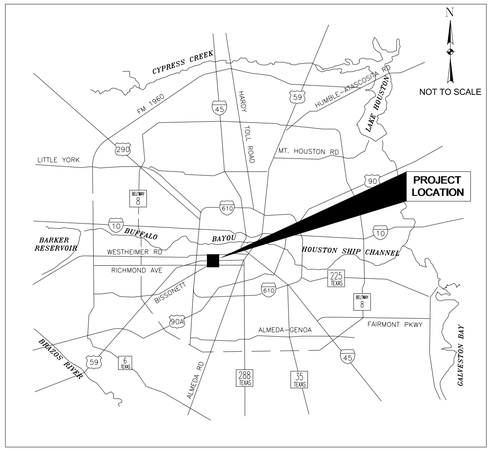
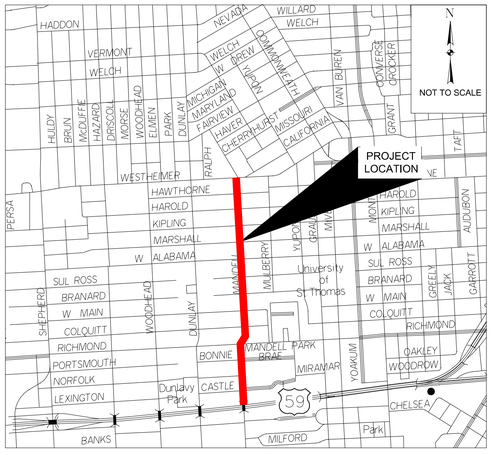
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MONTROSE REDEVELOPMENT AUTHORITY/TIRZ 27

MANDELL ST. IMPROVEMENTS
COH WBS: N-T27000-0003-7



LOCATION MAP



VICINITY MAP
KEY MAP NO 492V, 492Z, &
493N
GIMS TITLE No. 5356A, 5356C, 5357C
COUNCIL DISTRICT: C

TDLR NUMBER : TABS202315880

MAYOR
JOHN WHITMIRE

CONTROLLER
CHRIS HOLLINS

DISTRICT
COUNCIL MEMBERS

AMY PECK — DISTRICT A
TARSHA JACKSON — DISTRICT B
JOE PANZARELLA — 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
ALEJANDRA SALINAS — POSITION 4
SALLIE ALCORN — POSITION 5

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

FLOODPLAIN INFO
THIS PROJECT LIES WITHIN ZONE X UNSHADED PER FIRM PANEL #48201C0860L (EFF.6/18/2007).

TEXAS811 NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
WWW.TEXAS811.ORG/TEXAS811
OR 1-900-344-8377

ANY DAMAGE TO THE TRAFFIC SIGNAL INFRASTRUCTURE AS A RESULT OF THE CONSTRUCTION ACTIVITIES, SHALL BE REPAIRED OR REPLACED BY CONTRACTOR.

CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, OFFICE OF CITY ENGINEERS, 48 HOURS PRIOR TO STARTING ON THIS PROJECT. TELEPHONE NUMBER 832-394-9098

OCTOBER 2026

NO.	DATE	REVISION	APP.

HRGreen
11750 KATY FREEWAY
SUITE 400
HOUSTON, TX 77079
(832) 318-8800
(713) 965-0044 FAX
Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED
PROFESSIONAL ENGINEER
10/08/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

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

FOR CITY OF HOUSTON USE ONLY

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

DocuSigned by:
Albert Portella
5A7171986A8A4A0...
10/16/2026

For DIRECTOR OF HOUSTON PUBLIC WORKS DATE

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

SHEET NO 1 OF 101 SHEETS

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NO.	DATE	REVISION	APP.

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SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
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LICENSED
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HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

INDEX OF SHEETS

SHEET 1 OF 1

WBS NUMBER
N-T27000-003-7
DRAWING SCALE
AS NOTED
CITY OF HOUSTON PM
JIADA HUANG
SHEET NO. 2 OF 101

FOR CITY OF HOUSTON USE ONLY

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

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GENERAL CONSTRUCTION NOTES (WITHIN CITY OF HOUSTON ROW)

1. UNLESS OTHERWISE NOTED AND APPROVED ON DRAWINGS, CONSTRUCT CIVIL INFRASTRUCTURE IN ACCORDANCE WITH THE EFFECTIVE EDITION OF THE HOUSTON PUBLIC WORKS STANDARD CONSTRUCTION SPECIFICATIONS, STANDARD CONSTRUCTION DETAILS, AND SUPPLEMENTS, ADDENDA AND AMENDMENTS THERETO. THE LATEST EDITION OF THE ABOVE PUBLICATIONS CAN BE FOUND AT: HTTP://WWW.HOUSTONPERMITTINGCENTER.ORG/OFFICE-CITY-ENGINEER/DESIGN-AND-CONSTRUCTION-STANDARDS.

2. THE DESIGN MUST BE CONSISTENT WITH THE EFFECTIVE EDITION OF HOUSTON PUBLIC WORKS INFRASTRUCTURE DESIGN MANUAL AND TCEQ (TEXAS COMMISSION ON ENVIRONMENTAL QUALITY) REQUIREMENTS.

3. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. UTILITIES MARKED WITHIN THE PUBLIC RIGHT OF WAY OR IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, RULE 15/64 18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.

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

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

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

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

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

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

10. CONTRACTOR SHALL NOT UNDERTAKE SIDEWALK RECONSTRUCTION ON BOTH SIDES OF THE STREET SIMULTANEOUSLY, NOR RECONSTRUCT ALL FOUR CORNERS AT TN INTERSECTION AT THE SAME TIME, RECONSTRUCTION ACTIVITIES SHALL BE PHASED TO MAINTAAIN CONTINUOUS AND SAFE PEDESTRIAN ACCESS THROUGHOUT CONSTRUCTION, AT ALL TIMES, ONE SIDE OF THE STREET OR MULTIPLE CONRNERS OF THE INTERSECTION SHALL REMAIN OPEN AND NAVIGABLE FOR PEDESTRIAN USE. THE CONTRACTOR SHALL COORDINATE PHASING AND ACCESS ,MEASURES WITH THE PROJECT ENGINEER PRIOR To BEGINNING WORK IN EACH AREA.

11. CONTRACTOR SHALL PROVIDE ADVANCE NOTIFICATION TO AFFECTED RESIDENTS PRIOR TO COMMUNICATING ANY REMOVAL OR RECONSTRUCTION ACTIVITIES THAT MAY IMPACT DRIVEWAY ACCESS COMMUNICATION SHALL CLEARLY IDENTIFY THE ANTICIPATED DURATION AND NATURE OF THE DISRUPTION, SHALL BE COORDINATED IN CONSULTATION WITH THE PROJECT ENGINEER. DRIVEWAY ACCESS SHALL BE RESTORED OR MAINTAINED TO THE EXTENT FEASIBLE THROUGHOUT CONSTRUCTION, WITH APPROPRIATE ACCOMMODATIONS PROVIDED AS NECESSARY.

STORM NOTES

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

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

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

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

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

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

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

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

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

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

11. ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.

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

STREET AND BRIDGE NOTES

1. FILL AREAS ON PLANS SHALL BE FILLED IN LAYERS NOT EXCEEDING 8" IN DEPTH AND EACH COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY PRIOR TO INSTALLATION OF WATER LINE AND FILL AREA SHALL BE SEEDED ANDFERTILIZED WITHIN 10 WORKING DAYS.

2. UTILITY CONTRACTOR SHALL PROVIDE TEMPORARY SILT BARRIER FENCE ON ALL NON-CURBED INLETS WHICH WILL REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.

3. CONTRACTOR SHALL PROVIDE SILT BARRIER FENCE ON ALL STAGE 1 CURB INLETS.

4. EXISTING PAVEMENTS, CURBS, DRIVEWAYS, AND SIDEWALKS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO CITY OF HOUSTON STANDARDS, WITH LATEST ADDENDA AND AMENDMENTS THERETO.

5. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY UPON COMPLETION OF JOB SHALL BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK.

6. EXPOSED 15"OF REINFORCING STEEL AT PROPOSED SAWED JOINT IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BARS 24"LONG 24"C-C DRILLED AND EMBEDDED 8"INTO THE CENTER OF THE EXISTING SLAB WITH "PO ROC" OR EQUAL.

7. WHEELCHAIR RAMPS SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF HOUSTON STANDARDS AT ALL INTERSECTIONS WHERE SIDEWALKS EXIST AND THE EXISTING CURB OR SIDEWALK IS DAMAGED OR REMOVED DURING CONSTRUCTION.

8. PRIOR TO STREET CONSTRUCTION, THE CONTRACTOR SHALL CONTACT HOUSTON PUBLIC WORKS AT(PHONE) 832-394-9578 AND COMPLY WITH ALL REQUIREMENTS FOR THE ISSUANCE OF NECESSARY PERMITS/WORK ORDERS FOR STREET CONSTRUCTION.

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

SWPPP CONSTRUCTION NOTES

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

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

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

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

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

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

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

TRAFFIC NOTES

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

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

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) LATEST EDITION WITH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.

2. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00PM TO 7:00AM.

3. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS. TRAFFIC CONTROL PLANS SHALL INCLUDE ONE-WAY AND/OR DETOUR PLANS. CONTRACTOR SHALL MAINTAIN ADA COMPLAINT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO THE BUS STOP.

4. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.

5. CONTRACTOR SHALL SECURE ROADWAY/SIDEWALK/STREET/BICYCLE FACILITY PERMITS AS DESCRIBED IN CITY OF HOUSTON ORDINANCE, CHAPTER 40 STREETS & SIDEWALKS, SECTION 40-361 FROM HOUSTON PERMITTING CENTER (MOBILITY PERMIT SECTION AT HTTPS://GEOHUB.HOUSTONTX.GOV) BEFORE IMPLEMENTING THE TRAFFIC CONTROL PLAN. THE APPLICATION MUST BE SUBMITTED AT LEAST TEN BUSINESS DAYS PRIOR TO THE IMPLEMENTATION OF THE TRAFFIC CONTROL PLAN AND/OR BEGINNING CONSTRUCTION WORK. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS, CONSTRUCTION SEQUENCING, AND CONSTRUCTION SCHEDULE WITH THE APPLICATION.

6. CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES

7. ACCESS TO DRIVEWAYS ADJACENT TO THE CONSTRUCTION WORK ZONE SHALL BE MAINTAINED AT ALL TIMES AS MUCH AS POSSIBLE. ADDITIONAL CONES AND/OR DELINEATORS MAY BE REQUIRED TO DELINEATE THE DRIVEWAY ACCESS ROUTE THROUGH THE CONSTRUCTION WORK ZONE. A MINIMUM OF ONE TRAVEL LANE SHALL BE MAINTAINED ACROSS THE DRIVEWAY, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE CITY OF HOUSTON.

8. ADDITIONAL OFF DUTY POLICE OFFICERS/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED AT THE DIRECTION OF THE CITY EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS.

NO.	DATE	REVISION	APP.

MONTROSE
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JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
HRGREEN INC. 07/20/2026
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

GENERAL CONSTRUCTION NOTES

SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 3 OF 101	

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
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PRIVATE UTILITY NOTES:

AT&T TEXAS/ SWBT FACILITIES:

1. THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.
6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER KEVIN RAY AT (713) 614-1983 OR EMAIL HIM AT KR7896@ATT.COM IF CABLE LOCATE REQUESTS ARE NOT COMPLETED FOR OUR AT&T TEXAS/SWBT FACILITIES.

CENTERPOINT ENERGY NOTES:

CAUTION: UNDERGROUND GAS FACILITIES

1. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.
   -WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL 713-207-5463 OR 713-945-8037 (7:00 AM TO 4:30 PM) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
   -WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
   -WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
   -FOR EMERGENCIES REGARDING GAS LINES CALL 713-659-2111 OR 713-207-4200
2. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL LINES:

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

   -ANY ACTIVITY WHERE PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND

   -OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.

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

ACTIVITIES ON/OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

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

DETAILS

1. CITY OF HOUSTON STANDARD DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATERLINES, STORM DRAINAGE, AND STREET PAVING ARE INCORPORATED IN PLANS BY REFERENCE AS IF COPIED VERBATIM. STANDARD DETAILS ARE AVAILABLE FOR DOWNLOAD AT THE FOLLOWING WEB ADDRESS: http://edocs.publicworks.houstontx.gov/engineering-and-construction.html
2. DETAILS INCLUDED IN PLAN SET SUPERSEDE RELATED COH STANDARD DETAILS.

NO.	DATE	REVISION	APP.

NOTICE:

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

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

MONTROSE
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11750 Katy Freeway,
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Houston, TX 77079
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(713) 965-0044 FAX
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Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED
PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

PRIVATE UTILITY NOTES

SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 4 OF 101	

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EXISTING PLAN VIEW

- WATER METER
- WATER VALVE (GATE)
- WATER VALVE (BUTTERFLY)
- FIRE HYDRANT/FLUSHING VALVE
- TAPPING SLEEVE & VALVE
- 8" 6" REDUCER
- ROUND CONNECTION
- CO SAN MH / STM MH — SANITARY SEWER CLEANOUT & MANHOLE; STORM SEWER MANHOLE
- 'B' 'B–B' 'C' 'C–1' 'C–2' 'C–2A' 'GRATE' — STORM SEWER INLETS
- CULVERT PIPE AND HEADWALL
- TC=XX.XX — TOP OF CURB ELEVATION
- G=XX.XX — GUTTER ELEVATION
- TP=XX.XX — TOP OF PAVEMENT ELEVATION
- XX.X' — CONTOUR LINE
- ROW LINE
- PROPERTY LINE
- LOT LINES
- EASEMENT LINE
- CENTER LINE OF ROW
- TRANSIT LINE
- EDGE OF DITCHES
- CENTER LINE OF DITCHES
- EDGE OF DITCHES
- FENCE LINE, WOOD
- FENCE LINE, CHAIN LINK
- FENCE LINE, BARBED WIRE
- FENCE LINE, HOG WIRE
- EDGE OF CONCRETE
- CURB LINE
- CONCRETE WALK
- EDGE OF ASPHALT
- EDGE OF SHELL OR GRAVEL
- 28" 3–17 DIMENSION LINE
- P P AERIAL POWER LINE
- UNDERGROUND POWER LINE
- GAS LINE
- MISC UNKNOWN UNDERGROUND LINE
- (IDENTIFY CONDUIT) OGP OIL PIPELINE
- UNDERGROUND TELECOMM LINE W/VAULT
- AERIAL TELECOMM LINE
- RAILROAD LINE
- 20" (AND SMALLER) WATER; LDWL 24" (LARGER THAN 20") WATER — WATER LINE
- 24" (AND SMALLER) SANITARY SEWER; LDWL 30" (LARGER THAN 24") SANITARY SEWER — SANITARY SEWER LINE
- 24" (AND SMALLER) STORM SEWER; 30" (LARGER THAN 24") STORM SEWER — STORM SEWER LINE
- SANITARY SEWER FORCE MAIN
- RWL RECLAIMED WATER LINE
- NPW NON–POTABLE WATER LINE
- GAS METER
- GAS VALVE
- PROPANE PROPANE LINE
- STEAM STEAM LINE
- A2 MISC UNDERGROUND PIPELINE LABLE

PROPOSED PLAN VIEW

- WM WATER METER
- WV WATER VALVE (GATE)
- BFWV WATER VALVE (BUTTERFLY)
- FH WV FIRE HYDRANT/FLUSHING VALVE
- TS&V TAPPING SLEEVE & VALVE
- 12" 8" REDUCER
- ROUND CONNECTION
- CO SAN MH / STM MH — SANITARY SEWER CLEANOUT & MANHOLE; STORM SEWER MANHOLE
- 'B' 'B–B' 'C' 'C–1' 'C–2' 'C–2A' 'GRATE' — STORM SEWER INLETS
- CULVERT PIPE AND HEADWALL
- TC=XX.XX — TOP OF CURB ELEVATION
- G=XX.XX — GUTTER ELEVATION
- TP=XX.XX — TOP OF PAVEMENT ELEVATION
- XX.X' — CONTOUR LINE
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- EASEMENT LINE
- CENTER LINE OF ROW
- TRANSIT LINE
- EDGE OF DITCHES
- CENTER LINE OF DITCHES
- EDGE OF DITCHES
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- FENCE LINE, HOG WIRE
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- SANITARY SEWER FORCE MAIN
- RWL RECLAIMED WATER LINE
- NPW NON–POTABLE WATER LINE
- GAS METER
- GAS VALVE
- PROPANE PROPANE LINE
- STEAM STEAM LINE
- A2 MISC UNDERGROUND PIPELINE LABLE
- MATCH LINE

EXISTING PLAN VIEW

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

EXISTING PROFILE VIEW

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

PROPOSED PLAN VIEW

- PAVING HEADER
- RES. 1–STORY BR BLDG. — BUILDING, RESIDENTIAL
- COMM. 1–STORY BR BLDG. — BUILDING, COMMERCIAL
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- POINT OF CURVE (PC)
- POINT OF TANGENCY (PT)
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- P P POWER POLE W/DOWN GUY

PROPOSED PROFILE VIEW

- NORTH OR EAST PROPERTY LINE
- SOUTH OR WEST PROPERTY LINE
- NORTH OR EAST CURB
- SOUTH OR WEST CURB
- NORTH OR EAST DITCH
- SOUTH OR WEST DITCH
- NORTH OR EAST NATURAL GROUND
- SOUTH OR WEST NATURAL GROUND
- CULVERT — NORTH OR EAST CULVERT
- CULVERT — SOUTH OR WEST CULVERT
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- SANITARY SEWER FORCE MAIN
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- NPW NON–POTABLE WATER LINE
- CENTERPOINT ENERGY MANHOLE
- AT&T MANHOLE
- WATER LINE MANHOLE
- SANITARY SEWER MANHOLE & CLEANOUT
- STORM SEWER MANHOLE
- STORM SEWER INLET

MISC STANDARD ELEMENTS

- N Z COH NORTH ARROW
- 0′ 10′ 20′ 40′ SCALE: 1"=20′ COH BAR SCALE
- 1 REVISION CLOUD/DELTA
- 1 VIEW TITLE SCALE: 1:1 DETAIL/SECTION TITLE

NO.	DATE	REVISION	APP.

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STATE OF TEXAS — JOHN R. HUML — 140416 — LICENSED PROFESSIONAL ENGINEER — 07/20/2026
HRGREEN INC
Texas Registered Engineering Firm F–11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SYMBOLS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–T27000–003–7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
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CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 5 OF 101	

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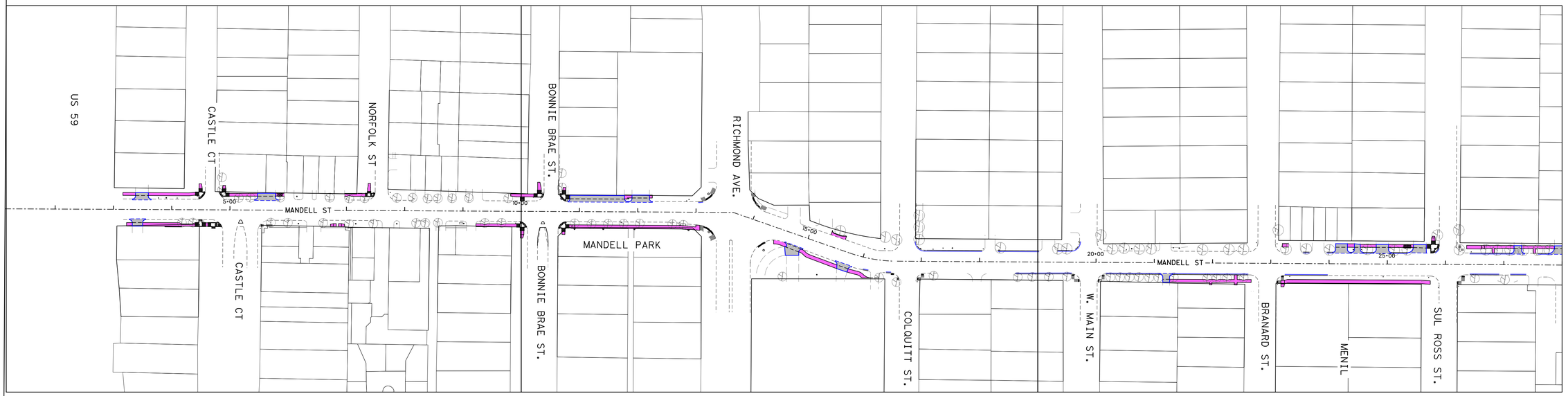
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LEGEND

PROP SIDEWALK

PROP MILL AND OVERLAY

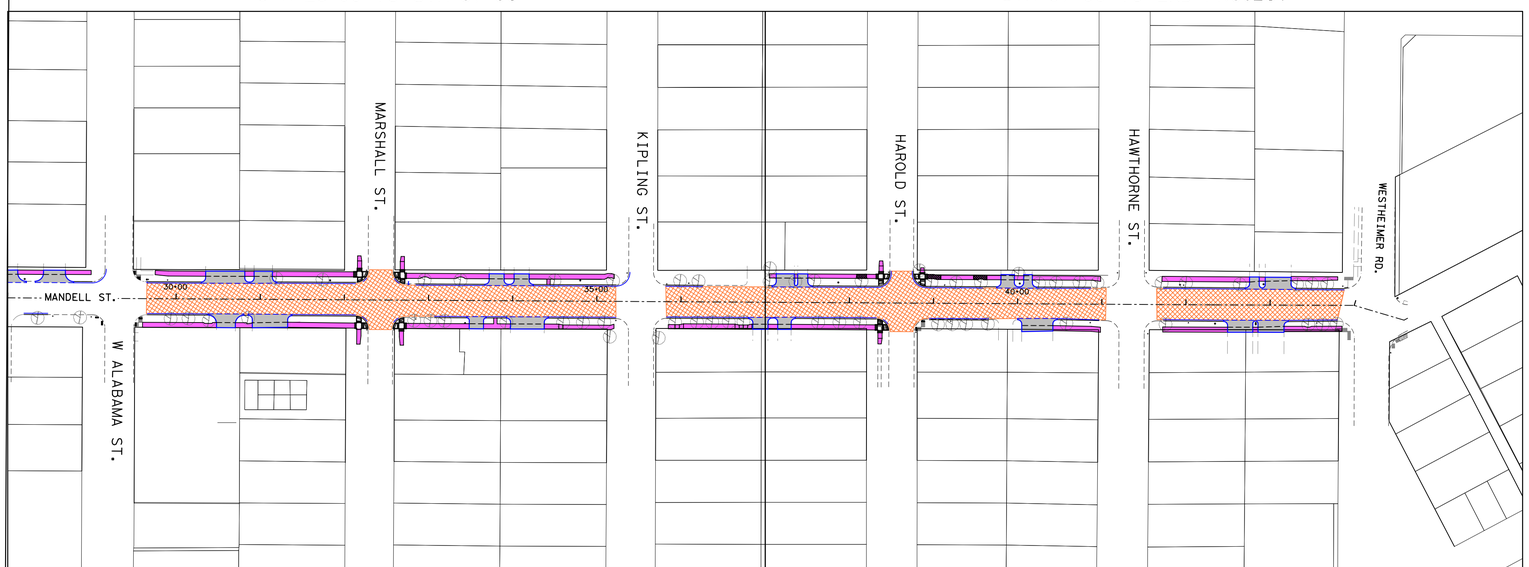
MANDELL STREET IMPROVEMENTS
BEGIN PROJECT TO STA 10+00



MANDELL STREET IMPROVEMENTS
STA 10+00 TO STA 19+00

MANDELL STREET IMPROVEMENTS
STA 19+00 TO STA 28+00

MANDELL STREET IMPROVEMENTS
STA 28+00 TO STA 37+00



MANDELL STREET IMPROVEMENTS
STA 37+00 TO END PROJECT

0′ 90′ 180′
SCALE IN FEET

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

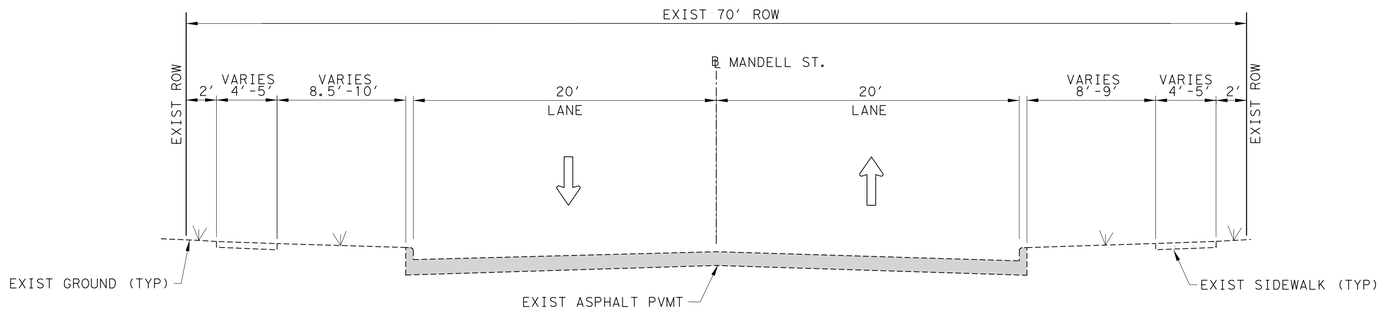
MANDELL STREET IMPROVEMENTS

PROJECT LAYOUT

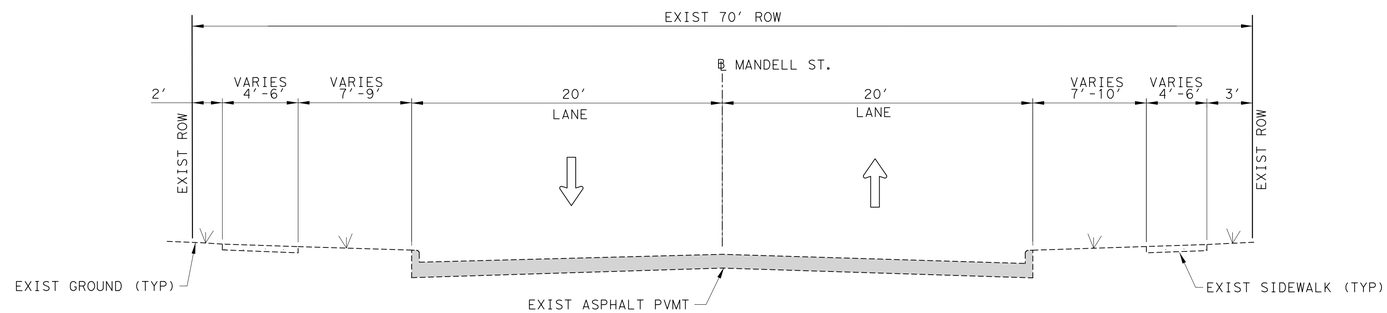
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CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 6 OF 101	

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MANDELL ST.
W. ALABAMA ST. TO WESTHEIMER RD.
N.T.S.



MANDELL ST.
RICHMOND AVE. TO W. ALABAMA ST.
N.T.S.

NO.	DATE	REVISION	APP.

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TAX INCREMENT REINVESTMENT ZONE 27

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Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

EXISTING TYPICAL SECTIONS

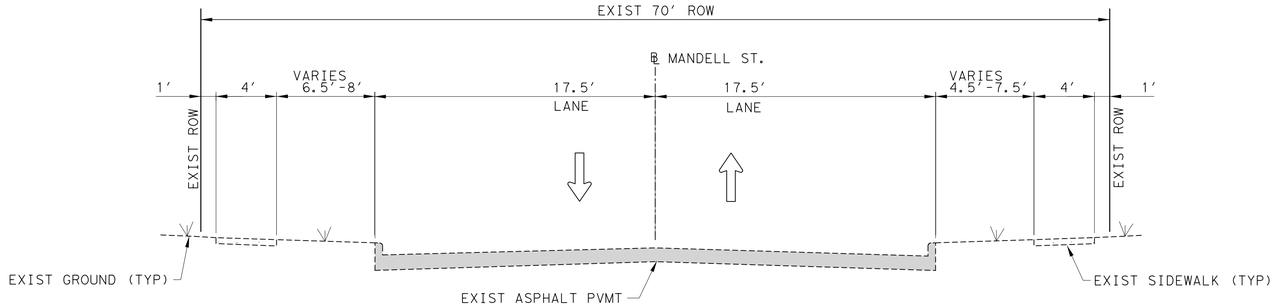
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CITY OF HOUSTON PM	
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SHEET NO. 7 OF 101	

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MANDELL ST.
US 69 TO RICHMOND AVE.
N.T.S.

NO.	DATE	REVISION	APP.

MONTROSE
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STATE OF TEXAS
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10/19/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

EXISTING TYPICAL SECTIONS

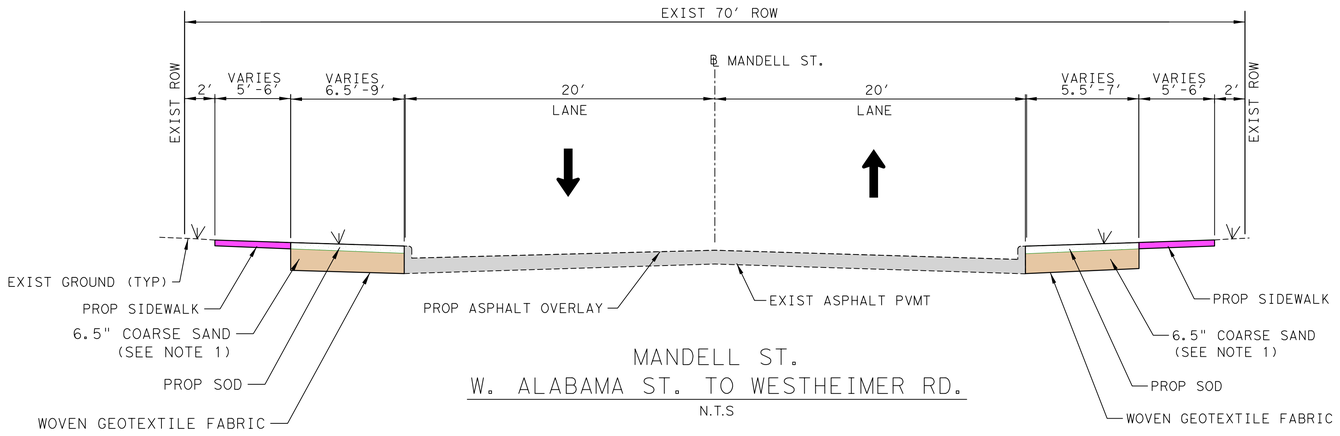
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SHEET NO. 8 OF 101	

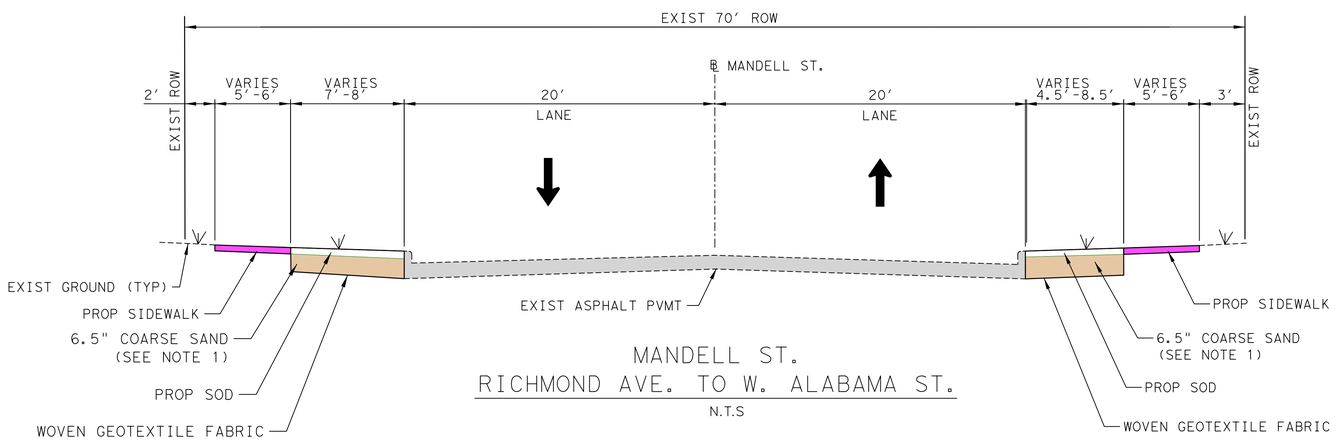
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MANDELL ST.
W. ALABAMA ST. TO WESTHEIMER RD.
N.T.S



MANDELL ST.
RICHMOND AVE. TO W. ALABAMA ST.
N.T.S

NOTES

1. SEE SIDEWALK LAYOUTS FOR PROPOSED COARSE SAND LOCATIONS.

NO.	DATE	REVISION	APP.

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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11750 Katy Freeway,
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Houston, TX 77079
(832) 318-8800
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07/20/2026
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Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

PROPOSED TYPICAL SECTIONS

SHEET 1 OF 2

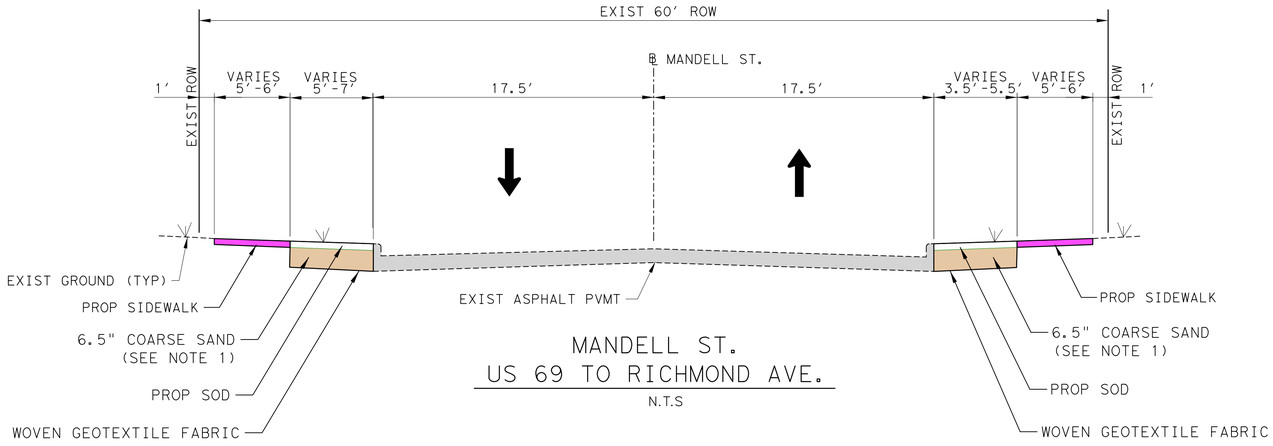
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SHEET NO. 9 OF 101	

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
83215
CITY DRAWING NUMBER
Approval Date 10/26/26
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MANDELL ST.
US 69 TO RICHMOND AVE.
N.T.S

NOTES

1. SEE SIDEWALK LAYOUTS FOR PROPOSED COARSE SAND LOCATIONS.

NO.	DATE	REVISION	APP.

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MANDELL STREET IMPROVEMENTS

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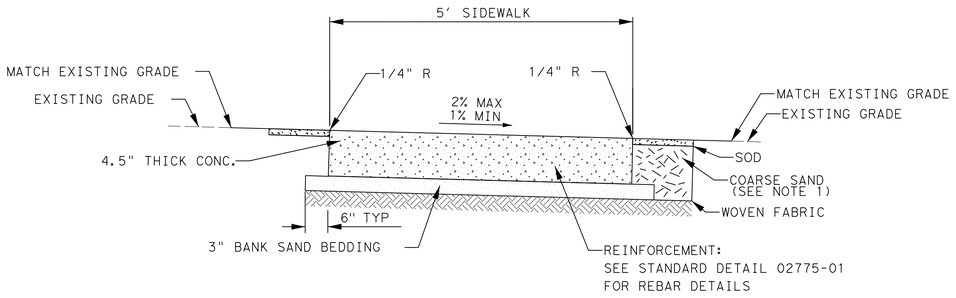
SHEET 2 OF 2

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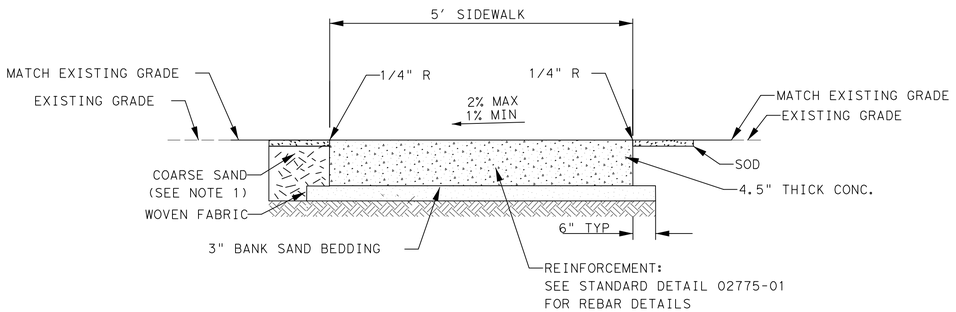
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PROPOSED 4.5" THICK SIDEWALK TYPICAL SECTION (TYPE 1)

N.T.S.



PROPOSED 4.5" THICK SIDEWALK TYPICAL SECTION (TYPE 2)

N.T.S.

NOTES

1. REFER TO THE SPECIFICATION FOR COARSE SAND FOR MORE INFORMATION.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

PROPOSED SIDEWALK DETAILS

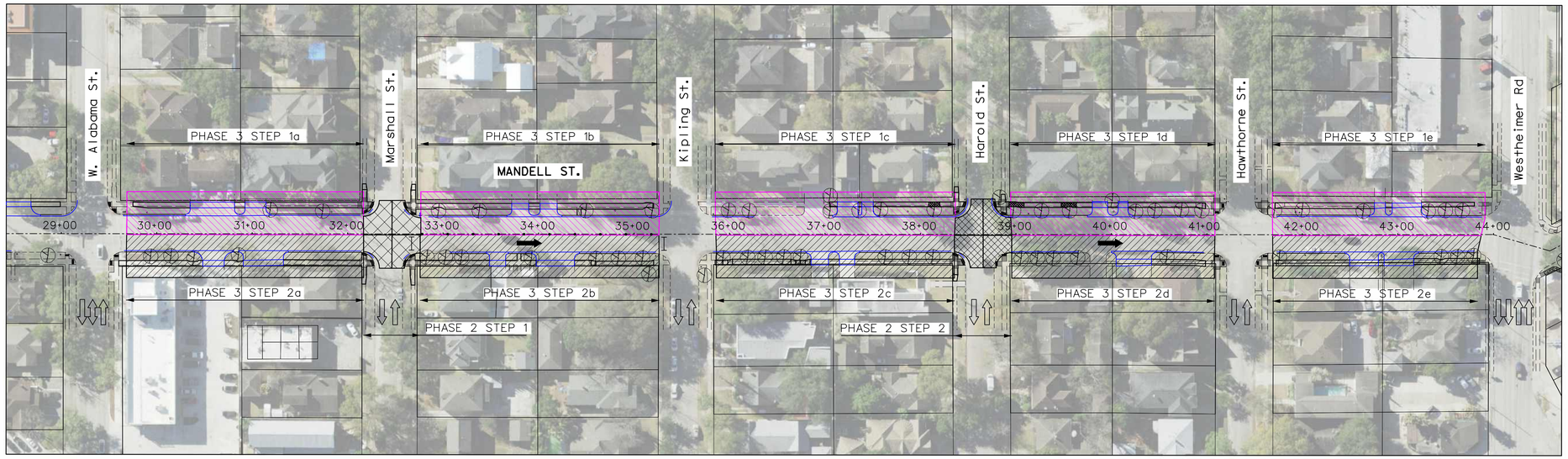
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LEGEND

- PHASE 2 STEP 1
- PHASE 2 STEP 2
- PHASE 3 STEP 1
- PHASE 3 STEP 2
- BARRELS OR DRUMS
- TYPE III BARRICADE W/ ROAD CLOSED SIGN
- PROP DIRECTION OF TRAFFIC
- EXIST DIRECTION OF TRAFFIC

TRAFFIC CONTROL NARRATIVE

1- PHASE 1 - SIDEWALK REMOVAL AND CONSTRUCTION

USE TYPICAL SINGLE LANE CLOSURE WITH FLAGGERS FOR SIDEWALK CONSTRUCTION. REMOVE AND RECONSTRUCT SIDEWALK AS SHOWN IN THE PLANS. CLEAN UP AND OPEN FOR PEDESTRIANS. SIDEWALK WORK SHALL BE COMPLETED ON THIS SIDE OF THE PROJECT BEFORE MOVING TO THE OTHER SIDE. CONSTRUCTION SHALL BE DONE IN A BLOCK-TO-BLOCK SEQUENCE. SIDEWALK WORK CAN BE COMPLETED ON MULTIPLE BLOCKS AT A TIME AS LONG AS THE BLOCKS ARE AT LEAST ONE BLOCK APART.

2- PHASE 2 - INTERSECTION MILL & OVERLAY OPERATION

USE TYPICAL CONSTRUCTION AT A 4-WAY INTERSECTION. MILL & OVERLAY OPERATIONS SHALL BE DONE IN 4 QUADRANTS, ONE INTERSECTION AT A TIME.

STEP 1: MARSHALL STREET INTERSECTION

STEP 2: HAROLD STREET INTERSECTION

3- PHASE 3 - MILL & OVERLAY OPERATION

USE TYPICAL DETOUR FOR MILL & OVERLAY WORK AS FOLLOWS. MILL & OVERLAY OPERATION SHALL BE DONE BLOCK BY BLOCK:

STEP 1: MANDELL STREET SOUTHBOUND

STEP 2: MANDELL STREET NORTHBOUND

TRAFFIC CONTROL NOTES

1- THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE MOST RECENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)

2- SIDEWALK CLOSED SIGNS SHALL BE INSTALLED DURING SIDEWALK CLOSURES. SIDEWALK WORK SHALL BE CONDUCTED ON ONE SIDE OF THE ROAD AND SHALL BE COMPLETED BEFORE MOVING TO THE OTHER SIDE. USE STANDARD CITY SINGLE LANE CLOSURE.

3- TRAFFIC LANES SHALL BE OPEN TO TRAFFIC AFTER EACH WORKING DAY. IF MILL & OVERLAY WORK IS NOT COMPLETE AFTER A WORKING DAY, DRIVERS ARE TO UTILIZE THE MILLED SURFACE AS THE DRIVING SURFACE.

4- LANE CLOSURES SHALL BE DURING OFF-PEAK HOURS ONLY (MONDAY THROUGH FRIDAY FROM 7 A.M. TO 7 P.M.). FLAGGERS IN RADIO CONTACT ARE REQUIRED TO DIRECT TRAFFIC DURING LANE CLOSURES

5- NO PAVING EXCAVATION AREAS SHALL BE LEFT OPEN OVERNIGHT OR ON WEEKENDS. ALL LANES MUST BE OPEN AFTER EACH WORKING DAY. CONTRACTOR CAN UTILIZE STEEL PLATES OR TEMPORARY ASPHALT OR ANY OTHER ALTERNATIVES TO OPEN TRAFFIC IF NEEDED. WORK IS INCIDENTAL TO TRAFFIC CONTROL ITEM

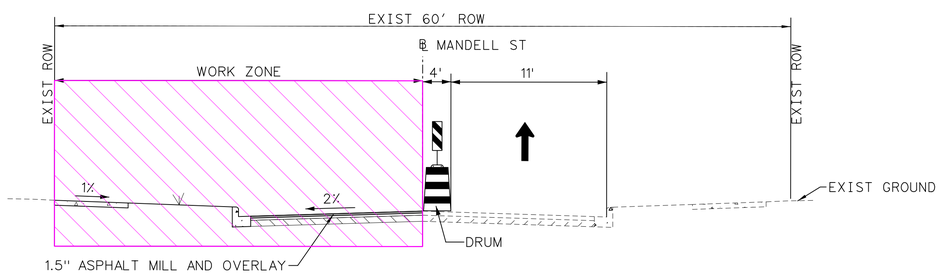
6- USE STANDARD CITY TRAFFIC CONTROL AND DETOUR PLANS FOR TEMPORARY CLOSURES AT INTERSECTIONS DURING MILL & OVERLAY OF INTERSECTIONS.

7- FOR IMPACTED PARKING SPACES THROUGHOUT THE PROJECT, INSTALL NO-PARKING SIGNS AND USE BARRELS AS NECESSARY TO AVOID CARS FROM PARKING OVERNIGHT.

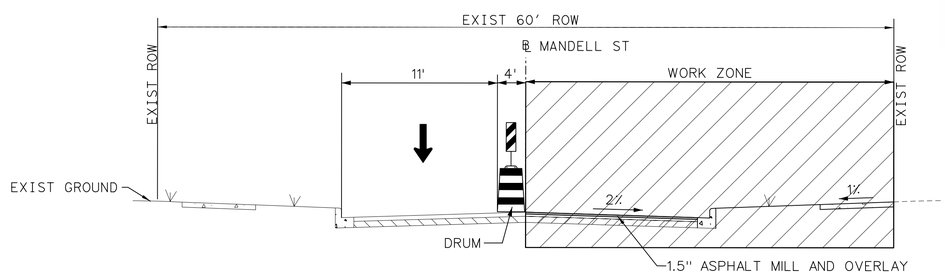
8- REFER TO TRAFFIC CONTROL STANDARD DETAILS FOR MORE INFORMATION.

9- PROVIDE SEQUENCE OF CONSTRUCTION TO CM PRIOR TO DEVELOPING SCHEDULE FOR APPROVAL.

10- COORDINATE WITH CM PRIOR TO CONSTRUCTION ON OR ACROSS DRIVEWAYS. CONTRACTOR TO MAINTAIN ACCESS TO RESIDENTS AND BUSINESSES AT ALL TIMES.



PHASE 3 STEP 1 - SOUTHBOUND
N.T.S



PHASE 3 STEP 2 - NORTHBOUND
N.T.S

N
0' 50' 100'
SCALE IN FEET

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MANDELL STREET IMPROVEMENTS

SEQUENCE OF CONSTRUCTION

SHEET 1 OF 1

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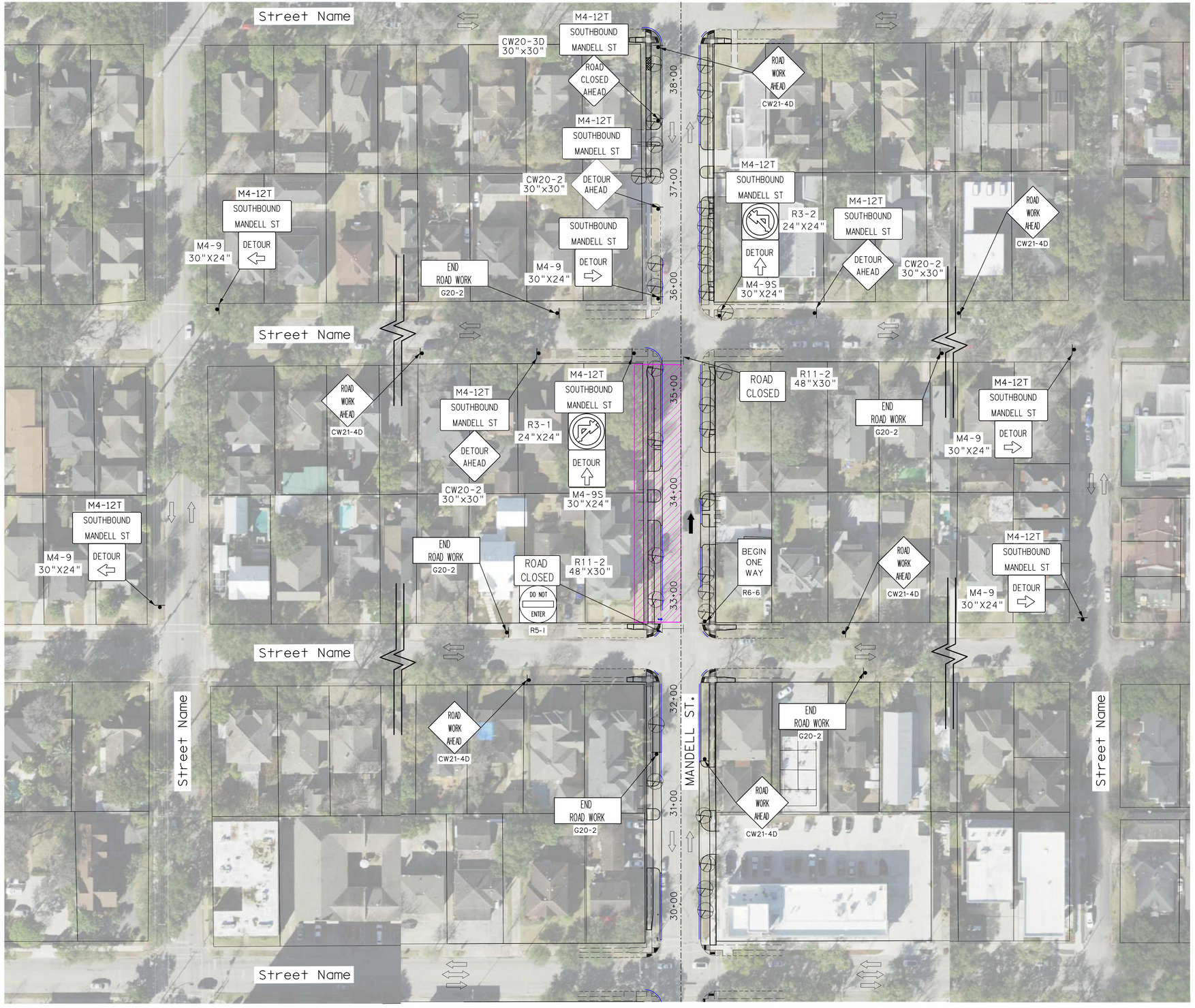
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LEGEND

- PHASE 3 STEP 1
- PHASE 3 STEP 2
- BARRELS OR DRUMS
- TYPE III BARRICADE W/ ROAD CLOSED SIGN
- PROP DIRECTION OF TRAFFIC
- EXIST DIRECTION OF TRAFFIC

NO.	DATE	REVISION	APP.

NOTES:

1. PRIOR TO CONSTRUCTION ACROSS DRIVEWAY COORDINATE WITH CM. CONTRACTOR TO MAINTAIN ACCESS TO RESIDENTS AND BUSINESSES AT ALL TIMES.
2. DETOUR TCP IS APPLICABLE TO ALL BLOCKS OF MANDELL STREET. WORK SHALL BE DONE BLOCK BY BLOCK AS SHOWN IN THE SEQUENCE OF CONSTRUCTION.

N

0′ 50′ 100′
SCALE IN FEET

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MANDELL STREET IMPROVEMENTS

PHASE 3 STEP 1
TYPICAL DETOUR LAYOUT

SHEET 1 OF 1

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LEGEND

- PHASE 3 STEP 1
- PHASE 3 STEP 2
- BARRELS OR DRUMS
- TYPE III BARRICADE W/ ROAD CLOSED SIGN
- PROP DIRECTION OF TRAFFIC
- EXIST DIRECTION OF TRAFFIC

NO.	DATE	REVISION	APP.

NOTES:

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CITY OF HOUSTON
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MANDELL STREET IMPROVEMENTS

PHASE 3 STEP 2
TYPICAL DETOUR LAYOUT

SHEET 1 OF 1

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GENERAL NOTES

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

SPACING FOR CHANNELIZING DEVICES

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

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

C. PLASTIC DRUMS ON RADII @ 35' C –C.

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

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

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

G. PLASTIC DRUMS W/GUARD RAIL MOUNTED.

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

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

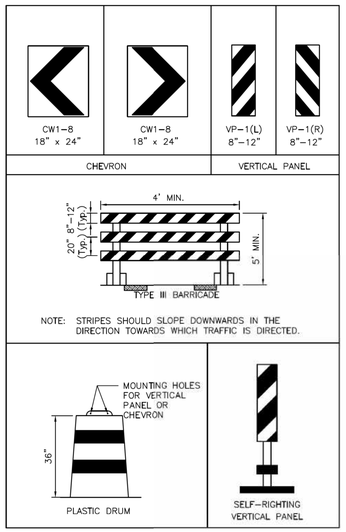
J. SPACING MAY BE ADJUSTED TO PROVIDE DRIVEWAYS, INTERSECTIONS AND /OR MEDIAN OPENINGS.

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

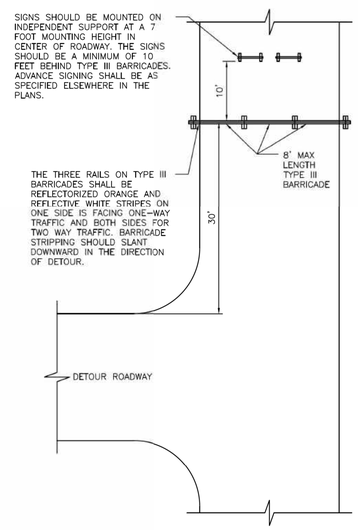
POSTED SPEED (MPH)	SIGN SPACING "X" (FEET)	MIN. DESIRABLE TAPER LENGTH "L"			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	120'	150'	165'	180'	30'	60'–75'
35	160'	205'	225'	245'	35'	70'–90'
40	240'	265'	295'	320'	40'	80'–100'
45	320'	450'	495'	540'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

TABLE C4 – STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

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



CHANNELIZATION AND BARRICADES



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

LEGEND:

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

APPROVED BY:	APPROVED BY:
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 01555–01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP NOTES CHANNELIZING DEVICES AND BARRICADES

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NOT TO SCALE	

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CITY OF HOUSTON
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MANDELL STREET IMPROVEMENTS

TCP NOTES CHANNELIZING DEVICES AND BARRICADES

SHEET 1 OF 1

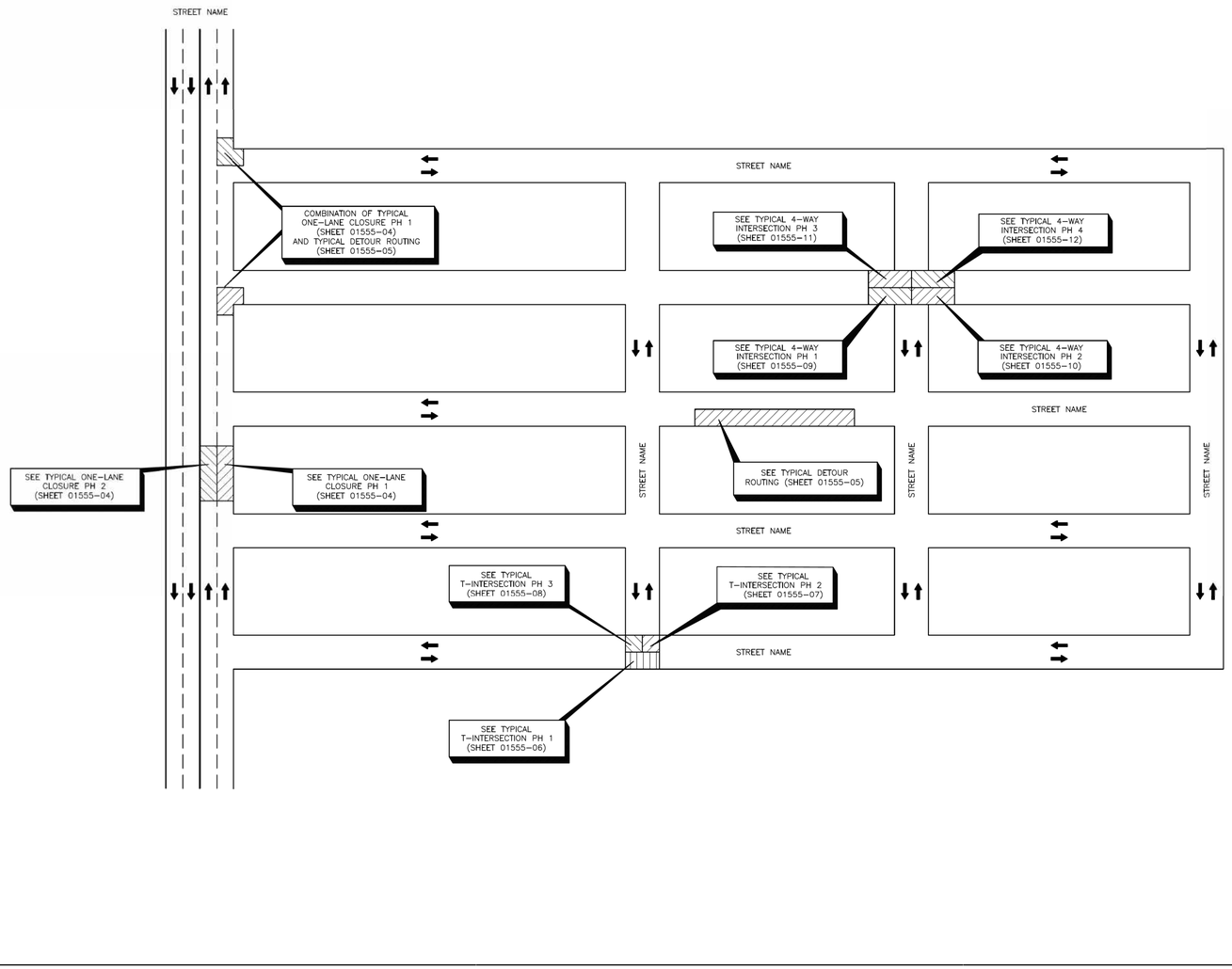
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DRAWING SCALE	
AS NOTED	
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JIADA HUANG	
SHEET NO. 15 OF 101	

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DocuSigned by: Sulat Kunwar	DocuSigned by: LONG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP OVERALL TRAFFIC CONTROL LAYOUT

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

NO.	DATE	REVISION	APP.

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Houston, TX 77079
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(713) 965-0044 FAX
HRGreen.com
Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TCP OVERALL TRAFFIC CONTROL LAYOUT

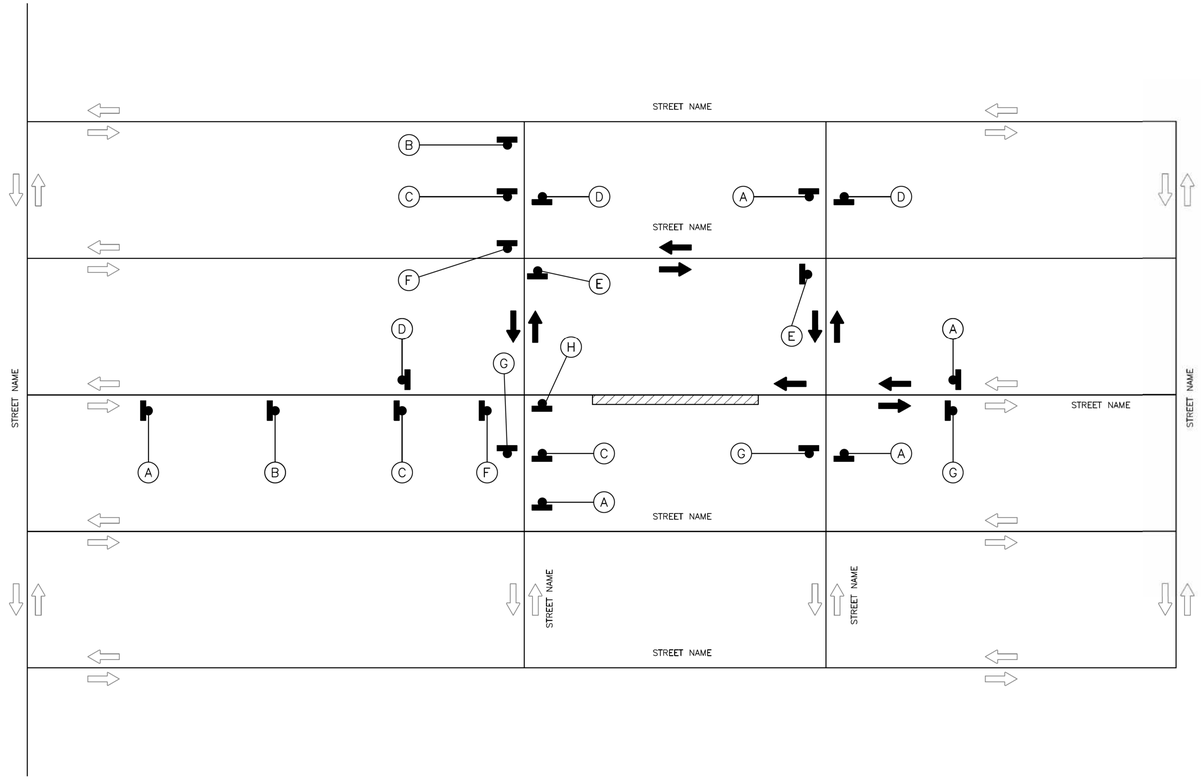
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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 16 OF 101	

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CW20-1	CW20-3	CW20-2	G20-2	M4-9R	M4-9L	M4-8a	M4-9T



LEGEND:

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

APPROVED BY:	APPROVED BY:
DocuSigned by: Sulad Kunwar	DocuSigned by: HUNG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-03

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TRAFFIC CONTROL LAYOUT

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140416
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MANDELL STREET IMPROVEMENTS

TRAFFIC CONTROL LAYOUT

SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 17 OF 101	

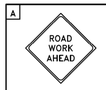
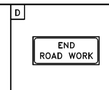
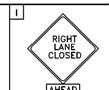
NO.	DATE	REVISION	APP.

