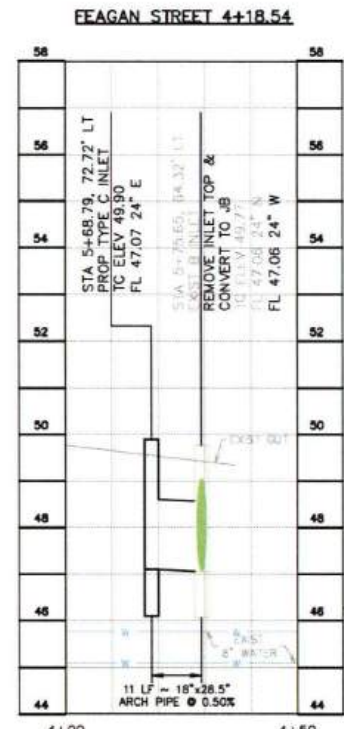


CAUTION!
PLEASE MAINTAIN
2' MIN CLEARANCE
FROM GAS FACILITY

NOTE: CORNER DETAILS ARE SHOWN AT 1:10 SCALE



BASELINE C		
Point	Station	Offset
1	6+05.30	79.74' LT
2	6+22.54	57.30' LT
3	6+39.59	50.36' LT
4	6+59.02	52.60' LT
5	6+62.47	53.01' LT
6	7+27.65	12.25' RT
7	7+21.75	12.46' RT
8	7+04.19	37.41' RT
9	7+19.69	64.83' RT
10	7+31.31	82.20' RT
11	5+64.68	78.38' LT
12	5+77.68	60.45' LT
13	5+68.72	36.99' LT
14	5+86.74	4.424' LT
15	5+85.91	8.826' LT
16	5+95.74	10.64' LT
17	5+97.77	9.82' LT
18	5+98.11	9.34' LT
19	5+96.76	6.21' LT
20	6+15.99	24.93' RT
21	6+31.12	21.70' RT
22	6+49.80	29.83' RT
23	6+68.05	60.09' RT
24	6+72.25	15.62' RT
25	6+71.55	17.14' RT
26	6+74.65	22.35' RT
27	6+77.85	26.71' RT
28	6+88.59	38.90' RT
29	6+90.20	38.10' RT
30	6+94.92	14.69' RT
31	6+94.00	13.18' RT
32	6+78.14	22.08' LT
33	6+71.92	21.31' LT
34	6+72.58	16.87' LT
35	6+78.74	17.65' LT



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

- PAVING LEGEND**
- PROP SIDEWALK
 - PROP SOD TO MATCH EXIST
 - PROP TRUNCATED DOMES
 - STATION AND OFFSET (SEE THIS SHEET)
 - MATCH EXISTING SW (SEE THIS SHEET)

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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.

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors Reg. No. P-20208 & P-20800
6326 West Loop South, Suite 100, Dallas, TX 75249
737-777-8801

VICTORIA M. MACALINO
142304
PROFESSIONAL ENGINEER
5/27/25

Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

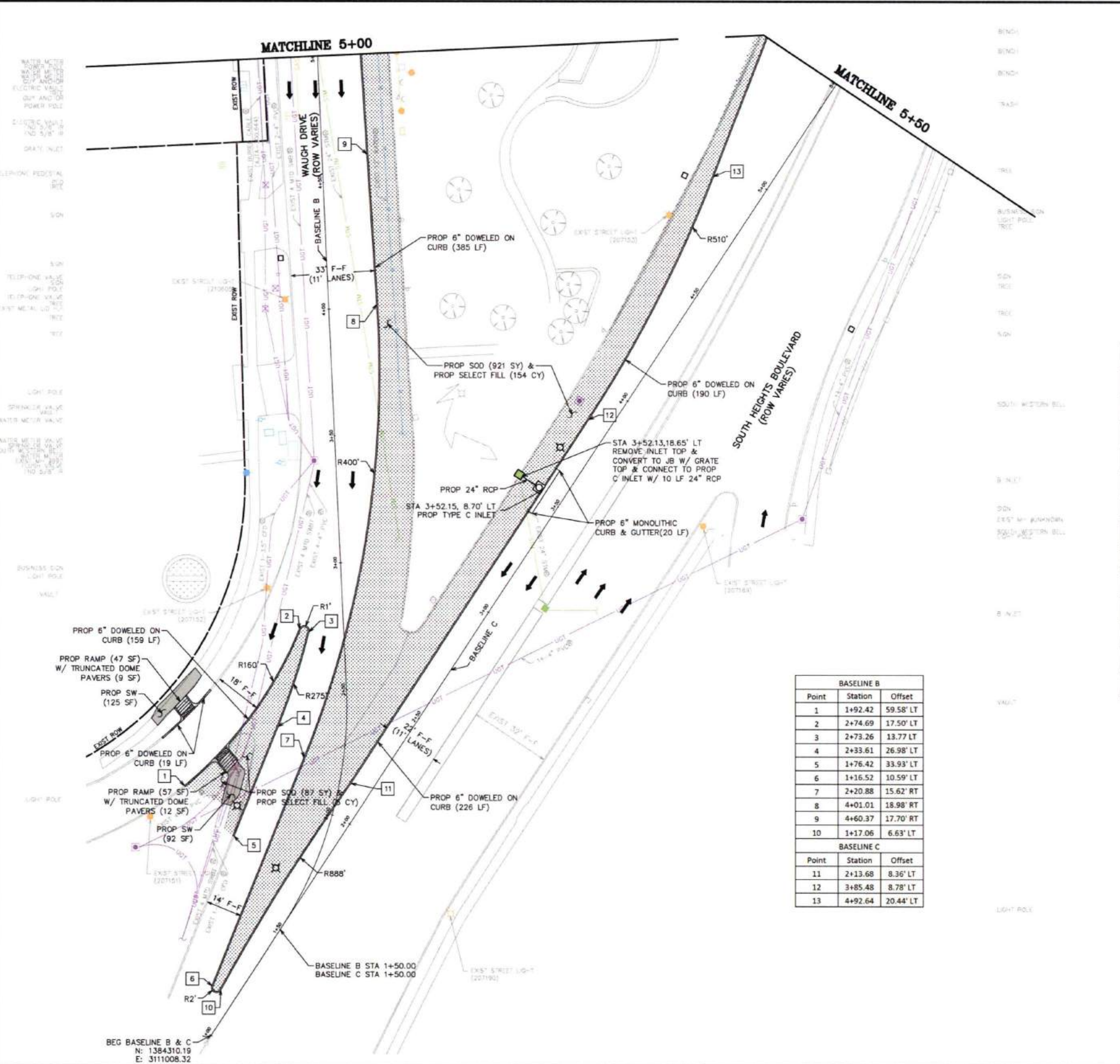
S. HEIGHTS BLVD AT FEAGAN ST
PAVING & DRAINAGE

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	
TOMS MATHEW	
SHEET NO. 11 OF 72	



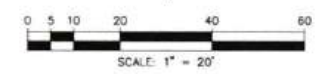
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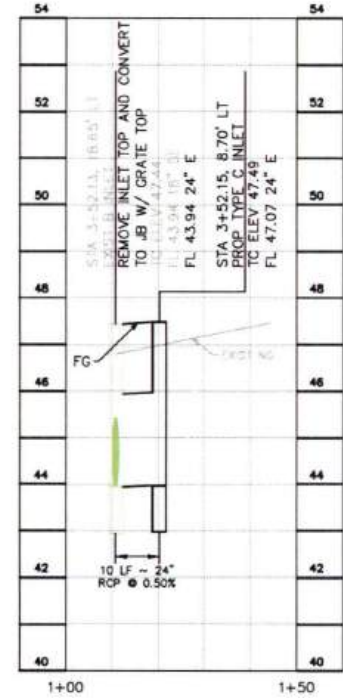
BASELINE B		
Point	Station	Offset
1	1+92.42	59.58' LT
2	2+74.69	17.50' LT
3	2+73.26	13.77' LT
4	2+33.61	26.98' LT
5	1+76.42	33.93' LT
6	1+16.52	10.59' LT
7	2+20.88	15.62' RT
8	4+01.01	18.98' RT
9	4+60.37	17.70' RT
10	1+17.06	6.63' LT
BASELINE C		
Point	Station	Offset
11	2+13.68	8.36' LT
12	3+85.48	8.78'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

- PAVING LEGEND**
- PROF SIDEWALK
 - PROF SOD TO MATCH EXIST
 - PROF TRUNCATED DOMES
 - STATION AND OFFSET (SEE THIS SHEET)
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S HEIGHTS BOULEVARD 3+52.15



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Mike Brower 05/29/25
Date
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1980 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. 12208 & 12488
6500 West Loop South, Suite 220, Houston, TX 77048
713.777.8887

VICTORIA M. MACALINO
142304
PROFESSIONAL ENGINEER
5/27/25

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

Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT S. HEIGHTS BLVD
PAVING & DRAINAGE

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012-7

DRAWING SCALE
AS NOTED

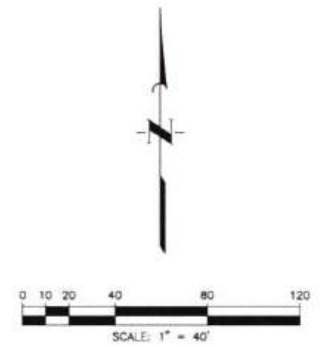
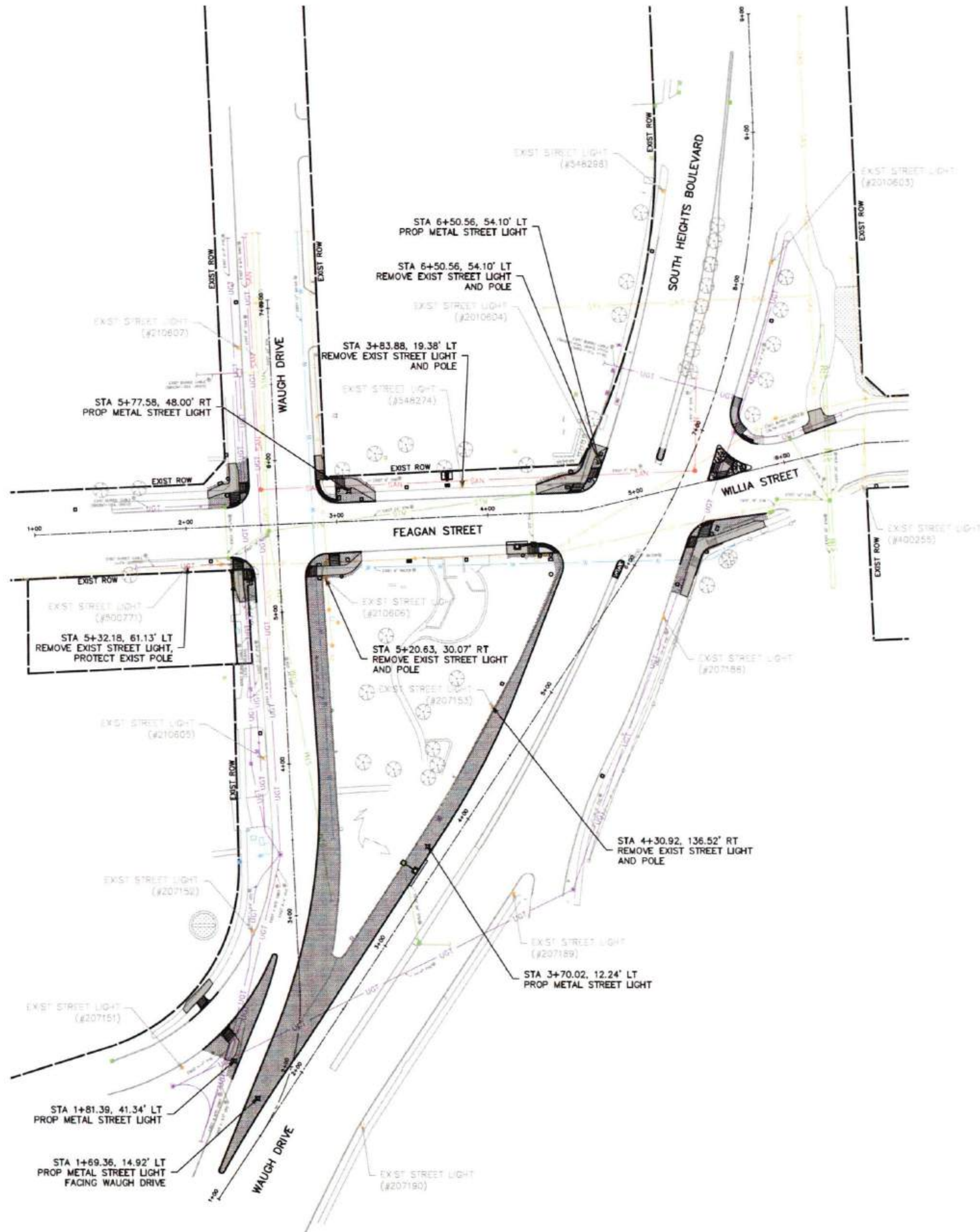
CITY OF HOUSTON POC
TOMS MATHEW

SHEET NO. 12 OF 72

ACCEPTED FOR FILED
80160

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

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NO.	DATE	REVISION	APP.

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

QUIDDITY
Texas Board of Professional Engineers
4800 West Loop South, Suite 100, Houston, TX 77025
713.771.8287

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

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STREET LIGHTING LAYOUT

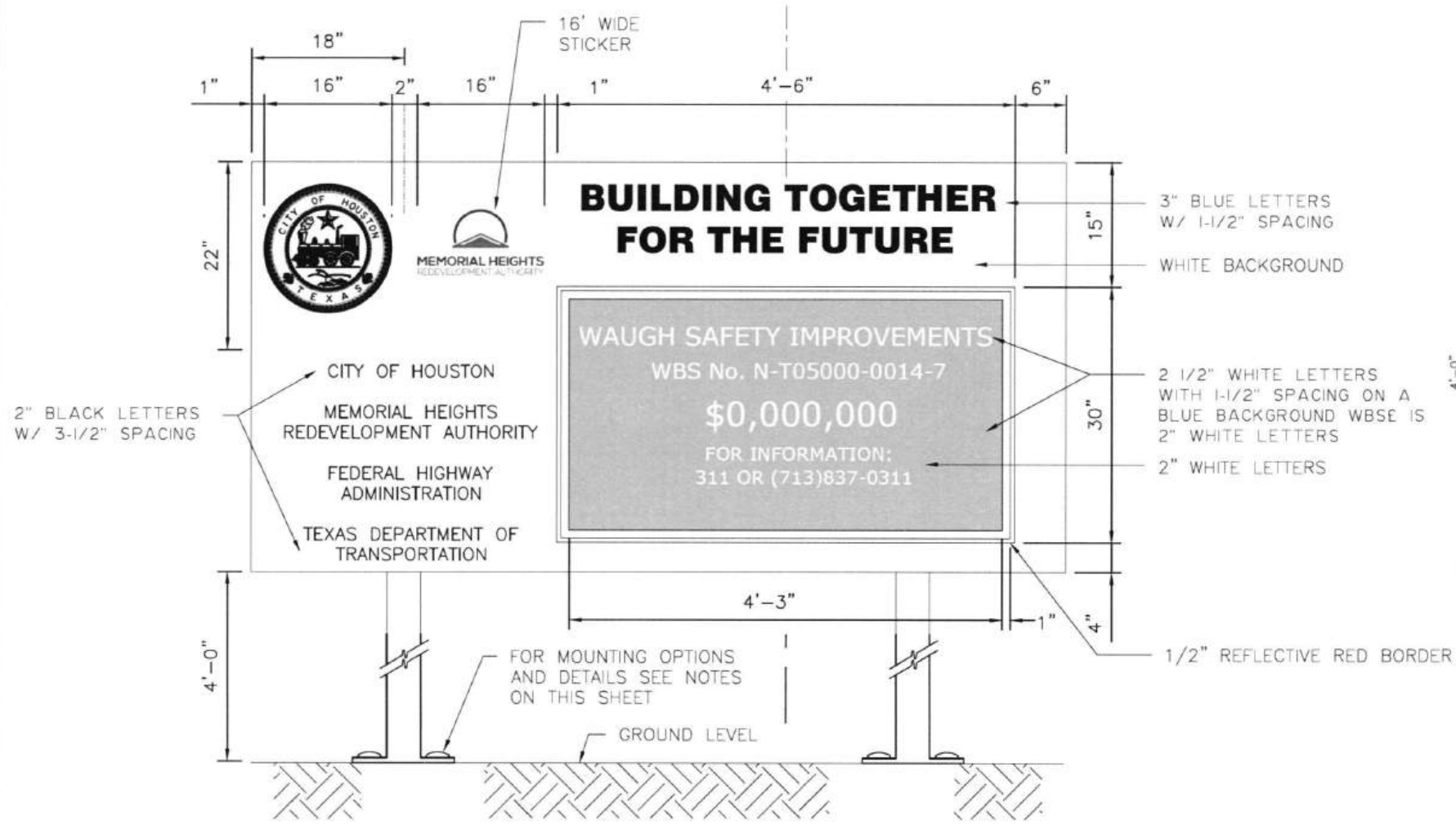
WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012-7
DRAWING SCALE
AS NOTED
CITY OF HOUSTON PROJECT NO.
TOMS MATHEW
SHEET NO. 13 OF 72

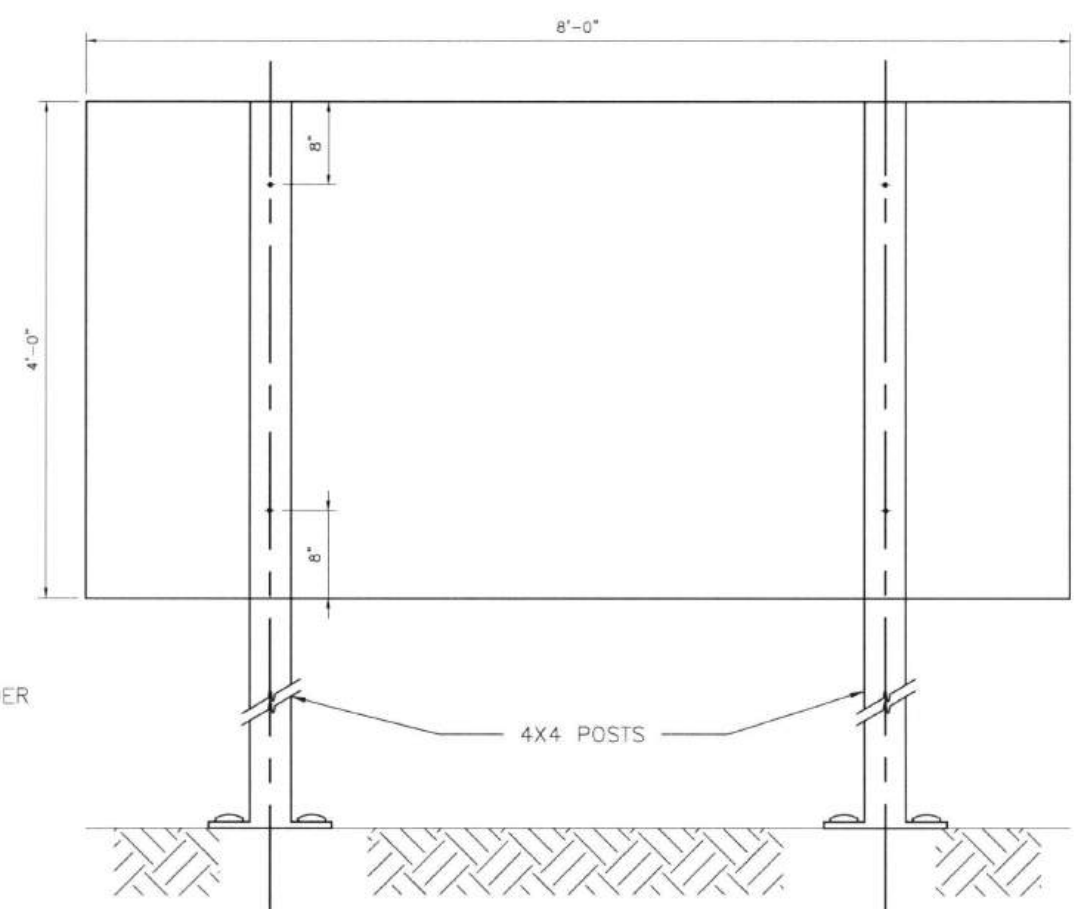
FOR CITY OF HOUSTON USE ONLY
PROJECT NO. 14760-0021-01
80160

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

NO.	DATE	REVISION	APP.



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.

1980 Post Oak Blvd., Suite 1380
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214-771-8287

VICTORIA M. MACALINO
142904
PROFESSIONAL ENGINEER
5/27/25
Victoria Macalino

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CONSTRUCTION SIGN DETAIL

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012

DRAWING SCALE
AS NOTED

CITY OF HOUSTON POC
TOMS MATHEW

SHEET NO. 14 OF

80160

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

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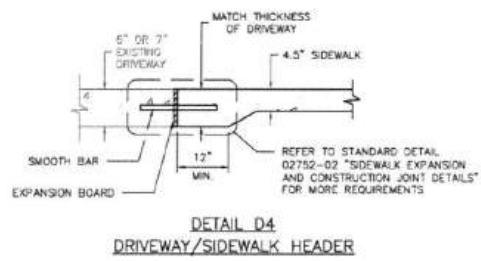
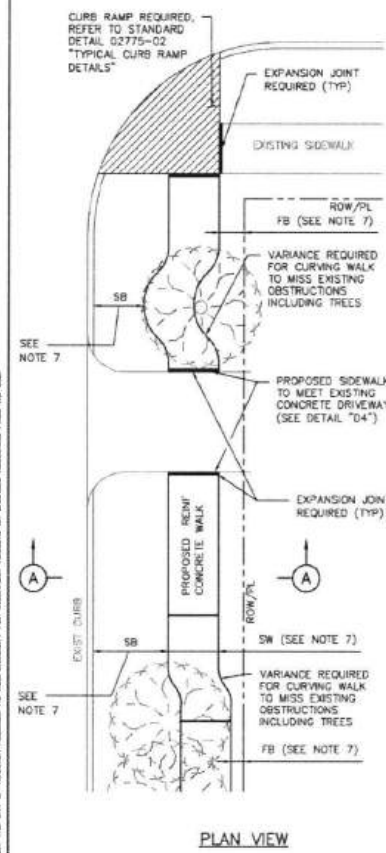
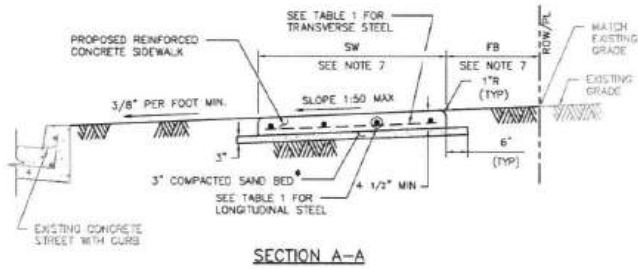


TABLE 1

REINFORCING STEEL INFORMATION FOR 4 1/2" 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)
		NO. OF BARS	SPACING (IN)	END BAR SPACING (IN)	
4.5	5	3	27	3	48
4.5	6	4	22	3	48



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

NOTES:

1. SIX - #2.9X12.9 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 RAMP AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
6. CURB RAMP 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:

Sidrah Khamar
CITY ENGINEER

WIRANG MOULLEN
CITY TRAFFIC ENGINEER

Approved by: Carl Hubbard
DIRECTOR OF HPW

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

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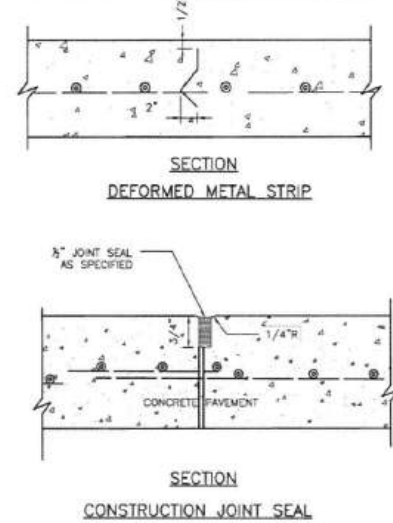
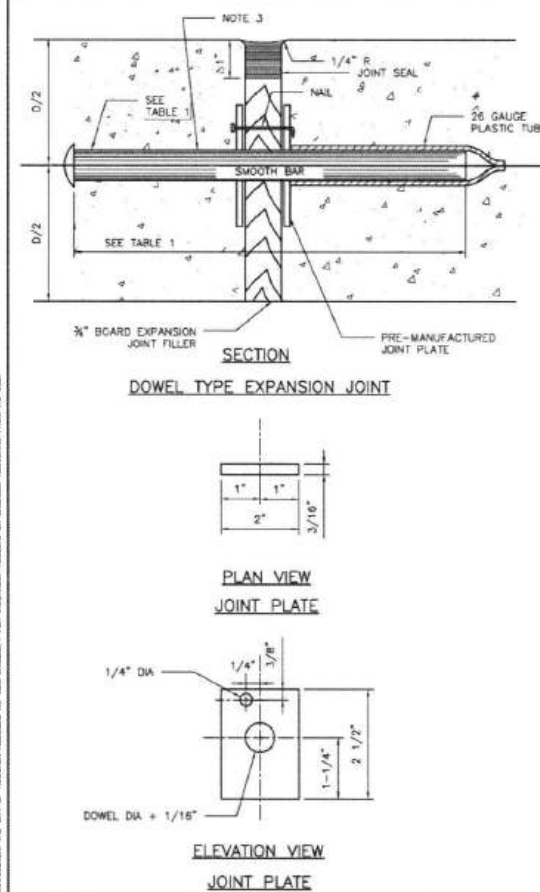


TABLE 1

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:

Sidrah Khamar
CITY ENGINEER

WIRANG MOULLEN
CITY TRAFFIC ENGINEER

Approved by: Carl Hubbard
DIRECTOR OF HPW

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

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

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753-777-8887

VICTORIA M. MACALINO
142304
PROFESSIONAL ENGINEER
5/27/25

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING DETAILS
SHEET 2 OF 5

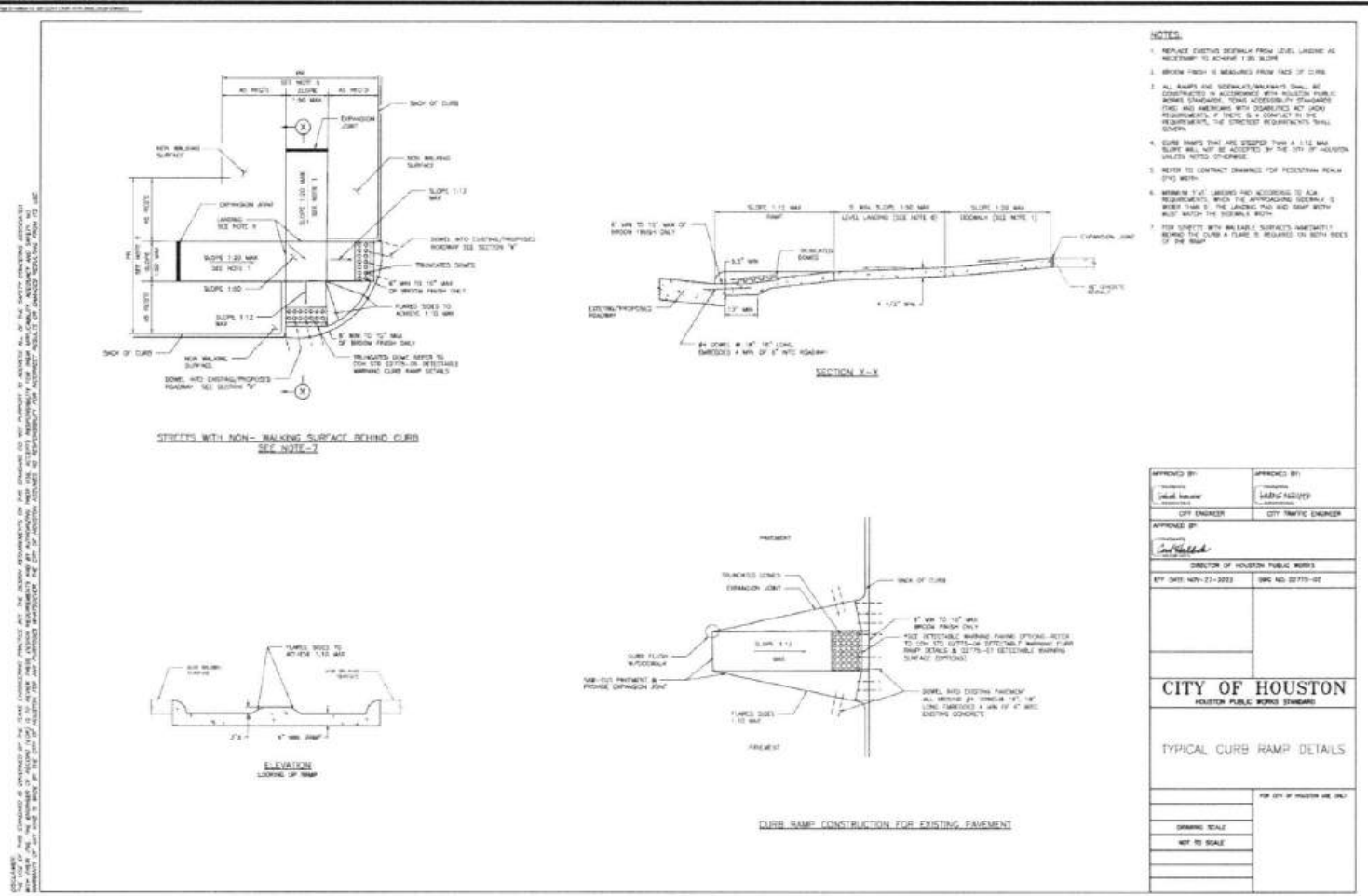
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WBS NUMBER: N-T05000-0012-7
DRAWING SCALE: AS NOTED
CITY OF HOUSTON PROJECT NO.: TOMS MATHEW
SHEET NO.: 16 OF 72

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- NOTES:**
1. REPLACE EXISTING SIDEWALK FROM LEVEL LANDING AS NECESSARY TO ACHIEVE 1:12 SLOPE.
 2. BROOM FINISH IS REQUIRED FROM FACE OF CURB.
 3. ALL RAMP AND SIDEWALK/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 RAMP SLOPE SHALL EXCEED 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON UNLESS NOTED OTHERWISE.
 5. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN RAMP (P/R) DETAIL.
 6. MINIMUM 1' LANDING AND ACCESSIBLE TO ADA REQUIREMENTS WITH 1:4 APPROXIMATE SLOPE IS MORE THAN 1'. THE LANDING SHALL BE FINISHED WITH 1:4 APPROXIMATE SLOPE.
 7. FOR DETAILS WITH WALKABLE SURFACES, WALKWAYS BEHIND THE CURB A FLARE IS REQUIRED TO BOTH SIDES OF THE RAMP.

APPROVED BY: [Signature] CITY ENGINEER

APPROVED BY: [Signature] CITY TRAFFIC ENGINEER

APPROVED BY: [Signature] DIRECTOR OF HOUSTON PUBLIC WORKS

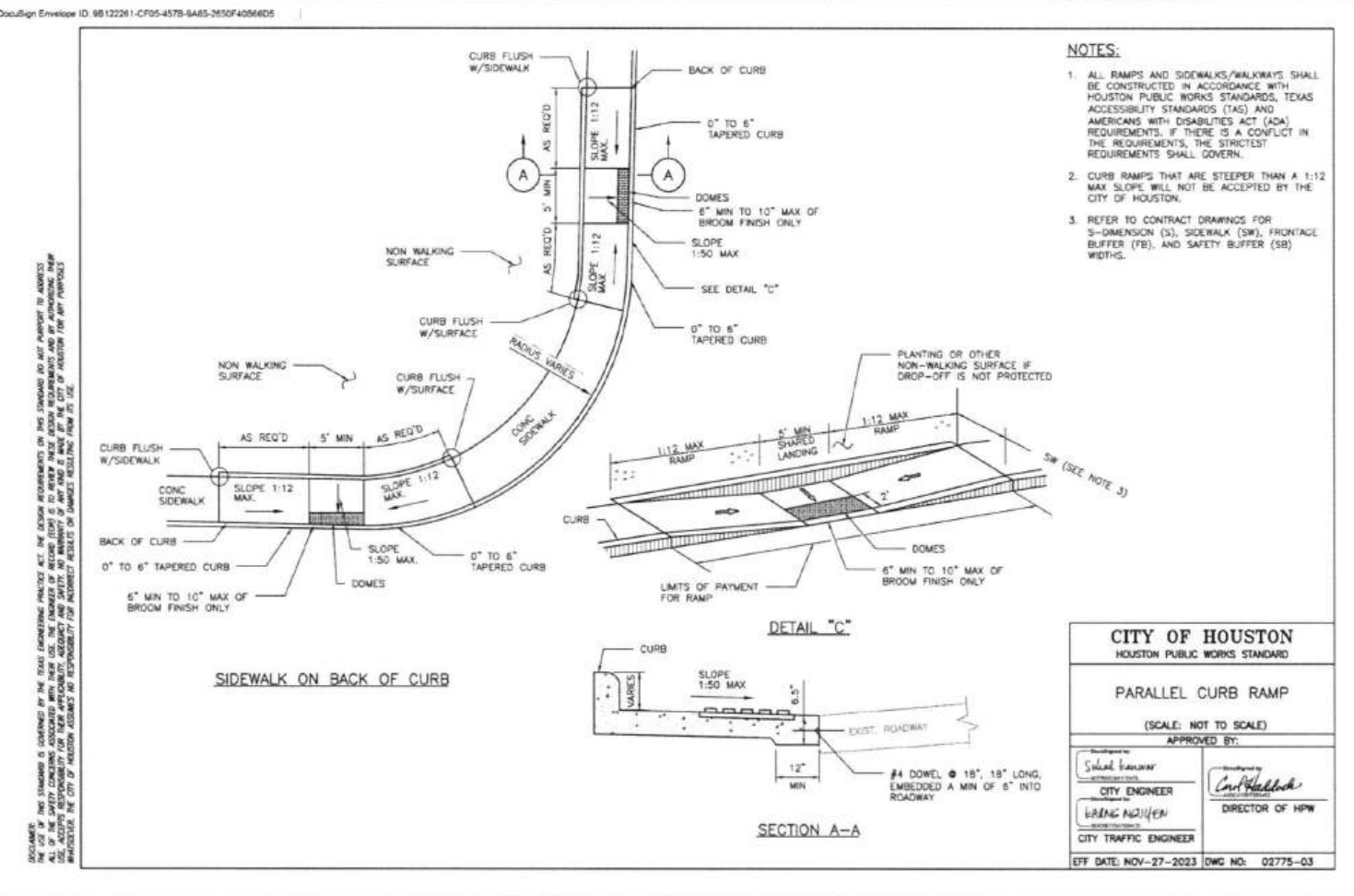
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CURB RAMP DETAILS

FOR CITY OF HOUSTON USE ONLY

ISSUANCE SCALE: NOT TO SCALE



- NOTES:**
1. ALL RAMP AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
 2. CURB RAMP 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: [Signature] CITY ENGINEER

APPROVED BY: [Signature] CITY TRAFFIC ENGINEER

APPROVED BY: [Signature] DIRECTOR OF HPW

EFF DATE: NOV-27-2023 DWG NO: 02775-03

CONT	SECT	JOB	HIGHWAY
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HOU		HARRIS	

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

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING DETAILS
SHEET 3 OF 5

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WBS NUMBER: N-T05000-0012-1

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CITY OF HOUSTON DOC: TOMS MATHEW

SHEET NO. 17 OF 17

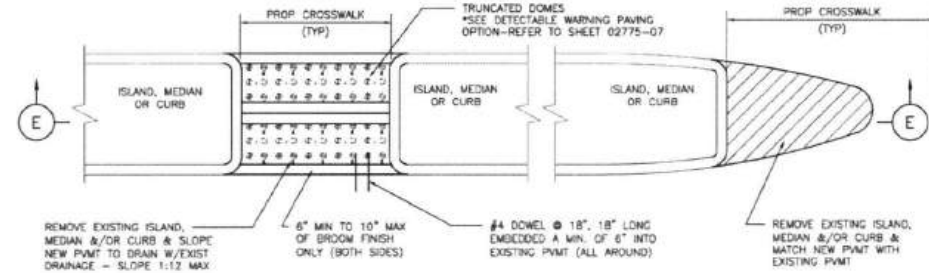
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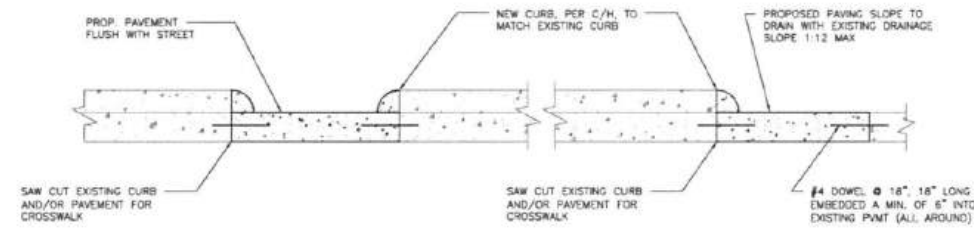
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- NOTES:**
1. SEE CDH STANDARD DETAIL FOR PAVEMENT MARKING DETAILS.
 2. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (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.



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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CURB MODIFICATION FOR CURB RAMPS & CROSSWALKS
(SCALE: NOT TO SCALE)

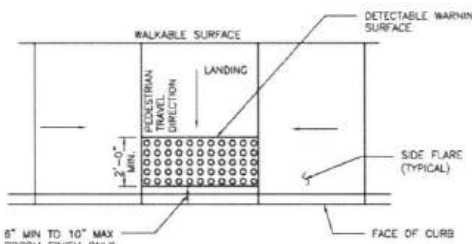
APPROVED BY:

Sulad Hanauer
CITY ENGINEER

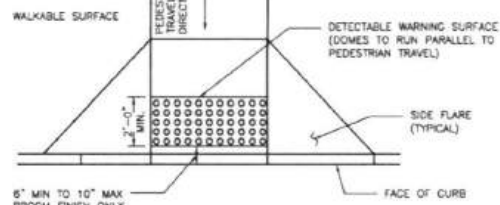
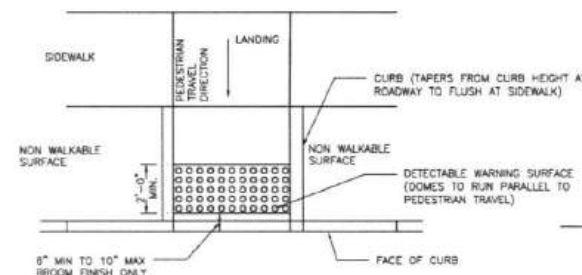
Carla Hallock
DIRECTOR OF HPW

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:

Sulad Hanauer
CITY ENGINEER

Carla Hallock
DIRECTOR OF HPW

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

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VICTORIA M. MACALINO
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5/27/25

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HOUSTON PUBLIC WORKS

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SHEET 4 OF 5

WAUGH SAFETY IMPROVEMENTS

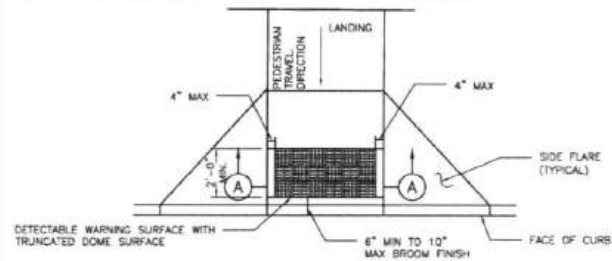
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SHEET NO.: 18 OF 72

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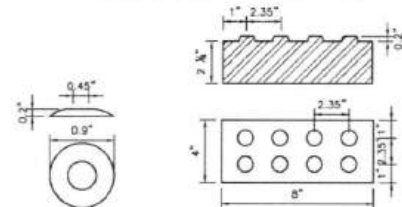
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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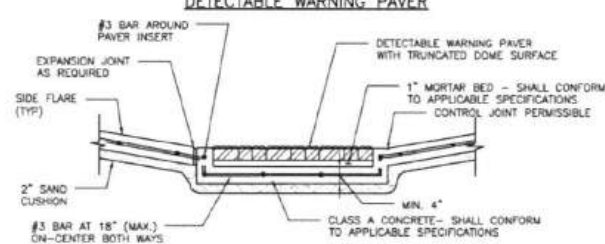
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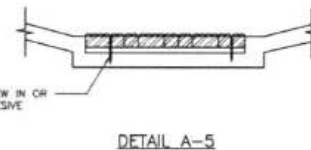
PLAN VIEW
DETECTABLE WARNING SURFACE



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

PAVS

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

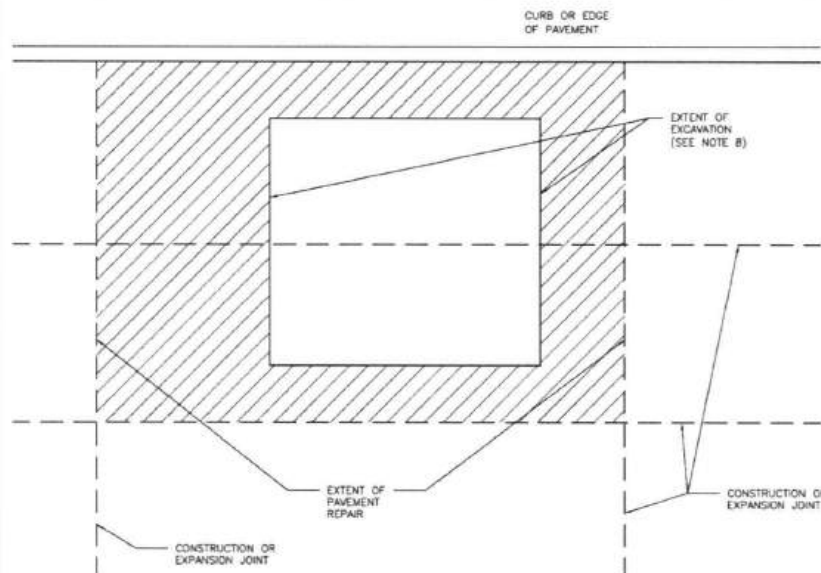
DETECTABLE WARNING SURFACE (OPTIONS)
(SCALE: NOT TO SCALE)

APPROVED BY:

<p>Reviewed by: <i>Sahad Hassan</i> CITY ENGINEER</p> <p>Reviewed by: <i>Wahid Naji</i> CITY TRAFFIC ENGINEER</p>	<p>Reviewed by: <i>Carl Haddock</i> DIRECTOR OF HPW</p>
---	---

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 (E: 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).

