NOTICE:

*Construction in Harris County Flood Control District Right-of-Way requires:

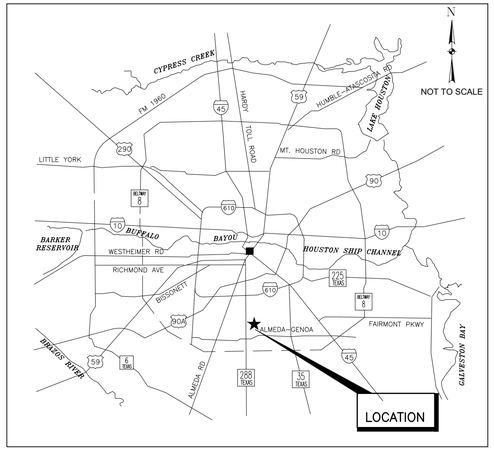
Site plans must be approved prior to obtaining the required HCFCD Right-of-Way Notification. Be advised that the HCFCD Right-of-Way Notification is separate from the site development permit package.

1.) HCFCD Right-of-Way Notification (permit)
2.) HCFCD 48-hr Pre-Construction Notification

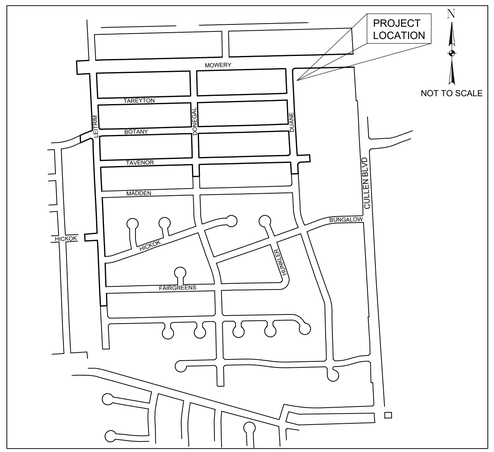
Both are required prior to entering or working within Harris County Flood Control District right-of-way. Both the HCFCD Right-of-Way Notification and 48-hour notification must be provided to HCFCD at dcid@hcfcd.org.

To apply for the HCFCD Right-of-Way Notification please go to http://apps.harriscountytx.gov/EPermits and apply for the HCFCD ROW under ROW Notification.

Failure to provide both items could result in project delays.



LOCATION MAP



VICINITY MAP
KEY MAP NO. 573 L & M
HCAD 5452C
ZIP CODE 77047

TDLR EABPRJ _____

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA PAVING & DRAINAGE

WBS NO. N-210004-0001-4

MAYOR
JOHN WHITMIRE

CONTROLLER
CHRIS HOLLINS

DISTRICT COUNCIL MEMBERS

AMY PECK, DISTRICT A
TARSHA JACKSON, DISTRICT B
JOE PANZARELLA, DISTRICT C
CARLOLYN EVANS-SHABAZZ, DISTRICT D
FRED FLICKINGER, DISTRICT E
TIFFANY D. THOMAS, DISTRICT F
MARY ANN HUFFMAN, DISTRICT G
MARIO CASTILLO, DISTRICT H
JOAQUIN MARTINEZ, DISTRICT I
EDWARD POLLARD, DISTRICT J
MARTHA GASTEX-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

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON JULY 8, 2019.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES.

UTILITY ONE CALL
CONTRACTOR TO CALL BEFORE DIGGING !!!!
PHONE:
HOUSTON (713) 223-4567
(STATEWIDE OUTSIDE HOUSTON)
1-(800)-545-6005

90% DESIGN REVIEW

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF ROAD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY: GEOSERV INC.
FB NO. P-5325

PARKS-FORESTRY DEPT.

METRO

HOUSTON WATER

TRANSPORTATION & DRAINAGE OPERATIONS

CAPITAL PROJECTS

SURVEY

CITY ENGINEER DATE

DIRECTOR OF HOUSTON PUBLIC WORKS DATE

SHEET NO 1 OF 159 SHEETS

FOR CITY OF HOUSTON USE ONLY

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NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
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TEXAS REGISTERED FIRM F–12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
MICHAEL BAGSTAD
81193
REGISTERED PROFESSIONAL ENGINEER
6-24-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

INDEX SHEET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 2 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\02 – G–002 – INDEX.DWG APR. 09, 2020–8:12am JAMES GAIBORT

PRIVATE UTILITY NOTES:

AT&T TEXAS/ SWBT FACILITIES:

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

CENTERPOINT ENERGY NOTES:

CAUTION: UNDERGROUND GAS FACILITIES

1. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.
   -WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL 713-945-8036 OR 713-945-8037 (7:00 AM TO 4:30 PM) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
   -WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
   -WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
   -FOR EMERGENCIES REGARDING GAS LINES CALL 713-659-3552 OR 713-207-4200
2. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL LINES:

1. OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:
   -ANY ACTIVITY WHERE PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND
   -OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.
2. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT 713-207-2222.

ACTIVITIES ON/OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

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

STORM CONSTRUCTION NOTES

1. STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 2317-02, 02317-3, 02317-05, 02317-06, AND 02317-07 (OCT. 2002) AS APPLICABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. ALL STORM SEWER CONSTRUCTED IN SIDE LOT EASEMENT SHALL BE R.C.P (C-76, CLASS III) 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. STABILIZED 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 MECHANICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST (ASTM D-698/AASHTO T99).
5. CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.
6. ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24" AND LARGER R.C.P. (C-76, CLASS III).
7. ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.
8. MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 48-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES. MINIMUM VERTICAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 18-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES.
9. ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02086-ADJUSTING MANHOLES, INLETS, AND VALVE BOXES TO GRADE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK.
11. ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.
12. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

SWPPP CONSTRUCTION NOTES

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.
2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.
3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FORM THE EXCAVATED AREA.
4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.
5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

   DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
   AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
   STRUCTURAL CONTROL MEASURES.
   LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.
6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

STANDARD NOTES FOR CONSTRUCTION DRAWINGS (HCFCD):

1. Obtain and comply with all applicable City, County, State, and Federal permits and approvals, with assistance from Engineer, if necessary. Obtain permit (certification) from Harris County Engineer to enter Harris County Flood Control District right-of-way.
2. Notify the Harris County Flood Control District's Development Coordination and Inspection Department in writing at least 48 hours prior to construction. Submit the HCFCD 48 Hour Pre-Construction Notification form, a copy of the approved construction drawings, and a copy of the Corps of Engineers individual Section 404 Permit or compliance with Nationwide Permit, if applicable, to HCFCD, 9900 Northwest Freeway, Houston, Texas 77092, Attn: Development Coordination and Inspection Dept. by hand delivery, by email DCID@hcfcd.org, or fax to 713-684-4129 (fax number).
3. Engineer shall submit certification letter and record drawings to the Harris County Flood Control District's Development Coordination and Inspection Section requesting inspection of items constructed in Harris County Flood Control District right-of-way. Prior to requesting inspection, the drainage right-of-way and/or easements shall be staked and flagged.
4. Protect, maintain, and restore existing backslope drainage systems.
5. Backslope swale and interceptor structure elevations and locations shown on plans are approximate. Final elevations and locations shall be field verified by the Engineer prior to installation.
6. Establish turf grass on all disturbed areas within the channel or detention right-of-way, except the channel bottom and where structural erosion measures are used. Minimum acceptance criteria are 75% coverage of live Bermuda grass and no erosion or rills deeper than 4".
7. Perform all activities within Harris County Flood Control District right-of-way in accordance with the most recent Harris County Flood Control District Standard Specifications Book.
8. Excavate channel flowline to design elevation as shown on plans and downstream, as necessary, to ensure no water remains in the facility (storm sewer, lateral channel, or dry bottom detention basin) during normal water surface conditions in the channel, so the facility will function as intended. For wet bottom detention basins, ensure no water is above the design level in the wet bottom during normal water surface conditions in the channel.
9. Maintain flow in channel during construction and restore channel to original condition.
10. Remove all excavated material from the Harris County Flood Control District or drainage right-of-way. No fill is to be placed within a designated flood plain area without first obtaining a fill permit from the appropriate jurisdictional authority.

NOTICE:

*CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT OF WAY REQUIRES:

1.) HCFCD RIGHT OF WAY NOTIFICATION (PERMIT)
2.) HCFCD 48 HR PRE CONSTRUCTION NOTIFICATION

BOTH ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT OF WAY. BOTH THE HCFCD RIGHT OF WAY NOTIFICATION AND 48 HOUR NOTIFICATION MUST BE PROVIDED TO HCFCD AT DCID@HCFCD.ORG. SITE PLANS MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED HCFCD RIGHT OF WAY NOTIFICATION. BE ADVISED THAT THE HCFCD RIGHT OF WAY NOTIFICATION IS SEPARATE FROM THE SITE DEVELOPMENT PERMIT PACKAGE.

TO APPLY FOR THE HCFCD RIGHT OF WAY NOTIFICATION PLEASE GO TO
HTTP://APPS.HARRISCOUNTYTX.GOV/EPERMITS AND APPLY FOR THE HCFCD ROW UNDER ROW NOTIFICATION.

FAILURE TO PROVIDE BOTH ITEMS COULD RESULT IN DELAYS AND ADDITIONAL CONSTRUCTION COSTS.

GENERAL NOTES- INSIDE CITY LIMITS

1. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING, AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS. WATER LINES, STORM DRAINAGE, AND STREET PAVING PUBLISHED BY HOUSTON PUBLIC WORKS.
2. THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT WAS CONDUCTED IN ACCORDANCE WITH CHAPTER 11 OF THE LATEST EDITION OF THE PUBLICATION INFRASTRUCTURE DESIGN MANUAL, PUBLISHED BY HOUSTON PUBLIC WORKS. SOILS REPORT WAS PREPARED BY [GEOTECHNICAL ENGINEERING FIRM] REPORT NO. [NO. OF REPORT], DATED [DATE OF REPORT].
3. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. UTILITIES MARKED WITHIN THE PUBLIC RIGHT OF WAY OR IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, RULE §18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE HOUSTON PUBLIC WORKS, STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEM, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING, REFERENCED ABOVE, AT NO ADDITIONAL COST.
5. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, HOUSTON PUBLIC WORKS @ 832-394-9098 OR VIA FAX AT 832-395-4424 FOR INSPECTION AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
6. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER.
7. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG THE AREA OF EXCAVATION.
8. CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.
9. CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS AND RECORD AS-BUILT CONDITIONS DURING CONSTRUCTION. THESE REDLINE MARKED UP DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.

TRAFFIC NOTES

1. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TEXAS MUTCD, MOST RECENT EDITION WITH REVISIONS) DURING CONSTRUCTION.
2. NO TRAFFIC LANES SHALL BE CLOSED DURING THE HOURS OF 5:30AM TO 7:00PM MONDAY THRU FRIDAY IN DOWNTOWN/MIDTOWN AREA.
3. NO LANES ON MAJORITY THOROUGHFARES MAY BE BLOCKED FROM 6:00AM TO 9:00AM AND 4:00PM TO 7:00PM UNLESS OUTLINED IN THE MOBILITY PERMIT.
4. NO TRAFFIC LANES SHALL BE CLOSED IN ALL RESIDENTIAL AREAS FROM 7:00PM TO 7:00AM.
5. CONTRACTOR SHALL MAINTAIN ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS.
6. CONTRACTOR SHALL COVER OPEN EXCAVATIONS WITH STEEL PLATES ANCHORED PROPERLY DURING ON-WORKING HOURS, AND OPEN THE LANES FOR NORMAL TRAFFIC FLOW.
7. _OFF-DUTY UNIFORMED POLICE OFFICER(S)/:FLAGGER(S) IS/ARE REQUIRED TO DIRECT TRAFFIC WHEN THE LANES ARE BLOCKED.
8. IN THE EVENT THAT NO "TRAFFIC CONTROL PLANS" EXIST AS A PART OF CONTRACT DRAWINGS, CONTRACTOR MAY PREPARE PLANS* AND SUBMIT TO THE PLAN REVIEW SECTION FOR APPROVAL TEN DAYS PRIOR TO IMPLEMENTATION.
9. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, HE/SHE SHALL BE RESPONSIBLE FOR PREPARING AND SUBMITTING AN ALTERNATE SET OF PLANS* TO THE PLAN REVIEW SECTION FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION.
10. APPROVED COPIES OF TRAFFIC CONTROL PLANS AND MOBILITY PERMITS SHALL BE MADE AVAILABLE FOR INSPECTION AT THE JOB SITE AT ALL TIMES. CONTRACTORS MUST SECURE MOBILITY PERMITS FROM THE CITY'S TRAFFIC MANAGEMENT AND MAINTENANCE BRANCH BEFORE CLOSING A LANE/SIDEWALK. THE REQUEST MUST BE MADE AT LEAST 10 DAYS IN ADVANCE OF THE CLOSURE. NOTE THAT WORKING HOURS MAY BE RESTRICTED OR THE REQUEST MAY BE DENIED. CALL 832-395-3020 FOR AN APPLICATION OR LOGON TO WWW.GIMS.HOUSTONTX.GOV .

SANITARY SEWERS CONSTRUCTION NOTES

1. ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON "STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC" AND ALL CURRENT AMENDMENTS THERETO AND BE SUBJECT TO A STANDARD EXFILTRATION TEST. TESTS ARE TO BE PERFORMED ON THE TOTAL FOOTAGE OF SEWER LINE INCLUDED IN THE PROJECT. REQUIREMENTS OF TEXAS ADMINISTRATIVE CODE, TITLE 30 CHAPTER 317, "DESIGN CRITERIA FOR SEWERAGE SYSTEMS" SHALL GOVERN WHERE CONFLICTS EXIST EXCEPT WHERE CITY REQUIREMENTS ARE MORE STRINGENT.
2. ALL MANHOLES ARE TO BE PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBERS 02082-01, 02082-02, 02082N-02, 02082-03, AND 02082N-03 UNLESS OTHERWISE NOTED. USE 2010 VERSION AS APPLICABLE.
3. SANITARY SEWER MANHOLES WILL HAVE BEDDING AND BACKFILL PER CITY OF HOUSTON STANDARD DETAILS DRAWING NO. 02317-08 UNLESS OTHERWISE NOTED.
4. THE SANITARY SEWER PVC PIPE SHALL BE ASTM D 3034 TYPE PSM SDR 26 GRAVITY SEWER PIPE, ASTM D2241 SDR 26 PRESSURE RATED SEWER PIPE OR AWWA C-900 DR-18 GREEN PVC PRESSURE RATED SEWER PIPE BASED ON CONSTRUCTION CONDITION REQUIREMENT AND CONFORMING TO ASTM D1784 AND CITY OF HOUSTON STANDARD SPECIFICATION SECTION 02506 POLYVINYL CHLORIDE PIPE.
5. WHEN SS PRESSURE RATED PVC PIPE IS USED ON WATERLINE (WL) CROSSING UNDER CONDITION 1 OF COH IDM TABLE 7.3, THE SAME TYPE OF D2241 SDR 26 PVC PIPE OR C-900 GREEN DR-18 PVC GREEN PRESSURED TO BE UTILIZING IN-BETWEEN TWO SS MH'S, OR TO UTILIZE A DI TRANSITION ADAPTER FOR THE CONNECTING OF ASTM D-3034 PVC GRAVITY PIPE TO DI-OD AWWA C-900 PVC PIPE CENTERED AT WL WHEN CONNECTING TWO DIFFERENT TYPES OF PVC PIPES FOR SEWER CONSTRUCTION.
6. AWWA C-900 DR-18 PVC PIPE USES EITHER AWWA C900 DR-18 PVC FITTINGS OR DIP FITTINGS.
7. ALL SANITARY SEWER LINES UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL HAVE BEDDING PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBERS 02317-01, 02317-02, OR 02317-03 AS APPLICABLE, WITH 1 ½ SACK CEMENT/CY STABILIZED SAND BACKFILL UP TO THE BOTTOM OF THE PAVEMENT SUBGRADE. 100 PSI PERFORMANCE RESULTS ARE STILL REQUIRED.
8. ALL SANITARY SEWERS CROSSING WATER LINES WITH A CLEARANCE BETWEEN 12 INCHES AND 9 FEET SHALL HAVE A MINIMUM OF ONE 18' JOINT OF 150 PSI DUCTILE IRON OR (GREEN) C900 PVC PIPE MEETING ASTM SPECIFICATION D2241 CENTERED ON WATER LINE. WHEN WATER LINE IS BELOW SANITARY SEWER PROVIDE MINIMUM 2 FOOT SEPARATION.
9. CONTRACTOR SHALL PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 9' FEET BETWEEN WATER LINES AND SANITARY SEWER MANHOLES AND LINES.
10. SANITARY SEWER MANHOLE RIMS OUTSIDE OF PROPOSED PAVING WILL BE SET 3" - 6" ABOVE THE SURROUNDING LEVEL FINISHED GRADE AFTER PAVING WITH SLOPED BACKFILL ADDED FOR STORM WATER TO DRAIN AWAY FROM MANHOLE RIM.
11. IN WET STABLE TRENCH AREAS USE BEDDING PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBER 02317-02 (2002).
12. DEFLECTION TEST: DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE AND SEMI-RIGID SEWER PIPE. THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF 5% IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID MANDREL, IT SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED AS PER 30 TAC 317.2 LATEST AMENDMENT AND WITHOUT MECHANICAL PULLING DEVICES. NO BALL-TYPE MANDREL IS ALLOWED.
13. INFILTRATION, EXFILTRATION OR LOW-PRESSURE AIR TEST: EITHER OF THE FOLLOWING TESTS SHALL BE PERFORMED AS PER TAC, TITLE 30 317.2 WITHIN THE SPECIFIED TOLERANCES ON ALL GRAVITY SEWERS.
14. INFILTRATION OR EXFILTRATION TEST: TOTAL LEAKAGE AS DETERMINED BY A HYDROSTATIC HEAD TEST SHALL NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO (2) FEET.

A. LOW-PRESSURE AIR TEST: PERFORM TEST ACCORDING TO UNI-B-6-90 OR OTHER APPROPRIATE PROCEDURES. FOR SECTIONS OF PIPE LESS THAN 36" (INCH) AVERAGE INSIDE DIAMETER, THE MINIMUM ALLOWABLE TIME FOR PRESSURE DROP FROM 3.5 P.S.I.G. TO 2.5 P.S.I.G. SHALL BE AS FOLLOWS:

B. 6" 340 SECONDS OR 0.855(L) FOR TEST LENGTHS GREATER THAN 398'
   8" 454 SECONDS OR 1.520(L) FOR TEST LENGTHS GREATER THAN 298'
   10" 567 SECONDS OR 2.374(L) FOR TEST LENGTHS GREATER THAN 239'
   15" 850 SECONDS OR 5.342(L) FOR TEST LENGTHS GREATER THAN 159'
   18" 1020 SECONDS OR 7.693(L) FOR TEST LENGTHS GREATER THAN 133'

   WHERE L = LENGTH OF LINE OF SAME PIPE SIZE IN FEET.

15. "SAN. S. E." INDICATES "SANITARY SEWER EASEMENT"
16. FOR SANITARY MANHOLE (MH) RIMS SET INSIDE OF OR @ CURB & GUTTER PAVEMENT AND/OR BELOW T.C., MH RIMS WILL BE SET FLUSHED WITH AN ABUTTING PAVED SURFACE. THE (VALCUN, NEENAH OR EQUAL) HEAVY DUTY BOLTED SOLID MH COVER SHALL BE PROPERLY (AND SECURELY) ATTACHED AND SEALED TO ITS COMPATIBLE GASKETED FRAME BY USING BOTH A NEOPRENE GASKET AND (AT LEAST) 4 COUNTER-SUNK HEX-HEAD COARSE THREADED ½"-1.3 UNC STAINLESS STEEL BOLTS. THE HEAVY DUTY FRAME MH COVER SHALL BE SOLID (NO AIR HOLES). SAID FRAME SHALL BE BOTH EMBEDDED INTO THE MH'S TOP ALSO SECURELY ANCHORED TO THE UNDERLYING MH STRUCTURE WITH EITHER SECURELY ATTACHED EMBEDDED ANCHOR BOLTS OR THE CONCRETE MH'S EXPOSED REBARS WELDED TO THE FRAME OR OTHER EQUALLY SECURED METHODS TO PREVENT MH COVER/FRAME BLOW-OFFS/EJECTIONS.

STREET & BRIDGE CONSTRUCTION NOTES

1. HOUSTON PUBLIC WORKS "STANDARD CONSTRUCTION SPECIFICATIONS" AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING" UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN IS CONSISTENT WITH THE MINIMUM STANDARDS ESTABLISHED IN THE "INFRASTRUCTURE DESIGN MANUAL" REFERENCED AT: https://edocs.publicworks.houstontx.gov/engineering-and-construction/design-manuals.html
2. FILL AREAS ON PLANS SHALL BE FILLED IN LAYERS NOT EXCEEDING 8" IN DEPTH AND EACH COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY PRIOR TO INSTALLATION OF WATER LINE AND FILL AREA SHALL BE SEEDED AND FERTILIZED WITHIN 10 WORKING DAYS.
3. UTILITY CONTRACTOR SHALL PROVIDE TEMPORARY SILT BARRIER FENCE ON ALL NON-CURBED INLETS WHICH WILL REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.
4. CONTRACTOR SHALL PROVIDE SILT BARRIER FENCE ON ALL STAGE 1 CURB INLETS.
5. 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.
6. 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.
7. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO SATISFACTION OF THE OWNING AUTHORITY.
8. 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.
9. CONTRACTOR TO TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG AREAS OF EXCAVATION.
10. CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAWS CONCERNING EXCAVATION, TRENCHING AND SHORING AS SPECIFIED IN CITY OF HOUSTON ORDINANCE #87-1457.
11. WHEEL CHAIR 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.
12. WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE HOUSTON PUBLIC WORKS "STANDARD CONSTRUCTION SPECIFICATIONS" AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS. WATER LINES, STORM DRAINAGE AND STREET PAVING" UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN SHOULD BE CONSISTENT WITH THE MINIMUM STANDARD ESTABLISHED IN THE "DESIGN MANUAL FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORMS DRAINAGE AND STREET PAVING".
13. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGES TO EXISTING WATER, WASTEWATER, STORM SEWER AND TRAFFIC SIGNAL CONDUITS, ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE HOUSTON PUBLIC WORKS "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THERETO, AT NO COST TO THE CITY OF HOUSTON.
14. 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.
15. 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.

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
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LEGEND

SYMBOL		DESCRIPTION
EXISTING PLAN VIEW	PROPOSED PLAN VIEW	
		AT&T/SWBT TEXAS MH
		MAILBOX
		PEDESTAL
		POWER POLE
		GAS OR ELECT. YARD LIGHT
		STREET LIGHT
		SIGN
		MANHOLE
		GRATE INLET
		CURB INLET
		WATER VALVE
		FIRE HYDRANT
		WATER METER
		ROUND CONNECTIONS
		SPRINKLER VALVE
		GAS LAMP
		GAS VALVE
		GAS METER
		DECIDUOUS TREE
		CONIFER TREE
		SHRUB
		ASPHALT PAVEMENT
		AT&T TEXAS/SWBT
		CENTERPOINT GAS LINE
		CONCRETE WALK
		EASEMENT
		EDGE OF PAVEMNT
		ELECTRICAL, OVERHEAD
		FENCE
		SANITARY SEWER
		SANITARY SEWER W/RESTRAINED PIPE
		SANITARY SEWER (AUGERED)
		STORM SEWER (24" AND SMALLER)
		STORM SEWER (30" AND LARGER)
		WATER LINE
		WATER LINE W/RESTRAINED PIPE

SYMBOL		DESCRIPTION
EXISTING PROFILE VIEW	PROPOSED PROFILE VIEW	
		AT&T/SWBT TEXAS CONDUIT
		AT&T/SWBT TEXAS MANHOLE
		CENTERPOINT ENERGY GAS LINE
		HOUSTON LIGHTING & POWER CO. MANHOLE
		NORTH OR EAST DITCH OR CURB
		NORTH OR EAST RIGH-OF-WAY
		SOUTH OR WEST DITCH OR CURB
		SOUTH OR WEST RIGHT-OF-WAY
		SANITARY SEWER MANHOLE AND CLEANOUT
		SANITARY SEWER TUNNEL CONSTRUCTION
		SANITARY SEWER (24" AND SMALLER)
		SANITARY SEWER W/RESTRAINED PIPE
		SANITARY SEWER LINE (AUGERED)
		STORM SEWER (24" AND SMALLER)
		STORM SEWER (30" AND LARGER)
		STORM SEWER INLET
		STORM SEWER MANHOLE
		WATER LINE (4" AND LARGER)
		WATER LINE W/RESTRAINED PIPE
		WATER LINE STEEL SECTIONS OFFSET SECTION AS PER COH DETAILS 02511-01

ABBREVIATIONS

@	AT
&	AND
DA	DEFLECTION ANGLE
ABAN	ABANDONED
AB	ALL BELL
AC	ACRE
ADJ	ADJUSTMENT
APP	APPROXIMATE
ASPH	ASPHALT
AUG	AUGER
AVE	AVENUE
B-B	BACK TO BACK
BC	BACK OF CURB
B/F	BLIND FLANGE
BL	BUILDING LINE
BLDG	BUILDING
BLVD	BOULEVARD
BM	BENCH MARK
BV	BUTTERFLY VALVE
BW	BOTH WAYS
C	CURVE
C-C	CENTER TO CENTER
CF	CUBIC FEET
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CO	CLEAN OUT OR COUNTY
COH	CITY OF HOUSTON
COMM	COMMERCIAL
CON	CONCRETE
COND	CONDUIT
CONN	CONNECTION
COR	CORNER
CP&A	CUT PLUG AND ABANDON
C&P	CUT AND PLUG
CR	CREEK
CTB	CONCRETE TRAFFIC BARRIER
CUL	CULVERT
CV	CHECK VALVE
CY	CUBIC YARD
DEG	DEGREE OR DEGREE OF CURVATURE
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DRIVE
DWY	DRIVEWAY
DTL	DETAIL
DWG	DRAWING
E	EAST
EA	EACH
EC	EDGE OF CONCRETE
ELEV	ELEVATION
ELEC	ELECTRIC
EOP	EDGE OF PAVEMENT
ESMT	EASEMENT
ESPL	ESPLANADE
EXIST	EXISTING
EXC	EXCAVATION
EXP	EXPANSION
FEN	FENCE
FF	FINISHED FLOOR
F-F	FACE TO FACE
FFF	FILTER FABRIC FENCE
FH	FIRE HYDRANT
FL	FLOW LINE
FM	FORCE MAIN
FND	FOUND
FT	FLUSH VALVE
GT	GUTTER
GALV	GALVANIZED
GM	GAS METER
GRAV	GRAVEL
GV	GATE VALVE
HB	HIGH BANK
HC	HARRIS COUNTY
HCFCD	HARRIS COUNTY FLOOD CONTROL DISTRICT
HGL	HYDRAULIC GRADE LINE
HL&P	HOUSTON LIGHTING & POWER
HMABC	HOT MIX ASPHALTIC BASE COURSE
HP	HIGH POINT
HWY	HIGHWAY
ID	INSIDE DIAMETER
INL	INLET
INV	INVERT ELEVATION
IP	IRON PIPE
IR	IRON ROD
JT	JOINT
L	LENGTH OF CURVE
LB	POUNDS
LC	CHORD LENGTH OF CURVE
LF	LINEAR FEET
LN	LANE
LP	LOW POINT OR LIGHT POLE
LS	LUMP SUM
LSSG	LIME STABILIZED SUBGRADE
LT	LEFT OR LIGHT
MAX	MAXIMUM
MATL	MATERIAL
MEG	MATCH EXISTING GRADE
MH	MANHOLE
MIN	MINIMUM
M/L	MATCH LINE
MOD	MODIFY
MON	MONUMENT
MRC	MONOLITHIC REINFORCED CONCRETE
MW	MONITORING WELL
N	NORTH
NE	NORTHEAST
NG	NATURAL GROUND
NIC	NOT IN CONTRACT
NO	NUMBER
NOR	NORMAL
NTS	NOT TO SCALE
NW	NORTHWEST
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OHE	OVERHEAD ELECTRIC
PC	POINT OF CURVATURE
PCC	PORTLAND CEMENT CONCRETE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE OR PIPE LINE
POC	POINT ON CURVE
POT	POINT ON TANGENT
PP	POWER POLE
PROP	PROPOSED
PSI	POUNDS PER SQUARE INCH
PT	POINT OR POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE OR POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
QTY	QUANTITY
R	RADIUSOR RIVER
RC	REVEE CURVE
RCCP	REINFORCED CONCRETE CULVERT PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REF	REINFORCED
REM	REMOVE
RES	RESIDENTIAL
REQD	REQUIRED
RFFF	REINFORCED FILTER FABRIC FENCE
ROW	RIGHT-OF-WAY
RP	RADIUS POINT
RR	RAIL ROAD
RT	RIGHT
S	SOUTH OR SLOPE
SBL	SURVEY BASE LINE
SAN	SANITARY
SE	SOUTHEAST
SEC	SECTION
SF	SQUARE FEET
SH	SHEET
SHLDR	SHOULDER
SP	SPACED OR SPACING
SPEC	SPECIFICATION
SQ	SQUARE
ST	STREET OR SAINT
STA	STATION
STAB	STABILIZED
STD	STANDARD
STM	STORM
SUB	SUBGRADE
SW	SOUTHWEST
SWBT	SOUTHWESTERN BELL TELEPHONE COMPANY
SWK	SIDEWALK
SWR	SEWER
SY	SQUARE YARD
T	TANGENT
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TCT	TOP OF CASTING
TEL	TELEPHONE
TEMP	TEMPORARY
TMUTCD	TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
TP	TOP OF PAVEMENT
TS&V	TAPPING SLEEVE & VALVE
TW	TOP OF WALK
TXDOT	TEXAS DEPARTMENT OF TRANSPORTATION
TY	TYPE
TYP	TYPICAL
UG	UNDER GROUND
UTL	UTILITY
V	VERTICAL
VAR	VARIABLE
VB	VALVE BOX
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VOL	VOLUME
W	WEST OR WHITE
W/	WITH
W/O	WITHOUT
WC	WET CONNECTION
WL	WATER LINE
WM	WATER METER
WS	WATER STOP
WV	WATER VALVE
WWF	WOVEN WIRE FABRIC
X	EASTING GRID COORDINATE
X-ING	CROSSING
X-SEC	CROSS SECTION
Y	NORTHING GRID COORDINATE OR YELLOW

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THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER

SURVEYED BY:GEOSURV, INC.
FB NO.

8/3/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

LEGEND AND ABBREVIATIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 4 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\GENERAL\04-LEGEND AND ABBREVIATIONS.DWG AUG. 03, 2026-8:41am

(1) PROPOSED 6–INCH CONCRETE PAVEMENT W/8–INCH–8% LIME STABILIZED SUB–GRADE AND 6–INCH CONCRETE CURB.

(2) REMOVE EXISTING RAMP & CONSTRUCT PROPOSED WHEELCHAIR RAMP (SEE DETAIL 02775–02 & 02775–06).

(3) CONSTRUCT PROPOSED 5–FOOT WIDE 4 1/2–INCH THICK CONCRETE SIDEWALK.

(4) PROPOSED CONCRETE PAVING HEADER PER DETAIL.

(5) PROPOSED SIDEWALK TO MATCH EXISTING SIDEWALK.

(6) CAP & PLUG PROPOSED STORM OR SANITARY SEWER FOR FUTURE CONNECTION.

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

(8) PROPOSED SAWED JOINT AND EXPOSE 15 INCHES OF REINFORCING STEEL. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. SEE NOTE 19. CONTRACTOR TO COMPLY WITH STREET CUT ORDINANCE AND DETAILS

(9) REMOVE EXISTING RAMP & CONSTRUCT PROPOSED PARALLEL CURB RAMP (SEE DETAIL 02775–03).

(10) (10.1) (10.2) (10.3) (10.4) (10.5) (10.6) (10.7) (10.8)

Table 7.3
PROTECTION REQUIREMENTS AT
WATER LINE (WL) - SANITARY SEWER (SS) CROSSINGS

	PROPOSED WATER LINE				PROPOSED SANITARY SEWER			
	OVER		UNDER		OVER		UNDER	
	EXISTING SS	PROP SS	EXISTING SS	PROP SS	EXISTING WL	PROP WL	EXISTING WL	PROP WL
Minimum 2 feet vertical clearance	√[1]	√[1]	√	√	Not Allowed	√	√[1]	√[1]
Place 1 full section (min 18 ft) of WL centered at SS Crossing. Provide restrained joints on WL, spaced at least 9 ft horizontally from centerline of SS	√	√	√	√		√		√
Place 1 full section (min 18 ft) of SS centered at WL Crossing. Provide restrained joints on SS, spaced at least 9 ft horizontally from centerline of WL		√					√	√
Replace 1 full section of existing SS with pressure-rated DIP or pressure-rated PVC pipe with adapters and restrained joints centered at WL crossing	√[2,3]		√[3]					
Provide DIP for small diameter WL (less than 24 inches), PVC pipe is only allowed if encased as per TAC § 290.44, and use restrained joints for both DIP and PVC pipe			√	√		√		
Embed SS with CSS for the total length of 1 pipe segment plus 1 foot beyond the joints on each end	√[2,3]	√[4]	√[3]	√[4]		√[4]	√[4]	√[4]
Place 1 full section (min 18 ft) of min 150 psi SS centered at WL crossing. Provide restrained joints on SS, spaced at least 9 ft horizontally from centerline of WL or encase in a joint of 150 psi pressure pipe (min 18 ft) two nominal sizes larger with spacers at 5 ft interval.				√		√		

1. Minimum clearance is 2 feet for non-pressure rated SS and 1 foot for pressure rated SS
2. Required if existing SS is disturbed and /or there is evidence of leakage
3. Not required for augered WL unless there is evidence of leakage; completely fill augered hole with bentonite/clay mixture
4. Not required for augered SS; completely fill augered hole with bentonite/clay mixture

Note:
a. Both water lines and wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600 standards
b. Sanitary sewers (SS) is applicable to both gravity sanitary sewers and force mains.

(11) REMOVE AND REPLACE CONCRETE DRIVEWAY WITH 5' RADIUS (TYP), SAWCUT AT RIGHT–OF–WAY; UNLESS OTHERWISE SHOWN IN PLANS.

(12) REMOVE AND REPLACE EXISTING WALKWAYS AT THE EXISTING WIDTH WITH 4 1/2–INCH THICK CONCRETE.

(13) REMOVE EXISTING CONCRETE PAVEMENT, CONCRETE CURB, CONCRETE BASE, AND CEMENT STABILIZED SHELL BASE COURSE WITH OR WITHOUT ASPHALT SURFACING. (ALL THICKNESS)

(14) REMOVE EXISTING CONCRETE SIDEWALKS.

(15) REMOVE EXISTING WHEELCHAIR RAMP.

(16) REMOVE, DISPOSE AND BACKFILL OF EXISTING STORM SEWER PIPE (24"DIA & SMALLER).

(17) REMOVE, DISPOSE AND BACKFILL EXISTING MANHOLE TO FULL DEPTH.

(18) REMOVE, DISPOSE AND BACKFILL EXISTING INLET.

(19) HORIZONTAL DOWELS SHALL BE NO. 6 BARS, 24 INCHES LONG, DRILLED AND EMBEDDED 12 INCHES INTO THE CENTER OF THE EXISTING SLAB WITH PO ROC OR EQUAL. DOWELS SHALL BE 12 INCHES, CENTER TO CENTER, UNLESS OTHERWISE SPECIFIED. USE GRADE 60 STEEL.(INCIDENTAL)

(20) REMOVE & DISPOSE EXIST. SANITARY SEWER LINE.

(21) ADJUST, REMOVE OR RELOCATE EXISTING WATER METER AND/OR WATER VALVE TO GRADE. RELOCATE WATER METER BOX. IF IN PAVING. REPLACE MISSING OR DAMAGED METER/VALVE BOXES AND COVERS. CONTACT SENIOR CHIEF INSPECTOR AT SERVICE INSPECTION DESK AT 713–371–1367 48 HOURS BEFORE COMMENCING WORK

(22) REMOVE AND RELOCATE EXISTING FIRE HYDRANT AND EXISTING VALVE.

(23) ABANDON EXISTING STORM SEWER PIPE IN ACCORDANCE WITH SPEC SECTION 02222.

(24) ADJUST STORM OR SANITARY MANHOLE TO GRADE.

(25) REMOVE, DISPOSE AND BACKFILL EXIST. STORM SEWER PIPE.(30" & LARGER).

(26) PROPOSED PRECAST CONCRETE SANITARY SEWER MANHOLE WITH SEALED MANHOLE COVER OVER EXIST. LINE

(27) PROPOSED PRECAST CONCRETE SANITARY SEWER MANHOLE WITH SEALED MANHOLE COVER.

(28) PROPOSED 4–INCH ASPHALT TRANSITION W/10–INCH BLACK BASE AD 6–INCH STABILIZED SUB–GRADE.

(29) PROTECT EXIST. POWER POLE/LIGHT AND /OR TEL. PED. IN PLACE (INCIDENTAL).

(30) PROTECT EXISTING FIRE HYDRANT IN PLACE & ADJUST EXIST. VALVE TO GRADE. CONTRACTOR IS RESPONSIBLE FOR DAMAGING THE FIRE HYDRANT.

(31) PLACE 1 FULL SECTION (MIN 18 FT) PRESSURE–RATED SANITARY SEWER CENTERED AT WATER LINE CROSSING. PROVIDE RESTRAINED JOINTS ON SANITARY SEWER, SPACED AT LEAST 9' HORIZONTALLY FROM CENTERLINE OF WATER LINE.

(32) CONSTRUCT 6–INCH SAN. LEAD WITH STACK, BEND, CLEAN OUT, ETC., COMPLETE IN PLACE.

(33) CRITICAL LOCATE IN ACCORDANCE WITH SPEC. SECTION 02317.

(34) CONSTRUCT 8–INCH SAN. SEWER INVERTED SIPHON.

(35) REMOVE EXIST. WATER LINE(S) AND VALVES AND TRANSFER SERVICES TO PROP. WATER LINE(S).

(36) REMOVE AND REPLACE EXIST. CONC. DRIVEWAY OUTSIDE ROW PER SHEET.78

(37) REMOVE/REPLACE EXIST. LIGHT POLES PER LIGHTING PLANS (INCIDENTAL).

(38) PROPOSED HIGH EARLY STRENGTH 10–INCH CONCRETE PAVEMENT W/ 6–INCH CONCRETE CURB AND 8–INCH CEMENT SAND STABILIZED SUB–GRADE.

(39) RELOCATE EXIST. TRAFFIC SIGN(S).

(40) REMOVE AND RELOCATE EXIST. FENCE, GATE OR BRICK STRUCTURE WITHIN ROW.

(41) PROPOSED SANITARY SEWER VENT WITH CONCRETE BOLLARD.

(42) PROPOSED PRECAST CONCRETE SANITARY SEWER DROP MANHOLE WITH SEALED MANHOLE COVER OVER EXIST. LINE.

(43) REMOVE/PUT BACK EXIST. BRICK STRUCTURES/MAILBOX.

(44) REMOVE/REPLACE EXISTING SIGN PER TCP (INCIDENTAL).

(45) REMOVE/DISPOSE EXIST. TREE STUMP.

(46) PROTECT EXIST. DECORATIVE YARD PLANTERS/BUSH (INCIDENTAL).

(47) REMOVE EXIST./ABANDONED WATER LINE (ALL SIZES).

K:\331052–CLOVERLAND AREA P&D–COH FY15\DWG\DESIGN DRAWINGS\SUB–PROJECT–1\GENERAL\05–PLAN & PROFILE KEY NOTES.DWG AUG. 03, 2026–8:22am

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK–UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F–12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

PLAN & PROFILE KEY NOTES

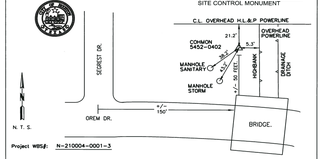
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 5 OF 159	

S:\PROJECTS\331052 CLOVERLAND AREA PROJECT TRW\DWG\CONTROL MAP\PHASE 1\331052_CLOVERLAND_CM_PH01_SH01.DWG JUL. 12, 2018 - 9:40am CARLOSALCARAZ

NO.	DATE	REVISIONS	BY

CITY OF HOUSTON

CITY SURVEY 5452-0402
SITE CONTROL MONUMENT



Project WBS#: N-210004-0001-3

Texas Coordinate System of 1983
South Central Zone, U.S. Survey Feet

X= 3,123,516.72
Y= 13,794,181.08
Lat.= 29°37'44.1815"N
Lon.= 95°21'49.3530"W
Vertical Adjustment used: NAVD '88
General Location: CONTROL POINT IS +/- 150 FT. OF THE INTERSECTION OF OREM DR. AND SEGREST DR. BEING +/- 50 NORTH OF OREM DR.
Date Set: 07/19/74 Type of Mark: 3/4" IR WITH 3" BRASS CAP IN CONCRETE
3 Nearest Project Control Points (bearings and distance stated below):
None

KEY MAP PG. 573L
Orthometric Elevation= 44.41 FT
Ellipsoid Height= -44.84 FT
Geoid: GEOID12A
Datum Source and Adjustment:
NAD '83 (2011)

NOTE:
1. Bearings are grid bearing.
2. Scale Factor = 0.9998791253
3. Surface = Grid
S.F.
4. Field Surveyed on: 09/28/2015

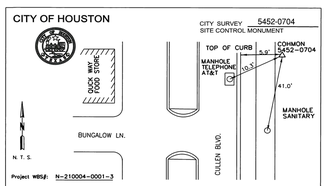
Surveyed By: GEOSURV
Mapping and Surveying
GeoSurv, Inc. d/b/a TSC Surveying
2100 S. Loop West, Suite 205
Houston, Texas 77027
Tel. 713-784-4444
TBPLS FIRM No. 10083100

STATE OF TEXAS REGISTERED DANIEL PAUL COYER 4867 LICENSED PROFESSIONAL LAND SURVEYOR
07/11/2016 DPC

City of Houston, Harris County, Texas

CITY OF HOUSTON

CITY SURVEY 5452-0704
SITE CONTROL MONUMENT



Project WBS#: N-210004-0001-3

Texas Coordinate System of 1983
South Central Zone, U.S. Survey Feet

X= 3,126,050.99
Y= 13,795,525.63
Lat.= 29°37'56.7059"N
Lon.= 95°21'20.1741"W
Vertical Adjustment used: NAVD '88
General Location: CONTROL POINT IS LOCATED +/- 50 FEET NORTH OF THE INTERSECTION OF CULLEN BLVD. AND BUNGALOW LN.
Date Set: 05/24/74 Type of Mark: 3/4" IR WITH 3" BRASS CAP IN CONCRETE
3 Nearest Project Control Points (bearings and distance stated below):
None

KEY MAP PG. 573M
Orthometric Elevation= 39.90 FT
Ellipsoid Height= -49.38 FT
Geoid: GEOID12A
Datum Source and Adjustment:
NAD '83 (2011)

NOTE:
1. Bearings are grid bearing.
2. Scale Factor = 0.9998791253
3. Surface = Grid
S.F.
4. Field Surveyed on: 09/28/2015

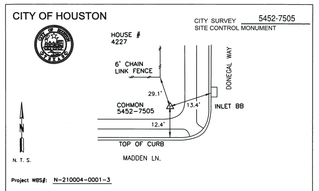
Surveyed By: GEOSURV
Mapping and Surveying
GeoSurv, Inc. d/b/a TSC Surveying
2100 S. Loop West, Suite 205
Houston, Texas 77027
Tel. 713-784-4444
TBPLS FIRM No. 10083100

STATE OF TEXAS REGISTERED DANIEL PAUL COYER 4867 LICENSED PROFESSIONAL LAND SURVEYOR
07/11/2016 DPC

City of Houston, Harris County, Texas

CITY OF HOUSTON

CITY SURVEY 5452-7505
SITE CONTROL MONUMENT



Project WBS#: N-210004-0001-3

Texas Coordinate System of 1983
South Central Zone, U.S. Survey Feet

X= 3,124,478.86
Y= 13,795,727.99
Lat.= 29°37'59.1930"N
Lon.= 95°21'37.9099"W
Vertical Adjustment used: NAVD '88
General Location: CONTROL POINT IS LOCATED AT THE NW CONER OF MADDEN LN AND DONEGAL WAY.
Date Set: 09/29/2015 Type of Mark: 3/4" IR WITH 3" BRASS CAP IN CONRETE
3 Nearest Project Control Points (bearings and distance stated below):
None

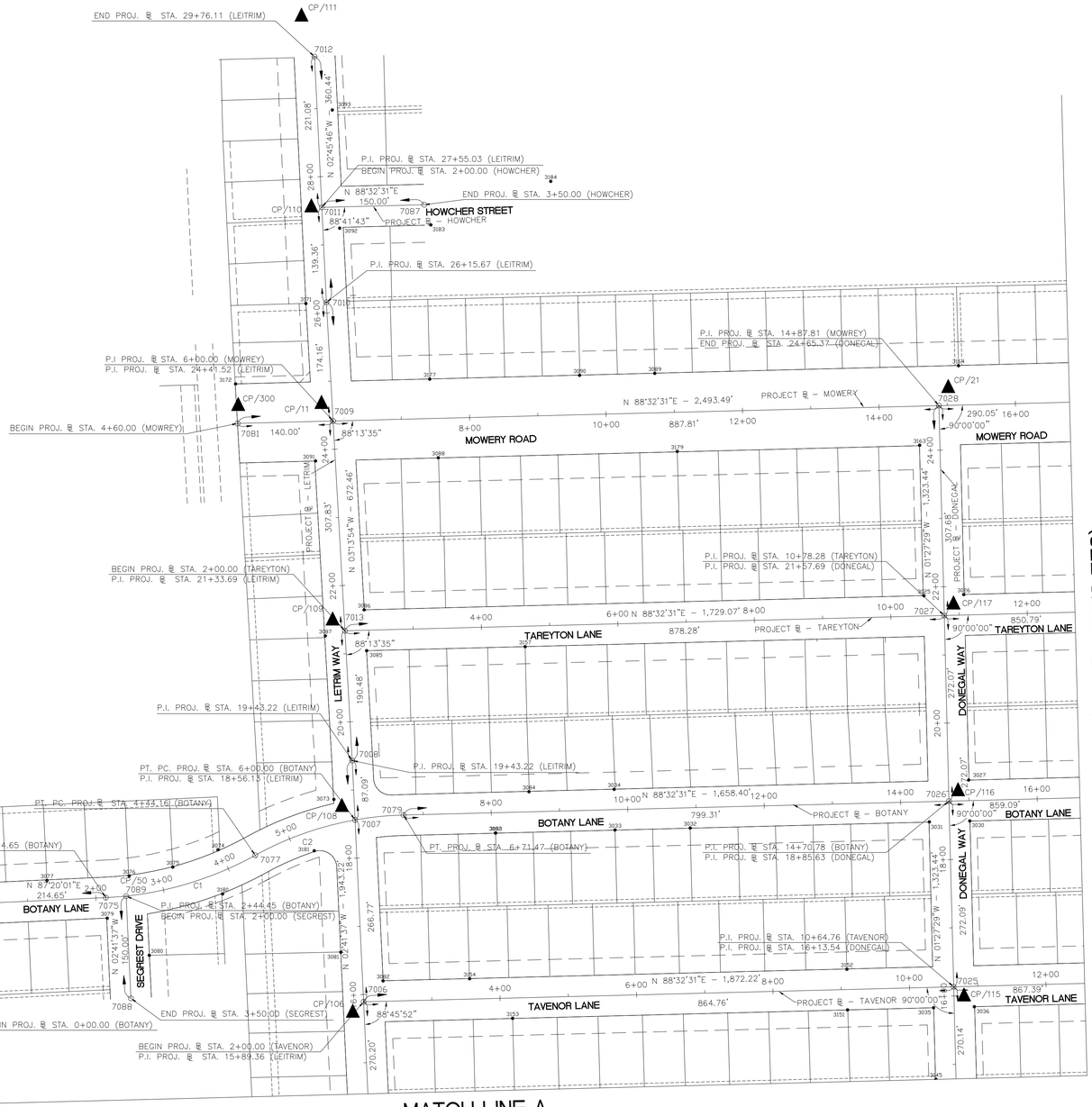
KEY MAP PG. 573L
Orthometric Elevation= 39.26 FT
Ellipsoid Height= -50.03
Geoid: GEOID12A
Datum Source and Adjustment:
NAD '83 (2011)

NOTE:
1. Bearings are grid bearing.
2. Scale Factor = 0.9998791253
3. Surface = Grid
S.F.
4. Field Surveyed on: 09/29/2015

Surveyed By: GEOSURV
Mapping and Surveying
GeoSurv, Inc. d/b/a TSC Surveying
2100 S. Loop West, Suite 205
Houston, Texas 77027
Tel. 713-784-4444
TBPLS FIRM No. 10083100

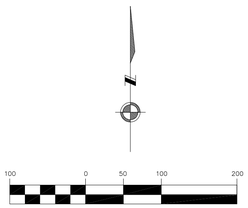
STATE OF TEXAS REGISTERED DANIEL PAUL COYER 4867 LICENSED PROFESSIONAL LAND SURVEYOR
07/11/2016 DPC

City of Houston, Harris County, Texas



MATCH LINE A
(SEE SHEET 3 of 3)

MATCH LINE B
(SEE SHEET 2 of 3)



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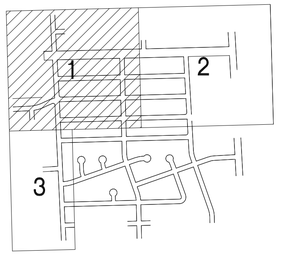
SCALE: 1" = 200' (11"X17")



STATE OF TEXAS REGISTERED DANIEL PAUL COYER 4867 LICENSED PROFESSIONAL LAND SURVEYOR
07/12/2018 DPC

NOTES:

1. THE HORIZONTAL CONTROL IS REFERENCED TO THE CONTINUOUS OPERATING REFERENCE STATIONS (C.O.R.S.) NETWORK, NORTH AMERICAN DATUM OF 1983 (2011) EPOCH DATE 2010.00, TEXAS SOUTH CENTRAL ZONE 4204.

2.ALL COORDINATES SHOWN HEREON THIS SURVEY CONTROL MAP SET HAVE BEEN EXPRESSED IN U.S. SURVEY FEET IN GRID VALUES AND SURFACE VALUES. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. SURFACE VALUES MAY BE CONVERTED TO GRID VALUES BY MULTIPLYING A COMBINED SCALE FACTOR OF 0.999879125 (SURFACE X 0.999879125 = GRID)

3. ELEVATION ON CITY OF HOUSTON (C.O.H.) SURVEY MARKER NO. 5452-7505 WAS ESTABLISHED BY GPS OBSERVATIONS TIED TO THE C.O.H. NGS CORS NETWORK. THE GPS DERIVED ELEVATION IS BASED ON USING GEOID12A TO ESTABLISH THE ORTHOMETRIC ELEVATION. ALL OTHER ELEVATIONS SHOWN HEREON THIS MAP SHEET IS REFERENCED TO C.O.H SURVEY MARKER NO. 5452-7505.

4. THE PROJECT CONTROL POINTS AND SURVEY BASELINE POINTS SHOWN HEREON THIS CONTROL MAP ARE BASED ON CONTROL SURVEYS CONDUCTED IN JUNE, 2014. THE VALUES SHOWN ON THE CONTROL POINTS ARE BASED ON THE RESULTS OF THE JUNE, 2014 SURVEY. GEOSURV/TSC CERTIFICATION OF THIS CONTROL MAP IS FOR THE ORIGINAL CONTROL SURVEY RESULTS. GEOSURV/TSC IS NOT RESPONSIBLE FOR ANY CHANGES IN THE HORIZONTAL AND/OR VERTICAL VALUES THAT MAY OCCUR DUE TO MOVEMENT OF THE CONTROL POINTS DUE TO EARTH SURFACE MOVEMENT AND SUBSIDENCE. ALL CONTROL POINTS WERE MARKED WITH A SEMI-PERMANENT SURVEY MARKER AT THE TIME OF THE ORIGINAL CONTROL SURVEY. GEOSURV/TSC IS NOT RESPONSIBLE FOR REPLACING CONTROL POINTS THAT HAVE BEEN DISTURBED OR NO LONGER EXISTS ON THE GROUND.

TRW ENGINEERS, INC.
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10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY: GEOSURV, INC. d.b.a. TSC SURVEYING
C.O.H. Field Book P-6019

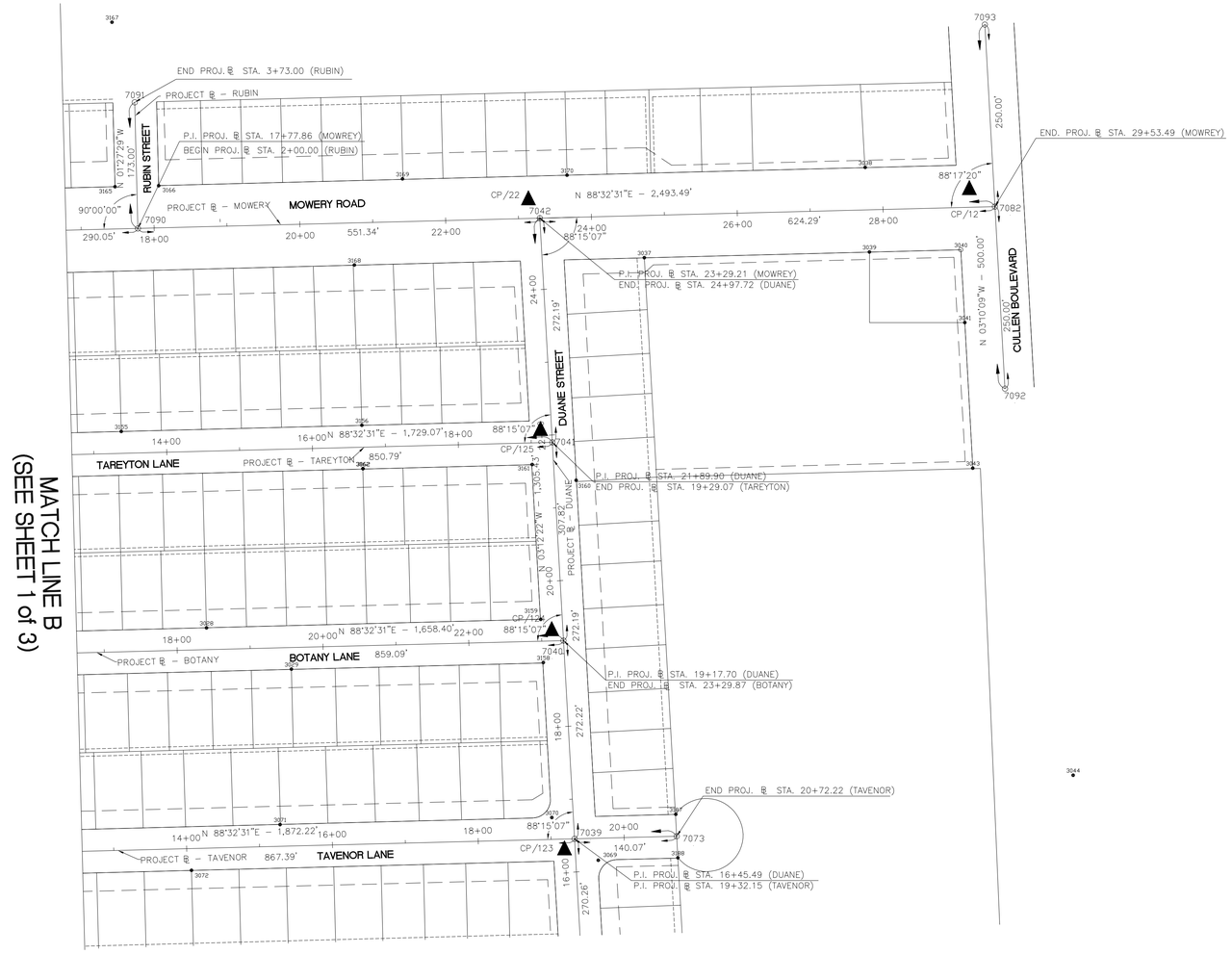
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

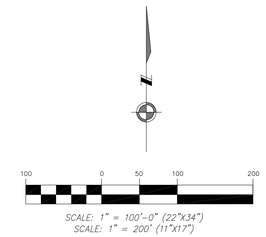
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

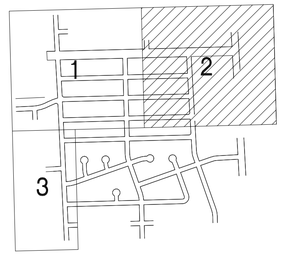
SURVEY CONTROL MAP (SCM)
SHEET NO. 1 OF 3 SHEETS SCM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-3	
DRAWING SCALE	
VERT. N/A HORIZ. 1"=100	
CITY OF HOUSTON PM	
NAWARAJ PANTA, P.E.	
SHEET NO. 06 OF 127	

NO.	DATE	REVISIONS	BY







NOTES:

1. THE HORIZONTAL CONTROL IS REFERENCED TO THE CONTINUOUS OPERATING REFERENCE STATIONS (C.O.R.S.) NETWORK, NORTH AMERICAN DATUM OF 1983 (2011) EPOCH DATE 2010.00, TEXAS SOUTH CENTRAL ZONE 4204.

2.ALL COORDINATES SHOWN HEREON THIS SURVEY CONTROL MAP SET HAVE BEEN EXPRESSED IN U.S. SURVEY FEET IN GRID VALUES AND SURFACE VALUES. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. SURFACE VALUES MAY BE CONVERTED TO GRID VALUES BY MULTIPLYING A COMBINED SCALE FACTOR OF 0.999879125 (SURFACE X 0.999879125 = GRID)

3. ELEVATION ON CITY OF HOUSTON (C.O.H.) SURVEY MARKER NO. 5452–7505 WAS ESTABLISHED BY GPS OBSERVATIONS TIED TO THE C.O.H. NGS CORS NETWORK. THE GPS DERIVED ELEVATION IS BASED ON USING GEOID12A TO ESTABLISH THE ORTHOMETRIC ELEVATION. ALL OTHER ELEVATIONS SHOWN HEREON THIS MAP SHEET IS REFERENCED TO C.O.H SURVEY MARKER NO. 5452–7505.

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TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F–12428

SURVEYED BY: GEOSURV, INC. d.b.a. TSC SURVEYING
C.O.H. Field Book P–6019

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

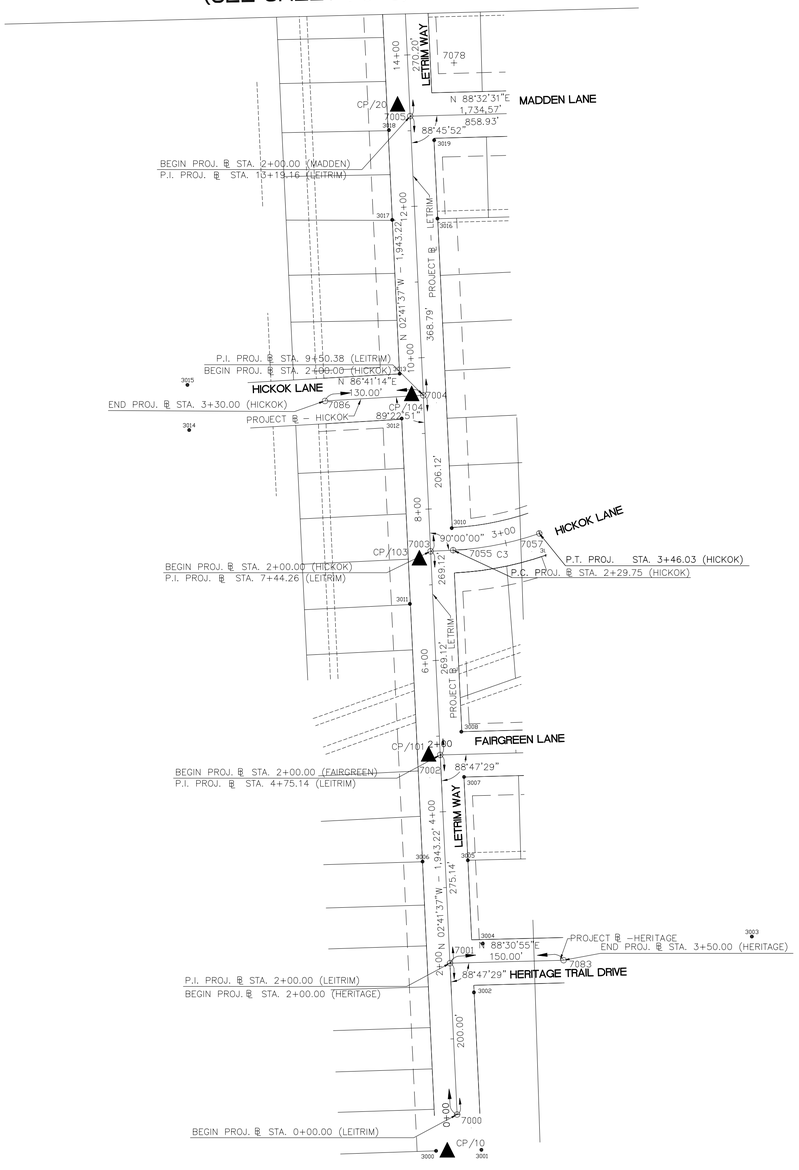
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

SURVEY CONTROL MAP (SCM)
SHEET NO. 2 OF 3 SHEETS SCM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001– 4	
DRAWING SCALE	
VERT. N/A HORIZ. 1"=100	
CITY OF HOUSTON PM	
NAWARAJ PANTA, P.E.	
SHEET NO. 7 OF 159	

S:\PROJECTS\331052 CLOVERLAND AREA PROJECT TRW\DWG\CONTROL MAP\PHASE 1\331052_CLOVERLAND_CM_PH01_SH02.DWG JUL 12, 2018 - 9:41am CARLOSALCARAZ

NO.	DATE	REVISIONS	BY



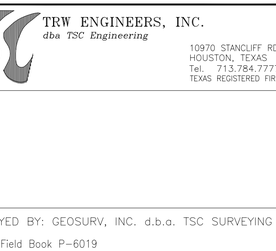
NOTES:

1. THE HORIZONTAL CONTROL IS REFERENCED TO THE CONTINUOUS OPERATING REFERENCE STATIONS (C.O.R.S.) NETWORK, NORTH AMERICAN DATUM OF 1983 (2011) EPOCH DATE 2010.00, TEXAS SOUTH CENTRAL ZONE 4204.

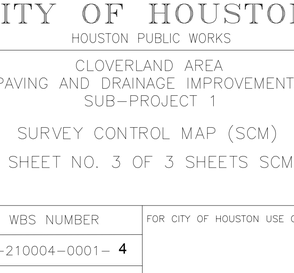
2.ALL COORDINATES SHOWN HEREON THIS SURVEY CONTROL MAP SET HAVE BEEN EXPRESSED IN U.S. SURVEY FEET IN GRID VALUES AND SURFACE VALUES. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. SURFACE VALUES MAY BE CONVERTED TO GRID VALUES BY MULTIPLYING A COMBINED SCALE FACTOR OF 0.999879125 (SURFACE X 0.999879125 = GRID)

3. ELEVATION ON CITY OF HOUSTON (C.O.H.) SURVEY MARKER NO. 5452–7505 WAS ESTABLISHED BY GPS OBSERVATIONS TIED TO THE C.O.H. NGS CORS NETWORK. THE GPS DERIVED ELEVATION IS BASED ON USING GEOID12A TO ESTABLISH THE ORTHOMETRIC ELEVATION. ALL OTHER ELEVATIONS SHOWN HEREON THIS MAP SHEET IS REFERENCED TO C.O.H SURVEY MARKER NO. 5452–7505.

4. THE PROJECT CONTROL POINTS AND SURVEY BASELINE POINTS SHOWN HEREON THIS CONTROL MAP ARE BASED ON CONTROL SURVEYS CONDUCTED IN JUNE, 2014. THE VALUES SHOWN ON THE CONTROL POINTS ARE BASED ON THE RESULTS OF THE JUNE, 2014 SURVEY. GEOSURV/TSC CERTIFICATION OF THIS CONTROL MAP IS FOR THE ORIGINAL CONTROL SURVEY RESULTS. GEOSURV/TSC IS NOT RESPONSIBLE FOR ANY CHANGES IN THE HORIZONTAL AND/OR VERTICAL VALUES THAT MAY OCCUR DUE TO MOVEMENT OF THE CONTROL POINTS DUE TO EARTH SURFACE MOVEMENT AND SUBSIDENCE. ALL CONTROL POINTS WERE MARKED WITH A SEMI–PERMANENT SURVEY MARKER AT THE TIME OF THE ORIGINAL CONTROL SURVEY. GEOSURV/TSC IS NOT RESPONSIBLE FOR REPLACING CONTROL POINTS THAT HAVE BEEN DISTURBED OR NO LONGER EXISTS ON THE GROUND.



SCALE: 1" = 100'–0" (22"X34")
SCALE: 1" = 200' (11"X17")



TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F–12428

SURVEYED BY: GEOSURV, INC. d.b.a. TSC SURVEYING
C.O.H. Field Book P–6019

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

SURVEY CONTROL MAP (SCM)
SHEET NO. 3 OF 3 SHEETS SCM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001– 4	
DRAWING SCALE	
VERT. N/A HORIZ. 1"=100	
CITY OF HOUSTON PM	
NAWARAJ PANTA, P.E.	
SHEET NO. 8 OF 159	

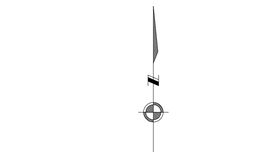
S:\PROJECTS\331052 CLOVERLAND AREA PROJECT TRW\DWG\CONTROL MAP\PHASE 1\331052_CLOVERLAND_CM_PH01_SH03.DWG JUL. 12, 2018 – 9:50am CARLOSALCARAZ

CONTROL TABLE				
PT. NO.	NORTHING	EASTING	ELEV.	DESC.
10	13795980.83208	3124073.02560	42.52900	GPS/010
11	13798494.12912	3123949.60128	40.05200	GPS/011
12	13798552.12125	3126284.26846	38.85300	GPS/012
20	13797361.67719	3124007.95072	40.24500	GPS/020
21	13798517.46106	3124867.80199	38.88400	GPS/021
22	13798538.10413	3125679.62246	38.56800	GPS/022
50	13797788.32757	3123650.21729	40.65300	GPS/050
101	13796503.41009	3124048.39814	41.41800	POT/101
103	13796762.24483	3124036.20008	40.43200	POT/103
106	13797602.68249	3123995.53295	40.73400	POT/106
108	13797903.69719	3123980.02321	38.89900	POT/108
109	13798177.40610	3123965.92039	40.18600	POT/109
110	13798782.10711	3123934.76325	38.83400	POT/110
111	13799061.66627	3123920.35900	39.54800	POT/111
115	13797626.39433	3124891.02239	39.40100	POT/115
116	13797926.15015	3124883.21102	38.03400	POT/116
117	13798201.43370	3124876.03738	38.43700	POT/117
123	13797647.43043	3125729.13627	38.83700	POT/123
124	13797946.99090	3125712.48328	39.25400	POT/124
125	13798222.39343	3125697.17326	38.03600	POT/125
300	13798491.02750	3123827.54068	38.85300	POT/300

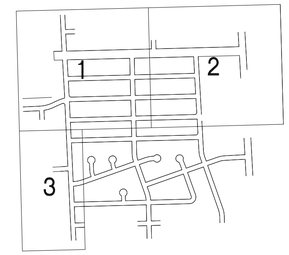
PROJECT BASELINE POINTS					
PT. NO.	N-SURFACE	E-SURFACE	DESC.	N-GRID	E-GRID
7000	13,796,030.35	3,124,086.02	Chiseled "X" in Conc.	13,794,362.76	3,123,708.39
7001	13,796,230.13	3,124,076.62	Chiseled "X" in Conc.	13,794,562.51	3,123,699.00
7002	13,796,504.96	3,124,063.69	Chiseled "X" in Conc.	13,794,837.31	3,123,686.07
7003	13,796,773.78	3,124,051.04	Chiseled "X" in Conc.	13,795,106.10	3,123,673.42
7004	13,796,979.67	3,124,041.35	Chiseled "X" in Conc.	13,795,311.97	3,123,663.74
7005	13,797,348.05	3,124,024.02	Chiseled "X" in Conc.	13,795,680.30	3,123,646.41
7006	13,797,617.95	3,124,011.33	Chiseled "X" in Conc.	13,795,950.17	3,123,633.71
7007	13,797,884.43	3,123,998.79	Chiseled "X" in Conc.	13,796,216.61	3,123,621.18
7008	13,797,971.42	3,123,994.70	Chiseled "X" in Conc.	13,796,303.59	3,123,617.09
7009	13,798,468.92	3,123,966.61	Chiseled "X" in Conc.	13,796,801.04	3,123,589.00
7010	13,798,642.80	3,123,956.79	Chiseled "X" in Conc.	13,796,974.90	3,123,579.18
7011	13,798,782.00	3,123,950.07	Chiseled "X" in Conc.	13,797,114.08	3,123,572.46
7012	13,799,002.82	3,123,939.41	Chiseled "X" in Conc.	13,797,334.87	3,123,561.81
7013	13,798,161.59	3,123,983.96	Chiseled "X" in Conc.	13,796,493.74	3,123,606.35
7025	13,797,639.96	3,124,875.80	Chiseled "X" in Conc.	13,795,972.17	3,124,498.08
7026	13,797,911.96	3,124,868.88	Chiseled "X" in Conc.	13,796,244.14	3,124,491.16
7027	13,798,183.94	3,124,861.96	Chiseled "X" in Conc.	13,796,516.09	3,124,484.24
7028	13,798,491.52	3,124,854.13	Chiseled "X" in Conc.	13,796,823.63	3,124,476.41
7039	13,797,662.03	3,125,742.92	Chiseled "X" in Conc.	13,795,994.24	3,125,365.09
7040	13,797,933.82	3,125,727.69	Chiseled "X" in Conc.	13,796,266.00	3,125,349.87
7041	13,798,205.59	3,125,712.47	Chiseled "X" in Conc.	13,796,537.73	3,125,334.65

PROJECT BASELINE POINTS					
PT. NO.	N-SURFACE	E-SURFACE	DESC.	N-GRID	E-GRID
7042	13,798,512.92	3,125,695.25	Chiseled "X" in Conc.	13,796,845.03	3,125,317.44
7055	13,796,775.18	3,124,080.75	Chiseled "X" in Conc.	13,795,107.50	3,123,703.13
7057	13,796,797.33	3,124,194.49	Chiseled "X" in Conc.	13,795,129.65	3,123,816.85
7073	13,797,665.59	3,125,882.94	Chiseled "X" in Conc.	13,795,997.80	3,125,505.10
7074	13,797,760.56	3,123,419.28	Chiseled "X" in Conc.	13,796,092.76	3,123,041.74
7075	13,797,770.54	3,123,633.70	Chiseled "X" in Conc.	13,796,102.74	3,123,256.13
7077	13,797,832.55	3,123,852.58	Chiseled "X" in Conc.	13,796,164.74	3,123,474.99
7079	13,797,891.62	3,124,069.83	Chiseled "X" in Conc.	13,796,223.80	3,123,692.20
7081	13,798,465.36	3,123,826.65	Chiseled "X" in Conc.	13,796,797.48	3,123,449.06
7082	13,798,528.81	3,126,319.34	Chiseled "X" in Conc.	13,796,860.92	3,125,941.44
7083	13,796,234.01	3,124,226.57	Chiseled "X" in Conc.	13,794,566.40	3,123,848.93
7086	13,796,972.16	3,123,911.57	Chiseled "X" in Conc.	13,795,304.46	3,123,533.97
7087	13,798,785.82	3,124,100.02	Chiseled "X" in Conc.	13,797,117.89	3,123,722.40
7088	13,797,622.98	3,123,670.46	Chiseled "X" in Conc.	13,795,955.20	3,123,292.89
7089	13,797,772.82	3,123,663.41	Chiseled "X" in Conc.	13,796,105.01	3,123,285.84
7090	13,798,498.90	3,125,144.09	Chiseled "X" in Conc.	13,796,831.01	3,124,766.34
7091	13,798,671.84	3,125,139.69	Chiseled "X" in Conc.	13,797,003.93	3,124,761.94
7092	13,798,279.19	3,126,333.16	Chiseled "X" in Conc.	13,796,611.33	3,125,955.26
7093	13,798,778.43	3,126,305.51	Chiseled "X" in Conc.	13,797,110.50	3,125,927.62
7102	13,796,660.02	3,124,741.36	Chiseled "X" in Conc.	13,794,992.35	3,124,363.66

NO.	DATE	REVISIONS	BY



SCALE: 1" = 100'-0" (22"X34")
SCALE: 1" = 200' (11"X17")



331-052 CLOVERLAND AREA.

COH MONUMENT & CONTROL POINT DESCRIPTIONS

C.O.H Site Control Monument 999
Being a 3/4" iron rod with a 3" dua. C.O.H brass cap set on conc. Counter-sunk approx. 0.2' below ground, and said Survey Marker, being Located Northwest corner of Madden Lane and Donegal Way.

Sta. 10+34, 26.5' Lt Madden Lane
Sta. 28+70, 25.4' Lt Donegal Way

Elev. = 39.26 ft. NAVD88 Geoid12A

C.O.H Site Control Monument 993
Being a 3/4" iron rod with a 3" dua. C.O.H brass cap set on conc. Counter-sunk approx. 0.2' below ground, and said Survey Marker, being Located at East end of North bound lane Cullen Boulevard on west side of
Bungalow Street.

Sta.16+76, 58.2' Lt Bungalow Street

Elev. = 39.02 ft. NAVD88 Geoid12A

CP 010
Being 5/8" iron rod with TSC/Geosurv cap, located on the Southwest end of the intersection
of Leitrim Way and Heritage Trail Drive.

Sta. N/A, 16.3' Lt Leitrim Way

Elev. = 42.53 ft. NAVD88 Geoid12A

CP 011
Top of a cotton spindle with shinner, being located on the Southwest corner of the intersection
of Mowery Road and Leitrim Way.

Sta. N/A, 25.6' Lt Mowery Road
Sta. 24+68, 15.6' Lt Leitrim Way

Elev. = 40.05 ft. NAVD88 Geoid12A

CP 012
Top of cotton spindle with shinner, being located on the West of the intersection of
Cullen Boulevard and Mowery Road.

Sta. 23+19, 24.2' Lt Mowery Road

Elev. = 38.85 ft. NAVD88 Geoid12A

CP 020
Being 5/8" iron rod with TSC/Geosurv cap, located on the West of the intersection of
Leitrim Way and Madden Lane.

Sta. 13+34, 15.4' Lt Leitrim Way
Sta. 1+84, 14.0' Lt Madden Lane

Elev. = 40.24 ft. NAVD88 Geoid12A

CP 021
Top of Mag Nail with shinner, located on the Southeast corner of the intersection of Mowery Road
and Donegal Way.

Sta. 9+02, 25.6' Lt Mowery Road
Sta. 39+91, 14.3' Rt Donegal Way

NOTES:

1. THE HORIZONTAL CONTROL IS REFERENCED TO THE CONTINUOUS OPERATING REFERENCE STATIONS (C.O.R.S.) NETWORK, NORTH AMERICAN DATUM OF 1983 (2011) EPOCH DATE 2010.00, TEXAS SOUTH CENTRAL ZONE 4204.

2.ALL COORDINATES SHOWN HEREON THIS SURVEY CONTROL MAP SET HAVE BEEN EXPRESSED IN U.S. SURVEY FEET IN GRID VALUES AND SURFACE VALUES. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. SURFACE VALUES MAY BE CONVERTED TO GRID VALUES BY MULTIPLYING A COMBINED SCALE FACTOR OF 0.999879125 (SURFACE X 0.999879125 = GRID)

3. ELEVATION ON CITY OF HOUSTON (C.O.H.) SURVEY MARKER NO. 5452-7505 WAS ESTABLISHED BY GPS OBSERVATIONS TIED TO THE C.O.H. NGS CORS NETWORK. THE GPS DERIVED ELEVATION IS BASED ON USING GEOID12A TO ESTABLISH THE ORTHOMETRIC ELEVATION. ALL OTHER ELEVATIONS SHOWN HEREON THIS MAP SHEET IS REFERENCED TO C.O.H SURVEY MARKER NO. 5452-7505.

CP 022
Top of Mag Nail with shinner, located on the Southwest corner of the intersection of Mowery Road
and Duane Street.

Sta. 17+14, 25.6' Lt Mowery Road
Sta. 25+24 14.0' Lt Duane Street

Elev. = 38.57 ft. NAVD88 Geoid12A

CP 050
Being 5/8" iron rod with TSC/Geosurv cap, located on the North of the intersection of Botany Lane and
Segrest Drive.

Sta. 4+33, 16.7' Lt Botany Lane

Elev. = 40.65 ft. NAVD88 Geoid12A

CP 101
Being 5/8" iron rod with TSC/Geosurv cap, located on the Southwest of the intersection of Leitrim Way
and Fairgreen Lane.

Sta. 4+74, 15.3' Lt Leitrim Way
Sta. 1+85, 1.2' Rt Fairgreen Lane

Elev. = 41.42 ft. NAVD88 Geoid12A

CP 103
Being 5/8" iron rod with TSC/Geosurv cap, located on the West of the intersection of Leitrim Way
and Hickok Lane.

Sta. 7+33, 15.5' Lt Leitrim Way
Sta. 1+85, 10.8' Lt Hickok Lane

Elev. = 40.43 ft. NAVD88 Geoid12A

CP 106
Being 5/8" iron rod with TSC/Geosurv cap, located on the Southwest of the intersection of Leitrim Way
and Tavenor Lane.

Sta. 15+75, 16.5 Lt Leitrim Way
Sta. 1+84, 14.9' Rt Tavenor Lane

Elev. = 40.73 ft. NAVD88 Geoid12A

CP 108
Top of Mag Nail with shinner, located on the Northwest corner of the intersection of Leitrim Lane and Botany Lane.

Sta. 18+76, 17.8' Lt Leitrim Way
Sta. 7+86, 22.5' Lt Botany Lane

Elev. = 38.90 ft. NAVD88 Geoid12A

CP 109
Being 5/8" iron rod with TSC/Geosurv cap, located on the Northwest of the intersection of Leitrim Way
and Tareyton Lane.