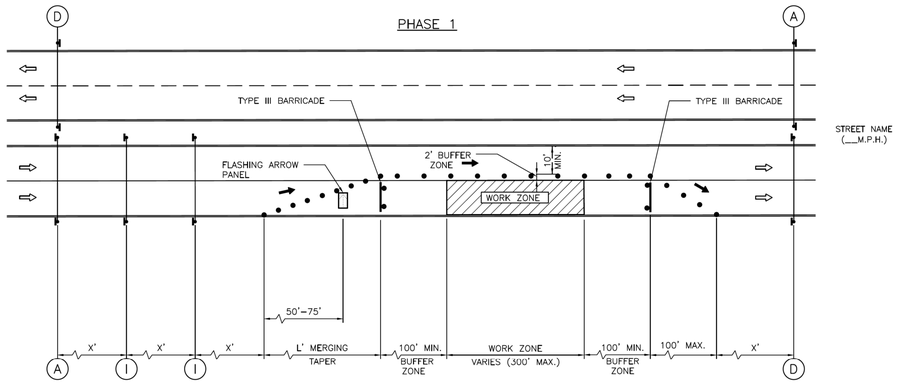
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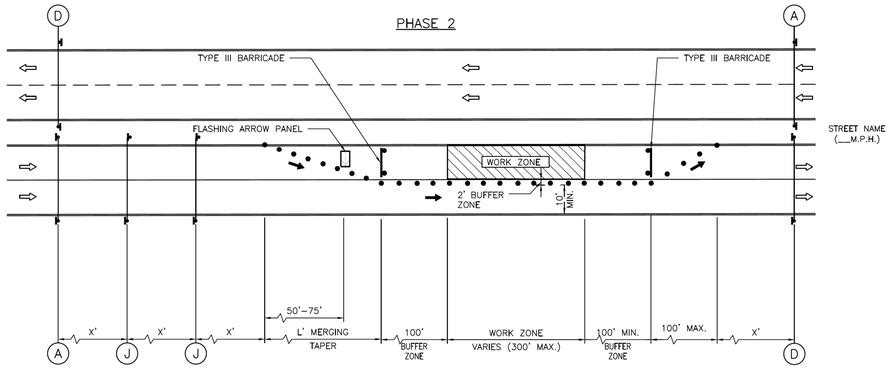
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A	D	I	J
			
CW20-1	G20-2	AHEAD CW20-5(2) CW16-3	AHEAD CW20-5(1) CW16-3





LEGEND:

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

NOTES:

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

APPROVED BY:	APPROVED BY:
Docusigned by: Salud Kanwar	Docusigned by: KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Docusigned by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP ONE LANE CLOSURE
PHASE 1 & 2

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WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY

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HRGreen.com
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JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TCP ONE LANE CLOSURE
PHASE 1&2

SHEET 1 OF 1

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JIADA HUANG	
SHEET NO. 18 OF 101	

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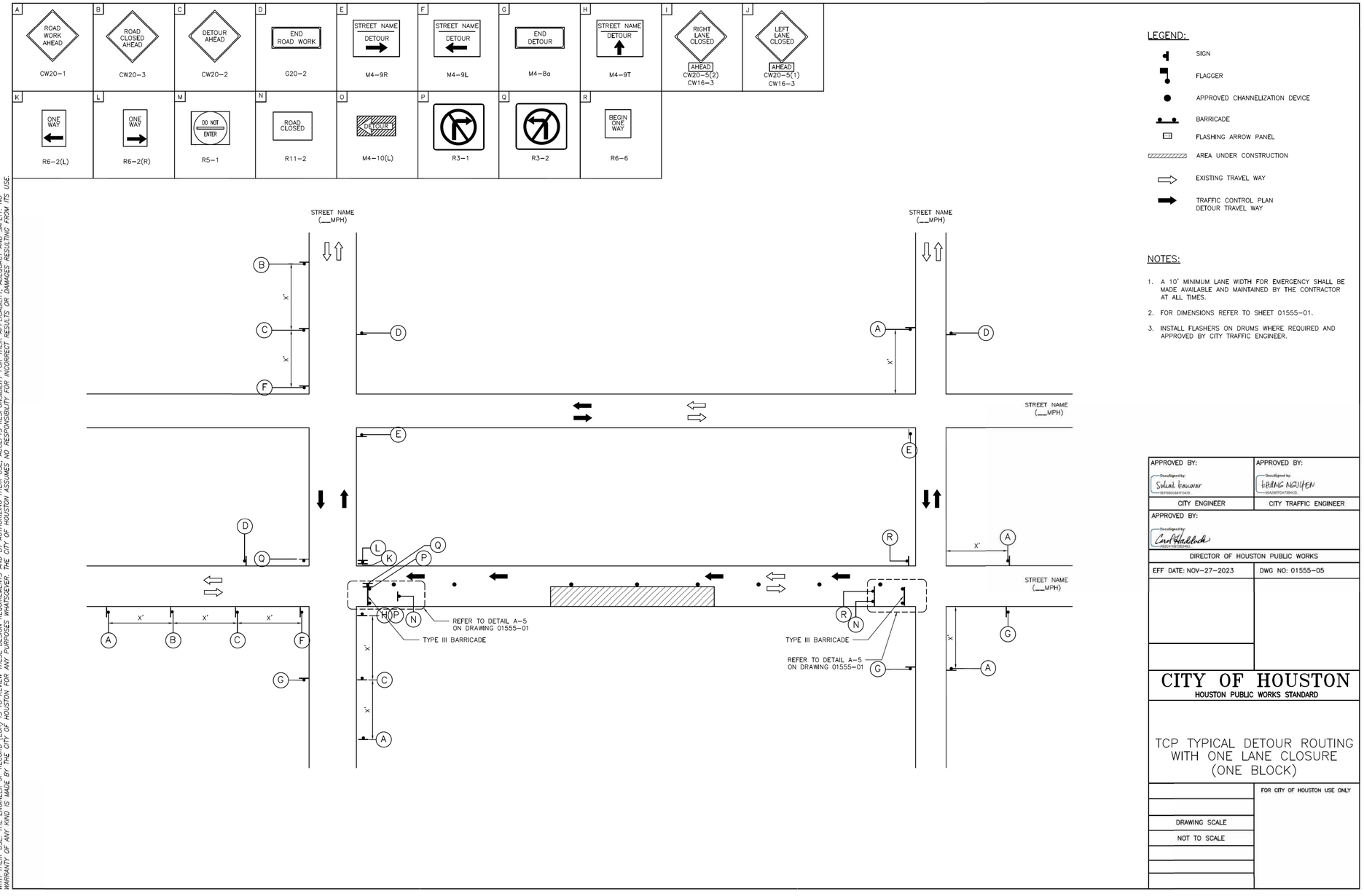
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LEGEND:

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

NOTES:

1. A 10' MINIMUM LANE WIDTH FOR EMERGENCY SHALL BE MADE AVAILABLE AND MAINTAINED BY THE CONTRACTOR AT ALL TIMES.
2. FOR DIMENSIONS REFER TO SHEET 01555-01.
3. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.

APPROVED BY:	APPROVED BY:
Docusigned by: Sukai Fauwar	Docusigned by: KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Docusigned by: Carl Wallbach	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-05

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL DETOUR ROUTING WITH ONE LANE CLOSURE (ONE BLOCK)

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LICENSED PROFESSIONAL ENGINEER
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Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

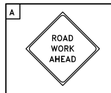
MANDELL STREET IMPROVEMENTS

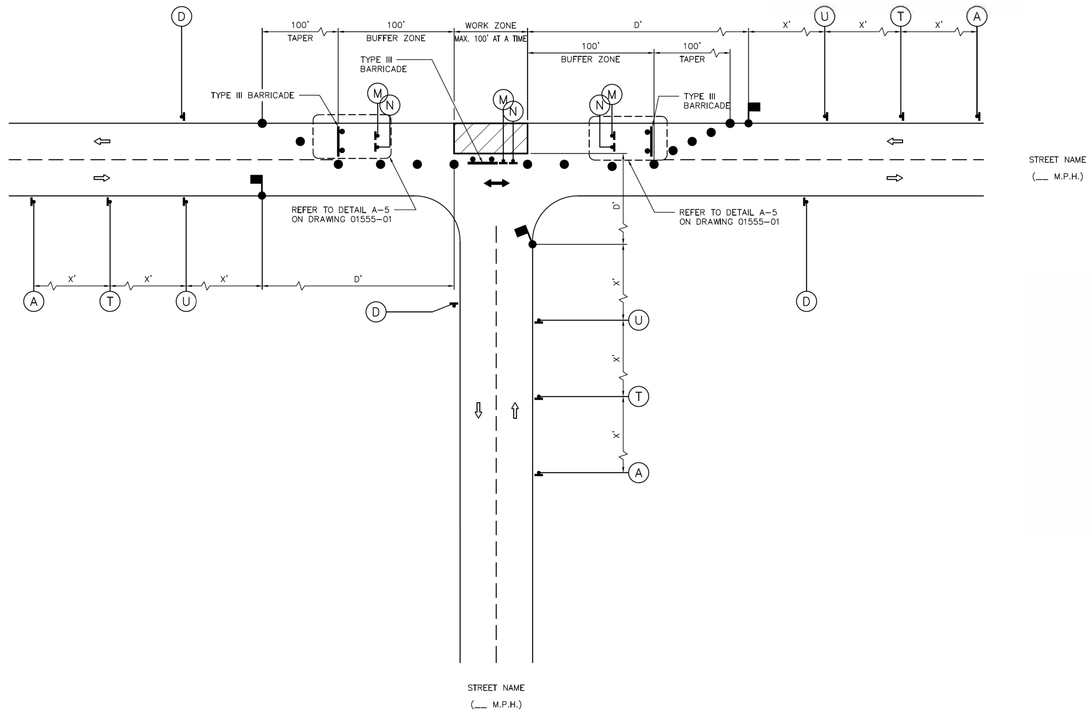
TCP ONE LANE CLOSURE

SHEET 1 OF 1

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CW20-1	CW20-4	CW20-7	G20-2	R5-1	R11-2



LEGEND:

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

NOTES:

1. MINOR WORK AND DAYTIME OPERATIONS ONLY.
2. REFER TO PROJECT SPECIFIC TRAFFIC CONTROL PLANS FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.
5. MAX. 100' WORK ZONE AT A TIME.

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APPROVED BY:	APPROVED BY:
Sohail Kanwar	HANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-06

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A T-INTERSECTION PHASE 1 OF 3

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STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TCP TYPICAL 3-WAY INTERSECTION PHASE 1 OF 3

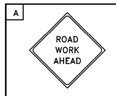
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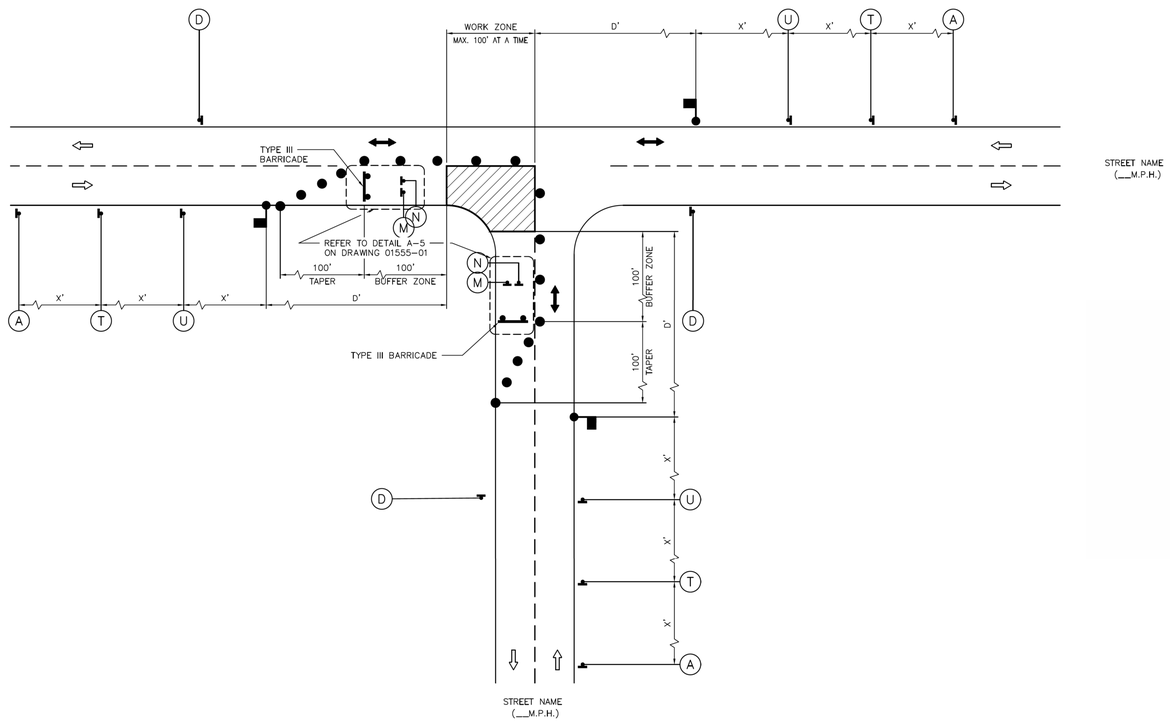
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JIADA HUANG	
SHEET NO. 20 OF 101	

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LEGEND:

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

NOTES:

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2. REFER TO PROJECT SPECIFIC TRAFFIC CONTROL PLANS FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.
5. MAX. 100' WORK ZONE AT A TIME.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukut Kaswar	DocuSigned by: HANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-07

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A T-INTERSECTION PHASE 2 OF 3

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Houston, TX 77079
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HRGreen.com
Firm No. F-11278

SURVEYED BY:



CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TCP TYPICAL 3-WAY INTERSECTION PHASE 2 OF 3

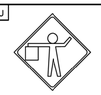
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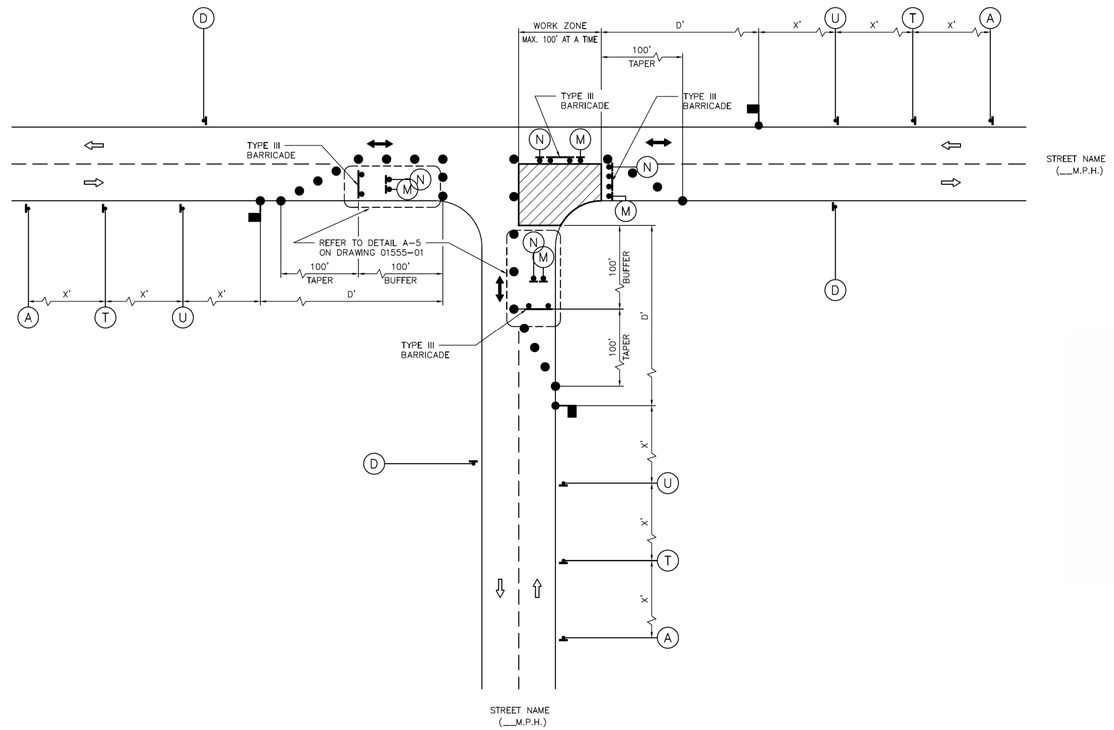
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DRAWING SCALE	
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CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 21 OF 101	

NO.	DATE	REVISION	APP.

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A	T	U	D	M	N
					
ROAD WORK AHEAD	ONE LANE ROAD AHEAD		END ROAD WORK	DO NOT ENTER	ROAD CLOSED
CW20-1	CW20-4	CW20-7	G20-2	R5-1	R11-2



LEGEND:

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

NOTES:

1. MINOR WORK AND DAYTIME OPERATIONS ONLY.
2. REFER TO PROJECT SPECIFIC TRAFFIC CONTROL PLANS FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01555-01.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.
5. MAX. 100' WORK ZONE AT A TIME.

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DocuSigned by: Sulad Kamvar	DocuSigned by: HANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-08

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A T-INTERSECTION PHASE 3 OF 3

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(713) 965-0044 FAX
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STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TCP TYPICAL 3-WAY INTERSECTION PHASE 3 OF 3

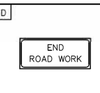
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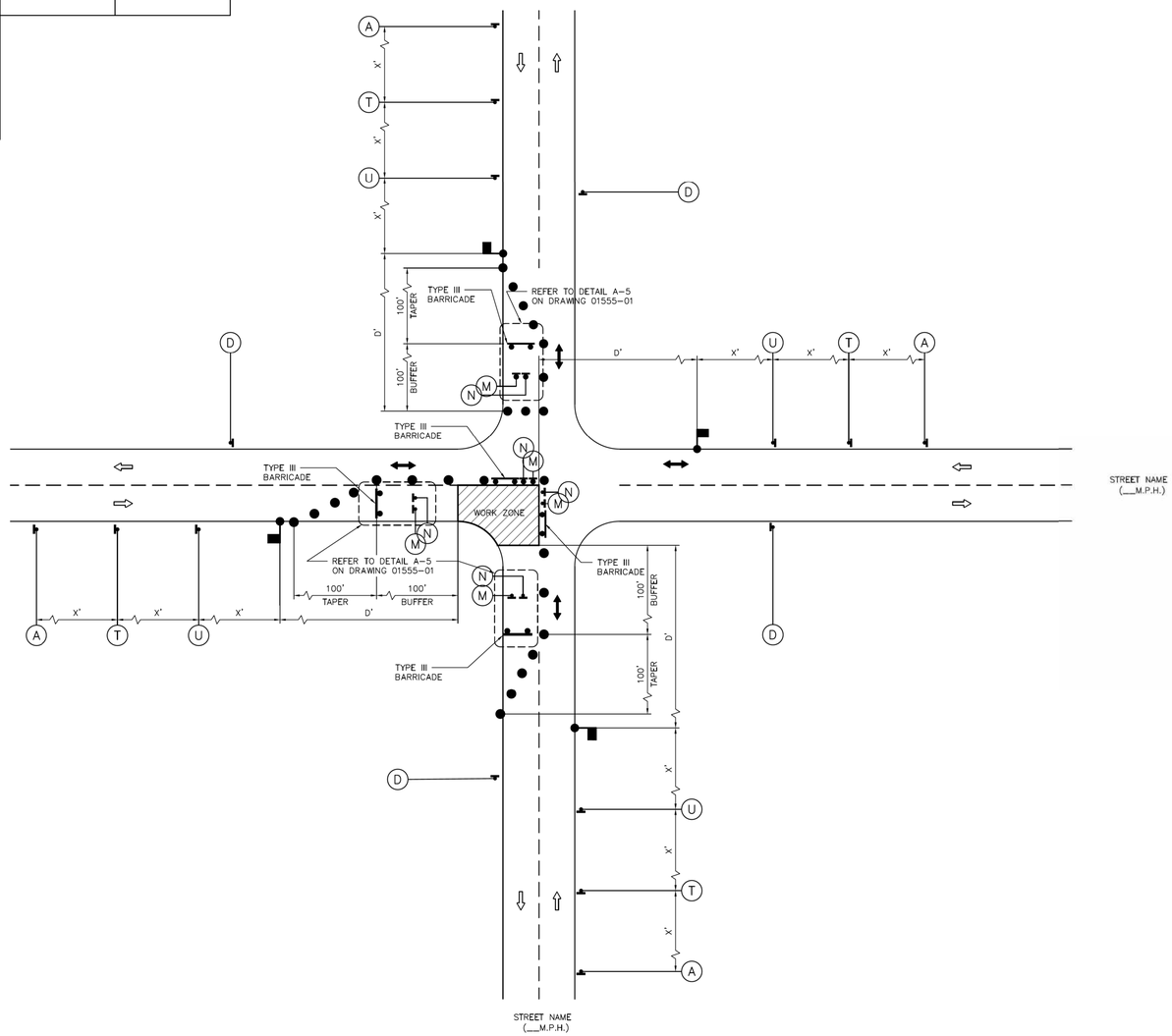
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A	T	U	D
			
CW20-1	CW20-4	CW20-7	G20-2

M	N
	
R5-1	R11-2



LEGEND:

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DocuSigned by: Sulaiman Kamawar	DocuSigned by: KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-09

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A 4-WAY INTERSECTION (LOW VOLUME TRAFFIC) PHASE 1 OF 4

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MANDELL STREET IMPROVEMENTS

TCP TYPICAL 4-WAY INTERSECTION PHASE 1 OF 4

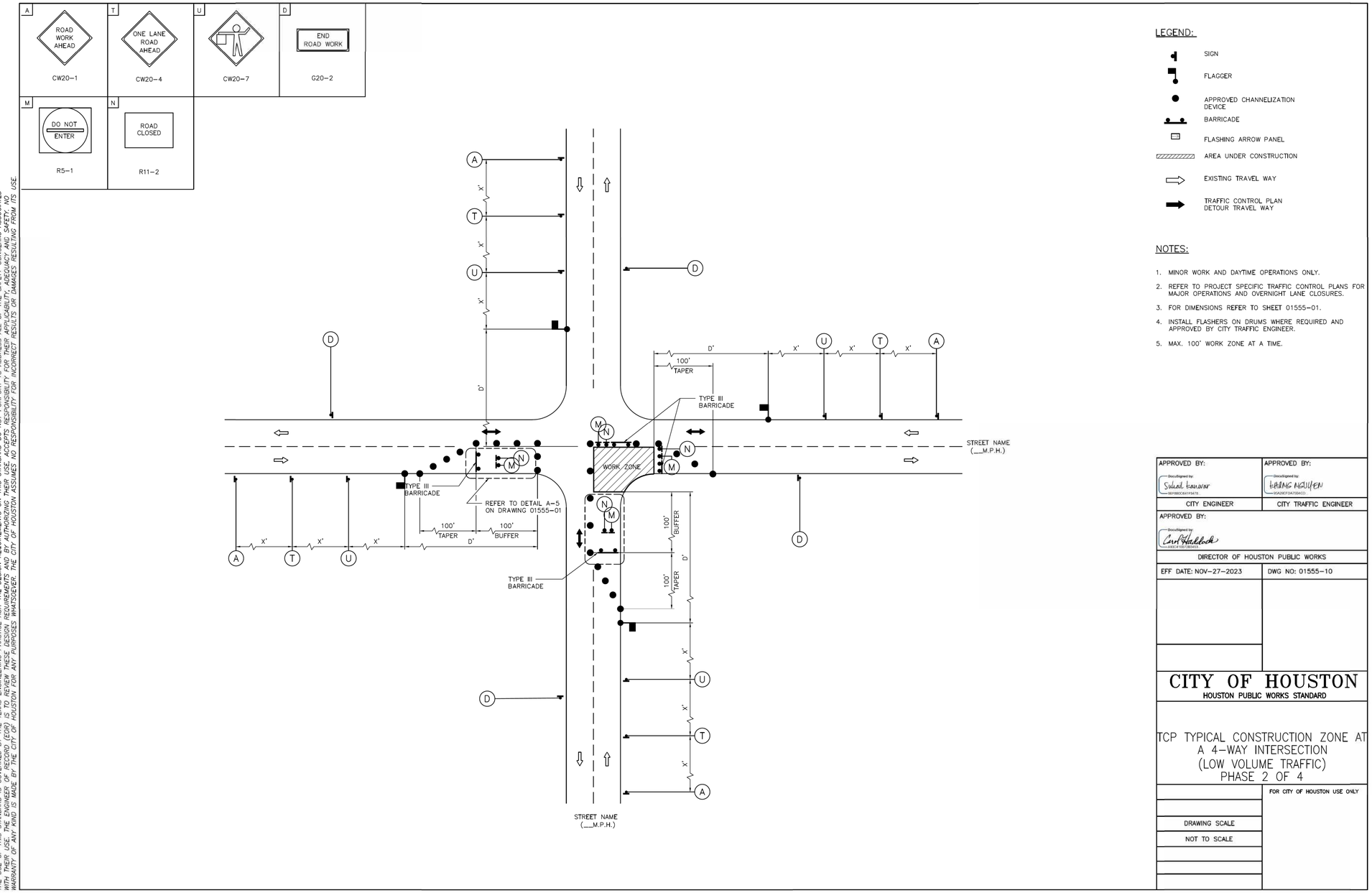
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Docusigned by: Sukat Kunwar	Docusigned by: HUANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Docusigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A 4-WAY INTERSECTION (LOW VOLUME TRAFFIC) PHASE 2 OF 4

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MANDELL STREET IMPROVEMENTS

TCP TYPICAL 4-WAY INTERSECTION PHASE 2 OF 4

SHEET 1 OF 1

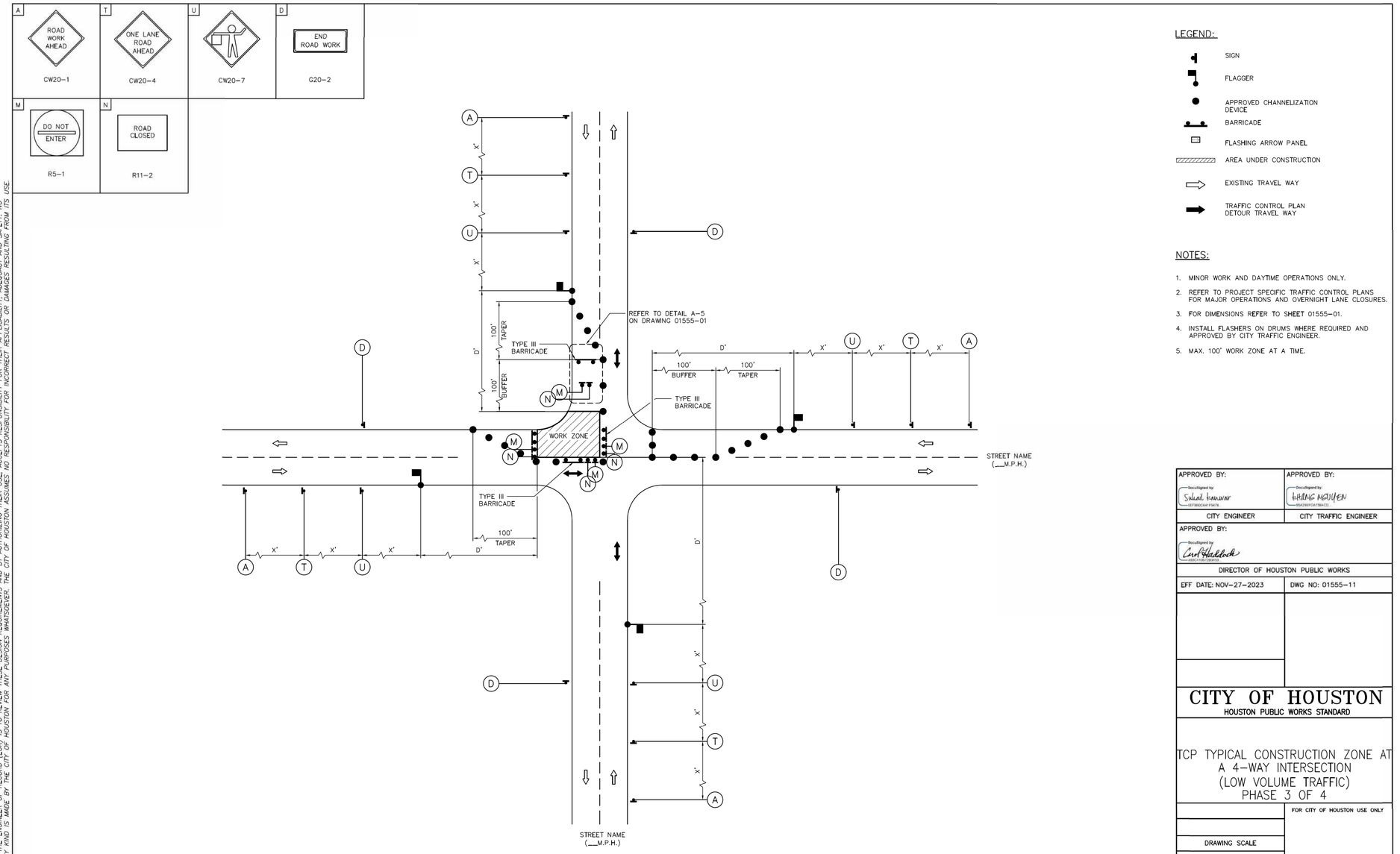
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APPROVED BY:	APPROVED BY:
Docusigned by: Sulad Kanwar	Docusigned by: KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER

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

EFF DATE: NOV-27-2023	DWG NO: 01555-11

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A 4-WAY INTERSECTION (LOW VOLUME TRAFFIC) PHASE 3 OF 4

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LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TCP TYPICAL 4-WAY INTERSECTION PHASE 3 OF 4

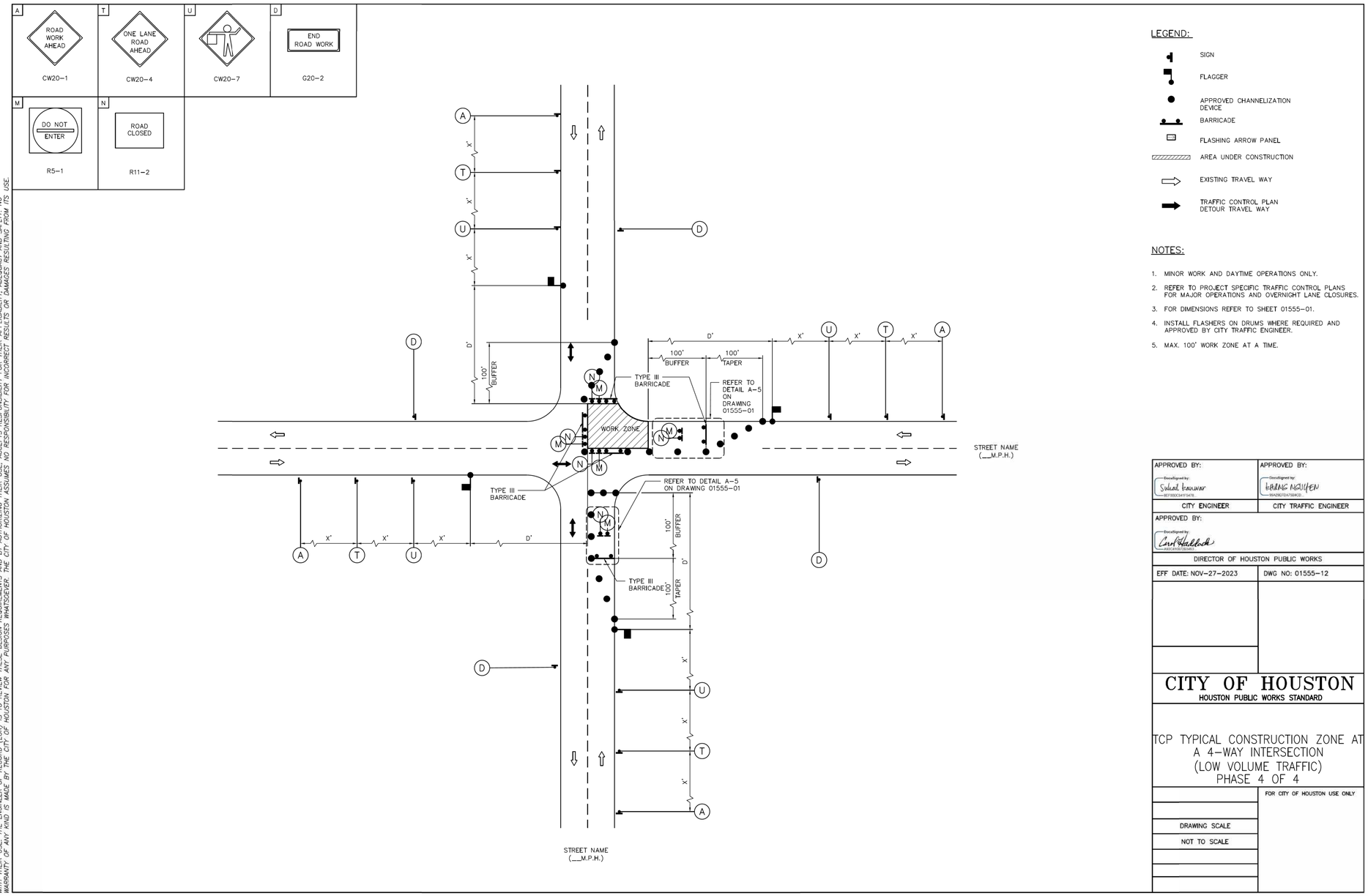
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DocuSigned by: Sukat Kalwar	DocuSigned by: KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01555-12

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TCP TYPICAL CONSTRUCTION ZONE AT A 4-WAY INTERSECTION (LOW VOLUME TRAFFIC) PHASE 4 OF 4

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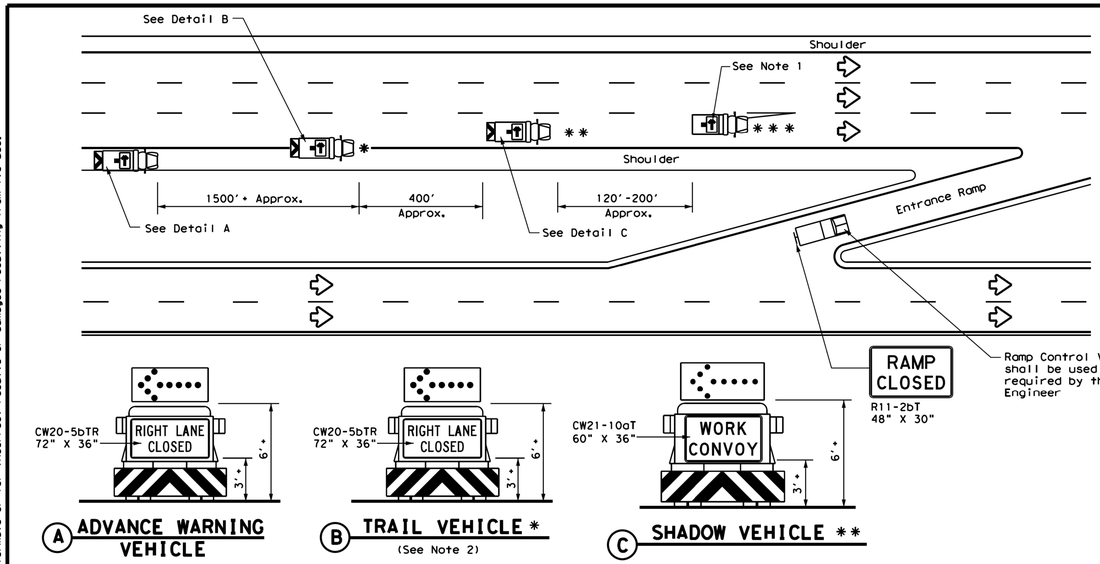
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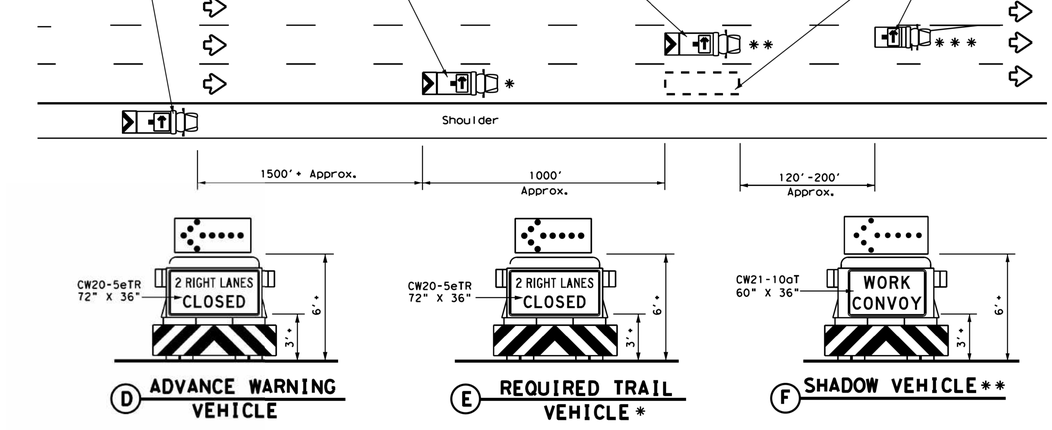
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RIGHT LANE CLOSURE ON DIVIDED HIGHWAY - TCP(3-2a)



INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)

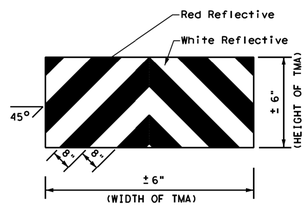
DATE:
FILE:

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

1. ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
2. For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
3. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
4. The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
5. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE may vary according to terrain, work activity and other factors.
9. Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
10. The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board, must be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
12. The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
13. Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
14. The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.



STRIPING FOR TMA

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

TCP(3-2)-13

FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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1-97				

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STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

MOBILE OPERATION
DIVIDED HIGHWAYS

SHEET 1 OF 1

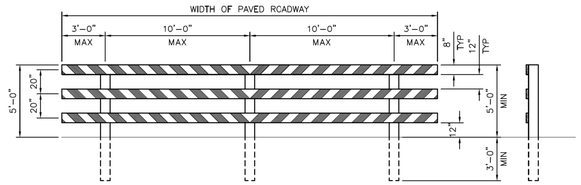
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NO.	DATE	REVISION	APP.

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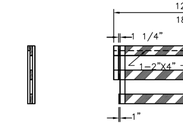
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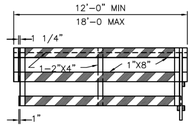
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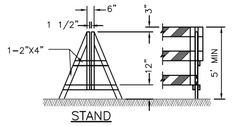


TYPE III BARRICADE
FOR END OF ROAD

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

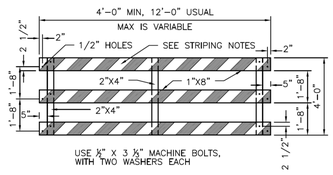




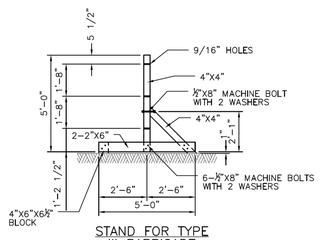




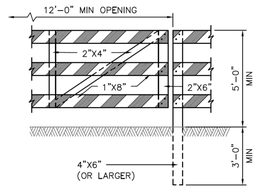
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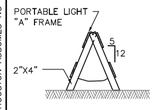
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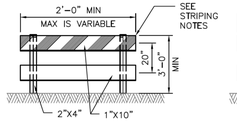
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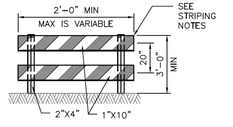
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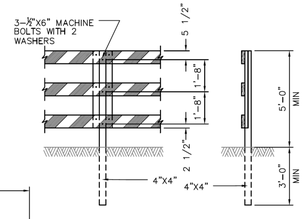
"A" FRAME



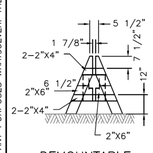
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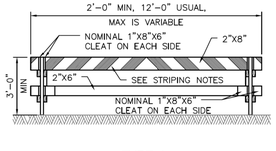
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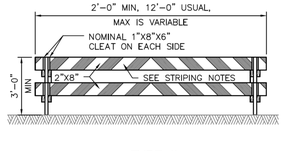
POST FOR TYPE III BARRICADE



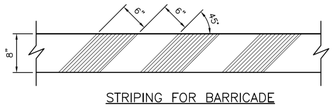
DEMOUNTABLE



TYPE I



TYPE II

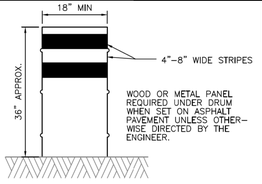


STRIPING FOR BARRICADE

BARRICADE NOTES:

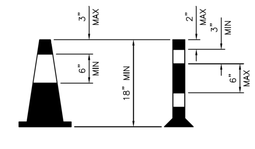
1. THE MOST RECENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND IT'S REVISIONS, SHALL GOVERN THE CONSTRUCTION AND USE OF ALL ITEMS HEREIN DESCRIBED.
2. CHANNELIZATION DEVICES OTHER THAN BARRICADES SHOULD NORMALLY BE USED FOR CHANNELIZATION PURPOSES.
3. BARRICADES SHOULD NORMALLY BE PLACED PERPENDICULAR TO THE TRAFFIC FLOW. OTHER CHANNELIZING DEVICES, SUCH AS DRUMS, VERTICAL PANELS OR PORTABLE BARRIERS, SHOULD BE USED WHERE NEEDED TO SEPARATE TRAFFIC FROM THE WORK AREA. IN ALL CASES, THE BARRICADES SHOULD BE SO LOCATED AS TO MOST ADVANTAGEOUSLY WARN AND DIRECT TRAFFIC.
4. BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL APPROVED BY THE TMUTCD. THE CONSTRUCTION DETAILS SHOWN HEREON ARE TYPICAL AND ARE SUGGESTED DETAILS FOR WOOD SUPPORT SYSTEMS FOR BARRICADES. THE DETAILS OF RAIL WIDTH AND STRIPING, NUMBER AND SPACING OF RAILS, MINIMUM LENGTH AND HEIGHT (ABOVE PAVEMENT) OF RAILS MUST BE ADHERED TO WHEN ALTERNATE DESIGNS ARE USED.
5. BARRICADES ARE TO BE CONSTRUCTED OF CLEAN SOUND MATERIAL. ALL SURFACES ABOVE GROUND, WHICH ARE NOT STRIPED, SHALL BE WHITE EXCEPT THE UNPAINTED GALVANIZED METAL OR ALUMINUM COMPONENTS MAY BE USED. COMPONENTS MADE OF LUMBER SHALL BE PAINTED WITH A MINIMUM OF TWO COATS OF AN APPROVED BRAND OF WHITE PAINT TO SECURE THOROUGH COVERAGE AND A UNIFORM WHITE COLOR.
6. THE REFLECTORIZED WHITE AND REFLECTORIZED ORANGE (REFLECTORIZED RED) STRIPES FOR BARRICADES, DRUMS AND VERTICAL PANELS SHALL BE CONSTRUCTED OF HIGH INTESITY SHEETING AND SHALL BE MAINTAINED TO MEET THE APPEARANCE, COLOR AND REFLECTIVITY REQUIREMENTS SET BY DOTT.
7. THE CONTRACTOR SHALL MAINTAIN EACH BARRICADE IN A CLEAN AND GOOD CONDITION.
8. BARRICADES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND/OR THE ELIMINATION OF THE HAZARD ON ANY SECTION.

- FOR ALL TYPES OF BARRICADES WITH RAILS LESS THAN 3'-0" LONG, STRIPES 4" WIDE SHALL BE USED. IDENTIFICATION MARKINGS MAY BE SHOWN ONLY ON BACK SIDE OF BARRICADE RAILS.
- STRIPING SHOULD COVER THE FULL WIDTH OF THE RAIL. STRIPING OF RAILS, PANELS, ETC. SHOULD SLOPE DOWNWARD AT AN ANGLE OF 45° DEGREES IN DIRECTIONS TRAFFIC IS TO PASS.
- WHERE A BARRICADE EXTENDS ENTIRELY ACROSS A ROADWAY, IT IS DESIRABLE THAT THE STRIPES SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING. WHEN BOTH RIGHT AND LEFT TURNS ARE PROVIDED FOR, THE CHEVRON STRIPING MAY SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE.



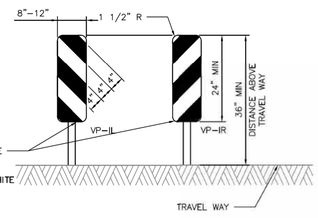
DRUMS

1. DRUMS, SET ON END, AND USED FOR TRAFFIC WARNING OR CHANNELIZATION SHALL BE APPROX 36" IN HEIGHT AND A MIN OF 18" IN DIAMETER. THE CONTRACTOR, AT HIS OPTION, MAY USE DRUMS MADE FROM STEEL BARRELS OR BLACK POLYETHYLENE PLASTIC DRUM LINERS WEIGHING APPROX EIGHT POUNDS EACH. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL CIRCUMFERENTIAL REFLECTORIZED ORANGE AND REFLECTORIZED WHITE STRIPES, 4 TO 8 INCHES WIDE. THE FIRST REFLECTORIZED STRIPE SHOULD START WITHIN TWO (2) INCHES OF THE TOP OF THE DRUM. THERE SHALL BE AT LEAST TWO ORANGE AND TWO WHITE STRIPES ON EACH DRUM. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE HORIZONTAL ORANGE AND WHITE STRIPES, THEY SHALL BE NO MORE THAN 2 INCHES WIDE. METAL DRUMS SHALL BE PAINTED BLACK OR ORANGE BEFORE REFLECTORIZED STRIPES ARE ADDED. ALL DRUMS ON PROJECT WILL BE THE SAME COLOR. WHEN DRUMS ARE PLACED IN THE ROADWAY, APPROPRIATE WARNING SIGNS SHOULD BE USED. DURING HOURS OF DARKNESS, A FLASHING WARNING LIGHT SHOULD BE PLACED ON DRUMS USED SINGLY AS A WARNING DEVICE. STEADY BURN ELECTRIC LIGHTS OR DELINEATORS SHOULD BE PLACED ON DRUMS USED IN SERIES FOR TRAFFIC CHANNELIZATION. DRUMS SHALL BE WEIGHTED WITH SAND TO THE EXTENT INDICATED IN THE PLANS.
2. CWI-8 CHEVRON SIGNS, CWI-6A ARROW SIGNS OR VP-1 VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.



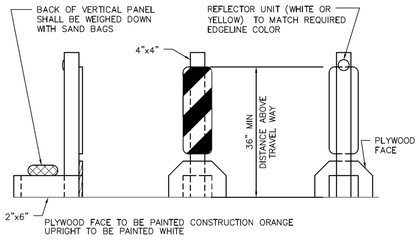
CONES

1. TRAFFIC CONES AND TUBULAR MARKERS SHALL BE A MIN OF 18" INCHES IN HEIGHT WITH A BROADENED BASE AND MAY BE MADE OF VARIOUS MATERIALS TO WITHSTAND IMPACT WITHOUT DAMAGE TO THEMSELVES OR TO VEHICLES. LARGER SIZES SHOULD BE USED ON FREEWAYS AND OTHER ROADWAYS WHERE SPEED ARE RELATIVELY HIGH OR WHERE EVER MORE CONSPICUOUS GUIDANCE IS NEEDED. ORANGE SHALL BE THE PREDOMINANT COLOR ON CONES AND TUBULAR MARKERS. THEY SHOULD BE KEPT CLEAN AND BRIGHT FOR MAX TARGET VALUE FOR NIGHT TIME USE THEY SHALL BE RELFECTORIZED OR EQUIPPED WITH LIGHTING DEVICES FOR MAX VISIBILITY. REFLECTORIZED MATERIAL SHALL HAVE A SMOOTH, SEALED OUTER SURFACE WHICH WILL DISPLAY THE SAME APPROX COLOR DAY AND NIGHT.
2. REFLECTORIZATION OF TUBULAR MARKERS SHALL BE A MIN OF TWO THREE-INCH BANDS PLACED A MAX OF 2" FROM THE TOP WITH A MAX OF 6" BETWEEN THE BANDS. REFLECTORIZATION OF CONES SHALL BE PROVIDED BY A MIN 6" BAND PLACED A MAX OF 3" FROM THE TOP.
3. CONES OR TUBULAR MARKERS ARE GENERALLY ONLY SUITABLE FOR TEMPORARY USAGE (UP TO 8 HOURS) WITH OTHER CHANNELIZATION DEVICES SUCH AS VERTICAL PANELS OR BARRICADES PREFERRED FOR LONGER TERM USAGE. CARE SHOULD BE TAKEN TO INSURE THAT THEY REMAIN IN THEIR PROPER LOCATION AND IN AN UPRIGHT POSITION.



VERTICAL PANELS (VP)

VERTICAL PANELS ARE NORMALLY USED AS CHANNELIZING DEVICES TO INDICATE TANGENT OR NEARLY TANGENT ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME. IN ADDITION, VERTICAL PANELS SHOULD BE USED AT THE EDGE OF SHOULDER DROP-OFFS AND OTHER SUCH AREAS AS LANE TRANSITIONS WHERE POSITIVE DAY AND NIGHT DELINEATION MAY BE REQUIRED. VERTICAL PANELS SHOULD BE MOUNTED BACK TO BACK IF USED AT THE EDGE OF CUTS ADJACENT TO TWO-WAY TWO LANE ROADWAYS. STRIPES SHOULD ALWAYS SLOPE DOWNWARD TOWARD THE TRAVELED WAY.



TYPICAL PORTABLE VERTICAL PANEL OR DELINEATOR

OTHER SIMILAR SUPPORTS MAY BE USED WHEN APPROVED BY TMUTCD AND DIRECTED BY THE CITY OF HOUSTON.

APPROVED BY:	APPROVED BY:
DocuSigned by: Suhail Kanwar	DocuSigned by: KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER

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

EFF DATE: NOV-27-2023 | DWG NO: 01555-14

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

BARRICADE AND CHANNELIZING DEVICES

DRAWING SCALE
NOT TO SCALE

FOR CITY OF HOUSTON USE ONLY

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Houston, TX 77079
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140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
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Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

BARRICADE STANDARD

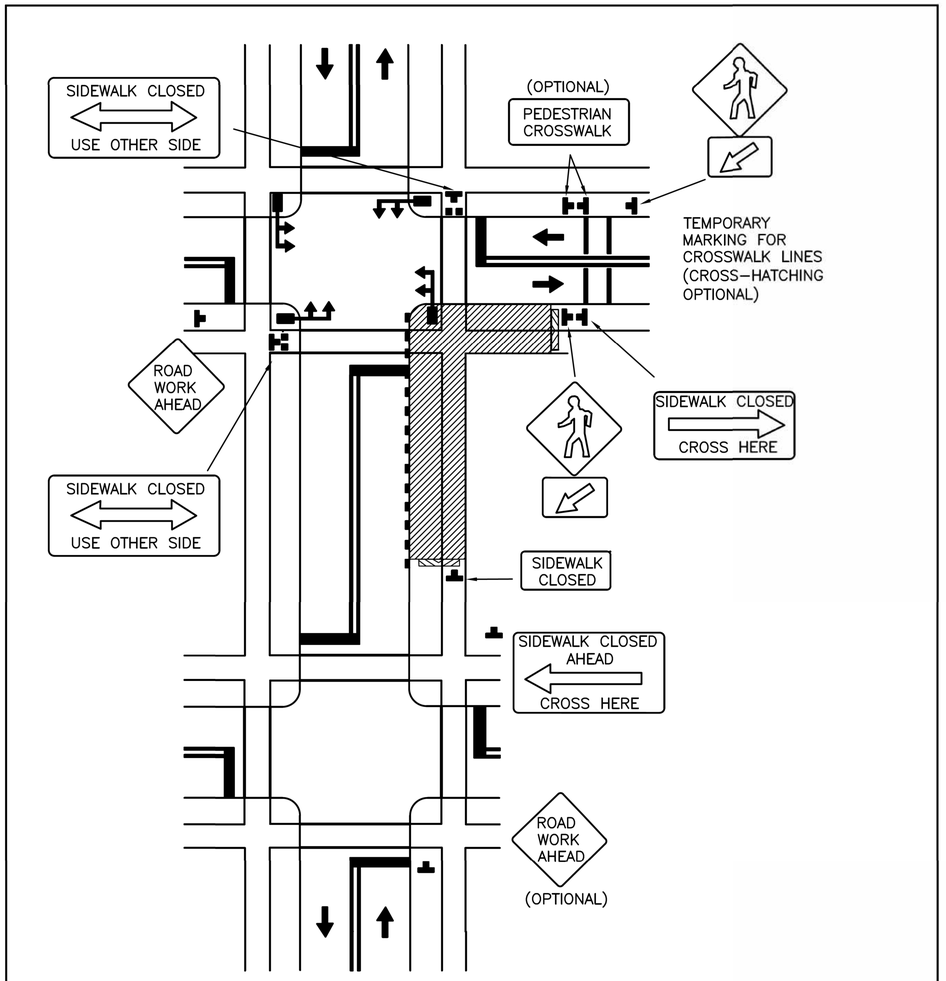
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APPROVED BY:

CITY ENGINEER	CITY TRAFFIC ENGINEER	DIRECTOR OF HPW
DocuSigned by: Suhail Kanwar 9CF8B0C641F5478...	DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...	DocuSigned by: Carol Haddock A93C410B72B3453...