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STREET CUT FOR CONCRETE PAVEMENT REPLACEMENT/RESTORATION AGE OF PAVEMENT ≤ 5YRS
(SCALE: NOT TO SCALE)

APPROVED BY:

<p>Reviewed by: <i>Sahad Hassan</i> CITY ENGINEER</p> <p>Reviewed by: <i>Wahid Naji</i> CITY TRAFFIC ENGINEER</p>	<p>Reviewed by: <i>Carl Haddock</i> DIRECTOR OF HPW</p>
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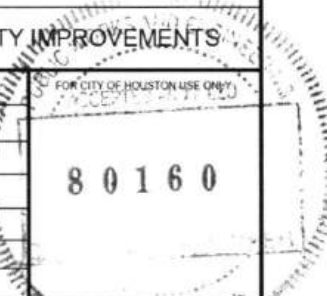
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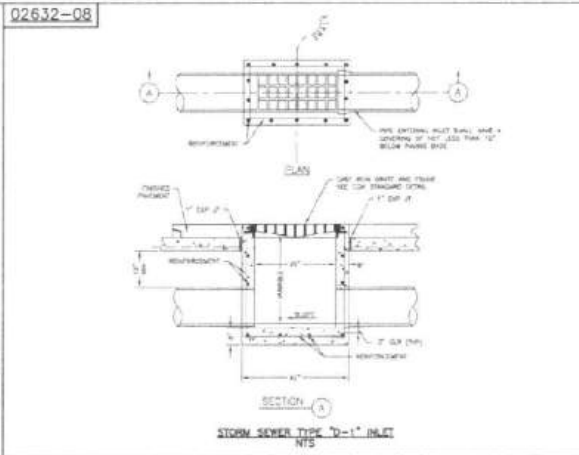
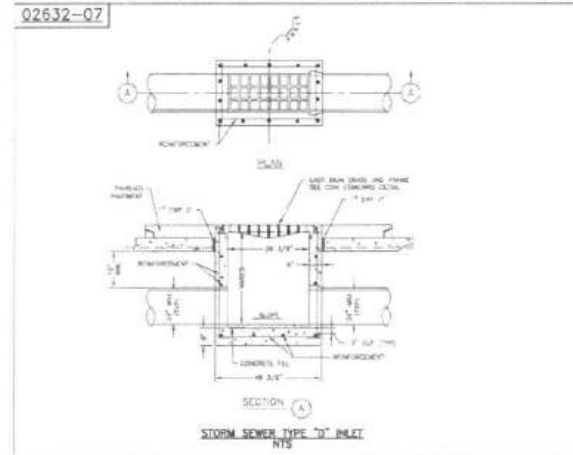
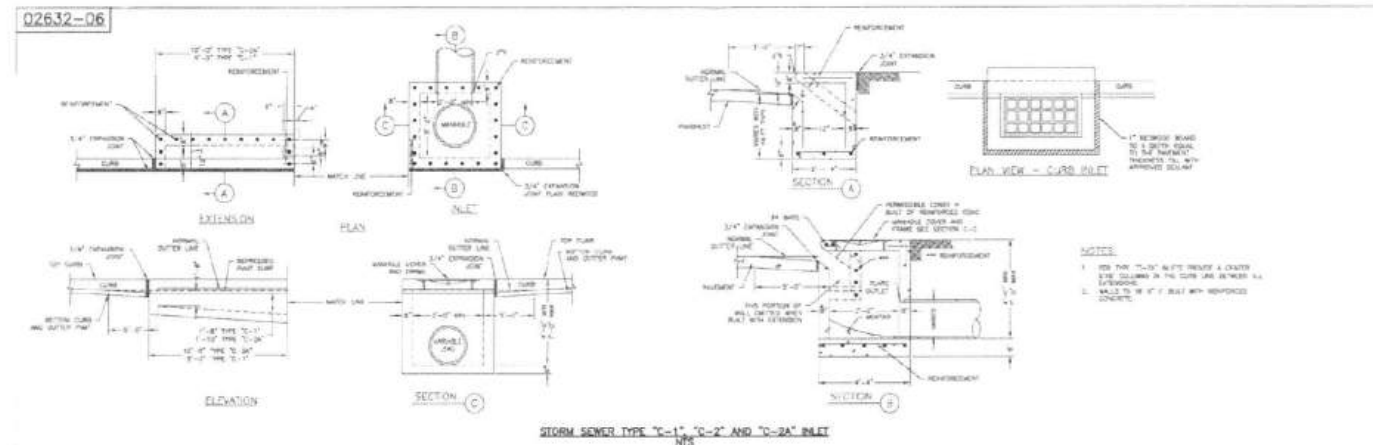
NO.	DATE	REVISION	APP.

 1980 Post Oak Blvd., Suite 1380 Houston, Texas 77056 713-850-9000	
 SURVEYED BY: QUIDDITY FB NO. 3124, Pages 1-4	 VICTORIA M. MACALINO 142904 5/27/25 <i>Victoria M. Macalino</i>
CITY OF HOUSTON HOUSTON PUBLIC WORKS	
PAVING DETAILS SHEET 5 OF 5	
WAUGH SAFETY IMPROVEMENTS	
WBS NUMBER N-T05000-0012-7	
DRAWING SCALE AS NOTED	
CITY OF HOUSTON PROJECT NO. TOMS MATHEW	
SHEET NO. 19 OF 72	

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



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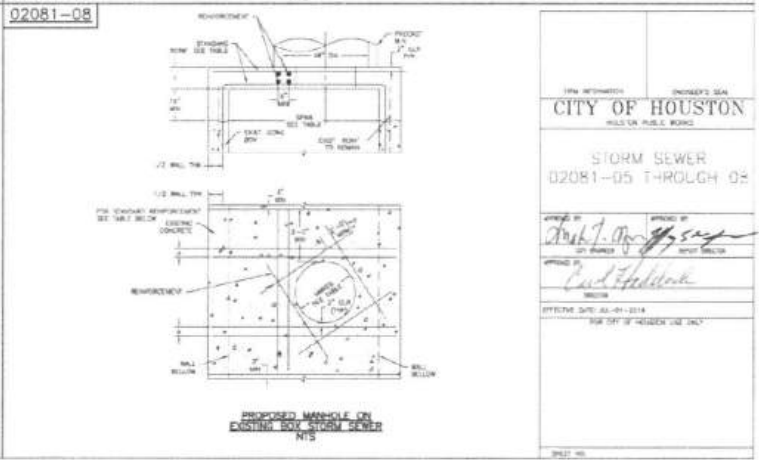
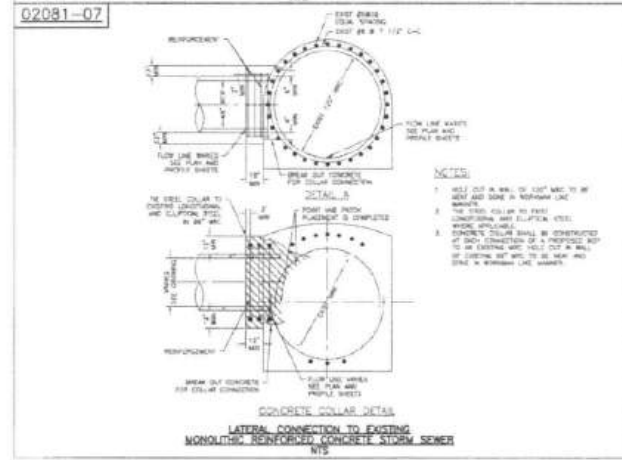
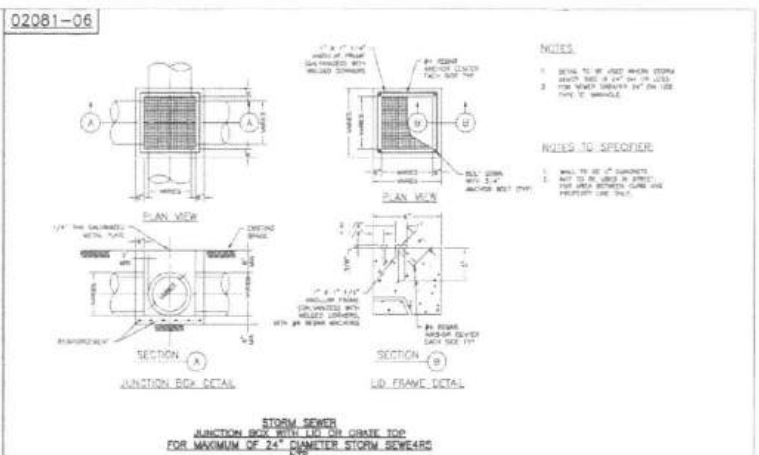
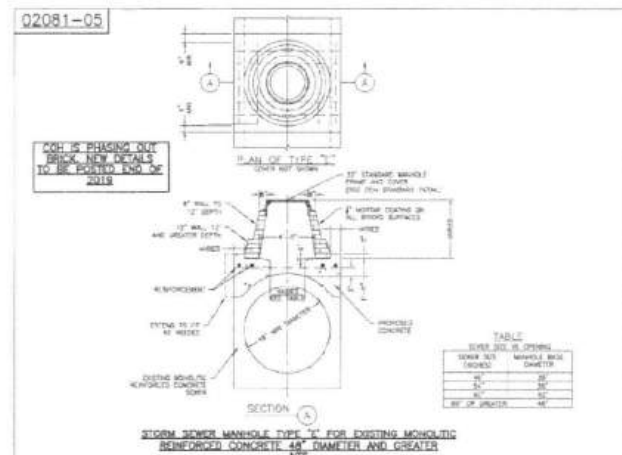
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02632-06 THROUGH 08

DESIGNED BY: *[Signature]*
CHECKED BY: *[Signature]*

DATE: 05-21-2014
FOR CITY OF HOUSTON USE ONLY



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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02081-05 THROUGH 08

DESIGNED BY: *[Signature]*
CHECKED BY: *[Signature]*

DATE: 05-21-2014
FOR CITY OF HOUSTON USE ONLY

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

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors, Reg. No. 12026 & 12042
4333 West Loop South, Suite 100, Houston, TX 77025
713-771-3307

STATE OF TEXAS
VICTORIA M. MACALINO
142804
PROFESSIONAL ENGINEER
5/27/25

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

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

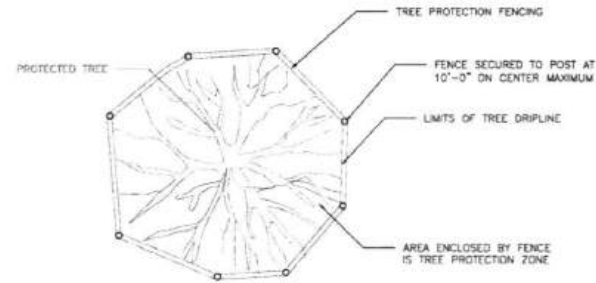
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NO.	DATE	REVISION	APP.

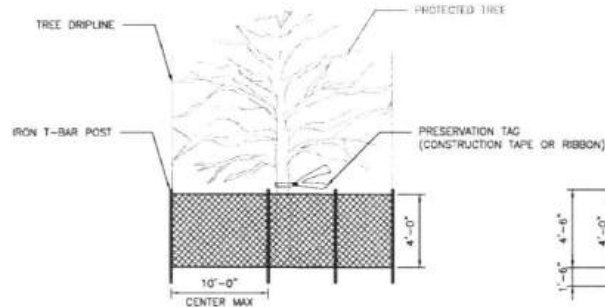
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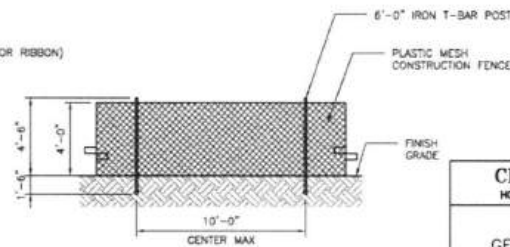
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PLAN VIEW
TREE PROTECTION FENCING DETAIL



FRONT VIEW
TREE PROTECTION FENCING DETAIL



DETAIL B-4
PROTECTIVE PLASTIC MESH FENCE

NOTES:
FENCE LOCATION MAY BE ADJUSTED TO ACTUAL SITE CONDITIONS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TREE PROTECTION
GENERAL REQUIREMENTS
(SCALE: NOT TO SCALE)

APPROVED BY:

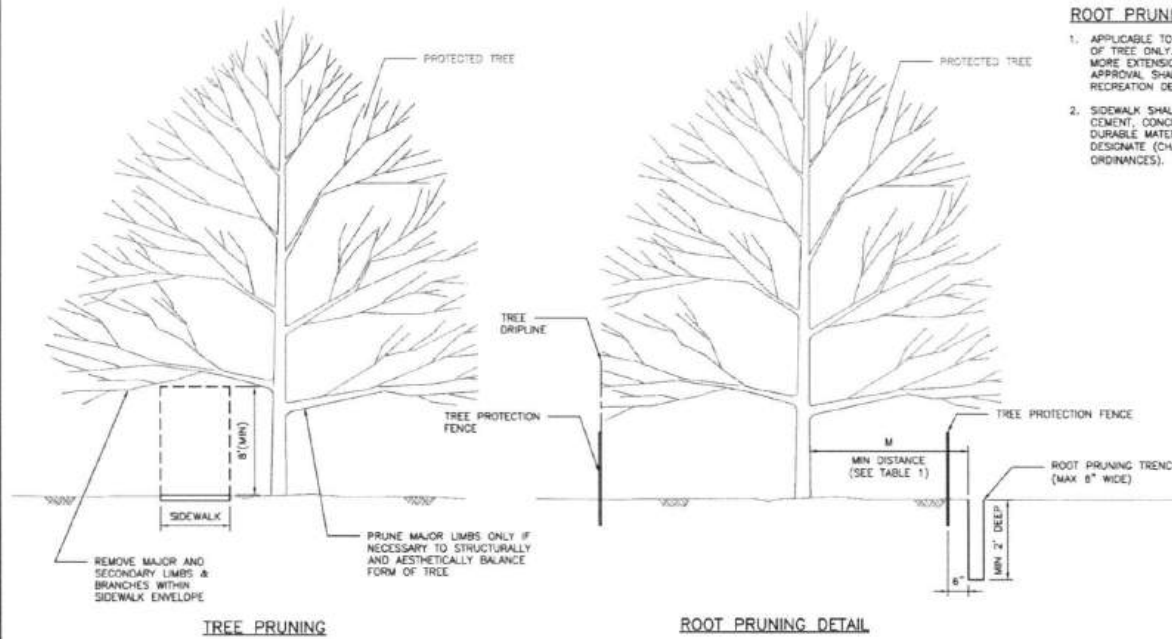
Sahel Hassan CITY ENGINEER
Carl Hubbard DIRECTOR OF HPW

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

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:

Sahel Hassan CITY ENGINEER
Carl Hubbard 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		

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors Reg. No. 97208 & 108400
6300 West Loop South, Suite 236, Bellaire, TX 77401
713.797.5287

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

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

Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TREE PROTECTION DETAILS
SHEET 1 OF 2

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER

N-T05000-0012-7

DRAWING SCALE

AS NOTED

CITY OF HOUSTON PROJECT

TOMS MATHEW

SHEET NO. 21 OF 72

FOR CITY OF HOUSTON USE ONLY
PROJECT NO. 80160
CITY OF HOUSTON
HOUSTON, TEXAS

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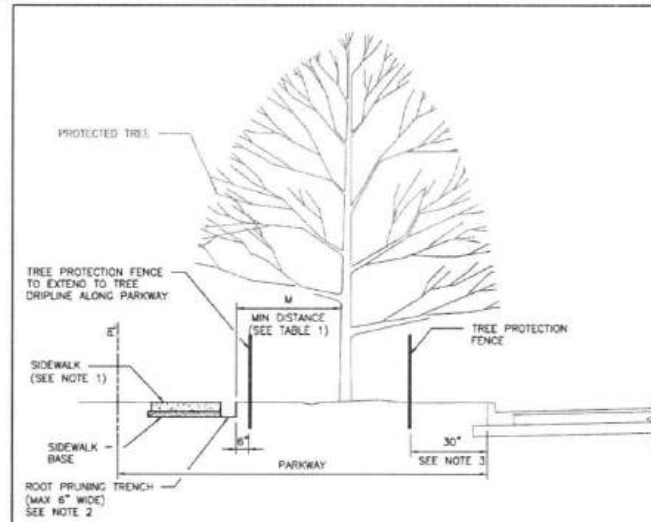


TABLE 1
"M" DISTANCE TABLE

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

NOTES:

- SIDEWALK SHALL BE CONSTRUCTED OF EITHER CEMENT, CONCRETE, ASPHALT OR OTHER DURABLE MATERIAL AS THE COUNCIL MAY DESIGNATE (CHAPTER 40-91, CODE OF ORDINANCES).
- 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.
- FENCES SHALL BE PLACED 30" BACK OF EXISTING CURB OR EDGE OF PAVEMENT WHERE ROOT PRUNING OR ZERO CURB CUT BACK IS NOT SPECIFIED.

*MINIMUM DISTANCE FROM TREE TRUNK TO EDGE OF TRENCH

ASSUMES 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

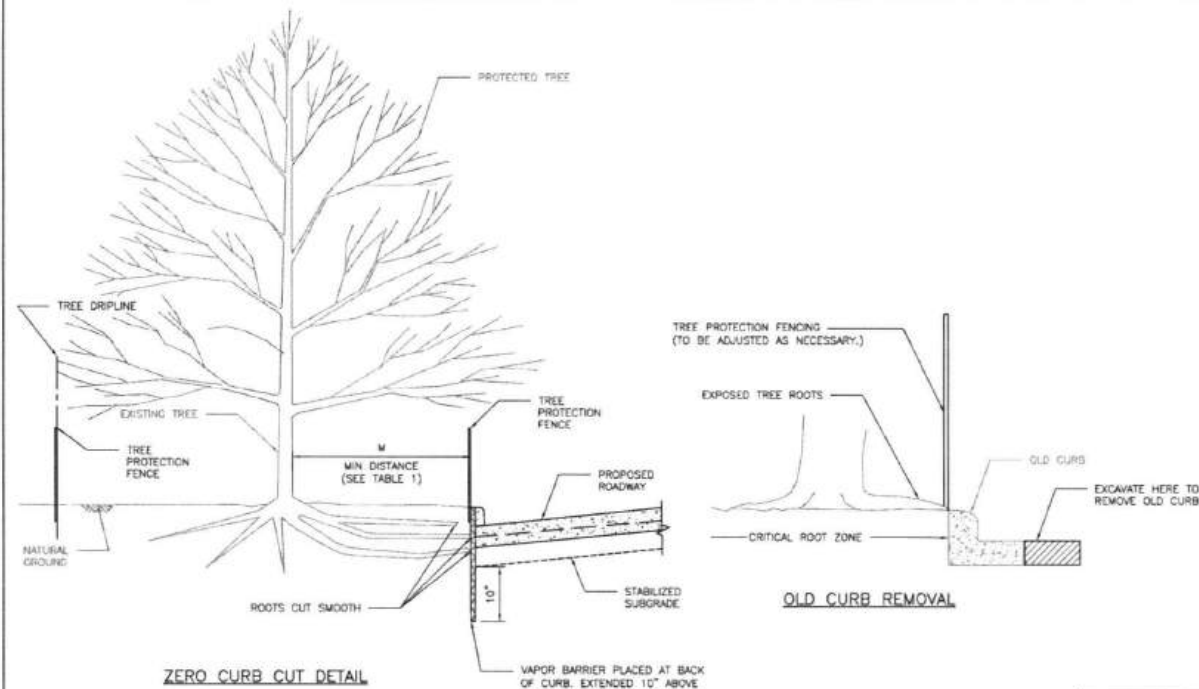
(SCALE: NOT TO SCALE)

APPROVED BY:
Suhail Ibrahim
CITY ENGINEER

Carroll Hallock
DIRECTOR OF HPW

EFF DATE: NOV-27-2023 DWG NO: 01562-03

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ZERO CURB CUT DETAIL

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TREE PROTECTION
ZERO CURB CUT

(SCALE: NOT TO SCALE)

APPROVED BY:
Suhail Ibrahim
CITY ENGINEER

Carroll Hallock
DIRECTOR OF HPW

EFF DATE: NOV-27-2023 DWG NO: 01562-04

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

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors Reg. No. 97208 & 120820
6500 West Loop South, Suite 200, Houston, TX 77057
713-777-8987

STATE OF TEXAS
VICTORIA M. MACALINO
142804
REGISTERED PROFESSIONAL ENGINEER

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

5/27/25
Victoria M. Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TREE PROTECTION DETAILS
SHEET 2 OF 2

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER

N-T05000-0012-7

DRAWING SCALE

AS NOTED

CITY OF HOUSTON PROJECT

TOMS MATHEW

SHEET NO. 22 OF 72

FOR CITY OF HOUSTON USE ONLY
ACCEPTED 5/27/25

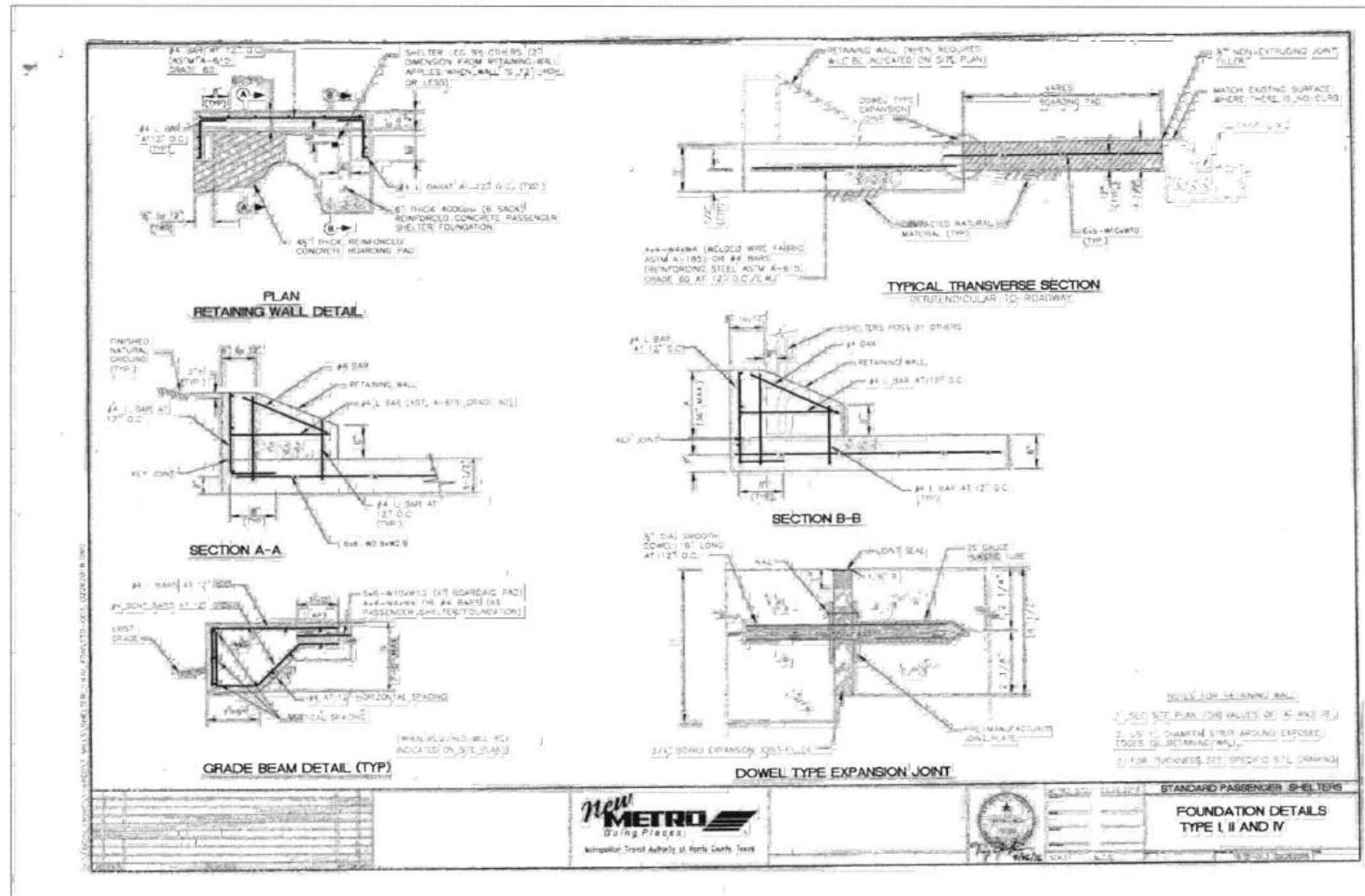
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HOUSTON, TEXAS

NO.	DATE	REVISION	APP.

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NO.	DATE	REVISION	APP.



STANDARD PASSENGER @-82 TERS
FOUNDATION DETAILS
TYPE I, II AND IV

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

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Houston, Texas 77056
713-850-9000

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
142904
5/27/25

VICTORIA M. MACALINO
PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

METRO FOUNDATION DETAIL

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012

DRAWING SCALE
AS NOTED

CITY OF HOUSTON POC
TOMS MATHEW

SHEET NO. 23 OF 24

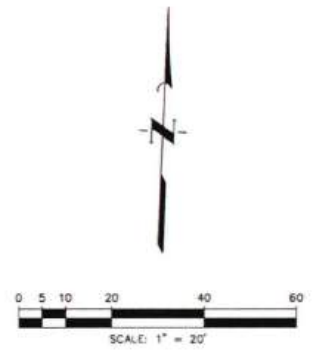
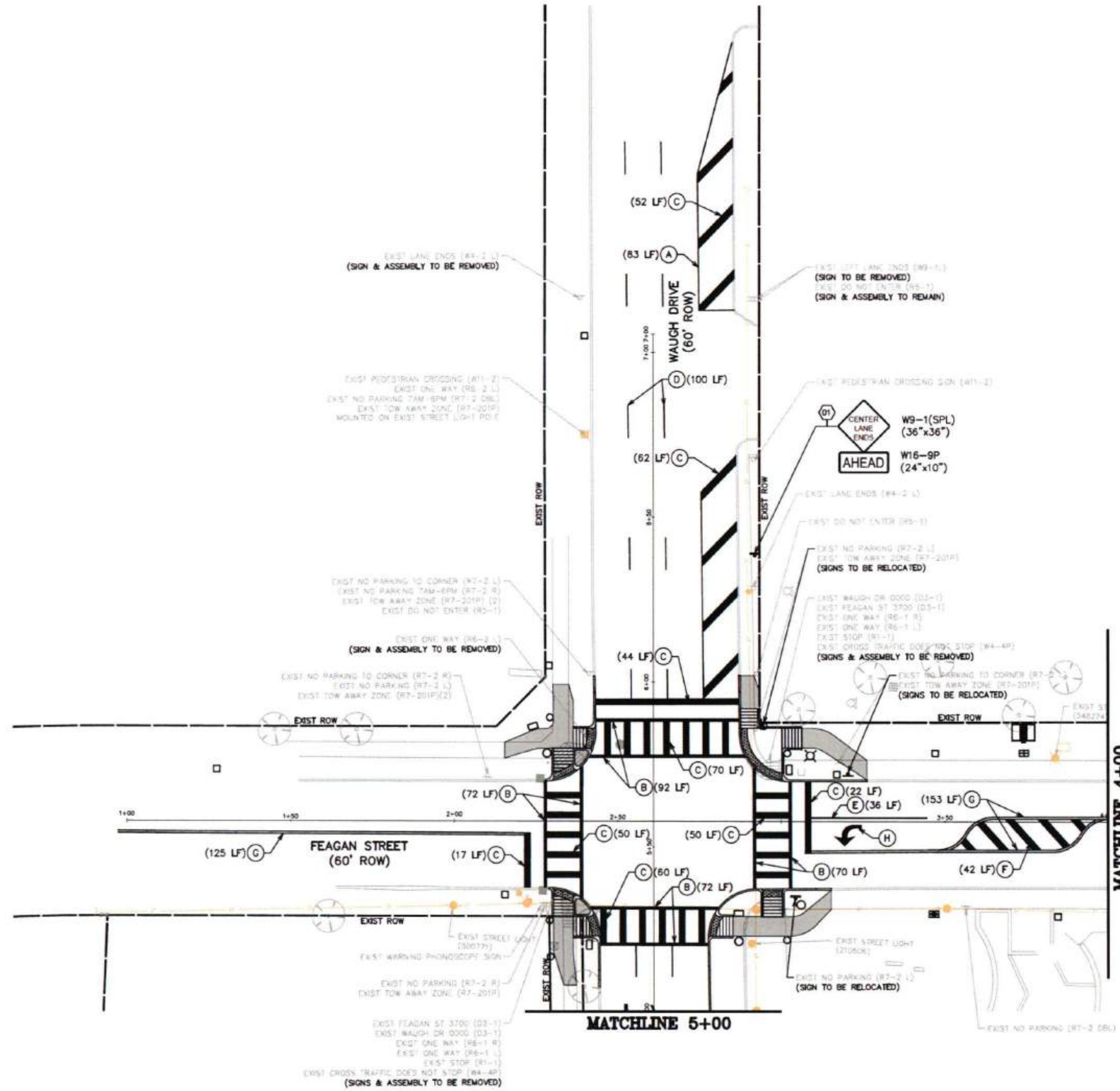
FOR CITY OF HOUSTON USE ONLY
80160

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PAVEMENT MARKING LEGEND

- (A) W54
- (B) W512
- (C) W524
- (D) W64-R40
- (E) W56-R20
- (F) YS24
- (G) YDS4-A40/A40
- (H) WS LEFT TURN ARROW
- (I) WS RIGHT TURN ARROW
- (J) WS WORD
- (K) W56
- (L) WS ARROW

NO.	DATE	REVISION	APP.



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Houston, Texas 77056
713-850-9000

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
Professional Engineer, Reg. No. 12228 & 12842
6330 West Loop South, Suite 200, Dallas, TX 75248
214-773-2857

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

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT FEAGAN ST
PAVEMENT MARKING & SIGNAGE

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PROJECT	TOMS MATHEW
SHEET NO.	24 OF 72

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

80160

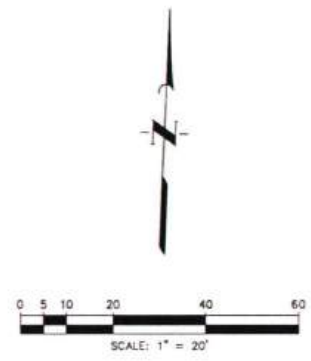
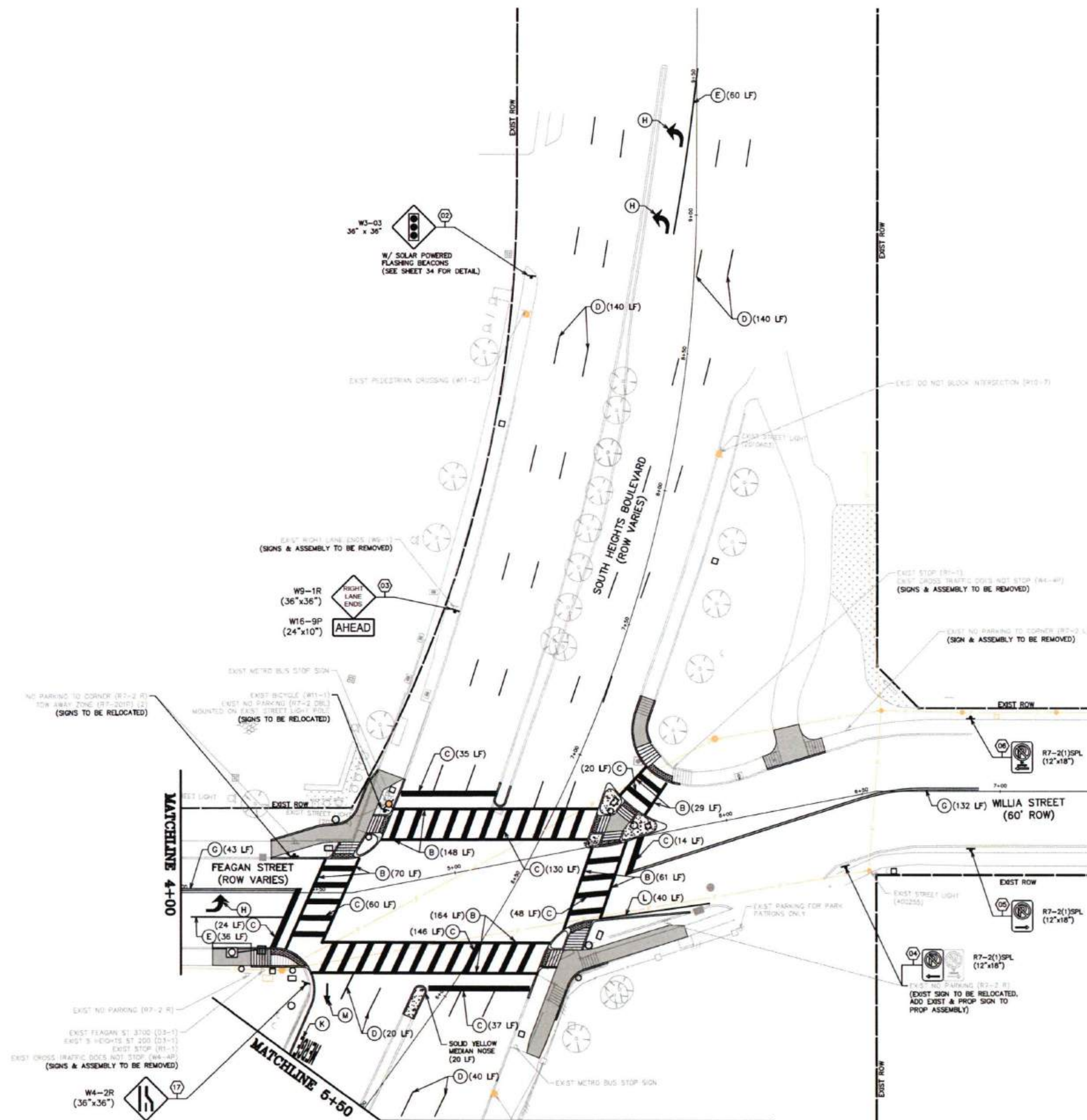
HOUSTON, TEXAS

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PAVEMENT MARKING LEGEND

- ① W54
- ② W512
- ③ W524
- ④ W64-R40
- ⑤ W56-R20
- ⑥ Y524
- ⑦ YD54-A40/A40
- ⑧ WS LEFT TURN ARROW
- ⑨ WS RIGHT TURN ARROW
- ⑩ WS WORD
- ⑪ W56
- ⑫ WS ARROW

NO.	DATE	REVISION	APP.



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Houston, Texas 77056
713-850-9000

QUIDDITY
142504
PROFESSIONAL ENGINEER
5/27/25

STATE OF TEXAS
VICTORIA M. MACALINO
142504
PROFESSIONAL ENGINEER
5/27/25

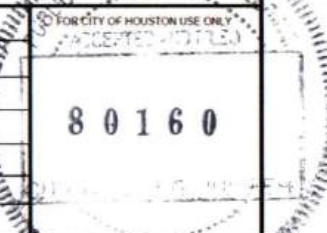
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

**S. HEIGHTS BLVD AT FEAGAN ST
PAVEMENT MARKING & SIGNAGE**

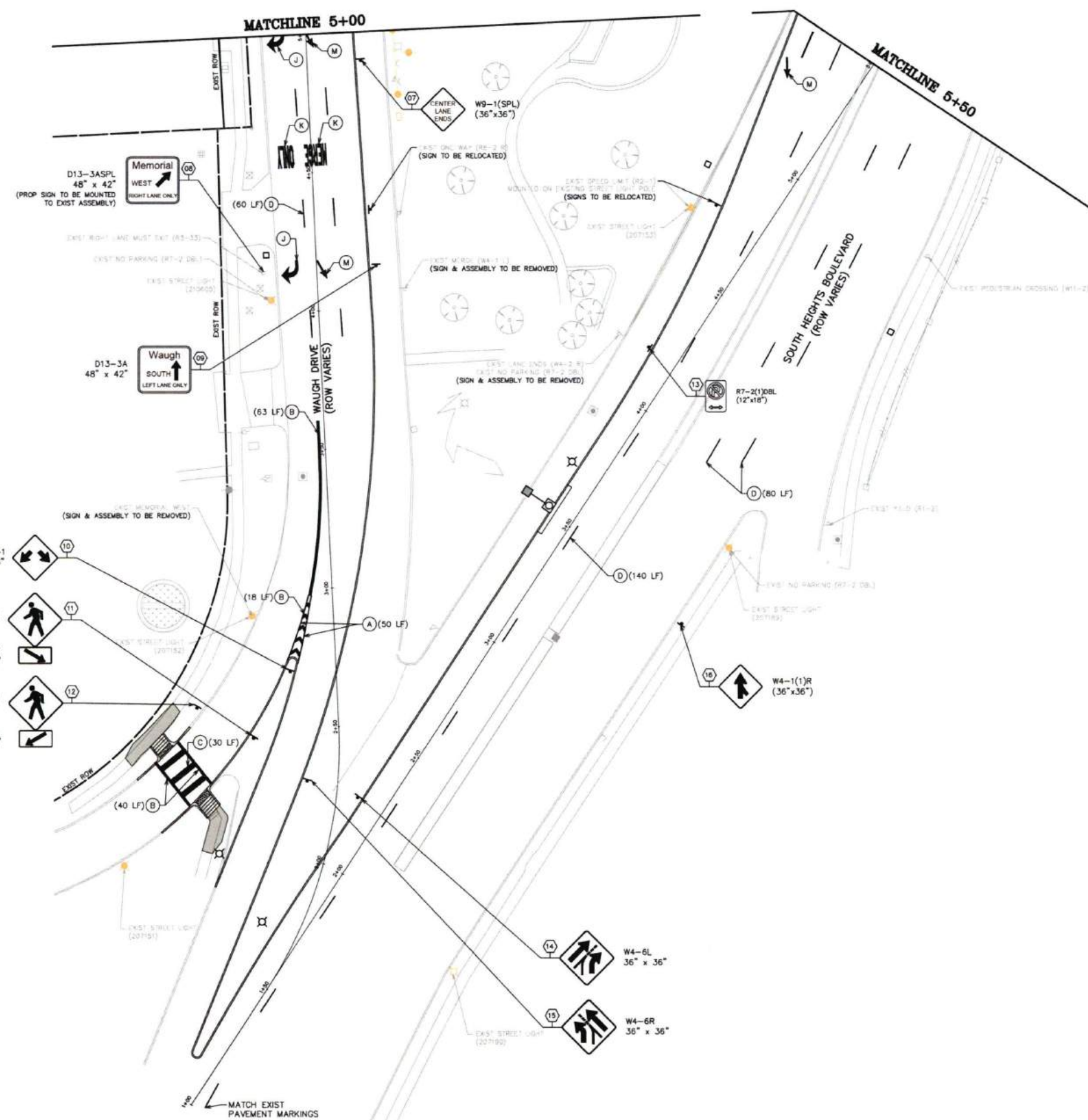
WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PROJECT NO.	TOMS MATHEW
SHEET NO.	25 OF 72

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

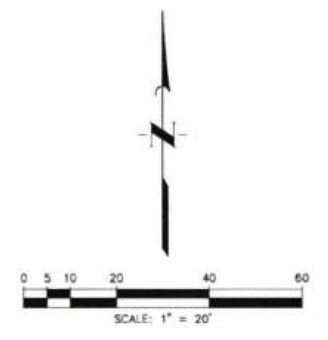


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- PAVEMENT MARKING LEGEND**
- (A) WS4
 - (B) WS12
 - (C) WS24
 - (D) WS4-R40
 - (E) WS6-R20
 - (F) YS24
 - (G) YDS4-A40/A40
 - (H) WS LEFT TURN ARROW
 - (J) WS RIGHT TURN ARROW
 - (K) WS WORD
 - (L) WS6
 - (M) WS ARROW

NO.	DATE	REVISION	APP.



- W12-1
36" x 36"
- W11-2
36" x 36"
- W16-7PR
24" x 18"
- W11-2
36" x 36"
- W16-7PL
24" x 18"

<p>1980 Post Oak Blvd., Suite 1380 Houston, Texas 77056 713-850-9000</p>	
<p>TRAFFIC ENGINEERS and Land Surveyors Reg. No. 7-2709 & 3304233 4832 West Loop South, Suite 100, Dallas, TX 75240 732.777.5557</p>	<p>6/27/25 <i>Victoria Macalino</i></p>
<p>SURVEYED BY: QUIDDITY FB NO. 3124, Pages 1-4</p>	
<p>CITY OF HOUSTON HOUSTON PUBLIC WORKS</p>	
<p>WAUGH DR AT S. HEIGHTS BLVD PAVEMENT MARKING & SIGNAGE</p>	
<p>WAUGH SAFETY IMPROVEMENTS</p>	
<p>WBS NUMBER N-T05000-00125</p>	<p>FOR CITY OF HOUSTON USE ONLY</p>
<p>DRAWING SCALE AS NOTED</p>	<p>80160</p>
<p>CITY OF HOUSTON DOC TOMS MATHEW</p>	<p>80160</p>
<p>SHEET NO. 26 OF 72</p>	

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

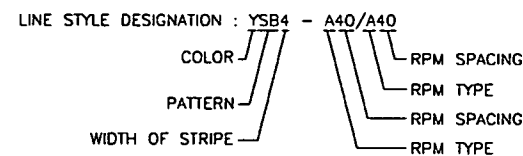
K:\14760\14760-0021-01 1-0533 WAUGH SAFETY\2 DESIGN PHASE\CAO\PLANS\14760-0021-CI-004-DETAILS.DWG, 5/27/2025 4:18 PM

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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).
			12", 24"	HATCHING AT HIGH VISIBILITY CROSSWALKS.
WC	WHITE	GUIDE (2' STRIPE W/6' GAP)	6"	GUIDE LINES THROUGH INTERSECTIONS. TAPER LINES FOR TURN LANES. GUIDE LINES FOR BICYCLE LANES.
			4"	EDGE LINES TO DELINEATE THE LEFT EDGE OF A DIVIDED ROADWAY, A ONE-WAY ROAD, OR RAMP.
			6"	BIDIRECTIONAL BICYCLE LANE PAVEMENT MARKING.
YS	YELLOW	SOLID	12", 24"	DIAGONAL HATCHING USED IN GORES BETWEEN SAME DIRECTION OF TRAVEL LANES.
			4" - (4") - 4" (GAP)	CENTERLINE THAT SEPARATES OPPOSING TRAVEL LANES AND DELINEATION OF MEDIUM ISLANDS.
			4" - (4") - 4" (GAP)	DEFINES THE EDGES OF CENTER REVERSIBLE LANES THAT ARE USED AS TWILTS DURING INTERMITTENT PERIODS.
YDS	YELLOW	DOUBLE SOLID	4" - (4") - 4" (GAP)	CENTERLINE THAT SEPARATES OPPOSING TRAVEL LANES AND DELINEATION OF MEDIUM ISLANDS.
YDB	YELLOW	DOUBLE BROKEN	4" - (4") - 4" (GAP)	DEFINES THE EDGES OF CENTER REVERSIBLE LANES THAT ARE USED AS TWILTS 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/6' GAP)	4"	SEPARATES BICYCLE TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YSB	YELLOW	SOLID & 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 (TWILT).
BICYCLE GREEN	GREEN	SOLID COLORED PAVEMENT	VARIES	PEDESTRIAN/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. 02784 EQUIVALENT	DESCRIPTION
C	CLEAR	TYPE I-C	APPROACH FACE THAT REFLECTS WHITE LIGHT, AND THE OTHER SIDE DOES NOT REFLECT.
R	CLEAR & RED	TYPE II-C-R	APPROACH FACE THAT REFLECTS WHITE LIGHT, AND THE OTHER SIDE REFLECTS RED LIGHT.
A	AMBER & AMBER	TYPE II-A-A	APPROACH FACE AND THE OTHER SIDE BOTH REFLECT AMBER LIGHT.