Sta. 21+51, 17.1' Lt Leitrim Way
Sta. 1+82, 16.3' Lt Tareyton Lane

Elev. = 40.89 ft. NAVD88 Geoid12A

4. THE PROJECT CONTROL POINTS AND SURVEY BASELINE POINTS SHOWN HEREON THIS CONTROL MAP ARE BASED ON CONTROL SURVEYS CONDUCTED IN JUNE, 2014. THE VALUES SHOWN ON THE CONTROL POINTS ARE BASED ON THE RESULTS OF THE JUNE, 2014 SURVEY. GEOSURV/TSC CERTIFICATION OF THIS CONTROL MAP IS FOR THE ORIGINAL CONTROL SURVEY RESULTS. GEOSURV/TSC IS NOT RESPONSIBLE FOR ANY CHANGES IN THE HORIZONTAL AND/OR VERTICAL VALUES THAT MAY OCCUR DUE TO MOVEMENT OF THE CONTROL POINTS DUE TO EARTH SURFACE MOVEMENT AND SUBSIDENCE. ALL CONTROL POINTS WERE MARKED WITH A SEMI-PERMANENT SURVEY MARKER AT THE TIME OF THE ORIGINAL CONTROL SURVEY. GEOSURV/TSC IS NOT RESPONSIBLE FOR REPLACING CONTROL POINTS THAT HAVE BEEN DISTURBED OR NO LONGER EXISTS ON THE GROUND.

CP 110
Being 5/8" iron rod with TSC/Geosurv cap, located on the West of the intersection of Leitrim Way
and Howcher Street.

Sta. 2+56, 15.3' Lt Leitrim Way

Elev. = 38.83 ft. NAVD88 Geoid12A

CP 111
Being 5/8" iron rod with TSC/Geosurv cap, located on the West of the intersection of
Brisbane Street and Leitrim Way.

Sta. 20+36, 16.2' Lt Leitrim Way

Elev. = 39.55 ft. NAVD88 Geoid12A

CP115
Top of Mag Nail with shinner, located on the Southeast corner of the intersection of Donegal Way and Tavenor Lane.

Sta. 10+80, 14.0' Rt Tavenor Lane
Sta. 30+00, 14.9' Rt Donegal Way

Elev. = 36.40 ft. NAVD88 Geoid12A

CP 116
Top of Mag Nail shinner, located on the Northeast corner of the intersection of Botany Lane and Donegal Way

Sta. 16+85, 13.8' Lt Botany Lane
Sta. 33+99, 14.7' Donegal Way

Elev. = 38.03 ft. NAVD88 Geoid12A

CP 117
Top of Mag Nail with shinner, located on the Northeast corner of the intersection of Donegal Way and Tareyton Lane.

Sta. 10+93, 17.1 Lt Tareyton Lane
Sta. 36+75, 0.5' Lt Hunkler Drive

Elev. = 38.44 ft. NAVD88 Geoid12A

CP 123
Being chiseled "x" on concrete, located on the Southwest corner of the intersection of Tavenor Lane
and Duane Street.

Sta. 19+18, 14.2' Rt Tavenor Lane
Sta. 16+32, 14.6' Lt Duane Street

Elev. = 38.84 ft. NAVD88 Geoid12A

CP 124
Top of Mag Nail with shinner, located on the Northwest corner of the intersection of Duane Street
and Botany Lane.

Sta. 25+15, 13.6' Lt Botany Lane
Sta. 19+32, 14.5' Lt Duane Street

Elev. = 39.25 ft. NAVD88 Geoid12A

CP125
Top of Mag Nail with shinner, located on the West of the intersection of Duane Street and Tareyton
Lane.

Sta. 19+14, 17.2' Lt Tareyton Lane
Sta. 22+08, 14.3' Lt Duane Street

Elev. = 38.04 ft. NAVD88 Geoid12A

CP 300
Being 5/8" iron rod with TSC/Geosurv cap, located on the West of the intersection of Mowery Road
and Leitrim Way.

Sta. N/A, 25.6' Lt Mowery Road

Elev. = 38.85 ft. NAVD88 Geoid12A

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY: GEOSURV, INC. d.b.a. TSC SURVEYING
C.O.H. Field Book P-6019

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CONTROL DATA SHEET (CDS)
SHEET NO. 1 OF 2 SHEETS CDS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001- 4	
DRAWING SCALE	
VERT. N/A HORIZ. 1"=100	
CITY OF HOUSTON PM	
NAWARAJ PANTA, P.E.	
SHEET NO. 9 OF 159	

S:\PROJECTS\331052 CLOVERLAND AREA PROJECT TRW\DWG\CONTROL MAP\PHASE 1\331052_CLOVERLAND_CM_PH01_SH04.DWG JUL. 12, 2018 - 9:51am CARLOSALCARAZ

PROJECT PROPERTY POINTS

PT. NO.	N-SURFACE	E-SURFACE	DESC.	STATION	OFFSET	STREET
3000	13,795,982.38	3,124,058.28	3/8" I.R.	N/A	L29.96	Leitrim Way
3001	13,795,983.79	3,124,118.11	5/8" I.R. R.P.L.S. 36	N/A	R29.87	Leitrim Way
3002	13,796,191.57	3,124,108.18	5/8" I.R. R.P.L.S. 36	2+30.56	R39.36	Heritage Trail Drive
3002	13,796,191.57	3,124,108.18	5/8" I.R. R.P.L.S. 36	1+60.00	R29.72	Leitrim Way
3004	13,796,256.09	3,124,119.90	5/8" I.R. R.P.L.S. 36	2+43.94	L24.84	Heritage Trail Drive
3005	13,796,365.88	3,124,100.13	1/2" I.R.	3+34.50	R29.86	Leitrim Way
3006	13,796,364.28	3,124,040.42	5/8" I.R. R.P.L.S. 36	3+35.71	L29.85	Leitrim Way
3007	13,796,475.93	3,124,095.13	1/2" I.R.	2+30.67	R29.84	Fairgreen Lane
3007	13,796,475.93	3,124,095.13	1/2" I.R.	4+44.66	R30.04	Leitrim Way
3008	13,796,535.63	3,124,091.59	3/8" I.R.	2+28.69	L29.94	Fairgreen Lane
3008	13,796,535.63	3,124,091.59	3/8" I.R.	5+04.46	R29.31	Leitrim Way
3010	13,796,804.34	3,124,078.88	5/8" I.R.	2+29.25	L29.21	Hickok Lane
3010	13,796,804.34	3,124,078.88	5/8" I.R.	7+73.47	R29.25	Leitrim Way
3011	13,796,704.35	3,124,023.64	5/8" I.R.	6+76.19	L30.63	Leitrim Way
3012	13,796,948.92	3,124,012.90	5/8" I.R.	2+30.18	L29.05	Hickok Lane
3012	13,796,948.92	3,124,012.90	5/8" I.R.	9+21.00	L29.87	Leitrim Way
3013	13,797,008.14	3,124,010.13	5/8" I.R.	2+29.53	R30.22	Hickok Lane
3013	13,797,008.14	3,124,010.13	5/8" I.R.	9+80.28	L29.85	Leitrim Way
3014	13,796,933.75	3,123,732.32	5/8" I.R.	5+11.18	L27.99	Hickok Lane
3015	13,796,993.39	3,123,730.06	3/4" I.P. PINCHED	5+09.98	R31.68	Hickok Lane
3016	13,797,212.85	3,124,060.11	5/8" I.R.	11+82.41	R29.69	Leitrim Way
3017	13,797,211.21	3,124,000.36	5/8" I.R.	11+83.59	L30.07	Leitrim Way
3018	13,797,329.64	3,123,996.11	1/2" I.R.	13+02.08	L28.75	Leitrim Way
3019	13,797,316.29	3,124,055.71	5/8" I.R.	12+85.94	R30.16	Leitrim Way
3019	13,797,316.29	3,124,055.71	5/8" I.R.	2+30.87	R32.56	Madden Lane
3025	13,798,212.89	3,124,832.23	1/2" I.P.	21+87.40	L28.98	Donegal Way
3025	13,798,212.89	3,124,832.23	1/2" I.P.	10+49.30	L29.70	Tareyton Lane
3026	13,798,214.64	3,124,890.51	3/4" I.P. PINCHED	21+87.66	R29.33	Donegal Way
3026	13,798,214.64	3,124,890.51	3/4" I.P. PINCHED	11+07.61	L29.97	Tareyton Lane
3027	13,797,942.89	3,124,897.63	5/8" I.R.	15+00.31	L30.19	Botany Lane
3027	13,797,942.89	3,124,897.63	5/8" I.R.	19+15.81	R29.53	Donegal Way
3028	13,797,951.25	3,125,238.15	3/4" I.P. PINCHED	18+40.92	L29.88	Botany Lane
3029	13,797,894.66	3,125,354.59	3/4" I.P. PINCHED	19+55.89	R29.65	Botany Lane
3030	13,797,882.91	3,124,899.42	3/4" I.P. PINCHED	15+00.57	R29.82	Botany Lane
3030	13,797,882.91	3,124,899.42	3/4" I.P. PINCHED	18+55.81	R29.79	Donegal Way
3031	13,797,881.52	3,124,840.10	3/4" I.P. PINCHED	14+41.23	R29.70	Botany Lane
3031	13,797,881.52	3,124,840.10	3/4" I.P. PINCHED	18+55.93	R29.55	Donegal Way
3032	13,797,872.49	3,124,489.77	3/4" I.P. PINCHED	10+90.79	R29.81	Botany Lane
3033	13,797,869.71	3,124,379.60	3/4" I.P. PINCHED	9+80.58	R29.79	Botany Lane
3034	13,797,929.24	3,124,378.34	3/4" I.P. PINCHED	9+80.84	L29.75	Botany Lane
3035	13,797,609.28	3,124,846.29	1/2" I.R.	15+83.62	L30.29	Donegal Way
3035	13,797,609.28	3,124,846.29	1/2" I.R.	10+34.47	R29.92	Tavenor Lane
3036	13,797,610.78	3,124,906.04	1/2" I.P.	15+83.60	R29.48	Donegal Way
3036	13,797,610.78	3,124,906.04	1/2" I.P.	10+94.24	R29.94	Tavenor Lane
3037	13,798,458.86	3,125,838.56	1/2" I.R.	24+71.09	R57.70	Mowrey Road

PROJECT PROPERTY POINTS

PT. NO.	N-SURFACE	E-SURFACE	DESC.	STATION	OFFSET	STREET
3038	13,798,582.56	3,126,141.45	3/4" I.P. PINCHED	27+77.03	L58.26	Mowrey Road
3039	13,798,466.68	3,126,147.24	5/8" I.R.	27+79.87	R57.73	Mowrey Road
3040	13,798,469.69	3,126,272.53	CHISELED "X" IN CONC.	N/A	N/A	Cullen Boulevard
3040	13,798,469.69	3,126,272.53	CHISELED "X" IN CONC.	29+05.20	R57.91	Mowrey Road
3041	13,798,369.86	3,126,278.06	5/8" I.R.	N/A	N/A	Cullen Boulevard
3042	13,798,994.90	3,126,244.45	3/4" I.P. PINCHED	N/A	N/A	Cullen Boulevard
3043	13,798,170.26	3,126,288.96	5/8" I.R. R.P.L.S. 5349	N/A	N/A	Cullen Boulevard
3044	13,797,749.27	3,126,426.66	1/2" I.R.	N/A	N/A	Cullen Boulevard
3069	13,797,632.65	3,125,775.36	1/2" I.R.	16+14.34	R30.75	Duane Street
3069	13,797,632.65	3,125,775.36	1/2" I.R.	19+63.84	R30.20	Tavenor Lane
3070	13,797,691.26	3,125,711.79	3/4" I.P. PINCHED	16+76.41	L29.45	Duane Street
3070	13,797,691.26	3,125,711.79	3/4" I.P. PINCHED	19+01.77	L30.01	Tavenor Lane
3071	13,797,681.60	3,125,338.97	1/2" I.P. PINCHED	15+28.83	L29.84	Tavenor Lane
3072	13,797,618.83	3,125,217.56	1/2" I.P. PINCHED	14+05.86	R29.81	Tavenor Lane
3073	13,797,914.48	3,123,967.77	1/2" I.R. W/CAP (GULLET)	5+76.49	L35.66	Botany Lane
3073	13,797,914.48	3,123,967.77	1/2" I.R. W/CAP (GULLET)	18+87.61	L29.58	Leitrim Way
3074	13,797,840.72	3,123,798.02	01" I.P.	3+97.36	L31.53	Botany Lane
3075	13,797,815.24	3,123,731.71	3/4" I.P. PINCHED	3+21.69	L29.35	Botany Lane
3076	13,797,802.14	3,123,667.87	3/4" I.P. PINCHED	2+52.46	L28.63	Botany Lane
3077	13,797,795.61	3,123,547.48	3/4" I.P. PINCHED	1+29.69	L29.05	Botany Lane
3078	13,797,790.35	3,123,427.82	1/2" I.R. W/CAP (PRECISION)	0+09.91	L29.37	Botany Lane
3079	13,797,740.40	3,123,635.85	3/4" I.P. PINCHED	2+15.35	R30.21	Botany Lane
3079	13,797,740.40	3,123,635.85	3/4" I.P. PINCHED	3+18.91	L29.05	Segrest Drive
3080	13,797,686.04	3,123,697.22	5/8" I.R.	2+61.73	R29.70	Segrest Drive
3081	13,797,690.56	3,123,978.03	5/8" I.R. W/CAP (EIC)	16+63.45	L29.85	Leitrim Way
3082	13,797,648.55	3,124,039.82	3/4" I.P. PINCHED	16+18.59	R29.90	Leitrim Way
3082	13,797,648.55	3,124,039.82	3/4" I.P. PINCHED	2+29.26	L29.86	Tavenor Lane
3083	13,797,865.25	3,124,204.63	5/8" I.R.	8+05.55	R29.79	Botany Lane
3084	13,797,925.71	3,124,253.61	3/4" I.P. PINCHED	8+56.06	L29.41	Botany Lane
3085	13,798,132.41	3,124,015.72	1/2" I.P.	21+02.77	R30.06	Leitrim Way
3085	13,798,132.41	3,124,015.72	1/2" I.P.	2+31.01	R29.97	Tareyton Lane
3086	13,798,192.23	3,124,012.14	1/2" I.R.	21+62.70	R29.87	Leitrim Way
3086	13,798,192.23	3,124,012.14	1/2" I.R.	2+28.95	L29.92	Tareyton Lane
3087	13,798,154.14	3,123,955.28	1/2" I.R.	21+27.88	L29.06	Leitrim Way
3088	13,798,415.11	3,124,120.77	1/2" I.P.	7+52.75	R57.72	Mowrey Road
3089	13,798,538.72	3,124,437.86	1/2" I.P.	10+72.88	L57.78	Mowrey Road
3090	13,798,355.94	3,124,327.78	1/2" I.P.	9+62.76	L57.80	Mowrey Road
3091	13,798,410.37	3,123,940.88	5/8" I.R.	23+84.50	L28.99	Leitrim Way
3091	13,798,410.37	3,123,940.88	5/8" I.R.	5+72.79	R57.88	Mowrey Road
3092	13,798,751.47	3,123,976.21	1/2" I.R.	2+25.35	R31.19	Howcher Street
3092	13,798,751.47	3,123,976.21	1/2" I.R.	27+23.27	R24.64	Leitrim Way
3093	13,798,924.65	3,123,965.39	5/8" I.R.	28+96.78	R22.17	Leitrim Way
3150	13,797,332.88	3,124,609.47	1/2" I.P. PINCHED	7+84.87	R30.07	Madden Lane
3151	13,797,606.07	3,124,720.32	1/2" I.R.	9+08.46	R29.92	Tavenor Lane
3152	13,797,665.55	3,124,719.28	3/8" I.R.	9+08.93	L29.57	Tavenor Lane

PROJECT PROPERTY POINTS

PT. NO.	N-SURFACE	E-SURFACE	DESC.	STATION	OFFSET	STREET
3153	13,797,593.66	3,124,229.59	3/4" I.P.	4+17.57	R29.84	Tavenor Lane
3154	13,797,651.71	3,124,166.63	1/2" I.P. PINCHED	3+56.11	L29.79	Tavenor Lane
3155	13,798,220.57	3,125,121.24	1/2" I.P. PINCHED	13+38.41	L30.03	Tareyton Lane
3156	13,798,229.09	3,125,451.16	1/2" I.P. PINCHED	16+68.44	L30.14	Tareyton Lane
3157	13,798,138.31	3,124,248.01	1/2" I.P.	4+63.37	R29.99	Tareyton Lane
3158	13,797,903.79	3,125,700.00	1/2" I.P. PINCHED	23+01.42	R29.32	Botany Lane
3158	13,797,903.79	3,125,700.00	1/2" I.P. PINCHED	18+89.27	L29.33	Duane Street
3159	13,797,962.92	3,125,696.55	1/2" I.P. PINCHED	22+99.48	L29.88	Botany Lane
3159	13,797,962.92	3,125,696.55	1/2" I.P. PINCHED	19+48.50	L29.47	Duane Street
3160	13,798,153.61	3,125,745.03	1/2" I.R.	21+36.18	R29.60	Duane Street
3161	13,798,175.31	3,125,684.76	1/2" I.P. PINCHED	21+61.22	L29.36	Duane Street
3161	13,798,175.31	3,125,684.76	1/2" I.P. PINCHED	19+00.60	R29.56	Tareyton Lane
3162	13,798,169.58	3,125,452.70	1/2" I.P. PINCHED	16+68.46	R29.38	Tareyton Lane
3163	13,798,433.40	3,124,825.90	3/4" I.R.	24+07.99	L29.70	Donegal Way
3163	13,798,433.40	3,124,825.90	3/4" I.R.	14+58.11	R57.38	Mowrey Road
3164	13,798,549.96	3,124,882.84	1/2" I.R.	15+18.00	L57.69	Mowrey Road
3165	13,798,556.05	3,125,112.73	5/8" I.R.	17+47.97	L57.93	Mowrey Road
3165	13,798,556.05	3,125,112.73	5/8" I.R.	2+57.93	L29.89	Rubin Street
3166	13,798,557.46	3,125,172.50	1/2" I.R. W/CAP	18+07.75	L57.82	Mowrey Road
3166	13,798,557.46	3,125,172.50	1/2" I.R. W/CAP	2+57.82	R29.89	Rubin Street
3167	13,798,781.64	3,125,108.51	5/8" I.R.	4+83.55	L28.37	Rubin Street
3168	13,798,448.71	3,125,440.95	01" I.P.	20+73.35	R57.72	Mowrey Road
3169	13,798,566.89	3,125,506.90	1/2" I.P. PINCHED	21+42.29	L58.74	Mowrey Road
3170	13,798,571.94	3,125,732.49	1/2" I.P. PINCHED	23+67.93	L58.04	Mowrey Road
3171	13,798,641.11	3,123,926.74	1/2" I.P. PINCHED	26+15.67	L30.10	Leitrim Way
3172	13,798,523.23	3,123,823.73	5/8" I.R. W/CAP	4+58.55	L57.92	Mowrey Road
3173	13,798,410.34	3,123,940.88	3/4" I.R.	23+84.48	L28.99	Leitrim Way
3173	13,798,410.34	3,123,940.88	3/4" I.R.	5+72.79	R57.91	Mowrey Road
3174	13,798,154.16	3,123,955.11	1/2" I.R.	21+27.91	L29.22	Leitrim Way
3175	13,798,132.43	3,124,015.67	1/2" I.P.	21+02.79	R30.02	Leitrim Way
3175	13,798,132.43	3,124,015.67	1/2" I.P.	2+30.96	R29.96	Tareyton Lane
3176	13,798,192.42	3,124,012.04	1/2" I.R.	21+62.89	R29.77	Leitrim Way
3176	13,798,192.42	3,124,012.04	1/2" I.R.	2+28.86	L30.11	Tareyton Lane
3177	13,798,530.33	3,124,108.20	1/2" I.R.	7+43.11	L57.78	Mowrey Road
3178	13,798,538.67	3,124,437.90	1/2" I.P.	10+72.92	L57.73	Mowrey Road
3179	13,798,424.43	3,124,470.85	5/8" I.R.	11+02.95	R57.31	Mowrey Road
3180	13,797,775.97	3,123,804.70	3/4" I.P.	3+78.71	R30.86	Botany Lane
3181	13,797,839.24	3,123,938.98	1/2" I.P. PINCHED	5+28.56	R28.94	Botany Lane
3182	13,797,865.29	3,124,204.68	5/8" I.R.	8+05.61	R29.75	Botany Lane
3183	13,798,756.34	3,124,109.83	1/2" I.P. PINCHED	3+59.05	R29.72	Howcher Street
3184	13,798,820.11	3,124,285.45	3/8" I.R.	5+36.24	L29.56	Howcher Street
3185	13,799,695.07	3,123,875.81	5/8" I.R. W/CAP	36+70.62	L30.16	Leitrim Way
3186	13,800,132.74	3,123,913.85	1/2" I.P. PINCHED	41+05.94	R28.92	Leitrim Way
3187	13,797,695.67	3,125,881.78	01" I.P.	20+71.82	L30.10	Tavenor Lane
3188	13,797,636.08	3,125,884.57	01" I.P. PINCHED	20+73.10	R29.54	Tavenor Lane

CONTROL TABLE

PT. NO.	N-GRID	E-GRID	ELEV.	DESC.	N-SURFACE	E-SURFACE	STATION	OFFSET	STREET
10	13,794,313.24	3,123,695.40	42.52	CP/10	13,795,980.83	3,124,073.03	N/A	L15.30	Leitrim Way
11	13,796,826.24	3,123,571.99	40.05	CP/11	13,798,494.13	3,123,949.60	5+83.64	L25.63	Mowery Road
11	13,796,826.24	3,123,571.99	40.05	CP/11	13,798,494.13	3,239,659.02	24+67.64	L15.55	Leitrim Way
12	13,796,884.22	3,125,906.37	38.85	CP/12	13,798,552.12	3,126,284.27	29+19.03	L24.20	Mowery Road
20	13,795,693.92	3,123,630.33	40.24	CP/20	13,797,361.68	3,124,007.95	1+84.28	L14.03	Madden Lane
20	13,795,693.92	3,123,630.33	40.24	CP/20	13,797,361.68	3,124,007.95	13+33.53	L15.42	Leitrim Way
21	13,796,849.56	3,124,490.08	38.88	CP/21	13,798,517.46	3,124,867.80	15+02.14	L25.59	Mowery Road
21	13,796,849.56	3,124,490.08	38.88	CP/21	13,798,517.46	3,124,867.80	24+90.96	R14.33	Donegal Way
22	13,796,870.20	3,125,301.80	38.56	CP/22	13,798,538.10	3,125,679.62	23+14.22	L25.57	Mowery Road
22	13,796,870.20	3,125,301.80	38.56	CP/22	13,798,538.10	3,125,679.62	25+23.73	L14.20	Duane Street
50	13,796,120.52	3,123,272.64	40.65	CP/50	13,797,788.33	3,123,650.22	4+32.58	L16.00	Botany Lane
101	13,794,835.76	3,123,670.77	41.41	CP/101	13,796,503.41	3,124,048.40	4+74.31	L15.35	Leitrim Way
101	13,794,835.76	3,123,670.77	41.41	CP/101	13,796,503.41	3,124,048.40	1+84.68	R1.15	Fairgreen Lane
103	13,795,094.56	3,123,658.58	40.43	CP/103	13,796,762.24	3,124,036.20	7+33.43	L15.37	Leitrim Way
103	13,795,094.56	3,123,658.58	40.43	CP/103	13,796,762.24	3,124,036.20	1+84.63	R10.82	Hickok Lane
106	13,795,934.90	3,123,617.92	40.73	CP/106	13,797,602.68	3,123,995.53	15+75.85	L16.49	Leitrim Way
106	13,795,934.90	3,123,617.92	40.73	CP/106	13,797,602.68	3,123,995.53	1+83.82	R14.86	Tavenor Lane
108	13,796,235.87	3,123,602.41	38.89	CP/108	13,797,903.70	3,123,980.02	18+76.26	L17.84	Leitrim Way
108	13,796,235.87	3,123,602.41	38.89	CP/108	13,797,903.70	3,123,980.02	7+85.59	L22.49	Botany Lane
109	13,796,509.55	3,123,588.31	40.18	CP/109	13,798,177.41	3,123,965.92	21+50.50	L17.12	Leitrim Way
109	13,796,509.55	3,123,588.31	40.18	CP/109	13,798,177.41	3,123,965.92	1+82.37	L16.27	Tareyton Lane
110	13,797,114.18	3,123,557.15	38.83	CP/110	13,798,782.11	3,123,934.76	27+55.88	L15.29	Leitrim Way
111	13,797,393.70	3,123,542.75	39.54	CP/111	13,799,061.67	3,123,920.36	30+35.81	L16.20	Leitrim Way
115	13,795,958.61	3,124,513.30	39.40	CP/115	13,797,626.39	3,124,891.02	10+79.63	R13.95	Tavenor Lane
115	13,795,958.61	3,124,513.30	39.40	CP/115	13,797,626.39	3,124,891.02	15+99.59	R14.87	Donegal Way
116	13,796,258.32	3,124,505.49	38.03	CP/116	13,797,926.15	3,124,883.21	18+99.45	R14.69	Donegal Way
116	13,796,258.32	3,124,505.49	38.03	CP/116	13,797,926.15	3,124,883.21	16+85.47	L13.82	Botany Lane
117	13,796,533.58	3,124,498.31	38.43	CP/117	13,798,201.43	3,124,876.04	10+92.80	L17.13	Tareyton Lane
117	13,796,533.58	3,124,498.31	38.43	CP/117	13,798,201.43	3,124,876.04	21+74.83	R14.52	Donegal Way
123	13,795,979.64	3,125,351.31	38.83	CP/123	13,797,647.43	3,125,729.14	16+31.68	L14.57	Duane Street
123	13,795,979.64	3,125,351.31	38.83	CP/123	13,797,647.43	3,125,729.14	19+18.00	R14.24	Tavenor Lane
124	13,796,279.16	3,125,334.66	39.25	CP/124	13,797,946.99	3,125,712.48	25+15.00	R14.24	Botany Lane
124	13,796,279.16	3,125,334.66	39.25	CP/124	13,797,946.99	3,125,712.48	19+31.70	L14.45	Duane Street
125	13,796,554.53	3,125,319.35	38.03	CP/125	13,798,222.39	3,125,697.17	19+14.21	L17.19	Tareyton Lane
125	13,796,554.53	3,125,319.35	38.03	CP/125	13,798,222.39	3,125,697.17	22+07.53	L14.33	Duane Street
300	13,796,823.13	3,123,449.94	38.85	CP/300	13,798,491.03	3,123,827.54	4+61.54	L25.63	Mowery Road

NOTES:

1. THE HORIZONTAL CONTROL IS REFERENCED TO THE CONTINUOUS OPERATING REFERENCE STATIONS (C.O.R.S.) NETWORK, NORTH AMERICAN DATUM OF 1983 (2011) EPOCH DATE 2010.00, TEXAS SOUTH CENTRAL ZONE 4204.

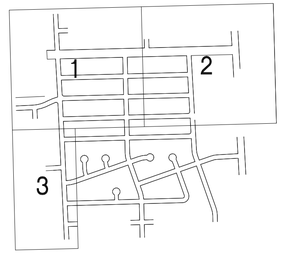
2. ALL COORDINATES SHOWN HEREON THIS SURVEY CONTROL MAP SET HAVE BEEN EXPRESSED IN U.S. SURVEY FEET IN GRID VALUES AND SURFACE VALUES. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. SURFACE VALUES MAY BE CONVERTED TO GRID VALUES BY MULTIPLYING A COMBINED SCALE FACTOR OF 0.999879125 (SURFACE X 0.999879125 = GRID)

3. ELEVATION ON CITY OF HOUSTON (C.O.H.) SURVEY MARKER NO. 5452-7505 WAS ESTABLISHED BY GPS OBSERVATIONS TIED TO THE C.O.H. NGS CORS NETWORK. THE GPS DERIVED ELEVATION IS BASED ON USING GEOID12A TO ESTABLISH THE ORTHOMETRIC ELEVATION. ALL OTHER ELEVATIONS SHOWN HEREON THIS MAP SHEET IS REFERENCED TO C.O.H SURVEY MARKER NO. 5452-7505.

4. THE PROJECT CONTROL POINTS AND SURVEY BASELINE POINTS SHOWN HEREON THIS CONTROL MAP ARE BASED ON CONTROL SURVEYS CONDUCTED IN JUNE, 2014. THE VALUES SHOWN ON THE CONTROL POINTS ARE BASED ON THE RESULTS OF THE JUNE, 2014 SURVEY. GEOSURV/TSC CERTIFICATION OF THIS CONTROL MAP IS FOR THE ORIGINAL CONTROL SURVEY RESULTS. GEOSURV/TSC IS NOT RESPONSIBLE FOR ANY CHANGES IN THE HORIZONTAL AND/OR VERTICAL VALUES THAT MAY OCCUR DUE TO MOVEMENT OF THE CONTROL POINTS DUE TO EARTH SURFACE MOVEMENT AND SUBSIDENCE. ALL CONTROL POINTS WERE MARKED WITH A SEMI-PERMANENT SURVEY MARKER AT THE TIME OF THE ORIGINAL CONTROL SURVEY. GEOSURV/TSC IS NOT RESPONSIBLE FOR REPLACING CONTROL POINTS THAT HAVE BEEN DISTURBED OR NO LONGER EXISTS ON THE GROUND.

NO.	DATE	REVISIONS	BY

SCALE: 1" = 100'-0" (22"X34")
SCALE: 1" = 200' (11"X17")



TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY: GEOSURV, INC. d.b.a. TSC SURVEYING
C.O.H. Field Book P-6019

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

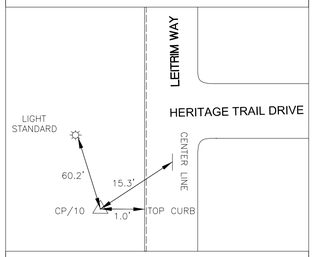
CONTROL DATA SHEET (CDS)
SHEET NO. 2 OF 2 SHEETS CDS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001- 4	
DRAWING SCALE	
VERT. N/A HORIZ. 1"=100	
CITY OF HOUSTON PM	
NAWARAJ PANTA, P.E.	
SHEET NO. 10 OF 159	

S:\PROJECTS\331052 CLOVERLAND AREA PROJECT TRW\DWG\CONTROL MAP\PHASE 1\331052_CLOVERLAND_CM_PH01_SH05.DWG JUL. 12, 2018 - 9:52am CARLOSALCARAZ

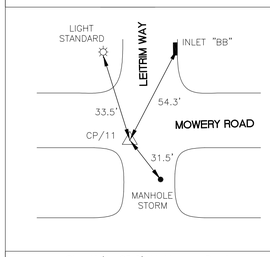
NO.	DATE	REVISIONS	BY

CP/10 – 5/8" I.R. W-TSC/GEOSURV CAP



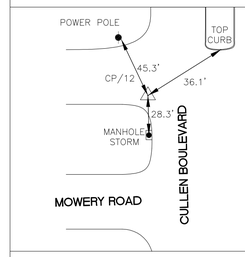
Sta: N/A, 15.3' Lt Leitrim Way

CP/11 – COTTON SPINDLE W/ SHINNER



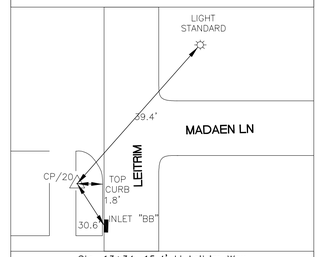
Sta: N/A, 25.6' Lt Mowery Road
Sta. 24+68, 15.6' Lt Leitrim Way

CP/12 – COTTON SPINDLE W/ SHINNER



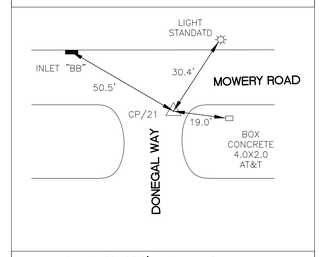
Sta: 23+19, 24.2' Lt Mowery Road

CP/20 – 5/8" I.R. W-TSC/GEOSURV CAP



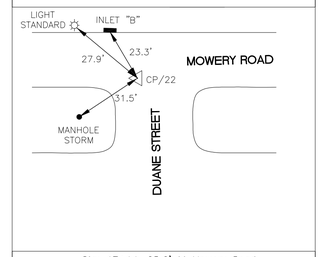
Sta. 13+34, 15.4' Lt Leitrim Way
Sta: 1+84, 14.0 Lt Madden Lane

CP/21 – MAG NAIL W/ SHINNER



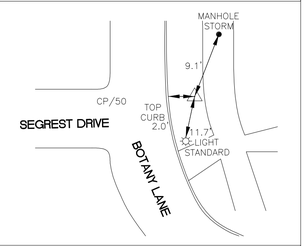
Sta: 9+02, 25.6' Lt Mowery Road
Sta: 39+91, 14.3' Rt Donegal Way

CP/22 – MAG NAIL W/ SHINNER



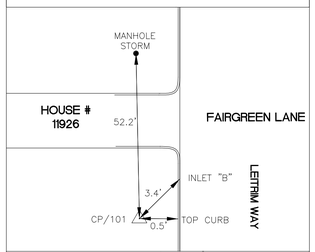
Sta: 17+14, 25.6' Lt Mowery Road
Sta: 46+24, 14.2' Duane Street

CP/50 – 5/8" I.R. W-TSC/GEOSURV CAP



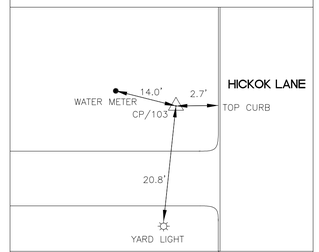
Sta: 4+33, 16.7' Lt Botany Lane

CP/101 – 5/8" I.R. W-TSC/GEOSURV CAP



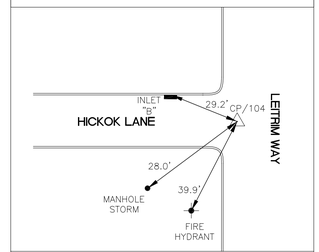
Sta: 4+74, 15.3' Lt Leitrim Way
Sta: 1+85' 1.2' Rt Fairgreen Lane

CP/103 – 5/8" I.R. W-TSC/GEOSURV CAP

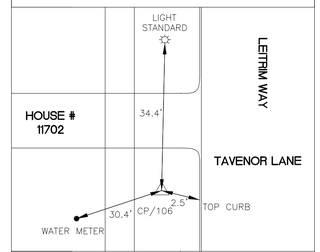


Sta: 7+33, 15.4' Lt Leitrim Way
Sta: 1+85, 10.8' Lt Hickok Lane

CP/104 – CHISELED "X" ON CONC.

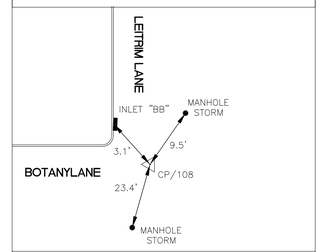


CP/106 – 5/8" I.R. W-TSC/GEOSURV CAP



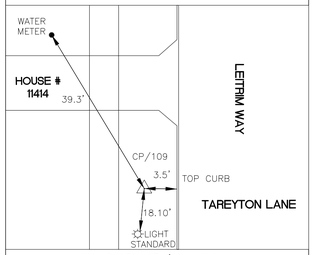
Sta: 15+75, 16.5' Lt Leitrim Way
Sta: 1+84, 14.9' Rt Tavenor Lane

CP/108 – SET MAGNAIL



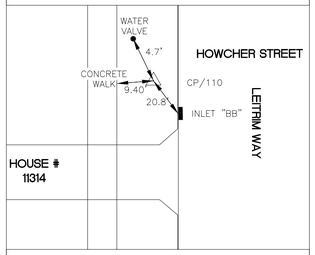
Sta: 18+76, 17.8' Lt Leitrim Way
Sta: 7+86, 22.5' Lt Botany Lane

CP/109 – 5/8" I.R. W-TSC/GEOSURV CAP



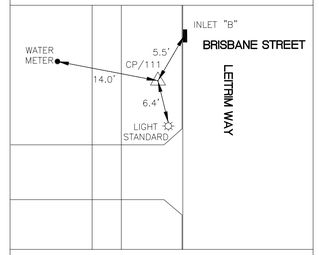
Sta: 21+51, 17.1' Lt Leitrim Way
Sta: 1+82, 16.3' Lt Tareyton Lane

CP/110 – 5/8" I.R. W-TSC/GEOSURV CAP



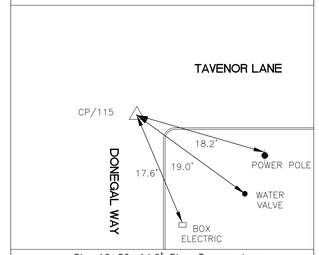
Sta: 2+56, 15.3' Lt Leitrim Way

CP/111 – 5/8" I.R. W-TSC/GEOSURV CAP



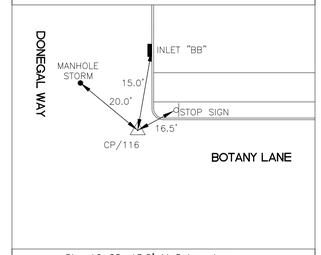
Sta: 20+36, 16.2' Lt – Leitrim Way

CP/115 – MAG NAIL W/ SHINNER



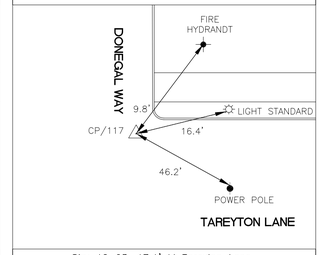
Sta: 10+80, 14.0' Rt – Tavenor Lane
Sta: 30+00, 14.9' Rt – Donegal Way

CP/116 – MAG NAIL W/ SHINNER



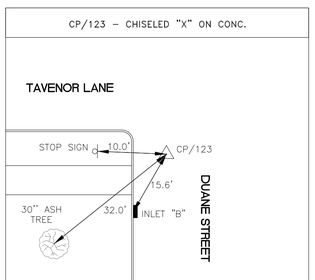
Sta: 16+85, 13.8' Lt Botany Lane
Sta: 33+99, 14.7' Rt Donegal Way

CP/117 – MAG NAIL W/ SHINNER



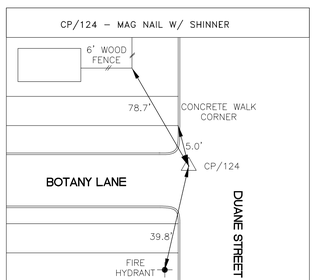
Sta: 10+93, 17.1' Lt Tareyton Lane
Sta: 36+75, 14.5' Rt Donegal Way

CP/123 – CHISELED "X" ON CONC.



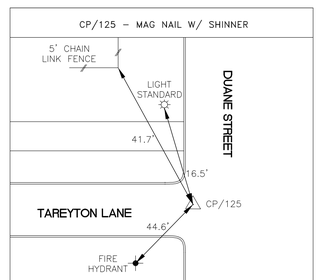
Sta: 19+18, 14.2' Rt Tavenor Lane
Sta: 37+32, 14.6' Lt Duane Street

CP/124 – MAG NAIL W/ SHINNER



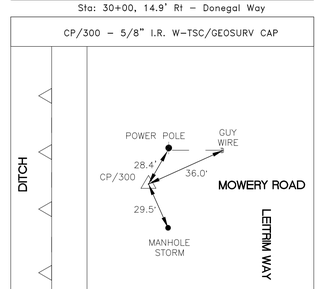
Sta: 25+15, 13.6' Lt Botany Lane
Sta: 19+21, 14.5' Lt Duane Street

CP/125 – MAG NAIL W/ SHINNER



Sta: 19+14, 17.2' Lt Tareyton Lane
Sta: 25+08, 14.3' Lt Duane Street

CP/300 – 5/8" I.R. W-TSC/GEOSURV CAP



Sta: N/A, 25.6' Lt Mowery Road

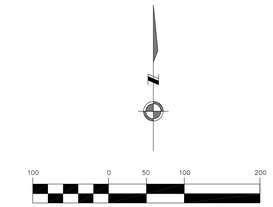
NOTES:

1. THE HORIZONTAL CONTROL IS REFERENCED TO THE CONTINUOUS OPERATING REFERENCE STATIONS (C.O.R.S.) NETWORK, NORTH AMERICAN DATUM OF 1983 (2011) EPOCH DATE 2010.00, TEXAS SOUTH CENTRAL ZONE 4204.

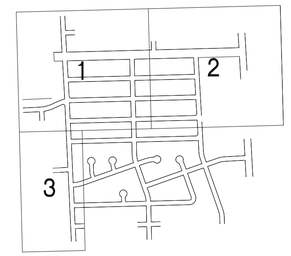
2. ALL COORDINATES SHOWN HEREON THIS SURVEY CONTROL MAP SET HAVE BEEN EXPRESSED IN U.S. SURVEY FEET IN GRID VALUES AND SURFACE VALUES. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. SURFACE VALUES MAY BE CONVERTED TO GRID VALUES BY MULTIPLYING A COMBINED SCALE FACTOR OF 0.999879125 (SURFACE X 0.999879125 = GRID)

3. ELEVATION ON CITY OF HOUSTON (C.O.H.) SURVEY MARKER NO. 5452-7505 WAS ESTABLISHED BY GPS OBSERVATIONS TIED TO THE C.O.H. NGS CORS NETWORK. THE GPS DERIVED ELEVATION IS BASED ON USING GEOID12A TO ESTABLISH THE ORTHOMETRIC ELEVATION. ALL OTHER ELEVATIONS SHOWN HEREON THIS MAP SHEET IS REFERENCED TO C.O.H SURVEY MARKER NO. 5452-7505.

4. THE PROJECT CONTROL POINTS AND SURVEY BASELINE POINTS SHOWN HEREON THIS CONTROL MAP ARE BASED ON CONTROL SURVEYS CONDUCTED IN JUNE, 2014. THE VALUES SHOWN ON THE CONTROL POINTS ARE BASED ON THE RESULTS OF THE JUNE, 2014 SURVEY. GEOSURV/TSC CERTIFICATION OF THIS CONTROL MAP IS FOR THE ORIGINAL CONTROL SURVEY RESULTS. GEOSURV/TSC IS NOT RESPONSIBLE FOR ANY CHANGES IN THE HORIZONTAL AND/OR VERTICAL VALUES THAT MAY OCCUR DUE TO MOVEMENT OF THE CONTROL POINTS DUE TO EARTH SURFACE MOVEMENT AND SUBSIDENCE. ALL CONTROL POINTS WERE MARKED WITH A SEMI-PERMANENT SURVEY MARKER AT THE TIME OF THE ORIGINAL CONTROL SURVEY. GEOSURV/TSC IS NOT RESPONSIBLE FOR REPLACING CONTROL POINTS THAT HAVE BEEN DISTURBED OR NO LONGER EXISTS ON THE GROUND.



SCALE: 1" = 100'-0" (22"X34")
SCALE: 1" = 200' (11"X17")



TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY: GEOSURV, INC. d.b.a. TSC SURVEYING
C.O.H. Field Book P-6019

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

SURVEY CONTROL 3PNT REF.

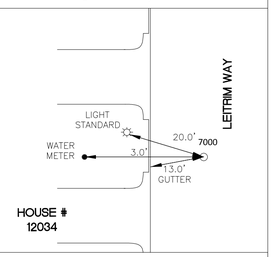
SHEET NO. 1 OF 1 SHEETS SCM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001- 4	
DRAWING SCALE	
VERT. N/A HORIZ. 1"=100	
CITY OF HOUSTON PM	
NAWARAJ PANTA, P.E.	
SHEET NO. 11 OF 159	

S:\PROJECTS\331052 CLOVERLAND AREA PROJECT TRW\DWG\CONTROL MAP\PHASE 1\331052_CLOVERLAND_CM_PH01_SH06.DWG JUL 12, 2018 - 9:53am CARLOSALCARAZ

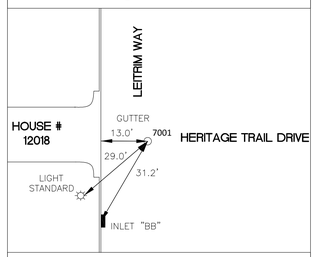
NO.	DATE	REVISIONS	BY

7000 -- ℄ – PCRCX W/ DRILL HOLE



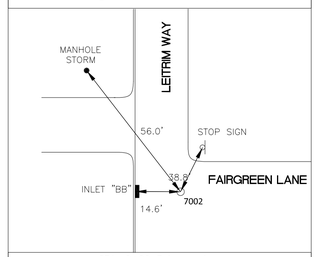
STA. 0+00 Leitrim Way

7001 -- ℄ – PCRCX W/ DRILL HOLE



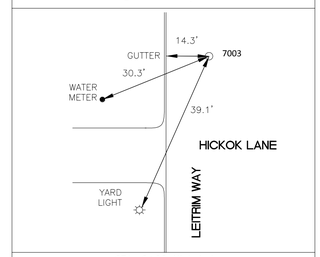
STA. 2+00 Leitrim Way

7002 -- ℄ – COTTON SPINDER W/ SHINNER



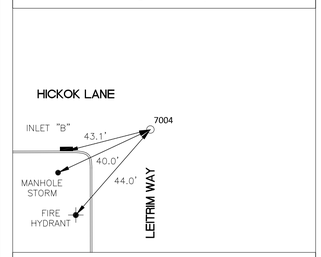
STA. 2+00 Fairgeen Lane
STA. 4+75 Leitrim Way

7003 -- ℄ – PCRCX W/ DRILL HOLE



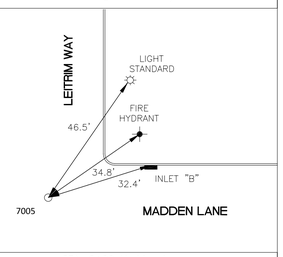
STA. 2+00 Hickok Lane
STA. 7+44 Leitrim Way

7004 -- ℄ – PCRCX W/ DRILL HOLE



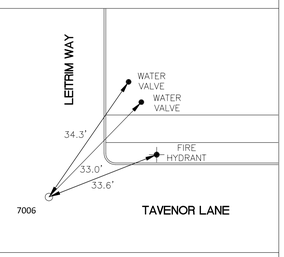
STA. 9+50 Leitrim Way

7005 -- ℄ – PCRCX W/ DRILL HOLE



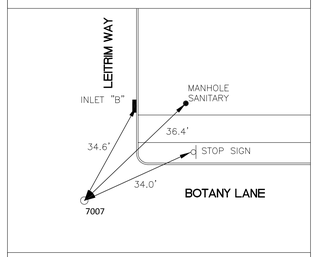
STA. 2+00 Madden Lane
STA. 13+19 Leitrim Way

7006 -- ℄ – PCRCX W/ DRILL HOLE



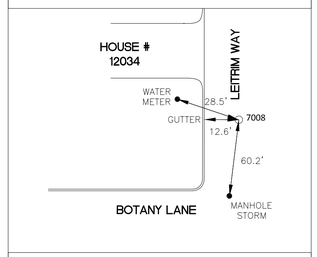
STA. 2+00 Tavenor Lane
STA. 15+89 Leitrim Way

7007 -- ℄ – PCRCX W/ DRILL HOLE



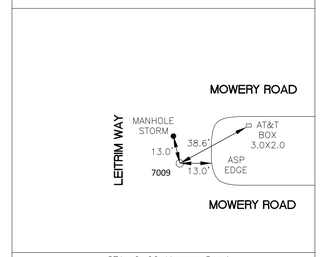
STA. 6+00 Botany Lane
STA. 18+56 Leitrim Way

7008 -- ℄ – PCRCX W/ DRILL HOLE



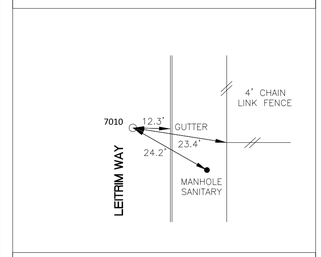
STA. 19+43 Leitrim Way

7009 -- ℄ – MAG NAIL W/ SHINNER



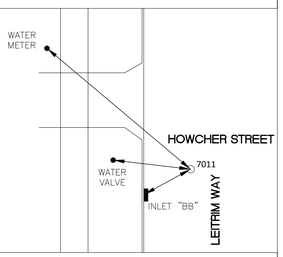
STA. 6+00 Mowery Road
STA. 24+42 Leitrim Way

7010 -- ℄ – PCRCX W/ DRILL HOLE



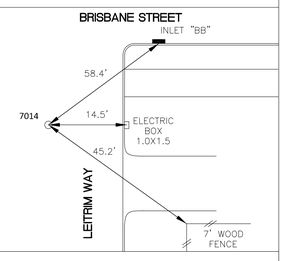
STA. 26+16 Leitrim Way

7011 -- ℄ – PCRCX W/ DRILL HOLE



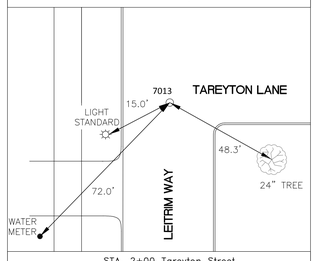
STA. 27+55 Leitrim Way

7012 -- ℄ – PCRCX W/ DRILL HOLE



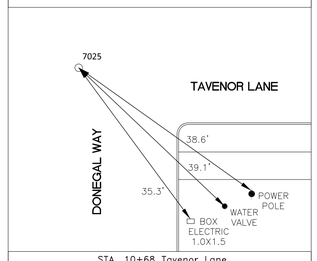
STA. 29+76 Leitrim Way

7013 -- ℄ – PCRCX W/ DRILL HOLE



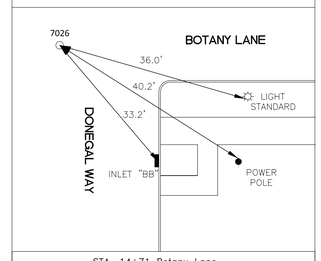
STA. 2+00 Tareyton Street
STA. 21+34 Leitrim Way

7025 -- ℄ – MAG NAIL W/ SHINNER



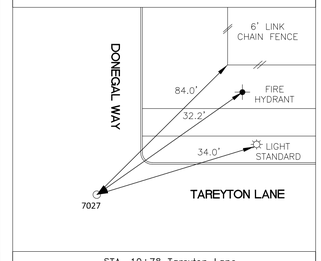
STA. 10+68 Tavenor Lane
STA. 16+14 Donegal Way

7026 -- ℄ – MAG NAIL W/ SHINNER



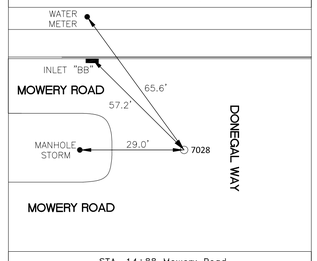
STA. 14+71 Botany Lane
STA. 18+86 Donegal Way

7027 -- ℄ – MAG NAIL W/ SHINNER



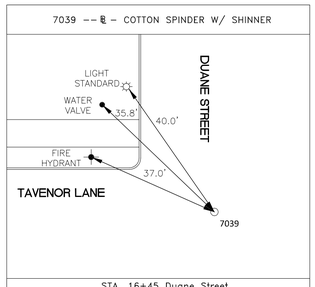
STA. 10+78 Tareyton Lane
STA. 21+58 Donegal Way

7028 -- ℄ – MAG NAIL W/ SHINNER



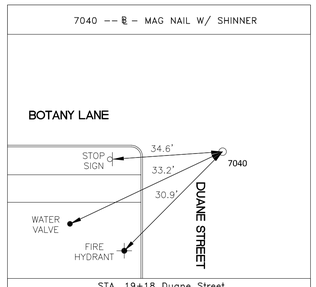
STA. 14+88 Mowery Road
STA. 24+65 Donegal Way

7039 -- ℄ – COTTON SPINDER W/ SHINNER



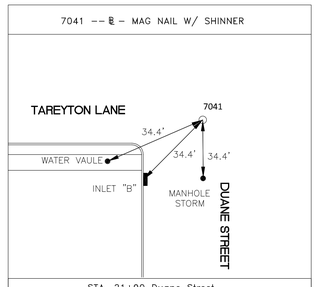
STA. 16+45 Duane Street
STA. 19+32 Tavenor Lane

7040 -- ℄ – MAG NAIL W/ SHINNER



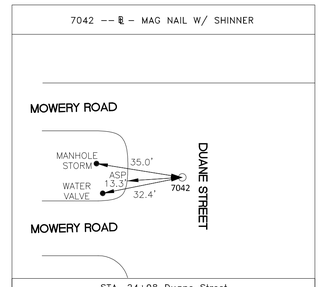
STA. 19+18 Duane Street
STA. 23+30 Botany Lane

7041 -- ℄ – MAG NAIL W/ SHINNER



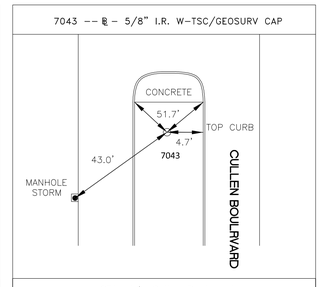
STA. 21+90 Duane Street
STA. 19+29 Tareyton Lane

7042 -- ℄ – MAG NAIL W/ SHINNER



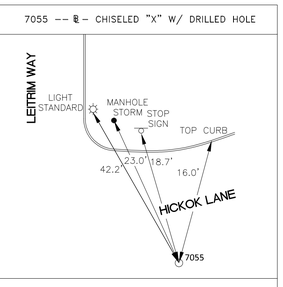
STA. 24+98 Duane Street
STA. 23+29 Mowery Road

7043 -- ℄ – 5/8" I.R. W–TSC/GEOSURV CAP



STA. N/A Cullen Boulevard

7055 -- ℄ – CHISELED "X" W/ DRILLED HOLE



STA. 2+30 Hickok Lane

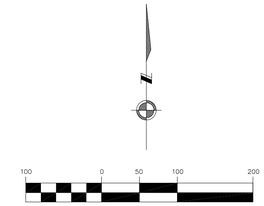
NOTES:

1. THE HORIZONTAL CONTROL IS REFERENCED TO THE CONTINUOUS OPERATING REFERENCE STATIONS (C.O.R.S.) NETWORK, NORTH AMERICAN DATUM OF 1983 (2011) EPOCH DATE 2010.00, TEXAS SOUTH CENTRAL ZONE 4204.

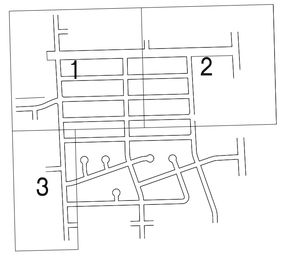
2.ALL COORDINATES SHOWN HEREON THIS SURVEY CONTROL MAP SET HAVE BEEN EXPRESSED IN U.S. SURVEY FEET IN GRID VALUES AND SURFACE VALUES. ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. SURFACE VALUES MAY BE CONVERTED TO GRID VALUES BY MULTIPLYING A COMBINED SCALE FACTOR OF 0.999879125 (SURFACE X 0.999879125 = GRID)

3. ELEVATION ON CITY OF HOUSTON (C.O.H.) SURVEY MARKER NO. 5452–7505 WAS ESTABLISHED BY GPS OBSERVATIONS TIED TO THE C.O.H. NGS CORS NETWORK. THE GPS DERIVED ELEVATION IS BASED ON USING GEOID12A TO ESTABLISH THE ORTHOMETRIC ELEVATION. ALL OTHER ELEVATIONS SHOWN HEREON THIS MAP SHEET IS REFERENCED TO C.O.H SURVEY MARKER NO. 5452–7505.

4. THE PROJECT CONTROL POINTS AND SURVEY BASELINE POINTS SHOWN HEREON THIS CONTROL MAP ARE BASED ON CONTROL SURVEYS CONDUCTED IN JUNE, 2014. THE VALUES SHOWN ON THE CONTROL POINTS ARE BASED ON THE RESULTS OF THE JUNE, 2014 SURVEY. GEOSURV/TSC CERTIFICATION OF THIS CONTROL MAP IS FOR THE ORIGINAL CONTROL SURVEY RESULTS. GEOSURV/TSC IS NOT RESPONSIBLE FOR ANY CHANGES IN THE HORIZONTAL AND/OR VERTICAL VALUES THAT MAY OCCUR DUE TO MOVEMENT OF THE CONTROL POINTS DUE TO EARTH SURFACE MOVEMENT AND SUBSIDENCE. ALL CONTROL POINTS WERE MARKED WITH A SEMI–PERMANENT SURVEY MARKER AT THE TIME OF THE ORIGINAL CONTROL SURVEY. GEOSURV/TSC IS NOT RESPONSIBLE FOR REPLACING CONTROL POINTS THAT HAVE BEEN DISTURBED OR NO LONGER EXISTS ON THE GROUND.



SCALE: 1" = 100'–0" (22"X34")
SCALE: 1" = 200' (11"X17")



TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F–12428

SURVEYED BY: GEOSURV, INC. d.b.a. TSC SURVEYING
C.O.H. Field Book P–6019

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

SURVEY CONTROL BASELINE

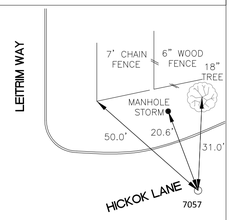
SHEET NO. 1 OF 2 SHEETS SCM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001– 4	
DRAWING SCALE	
VERT. N/A HORIZ. 1"=100	
CITY OF HOUSTON PM	
NAWARAJ PANTA, P.E.	
SHEET NO. 12 OF 159	

S:\PROJECTS\331052 CLOVERLAND AREA PROJECT TRW\DWG\CONTROL MAP\PHASE 1\331052_CLOVERLAND_CM_PH01_SH07.DWG JUL 12, 2018 - 9:53am CARLOSALCARAZ

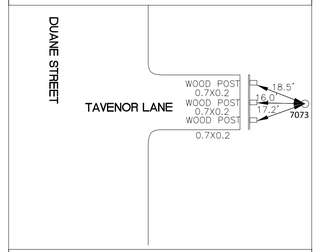
NO.	DATE	REVISIONS	BY

7057 -- ℄ – CHISELED "X" W/ DRILLED HOLE



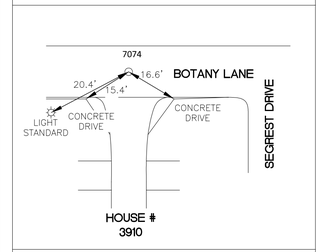
STA. 3+46 Hickok Lane

7073 -- ℄ – 5/8" I.R. W–TSC/GEOSURV CAP



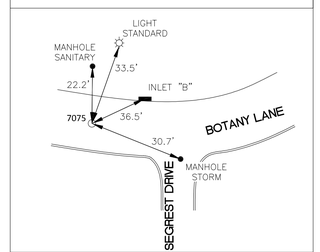
STA. 20+72 Tavenor Lane

7074 -- ℄ – MAG NAIL W/ SHINNER



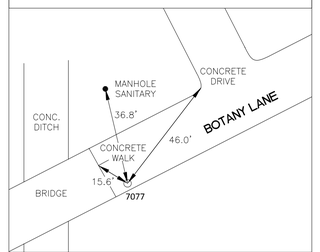
STA. 0+00 Botany Lane

7075 -- ℄ – MAG NAIL W/ SHINNER



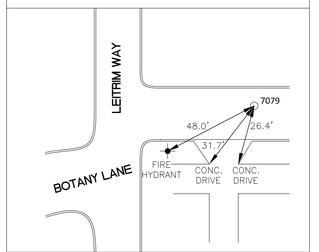
STA. 2+15 Botany Lane

7077 -- ℄ – MAG NAIL W/ SHINNER



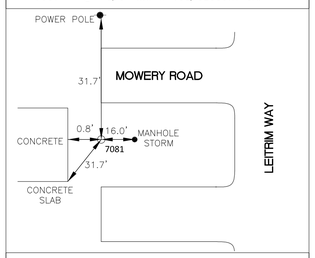
STA. 4+44 Botany Lane

7079 -- ℄ – MAG NAIL W/ SHINNER



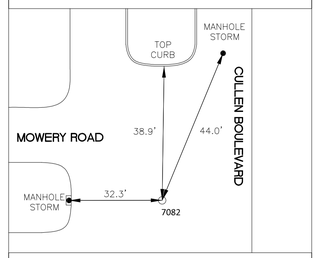
STA. 6+71 Botany Lane

7081 -- ℄ – 5/8" I.R. W–TSC/GEOSURV CAP



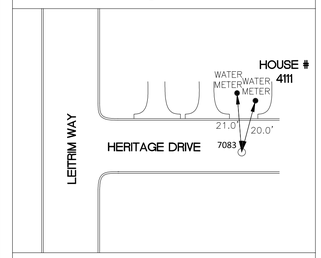
STA. N/A

7082 -- ℄ – MAG NAIL W/ SHINNER



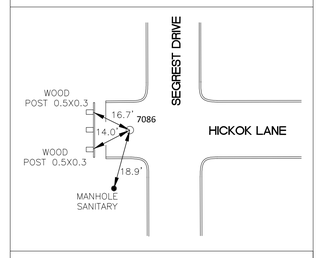
STA. 29+53 Mowery Road

7083 -- ℄ – CHISELED "X"



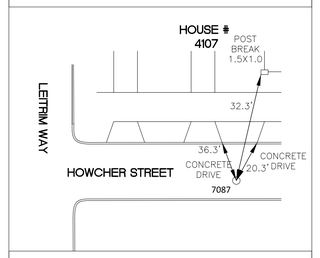
STA. N/A Heritage Drive

7086 -- ℄ – CHISELED "X"



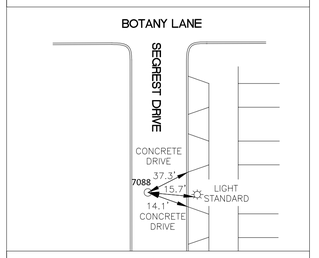
STA. N/A Hickok Lane

7087 -- ℄ – MAG NAIL W/ SHINNER



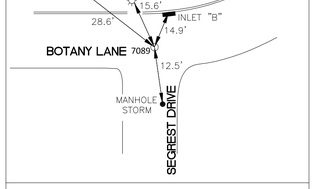
STA. N/A Howcher Street

7088 -- ℄ – MAG NAIL W/ SHINNER



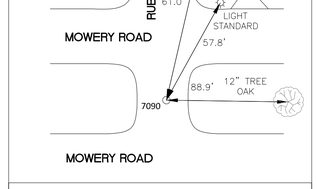
STA. N/A Howcher Street

7089 -- ℄ – MAG NAIL W/ SHINNER



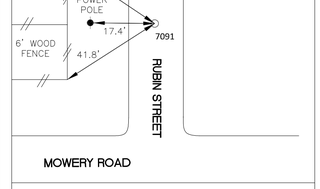
STA. N/A Botant Lane

7090 -- ℄ – MAG NAIL W/ SHINNER



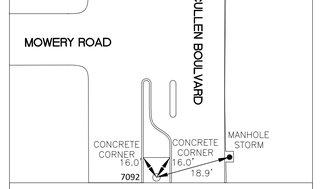
STA. 17+78 Mowery Road

7091 -- ℄ – MAG NAIL W/ SHINNER



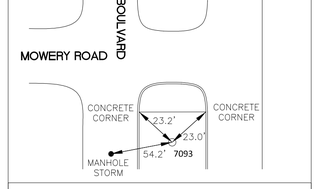
STA. N/A Rubin Street

7092 -- ℄ – RR SPIKE



STA. N/A

7093 -- ℄ – 5/8" I.R. W–TSC/GEOSURV CAP



STA. N/A

NOTES:

1. THE HORIZONTAL CONTROL IS REFERENCED TO THE CONTINUOUS OPERATING REFERENCE STATIONS (C.O.R.S.) NETWORK, NORTH AMERICAN DATUM OF 1983 (2011) EPOCH DATE 2010.00, TEXAS SOUTH CENTRAL ZONE 4204.

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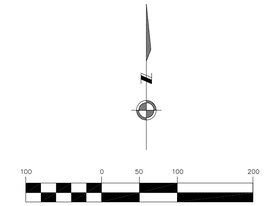
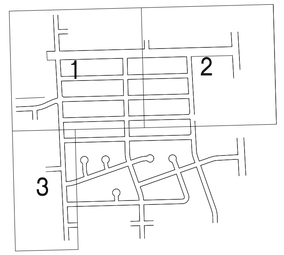
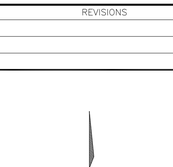


SCALE: 1" = 100'–0" (22"X34")
SCALE: 1" = 200' (11"X17")





TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F–12428

SURVEYED BY: GEOSURV, INC. d.b.a. TSC SURVEYING
C.O.H. Field Book P–6019

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

SURVEY CONTROL BASELINE

SHEET NO. 2 OF 2 SHEETS SCM

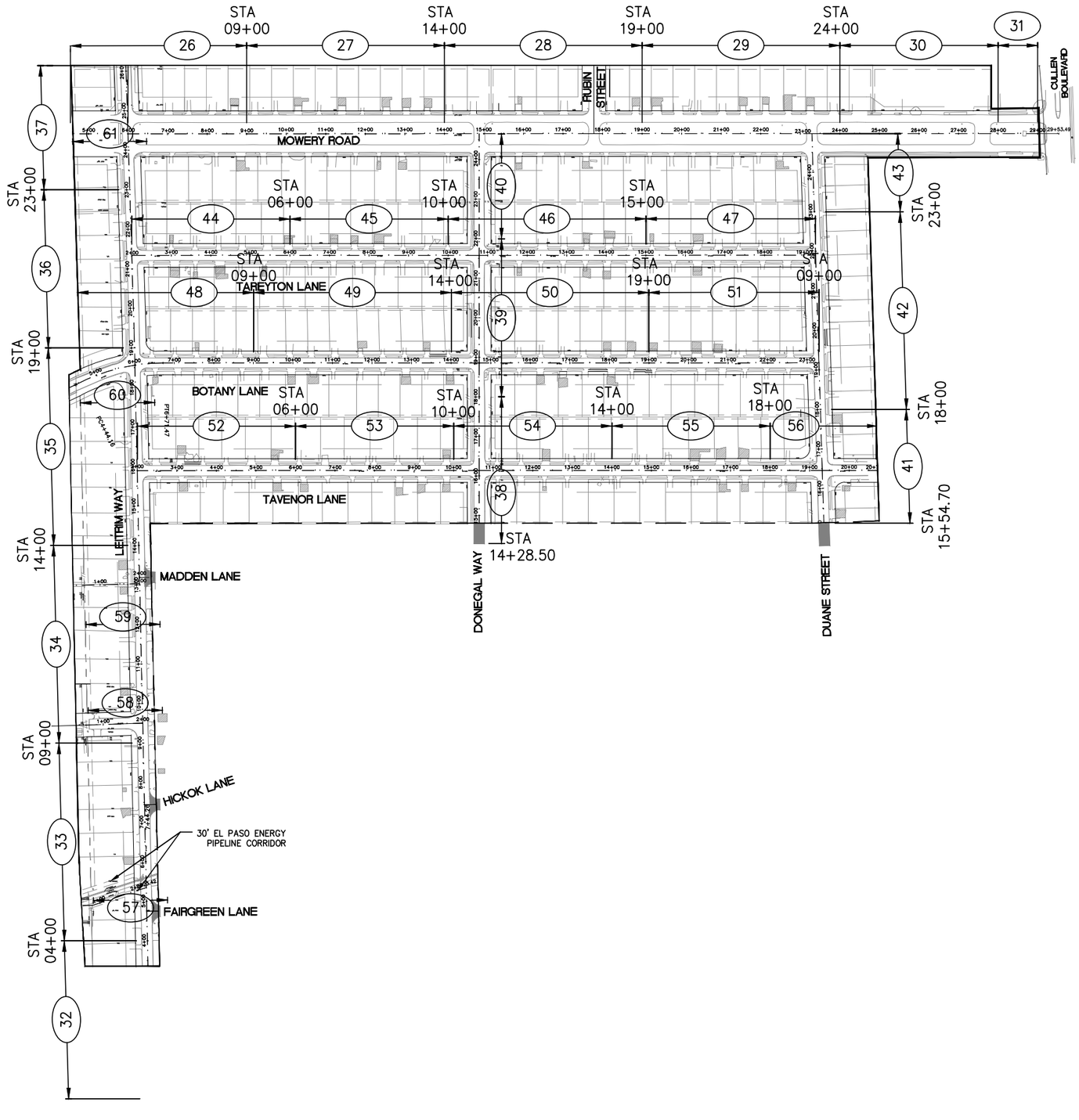
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001– 4	
DRAWING SCALE	
VERT. N/A HORIZ. 1"=100	
CITY OF HOUSTON PM	
NAWARAJ PANTA, P.E.	
SHEET NO. 13 OF 159	

S:\PROJECTS\331052 CLOVERLAND AREA PROJECT TRW\DWG\CONTROL MAP\PHASE 1\331052_CLOVERLAND_CM_PH01_SH08.DWG JUL 12, 2018– 9:54am CARLOSALCARAZ

LEGEND

(XX) PLAN & PROFILE SHEET NUMBER

NO.	DATE	REVISIONS	BY



75 0 75

SCALE: 1"=150'
FULL-SIZE (22"X34"): 1" = 75'
HALF-SIZE (11"X17"): 1" = 150'

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

STATE OF TEXAS
MICHAEL BAGSTAD
81193
REGISTERED PROFESSIONAL ENGINEER

SURVEYED BY:
FB NO. 00000

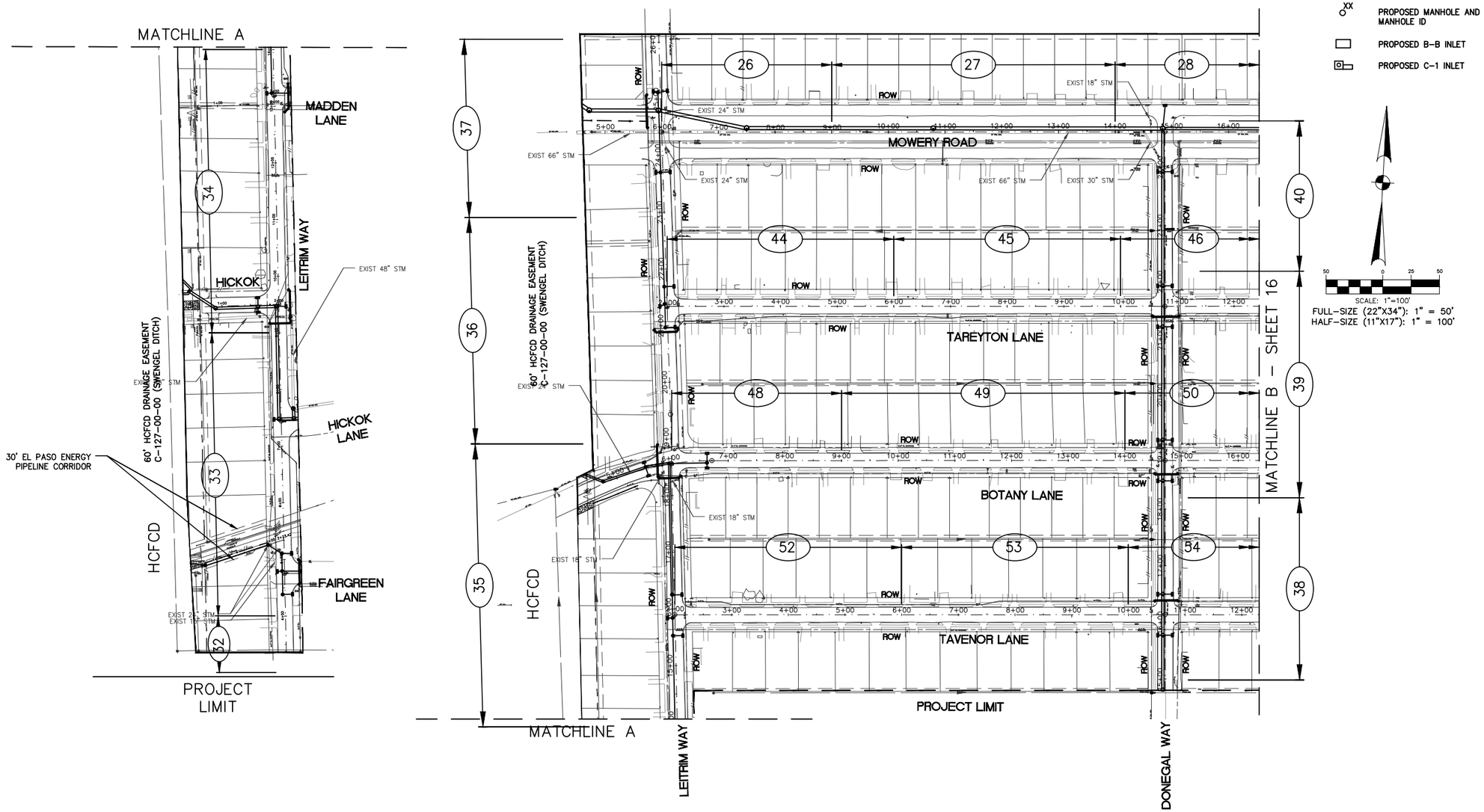
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

OVERALL SHEET LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 14 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\14 - OVERALL SHEET LAYOUT.DWG APR. 09, 2020-8:12am JAMES GAIBORT



LEGEND

(XX)	PLAN & PROFILE SHEET NUMBER
24"RCP	EXISTING STORM SEWER
24"RCP	PROPOSED STORM SEWER (LESS THAN 30")
30"-54" RCP	PROPOSED STORM SEWER (30" AND GREATER)
	EXISTING MANHOLE AND INLETS
XX	PROPOSED MANHOLE AND MANHOLE ID
	PROPOSED B-B INLET
	PROPOSED C-1 INLET

SCALE: 1"=100'
FULL-SIZE (22"X34"): 1" = 50'
HALF-SIZE (11"X17"): 1" = 100'

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
MICHAEL BAGSTAD
81193
REGISTERED PROFESSIONAL ENGINEER
Michael Bagstad 6-24-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

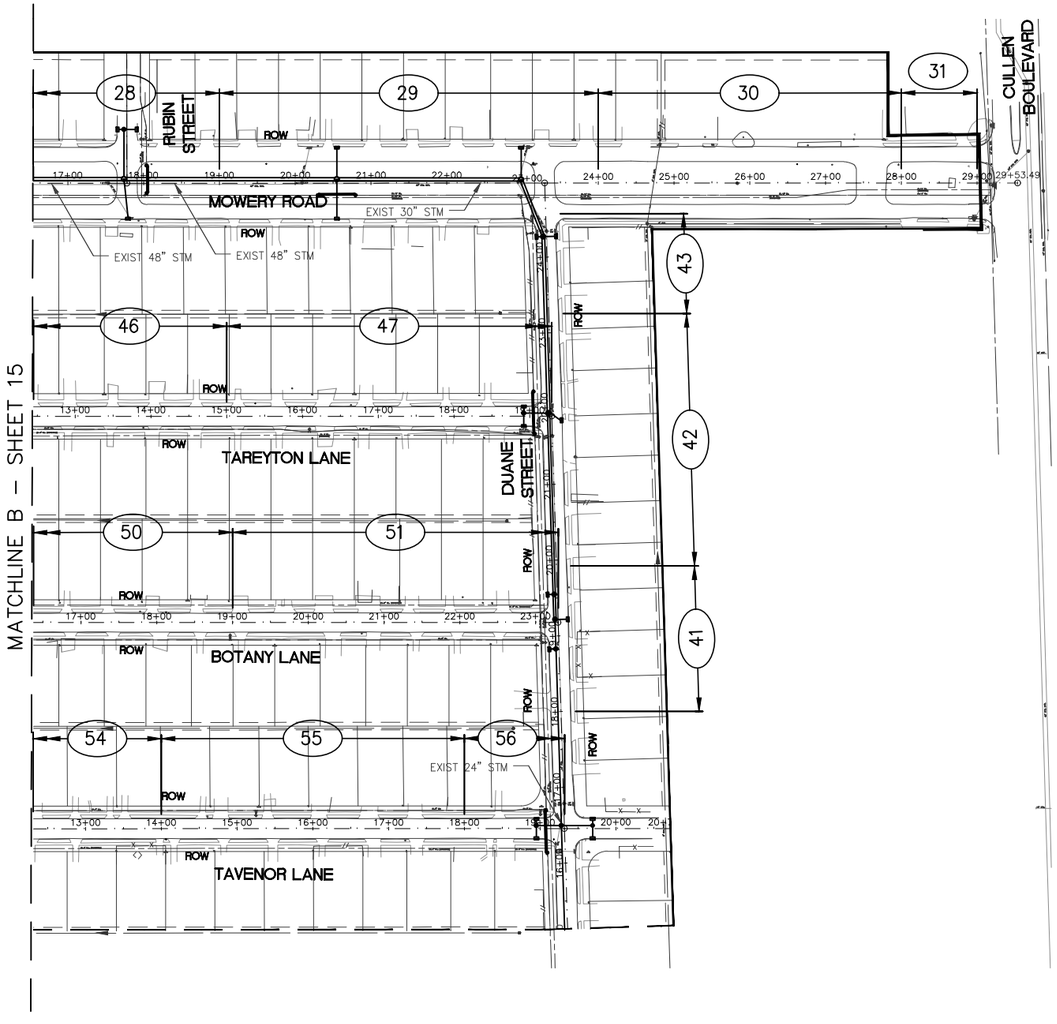
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

STORM SEWER LAYOUT

SHEET 1 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 15 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\15 - 16 STORM LAYOUT.DWG APR. 09, 2020-8:13am JAMES GAIBOR



LEGEND

(XX)	PLAN & PROFILE SHEET NUMBER
24"RCP	EXISTING STORM SEWER
24"RCP	PROPOSED STORM SEWER (LESS THAN 30")
30"–54" RCP	PROPOSED STORM SEWER (30" AND GREATER)
	EXISTING MANHOLE AND INLETS
XX	PROPOSED MANHOLE AND MANHOLE ID
	PROPOSED B–B INLET
	PROPOSED C–1 INLET

50 0 25 50

SCALE: 1"=100'

FULL–SIZE (22"X34"): 1" = 50'

HALF–SIZE (11"X17"): 1" = 100'

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F–12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
MICHAEL BAGSTAD
8119
REGISTERED PROFESSIONAL ENGINEER
4-24-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

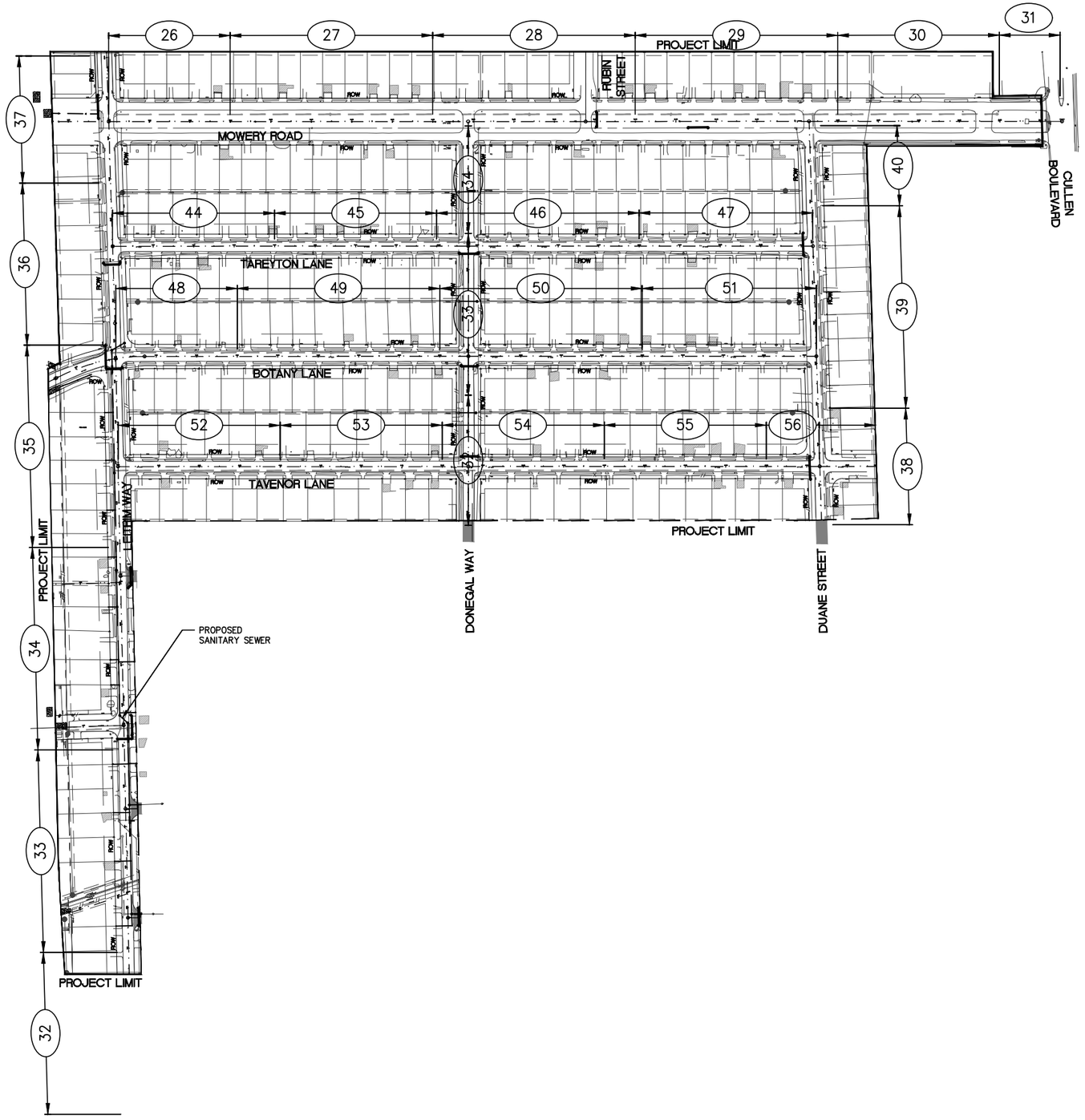
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

STORM SEWER LAYOUT

SHEET 2 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 16 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\15 – 16 STORM LAYOUT.DWG APR. 09, 2020–8:13am JAMES GAIBORT



LEGEND

(XX)	PLAN & PROFILE SHEET NUMBER
8"SAN	EXISTING SANITARY SEWER
8"SAN	PROPOSED SANITARY SEWER (LESS THAN 30")

NO.	DATE	REVISIONS	BY

75 0 75

SCALE: 1"=150'

FULL-SIZE (22"X34"): 1" = 75'
HALF-SIZE (11"X17"): 1" = 150'

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

STATE OF TEXAS
MICHAEL BASSTAD
81193
REGISTERED PROFESSIONAL ENGINEER
7-24-19

SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON

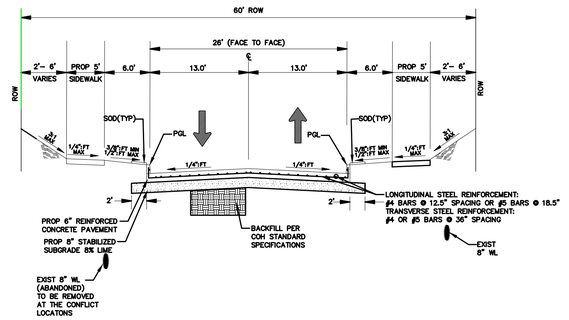
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

SANITARY SEWER LAYOUT

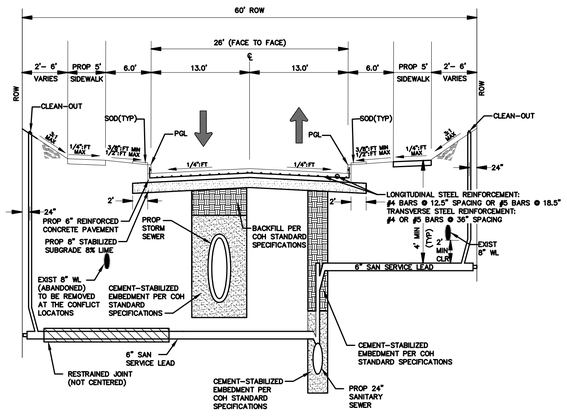
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 17 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\17 - SANITARY SEWER LAYOUT.DWG APR. 09, 2020-8:14am JAMES GAIBORT



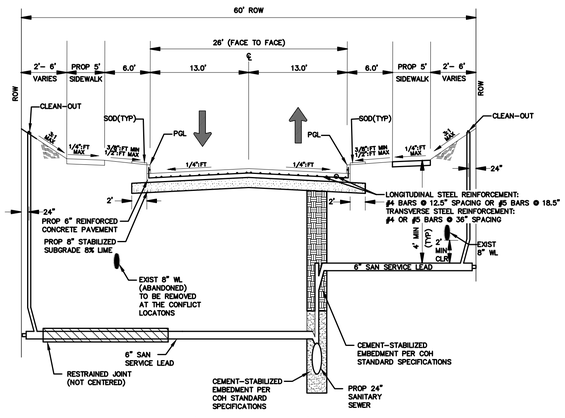
LEITRIM WAY

STA. 3+35.00 TO 4+38.00



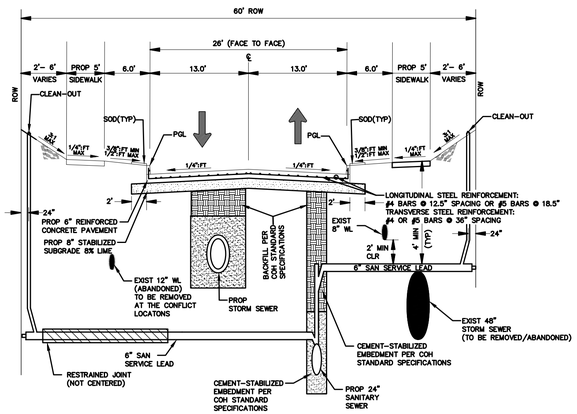
LEITRIM WAY

STA. 4+38.00 TO 5+10.00



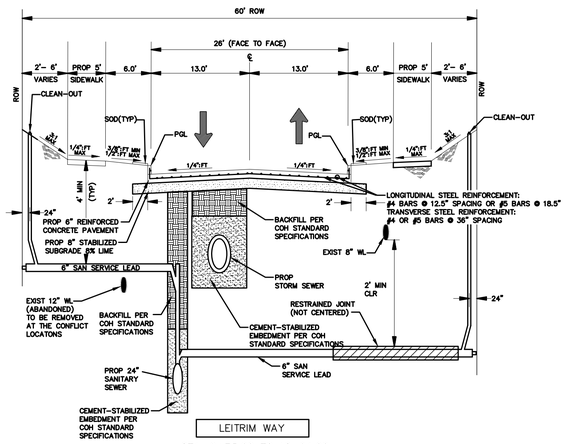
LEITRIM WAY

STA. 5+10.00 TO 7+48.00



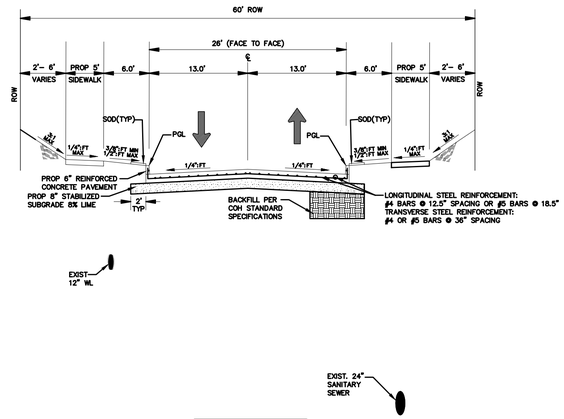
LEITRIM WAY

STA. 7+48.00 TO 9+75.00



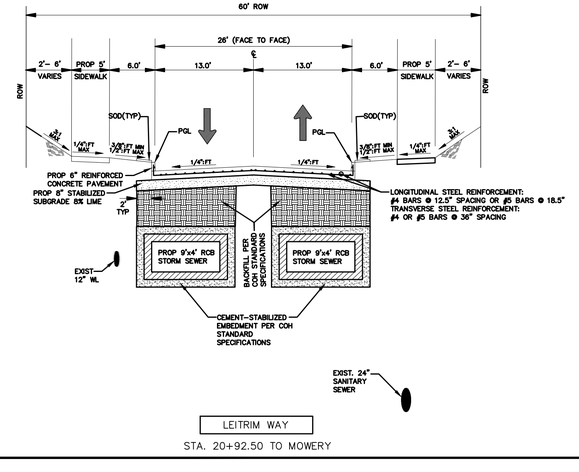
LEITRIM WAY

STA. 9+75.00 TO 18+94.00



LEITRIM WAY

STA. 18+94.00 TO 20+92.50



LEITRIM WAY

STA. 20+92.50 TO MOWERY

NOTES

1– LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND VARIES ALONG THE STREET PROFILE. SEE CONSTRUCTION PLANS.