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CROSSWALK CLOSURES AND PEDESTRIAN DETOURS

(SCALE: NOT TO SCALE)

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

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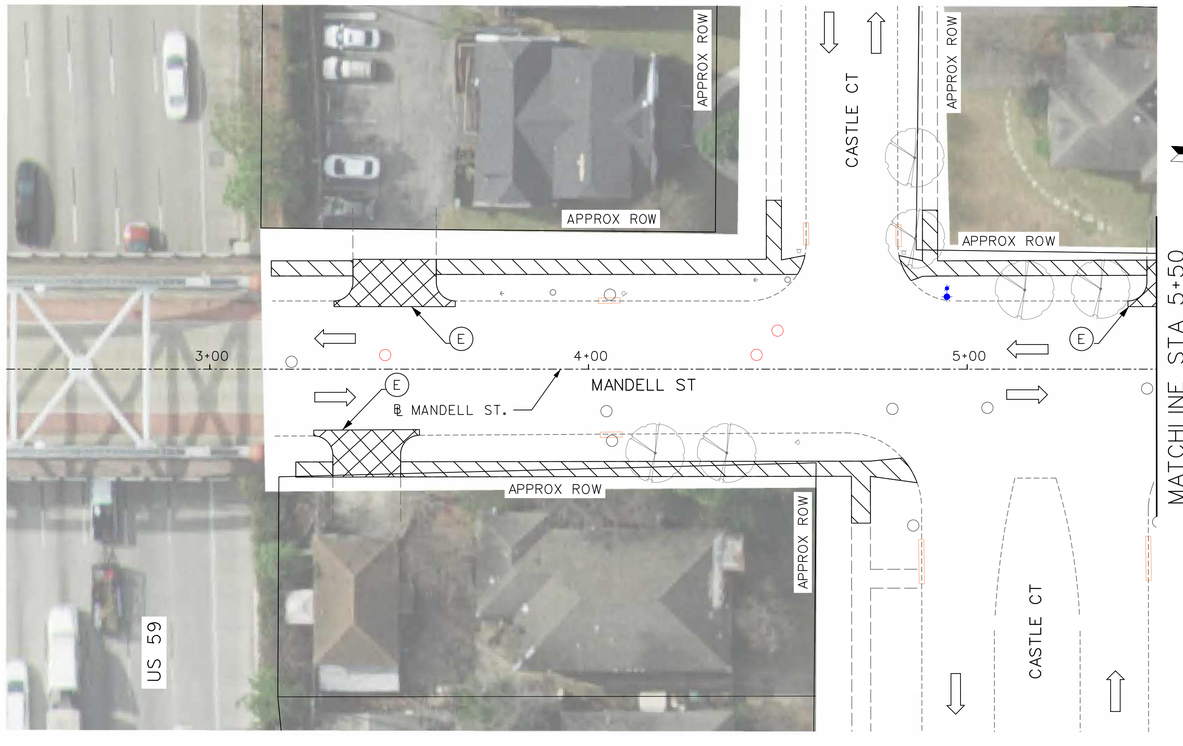
MANDELL STREET IMPROVEMENTS

CROSSWALK CLOSURES AND PEDESTRIAN DETOURS

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LEGEND

- REMOVE CONC DRWY
- REMOVE CONC SDWK
- (E) SAWCUT (FRONT AND BACK OF DRWY; NO SEPARATE PAY)
- (F) REMOVE CURB AND GUTTER

N

0′ 20′ 40′
SCALE IN FEET

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HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

DEMOLITION LAYOUT
BEGIN PROJECT TO STA 10+00

SHEET 1 OF 5

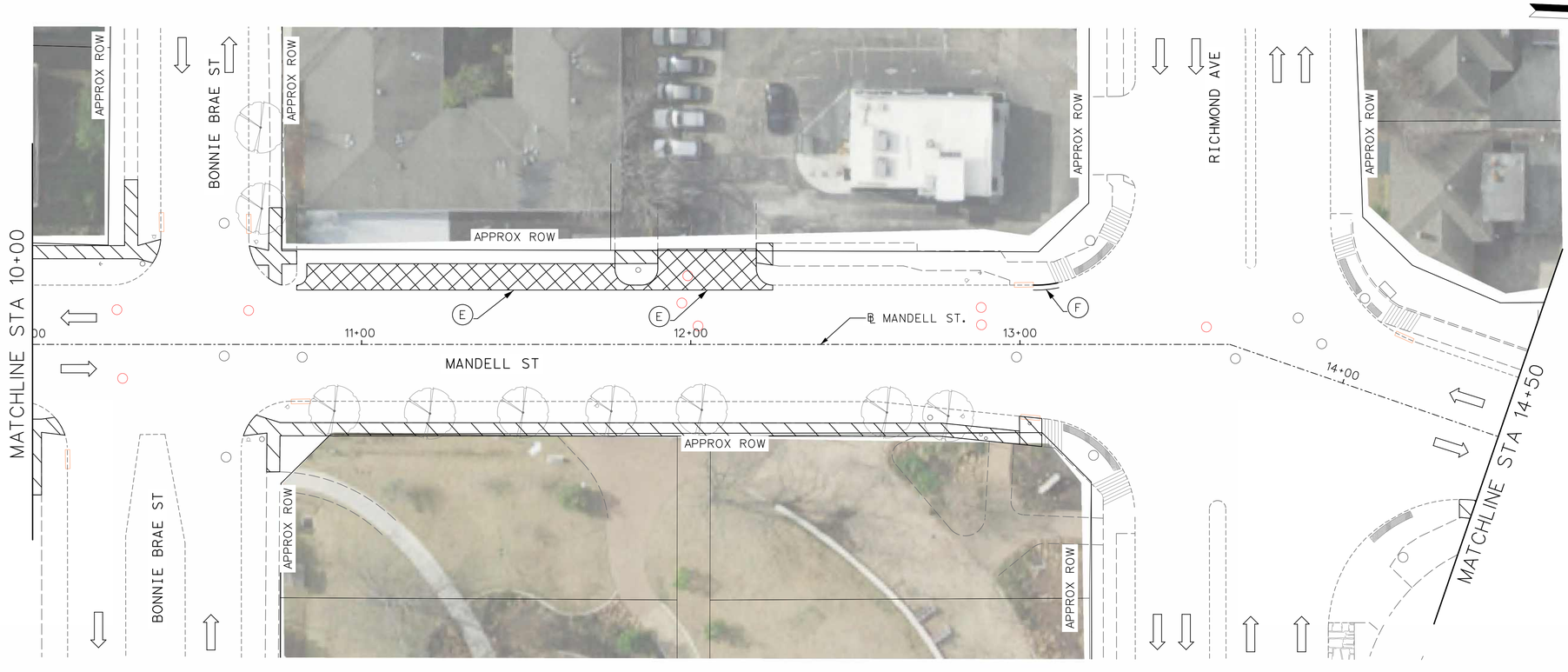
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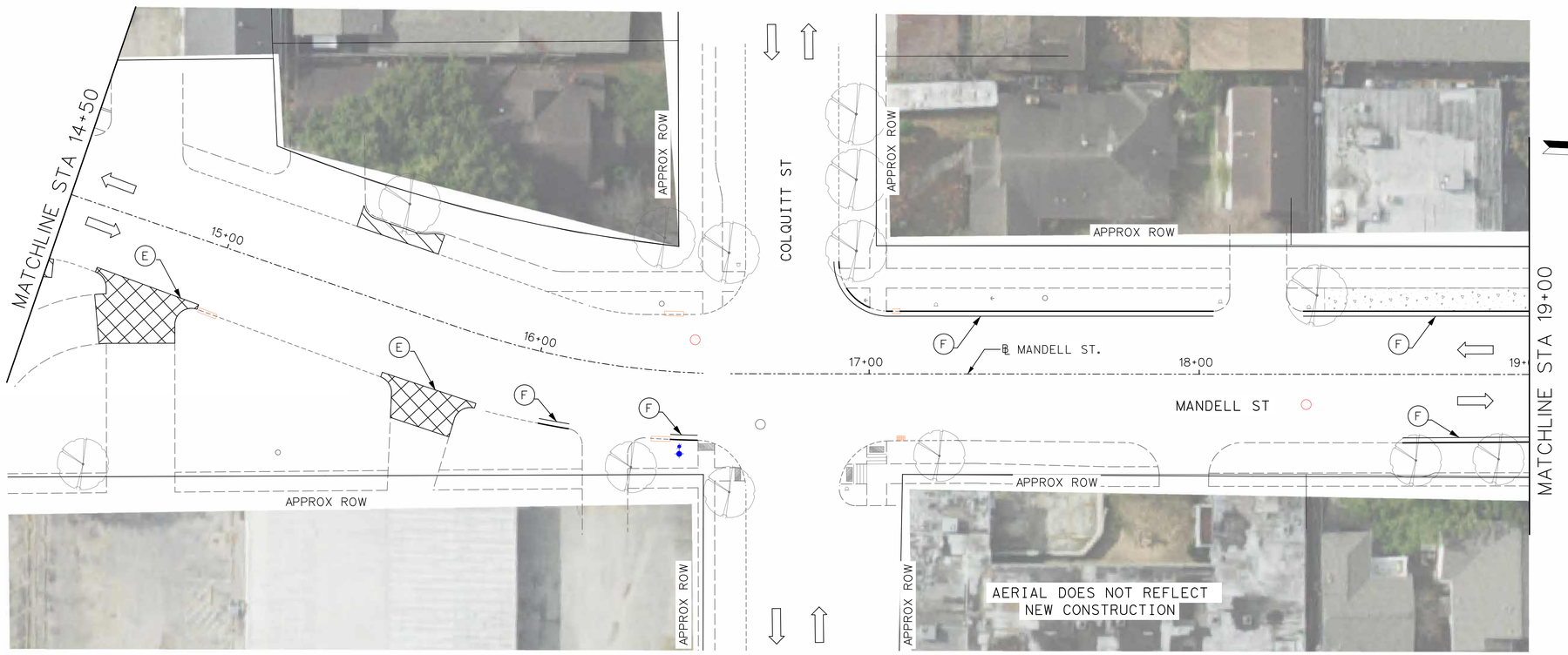
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- (F) REMOVE CURB AND GUTTER

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SCALE IN FEET

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MANDELL STREET IMPROVEMENTS

DEMOLITION LAYOUT
STA 10+00 TO STA 19+00

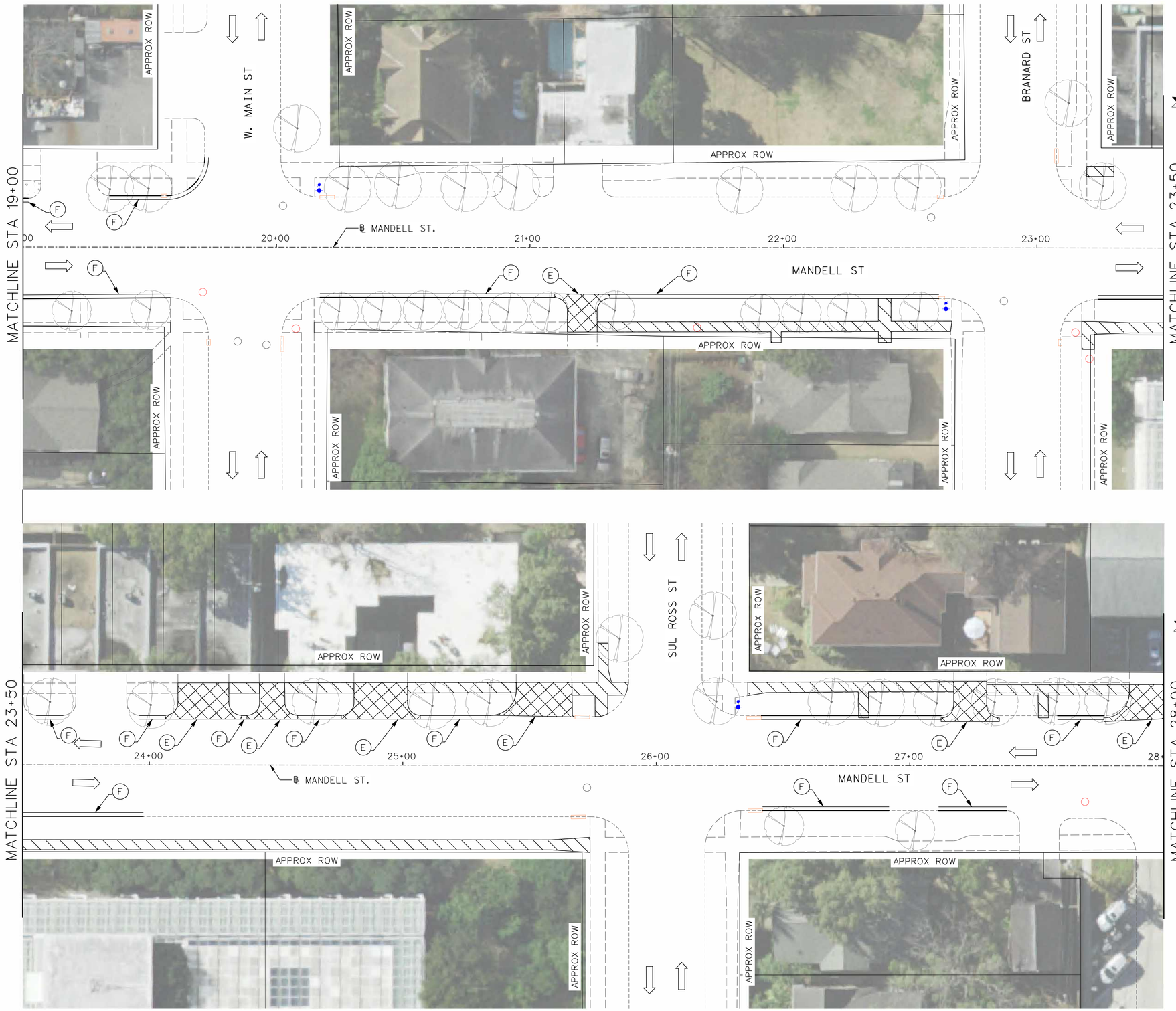
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SHEET NO. 31 OF 101	

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07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

DEMOLITION LAYOUT
STA 19+00 TO STA 28+00

SHEET 3 OF 5

WBS NUMBER
N-T27000-003-7
DRAWING SCALE
AS NOTED
CITY OF HOUSTON PM
JIADA HUANG
SHEET NO. 32 OF 101

FOR CITY OF HOUSTON USE ONLY

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

Design Filename: J:\2025\2503044\DesignData\Design Plans\Plan Production\Roadway\Demolition\1137 - DEMO- MANDELL ST - 03.dgn

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Plot Driver: J:\2025\2503044\DesignData\Design Plans\Plan Production\Resource\Plot files\Mandell_St.pltcfg



LEGEND

- REMOVE CONC DRWY
- REMOVE CONC SDWK
- (E) SAWCUT (FRONT AND BACK OF DRWY; NO SEPARATE PAY)
- (F) REMOVE CURB AND GUTTER

NO.	DATE	REVISION	APP.

0′ 20′ 40′
SCALE IN FEET

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

HRGreen
11750 Katy Freeway,
Suite 400
Houston, TX 77079
(832) 318-8800
(713) 965-0044 FAX
HRGreen.com
Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

DEMOLITION LAYOUT
STA 28+00 TO STA 37+00

SHEET 4 OF 5

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N-T27000-003-7	
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SHEET NO. 33 OF 101	

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- REMOVE CONC SDWK
- (E) SAWCUT (FRONT AND BACK OF DRWY; NO SEPARATE PAY)
- (F) REMOVE CURB AND GUTTER

NO.	DATE	REVISION	APP.

MATCHLINE STA 37+00

HAROLD ST

APPROX ROW

CURB TO REMAIN AT BLUE TILE STREET SIGN. IF DAMAGED CONTACT CONST MGR

38+00 39+00 40+00 41+00

℄ MANDELL ST.

MANDELL ST

HAWTHORNE ST

MATCHLINE STA 41+50

MATCHLINE STA 41+50

WESTHEIMER RD

42+00 43+00 44+00 45+00

46+

MANDELL ST

MATCHLINE STA 41+50

N

0′ 20′ 40′
SCALE IN FEET

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MANDELL STREET IMPROVEMENTS

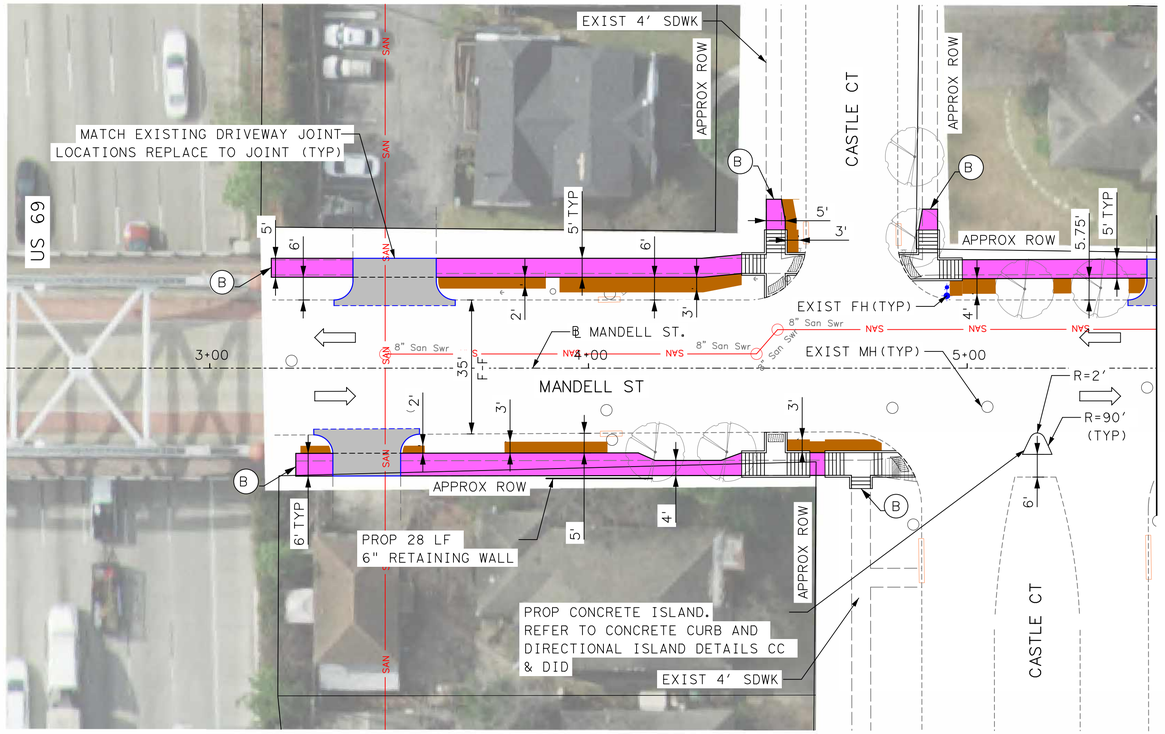
DEMOLITION LAYOUT
STA 37+00 TO END PROJECT

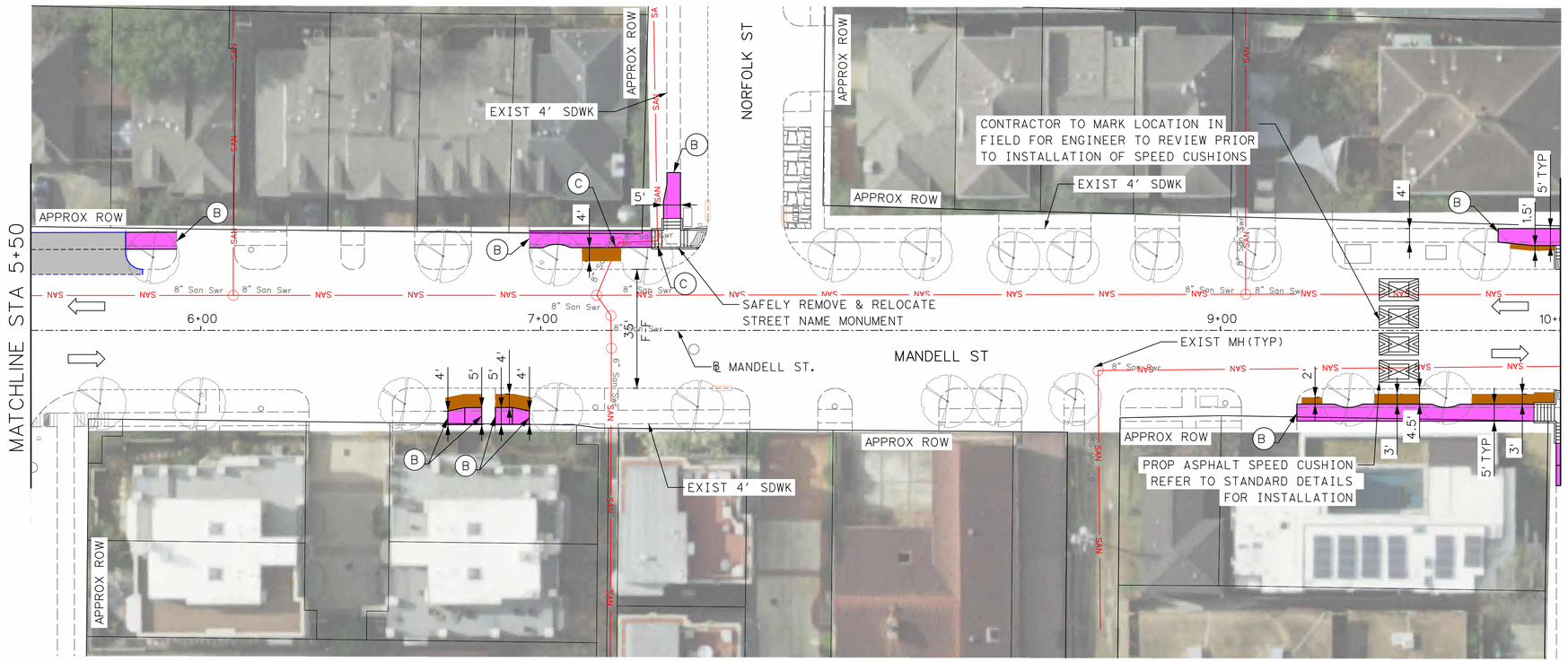
SHEET 5 OF 5

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JIADA HUANG	
SHEET NO. 34 OF 101	

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LEGEND

- EXIST LANE
- EXIST CURB
- EXIST DRIVEWAY
- EXIST INLET
- PROP CURB AND GUTTER
- PROP SIDEWALK
- PROP DRIVEWAY
- PROP 1.5 INCH ASPHALT MILL AND OVERLAY
- PROP COARSE SAND
- (A) REMOVE AND REPLACE CURB AND GUTTER
- (B) MATCH EXIST ELEVATION
- (C) ADJUST TO GRADE

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2. CONTRACTOR TO FIELD VERIFY THAT FLOWER BEDS WILL NOT BE DISTURBED WHEN PLACING COARSE SAND.
3. PROPOSED SIDEWALK AND SIDEWALK THROUGH PROPOSED DRIVEWAYS SHALL MATCH EXISTING SIDEWALK WIDTH, GRADE, CROSS-SLOPE AT CONNECTION POINTS.
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8. CONTRACTOR TO FIELD LAYOUT EDGES OF PROPOSED SIDEWALKS AND CONFIRM LOCATIONS WITH CM OR ENGINEER PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. NOTIFY CM OR ENGINEER OF ANY PLAN DEVIATIONS PRIOR TO FORM WORK. NO SEPARATE PAY.

0' 20' 40'
SCALE IN FEET

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SIDEWALK IMPROVEMENTS
BEGIN PROJECT TO STA 10+00

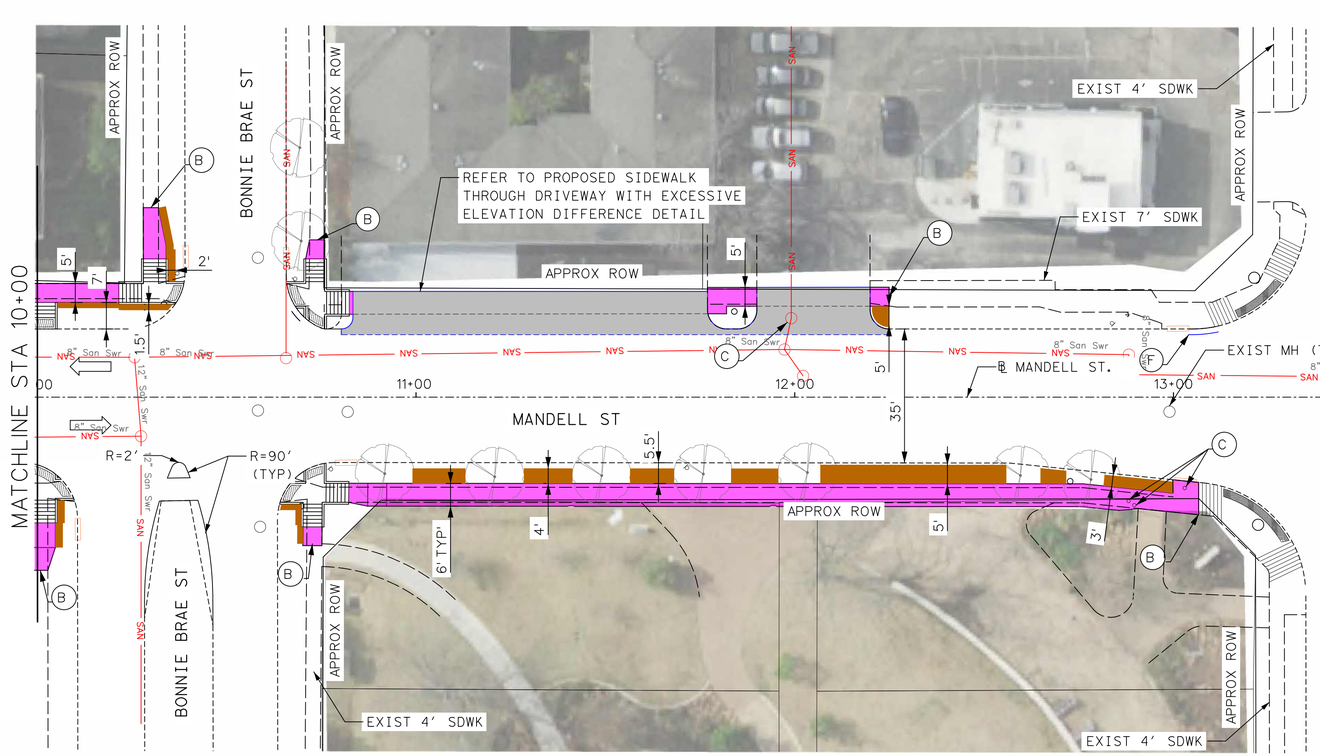
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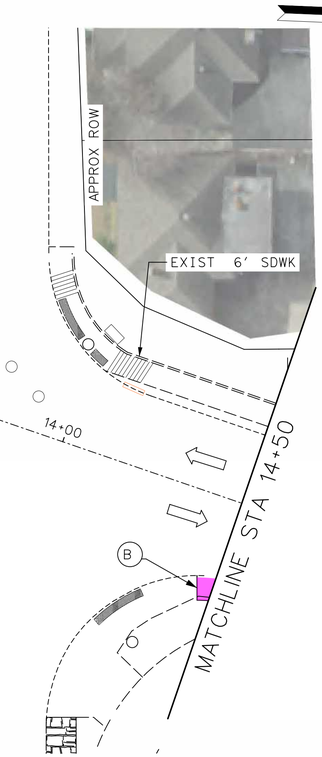
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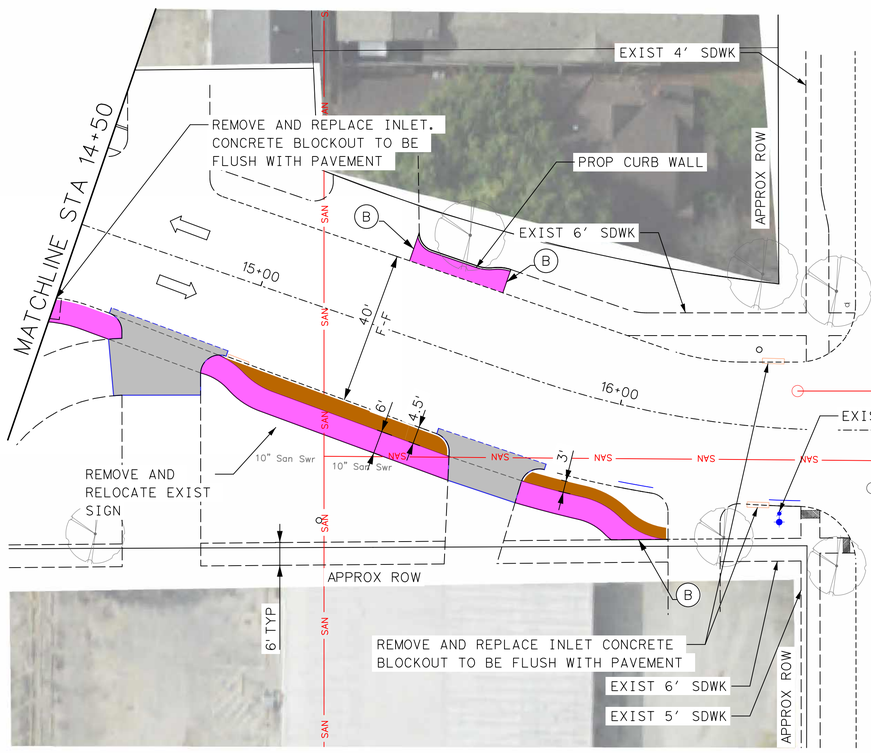
LEGEND

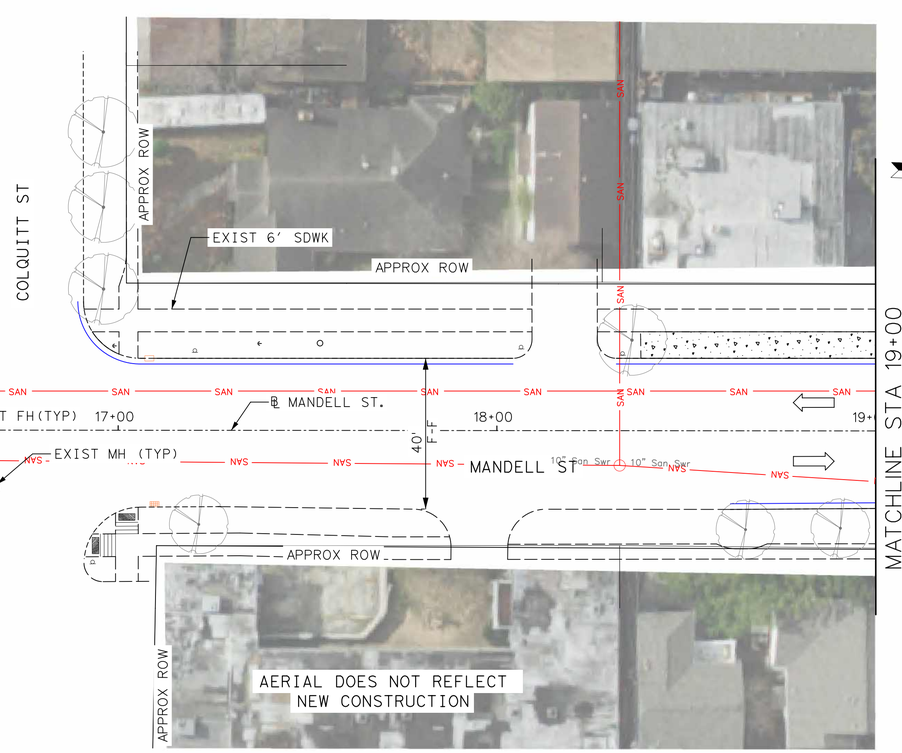
- EXIST LANE
- EXIST CURB
- EXIST DRIVEWAY
- EXIST INLET
- PROP CURB AND GUTTER
- PROP SIDEWALK
- PROP DRIVEWAY
- PROP 1.5 INCH ASPHALT MILL AND OVERLAY
- PROP COARSE SAND
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- (B) MATCH EXIST ELEVATION
- (C) ADJUST TO GRADE

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0' 20' 40'
SCALE IN FEET





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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SIDEWALK IMPROVEMENTS
STA 10+00 TO STA 19+00

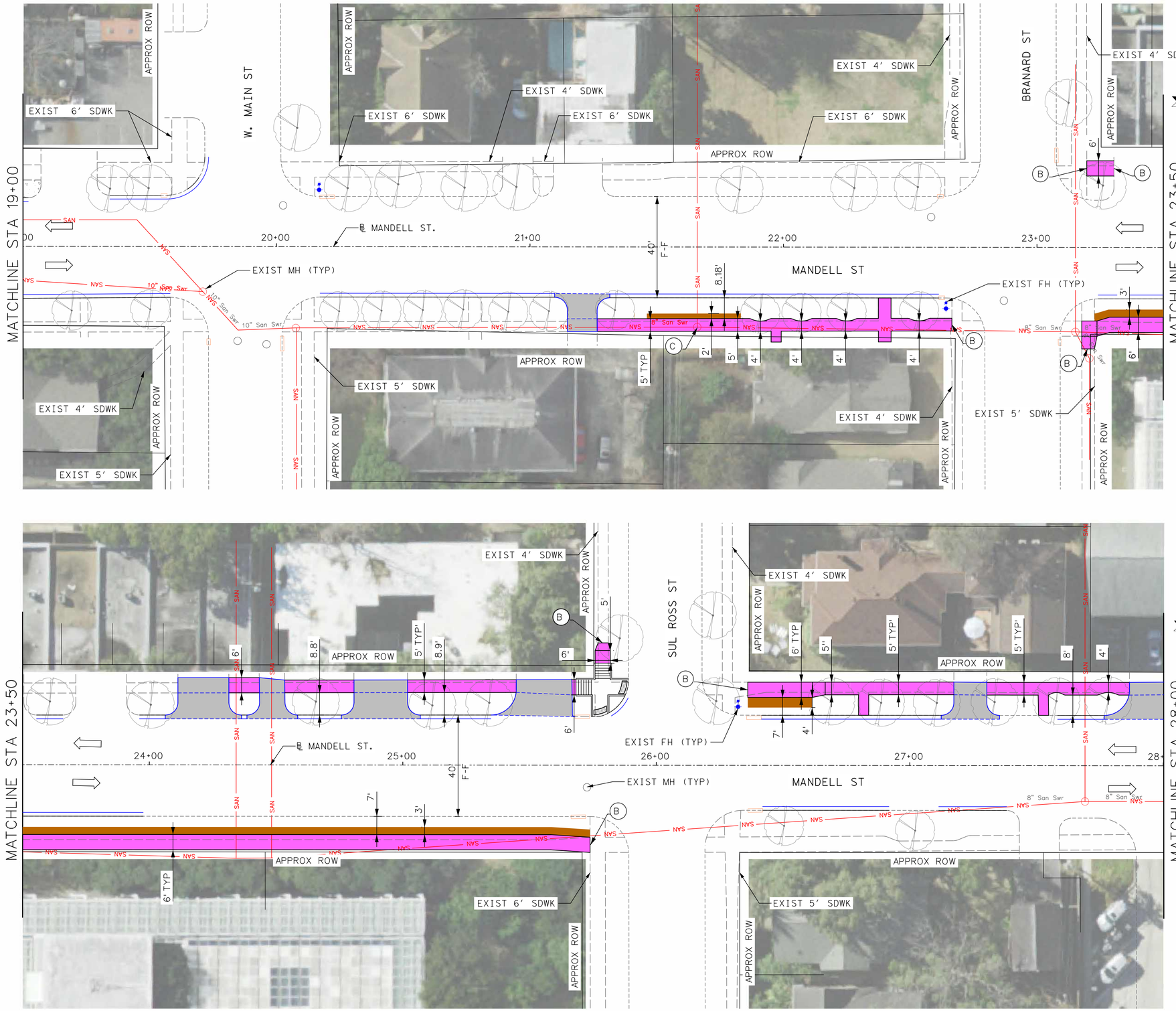
SHEET 2 OF 5

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 36 OF 101	

HOUSTON PUBLIC WORKS
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83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

NO.	DATE	REVISION	APP.

Design Filename: J:\2025\2503044\DesignData\Design Plans\Plan Production\Roadway\1137 - RDWY - MANDELL ST - 02.dgn



LEGEND

- EXIST LANE
- EXIST CURB
- EXIST DRIVEWAY
- EXIST INLET
- PROP CURB AND GUTTER
- PROP SIDEWALK
- PROP DRIVEWAY
- PROP 1.5 INCH ASPHALT MILL AND OVERLAY
- PROP COARSE SAND
- (A) REMOVE AND REPLACE CURB AND GUTTER
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0' 20' 40'
SCALE IN FEET

NO.	DATE	REVISION	APP.

MONTROSE
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

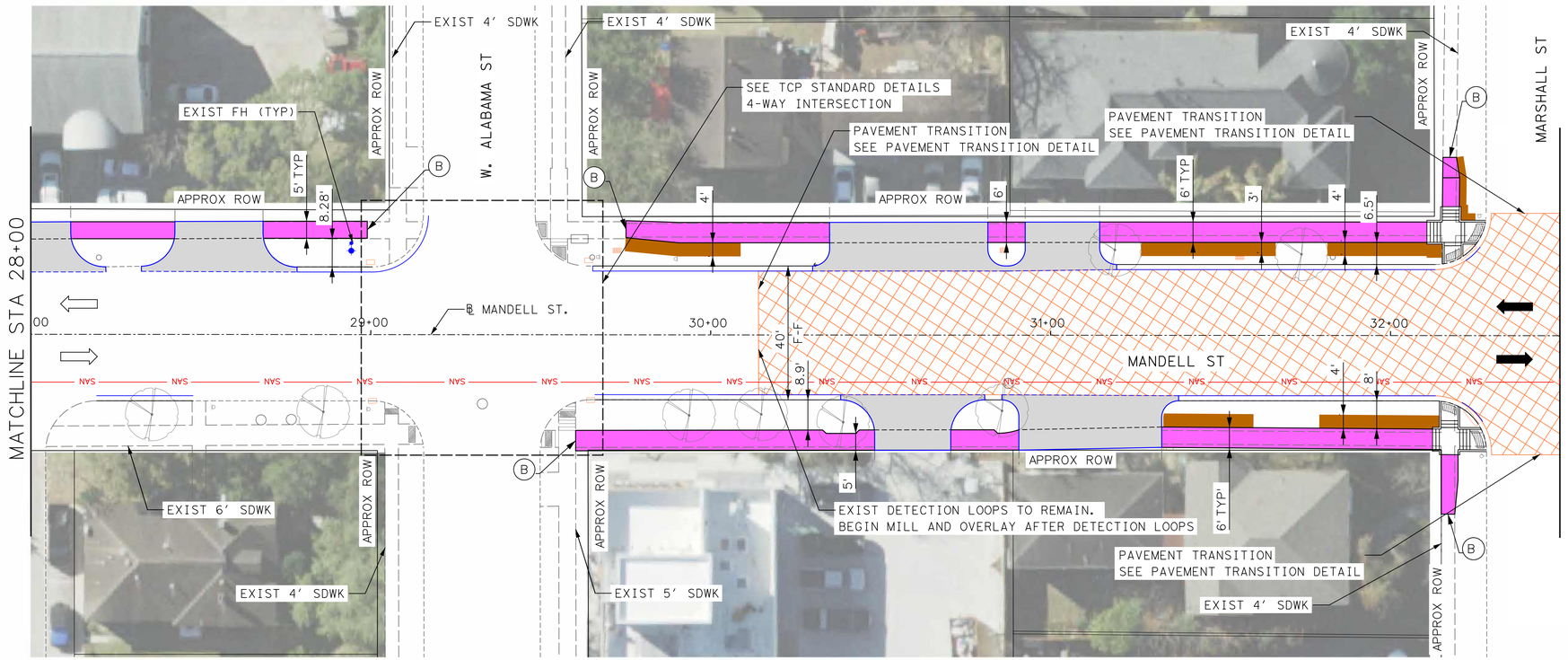
SIDEWALK IMPROVEMENTS
STA 19+00 TO STA 28+00

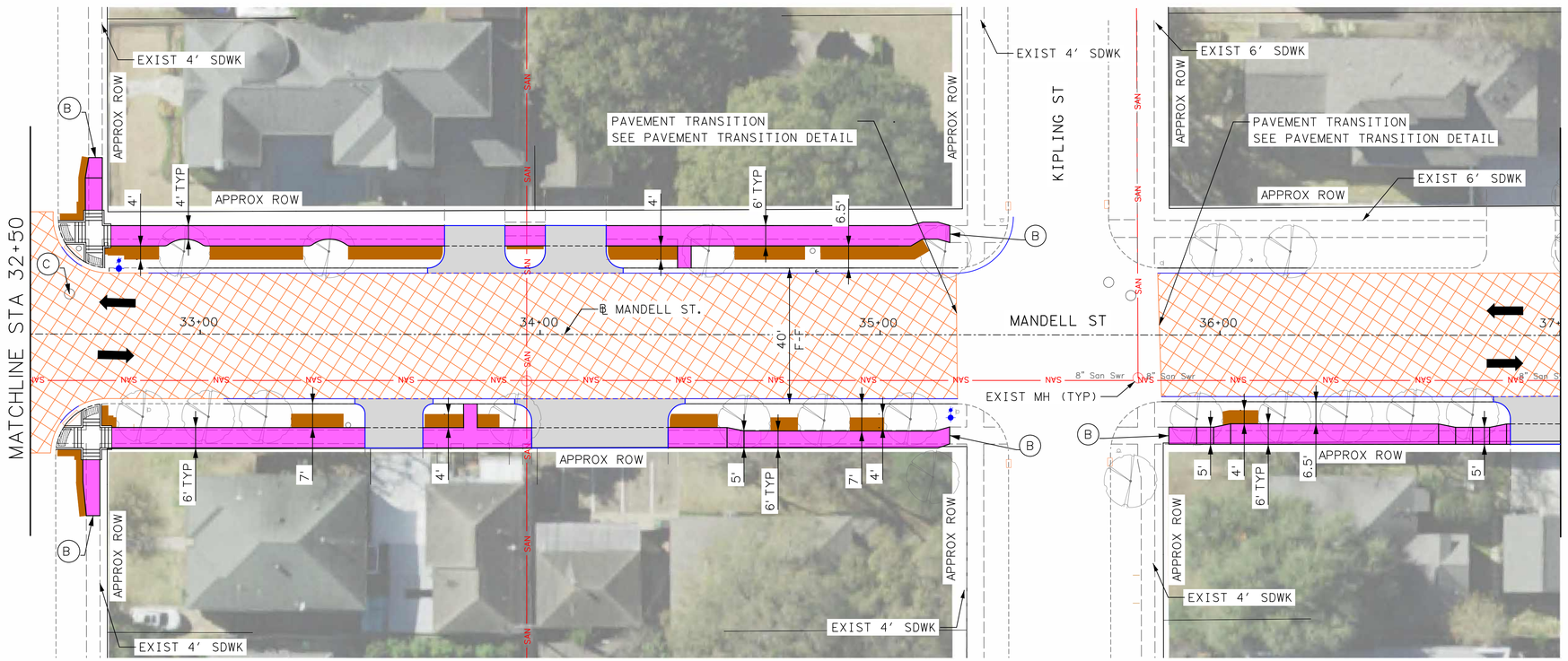
SHEET 3 OF 5

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LEGEND

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SIDEWALK IMPROVEMENTS
STA 28+00 TO STA 37+00

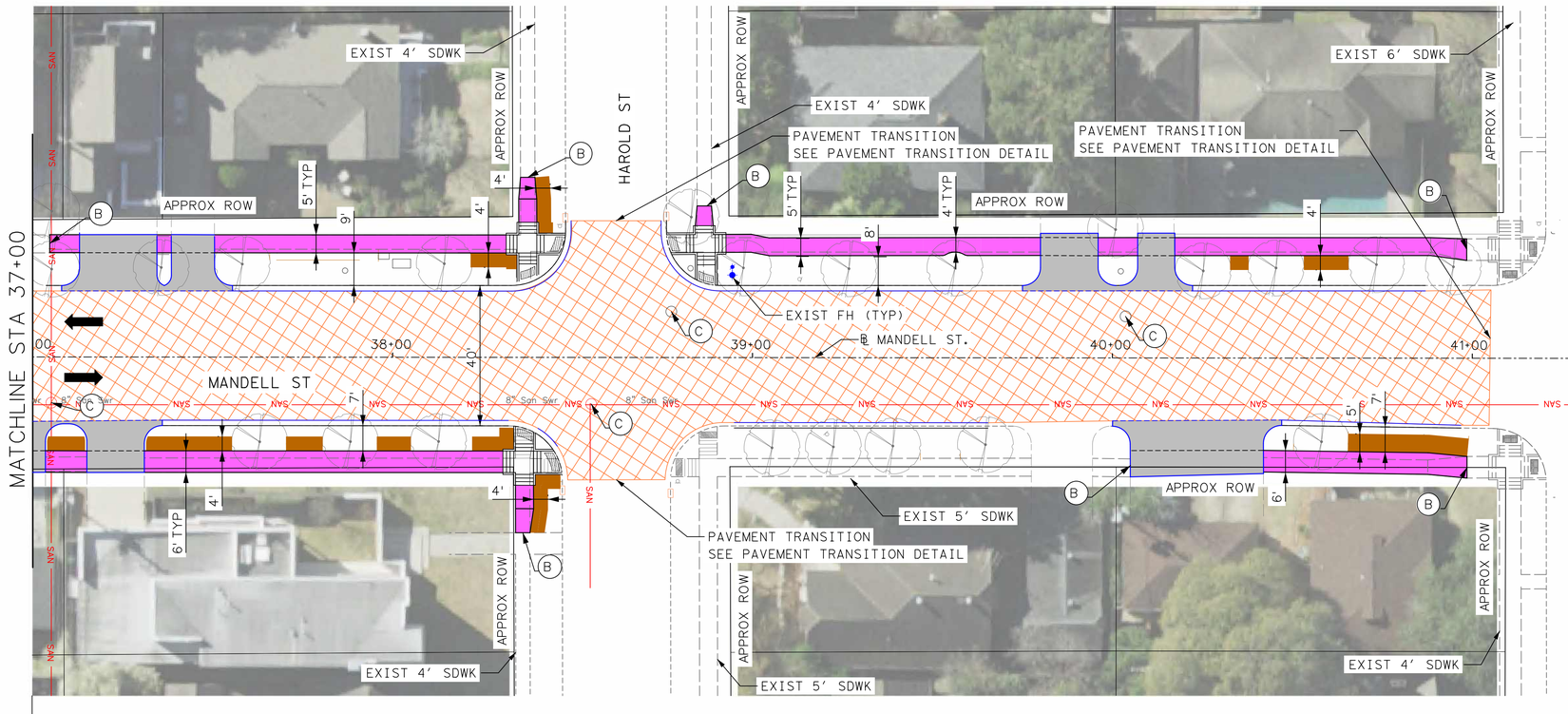
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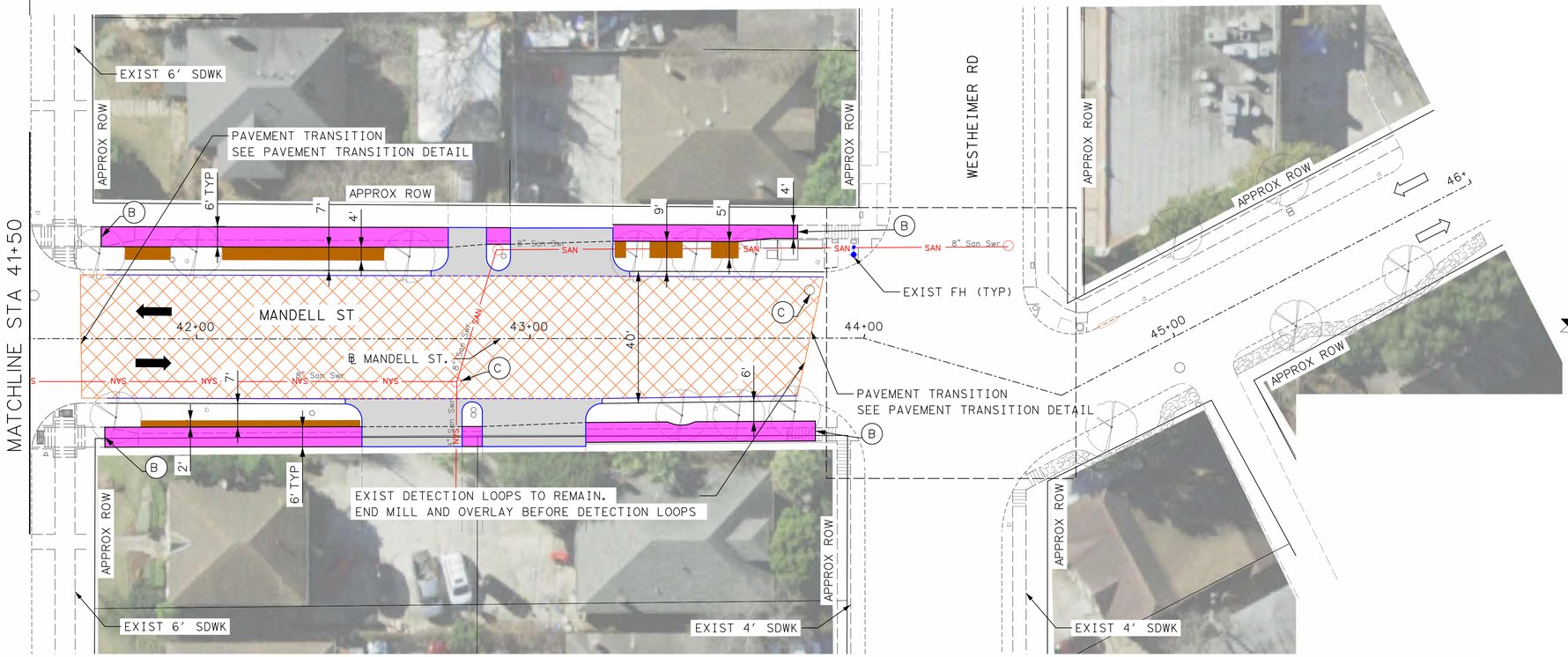
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Design Filename: J:\2025\2503044\DesignData\Design Plans\Plan Production\Roadway\1137 - RDWY - MANDELL ST - 04.dgn

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Pen Table: DALLAS.tbl
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LEGEND

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- EXIST CURB
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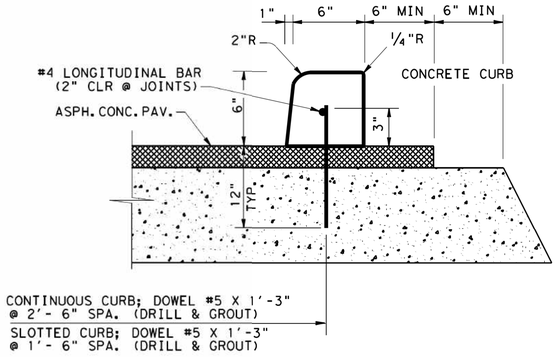
MANDELL STREET IMPROVEMENTS

SIDEWALK IMPROVEMENTS
STA 37+00 TO END PROJECT

SHEET 5 OF 5

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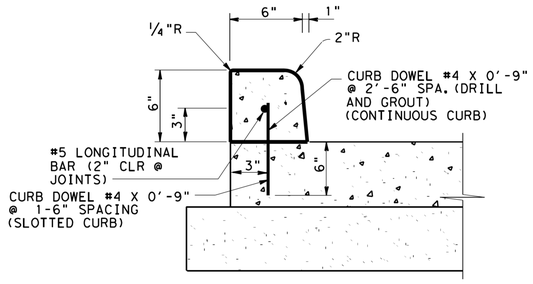
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CONTINUOUS CURB; DOWEL #5 X 1'-3"
@ 2'- 6" SPA. (DRILL & GROUT)
SLOTTED CURB; DOWEL #5 X 1'-3"
@ 1'- 6" SPA. (DRILL & GROUT)

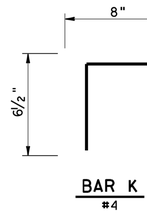
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(PAY ITEM 529-6011) - FOR CONTINUOUS

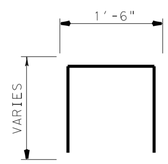


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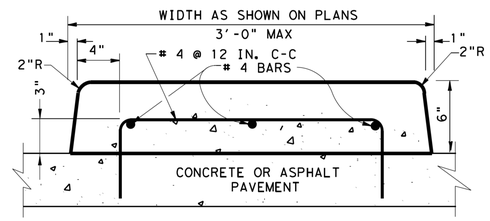
(PAY ITEM 529-6011) - FOR CONTINUOUS



BAR K
#4

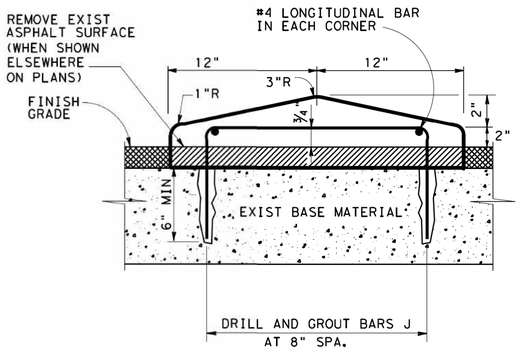


BAR J
#4



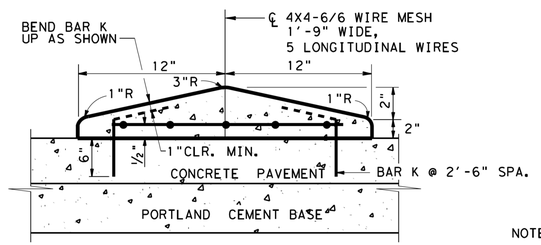
ITEM 536-6001 CONCRETE MEDIAN
SEE NOTE 2

CONCRETE CURB (DOWEL) (6 IN.)



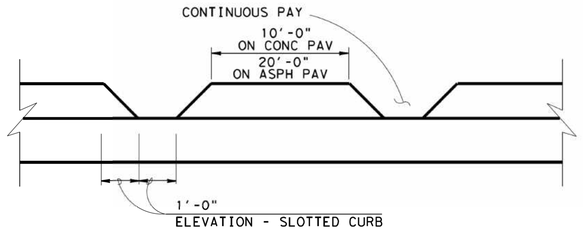
SHOWN ON EXISTING ACP PAVEMENT

SEE NOTE 2 - ITEM 536-6003 CONC DIRECTIONAL ISLAND



SHOWN ON EXISTING OR PROPOSED CONCRETE PAVEMENT

SEE NOTE 2 - ITEM 536-6003 CONC DIRECTIONAL ISLAND



ELEVATION - SLOTTED CURB

ITEM 529-6012 CONCRETE CURB (SLOTTED) - ON CONC.
ITEM 529-6009 CONC CURB (DOWEL)(SLOTTED) - ON ASPH.

NOTES:

1. DRILL AND GROUT BARS SHOWN AS PER ITEM 420.4.7.10, 6" EMBEDMENT, MINIMUM ON CONC.
2. INSTALL A 2 INCH DRAINAGE OPENING AT 10 FT C-C WHEN CURB/ISLAND IS NOT ON TOP OF CROSS SECTION. (LOCATED ON A 2 OR 3 PERCENT TRANSVERSE GRADE, OR SUPERELEVATION.)

CONCRETE DIRECTIONAL ISLAND

Texas Department of Transportation
Houston District

CONCRETE CURB AND DIRECTIONAL ISLAND DETAILS CC & DID

FILE: STDB-9.dgn	DN:	CK:	DW:	CK:	
© TxDOT 2014	DIST	FED REG	PROJECT NO.		SHEET
REVISIONS	HOU	6			
	COUNTY		CONTROL	SECT	JOB	HIGHWAY

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11750 Katy Freeway,
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(832) 318-8800
(713) 965-0044 FAX
HRGreen.com
Firm No. F-11278

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

SURVEYED BY:

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

CONCRETE CURB
AND DIRECTIONAL ISLAND
DETAILS CC & DID

SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 40 OF 101	

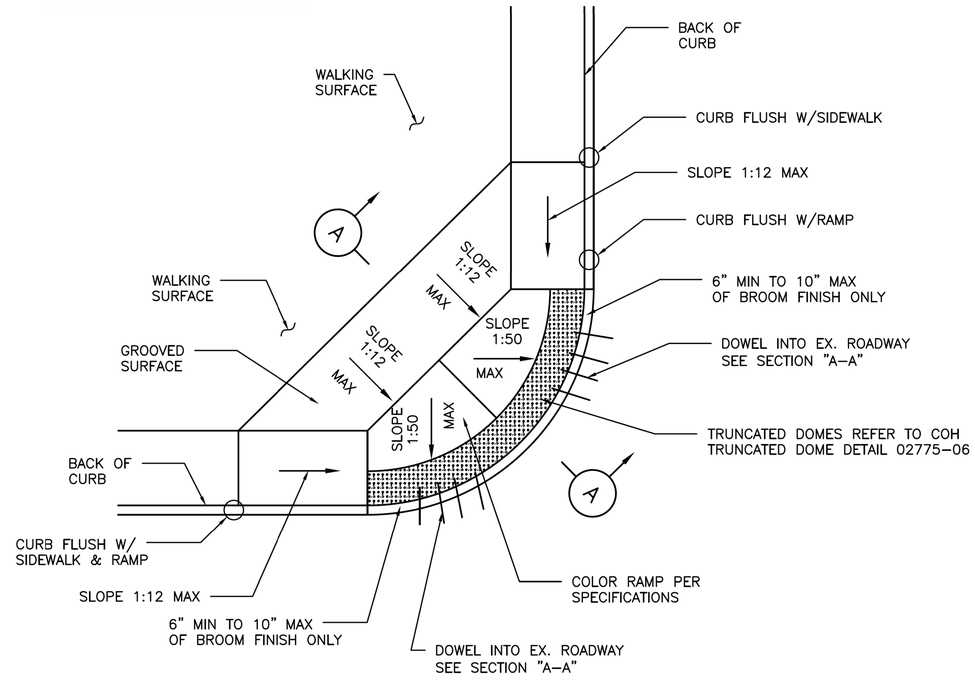
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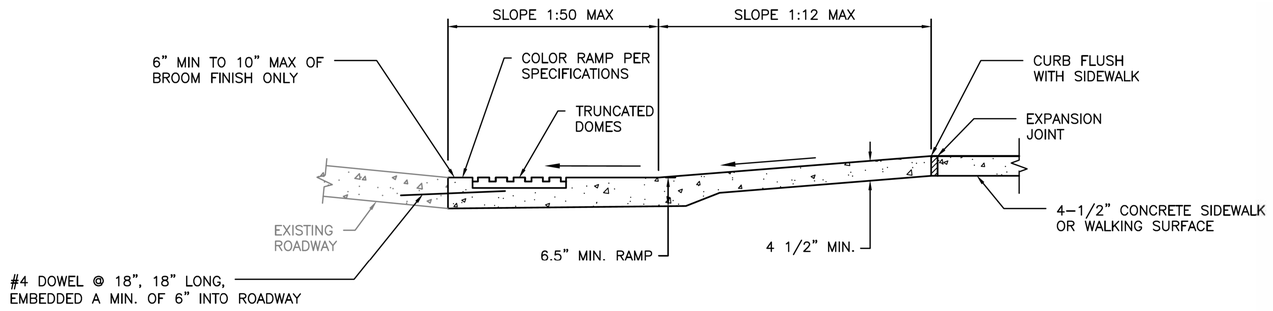
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Design Filename: J:\2025\2503044\DesignData\Design Plans\Plan Production\Roadway\Standards\00 - 1137 - TXDOT SLOTTED CURB DETAIL_POSISBLE NOT TO USE.dgn

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PLAN



SECTION A–A

NOTES:

1. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
2. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
3. THIS STANDARD DETAIL SHALL BE USED ONLY IF THE ROADWAY GEOMETRIC DOESN'T ALLOW STANDARD DETAILS 02775–02, 02775–03, AND 02775–09 TO BE USED.
4. THIS STANDARD DETAIL SHALL NOT BE USED IN LIEU OF STANDARD DETAILS 02775–02, 02775–03, AND 02775–09 UNLESS APPROVED BY THE CITY.

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

COMMERCIAL & HIGH DENSITY CONDITIONS CURB RAMP DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sukait Tamrat 9EF8B0C641F5478...
CITY ENGINEER

DocuSigned by: Carol Haddock A93C410972B3453...
DIRECTOR OF HPW

DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 | DWG NO: 02775–05

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HRGreen.com
Firm No. F–11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

COMMERICAL AND HIGH DENSITY CONDITIONS CURB RAMPS

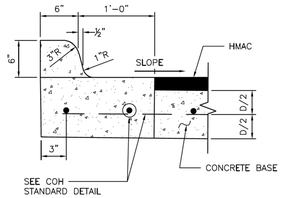
SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
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CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 41 OF 101	

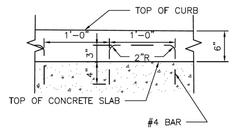
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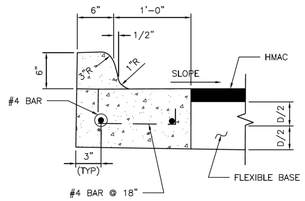
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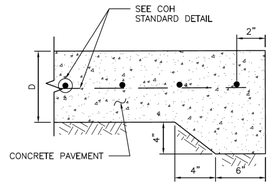
ESPLANADE CURB CONNECTED TO CONCRETE BASE



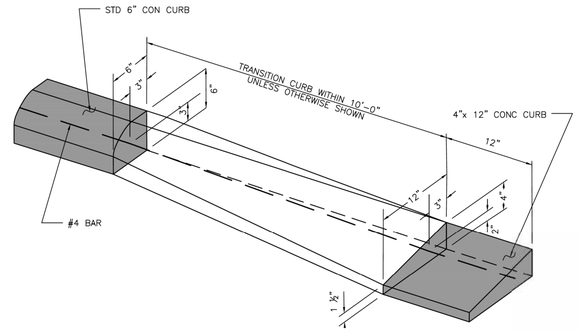
ALTERNATE CONCRETE CURB REINFORCEMENT



ESPLANADE CURB CONNECTED TO FLEXIBLE BASE



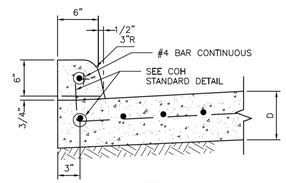
STANDARD CONCRETE PAVING HEADER



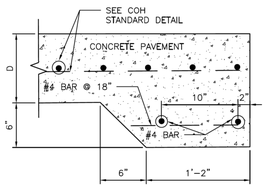
CURB TRANSITION
(SEE NOTES)

4"x12" MONOLITHIC AND TRANSITION CURB NOTES:

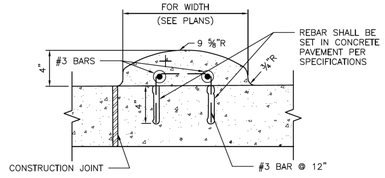
1. 6-INCH CONCRETE CURB TO BE CONSTRUCTED ON ALL ESPLANADES, ISLANDS, NON-RESIDENTIAL STREETS, AND RESIDENTIAL STREETS.
2. TRANSITIONS FROM 6- INCH CONCRETE CURB TO 4-INCH x 12-INCH CONCRETE CURB TO BE ACCOMPLISHED WITHIN 10 FEET, UNLESS OTHERWISE SHOWN. IF THIS 10-FEET TRANSITION CURB IS NOT POURED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



CONCRETE CURB

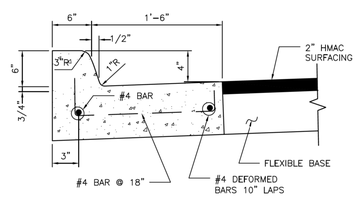


STANDARD RAILROAD HEADER

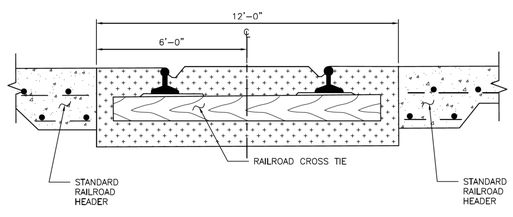


MOUNTABLE CURB

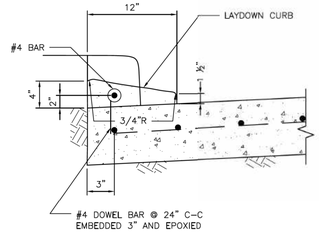
WHEN CONCRETE CURB IS TO BE PLACED EXISTING CONCRETE USE BASE #4 BAR @ 18x10" LONG, DOWELED AND SET IN EPOXY GROUT. SET #4 DOWEL BARS, 25" LONG AT 12" C-C WHEN PAVEMENT SECTION POURED.