GENERAL PAVEMENT MARKING NOTES:

- 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.
- 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).
- THE PERMANENT PAVEMENT MARKINGS MAY BE MODIFIED AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
- THE DESIGN SPEED FOR THE ROAD IS: _____ THE POSTED SPEED LIMIT IS: _____.
- ALL LANE DIMENSIONS ARE FROM CENTER OF LANE LINE, CENTER OF DOUBLE LANE LINE, FACE OF CURB, OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
- THE PAVEMENT MARKING DRAWINGS ARE SCHEMATIC ONLY. THE CONTRACTOR SHALL FOLLOW ALL DIMENSIONS, DETAILS, AND STANDARDS WHEN INSTALLING PAVEMENT MARKINGS AND SYMBOLS.
- 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 PAVEMENT.
- 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.
- 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.
- 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.
- 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.
- 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.
- THE ENGINEER OF RECORD SHALL BE REQUIRED TO PRODUCE AS-BUILT OF PAVEMENT MARKING PLANS WITHIN 30 DAYS AFTER COMPLETION OF PAVEMENT MARKING IMPLEMENTATION.
- BLUE RPMs MAY BE PLACED ADJACENT TO FIRE HYDRANTS WITH THE APPROVAL OF THE CITY TRAFFIC ENGINEER.
- FOR ALL CONSTRUCTION, ALL PAVEMENT MARKINGS AND SIGNING SHALL BE INSTALLED AND SHALL BE PAID BY THE PROJECT OWNER/DEVELOPER.
- 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: <i>Sahel Khamar</i> CITY ENGINEER	APPROVED BY: <i>LEANG NGUYEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carla...</i> 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	720, etc.	VARIOUS
DIST		COUNTY	
HOU		HARRIS	

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Victoria M. Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE
DETAILS SHEET 1 OF 9

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER: N-T05000-0012-7

DRAWING SCALE: AS NOTED

CITY OF HOUSTON PROJECT NUMBER: 80160

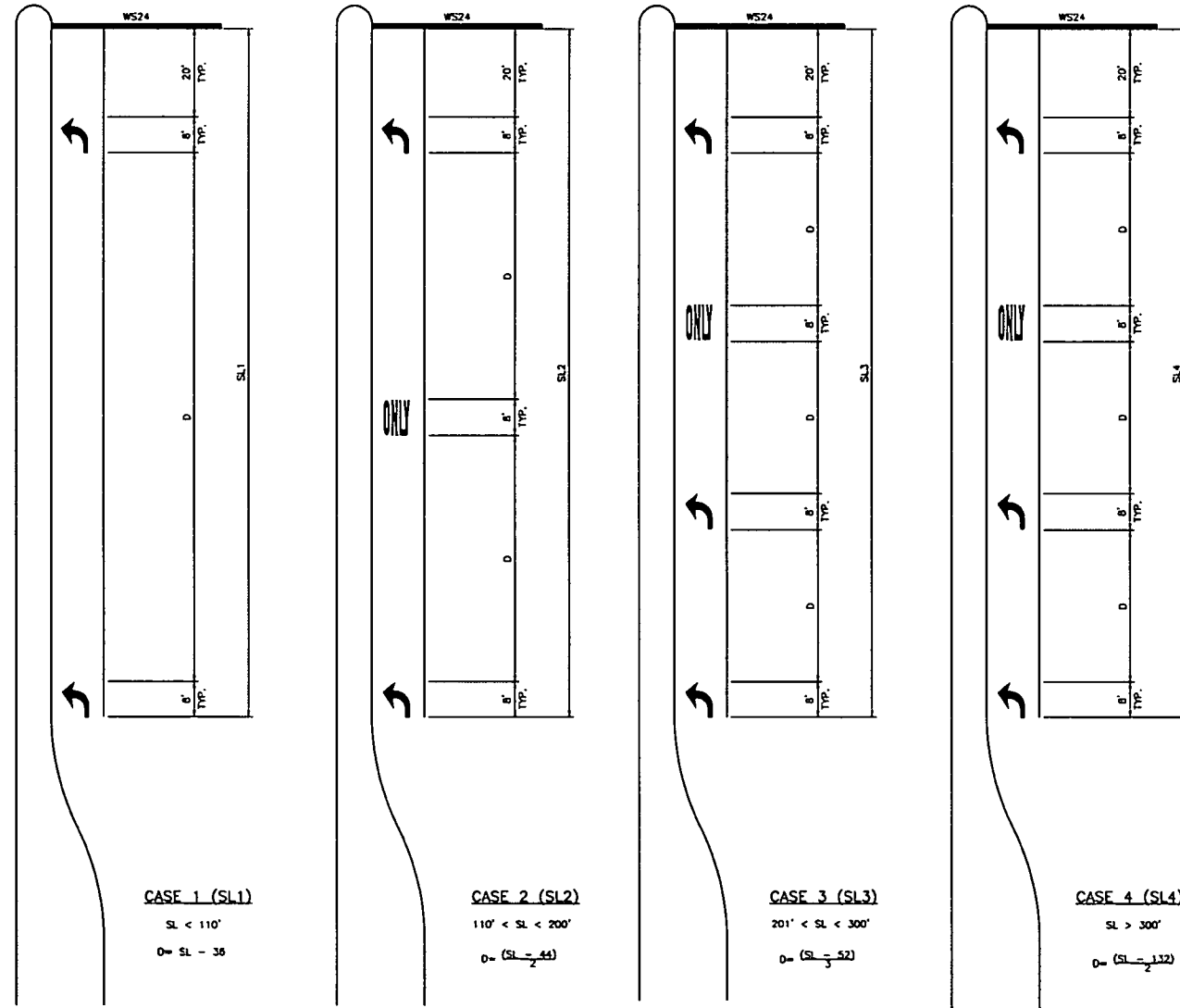
TOMS MATHEW

SHEET NO. 27 OF 72

NO.	DATE	REVISION	APP.

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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: <i>Suhail Khamar</i> CITY ENGINEER	APPROVED BY: <i>LEONIE NGUYEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl P. ...</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-02
DRAWING SCALE NOT TO SCALE	
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

LEFT/RIGHT-TURN "ONLY"
AND ARROW SPACING

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

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QUIDDITY <small>Survey Board of Professional Engineers and Land Surveyors Reg. No. 142304 & 142305 6200 West Loop South, Suite 200, Houston, TX 77056 713-771-3537</small>	VICTORIA M. MACALINO 142304 LICENSED PROFESSIONAL ENGINEER 5/27/25 <i>Victoria Macalino</i>
SURVEYED BY: QUIDDITY FB NO. 3124, Pages 1-4	
CITY OF HOUSTON HOUSTON PUBLIC WORKS	
PAVEMENT MARKING & SIGNAGE DETAILS SHEET 2 OF 9	
WAUGH SAFETY IMPROVEMENTS	
WBS NUMBER N-T05000-0012-7	
DRAWING SCALE AS NOTED	
CITY OF HOUSTON POC TOMS MATHEW	
SHEET NO. 28 OF 72	

80160

NO.	DATE	REVISION	APP.

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APPROVED BY: <i>Sahel Iswari</i> CITY ENGINEER	APPROVED BY: <i>LEUNG MAUHEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carla Hesse</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-03
CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
STANDARD PAVEMENT MARKING - (WORDS)	
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DRAWING SCALE	
NOT TO SCALE	

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

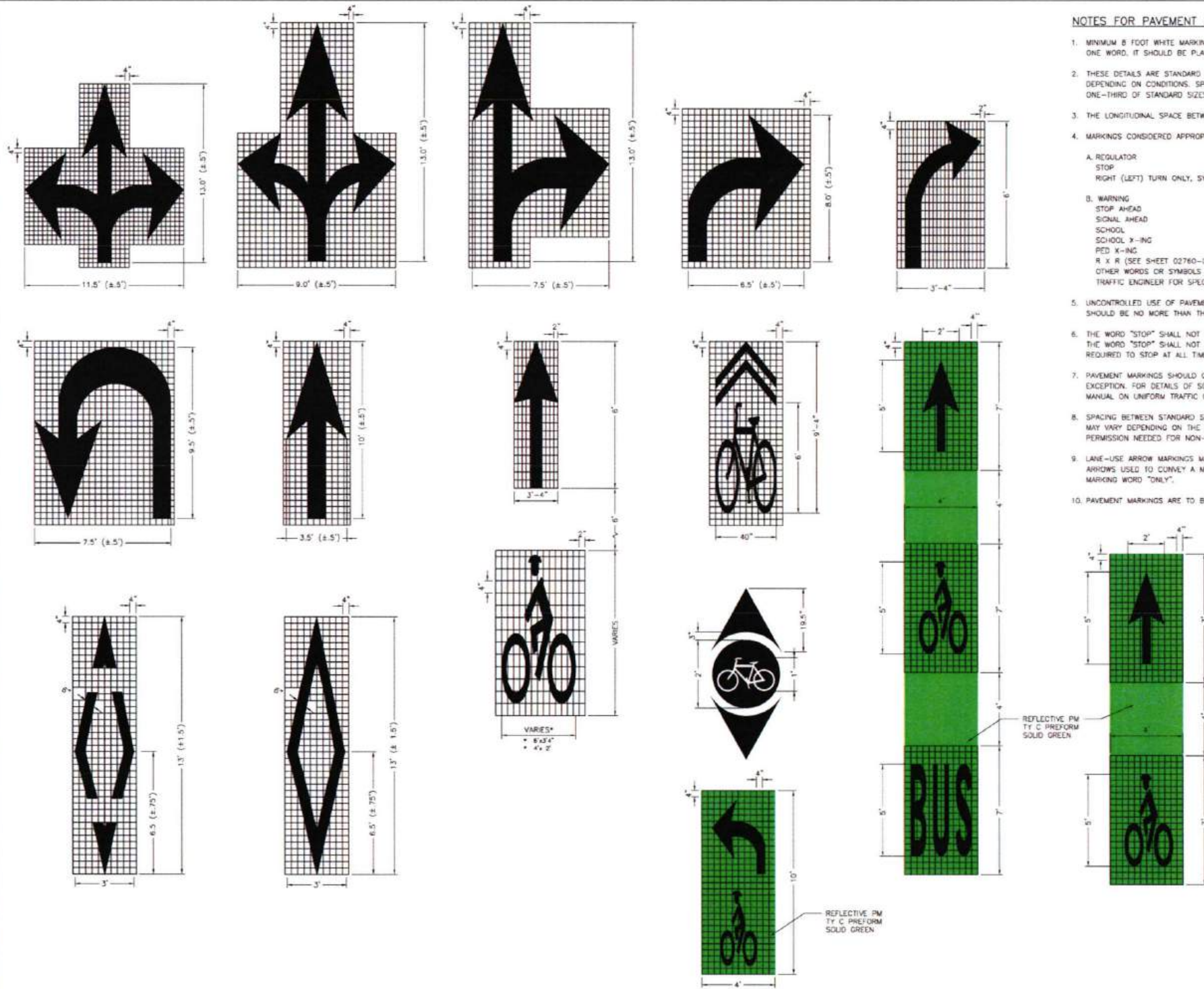
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CITY OF HOUSTON HOUSTON PUBLIC WORKS	
PAVEMENT MARKING & SIGNAGE DETAILS SHEET 3 OF 9	
WAUGH SAFETY IMPROVEMENTS	
WBS NUMBER N-T05000-0012-7	
DRAWING SCALE AS NOTED	
CITY OF HOUSTON POC TOMS MATHEW	
SHEET NO. 29 OF 72	

80160

NO.	DATE	REVISION	APP.

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

- 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.
- 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.
- THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET, OR AS INDICATED ON THE PLANS.
- 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.
- UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.
- 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).
- 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".
- 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".
- 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".
- PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED IN THE DESIGN PLANS.

APPROVED BY: <i>Sahel Isamir</i> CITY ENGINEER	APPROVED BY: <i>Waring Hayden</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Haddad</i> 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	
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CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

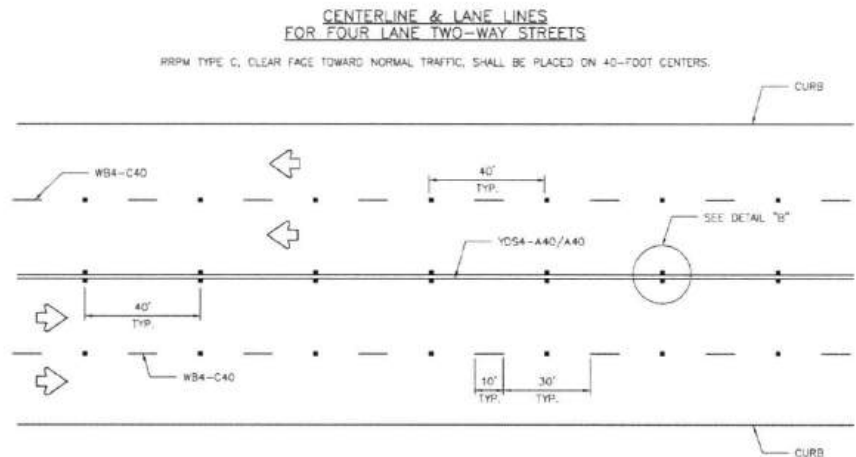
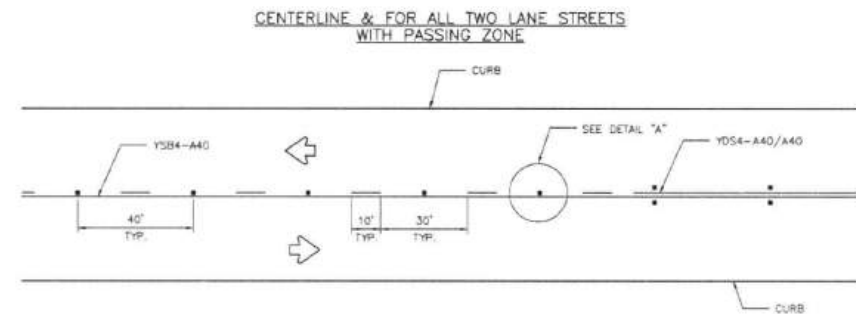
1980 Post Oak Blvd., Suite 1380 Houston, Texas 77056 713-850-9000	
QUIDDITY <small>Texas Board of Professional Engineers and Land Surveyors Reg. No. 12208 & 12042202 6301 West Loop South, Suite 100, Dallas, TX 75241 713.777.8887</small>	VICTORIA M. MACALINO 142304 PROFESSIONAL ENGINEER 5/27/25 <i>Victoria Macalino</i>
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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
DRAWING SCALE	80160
AS NOTED	
CITY OF HOUSTON PO	
TOMS MATHEW	
SHEET NO. 30 OF 72	

NO.	DATE	REVISION	APP.

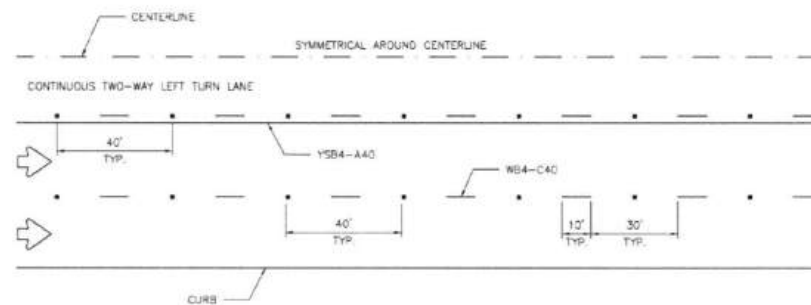
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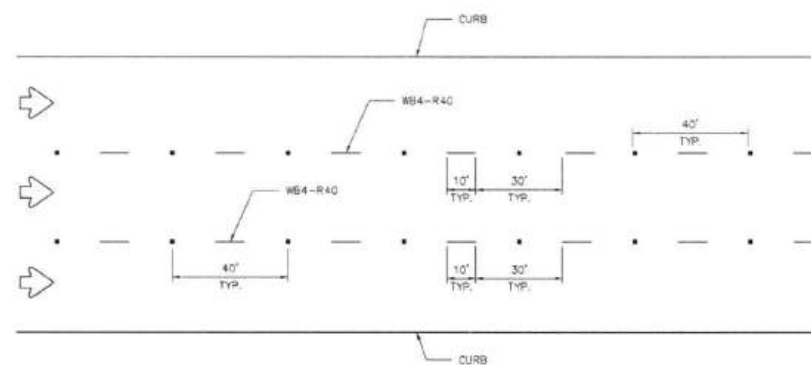


CENTERLINE & LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY MULTILANE STREET

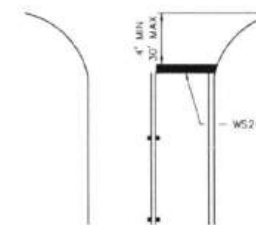
RRPM TYPE R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG-WAY TRAFFIC.



GENERAL NOTES:

1. EDGE LINE 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 EDGE LINE TO INSIDE OF EDGE LINE 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: <i>Sahad Khanani</i> CITY ENGINEER	APPROVED BY: <i>Walter Huijten</i> CITY TRAFFIC ENGINEER
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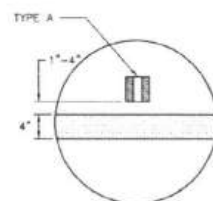
APPROVED BY: <i>Carl Haddock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-05

CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD

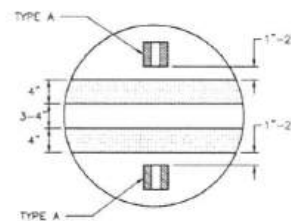
STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE.

FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE	
NOT TO SCALE	

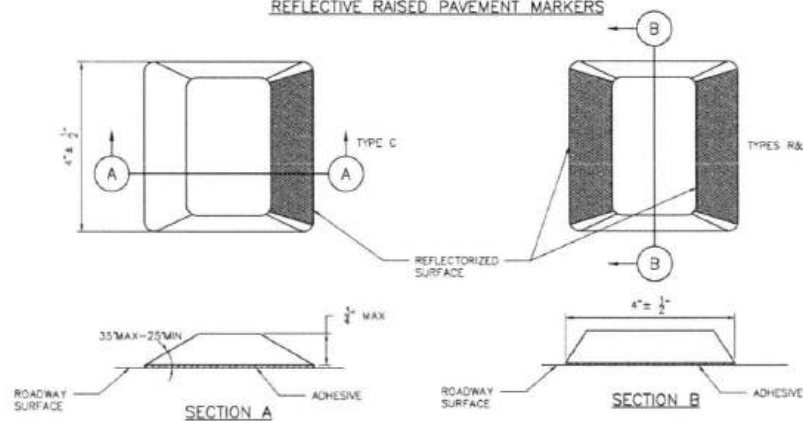
DETAIL "A"



DETAIL "B"



REFLECTIVE RAISED PAVEMENT MARKERS



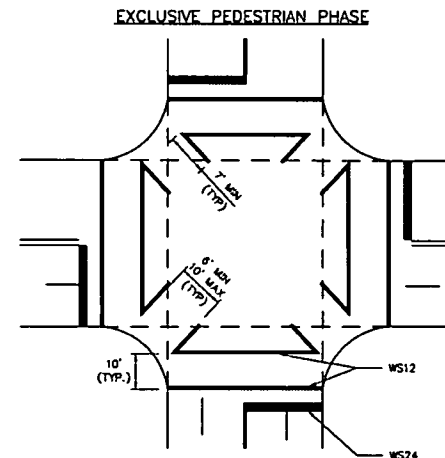
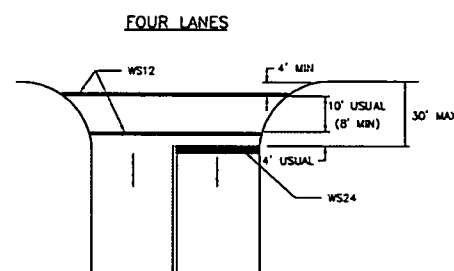
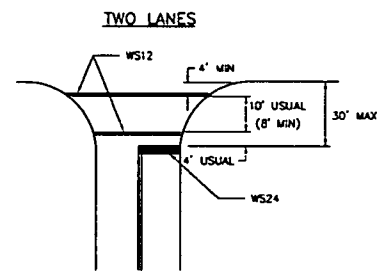
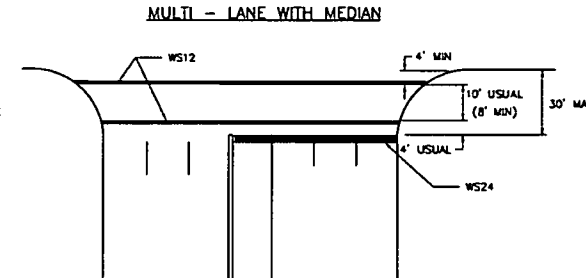
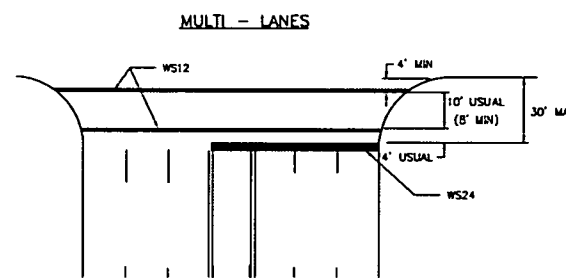
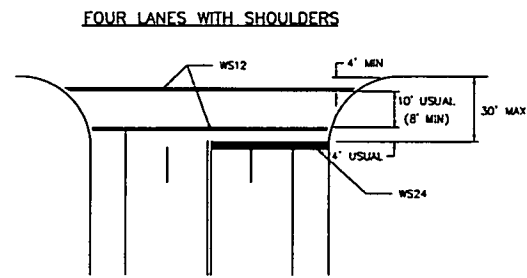
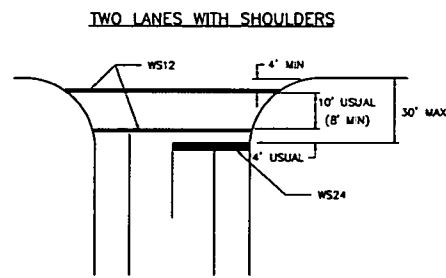
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

 1980 Post Oak Blvd., Suite 1380 Houston, Texas 77056 713-850-9000	 VICTORIA M. MACALINO 142304 PROFESSIONAL ENGINEER 5/27/25
 QUIDDITY <small>Texas Board of Professional Engineers and Land Surveyors, Reg. No. 12020 & 1040200 6300 West Loop South, Suite 120, Dallas, TX 75248 214-371-8871</small>	SURVEYED BY: QUIDDITY FB NO. 3124, Pages 1-4
CITY OF HOUSTON HOUSTON PUBLIC WORKS	
CITY OF HOUSTON HOUSTON PUBLIC WORKS	
PAVEMENT MARKING & SIGNAGE DETAILS SHEET 5 OF 9	
WAUGH SAFETY IMPROVEMENTS	
WBS NUMBER N-T05000-0012	FOR CITY OF HOUSTON USE ONLY 80160
DRAWING SCALE AS NOTED	CITY OF HOUSTON TOMS MATHEW
SHEET NO. 31 OF 72	

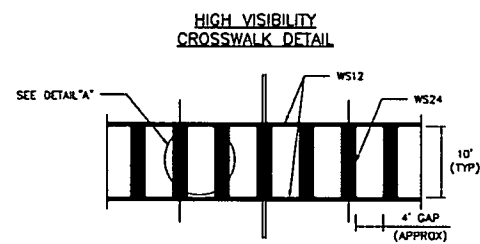
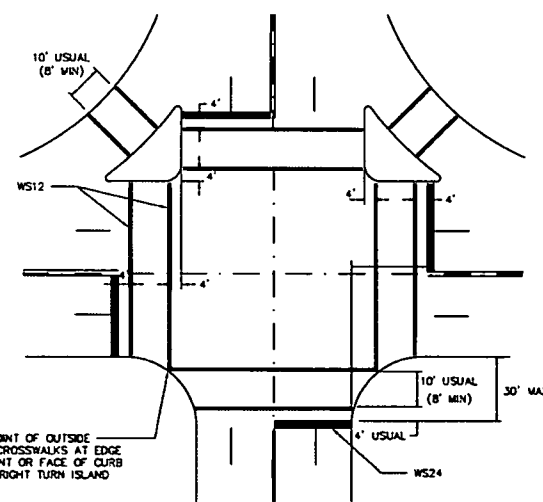
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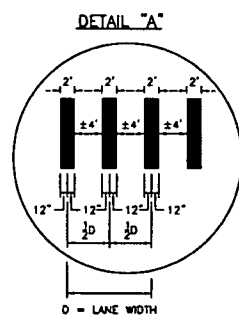
NO.	DATE	REVISION	APP.



INTERSECTION WITH RIGHT - TURN ISLANDS



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



NOTES:

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

APPROVED BY: <i>Sahad Khanam</i> CITY ENGINEER	APPROVED BY: <i>KRANG NGUYEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl P. ...</i> 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	NOT TO SCALE

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

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. A-22284 & 8094228
6300 West Loop South, Suite 270, Houston, TX 77057
713-777-1357

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

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

Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE
DETAILS SHEET 6 OF 9

WAUGH SAFETY IMPROVEMENTS

FOR CITY OF HOUSTON USE ONLY

WBS NUMBER
N-T05000-0012

DRAWING SCALE
AS NOTED

CITY OF HOUSTON POC
TOMS MATHEW

SHEET NO. 32 OF

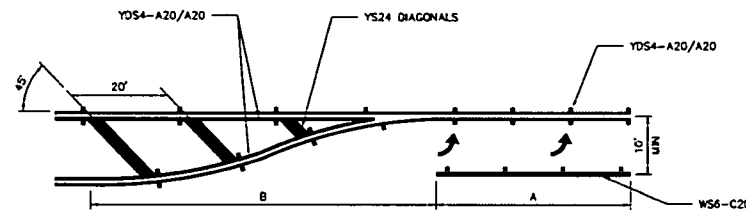
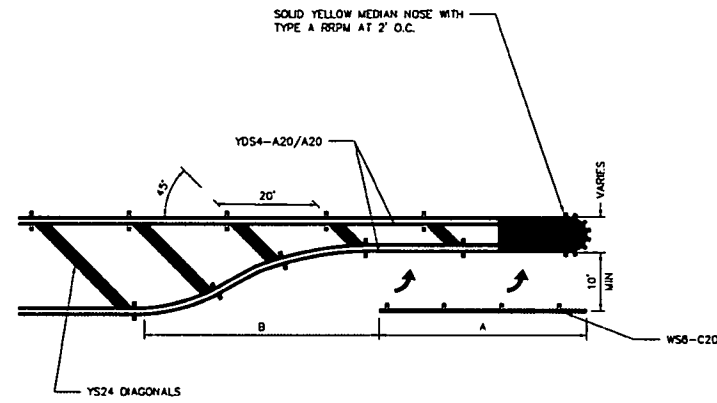
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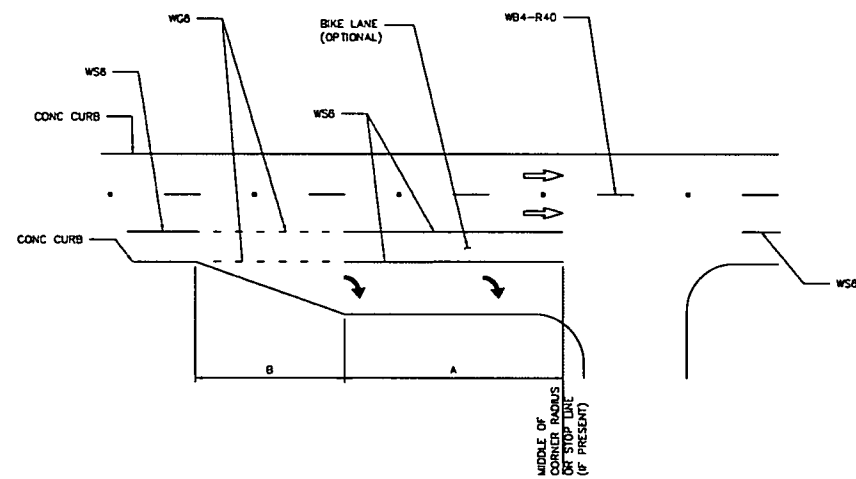
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PAINTED MEDIAN LEFT TURN BAY DETAILS



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 MARKINGS 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.

APPROVED BY: <i>Sahel Bannor</i> CITY ENGINEER	APPROVED BY: <i>LAINE MAHEW</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carla...</i> 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 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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MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
142304
SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE
DETAILS SHEET 7 OF 9

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012-7

DRAWING SCALE
AS NOTED

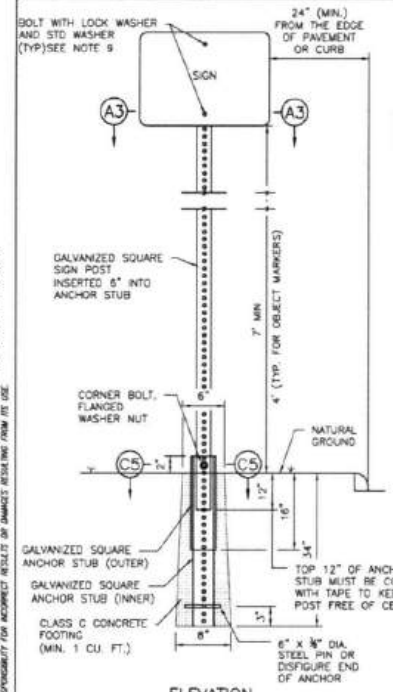
CITY OF HOUSTON
TOMS MATHEW

SHEET NO. 33 OF 72

80160

HOUSTON, TEXAS

NO.	DATE	REVISION	APP.

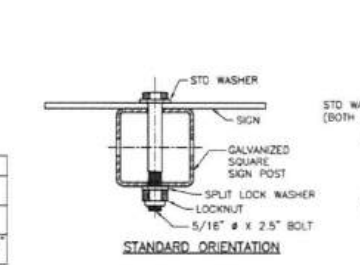


ELEVATION
TYPICAL GROUND SIGN INSTALLATION
PERFORATED SQUARE METAL TUBING

TABLE A	
GALVANIZED SQUARE SIGN POST (PERFORATED)	1-3/4" x 1-3/4" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PREFORATED) (INNER)	2" x 2" x 3/16" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PREFORATED) (OUTER)	2 1/4" x 2 1/4" x 1/8" (14 GAUGE)



SECTION A3: SIGN CONNECTION DETAILS



SECTION C5: CORNER BOLT

NOTES:

- 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 (532-395-6771) MUST BE NOTIFIED 48 HOURS IN ADVANCE PRIOR TO DELIVERY.
- 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.
- 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.
- ALL GROUND MOUNTED STOP SIGNS, WARNING SIGNS, AND OTHER REGULATORY SIGNS SHALL USE AT A MINIMUM HIGH INTENSITY PRISMATIC REFLECTIVE SHEETING.
- ALL OVERHEAD SIGNS SHALL USE DIAMOND GRADE REFLECTIVE SHEETING.
- ALL OTHER SIGNS SHALL USE SUPER ENGINEER GRADE SHEETING.
- ALL SIGNS TO BE INSTALLED SHALL BE ALUMINUM ALLOY 6061-T-6 OR 5052-H38 IN ACCORDANCE WITH ASTM B209.
- ALL HOLES SHALL BE 1/8" 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.
- BOLT SIZE REQUIREMENTS FOR SIGN CONNECTION:
 - STANDARD ORIENTATION = 5/16" DIA X 2 1/2" BOLT
 - NON-STANDARD ORIENTATION = 5/16" DIA X 3" BOLT
- SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON EACH DETAIL ON SHEET 01554-06.
- ALL SIGN BLANKS ARE TO BE ETCHED, DEGRADED, AND HAVE A COATING MEETING THE REQUIREMENTS OF ASTM B449, CLASS 2, OR ASTM B921, CLASS 2, PRIOR TO APPLICATION OF LEGENDS.
- ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN CONFORMANCE TO THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND STANDARD HIGHWAY SIGNS LATEST EDITION.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

GENERAL NOTES AND GROUND MOUNTING SIGN
(SCALE: NOT TO SCALE)

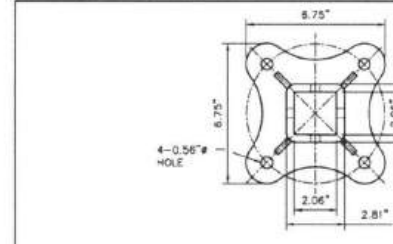
APPROVED BY:

Sahar Issaoui
CITY ENGINEER

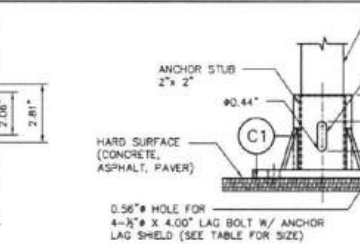
BRANG NOLVEN
CITY TRAFFIC ENGINEER

Carroll Haddock
DIRECTOR OF HPW

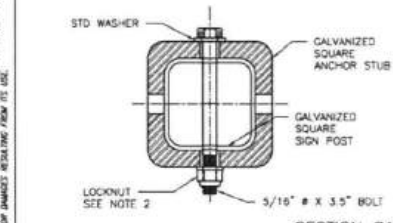
EFF DATE: NOV-27-2023 DWG NO: 01554-01



TOP VIEW
TYPICAL HARD SURFACE INSTALLATION GALVANIZED SIGN BASE



SIDE VIEW
TYPICAL HARD SURFACE INSTALLATION GALVANIZED SIGN BASE

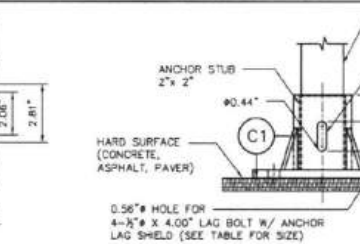


SECTION C1: CORNER BOLT

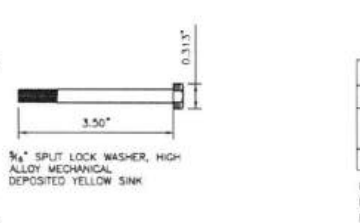
DIAMETER	E BODY DIAMETER		F WIDTH ACROSS FLATS		G WIDTH ACROSS CORNERS		H HEIGHT		L LENGTH	LT THREAD LENGTH
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN		
1/2"	0.515"	0.482"	0.750"	0.725"	0.866"	0.826"	0.364"	0.302"	4.00"	3.84"

MATERIAL: PER A307 GRADE A
COATING: HOT DIP ZINC PER ASTM F3329 OR IN ACCORDANCE WITH CLASS C OF ASTM A153 AND CLASS D FOR 1/2" DIAMETER AND LESS

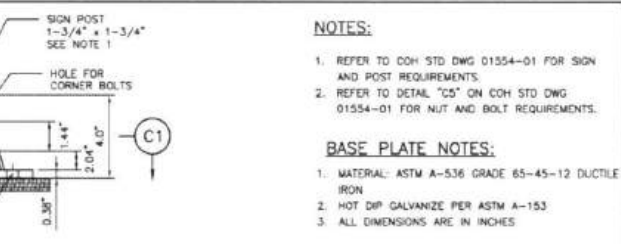
4" HEX LAG SCREWS, HOT DIPPED GALVANIZED



SECTION C1: CORNER BOLT



SECTION C1: CORNER BOLT



SECTION C1: CORNER BOLT

SAE FLAT WASHERS

SIZE	TOLERANCE		TOLERANCE		TOLERANCE				
	PLUS	MINUS	PLUS	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

LAG THREAD SIZE	TH THICKNESS	LS LENGTH OF SHIELD	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:

Sahar Issaoui
CITY ENGINEER

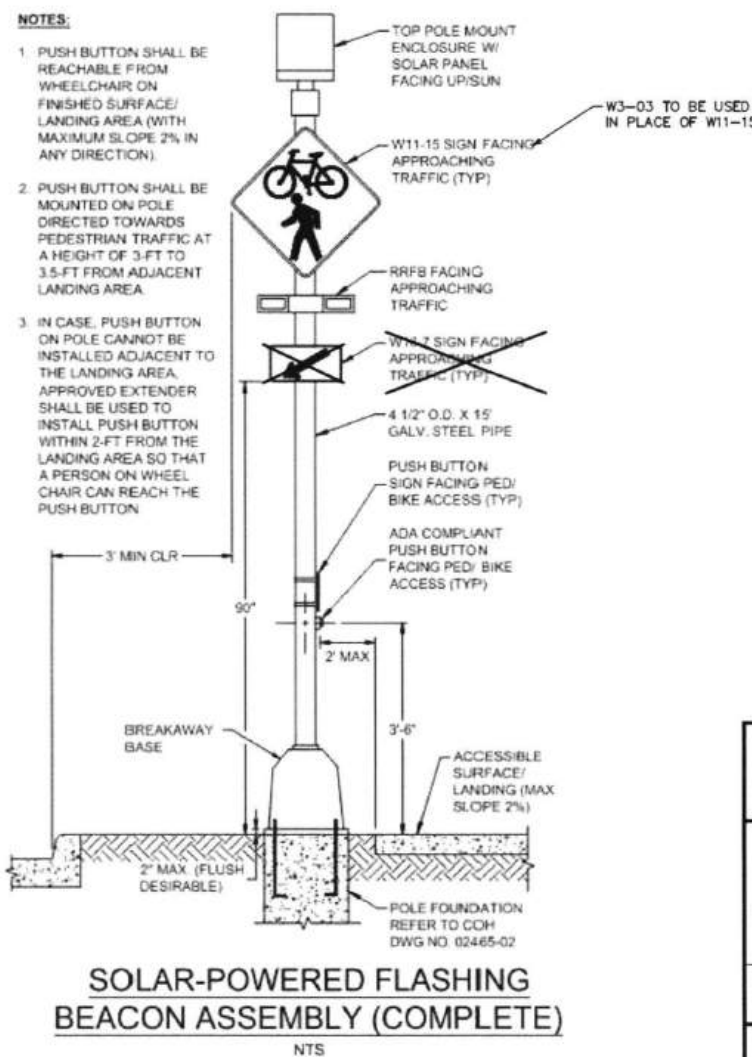
BRANG NOLVEN
CITY TRAFFIC ENGINEER

Carroll Haddock
DIRECTOR OF HPW

EFF DATE: NOV-27-2023 DWG NO: 01554-02

REVISIONS:

NO. DATE REVISION



SOLAR-POWERED FLASHING BEACON ASSEMBLY (COMPLETE)

CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVEMENT MARKING & SIGNAGE
DETAILS SHEET 8 OF 9

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER: N-T05000-0012-7

DRAWING SCALE: AS NOTED

CITY OF HOUSTON PROJECT NO. 2023-0012-7

TOMS MATHEW

SHEET NO. 34 OF 72

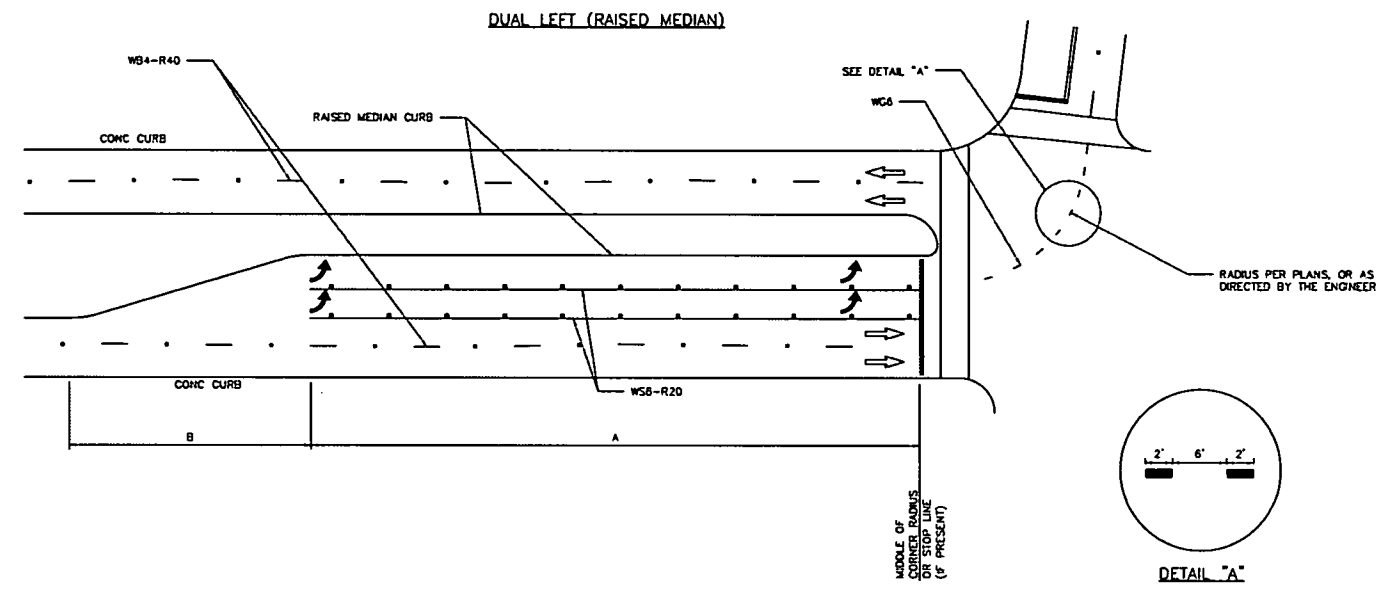
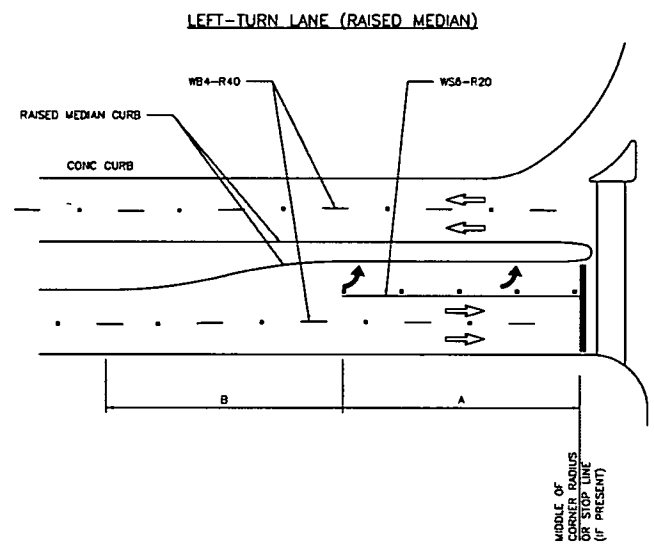
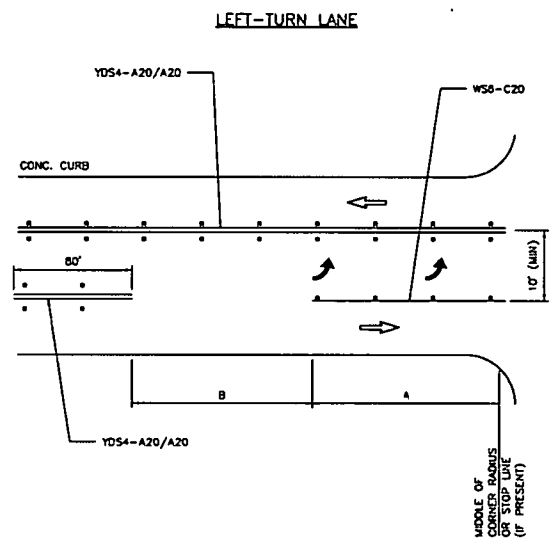
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NO.	DATE	REVISION	APP.