2– CONTRACTOR TO LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATION.

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK–UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

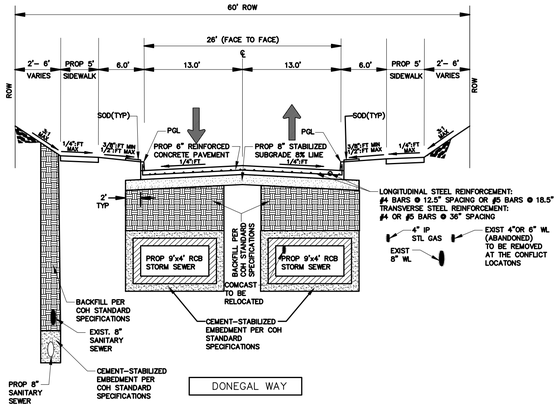
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

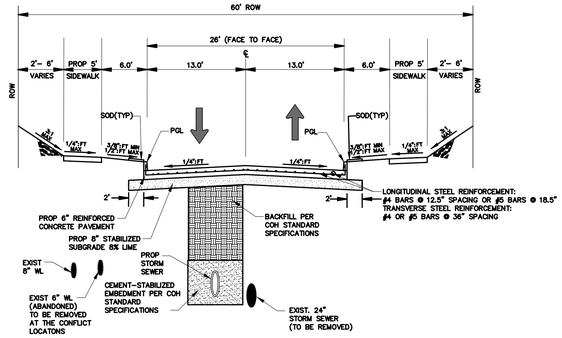
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

TYPICAL ROADWAY SECTIONS
SHEET 1 OF 2

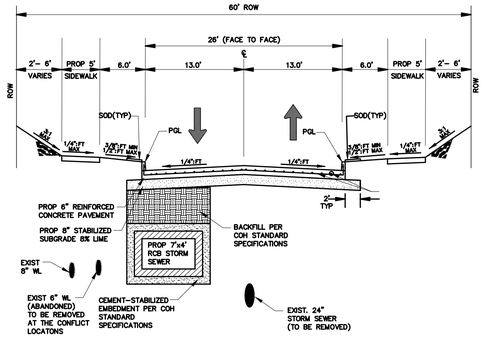
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT. 1"=10' HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 18 OF 159	

K:\331052–CLOVERLAND AREA P&D–COH FY15\DWG\DESIGN DRAWINGS\SUB–PROJECT–1\GENERAL\018–TYPICAL ROADWAY SECTIONS SHEET 1 OF 2.DWG AUG. 03, 2026–8:45am

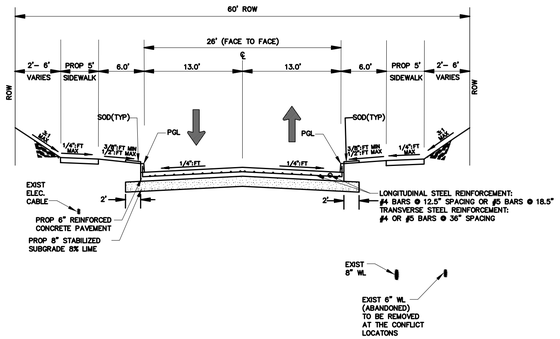


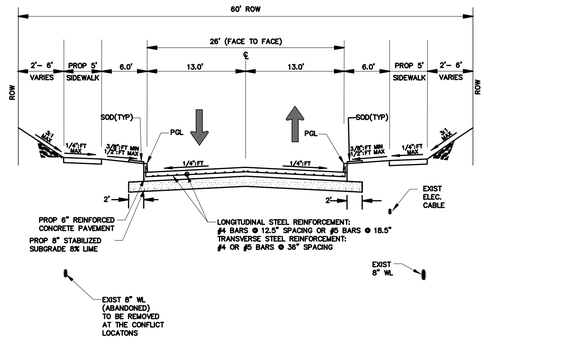


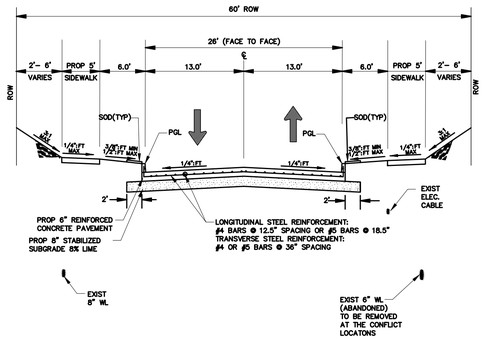
STA. 15+74.70 TO 18+78.00

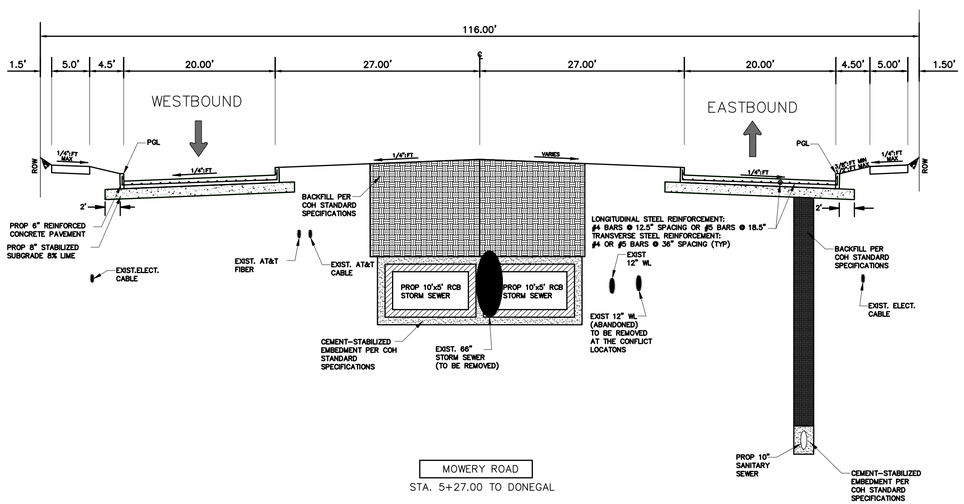


STA. 18+78.00 TO MOWERY

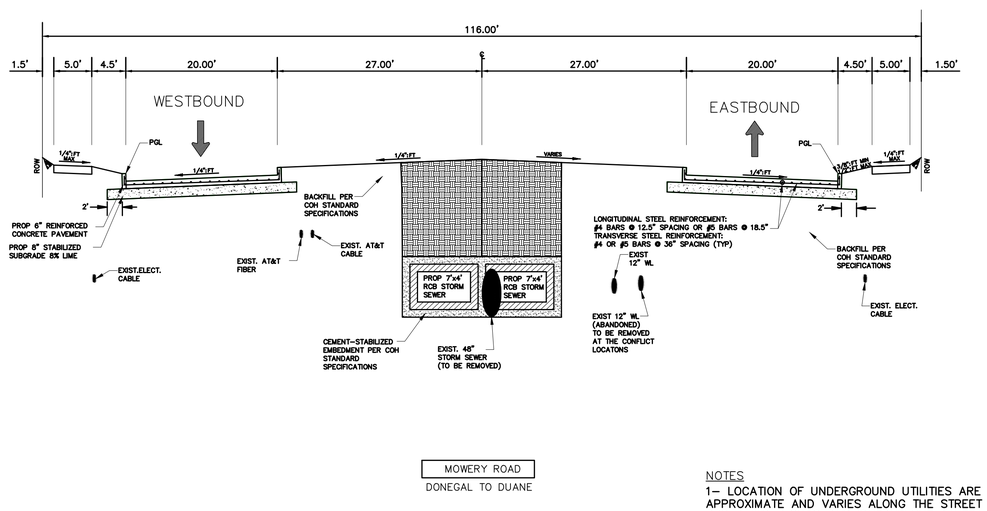








STA. 5+27.00 TO DONEGAL



DONEGAL TO DUANE

NOTES

1- LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND VARIES ALONG THE STREET PROFILE. SEE CONSTRUCTION PLANS.

2- CONTRACTOR TO LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATION.

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THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TYPICAL ROADWAY SECTIONS
SHEET 2 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.=10'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 19 OF 159	

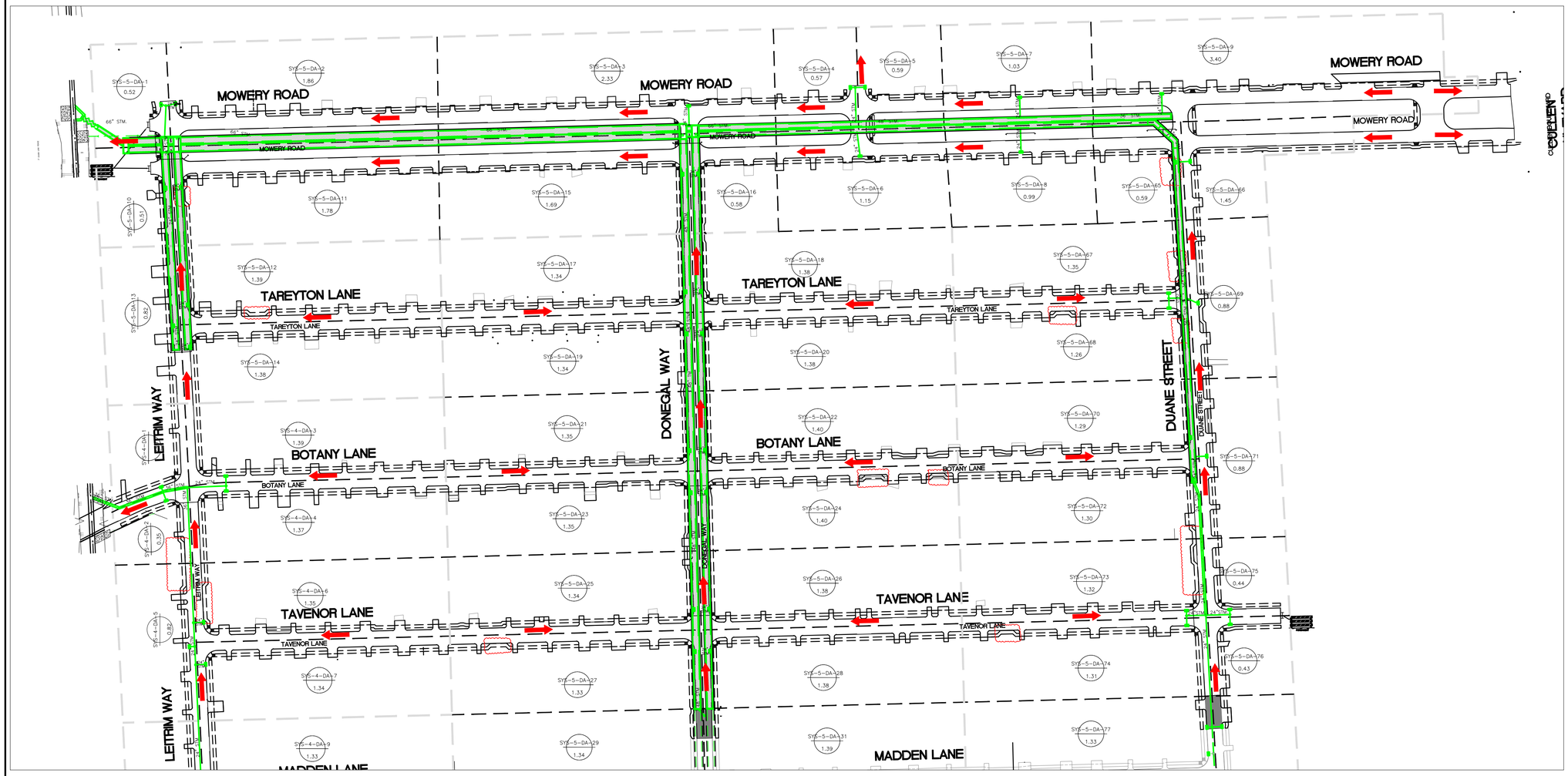
K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\GENERAL\019-TYPICAL ROADWAY SECTIONS SHEET 2 OF 2.DWG AUG. 03, 2026-8:24am

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DRAINAGE\020- DRAINAGE AREA MAP SHEET 1 OF 2.DWG AUG. 03, 2026-8:33am

LEGEND

- 100-YR SHEET FLOW DIRECTION
- C-2 / 0.54 — DRAINAGE AREA DESIGNATION / DRAINAGE AREA (ACRES)
- DRAINAGE AREA BOUNDARY
- DRAINAGE SUB-AREA BOUNDARY

FULL-SIZE (22"X34"): 1" = 100'
HALF-SIZE (11"X17"): 1" = 200'



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TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
FB NO.

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

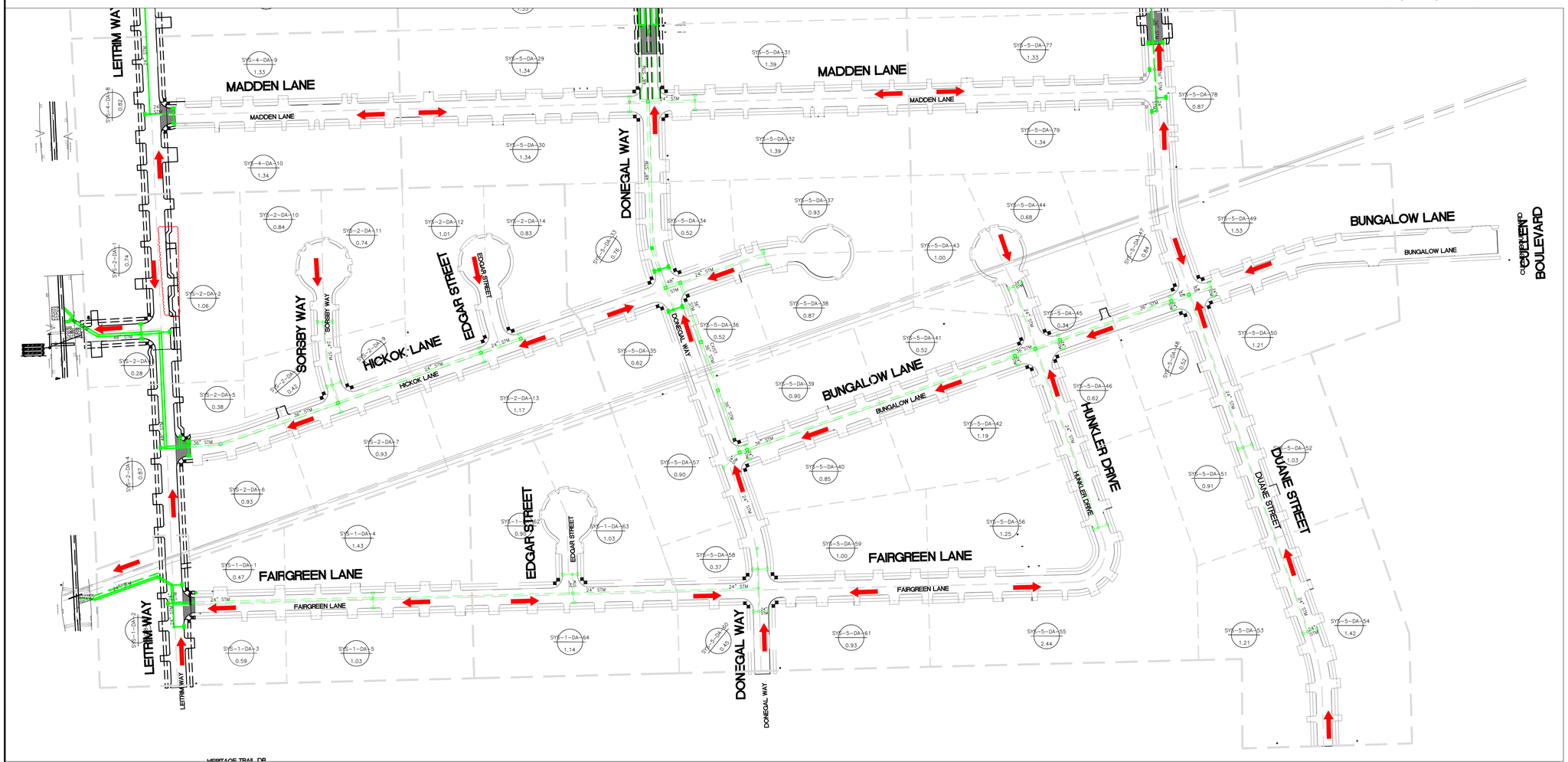
CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

DRAINAGE AREA MAP
SHEET 1 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. --~~OF~~ 159	



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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

DRAINAGE AREA MAP
SHEET 2 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. ~~--OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DRAINAGE\021- DRAINAGE AREA MAP SHEET 2 OF 2.DWG AUG. 03, 2026-8:37am

LEFT BLANK

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

BLANK- 1 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 22 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DRAINAGE\022- BLANK- 1 OF 4.DWG AUG. 03, 2026-8:35am

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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

BLANK- 2 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 23 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DRAINAGE\023- BLANK- 2 OF 4.DWG AUG. 03, 2026-8:41am

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THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK–UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F–12428

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

BLANK– 3 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 24 OF 159	

K:\331052–CLOVERLAND AREA P&D–COH FY15\DWG\DESIGN DRAWINGS\SUB–PROJECT–1\DRAINAGE\024– BLANK– 3 OF 4.DWG AUG. 03, 2026–8:43am

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THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
FB NO.

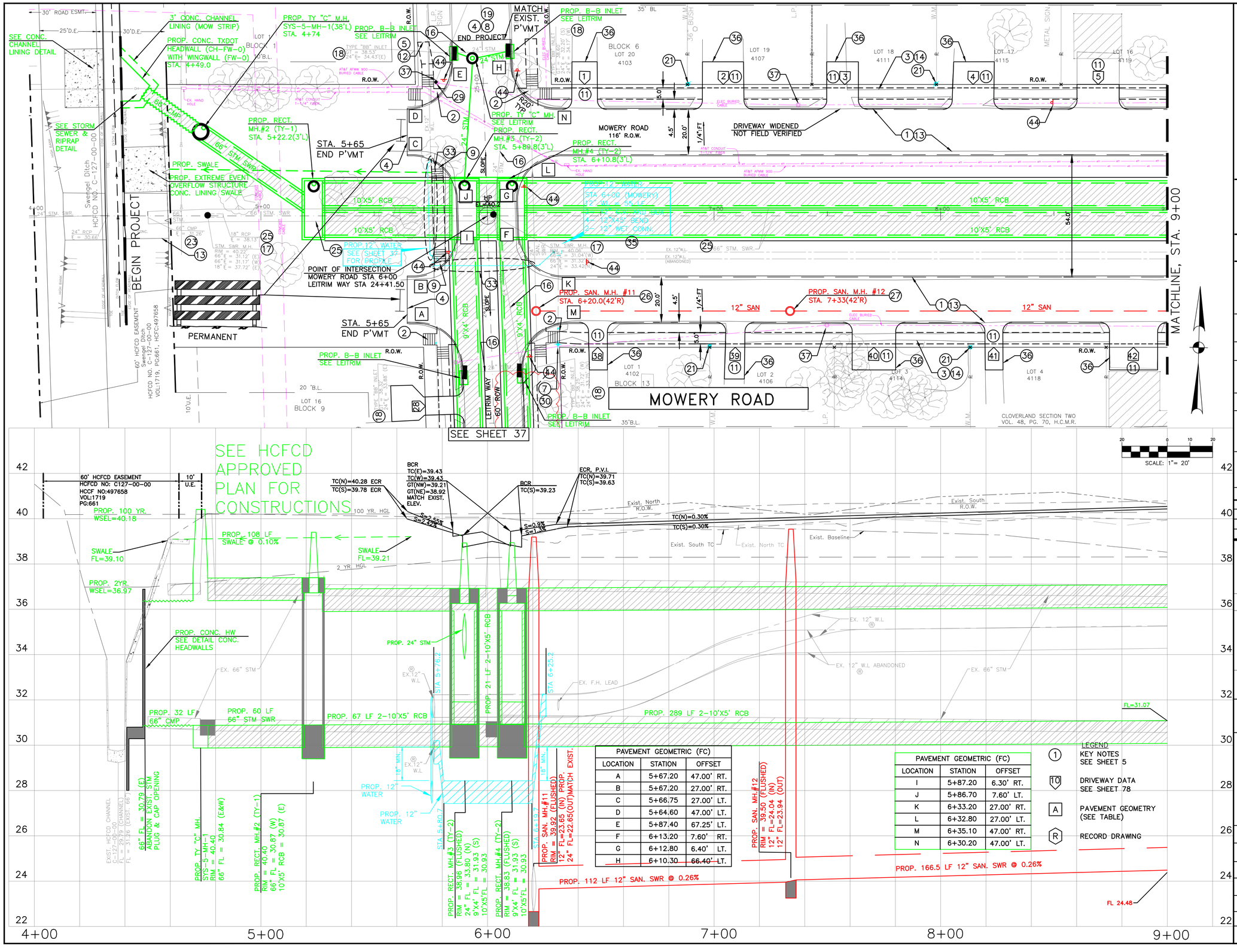
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

BLANK- 4 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 25 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DRAINAGE\025- BLANK- 4 OF 4.DWG AUG. 03, 2026-8:34am



K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\026-MOWE-PP01.DWG AUG. 03, 2026-8:42am

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "B":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED +/- 50FT OF THE INTERSECTION OF CULLEN BLVD. AND BUNGALOW LN.
ELEVATION = 39.90 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "C":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED AT THE NW CORNER OF MADDEN LN AND DONEGAL WAY.
ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE 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 TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CENTERPOINT ENERGY/UNDERGROUND ELECRICAL FACILITIES VERIFICATION ONLY.

(THIS SIGNATURE VERIFIES EXITING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION.)

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

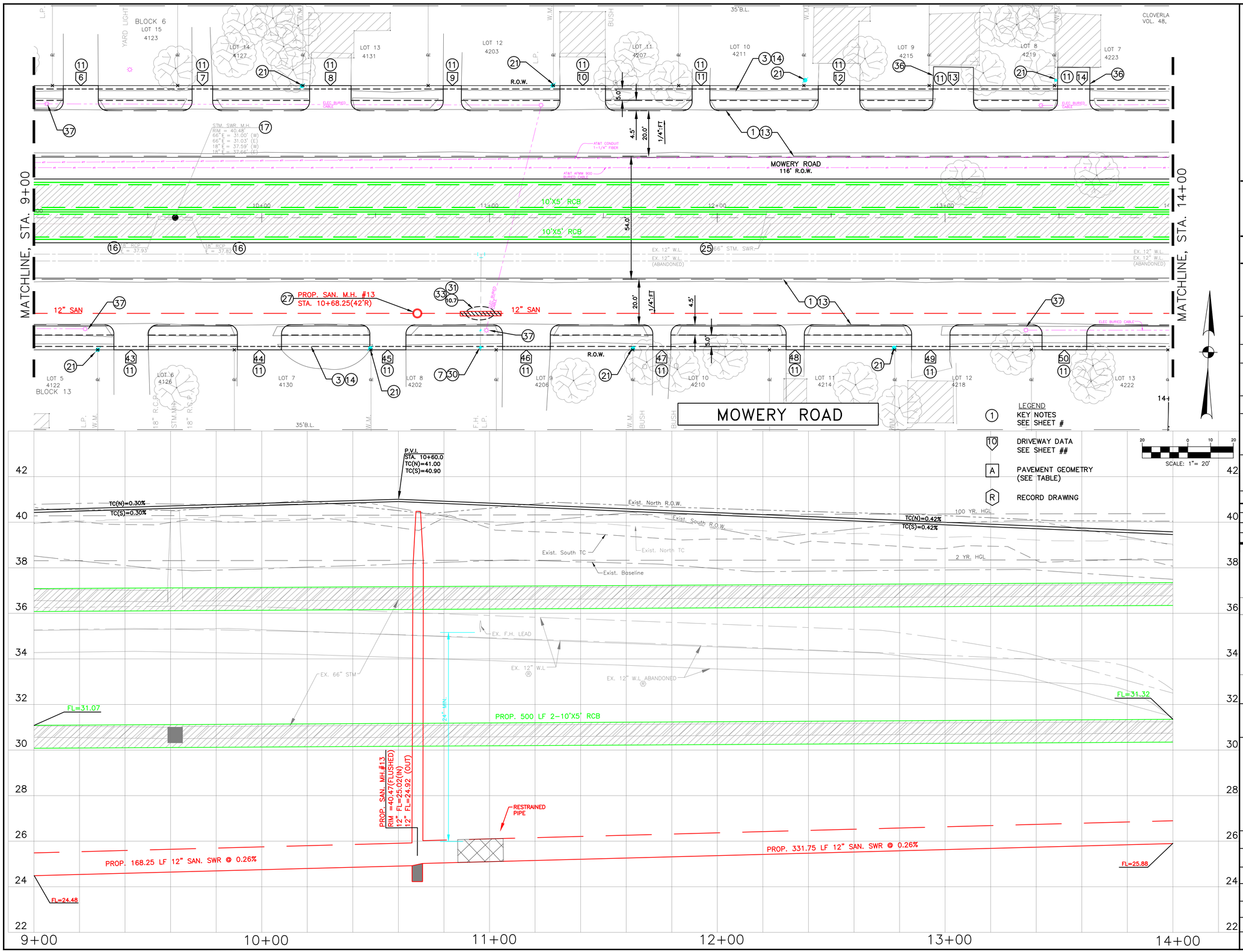
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

MOWERY ROAD
PLAN AND PROFILE
STA 4+40 TO STA 9+00

LEGEND
(1) KEY NOTES SEE SHEET 5
(10) DRIVEWAY DATA SEE SHEET 78
(A) PAVEMENT GEOMETRY (SEE TABLE)
(R) RECORD DRAWING

SCALE: 1"= 20'

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 26 OF 159	



LEGEND

1 KEY NOTES SEE SHEET #

10 DRIVEWAY DATA SEE SHEET ##

A PAVEMENT GEOMETRY (SEE TABLE)

R RECORD DRAWING

SCALE: 1"= 20'

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

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90% DESIGN REVIEW

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VERIFICATION OF PRIVATE UTILITY LINES

DATE:

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DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
FB NO.

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

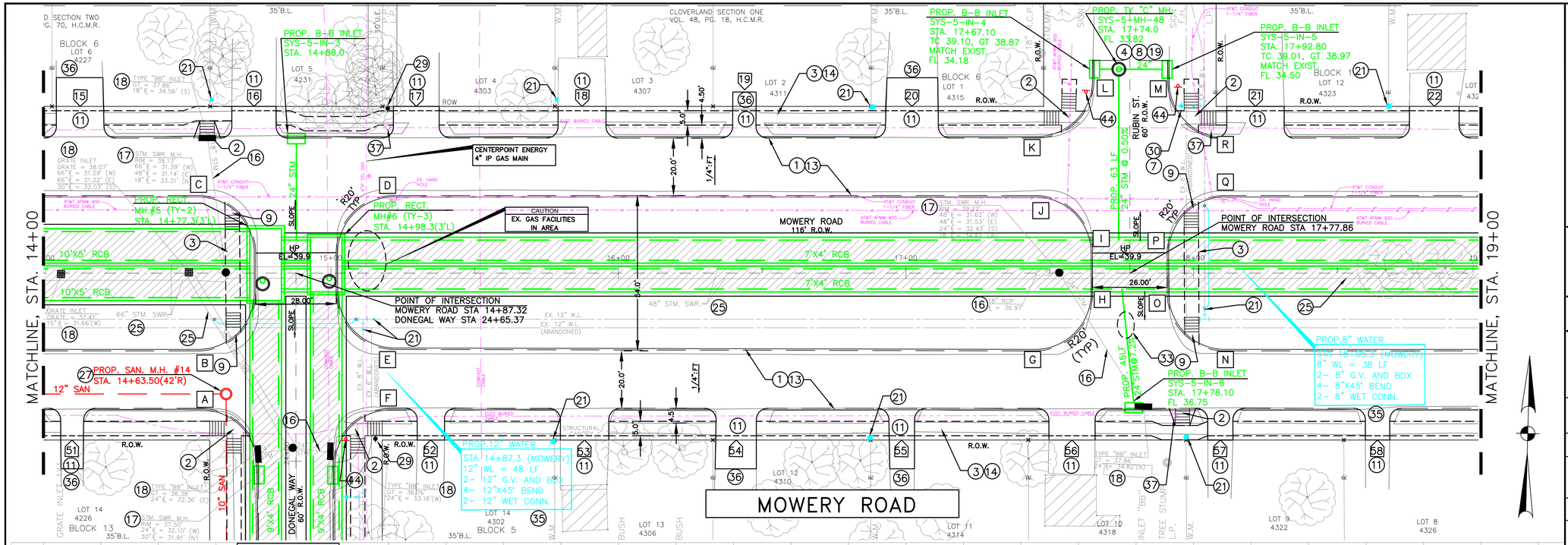
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

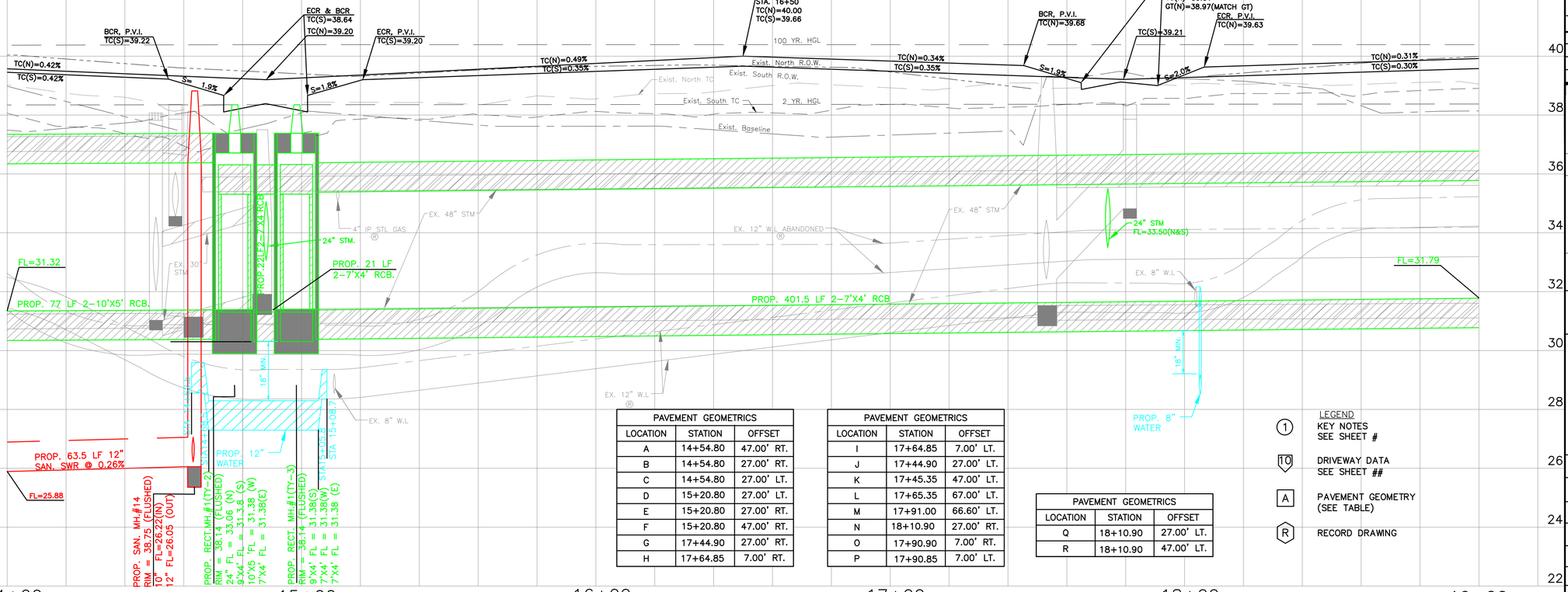
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

MOWERY ROAD
PLAN AND PROFILE
STA 9+00 TO STA 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ.1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 27 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\027-MOWE-PP02.DWG AUG. 03, 2026-8:45am





PAVEMENT GEOMETRICS		
LOCATION	STATION	OFFSET
A	14+54.80	47.00' RT.
B	14+54.80	27.00' RT.
C	14+54.80	27.00' LT.
D	15+20.80	27.00' LT.
E	15+20.80	27.00' RT.
F	15+20.80	47.00' RT.
G	17+44.90	27.00' RT.
H	17+64.85	7.00' RT.

PAVEMENT GEOMETRICS		
LOCATION	STATION	OFFSET
I	17+64.85	7.00' LT.
J	17+44.90	27.00' LT.
K	17+45.35	47.00' LT.
L	17+65.35	67.00' LT.
M	17+91.00	66.60' LT.
N	18+10.90	27.00' RT.
O	17+90.90	7.00' RT.
P	17+90.85	7.00' LT.

PAVEMENT GEOMETRICS		
LOCATION	STATION	OFFSET
Q	18+10.90	27.00' LT.
R	18+10.90	47.00' LT.

LEGEND
- (1) KEY NOTES SEE SHEET #
- (10) DRIVEWAY DATA SEE SHEET ##
- (A) PAVEMENT GEOMETRY (SEE TABLE)
- (R) RECORD DRAWING

SCALE: 1"= 20'

LEGAL DESCRIPTION:
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90% DESIGN REVIEW

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VERIFICATION OF PRIVATE UTILITY LINES

DATE:

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DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

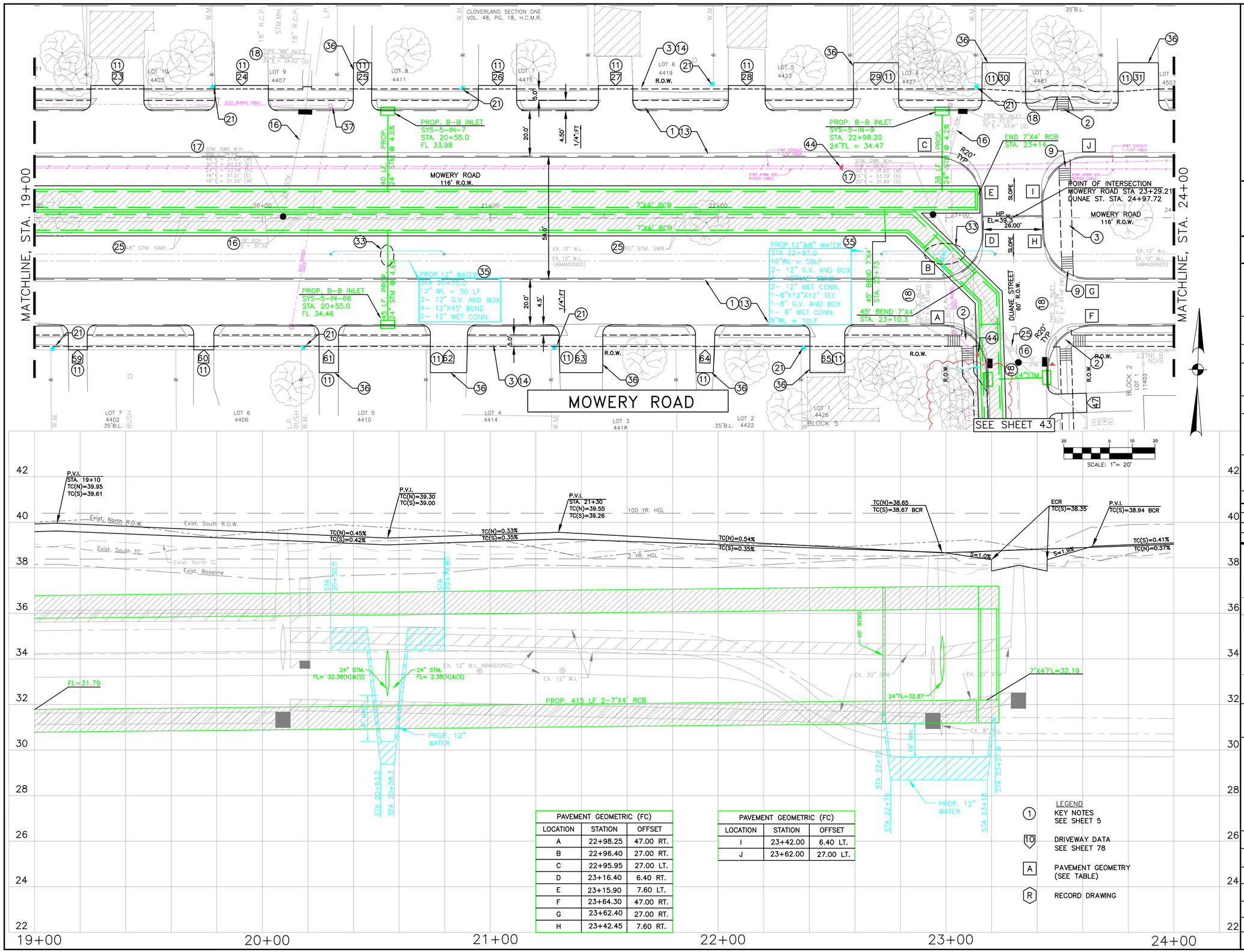
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

MOWERY ROAD
PLAN AND PROFILE
STA 14+00 TO STA 19+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ.1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 28 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\028-MOWE-PP03.DWG AUG. 03, 2026-8:34am



PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	22+98.25	47.00 RT.
B	22+96.40	27.00 RT.
C	22+95.95	27.00 LT.
D	23+16.40	6.40 RT.
E	23+15.90	7.60 LT.
F	23+64.30	47.00 RT.
G	23+62.40	27.00 RT.
H	23+42.45	7.60 RT.

PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
I	23+42.00	6.40 LT.
J	23+62.00	27.00 LT.

LEGEND
- (1) KEY NOTES SEE SHEET 5
- (10) DRIVEWAY DATA SEE SHEET 78
- [A] PAVEMENT GEOMETRY (SEE TABLE)
- (R) RECORD DRAWING

LEGAL DESCRIPTION:
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TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

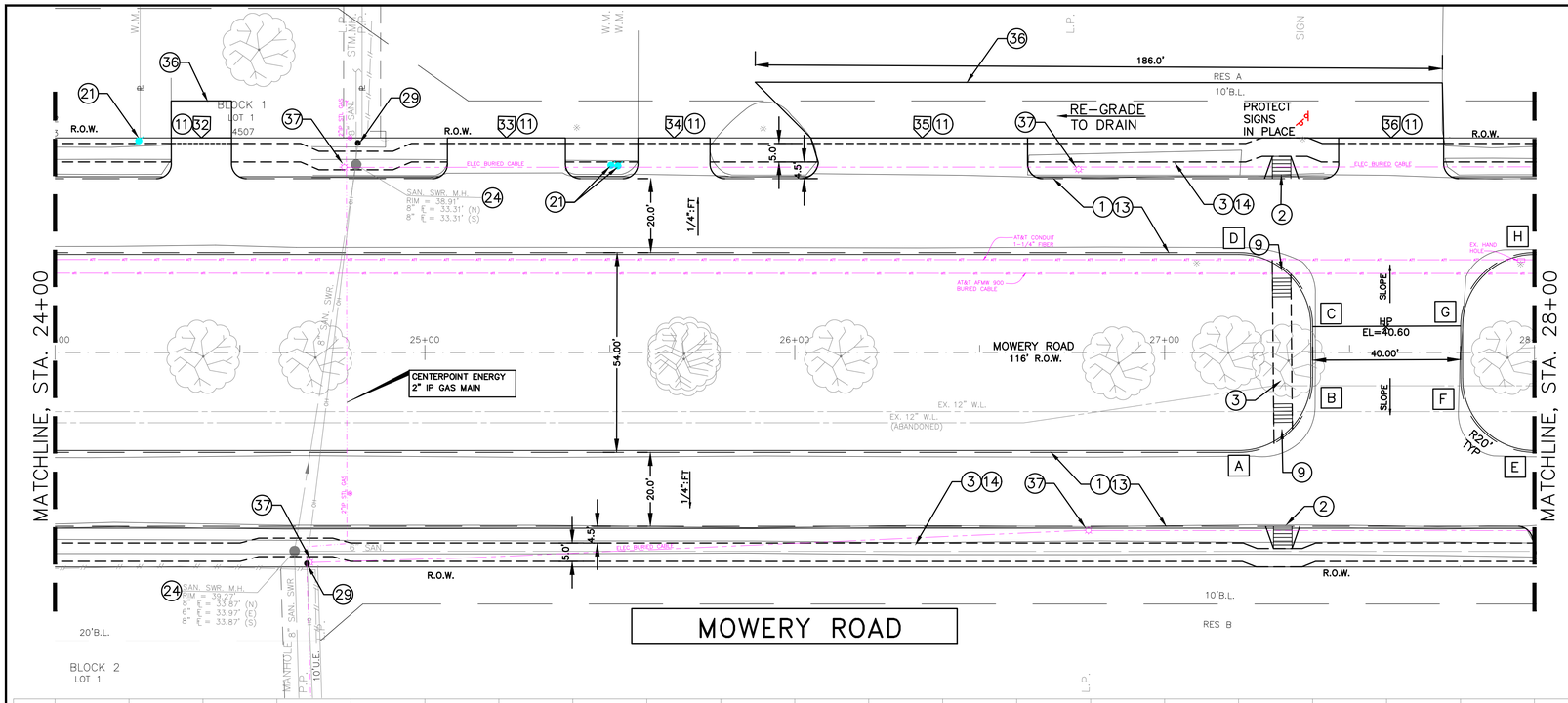
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

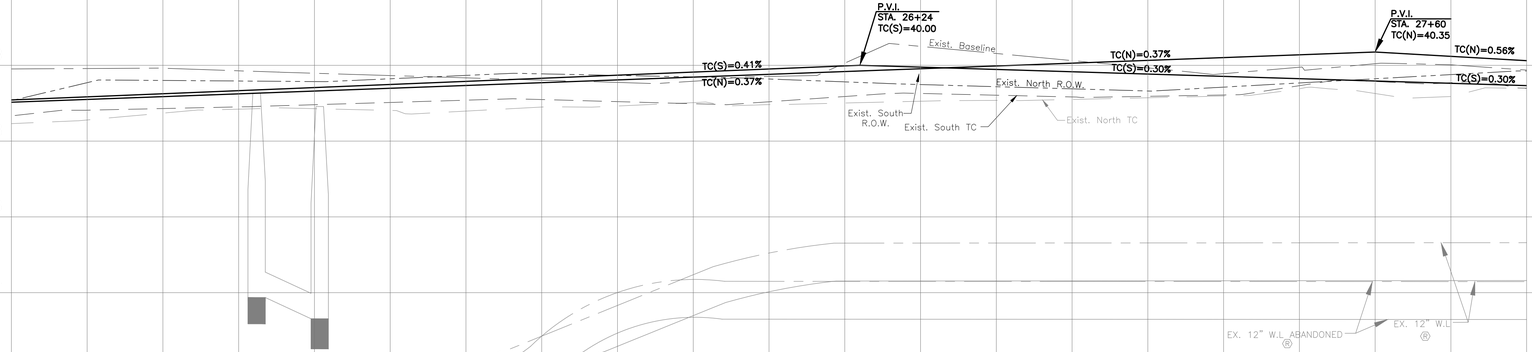
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

MOWERY ROAD
PLAN AND PROFILE
STA 19+00 TO STA 24+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 29 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\029-MOWE-PP04.DWG AUG. 03, 2026-8:40am





PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	27+20.00	27.00 RT.
B	27+40.00	7.00 RT.
C	27+40.00	7.00 LT.
D	27+20.00	27.00 LT.
E	28+00.00	27.00 RT.
F	27+80.00	7.00 RT.
G	27+80.00	7.00 LT.
H	28+00.00	27.00 LT.

LEGEND

(1) KEY NOTES SEE SHEET 5

(10) DRIVEWAY DATA SEE SHEET 78

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(R) RECORD DRAWING

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dba TSC Engineering
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Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

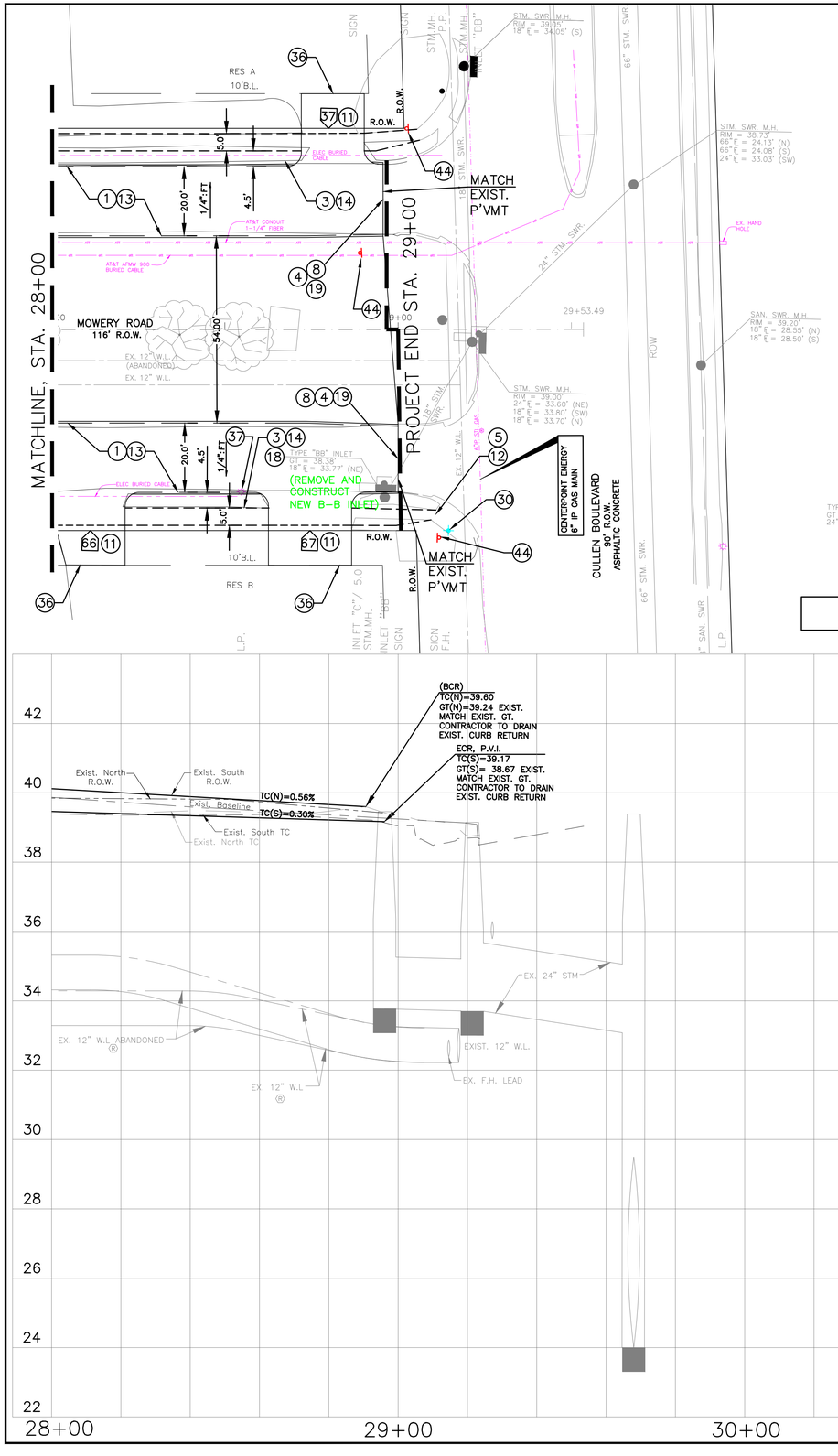
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

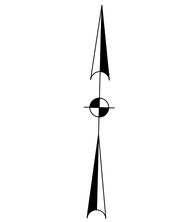
MOWERY ROAD
PLAN AND PROFILE
STA 24+00 TO STA 28+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 30 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\030-MOWE-PP05.DWG AUG. 03, 2026-8:20am



MOWERY ROAD



LEGEND

(1) KEY NOTES SEE SHEET 5

(10) DRIVEWAY DATA SEE SHEET 78

[A] PAVEMENT GEOMETRY (SEE TABLE)

<R> RECORD DRAWING

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 15OFT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "B":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED +/- 50FT OF THE INTERSECTION OF CULLEN BLVD. AND BUNGALOW LN.
ELEVATION = 39.90 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

TBM "C":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED AT THE NW CORNER OF MADDEN LN AND DONEGAL WAY.
ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE 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 TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CENTERPOINT ENERGY/UNDERGROUND ELECRICAL FACILITIES VERIFICATION ONLY.

(THIS SIGNATURE VERIFIES EXITING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION.)

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
FB NO.

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

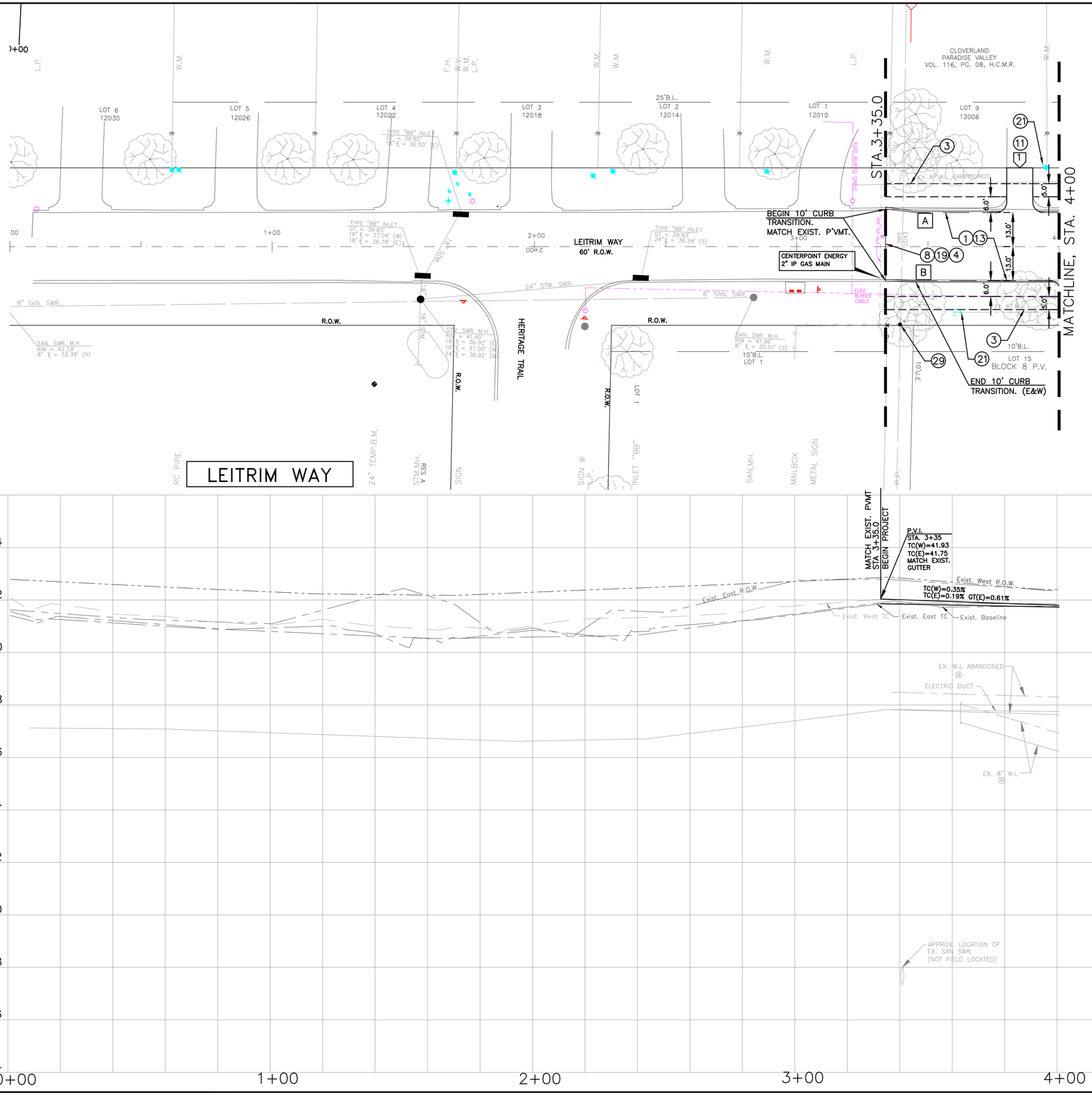
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

MOWERY ROAD
PLAN AND PROFILE
STA 28+00 TO STA 29+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 31 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\031-MOWE-PP06.DWG AUG. 03, 2026-8:30am



SCALE: 1"= 20'

PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	3+45.40	13.00' LT.
B	3+45.40	13.00' RT.

LEGEND

(1) KEY NOTES SEE SHEET 5

(10) DRIVEWAY DATA SEE SHEET 78

(A) PAVEMENT GEOMETRY (SEE TABLE)

(R) RECORD DRAWING

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "B":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED +/- 50FT OF THE INTERSECTION OF CULLEN BLVD. AND BUNGALOW LN.
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ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

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90% DESIGN REVIEW

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VERIFICATION OF PRIVATE UTILITY LINES

DATE:

CENTERPOINT ENERGY NATURAL GAS UTILITIES SHOWN. (GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

DATE:

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DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
FB NO.

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

LEITRIM WAY
PLAN AND PROFILE
STA 3+35 TO STA 4+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 32 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\032-LEIT-PP01.DWG AUG. 03, 2026-8:29am

PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	4+41.43	13.00' RT.
B	5+07.45	13.00' RT.
C	7+11.26	13.00' RT.
D	7+77.27	13.00' RT.

LEITRIM WAY

MATCHLINE, STA. 4+00

MATCHLINE, STA. 9+00

SEE SHEET 57

CAUTION
EXIST. PIPELINE FACILITIES IN AREA

POINT OF INTERSECTION
LEITRIM WAY STA. 7+44.25
HICKOK LN STA. 2+00

POINT OF INTERSECTION
LEITRIM WAY STA. 4+75.14
FAIRGREEN LN. STA 2+00

END SUB-PROJECT I
FAIRGREEN LN.
STA. 2+33.70

END SUB-PROJECT I
HICKOK LN.
STA. 2+39

PROP. B-B INLET
SYS-1-IN-2
STA. 4+79.25
FL 35.16

PROP. TY "C" M.H.
SYS-1-MH-4
STA. 4+79.25

PROP. TY "C" M.H.
SYS-1-MH-6
STA. 4+38.20

PROP. B-B INLET
SYS-1-IN-3
STA. 4+38.20
FL 35.44

PROP. SAN. M.H.#10
STA. 4+55.50(10'R)

PROP. SAN. M.H.#9
STA. 4+84.50(10'R)

PROP. 8" WATER
STA 4+26.40 (FAIRGREEN)
8" WL - 45 LF
2- 8" G.V. AND BOX
4- 8"X45° BEND
2- 8" WET CONN.

PROP. 40 LF 6" SAN. LEAD W/STACK @0.70%
STA. 4+55.4

PROP. TY "C" M.H.
SYS-1-MH-2
SEE SHEET 57

PROP. TY "C" M.H.
SYS-1-MH-3
STA. 5+10.50

PROP. B-B INLET
SYS-1-IN-4
STA. 5+10.50
FL 35.43

PROP. SAN. M.H.#8
STA. 5+78.00(10'R)

PROP. TY "C" M.H.
SYS-1-MH-5A
STA. 2+36.65(FAIRGREEN)
FL 35.85(MATCH EXIST.)

PROP. TY "C" M.H.
SYS-1-MH-5
STA. 2+29.50(FAIRGREEN)
FL 34.76

CENTERPOINT ENERGY
1-1/4" IP GAS MAIN

PROP. 40 LF 6" SAN. LEAD W/STACK @0.70%
STA. 6+15.32

PROP. 40 LF 6" SAN. LEAD W/STACK @0.70%
STA. 7+35.25

PROP. B-B INLET
SYS-2-IN-4
STA. 7+47.50
FL 35.81

PROP. TY "C" M.H.
SYS-2-MH-4
STA. 7+47.50

PROP. SAN. M.H. #7
STA. 7+53.75(10'R)

EXIST. MH TO BE REMOVED & REPLACED WITH PROP. TY "C" M.H.
SYS-2-MH-5A
48" FL 34.00(S) MATCH EXIST.

PROP. TY "C" M.H.
STA. 2+22.50(HICKOK)
48"FL 33.91 (N,E,W)

PROP. B-B INLET
SYS-2-IN-6
STA. 2+36.10(HICKOK)
FL 35.87

PROP. TY "C" M.H.
SYS-2-MH-6
STA. 2+36.60(HICKOK)
24"FL 35.82 (N,S)
48"FL 33.93 (E,W)

PROP. 20 LF 6" SAN. LEAD W/STACK @0.70%
STA. 8+55.64

PROP. 40 LF 6" SAN. LEAD W/STACK @0.70%
STA. 8+55.10

PROP. 41 LF 24" STM @ 0.30%

PROP. 31 LF 36" STM @ 0.30%

PROP. 29 LF 36" STM @ 0.30%

PROP. 29 LF 24" SAN. SWR @ 0.11%

PROP. 94 LF 24" SAN. SWR @ 0.11%

PROP. 175 LF 24" SAN. SWR @ 0.11%

PROP. 146 LF 24" SAN. SWR 0.11%

PROP. 152 LF 48" STM @ 0.13%

FL=24.62

FL=33.68

FL 25.91

RESTRAINED PIPE

RESTRAINED PIPE

LEGEND

1 KEY NOTES SEE SHEET 5

10 DRIVEWAY DATA SEE SHEET 78

A PAVEMENT GEOMETRY (SEE TABLE)

R RECORD DRAWING

ASPHALT PAVEMENT

SCALE: 1" = 20'

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

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ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

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90% DESIGN REVIEW

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CABLE COMPANY

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TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

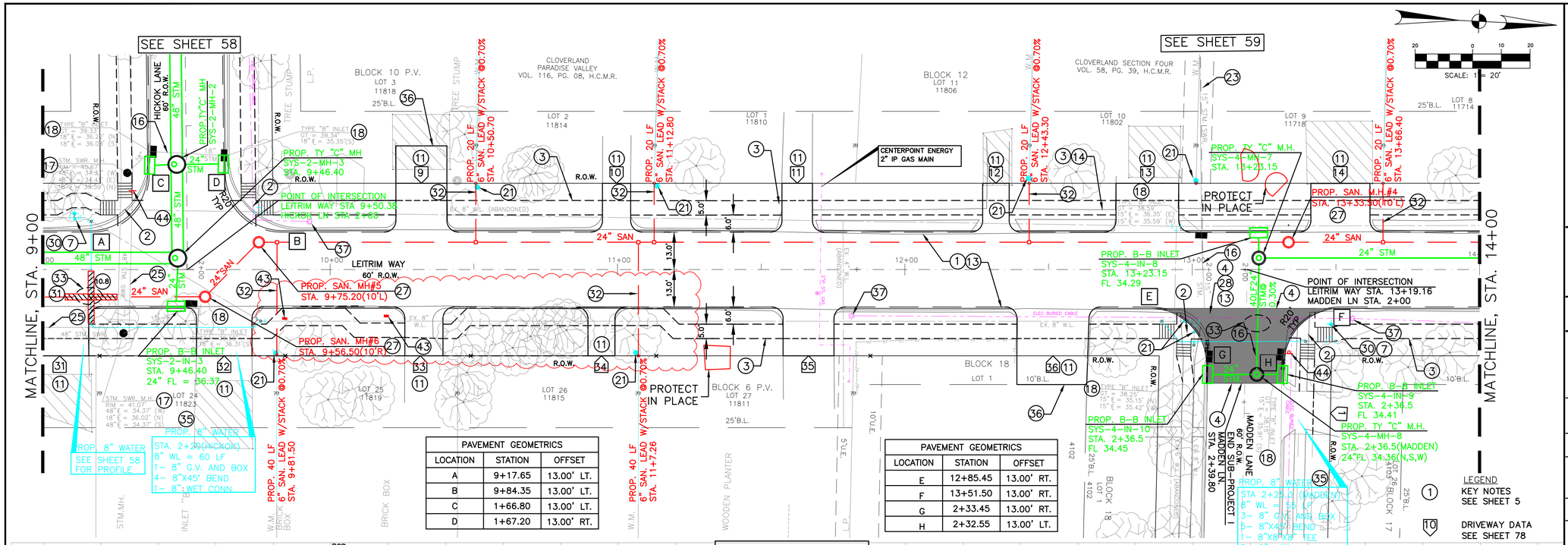
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

LEITRIM WAY
PLAN AND PROFILE
STA 4+00 TO STA 9+00

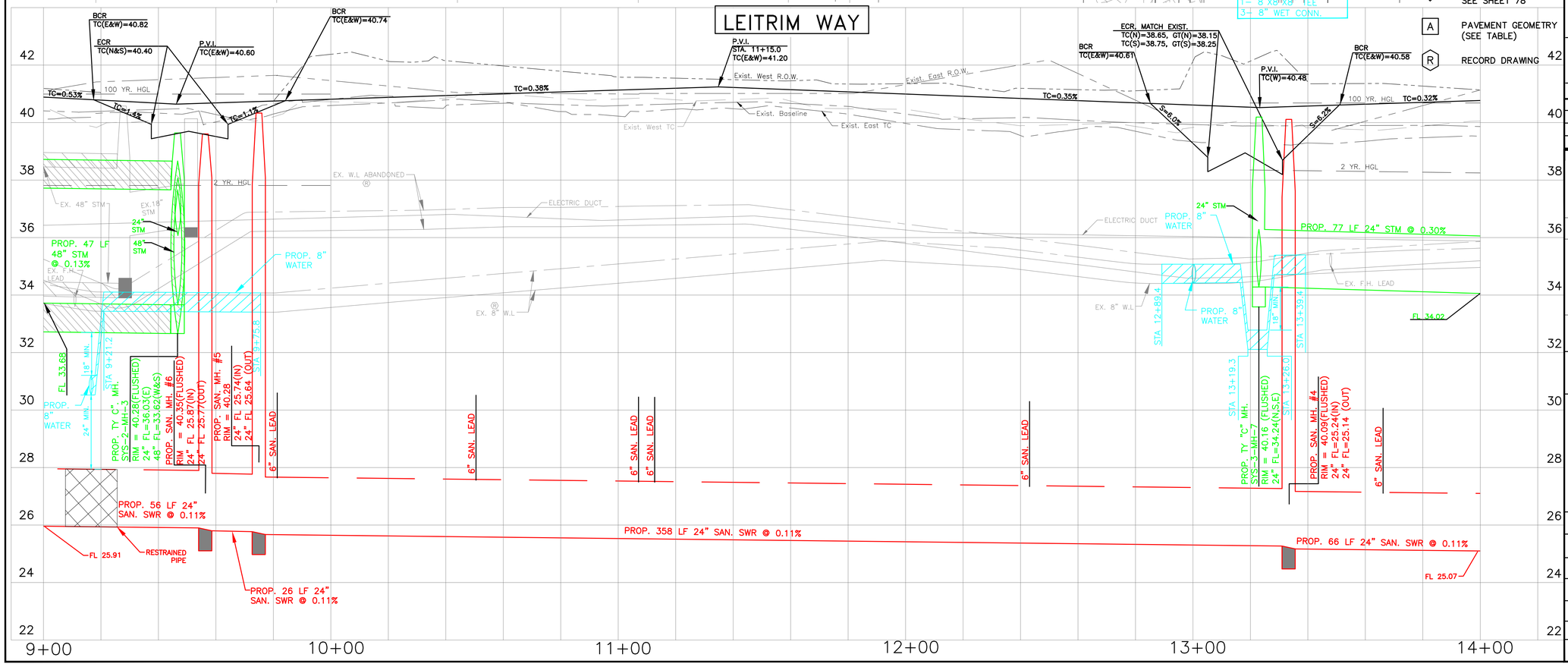
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 33 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\033-LEIT-PP02.DWG AUG. 03, 2026-8:30am



PAVEMENT GEOMETRICS		
LOCATION	STATION	OFFSET
A	9+17.65	13.00' LT.
B	9+84.35	13.00' LT.
C	1+66.80	13.00' LT.
D	1+67.20	13.00' RT.

PAVEMENT GEOMETRICS		
LOCATION	STATION	OFFSET
E	12+85.45	13.00' RT.
F	13+51.50	13.00' RT.
G	2+33.45	13.00' RT.
H	2+32.55	13.00' LT.



LEGEND

1 KEY NOTES SEE SHEET 5

10 DRIVEWAY DATA SEE SHEET 78

A PAVEMENT GEOMETRY (SEE TABLE)

R RECORD DRAWING

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BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

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8/3/2026

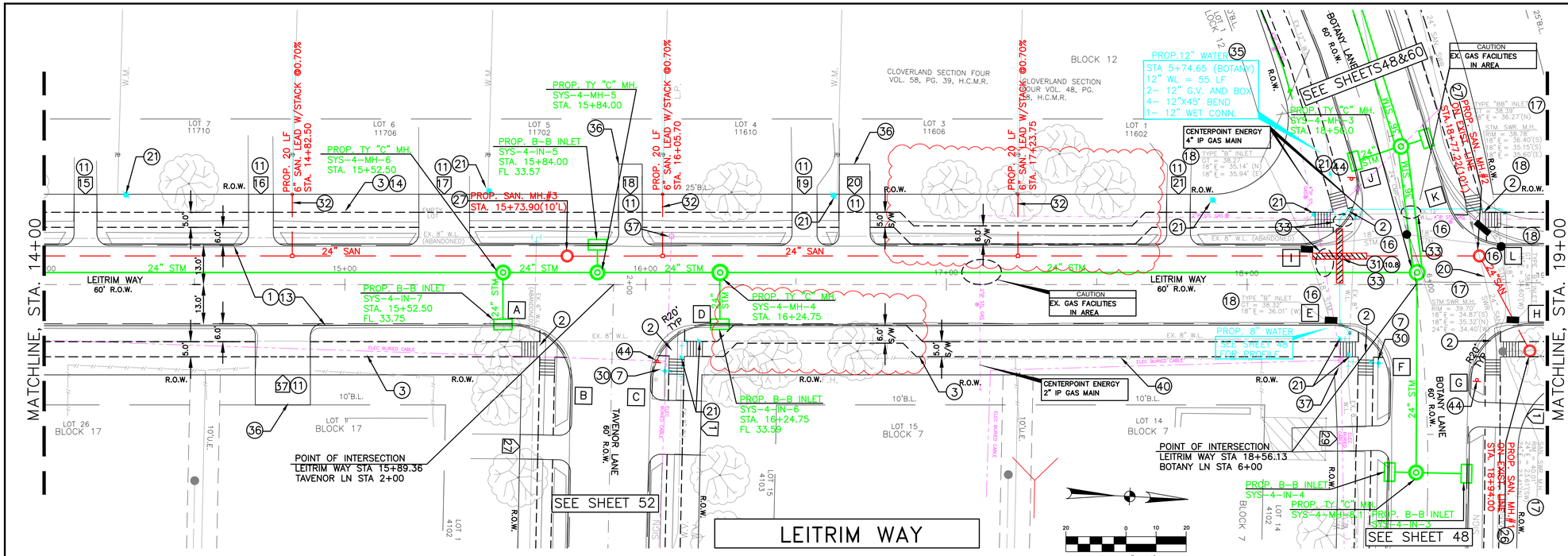
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

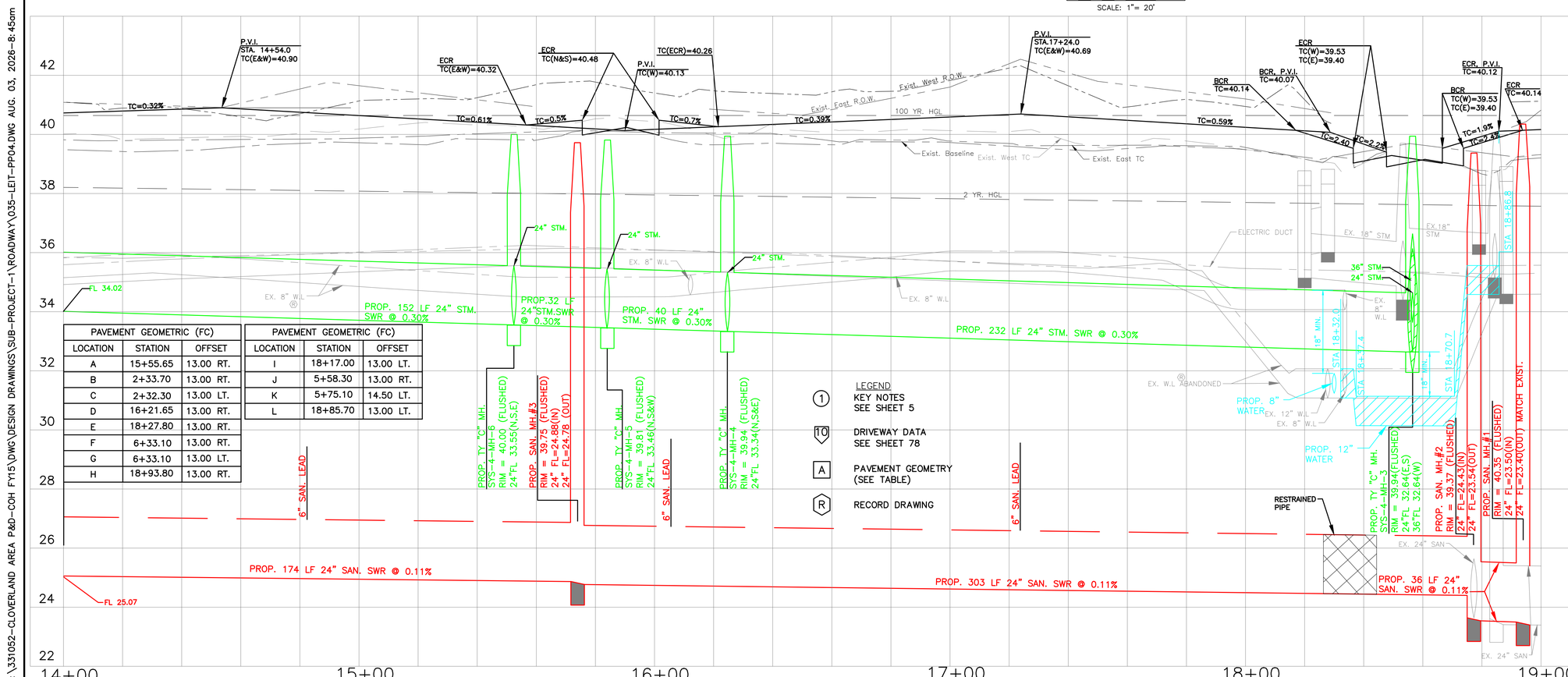
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

LEITRIM WAY
PLAN AND PROFILE
STA 9+00 TO STA 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ.1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 34 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\034-LEIT-PP03.DWG AUG. 03, 2026-8:26am





PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	15+55.65	13.00 RT.
B	2+33.70	13.00 RT.
C	2+32.30	13.00 LT.
D	16+21.65	13.00 RT.
E	18+27.80	13.00 RT.
F	6+33.10	13.00 RT.
G	6+33.10	13.00 LT.
H	18+93.80	13.00 RT.

PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
I	18+17.00	13.00 LT.
J	5+58.30	13.00 RT.
K	5+75.10	14.50 LT.
L	18+85.70	13.00 LT.

LEGEND
1 KEY NOTES SEE SHEET 5
10 DRIVEWAY DATA SEE SHEET 78
A PAVEMENT GEOMETRY (SEE TABLE)
R RECORD DRAWING

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "B":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED +/- 50FT OF THE INTERSECTION OF CULLEN BLVD. AND BUNGALOW LN.
ELEVATION = 39.90 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "C":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED AT THE NW CORNER OF MADDEN LN AND DONEGAL WAY.
ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

DATE:

CENTERPOINT ENERGY NATURAL GAS UTILITIES SHOWN. (GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CENTERPOINT ENERGY/UNDERGROUND ELECRICAL FACILITIES VERIFICATION ONLY.

(THIS SIGNATURE VERIFIES EXITING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION.)

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DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

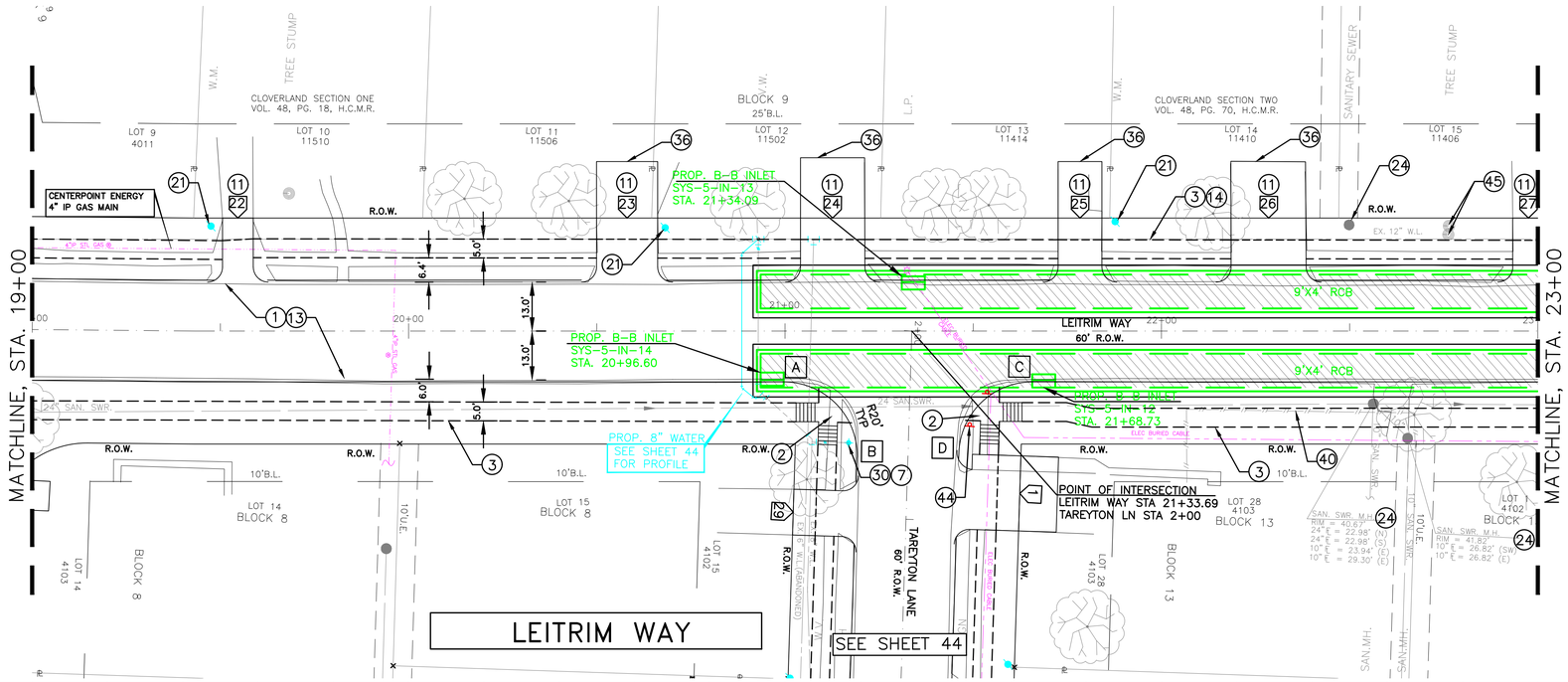
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

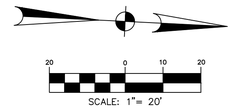
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

LEITRIM WAY
PLAN AND PROFILE
STA 14+00 TO STA 19+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 35 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\035-LEIT-PP04.DWG AUG. 03, 2026-8:45am





LEGEND

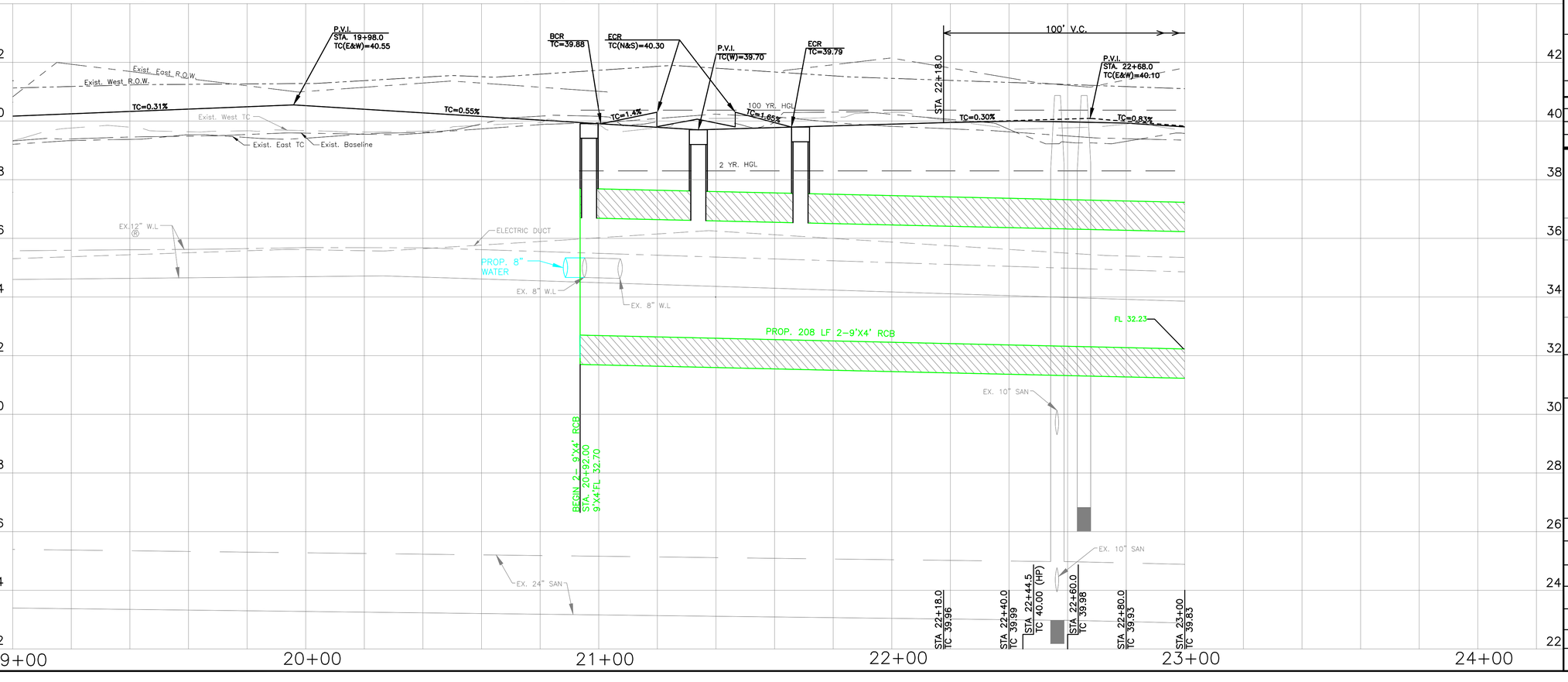
(1) KEY NOTES SEE SHEET 5

(10) DRIVEWAY DATA SEE SHEET 78

[A] PAVEMENT GEOMETRY (SEE TABLE)

(R) RECORD DRAWING

PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	20+99.65	13.00 RT.
B	2+33.60	13.00 RT.
C	21+65.70	13.00 RT.
D	2+31.70	13.00 LT.



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VERIFICATION OF PRIVATE UTILITY LINES

DATE:

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CABLE COMPANY

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dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

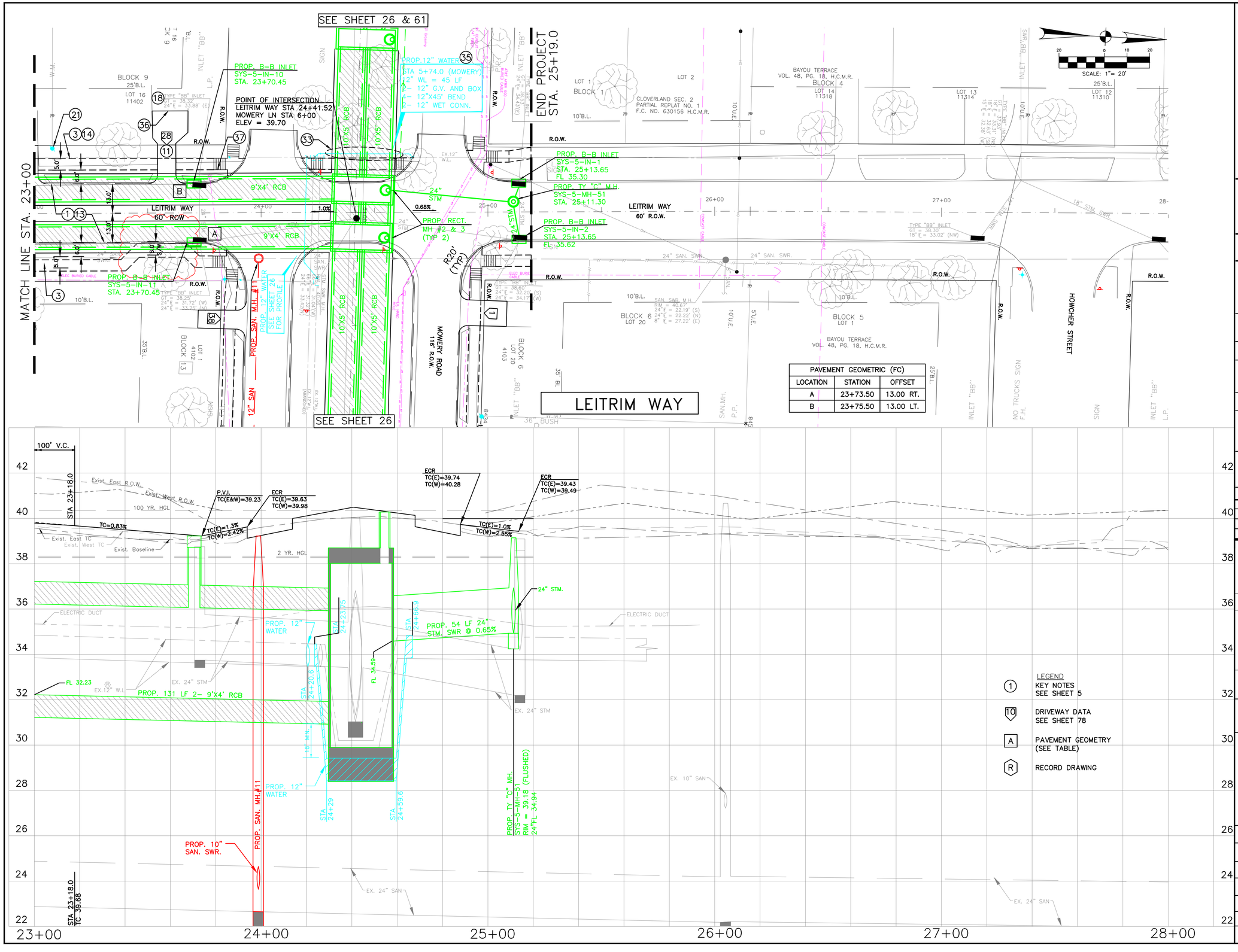
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

LEITRIM WAY
PLAN AND PROFILE
STA 19+00 TO STA 23+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 36 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\036-LEIT-PP05.DWG AUG. 03, 2026-8:43am



PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	23+73.50	13.00 RT.
B	23+75.50	13.00 LT.

LEGEND

1 KEY NOTES SEE SHEET 5

10 DRIVEWAY DATA SEE SHEET 78

A PAVEMENT GEOMETRY (SEE TABLE)

R RECORD DRAWING

LEGAL DESCRIPTION:
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DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

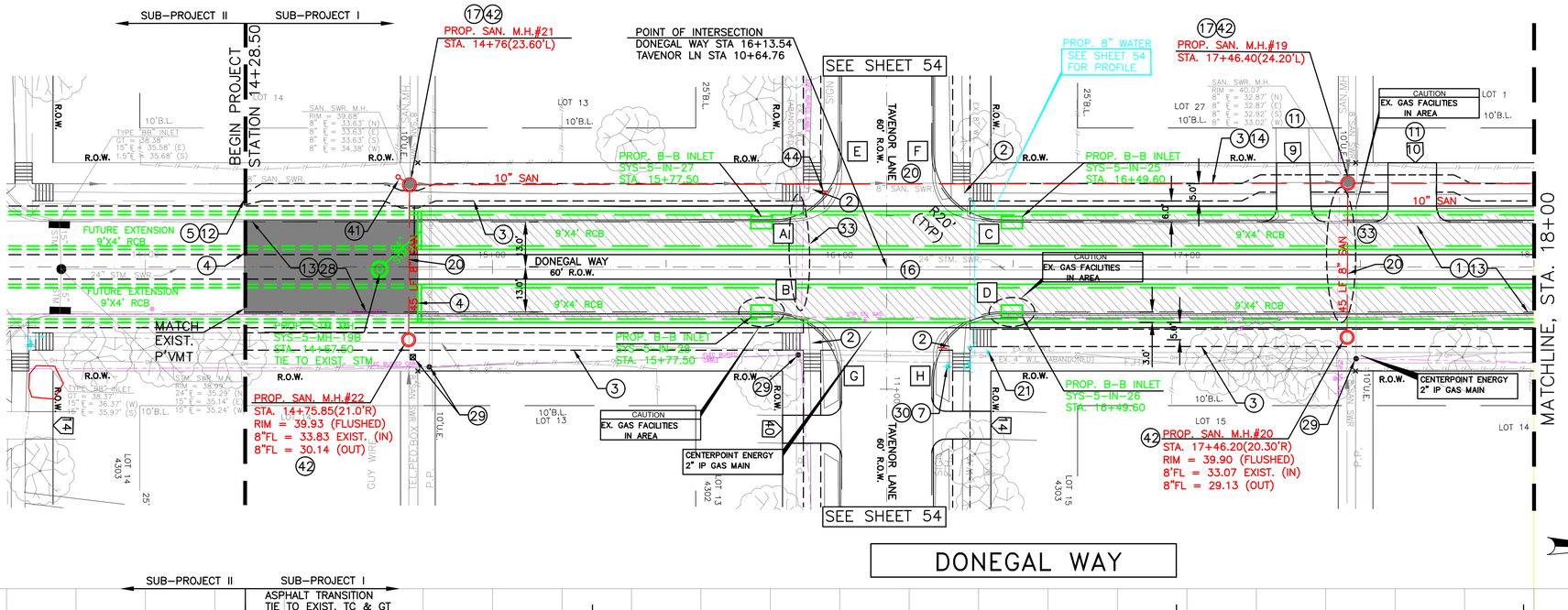
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

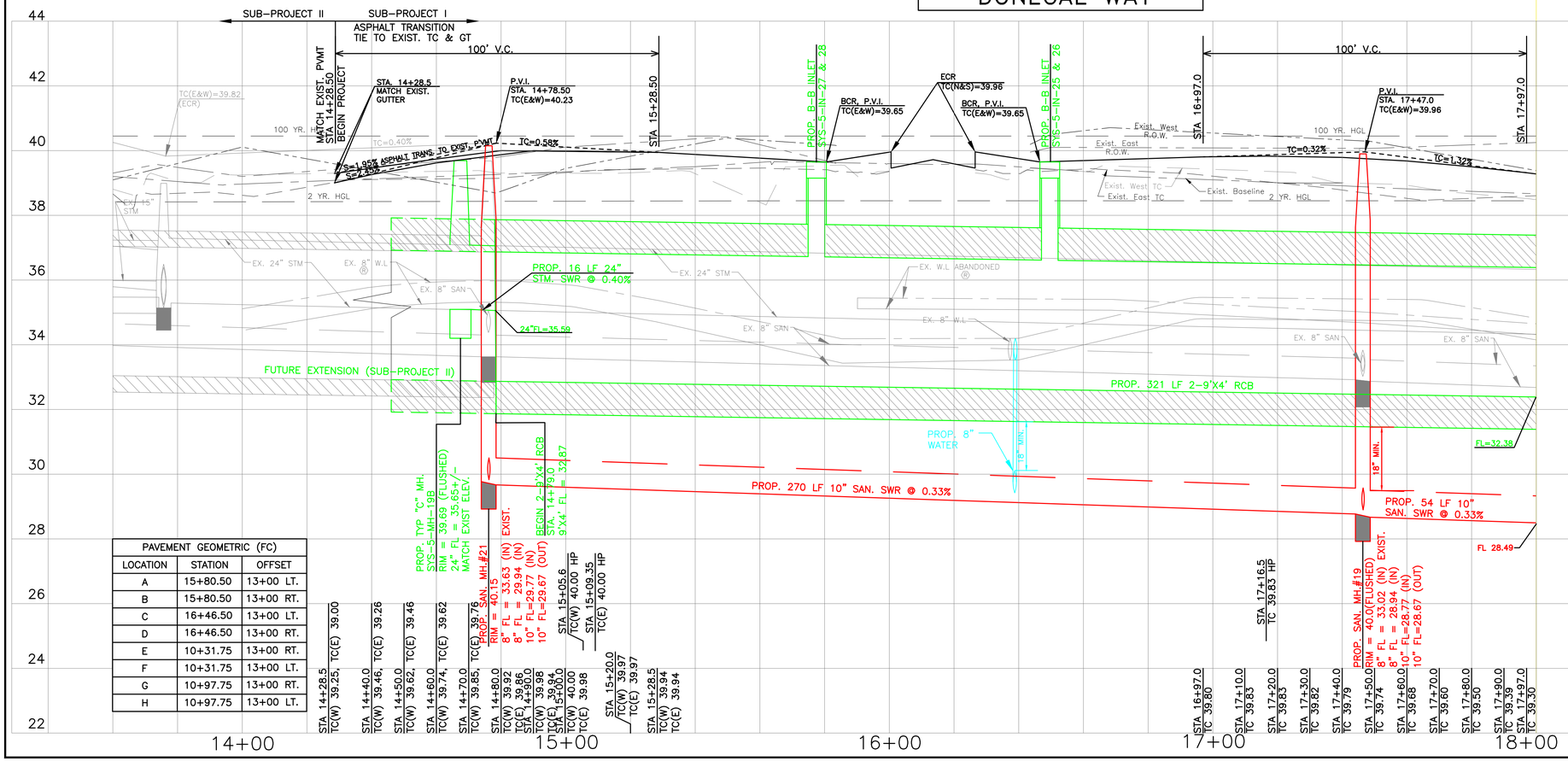
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

LEITRIM WAY
PLAN AND PROFILE
STA 23+00 TO STA 25+19

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 37 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\037-LEIT-PP06.DWG AUG. 03, 2026-8:26am





PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	15+80.50	13+00 LT.
B	15+80.50	13+00 RT.
C	16+46.50	13+00 LT.
D	16+46.50	13+00 RT.
E	10+31.75	13+00 RT.
F	10+31.75	13+00 LT.
G	10+97.75	13+00 RT.
H	10+97.75	13+00 LT.

LEGEND
1 KEY NOTES SEE SHEET 5
10 DRIVEWAY DATA SEE SHEET 78
A PAVEMENT GEOMETRY (SEE TABLE)
R RECORD DRAWING
ASPHALT PAVEMENT

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TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

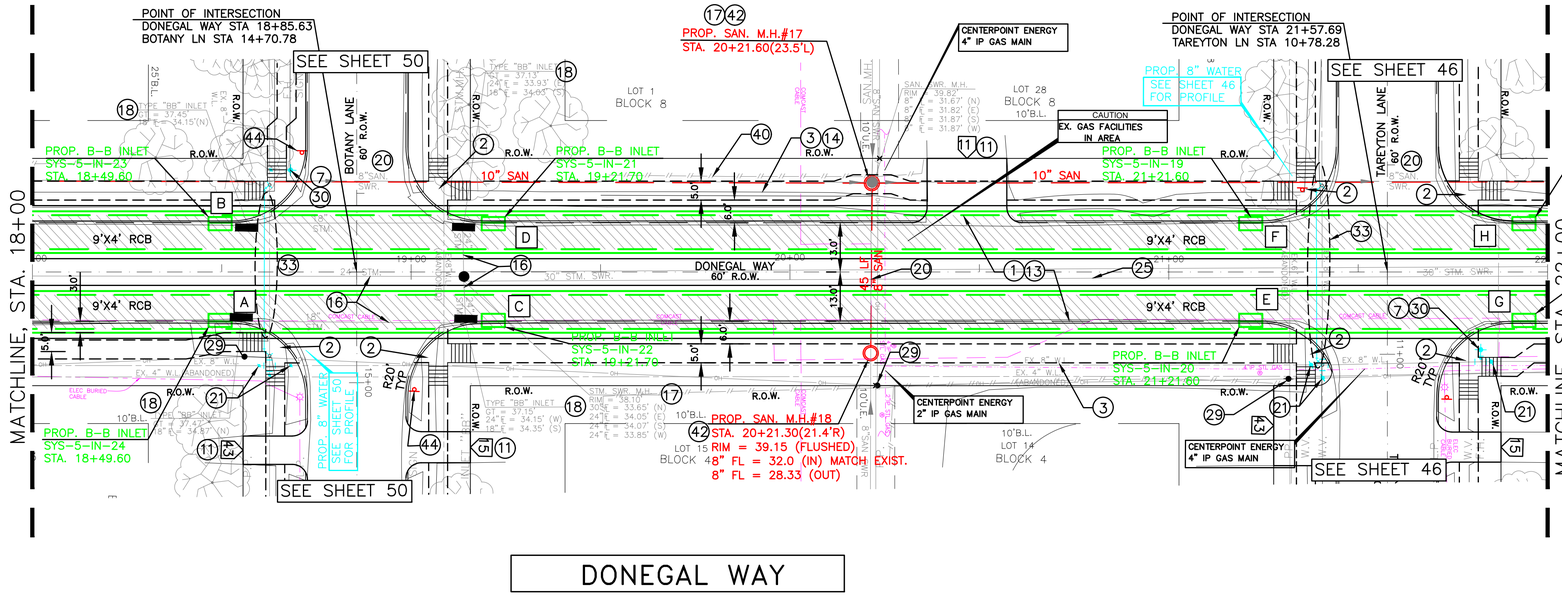
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

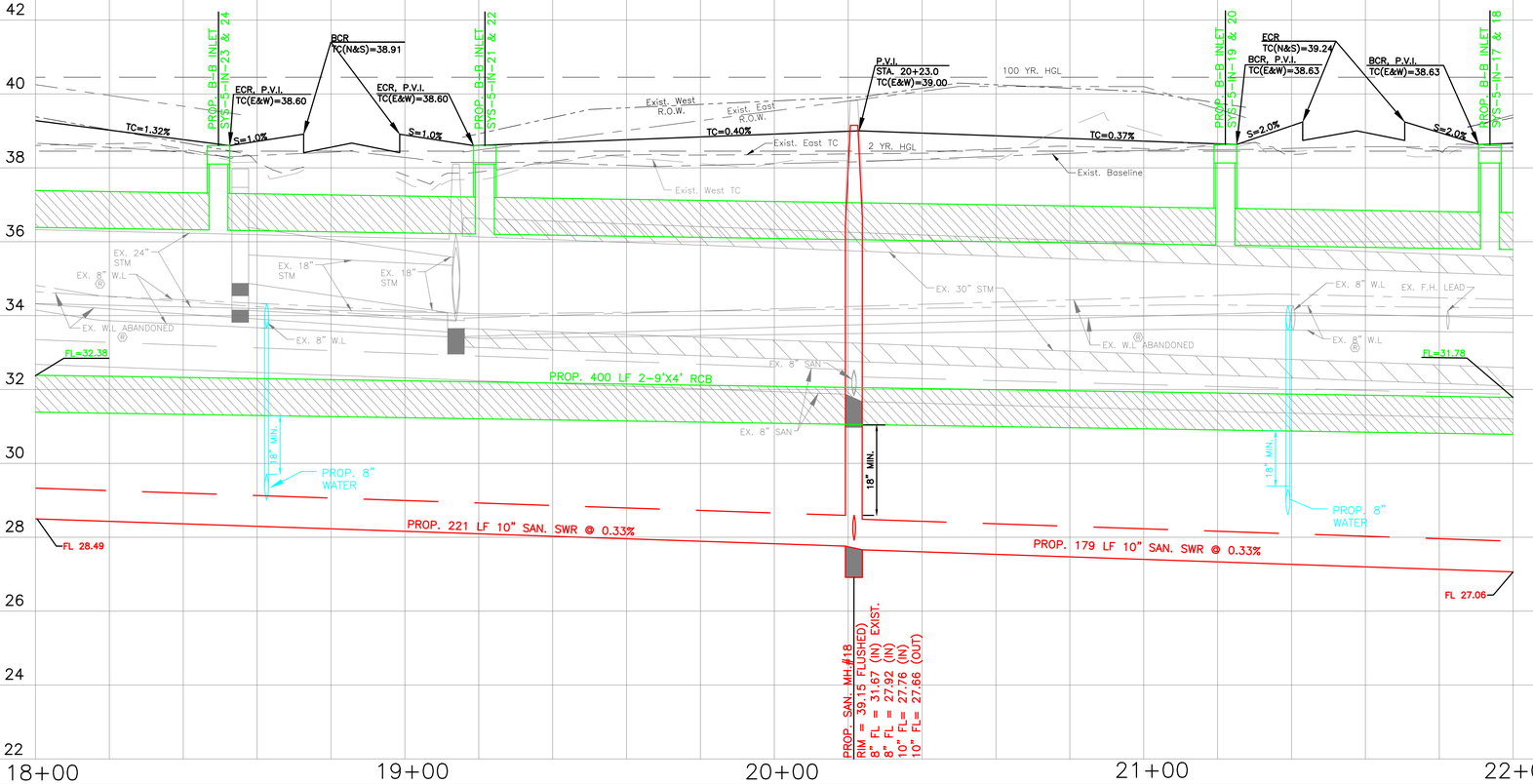
DONEGAL WAY
PLAN AND PROFILE
STA 14+28.50 TO STA 18+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 38 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\038-DONE-PP01.DWG AUG. 03, 2026-8:22am



DONEGAL WAY



PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	18+52.60	13.00' RT.
B	18+52.60	13.00' LT.
C	19+18.65	13.00' RT.
D	19+18.65	13.00' LT.
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STATE OF TEXAS
DARIUOSH S. KERMANY
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LICENSED
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8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

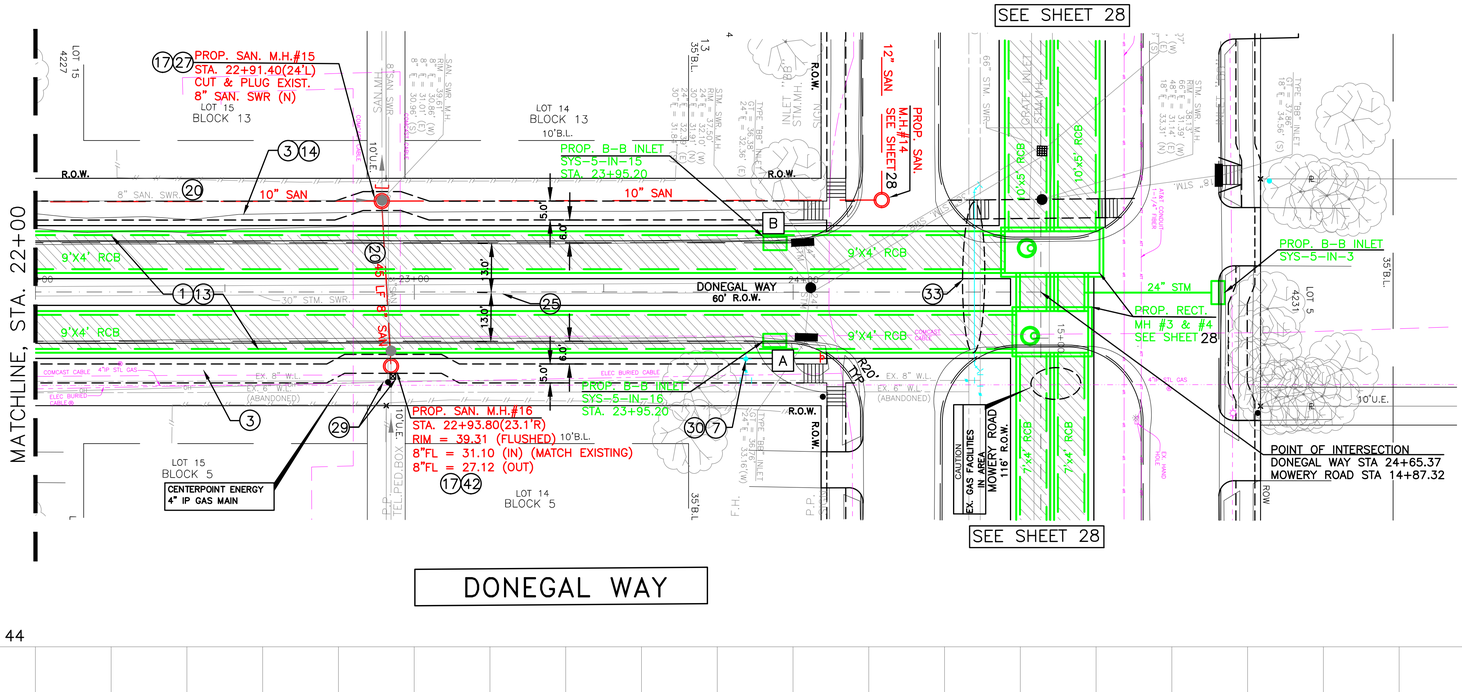
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

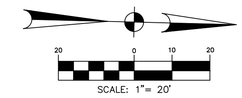
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

DONEGAL WAY
PLAN AND PROFILE
STA 18+00 TO STA 22+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ.1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 39 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\039-DONE-PP02.DWG AUG. 03, 2026-8:27am





LEGEND

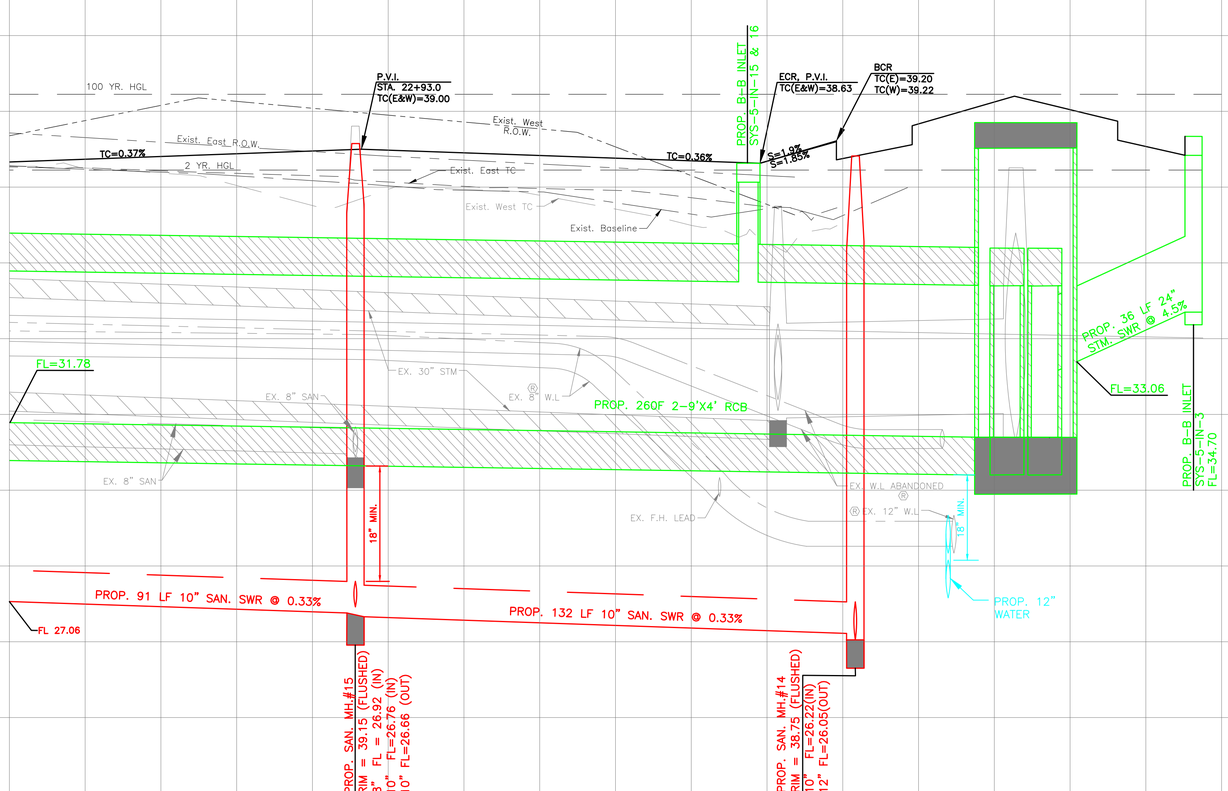
(1) KEY NOTES SEE SHEET 5

(10) DRIVEWAY DATA SEE SHEET 78

[A] PAVEMENT GEOMETRY (SEE TABLE)

(R) RECORD DRAWING

PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	23+98.40	13.00 RT.
B	23+98.40	13.00 LT.



LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "B":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED +/- 50FT OF THE INTERSECTION OF CULLEN BLVD. AND BUNGALOW LN.
ELEVATION = 39.90 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "C":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED AT THE NW CORNER OF MADDEN LN AND DONEGAL WAY.
ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE 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 TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CENTERPOINT ENERGY/UNDERGROUND ELECRICAL FACILITIES VERIFICATION ONLY.

(THIS SIGNATURE VERIFIES EXITING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION.)

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

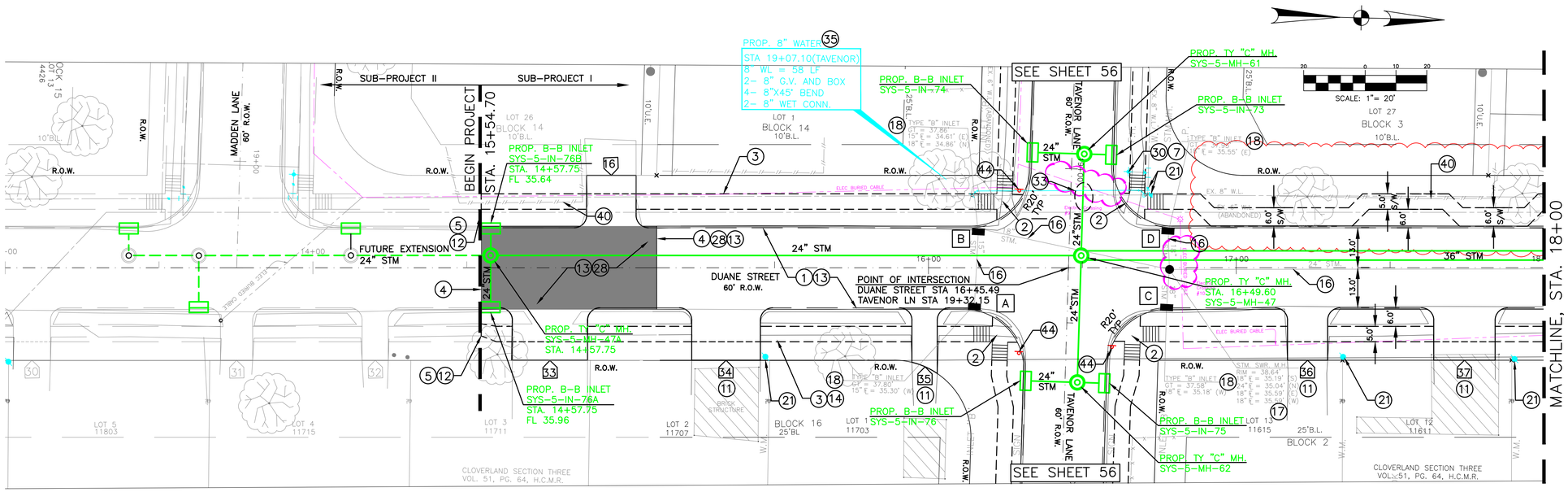
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

DONEGAL WAY
PLAN AND PROFILE
STA 22+00 TO 24+65.37

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ.1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 40 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\040-DONE-PP03.DWG AUG. 03, 2026-8:23am



DUANE STREET

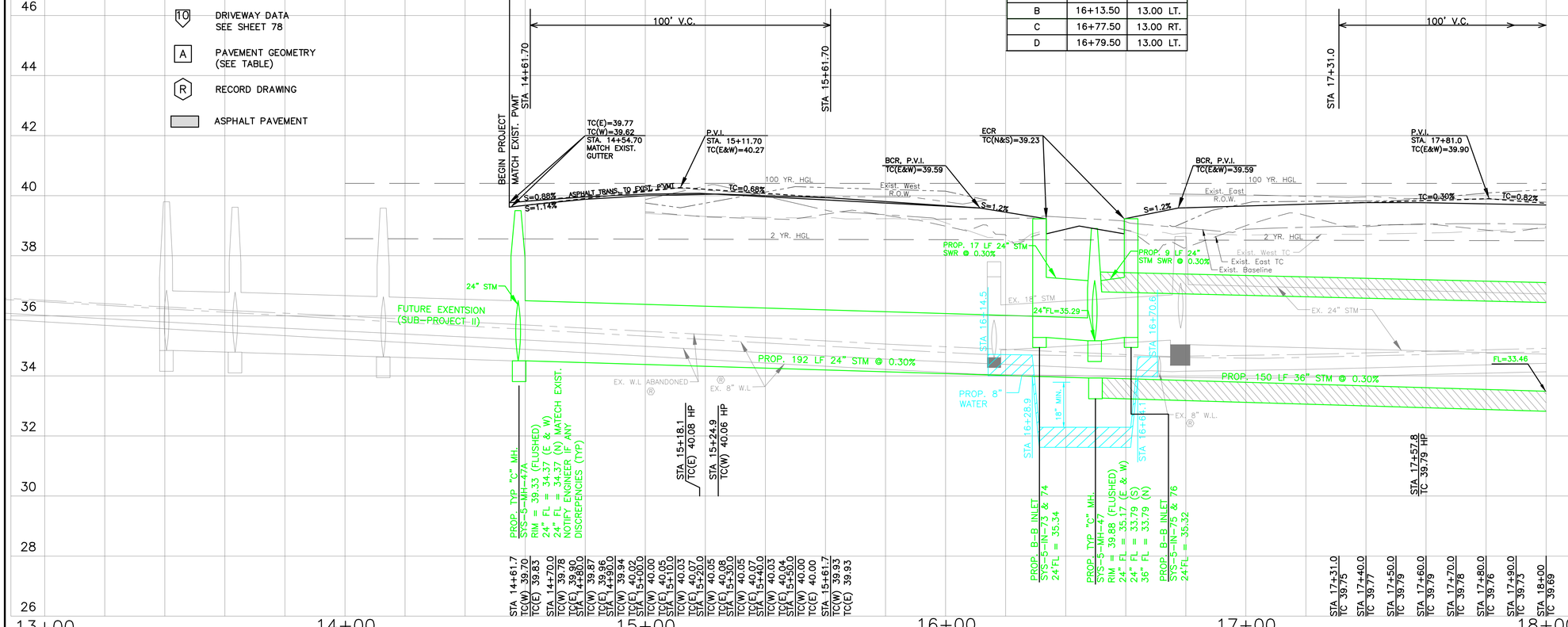
SUB-PROJECT II | SUB-PROJECT I

ASPHALT TRANSITION TIE TO EXITING TC & GT

LEGEND

1. KEY NOTES SEE SHEET 5
10. DRIVEWAY DATA SEE SHEET 78
A. PAVEMENT GEOMETRY (SEE TABLE)
R. RECORD DRAWING
ASPHALT PAVEMENT

PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	16+11.50	13.00 RT.
B	16+13.50	13.00 LT.
C	16+77.50	13.00 RT.
D	16+79.50	13.00 LT.



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VERIFICATION OF PRIVATE UTILITY LINES

DATE:

CENTERPOINT ENERGY NATURAL GAS UTILITIES SHOWN. (GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION

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CABLE COMPANY

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dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
FB NO.

STATE OF TEXAS · DARIUOSH S. KERMANY · 93626 · LICENSED PROFESSIONAL ENGINEER
8/3/2026

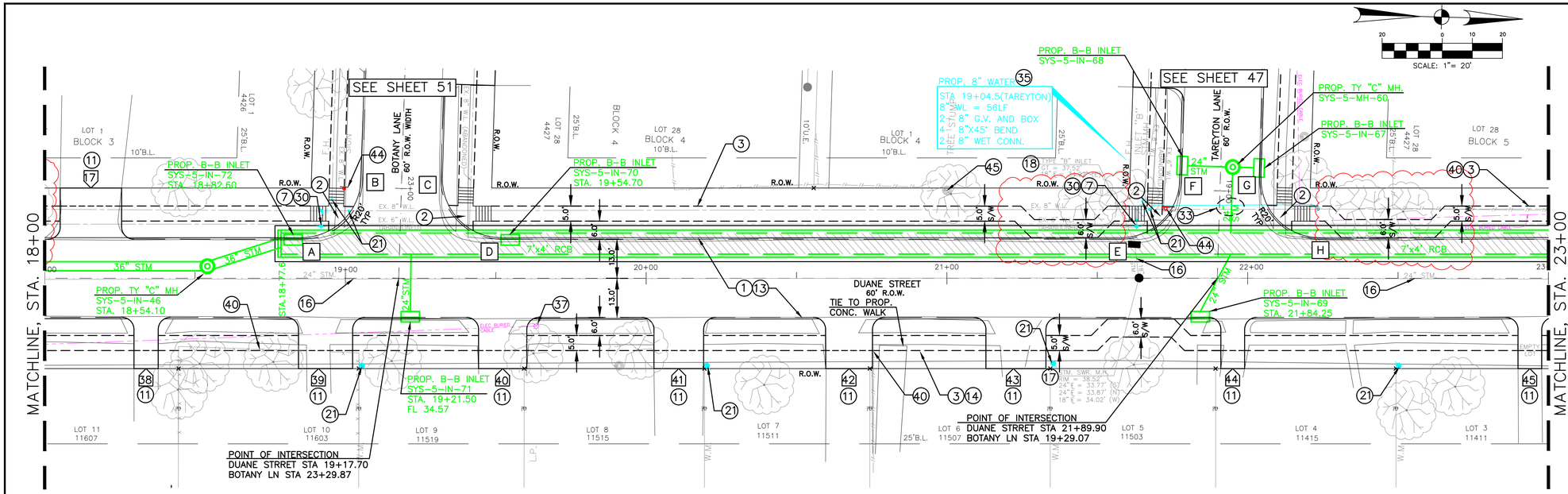
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

DUANE STREET
PLAN AND PROFILE
STA 14+54.70 TO STA 18+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 41 OF 159	

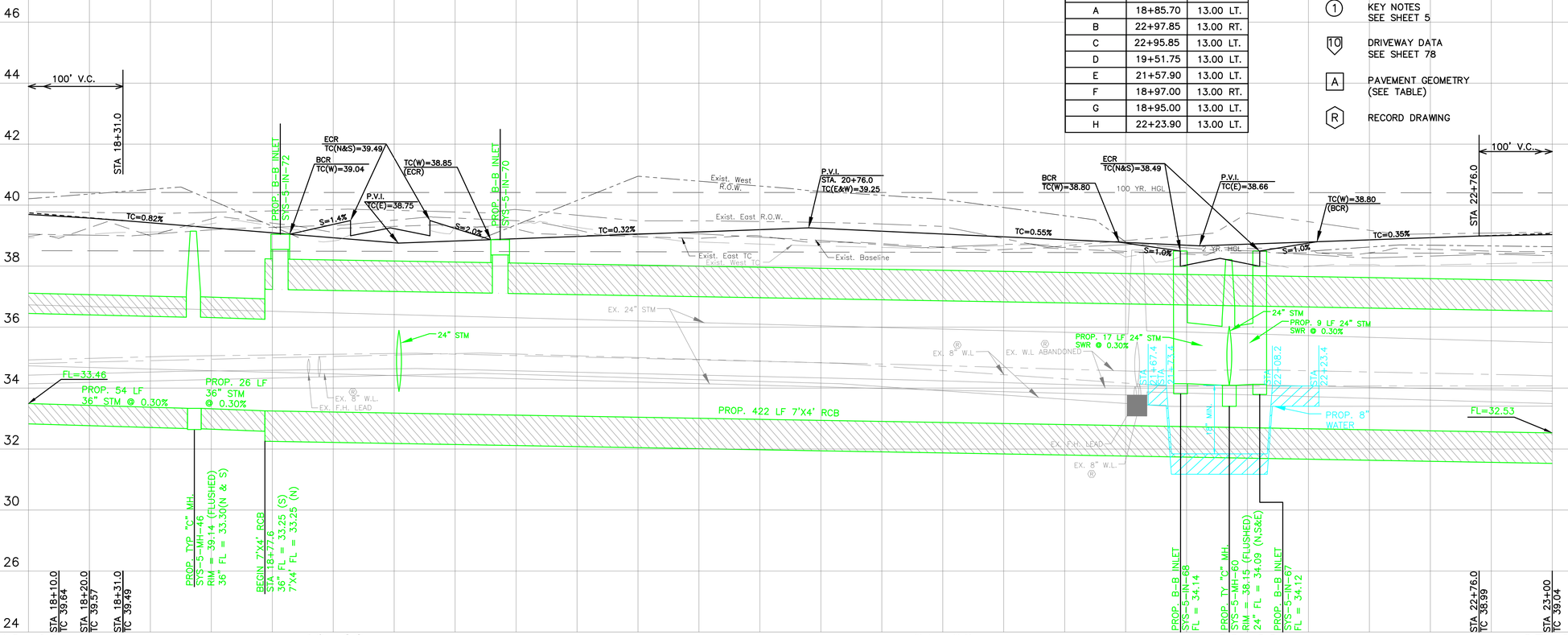
K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\041-DUAN-PP01.DWG AUG. 03, 2026-8:23am



DUANE STREET

PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	18+85.70	13.00 LT.
B	22+97.85	13.00 RT.
C	22+95.85	13.00 LT.
D	19+51.75	13.00 LT.
E	21+57.90	13.00 LT.
F	18+97.00	13.00 RT.
G	18+95.00	13.00 LT.
H	22+23.90	13.00 LT.

LEGEND
- (1) KEY NOTES SEE SHEET 5
- (10) DRIVEWAY DATA SEE SHEET 78
- (A) PAVEMENT GEOMETRY (SEE TABLE)
- (R) RECORD DRAWING



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CABLE COMPANY

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dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS — DARIUOSH S. KERMANY — 93626 — LICENSED PROFESSIONAL ENGINEER

SURVEYED BY:GEOSURV, INC.
FB NO.

8/3/2026

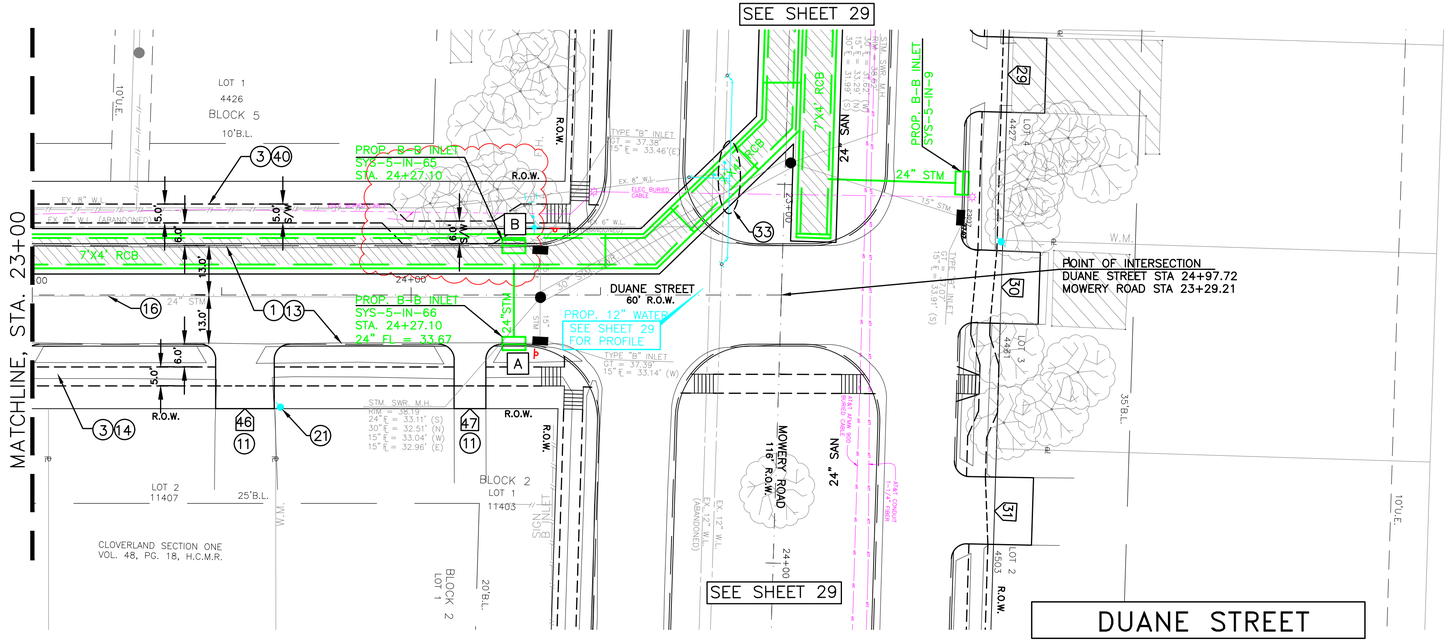
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

DUANE STREET
PLAN AND PROFILE
STA 18+00 TO STA 23+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 42 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\042-DUAN-PP02.DWG AUG. 03, 2026-8:38am



PAVEMENT GEOMETRIC (FC)		
LOCATION	STATION	OFFSET
A	24+30.20	13.00 RT.
B	24+31.70	13.00 LT.

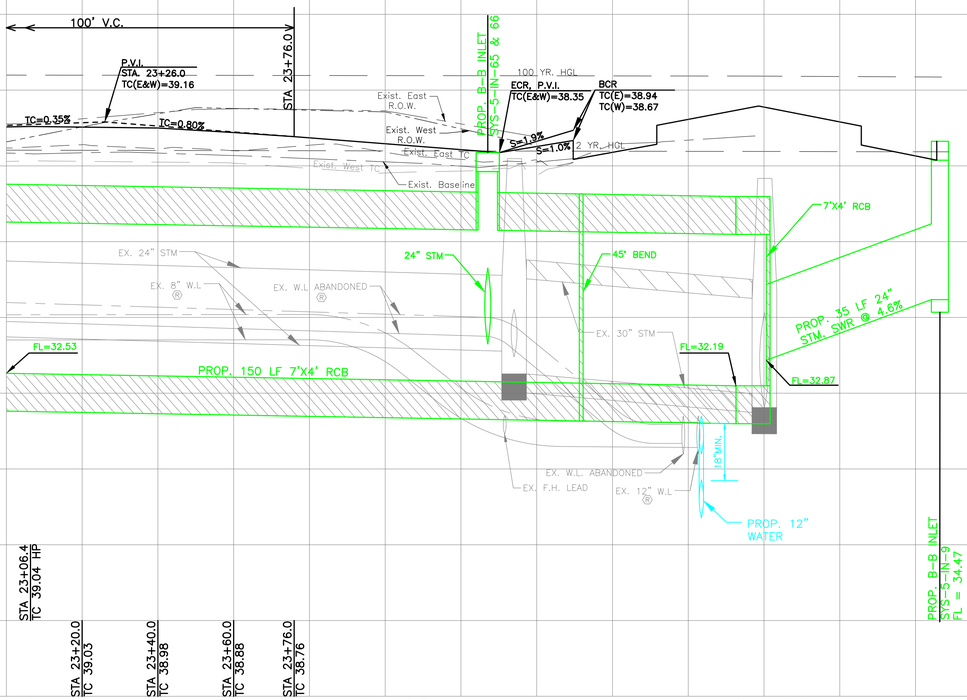
LEGEND

1 KEY NOTES SEE SHEET 5

10 DRIVEWAY DATA SEE SHEET 78

A PAVEMENT GEOMETRY (SEE TABLE)

R RECORD DRAWING



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VERIFICATION OF PRIVATE UTILITY LINES

DATE:

CENTERPOINT ENERGY NATURAL GAS UTILITIES SHOWN. (GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION

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TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
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TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER

SURVEYED BY:GEOSURV, INC.
FB NO.

8/3/2026

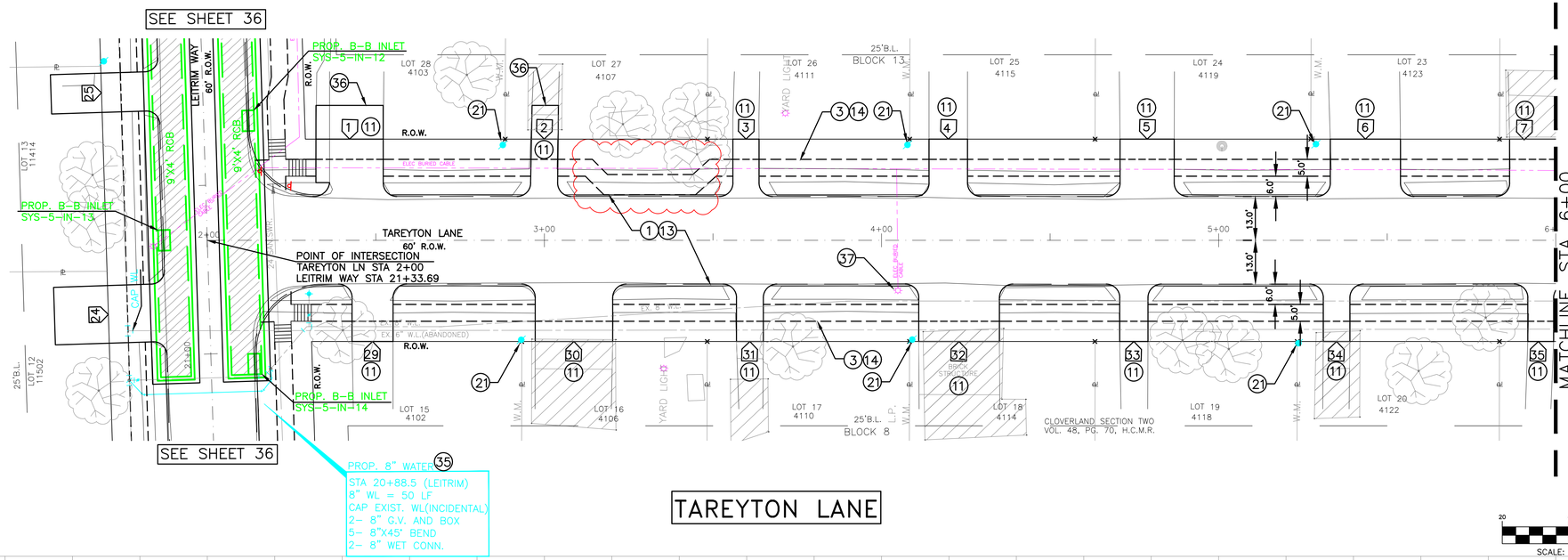
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

DUANE STREET
PLAN AND PROFILE
STA 23+00 TO 24+97.72

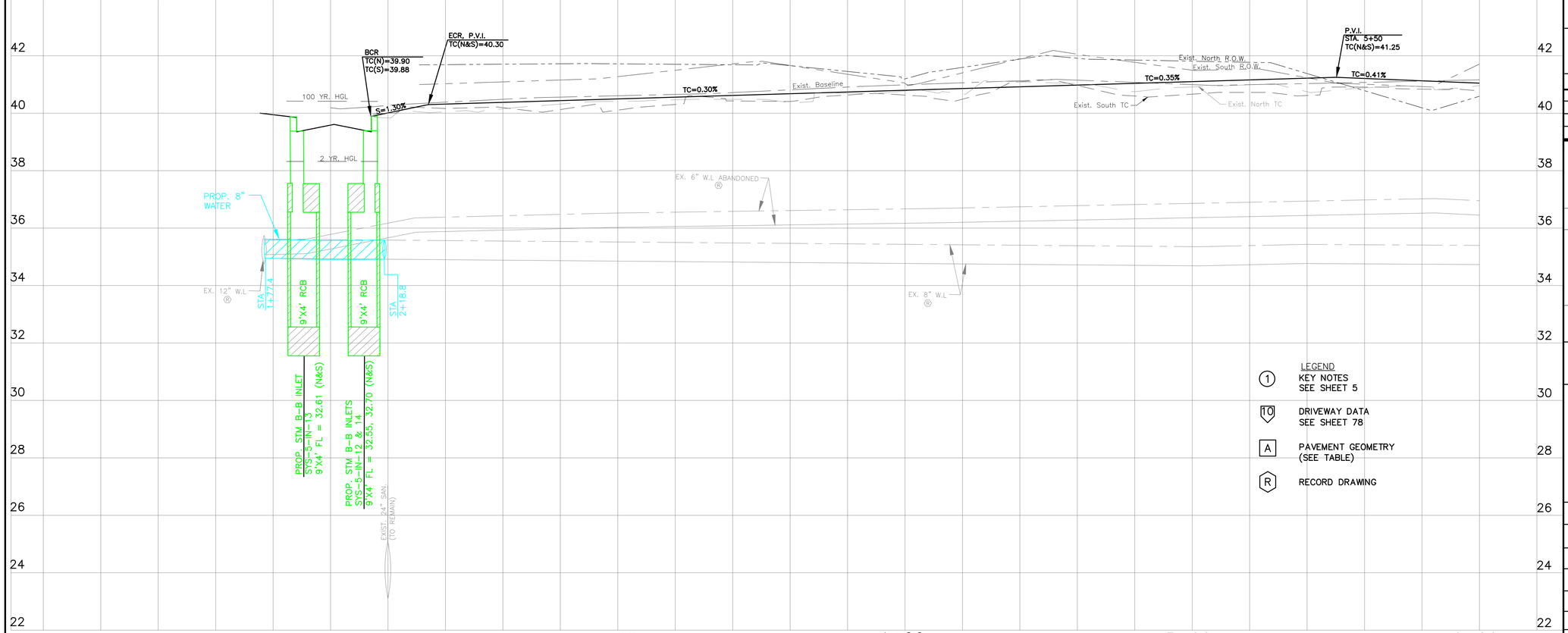
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 43 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\043-DUAN-PP03.DWG AUG. 03, 2026-8:44am



TAREYTON LANE

SCALE: 1"= 20'



LEGEND

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STATE OF TEXAS
DARIUOSH S. KERMANY
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LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY:GEOSURV, INC.
FB NO.

8/3/2026

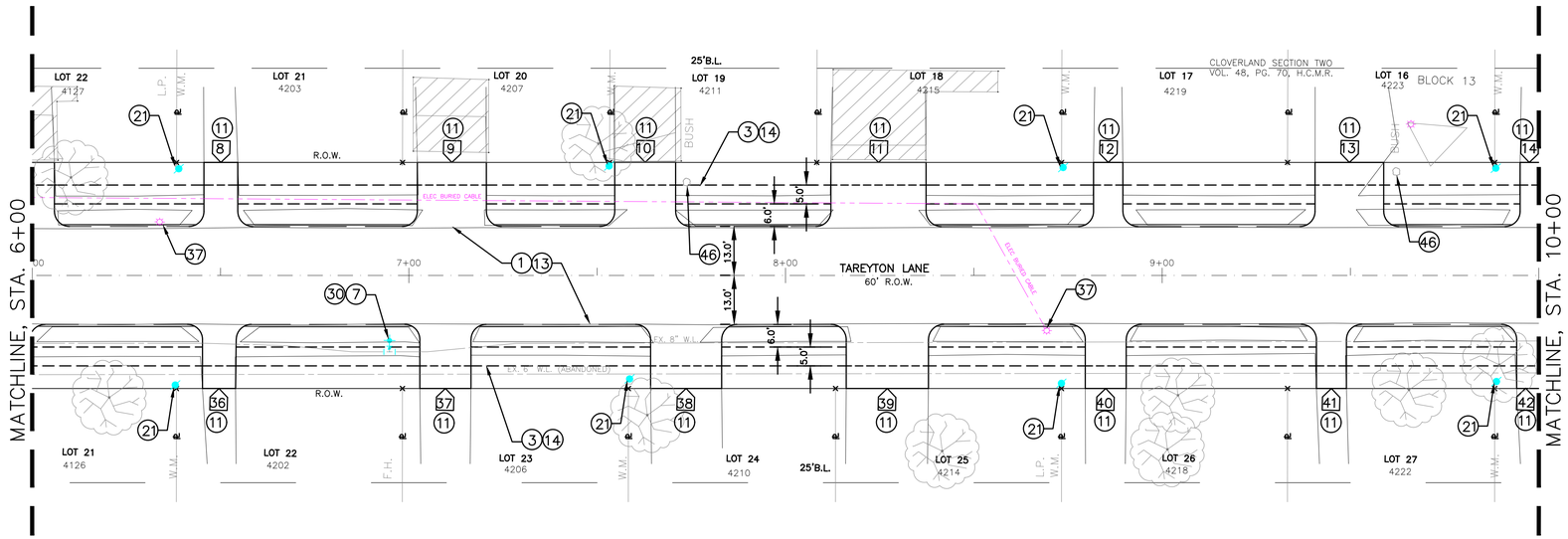
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

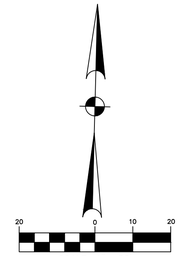
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TAREYTON LANE
PLAN AND PROFILE
STA 2+00 TO STA 6+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT 1"=2' HORIZ 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 44 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\044-TARE-PP01.DWG AUG. 03, 2026-8:35am





LEGEND

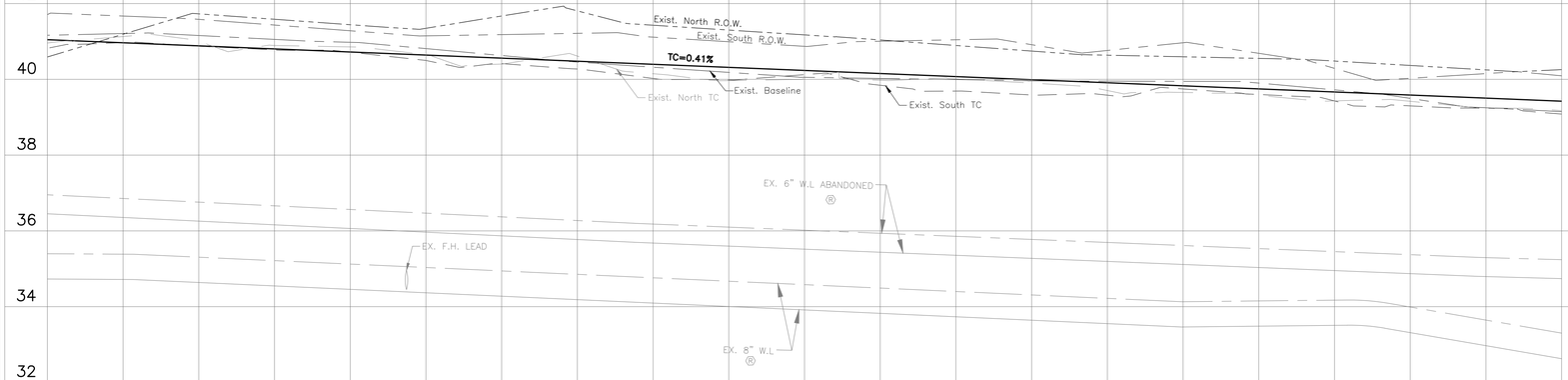
(1) KEY NOTES SEE SHEET 5

10 DRIVEWAY DATA SEE SHEET 78

A PAVEMENT GEOMETRY (SEE TABLE)

R RECORD DRAWING

TAREYTON LANE



LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

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ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

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3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
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THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
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90% DESIGN REVIEW

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VERIFICATION OF PRIVATE UTILITY LINES

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CENTERPOINT ENERGY NATURAL GAS UTILITIES SHOWN. (GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

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CENTERPOINT ENERGY/UNDERGROUND ELECRICAL FACILITIES VERIFICATION ONLY.

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DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

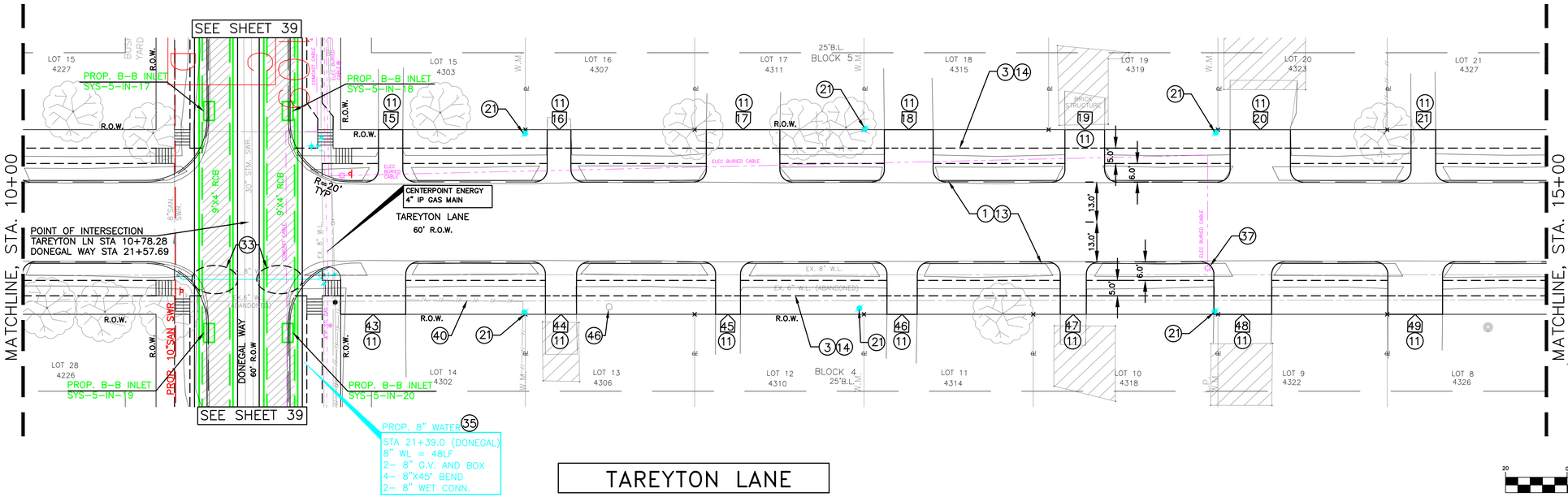
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TAREYTON LANE
PLAN AND PROFILE
STA 6+00 TO STA 10+00

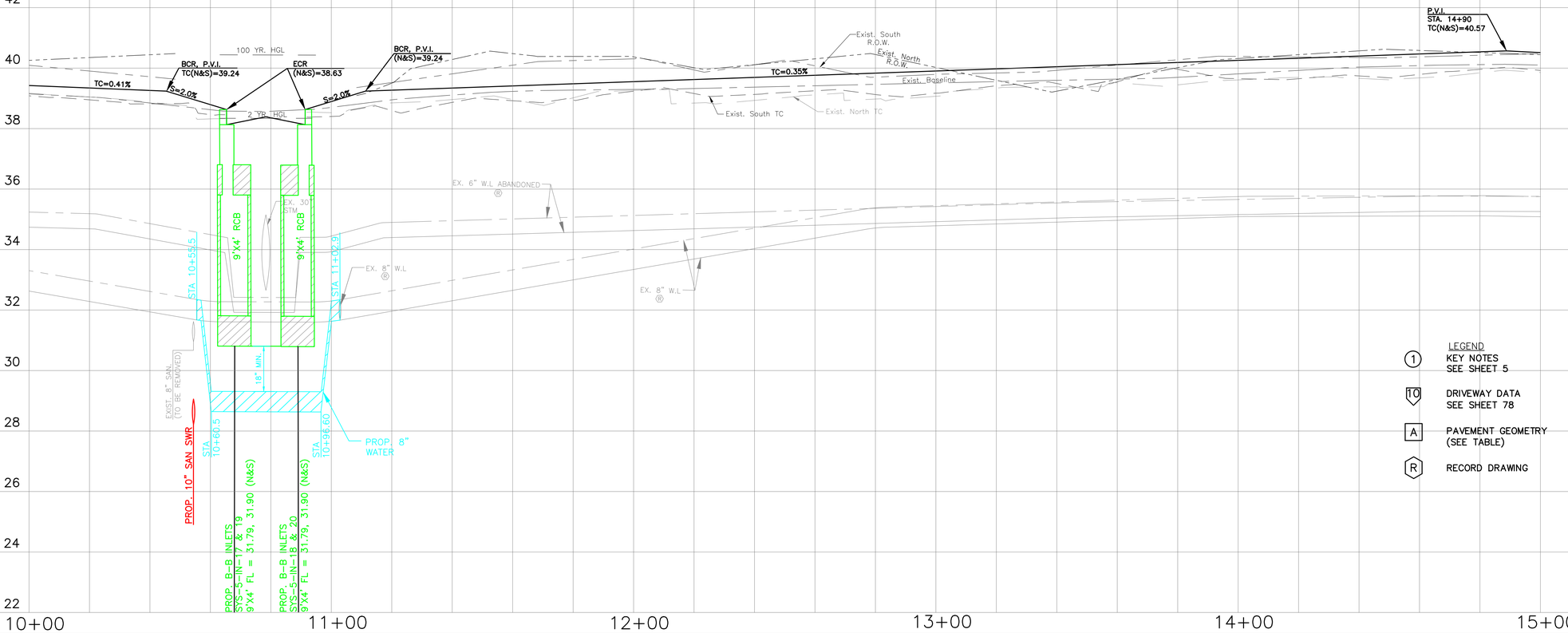
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 45 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\045-TARE-PP02.DWG AUG. 03, 2026-8:26am



TAREYTON LANE

SCALE: 1"= 20'



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CABLE COMPANY

NO.	DATE	REVISIONS	BY

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(10) DRIVEWAY DATA SEE SHEET 78
(A) PAVEMENT GEOMETRY (SEE TABLE)
(R) RECORD DRIVING

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

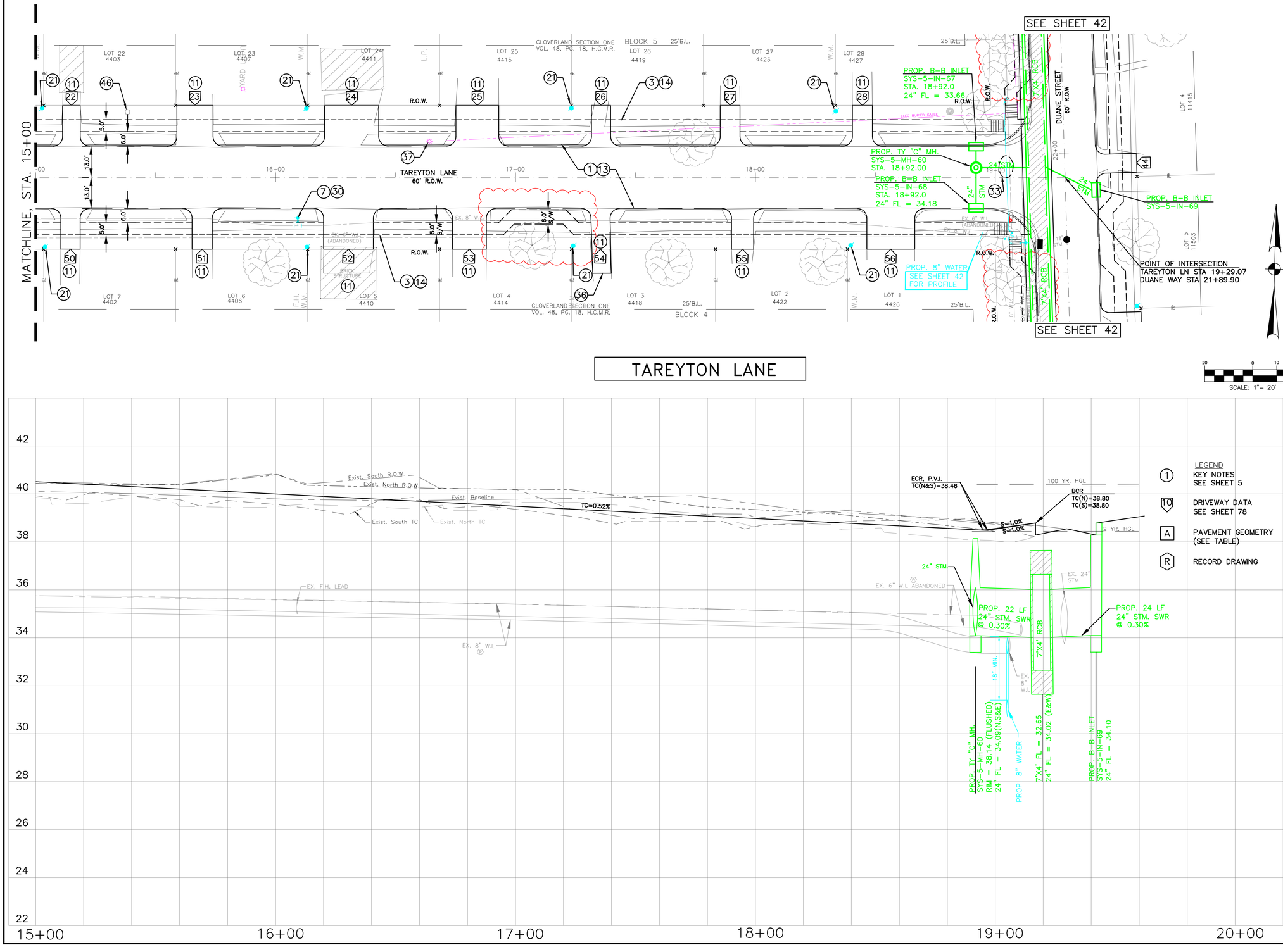
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TAREYTON LANE
PLAN AND PROFILE
STA 10+00 TO STA 15+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 46 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\046-TARE-PP03.DWG AUG. 03, 2026-8:33am



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CABLE COMPANY

LEGEND
(1) KEY NOTES SEE SHEET 5
(10) DRIVEWAY DATA SEE SHEET 78
(A) PAVEMENT GEOMETRY (SEE TABLE)
(R) RECORD DRAWING

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TAREYTON LANE
PLAN AND PROFILE
STA 15+00 TO 19+29.07

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 47 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\047-TARE-PP04.DWG AUG. 03, 2026-8:27am

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\048-BOTA-PP01.DWG AUG. 03, 2026-8:36am

SEE SHEET 35

SEE SHEET 60

MATCH EXIST. PVMT BEGIN PROJECT STA. 4+44

MATCHLINE, STA. 9+00

BOTANY LANE

POINT OF INTERSECTION
BOTANY LN STA 6+00
LEITRIM WAY STA18+56.13

PROP.12" WATER
STA 18+30.8 (LEITRIM)
8" WL = 50 LF
1- 8" G.V. AND BOX
4- 8"X45° BEND
1- 8" WET CONN.