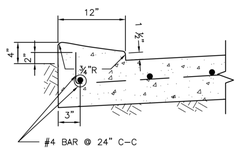
MONOLITHIC CURB AND GUTTER



STANDARD RAILROAD CROSSING – SINGLE TRACK



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



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

APPROVED BY:	APPROVED BY:
Sukut Kanwar	KHANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER

APPROVED BY:
Carol Haddock
DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: NOV-27-2023 | DWG NO: 02771-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CURB, CURB AND GUTTER AND HEADER DETAILS

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07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

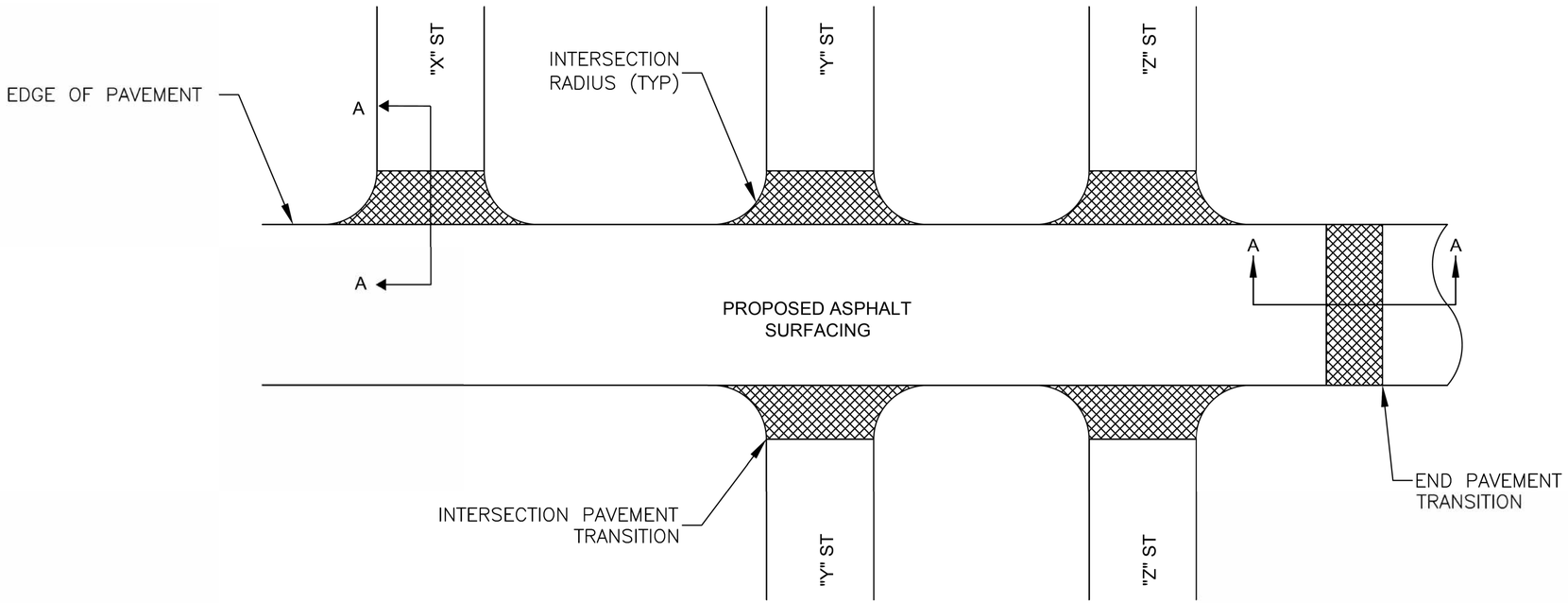
CONCRETE CURB AND GUTTER AND HEADER DETAILS

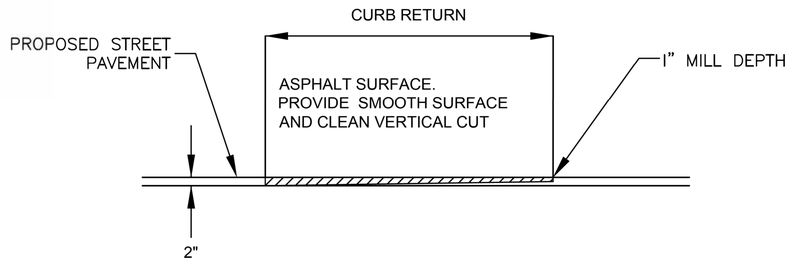
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Design Filename: J:\2025\2503044\DesignData\Design Plans\Plan Production\Roadway\Standards\02 - 1137 - CONCRETE CURB&HEADER&HEADWALL.dgn





SECTION A-A
TYPICAL PAVEMENT TRANSITION
N.T.S

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

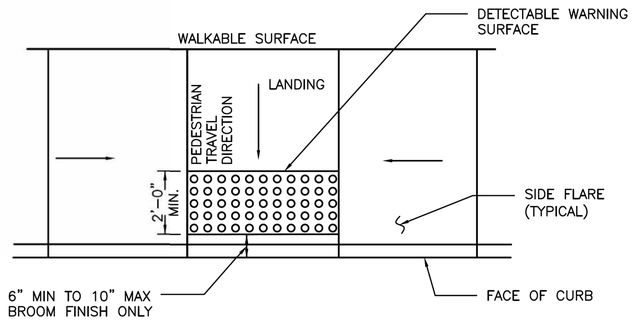
CONSTRUCTION STANDARDS
PAVEMENT TRANSITION DETAILS

SHEET 1 OF 1

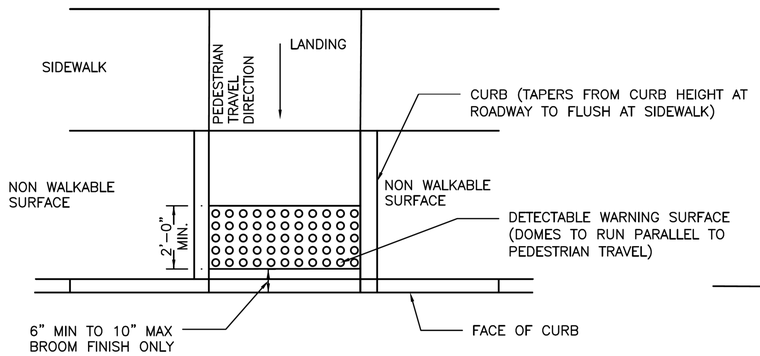
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JIADA HUANG	
SHEET NO. 43 OF 101	

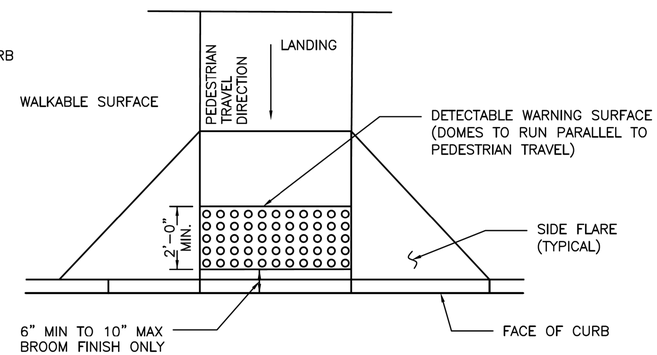
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Design Filename: J:\2025\2503044\DesignData\Design Plans\Plan Production\Roadway\Standards\03 - 1137 - CONSTRUCTION STANDARDS PAVEMENT TRANSITION DETAILS.dgn

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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.

DISCLAIMER:
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DETECTABLE WARNING CURB RAMP DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar 9EF8B0C841F5478...
CITY ENGINEER

DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY TRAFFIC ENGINEER

DocuSigned by: Carol Haddock A93C410B72B3453...
DIRECTOR OF HPW

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

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HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

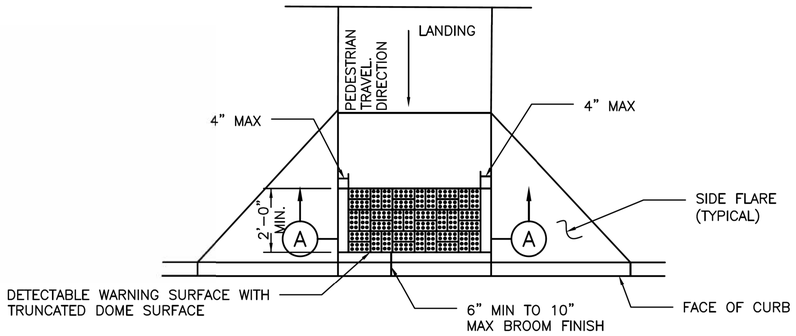
DETECTABLE WARNING CURB RAMPS DETAILS

SHEET 1 OF 1

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CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 44 OF 101	

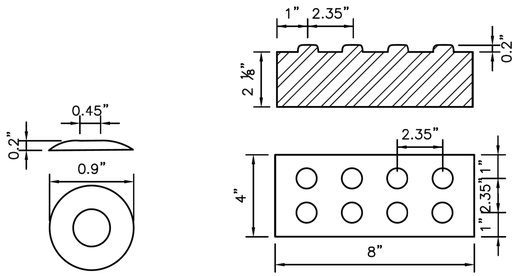
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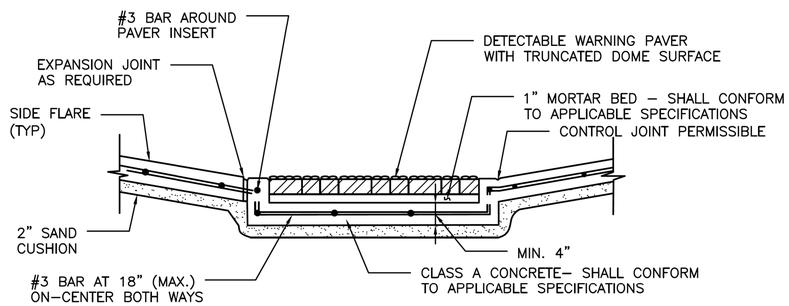
PLAN VIEW

DETECTABLE WARNING SURFACE



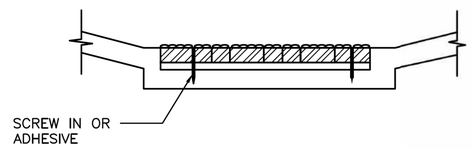
DETAIL

DETECTABLE WARNING PAVER



SECTION A–A

PAVER



DETAIL A–5

NOTES:

GENERAL NOTES

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

PAVERS

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

POLYMER CONCRETE

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

PADS

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DETECTABLE WARNING SURFACE (OPTIONS)

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar 9EFB8DC641F5478... CITY ENGINEER	DocuSigned by: Carol Haddock A93C410B72B3453... DIRECTOR OF HPW
DocuSigned by: KHANG NGUYEN 85A29EFDA75B4CD... CITY TRAFFIC ENGINEER	
EFF DATE: NOV–27–2023	DWG NO: 02775–07

MONTROSE
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JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F–11278

SURVEYED BY:

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

DETECTABLE WARNING SURFACE DETAILS

SHEET 1 OF 1

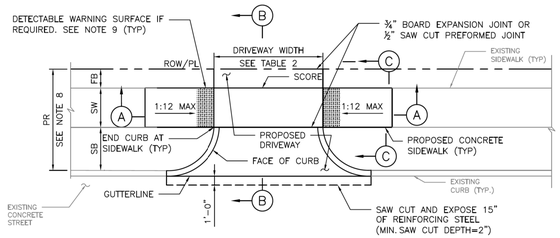
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JIADA HUANG	
SHEET NO. 45 OF 101	

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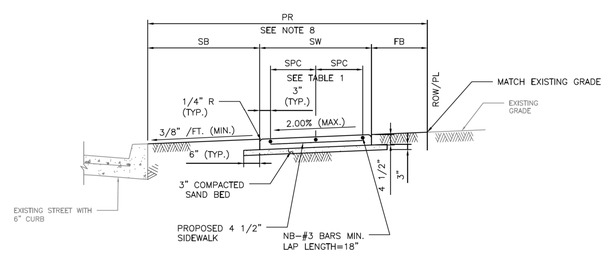
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NO.	DATE	REVISION	APP.

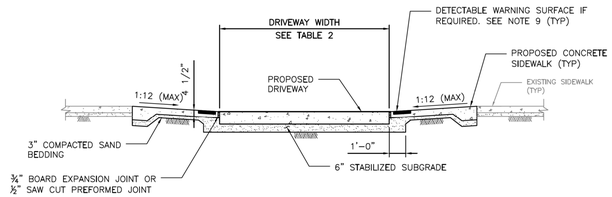
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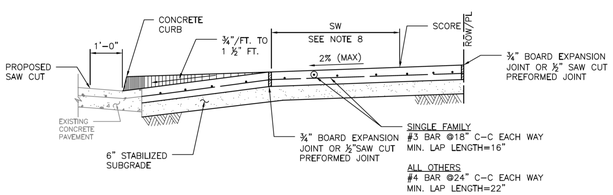
PLAN VIEW
DRIVEWAY



SECTION C–C
TYPICAL SIDEWALK SECTION



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



SECTION B–B
TYPICAL DRIVEWAY SECTION

TABLE 1

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

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

TABLE 2

DRIVEWAY DESIGN CRITERIA (1)(2)

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

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

NOTES:

1. REPAIR, RECONSTRUCTION OR REPLACEMENT OF SIDEWALKS SHALL MEET PERMITTING REQUIREMENTS OF CODE OF ORDINANCES SECTION 40-552.
2. FOR REPAIR, RECONSTRUCTION, OR REPLACEMENT OF EXISTING SIDEWALKS:
   - 2.1. EXISTING SIDEWALKS LESS THAN OR EQUAL TO 20 FEET IN TOTAL LENGTH:
     - 2.1.1. THE PROPOSED SIDEWALK WIDTH WILL BE ALLOWED TO MATCH THE EXISTING SIDEWALK.
   - 2.2. EXISTING SIDEWALKS GREATER THAN 20 FEET IN TOTAL LENGTH:
     - 2.2.1. THE SIDEWALK WIDTH FOR THE ENTIRE PROPERTY WIDTH SHALL BE IMPROVED TO MEET WIDTH REQUIREMENTS ACCORDING TO THE LATEST INFRASTRUCTURE DESIGN MANUAL.
   - 2.3. 20 FOOT TOTAL LENGTH IS DEFINED AS:
     - 2.3.1. UP TO 10 FEET ON BOTH SIDES OF THE DRIVEWAY; OR
     - 2.3.2. UP TO 20 FEET WHEN SIDEWALK AFFECTED IS LOCATED ONLY ON ONE SIDE OF THE DRIVEWAY.
3. ALL JOINTS ALONG THE SIDEWALK SHALL BE CONSTRUCTED ACCORDING TO DRAWING 02752-02 AND SPECIFICATION 02752.
4. DRIVEWAYS SHALL BE MINIMUM 6" THICK FOR SINGLE FAMILY AND DUPLEXES. DRIVEWAYS SHALL BE MINIMUM 7" THICK FOR ALL OTHERS (I.E. COMMERCIAL, INDUSTRIAL, ETC.)
5. DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5 1/2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.
6. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
7. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
8. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.
9. DETECTABLE WARNING SURFACES:
   - 9.1. SIDEWALK SHALL HAVE A DETECTABLE WARNING SURFACE WHERE:
     - 9.1.1. SIDEWALK INTERSECTS TYPE C DRIVEWAYS (COMMERCIAL DRIVEWAYS) THAT ARE STOP, YIELD, OR TRAFFIC SIGNAL CONTROLLED; OR
     - 9.1.2. SIDEWALK SLOPE IS GREATER THAN 1:20 AND INTERSECTS A TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY)
   - 9.2. DETECTABLE WARNING SURFACES ARE OPTIONAL WHERE SIDEWALKS INTERSECT TYPE A DRIVEWAYS (SINGLE FAMILY RESIDENTIAL HOUSES OR DUPLEXES) OR TYPE B DRIVEWAYS (SHARED ACCESS/SHARED DRIVEWAYS).
   - 9.3. REFER TO STANDARD DETAILS 02775-06 TO 02775-07 FOR DETECTABLE WARNING SURFACE STANDARDS.

APPROVED BY:	APPROVED BY:
Sukul Tanwar	Khang Nguyen
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02754-01B

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

DRIVEWAY DETAIL WITH 6" CURBED STREETS

FOR CITY OF HOUSTON USE ONLY

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NOT TO SCALE

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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(832) 318-8800
(713) 965-0044 FAX
HRGreen.com
Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

DRIVEWAY WITH 6 IN CURBED STREETS

SHEET 1 OF 1

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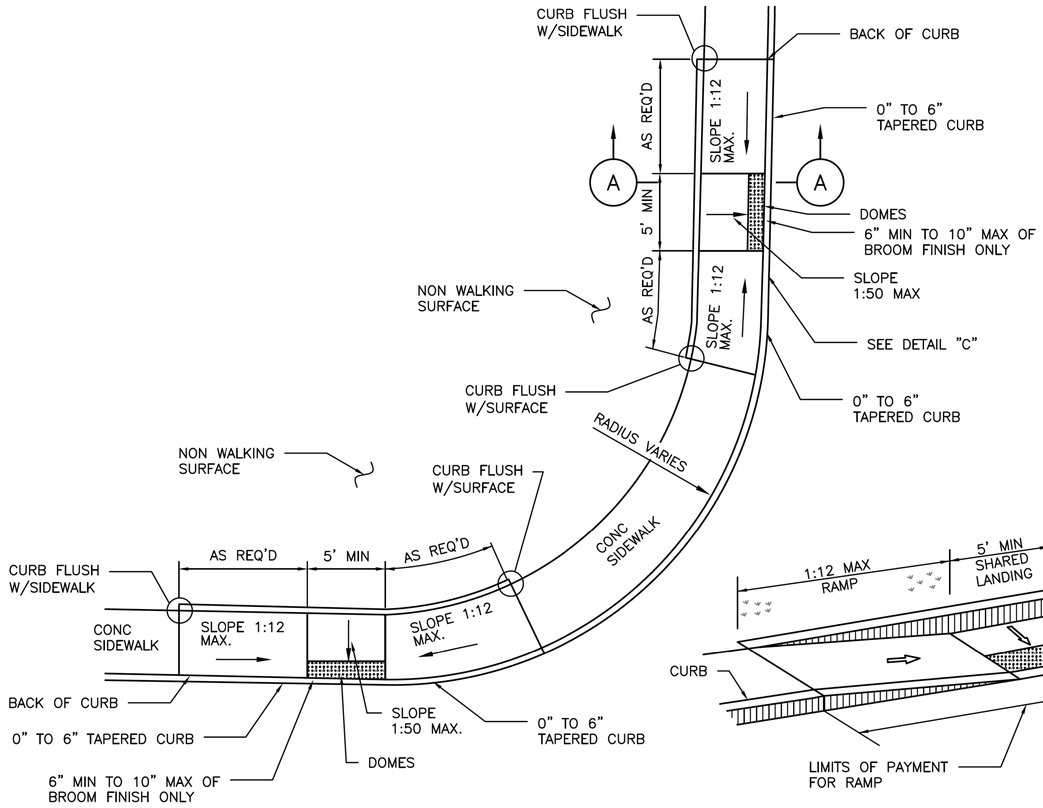
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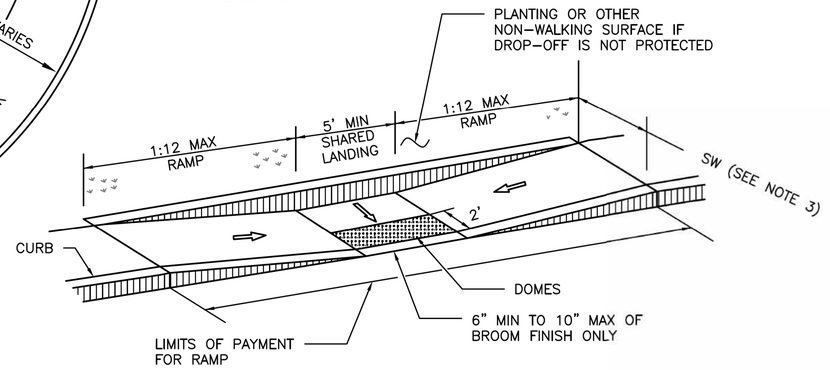
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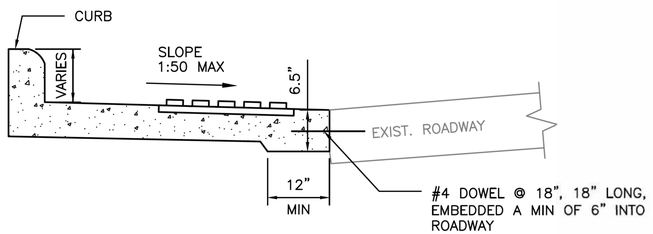
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SIDEWALK ON BACK OF CURB



DETAIL "C"



SECTION A-A

NOTES:

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PARALLEL CURB RAMP

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar 9EFBB0CB41F5478...
CITY ENGINEER

DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY TRAFFIC ENGINEER

DocuSigned by: Carol Haddock A93C410B72B3453...
DIRECTOR OF HPW

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

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SURVEYED BY:

STATE OF TEXAS JOHN R. HUML 140416 LICENSED PROFESSIONAL ENGINEER 07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

PARALLEL CURB RAMP

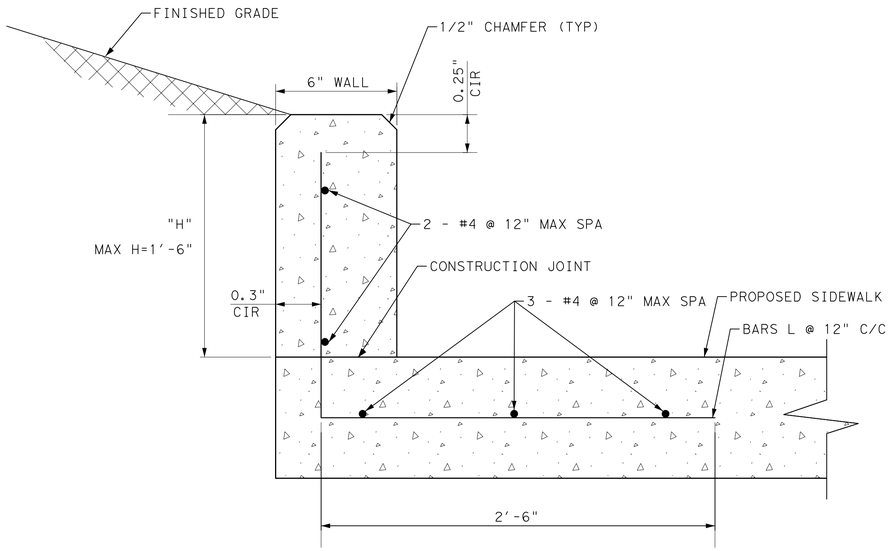
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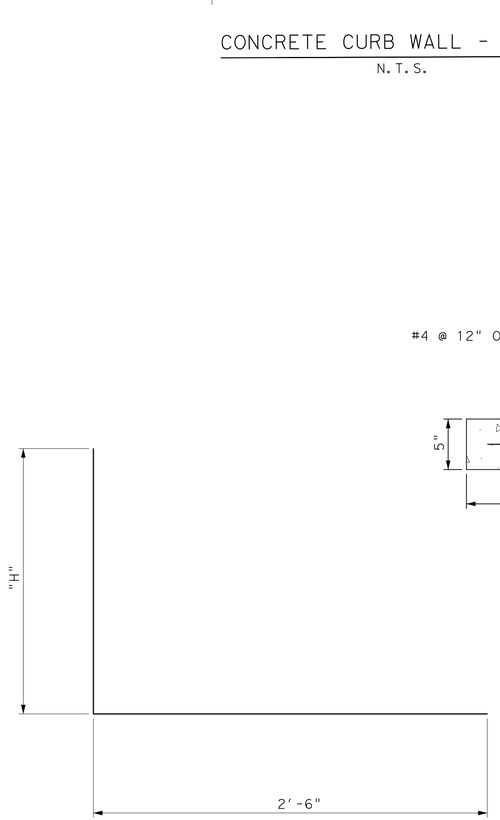
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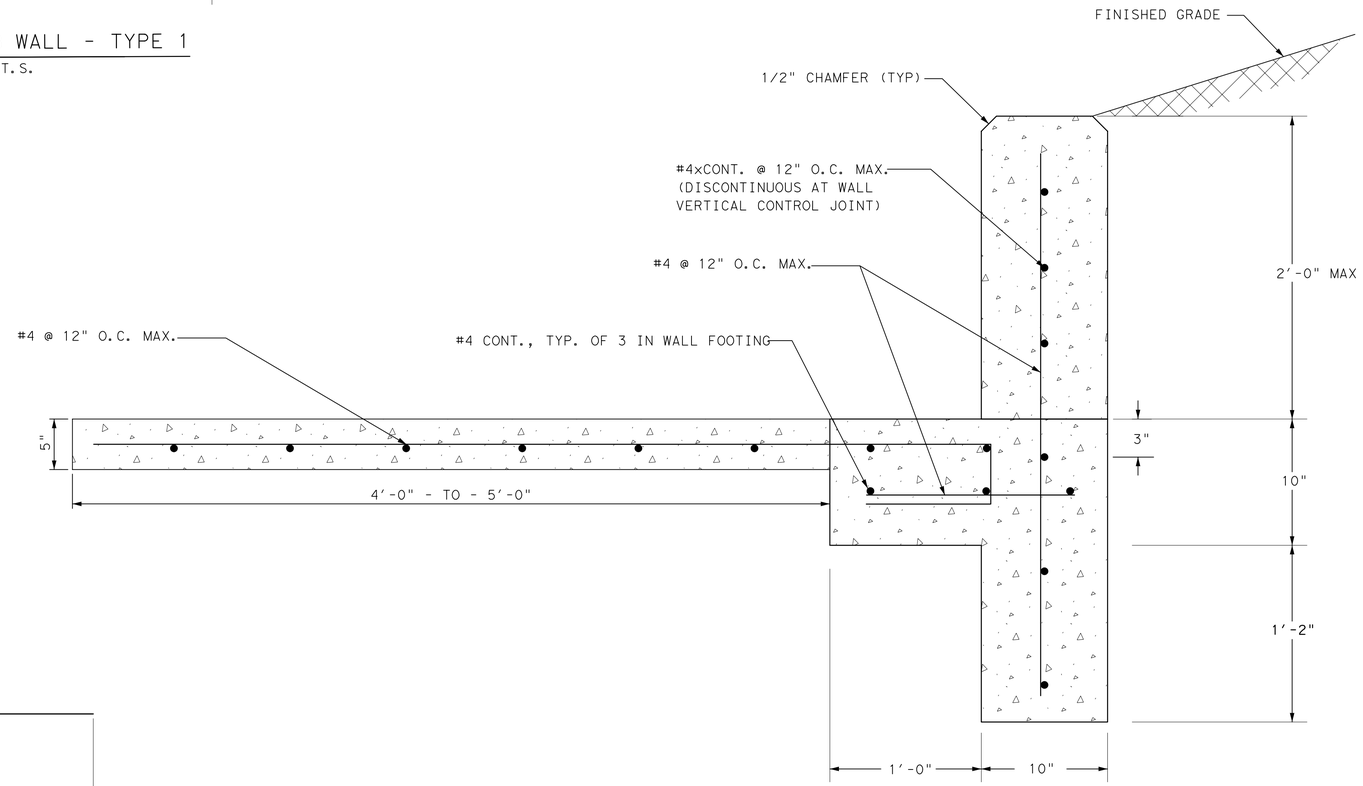
CONCRETE CURB WALL - TYPE 1

N.T.S.



BAR L (#5)

N.T.S.



CONCRETE CURB WALL - TYPE 2

N.T.S.

NOTE:

1. CONTRACTOR TO PROVIDE EXPANSION JOINTS IN RETAINING WALL AT 8' O.C. MAX SPACING SHALL BE DETERMINED BY WALL LENGTH TO achieve EQUAL SPACING RECEIVED 1/2" VERTICAL CHAMFERS, TYP.
2. MINIMUM WALL HEIGHT OF 4".
3. CONCRETE STRENGTH F C=4,000 PSI.
4. ALL STRUCTURAL STEEL SHALL BE GRADE 60.

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STATE OF TEXAS
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140416
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10/08/2026
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Texas Registered Engineering Firm F-11278

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

CONCRETE CURB WALL DETAILS

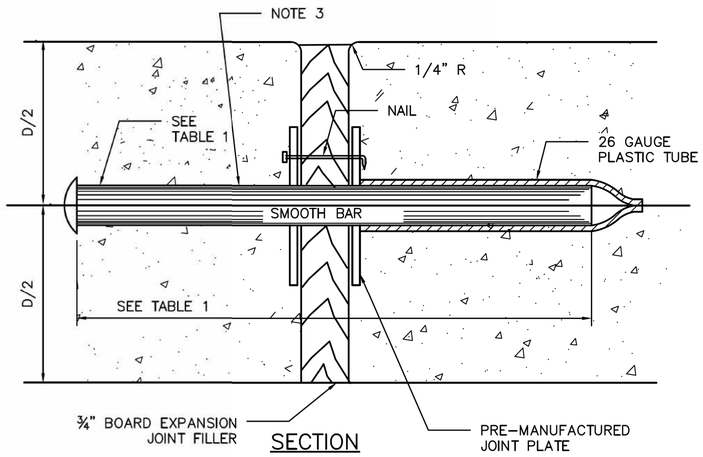
SHEET 1 OF 1

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ACCEPTED AND FILED
83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

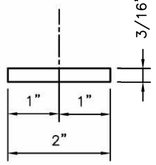
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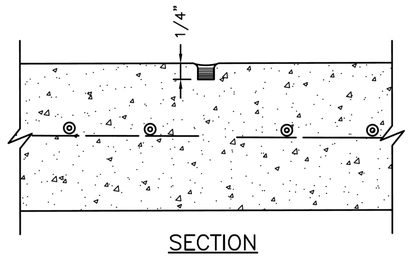
SECTION

DOWEL TYPE EXPANSION JOINT



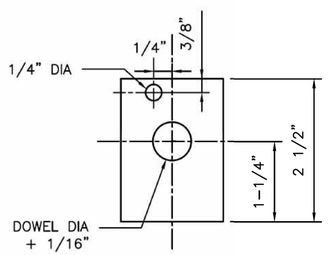
PLAN VIEW

JOINT PLATE



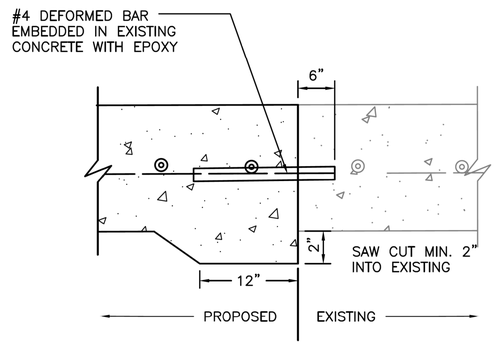
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CONTROL JOINT



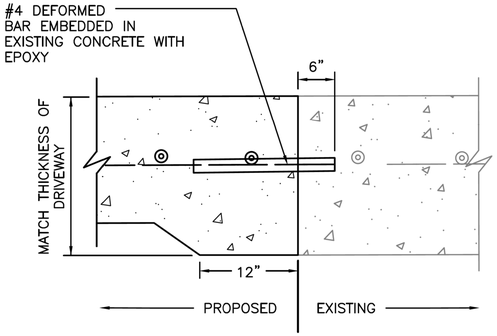
ELEVATION VIEW

JOINT PLATE



SECTION

SIDEWALK TO EXISTING SIDEWALK



SECTION

SIDEWALK TO EXISTING DRIVEWAY

TABLE 1

PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS		
	DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
4 1/2	1/2	18	12
5	1/2	18	12
6	3/4	18	12
7	1	18	12

NOTES:

1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS.
2. EXPANSION JOINT TO BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED AT A MAXIMUM DISTANCE OF 3 FEET MAXIMUM SPACING FOR CONTROL JOINTS SHALL BE 5 FEET.
3. CENTER DOWEL HORIZONTALLY ON JOINT.
4. CENTER DOWEL VERTICALLY IN CONCRETE AS NEEDED TO MAINTAIN A 2 INCH MINIMUM COVER.

DISCLAIMER:
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

SIDEWALK EXPANSION AND CONSTRUCTION JOINT DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER

DocuSigned by: KHANG NGUYEN — CITY TRAFFIC ENGINEER

DocuSigned by: Carol Haddock — DIRECTOR OF HPW

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

MONTROSE TAX INCREMENT REINVESTMENT ZONE 27

HRGreen
11750 Katy Freeway, Suite 400
Houston, TX 77079
(832) 318-8800
(713) 965-0044 FAX
HRGreen.com
Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS — JOHN R. HUML — 140416 — LICENSED PROFESSIONAL ENGINEER — 07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SIDEWALK EXPANSION AND CONSTRUCTION JOINT DETAILS

SHEET 1 OF 1

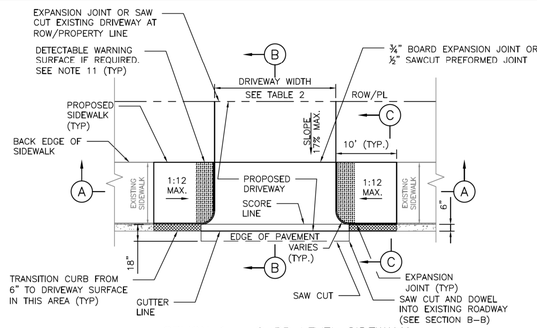
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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 49 OF 101	

NO. | DATE | REVISION | APP.

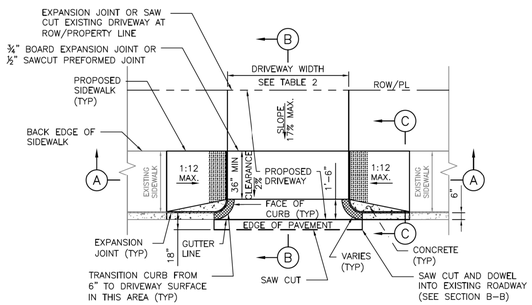
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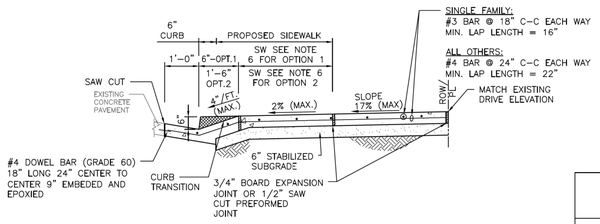
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WHETHER THE USE OF THIS STANDARD IS PRIVATE OR PUBLIC, THE CITY OF HOUSTON MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND AS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON



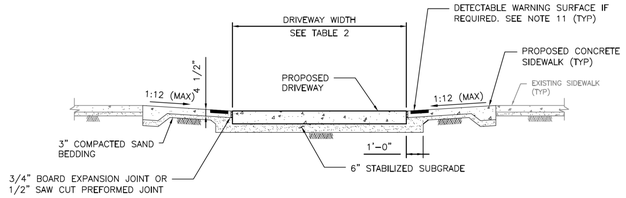
OPTION 1 – CURB LEVEL SIDEWALK
PLAN VIEW – DRIVEWAY WITHOUT CURB AT CURB RETURN



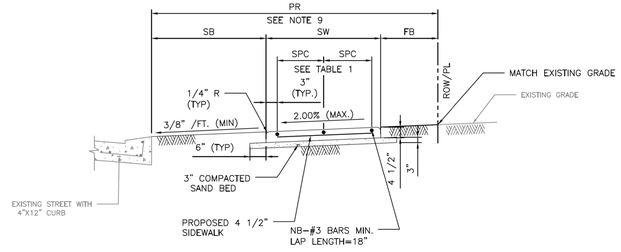
OPTION 2 – CURB LEVEL SIDEWALK
PLAN VIEW – DRIVEWAY WITH CURB AT CURB RETURN



SECTION B–B
TYPICAL DRIVEWAY SECTION THROUGH DRIVEWAY



SECTION A–A
PROPOSED SIDEWALK THROUGH DRIVEWAY



SECTION C–C
TYPICAL SIDEWALK SECTION

TABLE 1

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

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

TABLE 2

DRIVEWAY DESIGN CRITERIA (1)(2)

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

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

NOTES:

1. REPAIR, RECONSTRUCTION OR REPLACEMENT OF SIDEWALKS SHALL MEET PERMITTING REQUIREMENTS OF CODE OF ORDINANCES SECTION 40–552.
2. FOR REPAIR, RECONSTRUCTION, OR REPLACEMENT OF EXISTING SIDEWALKS:
   - 2.1. EXISTING SIDEWALKS LESS THAN OR EQUAL TO 20 FEET IN TOTAL LENGTH:
     - 2.1.1. THE PROPOSED SIDEWALK WIDTH WILL BE ALLOWED TO MATCH THE EXISTING SIDEWALK.
   - 2.2. EXISTING SIDEWALKS GREATER THAN 20 FEET IN TOTAL LENGTH:
     - 2.2.1. THE SIDEWALK WIDTH FOR THE ENTIRE PROPERTY WIDTH SHALL BE IMPROVED TO MEET WIDTH REQUIREMENTS ACCORDING TO THE LATEST INFRASTRUCTURE DESIGN MANUAL.
   - 2.3. 20 FOOT TOTAL LENGTH IS DEFINED AS:
     - 2.3.1. UP TO 10 FEET ON BOTH SIDES OF THE DRIVEWAY; OR
     - 2.3.2. UP TO 20 FEET WHEN SIDEWALK AFFECTED IS LOCATED ONLY ON ONE SIDE OF THE DRIVEWAY.
3. PROPOSED SIDEWALKS THAT DO NOT FALL WITHIN THE SCOPE DEFINED IN NOTE 2 SHALL BE DESIGNED ACCORDING TO IDM REQUIREMENTS AND CONSTRUCTED ACCORDING TO THE CONTRACT DRAWINGS.
4. DRIVEWAY WIDTH VARIES TO MATCH EXISTING DRIVE.
5. DRIVEWAY DETAIL TO PROVIDE FOR SIDEWALK TRANSITION FROM EXISTING BACK OF CURB TO PROPOSED DRIVEWAY EDGE.
6. DRIVEWAY WITH WIDTH >5' @ 2% CROSS SLOPE QUALIFIES AS PASSING SPACE. (SEE OPTION 1 AND OPTION 2 PLANS)
7. ALL RAMPS AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
8. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
9. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.
10. DRIVEWAYS SHALL BE MINIMUM 6" THICK FOR SINGLE FAMILY AND DUPLEXES. DRIVEWAYS SHALL BE MINIMUM 7" THICK FOR ALL OTHERS (I.E. COMMERCIAL, INDUSTRIAL, ETC.)
11. DETECTABLE WARNING SURFACES:
    - 11.1. SIDEWALK SHALL HAVE A DETECTABLE WARNING SURFACE WHERE:
      - 11.1.1. SIDEWALK INTERSECTS TYPE C DRIVEWAYS (COMMERCIAL DRIVEWAYS) THAT ARE STOP, YIELD OR TRAFFIC SIGNAL CONTROLLED; OR
      - 11.1.2. SIDEWALK SLOPE IS GREATER THAN 1:20 AND INTERSECTS A TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY)
    - 11.2. DETECTABLE WARNING SURFACES ARE OPTIONAL WHERE SIDEWALKS INTERSECT TYPE A DRIVEWAYS (SINGLE FAMILY RESIDENTIAL HOUSES OR DUPLEXES) OR TYPE B DRIVEWAYS (SHARED ACCESS/SHARED DRIVEWAYS).
    - 11.3. REFER TO STANDARD DETAILS 02775–06 TO 02775–07 FOR DETECTABLE WARNING SURFACE STANDARDS.

APPROVED BY:	APPROVED BY:
DocuSigned by: Salad Iravani	DocuSigned by: LEILING HSIHEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02754–03

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PROPOSED SIDEWALK THROUGH DRIVEWAY WITH EXCESSIVE ELEVATION DIFFERENCE

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

HRGreen
11750 Katy Freeway, Suite 400
Houston, TX 77079
(832) 318–8800
(713) 965–0044 FAX
HRGreen.com
Firm No. F–11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F–11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

PROPOSED SIDEWALK THROUGH DRIVEWAY WITH EXCESSIVE ELEVATION DIFFERENCE

SHEET 1 OF 1

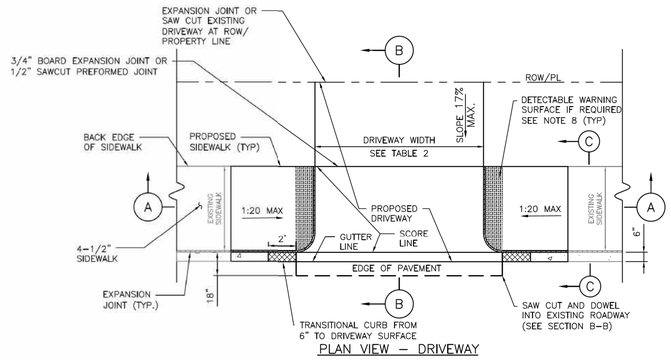
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AS NOTED	
CITY OF HOUSTON PM	
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SHEET NO. 50 OF 101	

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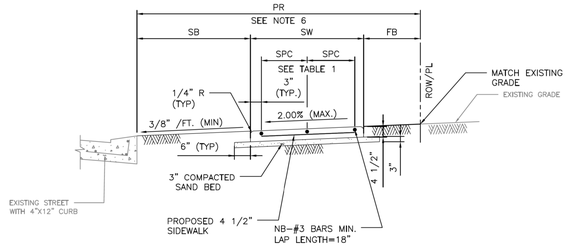
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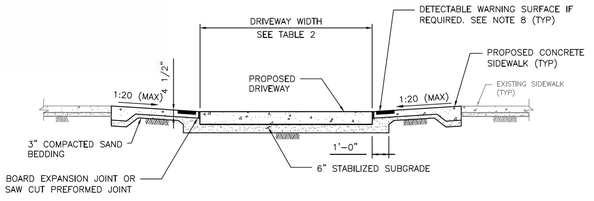
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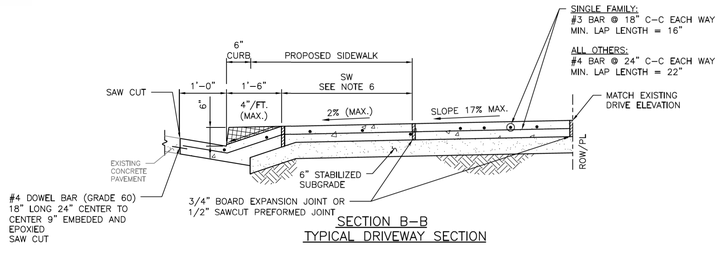
PLAN VIEW – DRIVEWAY



SECTION C–C
TYPICAL SIDEWALK SECTION



SECTION A–A
PROPOSED SIDEWALK THROUGH DRIVEWAY



SECTION B–B
TYPICAL DRIVEWAY SECTION

NOTES:

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5. CURB RAMPS THAT ARE STEEPER THAN A 1:20 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
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8. DETECTABLE WARNING SURFACES:
   - 8.1. SIDEWALK SHALL HAVE A DETECTABLE WARNING SURFACE WHERE SIDEWALK INTERSECTS TYPE C DRIVEWAYS (COMMERCIAL DRIVEWAYS) THAT ARE STOP, YIELD, OR TRAFFIC SIGNAL CONTROLLED.
   - 8.2. DETECTABLE WARNING SURFACES ARE OPTIONAL WHERE SIDEWALKS INTERSECT TYPE A DRIVEWAYS (SINGLE FAMILY RESIDENTIAL HOUSES OR DUPLEXES) OR TYPE B DRIVEWAYS (SHARED ACCESS/SHARED DRIVEWAYS).
   - 8.3. REFER TO STANDARD DETAILS 02775-06 TO 02775-07 FOR DETECTABLE WARNING SURFACE STANDARDS.

TABLE 1

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

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

TABLE 2

DRIVEWAY DESIGN CRITERIA (1)(2)

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

(1) REFER TO INFRASTRUCTURE DESIGN MANUAL ARTICLE 15.2.07.C.1.F FOR DRIVEWAYS THAT REQUIRE A VEHICLE SWEPT PATH ANALYSIS.
(2) REFER TO INFRASTRUCTURE DESIGN MANUAL ARTCILES 15.2.07.C.1.G.(1) AND 15.2.07.C.1.G.(2) FOR TYPE 1 PAE AND TYPE 2 PAE REQUIREMENTS.
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(6) REFER TO CHAPTER 42, SECTION 42-146 OF THE CODE OF ORDINANCES FOR EXCEPTIONS TO THE MINIMUM DRIVEWAY WIDTH FOR SHARED DRIVEWAYS.

APPROVED BY:	APPROVED BY:
Sudhakar Kannavar	HAIMING NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY:	
Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02754-04

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

PROPOSED SIDEWALK THROUGH DRIVEWAY WITH MINIMAL ELEVATION DIFFERENCE

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

PROPOSED SIDEWALK THROUGH DRIVEWAY WITH MINIMAL ELEVATION DIFFERENCE

SHEET 1 OF 1

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SHEET NO. 51 OF 101	

NO.	DATE	REVISION	APP.

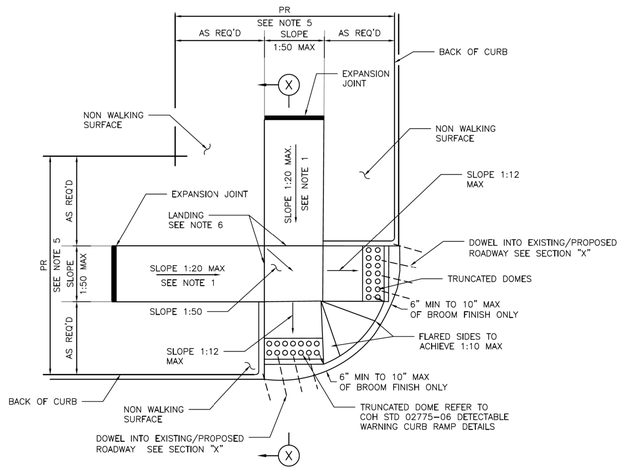
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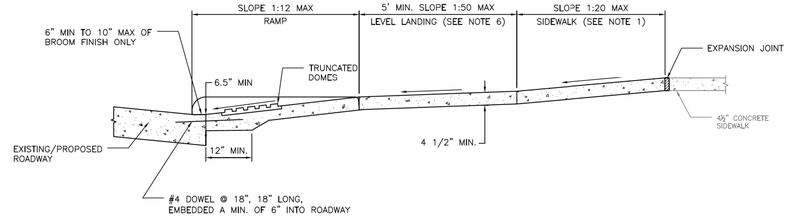
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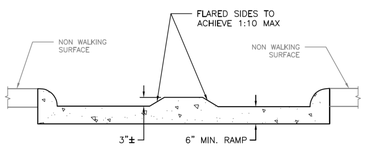
STREETS WITH NON- WALKING SURFACE BEHIND CURB
SEE NOTE-7



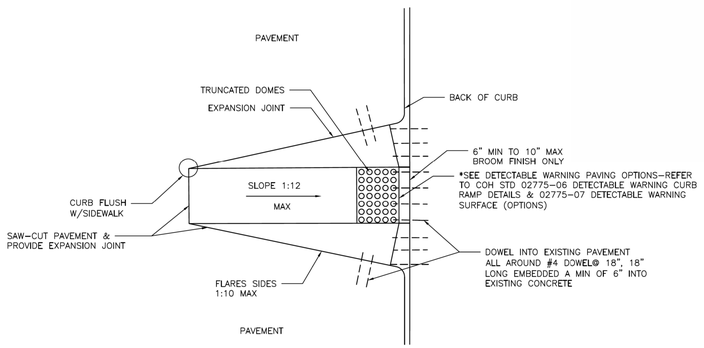
SECTION X-X

NOTES:

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



ELEVATION
LOOKING UP RAMP



CURB RAMP CONSTRUCTION FOR EXISTING PAVEMENT

APPROVED BY:	APPROVED BY:
Sukat Kanwar	Hang Nguyen
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02775-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CURB RAMP DETAILS

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

DISCLAIMER:
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Firm No. F-11278

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STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
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Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TYPICAL CURB RAMP DETAILS

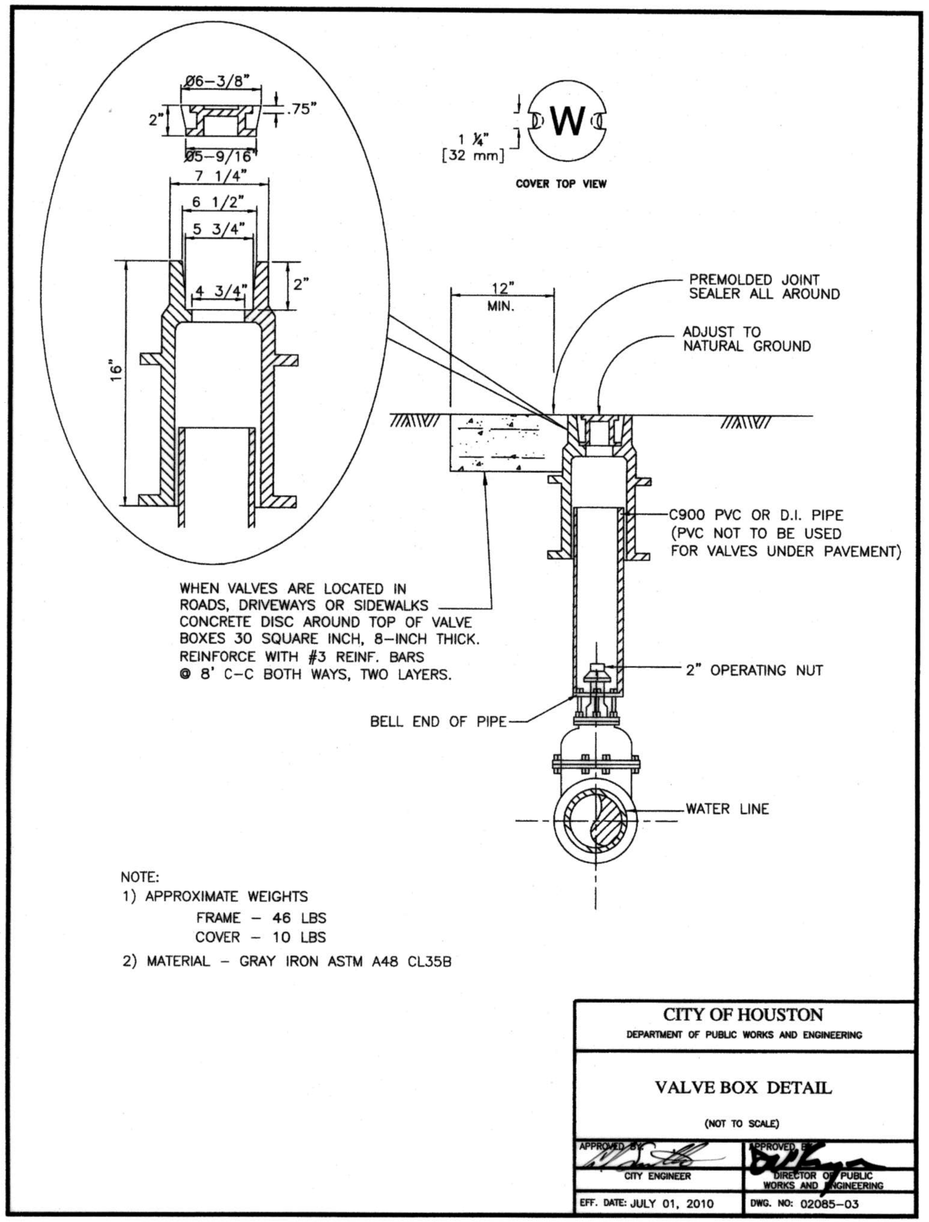
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WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 52 OF 101	

NO.	DATE	REVISION	APP.	

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NOTE:
1) APPROXIMATE WEIGHTS
FRAME – 46 LBS
COVER – 10 LBS
2) MATERIAL – GRAY IRON ASTM A48 CL35B

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

VALVE BOX DETAIL

(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF. DATE: JULY 01, 2010	DWG. NO: 02085-03

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

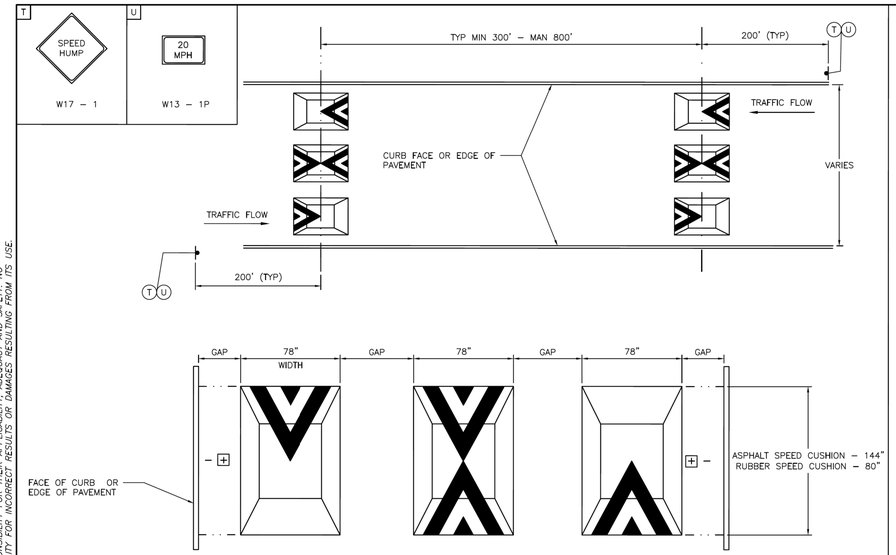
VALVE BOX DETAILS

SHEET 1 OF 1

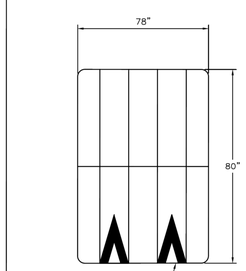
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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 53 OF 101	

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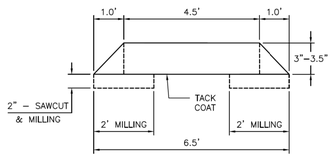
RUBBER SPEED CUSHION



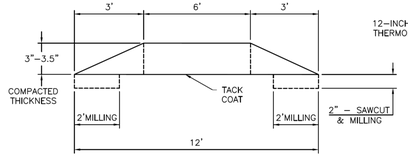
SEE SECTION 13500 FOR MATERIAL AND PRODUCT SPECIFICATIONS

INSTALL PER MANUFACTURER'S SPECIFICATIONS

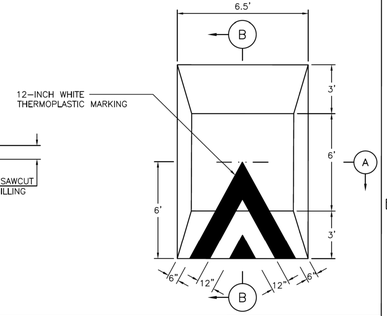
ASPHALT SPEED CUSHION – INSTALLATION DETAILS



SECTION A – A

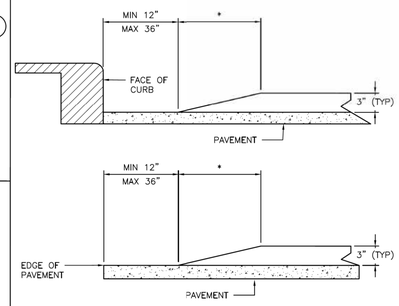


SECTION B – B



TYPICAL SPEED CUSHIONS ARRANGEMENT FOR A GIVEN PAVEMENT WIDTH

PAVEMENT WIDTH (FT)	No OF CUSHIONS	GAP (IN)	CUSHION (IN)	GAP (IN)	CUSHION (IN)	GAP (IN)	CUSHION (IN)	GAP (IN)	CUSHION (IN)	GAP (IN)	CUSHION (IN)	GAP (IN)
16	2	12	78	12	78	12						
18	2	20	78	20	78	20						
20	2	30	78	24	78	30						
22	2	36	78	36	78	36						
24	3	15	78	12	78	12	78	15				
26	3	20	78	19	78	19	78	20				
28	3	27	78	24	78	24	78	27				
30	3	31	78	32	78	32	78	31				
32	4	18	78	12	78	12	78	12	78	18		
34	4	21	78	18	78	18	78	18	78	21		
36	4	24	78	24	78	24	78	24	78	24		
38	4	30	78	28	78	28	78	28	78	30		
40	4	33	78	34	78	34	78	34	78	33		
42	5	19	78	19	78	19	78	19	78	19	78	19
44	5	23	78	23	78	23	78	23	78	23	78	23



* RUBBER CUSHION – 12" TAPER, ASPHALT CUSHION – 12" TAPER.

NOTES:

1. SPEED CUSHIONS AND ASSOCIATED SIGNS AND PAVEMENT MARKINGS WILL BE CONSTRUCTED AT LOCATIONS DESIGNED BY TRANSPORTATION AND DRAINAGE OPERATIONS (TDO) OR PER PLANS APPROVED BY TDO.
2. CONTRACTOR SHALL CONTACT THE CONSTRUCTION COORDINATOR BEFORE ANY STREET IS TEMPORARILY CLOSED FOR CONSTRUCTION.
3. THE TYPE OF SPEED CUSHION AND DISTANCE BETWEEN EACH CUSHION WILL BE DETERMINED BY TDO.
4. NO PART OF A SPEED CUSHION SHALL BE LOCATED IN FRONT OF DRIVEWAY APPROACH; RATHER THERE SHOULD BE A MINIMUM OF 6 FEET FROM THE EDGE OF A DRIVEWAY, WHEN PRACTICAL.
5. SPEED CUSHIONS SHOULD BE PLACED AS CLOSE AS POSSIBLE TO THE PROPERTY LINES INSTEAD OF MID – LOT LOCATION, WHERE PRACTICAL.
6. SPEED CUSHIONS SHOULD BE INSTALLED AT A RIGHT ANGLE TO THE CENTERLINE TANGENT OF THE ROADWAY.
7. TRAFFIC CONTROL CONSISTING OF SIGNS SHALL BE PROVIDED TO ADVISE ROADWAY USER OF SPEED CUSHIONS PRESENT. TRAFFIC SIGNS, AND PAVEMENT MARKINGS SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
8. ALL SIGNS AND PAVEMENT MARKINGS WILL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.
9. CONTRACTOR SHALL NOT OPEN SPEED CUSHIONS TO TRAFFIC UNTIL ALL REQUIRED WARNING SIGNS AND PAVEMENT MARKINGS ARE COMPLETED.
10. CONTRACTOR WILL MAINTAIN TEMPORARY MARKINGS UNTIL PERMANENT MARKINGS ARE INSTALLED.
11. CONTRACTOR SHALL COMPLETE THE CUSHION INSTALLATION TO FORM ONE COMPLETE HUMP BEFORE LEAVING THE JOB SITE.
12. CONTRACTOR SHALL WORK ONE HALF OF THE STREET AT A TIME AND MAINTAIN TWO – WAY TRAFFIC WITH CERTIFIED FLAGGER.
13. ASPHALT SPEED CUSHION SHALL BE CONSTRUCTED WITH TYPE D ASPHALT MIX PER CITY OF HOUSTON SPECIFICATIONS; A TACK COAT SHALL BE APPLIED PRIOR TO APPLICATION OF PAVEMENT MATERIAL.
14. ASPHALT SPEED CUSHIONS SHALL BE COMPACTED PER CITY OF HOUSTON SPECIFICATIONS AND SHAPE ACCORDING TO INSTALLATION DETAILS. COMPACTION SHALL REQUIRE UTILIZATION OF ALL NECESSARY SIZES AND TYPES OF ROLLERS TO ACCOMPLISH PROPER COMPACTION AND SHAPE.
15. ASPHALT SPEED CUSHIONS ARE TO BE CONSTRUCTED BETWEEN 3" – 3 ½" IN HEIGHT.
16. CONTRACTOR SHALL NOTIFY GARY DRABEK (832–395–2997) A MINIMUM OF TWO BUSINESS DAYS IN ADVANCE OF THE INSTALLATION OF SPEED CUSHIONS.

APPROVED BY:	APPROVED BY:
DocuSigned by: Sidrak Iskander 1EF8B6C0441D4F5...	DocuSigned by: HUANG NGUYEN 95A2BEF0A75B44C0...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock 4BDC4...1B7D4A0...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 13501–01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

SPEED CUSHIONS ARRANGEMENT AND INSTALLATION

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

DISCLAIMER:
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HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SPEED CUSHIONS ARRANGEMENT AND INSTALLATION

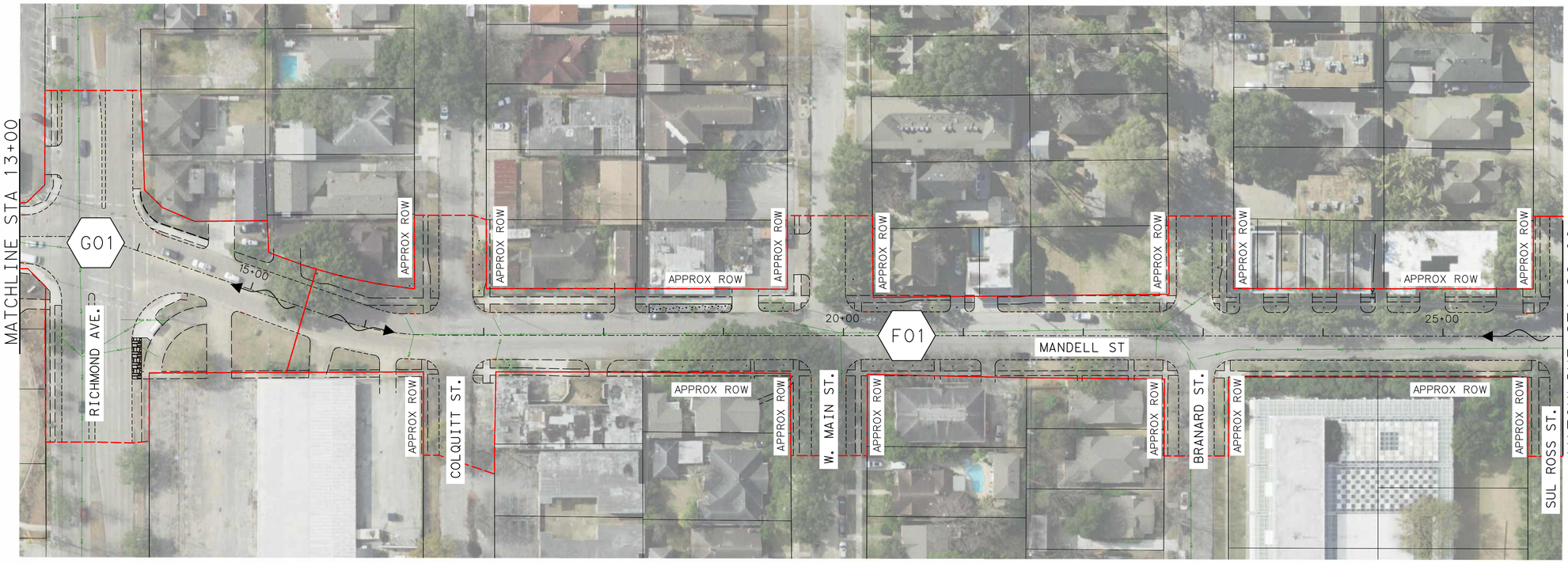
SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 54 OF 101	

NO.	DATE	REVISION	APP.