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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.
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: <i>Sahel Ismail</i> CITY ENGINEER	APPROVED BY: <i>BRING NGUYEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carroll</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-13
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	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

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5/27/23

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

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

Victoria M. Macalino
142304
5/27/23

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

PAVING DETAILS

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012-7

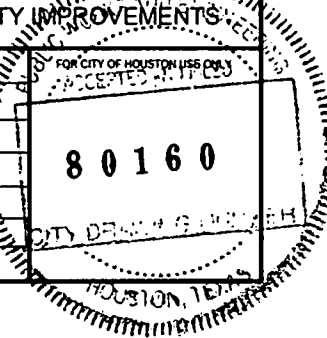
DRAWING SCALE
AS NOTED

CITY OF HOUSTON PROJECT NO.
TOMS MATHEW

SHEET NO. 35 OF 72

80160

FOR CITY OF HOUSTON USE ONLY
ACCEPTED




NO. DATE	REVISION	APP.

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	


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




**MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY**

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Houston, Texas 77056
713-850-9000



QUIDDITY

Civil, Surveying and Land Surveying Engineers
and Licensed Professional Engineers
4200 West Loop South, Suite 120, Houston, TX 77020
713-771-8227



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

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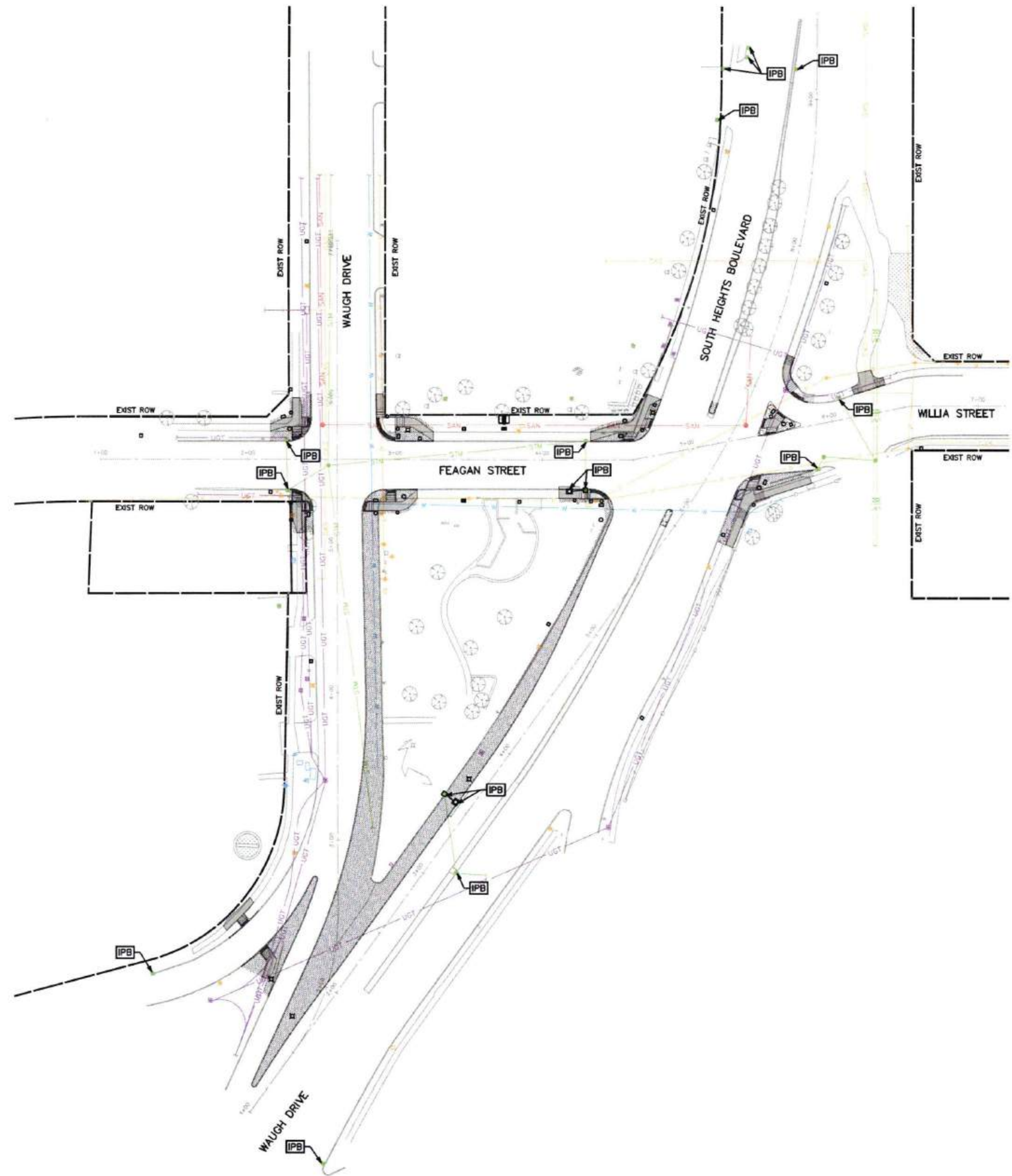
CITY OF HOUSTON
HOUSTON PUBLIC WORKS




SUMMARY OF SIGNS

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PROJECT	80160
TOMS MATHEW	
SHEET NO.	36 OF 72

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- LEGEND**
-  INLET PROTECTION BARRIERS
 -  REINFORCED FABRIC BARRIER
 -  STABILIZED CONSTRUCTION ENTRANCE/EXIT

NO.	DATE	REVISION	APP.

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and Land Surveyors Reg. No. F-25206 & F-25207
8530 West Loop South, Suite 100, Dallas, TX 75240
753-777-8887

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

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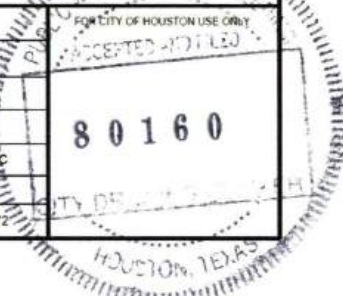
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM WATER POLLUTION PREVENTION PLAN

WAUGH SAFETY IMPROVEMENTS

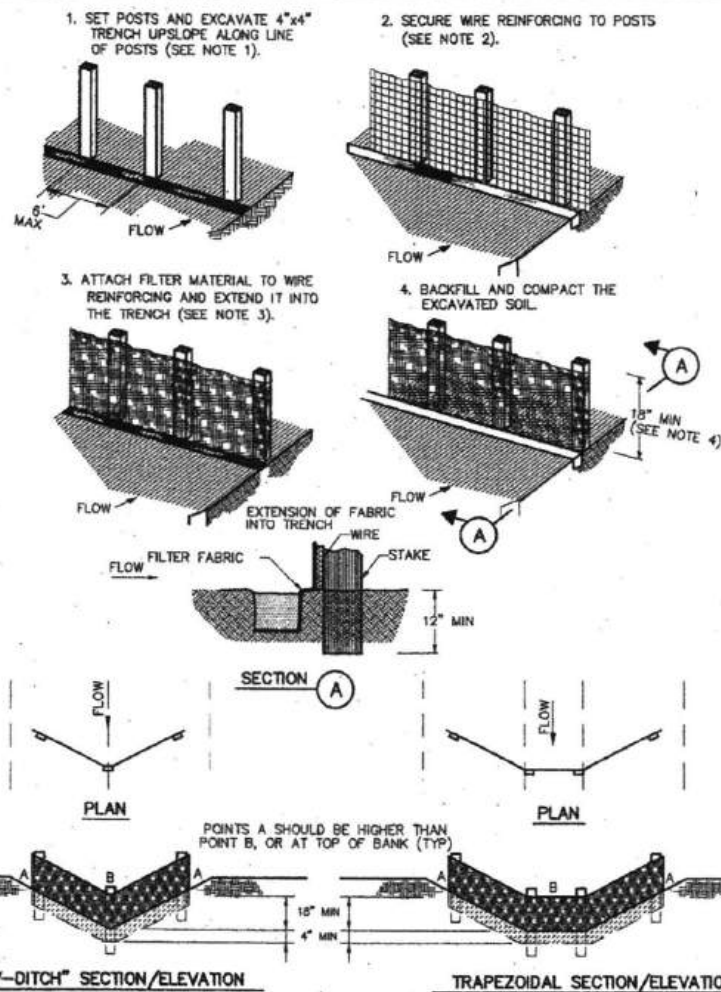
WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PROJECT NUMBER	80160
TOMS MATHEW	
SHEET NO.	37 OF 72

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

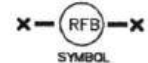


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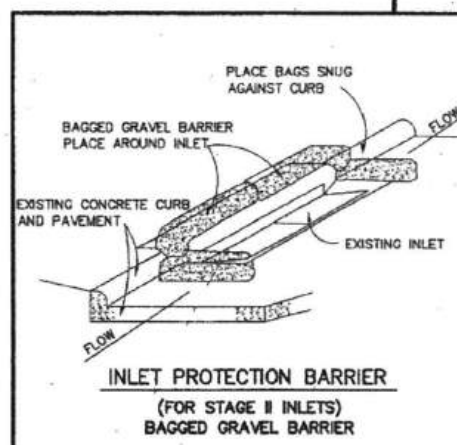
NO.	DATE	REVISION	APP.



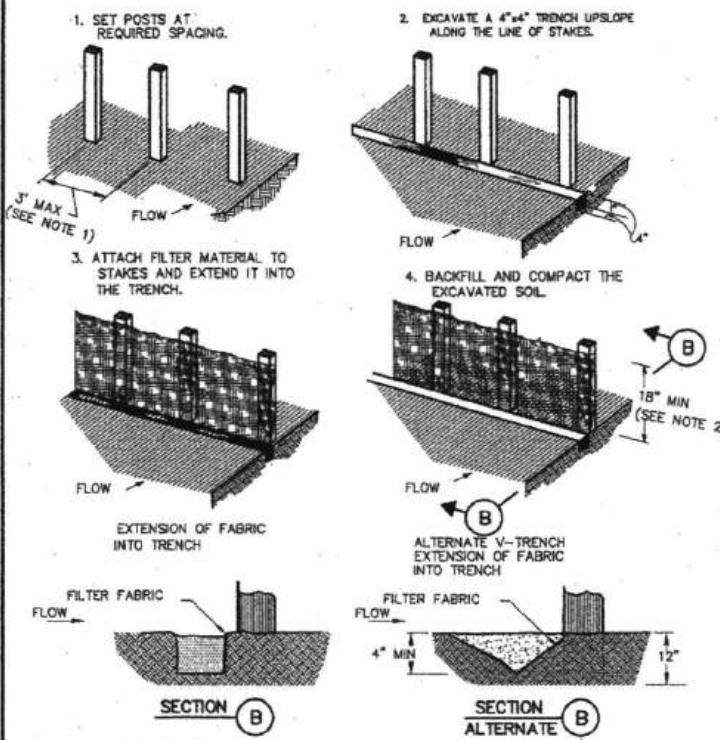
- CONSTRUCTION NOTES:**
- SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
 - WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
 - FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING, WITH TIES SPACED EVERY 24 INCHES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



REINFORCED FILTER FABRIC BARRIER

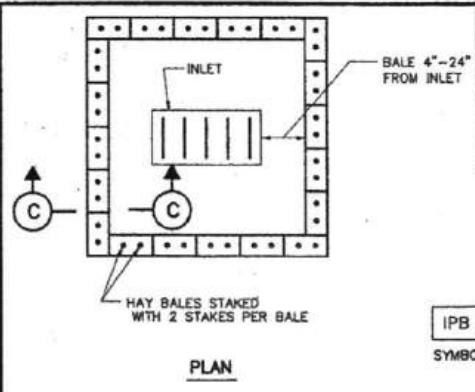


INLET PROTECTION BARRIER (FOR STAGE II INLETS) BAGGED GRAVEL BARRIER

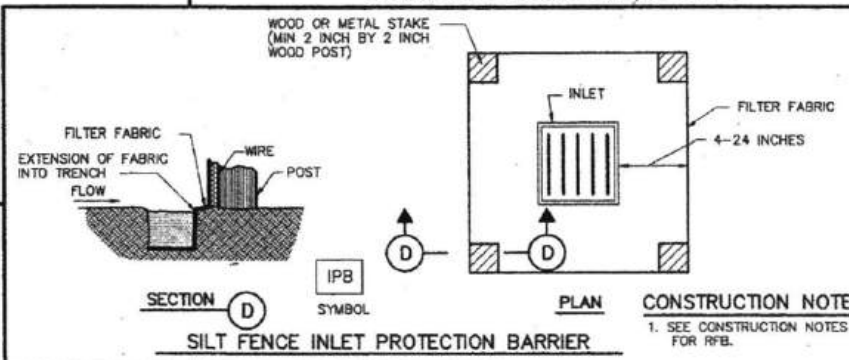


- CONSTRUCTION NOTES:**
- 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 6 FEET MAX.
 - ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL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

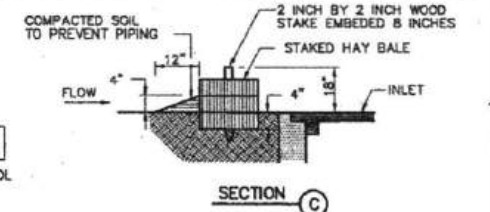
FILTER FABRIC BARRIER



HAY BALE INLET PROTECTION BARRIER



SILT FENCE INLET PROTECTION BARRIER



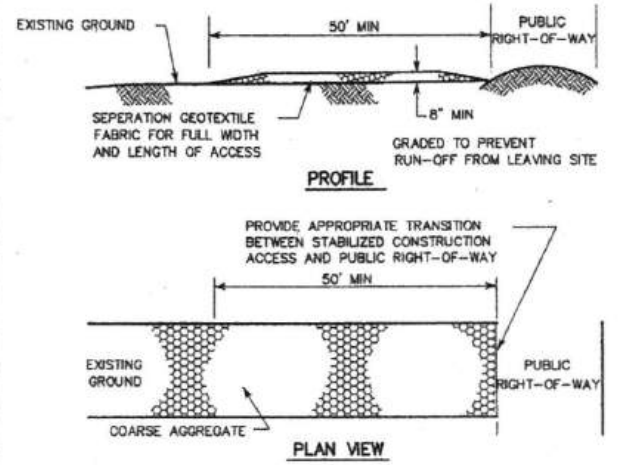
SECTION C

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS
(NOT TO SCALE)

APPROVED: [Signature] CITY ENGINEER
[Signature] DIRECTOR OF PUBLIC WORKS AND ENGINEERING

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



- CONSTRUCTION NOTES:**
- LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
 - THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
 - WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
 - 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.
 - STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMMODATE A WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE WASHING AREA.
 - COH STANDARD SPECIFICATION FOR STABILIZED CONSTRUCTION ACCESS.
 - STABILIZED CONSTRUCTION ACCESS SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.



STABILIZED CONSTRUCTION ACCESS

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

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
142304
VICTORIA M. MACALINO
PROFESSIONAL ENGINEER
5/27/25

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

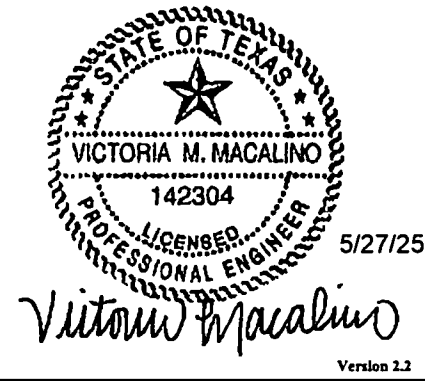
STORM WATER POLLUTION PREVENTION PLAN DETAILS

WAUGH SAFETY IMPROVEMENTS

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

80160

<p>I. STORMWATER POLLUTION PREVENTION</p> <p>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.</p> <p style="text-align: center;">No Additional Comments</p>	<p>III. CULTURAL RESOURCES</p> <p>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.</p> <p style="text-align: center;">No Additional Comments</p>	<p>VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES</p> <p>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.</p> <p style="text-align: center;">No Additional Comments</p>
<p>II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS</p> <p>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.</p> <p><input checked="" type="checkbox"/> No United States Army Corps (USACE) Permit Required</p> <p><input type="checkbox"/> 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."</p> <p><input type="checkbox"/> 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."</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p>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.</p> <p><input checked="" type="checkbox"/> No United States Coast Guard (USCG) Coordination Required</p> <p><input type="checkbox"/> United States Coast Guard (USCG) Permit</p> <p><input type="checkbox"/> United States Coast Guard (USCG) Exemption</p> <p style="text-align: center;">No Additional Comments</p>	<p>IV. VEGETATION RESOURCES</p> <p>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.</p> <p style="text-align: center;">No Additional Comments</p>	<p>VII. OTHER ENVIRONMENTAL ISSUES</p> <p>Comments:</p>
	<p>V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS</p> <p>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.</p> <p>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)</p> <p style="text-align: center;">No Additional Comments</p>	



		TxDOT Houston District	
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS			
EPIC			
FILE: EPIC Sheet.dgn	DN:	CR:	DW:
© TxDOT: March 2017	CONV:	SECT:	ROAD:
REVISIONS	0912	72	720
UPDATED section V, text and added definition (10/17)	DIST:	COUNTY:	SHEET NO.
ADDED USCG and USACE notes in Section VII (04/14)	12	HARRIS	39 OF 72

DATE: Nov 09, 2023
FILE:

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.

Version 2.2

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Design Engineer: 01/21/2025 10:47:48 AM - 006-0021-0021-001

NO. DATE	REVISION	APP.

GENERAL NOTES

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

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

SPACING FOR CHANNELIZING DEVICES

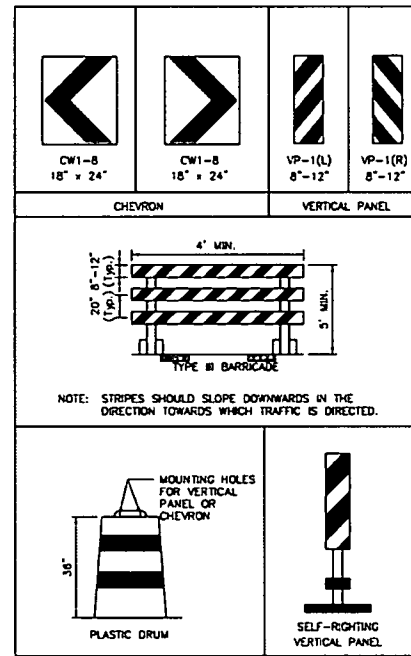
- PLASTIC DRUMS ON MERGING TAPER @ 30' C - C WITH CHEVRON SIGN @ 60' C - C AND WARNING LIGHTS FOR OVERNIGHT CLOSURE.
- PLASTIC DRUMS ON DOWNSTREAM TAPER @ 30' C - C (RETURN TAPER AND BARRICADE ARE OPTIONAL AND DIVIDED ROADWAY SECTION)
- PLASTIC DRUMS ON RADI @ 35' C - C.
- PLASTIC DRUMS ON TANGENT @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

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

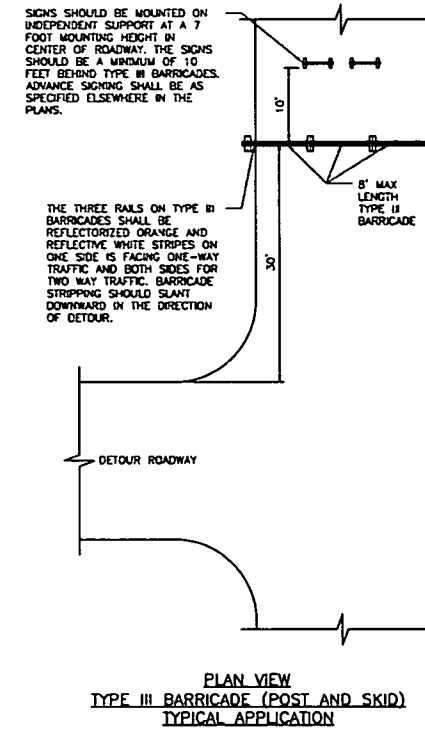
POSTED SPEED (MPH)	SIGN SPACING "X" (FEET)	MIN. DESIRABLE TAPER LENGTH "L" (FEET)			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	120'	150'	165'	180'	30'	60'-75'
35	160'	205'	225'	245'	35'	70'-90'
40	240'	285'	295'	320'	40'	80'-100'
45	320'	450'	495'	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	485



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: <i>Sulek Kumar</i> CITY ENGINEER	APPROVED BY: <i>LEUNG NGUYEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>[Signature]</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01553-01
CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
TCP NOTES CHANNELIZING DEVICES AND BARRICADES	
FOR CITY OF HOUSTON USE ONLY	
DRAWING SCALE	NOT TO SCALE

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

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
142304
VICTORIA M. MACALINO
LICENSED PROFESSIONAL ENGINEER 52725

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

NOTES CHANNELIZING DEVICES AND BARRICADES

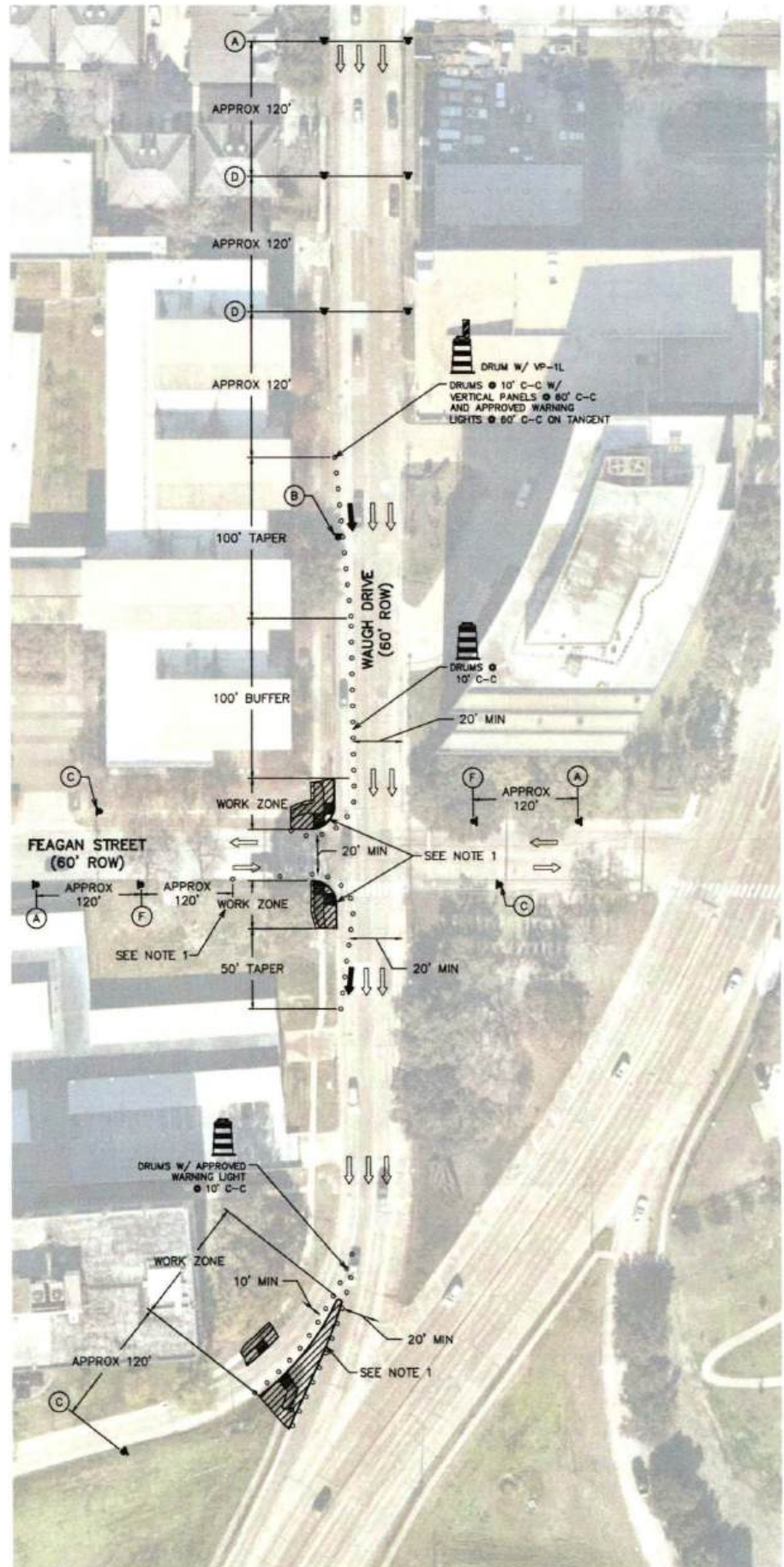
WAUGH SAFETY IMPROVEMENTS

WBS NUMBER: N-T05000-0012-7
DRAWING SCALE: AS NOTED
CITY OF HOUSTON PROJECT: TOMS MATHEW
SHEET NO. 40 OF 72

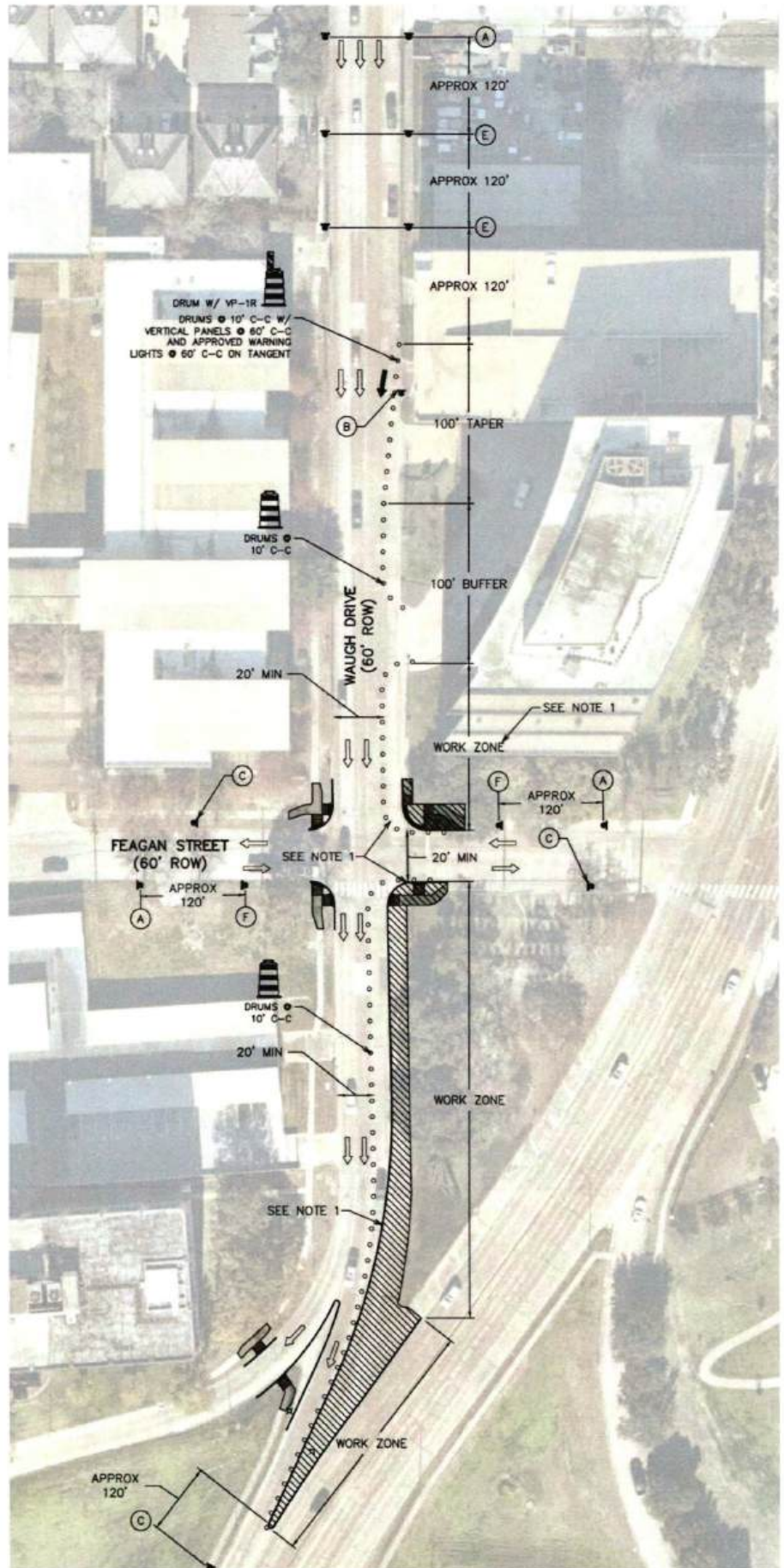
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FOR CITY OF HOUSTON USE ONLY

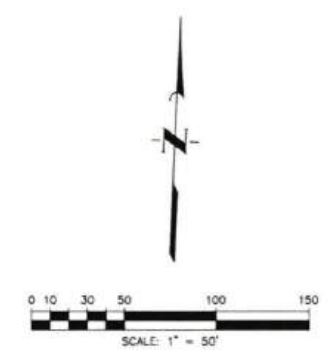
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WAUGH AT FEAGAN STREET (WAUGH WEST CORNER WORK)



WAUGH AT FEAGAN STREET (WAUGH 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**
- 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**
- A ROAD WORK AHEAD
 - B FLASHING ARROW
 - C END ROAD WORK
 - D RIGHT LANE CLOSED
 - E LEFT LANE CLOSED
 - F ROAD NARROWS
 - G LANE ENDS MERGE LEFT

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

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors Reg. No. 7-25208 & 133462209
4322 West Loop South, Suite 400, Dallas, TX 75244
732.777.5507

STATE OF TEXAS
VICTORIA M. MACALINO
142904
LICENSED PROFESSIONAL ENGINEER
6/27/25
Victoria Macalino

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR AT FEAGAN ST
TRAFFIC CONTROL PLAN

WAUGH SAFETY IMPROVEMENTS

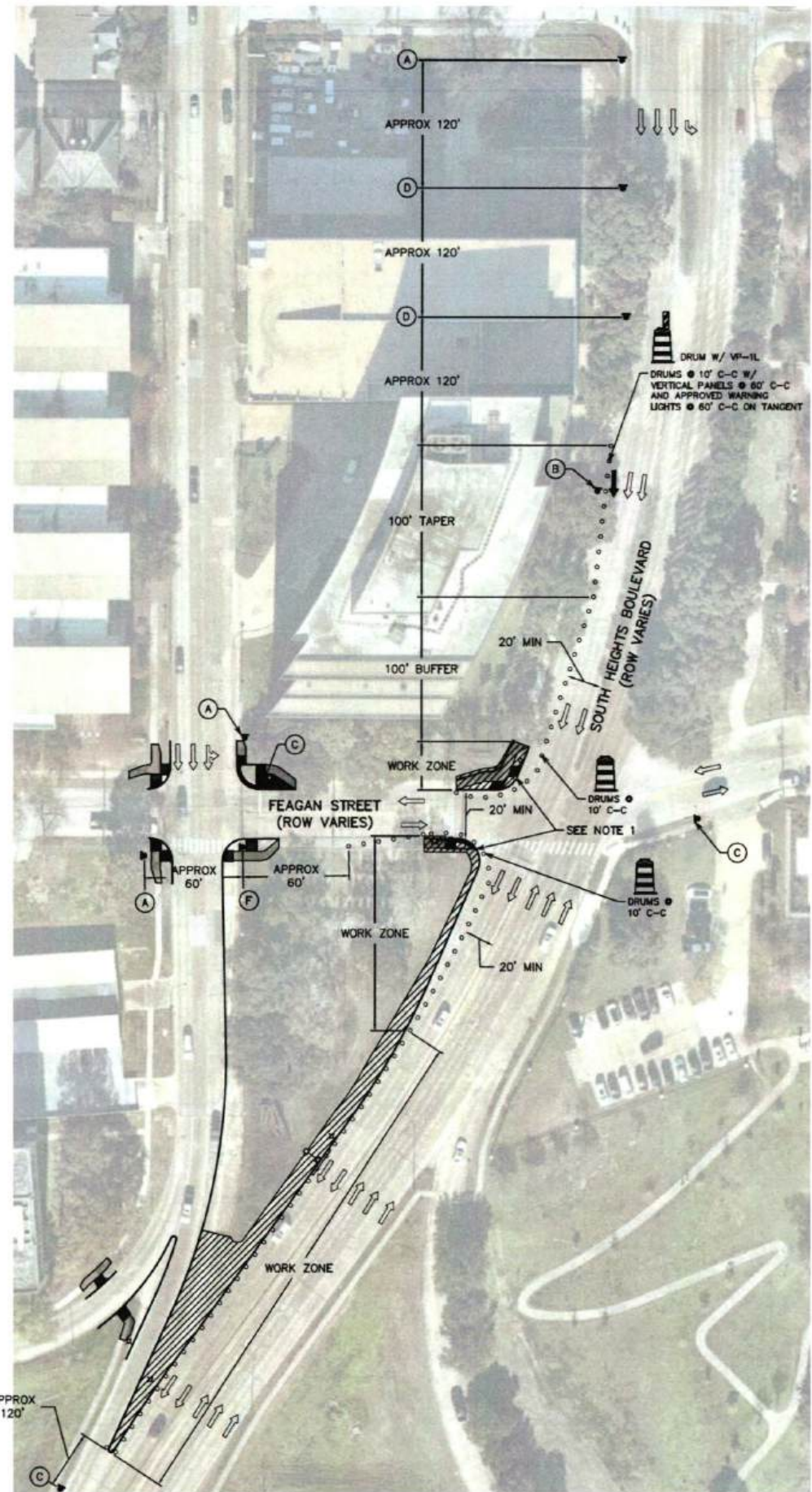
WBS NUMBER	N-T05000-002-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON P.O.C.	TOM MATHIAS
SHEET NO.	41 OF 45

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

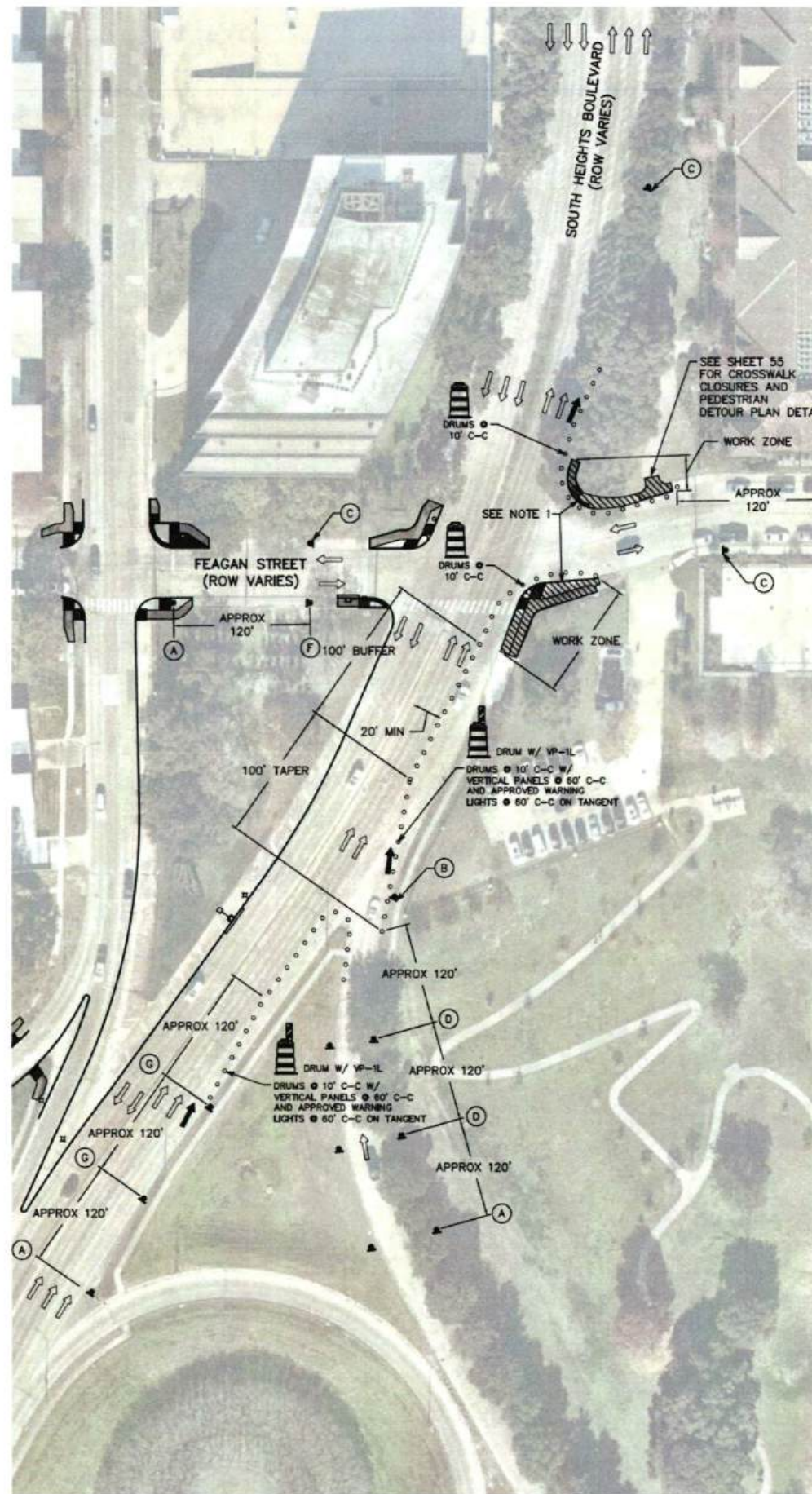
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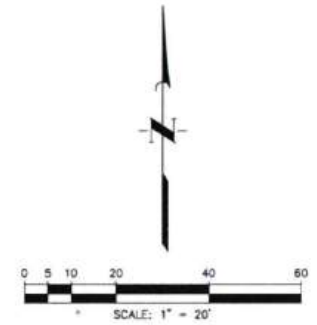
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SOUTH HEIGHTS AT FEAGAN STREET (SOUTH HEIGHTS WEST CORNER WORK)



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**
- 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**
- A ROAD WORK AHEAD
 - B FLASHING ARROW
 - C NO ROAD WORK
 - D RIGHT LANE CLOSED
 - E LEFT LANE CLOSED
 - F ROAD NARROWS
 - G LANE MERGE LEFT

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

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. 110208 & 108408
6300 West Loop South, Suite 200, Houston, TX 77057
713-771-8307

STATE OF TEXAS
VICTORIA M. MACALINO
142204
PROFESSIONAL ENGINEER
5/27/25

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

Victoria Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

S. HEIGHTS BLVD AT FEAGAN ST
TRAFFIC CONTROL PLAN

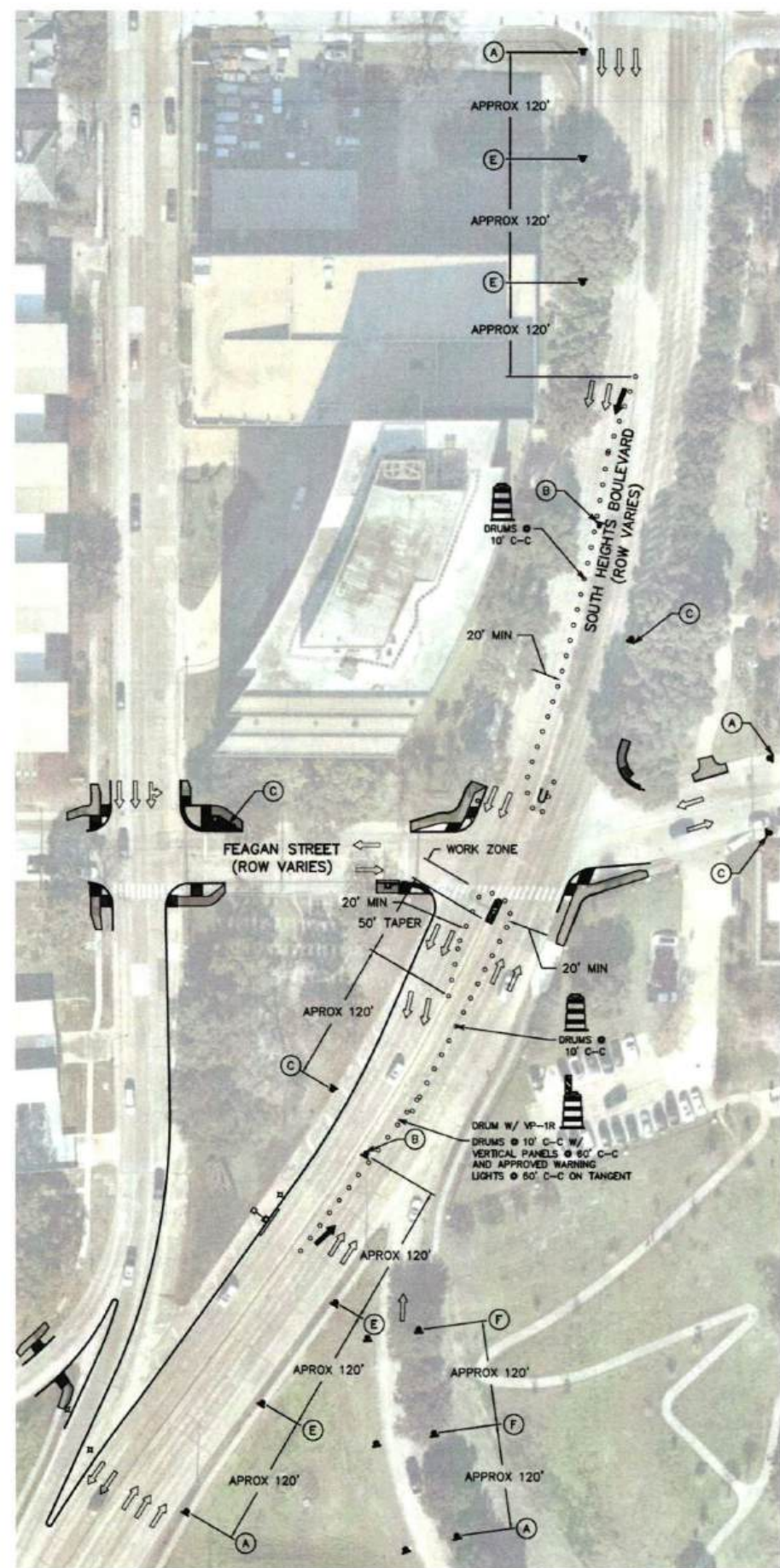
WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PROJECT NUMBER	TOMS MATHEW
SHEET NO.	42 OF 72