SEE SHEET 35 FOR PROFILE

PROP.EXTREME EVENT OVERFLOW STRUCTURE

SCALE: 1"= 20'

PROP. 100 YR. WSEL = 40.74
FL=39.80
PROP. 100 LF SWALE @ 0.10% FL=39.90
PROP. 2 YR. WSEL =34.75
2 YR. HGL
100 YR. HGL
Exist. North TC
Exist. South TC
Exist. Baseline
Exist. North R.O.W.
Exist. South R.O.W.
ECR, P.V.I. TC(N&S)=39.53
BCR TC(N&S)=40.14
P.V.I. TC(N&S)=39.40
TC(S)=1.73%
TC(N)=1.83%
S=1.2%
S=1.8%
S=1.3%
TC=0.30%

PROP. 50 LF 36" CMP @ 0.30%
PROP. 80 LF 36" STM SWR @ 0.30%
PROP. 42 LF 36" STM @ 0.30%
PROP. 67 L.F. 24"STM @ 0.50%

EXIST. HCFCD CHANNEL C-127-00-00 FL = 31.12 (CHANNEL) FL = 35.04 (EXIST. 24") 36" FL = 32.12 ABANDON EXIST. STM. PLUG & CAP OPENING

PROP. TY "C" MH. SYS-4-MH-1 RIM = 40.63 (FLUSHED) 36" FL = 32.27(E&W)

PROP. TY"C" MH. SYS-4-MH-2 RIM = 39.19 (FLUSHED) 24" FL = 32.51(N) 24" FL = 33.59(S) 36" FL = 32.51(E&W)

PROP. TY "C" M.H. SYS-4-MH-3 RIM = 39.94 (FLUSHED) 24" FL = 32.64 (S&E) 36" FL = 32.64 (W) STA 6+05.3

PROP. SAN.SWR MH#2

PROP. SAN.SWR MH#1

PROP. TY "C" MH. SYS-4-MH-8.1 24" FL = 32.98

EXIST. STM. MH. STA 5+77.9 (TO BE REMOVED) STA 5+86.70

EXIST. SAN. MH. (TO BE REMOVED)

EX. 24" SAN

EX. 12" W.L

EX. 8" W.L ABANDONED

EX. F.H. LEAD

EX. 18" STM

EX. 24" STM

24" STM

18" W.L

SEE SHEET 35 FOR PROFILE

LEGEND

(1) KEY NOTES SEE SHEET 5

(10) DRIVEWAY DATA SEE SHEET 78

(A) PAVEMENT GEOMETRY (SEE TABLE)

(R) RECORD DRAWING

4+00 5+00 6+00 7+00 8+00 9+00

22 24 26 28 30 32 34 36 38 40 42 44

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STATE OF TEXAS
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8/3/2026

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FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

BOTANY LANE
PLAN AND PROFILE
STA 4+44 TO STA 9+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ.1"=20'	
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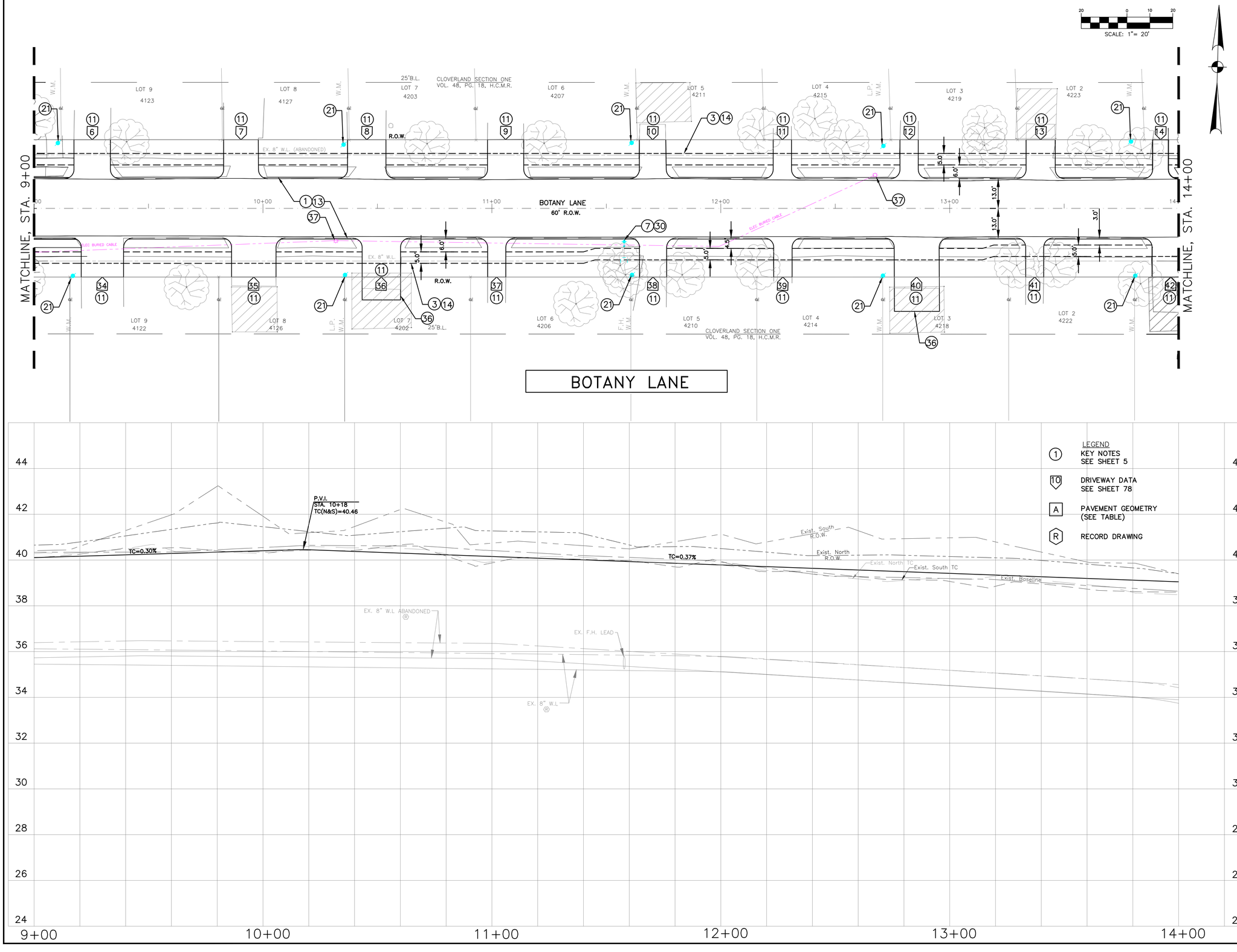

LEGEND

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LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

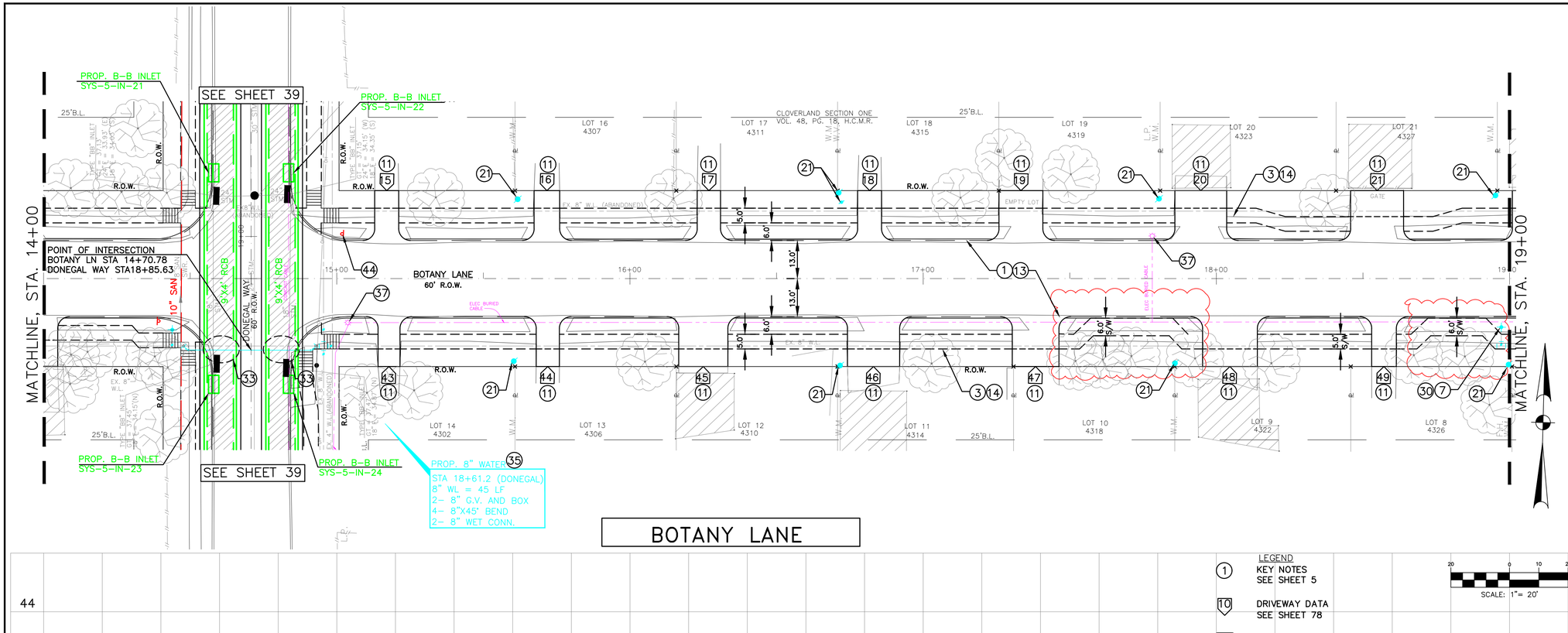
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

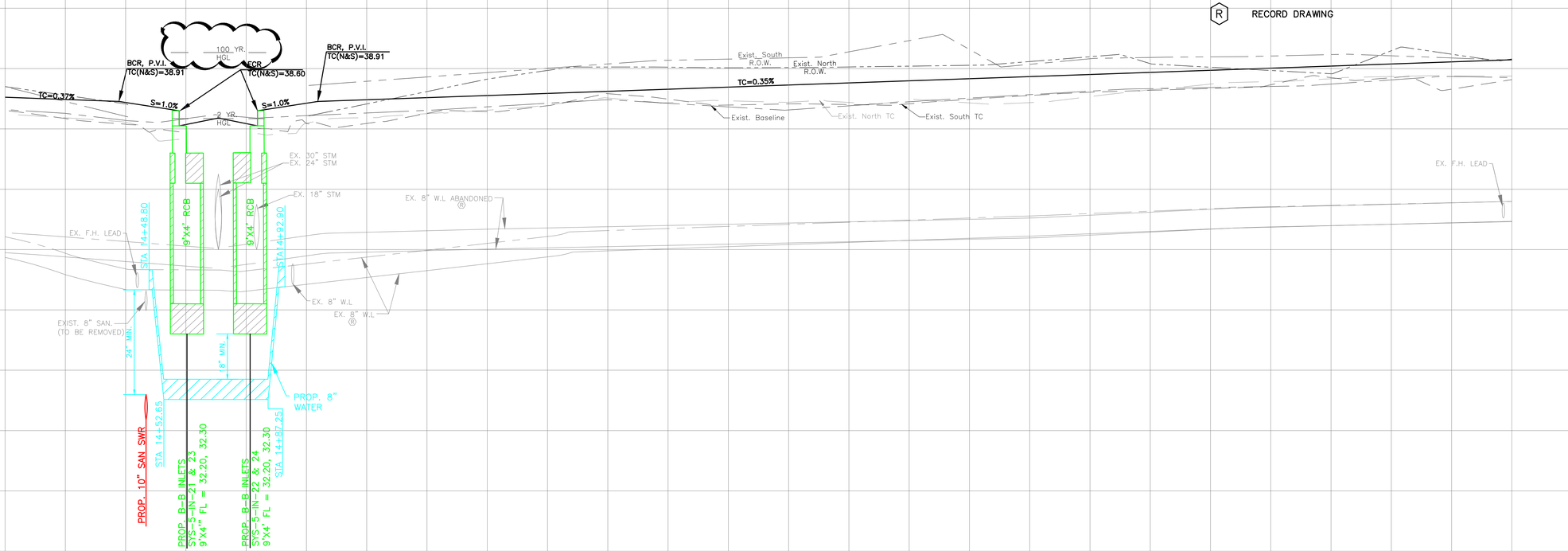
BOTANY LANE
PLAN AND PROFILE
STA 9+00 TO STA 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 49 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\049-BOTA-PP02.DWG AUG. 03, 2026-8:25am



BOTANY LANE



LEGEND

(1) KEY NOTES SEE SHEET 5

(10) DRIVEWAY DATA SEE SHEET 78

[A] PAVEMENT GEOMETRY (SEE TABLE)

(R) RECORD DRAWING

SCALE: 1"= 20'

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
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THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

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FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE CAN BE MARKED.

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VERIFICATION OF PRIVATE UTILITY LINES

DATE:

CENTERPOINT ENERGY NATURAL GAS UTILITIES SHOWN. (GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

DATE:

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NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS — DARIUOSH S. KERMANY — 93626 — LICENSED PROFESSIONAL ENGINEER

SURVEYED BY:GEOSURV, INC.
FB NO.

8/3/2026

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HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

BOTANY LANE
PLAN AND PROFILE
STA 14+00 TO STA 19+00

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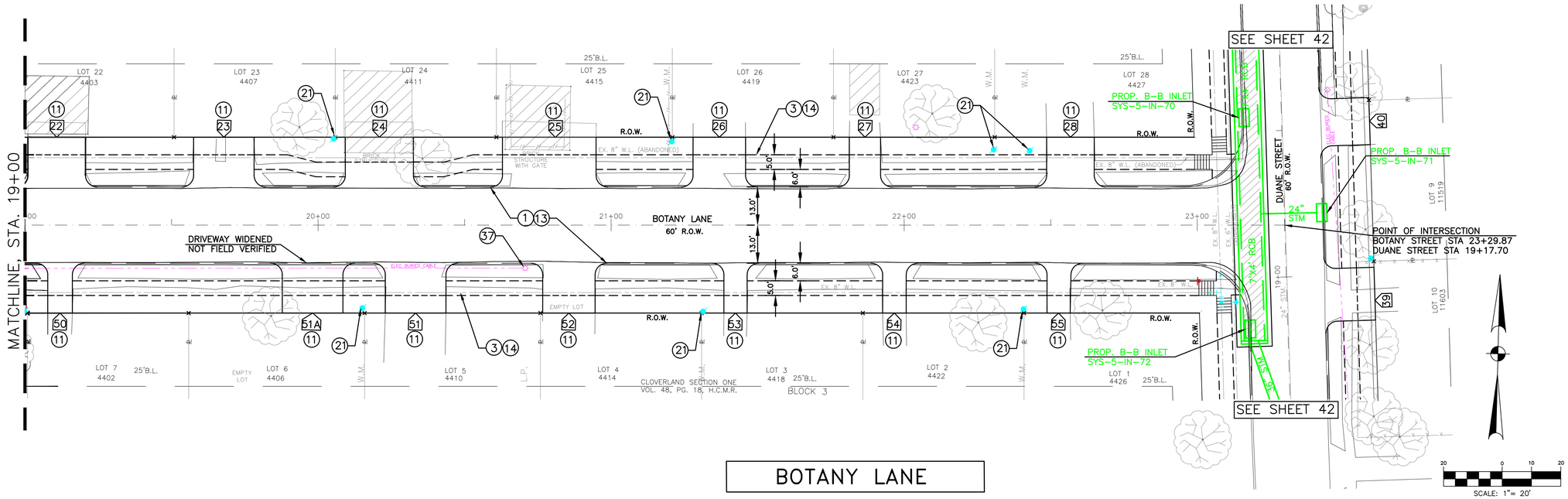
K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\050-BOTA-PP03.DWG AUG. 03, 2026-8:36am



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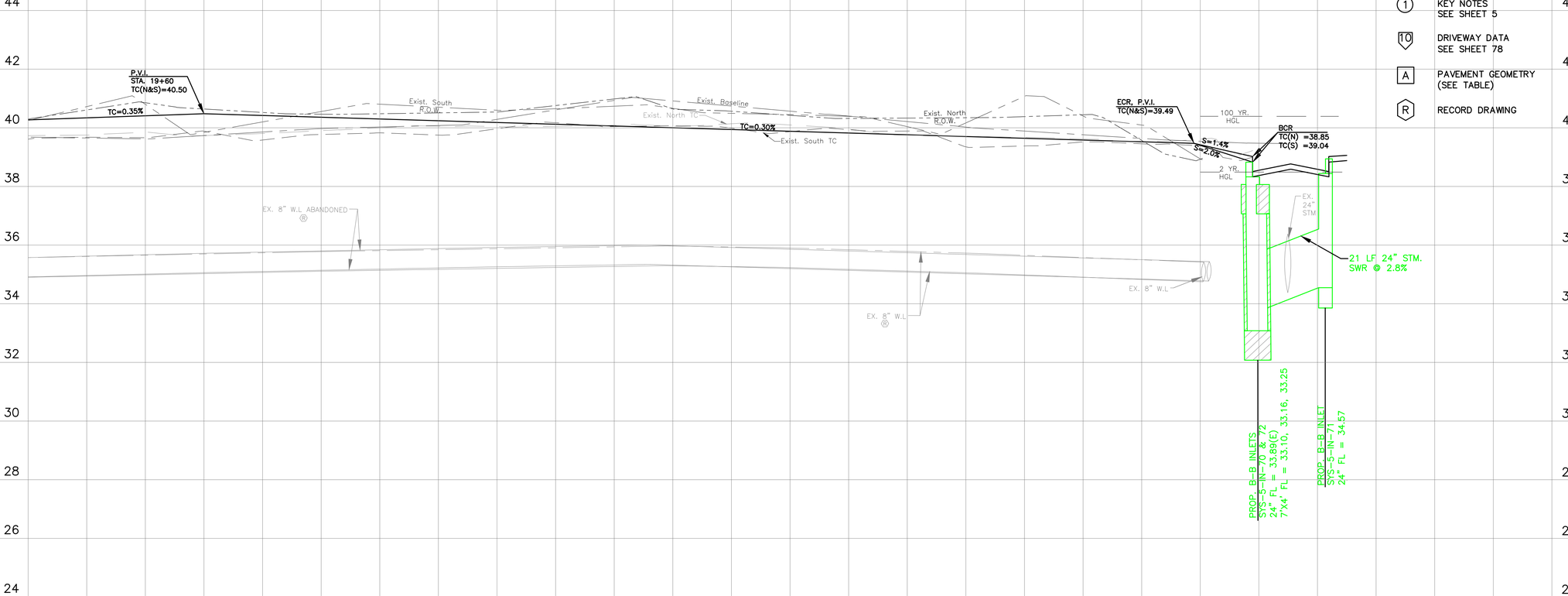

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(R) RECORD DRAWING

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STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER

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FB NO.

8/3/2026

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HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

BOTANY LANE
PLAN AND PROFILE
STA 19+00 TO 23+29.87

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SHEET NO. 51 OF 159	

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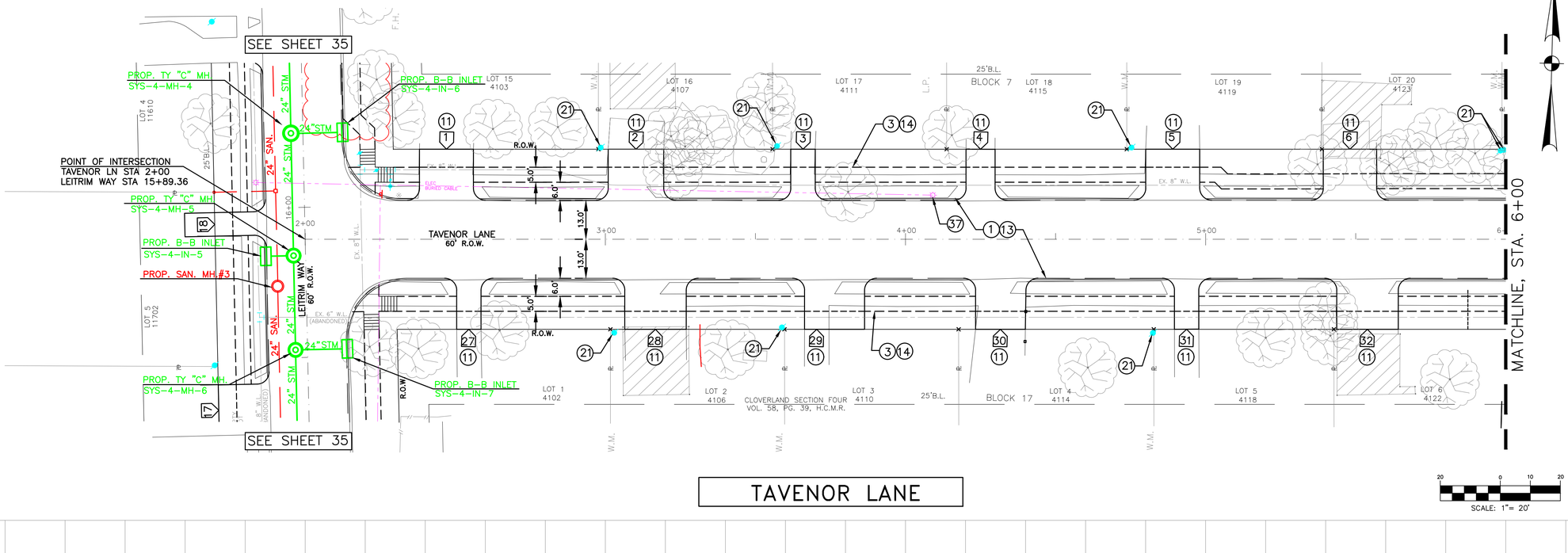

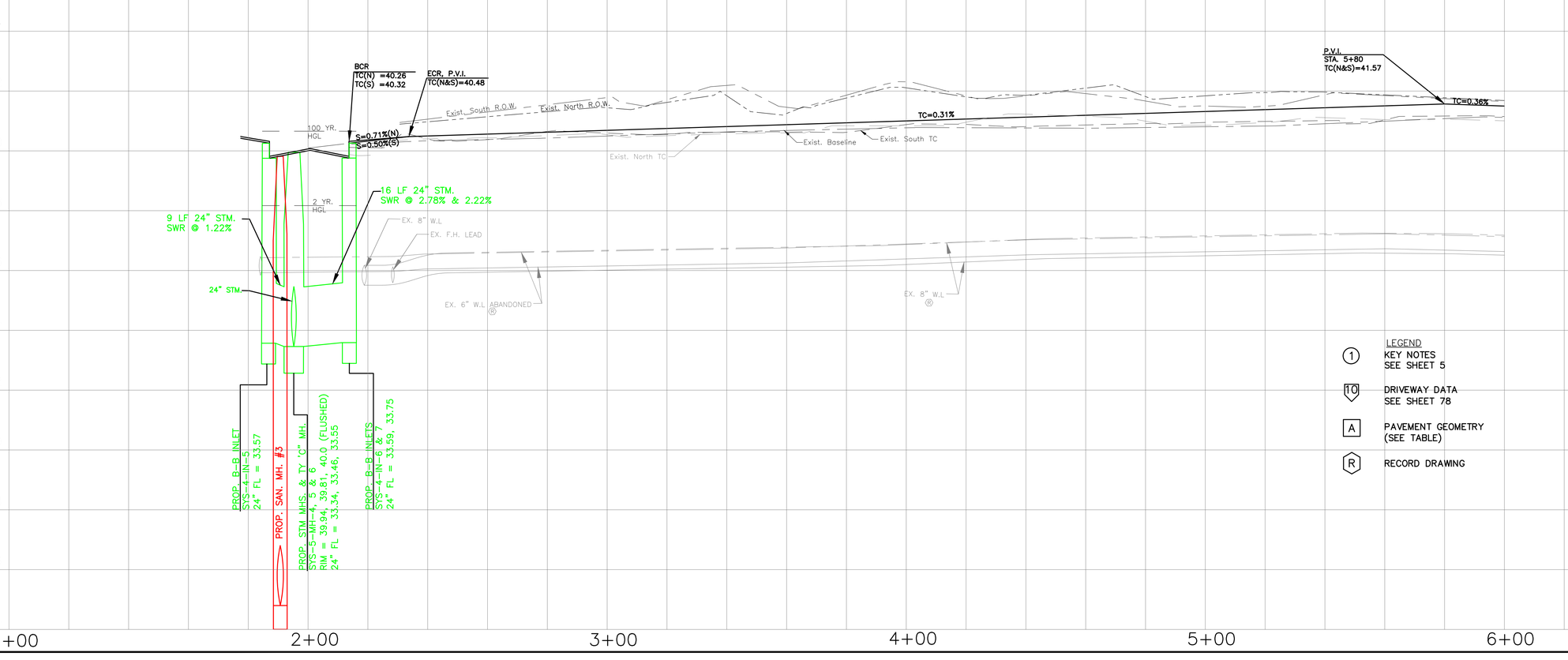

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CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TAVENOR LANE
PLAN AND PROFILE
STA 2+00 TO STA 6+00

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DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
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OMAR ABDULKAREEM, P.E.	
SHEET NO. 52 OF 159	

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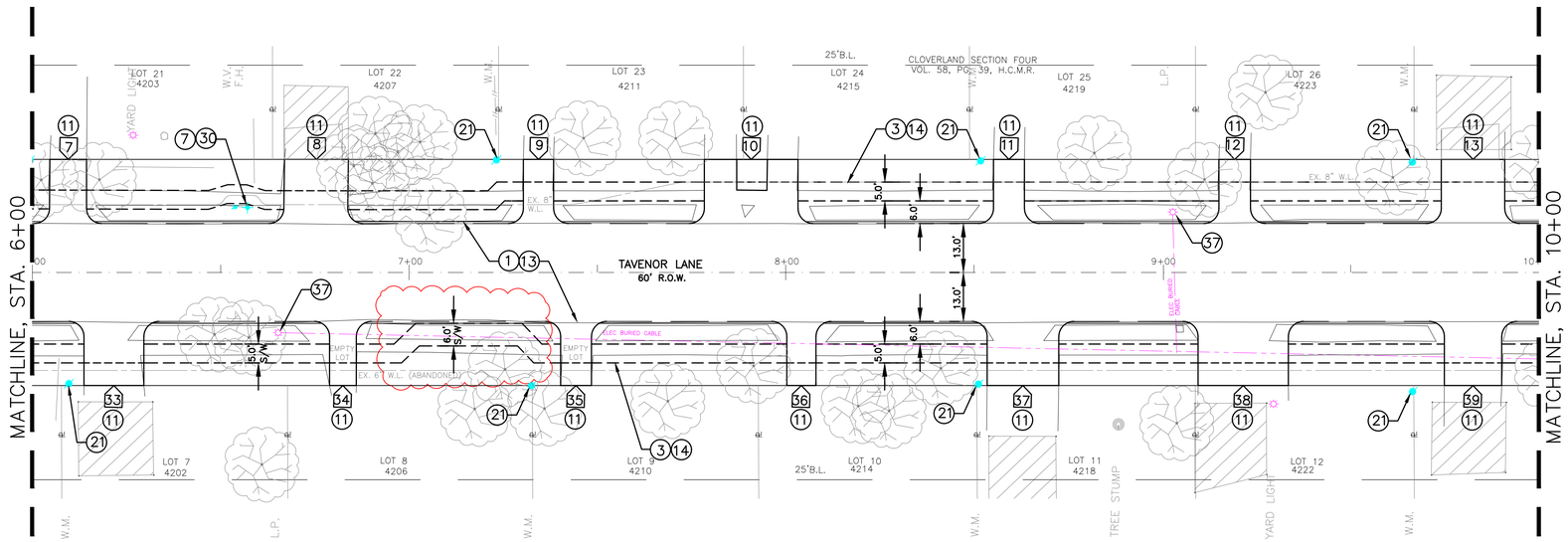

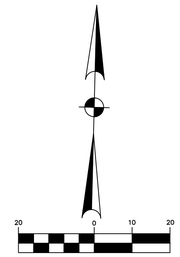

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R RECORD DRAWING

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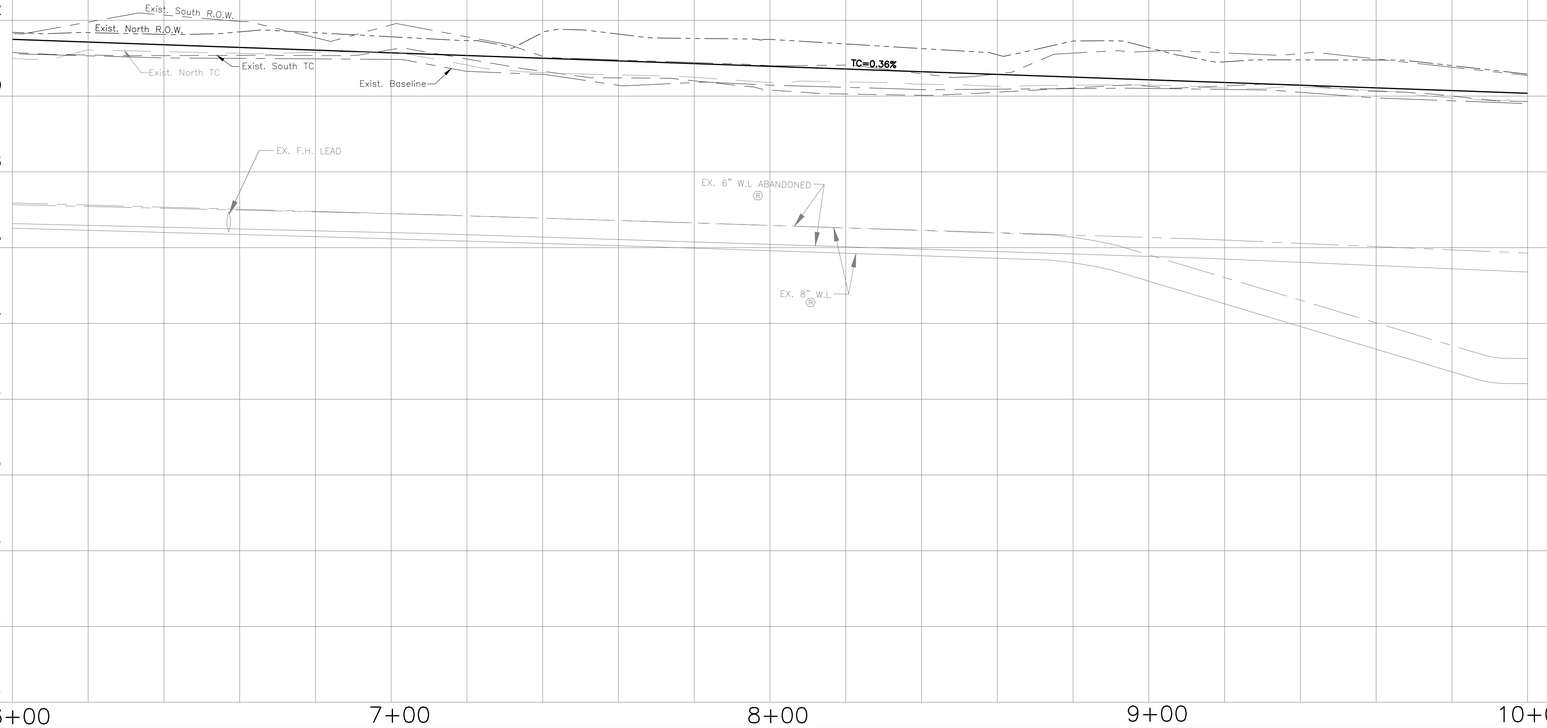

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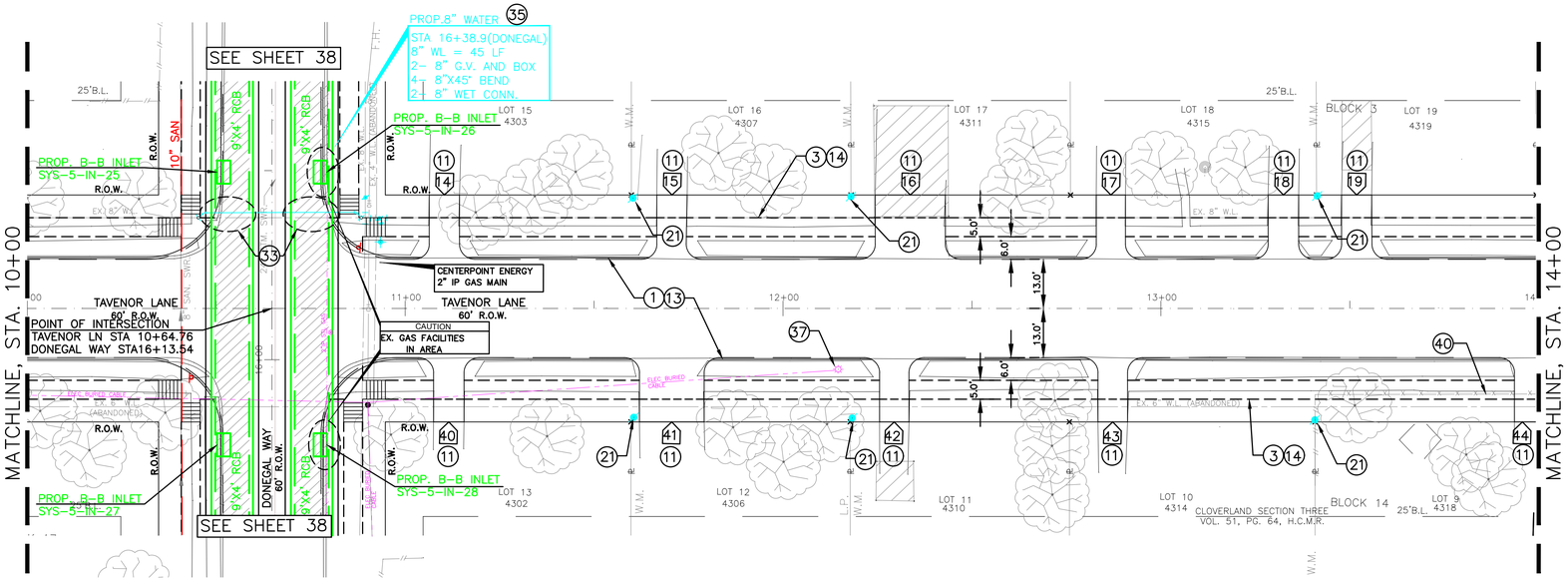

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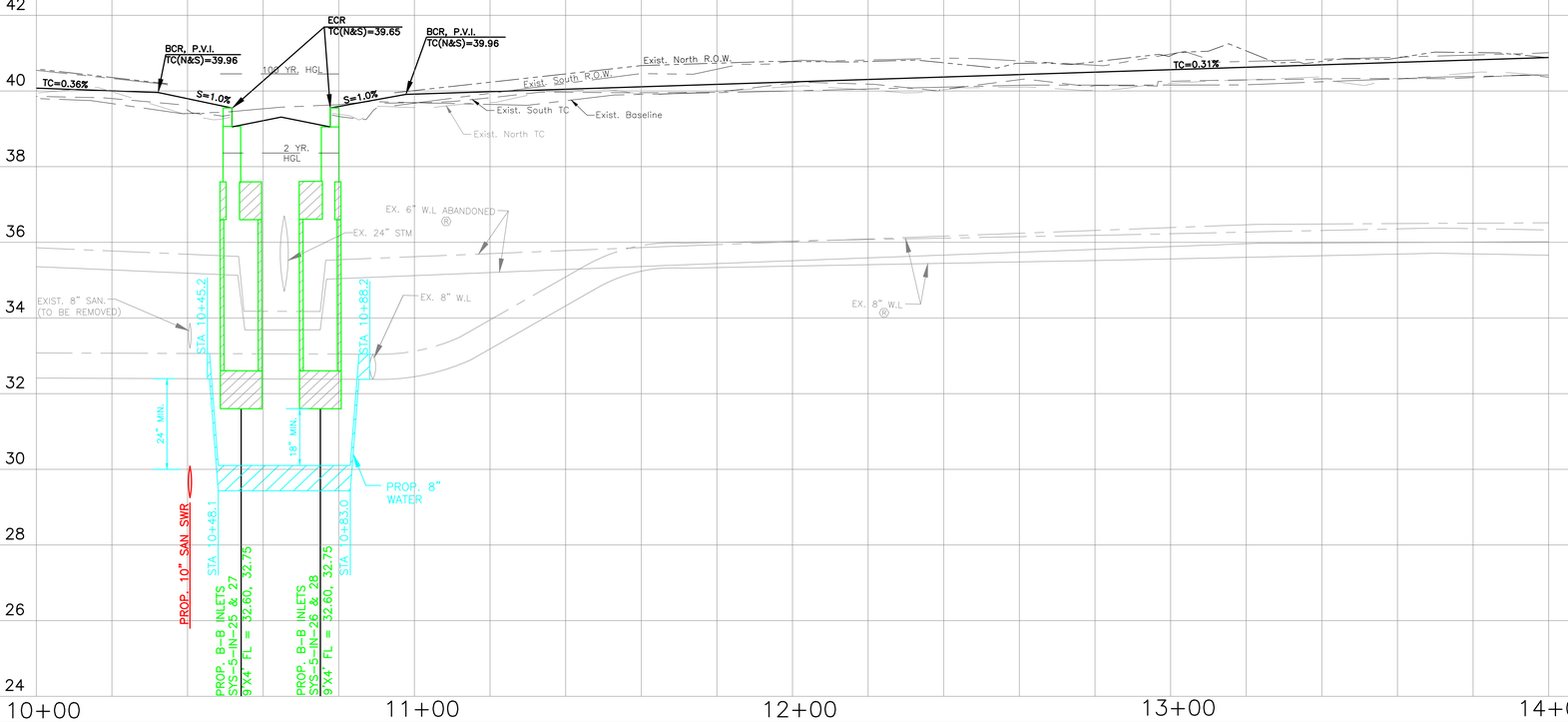

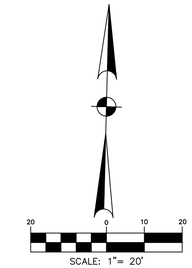

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PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

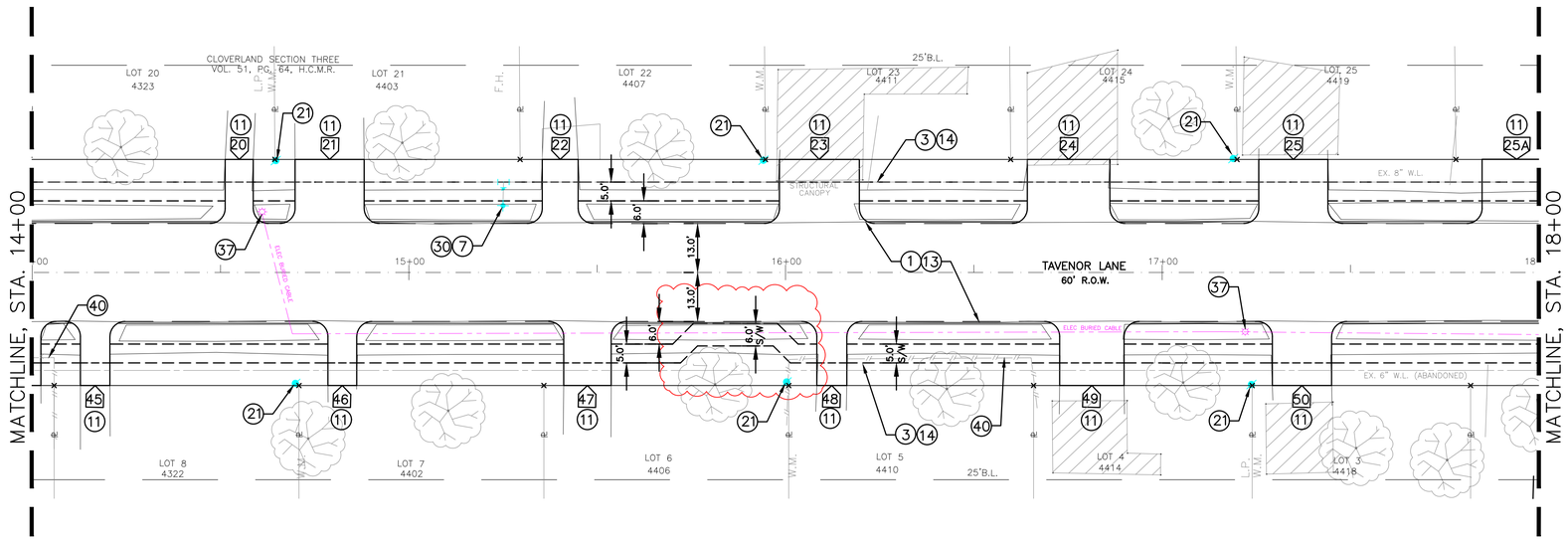
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

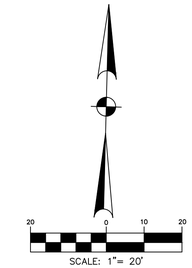
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TAVENOR LANE
PLAN AND PROFILE
STA 10+00 TO STA 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 54 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\054-TAVE-PP03.DWG AUG. 03, 2026-8:19am





LEGEND

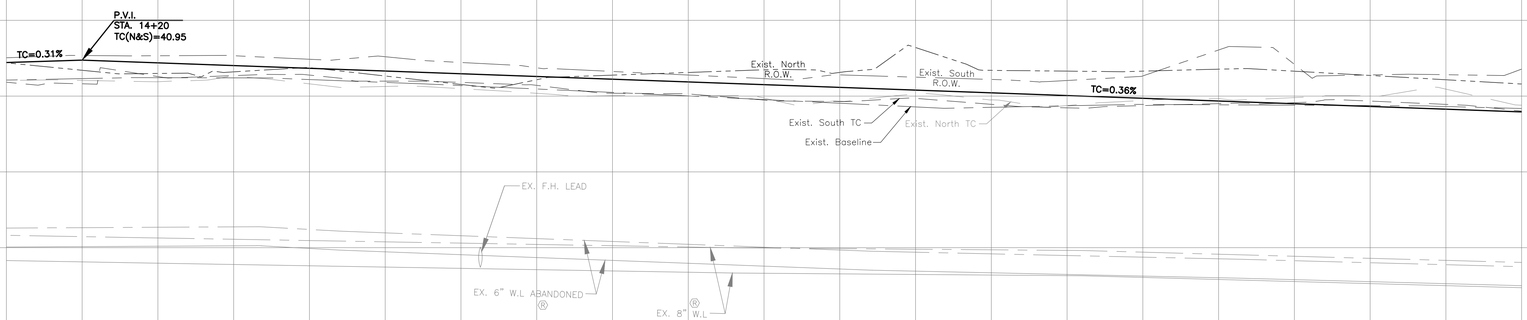
(1) KEY NOTES SEE SHEET 5

(10) DRIVEWAY DATA SEE SHEET 78

(A) PAVEMENT GEOMETRY (SEE TABLE)

(R) RECORD DRAWING

TAVENOR LANE



LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARKS:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

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TBM "C":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED AT THE NW CORNER OF MADDEN LN AND DONEGAL WAY.
ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE 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 TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CENTERPOINT ENERGY/UNDERGROUND ELECRICAL FACILITIES VERIFICATION ONLY.

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DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

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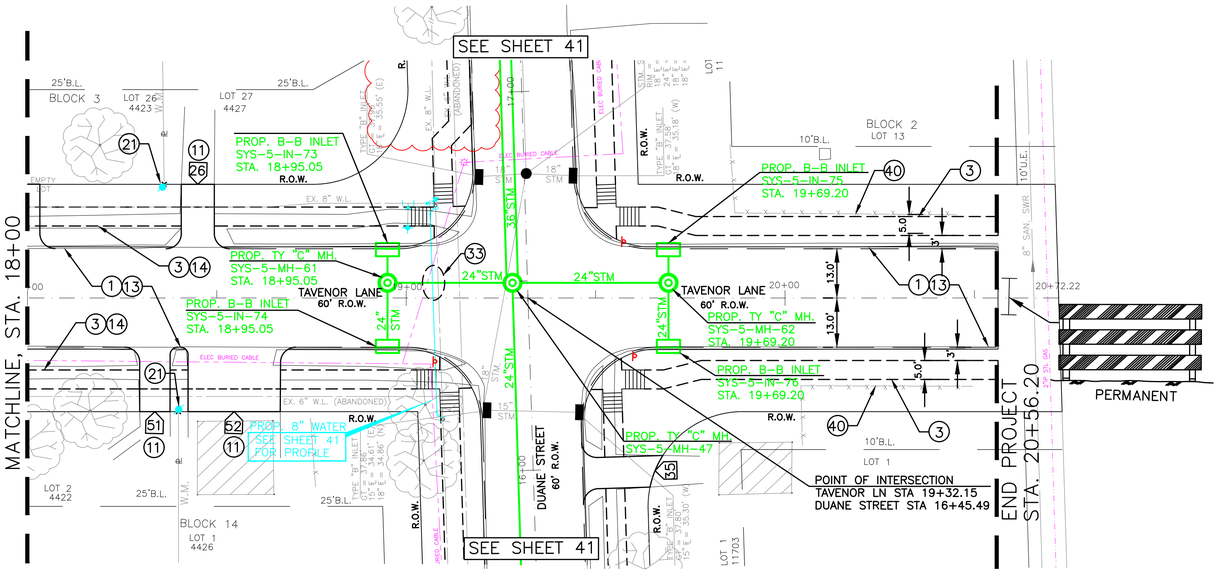
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

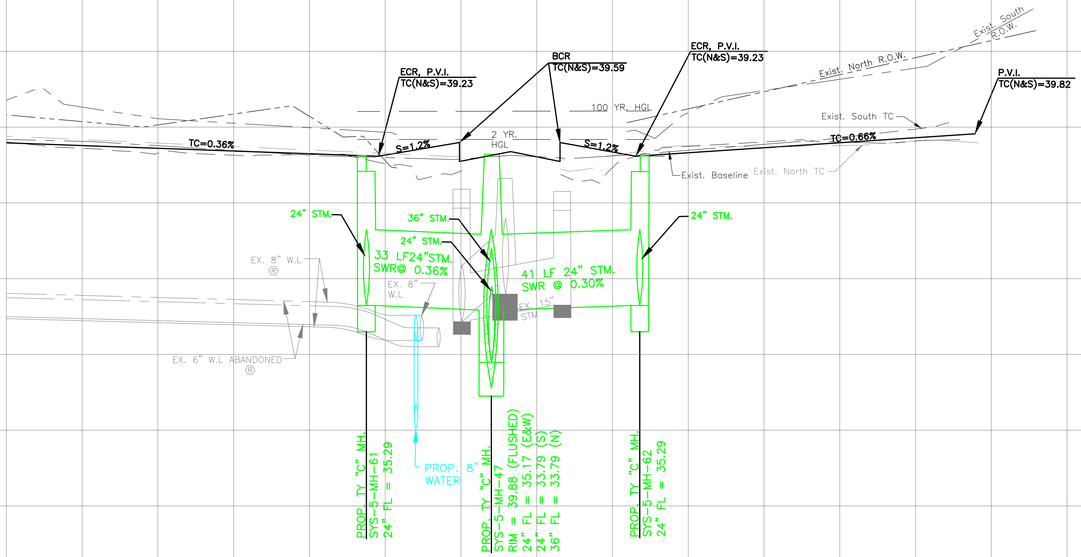
TAVENOR LANE
PLAN AND PROFILE
STA 14+00 TO STA 18+00

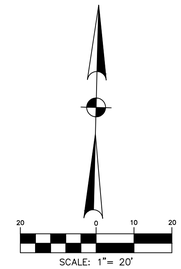
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 55 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\055-TAVE-PP04.DWG AUG. 03, 2026-8:21am



TAVENOR LANE





LEGEND

(1) KEY NOTES SEE SHEET 5

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(R) RECORD DRAWING

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VERIFICATION OF PRIVATE UTILITY LINES

DATE:

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dba TSC Engineering
10970 STANCLIFF RD
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TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

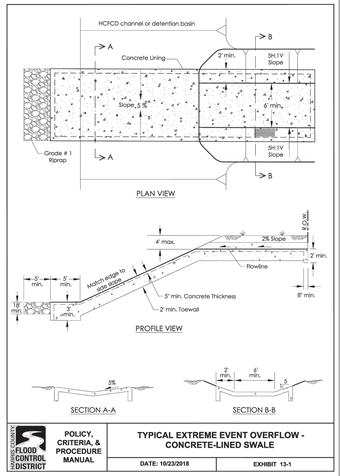
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

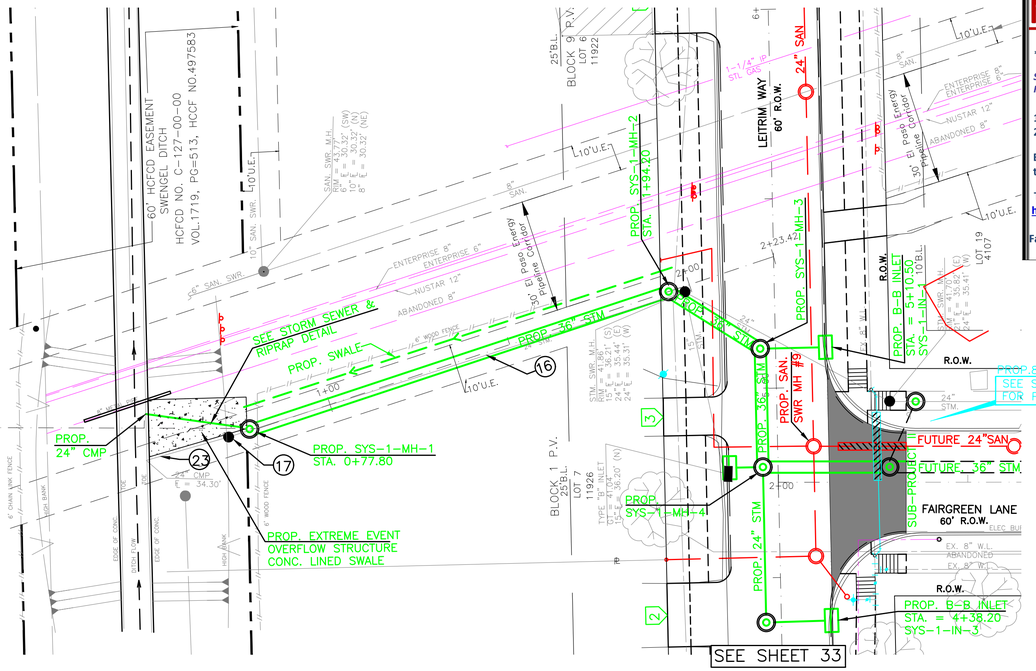
TAVENOR LANE
PLAN AND PROFILE
STA 18+00 TO 20+56.20

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 56 OF 159	

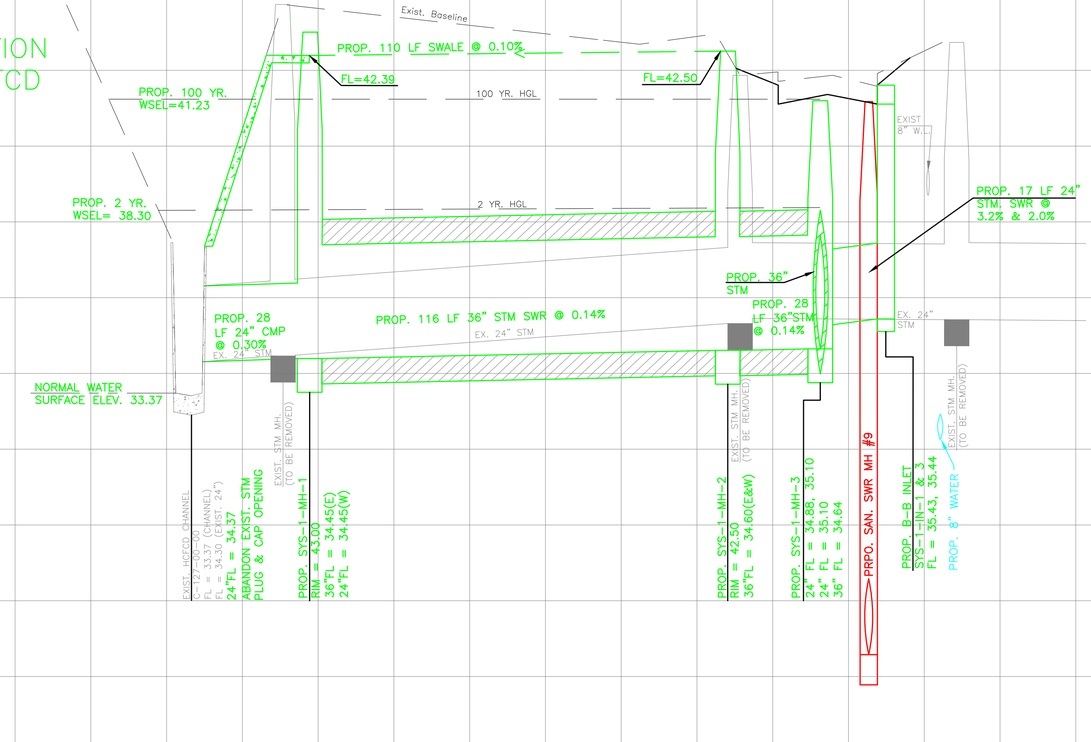
K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\056-TAVE-PP05.DWG AUG. 03, 2026-8:38am



SEE SHEET 33



SEE HCFCD APPROVED PLAN FOR CONSTRUCTION WITHIN HCFCD ROW



K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\057 HCFCD OUTFALL SYSTEM 1 PLAN AND PROFILE.DWG AUG. 03, 2026-8:37am

NOTICE:

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LEGEND
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⑩ DRIVEWAY DATA SEE SHEET 78
Ⓐ PAVEMENT GEOMETRY (SEE TABLE)
Ⓡ RECORD DRAWING

SCALE: 1"= 20'

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NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
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LICENSED
PROFESSIONAL ENGINEER
8/3/2026

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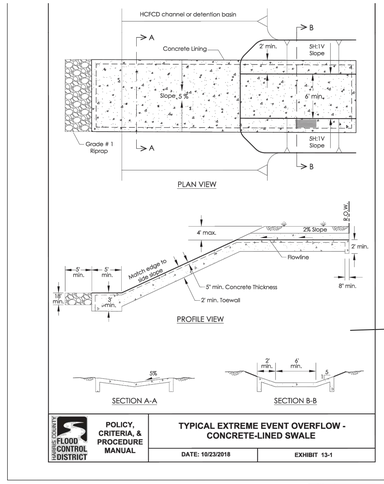
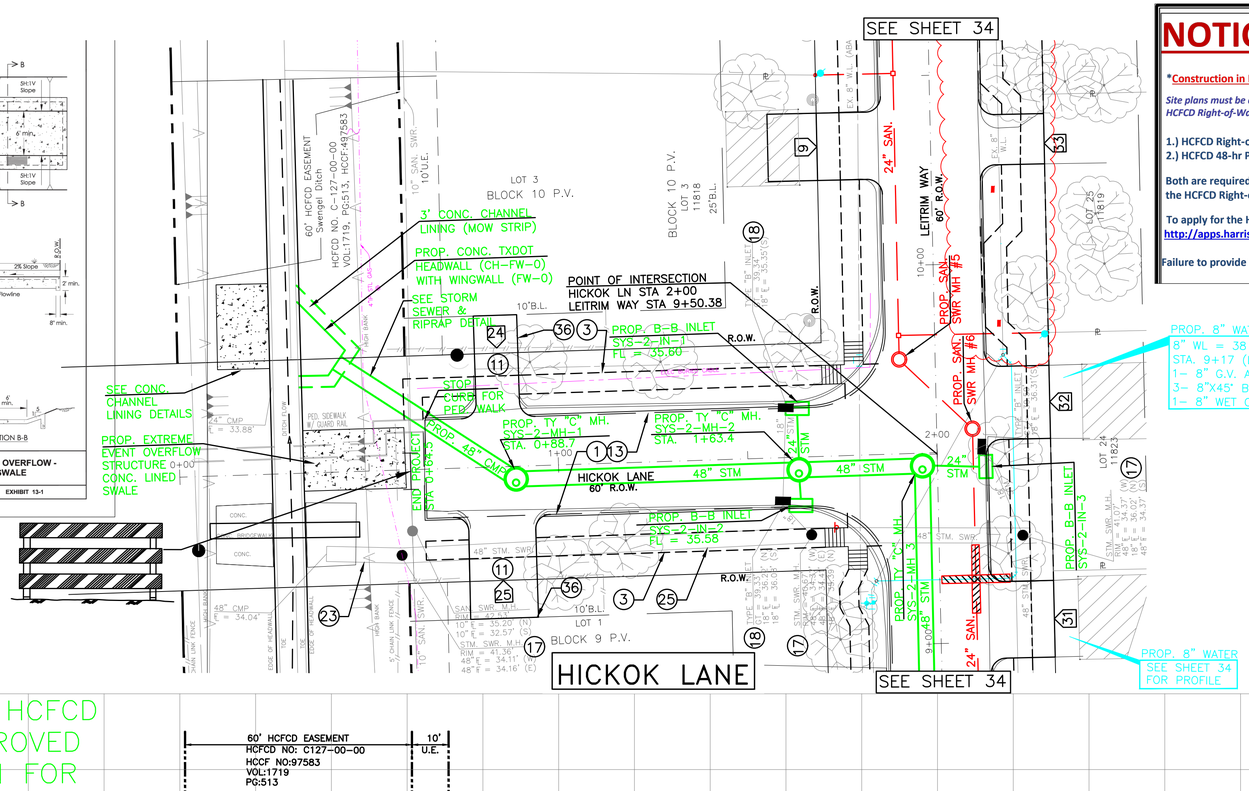
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

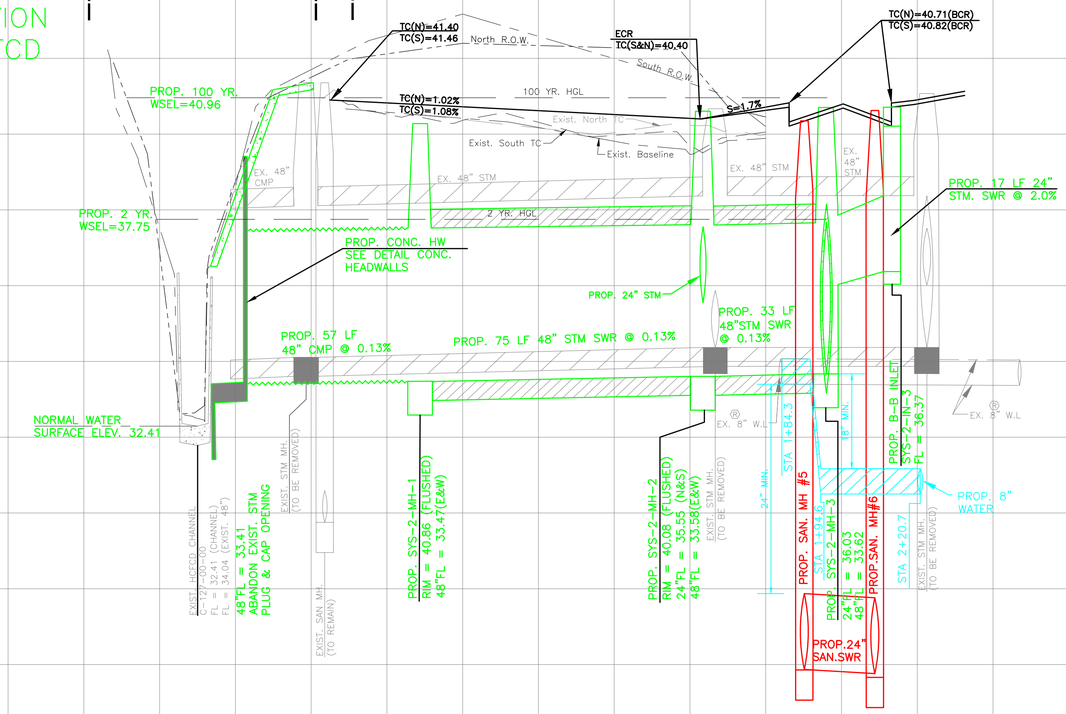
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

HCFCD OUTFALL SYSTEM 1 PLAN AND PROFILE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ. 1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 57 OF 159	







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LEGEND
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A PAVEMENT GEOMETRY (SEE TABLE)
R RECORD DRAWING

SCALE: 1"= 20'

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STATE OF TEXAS
DARIUOSH S. KERMANY
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8/3/2026

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FB NO.

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HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

HCFCD OUTFALL SYSTEM 2 AND HICKOK LANE PLAN AND PROFILE STA 0+65 TO STA 2+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
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OMAR ABDULKAREEM, P.E.	
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K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\058 HCFCD OUTFALL SYSTEM 2 PLAN AND PROFILE.DWG AUG. 03, 2026-8:29am

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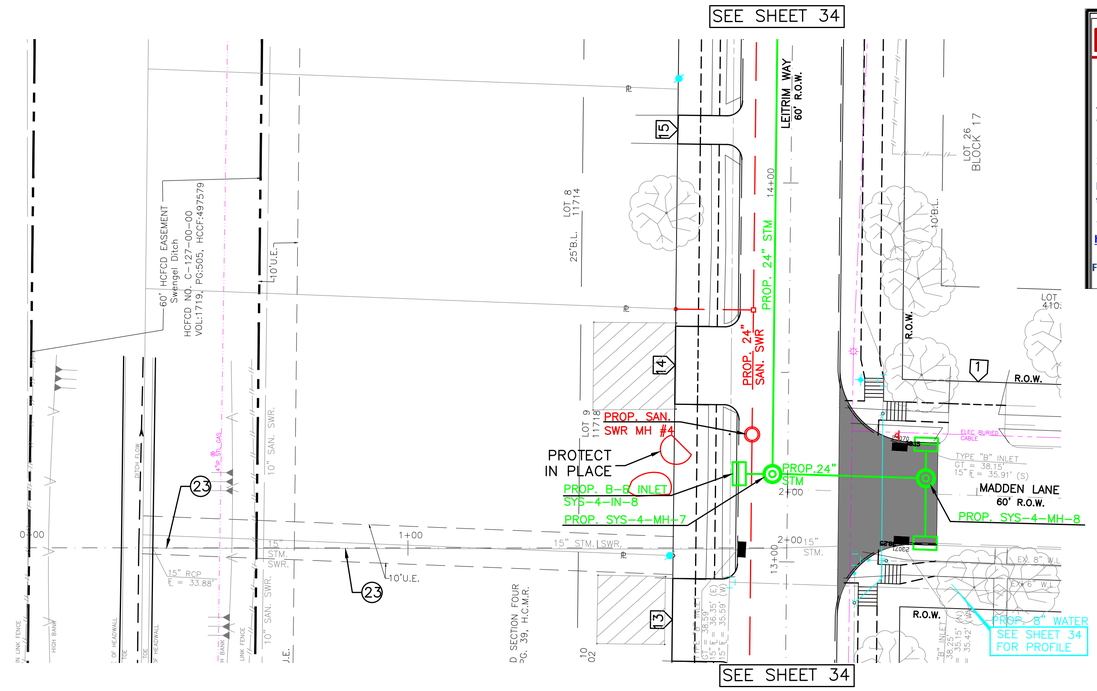

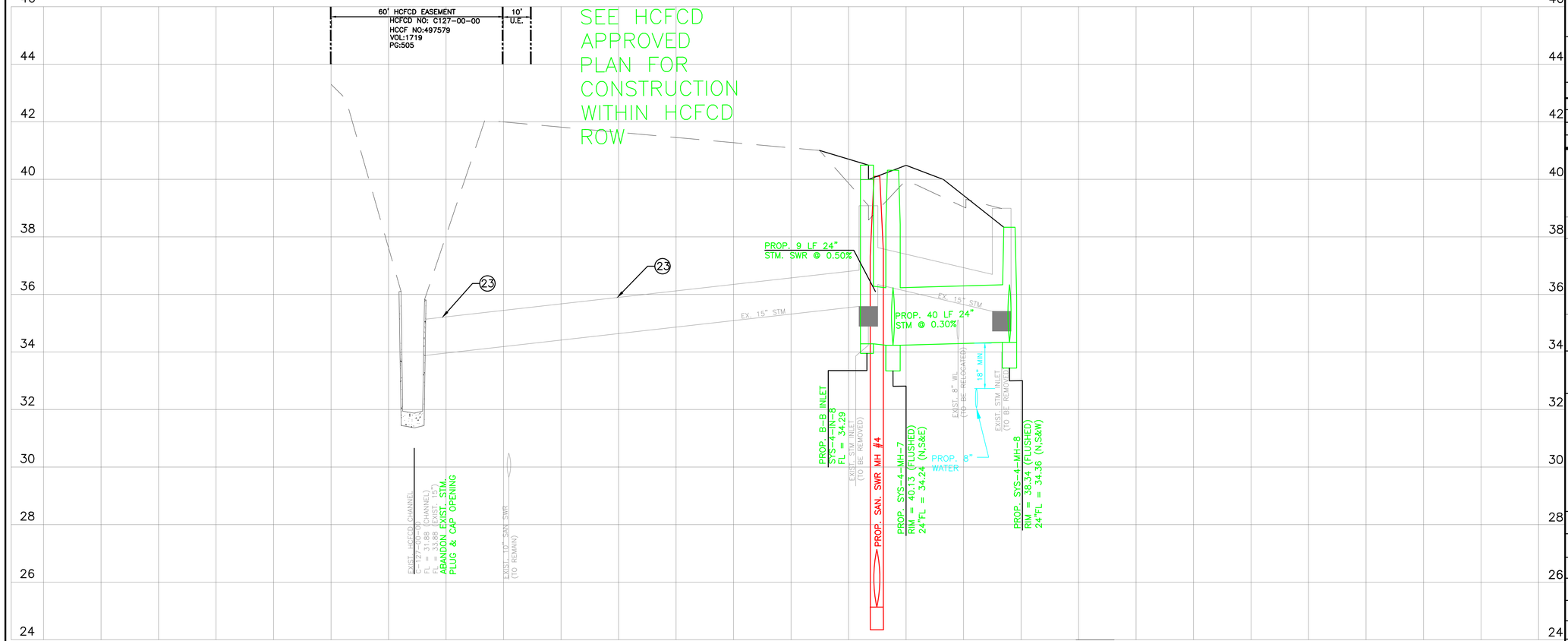

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(10) DRIVEWAY DATA SEE SHEET 78
(A) PAVEMENT GEOMETRY (SEE TABLE)
(R) RECORD DRAWING

SCALE: 1"= 20'

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
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THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE CAN BE MARKED.

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VERIFICATION OF PRIVATE UTILITY LINES

DATE:

CENTERPOINT ENERGY NATURAL GAS UTILITIES SHOWN. (GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

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CENTERPOINT ENERGY/UNDERGROUND ELECRICAL FACILITIES VERIFICATION ONLY.

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DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

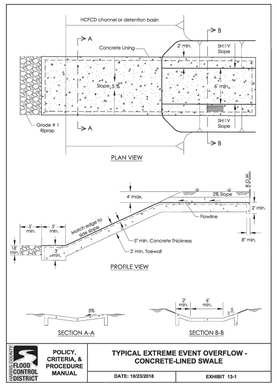
SURVEYED BY:GEOSURV, INC.
FB NO.

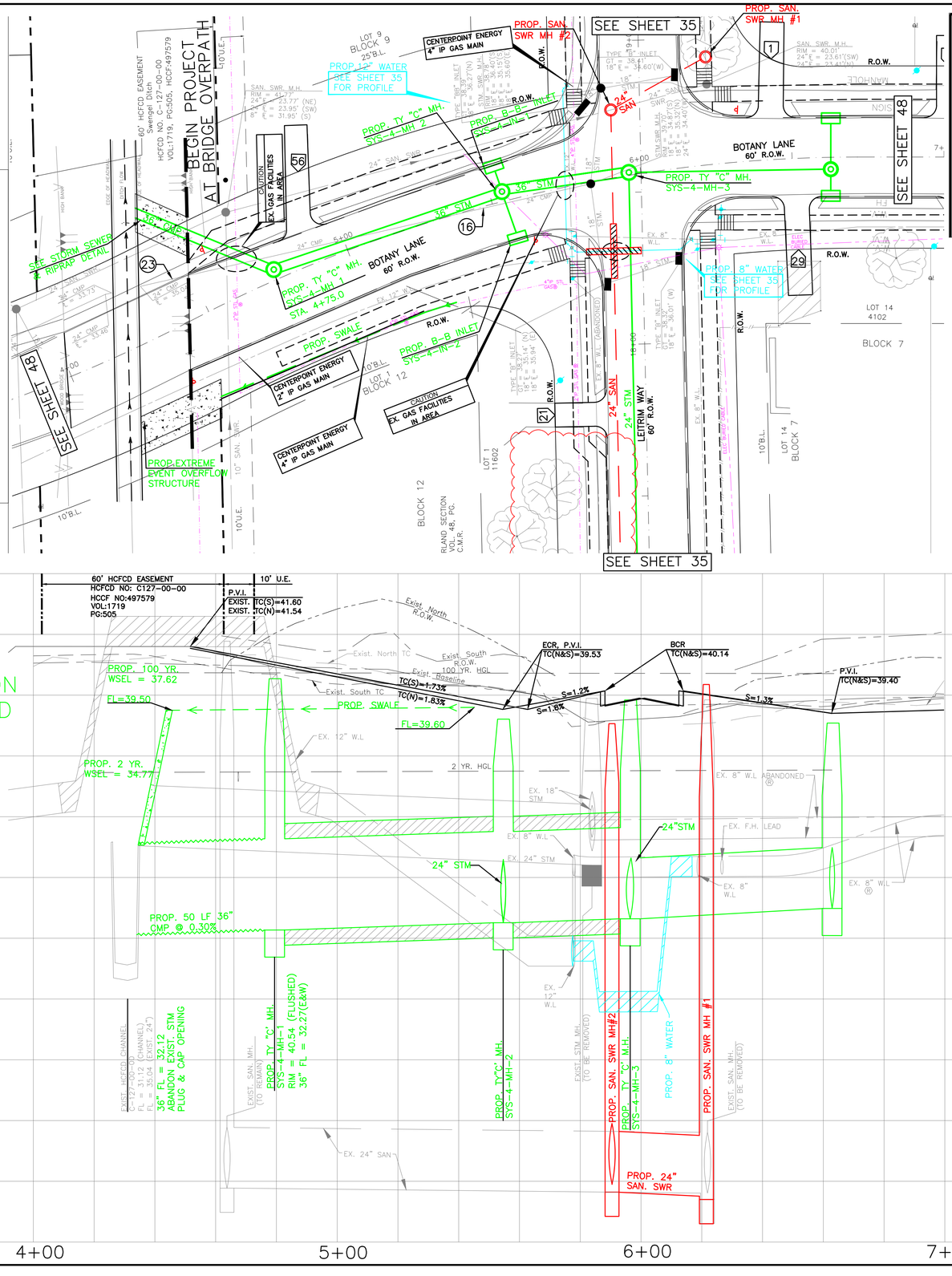
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

HCFCD OUTFALL SYSTEM 3 PLAN AND PROFILE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 59 OF 159	





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10. DRIVEWAY DATA SEE SHEET 78
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R. RECORD DRAWING

NOTICE:

*Construction in Harris County Flood Control District Right-of-Way requires:

Site plans must be approved prior to obtaining the required HCFCD Right-of-Way Notification. Be advised that the HCFCD Right-of-Way Notification is separate from the site development permit package.

1.) HCFCD Right-of-Way Notification (permit)
2.) HCFCD 48-hr Pre-Construction Notification

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Failure to provide both items could result in project delays.

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STATE OF TEXAS · DARIUOSH S. KERMANY · 93626 · LICENSED PROFESSIONAL ENGINEER
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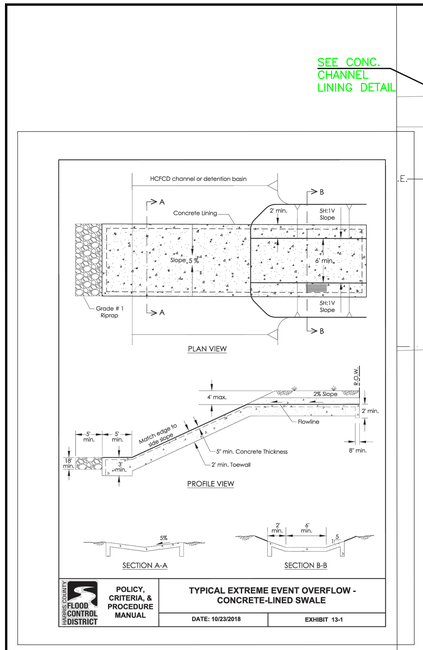
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

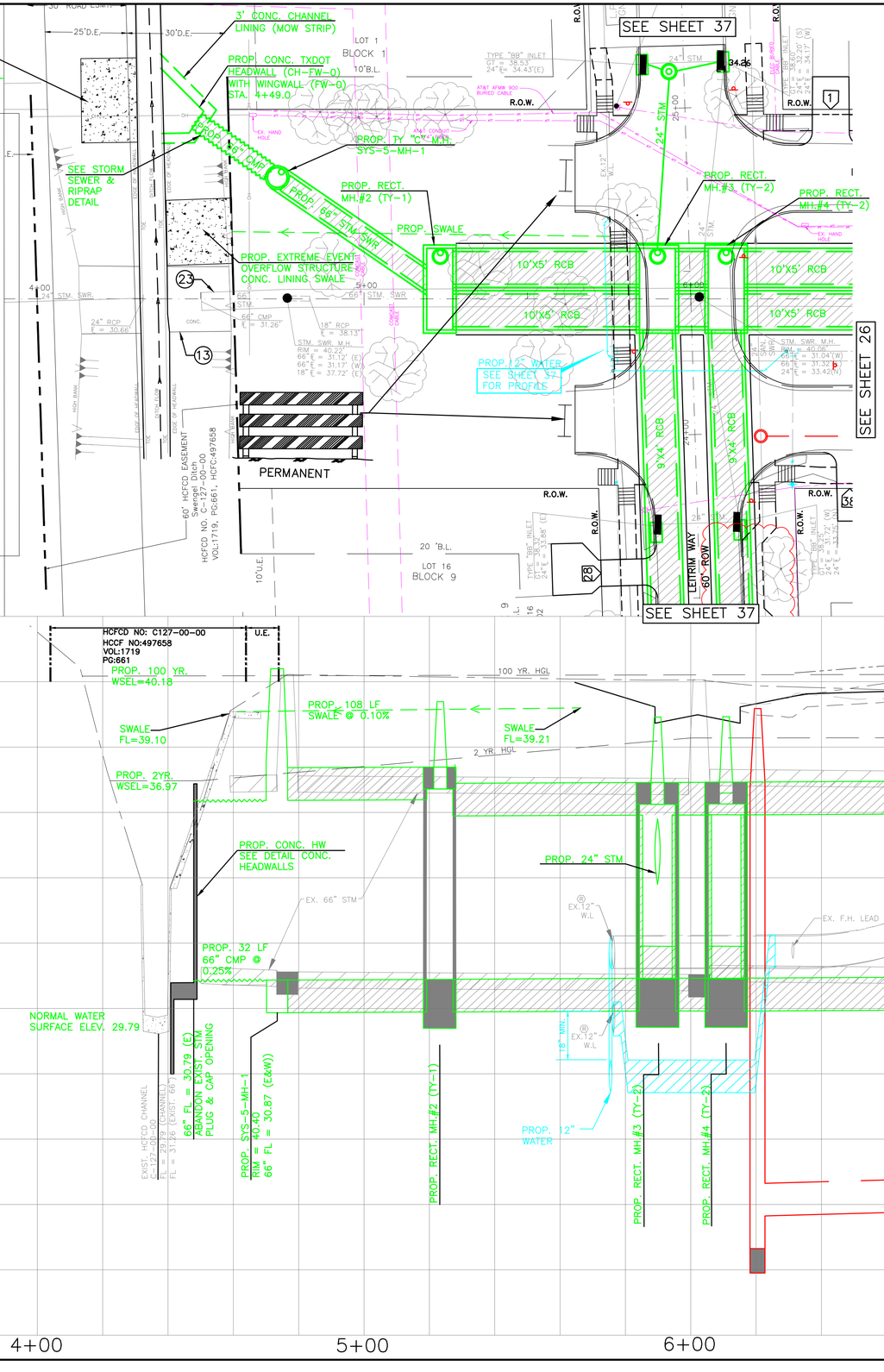
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

HCFCD OUTFALL SYSTEM 4 PLAN AND PROFILE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. 1"=2' HORIZ.1"=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 60 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\060 HCFCD OUTFALL SYSTEM 4 PLAN AND PROFILE.DWG AUG. 03, 2026-8:38am





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FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

HCFCD OUTFALL SYSTEM 5
PLAN AND PROFILE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1"=2' HORIZ."=20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
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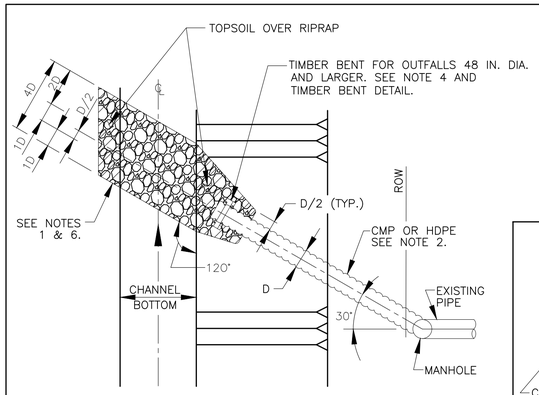
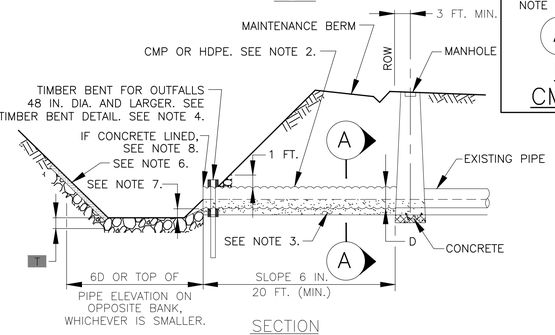
K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\ROADWAY\061 HCFCD OUTFALL SYSTEM 5 PLAN AND PROFILE.DWG AUG. 03, 2026-8:32am

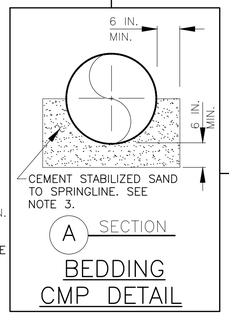


PLAN



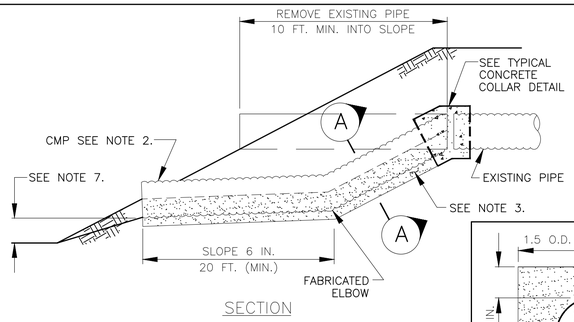
SECTION

TYPICAL STORM SEWER OUTFALL STRUCTURE LAYOUT



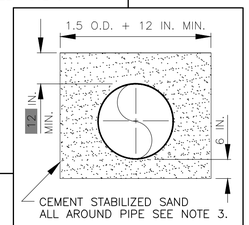
A SECTION

BEDDING CMP DETAIL



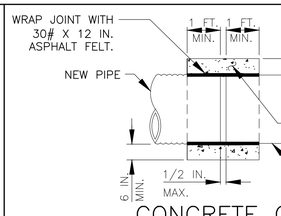
SECTION

PIPE ADJUSTMENT DETAIL 24–INCH TO 42–INCH DIAMETER

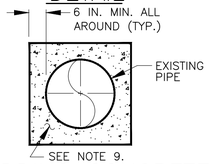


A SECTION

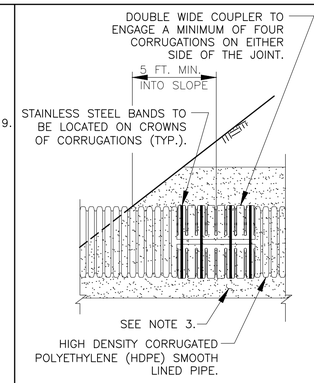
BEDDING HDPE PIPE DETAIL



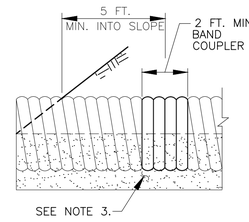
CONCRETE COLLAR DETAIL



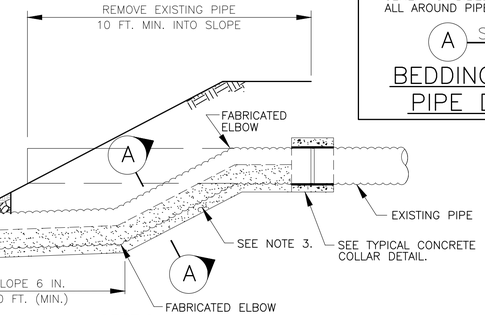
BEDDING CONCRETE PIPE DETAIL



HDPE PIPE BAND COUPLER DETAIL

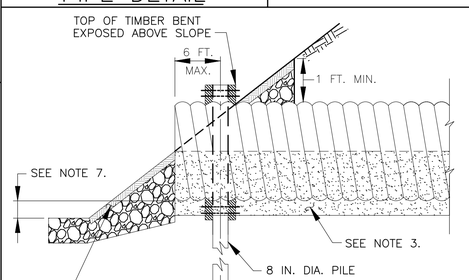


CMP BAND COUPLER DETAIL

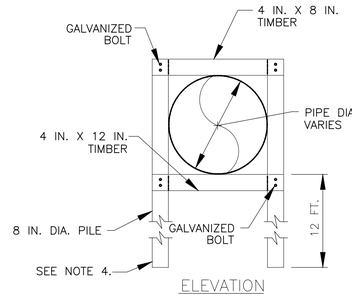


SECTION

PIPE ADJUSTMENT DETAIL 48–INCH AND LARGER DIAMETER

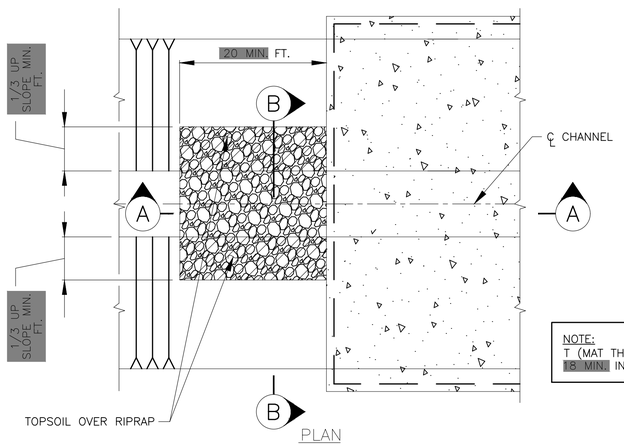


TYPICAL SECTION



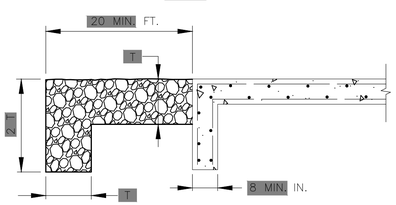
ELEVATION

TIMBER BENT DETAIL FOR 48–INCH AND LARGER OUTFALLS



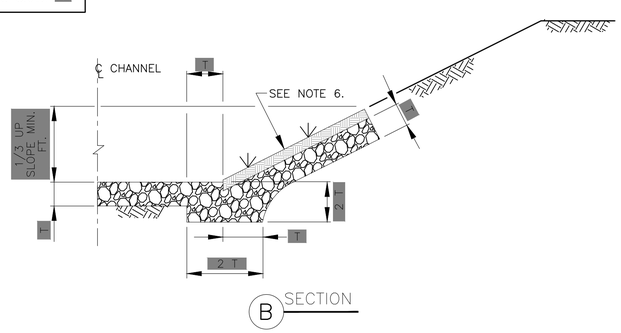
PLAN

NOTE:
T (MAT THICKNESS)
18 MIN. IN. GRADE 1



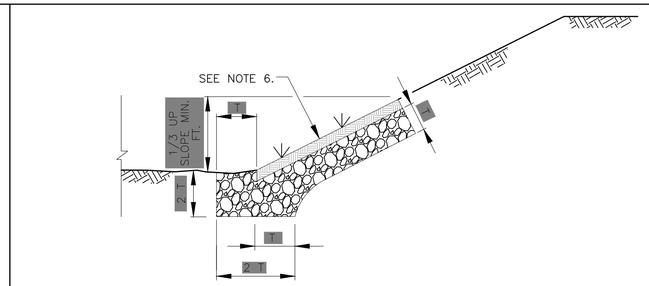
NOTE:
TOE–IN RIPRAP ACROSS CHANNEL BOTTOM & UP SLOPE. DO NOT PLACE TOE AGAINST CONCRETE.