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Design Filename: J:\2025\2503044\DesignData\Design Plans\Plan Production\Roadway\Standards\17 - SPEED CUSHIONS ARRANGEMENT AND INSTALLATION.dgn





LEGEND

- EXIST DRAINAGE AREA BOUNDARY
- XX — DRAINAGE AREA NO
- DIRECTION OF FLOW
- EXIST STORM SEWER

N

0′ 50′ 100′

SCALE IN FEET

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

EXISTING DRAINAGE AREA MAP

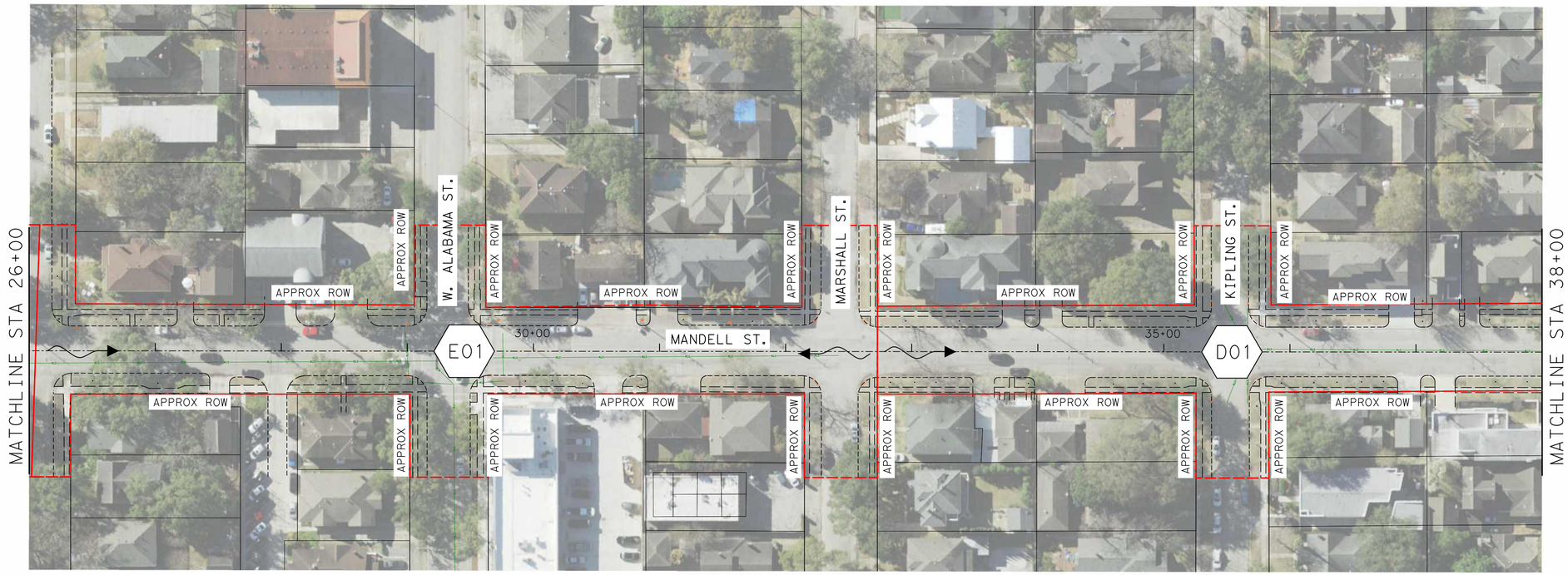
SHEET 1 OF 2

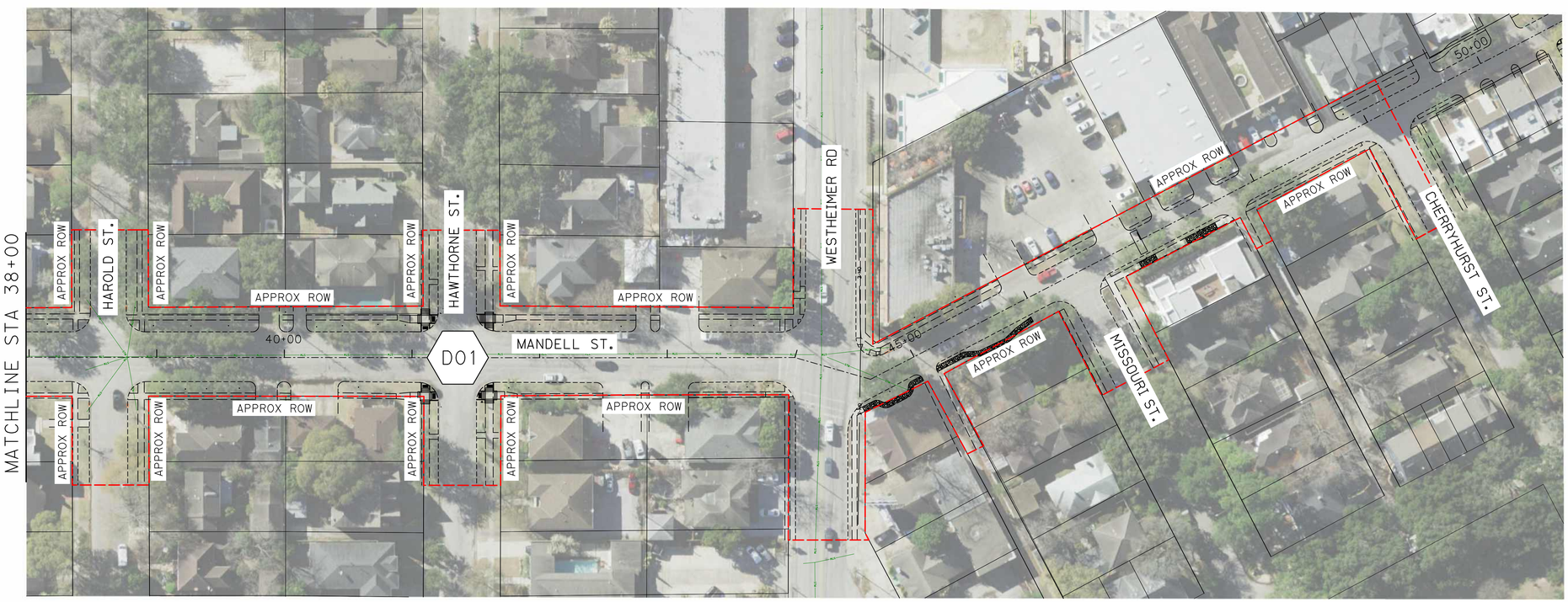
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 55 OF 101	

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EXIST ASPHALT DRWY
EXIST CONCRETE DRWY

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LEGEND

- EXIST DRAINAGE AREA BOUNDARY
- XX — DRAINAGE AREA NO
- DIRECTION OF FLOW
- EXIST STORM SEWER

N

0′ 50′ 100′

SCALE IN FEET

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

EXISTING DRAINAGE AREA MAP

SHEET 2 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 56 OF 101	

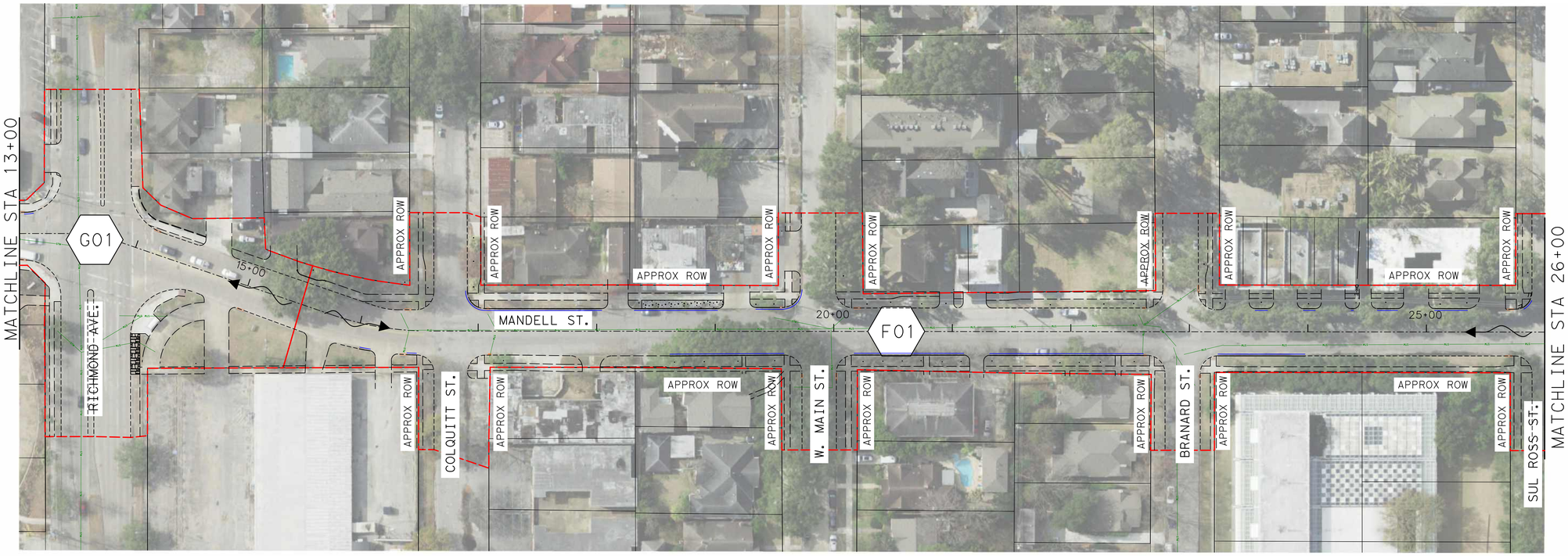
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HOUSTON TX

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LEGEND

- PROP DRAINAGE AREA BOUNDARY
- XX — DRAINAGE AREA NO
- DIRECTION OF FLOW
- EXIST STORM SEWER

N

0′ 50′ 100′

SCALE IN FEET

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

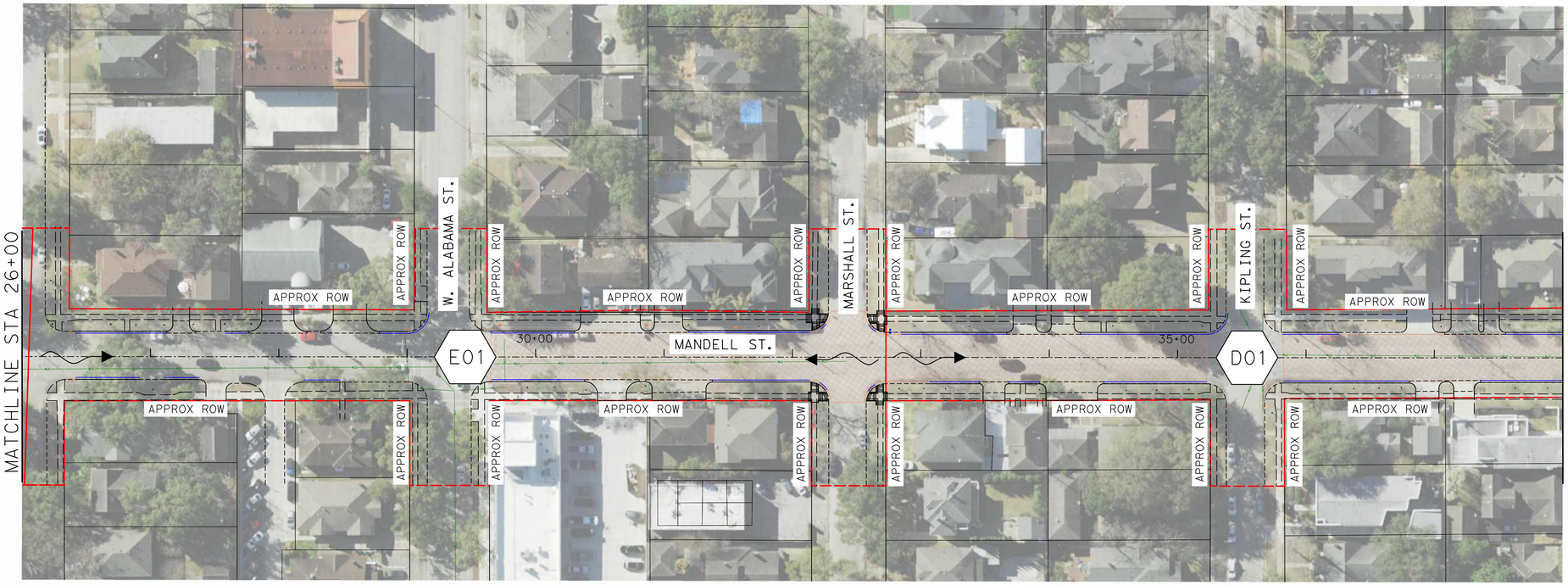
MANDELL STREET IMPROVEMENTS

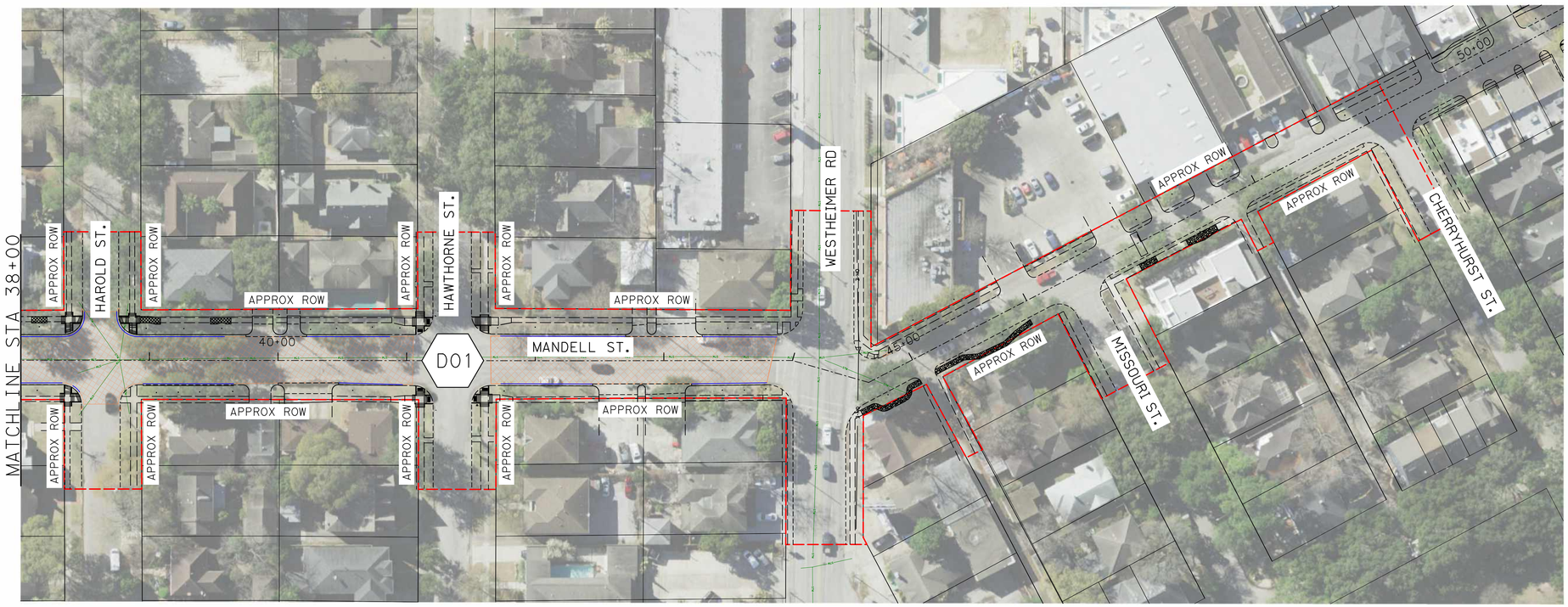
PROPOSED DRAINAGE AREA MAP

SHEET 1 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
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AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 57 OF 101	

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EXIST ASPHALT DRWY
EXIST CONCRETE DRWY
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LEGEND

- PROP DRAINAGE AREA BOUNDARY
- XX — DRAINAGE AREA NO
- DIRECTION OF FLOW
- EXIST STORM SEWER

NO. DATE | REVISION | APP.

N

0′ 50′ 100′

SCALE IN FEET

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CITY OF HOUSTON
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MANDELL STREET IMPROVEMENTS

PROPOSED DRAINAGE AREA MAP

SHEET 2 OF 2

WBS NUMBER
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	System D			System E			System F			System G			System H		
	Discharge (cfs)		Impervious	Discharge (cfs)		Impervious	Discharge (cfs)		Impervious	Discharge (cfs)		Impervious	Discharge (cfs)		Impervious
	2 Year	100 Year	Area (sqft)	2 Year	100 Year	Area (sqft)	2 Year	100 Year	Area (sqft)	2 Year	100 Year	Area (sqft)	2 Year	100 Year	Area (sqft)
Existing	9.89	22.60	113885.46	4.64	10.58	52527.23	7.09	16.17	81297.84	3.49	7.94	41309.97	5.31	12.10	59636.42
Proposed	9.89	22.59	115930.28	4.64	10.58	53479.18	7.09	16.17	82287.58	3.49	7.94	41856.40	5.31	12.09	60788.08
Increase	0.00	0.00	2044.82	0.00	0.00	951.95	0.00	0.00	989.74	0.00	0.00	546.43	0.00	0.00	1151.66

Drainage Area	C Value		Drainage Area (acres)	Tc (min)	Intensity		Discharge (cfs)			
							2 Year		100 Year	
	Existing	Proposed			2 Year	100 Year	Existing	Proposed	Existing	Proposed
D01	0.82	0.82	3.37	27.39	3.57	8.16	9.89	9.89	22.60	22.59
E01	0.83	0.83	1.52	25.76	3.69	8.41	4.64	4.64	10.58	10.58
F01	0.83	0.83	2.37	26.64	3.63	8.27	7.09	7.09	16.17	16.17
G01	0.85	0.85	1.09	25.16	3.74	8.51	3.49	3.49	7.94	7.94
H01	0.82	0.82	1.76	26.04	3.67	8.37	5.31	5.31	12.10	12.09

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TAX INCREMENT REINVESTMENT ZONE 27

HRGreen
11750 Katy Freeway,
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Houston, TX 77079
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Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

MITIGATION SUMMARY

SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 59 OF 101	

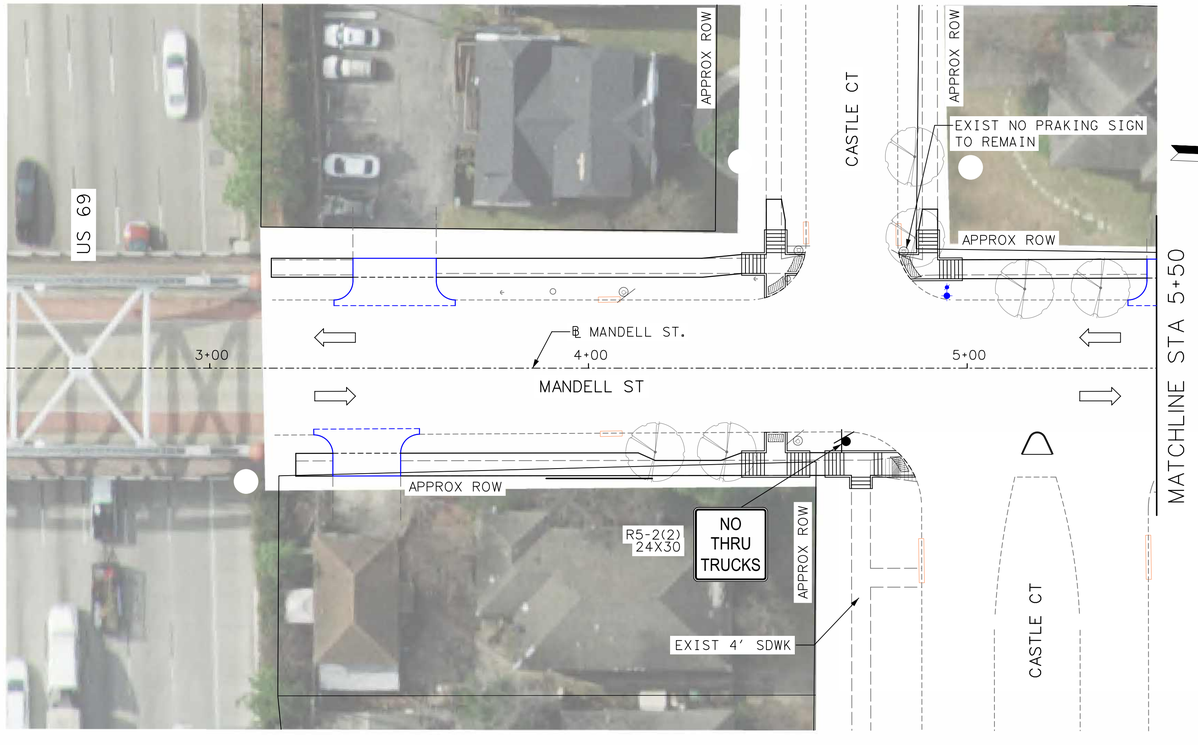
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NOTES:

1. REFER TO SUMMARY OF SMALL SIGNS FOR ADDITIONAL INFORMATION.
2. REFER TO SIGN AND PAVEMENT MARKING STANDARDS FOR ADDITIONAL INFORMATION.
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LEGEND

3	REFL PAV MRK (W) 12" (SLD)
4	REFL PAV MRK (W) 24" (SLD)
7	DBL REFL PAV MARK (Y) 4" (SLD) WITH REFL RAISED PAV MRK (TY A) @ 40' SPACING
16	REFL PAV MARK (Y) 4" (10' SLD, 30' GAP)

NO.	DATE	REVISION	APP.

0' 20' 40'
SCALE IN FEET

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SIGNING & PAVEMENT MARKINGS LAYOUT
BEGIN PROJECT TO STA 10+00

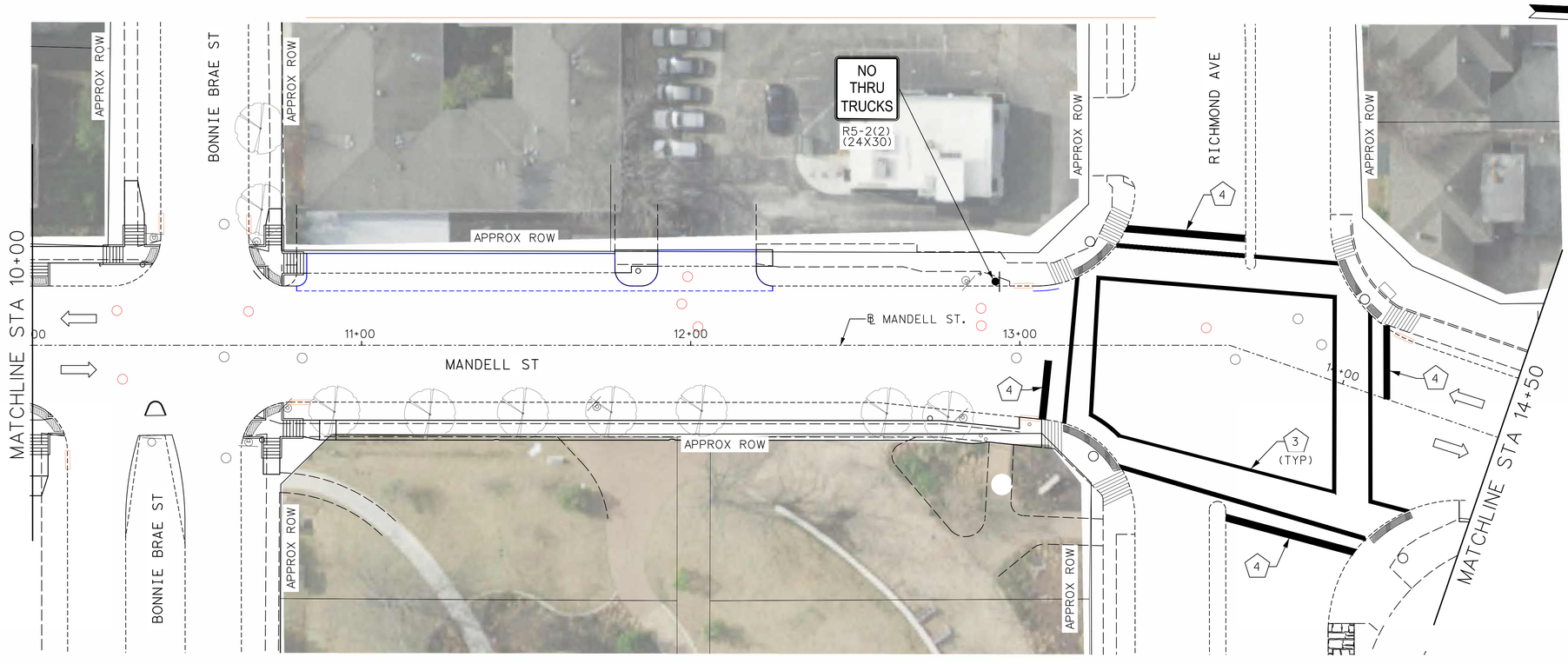
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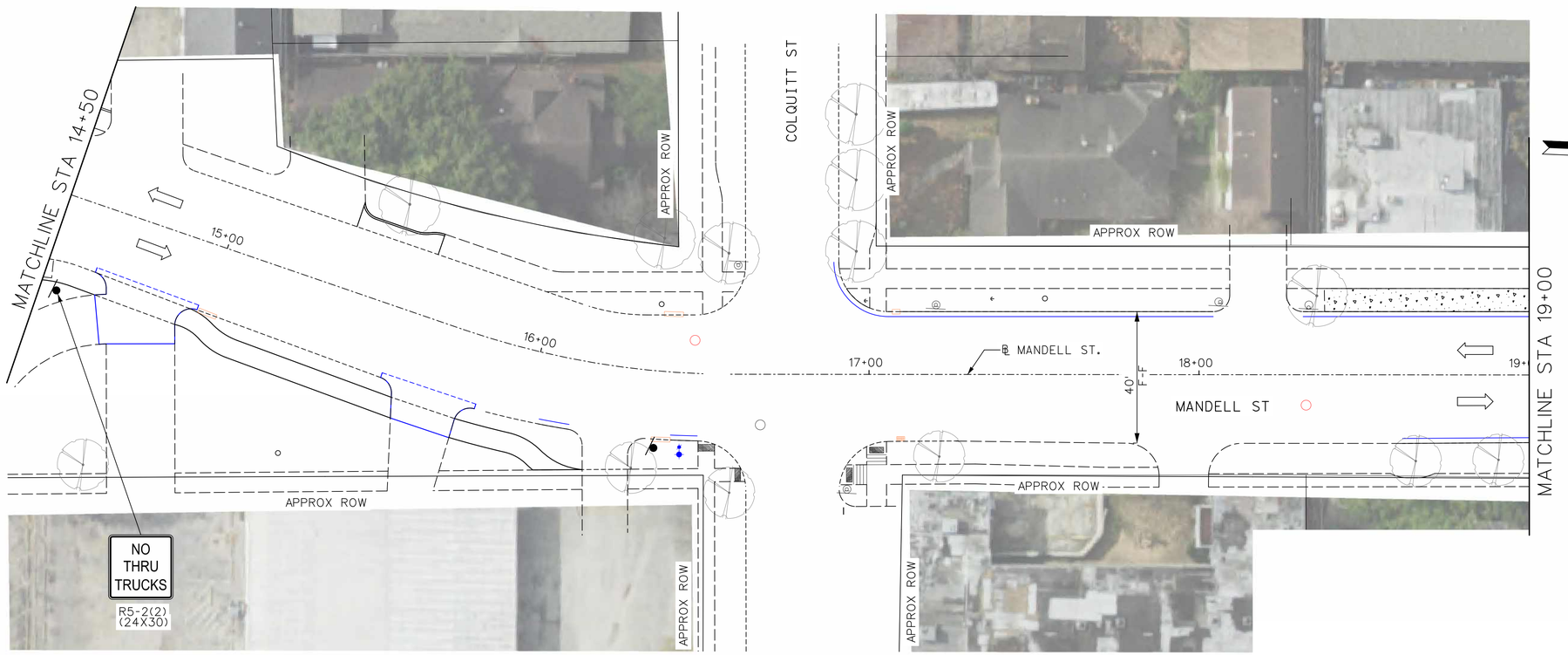
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JIADA HUANG	
SHEET NO. 60 OF 101	

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

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LEGEND

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0' 20' 40'
SCALE IN FEET

MONTROSE
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

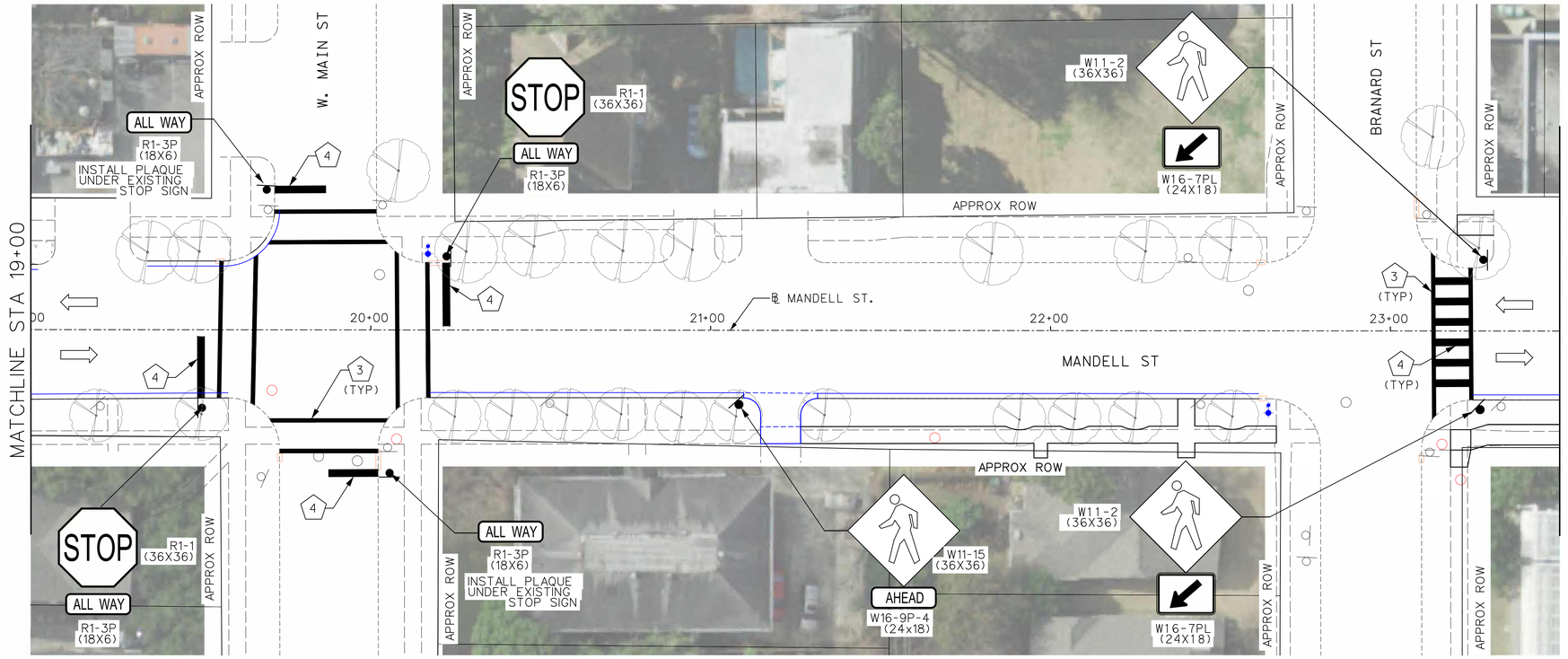
SIGNING AND PAVEMENT MARKING LAYOUT
STA 10+00 TO STA 19+00

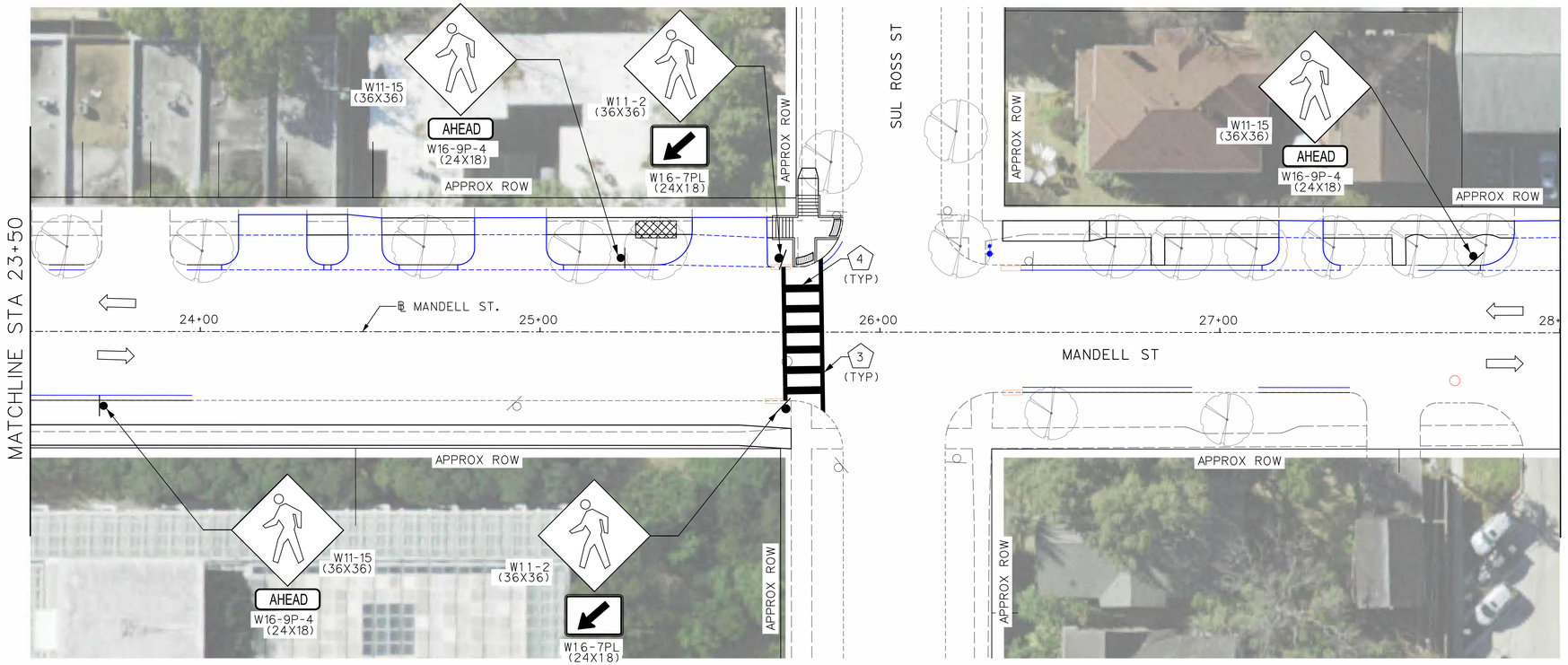
SHEET 2 OF 5

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 61 OF 101	

HOUSTON PUBLIC WORKS
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83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

Design Filename: J:\2025\2503044\DesignData\Design Plans\Plan Production\Sign-Pvmt Markings\1137 - PVMT- MANDELL ST - 02.dgn





LEGEND

3	REFL PAV MRK (W) 12" (SLD)
4	REFL PAV MRK (W) 24" (SLD)
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0' 20' 40'
SCALE IN FEET

NO.	DATE	REVISION	APP.

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SIGNING & PAVEMENT MARKINGS LAYOUT
STA 19+00 TO STA 28+00

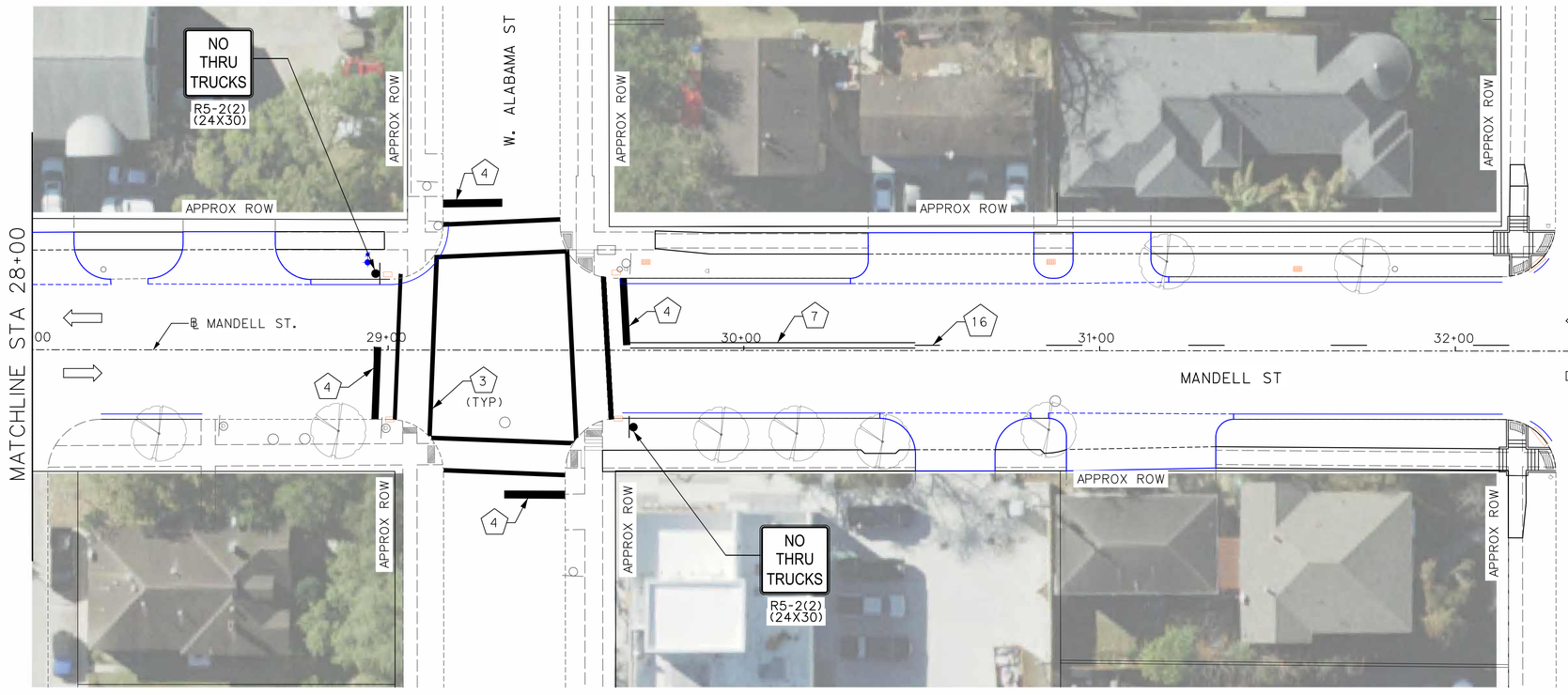
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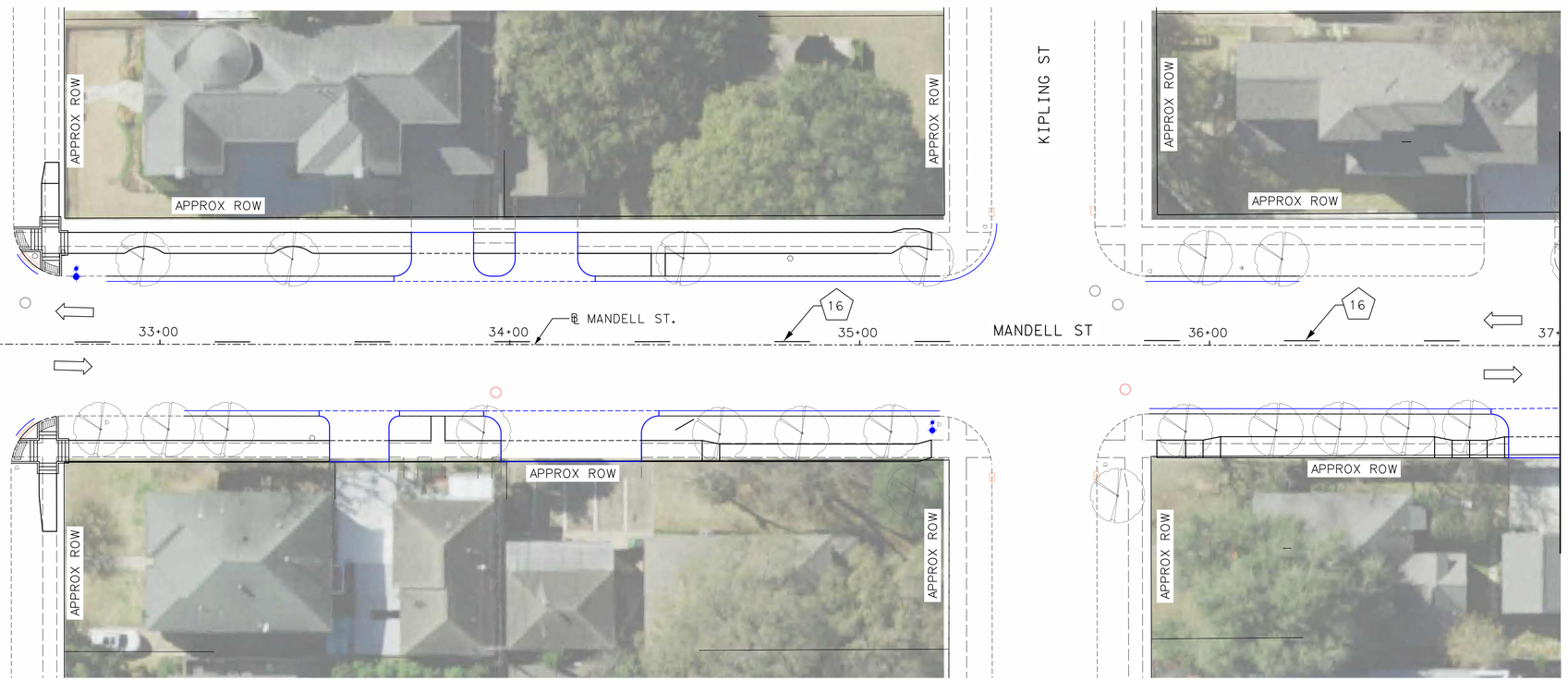
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DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	JIADA HUANG
SHEET NO. 62 OF 101	

FOR CITY OF HOUSTON USE ONLY

HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

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LEGEND

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SCALE IN FEET

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08/10/2026
HRGREEN INC.
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS LAYOUT
STA 28+00 TO STA 37+00

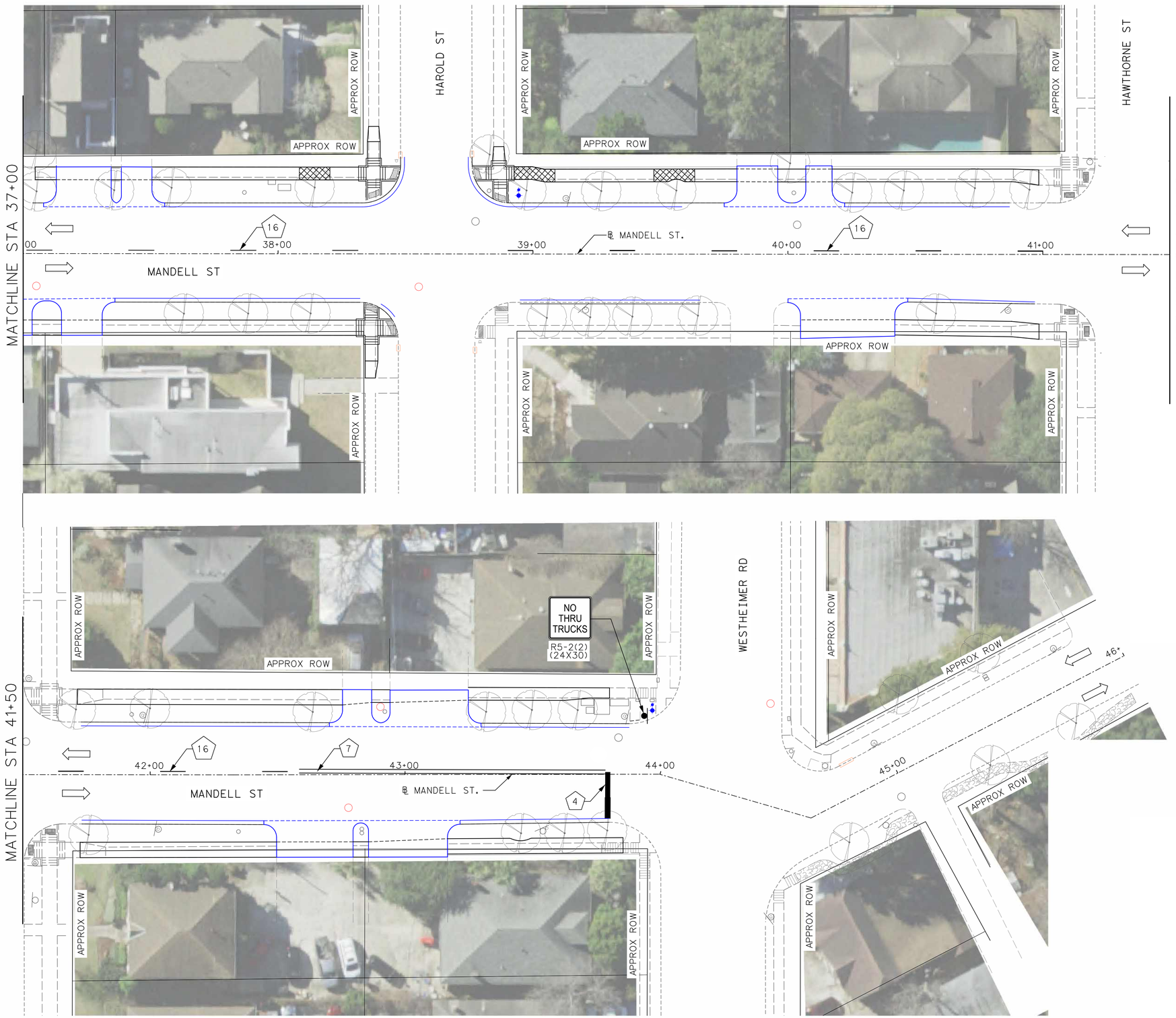
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WBS NUMBER	N-T27000-003-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	JIADA HUANG
SHEET NO.	63 OF 101

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HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

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LEGEND

- 3 — REFL PAV MRK (W) 12" (SLD)
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0' 20' 40'
SCALE IN FEET

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS LAYOUT
STA 37+00 TO END PROJECT

SHEET 5 OF 5

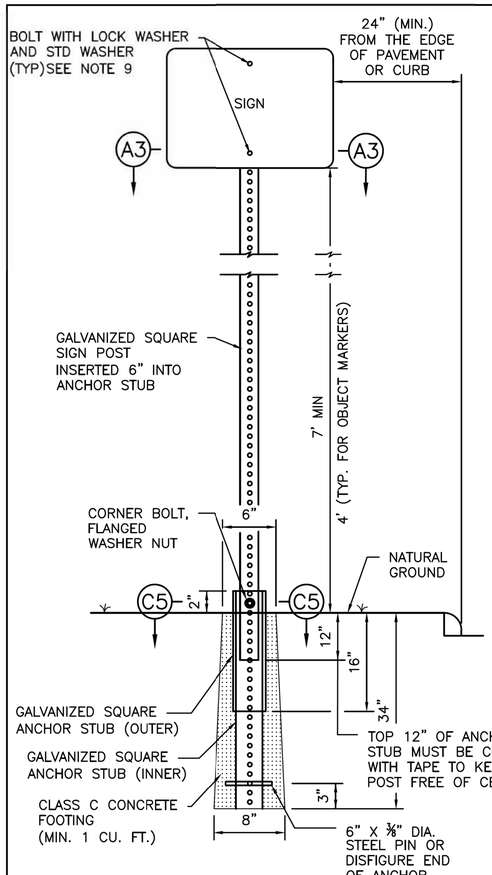
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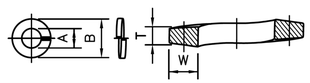
DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR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



ELEVATION

TYPICAL GROUND SIGN INSTALLATION
PERFORATED SQUARE METAL TUBING

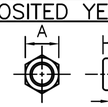
TABLE A	
GALVANIZED SQUARE SIGN POST (PERFORATED)	1–3/4"x–1–3/4" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PREFORATAED) (INNER)	2"x2"x36" (14 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PERFORATED) (OUTER)	2 1/4" x 2 1/4" x 18" (14 GAUGE)



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

DIMENSIONS: ASME B18.21.1
MATERIAL: ALLOY STEEL PER ASME B18.21.1
FINISH: MECHANICAL ZINC PER ASTM B695, CLASS 5, TYPE 2 (YELLOW)

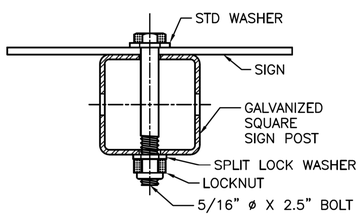
5/16" SPLIT LOCK WASHER, HIGH ALLOY MECHANICAL DEPOSITED YELLOW SINK



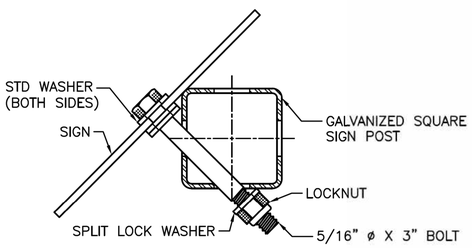
SIZE	C THICKNESS MAX	C THICKNESS MIN	A WIDTH ACROSS FLATS MAX	A WIDTH ACROSS FLATS MIN	D HEX HEIGHT MIN
0.313"	0.359"	0.329"	0.502"	0.489"	0.250"

DIMENSIONS: ASME B18.16.6
MATERIAL: CARBON STEEL, GRADE 8 PER ASME B18.16.6, NYLON ⅝
THREAD REQUIREMENTS: ASME B1.1 UNC & UNF CLASS 2B

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

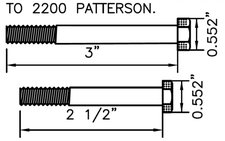


STANDARD ORIENTATION

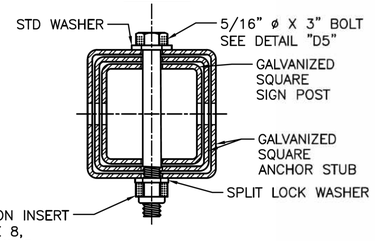


NON–STANDARD ORIENTATION

SECTION A3: SIGN CONNECTION DETAILS



SECTION D5
BOLTS



SECTION C5
CORNER BOLT

NOTES:

1. THE EXISTING SIGNS LOCATED ON PUBLIC CONSTRUCTION SITE ARE THE PROPERTY OF THE CITY OF HOUSTON. THROUGHOUT THE PERIOD OF THE CONTRACT, THE CONTRACTOR SHALL PROTECT THESE SIGNS SUCH THAT THEY ARE NOT DAMAGED IN THE COURSE OF CONSTRUCTION ACTIVITY. SUCH PROTECTION SHALL INCLUDE THE PERIOD AFTER SIGNS ARE REMOVED FROM INSTALLATION AND STORED BY THE CONTRACTOR OR DELIVERED TO THE TRAFFIC OPERATIONS CENTER (2200 PATTERSON). THE GENERAL TRAFFIC SUPERINTENDENT (832–395–6771) MUST BE NOTIFIED 48 HOURS IN ADVANCE PRIOR TO DELIVERY.
2. AFTER SIGNS ARE REMOVED FROM INSTALLATION AND ARE BEING STORED BY THE CONTRACTOR, THE CONTRACTOR SHALL CONTACT THE TRAFFIC OPERATIONS DIVISION OF HOUSTON PUBLIC WORKS (832–395–6771) AND ARRANGE FOR A CONVENIENT TIME TO DELIVER ONLY CITY SIGNS AND POSTS IDENTIFIED BY TRAFFIC OPERATIONS DIVISION TO 2200 PATTERSON.
3. PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIGN SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC. THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE PROJECTS COMPLETION.
4. ALL GROUND MOUNTED STOP SIGNS, WARNING SIGNS, AND OTHER REGULATORY SIGNS SHALL USE AT A MINIMUM HIGH INTENSITY PRISMATIC REFLECTIVE SHEETING.
5. ALL OVERHEAD SIGNS SHALL USE DIAMOND GRADE REFLECTIVE SHEETING.
6. ALL OTHER SIGNS SHALL USE SUPER ENGINEER GRADE SHEETING.
7. ALL BLANKS TO BE INSTALLED SHALL BE ALUMINUM ALLOY 6061–T–6 OR 5052–H38 IN ACCORDANCE WITH ASTM B209.
8. ALL HOLES SHALL BE ⅜" DIAMETER DRILLED OR PUNCHED AS SHOWN ON EACH BLANK DETAIL AND SHALL BE FREE OF BURRS AND / OR ROUGH EDGES. WHERE NON–STANDARD ORIENTATION OF SIGN IS USED, ENLARGE HOLE IN SIGN POST AT SIGN CONNECTION NOT GREATER THAN 11/16" IN DIAMETER.
9. BOLT SIZE REQUIREMENTS FOR SIGN CONNECTION:
   - 9.1. STANDARD ORIENTATION = 5/16" DIA X 2 1/2" BOLT
   - 9.2. NON STANDARD ORIENTATION = 5/16" DIA X 3" BOLT
10. SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON EACH DETAIL ON SHEET 01554–06.
11. ALL SIGN BLANKS ARE TO BE ETCHED, DEGREASED, AND HAVE A COATING MEETING THE REQUIREMENTS OF ASTM B449, CLASS 2, OR ASTM B921, CLASS 2. PRIOR TO APPLICATION OF LEGENDS.
12. ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN CONFORMANCE TO THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND STANDARD HIGHWAY SIGNS LATEST EDITION.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

GENERAL NOTES AND GROUND MOUNTING SIGN

(SCALE: NOT TO SCALE)

APPROVED BY:

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

EFF DATE: NOV–27–2023 | DWG NO: 01554–01

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

HRGreen
11750 Katy Freeway, Suite 400
Houston, TX 77079
(832) 318–8800
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SURVEYED BY:

JOHN R. HUML 140416 LICENSED PROFESSIONAL ENGINEER 07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

GENERAL NOTES AND GROUND MOUNTING SIGN

SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 65 OF 101	

HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX

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NO. DATE REVISION APP.

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DESCRIPTION AND APPLICATION OF PAVEMENT MARKING LINES				
LINE SERIES	COLOR	DESCRIPTION	WIDTH (INCHES)	TYPICAL APPLICATIONS
WB	WHITE	BROKEN (10' STRIPE W/30' GAP)	4"	LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS PERMITTED.
WS	WHITE	SOLID	4"	EDGE LINES TO DELINEATE THE RIGHT EDGE OF THE ROADWAY.
			6"	LEFT EDGE OF BICYCLE LANE AND LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS DISCOURAGED.
			12"	PERPENDICULAR CROSSWALK LINES.
			24"	STOP BARS AT INTERSECTIONS (SIGNALIZED AND UNSIGNALIZED).
				HATCHING AT HIGH VISIBILITY CROSSWALKS.
			12", 24"	DIAGONAL HATCHING USED IN GORES BETWEEN SAME DIRECTION OF TRAVEL LANES.
WG	WHITE	GUIDE (2' STRIPE W/6' GAP)	6"	GUIDE LINES THROUGH INTERSECTIONS.
				TAPER LINES FOR TURN LANES.
				GUIDE LINES FOR BICYCLE LANES.
YS	YELLOW	SOLID	4"	EDGE LINES TO DELINEATE THE LEFT EDGE OF A DIVIDED ROADWAY, A ONE-WAY ROAD, OR RAMP.
			6"	BIDIRECTIONAL BICYCLE LANE PAVEMENT MARKING.
			12", 24"	DIAGONAL HATCHING USED IN GORES BETWEEN OPPOSING DIRECTION OF TRAVEL LANES.
YDS	YELLOW	DOUBLE SOLID	4" – (4") – 4" (GAP)	CENTERLINE THAT SEPARATES OPPOSING TRAVEL LANES AND DELINEATION OF MEDIAN ISLANDS.
YDB	YELLOW	DOUBLE BROKEN	4" – (4") – 4" (GAP)	DEFINES THE EDGES OF CENTER REVERSIBLE LANES THAT ARE USED AS TWLTLS DURING INTERMITTENT PERIODS.
YB	YELLOW	BROKEN (10' STRIPE W/30' GAP)	4"	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YB (BIKE)	YELLOW	BROKEN (3' STRIPE W/9' GAP)	4"	SEPARATES BICYCLE TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YSB	YELLOW	SOLID & BROKEN BROKEN (10' STRIPE W/30' GAP)	4" – (4") – 4" (GAP)	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN ONE DIRECTION AND PROHIBITED IN THE OPPOSITE DIRECTION.
				USED FOR EDGE OF TWO-WAY LEFT TURN LANES (TWLTL).
BICYCLE GREEN	GREEN	SOLID COLORED PAVEMENT	VARIES	PED/BIKE CROSSING
				VEHICLE / BIKE/ CONFLICT AREA
YIELD LINE	WHITE	TRIANGLE	16" x 24"	MID-BLOCK CROSSING.