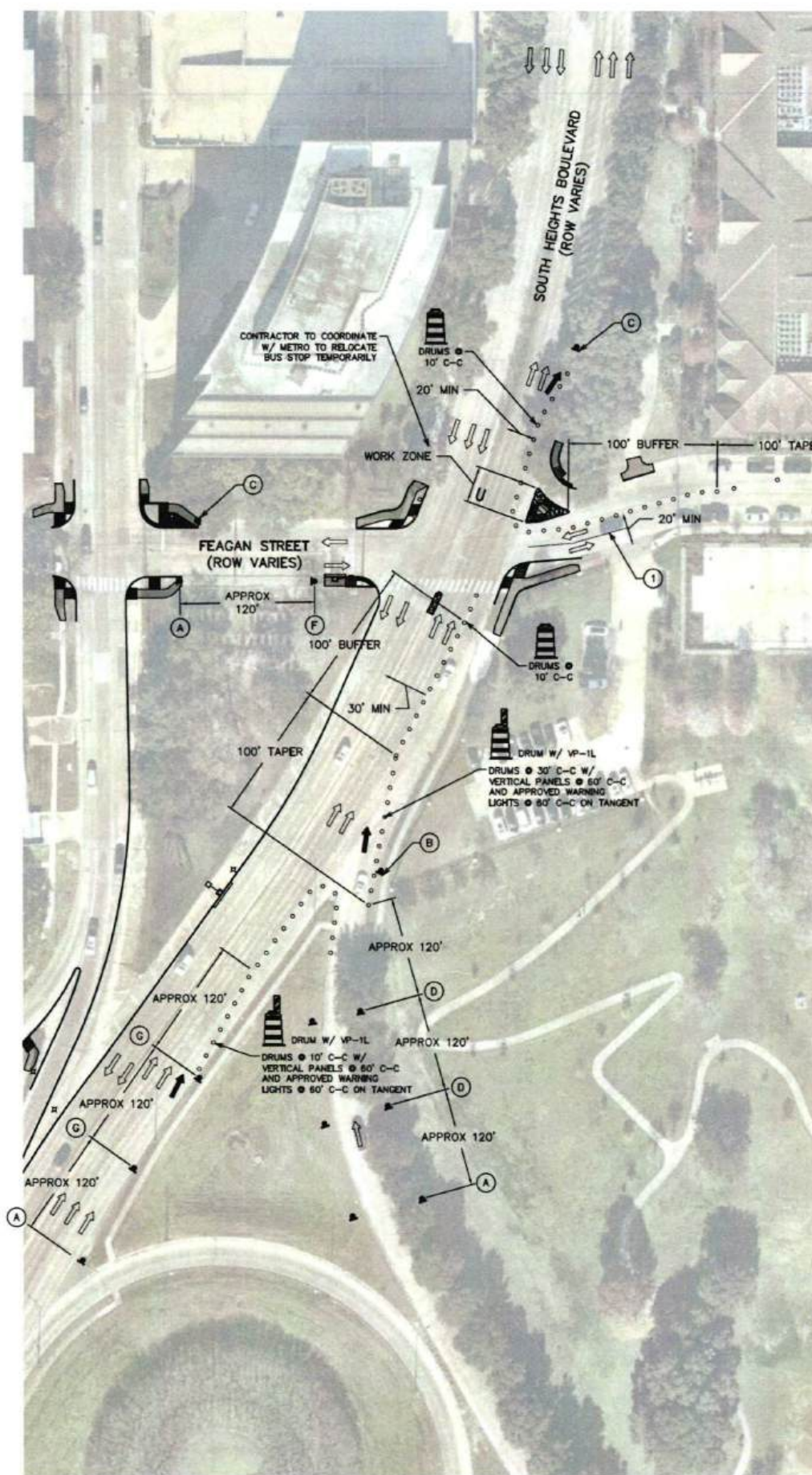
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

80160

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SOUTH HEIGHTS AT FEAGAN STREET (MEDIAN WORK)



SOUTH HEIGHTS AT FEAGAN STREET (DIRECTIONAL ISLAND WORK)

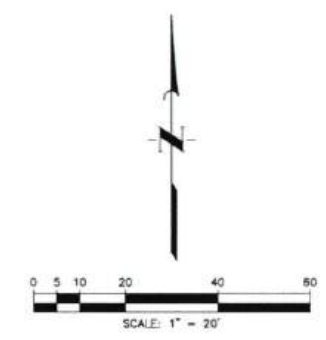
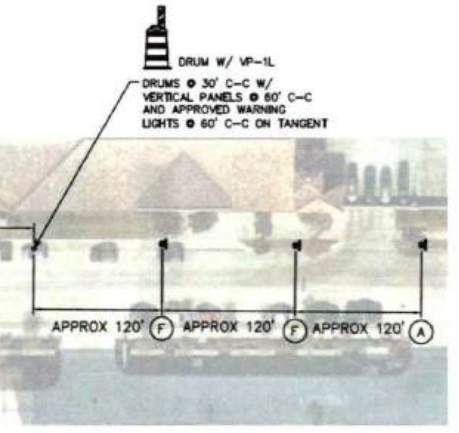
- LEGEND**
- CONSTRUCTION AREA A
 - CONSTRUCTION AREA B
 - EXIST TRAFFIC DIRECTION
 - PROP TRAFFIC DIRECTION

- TEMPORARY PAVEMENT MARKING LEGEND**
- 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**
- ROAD WORK AHEAD
 - FLAMING ARROW
 - END ROAD WORK
 - SHIFT LANE CLOSURE
 - LEFT LANE CLOSURE
 - ROAD WORK
 - LANE MERGE LEFT



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

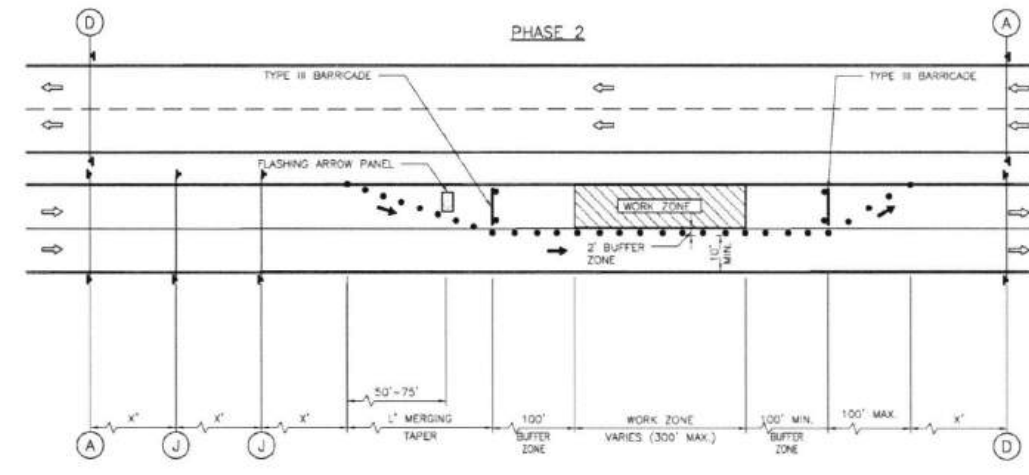
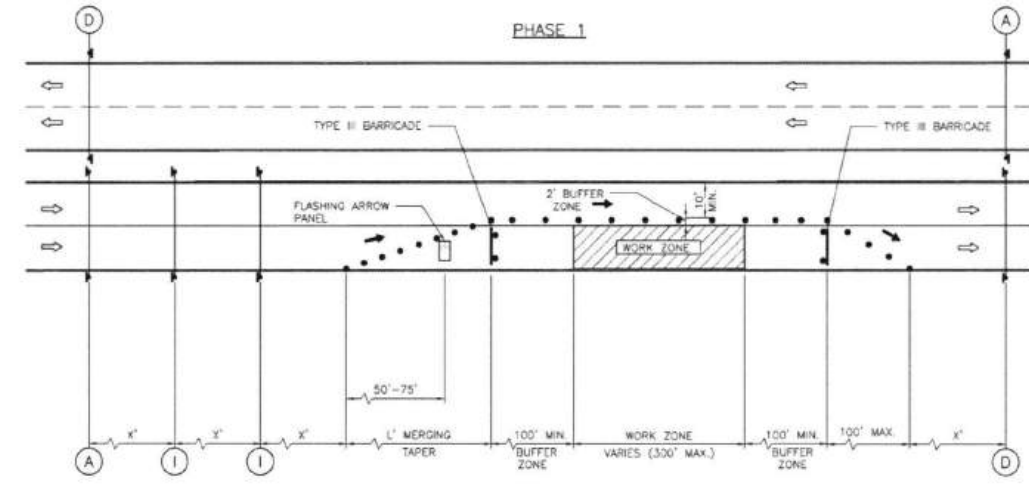
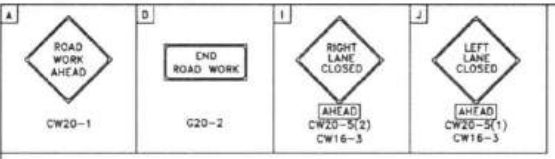
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST		COUNTY	
HOU		HARRIS	

<p>1980 Post Oak Blvd., Suite 1380 Houston, Texas 77056 713-850-9000</p>		<p>5/27/25</p>
<p>Quiddity Team of Professional Engineers and Land Surveyors, Inc. No. 71708 & 000400 4500 West Loop South, Suite 100, Dallas, TX 75241 214-773-8887</p>		<p>SURVEYED BY: QUIDDITY FB NO. 3124, Pages 1-4</p>
<p>CITY OF HOUSTON HOUSTON PUBLIC WORKS</p>		
<p>S. HEIGHTS BLVD AT FEAGAN ST MEDIAN WORK TRAFFIC CONTROL PLAN</p>		
<p>WAUGH SAFETY IMPROVEMENTS</p>		
<p>WBS NUMBER N-T05000-0012-7</p>		<p>CITY OF HOUSTON USE ONLY ACCEPTED - FILED</p> <p>80160</p>
<p>DRAWING SCALE AS NOTED</p>		
<p>CITY OF HOUSTON POC TOMS MATHEW</p>		
<p>SHEET NO. 43 OF 72</p>		

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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 OR DESIGNER (ED) IS TO REVIEW THESE DESIGN REQUIREMENTS AND APPLY THEM TO THE SPECIFIC PROJECT AND SITE CONDITIONS. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR DAMAGES RESULTING FROM ITS USE.



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: <i>Sahar Kassar</i> CITY ENGINEER	APPROVED BY: <i>BRING MATHEW</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hallack</i> 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	

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

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY

Team of Professional Engineers
4401 West Loop South, Suite 100, Dallas, TX 75240
214-343-8881

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

Victoria M. Macalino

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP DETAIL

WAUGH SAFETY IMPROVEMENTS

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

80160

NO. DATE	REVISION

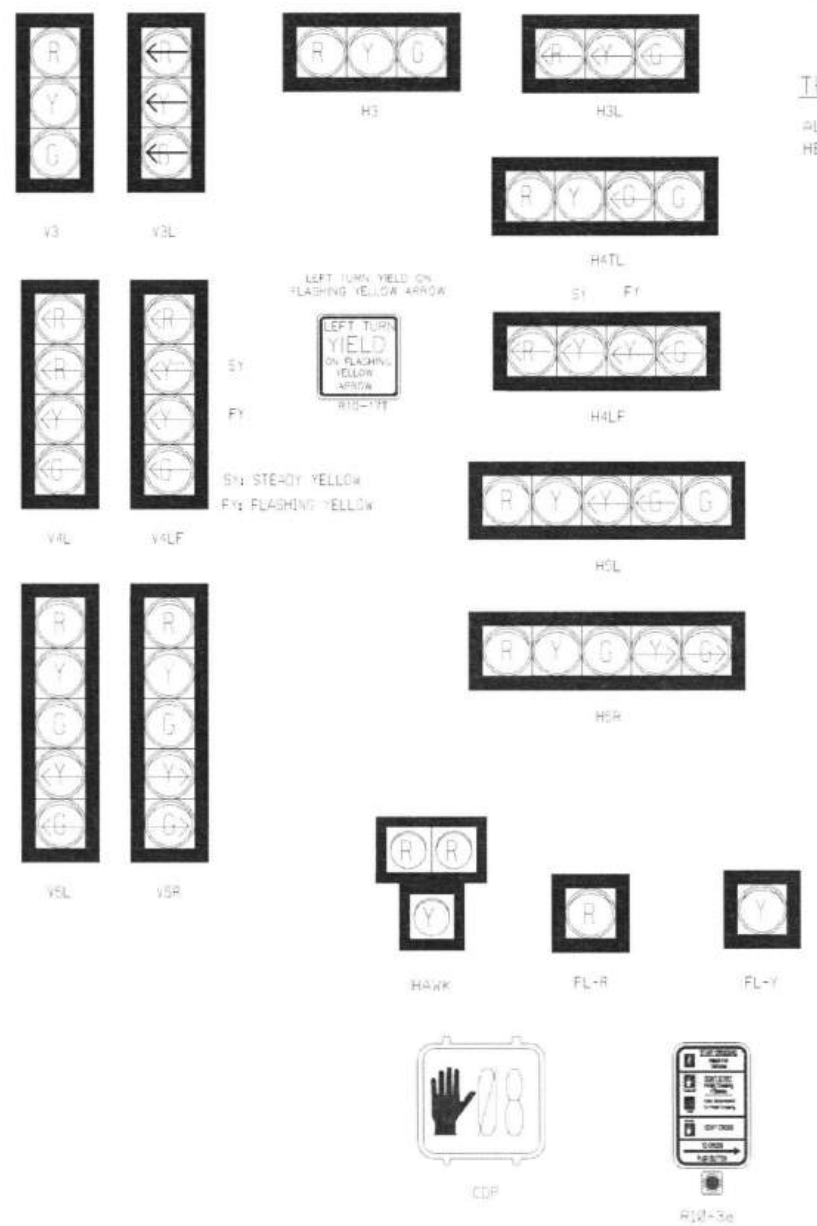
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DATE	
REVISION	
NO.	
DATE	

	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		
MAST ARM SIGN		
LOOP DETECTOR		
SPP RADIO		
W/MAX ANTENNA		
RADAR DETECTOR		
CCTV CAMERA		

SIGNAL TYPES



TRAFFIC CONTROL GENERAL NOTE:

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

TRAFFIC SIGNAL HEADS NOTE:

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

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DO 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 to 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.	

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. 12288 & 20426
4330 West Loop South, Suite 128, Houston, TX 77025
(713) 271-6257

TILER H. COOPER
REGISTERED PROFESSIONAL ENGINEER
14758
6/17/2025

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL
HARDWARE LEGEND

WAUGH SAFETY IMPROVEMENTS

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

80160

NOTE:

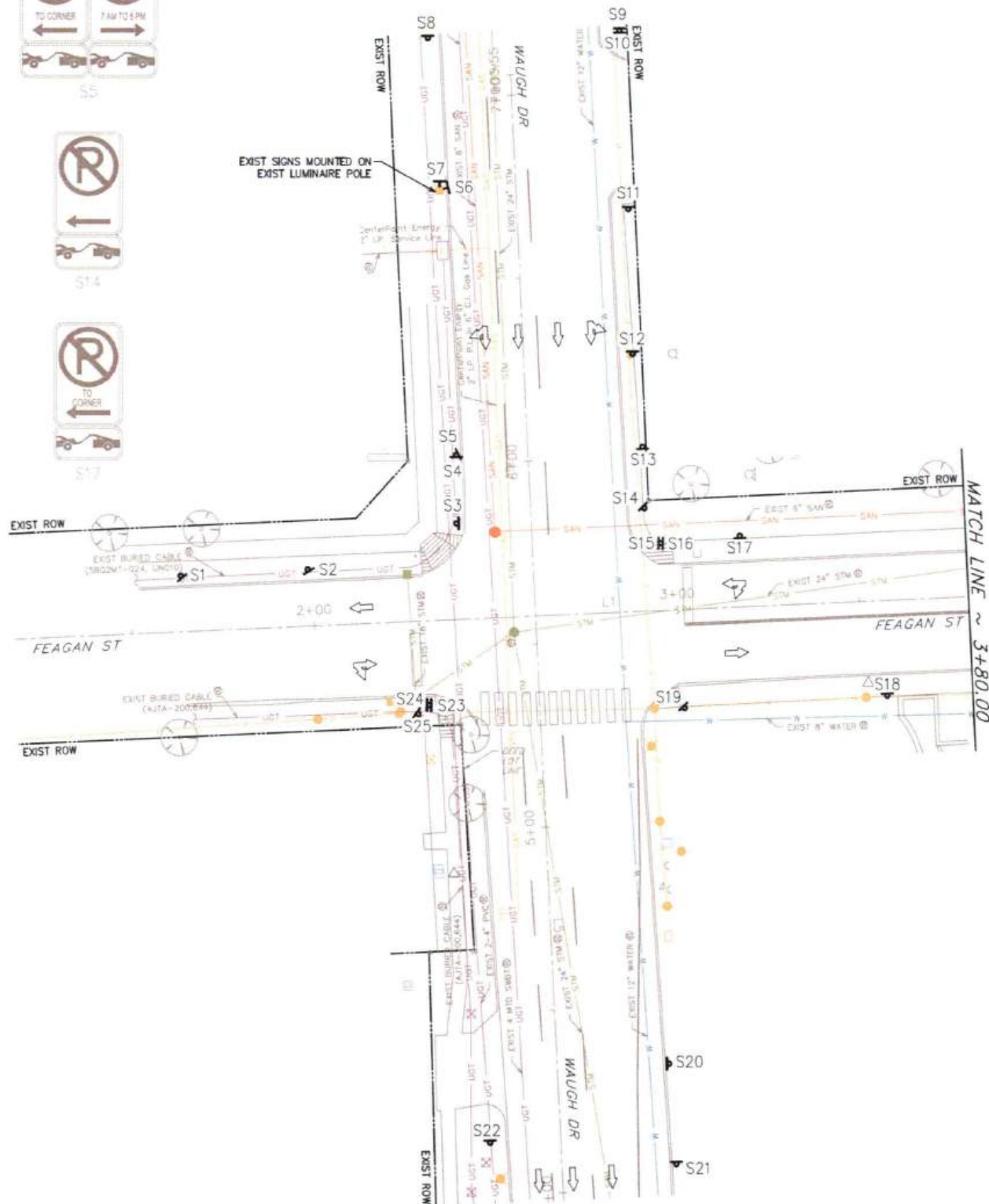
- THE CONTRACTOR SHALL UTILIZE THE 2023 CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING - TRAFFIC OPERATIONS DIVISION TRAFFIC SIGNAL DETAILS (02465 SERIES, 12582 SERIES, 02893 SERIES, 16700, 16710, 16727, 16737, 16738, 16742), AS WELL AS CONTROLLER AND CABINET SPECIFICATION #16730 AND 16731, 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).
- 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](https://www.houstonpermittingcenter.org/office-city-engineer/design-and-construction-standards)

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

EXISTING GROUND MOUNTED SIGN LEGEND

Legend for existing ground mounted signs:

- S1: Two-way traffic sign
- S2: One-way traffic sign
- S3: One-way traffic sign
- S4, S10, S13: Do Not Enter sign
- S5: No right turn sign
- S6: No left turn sign
- S7, S11: Pedestrian crossing sign
- S8: No U-turn sign
- S9: Left lane ends sign
- S12: Right lane must exit sign
- S14: No right turn sign
- S15: One-way traffic sign (to be removed)
- S16: Stop sign (to be removed)
- S17: No right turn sign
- S18: Two-way traffic sign
- S19: One-way traffic sign
- S20: One-way traffic sign
- S21: One-way traffic sign
- S22: Right lane must exit sign
- S23: One-way traffic sign (to be removed)
- S24: Stop sign (to be removed)
- S25: No right turn sign
- C22: Right lane must exit sign
- C24: Stop sign (to be removed)



LEGEND

Legend for symbols used in the plan:

- Street Light
- Ground Mounted Sign
- Pole Mounted Sign
- Lane Assignment Arrow

UTILITY LEGEND

Utility Legend showing line styles for various utilities:

- Exist Water Line
- Exist Storm Sewer Line
- Exist Overhead Power Line
- Exist Gas Line
- Exist Underground Telephone Line
- Exist Sanitary Sewer 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 Browne 05/29/25
Date

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

Mike Browne 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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors Reg. No. 112028 & 200402
8300 West Loop South, Suite 200, Dallas, TX 75240
754 971 6877

TYLER H. COWSER
14798
LICENSED PROFESSIONAL ENGINEER

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FB NO. 3124, Pages 1-4

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012

DRAWING SCALE
AS NOTED

CITY OF HOUSTON
TOMS MATHEW

SHEET NO. 46 OF 72

80160

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



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EXISTING GROUND MOUNTED SIGN LEGEND

TO CORNER
S26

TO CORNER
S27

S26, S34, S35

RIGHT LANE ENDS
S29

DO NOT BLOCK INTERSECTION
S30

STOP
S31
(TO BE REMOVED)

TO CORNER
S32

TO CORNER
S33

SPEED LIMIT 35
S36

Feagan ST 3700
S Heights ST 200

STOP
S37
(TO BE REMOVED)

TO CORNER
S38

LEGEND

○ STREET LIGHT

□ GROUND MOUNTED SIGN

□ POLE MOUNTED SIGN

↔ LANE ASSIGNMENT ARROW

UTILITY LEGEND

— W — EXIST WATER LINE

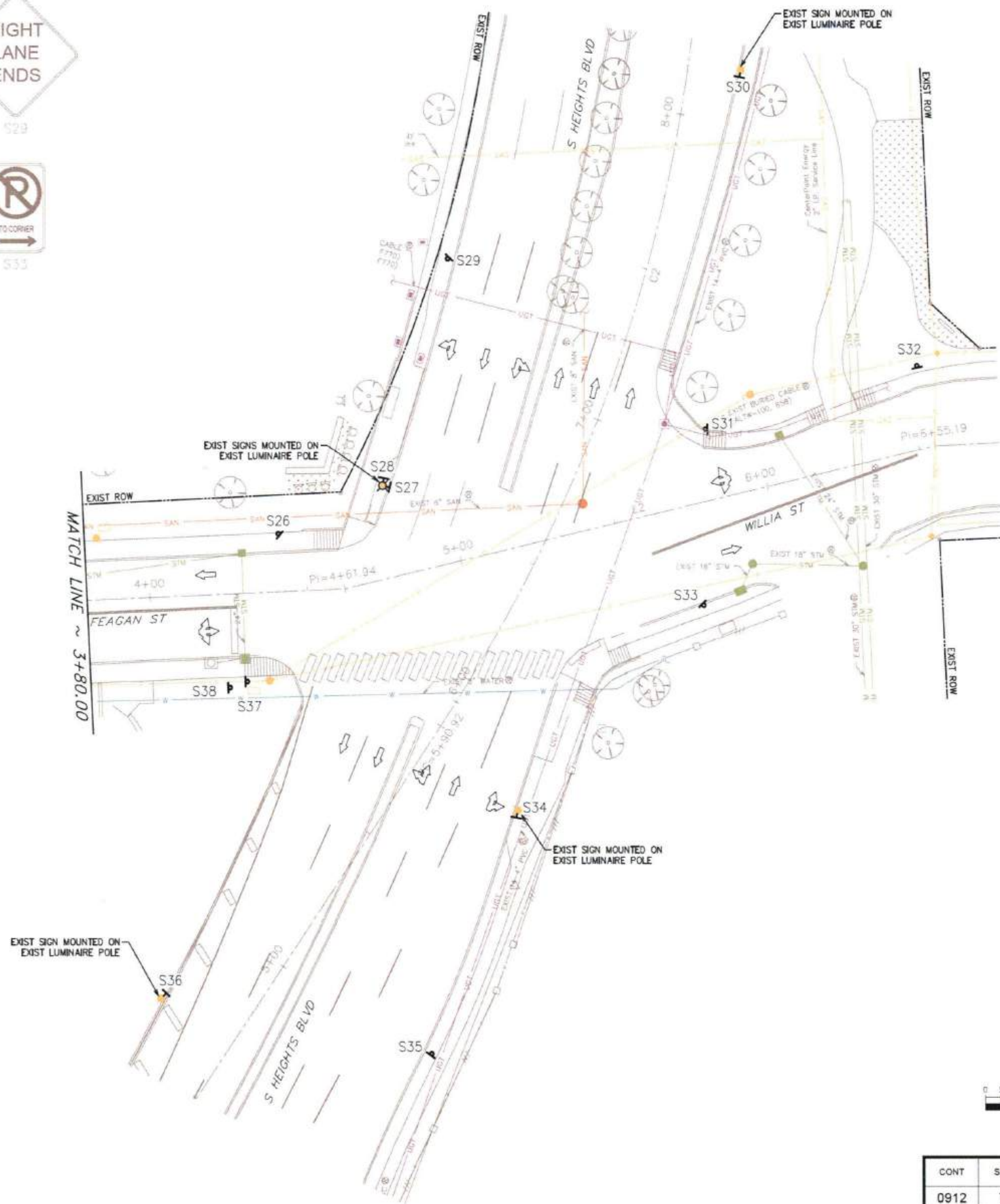
— S/W — EXIST STORM SEWER LINE

— — EXIST OVERHEAD POWER LINE

— GAS — EXIST GASLINE

— UGT — EXIST UNDERGROUND TELEPHONE LINE

— SAN — EXIST SANITARY SEWER 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 Brown 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 Brown 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.

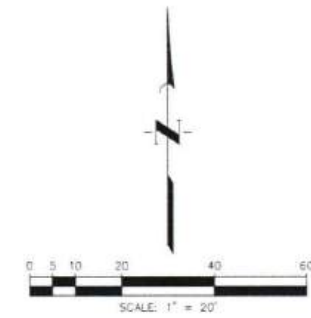
SURVEYED BY: QUIDDITY
FB NO. 3124, Pages 1-4

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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

WAUGH SAFETY IMPROVEMENTS

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

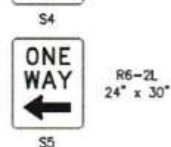
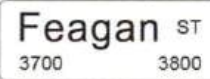
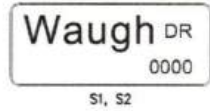


CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

NO.	DATE	REVISION	APP.

- 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)



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.

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 & YLV RETROREFL BDR
- ⊖ PEDESTRIAN SIGNAL HEAD
- ⊕ PEDESTRIAN PUSH BUTTON
- ◇ PULL BOX - TYPE A
- PULL BOX - TYPE B
- ⊞ PULL BOX - TYPE C
- CONDUIT
- CONDUIT (BUND)
- ⊗ PRE-EMPT SENSOR
- ⊖ CONTROLLER CABINET W/ UPS
- ⊕ METERED POWER PEDESTAL
- ⊕ MAST ARM SIGN
- ⊖ SAW-CUT LOOP DETECTOR
- ➔ LANE ASSIGNMENT ARROW

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 combat facilities only
Signature valid for one year.

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. 7-2208 & 2208-001
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713-777-8787

Tyler H. Cowser
147986
REGISTERED PROFESSIONAL ENGINEER

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

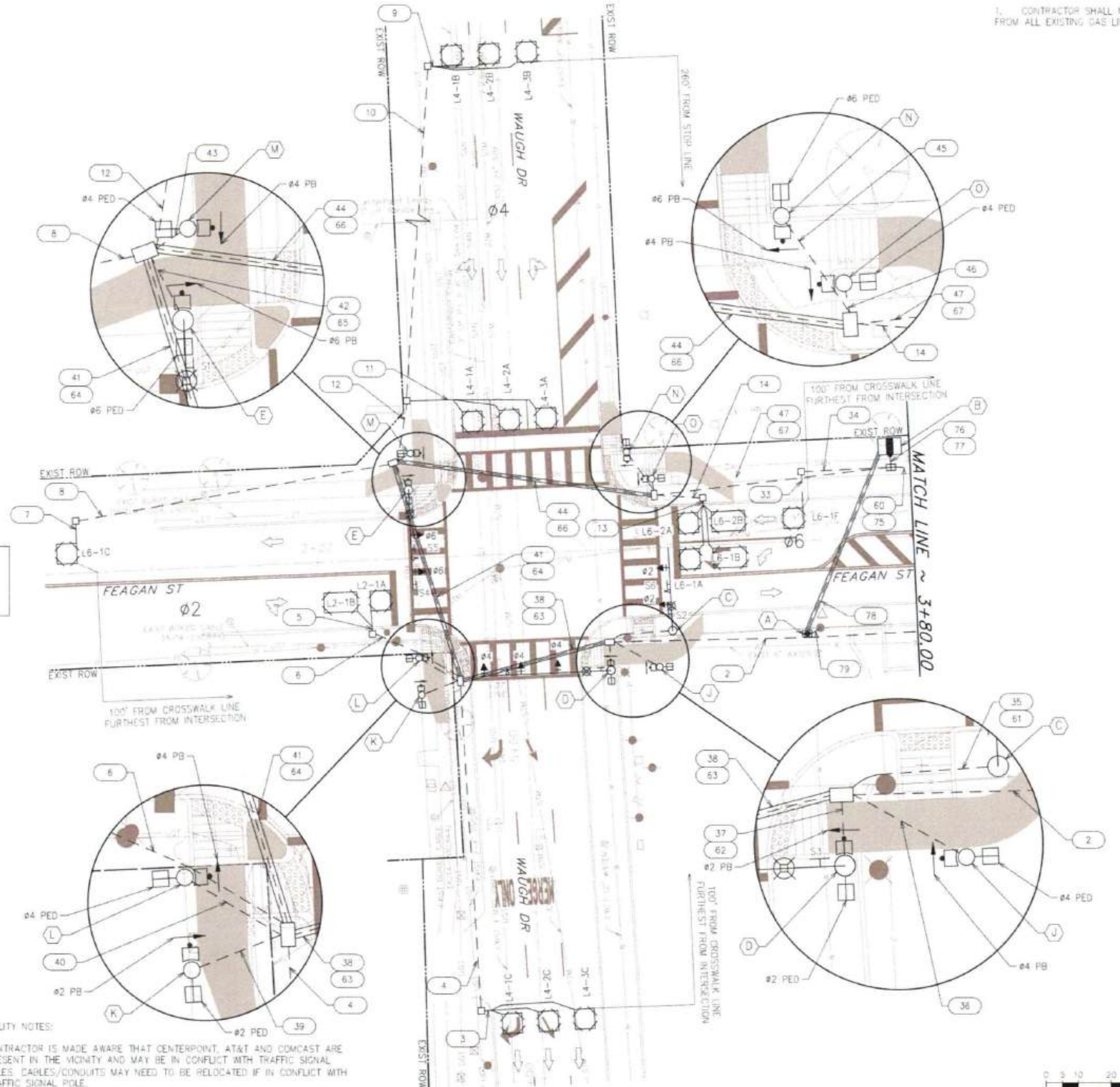
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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

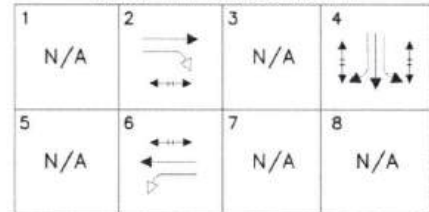
WAUGH SAFETY IMPROVEMENTS

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

80160



NEMA PHASING DIAGRAM



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 8 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

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 DWG.

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

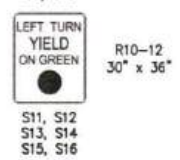
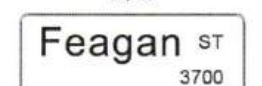
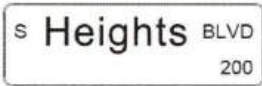
SPECIAL NOTES:

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

K:\14760\14760-0021-DT_1-0025-WAUGH SAFETY\2 DESIGN PHASE\TRAFFIC MASTER SIGNAL DESIGN FILE_DWG_6/17/2025 9:41 PM

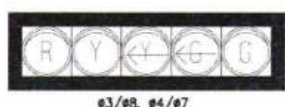
- S7 = STREET NAME "S Heights Blvd", BLOCK NUMBER 200
- S8 = STREET NAME "Feagan St", BLOCK NUMBER 3700
- S9 = STREET NAME "S Heights Blvd", BLOCK NUMBER 200
- S10 = STREET NAME "Feagan St", BLOCK NUMBER 3700
- S11 = R10-12 (30"x36") SIGN, "LEFT TURN YIELD ON GREEN BALL"
- S12 = R10-12 (30"x36") SIGN,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



POSTED SPEED LIMIT
S HEIGHTS BLVD = 35 MPH
FEAGAN ST = 30 MPH

PROPOSED TRAFFIC SIGNAL HEADS



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.

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

LEGEND

○	PEDESTAL POLE
—○—	POLE W/MAST ARM
⊙	VEHICLE SIGNAL HEAD W/ BLK BACK PLATE & YLW RETROREFL BOR
⊙	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

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 Browne 05/29/25
Date

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

Mike Browne 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.

1890 Post Oak Blvd., Suite 1380
Houston, Texas 77056
713-850-9000

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. 12208 (E) (Professional)
4800 West Loop South, Suite 100, Houston, TX 77025
713.797.3227

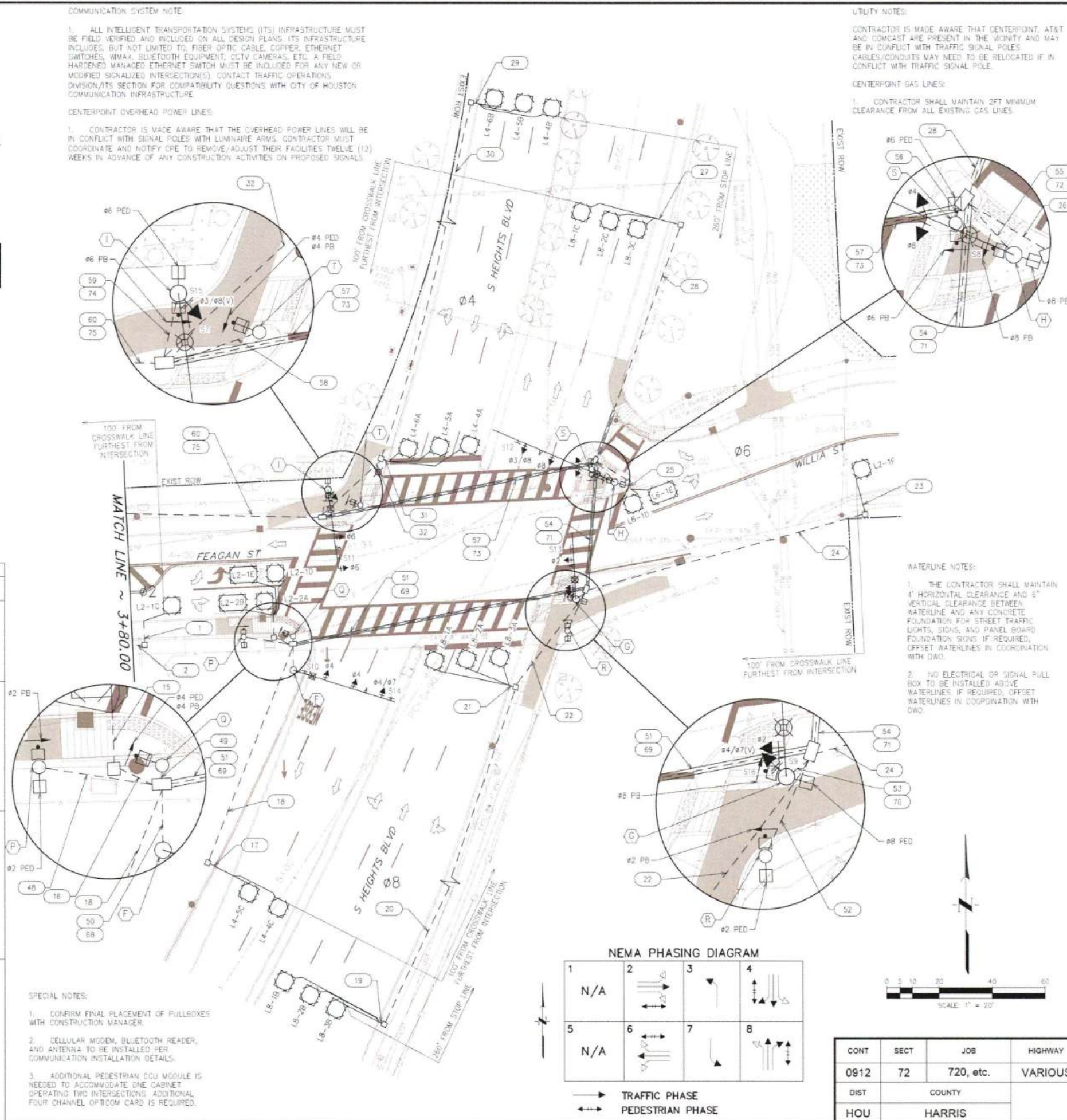
Tyler H. Cowser
18798B
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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

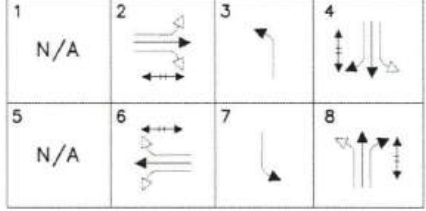
WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PROJECT	TOMS MATHEW
SHEET NO.	49 OF 72



WATERLINE NOTES:
1. THE CONTRACTOR SHALL MAINTAIN 4' HORIZONTAL CLEARANCE AND 5' 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 DWD.
2. NO ELECTRICAL OR SIGNAL PULL BOX TO BE INSTALLED ABOVE WATERLINES IF REQUIRED, OFFSET WATERLINES IN COORDINATION WITH DWD.

NEMA PHASING DIAGRAM



→ TRAFFIC PHASE
↔ PEDESTRIAN PHASE

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

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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 NAVGATOR 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 NAVGATOR 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 - VSL 1 - CDP	106 WATT SYSTEM MAX. LED COBRA LUMINAIRE	POLARA NAVGATOR 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 NAVGATOR 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 - VSL 1 - CDP	106 WATT SYSTEM MAX. LED COBRA LUMINAIRE	POLARA NAVGATOR 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 NAVGATOR 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 NAVGATOR 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 NAVGATOR 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 NAVGATOR 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 NAVGATOR 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 NAVGATOR 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 NAVGATOR 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.

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 (other than above) does service lines (do not show). This signature not be used for conflict verification.	
Signature valid for six months	
N/A	Date
CenterPoint Energy/UNDERGROUND Electrical Facilities (other than above) ONLY. (This signature verifies existing underground facilities - not to be used for conflict verification).	
Signature valid for six months	
NA	Date
Approved for 4557 underground conduit facilities only. Signature valid for one year.	

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. 12288 & 26846
4300 West Loop South, Suite 100, Houston, TX 77025
713-271-8927

Tyler H. Stovner, P.E., PLS
14700
REGISTERED PROFESSIONAL ENGINEER
14700

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WAUGH DR/S. HEIGHTS BLVD
AT FEAGAN ST
TRAFFIC SIGNAL POLE
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-TD5000-0012	ACCEPTED - 07/13/2023
DRAWING SC	
AS NOTED	80160
CITY OF HOUSTON POC	
TOMS MATHEW	
SHEET NO. 50 OF	

HOUSTON, TEXAS

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POLE SCHEDULE												
POLE NUMBER	POLE TYPE	MAST ARM		SIGNALS		MOUNTING	FACE	LUMINAIRE TYPE	PED PB TYPE/SIGN	REMARKS	LOCATION	STANDARDS
		SIGNAL	LUMINAIRE	SIGNALS	FACE							
Q	PED POLE 15'	-	-	-	-	1 - SIDE OF POLE	1 - CDP	-	POLARA NAVGATOR 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 NAVGATOR 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 NAVGATOR 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 NAVGATOR R10-3E (R)	-	POLE T: STA 6+35.88, 54.3' 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.

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

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 to be used for conflict verification.
Signature valid for six months.

N/A
Date

CenterPoint Energy UNDERGROUND BestPract 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.