A SECTION



B SECTION

TYPICAL RIPRAP AT CONCRETE CHANNEL LINING



TYPICAL RIPRAP LINING DETAIL–SIDE SLOPE ONLY

PIPE OUTFALL IN CHANNELS

BOTTOM WIDTH	PIPE OUTLET INVERT
6 FEET ≤ BW ≤ 20 FT	1 FOOT ABOVE FLOWLINE
20 FEET < BW ≤ 60 FT	AT TOE OF SLOPE
BW > 60 FT	AT TOE OF SLOPE

CORRUGATED GALVANIZED STEEL PIPE (TYPE I)

PIPE DIA. (in.)	2–2/3" X 1/2" CORRUGATION MIN.FILL* (in.)	SHEET THICKNESS gage	(in.)	(mm)	3" X 1" & 5" X 1" CORRUGATION MIN.FILL* (in.)	SHEET THICKNESS gage	(in.)	(mm)
24	12	16	.064	1.63	–	–	–	–
30	12	16	.064	1.63	–	–	–	–
36	12	16	.064	1.63	–	–	–	–
42	12	16	.064	1.63	12	16	.064	1.63
48	12	16	.064	1.63	12	16	.064	1.63
54	12	14	.079	2.01	12	16	.064	1.63
60	15	12	.109	2.77	12	16	.064	1.63
66	15	12	.109	2.77	15	16	.064	1.63
72	18	10	.138	3.51	15	16	.064	1.63
78	18	8	.168	4.27	18	16	.064	1.63
84	18	8	.168	4.27	18	14	.079	2.01
90	–	–	–	–	18	14	.079	2.01
96	–	–	–	–	18	14	.079	2.01

* MINIMUM DEPTH OF COVER ABOVE TOP OF PIPE, MAXIMUM DEPTH OF COVER ABOVE TOP OF PIPE IS 20 FEET.

STORM SEWER OUTFALL NOTES:

1. INSTALL OUTFALLS 48 INCHES OR LARGER AND TREATMENT PLANT OUTFALLS OF ANY DIAMETER, WITH RIPRAP EROSION DIMENSIONED AS SHOWN IN "TYPICAL STORM SEWER OUTFALL STRUCTURE LAYOUT."
2. STORM SEWER OUTFALL PIPES WITHIN THE HCFCD RIGHT–OF–WAY SHALL BE CMP OR HDPE IN ACCORDANCE WITH SPECIFICATION SECTION 02642–CORRUGATED METAL PIPE, HIGH DENSITY POLYETHYLENE PIPE (HDPE) IN ACCORDANCE WITH SPECIFICATION SECTION 02505–HIGH DENSITY POLYETHYLENE PIPE, OR APPROVED EQUAL. USE TABLE BELOW FOR CORRUGATED GALVANIZED STEEL PIPE.
3. PROVIDE AND PLACE CEMENT STABILIZED SAND IN ACCORDANCE WITH SPECIFICATION SECTION NO. 02321–CEMENT STABILIZED SAND.
4. TIMBER BENTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02464–TIMBER BENTS.
5. STORM SEWER OUTFALLS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02316–STRUCTURAL EXCAVATING AND BACKFILLING.
6. RIPRAP SHALL BE PLACED IN ACCORDANCE WITH SPECIFICATION SECTION 02378–RIPRAP AND GRANULAR FILL. FILL RIPRAP VOIDS AND BURY RIPRAP A MINIMUM OF 6 INCHES WITH TOPSOIL ON SIDE SLOPE AS DIRECTED BY THE ENGINEER.
7. IN DETENTION BASIN, SET FLOWLINE OF OUTFALL AT TOE OF THE SLOPE. IN CHANNEL, USE ELEVATION INDICATED IN THE TABLE OR 1 FOOT ABOVE NORMAL WATER LEVEL, WHICH EVER IS HIGHER.
8. SEE CONCRETE CHANNEL LINING DETAIL SHEET FOR CMP OR OUTFALL DETAILS THROUGH CONCRETE CHANNEL LINING.
9. STRUCTURAL CONCRETE #4 BARS (GRADE 40) 12 INCH O.C. EACH WAY – FOR COLLARS ONLY.

THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON HCFCD PROJECTS OR PROJECTS TO BE MAINTAINED BY THE HCFCD WHEN COMPLETED BY OTHERS. AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE §137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

P.E. SEAL AND SIGNATURE

REV	DESCRIPTION	DATE	APPR
1	DELETED "OR HDPE" FROM NOTE #8	2/8/11	SF

WBS NO: N–210004–0001–4

CLOVERLAND AREA
PAVING AND DRAINAGE

STORM SEWER AND
RIPRAP DETAILS

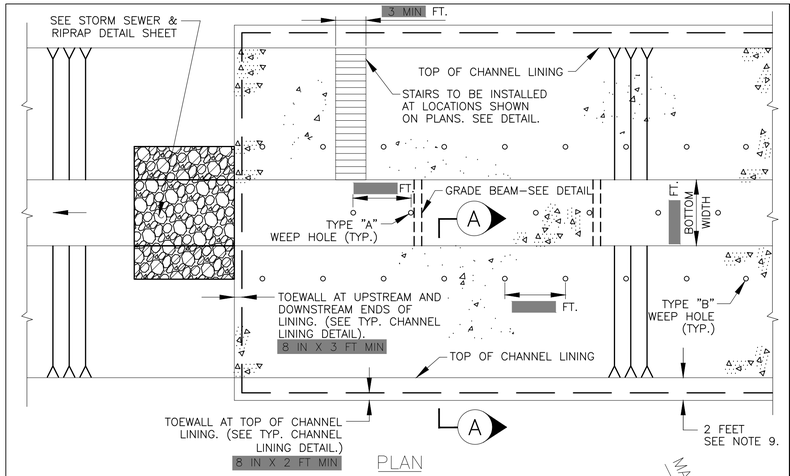
PREPARED: CHECKED: APPROVED:

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD.
HOUSTON, TEXAS 77099
TEL: 713.784-7797
TEXAS REGISTERED FIRM F-12428

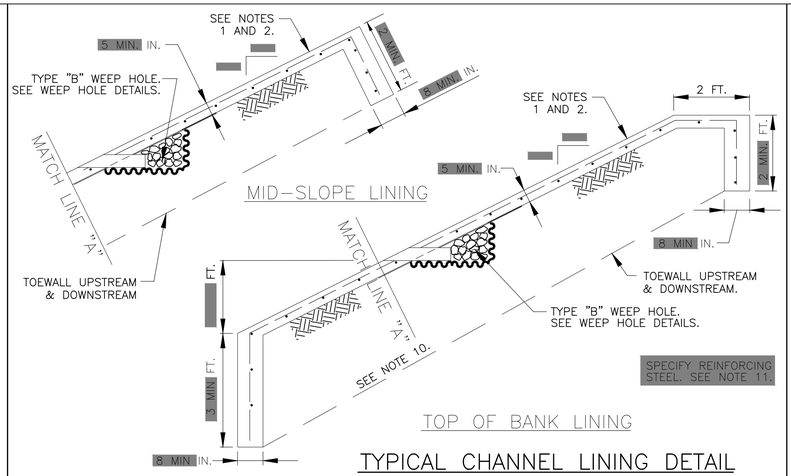
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 Northwest Freeway
Houston, Texas 77092

DATE: 12–21–2010
SCALE: NTS

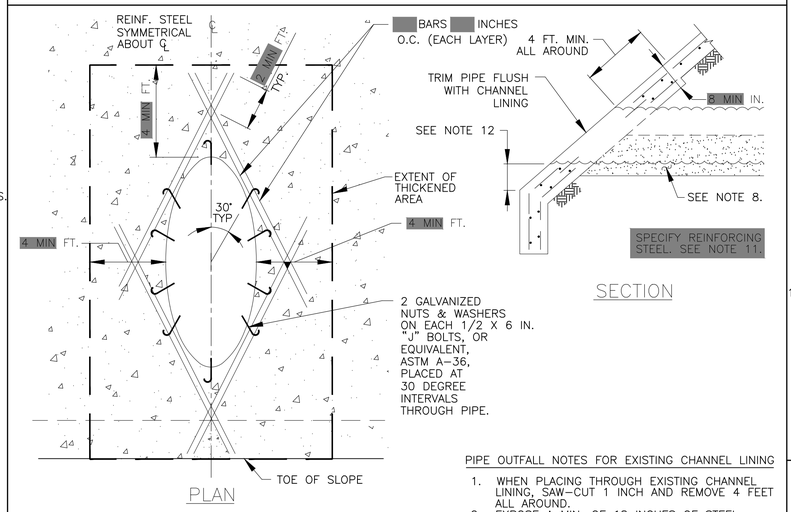
SHEET NUMBER
62 OF 159



TYPICAL TRAPEZOIDAL CHANNEL LINING



TYPICAL CHANNEL LINING DETAIL

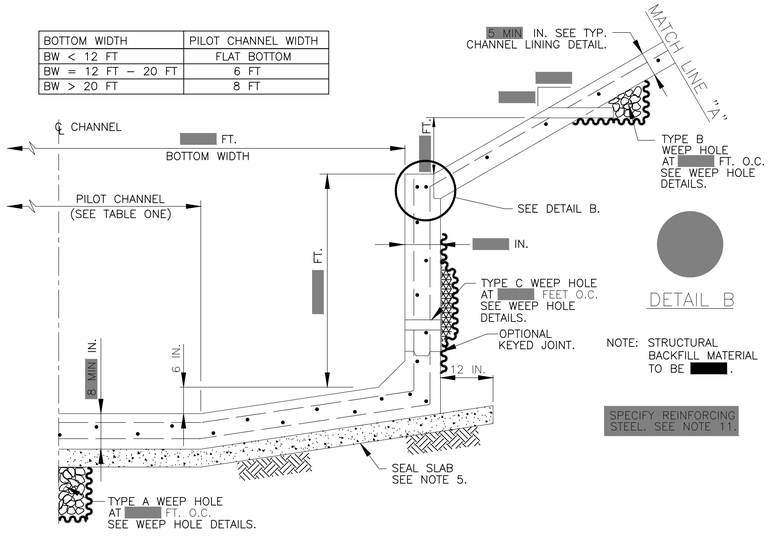


PIPE OUTFALL DETAILS
(FOR CMP OUTFALLS 24–42 INCH DIA. ONLY)

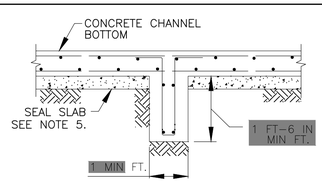
PIPE OUTFALL NOTES FOR EXISTING CHANNEL LINING

1. WHEN PLACING THROUGH EXISTING CHANNEL LINING, SAW–CUT 1 INCH AND REMOVE 4 FEET ALL AROUND.
2. EXPOSE A MIN. OF 18 INCHES OF STEEL.

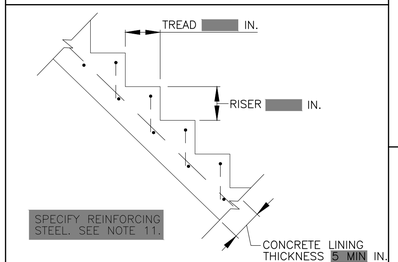
BOTTOM WIDTH	PILOT CHANNEL WIDTH
BW < 12 FT	FLAT BOTTOM
BW = 12 FT – 20 FT	6 FT
BW > 20 FT	8 FT



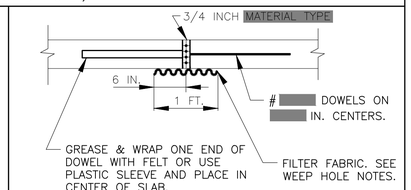
TYPICAL RECTANGULAR CONCRETE CHANNEL LINING HALF SECTION



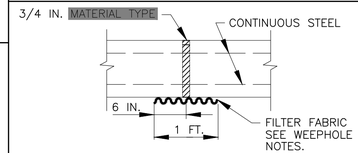
GRADE BEAM DETAIL
(SEE NOTE 6)



STAIR DETAIL



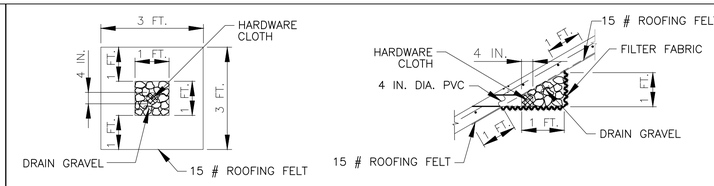
EXPANSION JOINT

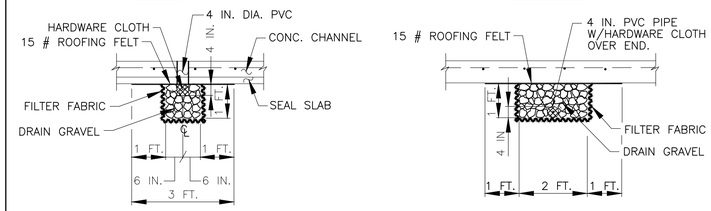


CONSTRUCTION JOINT

HALF JOINT
(SLOPES ONLY)

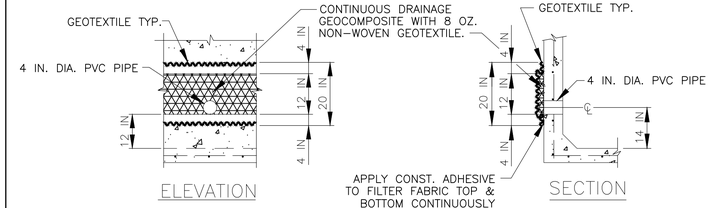
CONTROL JOINT





TYPE "A" WEEP HOLE

TYPE "B" WEEP HOLE



TYPE "C" WEEP HOLE

WEEP HOLE NOTES:

1. MATERIALS:
   a. PIPE: 4 INCH DIA. SCH. 40 PVC
   b. DRAIN GRAVEL:

SIEVE SIZE	% FINER
1 IN	100
3/4 IN	70 – 100
3/8 IN	20 – 90
NO. 4	0 – 60
NO. 8	0

   c. HARDWARE CLOTH: MIN. OPEN 1/8 IN, MAX. OPEN 1/4 IN
   d. FILTER FABRIC: NON–WOVEN GEOTEXTILE
   MIN. AOS SIEVE NO. 100 MIN
   MAX. AOS SIEVE NO. 70 MAX
   WEIGHT OZ/SY 6 OZ. MIN
2. CUT WEEP HOLE PIPE FLUSH WITH CONCRETE SURFACE.
3. TYPE "A" AND "C" WEEP HOLES FOR TYPICAL RECTANGULAR CONCRETE CHANNEL LINING. TO BE STAGGERED.

WEEP HOLE DETAILS

CONCRETE CHANNEL LINING DETAILS NOTES:

1. STRUCTURAL CONCRETE FOR CONCRETE CHANNEL LINING AND NONSTRUCTURAL CONCRETE FOR SEAL SLAB SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION NO. 03310–CONCRETE.
2. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION NO. 03310–CONCRETE.
3. EXCAVATION AND BACKFILL FOR CONCRETE CHANNEL LINING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION NO. 02316–STRUCTURAL EXCAVATING AND BACKFILLING.
4. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION NO. 02378–RIPRAP AND GRANULAR FILL.
5. A NON–REINFORCED 4 INCH MINIMUM NONSTRUCTURAL CONCRETE SEAL SLAB WILL BE REQUIRED BENEATH THE BOTTOM OF CONCRETE CHANNELS.
6. STRUCTURAL CONCRETE GRADE BEAMS SHALL BE INSTALLED TRANSVERSLEY AT 20 FOOT MAX. CENTERS ON CONCRETE LINED CHANNELS WITH BOTTOM WIDTHS EQUAL TO OR GREATER THAN 20 FEET.
7. JOINTS:
   A PLACE CONSTRUCTION AND/OR EXPANSION JOINT IN CONCRETE LOW–FLOW AND TRAPEZOIDAL BOTTOM SECTIONS AT 20 FOOT MIN., 60 FOOT MAX. SPACING CONTINUOUSLY THROUGH CHANNEL LINING.
   B. PLACE CONTROL JOINT ON SLOPES AT 20 FOOT SPACING.
8. CEMENT STABILIZED SAND SHALL BE PROVIDED AND PLACED IN ACCORDANCE WITH SPECIFICATION SECTION NO. 02321–CEMENT STABILIZED SAND.
9. DELETE 2 FT. FLAT EDGE WHEN LINING IS BELOW TOP OF BANK. SEE MID–SLOPE LINING DETAIL.
10. UPSTREAM AND DOWNSTREAM TOE WALL 3 FOOT MIN. DEPTH AT BOTTOM OF SLOPE AND 8 INCHES THIICK.
11. #4 AT 12 INCH O.C. MINIMUM OR EQUIVALENT WELDED WIRE FABRIC.
12. VARIES BASED ON SIDE SLOPE. MINIMUM 1 FOOT VERTICAL AT TOE OF SLOPE.

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P.E. SEAL AND SIGNATUARE

REV	DESCRIPTION	DATE	APPR

WBS NO: N–210004–0001–4

CLOVERLAND AREA
PAVING AND DRAINAGE

CONCRETE CHANNEL LINING DETAILS

PREPARED:

CHECKED:

APPROVED:

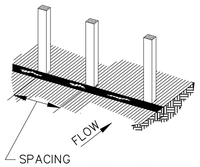
TRW ENGINEERS, INC.
dba TSC Engineering
10870 SYNCLIFF RD
HOUSTON, TX 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F–12428

HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 Northwest Freeway
Houston, Texas 77092

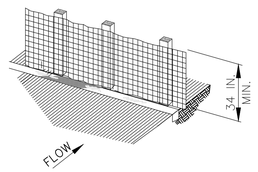
DATE: 12–21–2010
SCALE: NTS

SHEET NUMBER
63 OF 159

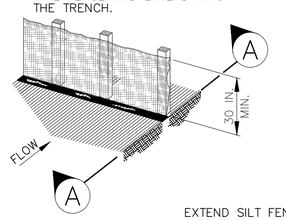
1. SET SUPPORTS AND EXCAVATE 4 IN. X 6 IN. TRENCH UPSLOPE ALONG LINE OF SUPPORTS.



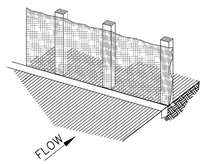
2. SECURE WIRE FENCING TO SUPPORTS.

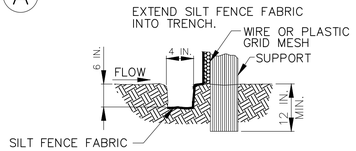


3. ATTACH SILT FENCE FABRIC TO WIRE FENCE AND EXTEND INTO THE TRENCH.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.





A SECTION

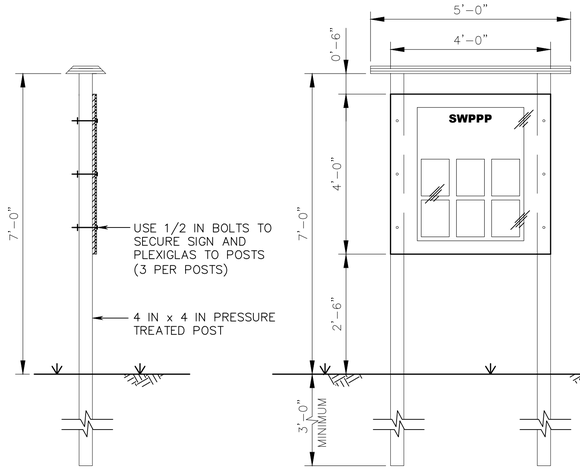
CONSTRUCTION NOTES:

1. SEE SPECIFICATION SECTION NO. 02361–SILT FENCES.

RSF SYMBOL — REINFORCED SILT FENCE

SF SYMBOL — SILT FENCE

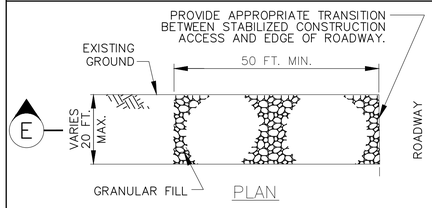
SILT FENCE



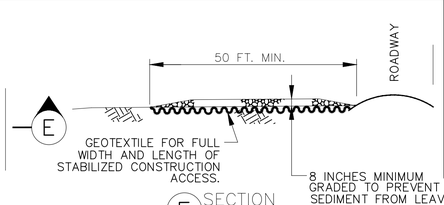
NOTE:
CONSTRUCT IN ACCORDANCE WITH HCFCD SPECIFICATION SECTION 01580 – PROJECT SIGNS.

LEFT SIDE FRONT CSN HOLDER

SWPPP / BMP SIGN AND CONSTRUCTION SITE NOTICE HOLDER DETAILS



PLAN



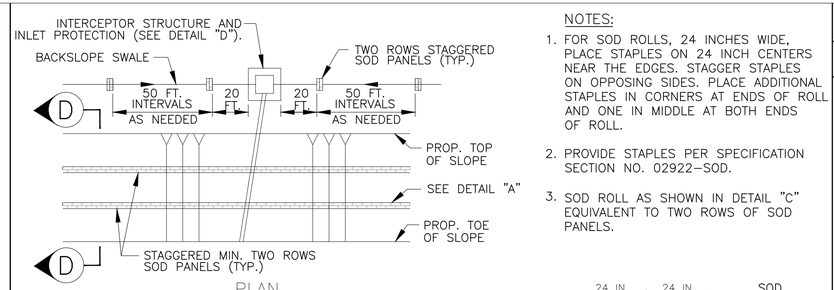
E SECTION

CONSTRUCTION NOTES:

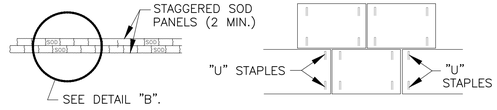
1. SEE SPECIFICATION SECTION NO. 02365–STABILIZED CONSTRUCTION ACCESS.

SCA SYMBOL

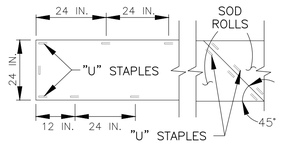
STABILIZED CONSTRUCTION ACCESS



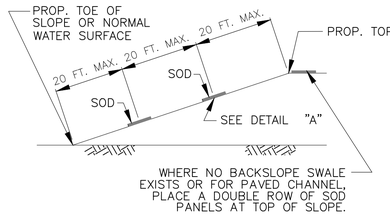
PLAN



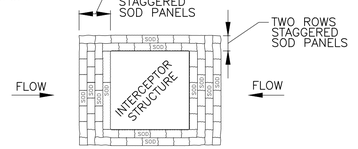
DETAIL "A" DETAIL "B"



DETAIL "C"



D SECTION



DETAIL "D"
INTERCEPTOR STRUCTURE & INLET PROTECTION

SOD SYMBOL IP SYMBOL

SODDING

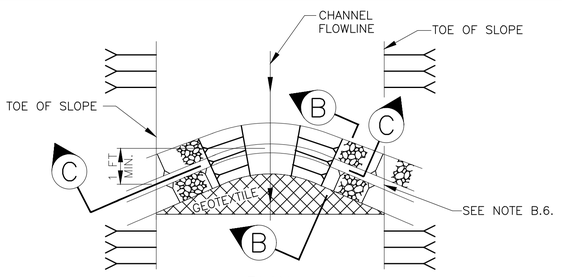
NOTES:

1. FOR SOD ROLLS, 24 INCHES WIDE, PLACE STAPLES ON 24 INCH CENTERS NEAR THE EDGES. STAGGER STAPLES ON OPPOSING SIDES. PLACE ADDITIONAL STAPLES IN CORNERS AT ENDS OF ROLL AND ONE IN MIDDLE AT BOTH ENDS OF ROLL.
2. PROVIDE STAPLES PER SPECIFICATION SECTION NO. 02922–SOD.
3. SOD ROLL AS SHOWN IN DETAIL "C" EQUIVALENT TO TWO ROWS OF SOD PANELS.

FILTER DAM NOTES:

A. TYPES OF FILTER DAMS
   1. TYPE 1 (NON–REINFORCED)
      a. HEIGHT – 18–24 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
      b. TOP WIDTH – 2 FEET (MINIMUM)
      c. SLOPES – 2:1 (MAXIMUM).
   2. TYPE 2 (REINFORCED).
      a. HEIGHT – 18–36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
      b. TOP WIDTH – 2 FEET (MINIMUM).
      c. SLOPES – 2:1 (MAXIMUM).
   3. TYPE 3 (REINFORCED)
      a. HEIGHT – 36–48 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
      b. TOP WIDTH – 2 FEET (MINIMUM).
      c. SLOPES – 3:1 (MAXIMUM).
   4. TYPE 4 (GABION)
      a. HEIGHT – 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
      b. TOP WIDTH – 2 FEET (MINIMUM).
   5. TYPE 5. AS SHOWN ON THE PLANS.

B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.
   1. TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
   2. GRANULAR FILL:
      a. PLACE ON MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
      b. 3–5 INCHES FOR ROCK FILTER DAM TYPES 1,2, AND 4 AND 4–8 INCHES FOR ROCK FILTER DAM TYPE 3. REFER TO GRANULAR FILL IN SPECIFICATION SECTION NO. 02378–RIPRAP AND GRANULAR FILL.
   3. WIRE MESH: FOLD AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURE TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
   4. IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
   5. SEE SPECIFICATION SECTION NO. 02364–FILTER DAMS.
   6. EMBED ONE FOOT MINIMUM INTO SLOPE AND AT SLOPE RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA.

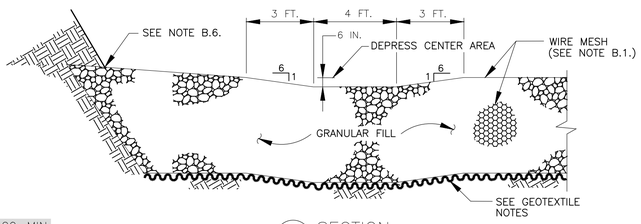


PLAN

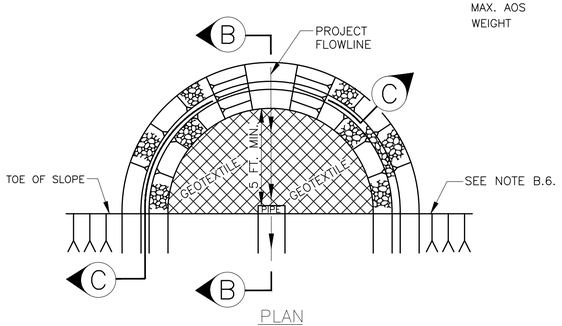
IN–CHANNEL FILTER DAM

GEOTEXTILE NOTES:

MIN. AOS	SIEVE NO.	120 MIN
MAX. AOS	SIEVE NO.	50 MAX
WEIGHT	OZ/SY	4 OZ. MIN

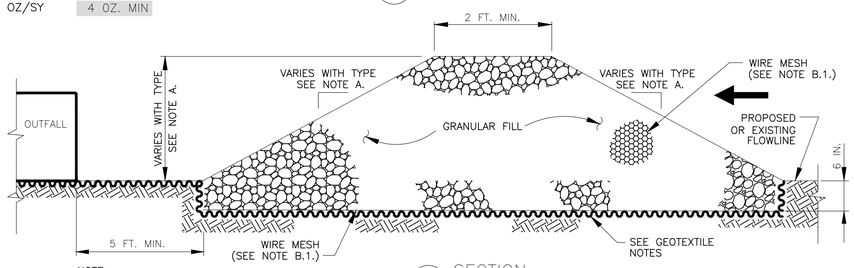


C SECTION



PLAN

FILTER DAM AT DETENTION BASIN OUTFALL PIPE



NOTE:
ONLY APPLIES FOR DETENTION BASIN OUTFALL PIPE PROTECTION.

B SECTION

FILTER DAM

FD–TYPE SYMBOL

THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON HCFCD PROJECTS OR PROJECTS TO BE MAINTAINED BY THE HCFCD WHEN COMPLETED BY OTHERS. AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE §137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

P.E. SEAL AND SIGNATURE

REV	DESCRIPTION	DATE	APPR

WBS NO: N–210004–0001–4

CLOVERLAND AREA
PAVING AND DRAINAGE

STORMWATER POLLUTION PREVENTION DETAILS

PREPARED: CHECKED: APPROVED:

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
TEL: 713.541.7777
TEXAS REGISTERED FIRM F-12428

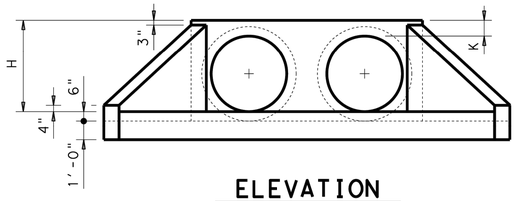
HARRIS COUNTY FLOOD CONTROL DISTRICT
9900 Northwest Freeway
Houston, Texas 77092

DATE: 08–31–05
SCALE: NTS

SHEET NUMBER
64 OF 159

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (4)

SLOPE	DIA OF PIPE, D	Values for one Pipe						Values to be added for each addt'l Pipe		
		W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	X and W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	4'- 7 1/2"	2'- 6"	2'-10"	3'- 3 1/4"	84	0.6	1'- 9"	20	0.2
	15"	5'- 5 3/4"	2'- 9 1/2"	3'- 4"	3'-10 1/4"	99	0.7	2'- 2"	24	0.3
	18"	6'- 4 1/4"	3'- 1"	3'-10"	4'- 5"	120	0.9	2'- 8"	32	0.3
	21"	7'- 2 3/4"	3'- 4 1/2"	4'- 4"	5'- 0"	137	1.1	3'- 1"	43	0.4
	24"	8'- 2 1/2"	3'- 9 1/2"	4'-10"	5'- 7"	158	1.3	3'- 7"	50	0.5
	27"	9'- 1"	4'- 1"	5'- 4"	6'- 2"	173	1.5	3'-11"	56	0.6
	30"	9'-11 1/2"	4'- 4 1/2"	5'-10"	6'- 8 3/4"	197	1.7	4'- 4"	65	0.8
	33"	10'-10"	4'- 8"	6'- 4"	7'- 3 3/4"	216	2.0	4'- 8"	71	0.9
	36"	11'- 8 1/4"	4'-11 1/2"	6'-10"	7'-10 3/4"	241	2.2	5'- 1"	81	1.0
	42"	13'- 5 1/4"	5'- 6 1/2"	7'-10"	9'- 0 1/2"	290	2.8	5'-10"	97	1.3
	48"	15'- 9"	6'- 1 1/2"	9'- 4"	10'- 9 1/4"	350	3.8	6'- 7"	117	1.7
	54"	17'- 5 3/4"	6'- 8 1/2"	10'- 4"	11'-11 1/4"	415	4.5	7'- 6"	151	2.1
	60"	19'- 2 3/4"	7'- 3 1/2"	11'- 4"	13'- 1"	469	5.3	8'- 3"	174	2.5
	66"	20'-11 1/2"	7'-10 1/2"	12'- 4"	14'- 3"	530	6.2	8'- 9"	194	2.9
	72"	22'- 8 1/2"	8'- 5 1/2"	13'- 4"	15'- 4 3/4"	587	7.1	9'- 4"	213	3.3
3:1	12"	6'- 3"	2'- 6"	4'- 3"	4'-11"	114	0.8	1'- 9"	22	0.2
	15"	7'- 5"	2'- 9 1/2"	5'- 0"	5'- 9 1/4"	133	1.1	2'- 2"	28	0.3
	18"	8'- 6 3/4"	3'- 1"	5'- 9"	6'- 7 3/4"	166	1.3	2'- 8"	37	0.5
	21"	9'- 8 3/4"	3'- 4 1/2"	6'- 6"	7'- 6"	189	1.6	3'- 1"	48	0.6
	24"	11'- 0"	3'- 9 1/2"	7'- 3"	8'- 4 1/2"	221	2.0	3'- 7"	58	0.7
	27"	12'- 2"	4'- 1"	8'- 0"	9'- 2 3/4"	245	2.3	3'-11"	67	0.8
	30"	13'- 4"	4'- 4 1/2"	8'- 9"	10'- 1 1/4"	287	2.7	4'- 4"	77	1.0
	33"	14'- 5 3/4"	4'- 8"	9'- 6"	10'-11 3/4"	310	3.1	4'- 8"	84	1.2
	36"	15'- 7 3/4"	4'-11 1/2"	10'- 3"	11'-10"	343	3.5	5'- 1"	96	1.4
	42"	17'-11 1/2"	5'- 6 1/2"	11'- 9"	13'- 6 3/4"	424	4.5	5'-10"	119	1.7
	48"	21'- 1 3/4"	6'- 1 1/2"	14'- 0"	16'- 2"	527	6.1	6'- 7"	146	2.3
	54"	23'- 5 1/2"	6'- 8 1/2"	15'- 6"	17'-10 3/4"	618	7.3	7'- 6"	186	2.9
	60"	25'- 9 1/4"	7'- 3 1/2"	17'- 0"	19'- 7 1/2"	707	8.7	8'- 3"	219	3.4
	66"	28'- 1"	7'-10 1/2"	18'- 6"	21'- 4 1/4"	797	10.1	8'- 9"	242	3.9
	72"	30'- 4 3/4"	8'- 5 1/2"	20'- 0"	23'- 1 1/4"	910	11.7	9'- 4"	272	4.4
4:1	12"	7'-10 3/4"	2'- 6"	5'- 8"	6'- 6 1/2"	144	1.1	1'- 9"	24	0.3
	15"	9'- 4"	2'- 9 1/2"	6'- 8"	7'- 8 1/2"	177	1.5	2'- 2"	32	0.4
	18"	10'- 9 1/2"	3'- 1"	7'- 8"	8'-10 1/4"	217	1.9	2'- 8"	42	0.5
	21"	12'- 2 3/4"	3'- 4 1/2"	8'- 8"	10'- 0"	254	2.3	3'- 1"	57	0.7
	24"	13'- 9 1/2"	3'- 9 1/2"	9'- 8"	11'- 2"	295	2.8	3'- 7"	67	0.9
	27"	15'- 3"	4'- 1"	10'- 8"	12'- 3 3/4"	328	3.3	3'-11"	77	1.0
	30"	16'- 8 1/4"	4'- 4 1/2"	11'- 8"	13'- 5 3/4"	379	3.8	4'- 4"	89	1.3
	33"	18'- 1 3/4"	4'- 8"	12'- 8"	14'- 7 1/2"	417	4.5	4'- 8"	101	1.4
	36"	19'- 7"	4'-11 1/2"	13'- 8"	15'- 9 1/4"	464	5.1	5'-1"	115	1.7
	42"	22'- 5 3/4"	5'- 6 1/2"	15'- 8"	18'- 1"	575	6.5	5'-10"	141	2.1
	48"	26'- 6 1/4"	6'- 1 1/2"	18'- 8"	21'- 6 3/4"	720	8.9	6'- 7"	175	2.8
	54"	29'- 5"	6'- 8 1/2"	20'- 8"	23'-10 1/4"	863	10.7	7'- 6"	226	3.6
	60"	32'- 3 3/4"	7'- 3 1/2"	22'- 8"	26'- 2"	984	12.7	8'- 3"	264	4.3
	66"	35'- 2 1/2"	7'-10 1/2"	24'- 8"	28'- 5 3/4"	1126	14.9	8'- 9"	300	4.9
	72"	38'- 1 1/4"	8'- 5 1/2"	26'- 8"	30'- 9 1/2"	1283	17.3	9'- 4"	334	5.6
6:1	12"	11'- 2"	2'- 6"	8'- 6"	9'- 9 3/4"	220	1.9	1'- 9"	28	0.4
	15"	13'- 2 1/4"	2'- 9 1/2"	10'- 0"	11'- 6 1/2"	264	2.5	2'- 2"	37	0.5
	18"	15'- 2 1/2"	3'- 1"	11'- 6"	13'- 3 1/4"	326	3.2	2'- 8"	50	0.7
	21"	17'- 2 3/4"	3'- 4 1/2"	13'- 0"	15'- 0 1/4"	381	3.9	3'- 1"	69	0.9
	24"	19'- 4 1/2"	3'- 9 1/2"	14'- 6"	16'- 9"	447	4.8	3'- 7"	80	1.2
	27"	21'- 4 3/4"	4'- 1"	16'- 0"	18'- 5 3/4"	506	5.7	3'-11"	96	1.4
	30"	23'- 5 1/4"	4'- 4 1/2"	17'- 6"	20'- 2 1/2"	587	6.7	4'- 4"	110	1.7
	33"	25'- 5 1/2"	4'- 8"	19'- 0"	21'-11 1/4"	667	7.8	4'- 8"	127	2.0
	36"	27'- 5 3/4"	4'-11 1/2"	20'- 6"	23'- 8"	727	9.0	5'- 1"	144	2.3
	42"	31'- 6 1/4"	5'- 6 1/2"	23'- 6"	27'- 1 1/2"	914	11.5	5'-10"	179	3.0
	48"	37'- 3 1/2"	6'- 1 1/2"	28'- 0"	32'- 4"	1181	15.9	6'- 7"	231	4.0
	54"	41'- 4 1/4"	6'- 8 1/2"	31'- 0"	35'- 9 1/2"	1412	19.2	7'- 6"	300	5.0
	60"	45'- 4 3/4"	7'- 3 1/2"	34'- 0"	39'- 3"	1619	22.9	8'- 3"	353	6.0



ELEVATION

Showing dimensions

1. Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
2. For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. Provide a 1'-0" footing as shown where required to maintain 4" Min cover for pipes.
4. Quantities shown are for one structure end only (one headwall).
5. Min Length = $6" + 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right)$

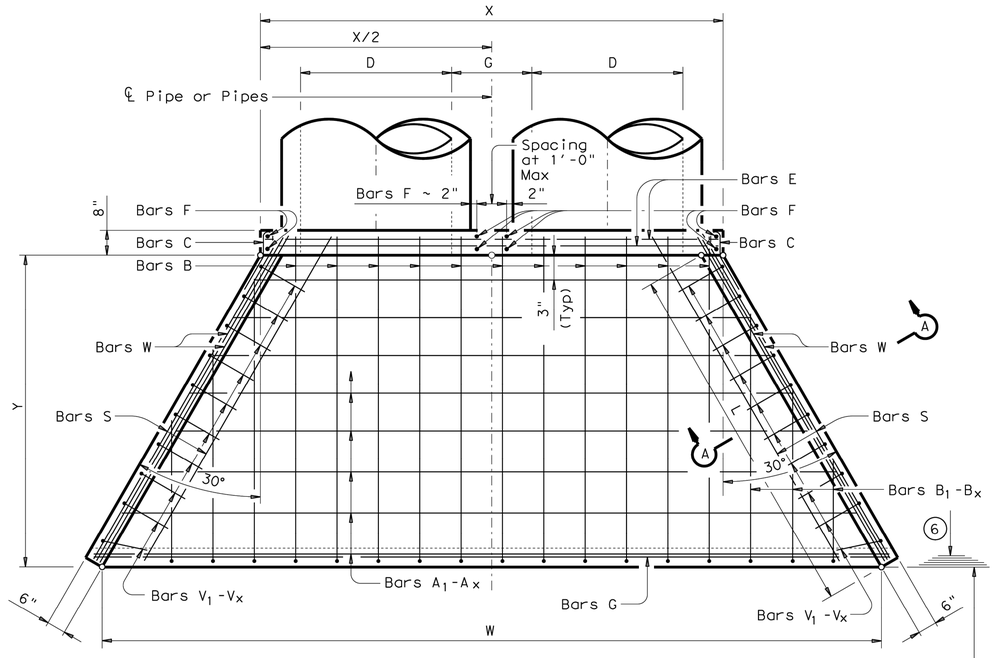
   Max Length = $12 \times H - 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right) - 1"$
6. Lengths of wings based on SL:1 Slope along this line.

TABLE OF REINFORCING STEEL (4)

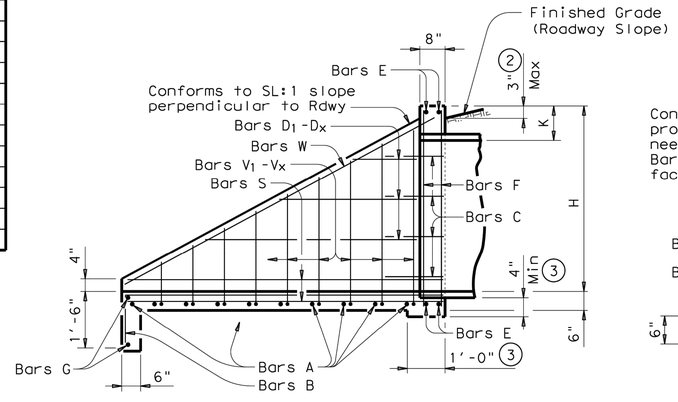
Bar	Size	Spa	No.
A	# 4	1'-0"	~
B	# 3	1'-6"	~
C	# 4	1'-0"	~
D	# 3	1'-0"	~
E	# 5	~	4
F	# 5	~	~
G	# 3	~	2
S	# 4	~	6
V	# 4	1'-0"	~
W	# 5	~	4

TABLE OF CONSTANT DIMENSIONS

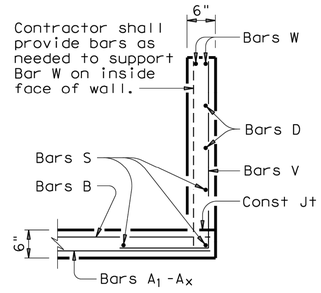
DIA OF PIPE, D	G	K	H
12"	9"	1'- 0"	2'- 0"
15"	11"	1'- 0"	2'- 3"
18"	1'- 2"	1'- 0"	2'- 6"
21"	1'- 4"	1'- 0"	2'- 9"
24"	1'- 7"	1'- 0"	3'- 0"
27"	1'- 8"	1'- 0"	3'- 3"
30"	1'-10"	1'- 0"	3'- 6"
33"	1'-11"	1'- 0"	3'- 9"
36"	2'- 1"	1'- 0"	4'- 0"
42"	2'- 4"	1'- 0"	4'- 6"
48"	2'- 7"	1'- 3"	5'- 3"
54"	3'- 0"	1'- 3"	5'- 9"
60"	3'- 3"	1'- 3"	6'- 3"
66"	3'- 3"	1'- 3"	6'- 9"
72"	3'- 4"	1'- 3"	7'- 3"



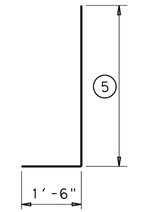
PLAN



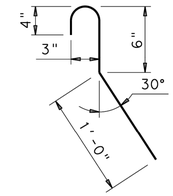
TYPICAL WING ELEVATION



SECTION A-A

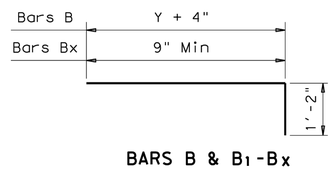


BARS V



BARS C

(2'-0" long)



BARS B & B1-Bx

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.

All reinforcing steel shall be Grade 60.

All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.

No bridge rails of any type may be mounted directly to these culvert headwalls.

Texas Department of Transportation

Bridge Division Standard

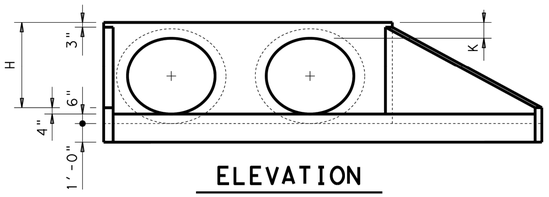
CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

FILE: chfw00se.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.
				65

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (4)

SLOPE	DIA. OF PIPE, D	Values for one Pipe						Values to be added for each addt'l Pipe		
		W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	X and W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	4'- 9"	3'- 1 1/2"	2'-10"	4'- 0"	90	0.6	2'- 0 1/4"	22	0.2
	15"	5'- 6 3/4"	3'- 5 1/4"	3'- 4"	4'- 8 1/2"	102	0.8	2'- 6"	28	0.3
	18"	6'- 4 3/4"	3'- 9 1/4"	3'-10"	5'- 5"	129	0.9	3'- 1"	41	0.4
	21"	7'- 2 3/4"	4'- 1 1/4"	4'- 4"	6'- 1 1/2"	144	1.1	3'- 6 3/4"	47	0.5
	24"	8'- 2 1/2"	4'- 7"	4'-10"	6'-10"	164	1.4	4'- 1 3/4"	57	0.6
	27"	9'- 0 1/2"	4'-11"	5'- 4"	7'- 6 1/2"	178	1.6	4'- 6 1/4"	62	0.7
	30"	9'-10 1/2"	5'- 3"	5'-10"	8'- 3"	212	1.8	5'- 0"	72	0.9
	33"	10'- 8 3/4"	5'- 7"	6'- 4"	8'-11 1/2"	225	2.1	5'- 4 3/4"	79	1.0
	36"	11'- 6 3/4"	5'-11 1/4"	6'-10"	9'- 8"	250	2.4	5'-10 1/2"	90	1.2
	42"	13'- 2 3/4"	6'- 7 1/4"	7'-10"	11'- 1"	304	3.0	6'- 8 3/4"	109	1.5
	48"	15'- 4 3/4"	7'- 3 1/4"	9'- 4"	13'- 2 1/2"	369	4.0	7'- 7 1/4"	142	2.0
	54"	17'- 1"	7'-11 1/2"	10'- 4"	14'- 7 1/4"	429	4.7	8'- 8"	170	2.5
	60"	18'- 9"	8'- 7 1/2"	11'- 4"	16'- 0 1/4"	484	5.6	9'- 6 1/4"	194	2.9
	66"	20'- 5"	9'- 3 1/2"	12'- 4"	17'- 5 1/4"	550	6.5	10'- 1 1/4"	217	3.3
	72"	22'- 1 1/4"	9'-11 3/4"	13'- 4"	18'-10 1/4"	614	7.5	10'- 9 1/4"	239	3.7
3:1	12"	6'- 2"	3'- 1 1/2"	4'- 3"	6'- 0"	118	0.9	2'- 0 1/4"	24	0.3
	15"	7'- 2 3/4"	3'- 5 1/4"	5'- 0"	7'- 0 3/4"	142	1.1	2'- 6"	31	0.4
	18"	8'- 3 3/4"	3'- 9 1/4"	5'- 9"	8'- 1 1/2"	179	1.4	3'- 1"	46	0.5
	21"	9'- 4 3/4"	4'- 1 1/4"	6'- 6"	9'- 2 1/4"	197	1.7	3'- 6 3/4"	53	0.7
	24"	10'- 7 1/2"	4'- 7"	7'- 3"	10'- 3"	227	2.1	4'- 1 3/4"	65	0.8
	27"	11'- 8 1/2"	4'-11"	8'- 0"	11'- 3 3/4"	255	2.4	4'- 6 1/4"	75	1.0
	30"	12'- 9 1/2"	5'- 3"	8'- 9"	12'- 4 1/2"	298	2.8	5'- 0"	86	1.2
	33"	13'-10 3/4"	5'- 7"	9'- 6"	13'- 5 1/4"	322	3.2	5'- 4 3/4"	94	1.3
	36"	14'-11 3/4"	5'-11 1/4"	10'- 3"	14'- 6"	355	3.7	5'-10 1/2"	108	1.5
	42"	17'- 1 3/4"	6'- 7 1/4"	11'- 9"	16'- 7 1/2"	441	4.6	6'- 8 3/4"	133	2.0
	48"	20'- 0 3/4"	7'- 3 1/4"	14'- 0"	19'- 9 1/2"	542	6.2	7'- 7 1/4"	176	2.7
	54"	22'- 3"	7'-11 1/2"	15'- 6"	21'-11"	626	7.5	8'- 8"	211	3.3
	60"	24'- 5"	8'- 7 1/2"	17'- 0"	24'- 0 1/2"	725	8.9	9'- 6 1/4"	246	3.9
	66"	26'- 7"	9'- 3 1/2"	18'- 6"	26'- 2"	821	10.4	10'- 1 1/4"	274	4.5
	72"	28'- 9 1/4"	9'-11 3/4"	20'- 0"	28'- 3 1/2"	930	12.0	10'- 9 1/4"	309	5.1
4:1	12"	7'- 7"	3'- 1 1/2"	5'- 8"	8'- 0 1/4"	156	1.2	2'- 0 1/4"	28	0.3
	15"	8'-10 3/4"	3'- 5 1/4"	6'- 8"	9'- 5 1/4"	183	1.5	2'- 6"	36	0.5
	18"	10'- 2 3/4"	3'- 9 1/4"	7'- 8"	10'-10"	228	1.9	3'- 1"	52	0.6
	21"	11'- 6 3/4"	4'- 1 1/4"	8'- 8"	12'- 3"	264	2.3	3'- 6 3/4"	63	0.8
	24"	13'- 0 1/2"	4'- 7"	9'- 8"	13'- 8"	301	2.8	4'- 1 3/4"	75	1.0
	27"	14'- 4 1/2"	4'-11"	10'- 8"	15'- 1"	339	3.4	4'- 6 1/4"	87	1.2
	30"	15'- 8 1/2"	5'- 3"	11'- 8"	16'- 6"	394	3.9	5'- 0"	99	1.4
	33"	17'- 0 3/4"	5'- 7"	12'- 8"	17'-11"	432	4.5	5'- 4 3/4"	112	1.7
	36"	18'- 4 3/4"	5'-11 1/4"	13'- 8"	19'- 4"	479	5.2	5'-10 1/2"	128	1.9
	42"	21'- 0 3/4"	6'- 7 1/4"	15'- 8"	22'- 1 3/4"	587	6.6	6'- 8 3/4"	158	2.5
	48"	24'- 8 3/4"	7'- 3 1/4"	18'- 8"	26'- 4 3/4"	738	8.9	7'- 7 1/4"	211	3.3
	54"	27'- 5"	7'-11 1/2"	20'- 8"	29'- 2 3/4"	871	10.8	8'- 8"	257	4.1
	60"	30'- 1"	8'- 7 1/2"	22'- 8"	32'- 0 3/4"	999	12.8	9'- 6 1/4"	297	4.9
	66"	32'- 9"	9'- 3 1/2"	24'- 8"	34'-10 1/2"	1139	14.9	10'- 1 1/4"	340	5.6
	72"	35'- 5 1/4"	9'-11 3/4"	26'- 8"	37'- 8 1/2"	1290	17.3	10'- 9 1/4"	378	6.4
6:1	12"	10'- 5"	3'- 1 1/2"	8'- 6"	12'- 0 1/4"	223	1.9	2'- 0 1/4"	32	0.4
	15"	12'- 2 3/4"	3'- 5 1/4"	10'- 0"	14'- 1 3/4"	273	2.5	2'- 6"	43	0.6
	18"	14'- 0 3/4"	3'- 9 1/4"	11'- 6"	16'- 3 1/4"	336	3.2	3'- 1"	61	0.8
	21"	15'-10 3/4"	4'- 1 1/4"	13'- 0"	18'- 4 1/2"	396	3.9	3'- 6 3/4"	76	1.1
	24"	17'-10 1/2"	4'- 7"	14'- 6"	20'- 6"	450	4.8	4'- 1 3/4"	91	1.4
	27"	19'- 8 1/2"	4'-11"	16'- 0"	22'- 7 1/2"	519	5.7	4'- 6 1/4"	108	1.6
	30"	21'- 6 1/2"	5'- 3"	17'- 6"	24'- 9"	595	6.6	5'- 0"	124	2.0
	33"	23'- 4 3/4"	5'- 7"	19'- 0"	26'-10 1/2"	674	7.7	5'- 4 3/4"	143	2.3
	36"	25'- 2 3/4"	5'-11 1/4"	20'- 6"	29'- 0"	737	8.8	5'-10 1/2"	162	2.7
	42"	28'-10 3/4"	6'- 7 1/4"	23'- 6"	33'- 2 3/4"	920	11.3	6'- 8 3/4"	202	3.5
	48"	34'- 0 3/4"	7'- 3 1/4"	28'- 0"	39'- 7 1/4"	1189	15.5	7'- 7 1/4"	274	4.6



ELEVATION
Showing dimensions

1. Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
2. For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. Provide a 1'-0" footing as shown where required to maintain 4" Min cover for pipes.
4. Quantities shown are for one structure end only (one headwall).
5. Min Length = $6" + 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right)$

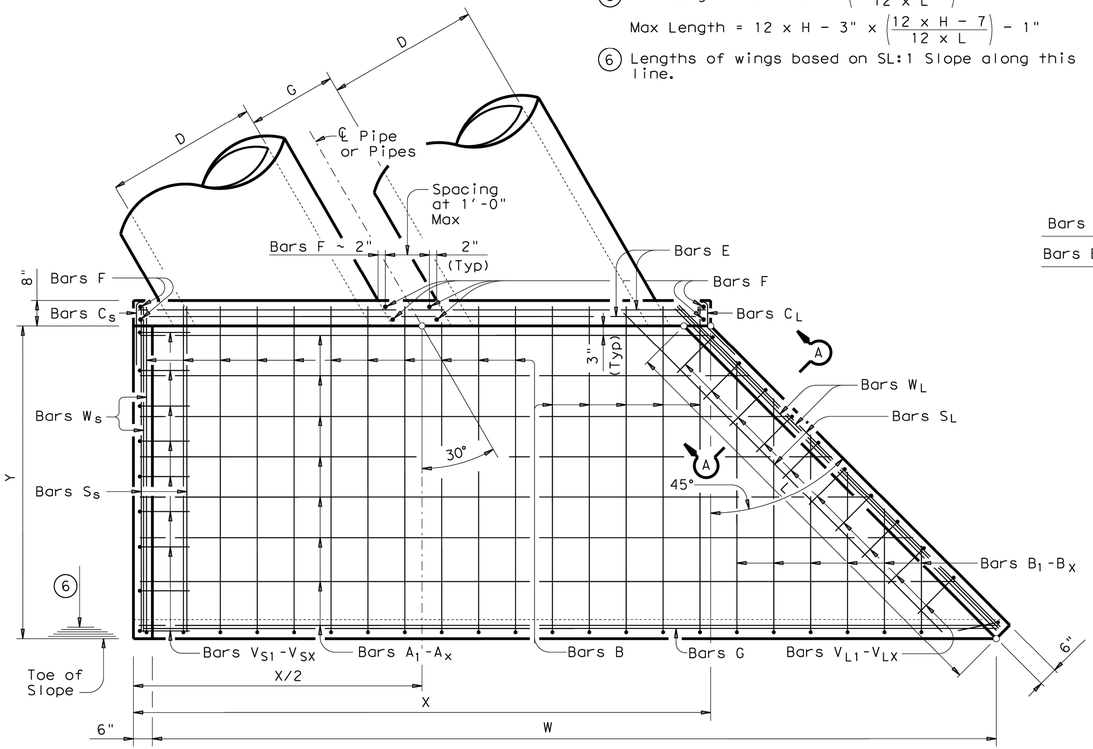
   Max Length = $12 \times H - 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right) - 1"$
6. Lengths of wings based on SL:1 Slope along this line.

TABLE OF REINFORCING STEEL (4)

Bar	Size	Spa	No.
A	# 4	1'-0"	~
B	# 3	1'-6"	~
CL	# 4	1'-0"	~
CS	# 4	1'-0"	~
D	# 3	1'-0"	~
E	# 5	~	4
F	# 5	~	~
G	# 3	~	2
SL	# 4	~	3
SS	# 4	~	3
V	# 4	1'-0"	~
WL	# 5	~	2
WS	# 5	~	2

TABLE OF CONSTANT DIMENSIONS

DIA OF PIPE, D	G	K	H
12"	9"	1'- 0"	2'- 0"
15"	11"	1'- 0"	2'- 3"
18"	1'- 2"	1'- 0"	2'- 6"
21"	1'- 4"	1'- 0"	2'- 9"
24"	1'- 7"	1'- 0"	3'- 0"
27"	1'- 8"	1'- 0"	3'- 3"
30"	1'-10"	1'- 0"	3'- 6"
33"	1'-11"	1'- 0"	3'- 9"
36"	2'- 1"	1'- 0"	4'- 0"
42"	2'- 4"	1'- 0"	4'- 6"
48"	2'- 7"	1'- 3"	5'- 3"
54"	3'- 0"	1'- 3"	5'- 9"
60"	3'- 3"	1'- 3"	6'- 3"
66"	3'- 3"	1'- 3"	6'- 9"
72"	3'- 4"	1'- 3"	7'- 3"



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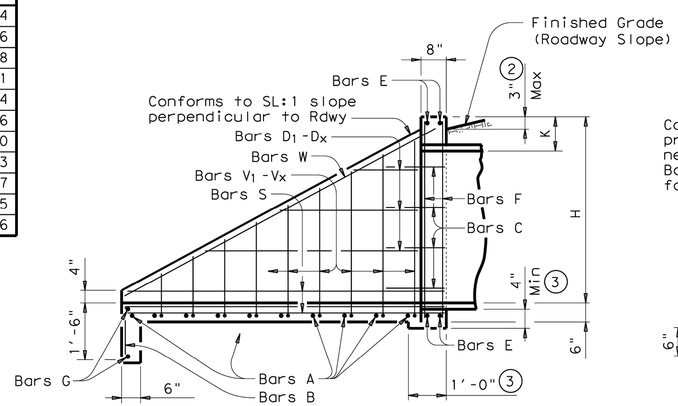
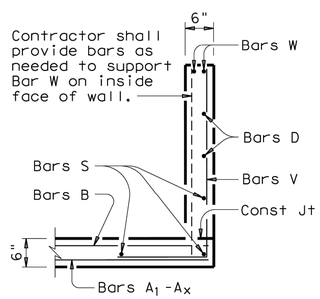
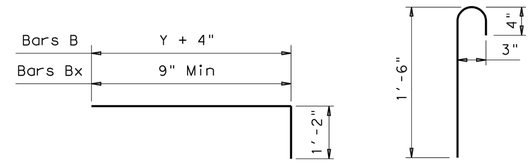


TYPICAL WING ELEVATION

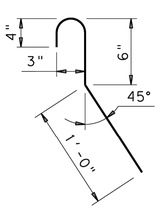


SECTION A-A

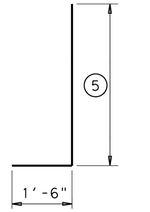


BARS B & B_1-B_X

BARS C_S
(2'-0" long)



BARS C_L
(2'-0" long)



BARS V_S & V_L

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.

All reinforcing steel shall be Grade 60.

All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.

No bridge rails of any type may be mounted directly to these culvert headwalls.

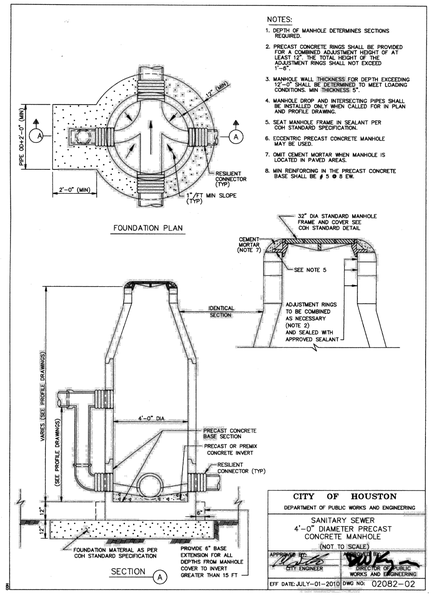
Texas Department of Transportation

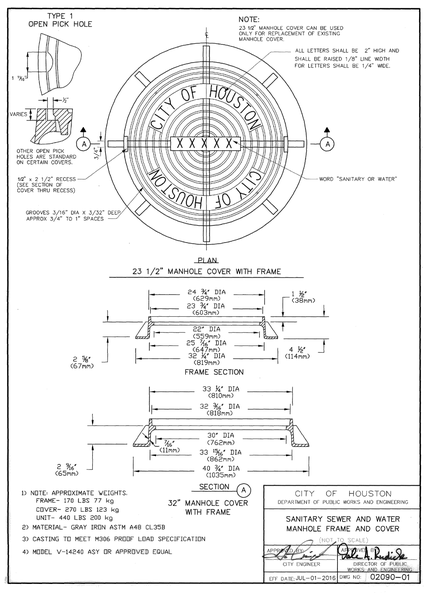
Bridge Division Standard

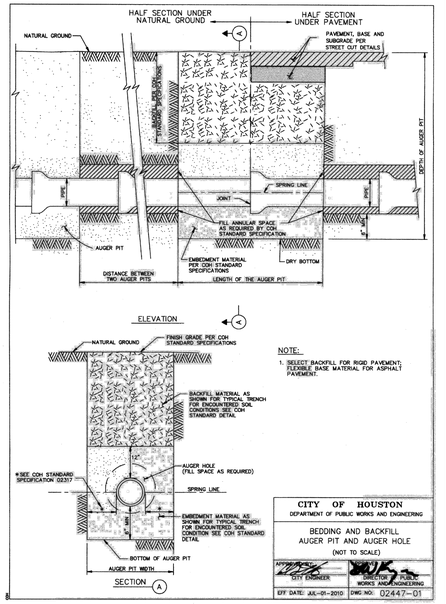
CONCRETE HEADWALLS WITH FLARED WINGS FOR 30° SKEW PIPE CULVERTS

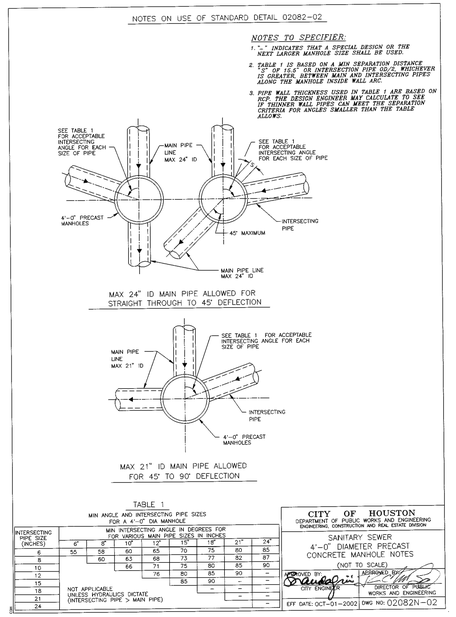
CH-FW-30

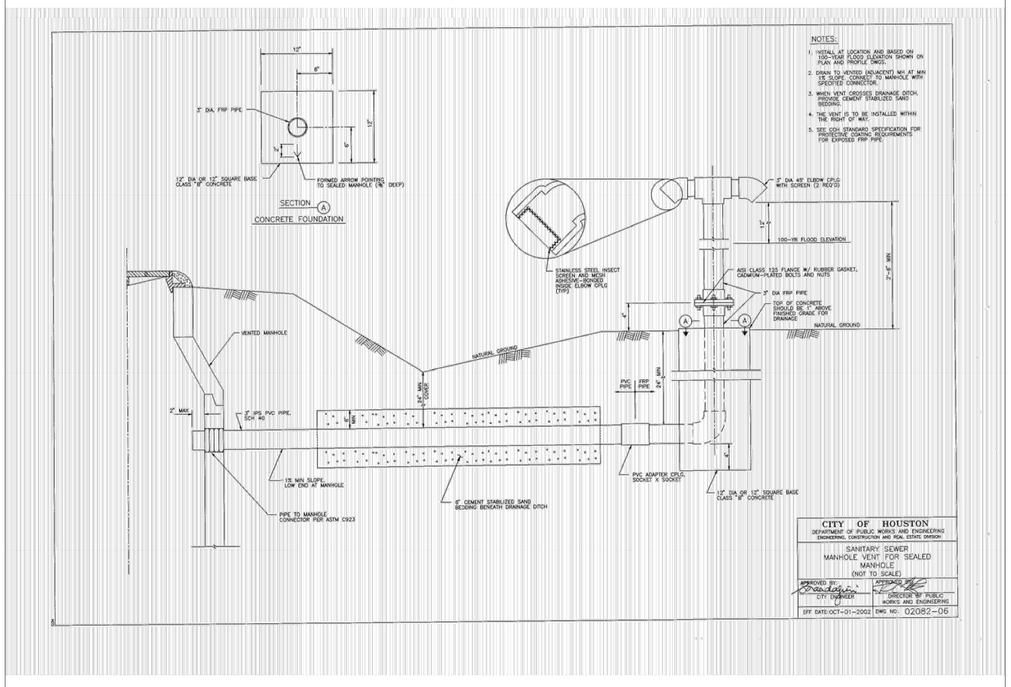
FILE: chfw30se.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				66

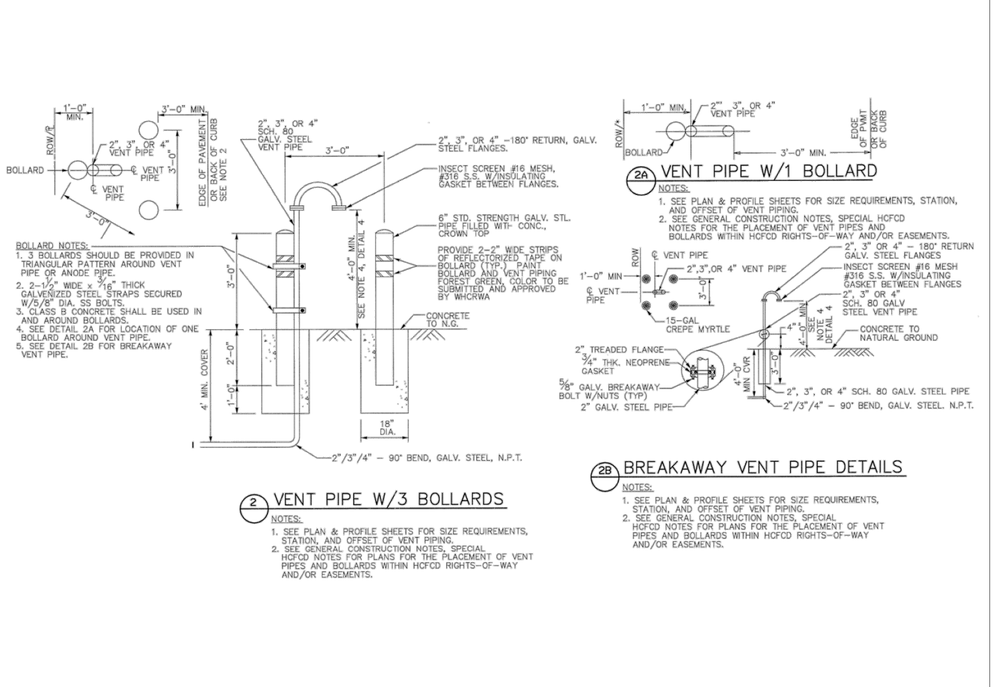












THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

THE STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

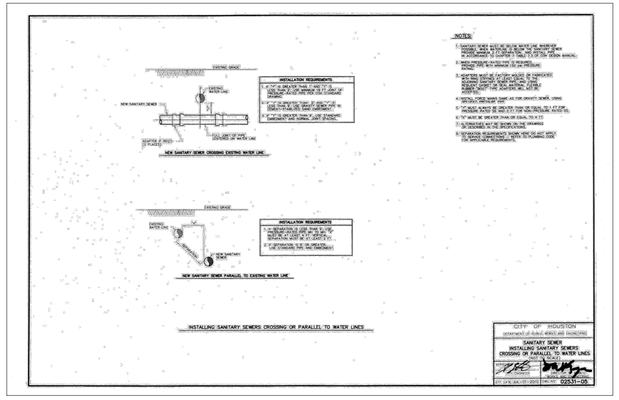
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

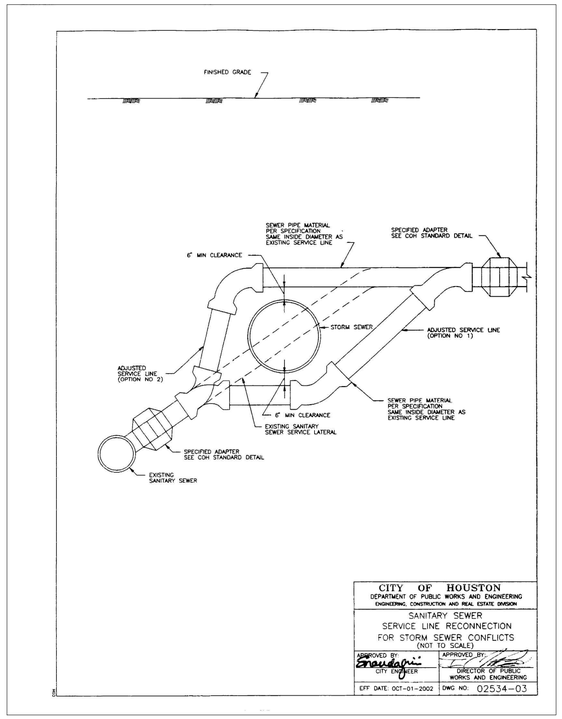
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

SANITARY SEWER DETAILS
SHEET 1 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 67 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DETAILS\067- SANITARY SEWER DETAILS SHEET 1 OF 3.DWG AUG. 03, 2026-8:28am





LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "B":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED +/- 50FT OF THE INTERSECTION OF CULLEN BLVD. AND BUNGALOW LN.
ELEVATION = 39.90 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

TBM "C":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED AT THE NW CORNER OF MADDEN LN AND DONEGAL WAY.
ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

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90% DESIGN REVIEW

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE 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 TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CENTERPOINT ENERGY/UNDERGROUND ELECRICAL FACILITIES VERIFICATION ONLY.

(THIS SIGNATURE VERIFIES EXITING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION.)

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
FB NO.