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

LINE STYLE DESIGNATION : YSB4 – A40/A40

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

GENERAL PAVEMENT MARKING NOTES:

1. PRIOR TO START OF CONSTRUCTION, ALL EXISTING PAVEMENT MARKINGS WITHIN THE AREA OF CONSTRUCTION SHALL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING ALL EXISTING PAVEMENT MARKINGS AND LANE CONFIGURATIONS WILL BE DUPLICATED AGAIN. THIS REVIEW CAN BE DONE IN CONJUNCTION WITH SIGN INVENTORY. THE CONTRACTOR IS HELD ACCOUNTABLE FOR EXISTING AND TEMPORARY CONSTRUCTION PAVEMENT MARKINGS THROUGHOUT THE PROJECT AND AT THE PROJECT'S COMPLETION.
2. ALL PAVEMENT MARKINGS SHALL CONFORM TO CITY OF HOUSTON STANDARDS AND SPECIFICATIONS AND GENERAL GUIDELINES OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
3. THE PERMANENT PAVEMENT MARKINGS MAY BE MODIFIED AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
4. THE DESIGN SPEED FOR THE ROAD IS: _____. THE POSTED SPEED LIMIT IS: _____.
5. ALL LANE DIMENSIONS ARE FROM CENTER OF LANE LINE, CENTER OF DOUBLE LANE LINE, FACE OF CURB, OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
6. THE PAVEMENT MARKING DRAWINGS ARE SCHEMATIC ONLY. THE CONTRACTOR SHALL FOLLOW ALL DIMENSIONS, DETAILS, AND STANDARDS WHEN INSTALLING PAVEMENT MARKINGS AND SYMBOLS.
7. THE FINAL LONGITUDINAL STRIPINGS SHALL BE 60 MIL (0.060") THICK HOT-SPRAYED THERMOPLASTIC PLACED OVER THE TEMPORARY STRIPING WITHIN 14 TO 30 CALENDAR DAYS AFTER COMPLETION OF THE FINAL PAVEMENT SURFACE, OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER. ALL OTHER PAVEMENT MARKINGS SHALL BE APPLIED AT THE SAME TIME. TEMPORARY STRIPING SHALL BE WATER BASED PAINT.
8. ALL FINAL TRANSVERSE MARKINGS SHALL BE 90 MIL (0.090") HOT-SPRAYED THERMOPLASTIC. ALL PAVEMENT ARROWS AND LEGENDS SHALL ALSO BE 90 MIL (0.090") HOT-SPRAYED THERMOPLASTIC. PREFORMED THERMOPLASTIC APPLICATIONS MAY BE USED IF ONLY APPROVED BY THE CITY TRAFFIC ENGINEER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT AND INSTALLATION OF PAVEMENT MARKINGS OF FINAL SURFACE COURSE FOLLOWING CONTROL POINTS THAT HAVE BEEN SET NO MORE THAN 50 FEET APART ALONG THE LINES TO BE IMPLEMENTED. IN TANGENT SECTIONS OF A ROAD WHERE THE PAVEMENT MARKING PATTERN DOES NOT CHANGE, CONTROL POINTS CAN BE SET AT 200 FEET SPACING. THE LAYOUT AND INSPECTION OF ALL PAVEMENT MARKINGS SHALL BE APPROVED BY CITY OF HOUSTON REPRESENTATIVE PRIOR TO THE APPLICATION OF MATERIALS.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE FINAL SURFACE COURSE IS PLACED SO THAT THE STRIPING IS OFFSET NO MORE THAN ONE FOOT CLEAR OF THE CONSTRUCTION JOINT, UNLESS OTHERWISE DIRECTED BY THE CITY TRAFFIC ENGINEER.
11. ALL RAISED PAVEMENT MARKERS (RPMS) SHALL BE INSTALLED SO THAT THE REFLECTIVE FACE OF EACH MARKER IS FACING THE DIRECTION OF TRAFFIC AND IS PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW. TYPE C PAVEMENT MARKERS SHALL BE INSTALLED SO THAT THE CLEAR FACE OF EACH MARKER IS FACING THE APPROACHING TRAFFIC FLOW AND PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW.
12. ALL REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED IN ACCORDANCE TO CITY OF HOUSTON STANDARD SPECIFICATION 02762. APPLYING OVER EXISTING PAVEMENT MARKINGS DOES NOT CONSTITUTE AS APPROVED OBLITERATION METHOD.
13. THE ENGINEER OF RECORD SHALL BE REQUIRED TO PRODUCE AS-BUILT OF PAVEMENT MARKING PLANS WITHIN 30 DAYS AFTER COMPLETION OF PAVEMENT MARKING IMPLEMENTATION.
14. BLUE RPMS MAY BE PLACED ADJACENT TO FIRE HYDRANTS WITH THE APPROVAL OF THE CITY TRAFFIC ENGINEER.
15. FOR ALL CONSTRUCTION, ALL PAVEMENT MARKINGS AND SIGNING SHALL BE INSTALLED AND SHALL BE PAID BY THE PROJECT OWNER/DEVELOPER.
16. FINAL INSPECTION AND ACCEPTANCE OF PAVEMENT MARKINGS SHALL BE PERFORMED BY TRANSPORTATION & DRAINAGE OPERATION REPRESENTATIVE (713-803-3054).

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukul Kanwar 5D7B0DC8415747B...	DocuSigned by: KHANG NGUYEN 95A2907DA77B4CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haldbrook A5DC4185E2E843...	
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	

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 FOR EACH PROJECT IS RESPONSIBLE FOR DESIGN ALTERNATIVES AND ADDITIONS AS REQUIRED TO ADDRESS SITE-SPECIFIC ROADWAY SAFETY AS WARRANTED. USE OF ANY PART OF THIS STANDARD BY ANY PERSON OR ENTITY OTHER THAN THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

NO.	DATE	REVISION	APP.

MONTROSE
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Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

GENERAL NOTES AND GROUND MOUNTING SIGN

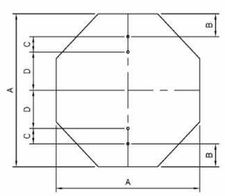
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WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 66 OF 101	

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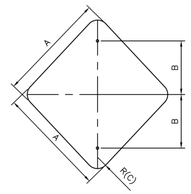
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DISCLAIMER:
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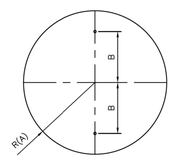
OCTAGONAL

A	B	C	D	T
24	3	3	12	0.08
36	3	3	24	0.08



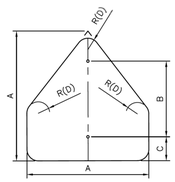
DIAMOND

A	B	C	T
24	12	1 1/2	0.08
30	15	1 1/2	0.08
36	18	1 1/2	0.08



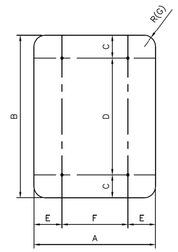
CIRCLE

A	B	T
15	15	0.08
18	12	0.08



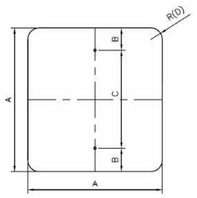
PENTAGON (SCHOOL)

A	B	C	D	T
36	24	3	1 1/2	0.08



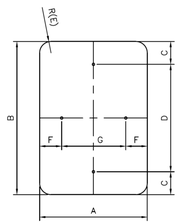
VERTICAL RECTANGLE

A	B	C	D	E	F	G	T
36	48	6	36	6	24	1 1/2	0.08
48	60	6	48	9	30	1 1/2	0.08
18	30	3	24	–	–	1 1/2	0.08



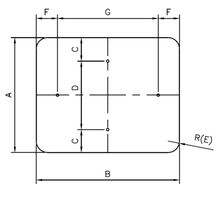
SQUARE (A)

A	B	C	D	T
18	3	12	1 1/2	0.08
24	3	18	1 1/2	0.08
36	3	30	1 1/2	0.08



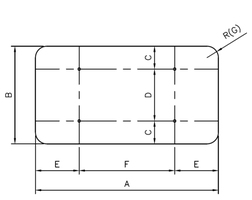
VERTICAL/HORIZONTAL RECTANGLE

A	B	C	D	E	F	G	T
12	18	1 1/2	15	1 1/2	1 1/2	9	0.08
12	36	3	30	1 1/2	1 1/2	9	0.08
18	24	3	18	1 1/2	1 1/2	15	0.08
24	30	3	24	1 1/2	3	18	0.08
24	36	3	30	1 1/2	3	18	0.08
24	48	3	36	1 1/2	3	18	0.08
30	36	3	30	1 1/2	3	24	0.08



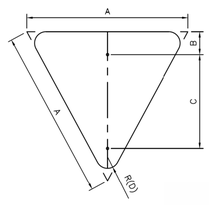
HORIZONTAL/VERTICAL RECTANGLE

A	B	C	D	E	F	G	T
12	6	–	–	1 1/2	1	4	0.08
18	6	–	–	1 1/2	1	4	0.08
12	9	1	10	1 1/2	–	–	0.08
24	12	1 1/2	9	1 1/2	2	8	0.08
24	18	3	12	1 1/2	2	14	0.08
30	24	3	18	1 1/2	3	18	0.08
36	12	1 1/2	9	1 1/2	2	8	0.08



HORIZONTAL RECTANGLE

A	B	C	D	E	F	G	T
36	24	3	18	6	24	1 1/2	0.08
48	24	3	18	9	30	1 1/2	0.08
48	36	6	24	9	30	1 1/2	0.08
60	24	3	18	12	36	1 1/2	0.08
60	36	6	24	12	36	1 1/2	0.08



EQUILATERAL TRIANGLE

A	B	C	D	T
36	3	21	1 1/2	0.08

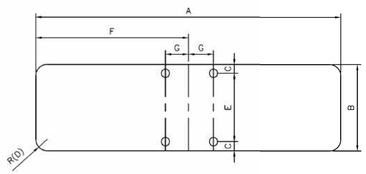


TABLE – D3 SIGNS (BRACKETS)

A	B	C	D	E	F	G	T
30	9	5/16	1 1/2	8 3/8	15	1 3/4	0.125
36	9	5/16	1 1/2	8 3/8	18	1 3/4	0.125
42	9	5/16	1 1/2	8 3/8	21	1 3/4	0.125
48	9	5/16	1 1/2	8 3/8	24	1 3/4	0.125

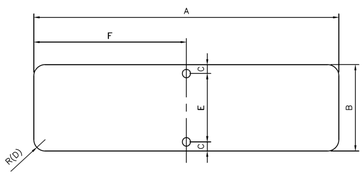


TABLE – D3 SIGNS

A	B	C	D	E	F	T
30	9	1 1/2	1 1/2	6	15	0.125
36	9	1 1/2	1 1/2	6	18	0.125
42	9	1 1/2	1 1/2	6	21	0.125
48	9	1 1/2	1 1/2	6	24	0.125

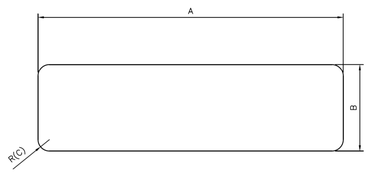
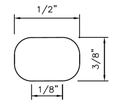


TABLE – D1 SIGNS

A	B	C	T
60	24	1 1/2	0.08
72	24	1 1/2	0.08
84	24	1 1/2	0.08
96	24	1 1/2	0.08

NOTES:

1. A 30" LONG OR GREATER PLATE SHALL BE USED WHEN A "NO OUTLET" SUPPLEMENT IS REQUIRED.
2. THE CITY OF HOUSTON "STOP" AND "YIELD" SIGNS SHALL BE A MINIMUM 36". SPECIAL PERMISSION FROM THE CITY TRAFFIC ENGINEER IS REQUIRED FOR LESS THAN 36" SIGNS.
3. ALL PUNCHED HOLES ARE 3/8"x 1/2" OVAL.
4. ALL CORNER RADII ARE 1 1/2".
5. ALL DIMENSIONS ARE IN INCHES.
6. T = THICKNESS



APPROVED BY:	APPROVED BY:
DocuSigned by: Sylvia Kauwar	DocuSigned by: HANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01554-06

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

GROUND MOUNTED
SIGN SIZES

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

HRGreen
11750 Katy Freeway,
Suite 400
Houston, TX 77079
(832) 318-8800
(713) 965-0044 FAX
HRGreen.com
Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED
PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

GROUND MOUNTED
SIGN SIZES

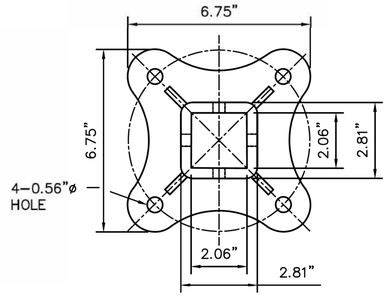
SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 67 OF 101	

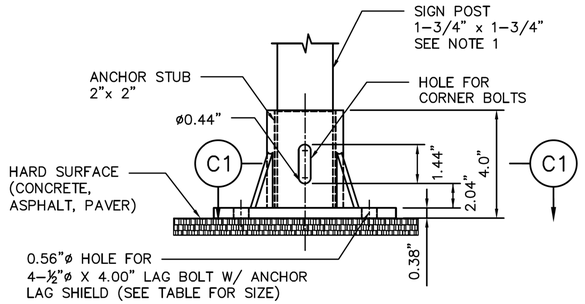
NO.	DATE	REVISION	APP.

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TOP VIEW



SIDE VIEW

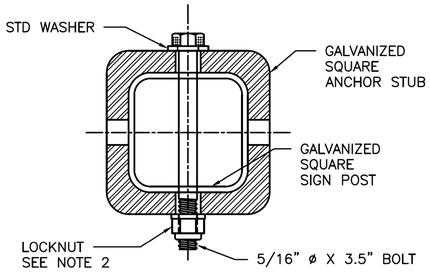
TYPICAL HARD SURFACE INSTALLATION GALVANIZED SIGN BASE

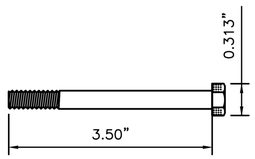
NOTES:

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

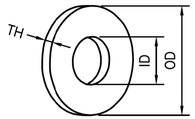
BASE PLATE NOTES:

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





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

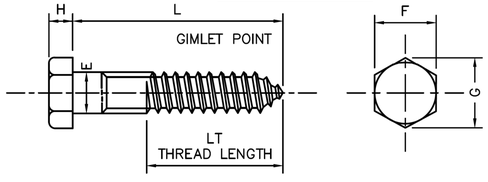


SAE FLAT WASHERS									
SIZE	ID			OD			THICKNESS – TH		
	BASIC	TOLERANCE		BASIC	TOLERANCE		BASIC	MAX	MIN
		PLUS	MINUS		PLUS	MINUS			
1/2"	0.531	0.015"	0.005"	1.062"	0.030"	0.007"	0.95"	0.121"	0.74"

DIMENSIONS: ASME B18.21.1, TYPE A PLAIN WASHERS
MATERIAL: CARBON STEEL
FINISH: Fe/Zn 3AT PER ASTM F1941

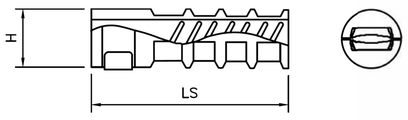
1/2" FLAT WASHERS, LOW CARBON, SAE, ZINC PLATED

SECTION C1
CORNER BOLT



4" HEX LAG SCREWS, HOT DIPPED GALVANIZED										
DIAMETER	E		F		G		H		L	LT
	BODY DIAMETER		WIDTH ACROSS FLATS		WIDTH ACRSS CORNERS		HEIGHT		LENGTH	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 F2329 OR IN ACCORDANCE WITH CLASS C OF ASTM A153 AND CLASS D FOR ⅜" DIAMETER AND LESS



TH	LS	H	L
LAG THREAD SIZE	LENGTH OF SHIELD NOMINAL	DRILLED HOLE SIZE	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:

DocuSigned by: Suhail Kanwar 9EF8B0C641F5478...
CITY ENGINEER

DocuSigned by: Carol Haddock A93C410B72B3453...
DIRECTOR OF HPW

DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 | DWG NO: 01554–02

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HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SIGN BASE HARD SURFACE
MOUNTING DETAILS

SHEET 1 OF 1

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SHEET NO. 68 OF 101	

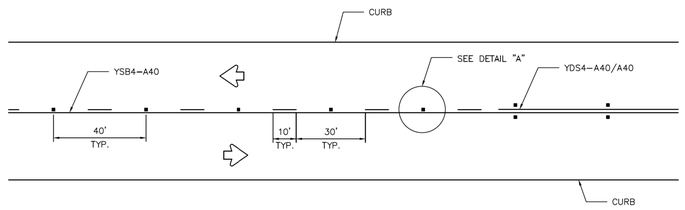
DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR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

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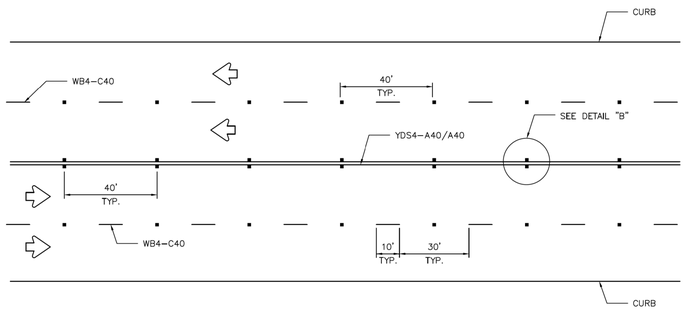
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CENTERLINE & FOR ALL TWO LANE STREETS WITH PASSING ZONE

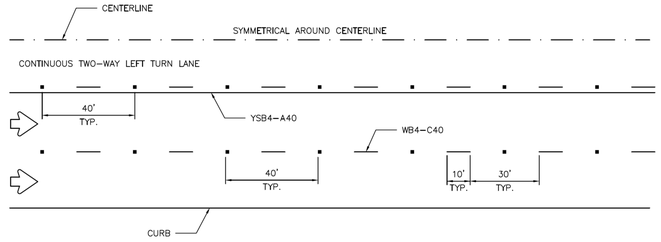


CENTERLINE & LANE LINES FOR FOUR LANE TWO–WAY STREETS

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

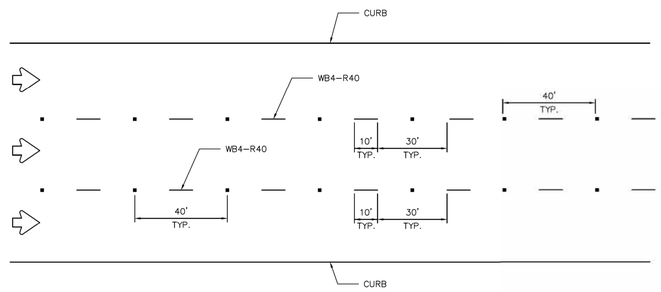


CENTERLINE & LANE LINES FOR TWO–WAY LEFT TURN LANE



LANE LINES FOR ONE–WAY MULTILANE STREET

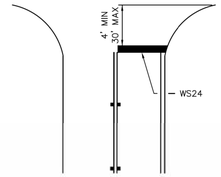
RRPM TYPE R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG–WAY TRAFFIC.



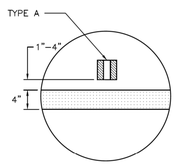
GENERAL NOTES:

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

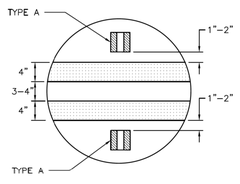
GUIDE FOR PLACEMENT OF STOP LINES & CENTERLINE



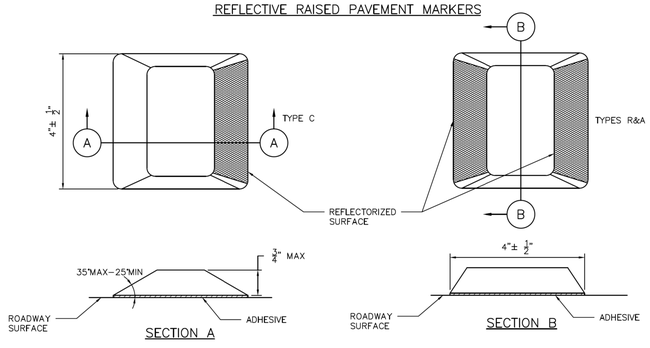
DETAIL "A"



DETAIL "B"



REFLECTIVE RAISED PAVEMENT MARKERS



APPROVED BY:	APPROVED BY:
DocuSigned by: Sukal Kanuvar	DocuSigned by: HANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02760–05

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE

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SURVEYED BY:

JOHN R. HUML 140416 LICENSED PROFESSIONAL ENGINEER 07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE

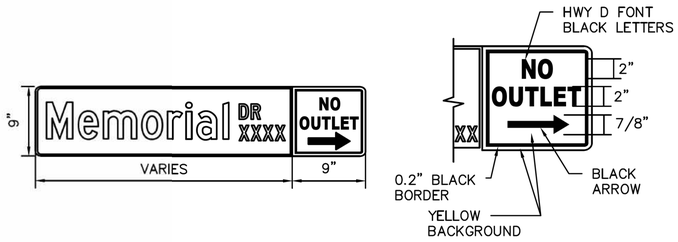
SHEET 1 OF 1

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SHEET NO. 69 OF 101	

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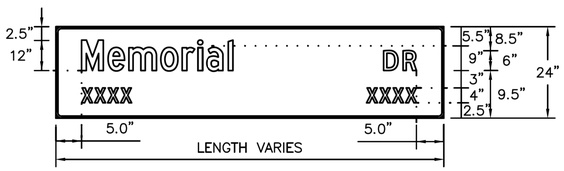
POST MOUNTED STREET NAME SIGN W/ NO OUTLET SIGN



D3 – POST MOUNTED STREET NAME SIGN



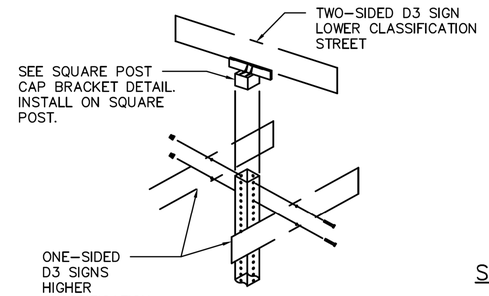
OVERHEAD STREET NAME SIGN DETAIL



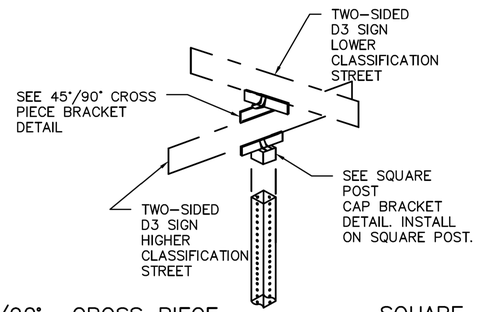
D3 – STREET NAME SIGN

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

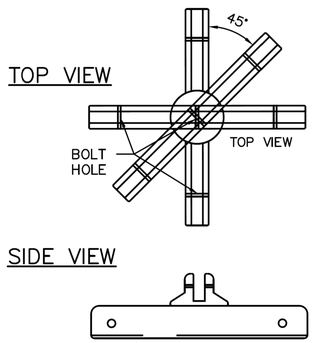
D3 SIGNS GREATER THAN 42" PLATES IN LENGTH



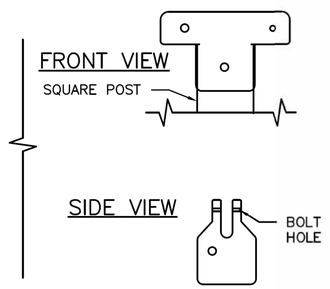
D3 SIGNS LESS THAN OR EQUAL TO 42" PLATES IN LENGTH



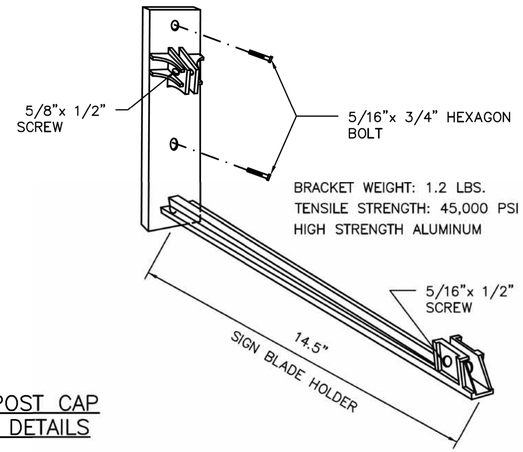
45°/90° CROSS PIECE SIGN BRACKET



SQUARE POST CAP BRACKET DETAILS



SIGNAL POLE MOUNTING DETAIL



NOTES:

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

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STREET NAME SIGN AND SIGN MOUNTING

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sulail Kanwar 9EFBB0C841F5478... CITY ENGINEER	DocuSigned by: Carol Haddock A93C410B72B3453... DIRECTOR OF HPW
DocuSigned by: KHANG NGUYEN 05A29EFDA75B4CD... CITY TRAFFIC ENGINEER	
EFF DATE: NOV–27–2023	DWG NO: 01554–03

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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN TEXT	DIMENSION	SQUARE POST	SIGNAL MOUNT	ROUND POST (PERMISSION NEEDED FROM CITY TRAFFIC ENGINEER)	NUMBER OF POSTS (1 OR 2)	SIGN AREA SQ. FT. (FOR INFORMATION ONLY NOT INTENDED FOR BID)	SIGN POST SIZE (TABLE A)
1	1	R5-2(2)	NO THRU TRUCKS	24X30	X			1	5	1-3/4" X 1-3/4"
	2	W17-1	SPEED HUMP	30X30	X			1	6.25	1-3/4" X 1-3/4"
	3	W13-1P	20 MPH	18X18	X				5	1-3/4" X 1-3/4"
	4	W17-1	SPEED HUMP	30X30	X			1	6.25	1-3/4" X 1-3/4"
	5	W13-1P	20 MPH	18X18	X				5	1-3/4" X 1-3/4"
2	6	R5-2(2)	NO THRU TRUCKS	24X30	X			1	5	1-3/4" X 1-3/4"
	7	R5-2(2)	NO THRU TRUCKS	24X30	X			1	5	1-3/4" X 1-3/4"
3	8	R1-3P	ALL WAY	18X6	X				0.75	
	9	R1-1	STOP	36X36	X			1	9	1-3/4" X 1-3/4"
	10	R1-3P	ALL WAY	18X6	X				0.75	
	11	R1-1	STOP	36X36	X			1	9	1-3/4" X 1-3/4"
	12	R1-3P	ALL WAY	18X6	X				0.75	
	13	R1-3P	ALL WAY	18X6	X				0.75	
	14	W11-15	BICYCLE/PEDESTRIAN	36X36	X			1	9	1-3/4" X 1-3/4"
	15	W16-9P-4	AHEAD	24X18					3	
	16	W11-2	PEDESTRIAN	36X36	X			1	9	1-3/4" X 1-3/4"
	17	W16-7PL	DIAGONAL ARROW	24X18					3	
	18	W11-2	PEDESTRIAN	36X36	X			1	9	1-3/4" X 1-3/4"
	19	W16-7PL	DIAGONAL ARROW	24X18					3	
	20	W11-15	BICYCLE/PEDESTRIAN	36X36	X			1	9	1-3/4" X 1-3/4"
	21	W16-9P-4	AHEAD	24X18					3	
	22	W11-15	BICYCLE/PEDESTRIAN	36X36	X			1	9	1-3/4" X 1-3/4"
	23	W16-9P-4	AHEAD	24X18						
	24	W11-2	PEDESTRIAN	36X36	X			1	9	1-3/4" X 1-3/4"
	25	W16-7PL	DIAGONAL ARROW	24X18					3	
	26	W11-2	PEDESTRIAN	36X36	X			1	9	1-3/4" X 1-3/4"
	27	W16-7PL	DIAGONAL ARROW	24X18					3	
	28	W11-15	BICYCLE/PEDESTRIAN	36X36	X			1	9	1-3/4" X 1-3/4"
	29	W16-9P-4	AHEAD	24X18					3	
4	30	R5-2(2)	NO THRU TRUCKS	24X30	X			1	5	1-3/4" X 1-3/4"
	31	R5-2(2)	NO THRU TRUCKS	24X30	X			1	5	1-3/4" X 1-3/4"
5	32	R5-2(2)	NO THRU TRUCKS	24X30	X			1	5	1-3/4" X 1-3/4"

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08/10/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

SUMMARY OF SMALL SIGNS

SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 71 OF 101	

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REGULATORY SIGNS		
SIGN	SIGN DESIGNATION	SIZE (IN.)
STOP	R1-1	36x36
YIELD	R1-2	36x36x36
ALL WAY PLAQUE	R1-3P	18x6
YIELD HERE TO PEDISTRIANS	R1-5a	36x48
EXCEPT RIGHT TURN (PLAQUE)	R1-10P(1)	24x18
EXCEPT BUSES (PLAQUE)	R1-10P(2)	24x18
SPEED LIMIT	R2-1	30x36
MINIMUM SPEED LIMIT (PLAQUE)	R2-4P	24x30
NO RIGHT TURNS	R3-1	36x36
NO LEFT TURNS	R3-2	36x36
NO U-TURNS	R3-4	36x36
LEFT/RIGHT TURN ONLY	R3-5	30x36
THRU ONLY	R3-5a	30x36
LEFT TURN/THRU	R3-6	30x36
LEFT/RIGHT LANE MUST TURN LEFT/RIGHT	R3-7	36x36
ADVANCE INTERSECTION LANE CONTROL (VARIES)	R3-8	VARIESx30
TWO-WAY LEFT TURN ONLY (OVERHEAD)	R3-9a	30x36
TWO-WAY LEFT TURN LANE (POST MOUNTED)	R3-9b	24x36
BEGIN	R3-9cP	30x12
END	R3-9dP	30x12
REVERSIBLE LANE CONTROL (SYMBOL)	R3-9e	108x48
REVERSIBLE LANE CONTROL (POST MOUNTED)	R3-9f	36x54
ADVANCE REVERSIBLE LANE CONTROL TRANSITION	R3-9g,9h	108x36
END REVERSIBLE LANE	R3-9i	108x48
BIKE LANE	R3-17	24x18
SLOWER TRAFFIC KEEP RIGHT	R4-3	24x30
BEGIN RIGHT TURN LANE YIELD TO BIKES	R4-4	36x30
KEEP RIGHT	R4-7	24x30
KEEP LEFT	R4-8	24x30
DO NOT DRIVE ON SHOULDER	R4-17	24x30
DO NOT PASS ON SHOULDER	R4-18	24x30
DO NOT ENTER	R5-1	36x36
WRONG WAY	R5-1a	42x30
NO TRUCKS (SYMBOL)	R5-2(1)	24x24
NO THRU TRUCKS (TEXT)	R5-2(2)	24x30
ONE WAY (LONG)	R6-1	54x18
ONE WAY	R6-2	30x36
ROUNDABOUT DIRECTIONAL (2 CHEVRONS)	R6-4	30x24
ROUNDABOUT CIRCULATION (PLAQUE)	R6-5P	30x30
BEGIN ONE WAY	R6-6	30x36
END ONE WAY	R6-7	30x36
PARKING RESTRICTION (ARROW)	R7-2(1)	12x18
PARKING RESTRICTION (TO CORNER)	R7-2(2)	12x18
PARKING RESTRICTION (BUS ZONE)	R7-2(3)	12x18

REGULATORY SIGNS		
SIGN	SIGN DESIGNATION	SIZE (IN.)
PARKING RESTRICTION (VALET ZONE)	R7-2(4)	12x18
PARKING RESTRICTION (PEAK PERIOD)	R7-2(5)	12x18
PARKING RESTRICTION (EMERGENCY VEH. ONLY)	R7-2(6)	12x18
PARKING RESTRICTION (TAXI ZONE)	R7-2(7)	12x18
PARKING RESTRICTION (NO STOPPING OR STANDING)	R7-2(8)	12x18
PARKING RESTRICTION (JITNEY STOP)	R7-2(9)	12x18
PARKING RESTRICTION (PED-CAB ZONE)	R7-2(10)	12x18
PARKING RESTRICTION (LIMO ZONE)	R7-2(11)	12x18
PARKING RESTRICTION (COMMERCIAL VEH. ZONE)	R7-2(12)	12x18
PARKING RESTRICTION (FED/CITY AUTHORIZED VEH. ONLY)	R7-2(13)	12x18
PARKING RESTRICTION (U.S. MARSHAL PARKING ONLY)	R7-2(14)	12x18
PARKING RESTRICTION (EMERGENCY)	R7-2(15)	12x18
PARKING TIME LIMIT (VARIES)	R7-108	12x18
HANDICAPPED PARKING	R7-8T	12x18
TOW AWAY ZONE (PLAQUE)	R7-201P	12x6
PARKING METER (COH)	R7-110	12x18
ON TRACKS (PLAQUE)	R8-3eP	24x18
CROSS ONLY AT CROSSWALKS (SYMBOL)	R9-2	12x18
NO PEDESTRIAN CROSSING (SYMBOL)	R9-3	18x18
NO PEDESTRIAN CROSSING	R9-3a	12x18
PEDESTRIAN CROSSING	R9-8	36x18
SIDEWALK CLOSED	R9-9	24x12
SIDEWALK CLOSED-USE OTHER SIDE	R9-10	24x12
SIDEWALK CLOSED CROSS HERE	R9-11a	24x12
PUSH BUTTON FOR PEDESTRIAN CROSSING	R10-3e	9x15
LEFT ON GREEN ARROW ONLY	R10-5	30x36
STOP HERE ON RED	R10-6	24x36
DO NOT BLOCK INTERSECTION	R10-7	24x30
LEFT/RIGHT TURN SIGNAL	R10-10	30x36
NO TURN ON ROAD (TEXT)	R10-11a	36x48
LEFT TURN YIELD ON GREEN	R10-12	30x36
CROSSWALK, STOP ON RED	R10-23	24x30
KEEP OFF MEDIAN	R11-1	24x30
ROAD CLOSED	R11-2	48x30
ROAD CLOSED LOCAL TRAFFIC ONLY	R11-3a	60x30
BRIDGE OUT LOCAL TRAFFIC ONLY	R11-3b	60x30
ROAD CLOSED TO THRU TRAFFIC	R11-4	60x30
WEIGHT LIMIT XX TONS	R12-1	24x30
AXLE WEIGHT LIMIT XX TONS/LBS	R12-2	24x30
NO TRUCKS OVER XX TONS/LBS EMPTY WEIGHT	R12-3	24x36
WEIGHT LIMIT XX TONS PER AXLE XX TONS GROSS	R12-4	36x24
LOAD ZONED BRIDGE	R12aT	VARIESx36
TRUCK ROUTE	R14-1	24x18
GRADE CROSSING (CROSSBUCK)	R15-1	48x9
NUMBER OF TRACKS (PLAQUE)	R15-2P	27x18

REGULATORY SIGNS		
SIGN	SIGN DESIGNATION	SIZE (IN.)
RIGHT ANGLE TURN	CW1-1	36X36
HORIZONTAL CURVE	CW1-2	36X36
REVERSE RIGHT ANGLE TURNS	CW1-3	36X36
REVERSE HORIZONTAL CURVES	CW1-4	36X36
REVERSE CURVE (2 LANES)	CW1-4b	36X36
REVERSE CURVE (MORE THAN 2 LANES)	CW1-4c	36X36
ONE-DIRECTION LARGE ARROW	CW1-6	48X24
UPWARD SLOPING ARROW	CW1-6aT	36X36
CHEVRON	CW1-8	18X24
STOP AHEAD	CW3-1	36X36
SIGNAL AHEAD	CW3-3	36X36
BE PREPARED TO STOP	CW3-4	36X36
ROAD NARROWS	CW5-1	36X36
NARROW BRIDGE	CW5-2	36X36
TWO-WAY TRAFFIC FLOW	CW6-3	36X36
TWO-WAY TRAFFIC	CW6-4	12X18
BUMP	CW8-1	36X36
DIP	CW8-2	36X36
SOFT SHOULDER	CW8-4	36X36
TRUCK CROSSING	CW8-6	36X36
ROUGH ROAD	CW8-8	36X36
UNEVEN LANES	CW8-11	36X36
LEFT LANE ENDS	CW9-1(1)	36X36
RIGHT LANE ENDS	CW9-1(2)	36X36
DOUBLE ARROW	CW12-1	30X30
ADVISORY SPEED (PLAQUE)	CW13-1P	24X24
XX FEET (PLAQUE)	CW16-2P	24X'8
AHEAD (PLAQUE)	CW16-3	24X'2
ROAD WORK AHEAD	CW20-1	36X36
DETOUR AHEAD	CW20-2	36X36
ROAD CLOSED AHEAD	CW20-3	36X36
ONE LANE ROAD	CW20-4	36X36
LEFT LANE CLOSED	CW20-5(1)	36X36
RIGHT LANE CLOSED	CW20-5(2)	36X36
FLAGGER (SYMBOL)	CW20-7	36X36
NARROW LANES AHEAD	CW20-8T	36X36
SHOULDER WORK AHEAD	CW21-5	36X36
UTILITY WORK AHEAD	CW21-7	36X36
DOUBLE REVERSE CURVE (1 LANE)	CW24-1	36X36
DOUBLE REVERSE CURVE (2 LANE)	CW24-1a	36X36
DOUBLE REVERSE CURVE (3 LANE)	CW24-1b	36X36
END ROAD WORK	G20-2	36X'8
DETOUR WITH ARROWS	M4-9	30X24
END DETOUR	M4-8a	24X'8
PEDESTRIAN DETOUR	M4-9b	30X24
DETOUR	M4-10	48X'8

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APPROVED BY: DocuSigned by: Carl Hedlund	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01554-08

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CITY OF HOUSTON SIGNS

SHEET 1 OF 2

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07/20/2026
HRGREEN INC
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TYPICAL CITY OF HOUSTON SIGNS

SHEET 1 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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SHEET NO. 72 OF 101	

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WARNING SIGNS		
SIGN	SIGN DESIGNATION	SIZE (IN.)
RIGHT ANGLE TURN CURVE	W1-1	30x30
RIGHT ANGLE TURN WITH SPEED LIMIT	W1-1a	36x36
HORIZONTAL CURVE	W1-2	30x30
HORIZONTAL CURVE WITH SPEED LIMIT	W1-2a	36x36
REVERSE RIGHT ANGLE TURN	W1-3	30x30
REVERSE HORIZONTAL CURVE	W1-4	30x30
WINDING ROAD	W1-5	30x30
ONE DIRECTION LARGE ARROW	W1-6	48x24
TWO DIRECTION LARGE ARROW	W1-7	48x24
CHEVRON ALIGNMNET	W1-8	18x24
HAIRPIN CURVE	W1-11	30x30
TRUCK ROLLOVER	W1-13	36x36
CROSS ROAD	W2-1	30x30
SIDE STREET T-INTERSECTION (SYMBOL)	W2-2	30x30
T- INTERSECTION (SYMBOL)	W2-4	30x30
Y- INTERSECTION (SYMBOL)	W2-5	30x30
ROUNDABOUT (SYMBOL)	W2-6	30x30
STOP AHEAD	W3-1	30x30
SIGNAL AHEAD	W3-3	30x30
REDUCED SPEED LIMIT AHEAD	W3-5	36x36
MERGE	W4-1	36x36
LANE ENDS	W4-2	36x36
ADDED LANE	W4-3	36x36
CROSS TRAFFIC DOES NOT STOP (PLAQUE)	W4-4P	24x12
ROAD NARROWS	W5-1	36x36
NARROW BRIDGE	W5-2	36x36
DIVIDED HIGHWAY	W6-1	36x36
DIVIDED HIGHWAY ENDS	W6-2	36x36
TWO WAY TRAFFIC (SYMBOL)	W6-3	36x36
BUMP	W8-1	30x30
DIP	W8-2	30x30
PAVEMENT ENDS	W8-3	36x36
SOFT SHOULDER	W8-4	36x36
TRUCK CROSSING	W8-6	36x36
LOOSE GRAVEL	W8-7	36x36
ROUGH ROAD	W8-8	36x36
UNEVEN LANES	W8-11	36x36
WATCH FOR ICE ON BRIDGE	W8-13T	36x36
SHOULDER DROP-OFF (SYMBOL)	W8-17	30x30
SHOULDER DROP-OFF (PLAQUE)	W8-17P	24x18

WARNING SIGNS		
SIGN	SIGN DESIGNATION	SIZE (IN.)
FLOOD GAUGE	W8-19	12X72
NO SHOULDER	W8-23	36x36
SHOULDER ENDS	W8-25	36x36
LEFT LANE ENDS	W9-1(1)	36x36
RIGHT LANE ENDS	W9-1(2)	36x36
LANE ENDS MERGE LEFT	W9-2(1)	36x36
LANE ENDS MERGE RIGHT	W9-2(2)	36x36
GRADE CROSSING ADVANCE WARNING	W10-1	30 DIA
NO TRAIN HORN	W10-9	36x36
NO TRAIN HORN (PLAQUE)	W10-9P	30x24
BICYCLE	W11-1	30x30
PEDESTRIAN	W11-2	36x36
EMERGENGY VEHICLE	W11-8	30x30
HANDICAPPED	W11-9	30x30
TRUCK	W11-10	30x30
EMERGENGY SIGNAL AHEAD (PLAQUE)	W11-12P	36x30
BICYCLE/PEDESTRIAN	W11-15	30x30
TRAIL CROSSING (PLAQUE)	W11-15P	24x18
DOUBLE ARROW	W12-1	30x30
LOW CLEARANCE WITH ARROWS	W12-2	36x36
LOW CLEARANCE	W12-2a	78x24
LOADED ZONED BRIDGE	W12-5T	36x36
ADVISORY SPEED (PLAQUE)	W13-1P	18x18
NO OUTLET	W14-2	24x24
NO OUTLET WITH ARROW	W14-2a	36x6
SHARE THE ROAD (PLAQUE)	W16-1P	18x24
XX FEET (PLAQUE)	W16-2P	24x18
NEXT XX FEET (PLAQUE)	W16-4P	30x24
SUPPLEMENTAL LEFT ARROW (PLAQUE)	W16-5P(1)	24x18
SUPPLEMENTAL RIGHT ARROW (PLAQUE)	W16-5P(2)	24x18
DIAGONAL ARROW (PLAQUE)	W16-7P	24x12
AHEAD (PLAQUE)	W16-9P	24x12
WHEN FLASHING (PLAQUE)	W16-13P	24x18
ROUNDABOUT (PLAQUE)	W16-17	24x12
SPEED HUMP	W17-1	30x30
TYPE 3 OBJECT MARKER (LEFT)	OM3-L	12x36
TYPE 3 OBJECT MARKER (RIGHT)	OM3-R	12x36
TYPE 3 OBJECT MARKER (CENTER)	OM3-C	12x36
TYPE 4 OBJECT MARKER	OM4-1	18x18

BICYCLE SIGNS		
SIGN	SIGN DESIGNATION	SIZE (IN.)
STOP	R1-1	18x18
STREET NAME	D3-1	VARIESx6
YIELD	R1-2	18x18x18
TO REQUEST GREEN WAIT ON SYMBOL	R10-22	12x18
YIELD TO PEDESTRIAN	R9-6	18x18
NO PARKING BIKE LANE	R7-9	12x18
BIKE ROUTE	D11-1	24x18
BIKE ROUTE TO DOWNTOWN	D11-1c	24x18
BIKE SIGN AUXILARY SIGNS	M4-1, M4-14	12x6
BICYCLE ROUTE ROUTE ARROW SIGNS	M5-1,2; M6-1,2,3,4,5,6,7	12x9
WALK YOUR BIKE (CUSTOM SIGN)	R9-8 CoH	12x18
YIELD TO PED/BIKE (CUSTOM SIGN)	R1-5PB	36x36
TURNING VEHICLES YIELD TO PED/BIKE (CUSTOM SIGN)	R10-15PB	36x36
STOP FOR PED/BIKE (CUSTOM SIGN)	R1-5PBb	36x36
TURNING VEHICLES STOP FOR PED/BIKE (CUSTOM SIGN)	R10-15PBa	36x36
CROSSWALK STOP ON RED (CUSTOM SIGN)	R10-23 (CoH)	42x30
PEDESTRAIN CROSSING (CUSTOM SIGN)	W11-2 (HAWK)	48x30
LOOK BOTH WAYS (CUSTOM SIGN)	W4-4Pa (BIKE) W4-4Pb (BIKE)	VARIES
TURN WIDE (CUSTOM SIGN)	R3-8 (BIKE)	30x36
BIKE MERGE AHEAD (CUSTOM SIGN)	W11-1 (MERGE)	36x36

SCHOOL SIGNS		
SIGN	SIGN DESIGNATION	SIZE (IN.)
SCHOOL	S1-1(FYG)	36x36
X: XX TO X: XX AM AND PM (PLAQUE)	S4-1P	24x10
SCHOOL (PLAQUE)	S4-3P(FYG)	24x8
WHEN FLASHING (PLAQUE)	S4-4P	24x10
REDUCED SCHOOL SPEED LIMIT AHEAD	S4-5a(FYG)	36x36
SCHOOL SPEED LIMIT XX WHEN FLASHING	S5-1(FYG)	24x48
END SCHOOL ZONE	S5-2	24x30
END SCHOOL ZONE (PLAQUE)	S5-2aTP	24x10
CELL PHONE USE PROHIBITED	S7-1T	24x18
TURN ARROW (PLAQUE)	SW16-5P(FYG)	24x12
ADVANCE TURN ARROW (PLAQUE)	SW16-6P(FYG)	24x12
DIAGONAL ARROW (PLAQUE)	SW16-7P(FYG)	24x12
AHEAD (PLAQUE)	S16-9P(FYG)	24x12
FYG- FLUORESCENT YELLOW-GREEN BACKGROUND COLOR		

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CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 01554-09

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CITY OF HOUSTON SIGNS

SHEET 2 OF 2

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TYPICAL CITY OF HOUSTON SIGNS

SHEET 2 OF 2

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JIADA HUANG	
SHEET NO. 73 OF 101	

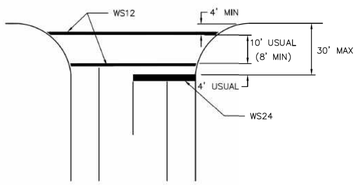
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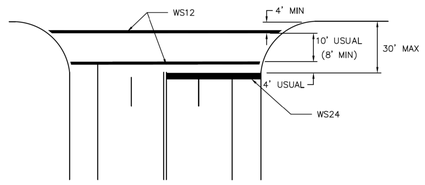
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THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD PREPARING THE DESIGNS AND DRAWINGS FOR A PROJECT IS REQUIRED TO EXERCISE PROFESSIONAL JUDGMENT IN APPLYING THESE AND OTHER APPLICABLE DESIGN REQUIREMENTS AND IS RESPONSIBLE FOR THE SAFETY AND ADEQUACY OF THE DESIGNS. IN DOING SO, THE ENGINEER OF RECORD ASSUMES RESPONSIBILITY FOR THE USE OF THIS STANDARD AND ACCEPTS LIABILITY FOR ANY CLAIMS, DAMAGES OR LOSSES ARISING FROM ITS USE. THE CITY OF HOUSTON MAKES NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

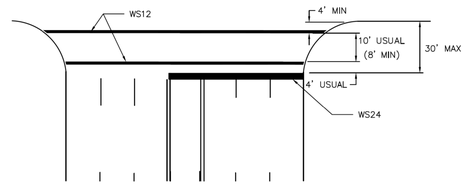
TWO LANES WITH SHOULDERS



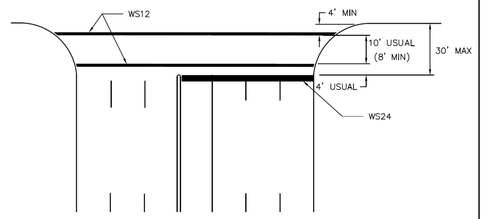
FOUR LANES WITH SHOULDERS



MULTI – LANES



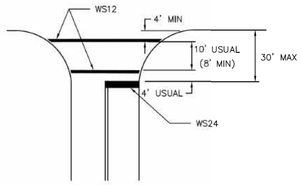
MULTI – LANE WITH MEDIAN



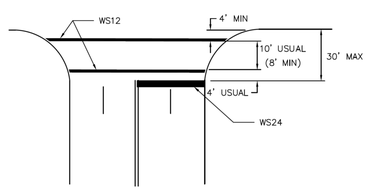
NOTES:

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

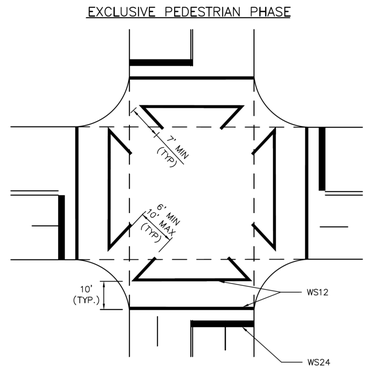
TWO LANES



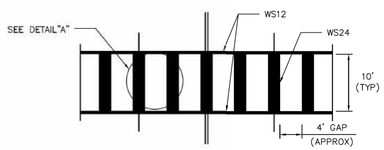
FOUR LANES



EXCLUSIVE PEDESTRIAN PHASE

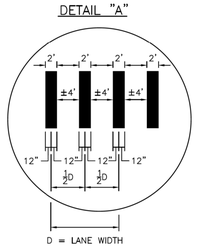


HIGH VISIBILITY CROSSWALK DETAIL



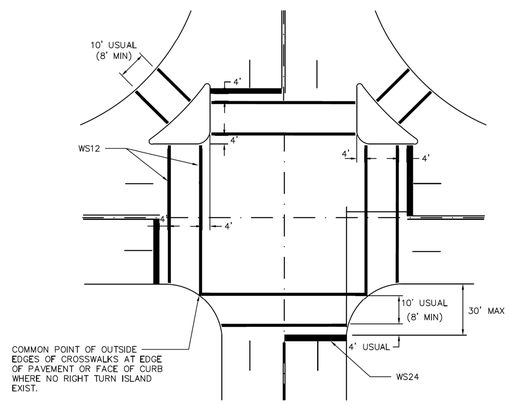
TYPICALLY USED AT SIGNALIZED AND NON-SIGNALIZED CROSSINGS ON COLLECTOR AND ARTERIAL ROADWAYS AND AT LOCATIONS REQUIRING EXTRA EMPHASIS.

DETAIL "A"



D = LANE WIDTH

INTERSECTION WITH RIGHT – TURN ISLANDS



APPROVED BY:	APPROVED BY:
Designed by: Sukul Kanwar	Designed by: LONG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Designed by: Carol Haddock	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02760-12

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CROSSWALK DETAILS

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NOT TO SCALE	

NO.	DATE	REVISION	APP.

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Suite 400
Houston, TX 77079
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(713) 965-0044 FAX
HRGreen.com
Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TYPICAL CROSSWALK DETAILS

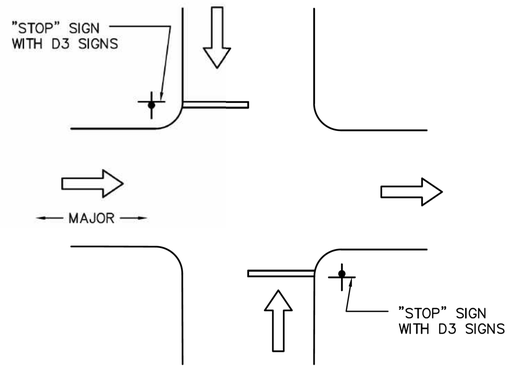
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N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 74 OF 101	

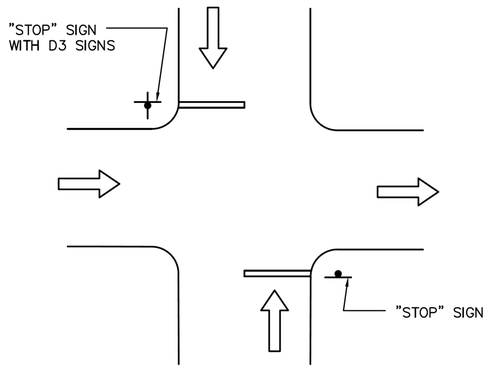
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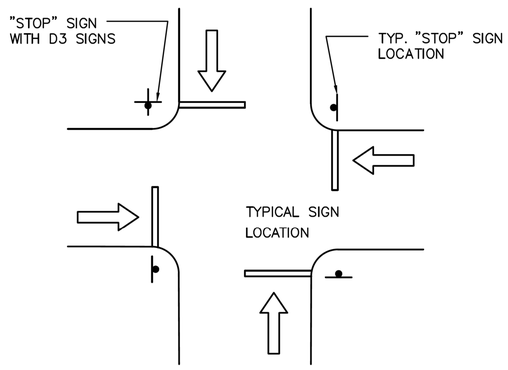
TYPICAL SIGN PLACEMENT



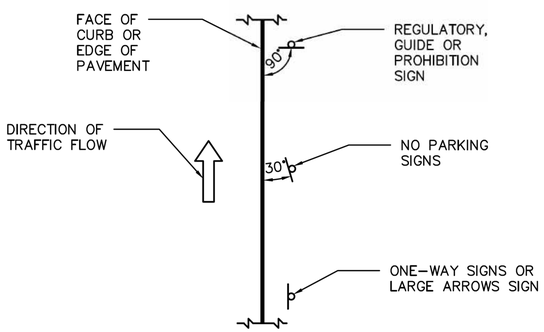
TWO–WAY STOP
AND ONE–WAY OPERATION
ON MAJOR/LOCAL INTERSECTION



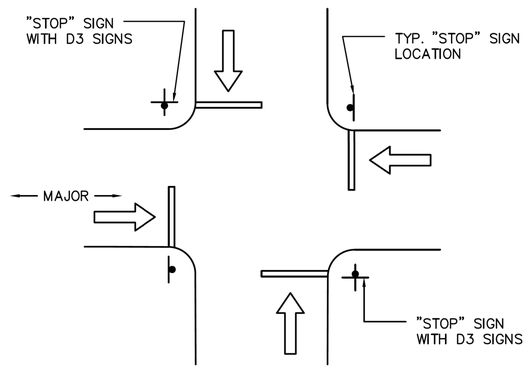
TWO–WAY STOP
AND ONE–WAY OPERATION
ON LOCAL/LOCAL INTERSECTION



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

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL SIGN PLACEMENT

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Sukait Kanwar 9EF8B0C641F5478...
CITY ENGINEER

DocuSigned by: Carol Haddock A93C410B72E3453...
DIRECTOR OF HPW

DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY TRAFFIC ENGINEER

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

NO.	DATE	REVISION	APP.

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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140416
LICENSED
PROFESSIONAL ENGINEER
07/20/2026
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

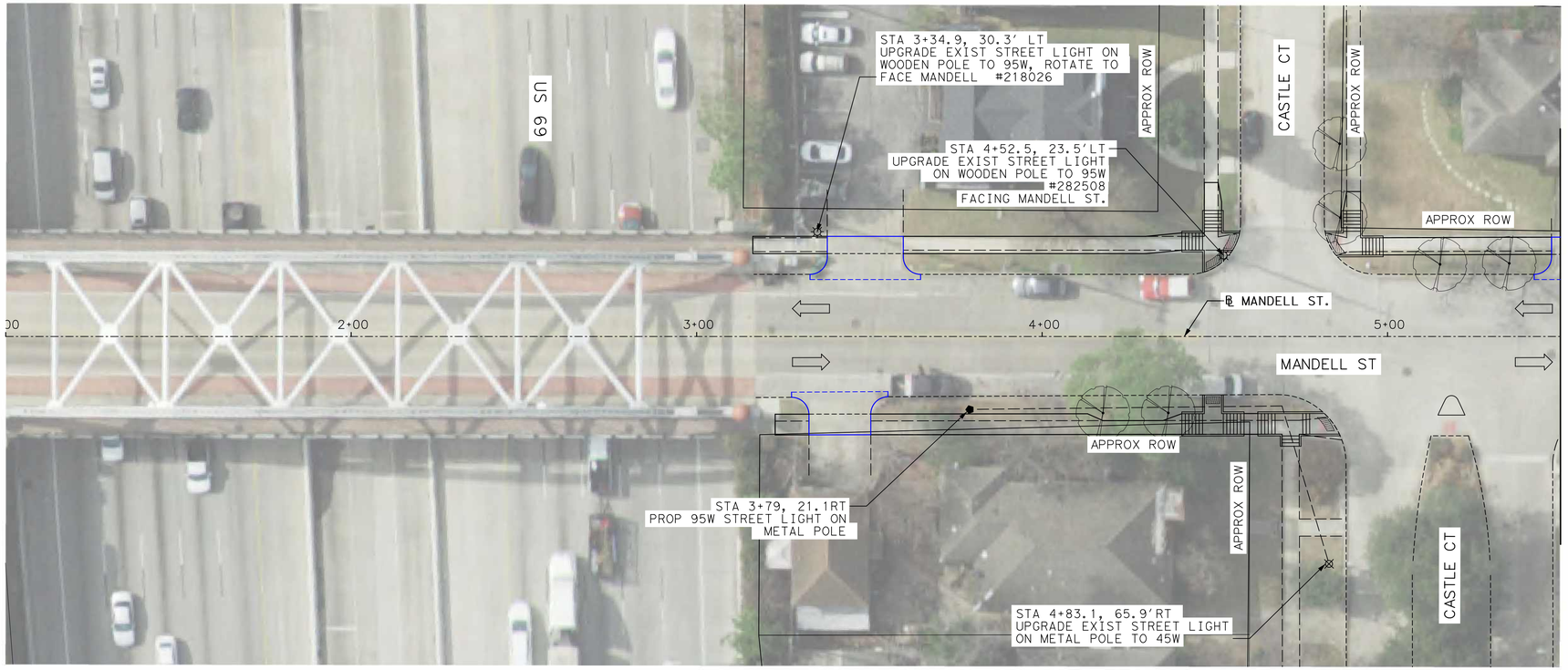
MANDELL STREET IMPROVEMENTS

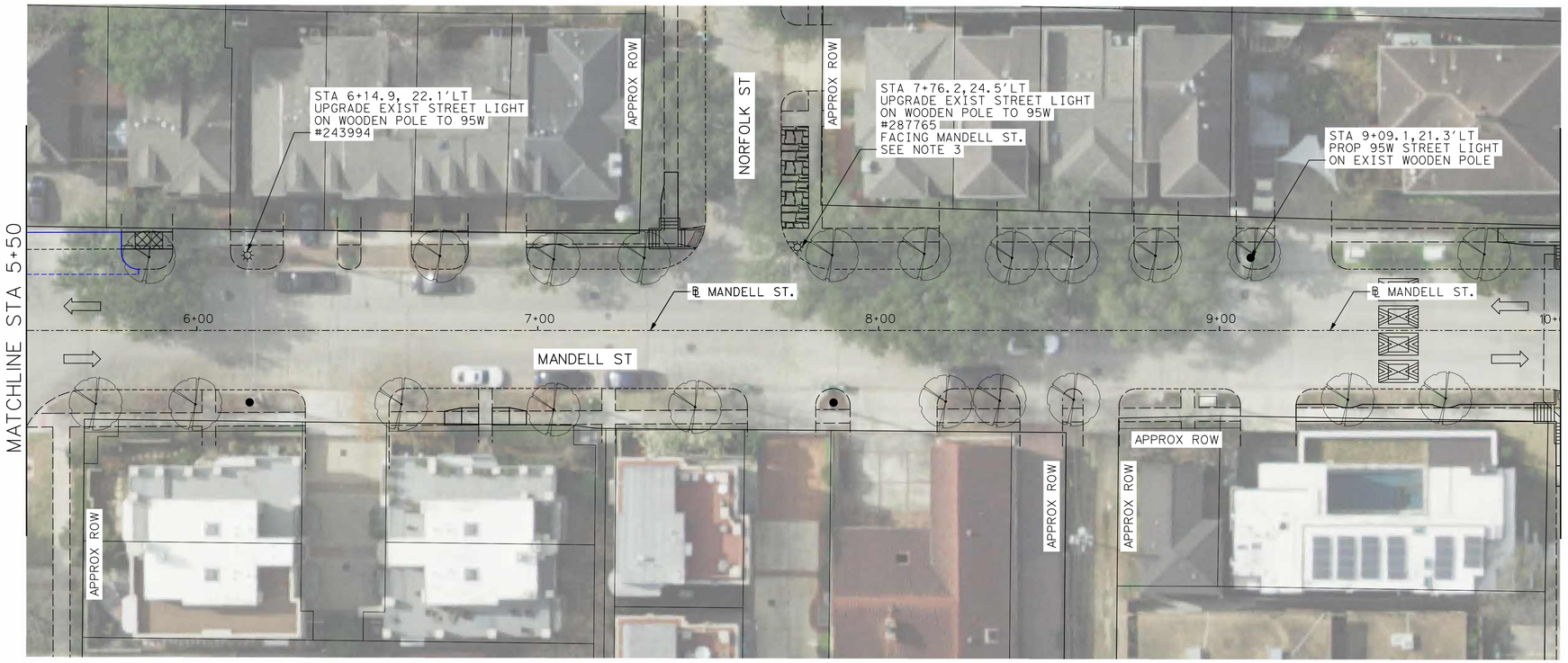
TYPICAL SIGN PLACEMENT

SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 75 OF 101	

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LEGEND

- EXIST STREET LIGHT ON WOODEN POLE
- EXIST STREET LIGHT ON METAL POLE
- PROP STANDARD METAL POLE WITH STREET LIGHT (TO BE INSTALLED BY OTHERS)
- PROP STREET LIGHT ON EXIST WOODEN POLE
- PROP UNDERGROUND STREET LIGHT CONDUIT (2-INCH PVC, SCHEDULE 80)

NOTES:

1. LOCATION OF STREETLIGHT ARE APPROXIMATE.
2. COORDINATE WITH CPE FOR DE-ENERGIZING.
3. TYPICAL MOUNTING HEIGHT OF PROPOSED STREETLIGHT IS 26 FT, CONTRACTOR TO TRIM THE TREE CANOPY IF FOUND FOR 5 FT RADIUS AROUND THE PROPOSED LIGHT.
4. ALL CONDUIT INSTALLATION MUST CONFIRM TO COH SPECIFICATION LATEST EDITION, UNLESS OTHERWISE AUTHORIZED BY LIGHTING DESIGN SERVICES DEPARTMENT.
5. CONTRACTOR TO INSTALL CONDUIT. CABLING AND LIGHT POLES TO BE INSTALLED BY OTHERS.