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

QUIDDITY
 Texas Board of Professional Engineers and Land Surveyors Reg. No. 12028 & 12040
 4330 West Loop South, Suite 100, Houston, TX 77025
 713.977.8227

Tyler H. Conser P.E., PLS
 01/17/2025

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

CITY OF HOUSTON
 HOUSTON PUBLIC WORKS

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

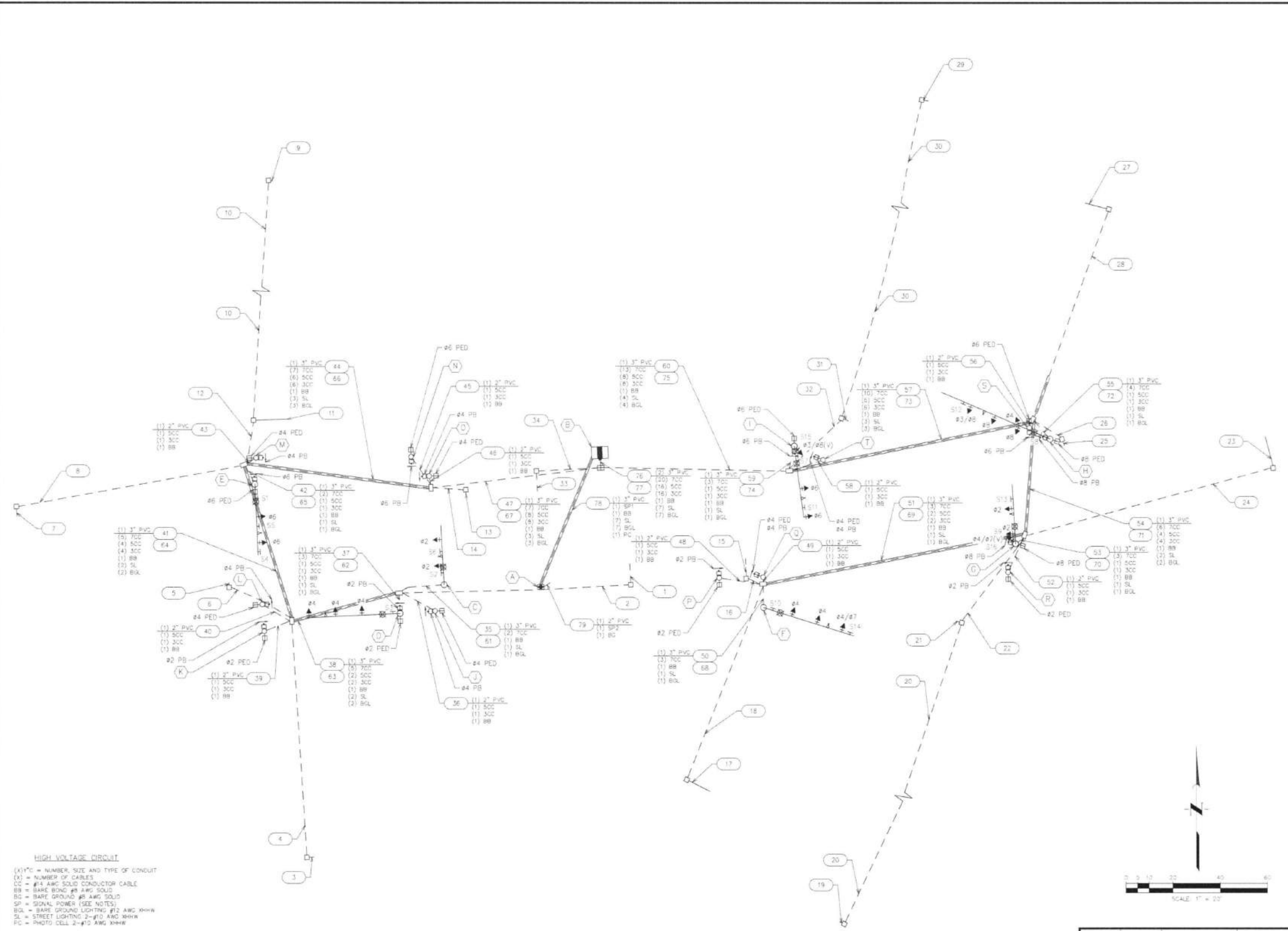
WAUGH SAFETY IMPROVEMENTS

WBS NUMBER: N-T05000-0012-7
 DRAWING SCALE: AS NOTED
 CITY OF HOUSTON PROJECT: TOMS MATHEW
 SHEET NO. 51 OF 72

80160

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

P:\11760\11760-001-01-1-0035 WAUGH SAFETY\3 DESIGN PHASE\GAD\TRAFFIC MASTER SIGNAL DESIGN_FILE.DWG, 6/17/2025 5:41 PM



LEGEND

	PEDestal POLE
	POLE w/MAST ARM
	LUMINAIRE
	VEHICLE SIGNAL HEAD w/ BLK BACK PLATE & YLV RETROREFL W/H
	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

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 Brown 05/29/25
 Date
 CenterPoint Energy natural gas utility shown. Gas service lines are not shown. This signature not to be used for contact verification.
 Signature valid for six months.

Mike Brown 05/29/25
 Date
 CenterPoint Energy UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities - not to be used for contact 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.

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors, No. 11208, G. S. Quiddy, 4800 West Loop South, Suite 100, Dallas, TX 75242, Tel. 972-257

John Conner, P.E., PLS
 6/17/2025
TILEN H. CONNER
 LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
 HOUSTON PUBLIC WORKS

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

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012
DRAWING SCALE	AS NOTED
CITY OF HOUSTON POC	TOMS MATHEW
SHEET NO.	52 OF 72

80160

HIGH VOLTAGE CIRCUIT

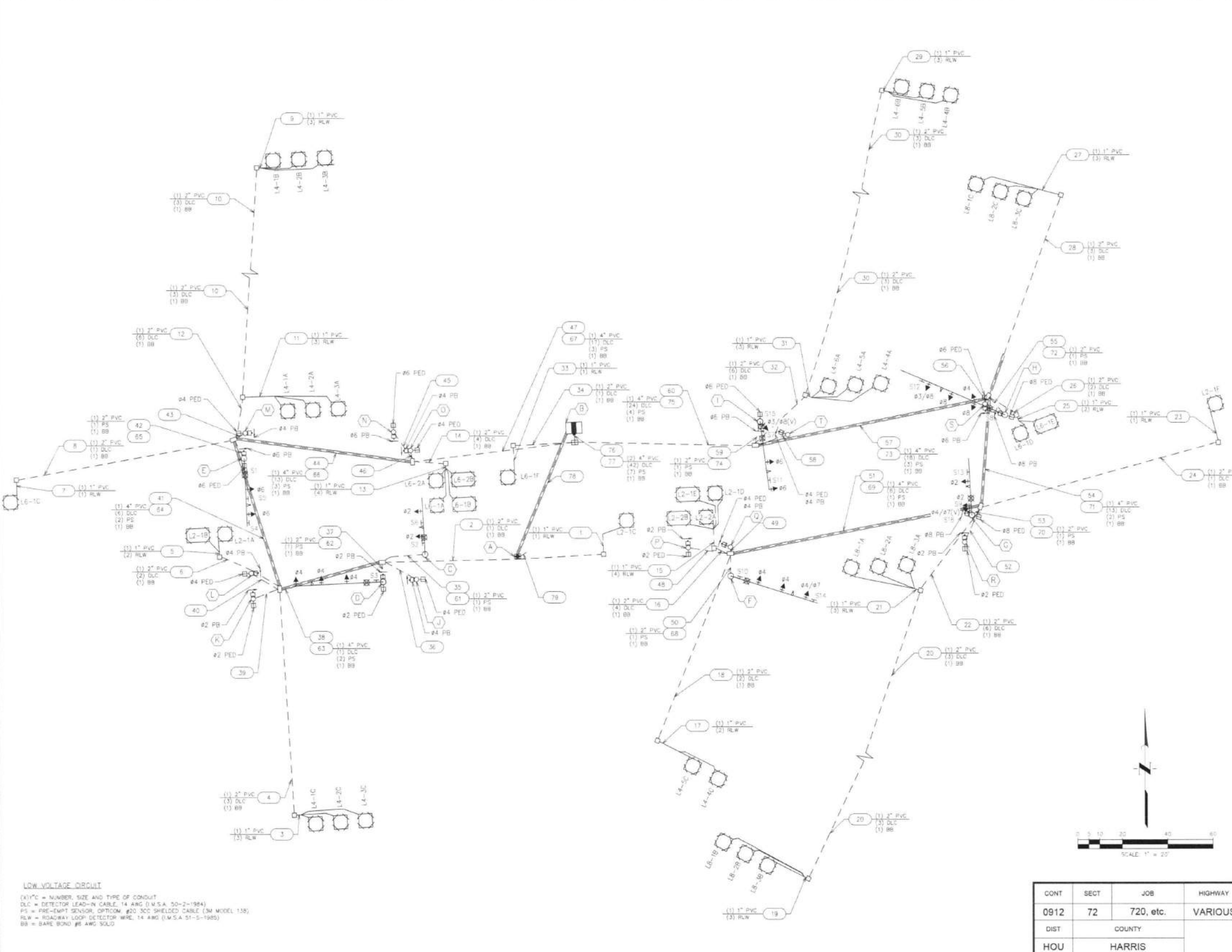
(X)YC = NUMBER, SIZE AND TYPE OF CONDUIT
 (X) = NUMBER OF CABLES
 CQ = #14 AWG SOLID CONDUCTOR CABLE
 BB = BARE BOND #8 AWG SOLID
 BG = BARE GROUND #8 AWG SOLID
 SP = SIGNAL POWER (SEE NOTES)
 BGL = BARE GROUND LIGHTING #12 AWG XHHW
 SL = STREET LIGHTING 2-#10 AWG XHHW
 PC = PHOTO CELL 2-#10 AWG XHHW

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 W/TH GROUND

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

K:\14780\14780-001-01_1-0515_WAUGH SAFETY IMPROVEMENTS - SIGNAL DESIGN FILE - DWG - 6/17/2025 9:41 AM



LOW VOLTAGE CIRCUIT
 (X)VC = 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, #20 3CC SHIELDED CABLE (3M MODEL 139)
 RLW = ROADWAY LOOP DETECTOR WIRE, 14 AWG (I.M.S.A. 51-5-1985)
 BB = BARE BOND #8 AWG SOLID

LEGEND

- PEDESTAL POLE
- POLE W/MAST ARM
- ⊕ LUMINAIRE
- ⊕ VEHICLE SIGNAL HEAD W/ BLK BACK PLATE & FLW RETROREFL BOX
- ⊕ PEDESTRIAN SIGNAL HEAD
- ⊕ PEDESTRIAN PUSH BUTTON
- ◇ PULL BOX - TYPE A
- PULL BOX - TYPE B
- ⊕ PULL BOX - TYPE C
- CONDUIT
- CONDUIT (HIDDEN)
- ⊕ PRE-EMPT SENSOR
- ⊕ CONTROLLER CABINET W/ UPS
- ⊕ METERED POWER PEDESTAL
- ⊕ MAST ARM SIGN
- ⊕ SAK-OUT LOOP DETECTOR
- LANE ASSIGNMENT ARROW

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Mike Brown 05/29/25
 Date
 Centennial Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.
 Signature valid for six months.

Mike Brown 05/29/25
 Date
 Centennial Energy UNDERGROUND Electrical Facilities (withdrawing 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.

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

QUIDDITY
 Texas Board of Professional Engineers and Land Surveyors, No. 11208-01-000000
 4330 West Loop South, Suite 100, Houston, TX 77025
 713-777-8227



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

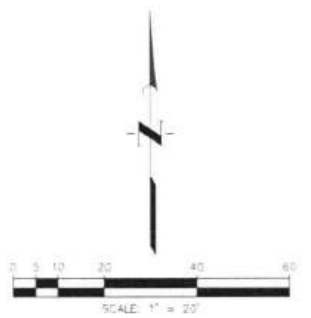
CITY OF HOUSTON
 HOUSTON PUBLIC WORKS

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

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PROJECT	TOMS MATHEW
SHEET NO.	53 OF 72

FOR CITY OF HOUSTON USE ONLY
80160

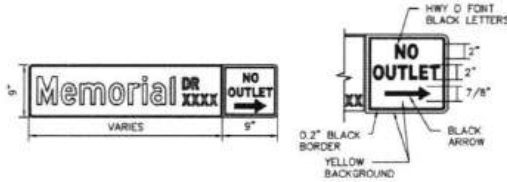


CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

P:\14760\14760-001-01 1-05.35 WAUGH SAFETY\3 DESIGN PHASE\CAD\TRAFFIC STANDARDS DWG, 2/26/2025 1:41 PM

DocuSign Envelope ID: CB71C116-B716-4899-A9E8-9D2F2CC8AF8

POST MOUNTED STREET NAME SIGN W/ NO OUTLET SIGN



D3 - POST MOUNTED STREET NAME SIGN



OVERHEAD STREET NAME SIGN DETAIL



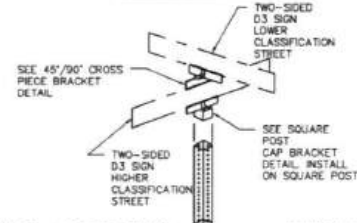
D3 - STREET NAME SIGN

	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"
SUBSTRATE	ALUMINUM ALLOY, 5052-H38 (ASTM B-209)	
SIGN FACE MATERIALS	GREEN FILM OVER DIAMOND GRADE VP 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	

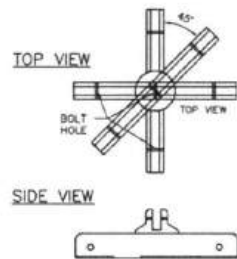
D3 SIGNS GREATER THAN 42" PLATES IN LENGTH



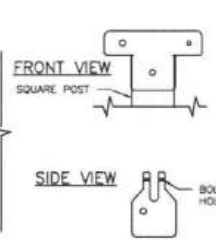
D3 SIGNS LESS THAN OR EQUAL TO 42" PLATES IN LENGTH



45/90° CROSS PIECE SIGN BRACKET



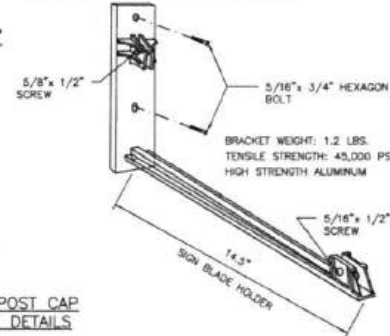
SQUARE POST CAP BRACKET DETAILS



NOTES:

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

SIGNAL POLE MOUNTING DETAIL



CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STREET NAME SIGN AND SIGN MOUNTING
(SCALE: NOT TO SCALE)

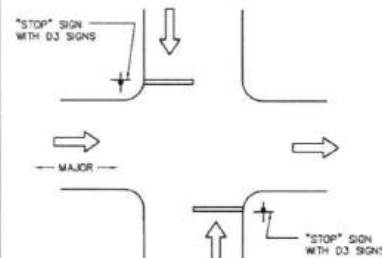
APPROVED BY:

<p>Reviewed by:</p> <p><i>Suhail Issamir</i> CITY ENGINEER</p> <p>Reviewed by:</p> <p><i>Wahne Houston</i> CITY TRAFFIC ENGINEER</p>	<p>Reviewed by:</p> <p><i>Carl Hubbard</i> DIRECTOR OF HPW</p>
--	--

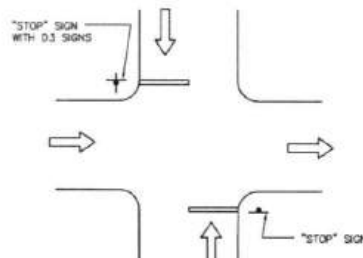
EFF DATE: NOV-27-2023 DWG NO: 01554-03

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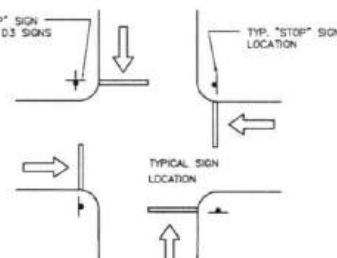
TYPICAL SIGN PLACEMENT



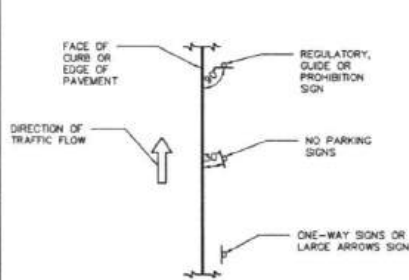
TWO-WAY STOP AND ONE-WAY OPERATION ON MAJOR/LOCAL INTERSECTION



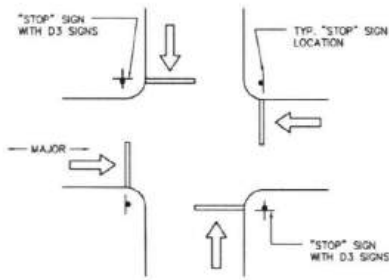
TWO-WAY STOP AND ONE-WAY OPERATION ON LOCAL/LOCAL INTERSECTION



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:

<p>Reviewed by:</p> <p><i>Suhail Issamir</i> CITY ENGINEER</p> <p>Reviewed by:</p> <p><i>Wahne Houston</i> CITY TRAFFIC ENGINEER</p>	<p>Reviewed by:</p> <p><i>Carl Hubbard</i> DIRECTOR OF HPW</p>
--	--

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

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.

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.

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
4838 West Loop South, Suite 100, Dallas, TX 75242
713-753-2307

TYLER H. DOWSER
147980
LICENSED PROFESSIONAL ENGINEER
6/17/2025

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 1 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012

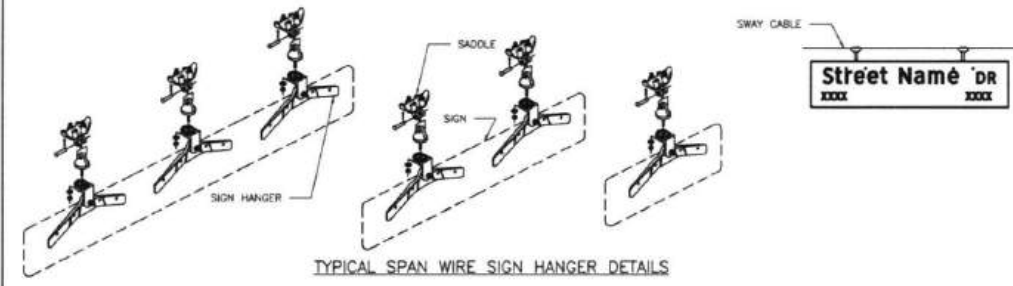
DRAWING SCALE
AS NOTED

CITY OF HOUSTON POC
TOMS MATHEW

SHEET NO. 54 OF 72

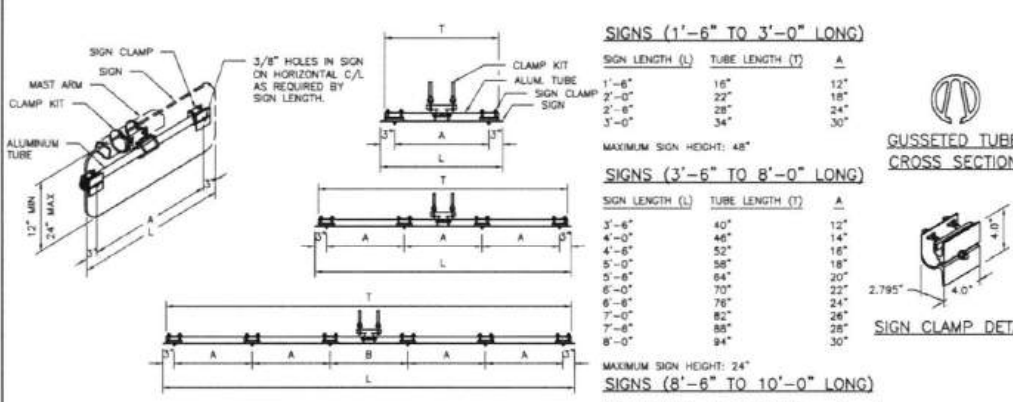
FOR CITY OF HOUSTON USE ONLY
80160

NO.	DATE	REVISION	APP.



- 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.

RECLAIM: THE CONTRACTOR IS ADVISED THAT THE TEXAS ENGINEERING PRACTICE ACT AND THE TEXAS ENGINEERING PRACTICE ACT REQUIRE THE CONTRACTOR TO OBTAIN THE NECESSARY PERMITS AND APPROVALS FOR ANY WORK TO BE PERFORMED IN THE CITY OF HOUSTON. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR DAMAGES RESULTING FROM THIS USE.



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)

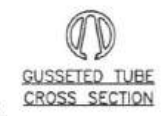
SIGN LENGTH (L)	TUBE LENGTH (T)	A
3'-6"	40"	12"
4'-0"	46"	14"
4'-6"	52"	16"
5'-0"	58"	18"
5'-6"	64"	20"
6'-0"	70"	22"
6'-6"	76"	24"
7'-0"	82"	26"
7'-6"	88"	28"
8'-0"	94"	30"

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"



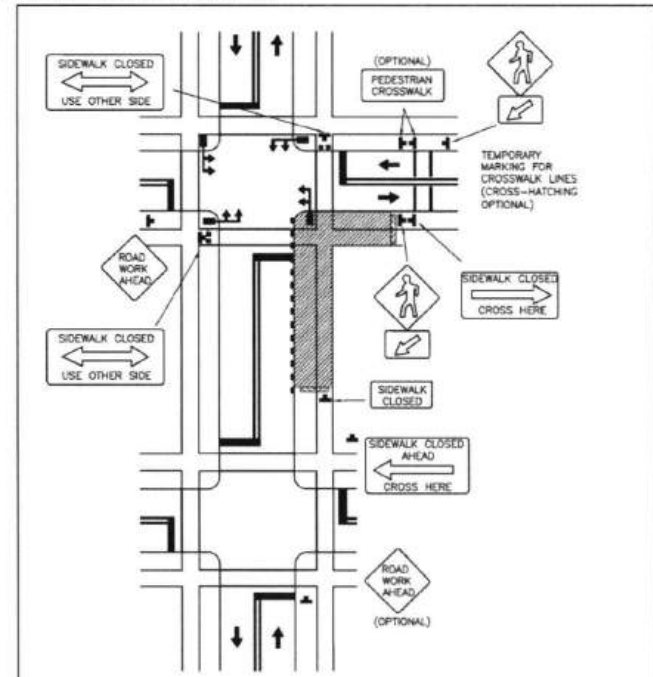
CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

OVERHEAD STREET NAME SIGN MOUNTING DETAILS
(SCALE: NOT TO SCALE)

APPROVED BY:

Submitted by: Suleah Isomae CITY ENGINEER	Approved by: [Signature] DIRECTOR OF HPW
---	--

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



CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CROSSWALK CLOSURES AND PEDESTRIAN DETOURS
(SCALE: NOT TO SCALE)

APPROVED BY:

Submitted by: Suleah Isomae CITY ENGINEER	Approved by: [Signature] CITY TRAFFIC ENGINEER	Approved by: [Signature] DIRECTOR OF HPW
---	--	--

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

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

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors Reg. No. 12208 & 12208-02
8300 West Loop South, Suite 150, Houston, TX 77036
713-773-2337

TYLER H. DOWSER
14798
LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 2 OF 19

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. 55 OF 72	

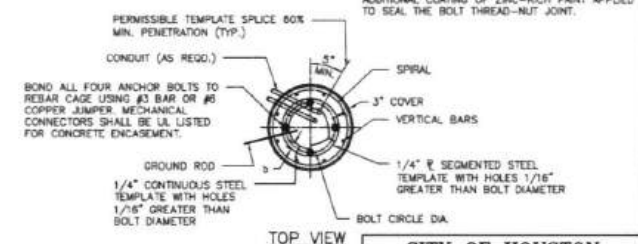
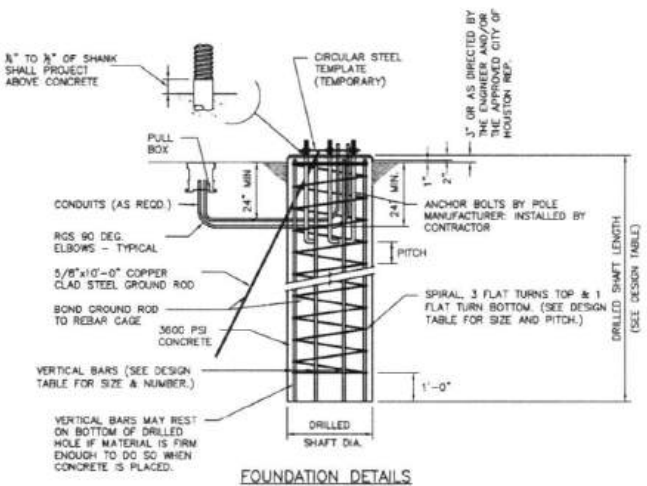
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

NO.	DATE	REVISION	APP.

POLE MARK	DRILLED SHAFT DIA.	REINFORCING STEEL		DRILLED SHAFT LENGTH FT.	BOLT CIRCLE DIA.	FOUNDATION DESIGN LOADS (1)			TYPICAL APPLICATION
		VERT. BARS	SPRAL & 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'-35') 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.



- 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 PLUMS AFTER CONCRETE IS POURED AND BEFORE INITIAL SET.

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 WAGNERS 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.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DRILLED SHAFT FOUNDATIONS
(SCALE: NOT TO SCALE)

APPROVED BY:

Sahar Issam
CITY ENGINEER

Heidi Hatcher
CITY TRAFFIC ENGINEER

Carla Haddock
DIRECTOR OF HPW

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

	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	—	—
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:

Sahar Issam
CITY ENGINEER

Heidi Hatcher
CITY TRAFFIC ENGINEER

Carla Haddock
DIRECTOR OF HPW

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

REQUIREMENTS ARE CONTAINED IN THE STATE ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS DRAWING DO NOT APPLY TO ANY OTHER PROJECTS. ALL OF THE SAFETY CHECKING ASSOCIATED WITH THIS DRAWING IS THE RESPONSIBILITY OF THE DESIGNER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR ANY ERRORS OR OMISSIONS ON THIS DRAWING. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR ANY ERRORS OR OMISSIONS ON THIS DRAWING.

K:\14760\14760-0021-01_1-0515_WAUGH SAFETY\TRAFFIC SIGNALS\TRAFFIC SIGNALS.DWG, 2/26/2025 1:41 PM

NO.	DATE	REVISION

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.

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors, Inc. No. 12088-02-000000
4300 West Loop South, Suite 100, Dallas, TX 75240
754.777.3327

Tylen H. Cowser, P.E., PLS
6/17/2025

TYLEN H. COWSER
147980
LICENSED PROFESSIONAL ENGINEER

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

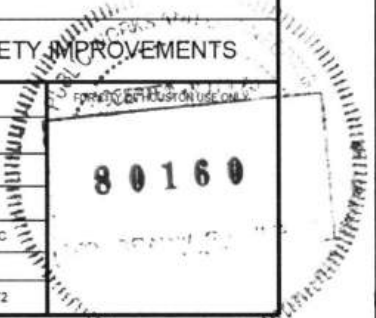
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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

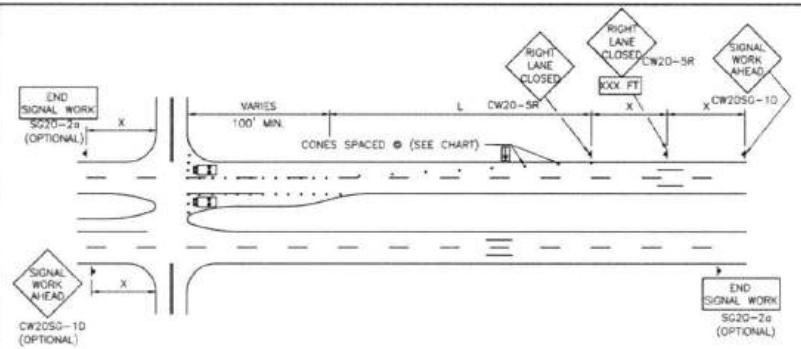
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		



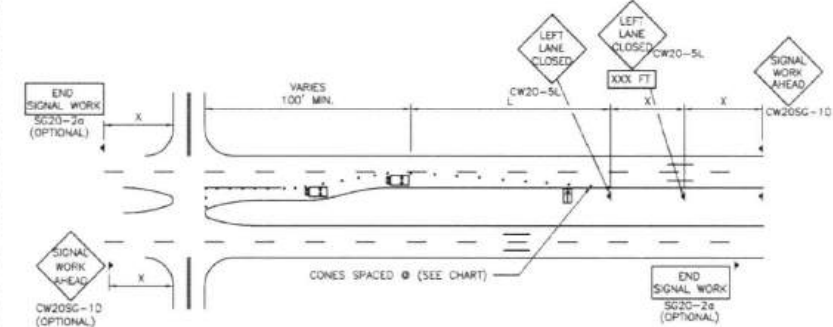
NO.	DATE	REVISION

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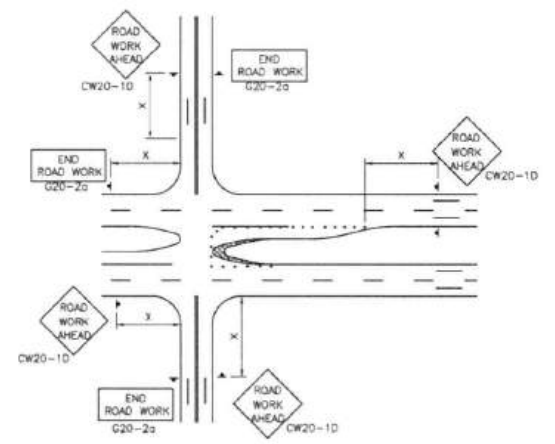
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THE USE OF TRAFFIC CONTROL DEVICES. THE USER OF THIS STANDARD ASSUMES FULL RESPONSIBILITY FOR THEIR USE AND ASSUMES ALL LIABILITY FOR ANY DAMAGE, INJURY, OR DEATH THAT MAY OCCUR AS A RESULT OF ANY AND 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.



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



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

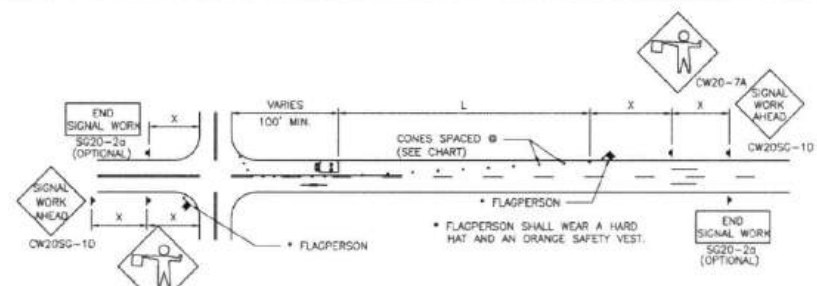


MEDIAN NOSE MODIFICATION

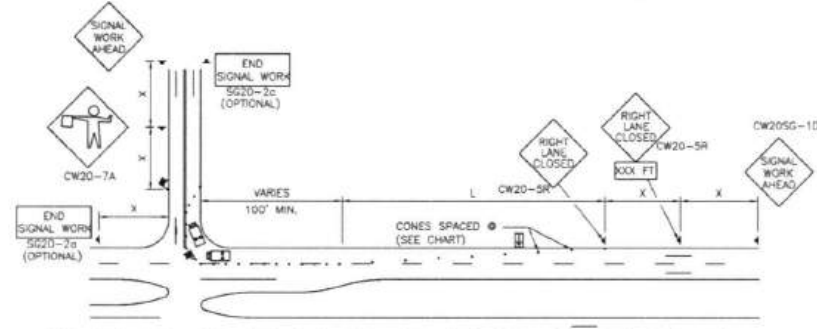
TYPICAL TRANSITION LENGTHS
SUGGESTED MAXIMUM SPACING OF DEVICES

POSTED SPEED	FORMULA	MINIMUM DESIRABLE TAPER LENGTHS **			SUGGESTED MAXIMUM SPACING OF DEVICES		MINIMUM SIGN SPACING X DISTANCE
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT	
30	L=WS ² /80	150'	165'	180'	30'	60'-75'	120'
35		205'	225'	245'	35'	70'-90'	180'
40	L=WS	265'	295'	320'	40'	80'-100'	240'
45		450'	495'	540'	45'	90'-110'	320'
50	L=WS	600'	650'	600'	50'	100'-125'	400'
55		550'	605'	660'	55'	100'-140'	500'
60	L=WS	600'	660'	720'	60'	120'-150'	600'

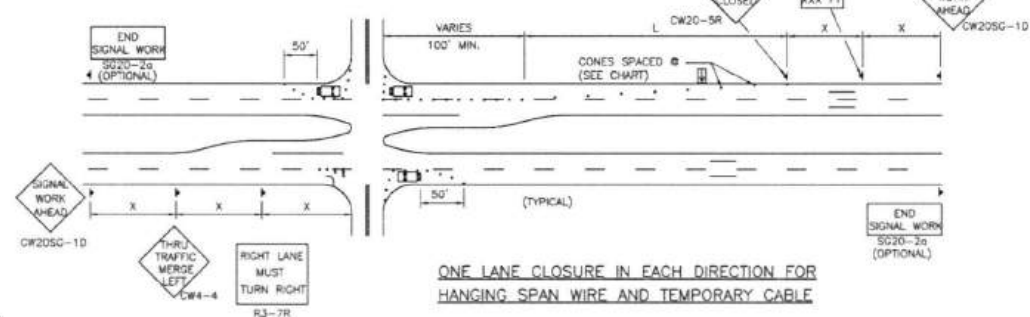
** TAPER LENGTHS HAVE BEEN ROUNDED OFF
L=LENGTH OF TAPER (FT.)
W=WIDTH OF OFFSET (FT.)
S=POSTED SPEED(MPH)



FLAGGING OPERATION FOR HANGING SIGNALS, STRAPPING CABLE, OR INSTALLING 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

NOTES:

- ALL TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.
- THE MINIMUM LANE WIDTH ALLOWED IS 10 FEET. THE MINIMUM BUFFER ZONE BETWEEN THE WORK ZONE AND ADJACENT TRAFFIC IS 2 FEET.
- FLORESCENT ORANGE SHALL BE THE BACKGROUND COLOR ON ALL WORK ZONE SIGNS.
- THE CONTRACTOR SHALL REMOVE ADVANCE SIGNS WHEN NO CONSTRUCTION OPERATIONS ARE UNDERWAY.
- OBSTRUCTIONS OR HAZARDS AT THE WORK AREA SHALL BE CLEARLY MARKED AND DELINEATED AT ALL TIMES.
- ALL HOLES, TRENCHES OR OTHER HAZARDOUS AREAS SHALL BE ADEQUATELY PROTECTED BY LIGHTS OR OTHER PROTECTIVE DEVICES.
- TRENCHES SHALL BE COVERED OR SURROUNDED WITH ORANGE PLASTIC CONSTRUCTION FENCE AS DIRECTED BY THE ENGINEER.
- FLAGGER AND FW20-7a SIGN MAY BE REQUIRED ACCORDING TO FIELD CONDITIONS.
- VEHICLES PARKED IN ROADWAY SHALL BE EQUIPPED WITH TWO STROBES.

LEGEND:

- HEAVY WORK VEHICLE
- FLASHING ARROW PANEL

APPROVED BY: *Suhail Hassan* CITY ENGINEER

APPROVED BY: *WINGANG NGUYEN* CITY TRAFFIC ENGINEER

APPROVED BY: *Carl Haddock* DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023 DWG NO: 01585-13

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TRAFFIC CONTROL PLAN FOR SIGNAL CONSTRUCTION

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE: NOT TO SCALE

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

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

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

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

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors, No. 12288-B, 08/04/22
4330 West Loop South, Suite 100, Dallas, TX 75240
753.777.5227

TYLER H. COWSER
14789
LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 4 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER: N-T05000-0012-7

DRAWING SCALE: AS NOTED

CITY OF HOUSTON POC: TOMS MATHEW

SHEET NO. 57 OF 72

80160

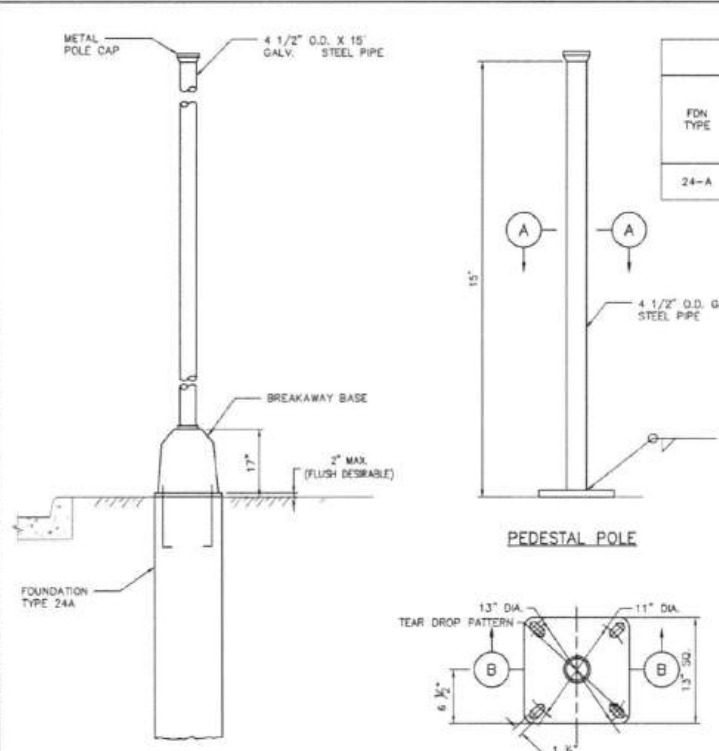
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST		COUNTY	
HOU		HARRIS	

K:\14780\14780-0021-01_T-0535_WAUGH_SAFETY_3_DESIGN_PHASE3\TRAFFIC STANDARDS.DWG, 2/26/2025 1:41 PM

NO.	DATE	REVISION	APP.

Drawings created by: CDP/11/16/16-089-4886/002/02/2025

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 THE USE OF THIS STANDARD. THE USER OF THIS STANDARD SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR OBTAINING ALL NECESSARY INFORMATION FROM THE CITY OF HOUSTON TO ENSURE THAT THE DESIGN MEETS ALL APPLICABLE REGULATORY REQUIREMENTS. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



FDN TYPE	DRILLED SHAFT DIA.	REINFORCING STEEL		DRILLED SHAFT LENGTH FT	ANCHOR BOLT DESIGN (SEE NOTE 2)			FOUNDATION DESIGN LOAD (SEE NOTE 8)		
		VERT. BARS	SPIRAL & PITCH		ANCHOR BOLT DIA.	F _y (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

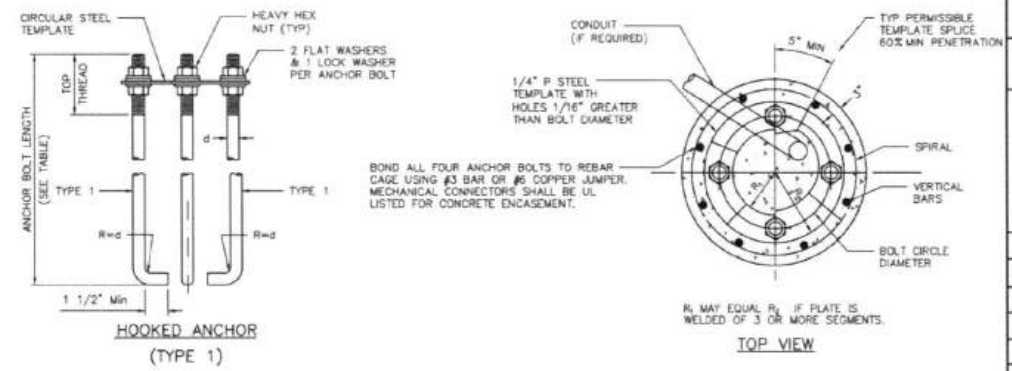
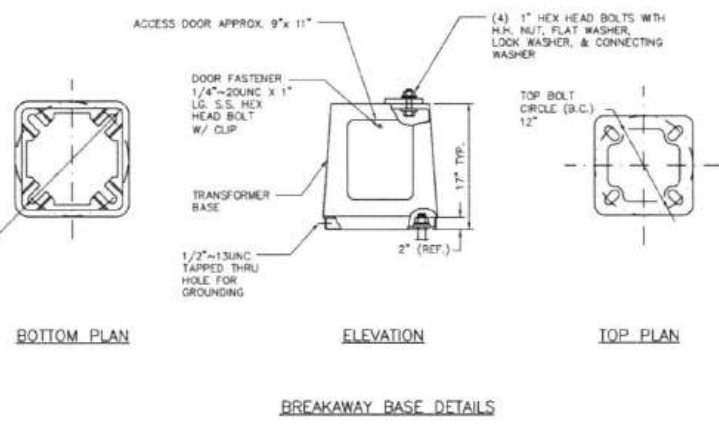
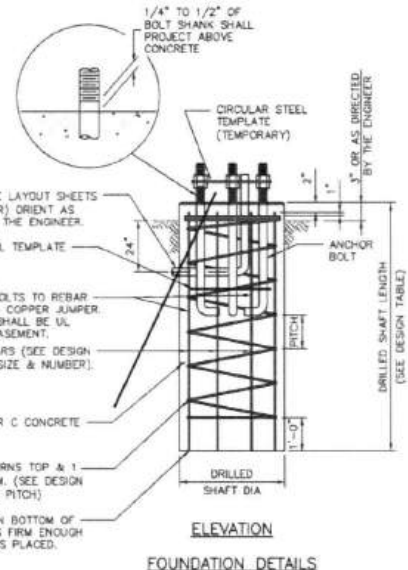
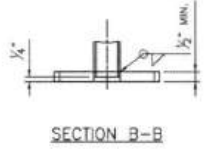
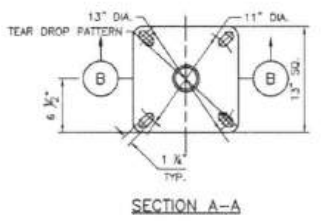
* 10 1/2" B.C. FOR PUSH BUTTON POLE

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 3/8"

** MIN DIMENSIONS GIVEN, LONGER BOLTS ARE ACCEPTABLE

GENERAL NOTES

- DESIGN CONFORMS TO 1994 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS AND INTERM REVISIONS THERETO.
- CONCRETE SHALL BE CLASS A OR C.
- 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.
- 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.
- ANCHOR BOLT DESIGN DEVELOPS THE FOUNDATION CAPACITY GIVEN UNDER FOUNDATION DESIGN LOADS.
- FOUNDATION DESIGN LOADS ARE THE ALLOWABLE MOMENTS AND SHEARS AT THE BASE OF THE STRUCTURE.
- ANCHOR BOLT ASSEMBLY 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.
- DETAILS DEPICTED ON THIS SHEET SHOW A TYPICAL PEDESTAL POLE ASSEMBLY WITH A DRILLED SHAFT FOUNDATION.
- USE 24 IN. DRILLED SHAFT FOUNDATION AS SHOWN.
- PROVIDE BREAKAWAY FUSE HOLDER WITH DOUBLE-POLE HOUSING. ENSURE FUSE HOLDER IS POLARIZED, WATER-RESISTANT, UL RECOGNIZED, AND RATED FOR JOA 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.
- 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.
- PER MANUFACTURER'S RECOMMENDATIONS, ENGAGE ALL THREADS ON THE PEDESTAL POLE BASE AND PIPE UNLESS THE PIPE IS FULLY SEATED INTO BASE.
- PROVIDE NON-FUSED WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS FOR BREAKAWAY POLES (BUSSMANN HET, LITTELFUSE LET, FERRAZ-SHAMMUT FEBN, OR APPROVED EQUAL).
- PROVIDE SIGNAL HEADS AND MOUNTING AS SHOWN ELSEWHERE ON THE PLANS.



APPROVED BY: *Sahel Banwar* CITY ENGINEER

APPROVED BY: *KRANC NGUYEN* CITY TRAFFIC ENGINEER

APPROVED BY: *Carl Hubbard* 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

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.	