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

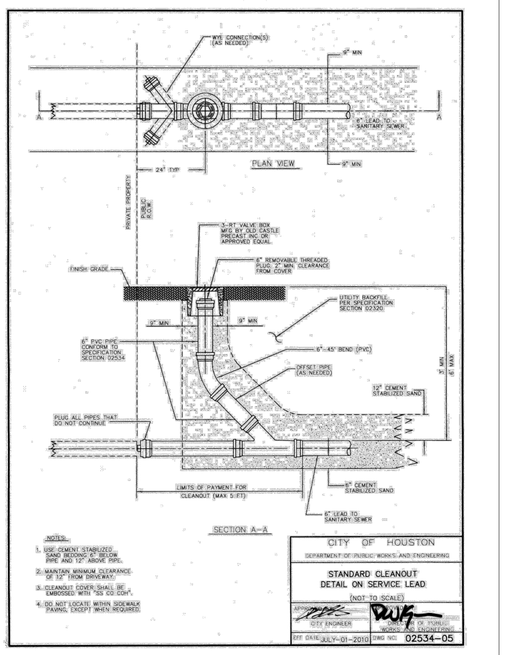
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

SANITARY SEWER DETAILS
SHEET 2 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 68 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DETAILS\068- SANITARY SEWER DETAILS SHEET 2 OF 3.DWG AUG. 03, 2026-8:34am



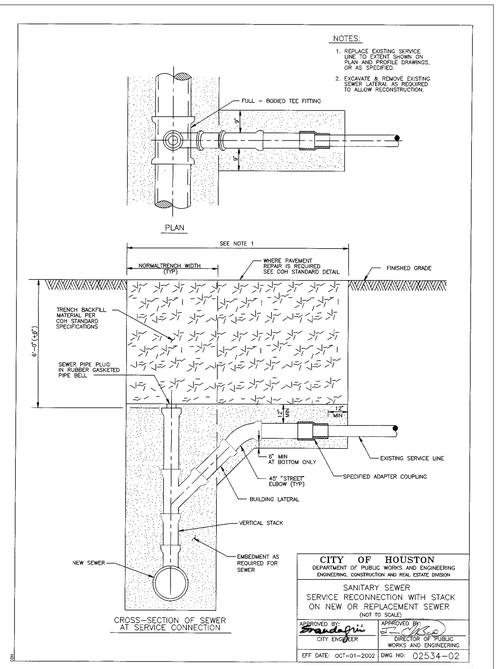
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STANDARD CLEANOUT DETAIL ON SERVICE LEAD

(NOT TO SCALE)

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

EFF DATE: JULY-01-2010 DWG NO: 02534-05

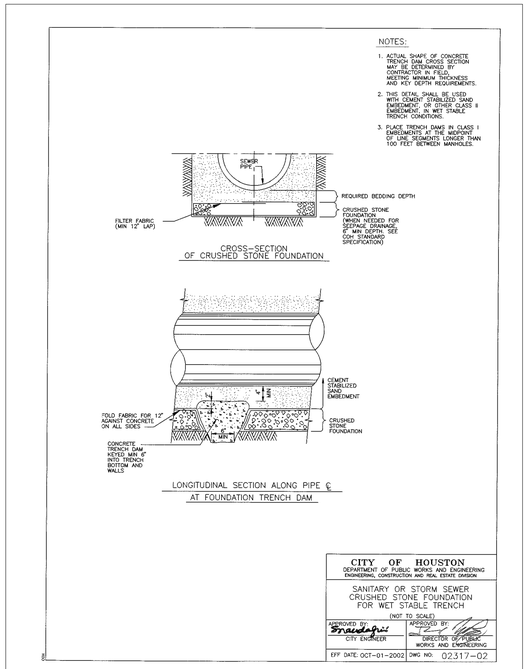


CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SANITARY SEWER
SERVICE RECONNECTION WITH STACK ON NEW OR REPLACEMENT SEWER
(NOT TO SCALE)

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

EFF DATE: OCT-01-2002 DWG NO: 02534-02

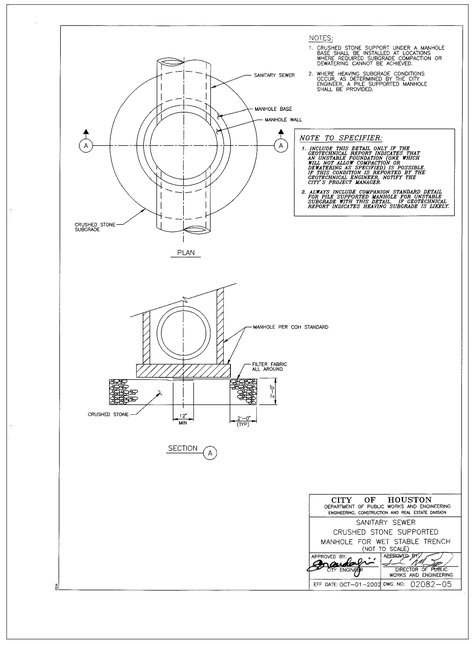


CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SANITARY OR STORM SEWER
CRUSHED STONE FOUNDATION
FOR WET STABLE TRENCH
(NOT TO SCALE)

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

EFF DATE: OCT-01-2002 DWG NO: 02317-02



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SANITARY SEWER
CRUSHED STONE SUPPORTED
MANHOLE FOR WET STABLE TRENCH
(NOT TO SCALE)

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

EFF DATE: OCT-01-2002 DWG NO: 02082-05

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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

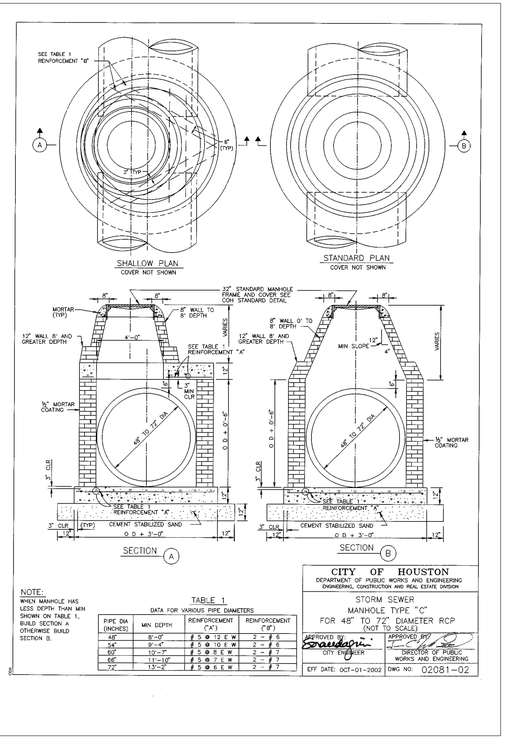
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

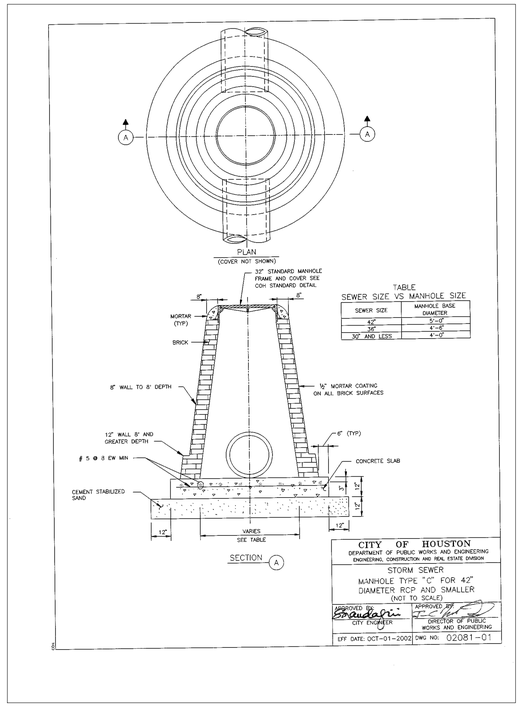
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

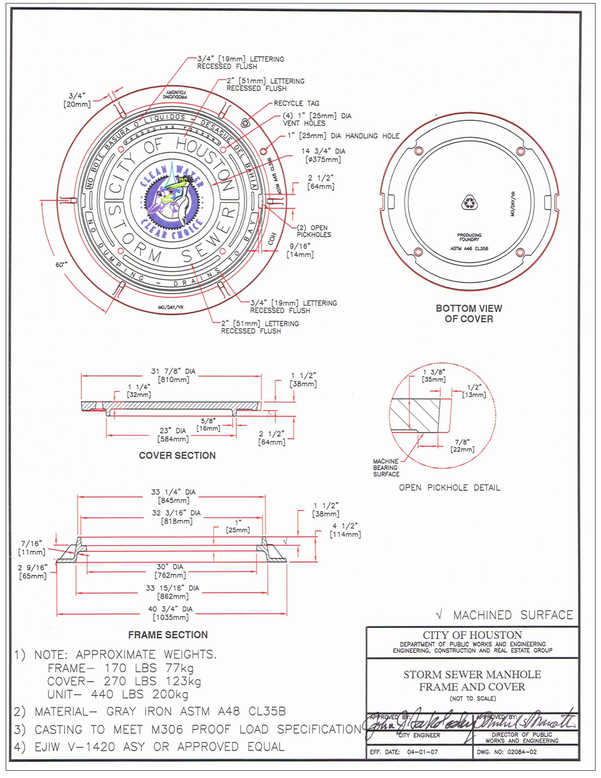
SANITARY SEWER DETAILS
SHEET 3 OF 3

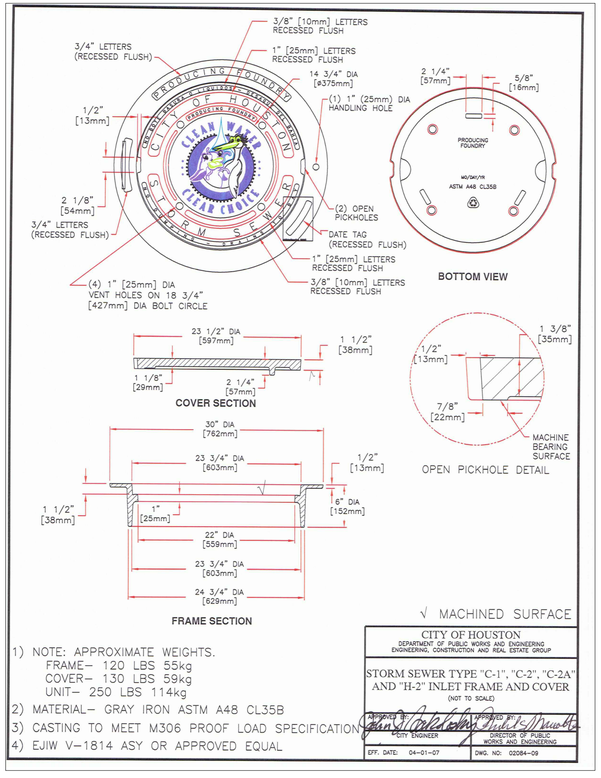
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 69 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DETAILS\069- SANITARY SEWER DETAILS SHEET 3 OF 3.DWG AUG. 03, 2026-8:43am









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TRW ENGINEERS, INC.
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10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

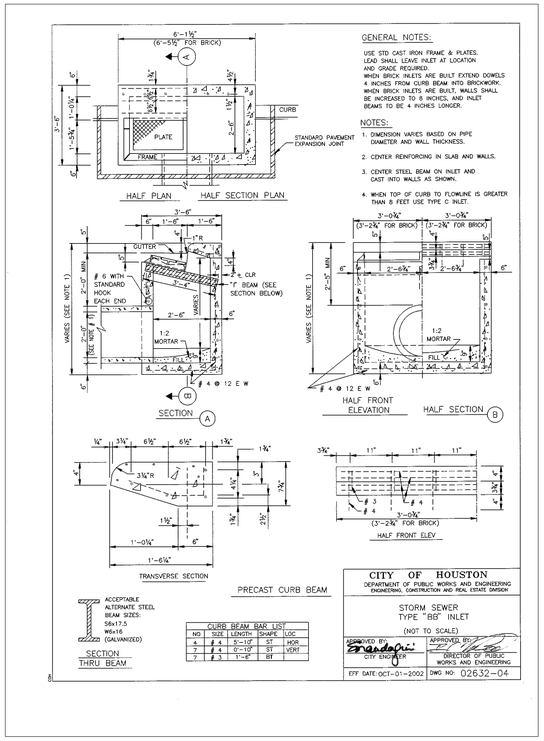
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

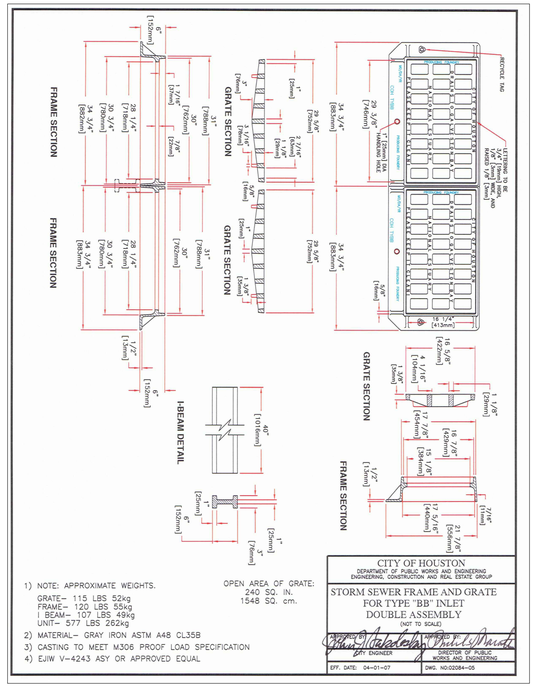
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

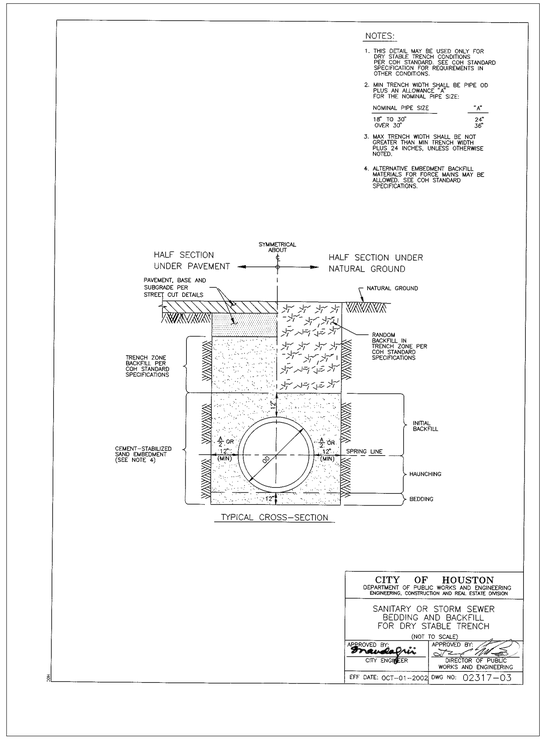
STORM SEWER DETAILS
SHEET 1 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 70 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DETAILS\070- STORM SEWER DETAILS SHEET 1 OF 2.DWG AUG. 03, 2026-8:33am







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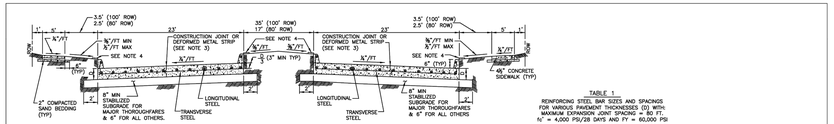
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

STORM SEWER DETAILS
SHEET 2 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 71 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DETAILS\071- STORM SEWER DETAILS SHEET 2 OF 2.DWG AUG. 03, 2026-8:43am



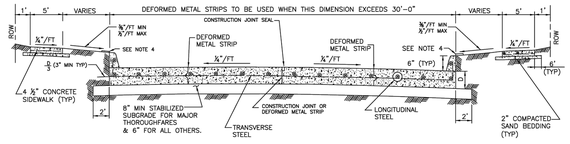
TYPICAL DOUBLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS NOTES:

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

TABLE 1
REINFORCING STEEL BAR SIZES AND SPACINGS FOR VARIOUS PAVEMENT THICKNESSES (D) WITH MAXIMUM EXPANSION JOINT SPACING OF 80 FT
fc' = 4,000 PSI/28 DAYS AND FY = 60,000 PSI

PAVEMENT THICKNESS D (IN)	PAVEMENT WIDTH (FT)	LONGITUDINAL STEEL # 4 BARS: NUMBER OF BARS	# 4 BARS: SPACING (IN)	# 4 BARS: END BAR SPACING (IN)	# 5 BARS: NUMBER OF BARS	# 5 BARS: SPACING (IN)	# 5 BARS: END BAR SPACING (IN)	# 6 BARS: NUMBER OF BARS	# 6 BARS: SPACING (IN)	# 6 BARS: END BAR SPACING (IN)	TRANSVERSE STEEL # 4 BARS: SPACING (IN)	# 5 BARS: SPACING (IN)	# 6 BARS: SPACING (IN)
6	28	17	20.50	4	–	–	–	–	–	–	36	–	–
7	28	17	18.25	4	–	–	–	–	–	–	36	–	–
7	35	24	18.00	3	–	–	–	–	–	–	36	–	–
7	37	25	18.25	3	–	–	–	–	–	–	36	–	–
7	39	26	18.00	3	–	–	–	–	–	–	36	–	–
7	41	28	18.00	3	–	–	–	–	–	–	36	–	–
7	45	31	17.75	3.75	–	–	–	–	–	–	36	–	–
8	25	20	15.50	2.75	13	24.50	3	–	–	–	36	36	–
8	28	22	15.50	2.75	13	24.50	3	–	–	–	36	36	–
8	33	27	18.00	3	18	24.00	4	–	–	–	36	36	–
8	38	28	15.75	3.25	18	24.00	3	–	–	–	30	36	–
8	44	34	15.75	4	22	24.75	4	–	–	–	30	36	–
8	45	35	15.75	4.25	23	24.25	4	–	–	–	30	36	–
9	42	33	14.50	3	18	22.00	3.5	–	–	–	30	36	–
9	43	33	14.75	3	19	22.25	3.5	–	–	–	30	36	–
9	55	41	13.75	3.75	20	21.75	3.5	–	–	–	30	36	–
9	56	42	13.75	3	21	21.25	3.0	–	–	–	30	36	–
9	44	38	12.75	2.75	20	21.75	3	–	–	–	24	36	–
10	48	37	12.75	3.5	17	18.25	4.5	–	–	–	30	36	–
10	54	42	12.75	3.5	17	18.25	4	–	–	–	30	36	36
10	54	53	19.50	4	21	20.00	4	–	–	–	30	36	36
10	50	54	18.50	3.25	23	18.75	4	–	–	–	30	36	36
10	56	55	12.50	3.5	24	18.50	3	–	–	–	30	36	36
11	44	44	19.50	4	24	18.00	4.5	–	–	–	24	36	36
11	52	53	19.00	3	29	18.00	4	–	–	–	24	36	36
11	55	61	11.25	3	17	18.25	4	12	28.75	3	24	36	36
11	56	56	11.50	2.75	24	17.00	2.5	12	23.00	4	24	36	36
11	55	57	11.50	3	24	18.00	3	17	28.75	4	24	36	36
11	57	60	11.00	2.5	25	17.25	3	17	28.50	4	24	36	36
11	45	48	11.25	2.5	20	18.00	3	22	28.00	4	24	36	36
12	48	49	–	–	21	16.25	4	13	21.50	4	24	36	36
12	28	–	–	–	18	16.23	4	13	21.50	4	30	36	36
12	34	–	–	–	28	16.00	4	18	23.00	4	24	36	36
12	50	–	–	–	29	16.00	4	18	23.00	4	24	36	36
12	36	–	–	–	21	16.25	4.5	20	22.25	4.5	24	36	36
12	56	–	–	–	30	15.75	4	25	22.50	4	24	36	36
14	45	–	–	–	35	15.75	4	25	22.50	4	24	30	36

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



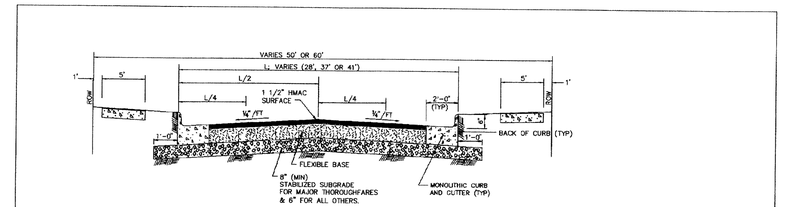
TYPICAL SINGLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

CONCRETE PAVEMENT DETAILS

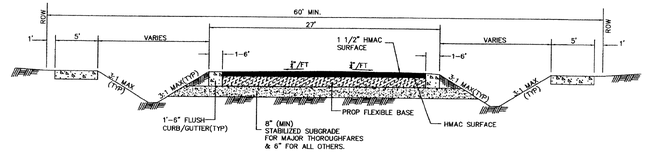
(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: NOV-04-2016	DWG NO: 02751-01



FLEXIBLE BASE PAVEMENT – CURB & GUTTER SECTION
(NOT APPLICABLE TO ETJ OF CITY OF HOUSTON)

NOTE:
FLEXIBLE BASE SHALL BE:
ALTERNATES: 1. 6" (MIN) HOT MIX ASPHALTIC CONCRETE.
2. 8" (MIN) CRUSHED CONCRETE.



FLEXIBLE BASE PAVEMENT – DITCH SECTION
(NOT APPLICABLE TO ETJ OF CITY OF HOUSTON)

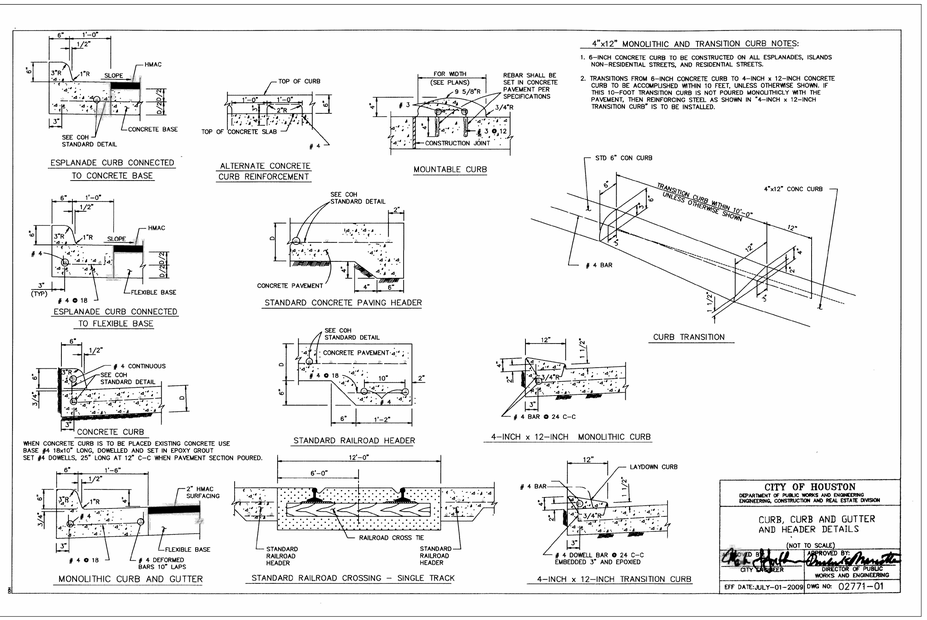
NOTE:
FLEXIBLE BASE SHALL BE:
ALTERNATES: 1. 6" (MIN) HOT MIX ASPHALTIC CONCRETE.
2. 8" (MIN) CRUSHED CONCRETE.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

HOT-MIX ASPHALTIC CONCRETE PAVEMENT DETAILS

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2009	DWG NO: 02741-01



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

CURB, CURB AND GUTTER AND HEADER DETAILS

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2009	DWG NO: 02771-01

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

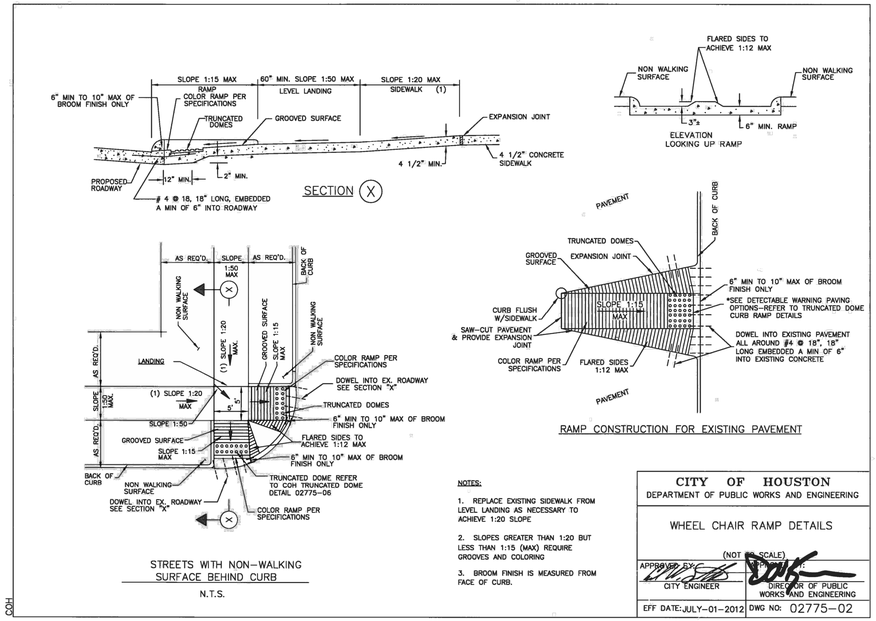
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

PAVEMENT DETAILS SHEET
1 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 72 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DETAILS\072- PAVEMENT DETAILS SHEET 1 OF 3.DWG AUG. 03, 2026-8:24am



NOTES:

1. REPLACE EXISTING SIDEWALK FROM LEVEL LANDING AS NECESSARY TO ACHIEVE 1:20 SLOPE
2. SLOPES GREATER THAN 1:20 BUT LESS THAN 1:15 (MAX) REQUIRE GROOVES AND COLORING
3. BROOM FINISH IS MEASURED FROM FACE OF CURB.

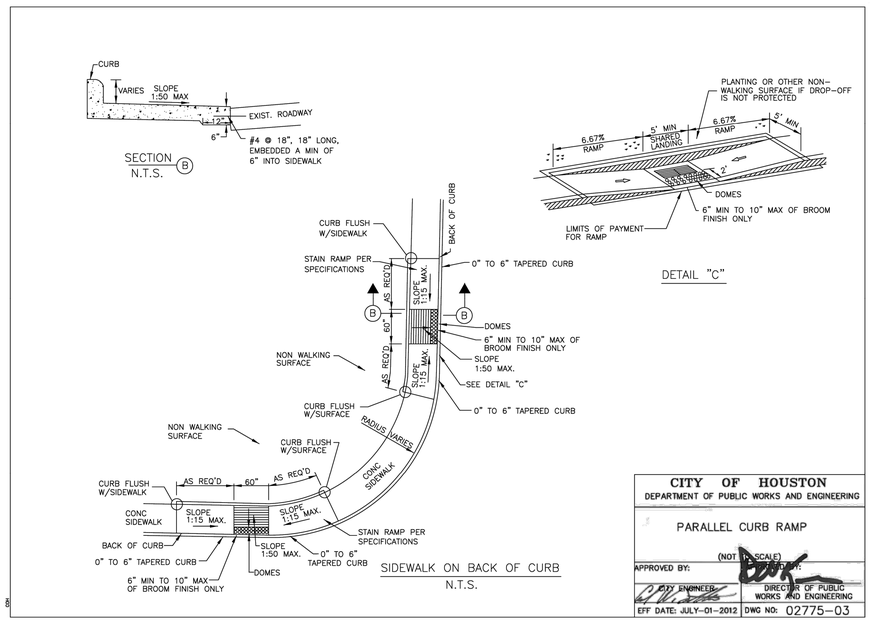
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WHEEL CHAIR RAMP DETAILS

(NOT TO SCALE)

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

EFF DATE: JULY-01-2012 | DWG NO: 02775-02



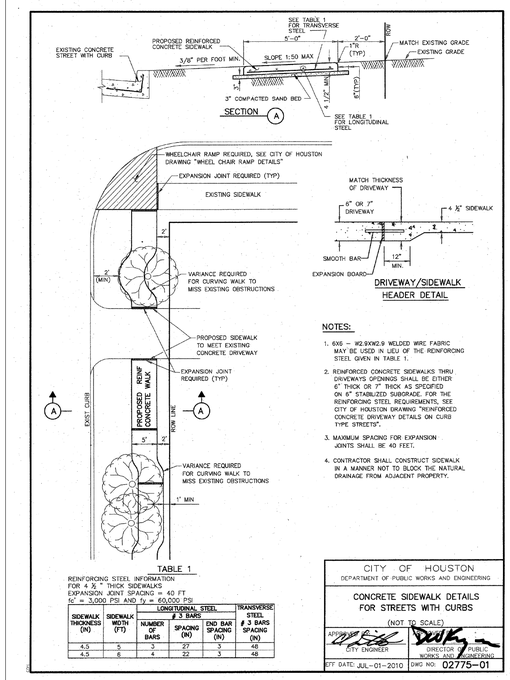
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

PARALLEL CURB RAMP

(NOT TO SCALE)

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

EFF DATE: JULY-01-2012 | DWG NO: 02775-03



SIDEWALK THICKNESS (IN)	SIDEWALK WIDTH (FT)	LONGITUDINAL STEEL # 3 BARS NUMBER OF BARS	LONGITUDINAL STEEL # 3 BARS SPACING (IN)	LONGITUDINAL STEEL END BAR SPACING (IN)	TRANSVERSE STEEL # 3 BARS SPACING (IN)
4.5	5	3	27	3	48
4.5	6	4	22	3	48

NOTES:

1. 6X6 – W2.9XW2.9 WELDED WIRE FABRIC MAY BE USED IN LIEU OF THE REINFORCING STEEL GIVEN IN TABLE 1.
2. REINFORCED CONCRETE SIDEWALKS THRU DRIVEWAYS OPENINGS SHALL BE EITHER 6" THICK OR 7" THICK AS SPECIFIED ON 6" STABILIZED SUBGRADE. FOR THE REINFORCING STEEL REQUIREMENTS, SEE CITY OF HOUSTON DRAWING "REINFORCED CONCRETE DRIVEWAY DETAILS ON CURB TYPE STREETS".
3. MAXIMUM SPACING FOR EXPANSION JOINTS SHALL BE 40 FEET.
4. CONTRACTOR SHALL CONSTRUCT SIDEWALK IN A MANNER NOT TO BLOCK THE NATURAL DRAINAGE FROM ADJACENT PROPERTY.

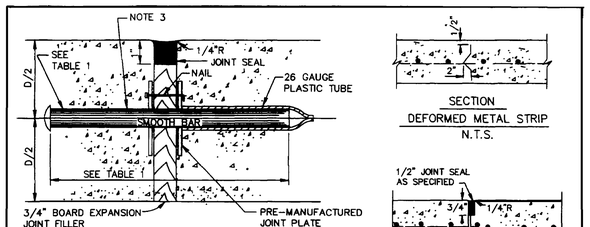
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

CONCRETE SIDEWALK DETAILS FOR STREETS WITH CURBS

(NOT TO SCALE)

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

EFF DATE: JUL-01-2010 | DWG NO: 02775-01



NOTES:

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

TABLE 1

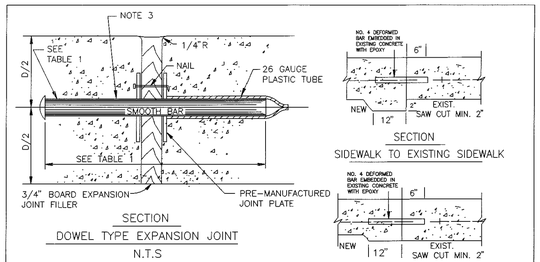
PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
6	3/4	18	12
7	1	18	12
8	1	18	12
9	1 1/4	18	12
10	1 1/4	18	12
11	1 1/4	18	12
12	1 1/4	18	12

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

PAVEMENT EXPANSION AND CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)

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

EFF DATE: June-01-2003 | DWG NO: 02752-01



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 36' 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 2" MIN. COVER.

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SIDEWALK EXPANSION AND CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)

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

EFF DATE: OCT-01-2002 | DWG NO: 02752-02

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS — DARIUOSH S. KERMANY — 93626 — LICENSED PROFESSIONAL ENGINEER

8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

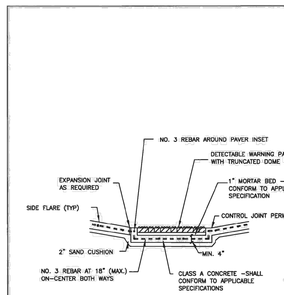
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

PAVEMENT DETAILS SHEET
2 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 73 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DETAILS\073- PAVEMENT DETAILS SHEET 2 OF 3.DWG AUG. 03, 2026-8:24am

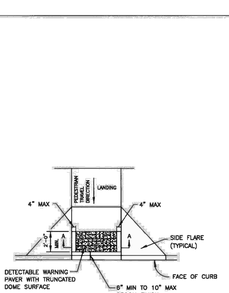


SECTION Ⓐ

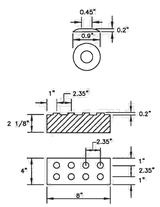
GENERAL NOTES (PAVERS)

1. FURNISH DETECTABLE WARNING PAVER 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 PAVER UNITS USING A POWER SAW.

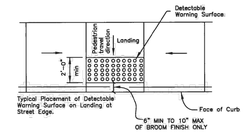


DETECTABLE WARNING PAVER (OPTION)



DETECTABLE WARNING PAVER

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
DETECTABLE WARNING PAVER (OPTION) (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2012	DWG NO: 02775-07



GENERAL NOTES FOR DETECTABLE WARNINGS

1. 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.

2. DETECTABLE WARNING SURFACES MUST BE SLIP RESISTANT AND NOT ALLOW WATER TO ACCUMULATE.

3. ALIGN TRUNCATED DOMES IN THE DIRECTION OF PEDESTRIAN TRAVEL WHEN ENTERING THE STREET.

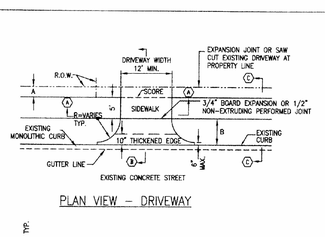
4. OMIT

5. 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.

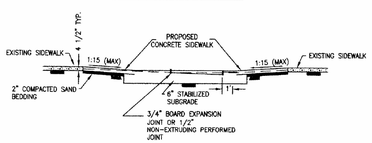
6. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6" MIN TO 10" MAX FROM THE EXTENSION OF THE FACE OF CURB. DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.

7. REFERENCE CURB RAMP DETAILS FOR RAMP GROOVED SURFACE.

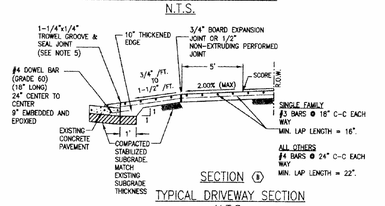
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
DETECTABLE WARNING CURB RAMP DETAILS (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2012	DWG NO: 02775-06



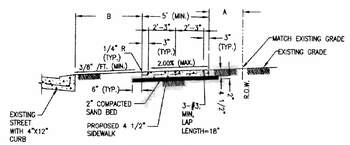
PLAN VIEW – DRIVEWAY



SECTION Ⓐ
PROPOSED SIDEWALK, THROUGH DRIVEWAY WITH EXCESSIVE GRADES
N.T.S.



SECTION Ⓑ
TYPICAL DRIVEWAY SECTION
N.T.S.

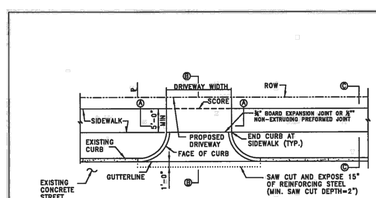


SECTION Ⓒ
TYPICAL SIDEWALKS SECTION
N.T.S.

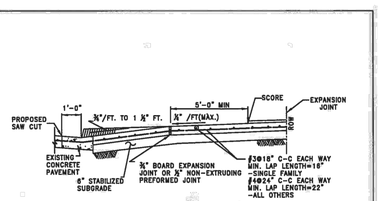
NOTES

1. IF AVAILABLE ROW IS NOT SUFFICIENT TO ACCOMMODATE A 5-FEET SIDEWALK, ENGINEER SHALL OBTAIN A VARIANCE FROM THE CITY ENGINEER FOR A 4-FEET WIDE SIDEWALK.
2. DRIVEWAYS SHALL BE 6" THICK FOR SINGLE FAMILY
3. DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5 1/2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.
4. THE OUTER DOWEL BARS ARE TO BE LOCATED 12" FROM END OF PROPOSED EDGE OF DRIVEWAY RETURN. EXTEND DOWEL 3" INCHES INTO PROPOSED DRIVEWAY AND BEND REMAINING BAR TO EXTEND TO RADIUS RETURN BOTH SIDES.
5. TROWEL GROOVE SEALANT SHALL BE LOW MODULUS SILICONE OR POLYURETHANE SEALANT.
6. EXPANSION & CONSTRUCTION JOINTS ALONG SIDEWALK SHALL BE ACCORDING TO DRAWING No. 02752-02.
7. REFER CHAPTER 10 DESIGN REQUIREMENTS FOR A AND B.

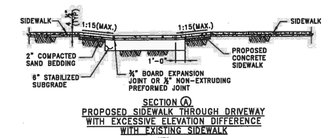
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
DRIVEWAY / LOCAL RESIDENTIAL STREETS (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2009	DWG NO: 02754-01A



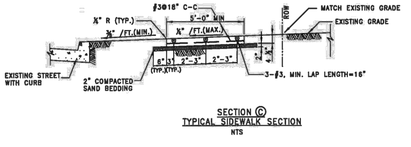
PLAN VIEW – DRIVEWAY
NTS



SECTION Ⓑ
TYPICAL DRIVEWAY SECTION
NTS



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



SECTION Ⓒ
TYPICAL SIDEWALK SECTION
NTS

NOTES

1. ALL JOINTS SHALL CONFORM TO CITY OF HOUSTON 02752 STANDARD SPECIFICATION.
2. DRIVEWAYS SHALL BE MINIMUM 6" THICK FOR SINGLE FAMILY USE AND MINIMUM 7" THICK FOR ALL OTHERS (I.E. COMMERCIAL, INDUSTRIAL, ETC.)
3. DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5-1/2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.
4. STANDARD CONSTRUCTION SPECIFICATIONS LOCATED AT http://documents.publicworks.houstontx.gov/document-center/cat_view/88-engineering-and-construction.html

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
DRIVEWAY DETAIL WITH 6" CURBED STREETS (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: FEB-13-2014	DWG NO: 02754-01B

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

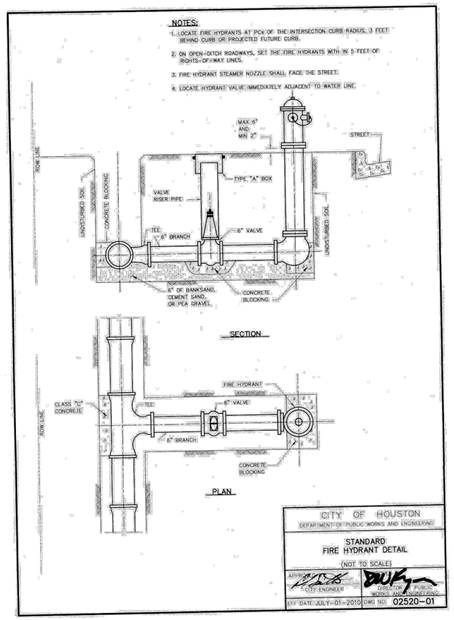
PAVEMENT DETAILS SHEET
3 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 74 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DETAILS\074- PAVEMENT DETAILS SHEET 3 OF 3.DWG AUG. 03, 2026-8:42am

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\DETAILS\075- WATER DETAILS SHEET 1 OF 1.DWG AUG. 03, 2026-8:20am

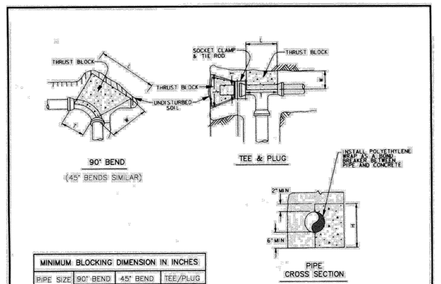
NOTES:
1. LOCATE FIRE HYDRANTS AT PCH OF THE INTERSECTION CURB RADIUS, 3 FEET BEHIND CURB OR PROJECTED FUTURE CURB.
2. ON OPEN-DITCH ROADWAYS, SET THE FIRE HYDRANTS WITH IN 5 FEET OF RIGHTS-OF-WAY LINES.
3. FIRE HYDRANT STEAMER NOZZLE SHALL FACE THE STREET.
4. LOCATE HYDRANT VALVE IMMEDIATELY ADJACENT TO WATER LINE.



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STANDARD FIRE HYDRANT DETAIL
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER | DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF. DATE: JULY-01-2010 | DWG NO. 02520-01



MINIMUM BLOCKING DIMENSION IN INCHES

PIPE SIZE	90° BEND			45° BEND			TEE/PLUG		
	W	H	L	W	H	L	W	H	L
4"	6	12	14	10	6	8	11	8	6
6"	8	14	26	12	8	14	14	12	8
8"	10	16	40	16	10	18	20	16	10
10"	12	24	42	18	12	22	30	18	12
12"	14	36	48	30	14	26	30	22	14

4"	6	12	14	10	6	8	11	8	6	10	12	12
6"	8	14	26	12	8	14	14	12	8	14	19	19
8"	10	16	40	16	10	18	20	16	10	16	26	26
10"	12	24	42	18	12	22	30	18	12	24	30	30
12"	14	36	48	30	14	26	30	22	14	26	40	40

CORRECTION FACTORS

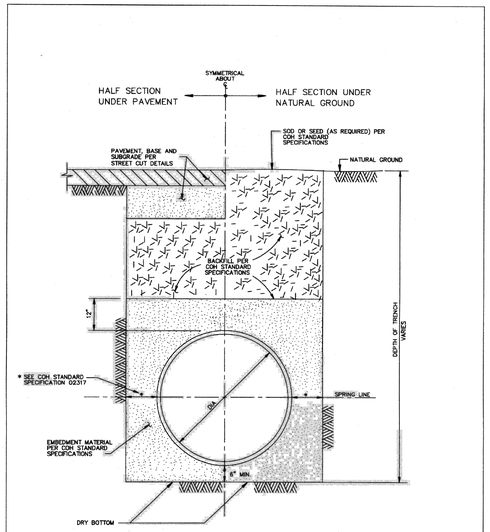
SOIL TYPE	SOIL BEARING STRENGTH S_b (lb/ft²)	MULTIPLY "L" AND "H" BY
SOFT CLAY	1000	1.73
SILT	1500	1.41
SANDY SILT	3000	1.00
SAND	4000	0.87
SANDY CLAY	6000	0.71
HARD CLAY	9000	0.58

NOTES:
1. DEPTH "H" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE.
2. BLOCKING MUST BE PLACED AGAINST UNDISTURBED EARTH. WHERE THIS IS NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND UNDISTURBED SOIL MUST BE COMPACTED TO AT LEAST 90% STANDARD PROCTOR DENSITY.
3. PROVIDE CONCRETE IN ACCORDANCE WITH STANDARD SPECIFICATION SECTION 03315 — CONCRETE FOR UTILITY CONSTRUCTION.
4. BLOCKING DIMENSIONS SHOWN ARE BASED ON 3000 PSI SOIL BEARING STRENGTH AND 125 PSI INTERNAL WATER PRESSURE. FOR OTHER SOIL CONDITIONS, MULTIPLY DIMENSIONS "L" AND "H" BY THE APPROPRIATE CORRECTION FACTOR.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

THRUST BLOCK DETAIL FOR WATER LINES (4-INCH TO 12 INCH)
(NOT TO SCALE)

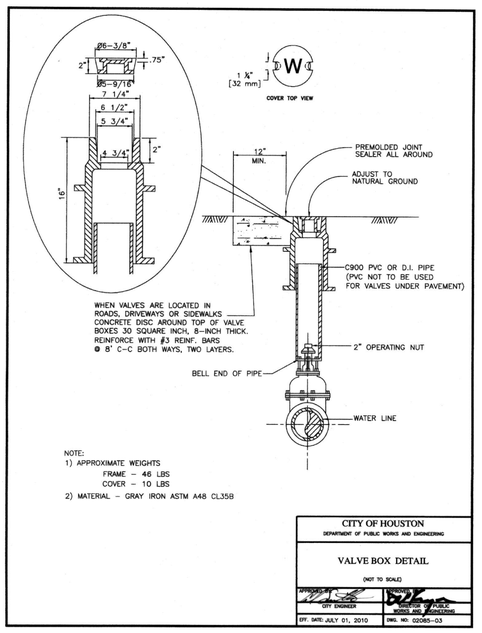
APPROVED BY: CITY ENGINEER | DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF. DATE: JULY-01-2010 | DWG NO. 02511-02



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER DISTRIBUTION MAIN BEDDING AND BACKFILL FOR OPEN CUT TRENCHES
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER | DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010 | DWG NO: 02317-04

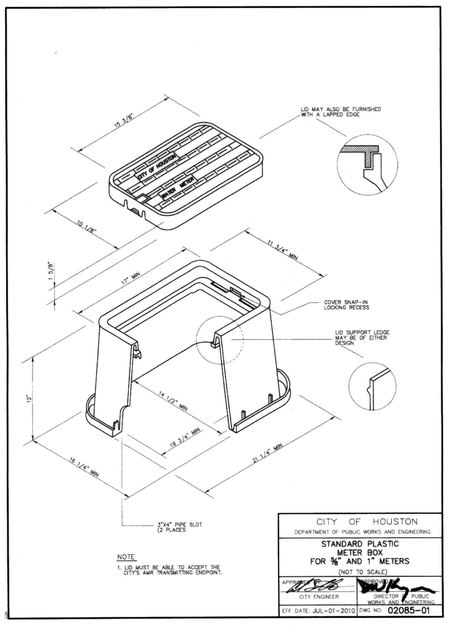


NOTE:
1) APPROXIMATE WEIGHTS
FRAME – 46 LBS
COVER – 10 LBS
2) MATERIAL – GRAY IRON ASTM A48 CL35B

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

VALVE BOX DETAIL
(NOT TO SCALE)

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

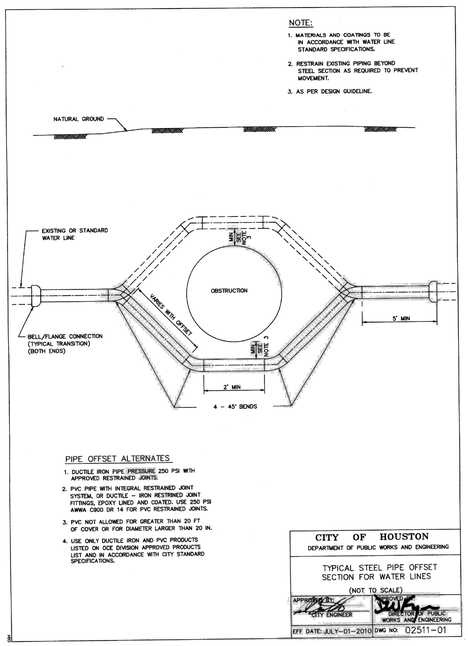


NOTE
1. LID MUST BE ABLE TO ACCEPT THE CITY'S AMR TRANSMITTING ENDPOINT.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STANDARD PLASTIC METER BOX FOR ⅝" AND 1" METERS
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER | DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010 | DWG NO: 02085-01



PIPE OFFSET ALTERNATES
1. DUCTILE IRON PIPE PRESSURE 250 PSI WITH APPROVED RESTRAINED JOINTS.
2. PVC PIPE WITH INTEGRAL RESTRAINED JOINT SYSTEM, OR DUCTILE – IRON RESTRINED JOINT FITTINGS, EPOXY LINED AND COATED. USE 250 PSI AWWA C900 DR 14 FOR PVC RESTRAINED JOINTS.
3. PVC NOT ALLOWED FOR GREATER THAN 20 FT OF COVER OR FOR DIAMETER LARGER THAN 20 IN.
4. USE ONLY DUCTILE IRON AND PVC PRODUCTS LISTED ON OCE DIVISION APPROVED PRODUCTS LIST AND IN ACCORDANCE WITH CITY STANDARD SPECIFICATIONS.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

TYPICAL STEEL PIPE OFFSET SECTION FOR WATER LINES
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER | DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010 | DWG NO: 02511-01

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STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED PROFESSIONAL ENGINEER
8/3/2026

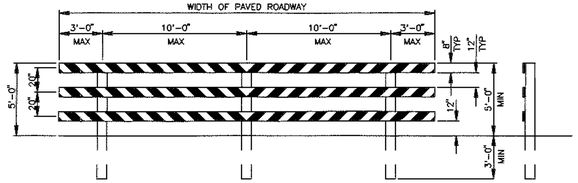
SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

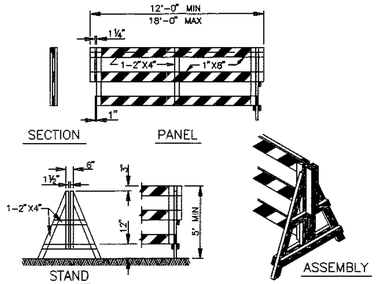
WATER DETAILS
SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 75 OF 159	



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 SRIPES ON SIDE FACING TRAFFIC



DEMOUNTABLE TYPE III BARRICADE

BARRICADE NOTES

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.

CHANNELIZATION DEVICES OTHER THAN BARRICADES SHOULD NORMALLY BE USED FOR CHANNELIZATION PURPOSES.

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.

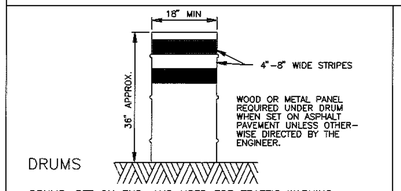
BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL IN A MANNER APPROVED BY THE DEPARTMENT OF TRAFFIC AND TRANSPORTATION. THE CONSTRUCTION DETAILS SHOWN HEREON ARE TYPICAL AND ARE SUGGESTED DETAILS FOR WOOD SUPPORT SYSTEMS FOR BARRICADES. THE DETAILS OF RAIL WIDTH AND STRIPING, NUMBER AND SPACING OF RAILS, MINIMUM LENGTH AND HEIGHT (ABOVE PAVEMENT) OF RAILS MUST BE ADHERED TO WHEN ALTERNATE DESIGNS ARE USED.

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.

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.

THE CONTRACTOR SHALL MAINTAIN EACH BARRICADE IN A CLEAN AND GOOD CONDITION.

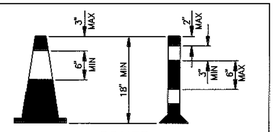
BARRICADES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND/OR THE ELIMINATION OF THE HAZARD ON ANY SECTION.



DRUMS

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

CWI–8 CHEVRON SIGNS, CWI–6A ARROW SIGNS OR VP–I VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.

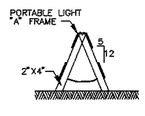


CONES

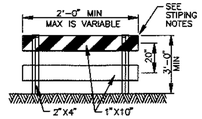
TRAFFIC CONES AND TUBULAR MARKERS SHALL BE A MIN OF 18" INCHES IN HEIGHT WITH A BROADENED BASE AND MAY BE MADE OF VARIOUS MATERIALS TO WITHSTAND IMPACT WITHOUT DAMAGE TO THEMSELVES OR TO VEHICLES. LARGER SIZES SHOULD BE USED ON FREEWAYS AND OTHER ROADWAYS WHERE SPEED ARE RELATIVELY HIGH OR WHERE EVER 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 NIGHTTIME USE THEY SHALL BE REFLECTORIZED OR EQUIPPED WITH LIGHTING DEVICES FOR MAX VISIBILITY. REFLECTORIZED MATERIAL SHALL HAVE A SMOOTH, SEALED OUTER SURFACE WHICH WILL DISPLAY THE SAME APPROX COLOR DAY AND NIGHT.

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.

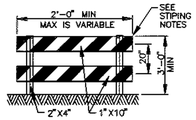
CONES OR TUBULAR MARKERS ARE GENERALLY ONLY SUITABLE FOR TEMPORARY USAGE (UP TO 8 HOURS) WITH OTHER CHANNELIZATION DEVICES SUCH AS VERTICAL PANELS OR BARRICADES PREFERRED FOR LONGER TERM USAGE. CARE SHOULD BE TAKEN TO INSURE THAT THEY REMAIN IN THEIR PROPER LOCATION AND IN AN UPRIGHT POSITION.



"A" FRAME



TYPE I



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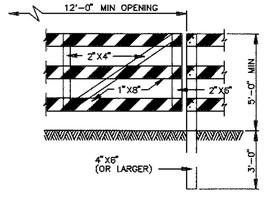
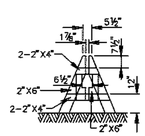
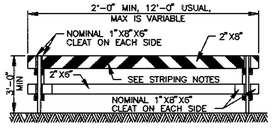


GATE FOR
TYPE III BARRICADE



DEMOUNTABLE



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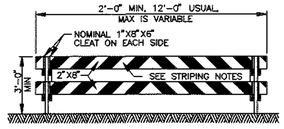

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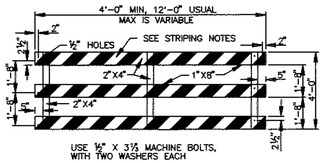
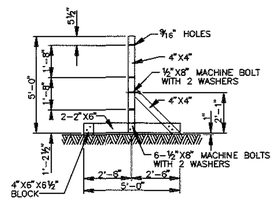
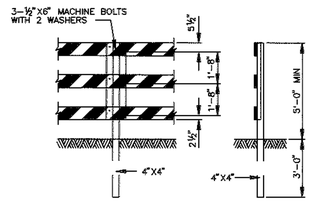


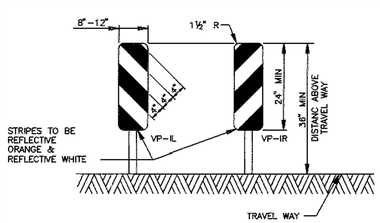
PANEL FOR
TYPE III BARRICADE



STAND FOR
TYPE III BARRICADE

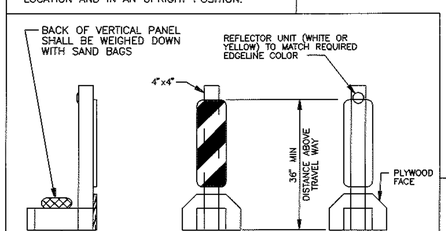


POST FOR
TYPE III BARRICADE



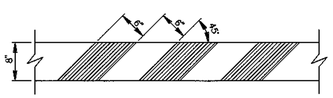
VERTICAL PANELS (VP)

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 OR DIRECTED BY THE COH DEPT OF TRAFFIC AND TRANSPORTATION



STRIPING FOR BARRICADE

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 BAR–RICADE 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.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

BARRICADE STANDARD

(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT–01–2002	DWG NO: 01580–01

COH

K:\331052–CLOVERLAND AREA P&D–COH FY15\DWG\DESIGN DRAWINGS\SUB–PROJECT–1\DETAILS\076– MISCELLANEOUS DETAILS 1 OF 2.DWG AUG. 03, 2026–8:19am

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127–00–00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/– 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/– 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "B":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED +/– 50FT OF THE INTERSECTION OF CULLEN BLVD. AND BUNGALOW LN.
ELEVATION = 39.90 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "C":
3/4" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED AT THE NW CORNER OF MADDEN LN AND DONEGAL WAY.
ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK–UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE 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 TO BE USED FOR CONFLICT VERIFICATION

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CENTERPOINT ENERGY/UNDERGROUND ELECRICAL FACILITIES VERIFICATION ONLY.

(THIS SIGNATURE VERIFIES EXITING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION.)

SIGNATURE VALID FOR SIX MONTHS.

DATE:

CABLE COMPANY

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F–12428

STATE OF TEXAS · DARIUOSH S. KERMANY · 93626 · LICENSED PROFESSIONAL ENGINEER
8/3/2026

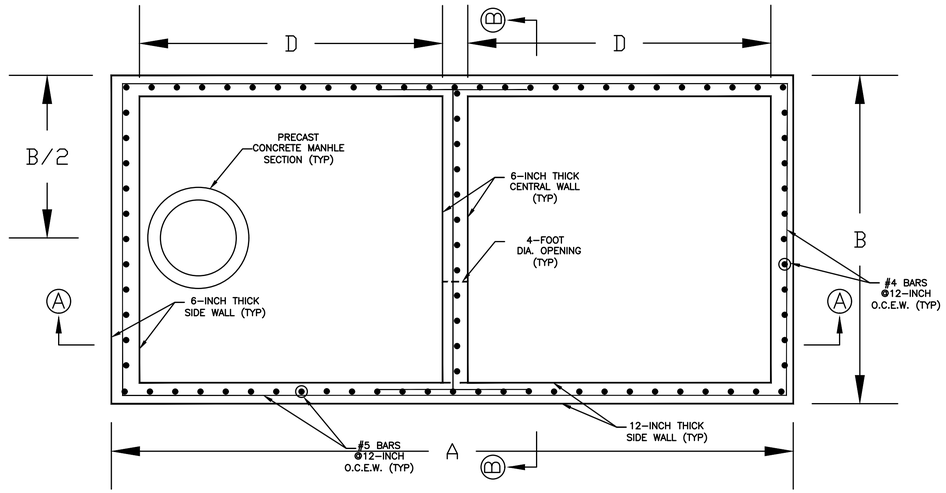
SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

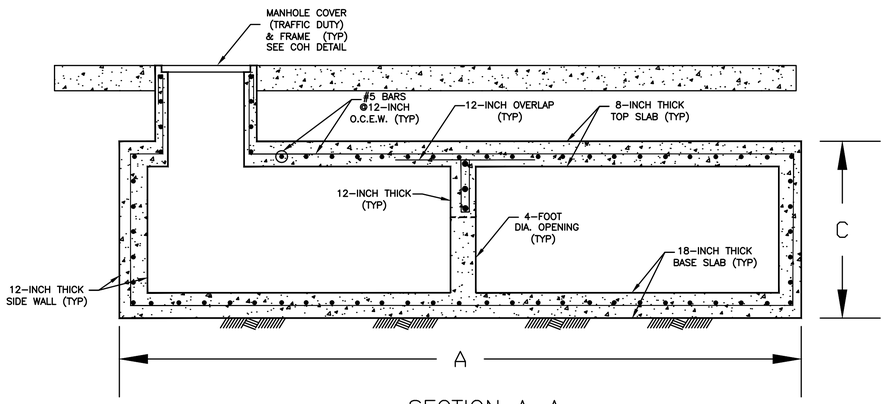
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

MISCELLANEOUS
DETAILS 1 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 76 OF 159	

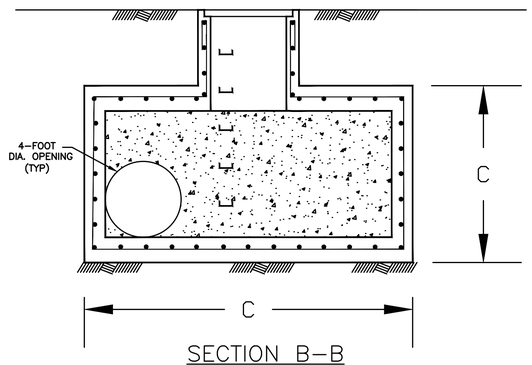


PRECAST RECTANGULAR MANHOLE
NTS

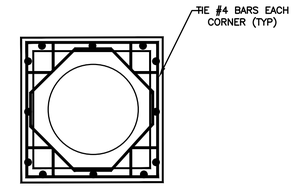


SECTION A–A

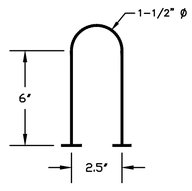
RECTANGULAR BOX	A	B	C	D
MANHOLE (TY–1)	27'	10'	7.17'	12'
MANHOLE (TY–2)	27'	13'	7.17'	12'
MANHOLE (TY–3)	21'	13'	6.17'	9'



SECTION B–B



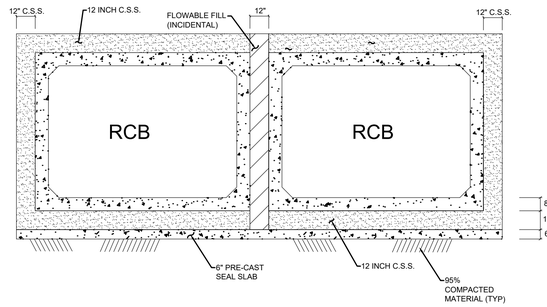
PLAN AT OPENING OR MANHOLE



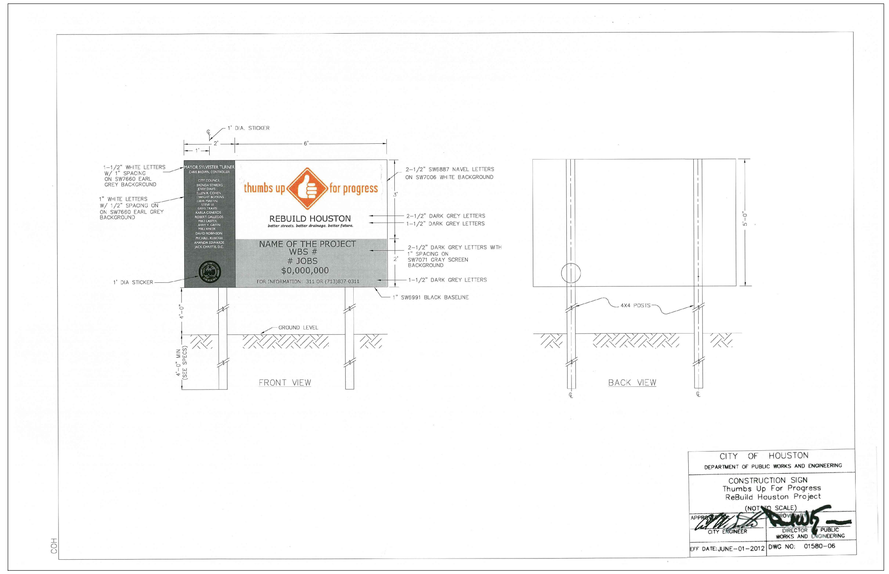
ANCHOR LIFTING

GENERAL NOTES

1. PRECAST CONCRETE MANHOLE SHALL BE DESIGNED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND APPLICABLE CITY OF HOUSTON STANDARD DETAILS.
2. TOP SLAB DESIGN LOADING SHALL BE HL-93 TRAFFIC LOADING.
3. MINIMUM SPECIFIED CONCRETE COMPRESSIVE STRENGTH SHALL BE F'C = 5,000 PSI AT 28 DAYS.
4. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60 WITH FY = 60,000 PSI.
5. MINIMUM CLEAR CONCRETE COVER SHALL BE 2 INCHES UNLESS NOTED OTHERWISE.
6. EXTERIOR WALLS AND CENTER WALL SHALL BE 12 INCHES THICK.
7. TOP SLAB SHALL BE 8 INCHES THICK AND BASE SLAB SHALL BE 18 INCHES THICK.
8. PROVIDE ONE 48-INCH DIAMETER OPENING THROUGH THE CENTER WALL BETWEEN CHAMBERS. THE BOTTOM OF THE OPENING SHALL BEGIN AT FLOOR ELEVATION.
9. PROVIDE ONE 4'-0" DIAMETER MANHOLE RISER CENTERED OVER THE 9'-6" CHAMBER.
10. THE MANHOLE RISER SHALL EXTEND 3'-0" ABOVE THE TOP OF THE BOX.
11. PROVIDE TRAFFIC-DUTY MANHOLE FRAME AND COVER SET IN MORTAR.
12. PROVIDE POLYMER CONCRETE OR COATED STEEL STEPS INSIDE THE MANHOLE AT 12 INCHES ON CENTER VERTICALLY.
13. PROVIDE TIE REINFORCING BARS BETWEEN THE MANHOLE RISER AND TOP SLAB. FINAL DOWEL SIZE, SPACING, DEVELOPMENT, AND CONFINEMENT REINFORCING SHALL BE DESIGNED BY THE PRECAST MANUFACTURER OR ENGINEER OF RECORD.
14. LIFTING ANCHORS SHALL BE DESIGNED BY THE PRECAST MANUFACTURER FOR THE WEIGHT OF EACH PRECAST SECTION.



BEDDING DETAIL FOR RCB



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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

MISCELLANEOUS DETAILS 2 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 77 OF 159	

K:\331052–CLOVERLAND AREA P&D–COH FY15\DWG\DESIGN DRAWINGS\SUB–PROJECT–1\DETAILS\077– MISCELLANEOUS DETAILS 2 OF 2.DWG AUG. 03, 2026–8:25am

MOWERY (NORTH)

DRIVEWAY NO.	DISTANCE TO HIGH POINT	STREET SLOPE	PROP.GUTTER	EXIST ROW	ROW+10FT	PROP SLOPE DRIVEWAY WITHOUT S/W	DIST. FROM ROW TO GUTTER	DWY. SLOPE @ ROW	DWY. SLOPE @ TIE IN OUTSIDE ROW	COMMENT: OK=UNDER12%, !=OVER12%	COVERED PARKING	BEGINNING SLOPE	
1	418.67	0.30	39.24	40.47	41.05	11.15	11.00	45.07	10.92	OK		10.0%	10 feet outside ROW
2	357.47	0.30	39.43	40.63	41.44	10.93	11.00	43.49	11.93	OK		12.0%	10 feet outside ROW
3	307.3	0.30	39.58	40.77	41.18	10.84	11.00	42.79	9.15	OK		10.0%	10 feet outside ROW
4	247.22	0.30	39.76	40.80	40.96	9.47	11.00	32.78	5.67	OK		10.0%	10 feet outside ROW
5	192.02	0.30	39.92	40.50		5.24	11.00	7.74		OK	YES	8.0%	
6	140.89	0.30	40.08	40.62		4.93	11.00	5.51		OK		8.0%	
7	87.52	0.30	40.24	40.88		5.84	11.00	6.17		OK		10.0%	
8	31.36	0.30	40.41	41.09		6.22	11.00	8.94		OK	YES	10.0%	
9	22.17	0.42	40.41	40.75		3.12	11.00	4.22		OK		4.0%	
10	79.42	0.42	40.17	40.77		5.49	11.00	3.60		OK	YES	10.0%	
11	131.35	0.42	39.95	40.51		5.11	11.00	6.83		OK		8.0%	
12	191.94	0.42	39.69	40.20		4.61	11.00	3.15		OK	YES	8.0%	
13	242.04	0.42	39.48	40.28	40.92	7.25	11.00	16.53	9.35	OK	YES	10.0%	8 feet outside ROW
14	294.92	0.42	39.26	40.09	40.67	7.55	11.00	18.69	9.06	OK	YES	10.0%	8 feet outside ROW
15	351.27	0.42	39.02	40.00	40.64	8.88	11.00	28.49	9.28	OK		10.0%	10 feet outside ROW
16	411.72	0.42	38.77	39.43		6.01	11.00	7.44		OK		10.0%	
17	121.82	0.49	38.90	39.44		4.92	11.00	5.44		OK		8.0%	
18	64.17	0.49	39.18	39.67		4.43	11.00	4.79		OK	YES	7.0%	
19	7.74	0.49	39.46	39.65	40.42	1.71	11.00	-0.12	6.28	OK		10.0%	5 feet outside ROW
20	50.55	0.34	39.33	39.36	39.76	0.28	11.00	-10.65	2.09	OK		2.0%	10 feet outside ROW
21	89.92	0.31	39.17	39.64		4.27	11.00	6.62		OK		6.0%	
22	27.72	0.31	39.36	39.83		4.24	11.00	6.41		OK	YES	6.0%	
23	24.86	0.45	39.34	39.88		4.92	11.00	8.43		OK	YES	7.0%	
24	79.43	0.45	39.09	39.38		2.60	11.00	6.40		OK		4.0%	
25	132.41	0.45	38.86	39.67	39.88	7.40	11.00	17.57	4.12	OK		10.0%	10 feet outside ROW
26	28.32	0.33	38.96	39.45		4.49	11.00	8.29		OK		6.0%	
27	23.49	0.54	38.92	39.56		5.78	11.00	5.72		OK	YES	10.0%	
28	81.1	0.54	38.62	38.89		2.50	11.00	5.63		OK	YES	2.0%	
29	137.68	0.54	38.31	39.08	39.28	6.98	11.00	14.50	3.63	OK	YES	10.0%	10 feet outside ROW
30	434.66	0.37	38.25	39.15	39.88	8.18	11.00	23.29	9.39	OK	YES	10.0%	10 feet outside ROW
31	377.01	0.37	38.46	39.3	39.76	7.61	11.00	19.15	6.50	OK		10.0%	10 feet outside ROW
32	321.9	0.37	38.67	39.55	39.93	8.04	11.00	22.30	6.21	OK		10.0%	10 feet outside ROW
33	239.45	0.37	38.97	39.4	39.78	3.92	11.00	4.07		OK		6.0%	
34	194.1	0.37	39.14	39.46		2.95	11.00	2.95		OK		4.0%	
35	127.01	0.37	39.38	39.51	39.70	1.16	11.00	-4.17	1.11	OK		2.0%	15 feet outside ROW
36	0	0.37	39.85	39.44	39.47	-3.73	11.00	-43.00	-5.35	!		3.0%	15 feet outside ROW
37	119.4	0.32	39.47	39.68	40.05	1.94	11.00	-7.41	2.25	OK		4.5%	10 feet outside ROW

MOWERY (SOUTH)

DRIVEWAY NO.	DISTANCE TO HIGH POINT	STREET SLOPE	PROP.GUTTER	EXIST ROW	ROW+10FT	PROP SLOPE DRIVEWAY WITHOUT S/W	DIST. FROM ROW TO GUTTER	DWY. SLOPE @ ROW	DWY. SLOPE @ TIE IN OUTSIDE ROW	COMMENT:OK=UNDER12%, !=OVER12%	COVERED PARKING	BEGINNING SLOPE	
38	409.82	0.30	39.17	40.14	40.79	8.85	11.00	28.22	9.33	OK		10.0%	10 feet outside ROW
39	349.15	0.30	39.35	40.63	41.61	11.64	11.00	48.72	11.04	OK		10.0%	10 feet outside ROW
40	287.99	0.30	39.53	40.88	41.25	12.24	11.00	53.11	10.15	OK		10.0%	10 feet outside ROW
41	235.06	0.30	39.69	40.63	41.37	8.52	11.00	25.83	9.80	OK		10.0%	10 feet outside ROW
42	173.41	0.30	39.88	40.76	41.56	8.02	11.00	22.12	9.84	OK	covered	10.0%	10 feet outside ROW
43	153.85	0.30	40.05	40.29		2.17	11.00	3.24		OK		2.0%	
44	59.51	0.30	40.22	40.92		6.36	11.00	9.94		OK		6.0%	
45	3.14	0.30	40.39	40.63		2.18	11.00	3.30		OK		2.0%	
46	57.67	0.42	40.16	40.30		1.31	11.00	1.43		OK		0.5%	
47	117.13	0.42	39.90	40.06		1.41	11.00	2.19		OK		0.5%	
48	175.55	0.42	39.66	39.86		1.84	11.00	2.33		OK	covered	1.5%	
49	235.17	0.42	39.41	39.91		4.59	11.00	8.97		OK	covered	6.0%	
50	293.86	0.42	39.16	39.42		2.39	11.00	4.85		OK		2.0%	
51	351.43	0.42	38.91	38.54	39.19	-3.40	11.00	-33.09	1.10	OK		1.1%	10 feet outside ROW
52	113.78	0.35	38.76	39.11		3.18	11.00	4.69		OK		4.0%	
53	60.32	0.35	38.95	39.37		3.84	11.00	3.48		OK	covered	6.0%	
54	7.59	0.35	39.13	39.25	40.12	1.07	11.00	0.28	3.80	OK		10.0%	10 feet outside ROW
55	49.93	0.35	38.98	39.06	39.77	0.69	11.00	-3.13	3.61	OK		10.0%	10 feet outside ROW
56	109.21	0.35	38.78	39.27		4.49	11.00	8.26		OK	covered	6.0%	
57	99.16	0.30	38.81	39.46		5.91	11.00	6.70		OK		10.0%	
58	44.51	0.30	38.98	39.43		4.14	11.00	5.66		OK		6.0%	
59	10.48	0.42	39.07	39.52		4.13	11.00	5.61		OK		6.0%	
60	65.76	0.42	38.93	39.55		6.51	11.00	11.11		OK		10.0%	
61	120.59	0.42	38.60	39.59	40.02	8.98	11.00	29.15	7.54	OK		10.0%	10 feet outside ROW
62	46.66	0.35	38.60	39.73	40.24	10.29	11.00	38.78	9.49	OK		10.0%	10 feet outside ROW
63	11.29	0.35	38.72	39.72	40.31	9.09	11.00	29.98	9.04	OK		10.0%	10 feet outside ROW
64	65.77	0.35	38.53	39.43	40.23	8.19	11.00	23.40	10.01	OK		10.0%	10 feet outside ROW
65	119.38	0.35	38.34	39.34	40.05	9.08	11.00	29.95	10.08	OK	covered	10.0%	10 feet outside ROW
66	188.68	0.34	38.85	39.92	40.36	9.72	11.00	34.61	8.34	OK		10.0%	10 feet outside ROW
67	252.04	0.34	38.63	39.82	39.9	10.80	11.00	42.50	6.24	OK		10.0%	10 feet outside ROW

TABEYTON

DRIVEWAY NO.	DISTANCE TO HIGH POINT	STREET SLOPE	PROP.GUTTER	EXIST ROW	ROW +10FT	PROP SLOPE DRIVEWAY WITHOUT S/W	DIST. FROM ROW TO GUTTER	DWY. SLOPE @ ROW	DWY. SLOPE @ TIE IN OUTSIDE ROW	COMMENT: OK=UNDER12%, !=OVER12%	COVERED PARKING	BEGINNING SLOPE	
1	308.55	0.30	39.83	41.58	42.30	10.32	17.00	15.58	10.34	OK		12.0%	10 Feet Outside ROW
2	250.76	0.30	40.00	41.63	42.20	9.57	17.00	13.44	9.38	OK	YES	10.0%	10 Feet Outside ROW
3	190.97	0.30	40.18	41.60		8.37	17.00	10.04		OK		12.0%	
4	130.96	0.30	40.36	41.78		8.37	17.00	10.04		OK		12.0%	
5	71.97	0.30	40.53	41.89		7.97	17.00	10.93		OK		10.0%	
6	7.23	0.30	40.73	41.57		4.95	17.00	6.36		OK		6.0%	
29	300.21	0.30	39.85	41.03		6.94	17.00	7.99		OK		10.0%	
30	240.46	0.30	40.03	41.38		7.04	17.00	10.84		OK	YES	10.0%	
31	188.27	0.30	40.19	41.38		7.02	17.00	8.24		OK	YES	10.0%	
32	126.22	0.30	40.37	41.55		6.90	17.00	7.89		OK	YES	10.0%	
33	74.38	0.30	40.53	41.56		6.08	17.00	5.55		OK		10.0%	
34	14.25	0.30	40.71	41.40		4.07	17.00	3.88		OK	YES	6.0%	
7	45.33	0.41	40.57	41.86		7.61	17.00	9.90		OK	YES	10.0%	
8	99.32	0.41	40.35	41.49		6.73	17.00	7.39		OK		10.0%	
9	160.65	0.41	40.10	41.45		7.95	17.00	10.87		OK	YES	10.0%	
10	212.01	0.41	39.89	41.33		8.45	17.00	10.26		OK	YES	12.0%	
11	273.9	0.41	39.64	41.06		8.37	17.00	10.04		OK	YES	12.0%	
12	334.9	0.41	39.39	40.60		7.12	17.00	8.50		OK		10.0%	
13	398.9	0.41	39.13	40.67		9.06	17.00	12.00		OK		12.0%	
14	448.3	0.41	38.93	40.18		7.36	17.00	9.17		OK		10.0%	
35	46.3	0.41	40.56	41.50		5.52	17.00	7.97		OK		6.0%	
36	100.37	0.41	40.34	41.47		6.60	17.00	7.04		OK		10.0%	
37	160.47	0.41	40.10	41.23		6.66	17.00	7.19		OK		10.0%	
38	224.38	0.41	39.84	41.03		7.01	17.00	8.19		OK		10.0%	
39	277.8	0.41	39.62	40.84		7.16	17.00	8.63		OK		10.0%	
40	335.78	0.41	39.39	40.61		7.20	17.00	8.72		OK		10.0%	
41	395.7	0.41	39.14	39.94		4.69	17.00	5.61		OK		6.0%	
42	450.24	0.41	38.92	40.12		7.05	17.00	8.30		OK		10.0%	
15	366.29	0.35	38.78	39.85		6.27	17.00	6.09		OK		10.0%	
16	311.56	0.35	38.98	40.21		7.25	17.00	8.89		OK		10.0%	
17	251.76	0.35	39.19	40.25		6.26	17.00	6.06		OK		10.0%	
18	197.94	0.35	39.38	40.29		5.38	17.00	7.58		OK		6.0%	
19	140.75	0.35	39.58	40.35		4.55	17.00	5.23		OK	YES	6.0%	
20	83.71	0.35	39.78	40.40		3.67	17.00	4.73		OK	YES	4.0%	
21	30.73	0.35	39.96	40.42		2.66	17.00	2.88		OK		3.0%	
43	370.42	0.35	38.77	39.51		4.35	17.00	4.66		OK		6.0%	
44	309.4	0.35	38.98	40.19		7.09	17.00	8.43		OK	YES	10.0%	
45	255.13	0.35	39.17	39.78		3.56	17.00	2.42		OK		6.0%	
46	198.57	0.35	39.37	39.91		3.16	17.00	4.28		OK		6.0%	
47	142.95	0.35	39.57	39.79		1.30	17.00	1.03		OK	YES	1.0%	
48	87.87	0.35	39.76	40.27		2.99	17.00	3.81		OK	YES	3.0%	
49	31.85	0.35	39.96	40.29		1.95	17.00	2.86		OK		1.0%	
22	24.08	0.52	39.95	40.47		3.09	17.00	4.08		OK	YES	3.0%	
23	75.57	0.52	39.68	40.29		3.59	17.00	3.52		OK		5.0%	
24	140.89	0.52	39.34	40.41		6.26	17.00	6.07		OK	YES	10.0%	
25	193.29	0.52	39.07	40.14		6.29	17.00	6.17		OK		10.0%	
26	244.85	0.52	38.80	40.06		7.39	17.00	9.28		OK		10.0%	
27	298.66	0.52	38.52	39.28		4.44	17.00	4.92		OK		6.0%	
28	353.79	0.52	38.24	39.35		6.53	17.00	6.84		OK		10.0%	
50	25.23	0.52	39.94	40.35		2.41	17.00	2.18		OK		3.0%	
51	80.1	0.52	39.66	40.18		3.08	17.00	4.07		OK		3.0%	
52	141.11	0.52	39.34	40.55		7.12	17.00	8.50		OK	YES	10.0%	
53	191.5	0.52	39.08	40.01		5.48	17.00	7.85		OK		6.0%	
54	246.16	0.52	38.80	38.73	39.20	-0.42	17.00	-4.86	1.15	OK		2.0%	10 Feet Outside ROW
55	305.38	0.52	38.49	38.99		2.94	17.00	3.67		OK		3.0%	
56	367.17	0.52	38.17	39.51		7.88	17.00	10.66		OK		10.0%	