NO.	DATE	REVISION	APP.

N

0' 20' 40'

SCALE IN FEET

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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11750 Katy Freeway,
Suite 400
Houston, TX 77079
(832) 318-8800
(713) 965-0044 FAX
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STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

ILLUMINATION PLAN
BEGIN PROJECT TO STA 10+00

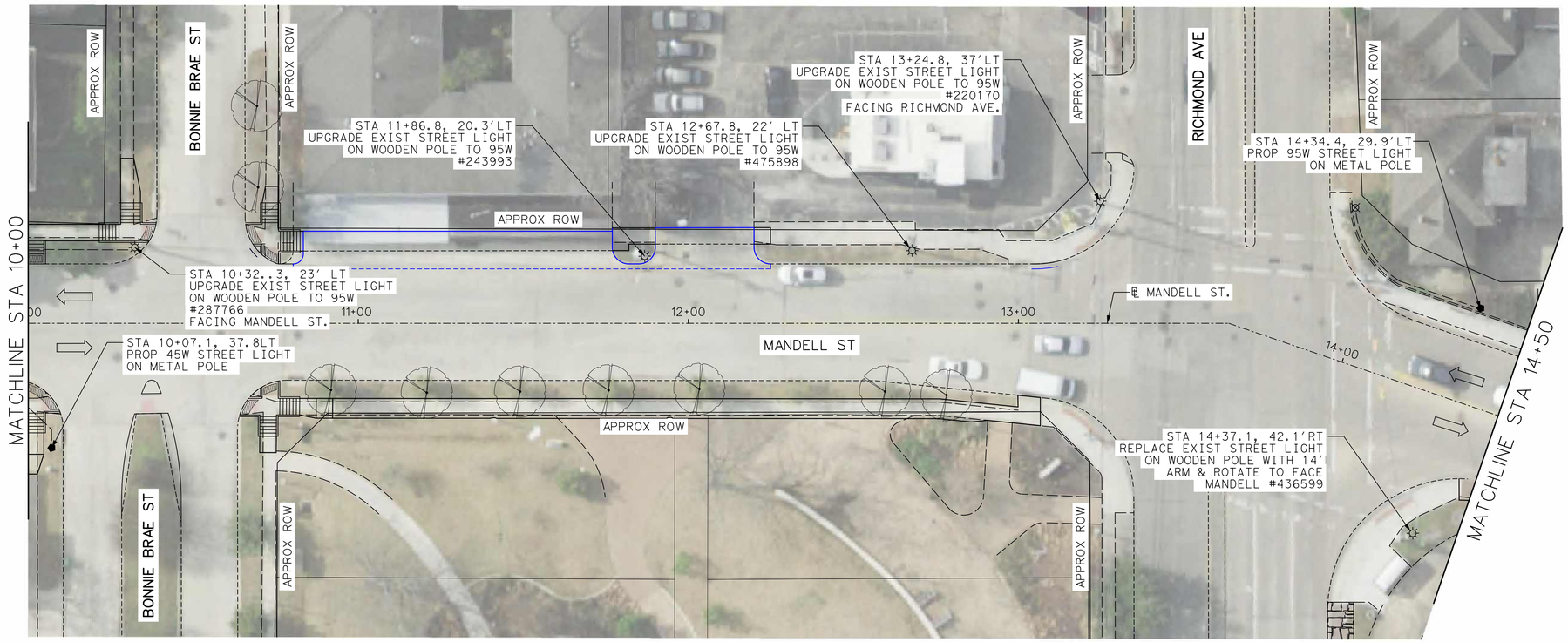
SHEET 1 OF 5

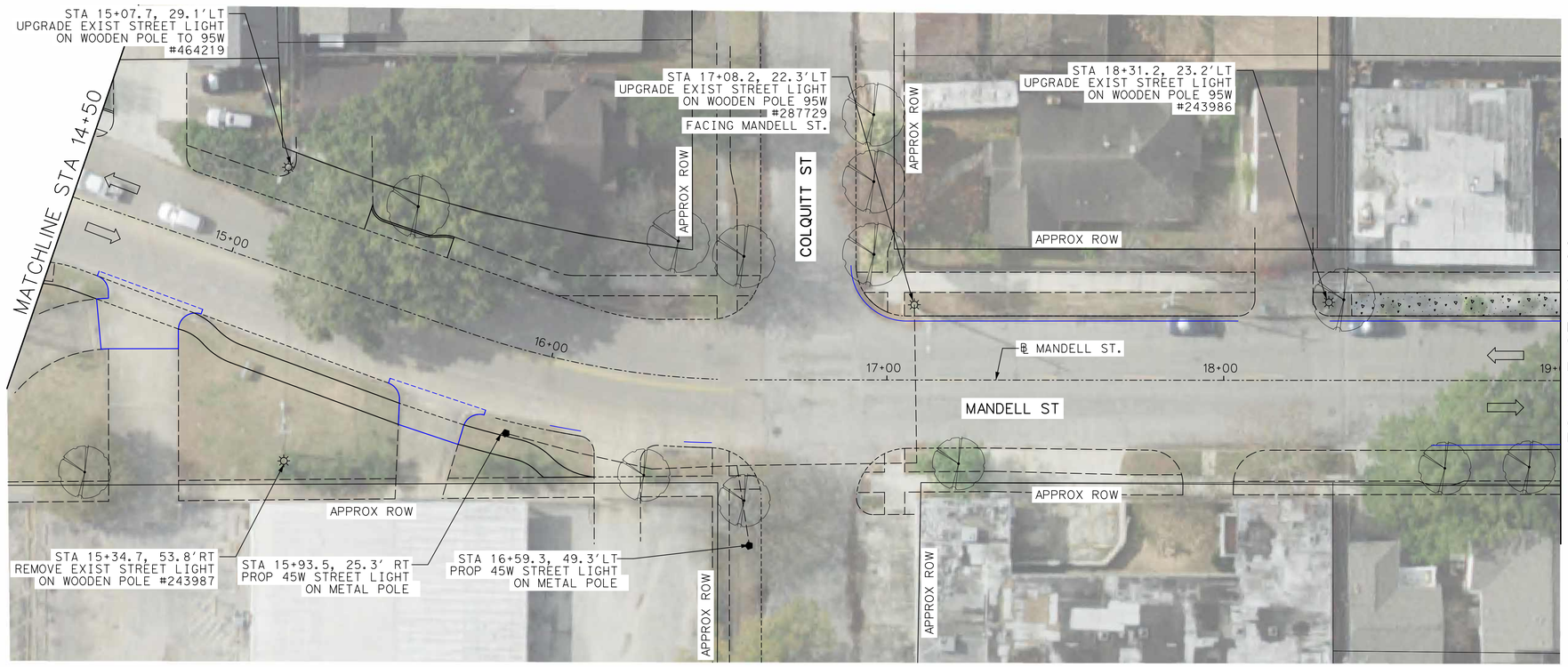
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N-T27000-003-7
DRAWING SCALE
AS NOTED
CITY OF HOUSTON PM
JIADA HUANG
SHEET NO. 76 OF 101

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83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

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LEGEND

- EXIST STREET LIGHT ON WOODEN POLE
- EXIST STREET LIGHT ON METAL POLE
- PROP STANDARD METAL POLE WITH STREET LIGHT (TO BE INSTALLED BY OTHERS)
- PROP STREET LIGHT ON EXIST WOODEN POLE
- PROP UNDERGROUND STREET LIGHT CONDUIT (2-INCH PVC, SCHEDULE 80)

NOTES:

1. LOCATION OF STREETLIGHT ARE APPROXIMATE.
2. COORDINATE WITH CPE FOR DE-ENERGIZING.
3. TYPICAL MOUNTING HEIGHT OF PROPOSED STREETLIGHT IS 26 FT, CONTRACTOR TO TRIM THE TREE CANOPY IF FOUND FOR 5 FT RADIUS AROUND THE PROPOSED LIGHT.
4. ALL CONDUIT INSTALLATION MUST CONFIRM TO COH SPECIFICATION LATEST EDITION, UNLESS OTHERWISE AUTHORIZED BY LIGHTING DESIGN SERVICES DEPARTMENT.
5. CONTRACTOR TO INSTALL CONDUIT. CABLING AND LIGHT POLES TO BE INSTALLED BY OTHERS.

NO.	DATE	REVISION	APP.

N

0' 20' 40'
SCALE IN FEET

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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11750 Katy Freeway,
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Houston, TX 77079
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(713) 965-0044 FAX
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140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

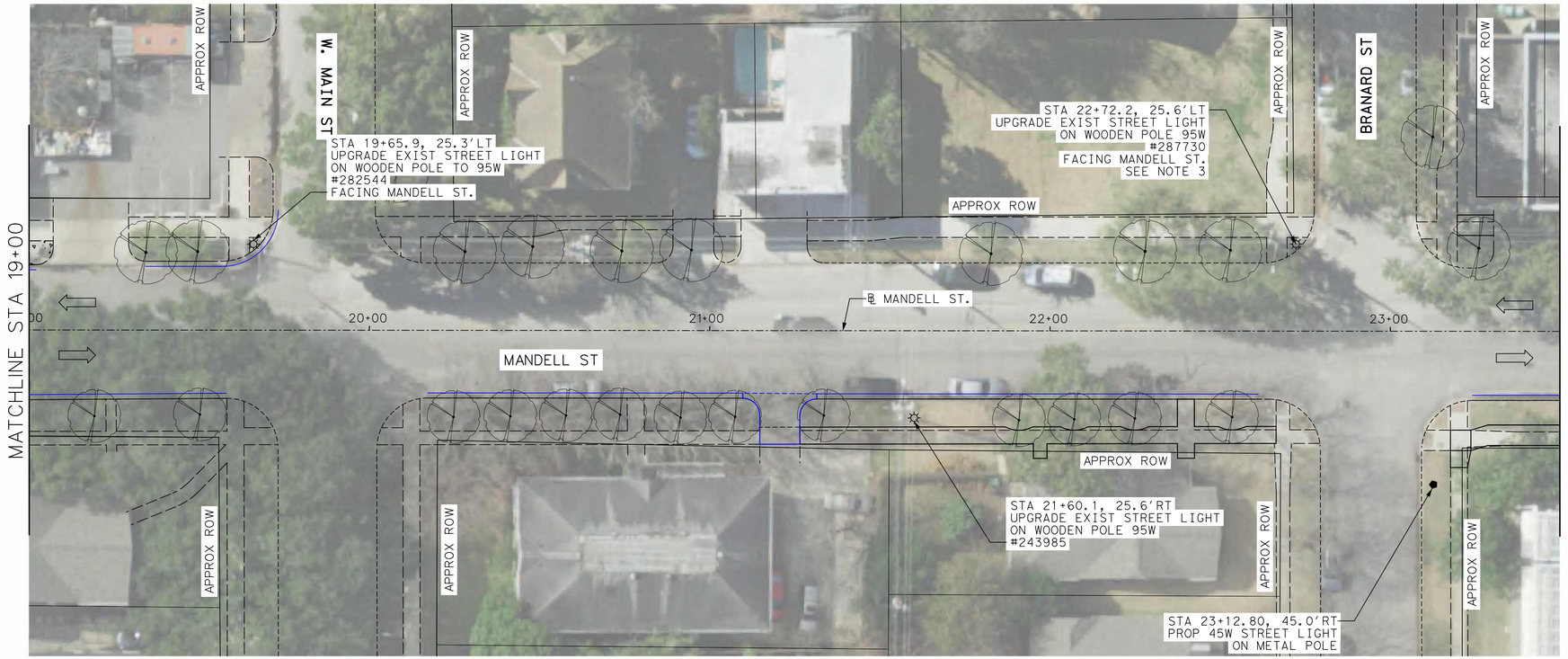
MANDELL STREET IMPROVEMENTS

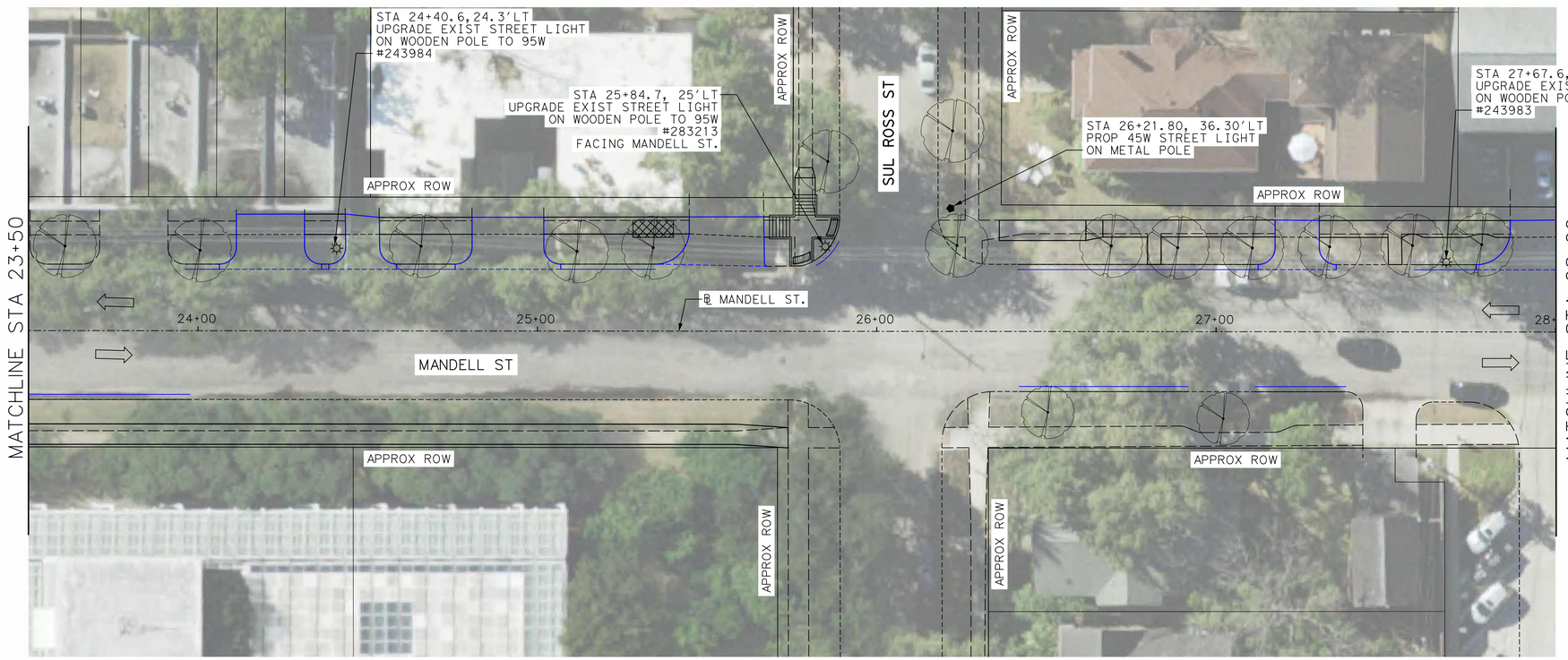
ILLUMINATION PLAN
STA 10+00 TO STA 19+00

SHEET 2 OF 5

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 77 OF 101	

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LEGEND

- EXIST STREET LIGHT ON WOODEN POLE
- EXIST STREET LIGHT ON METAL POLE
- PROP STANDARD METAL POLE WITH STREET LIGHT (TO BE INSTALLED BY OTHERS)
- PROP STREET LIGHT ON EXIST WOODEN POLE
- PROP UNDERGROUND STREET LIGHT CONDUIT (2-INCH PVC, SCHEDULE 80)

NOTES:

1. LOCATION OF STREETLIGHT ARE APPROXIMATE.
2. COORDINATE WITH CPE FOR DE-ENERGIZING.
3. TYPICAL MOUNTING HEIGHT OF PROPOSED STREETLIGHT IS 26 FT, CONTRACTOR TO TRIM THE TREE CANOPY IF FOUND FOR 5 FT RADIUS AROUND THE PROPOSED LIGHT.
4. ALL CONDUIT INSTALLATION MUST CONFIRM TO COH SPECIFICATION LATEST EDITION, UNLESS OTHERWISE AUTHORIZED BY LIGHTING DESIGN SERVICES DEPARTMENT.
5. CONTRACTOR TO INSTALL CONDUIT. CABLING AND LIGHT POLES TO BE INSTALLED BY OTHERS.

NO.	DATE	REVISION	APP.

N

0' 20' 40'
SCALE IN FEET

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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LICENSED PROFESSIONAL ENGINEER
07/20/2026
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Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

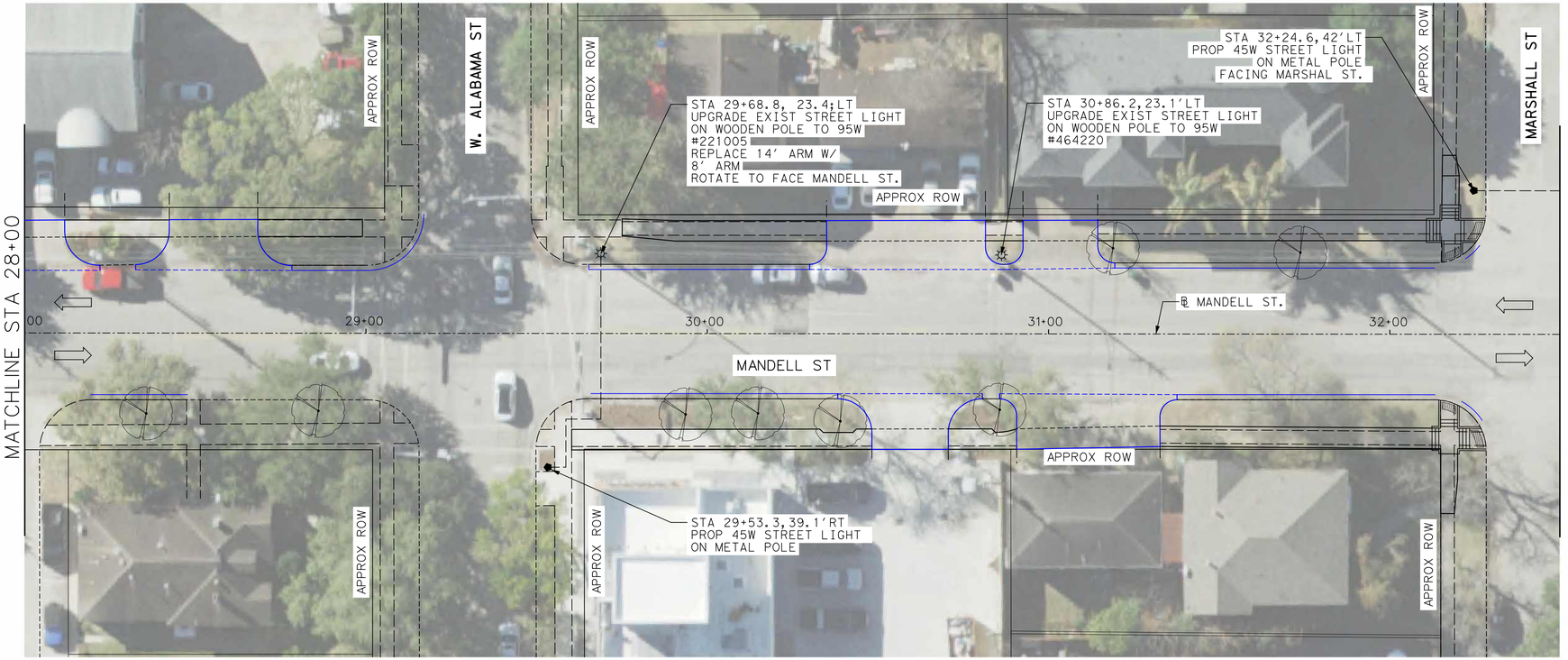
ILLUMINATION PLAN
STA 19+00 TO STA 28+00

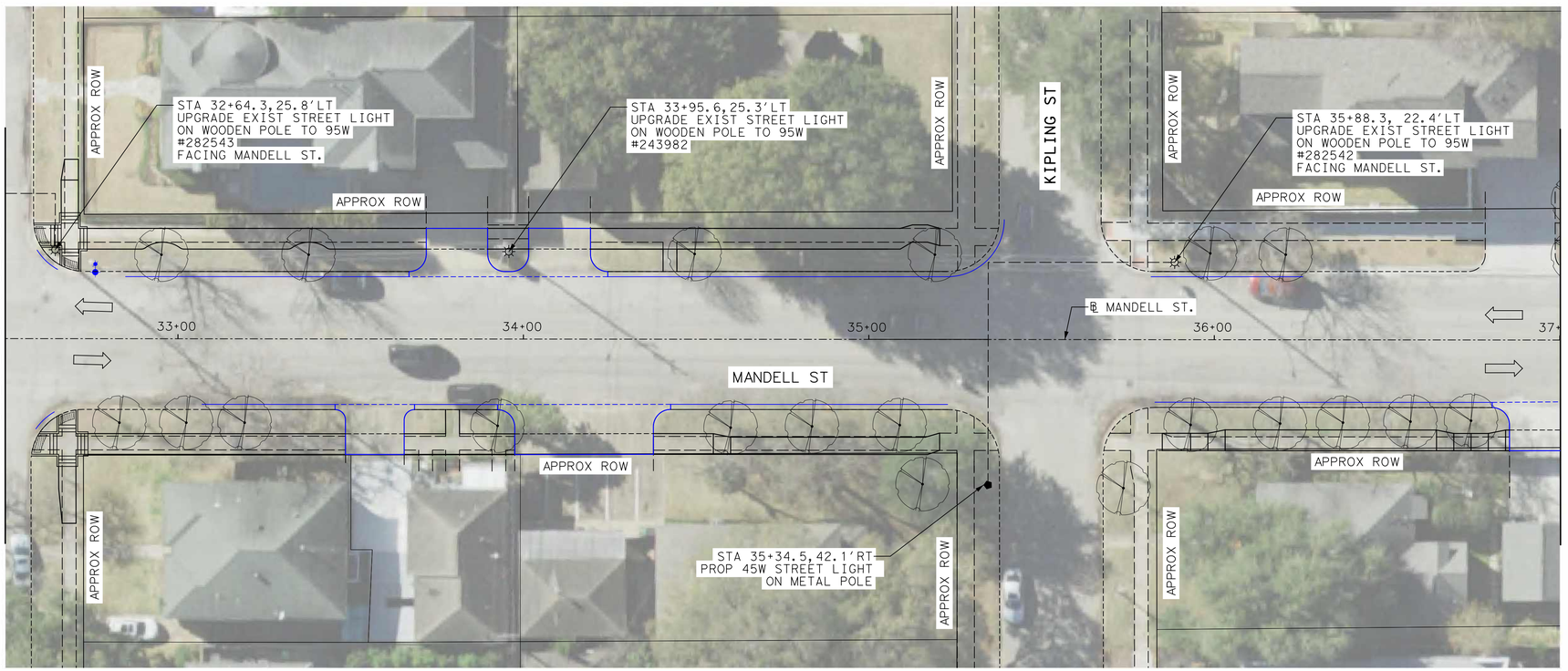
SHEET 3 OF 5

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 78 OF 101	

HOUSTON PUBLIC WORKS
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83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

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LEGEND

- EXIST STREET LIGHT ON WOODEN POLE
- EXIST STREET LIGHT ON METAL POLE
- PROP STANDARD METAL POLE WITH STREET LIGHT (TO BE INSTALLED BY OTHERS)
- PROP STREET LIGHT ON EXIST WOODEN POLE
- PROP UNDERGROUND STREET LIGHT CONDUIT (2-INCH PVC, SCHEDULE 80)

NOTES:

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5. CONTRACTOR TO INSTALL CONDUIT. CABLING AND LIGHT POLES TO BE INSTALLED BY OTHERS.

NO.	DATE	REVISION	APP.

N

0' 20' 40'

SCALE IN FEET

MONTROSE
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Suite 400
Houston, TX 77079
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(713) 965-0044 FAX
HRGreen.com
Firm No. F-11278

SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

ILLUMINATION PLAN
STA 28+00 TO STA 37+00

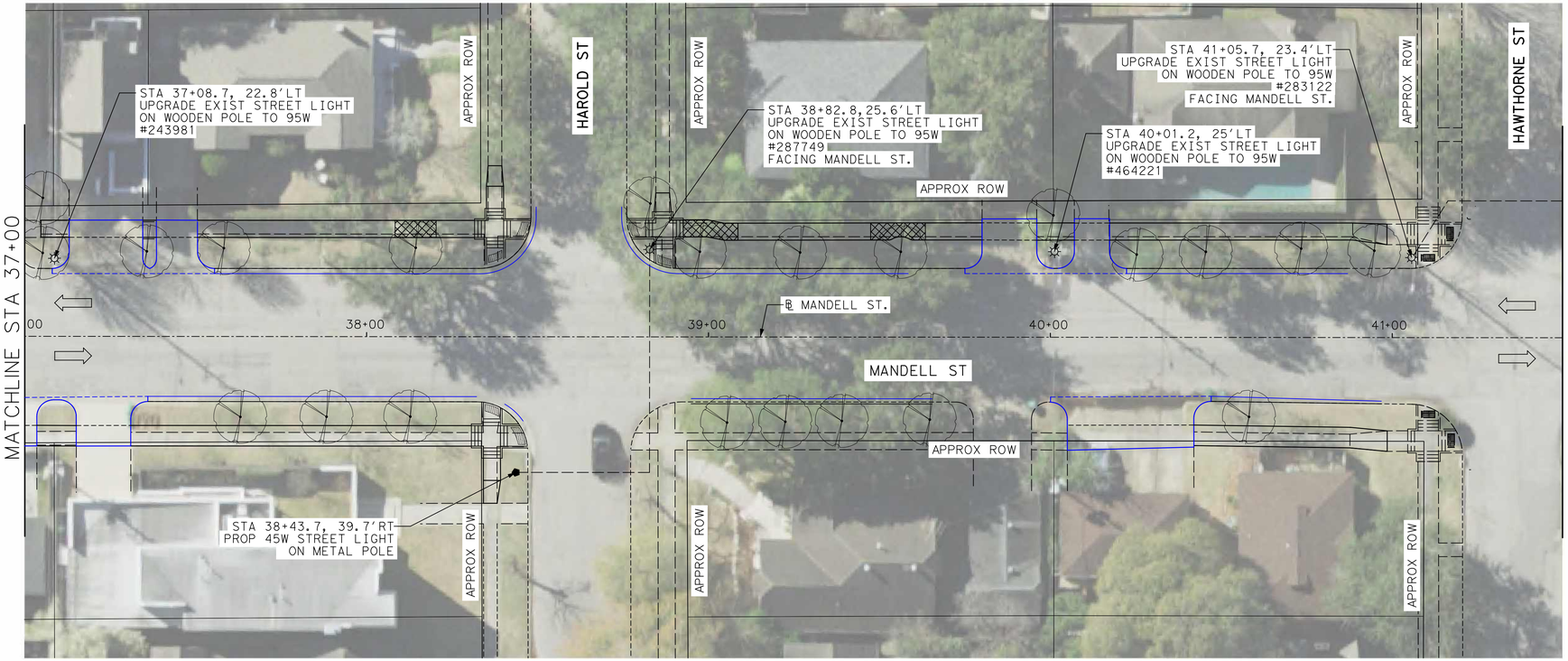
SHEET 4 OF 5

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	
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CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 79 OF 101	

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83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

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LEGEND

- EXIST STREET LIGHT ON WOODEN POLE
- EXIST STREET LIGHT ON METAL POLE
- PROP STANDARD METAL POLE WITH STREET LIGHT (TO BE INSTALLED BY OTHERS)
- PROP STREET LIGHT ON EXIST WOODEN POLE
- PROP UNDERGROUND STREET LIGHT CONDUIT (2-INCH PVC, SCHEDULE 80)

NO.	DATE	REVISION	APP.

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N

0' 20' 40'
SCALE IN FEET

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CITY OF HOUSTON
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MANDELL STREET IMPROVEMENTS

ILLUMINATION PLAN
STA 37+00 TO END PROJECT

SHEET 5 OF 5

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SPECIFICATION

FOR

INSTALLATION OF CONDUIT SYSTEM FOR THOROUGHFARE STREET LIGHTING

CenterPoint Energy
Distribution Engineering
P.O. Box 1700
Houston, Texas 77251

REFERENCE DRAWINGS:
004-237-16 Revision 4

REFERENCE STANDARDS:

CITY OF HOUSTON STREET LIGHT APPROVAL

By signing below, I acknowledge that I am the City of Houston's (COH)'s authorized representative of this project and that I have read and understand all statements, notes, detail drawings, and all attendant contracts and agreements (collectively the "materials") furnished to COH regarding street light construction indicated on conduit layout.

Signature _____ Title _____

Printed Name _____ Date _____

NO.	DATE	ITEMS REVISED	BY	CH	APP
5	7-25-07	Revised for practical application	KTN	JCD	MMG
4	2-23-99	Added conduit run for high density area	KTN	JCD	LHH

CenterPoint Energy
HOUSTON, TEXAS

WRITTEN	9-13-90	N.T. Khanh
CHECKED	9-13-90	JCD / RKM
APPROVED	9-14-90	Robert Boucher

Sheet 1 of 16

SPEC ID.		007	371	08

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CENTERPOINT CONDUIT SPECIFICATIONS

SHEET 1 OF 8

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1.0 SCOPE

This Specification covers CenterPoint Energy (CNP) requirements concerning the installation of pull-boxes and conduits for underground electrical service to street lights. Number, size and direction of conduits to be specified on layout at CNP's discretion. Where there is a conflict between this specification and the CNP project drawing, the drawing will take precedence.

2.0 GENERAL

The following sub-articles state the general procedures to be followed for coordination of conduit system installation:

2.1 For City/County Contractor installed conduit: City/County Street Light Division shall approve proposed street light locations. City/County shall forward proposed locations to CNP. CNP shall design the conduit system and return design to City/County for contracting.

2.2 For Metro Contractor installed conduit: Metro shall forward construction drawings to COH Street Light Division for proposed street light locations. COH shall submit their approved locations to CNP. CNP shall design the conduit system and return design to COH. (For conduit to be located in utility or side lot easements, CNP will perform the work in conjunction with street light installation, with reimbursement from Metro).

2.3 CNP shall require, and note on drawings, when pull-boxes are required at the beginning and ending of each continuous conduit run, in addition to those areas where pull-boxes are currently required for crossings or distance.

2.4 CNP Street Light Engineering shall attend City/County/Metro utility coordinating meeting prior to the start of construction. The proposed conduit installation (as well as potential conflicts with existing CNP facilities) will be reviewed at that time.

2.5 In conjunction with the utility coordinating meeting, Contractor, CNP representative, Metro (if applicable) and City/County or other municipal representative shall review proposed light locations in the field.

2.6 Contractor will notify CNP Street Light Engineering, at least 2 (two) working days in advance, of Contractor's schedule for conduit installation. CNP Street Light Engineering will perform final inspections with Contractor present when all conduits had been installed.

2.7 Contractor shall attempt to determine if existing underground utilities or any other obstructions would prohibit CNP's installation of proposed new street lights. If such obstructions exist, Contractor may revise the proposed location of the light up to 5 feet in any direction within street right-of-way in order to avoid obstructions. For revised street light locations greater than 5 feet in any direction, Contractor must obtain prior approval as follows:

For projects being performed for City/County, Contractor shall notify the City Inspector, who will notify the City/County 's Public Works Department. Public Works will review the problem with the City's Street Light Division and CNP for approval of any changes. (In the case of municipalities other than City/County, Contractor shall notify City Inspector who shall notify appropriate Department of City. City shall consult with CNP for approval of any changes)

For projects being performed for Metro, Contractor must notify the Metro Inspector, who will in turn contact Metro's Utility Coordination Section. The Utility Coordination Section will review the problem with the COH's Street Light Division (or other municipality if applicable) and CNP for approval of any changes.

2.8 For any contractor-proposed changes to CNP's conduit system design, Contractor must obtain prior approval from CNP. Contractor shall first notify City/County or Metro Inspector of requested changes, who will in turn notify City/County Public Works, other municipality or Metro's Utility Coordination Section. City/County Public Works, other municipality or Metro Utility Coordination will review the requested changes with CNP for approval.

2.9 For proposed street lights on bridges or elevated roads, Contractor shall design and install foundations that meet the loading requirements of CNP Specification for Galvanized Street Light Standards 007-371-04. For information on pull-boxes and conduit, see Article 8.0.

3.0 MATERIAL FURNISHED BY CNP

CNP shall only furnish the pull-boxes (see Article 4.0) and the warning tape (see Article 5.0). Pull-boxes will not be furnished for installation on bridges or elevated roads.

3.1 The Customer's Contractor shall notify CNP Street Light Engineering when pull-boxes and warning tape are required, seven working days in advance of planned pick-up. Pull-boxes and tape can be obtained Tuesday through Friday, excluding holidays, from the South Houston Complex-Building D, located at 4500 South Shaver, Houston, Texas, 77034.

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SHEET 2 OF 8

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3.2 After Contractor's notification, CNP will provide Contractor with a work order number for reference when picking up materials at the South Houston Complex-Building D.

4.0 PULL-BOX

The following sub-articles state the general requirements for pull-boxes:

4.1 The pull-boxes shall be furnished by CNP and shall be installed by the Customer's Contractor as a part of the conduit system.

4.2 Pull-boxes shall be installed in accordance with sheet 9 & 10 of this specification. The conduit layout will specify the type of pull-box to be installed.

4.3 At the point of entrance to the pull-box, the conduits shall always have a minimum ground cover as noted on pull-box drawing. Conduit shall run up a maximum of 5 inches into the pull-box. The bends to be used with the pull-box shall have a minimum radius as shown on pull-box drawing.

5.0 WARNING TAPE

5.1 Warning tape shall be furnished by CNP and installed by the Customer's Contractor (see sheet 11).

5.2 Warning tape shall be installed approximately 12 inches above the street light conduit.

6.0 MATERIAL FURNISHED BY THE CUSTOMER

The Customer or Customer's Contractor shall furnish the conduits (see Article 7.0), the conduits and pull-boxes installed in bridges or elevated roadways (see Artical 8.0), the conduit plugs (see Article 9.0), and all other materials not furnished by CNP.

7.0 CONDUIT

The following sub-articles state the general requirements, unless specifically stated otherwise on the layout, for the number, size and installation of the conduit system from the pull-box to the street light or terminal pole.

7.1 Conduit shall be PVC Nema Tc2 Schedule 40 or Schedule 80, U.L. label, US trade size, and meet the standards of the National Electrical Code (NEC). Size to be determined by layout.

7.2 A No. 14 Aluminum or Copper wire, and a fiber pulling cord of at least 1200 pounds breaking strength shall be installed in the conduit.
Pulling cord shall be installed in such a manner as to provide adequate access and be free to pull without hindrance. Pulling cord shall not be glued or permanently attached to conduit in any manner. The pulling cord and wire shall beviewable from outside the end of conduit run.

7.3 The conduit runs shall be made "continuous" with all sections connected from beginning to end, including the conduit crossing the street. Stub-out will be required at all conduit end and street light locations (see drawing #004-237-16).

7.4 The conduit shall be placed 3 feet behind curb unless sidewalk is to be installed. Where sidewalks exist, conduit shall be placed up to 6 inches behind the sidewalk (or in grassy area between the curb and the start of sidewalk, where 12 inches or more of grassy area exists) (see sheet 12). Even though sidewalks exist, CNP will install street light approximately 3 feet back of curb. City/County/Metro Contractor shall design a block-out area for the street light installation in concrete area (see sheet 16).

7.5 The conduit shall have a minimum cover of 36 inches from final grade except as noted on pull-box and manhole drawing, or where city, county or state regulators require a greater depth, and shall consist of PVC conduit.

7.6 For the burial of street light conduits crossing under driveways or sidewalks, schedule 40 PVC or better is required. When crossing under streets, the conduit shall be PVC conduit schedule 80.

7.7 For terminal pole source locations specified on the layout, the bend of the conduits at the terminal pole shall be 90 degrees, 24 inch radius bend, schedule 40 PVC conduit. This bend shall be brought to the face of the pole and stubbed out approximately 12 inches above the final grade (see sheet 14).

7.8 For pad mounted transformer source locations specified on the layout, conduit shall be brought to within 1 foot of transformer pad, opposite the small notch "V" on the pad, stubbed out approximately 12 inches above the final grade.

7.9 For secondary pedestal source locations specified on the layout, conduit shall be brought to within 1 foot of pedestal and stubbed out approximately 12 inches above the final grade.

7.10 For manhole source location, the conduit shall enter the manhole a minimum of 12 inches from the inside ceiling or as specified on the layout. A ductbell terminator will be installed in the manhole wall for conduit termination. CNP shall be notified 48 hours prior to the actual coring of the manhole wall so that CNP can verify the location in each manhole to be penetrated. CNP will stand-by only during the actual coring. The contractor shall do the coring and installation of the ductbell terminator. The contractor shall seal around the ductbell terminator with packaged, dry, rapid hardening cementitious material conforming to ASTM C928-80 specifications, to ensure a water

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CENTERPOINT CONDUIT SPECIFICATIONS

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8.0 CONDUIT INSTALLED IN BRIDGE OR ELEVATED ROADWAY

Customer or Customer's Contractor shall be responsible for designing, furnishing and installing the conduits and pull-boxes. The pull-boxes should be located to provide CNP personnel safe and reasonable access, without using ladders or other special equipment, for cable installation, inspection and maintenance. Where there are junction-boxes in addition to the pull-boxes, reasonable access shall also be provided.

8.1 The conduit shall be at least 2 inches, in diameter and meet all requirements of the latest National Electrical Code (NEC) and National Electrical Safety Code (NESC).

8.2 The conduits shall run to each street light location. The conduits shall be arranged to allow the source conductor to be pulled in and out of each street light location or Contractor shall provide junction-boxes on main conduit run at each street light location and run tap conduit to the street light location (see sheet 15 for examples of conduit runs).

8.3 A #14 Aluminium or Copper wire, and a fiber pulling cord of at least 1200 pound breaking strength shall be installed in the conduit.

A toning wire and pulling cord shall be installed in such a manner as to provide adequate access and be free to pull without hindrance. Pulling cord shall not be glued or permanently attached to conduit in any manner. The wire and pulling cord shall be attached and viewable outside the end of conduit run.

8.4 The pull-boxes used to pull the main circuit cable through the conduit system shall have a minimum opening of 15" x 15" x 12".

8.5 Junction boxes used as tap location shall meet all requirements of the latest NEC.

9.0 CONDUIT PLUGS

Plugs shall be installed on all conduit terminator points at the time the conduits are installed, to prevent blockage, until the cable is installed.

10.0 LIABILITY

10.1 Upon completion of the conduit installation, the Customer (or Customer's Contractor) shall forward to CNP Street Light Engineering notification in writing from a City or County Inspector that the installation meets CNP Specifications. In addition, Customer shall provide CNP with as-built drawings (showing conduits, pull-box, blockout, etc.).

10.2 The Customer shall be responsible for either: (1) correcting any violations of said Specifications and clearing any blockage or repairing any breaks within the street light conduits prior to street lights and circuit installation by CNP, or (2) reimbursing CNP for correcting violation.

10.3 Upon installation of street lights, with the exception of street lights on bridges or elevated roadways, CNP shall furnish, install, own, and at all times have complete control over said street light service conduit system and shall be responsible for the location and maintenance thereof. Maintenance of conduit systems on bridges or elevated roadways will be the Customer's responsibility.

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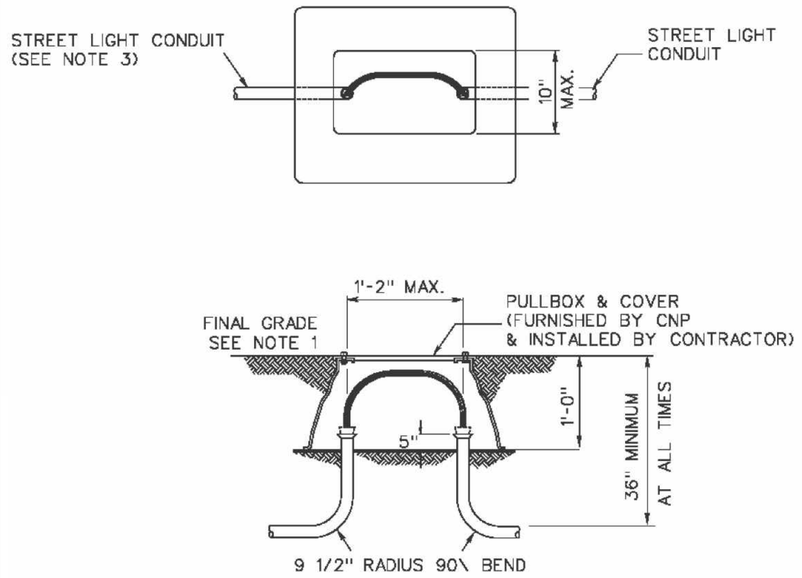
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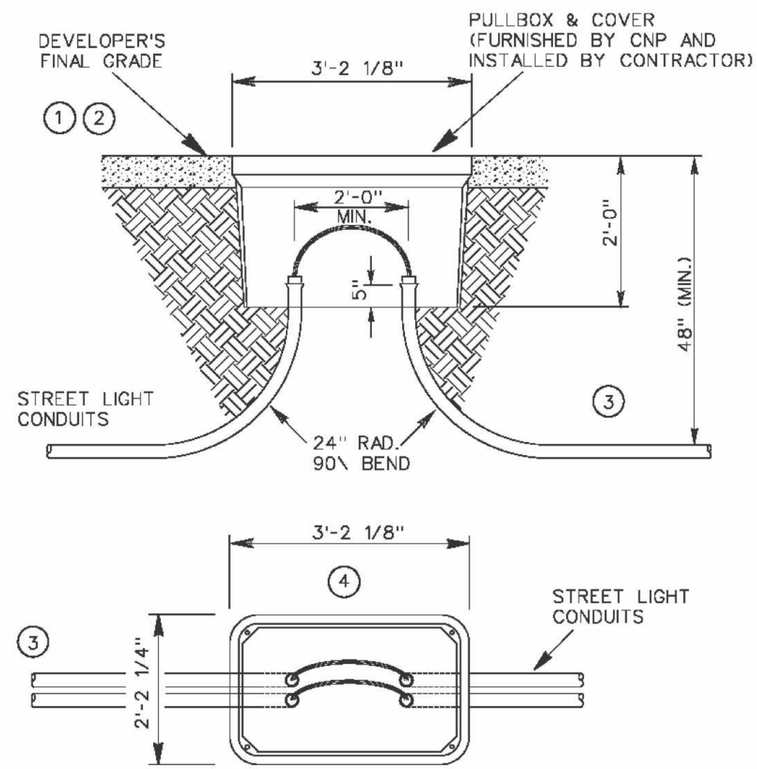


SMALL PULL BOX

NOTES:

1. GRADE AT TIME OF INSTALLATION SHALL BE CONSIDERD DEVELOPER'S FINAL GRADE.
2. THE SMALL CONCRETE PULL-BOX CAN BE INSTALLED IN DRIVEWAYS AND PARKING LOTS BUT NOT IN STREET.
3. THE NUMBER, SIZE AND DIRECTION OF CONDUITS TO BE SPECIFIED ON CNP CONDUIT LAYOUT.

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LARGE PULL BOX

1. GRADE AT TIME OF INSTALLATION SHALL BE CONSIDERED DEVELOPER'S FINAL GRADE.
2. WHEN INSTALLING PULL BOXES IN INCIDENTAL TRAFFIC LOADING AREA, DEVELOPER'S FINAL GRADE REFERS TO THE SURFACE OF THE PAVEMENT.
3. THE NUMBER, SIZE AND DIRECTION OF CONDUITS TO BE SPECIFIED ON CNP CONDUIT LAYOUT.
4. THIS PULL-BOX CAN BE INSTALLED IN DRIVEWAYS AND PARKING LOTS BUT NOT IN STREET.

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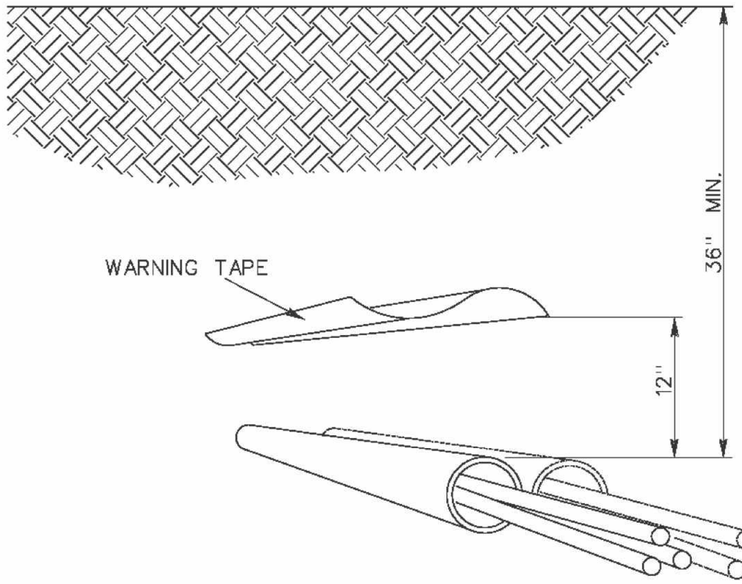
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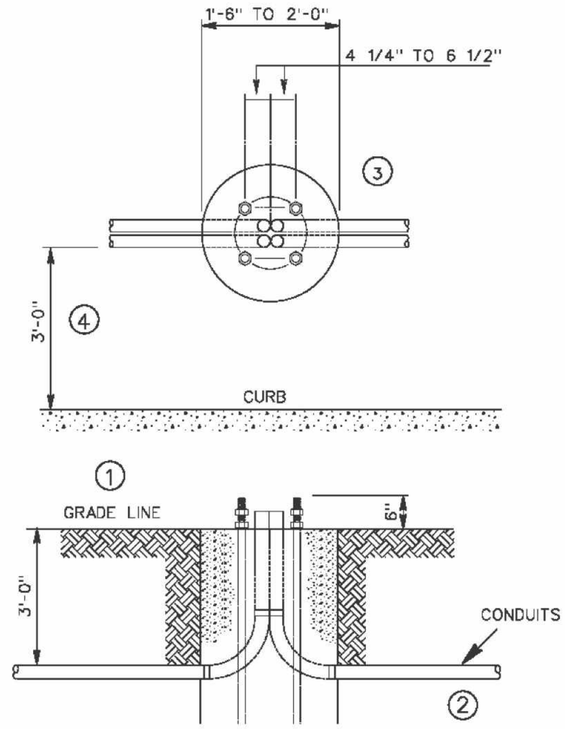
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TYPICAL STREET LIGHT CONDUIT LAYOUT

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MULTIPLE CONDUIT RUN IN STREET LIGHT FOUNDATION

1. GRADE AT TIME OF INSTALLATION SHALL BE CONSIDERED DEVELOPER'S FINAL GRADE.
2. THE QUANTITY, SIZE AND DIRECTION OF CONDUITS TO BE SPECIFIED BY ENGINEERING DEPARTMENT.
3. SEE ACCOMPANING CNP STANDARDS FOUNDATION FOR ACTUAL SIZE AND ANCHOR BOLT POSITION.
4. CNP STANDARD LOCATION OF STREET LIGHT IS 3' BEHIND THE 6" CURB, UNLESS SPECIFIED DIFFERENTLY BY CITY / COUNTY / METRO.

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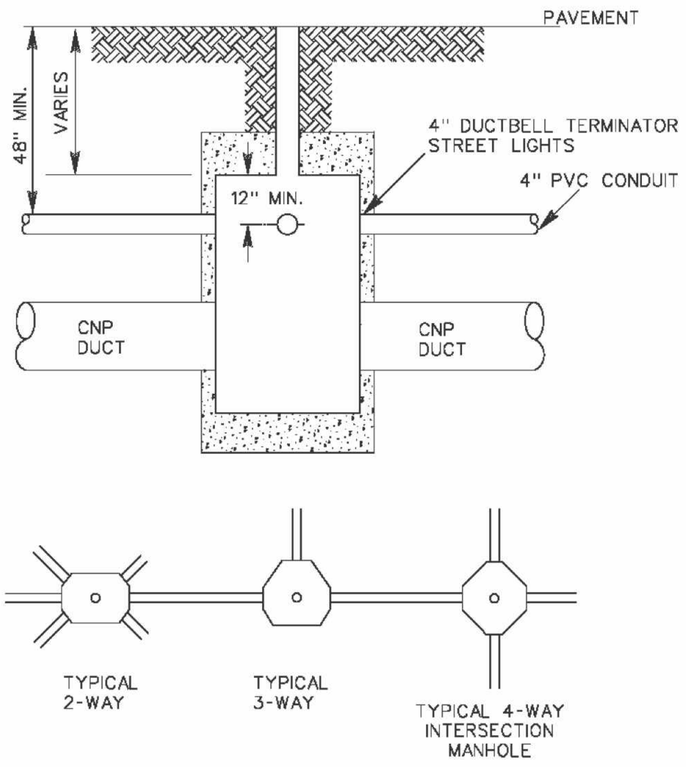
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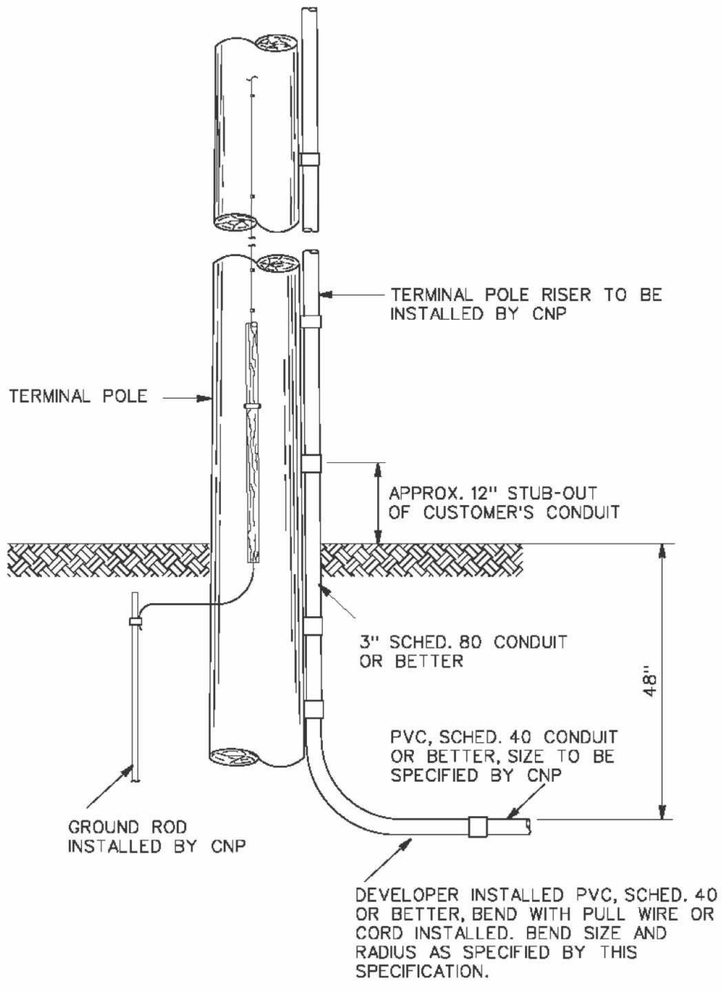
STREET LIGHT CONDUIT RUN FROM MANHOLE

① CONDUITS SHALL TYPICALLY ENTER THE MANHOLE THROUGH THE SHORT WALLS. CNP MUST APPROVE ENTRY THROUGH OTHER WALLS.

② THE NUMBER, SIZE AND DIRECTION OF CONDUITS TO BE SPECIFIED BY ENGINEERING DEPARTMENT.

③ CNP TO BE NOTIFIED 48 HOURS PRIOR TO THE ACTUAL CORING TO THE MANHOLE WALL.

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TYPICAL TERMINAL POLE LAYOUT

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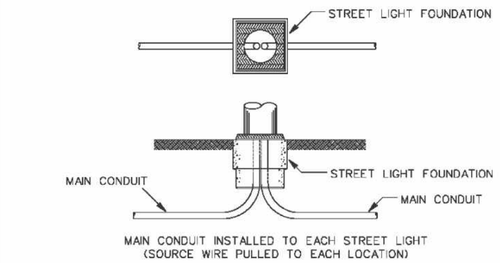
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SPECIFICATIONS

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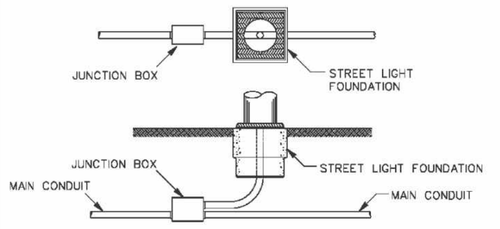
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Plot Driver: J:\2025\2503044\DesignData\Design Plans\Plan Production\Resource\Plot files\Mandell_St.pltcfg



MAIN CONDUIT INSTALLED TO EACH STREET LIGHT
(SOURCE WIRE PULLED TO EACH LOCATION)



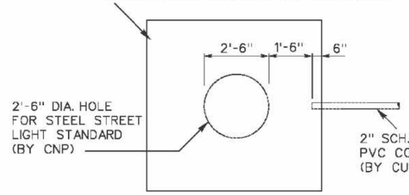
MAIN CONDUIT WITH TAPS FEEDING EACH LOCATION

NOTE:
ALL MATERIAL INSTALLED IN BRIDGE OR ELEVATED ROADWAY CONSTRUCTION SHALL BE FURNISHED BY CUSTOMER.

CONDUIT INSTALLED IN BRIDGE OR ELEVATED ROADWAY

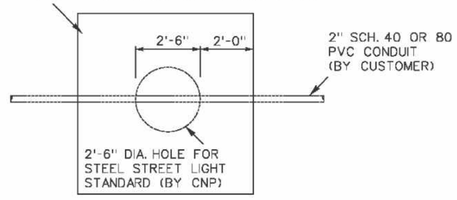
REV. NO. #5	SPEC. ID.		007	371	08	Sheet 15 of 16

6'-6" X 6'-6" CONCRETE BLOCK-OUT REQUIRED FOR STREET LIGHT INSTALLATION (BLOCK-OUT TO BE CENTERED ON PROPOSED STREET LIGHT LOCATION (BY CUSTOMER).



STREET LIGHT @ END OF CIRCUIT

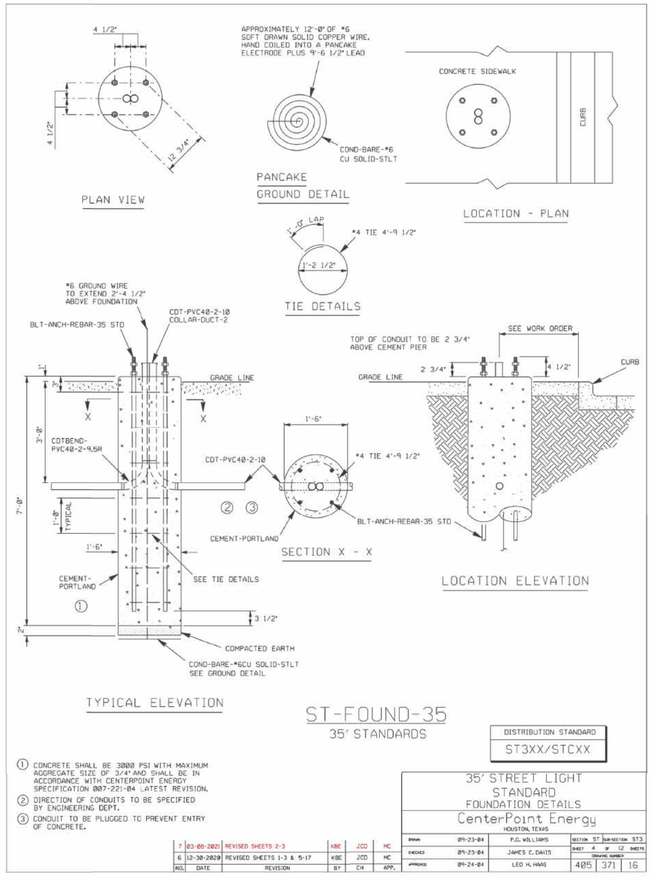
6'-6" X 6'-6" CONCRETE BLOCK-OUT REQUIRED FOR STREET LIGHT INSTALLATION (BLOCK-OUT TO BE CENTERED ON PROPOSED STREET LIGHT LOCATION (BY CUSTOMER).



STREET LIGHT @ CONTINUOUS CIRCUIT

BLOCK-OUT DETAIL FOR STREET LIGHTS LOCATED IN CONCRETE AREAS

REV. NO. #5	SPEC. ID.		007	371	08	Sheet 16 of 16



① CONCRETE SHALL BE 3000 PSI WITH MAXIMUM AGGREGATE SIZE OF 3/4" AND SHALL BE IN ACCORDANCE WITH CENTERPOINT ENERGY SPECIFICATION 007-221-04 LATEST REVISION.
② DIRECTION OF CONDUITS TO BE SPECIFIED BY ENGINEERING DEPT.
③ CONDUIT TO BE PLUGGED TO PREVENT ENTRY OF CONCRETE.

NO.	DATE	REVISION	BY	CH	APP.
7	03-08-2021	REVISED SHEETS 2-3	KBE	JCD	HC
6	12-30-2020	REVISED SHEETS 1-3 & 5-17	KBE	JCD	HC

ST-FOUND-35
35' STANDARDS

DISTRIBUTION STANDARD: ST3XX/STCXX

35' STREET LIGHT STANDARD FOUNDATION DETAILS
CenterPoint Energy
HOUSTON, TEXAS

DRAWN	09-23-04	P.G. WILLIAMS	SECTION ST SUB-SECTION ST3
CHECKED	09-23-04	JAMES C. DAVIS	SHEET 4 OF 12 SHEETS
APPROVED	09-24-04	LEO H. HAAS	DRAWING NUMBER 405 371 16

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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SURVEYED BY:

STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F-11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

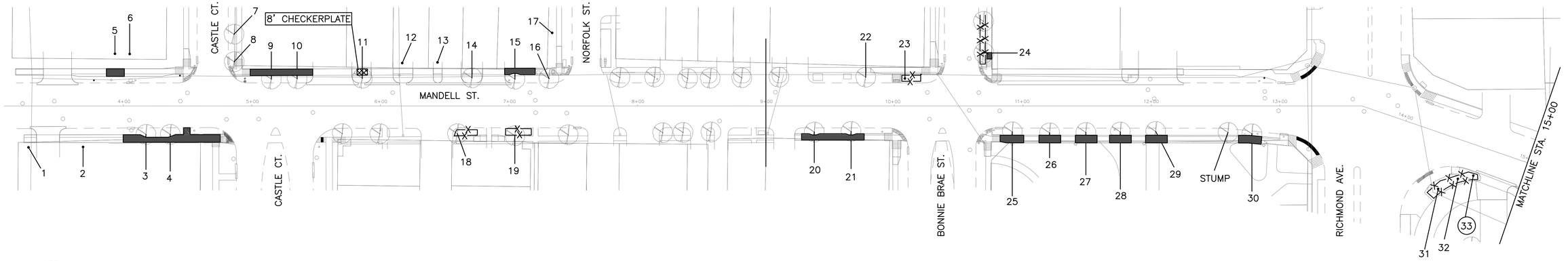
MANDELL STREET IMPROVEMENTS

CENTERPOINT CONDUIT SPECIFICATIONS

SHEET 8 OF 8

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 88 OF 101	

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NOTE:

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N

40 0 40 80

SCALE: 1"=40'

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- ① — TREE TO BE REMOVED
- –X–X– TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Madell Street					
1	4605 Mandell	13" Crepe Myrtle	Not Protected	Private tree, Not impacted	
2	4605 Mandell	11" Cherrylaurel	Not Protected		Clearance prune
3	4605 Mandell	13" Pine	Protected		Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
4	4605 Mandell	18" Pine	Protected		Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
5	1601 Castle	24" Crepe Myrtle	Not Protected	Private tree	Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
6	1601 Castle	24" Crepe Myrtle	Not Protected	Private tree, Not impacted	
7	1602 Castle	12" Crepe Myrtle	Not Protected		
8	1602 Castle	12" Crepe Myrtle	Not Protected		
9	1602 Castle	13" Green Ash	Protected	Topped by CPE, Poor	Clearance prune, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
10	1602 Castle	15" Green Ash	Protected	Topped by CPE	Clearance prune, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
11	4512 Mandell	22" Live Oak	Protected	Topped by CPE	8' Checker Plate, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
12	4508 Mandell	4" Little Gem Magnolia	Not Protected	Private tree, Not impacted	
13	4506 Mandell	10" Red Tip Photina	Not Protected	Private tree	Clearance prune
14	4504 Mandell	11" Crepe Myrtle	Not Protected	Topped by CPE	Clearance prune
15	1601 Norfolk	15" Live Oak	Protected	Topped by CPE	Clearance prune, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
16	1601 Norfolk	11" Japanese Blueberry	Not Protected	Topped by CPE	Clearance prune
17	1601 Norfolk	24" Live Oak	Protected	Not impacted	
18	4503 Mandell	21" Nutall Oak	Protected		Fence
19	4503 Mandell	14" Nutall Oak	Protected		Fence
20	1533 Bonnie Brae	10" Live Oak	Protected		Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
21	1533 Bonnie Brae	10" Live Oak	Protected		Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
22	1601 Bonnie Brae	15" Eastern Red Cedar	Not Protected	Topped by CPE	
23	1601 Bonnie Brae	9" Texas Mountain Laurel	Protected		Clearance prune, Fence
24	1602 Bonnie Brae	16" Bald Cypress	Protected		Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
25	4399 Mandell	10" Mexican White Oak	Protected		Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
26	4399 Mandell	10" Mexican White Oak	Protected		Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
27	4399 Mandell	8" Mexican White Oak	Protected		Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
28	4399 Mandell	11" Mexican White Oak	Protected		Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
29	4399 Mandell	10" Mexican White Oak	Protected		Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
30	4399 Mandell	7" Mexican White Oak	Protected		Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
31	4215 Mandell	6" Red Maple	Protected	Trunk decay, Poor condition	Fence, Clearance prune
32	4215 Mandell	7" Red Maple	Protected		Fence, Clearance prune
33	4215 Mandell	4" Red Maple	Protected	Remove for sidewalk	Remove tree, Provide 4" in replacement/mitigation

NO.	DATE	REVISION	APP.