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors, No. 12288-02, 02/08/2014
4300 West Loop South, Suite 200, Dallas, TX 75240
753-277-3307

TYLER H. DOWSER
147588
LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 5 OF 19

WAUGH SAFETY IMPROVEMENTS

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

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

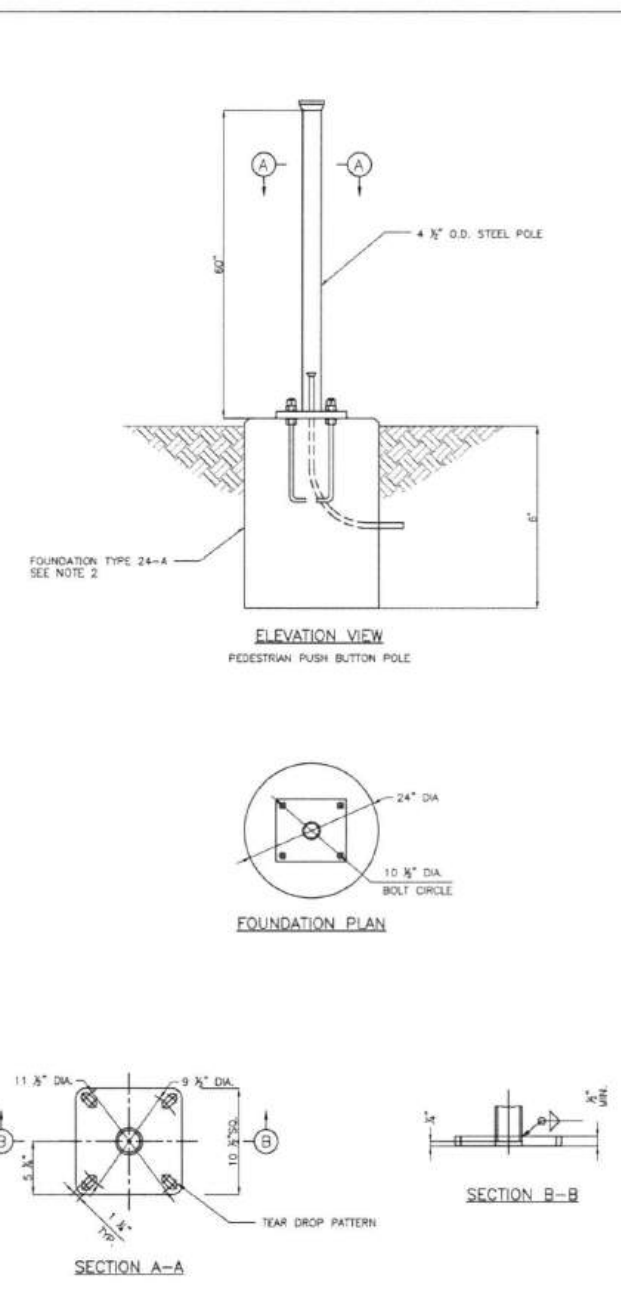
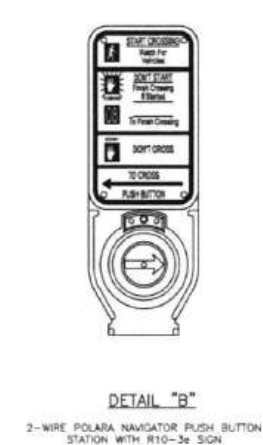
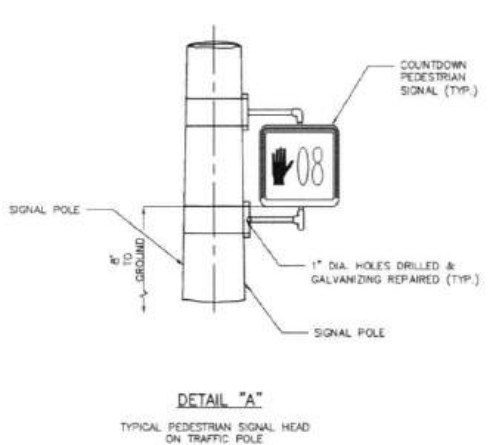
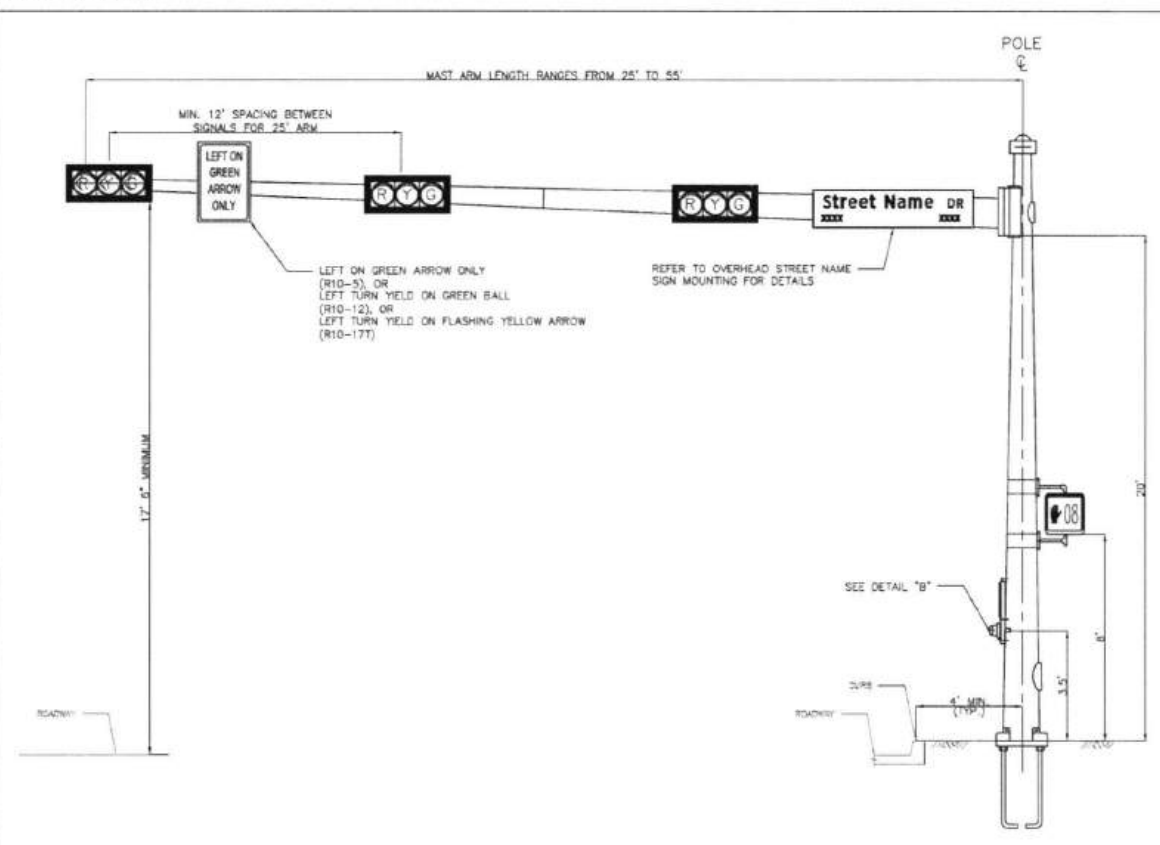
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NO.	DATE	REVISION	APP.

Design: G:\Projects\14760-0021-01-05-35 WAUGH SAFETY\TRAFFIC SIGNALS\TRAFFIC SIGNALS.DWG, 2/26/2025 1:41 PM

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- NOTE:**
1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS STATED ON CITY OF HOUSTON STANDARD DETAIL 02485-02 "PEDESTAL/PUSH BUTTON POLE DRILLED SHAFT FOUNDATION".
 2. REFER TO CITY OF HOUSTON STANDARD DETAIL 02485-02 "PEDESTAL/PUSHBUTTON POLE DRILLED SHAFT FOUNDATION" FOR ANCHOR BOLT DETAILS.

APPROVED BY: <i>Sahad binasser</i> CITY ENGINEER	APPROVED BY: <i>KRANG NGUYEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Haddock</i> 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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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.

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors No. 12228 & 12284-12287
4300 West Loop South, Suite 100, Dallas, TX 75240
214.773.3307

TYLER H. CONSER
14798
LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 6 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012-7

DRAWING SCALE
AS NOTED

CITY OF HOUSTON P
TOMS MATHEW

SHEET NO. 50 OF 72

FOR CITY OF HOUSTON USE ONLY
80160

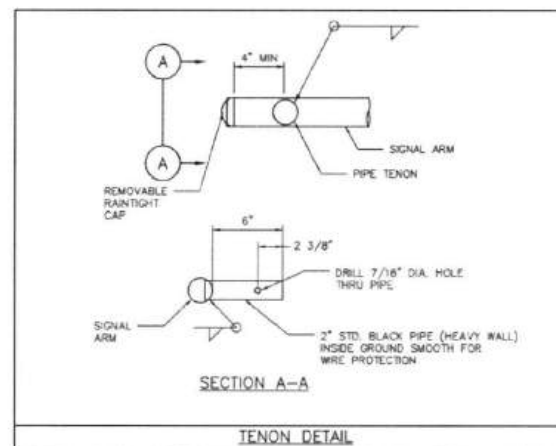
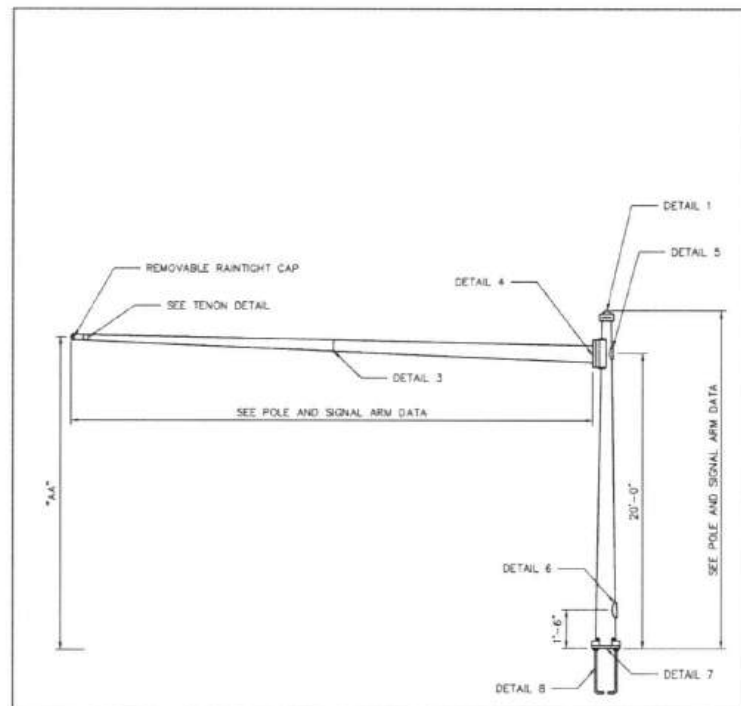
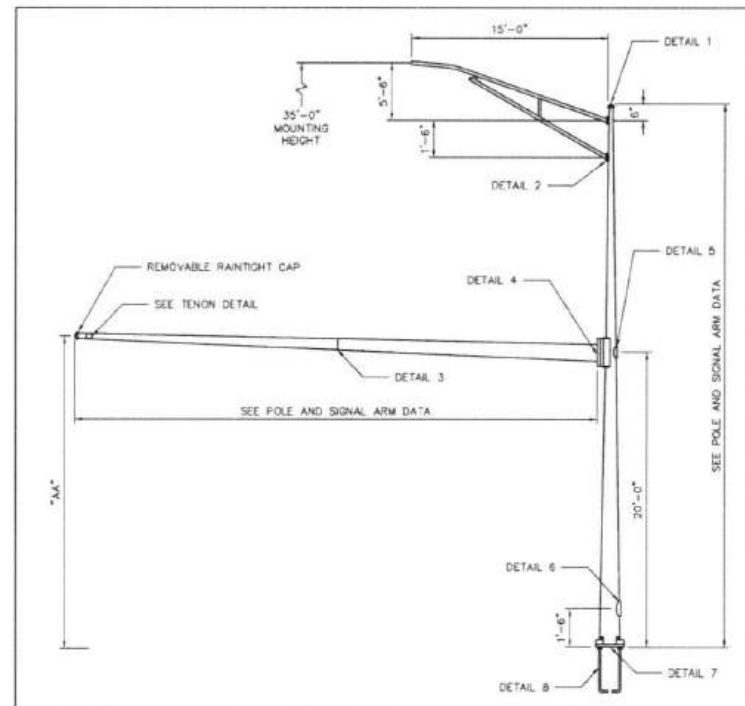
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

K:\14760\14760-0021-01-05-35 WAUGH SAFETY\TRAFFIC SIGNALS\TRAFFIC SIGNALS.DWG, 2/26/2025 1:41 PM

K:\14780\14780-001-01_1-05-25_WALSH_SAFETY\3 DESIGN PHASE\3D\TRAFFIC STANDARDS DWG_2/26/2025_1-41_PM

Drawings Exchange ID: CB71C116-8716-4896-A88E-8D3F2C358A9

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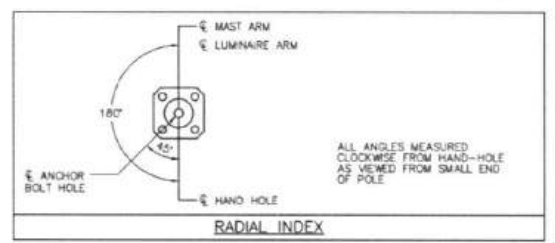
VIBRATION DISCLAIMER

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.

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. "X" (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	19.00	18.00	2.25	2.50	2.25	89.00	7.00	9.00	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 A329	36
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		DALVANIZING	A113 & A153	
ARM ATTACHMENT PLATE	A36	36			
BASEPLATE	A36	36			

*LUBRICATE IN FIELD IF NECESSARY IN LIEU OF THE REQUIREMENTS IN F3125 GR.A329.



APPROVED BY: *Sahel Khamis* CITY ENGINEER

APPROVED BY: *WIRING NAUEN* CITY TRAFFIC ENGINEER

APPROVED BY: *Carla Haddad* 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

DRAWING SCALE: NOT TO SCALE

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

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 to 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.

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Tyler H. Cowser
147988
LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 7 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER: N-T05000-0012
DRAWING SCALE: AS NOTED
CITY OF HOUSTON PROJECT: TOMS MATHEW
SHEET NO. 60 OF 72

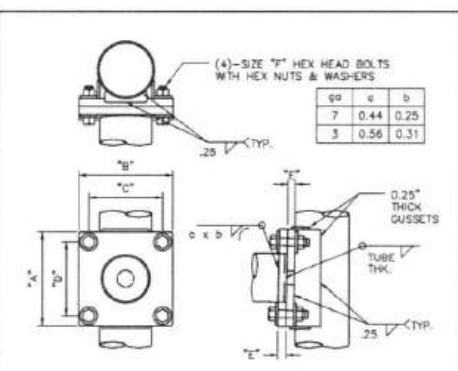
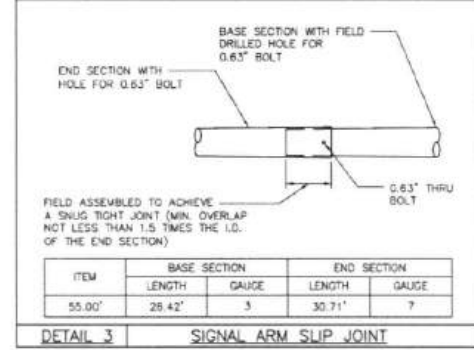
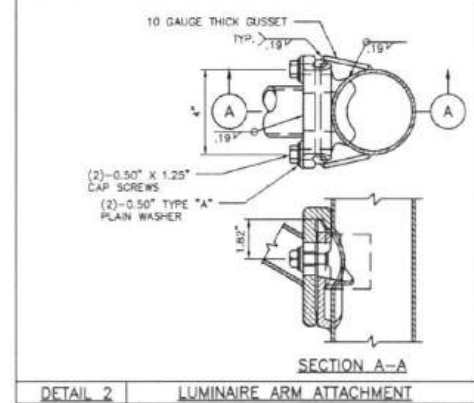
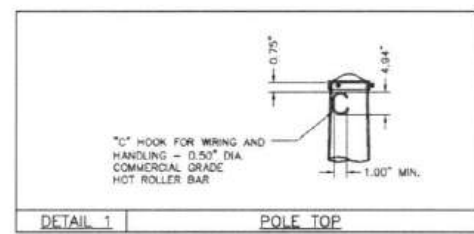
FOR CITY OF HOUSTON USE ONLY
80160

NO.	DATE	REVISION	APP.

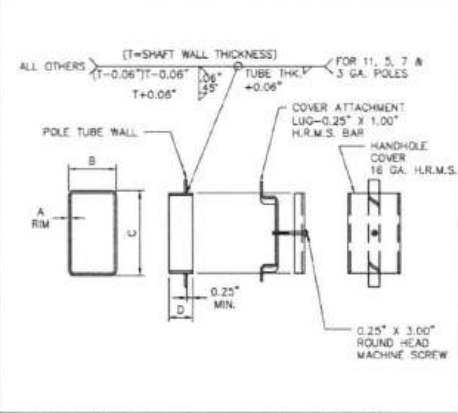
NO.	DATE	REVISION	APP.

Drawings created by: CPT/C/16/ST/4-488-488-02/2025/04/14

DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT INTEND TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THE USE OF THIS STANDARD. THE USER SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE STRUCTURE AND FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS. THE CITY OF HOUSTON ASSUMES NO LIABILITY FOR DAMAGES RESULTING FROM ITS USE.

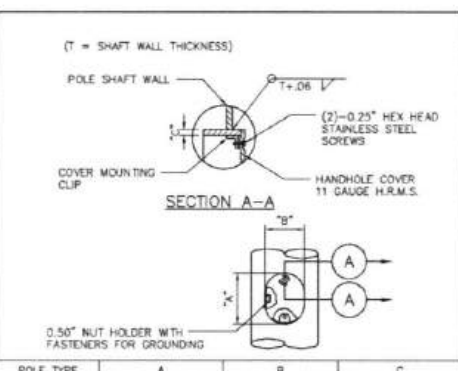


POLE TYPE	"A"	"B"	"C"	"D"	"E"	"F"
1	17.75"	17.75"	14.50"	14.50"	1.50"	1.25" x 4.50"
2	18.75"	18.75"	15.00"	15.00"	1.75"	1.50" x 5.25"

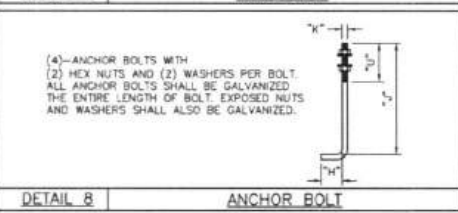
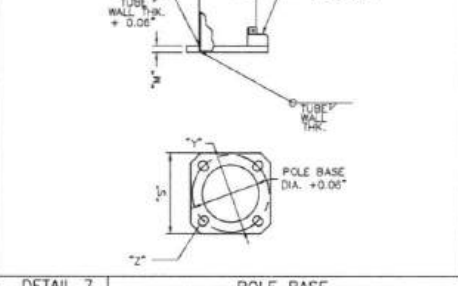


POLE TYPE	A	B	C	D
1	7 GA.	3.00"	5.00"	1.50"
2	0.50"	4.00"	8.00"	2.50"

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.

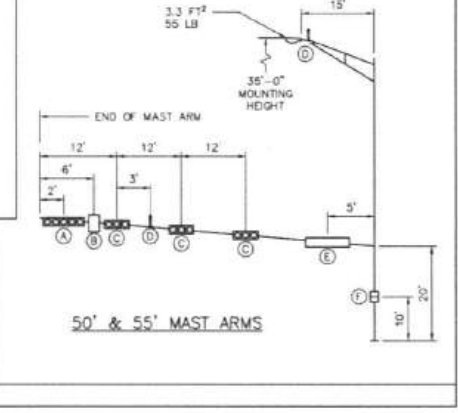
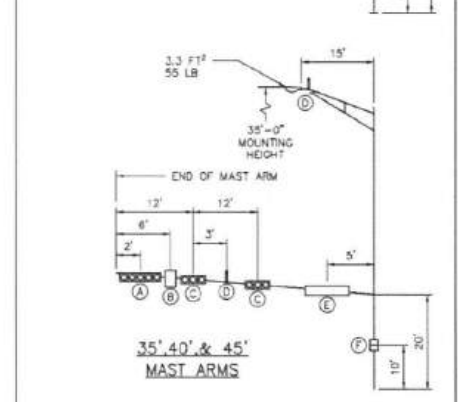
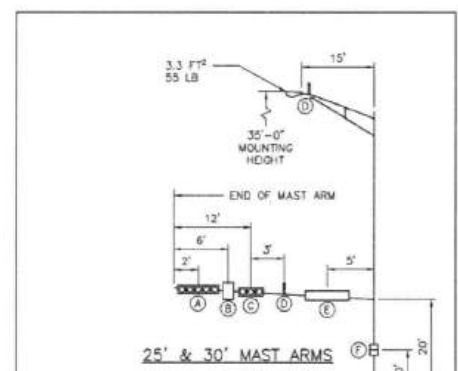


POLE TYPE	A	B	C
1	7.56"	5.19"	0.280"
2	7.31"	5.63"	0.432"



DEVICE	DESCRIPTION	PROJ. AREA (FT ²)	WEIGHT (LBS)
(A)	12" x 5" SEC. SIGNAL WITH BACKPLATES	13.33	96
(B)	30" x 36" SIGNAL ARM MOUNTED SIGN	7.50	15
(C)	12" x 3" SEC. SIGNAL WITH BACKPLATES	8.67	53
(D)	VIDEO 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: *[Signature]*
 CITY ENGINEER

APPROVED BY: *[Signature]*
 CITY TRAFFIC ENGINEER

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
 FOR CITY OF HOUSTON USE ONLY

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

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VERIFICATION OF PRIVATE UTILITY LINES

N/A

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

N/A

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

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

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

MEMORIAL HEIGHTS REDEVELOPMENT AUTHORITY

QUIDDITY
 Texas Board of Professional Engineers
 License No. 147989

TYLER H. COWSER
 LICENSED PROFESSIONAL ENGINEER
 147989

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

CITY OF HOUSTON
 HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
 SHEET 8 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
 N-T05000-0012-7

DRAWING SCALE
 AS NOTED

CITY OF HOUSTON PROJECT
 TOMS MATHEW

SHEET NO. 61 OF 72

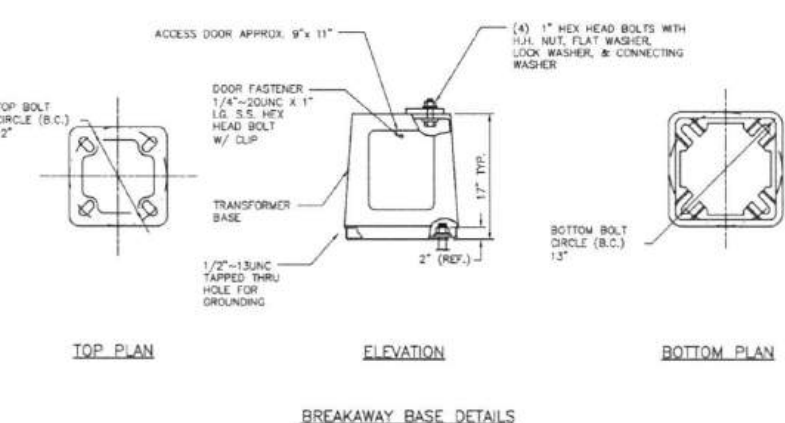
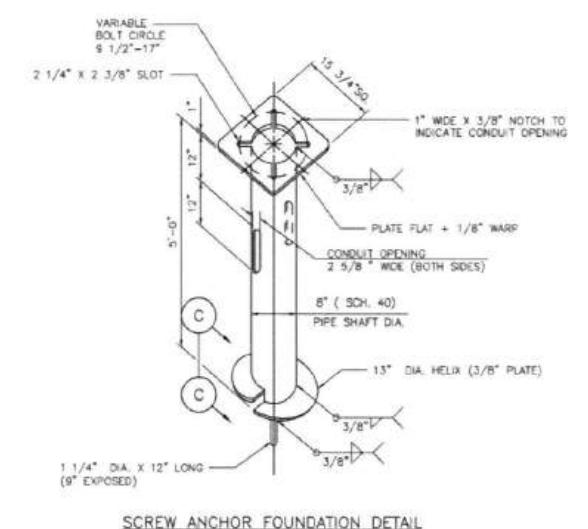
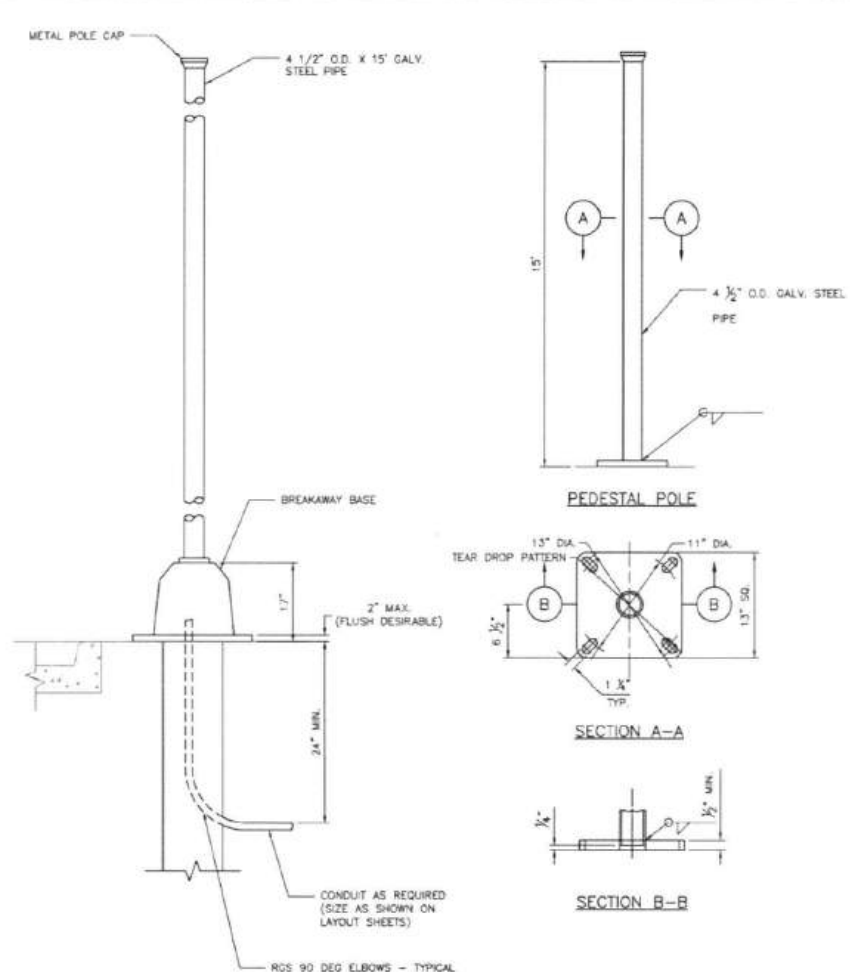
80160

K:\14760\14760-0021-01_3-0535_WAUGH SAFETY\2 DESIGN PHASE\GAD\TRAFFIC STANDARD.DWG, 2/26/2025 1:41 PM

NO.	DATE	REVISION	APP.

Drawn: E:\work\14760-0021-01-1-05-35 WAUGH SAFETY\3 DESIGN PHASE\3AD\TRAFFIC STANDARDS.DWG, 2/26/2025 1:43 PM

DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT INTEND 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.



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 35A MAXIMUM CURRENT CAPACITY AT 800V 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 492.3 (SS 492.3), "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 8 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 WATER-TIGHT BREAKAWAY ELECTRICAL CONNECTORS FOR BREAKAWAY POLES (BUSMANN HET, LITTELFUSE LET, FERRAZ-SHAMMUT FERN, OR APPROVED EQUAL).

APPROVED BY: <i>Sahar Kassar</i> CITY ENGINEER	APPROVED BY: <i>WONG NGUYEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Chris Haddock</i> 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

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 to be used for contact 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 contact verification).
Signature valid for six months.

N/A
Date

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

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. 7-2226 & 20842-02
4800 West Loop South, Suite 200, Houston, TX 77025
713-773-6267

Tyler H. Couser P.E., PLS
14760
LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 9 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER	N-T05000-0012
DRAWING SCALE	AS NOTED
CITY OF HOUSTON	TOMS MATHEW
SHEET NO.	62 OF 72

80160

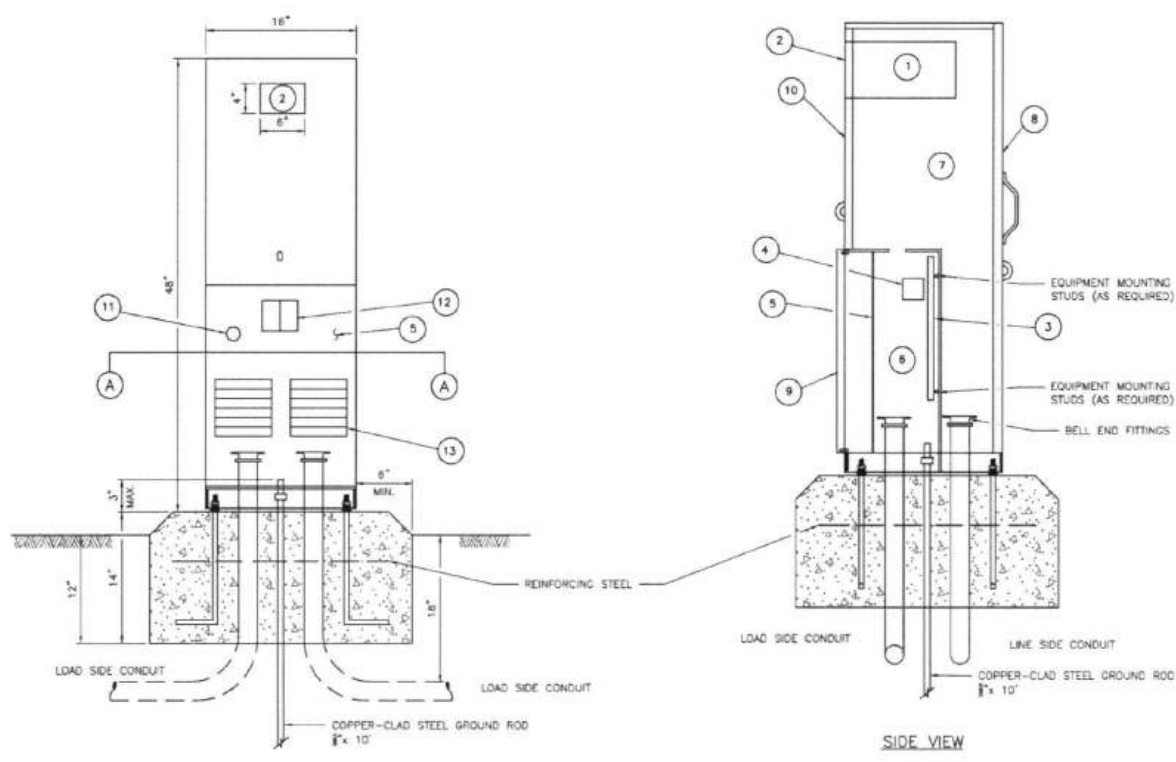
CONT	SECT	JOB	HIGHWAY
0912	72	720, etc.	VARIOUS
DIST	COUNTY		
HOU	HARRIS		

K:\14760\14760-0021-01-1-05-35 WAUGH SAFETY\3 DESIGN PHASE\3AD\TRAFFIC STANDARDS.DWG, 2/26/2025 1:43 PM

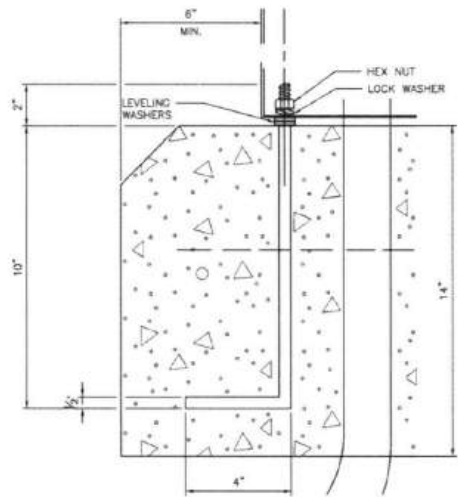
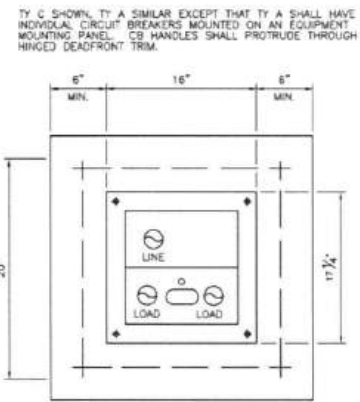
NO.	DATE	REVISION	APP.

Drawing Created: 18122281-CP25-6175-0465-265F-4038623

DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THE STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THE USE OF THIS STANDARD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF HOUSTON AND THE UTILITY COMPANY. THE CITY OF HOUSTON ASSUMES NO LIABILITY, MERCHANTABILITY, AND SAFETY, NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER.



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.



GENERAL NOTES:

- 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.
- UTILITY ACCESS DOOR SHALL HAVE STAINLESS STEEL PIANO HINGE AND PROVISIONS FOR PADLOCKING.
- PEDESTAL DOOR SHALL HAVE STAINLESS STEEL PIANO HINGE AND STAINLESS STEEL LATCH WITH PROVISIONS FOR PADLOCKING.
- METER ACCESS SHALL BE HINGED AND CAPABLE OF PADLOCKING.
- 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 SUBMITTALS TO THE CITY AND PRIOR TO CONSTRUCTING THE ELECTRICAL PEDESTAL SERVICE. ANY CHANGES REQUIRED BY THE UTILITY COMPANY SHALL BE NOTED ON THE SUBMITTALS.
- METER SOCKET SHALL BE A MINIMUM OF 100 AMP RATING AND SHALL COMPLY WITH THE LOCAL UTILITY REQUIREMENTS.
- PHOTOELECTRIC CONTROL SHALL MEET THE REQUIREMENTS AS SHOWN ON ED(S). 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. THE CONTROL STATION (H-O-A SWITCH) SHALL BE AS SHOWN ON TxDOT STANDARD ED(S) EXCEPT THAT H-O-A SWITCH OPERATING HANDLE SHALL PROTRUDE THROUGH HINGED DEADFRONT TRIM AND NEMA 1 ENCLOSURE WILL NOT BE REQUIRED.
- 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.
- REINFORCING STEEL SHALL BE #4 REBAR IN ACCORDANCE WITH TxDOT ITEM 440, "REINFORCING STEEL".
- ANCHOR BOLTS SHALL BE A36MS5 IN ACCORDANCE WITH ITEM 449, "ANCHOR BOLTS". ANCHOR BOLTS SHALL BE 1/2 INCH X 12 INCHES X 4 INCHES (DIA. X LENGTH X HOOK LENGTH).
- 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 PEDESTAL SERVICE SHALL BE PAID FOR SEPARATELY. SERVICE CONDUIT SHALL BE THE SIZE AND TYPE AS SHOWN IN THE ELECTRICAL SERVICE DATA.
- DIMENSIONS MAY VARY TO ACCOMMODATE 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.
- 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.
- 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.
- 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.
 - ALL CONDUITS ENTERING ENCLOSURES FROM UNDERGROUND MUST BE SEALED. SILICONE SHALL NOT BE ALLOWED.
 - ALL CONDUCTORS SHALL BE WEGGED AND PULL TESTED. TRAFFIC SIGNAL CABLE NOT TO BE WEGGED AFTER CONNECTION, AS ELECTRONICS WILL BE DAMAGED.
 - TOP OF CONCRETE FOUNDATION TO BE FINISHED IN A NEAT AND WORKMAN LIKE MANNER. IF LEVELING WASHERS ARE USED, NO MORE THAN 1/8 IN. HEIGHT SHALL BE USED AT ANY ONE CORNER. MAXIMUM DIP OR RISE IN FOUNDATION IS NOT TO EXCEED 1/8 IN. PER FOOT. WHEN PROPERLY INSTALLED, TOP OF SERVICE ENCLOSURE SHALL READ LEVEL FRONT TO BACK AND SIDE TO SIDE WITHIN 1/4 IN. ROCKING OR MOVEMENT OF THE SERVICE ENCLOSURE SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE STATE.
 - LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL NOT BE ALLOWED ON PS TYPE SERVICES.

LEGEND:

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

APPROVED BY: *Sahel Inam* CITY ENGINEER
 APPROVED BY: *Wahid Nadeem* CITY TRAFFIC ENGINEER

APPROVED BY: *Carl Wallick* 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	

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 to be used for conflict verification.	Signature valid for six months.
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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.
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Approved for AT&T underground conduit facilities only	Signature valid for one year.

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

QUIDDITY
Texas Board of Professional Engineers and Surveyors, Inc. 122008-0000000000
4300 West Loop South, Suite 100, Dallas, TX 75240
753.773.3587

TYLER H. CONSER
14789
LICENSED PROFESSIONAL ENGINEER

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

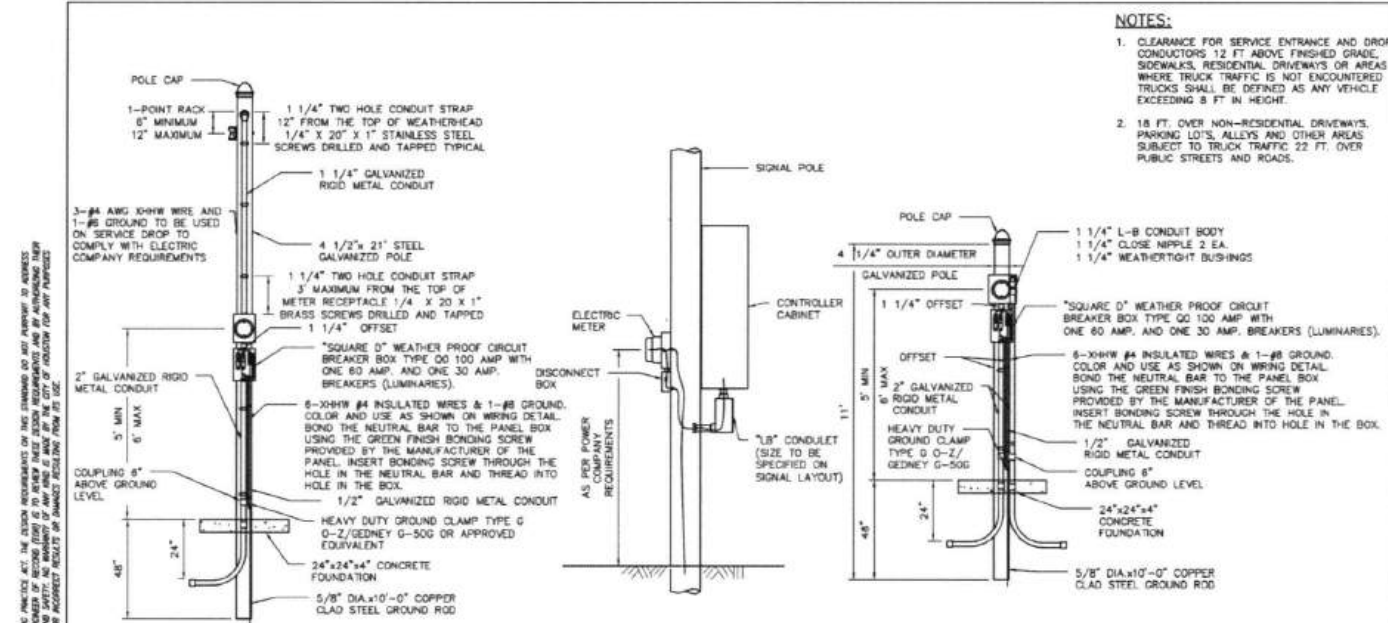
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 10 OF 19

WAUGH SAFETY IMPROVEMENTS

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

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



NOTES:

- 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.
- 18 FT OVER NON-RESIDENTIAL DRIVEWAYS, PARKING LOTS, ALLEYS AND OTHER AREAS SUBJECT TO TRUCK TRAFFIC 22 FT OVER PUBLIC STREETS AND ROADS.

DECLARATION: THE STANDARD IS DETERMINED BY THE STATE ENGINEERING PRACTICE ACT. THE DESIGN REPRESENTATION ON THIS DRAWING IS NOT A WARRANTY TO ADDRESS THE USE OF THE STANDARD. THE USER OF THIS STANDARD IS RESPONSIBLE FOR THE DESIGN REPRESENTATION ON THIS DRAWING. THE USER OF THIS STANDARD IS RESPONSIBLE FOR THE DESIGN REPRESENTATION ON THIS DRAWING. THE USER OF THIS STANDARD IS RESPONSIBLE FOR THE DESIGN REPRESENTATION ON THIS DRAWING.

METER POLE ASSEMBLY (AERIAL SERVICE)

POLE MOUNTED CONTROLLER & ELECTRIC METER DETAIL

METER POLE ASSEMBLY (UNDERGROUND SERVICE)

**CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD**

METER LOOP
(SCALE: NOT TO SCALE)

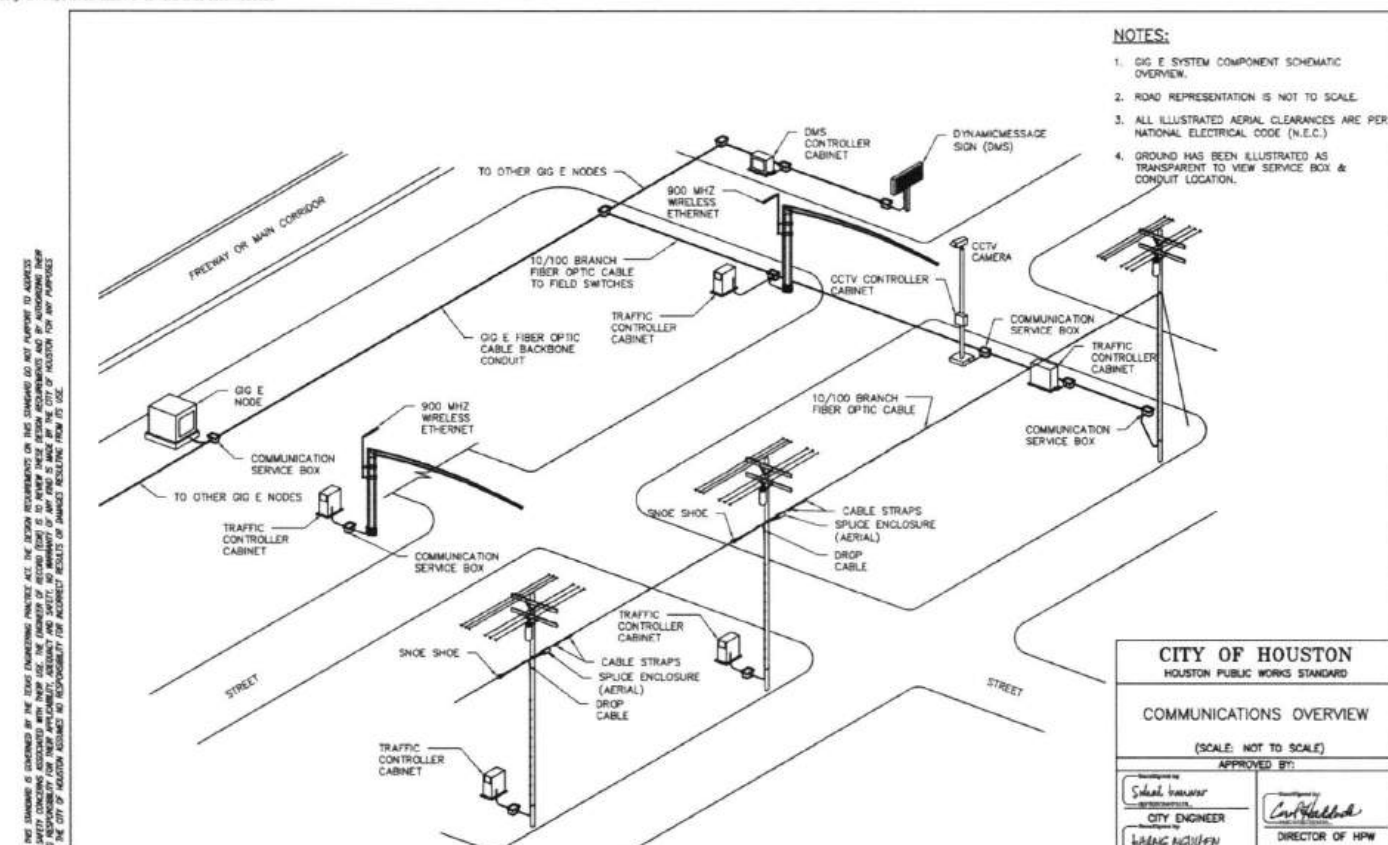
APPROVED BY:

Sahar Khamar
CITY ENGINEER

Wesley Mathew
CITY TRAFFIC ENGINEER

Carl Haddock
DIRECTOR OF HPW

EFF DATE: NOV-27-2023 DWG NO: 02893-03



NOTES:

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

DECLARATION: THE STANDARD IS DETERMINED BY THE STATE ENGINEERING PRACTICE ACT. THE DESIGN REPRESENTATION ON THIS DRAWING IS NOT A WARRANTY TO ADDRESS THE USE OF THE STANDARD. THE USER OF THIS STANDARD IS RESPONSIBLE FOR THE DESIGN REPRESENTATION ON THIS DRAWING. THE USER OF THIS STANDARD IS RESPONSIBLE FOR THE DESIGN REPRESENTATION ON THIS DRAWING. THE USER OF THIS STANDARD IS RESPONSIBLE FOR THE DESIGN REPRESENTATION ON THIS DRAWING.

**CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD**

COMMUNICATIONS OVERVIEW
(SCALE: NOT TO SCALE)

APPROVED BY:

Sahar Khamar
CITY ENGINEER

Wesley Mathew
CITY TRAFFIC ENGINEER

Carl Haddock
DIRECTOR OF HPW

EFF DATE: NOV-27-2023 DWG NO: 16700-01

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 to 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.

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

**MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY**

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors Reg. No. 123248 & 123456
4300 West Loop South, Suite 200, Dallas, TX 75240
714-773-8337

Tyler H. Dowser, P.E.
147980
REGISTERED PROFESSIONAL ENGINEER

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

**CITY OF HOUSTON
HOUSTON PUBLIC WORKS**

TRAFFIC SIGNAL DETAILS

SHEET 11 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012

DRAWING SCALE
AS NOTED

CITY OF HOUSTON P.O.C.
TOMS MATHEW

SHEET NO. 64 OF 72

80160

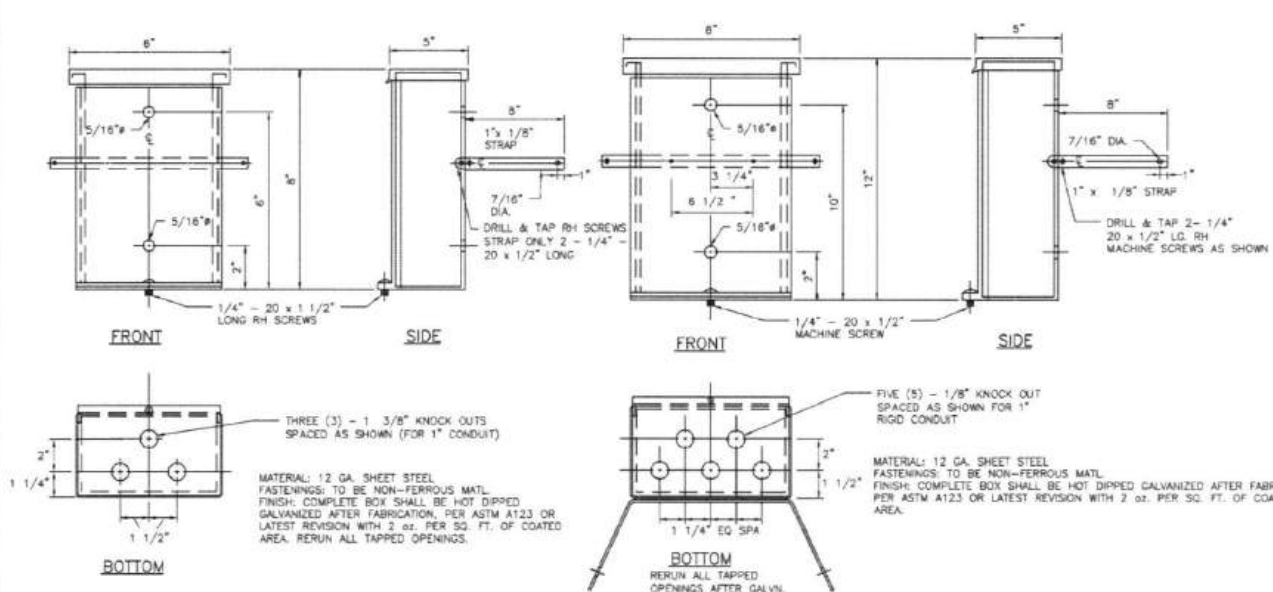
HOUSTON, TEXAS

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

NO.	DATE	REVISION	APP.

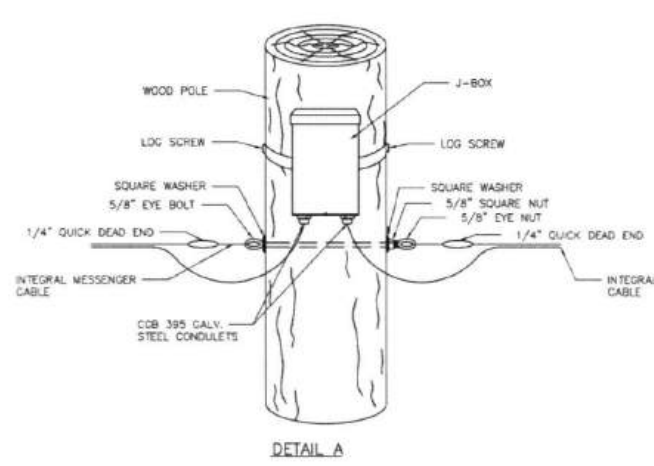
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NOTES:
 CONTRACTOR SHALL TRIM TREES AND APPLY WOOD PRESERVATIVE AS DIRECTED BY ENGINEER AND/OR APPROVED CITY OF HOUSTON REPRESENTATIVE.

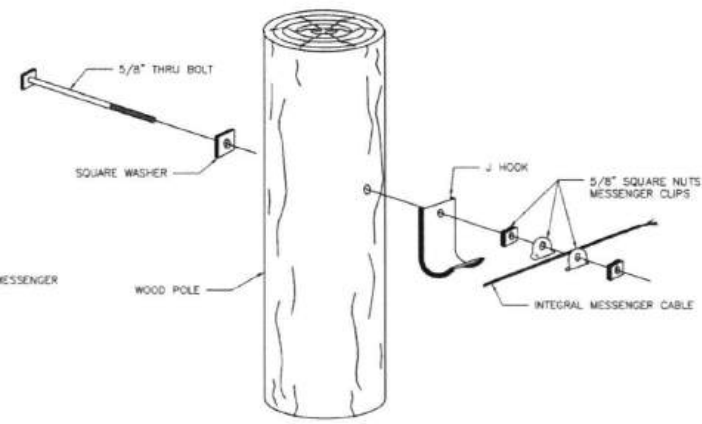


RAINTIGHT JUNCTION BOX
 6" x 6" x 5" O.A. DIM.
 3 - 1/8" BOTTOM K.O.

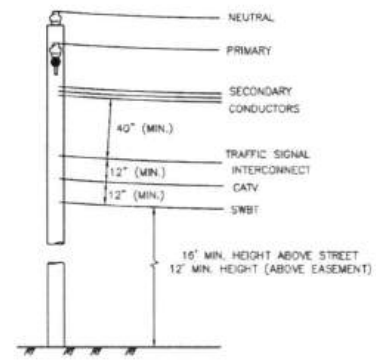
RAINTIGHT JUNCTION BOX
 8" x 5" x 12" O.A. DIM.
 5 - 1/8" BOTTOM K.O.



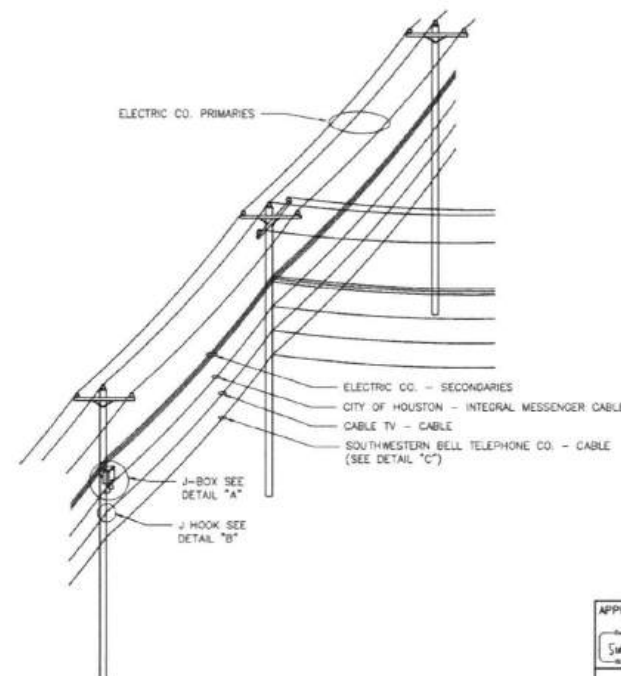
DETAIL A



DETAIL B



DETAIL C



APPROVED BY: <i>Sahar Banwar</i> CITY ENGINEER	APPROVED BY: <i>Wanda McPherson</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Hill</i> 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	

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.	
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.	

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

MEMORIAL HEIGHTS
 REDEVELOPMENT AUTHORITY

QUIDDITY
 Texas Board of Professional Engineers
 6800 West Loop South, Suite 230, Houston, TX 77048
 713-773-2327

TYLER H. DOWSER
 LICENSED PROFESSIONAL ENGINEER
 147892

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

CITY OF HOUSTON
 HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
 SHEET 12 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
 N-T05000-0012-7

DRAWING SCALE
 AS NOTED

CITY OF HOUSTON POC
 TOMS MATHEW

SHEET NO. 65 OF 72

FOR CITY OF HOUSTON USE ONLY
 ACCEPTED

80160

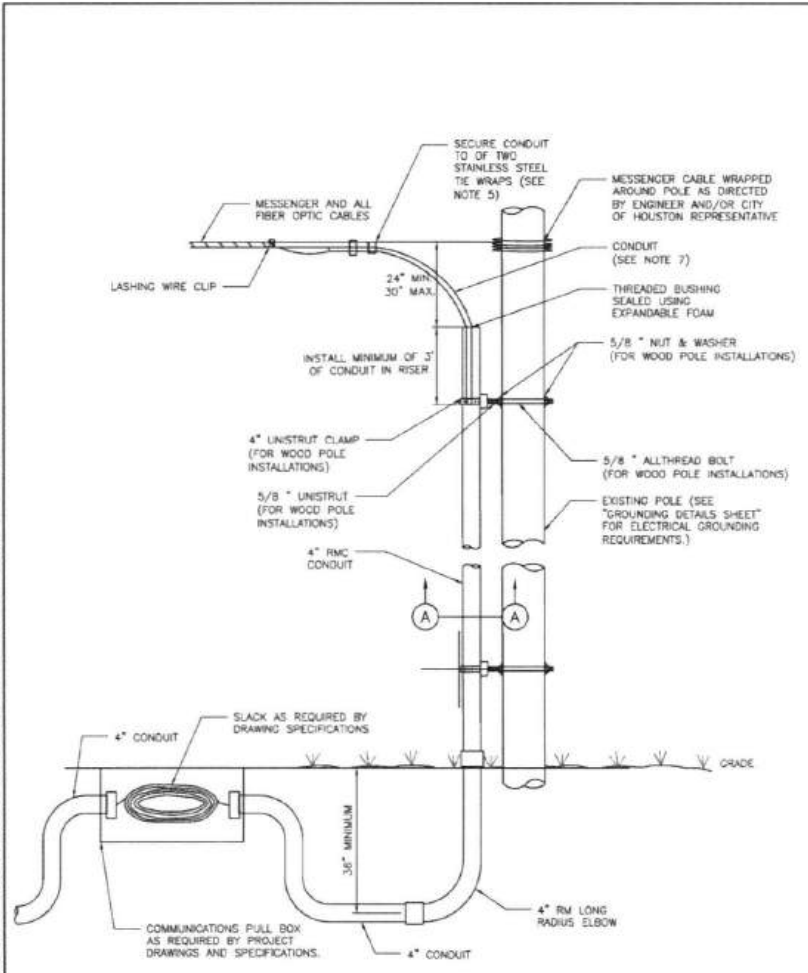
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DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS OF THIS STANDARD DO NOT IMPROVE TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (FOR) IS TO REVIEW THESE DESIGN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

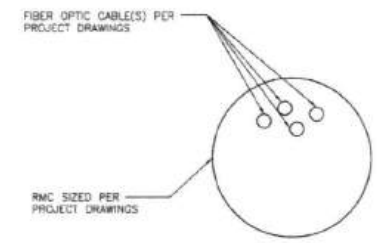
NO.	DATE	REVISION	APP.

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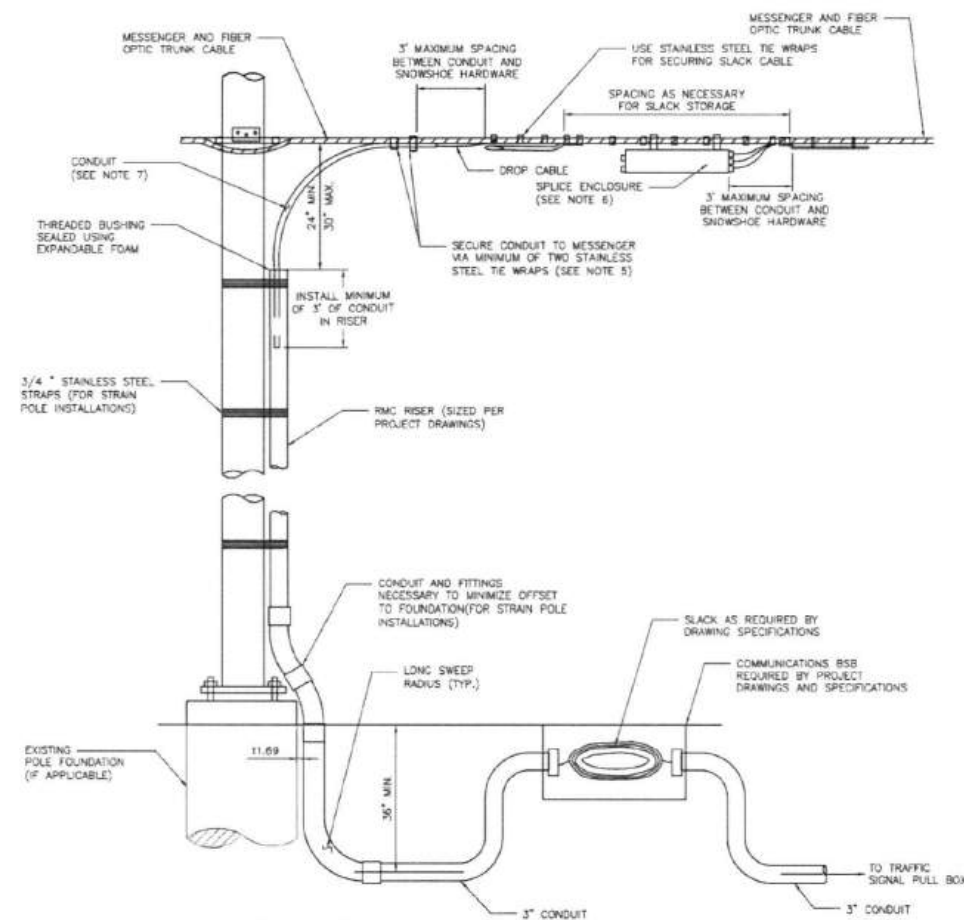
DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THE USE OF THIS STANDARD. THE USER OF THIS STANDARD SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF ANY FACILITY THAT IS DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THIS STANDARD. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR ANY DAMAGE RESULTING FROM ITS USE.



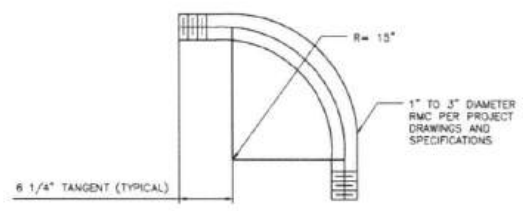
TYPICAL RIGID RISER ASSEMBLY FOR TRUNK FIBER AERIAL TO UNDERGROUND TRANSITIONS



SECTION A-A



TYPICAL RIGID RISER ASSEMBLY FOR FIBER OPTIC DROP CABLE INSTALLATION



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 RADI 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 OPTIRACK PART# MFSR24-HOX 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 AERIALY USING STAINLESS STEEL TIE WRAPS (PART# MFT 4H-LP OR APPROVED EQUAL).
6. SPLICE ENCLOSURES USED SHALL BE PART# SM 2178 LS, 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 ENCLOSURES OR SLACK STORAGE SHALL BE LOCATED OVER PUBLIC OR PRIVATE TRAVEL WAYS.
9. ALL REQUIRED HARDWARE AND CONDUIT SHALL BE GALVANIZED.

APPROVED BY: <i>Sahel Khamar</i> CITY ENGINEER	APPROVED BY: <i>Wahne Nuyten</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Haddock</i> 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	

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. No. 12288-A, 12/28/2014
4330 West Loop South, Suite 102, Dallas, TX 75240
754.773.3327

TYLEN H. CONSER
REGISTERED PROFESSIONAL ENGINEER
147989
EXPIRES 12/31/2025

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 13 OF 19

WAUGH SAFETY IMPROVEMENTS

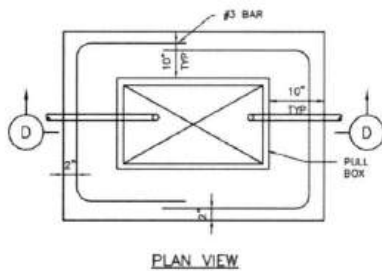
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DRAWING SCALE: AS NOTED
CITY OF HOUSTON PROJ: TOMS MATHEW
SHEET NO. 66 OF 122

80160

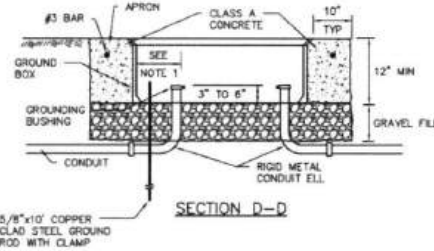
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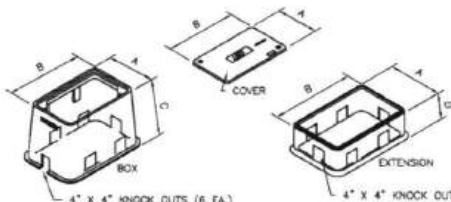


PLAN VIEW

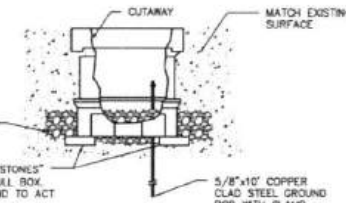


SECTION D-D

APRON FOR PULL BOXES



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

- 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 ENCRUST 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.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PULL BOXES
(SCALE: NOT TO SCALE)

APPROVED BY:

Salud Lozano
CITY ENGINEER

Carla Hallock
DIRECTOR OF HPW

LEFT DATE: NOV-27-2023 DWG NO: 16710-01

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

N/A

Date

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Signature valid for six months.

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Date

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers
and Land Surveyors, No. 112288 & 122888
4300 West Loop South, Suite 100, Dallas, TX 75241
714.773.3337

Tyler H. Conser P.E.
147899
LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 14 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER
N-T05000-0012-7

DRAWING SCALE
AS NOTED

CITY OF HOUSTON
TOMS MATHEW

SHEET NO. 67 OF 72

ACCEPTED

80160

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

NOTES:

1. ALL CONDUIT SHALL BE TO THIS

342-HOUSING 1 DETAIL TOP VIEW

303 DETAIL

342-HOUSING 1 DETAIL SIDE VIEW

303 DETAIL SIDE VIEW

303 DETAIL

APRON DETAIL TOP VIEW

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONTROLLER FOUNDATIONS

APPROVED BY:
Salud Lozano
CITY ENGINEER

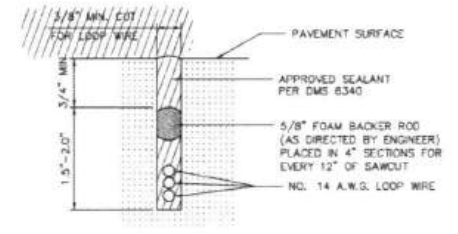
APPROVED BY:
Carla Hallock
DIRECTOR OF HOUSTON PUBLIC WORKS

LEFT DATE: NOV-27-2023 DWG NO: 16710-01

NO.	DATE	REVISION	APP.

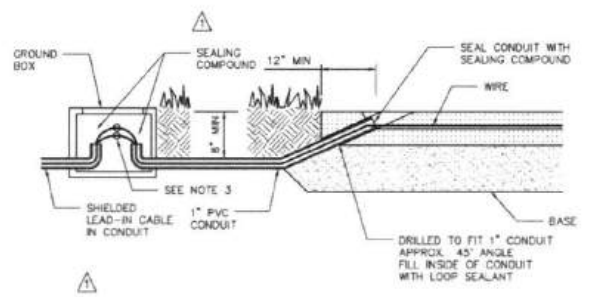
NO.	DATE	REVISION	APP.

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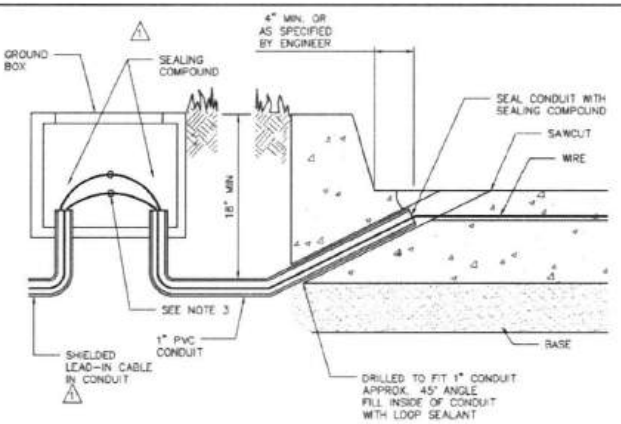


LOOP SAW CUT CROSS-SECTION

* 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)

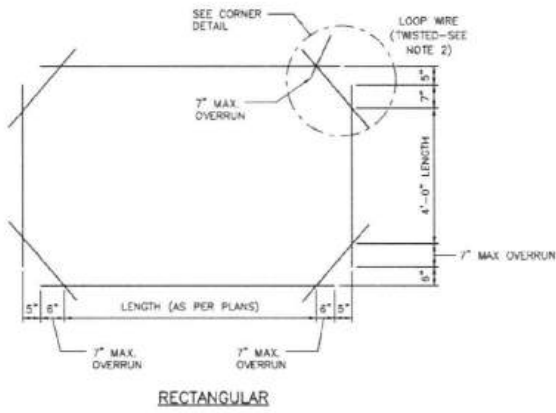
GENERAL NOTES:

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 MSA 50-2 SHIELDED CABLE AND SHALL BE SOLDERED TO THE LOOP WIRE. THE SOLDER JOINTS SHALL BE SEALED WITH SCOTCH-CAST 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.

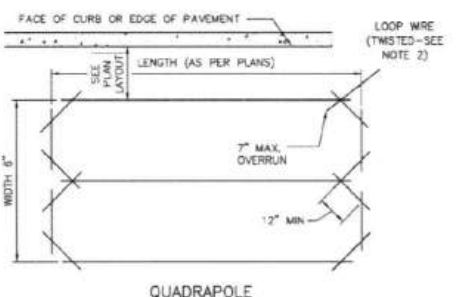
RECOMMENDED NUMBER OF TURNS FOR LOOP DETECTORS

LOOPS PERMETER 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', 8' 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 PREGROUND 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, (T) 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.

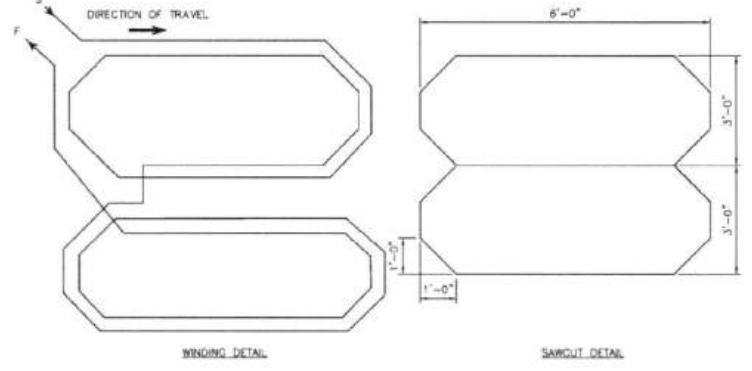


RECTANGULAR

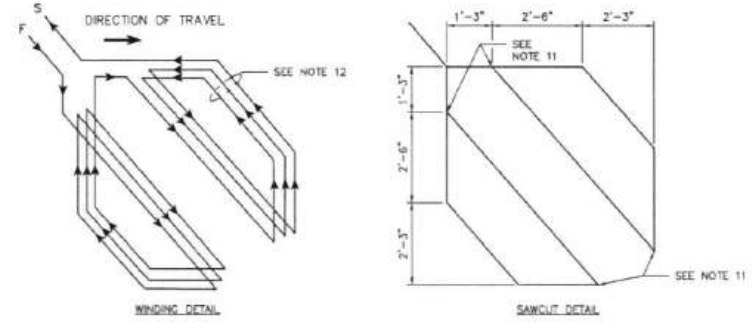


QUADRUPLE

TYPICAL VEHICULAR LOOP DETECTOR LAYOUT
(AS SPECIFIED IN PLANS)

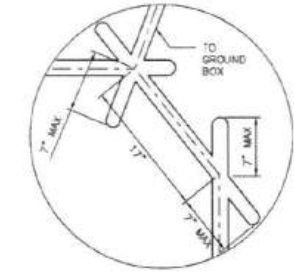


QUADRUPLE (Q) TYPE LOOP DETECTOR CONFIGURATION

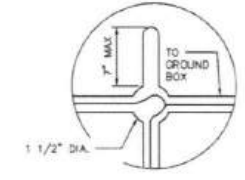


DIAGONAL SLASHED (D) TYPE LOOP DETECTOR CONFIGURATION

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



RECTANGULAR & HEXAGON LOOP



RECTANGULAR & HEXAGON LOOP (ALT.)

TYPICAL CORNER DETAILS

APPROVED BY: <i>Sahel Hanou</i> CITY ENGINEER	APPROVED BY: <i>BRUCE NICHOL</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carla Haddad</i> 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

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

N/A	Date
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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.

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors, Reg. No. 12208-01, 09/04/2018
6300 West Loop South, Suite 202, Dallas, TX 75243
754.773.3307

TYLER H. COWSER
147989
LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 15 OF 19

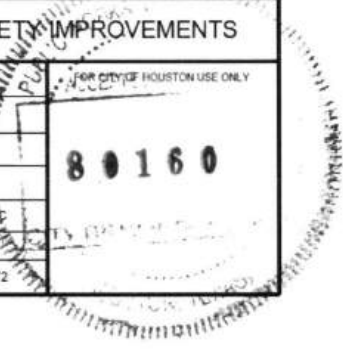
WAUGH SAFETY IMPROVEMENTS

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

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

K:\14760\14760-0021-01-1-0515_WAUGH_SAFETY\TRAFFIC_SIGNALS\CAO\TRAFFIC_SIGNALS\STANDARD.DWG_2/26/2025 1:41 PM

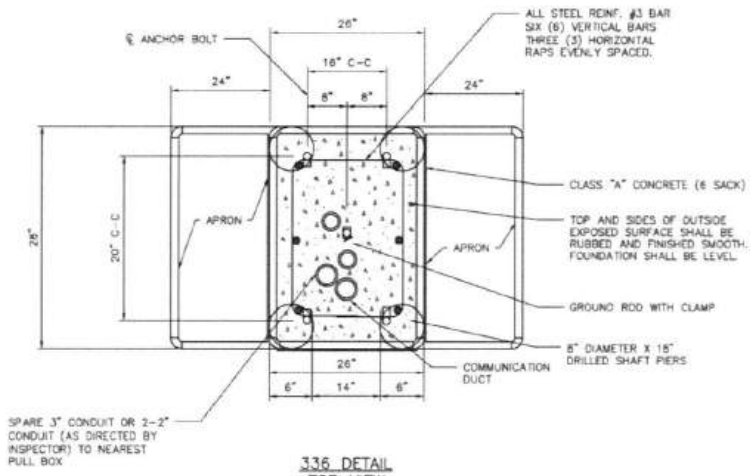
DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL SAFETY CONCERNS ASSOCIATED WITH THE USE OF THIS STANDARD. THE USER OF THIS STANDARD SHALL BE RESPONSIBLE FOR IDENTIFYING AND ADDRESSING ALL SAFETY CONCERNS. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR ANY DAMAGES RESULTING FROM ITS USE.



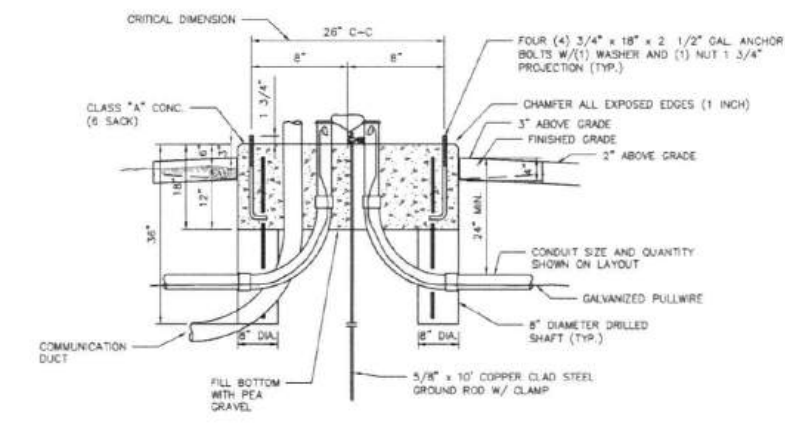
REV: 14760\14760-0021-01 1-05-35 WAUGH SAFETY\3 DESIGN PHASE\GAD\TRAFFIC STANDARDS.DWG, 2/26/2025 1:41 PM

Drawings Created: 05/12/2011 07:05:45B 20074089025

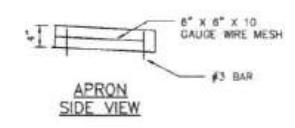
DISCLAIMER: THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS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



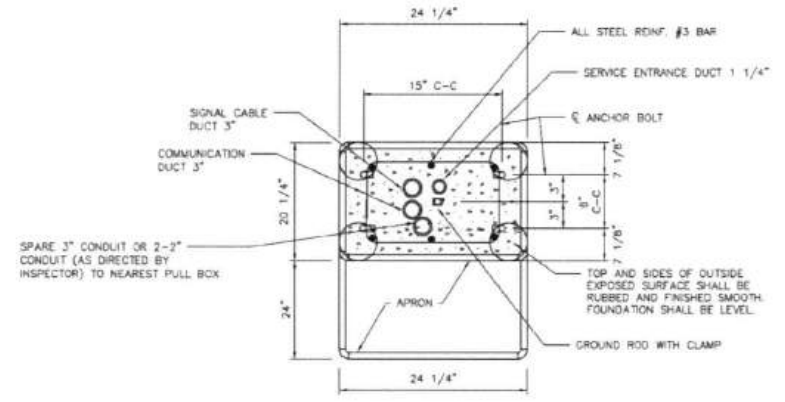
336 DETAIL TOP VIEW



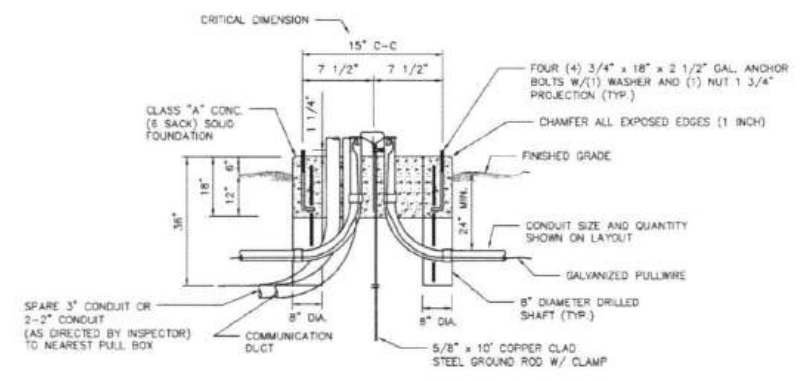
336 DETAIL SIDE VIEW



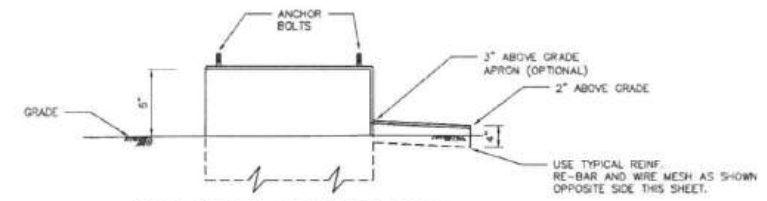
APRON SIDE VIEW



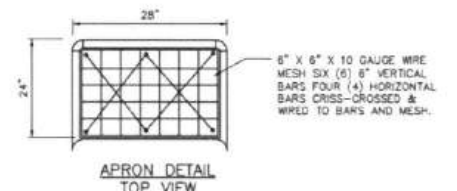
MODEL ITS 346 AND ATC 356i DETAIL TOP VIEW



MODEL ITS 346 AND ATC 356i DETAIL SIDE VIEW



MODEL ITS 346 AND ATC 356i DETAIL



APRON DETAIL TOP VIEW

NOTES:
1. APRON TO BE INSTALLED IF NEEDED.

APPROVED BY: <i>Sahar Khamar</i> CITY ENGINEER	APPROVED BY: <i>WIRANG NUSYEN</i> CITY TRAFFIC ENGINEER
APPROVED BY: <i>Carl Haddock</i> DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 18730-02
CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
CONTROLLER FOUNDATIONS	
SHEET 02 OF 03 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

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N/A
Date _____
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Signature valid for one year.

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. 1-22288 & 22882-22
4200 West Loop South, Suite 500, Dallas, TX 75240
754-7722807

Tyler H. Cowser, P.E., Prec. 81770288
TYLER H. COWSER
147989
LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 16 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER _____ JOB CITY OF HOUSTON USE ONLY

N-T05000-001

DRAWING SCALE

AS NOTED

CITY OF HOUSTON EDC

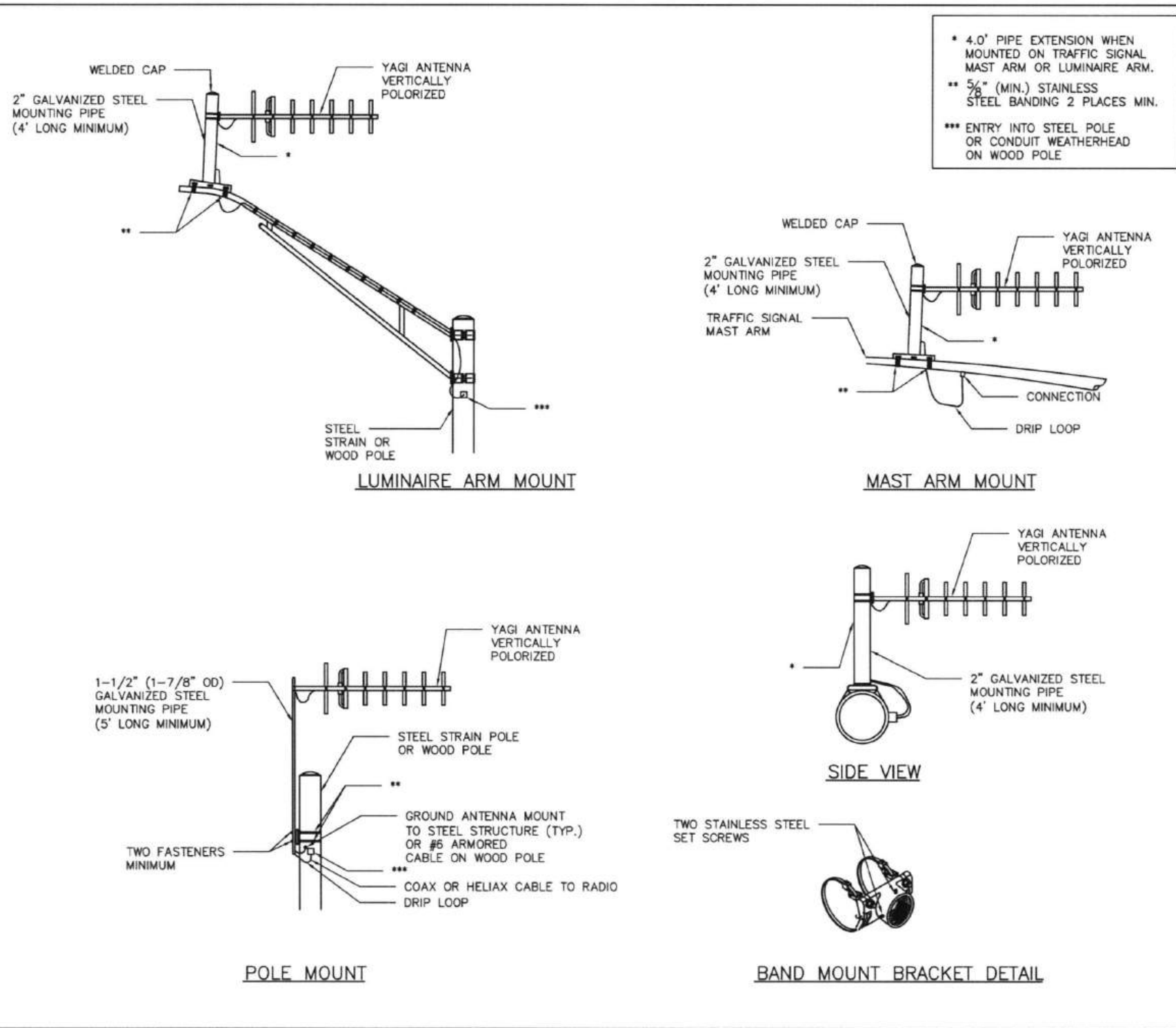
TOMS MATHEW

SHEET NO. 69 OF 72

80160

NO.	DATE	REVISION

NO.	DATE	REVISION



- * 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

- 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.

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

ANTENNA MOUNTING DETAILS
(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: <i>Sulal banwar</i> 8E780C541F5475 CITY ENGINEER	DocuSigned by: <i>Carl Hallock</i> A30C410B720A6A DIRECTOR OF HPW
DocuSigned by: <i>BANG NGUYEN</i> 95A28E1DA1794C72 CITY TRAFFIC ENGINEER	

EFF DATE: NOV-27-2023 DWG NO: 16738-01

NOTICE:
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N/A Date _____

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

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

MEMORIAL HEIGHTS
REDEVELOPMENT AUTHORITY

QUIDDITY
Texas Board of Professional Engineers and Land Surveyors Reg. No. 12208 & 1208428
4200 West Loop South, Suite 100, Houston, TX 77025
713.773.2207

TYLER H. DOWSER
14759D
LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
SHEET 18 OF 19

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: 71 OF 72

80160

K:\14760\14760-0021-01_1-0535_WALCH_SAFETY\2 DESIGN_PHASE\CAO\TRAFFIC\STANDARDS.DWG, 2/26/2025 1:41 PM

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 Ethernet 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 Ethernet 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.

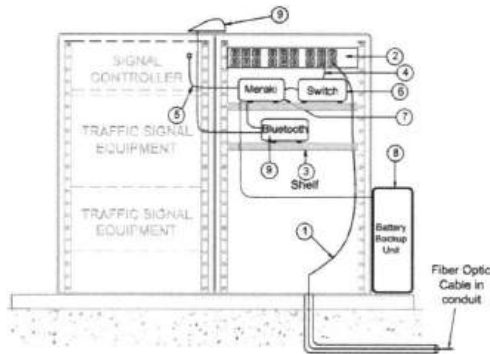
Notes

All existing and proposed 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 Design Operations/ITS section approval 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 713-881-8000.

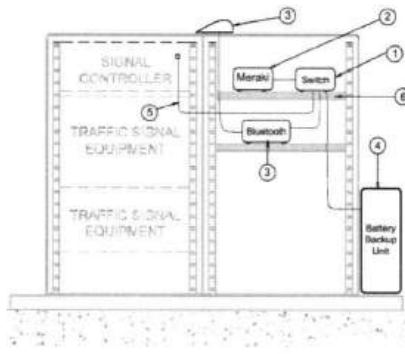
For a modified or reconstructed signalized intersection, all existing ITS infrastructure must be shown on design plans and kept operational during construction. If there is no existing ITS communication devices, new devices shall be installed and included in the design. If there is existing ITS communication 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

P.L.E. Communication Installation.dwg

DATE: 01-28-2021

SCALE: NTS

CITY OF HOUSTON P.W.

P.W. NO. 1 OF 1

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

MEMORIAL HEIGHTS
 REDEVELOPMENT AUTHORITY

QUIDDITY
 Texas Board of Professional Engineers
 and Land Surveyors, Reg. No. 112288 & 122882-02
 4300 West Loop South, Suite 100, Dallas, TX 75240
 753.773.2227

TYLER H. DOWSER
 14798
 LICENSED PROFESSIONAL ENGINEER

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

CITY OF HOUSTON
 HOUSTON PUBLIC WORKS

TRAFFIC SIGNAL DETAILS
 SHEET 19 OF 19

WAUGH SAFETY IMPROVEMENTS

WBS NUMBER: N-T05000-001
 DRAWING SCALE: AS NOTED
 CITY OF HOUSTON P.W. TOMS MATHEW
 SHEET NO. 72 OF 72

80160

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

NO.	DATE	REVISION	APP.