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APPROVED: Craig N. Koehl 01.5.26

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MANDELL STREET IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 1 OF 6

WBS NUMBER	N-T27000-003-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	JIADA HUANG
SHEET NO.	89 OF 101

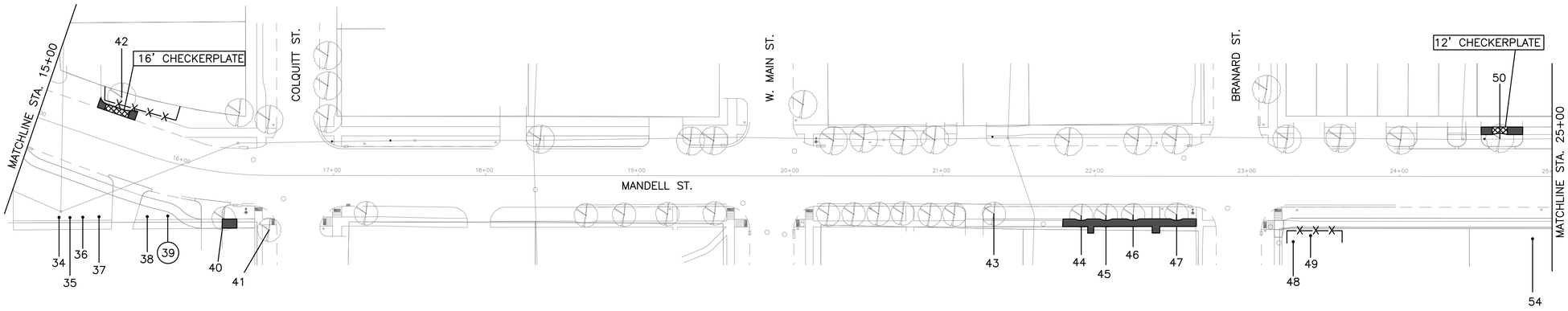
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HOUSTON PUBLIC WORKS
ACCEPTED AND FILED
83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

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Pen Table: $PENTBLS$
Plot Driver: $PLTDRVL$

Design Filename: $FILEL$



NOTE:

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Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Madell Street					
34	4215 Mandell	14" Box Elder	Not Protected	Pruned by CPE	Clearance prune
35	4215 Mandell	6" Water Oak	Protected	Not impacted	
36	4215 Mandell	5" Oleander	Not Protected		Clearance prune
37	4215 Mandell	5" Oleander	Not Protected		Clearance prune
38	4215 Mandell	5" Oleander	Not Protected		Clearance prune
39	4215 Mandell	5" Oleander	Not Protected	Remove for sidewalk, stump sprouts	Remove tree, No replacement required
40	4215 Mandell	11" Mulberry	Protected		Clearance prune, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
41	4215 Mandell	26" Water Oak	Protected	Poor, Needs to be evaluated by HPARD	
42	1601 Colquitt	45" Live Oak	Protected	20% dieback	16' Checker Plate, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
43	1519 Branard	18" Bald Cypress	Not Protected	40% dieback	
44	1521 Branard	22" Tallow	Protected	90% dieback, Poor, Needs to be evaluated by HPARD	
45	1521 Branard	22" Live Oak	Protected	15% dieback	Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
46	1521 Branard	28" Tallow	Protected	30% dieback	Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
47	1521 Branard	23" Tallow	Protected	Trunk cavity, 40% dieback	Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
48	1533 Sul Ross	14" Magnolia	Not Protected	Private tree	Fence, Clearance prune
49	1533 Sul Ross	19" Magnolia	Protected	Corridor Tree	Fence, Clearance prune
50	3902 Mandell	26" Live Oak	Protected	Topped by CPE	12' Checker Plate, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
54	1533 Sull Ross	Oleander Hedges	Not Protected	Private tree	Clearance prune

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- –X–X– — TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION

N

40 0 40 80

SCALE: 1"=40'

NO.	DATE	REVISION	APP.

C.N. Koehl
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MANDELL STREET IMPROVEMENTS

TREE PROTECTION PLAN

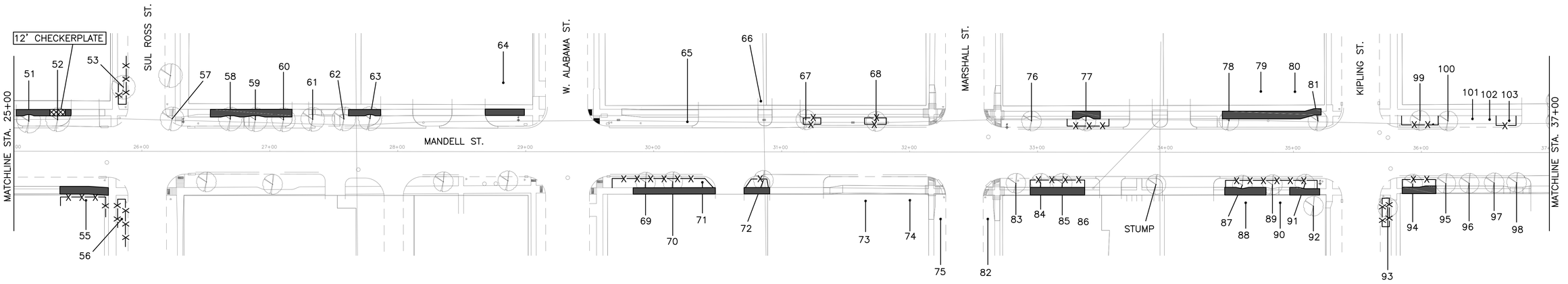
SHEET 2 OF 6

WBS NUMBER
N-T27000-003-7
DRAWING SCALE
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JIADA HUANG
SHEET NO. 90 OF 101

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83215
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- ① — TREE TO BE REMOVED
- –X–X– TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Madell Street					
51	3902 Mandell	20" Live Oak	Protected	Topped by CPE	Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
52	3902 Mandell	20" Live Oak	Protected	Topped by CPE	12' Checker Plate, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
53	3902 Mandell	23" Live Oak	Protected		Fence
55	1533 Sull Ross	23" Magnolia	Protected	Corridor Tree	Fence, Clearance prune
56	1533 Sull Ross	29" Live Oak	Protected	Thin canopy	Fence
57	1602 Sul Ross	14" Live Oak	Protected	In visibility triangle, Not impacted	
58	1602 Sul Ross	20" Crepe Myrtle	Protected	70% dieback, Topped by CPE	Clearance prune, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
59	1602 Sul Ross	23" Sugarberry	Protected	Topped by CPE	Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
60	1602 Sul Ross	23" Crepe Myrtle	Protected	Topped by CPE	Clearance prune, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
61	1602 Sul Ross	16" Crepe Myrtle	Not Protected	Topped by CPE	
62	1602 Sul Ross	14" Tallow	Not Protected	Topped by CPE	
63	1602 Sul Ross	15" Live Oak	Protected	Topped by CPE	Clearance prune, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
64	1601 W Alabama	49" Live Oak	Protected	Exposed surface roots at walk, Corridor Tree, 30% dieback	Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
65	1602 W Alabama	5" Peach	Not Protected		Clearance prune
66	1602 W Alabama	5" Peach	Not Protected		Clearance prune
67	1603 W Alabama	3" Little Gem Magnolia	Protected		Fence
68	1603 W Alabama	2" Little Gem Magnolia	Protected		Fence
69	1540 W Alabama	5" Live Oak	Protected		Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
70	1540 W Alabama	16" Live Oak	Protected		Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
71	1540 W Alabama	18" Live Oak	Protected		Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
72	1540 W Alabama	20" Live Oak	Protected	Topped by CPE	Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
73	3705 Mandell	6" Raintree	Not Protected	Private tree, Not impacted	
74	3705 Mandell	6" Burford	Not Protected	Private tree, Not impacted	
75	3705 Mandell	17" Tallow	Not Protected		Clearance prune
76	1600 Marshall	19" Red Maple	Protected	Trunk decay, Nees to be evaluated by HPARD	
77	1600 Marshall	13" Red Maple	Protected	Topped by CPE	Fence, Clearance prune
78	1601 Kipling	12" Crepe Myrtle	Not Protected		Clearance prune
79	1601 Kipling	29" Water Oak	Protected	Corridor Tree, Pruned by CPE	Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
80	1601 Kipling	30" Live Oak	Protected	Corridor Tree, Pruned by CPE	Clearance prune, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
81	1601 Kipling	11" Crepe Myrtle	Not Protected		Clearance prune
82	1530 Marshall	14" Crepe Myrtle	Not Protected		
83	1530 Marshall	12" Crepe Myrtle	Not Protected		Clearance prune
84	1530 Marshall	15" Crepe Myrtle	Not Protected	Suppressed	
85	1530 Marshall	24" Pecan	Protected		Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
86	1530 Marshall	10" Crepe Myrtle	Not Protected	Trunk decay	
87	1539 Kipling	21" Crepe Myrtle	Protected	40% dieback	Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
88	1539 Kipling	17" Tallow	Not Protected	Private tree, Not impacted	
89	1539 Kipling	19" Crepe Myrtle	Not Protected	35% dieback	Clearance prune
90	1539 Kipling	13" Crepe Myrtle	Not Protected	80% dieback, Private tree	
91	1539 Kipling	14" Crepe Myrtle	Not Protected		Clearance prune
92	1539 Kipling	20" Live Oak	Protected	Corridor Tree	Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger
93	1538 Kipling	13" Mexican Sycamore	Protected		Fence
94	1538 Kipling	22" Tallow	Protected	60% dieback	Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
95	1538 Kipling	15" Tallow	Not Protected	40% dieback	Clearance prune
96	1538 Kipling	15" Tallow	Not Protected	50% dieback	Clearance prune
97	1538 Kipling	12" Crepe Myrtle	Not Protected	Topped	
98	1538 Kipling	19" Tallow	Not Protected		Clearance prune
99	3520 Mandell	21" Tallow	Protected	Topped by CPE	Fence, Clearance prune
100	3520 Mandell	11" Crepe Myrtle	Not Protected		Clearance prune
101	3520 Mandell	4" Crepe Myrtle	Not Protected		
102	3520 Mandell	4" Crepe Myrtle	Not Protected		
103	3520 Mandell	3" Cherry	Protected	50% dieback	Fence

N

40 0 40 80

SCALE: 1"=40'

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MANDELL STREET IMPROVEMENTS

TREE PROTECTION PLAN

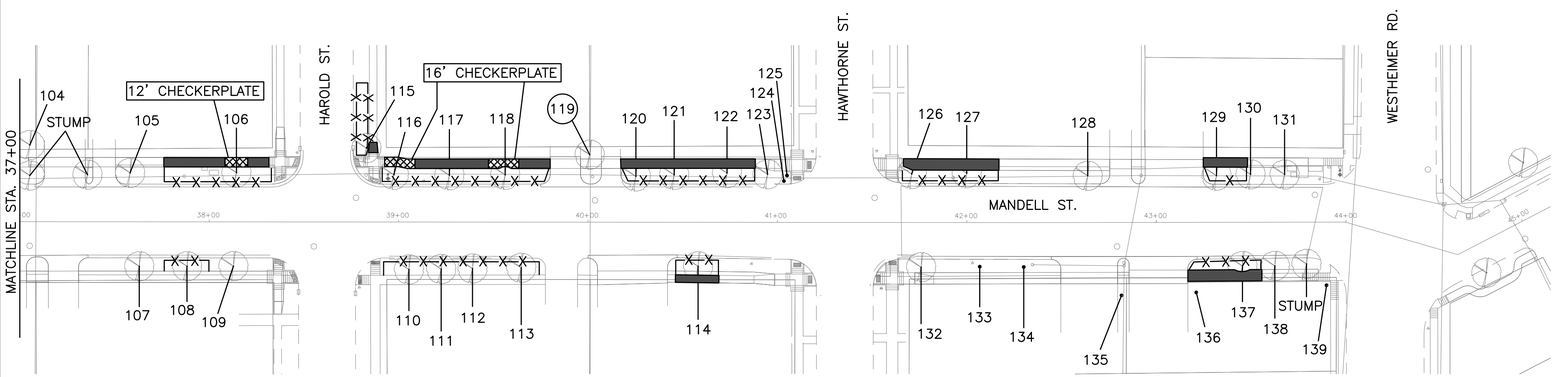
SHEET 3 OF 6

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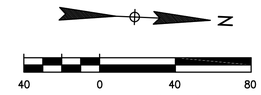
NOTE:

1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED APRIL 2026. THE PLAN CONSIDERS ALL FITTINGS, VERTICAL OFFSETS AND AREAS OF NECESSARY EXCAVATION. CHANGES MADE TO DESIGN MAY COMPROMISE THE TREE PROTECTION PLAN. REFER SPECIFICATIONS 01562 AND 02915.
2. CN KOEHL URBAN FORESTRY, INC. HAS NOT BEEN CONTRACTED TO COMPLETE ANY TREE RISK ASSESSMENTS ON THIS PROJECT–THIS TPP INCLUDES PROTECTION MEASURES FOR SPECIES OF TREES PROTECTED BY APPLICABLE ORDINANCE ONLY. CN KOEHL URBAN FORESTRY, INC. DOES NOT GUARANTEE CONDITION OR STRUCTURAL INTEGRITY OF ANY TREE LOCATED ON OR ADJACENT TO THIS PROJECT.
3. IN AREAS WHERE INDIVIDUAL TREES HAVE NOT BEEN TIED IN BY SURVEY, APPROXIMATE LOCATION IS INDICATED ON TPP WITH A DOT AND TREE NUMBER. ACCURACY OF REPRESENTED LOCATION IS NOT GUARANTEED BY CN KOEHL URBAN FORESTRY, INC.
4. THE CONTRACTOR'S ARBORIST WILL MARK LOCATIONS OF TREES TO BE PLANTED AND OBTAIN APPROVAL BY CITY ENGINEER AND CITY FORESTER BEFORE PURCHASING OR EXCAVATING PLANTING HOLE OF EACH TREE.

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- —X—X— TREE PROTECTION FENCE
- ROOT PRUNING TRENCH
- SIDEWALK ON GRADE
- CHECKERPLATE SECTION

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Madell Street					
104	3508 Harold	16" Bradford Pear	Not Protected	Private tree, Not impacted	
105	3508 Harold	16" Bradford Pear	Not Protected		Clearance prune
106	3508 Harold	31" Live Oak	Protected	Topped by CPE	12' Checker Plate, Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
107	1537 Mandell	2" Crepe Myrtle	Not Protected		
108	1537 Mandell	9" Lacebark Elm	Protected		Fence, Clearance prune
109	1537 Mandell	14" Crepe Myrtle	Not Protected	Topped	
110	1540 Harold	13" Pine	Protected	Thin canopy	Fence
111	1540 Harold	13" Pine	Protected	Thin canopy	Fence
112	1540 Harold	14" Pine	Protected	Thin canopy	Fence
113	1540 Harold	26" Live Oak	Protected		Fence, Clearance prune
114	1539 Hawthorn	12" Cedar Elm	Protected		Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
115	1602 Mandell	22" Live Oak	Protected	30% dieback, Preservation will require field changes during construction	Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Contractor to coordinate with project engineer and forester prior to doing any excavation for proposed walk or ramp
116	1602 Mandell	25" Live Oak	Protected	30% dieback	16' Checker Plate, Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
117	1602 Mandell	19" Crepe Myrtle	Not Protected		Clearance prune
118	1602 Mandell	20" Live Oak	Protected	Topped by CPE	16' Checker Plate, Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
119	1602 Mandell	20' Palm	Not Protected	Trunk below ADA, Remove for sidewalk	Remove tree
120	1601 Hawthorne	7" Oleander	Not Protected		Clearance prune
121	1601 Hawthorne	26" Arborvitae	Protected	70% dieback, Topped by CPE	Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
122	1601 Hawthorne	24" Arborvitae	Protected	70% dieback, Topped by CPE	Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
123	1601 Hawthorne	8" Oleander	Not Protected		Clearance prune
124	1601 Hawthorne	12" Sugarberry	Not Protected		Clearance prune
125	1601 Hawthorne	11" Sugarberry	Not Protected		Clearance prune
126	1602 Hawthorne	14" Lacebark Elm	Protected	Topped by CPE	Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
127	1602 Hawthorne	15" Lacebark Elm	Protected	Topped by CPE	Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
128	1602 Hawthorne	13" Tallow	Not Protected	Topped by CPE	Clearance prune
129	1601 Westheimer	20" Crepe Myrtle	Protected		Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
130	1601 Westheimer	14" Crepe Myrtle	Not Protected		Clearance prune
131	1601 Westheimer	8" Crepe Myrtle	Not Protected		Clearance prune
132	1540 Hawthorne	10" Crepe Myrtle	Not Protected	Topped	
133	1540 Hawthorne	10" Crepe Myrtle	Not Protected	Topped	
134	1540 Hawthorne	10" Crepe Myrtle	Not Protected	Topped	
135	1540 Hawthorne	10' Palm	Not Protected		Clearance prune
136	3303 Mandell	27" Live Oak	Protected	Corridor Tree	Fence, Demo-form-pour-sidewalk without damage to roots 1" diameter or larger, Clearance prune
137	3303 Mandell	9" Crepe Myrtle	Not Protected	Suppressed	
138	3303 Mandell	18" Sugarberry	Not Protected		Clearance prune
139	3303 Mandell	12' Palm	Not Protected	Dead, Not impacted	



SCALE: 1"=40'

NO.	DATE	REVISION	APP.

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HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 4 OF 6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED
DRAWING SCALE	83215 CITY DRAWING NUMBER
AS NOTED	Approval Date 10/26/26
CITY OF HOUSTON PM	HOUSTON TX
JIADA HUANG	
SHEET NO. 92 OF 101	

$USER$ $TIME$ $DATE$
Pen Table: $PENTBL$$
Plot Driver: $PLTDRVL$
Design Filename: $FILEL$

$USER$
$TIME$
$DATE$

Tree Removal List

Tree No.	Location	Description	Replacement requirement
33	4215 Mandell	4" Red Maple	4
39	4215 Mandell	5" Oleander	0
119	1602 Mandell	20' Palm	0
		TOTAL REPLACEMENT INCHES REQUIRED	**4**

Tree Replacement List

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

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

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

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

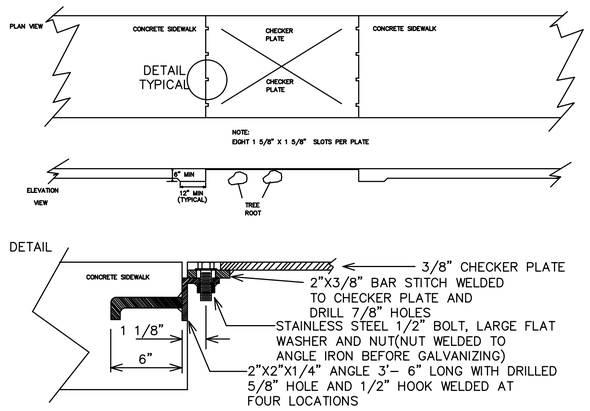
Cash Allowance Due Parks from HPW for Balance of Mitigation Not Planted on Project

	Required Mitigation total	Mitigation rate/inch	
0-5.99"	4	$ 302.12	$ 1,208.48
6-11.99"	0	$ 503.55	$ -
12" +	0	$ 671.40	$ -
		TOTAL REQUIRED MITIGATION FEE	**$ 1,208.48**

Arboriculturally Significant Tree List

Tree No.	Location	Description
5	1601 Castle	24" Crepe Myrtle
6	1601 Castle	24" Crepe Myrtle
17	1601 Norfolk	24" Live Oak
41	4215 Mandell	26" Water Oak
42	1601 Colquitt	45" Live Oak
50	3902 Mandell	26" Live Oak
56	1533 Sull Ross	29" Live Oak
64	1601 W Alabama	49" Live Oak
79	1601 Kipling	29" Water Oak
80	1601 Kipling	30" Live Oak
85	1530 Marshall	24" Pecan
106	3508 Harold	31" Live Oak
113	1540 Harold	26" Live Oak
116	1602 Mandell	25" Live Oak
136	3303 Mandell	27" Live Oak

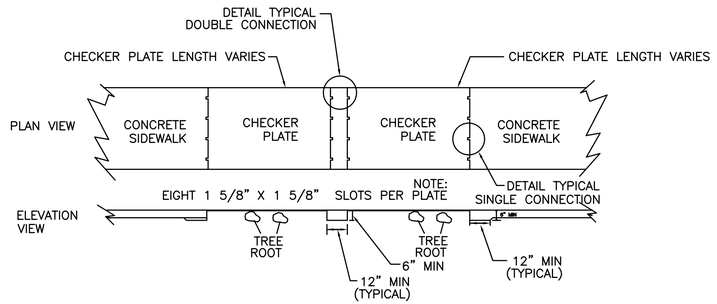
Trees Identified by City of Houston Forestry/Parks & Recreation Department as Arboriculturally Significant are identified here and/or in treatment schedule included on TPP sheets. Arboriculturally Significant trees are to be pruned under direct supervision of City of Houston Forestry. Minimal pruning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

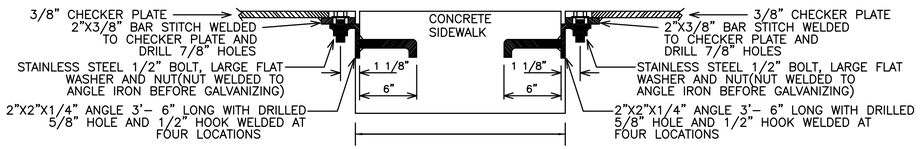


CHECKERPLATE DETAIL-SINGLE CONNECTION

NOT TO SCALE

NOTE:
ALL IRONWORK TO BE HOT DIPPED GALVINIZED EXCEPT AS NOTED.

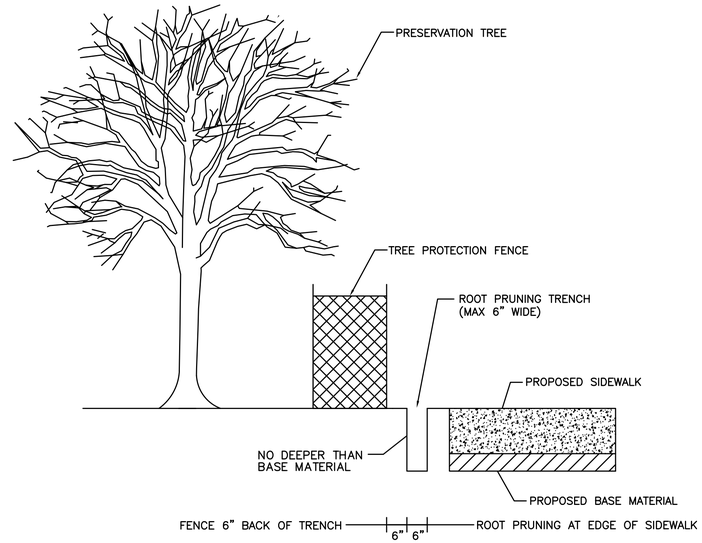




CHECKERPLATE DETAIL-DOUBLE CONNECTION

NOT TO SCALE

NOTE:
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ROOT PRUNE FOR SIDEWALK

NOT TO SCALE

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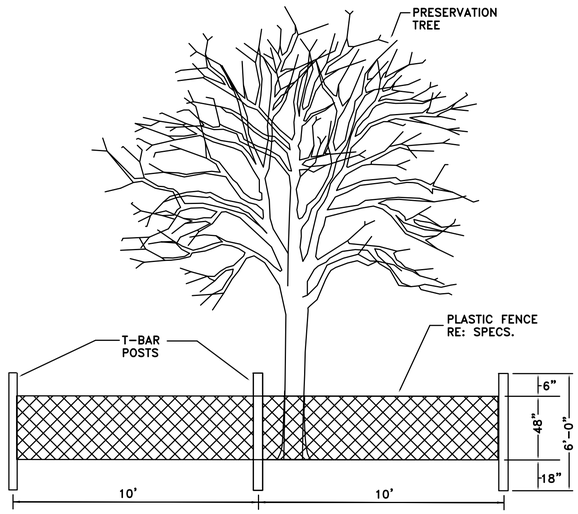
MANDELL STREET IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 5 OF 6

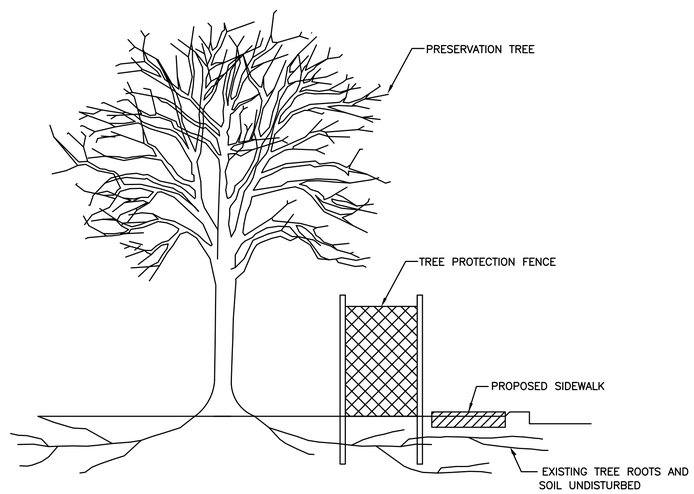
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N-T27000-003-7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 93 OF 101	

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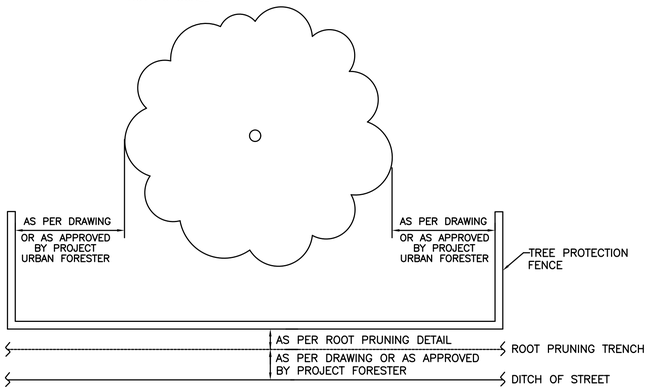
TREE PROTECTION FENCING DETAIL A

NOT TO SCALE



DEMO-FORM-POUR WALK WITHOUT DAMAGE TO TREE ROOTS 1" DIAMETER OR LARGER

NOT TO SCALE



TREE PROTECTION FENCING DETAIL B

NOT TO SCALE

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MANDELL STREET IMPROVEMENTS

TREE PROTECTION PLAN

SHEET 6 OF 6

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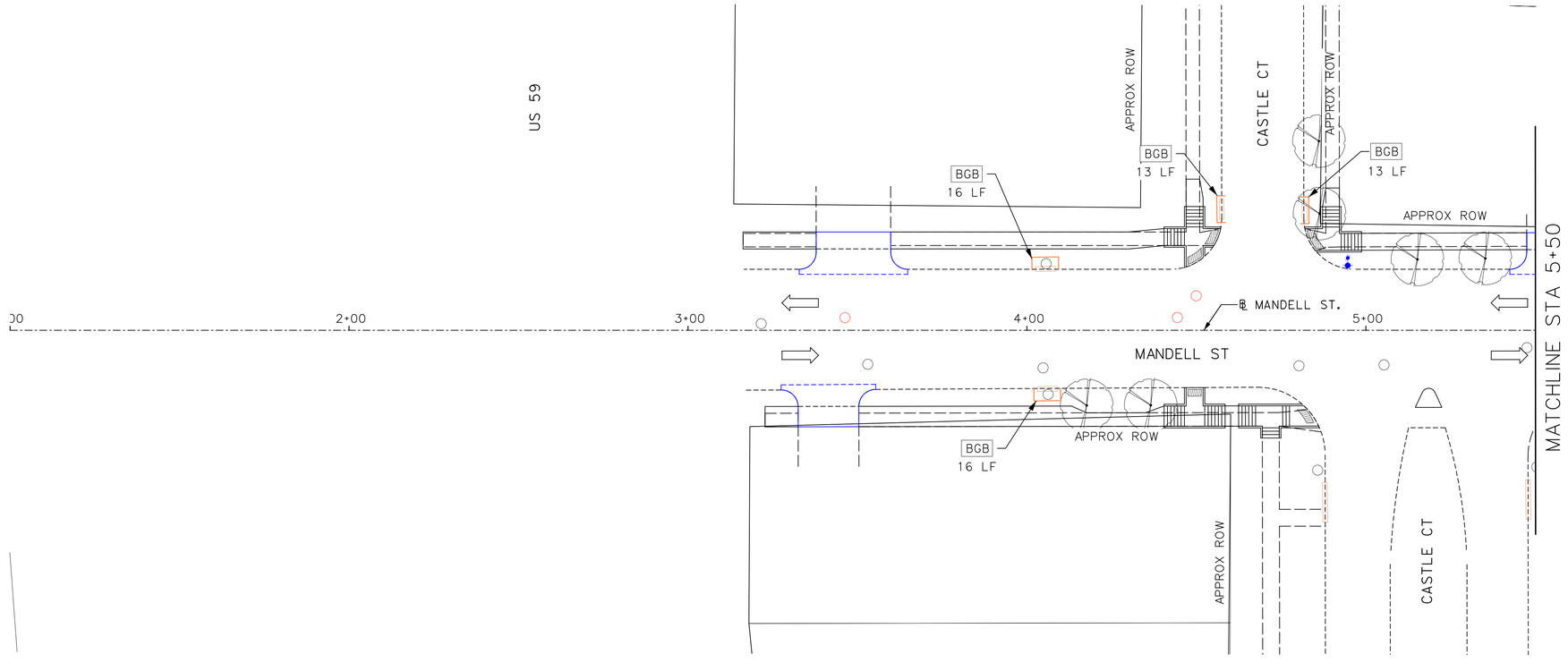
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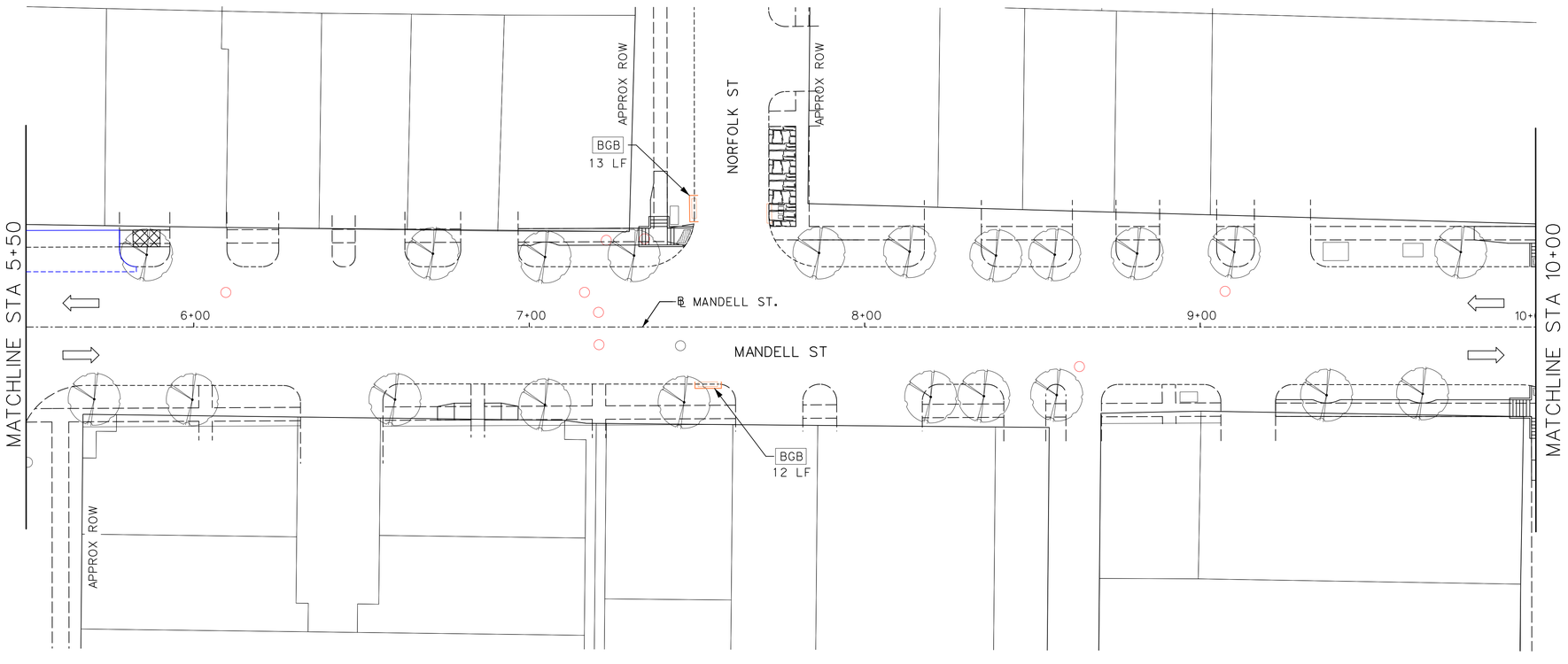
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LEGEND

BGB BAGGED GRAVEL BARRIER

NO.	DATE	REVISION	APP.





N

0′ 20′ 40′

SCALE IN FEET

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

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Texas Registered Engineering Firm F-11278

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

STORM WATER
POLLUTION PREVENTION PLAN
BEGIN PROJECT TO STA 10+00

SHEET 1 OF 5

WBS NUMBER
N-T27000-003-7
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JIADA HUANG
SHEET NO. 95 OF 101

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LEGEND

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NO.	DATE	REVISION	APP.

MATCHLINE STA 10+00

BONNIE BRAE ST

RICHMOND AVE

℄ MANDELL ST.

MANDELL ST

10+00 11+00 12+00 13+00 14+00

MATCHLINE STA 14+50

BGB 13 LF — APPROX ROW — OH-E

BONNIE BRAE ST

MATCHLINE STA 14+50

15+00 16+00

COLQUITT ST

BGB 11 LF

17+00 18+00 19+

MATCHLINE STA 19+00

BGB 16 LF

N

0′ 20′ 40′

SCALE IN FEET

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

STORM WATER
POLLUTION PREVENTION PLAN
STA 10+00 TO STA 19+00

SHEET 2 OF 5

WBS NUMBER
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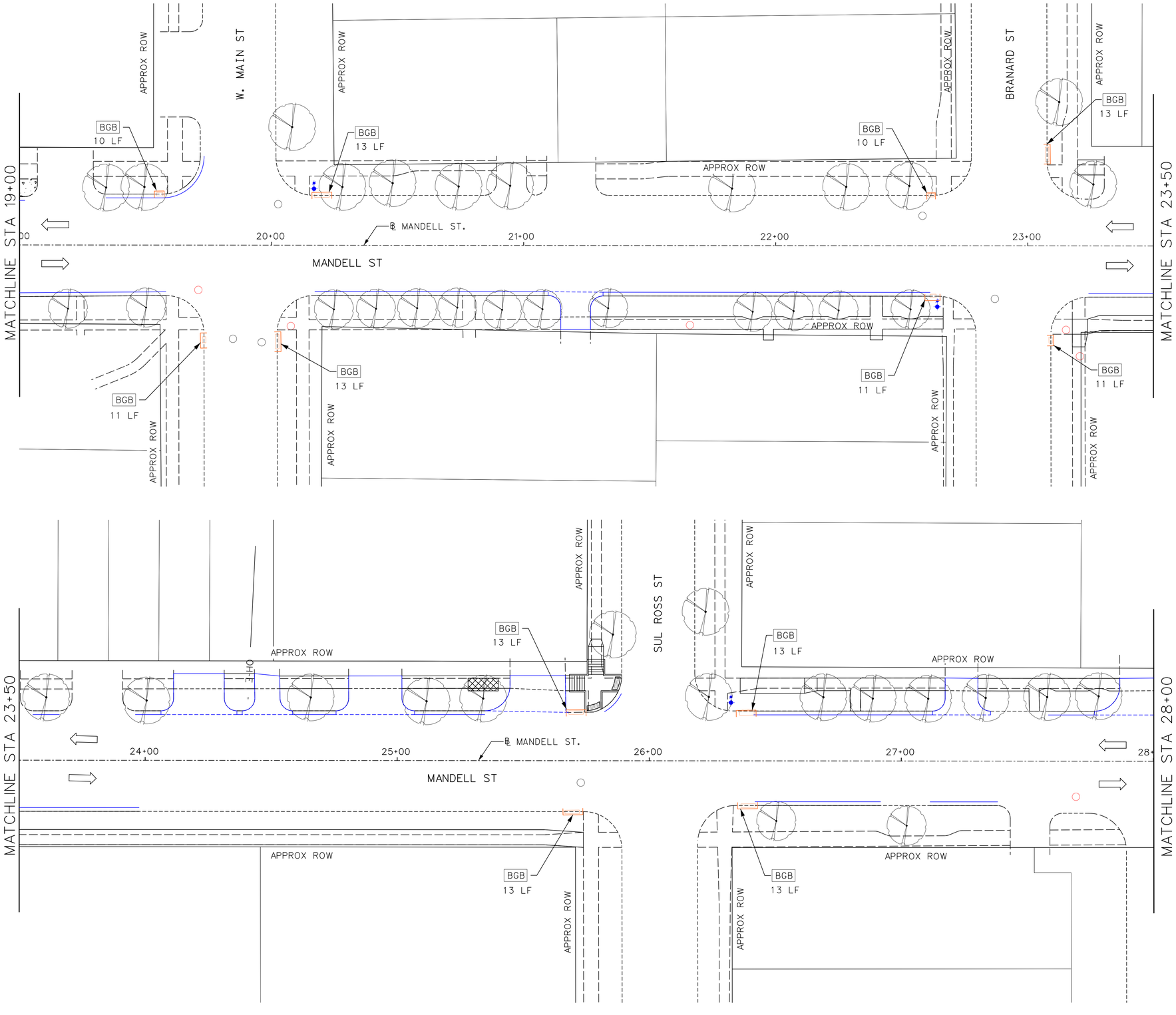
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LEGEND

BGB BAGGED GRAVEL BARRIER

NO.	DATE	REVISION	APP.



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HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

STORM WATER
POLLUTION PREVENTION PLAN
STA 19+00 TO STA 28+00

SHEET 3 OF 5

WBS NUMBER
N-T27000-003-7
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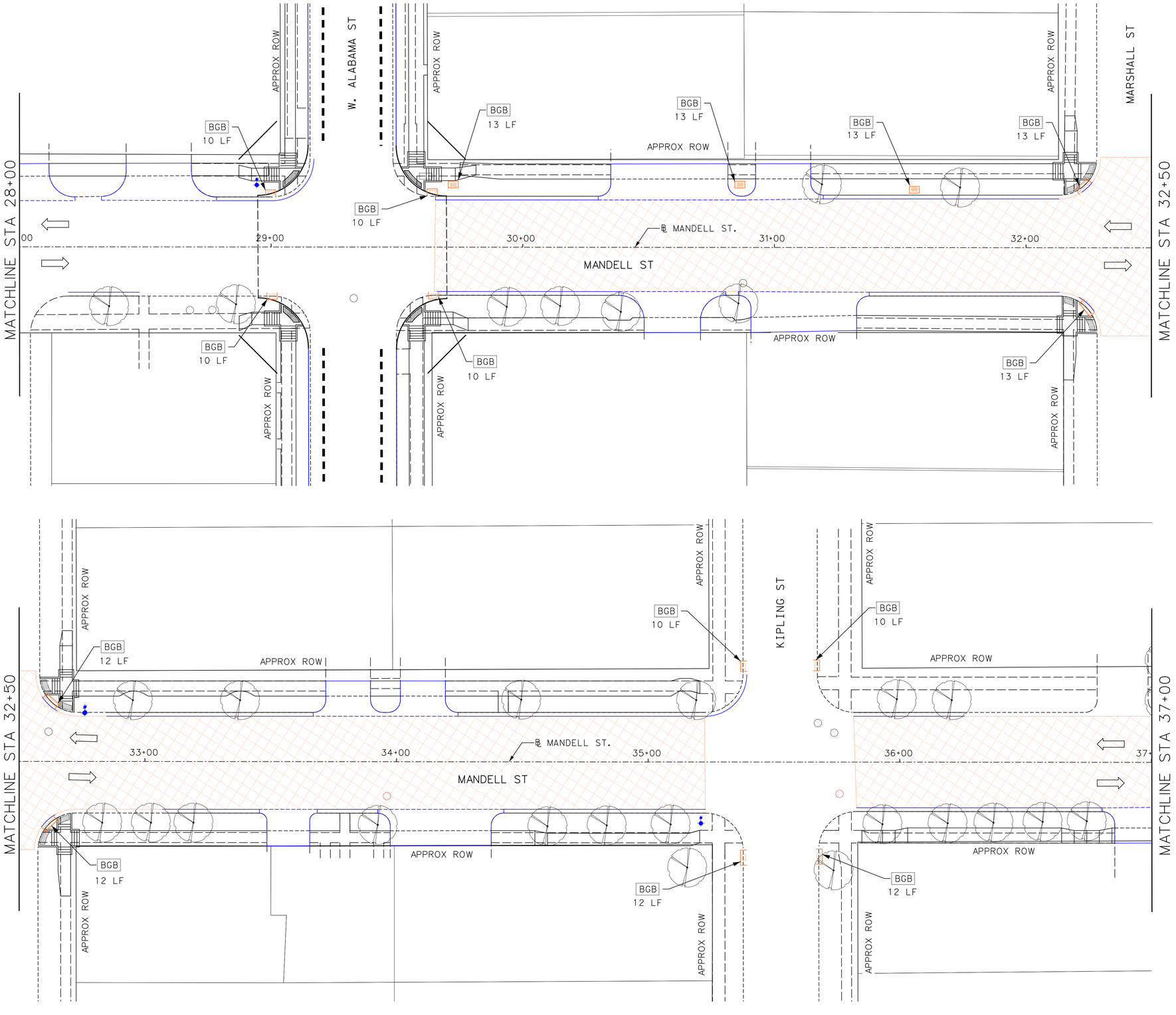
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LEGEND

BGB BAGGED GRAVEL BARRIER

NO.	DATE	REVISION	APP.



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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

STORM WATER
POLLUTION PREVENTION PLAN
STA 28+00 TO STA 37+00

SHEET 4 OF 5

WBS NUMBER
N-T27000-003-7
DRAWING SCALE
AS NOTED
CITY OF HOUSTON PM
JIADA HUANG
SHEET NO. 98 OF 101

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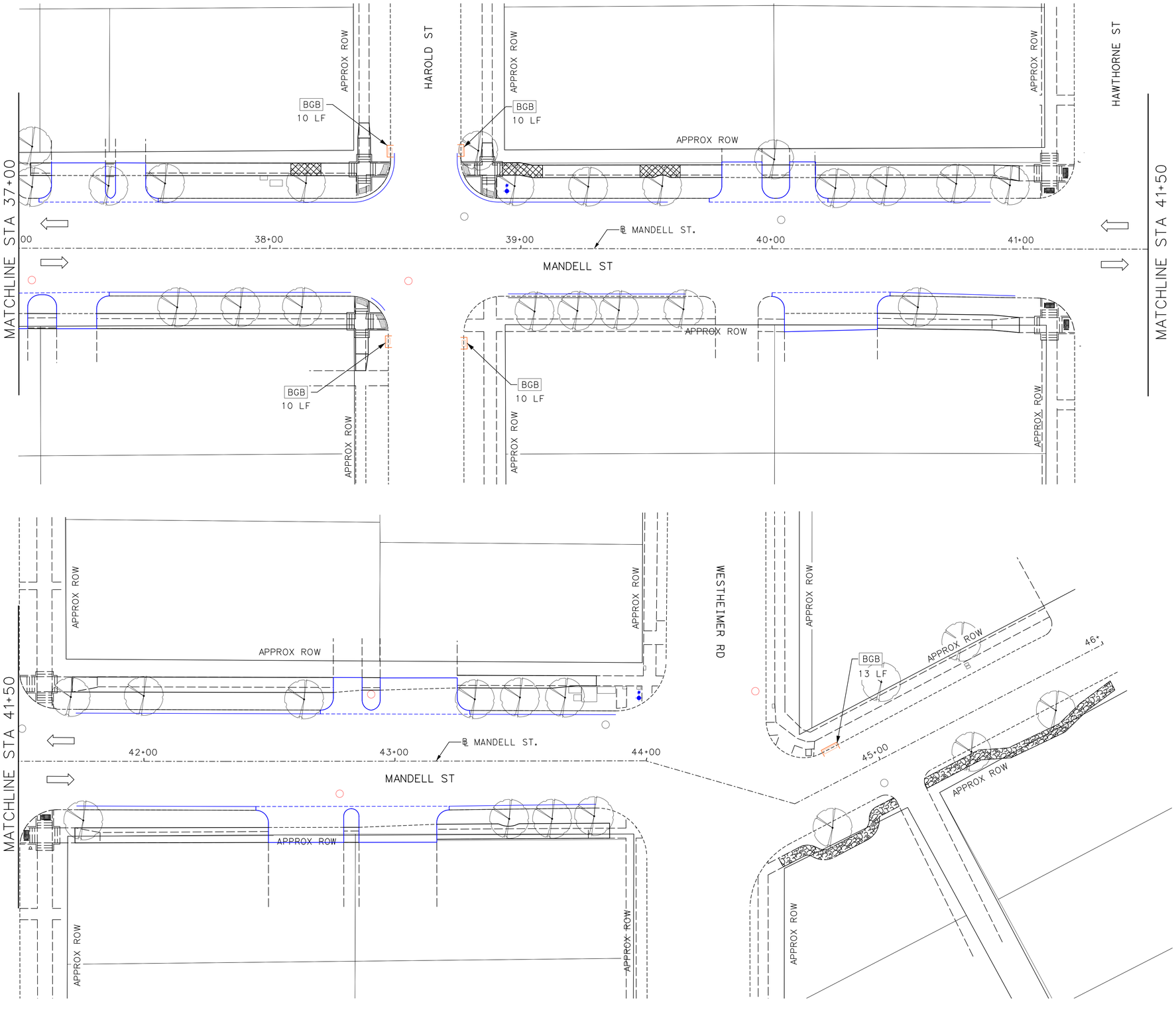
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LEGEND

BGB BAGGED GRAVEL BARRIER

NO.	DATE	REVISION	APP.



N

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

STORM WATER POLLUTION PREVENTION PLAN STA 37+00 TO END PROJECT

SHEET 5 OF 5

WBS NUMBER
N-T27000-003-7
DRAWING SCALE
AS NOTED
CITY OF HOUSTON PM
JIADA HUANG
SHEET NO. 99 OF 101

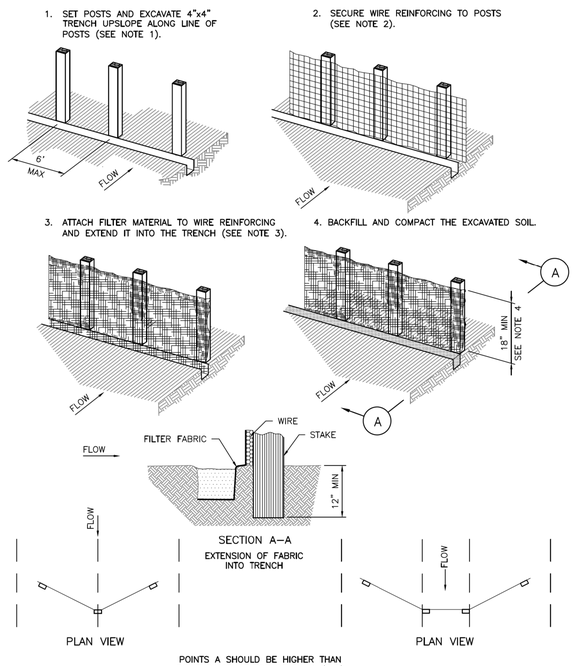
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ACCEPTED AND FILED
83215
CITY DRAWING NUMBER
Approval Date 10/26/26
HOUSTON TX

Design Filename: J:\2025\2503044\DesignData\Design Plans\Plan Production\SW3P\1137 - SW3P - MANDELL ST - 05.dgn

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.

1. SET POSTS AND EXCAVATE 4"x4" TRENCH UPSLOPE ALONG LINE OF POSTS (SEE NOTE 1).
2. SECURE WIRE REINFORCING TO POSTS (SEE NOTE 2).
3. ATTACH FILTER MATERIAL TO WIRE REINFORCING AND EXTEND IT INTO THE TRENCH (SEE NOTE 3).
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

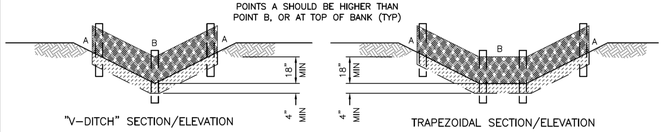


SECTION A–A
EXTENSION OF FABRIC INTO TRENCH

PLAN VIEW

PLAN VIEW

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



"V–DITCH" SECTION/ELEVATION

TRAPEZOIDAL SECTION/ELEVATION

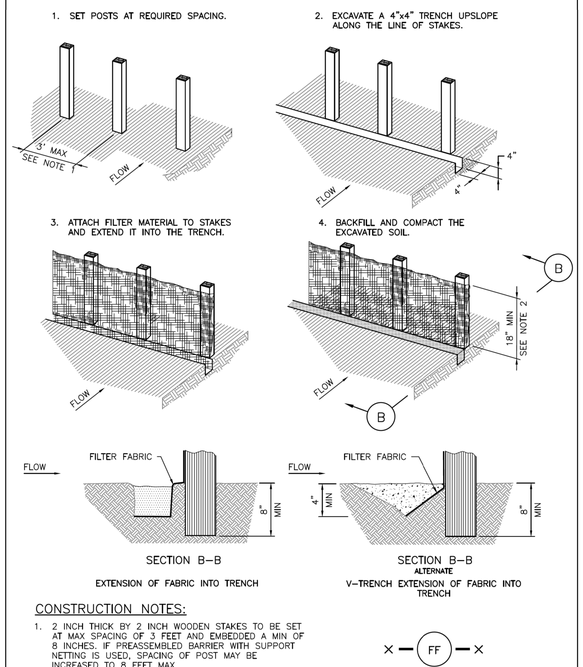
CONSTRUCTION NOTES:

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

SYMBOL

REINFORCED FILTER FABRIC BARRIER

1. SET POSTS AT REQUIRED SPACING.
2. EXCAVATE A 4"x4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.
3. ATTACH FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



SECTION B–B
EXTENSION OF FABRIC INTO TRENCH

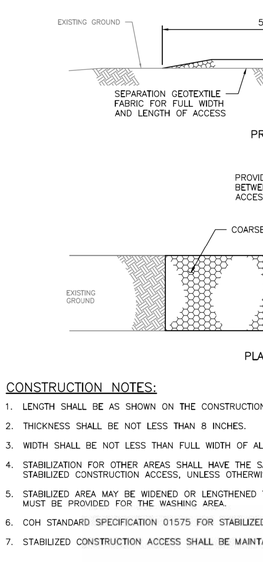
SECTION B–B
ALTERNATE
V–TRENCH EXTENSION OF FABRIC INTO TRENCH

CONSTRUCTION NOTES:

1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 6 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE COH STANDARD SPECIFICATION 01570 FOR FILTER FABRIC BARRIER.

SYMBOL

FILTER FABRIC BARRIER



PROFILE

PLAN VIEW

CONSTRUCTION NOTES:

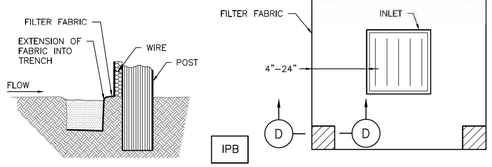
1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS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

SYMBOL

STABILIZED CONSTRUCTION ACCESS

CONSTRUCTION NOTES:

1. SEE CONSTRUCTION NOTES FOR RFB.



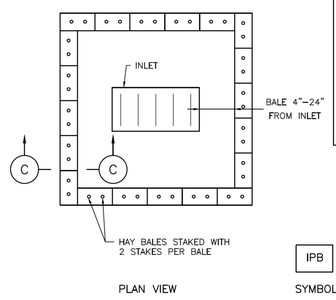
SECTION D–D

IPB

SYMBOL

PLAN VIEW

SILT FENCE INLET PROTECTION BARRIER

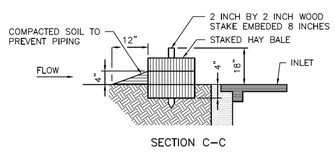


INLET PROTECTION BARRIER
(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER

PLAN VIEW

IPB

SYMBOL



SECTION C–C

HAY BALE INLET PROTECTION BARRIER

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: MAR–02–2026	DWG NO: 01570–01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STORMWATER POLLUTION PREVENTION PLAN DETAILS

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
NOT TO SCALE

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

HRGreen
11750 Katy Freeway, Suite 400
Houston, TX 77079
(832) 318–8800
(713) 965–0044 FAX
HRGreen.com
Firm No. F–11278

SURVEYED BY:

JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F–11278

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

STORM WATER POLLUTION PREVENTION DETAILS

SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–T27000–003–7	HOUSTON PUBLIC WORKS ACCEPTED AND FILED 83215 CITY DRAWING NUMBER Approval Date 10/26/26 HOUSTON TX
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
JIADA HUANG	
SHEET NO. 100 OF 101	

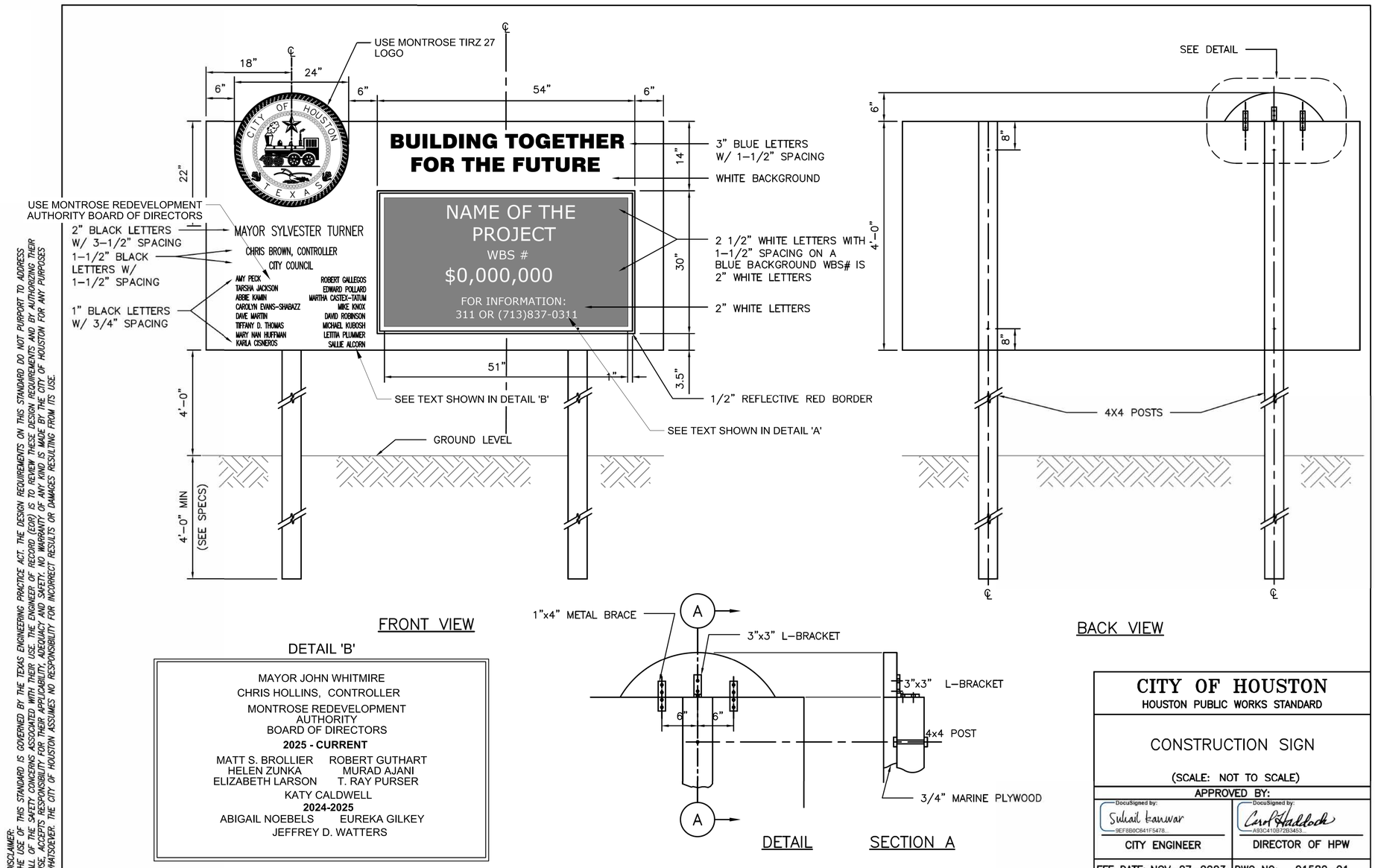
NO.	DATE	REVISION	APP.

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DETAIL 'B'

MAYOR JOHN WHITMIRE
CHRIS HOLLINS, CONTROLLER
MONTROSE REDEVELOPMENT AUTHORITY
BOARD OF DIRECTORS
2025 - CURRENT
MATT S. BROLLIER — ROBERT GUTHART
HELEN ZUNKA — MURAD AJANI
ELIZABETH LARSON — T. RAY PURSER
KATY CALDWELL
2024-2025
ABIGAIL NOEBELS — EUREKA GILKEY
JEFFREY D. WATTERS

DETAIL 'A'

MANDELL ST. IMPROVEMENTS

WBS NO. N-T27000-0003-7

$0,000,000

FOR INFORMATION:
311 OR (713) 837-0311

DISCLAIMER:
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONSTRUCTION SIGN

(SCALE: NOT TO SCALE)

APPROVED BY:

CITY ENGINEER	DIRECTOR OF HPW
DocuSigned by: Suhail Kanwar 9EF8B0C841F5478...	DocuSigned by: Carol Haddock A93C410B72B3453...

EFF DATE: NOV–27–2023 | DWG NO: 01580–01

NO.	DATE	REVISION	APP.

MONTROSE
TAX INCREMENT REINVESTMENT ZONE 27

HRGreen
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STATE OF TEXAS
JOHN R. HUML
140416
LICENSED PROFESSIONAL ENGINEER
07/20/2026
HRGREEN INC.
Texas Registered Engineering Firm F–11278

SURVEYED BY:

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MANDELL STREET IMPROVEMENTS

CONSTRUCTION SIGN

SHEET 1 OF 1

WBS NUMBER	N-T27000-003-7
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	JIADA HUANG
SHEET NO. 101 OF 101	

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