LEITKIM

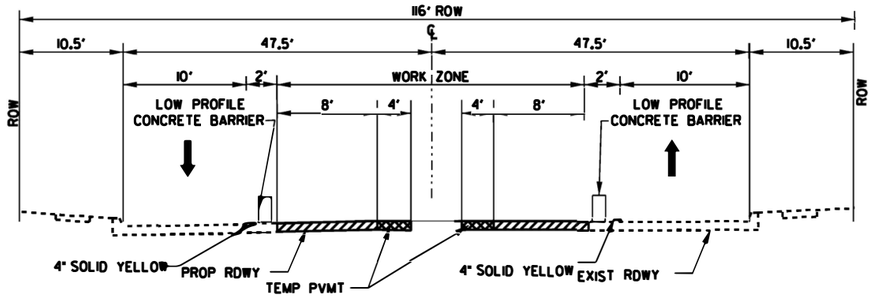
DRIVEWAY NO.	DISTANCE TO HIGH POINT	STREET SLOPE	PROP.GUTTER	EXIST ROW	ROW+10FT	PROP SLOPE DRIVEWAY WITHOUT S/W	DIST. FROM ROW TO GUTTER	DWY. SLOPE @ ROW	DWY. SLOPE @ TIE IN OUTSIDE ROW	COMMENT: OK=UNDER12%, !=OVER12%	COVERED PARKING	BEGINNING SLOPE	
1	53	0.49	41.45	42.15		4.10	17	3.96		OK		6.0%	
2	108.67	0.49	41.18	42.2		5.99	17	5.31		OK		10.0%	
29	77.07	0.54	41.21	42.1		5.22	17	1.11		OK		6.0%	
3	80	0.35	40.96	42.36		8.26	17	9.73		OK		6.0%	
4	29.5	0.59	41.06	42.28		7.15	17	6.59		OK	YES	6.0%	
5	86.8	0.59	40.72	41.87		6.74	17	5.43		OK		6.0%	
6	152.07	0.59	40.34	41.22		5.20	17	7.06		OK	YES	6.0%	
7	73.03	0.35	40.32	40.75		2.51	17	2.45		OK	YES	3.0%	
8	11.83	0.35	40.54	41.55		5.95	17	5.19		OK		10.0%	
30	27.34	0.35	40.48	41.5		5.98	17	5.27		OK	YES	10.0%	
31	49.89	0.53	40.31	41.08		4.51	17	5.10		OK	YES	6.0%	
9	82.23	0.36	40.41	41.99	43.30	9.31	17	12.70	10.90	OK	YES	12.0%	13 Feet Outside ROW
10	15.32	0.36	40.65	41.55		5.32	17	7.41		OK		6.0%	
32	153.85	0.36	40.16	41.45		7.58	17	7.82		OK	YES	6.0%	
33	83.6	0.36	40.40	41.06		3.86	17	3.28		OK		6.0%	
34	20.57	0.36	40.63	40.94		1.84	17	1.55		OK		2.0%	
11	47.53	0.35	40.54	41.49		5.61	17	4.24		OK		10.0%	
12	116.44	0.35	40.30	41.13		4.91	17	6.23		OK	YES	6.0%	
13	169.38	0.35	40.11	41.1		5.80	17	4.77		OK	YES	10.0%	
35	51.47	0.35	40.52	41.4		5.17	17	6.97		OK		6.0%	
36	136.54	0.35	40.23	42.22	42.30	11.72	17	19.54	8.58	OK		10.0%	10 Feet Outside ROW
14	102.42	0.32	40.07	41.34		7.46	17	9.47		OK	YES	10.0%	
15	40.17	0.32	40.27	40.94		3.93	17	3.48		OK		6.0%	
16	18.1	0.59	40.29	40.56		1.57	17	1.79		OK		1.0%	
17	29.03	0.59	39.93	41.45		8.93	17	11.64		OK		10.0%	
37	25.38	0.59	40.25	41.85	42.00	9.41	17	15.01	6.56	OK		10.0%	10 feet Outside ROW
18	129.03	0.59	39.64	41.4	41.80	10.38	17	17.74	9.15	OK		10.0%	10 feet Outside ROW
19	71.15	0.40	39.91	41.34		8.44	17	10.24		OK		10.0%	
20	54.52	0.40	39.97	41.52	42.40	9.11	17	14.13	10.80	OK		12.0%	10 Feet Outside ROW
21	53.2	0.59	39.88	41.21		7.83	17	10.52		OK		10.0%	
22	43.63	0.45	39.75	41.23		8.68	17	10.94		OK		12.0%	
23	59.77	0.31	39.76	41.58	42.80	10.68	17	18.59	11.12	OK		10.0%	15 Feet Outside ROW
24	114.35	0.31	39.60	41.25	43.00	9.73	17	15.91	11.75	OK		12.0%	16 Feet Outside ROW
25	89.91	0.55	39.10	41.29	42.43	12.86	17	24.76	11.93	OK		12.0%	15 Feet Outside ROW
26	39.79	0.55	39.38	41.28	42.50	11.17	17	19.99	10.95	OK		12.0%	15 Feet Outside ROW
27	29.22	0.30	39.51	41.04		8.99	17	11.79		OK		12.0%	
28	90.16	0.30	39.33	41.40	42.65	12.18	17	22.84	11.91	OK		12.0%	15 Feet Outside ROW

DUANE

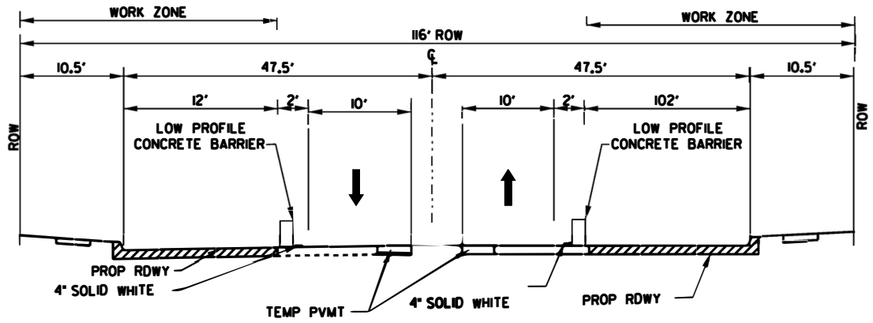
DRIVEWAY NO.	DISTANCE TO HIGH POINT	STREET SLOPE	PROP.GUTTER	EXIST ROW	PROP SLOPE DRIVEWAY WITHOUT S/W	DIST. FROM ROW TO GUTTER	DWY. SLOPE @ ROW	COMMENT: OK=UNDER12%, !=OVER12%	COVERED PARKING	BEGINNING SLOPE
16	15.12	0.88	39.62	40.13	3.00	17	3.83	OK		3.0%
33	34.37	1.14	39.40	40.45	6.18	17	5.83	OK		10.0%
34	23.03	0.67	39.61	40.11	2.91	17	3.59	OK	YES	6.0%
35	87.6	0.67	39.18	40.02	4.95	17	6.35	OK		6.0%
36	57.45	0.30	39.23	40.07	4.96	17	6.37	OK		6.0%
37	6.48	0.30	39.38	39.87	2.88	17	3.49	OK	YES	3.0%
17	33.97	0.82	39.12	39.98	5.05	17	6.63	OK		6.0%
38	53.08	0.82	38.97	39.26	1.73	17	1.24	OK		2.0%
39	110.44	0.82	38.50	39.74	7.32	17	9.07	OK		10.0%
40	123.34	0.32	38.35	39.87	8.94	17	11.65	OK		12.0%
41	64.8	0.55	38.40	39.38	5.79	17	8.73	OK		6.0%
42	8.14	0.55	38.71	39.39	4.03	17	3.74	OK		6.0%
43	46.5	0.55	38.50	38.95	2.67	17	2.90	OK		3.0%
44	130.58	0.35	38.20	39.43	7.23	17	8.83	OK		10.0%
45	31.79	0.35	38.55	39.13	3.42	17	5.03	OK		3.0%
46	30.51	0.80	38.42	39.48	6.26	17	8.08	OK		8.0%
47	89.9	0.80	37.94	39.40	8.59	17	10.68	OK		12.0%

TAVENOR

DRIVEWAY NO.	DISTANCE TO HIGH POINT	STREET SLOPE	PROP.GUTTER	EXIST ROW	PROP SLOPE DRIVEWAY WITHOUT S/W	DIST. FROM ROW TO GUTTER	DWY. SLOPE @ ROW	COMMENT: OK=UNDER12%, !=OVER12%	COVERED PARKING	BEGINNING SLOPE	
1	333.72	0.31	40.02	41.40	8.11	17	11.30	OK		10.0%	
2	270.58	0.31	40.22	41.44	7.18	17	8.67	OK	YES	10.0%	
3	214.93	0.31	40.39	41.46	6.27	17	6.09	OK		10.0%	
4	155.79	0.31	40.58	41.71	6.64	17	7.16	OK		10.0%	
5	91.75	0.31	40.78	41.85	6.28	17	6.14	OK		10.0%	
6	32.71	0.31	40.97	41.97	5.90	17	5.05	OK	YES	10.0%	
27	324.72	0.31	40.05	41.11	6.24	17	6.00	OK		10.0%	
28	262.46	0.31	40.25	41.67	8.38	17	10.07	OK	YES	12.0%	
29	208.82	0.31	40.41	41.58	6.86	17	7.77	OK		10.0%	
30	147.61	0.31	40.61	41.75	6.73	17	7.39	OK		10.0%	
31	85.57	0.31	40.80	41.46	3.88	17	3.31	OK		6.0%	
32	25.35	0.31	40.99	41.93	5.53	17	7.99	OK	YES	6.0%	
7	28.72	0.36	40.97	41.64	3.95	17	3.54	OK		6.0%	
8	94.62	0.36	40.73	41.66	5.45	17	7.78	OK	YES	6.0%	
9	153.37	0.36	40.52	41.40	5.15	17	6.94	OK		6.0%	
10	210.04	0.36	40.32	41.31	5.81	17	4.80	OK		10.0%	
11	278.48	0.36	40.08	41.19	6.54	17	6.87	OK		10.0%	
12	338.41	0.36	39.86	40.86	5.86	17	4.92	OK		10.0%	
13	401.69	0.36	39.64	40.90	7.42	17	9.35	OK	YES	10.0%	
33	42.38	0.36	40.92	41.74	4.83	17	6.02	OK	YES	6.0%	
34	103.17	0.36	40.70	41.50	4.69	17	5.62	OK		6.0%	
35	165.07	0.36	40.48	41.02	3.16	17	2.30	OK		5.0%	
36	224.9	0.36	40.27	40.80	3.12	17	2.18	OK		5.0%	
37	283.72	0.36	40.06	40.70	3.77	17	3.01	OK	YES	6.0%	
38	342.2	0.36	39.85	41.03	6.93	17	7.98	OK	YES	10.0%	
39	403.22	0.36	39.63	40.82	6.98	17	8.10	OK	YES	10.0%	
14	310.39	0.31	39.50	40.24	4.38	17	4.74	OK		6.0%	
15	250.15	0.31	39.68	40.64	5.64	17	4.32	OK	YES	10.0%	
16	187.08	0.31	39.87	40.72	4.97	17	6.42	OK		6.0%	
17	134	0.31	40.04	40.72	4.01	17	3.70	OK		6.0%	
18	88.34	0.31	40.18	40.82	3.77	17	3.03	OK		6.0%	
19	68.97	0.31	40.24	40.81	3.37	17	3.87	OK	YES	4.0%	
40	307.67	0.31	39.50	40.15	3.80	17	3.10	OK		6.0%	
41	248.67	0.31	39.69	40.55	5.09	17	6.74	OK		6.0%	
42	189.8	0.31	39.87	40.75	5.20	17	7.06	OK	YES	6.0%	
43	131.97	0.31	40.04	40.75	4.15	17	4.10	OK		6.0%	
44	21.29	0.31	40.38	40.87	2.86	17	2.42	OK		4.0%	
45	2.52	0.31	40.44	41.03	3.46	17	2.13	OK		6.0%	
20	34.19	0.36	40.33	40.58	1.49	17	1.55	OK		1.0%	
21	58.19	0.36	40.24	40.69	2.64	17	2.82	OK		3.0%	
22	119.4	0.36	40.02	40.53	2.99	17	3.81	OK		3.0%	
23	188.21	0.36	39.77	40.83	6.21	17	5.93	OK	YES	10.0%	
24	254.38	0.36	39.54	40.62	6.37	17	6.39	OK	YES	10.0%	
25	314.05	0.36	39.32	40.73	8.28	17	11.79	OK	YES	10.0%	
25A	385	0.36	39.07	40.50	8.43	17	10.21	OK		12.0%	
26	423.54	0.36	38.93	39.93	5.89	17	5.01	OK		10.0%	
46	63.1	0.36	40.22	40.81	3.45	17	3.11	OK		5.0%	
47	128.17	0.36	39.99	40.56	3.35	17	2.84	OK		5.0%	
48	193.05	0.36	39.76	40.38	3.67	17	3.72	OK		5.0%	
49	262.1	0.36	39.51	40.36	5.01	17	7.52	OK	YES	5.0%	
50	317.87	0.36	39.31	40.83	8.95	17	11.69	OK	YES	12.0%	
51	414.42	0.36	38.96	40.18	7.17	17	8.64	OK		10.0%	
52	435.34



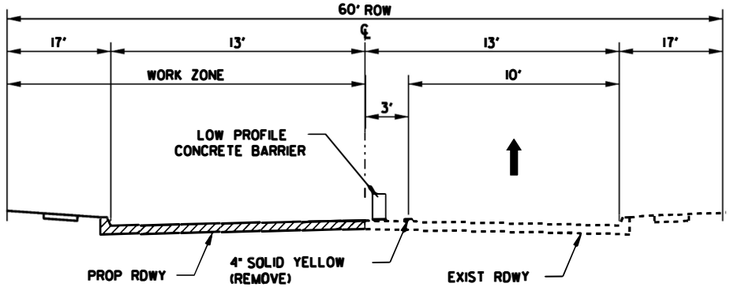
PHASE 1- STEP 1
MOWERY ROAD



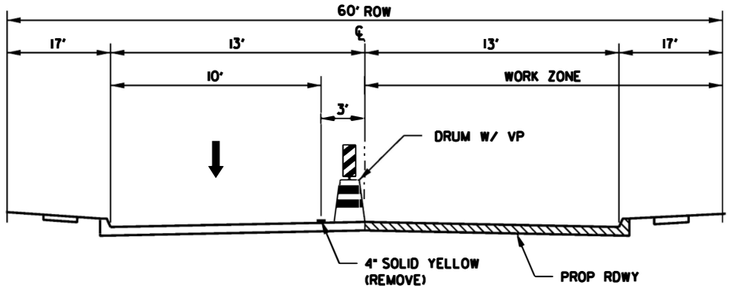
PHASE 1- STEP 2
MOWERY ROAD

NOTES:

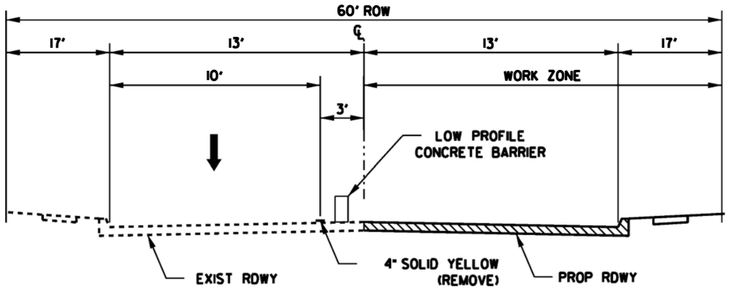
1. CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY DRAINAGE DURING CONSTRUCTION.
2. CONTRACTOR MUST INSTALL LOW PROFILE CONCRETE TRAFFIC BARRIER WITH REFLECTORS (LPCTB) AROUND EXCAVATION MORE THAN 2FT DEEP.
3. CONTRACTOR SHALL NOT CONSTRUCT TWO (2) ADJOINING PARALLEL STREETS SIMULTANEOUSLY.
4. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS ALL TIMES DURING CONSTRUCTION.
5. INTERSECTION CONSTRUCTION TO BE BUILT WITH HIGH EARLY STRENGTH CONCRETE.
6. TEMPORARY PAVEMENT WILL BE 2" HMAC SURFACE & 8" ASPH BASE.



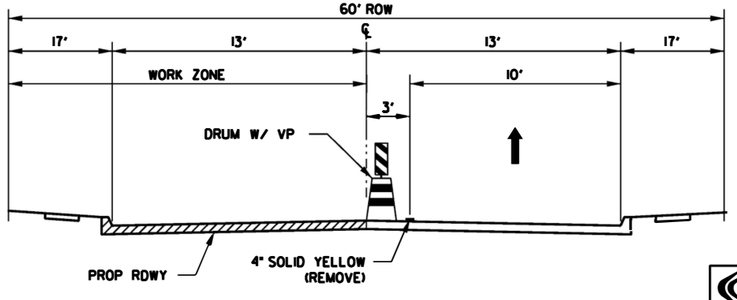
PHASE 3,4,5,6-STEP 1
DONEGAL WAY
LEITRIM WAY
BOTANY LANE
TAREYTON LANE



PHASE 3,4,5,6-STEP 2
DONEGAL WAY
LEITRIM WAY
BOTANY LANE
TAREYTON LANE



PHASE 2 & 7-STEP 1
DUANE STREET
TAVENOR LANE



PHASE 2 & 7-STEP 2
DUANE STREET
TAVENOR LANE

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

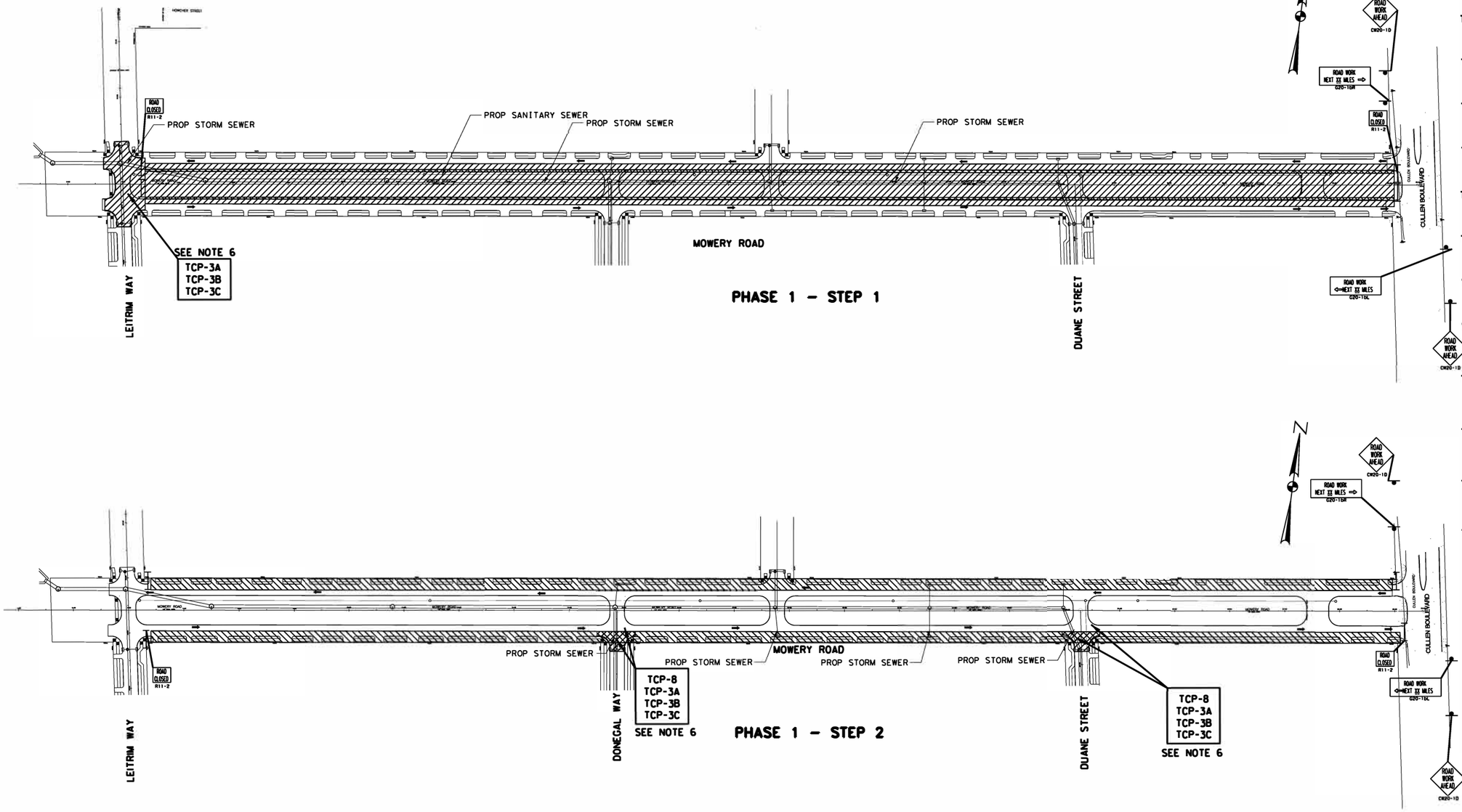
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TRAFFIC CONTROL PLAN-TYPICAL SECTIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ. NTS	
CITY OF HOUSTON FM	
SHEET NO. 79 OF 159	

SP ENGINEERING,INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522



PHASE 1 – STEP 1

PHASE 1 – STEP 2

LEGEND

ROW

TCP-1 - TYPICAL TRAFFIC CONTROL PLAN
2 LANE STREET - 1LANE CLOSURE
SEE SHEET NO. 89

TCP-2A - TYPICAL TRAFFIC CONTROL PLAN
4-WAY INTERSECTION RECONSTRUCTION
STEP 1OF 4
SEE SHEET NO. 90

TCP-2B - TYPICAL TRAFFIC CONTROL PLAN
4-WAY INTERSECTION RECONSTRUCTION
STEP 2 OF 4
SEE SHEET NO. 91

TCP-2C - TYPICAL TRAFFIC CONTROL PLAN
4-WAY INTERSECTION RECONSTRUCTION
STEP 3 OF 4
SEE SHEET NO. 92

TCP-2D - TYPICAL TRAFFIC CONTROL PLAN
4-WAY INTERSECTION RECONSTRUCTION
STEP 4 OF 4
SEE SHEET NO. 93

TCP-3A - TYPICAL TRAFFIC CONTROL PLAN
3-WAY INTERSECTION
STEP 1OF 3
SEE SHEET NO. 94

TCP-3B - TYPICAL TRAFFIC CONTROL PLAN
3-WAY INTERSECTION
STEP 2 OF 3
SEE SHEET NO. 95

TCP-3C - TYPICAL TRAFFIC CONTROL PLAN
3-WAY INTERSECTION
STEP 3 OF 3
SEE SHEET NO. 96

TCP-4 - TYPICAL TRAFFIC CONTROL PLAN
4 LANE STREET - 1LANE CLOSURE
STEP 1& 2
SEE SHEET NO. 97

TCP-5 - TYPICAL TRAFFIC CONTROL PLAN
TYPICAL NEIGHBORHOOD DETOUR PLAN
SEE SHEET NO. 82

TCP-6 - TYPICAL TRAFFIC CONTROL PLAN
4-WAY INTERSECTION CONSTRUCTION DETOUR PLAN
SEE SHEET NO. 83

TCP-7 - TYPICAL TRAFFIC CONTROL PLAN
3-WAY INTERSECTION CONSTRUCTION DETOUR PLAN
SEE SHEET NO. 84

TCP-8 - TYPICAL TRAFFIC CONTROL PLAN
MOWERY ROAD AND DONEGAL WAY/DUANE DETOUR PLAN
SEE SHEET NO. 85

SEQUENCE OF CONSTRUCTION:

1. INSTALL ADVANCE WARNING SIGNS, CONSTRUCTION SIGNS, DEVICES, DETOUR, BARRIERS, TEMPORARY PAVEMENT MARKINGS, ETC.
2. REMOVE EXISTING PAVEMENT.
3. CONSTRUCT STORM SEWERS AND SANITARY SEWER.
4. CONSTRUCT PROPOSED PAVEMENT STRUCTURE.
5. CONSTRUCT TRAFFIC SIGNS AND MARKING.

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY DRAINAGE DURING CONSTRUCTION.
2. SEE STANDARDS DETAILS FOR TEMPORARY SIGNS
3. CONTRACTOR MUST INSTALL LOW PROFILE CONCRETE TRAFFIC BARRIER WITH REFLECTORS (LPCTB) AROUND EXCAVATION MORE THAN 2FT DEEP.
4. CONTRACTOR SHALL NOT CONSTRUCT TWO (2) ADJOINING PARALLEL STREETS SIMULTANEOUSLY.
5. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS ALL TIMES DURING CONSTRUCTION.
6. INTERSECTION CONSTRUCTION TO BE BUILT WITH HIGH EARLY STRENGTH CONCRETE. SEE DETOUR FOR INTERSECTION CONSTRUCTION.
7. TEMPORARY PAVEMENT WILL BE 2" HMAC SURFACE & 8" ASPH BASE.
8. SEE TYPICAL SECTIONS ON SHEET 79.

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

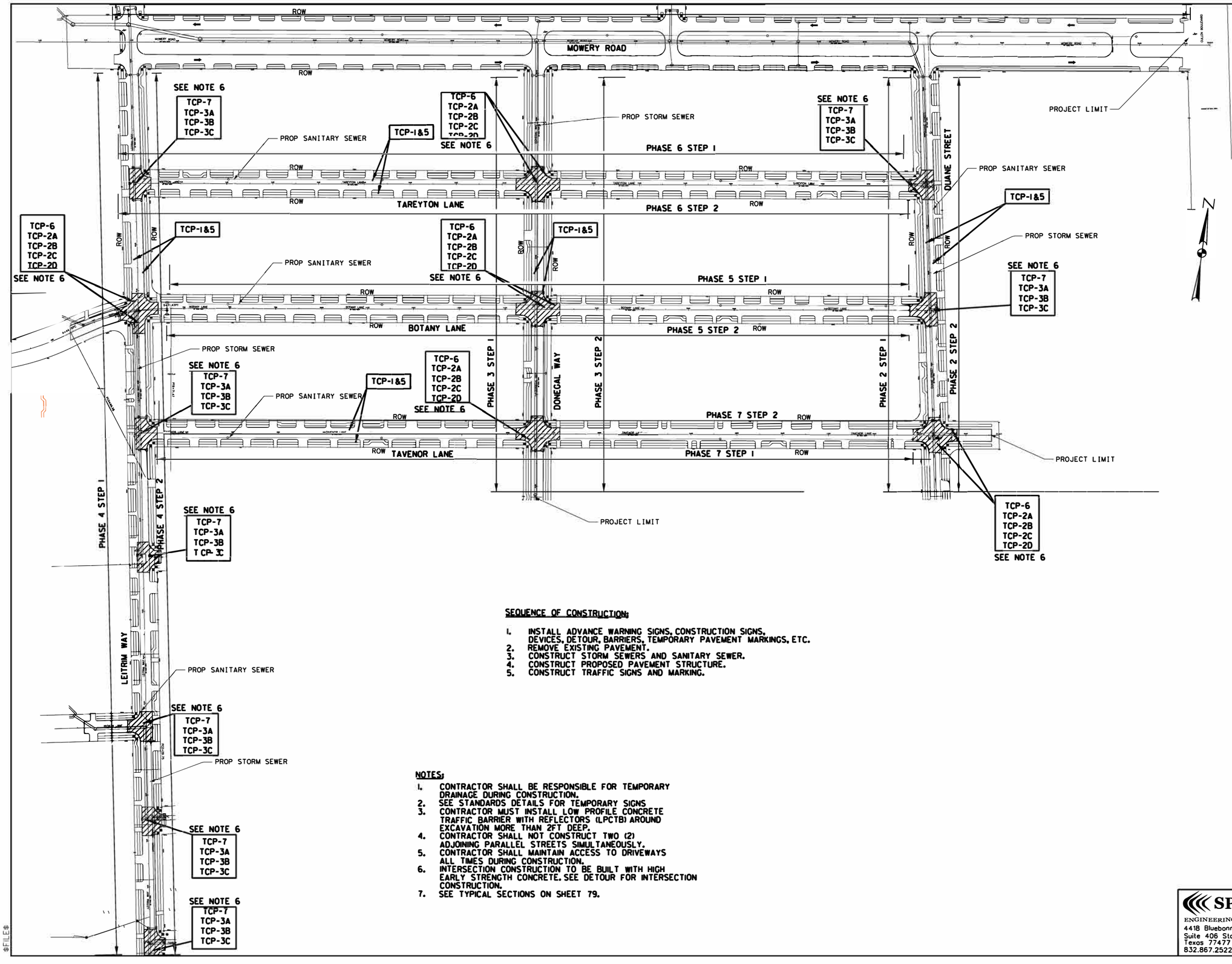
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TRAFFIC CONTROL PLAN
PHASE 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ. 1"=100'	
CITY OF HOUSTON PM	
SHEET NO. 80 OF 159	

SP ENGINEERING, INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

$TIME$
$DATE$
$FILE$



SEQUENCE OF CONSTRUCTION:

1. INSTALL ADVANCE WARNING SIGNS, CONSTRUCTION SIGNS, DEVICES, DETOUR, BARRIERS, TEMPORARY PAVEMENT MARKINGS, ETC.
2. REMOVE EXISTING PAVEMENT.
3. CONSTRUCT STORM SEWERS AND SANITARY SEWER.
4. CONSTRUCT PROPOSED PAVEMENT STRUCTURE.
5. CONSTRUCT TRAFFIC SIGNS AND MARKING.

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY DRAINAGE DURING CONSTRUCTION.
2. SEE STANDARDS DETAILS FOR TEMPORARY SIGNS
3. CONTRACTOR MUST INSTALL LOW PROFILE CONCRETE TRAFFIC BARRIER WITH REFLECTORS (LPCTB) AROUND EXCAVATION MORE THAN 2FT DEEP.
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5. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS ALL TIMES DURING CONSTRUCTION.
6. INTERSECTION CONSTRUCTION TO BE BUILT WITH HIGH EARLY STRENGTH CONCRETE. SEE DETOUR FOR INTERSECTION CONSTRUCTION.
7. SEE TYPICAL SECTIONS ON SHEET 79.

LEGEND

ROW

TCP-1 - TYPICAL TRAFFIC CONTROL PLAN
2 LANE STREET - 1LANE CLOSURE
SEE SHEET NO. 89

TCP-2A - TYPICAL TRAFFIC CONTROL PLAN
4-WAY INTERSECTION RECONSTRUCTION
STEP 1OF 4
SEE SHEET NO. 90

TCP-2B - TYPICAL TRAFFIC CONTROL PLAN
4-WAY INTERSECTION RECONSTRUCTION
STEP 2 OF 4
SEE SHEET NO. 91

TCP-2C - TYPICAL TRAFFIC CONTROL PLAN
4-WAY INTERSECTION RECONSTRUCTION
STEP 3 OF 4
SEE SHEET NO. 92

TCP-2D - TYPICAL TRAFFIC CONTROL PLAN
4-WAY INTERSECTION RECONSTRUCTION
STEP 4 OF 4
SEE SHEET NO. 93

TCP-3A - TYPICAL TRAFFIC CONTROL PLAN
3-WAY INTERSECTION
STEP 1OF 3
SEE SHEET NO. 94

TCP-3B - TYPICAL TRAFFIC CONTROL PLAN
3-WAY INTERSECTION
STEP 2 OF 3
SEE SHEET NO. 95

TCP-3C - TYPICAL TRAFFIC CONTROL PLAN
3-WAY INTERSECTION
STEP 3 OF 3
SEE SHEET NO. 96

TCP-4 - TYPICAL TRAFFIC CONTROL PLAN
4 LANE STREET - 1LANE CLOSURE
STEP 1& 2
SEE SHEET NO. 97

TCP-5 - TYPICAL TRAFFIC CONTROL PLAN
TYPICAL NEIGHBORHOOD DETOUR PLAN
SEE SHEET NO. 82

TCP-6 - TYPICAL TRAFFIC CONTROL PLAN
4-WAY INTERSECTION CONSTRUCTION DETOUR PLAN
SEE SHEET NO. 83

TCP-7 - TYPICAL TRAFFIC CONTROL PLAN
3-WAY INTERSECTION CONSTRUCTION DETOUR PLAN
SEE SHEET NO. 84

TCP-8 - TYPICAL TRAFFIC CONTROL PLAN
MOWERY ROAD AND DONEGAL WAY/DUANE DETOUR PLAN
SEE SHEET NO. 85

TRW ENGINEERS, INC.
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HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TRAFFIC CONTROL PLAN
PHASE 2 THRU PHASE 7

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ. 1"=100'	
CITY OF HOUSTON PM	
SHEET NO. 81 OF 159	

SP ENGINEERING,INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

$TIME$
$DATE$
$FILE$

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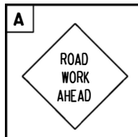
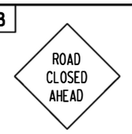
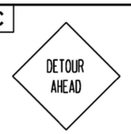
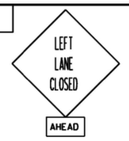
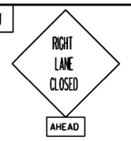
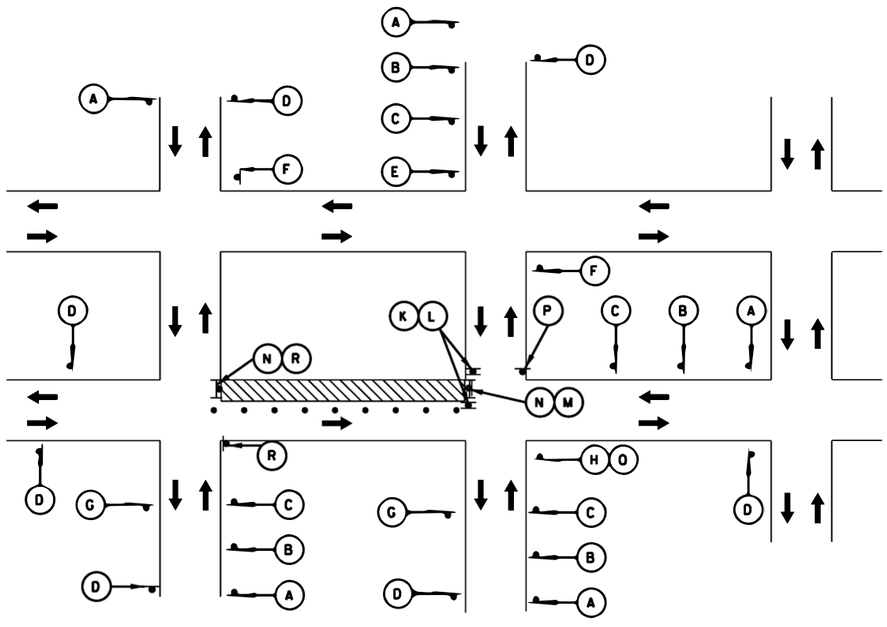
 CW20-1	 CW20-3	 CW20-2	G20-2	M4-9R	M4-9L	M4-8a	M4-9T	 CW20-5(2) CW16-3	 CW20-5(1) CW16-3
K	L	M	N	O	P	Q	R		
R6-2(L)	R6-2(R)	R5-1	R11-2	M4-10(L)	R3-1	R3-2	R6-6		

LEGEND

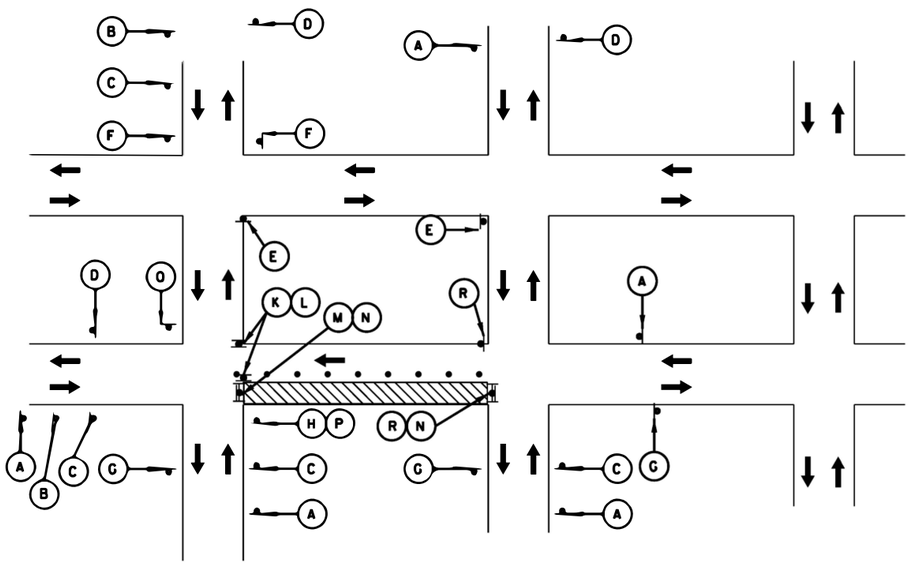
- SIGN SPACING @ 100'
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NOTES:

1. CONTRACTOR MUST MAINTAIN CORRESPONDING CIRCULATION ROUTE IN THE ADJACENT PARALLEL STREET FOR ACCESSIBILITY.
2. A 10' MINIMUM LANE WIDTH FOR EMERGENCY SHALL BE MADE AVAILABLE AND MAINTAINED BY CONTRACTOR AT ALL TIMES.



STEP 1



STEP 2

TYPICAL TRAFFIC NEIGHBORHOOD DETOUR PLAN

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

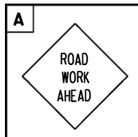
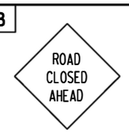
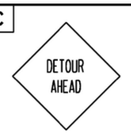
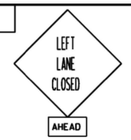
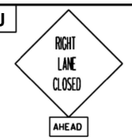
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

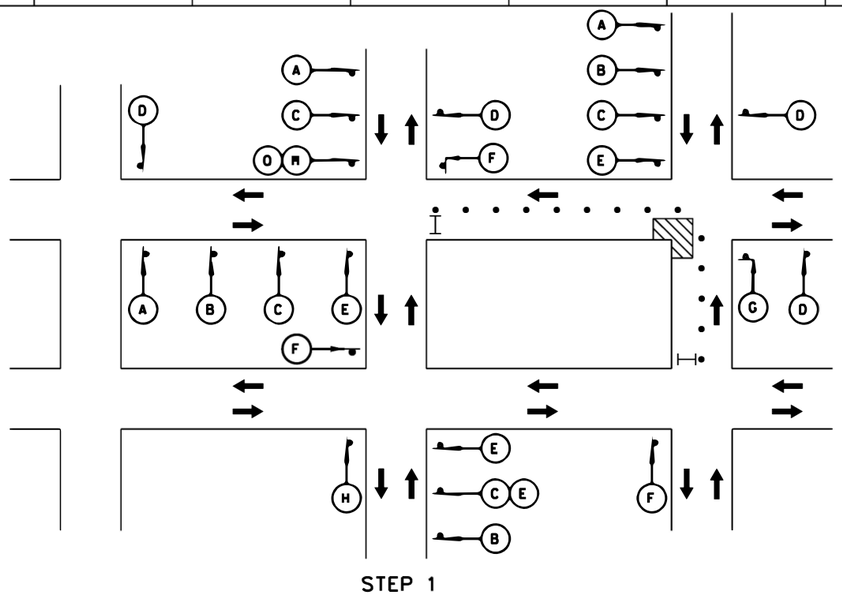
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TRAFFIC CONTROL PLAN
TCP-5

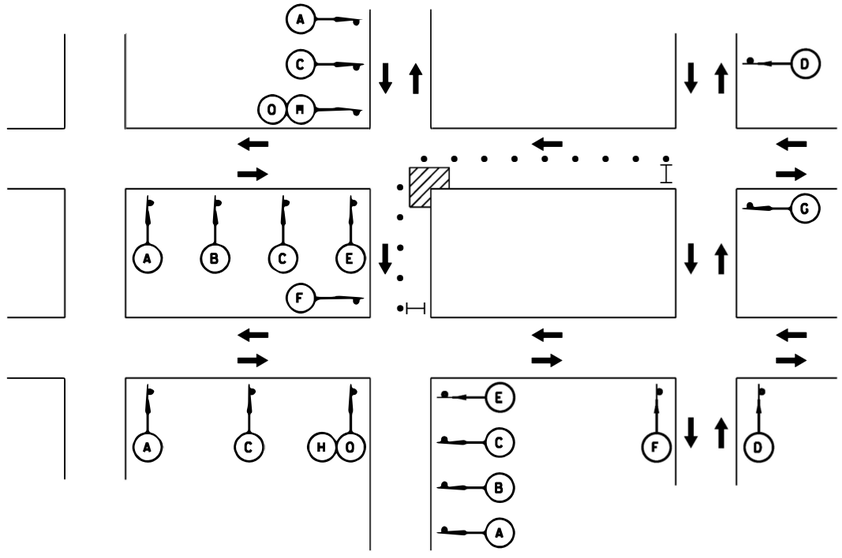
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
SHEET NO. 82 OF 159	

SP ENGINEERING, INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

A	B	C	D	E	F	G	H	I	J
 CW20-1	 CW20-3	 CW20-2	G20-2	M4-9R	M4-9L	M4-8a	M4-9T	 CW20-5(2) CW16-3	 CW20-5(1) CW16-3
K	L	M	N	O	P	Q	R		
R6-2(L)	R6-2(R)	R5-1	R11-2	M4-10(L)	R3-1	R3-2	R6-6		



STEP 1



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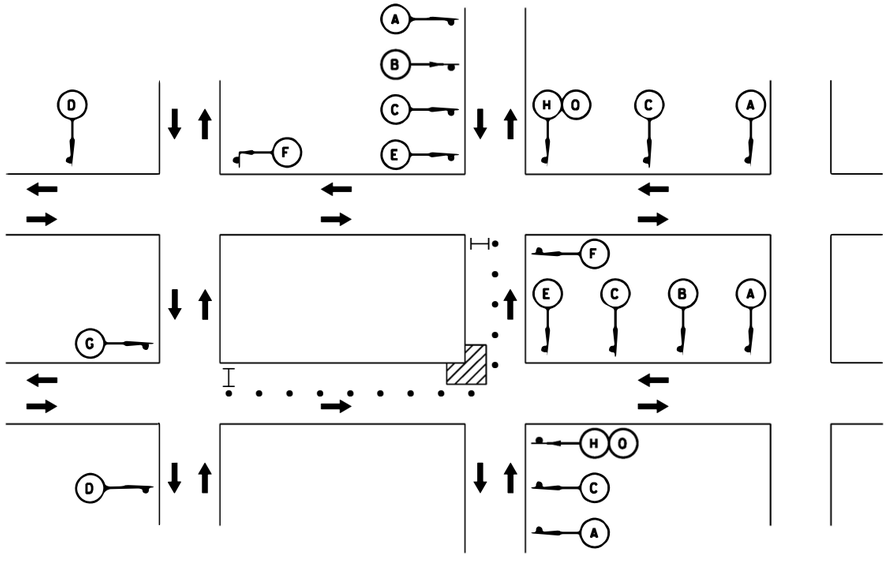

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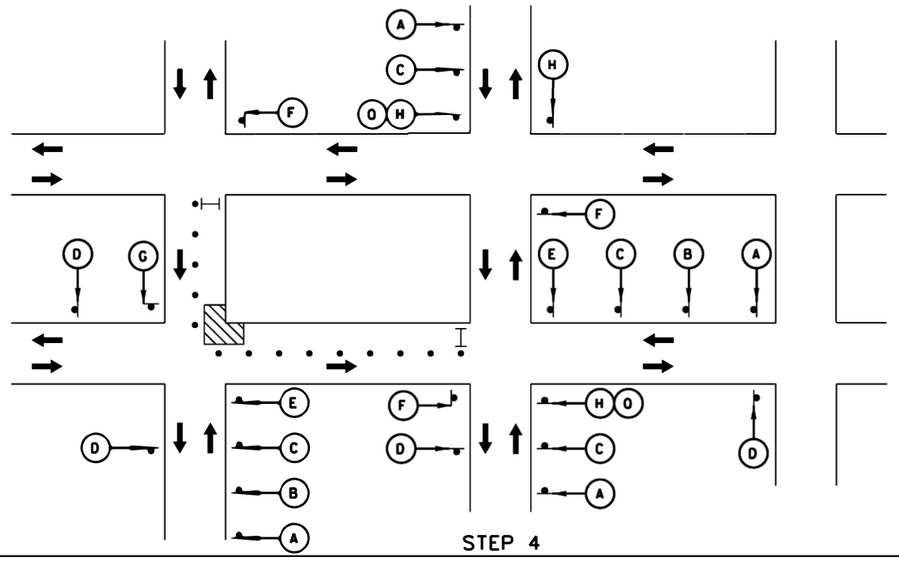

STEP 4

LEGEND

- SIGN SPACING @ 100'
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NOTES:

1. CONTRACTOR MUST MAINTAIN CORRESPONDING CIRCULATION ROUTE IN THE ADJACENT PARALLEL STREET FOR ACCESSIBILITY.
2. A 10' MINIMUM LANE WIDTH FOR EMERGENCY SHALL BE MADE AVAILABLE AND MAINTAINED BY CONTRACTOR AT ALL TIMES.

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TRAFFIC CONTROL PLAN 4-WAY INTERSECTION CONSTRUCTION TCP-6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
SHEET NO. 83 OF 89	

SP ENGINEERING,INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

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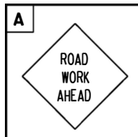
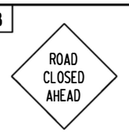
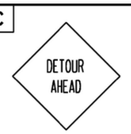
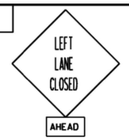
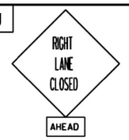
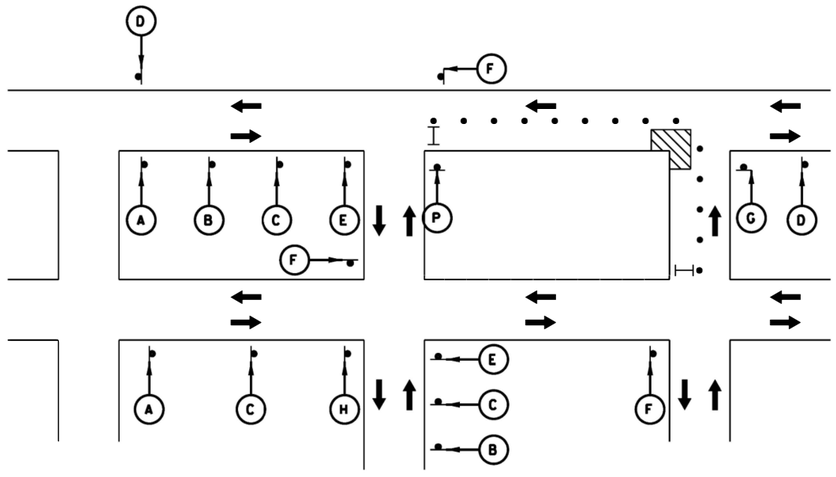
 CW20-1	 CW20-3	 CW20-2	G20-2	M4-9R	M4-9L	M4-8a	M4-9T	 CW20-5(2) CW16-3	 CW20-5(1) CW16-3
K	L	M	N	O	P	Q	R		
R6-2(L)	R6-2(R)	R5-1	R11-2	M4-10(L)	R3-1	R3-2	R6-6		

LEGEND

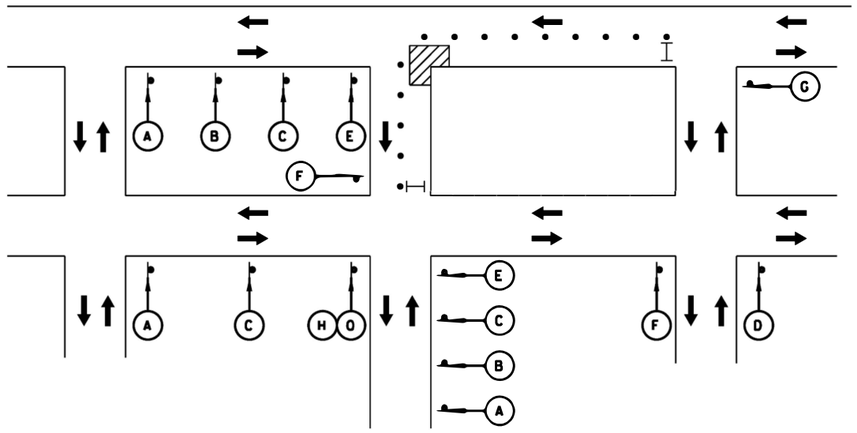
- SIGN SPACING @ 100'
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NOTES:

1. CONTRACTOR MUST MAINTAIN CORRESPONDING CIRCULATION ROUTE IN THE ADJACENT PARALLEL STREET FOR ACCESSIBILITY.
2. A 10' MINIMUM LANE WIDTH FOR EMERGENCY SHALL BE MADE AVAILABLE AND MAINTAINED BY CONTRACTOR AT ALL TIMES.



STEP 1



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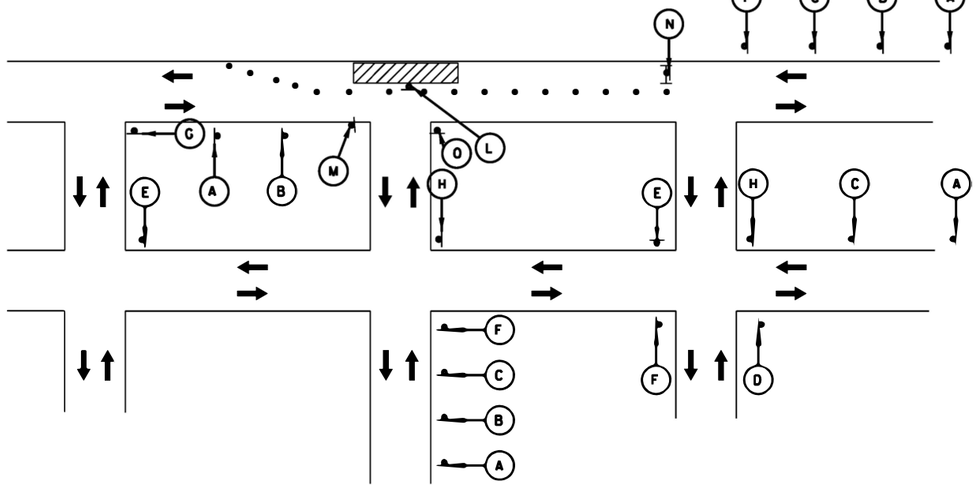


STEP 3

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TRAFFIC CONTROL PLAN 3-WAY INTERSECTION CONSTRUCTION TCP-7

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
SHEET NO. 84 OF 159	

SP ENGINEERING, INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

A	B	C	D	E	F	G	H	I	J
ROAD WORK AHEAD	ROAD CLOSED AHEAD	DETOUR AHEAD	END ROAD WORK	STREET NAME DETOUR	STREET NAME DETOUR	END DETOUR	STREET NAME DETOUR	LEFT LANE CLOSED AHEAD	RIGHT LANE CLOSED AHEAD
CW20-1	CW20-3	CW20-2	G20-2	M4-9R	M4-9L	M4-8a	M4-9T	CW20-5(2) CW16-3	CW20-5(1) CW16-3

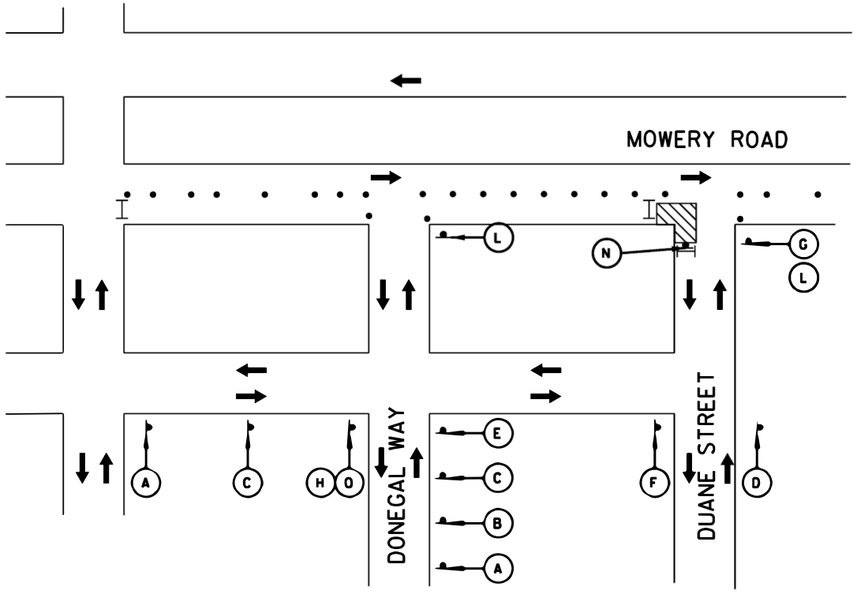
K	L	M	N	O	P	Q	R	
ONE WAY	ONE WAY	DO NOT ENTER	ROAD CLOSED	DETOUR			BEGIN ONE WAY	
R6-2(L)	R6-2(R)	R5-1	R11-2	M4-10(L)	R3-1	R3-2	R6-6	

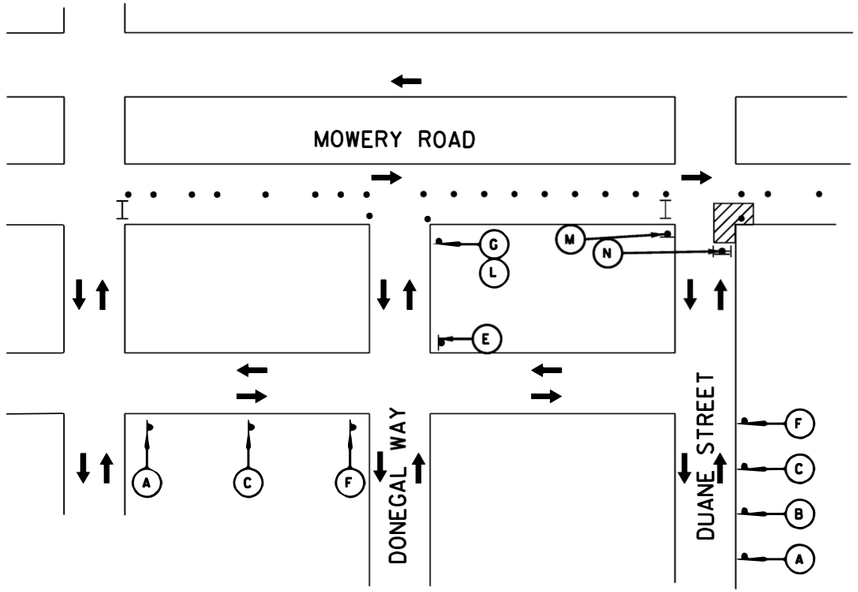
LEGEND

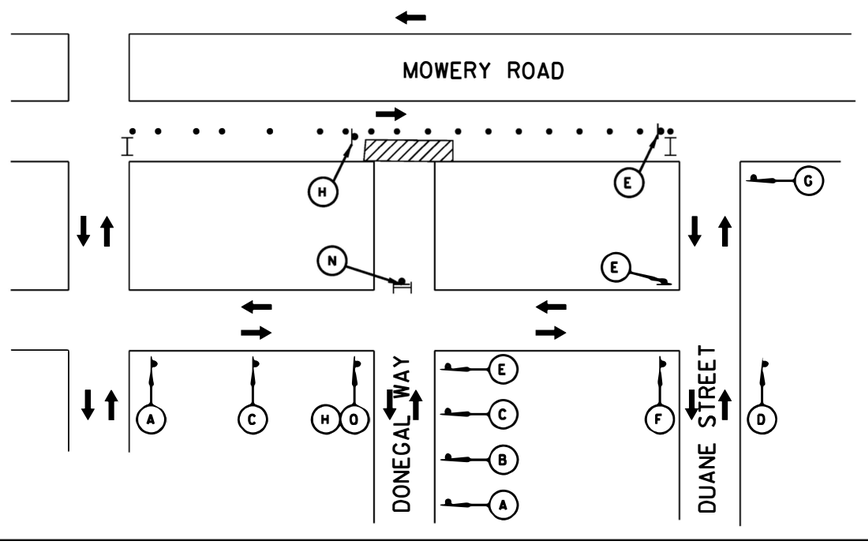
- SIGN SPACING @ 100'
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NOTES:

1. CONTRACTOR MUST MAINTAIN CORRESPONDING CIRCULATION ROUTE IN THE ADJACENT PARALLEL STREET FOR ACCESSIBILITY.
2. A 10' MINIMUM LANE WIDTH FOR EMERGENCY SHALL BE MADE AVAILABLE AND MAINTAINED BY CONTRACTOR AT ALL TIMES.







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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TRAFFIC CONTROL PLAN
TCP-8

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
SHEET NO. 85 OF 159	

SP ENGINEERING, INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

GENERAL NOTES

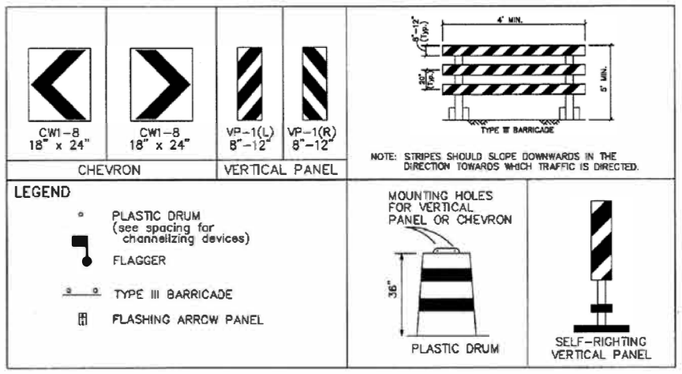
1. The Contractor shall provide and install traffic control devices in conformance with Part VI of the Texas Manual on Traffic Control Devices (TMUTCD)
2. All signs and traffic control devices shall conform the latest version of the TMUTCD
3. No lanes shall be closed during the hours of 7:00 AM to 9:00 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 plate 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 for 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 and reproducible in mylars and shall be sealed by a Licensed Engineer in the State of Texas. Transportation & Drainage Operations representative approval is required to accept the proposed changes.
9. Contractor shall secure lane/sidewalk/bicycle facility closure permits from Transportation & Drainage Operations (Mobility Permit Section at http://www.gims.houstontx.gov/portalWS/MainPortal.aspx) before implementing the 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 Transportation & Drainage Operations (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 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 delineators may be required to delineate the driveway access route through the construction zone. A minimum of a 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 (832-393-8650) 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.

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.

CHANNELIZATION AND BARRICADES



TYPICAL SIGN SPACING, TAPER LENGTHS, AND SUGGESTED SPACING OF CHANNELIZATION DEVICES

Posted Speed (mph)	Sign Spacing "X"	Min. Desirable Taper Length "L" 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing Of Device On a Taper	On a Tangent
30	120'	150'	165'	180'	30'	60' - 75'
35	160'	205'	225'	245'	35'	70' - 90'
40	240'	265'	295'	320'	40'	80' - 100'
45	320'	450'	495'	540'	45'	90' - 110'
50	400'	500'	550'	600'	50'	100' - 125'
55	500'	550'	605'	660'	55'	110' - 140'

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP NOTES
CHANNELIZING DEVICES
AND BARRICADES
(NOT TO SCALE)

CITY TRAFFIC ENGINEER
CITY ENGINEER

DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: JUL-01-2018

DWG NO: 01512-01

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

SHAUKAT KHAN 90195 REGISTERED PROFESSIONAL ENGINEER STATE OF TEXAS

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
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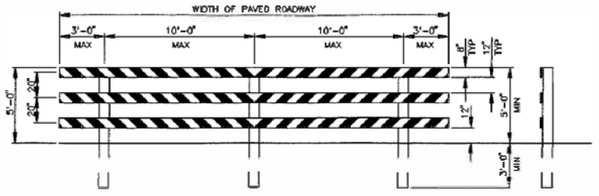
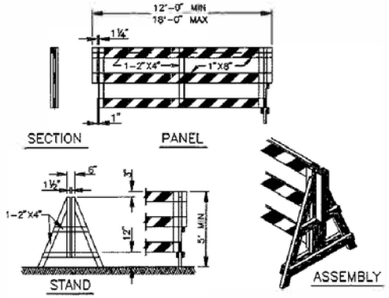


TYPE III BARRICADE
FOR END OF ROAD

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



DEMOUNTABLE TYPE III BARRICADE

BARRICADE NOTES

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.

CHANNELIZATION DEVICES OTHER THAN BARRICADES SHOULD NORMALLY BE USED FOR CHANNELIZATION PURPOSES.

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.

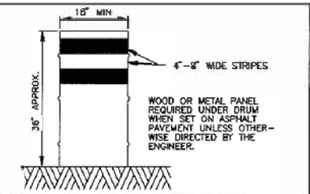
BARRICADES MAY BE DESIGNED AND CONSTRUCTED FROM WOOD OR ANY OTHER SUITABLE MATERIAL IN A MANNER APPROVED BY THE DEPARTMENT OF TRAFFIC AND TRANSPORTATION. THE CONSTRUCTION DETAILS SHOWN HEREON ARE TYPICAL AND ARE SUGGESTED DETAILS FOR WOOD SUPPORT SYSTEMS FOR BARRICADES. THE DETAILS OF RAIL WIDTH AND STRIPING, NUMBER AND SPACING OF RAILS, MINIMUM LENGTH AND HEIGHT (ABOVE PAVEMENT) OF RAILS MUST BE ADHERED TO WHEN ALTERNATE DESIGNS ARE USED.

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.

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 DOT.

THE CONTRACTOR SHALL MAINTAIN EACH BARRICADE IN A CLEAN AND GOOD CONDITION.

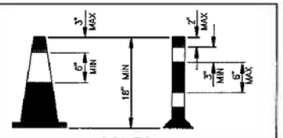
BARRICADES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND/OR THE ELIMINATION OF THE HAZARD ON ANY SECTION.



DRUMS

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.

CW1-8 CHEVRON SIGNS, CW1-6A ARROW SIGNS OR VP-1 VERTICAL PANELS MOUNTED ABOVE DRUMS MAY BE USED AS SUPPLEMENTS TO DRUM DELINEATION.

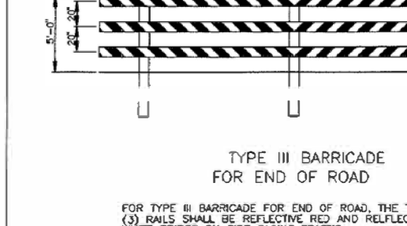


CONES

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 NIGHTTIME USE THEY SHALL BE REFLECTORIZED OR EQUIPPED WITH LIGHTING DEVICES FOR MAX VISIBILITY. REFLECTORIZED MATERIAL SHALL HAVE A SMOOTH, SEALED OUTER SURFACE WHICH WILL DISPLAY THE SAME APPROX COLOR DAY AND NIGHT.

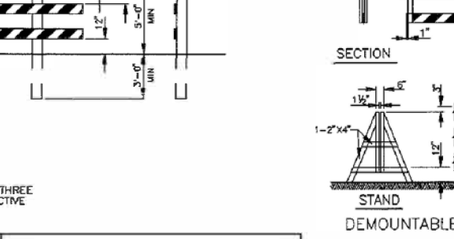
REFLECTORIZATION OF TUBULAR MARKERS SHALL BE A MIN OF TWO THREE-INCH BANDS PLACED A MAX OF 2" FROM THE TOP WITH A MAX OF 6" BETWEEN THE BANDS. REFLECTORIZATION OF CONES SHALL BE PROVIDED BY A MIN 6" BAND PLACED A MAX OF 3" FROM THE TOP.

CONES OR TUBULAR MARKERS ARE GENERALLY ONLY SUITABLE FOR TEMPORARY USAGE (UP TO 6 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)

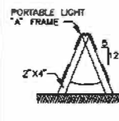
VERTICAL PANELS ARE NORMALLY USED AS CHANNELIZING DEVICES TO INDICATE TANGENT OR NEARLY TANGENT ROADWAY ALIGNMENT WHERE GOOD TARGET VALUE OF A DEVICE IS NEEDED IN DAYTIME AS WELL AS THE NIGHTTIME. IN ADDITION, VERTICAL PANELS SHOULD BE USED AT THE EDGE OF SHOULDER DROP-OFFS AND OTHER SUCH AREAS AS LANE 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.



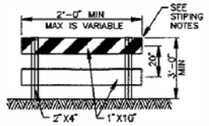
PLYWOOD FACE TO BE PAINTED CONSTRUCTION ORANGE UPRIGHT TO BE PAINTED WHITE

TYPICAL PORTABLE VERTICAL PANEL OR DELINEATOR

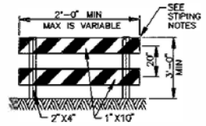
OTHER SIMILAR SUPPORTS MAY BE USED WHEN APPROVED OR DIRECTED BY THE COH DEPT OF TRAFFIC AND TRANSPORTATION



"A" FRAME



TYPE I



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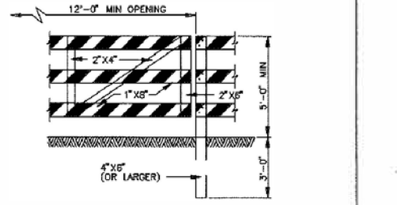
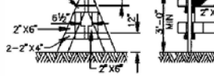
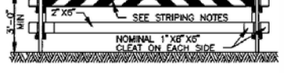


GATE FOR
TYPE III BARRICADE

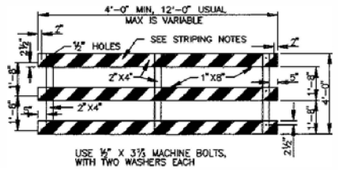


DEMOUNTABLE

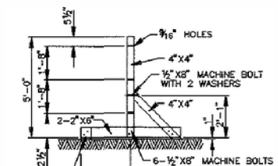


TYPE I

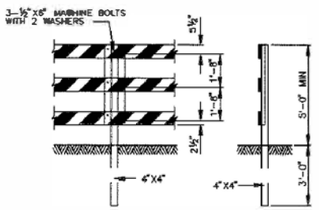
TYPE II



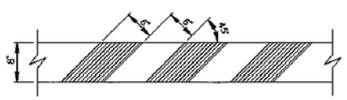
PANEL FOR
TYPE III BARRICADE



STAND FOR
TYPE III BARRICADE



POST FOR
TYPE III BARRICADE



STRIPING FOR BARRICADE

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.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

BARRICADE STANDARD

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 01580-01

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
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Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAIKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

BARRICADE STANDARDS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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JAMES BIELSTEIN, P.E.	
SHEET NO. 87 OF 159	

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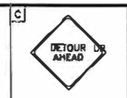
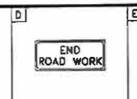
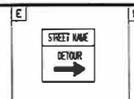
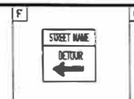
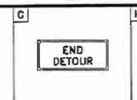
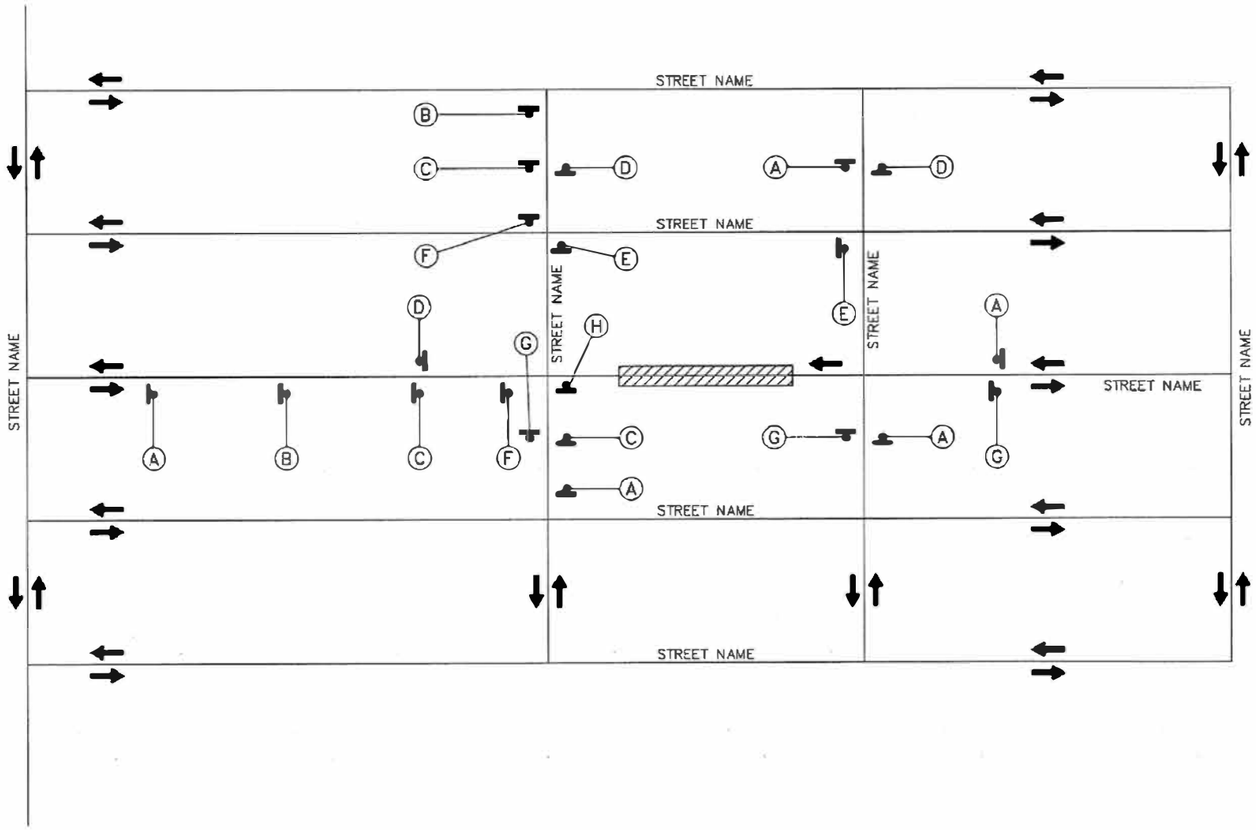
							
CW20-1	CW20-4	CW20-2	G20-2	M4-9R	M4-9L	M4-8a	M4-9T

LEGEND

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- TRAFFIC FLOW
- CONSTRUCTION AREA



CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TRAFFIC CONTROL LAYOUT

(NOT TO SCALE)

CITY TRAFFIC ENGINEER

CITY ENGINEER

DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: JUL-01-2018

DWG. NO: 01512-03

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90095
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TCP-DETOUR LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
SHEET NO. 88 OF 159	

SP ENGINEERING,INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

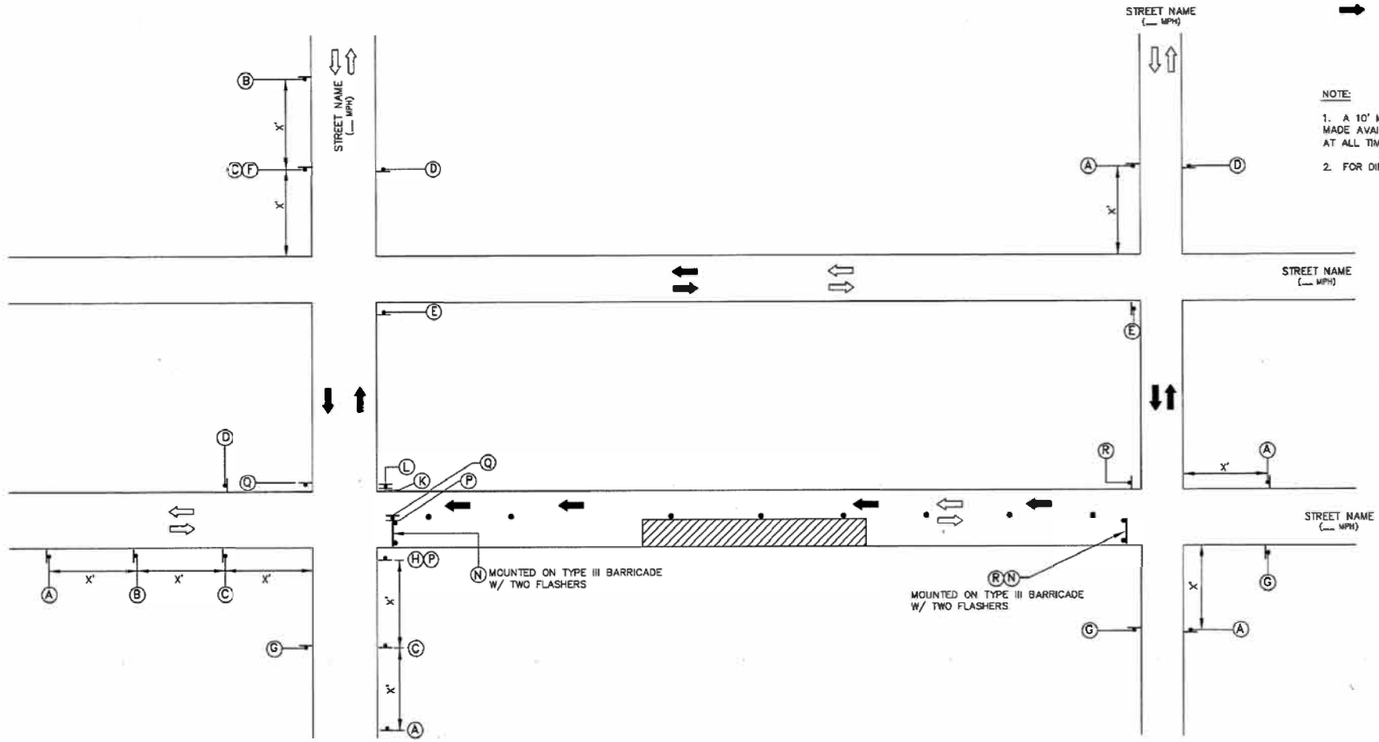
$TIME$
$DATE$
$FILE$

A	B	C	D	E	F	G	H	I	J
ROAD WORK AHEAD CW20-1	ROAD CLOSED AHEAD CW20-3	DETOUR AHEAD CW20-2	END ROAD WORK G20-2	STREET NAME DETOUR → M4-9R	STREET NAME DETOUR ← M4-9L	END DETOUR M4-8a	STREET NAME DETOUR ↑ M4-9T	RIGHT LANE CLOSED AHEAD CW20-5(2) CW16-3	LEFT LANE CLOSED AHEAD CW20-5(1) CW16-3

K	L	M	N	O	P	Q	R
ONE WAY ← R6-2(L)	ONE WAY → R6-2(R)	DO NOT ENTER R5-1	ROAD CLOSED R11-2	DETOUR M4-10(L)	 R5-1	 R3-2	BEGIN ONE WAY R6-6

LEGEND

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



NOTE:

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 01512-01.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP ONE LANE CLOSURE

(NOT TO SCALE)

CITY TRAFFIC ENGINEER CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01512-05

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

ONE LANE CLOSURE
TCP-1

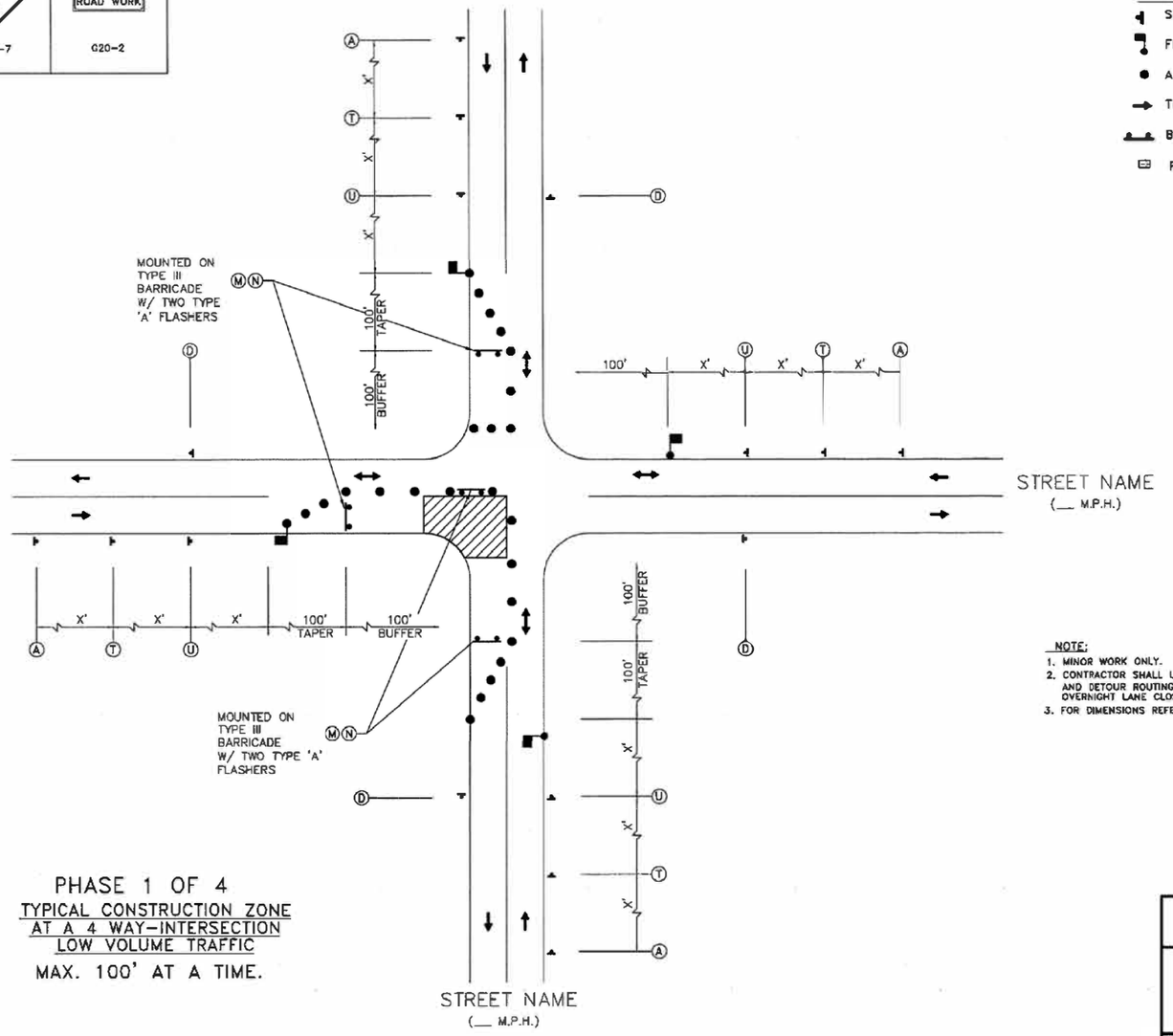
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	

SP ENGINEERING,INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

$TIME$
$DATE$
$FILE$

A	T	U	D
ROAD WORK AHEAD	ONE LANE ROAD		END ROAD WORK
CW20-1	CW20-4	CW20-7	G20-2

M	N
DO NOT ENTER	ROAD CLOSED
R5-1	R11-2



LEGEND

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- TRAFFIC FLOW
- BARRICADE
- FLASHING ARROW PANEL

NOTE:
1. MINOR WORK ONLY.
2. CONTRACTOR SHALL USE ONE-LANE ROAD CLOSURE AND DETOUR ROUTING FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01512-01

PHASE 1 OF 4
TYPICAL CONSTRUCTION ZONE
AT A 4 WAY-INTERSECTION
LOW VOLUME TRAFFIC
MAX. 100' AT A TIME.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP 4-WAY INTERSECTION
PHASE 1 OF 4

(NOT TO SCALE)

CITY TRAFFIC ENGINEER
CITY ENGINEER

DIRECTOR OF
HOUSTON PUBLIC WORKS

EFF DATE: JUL-01-2018

DWG NO: 01512-09

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

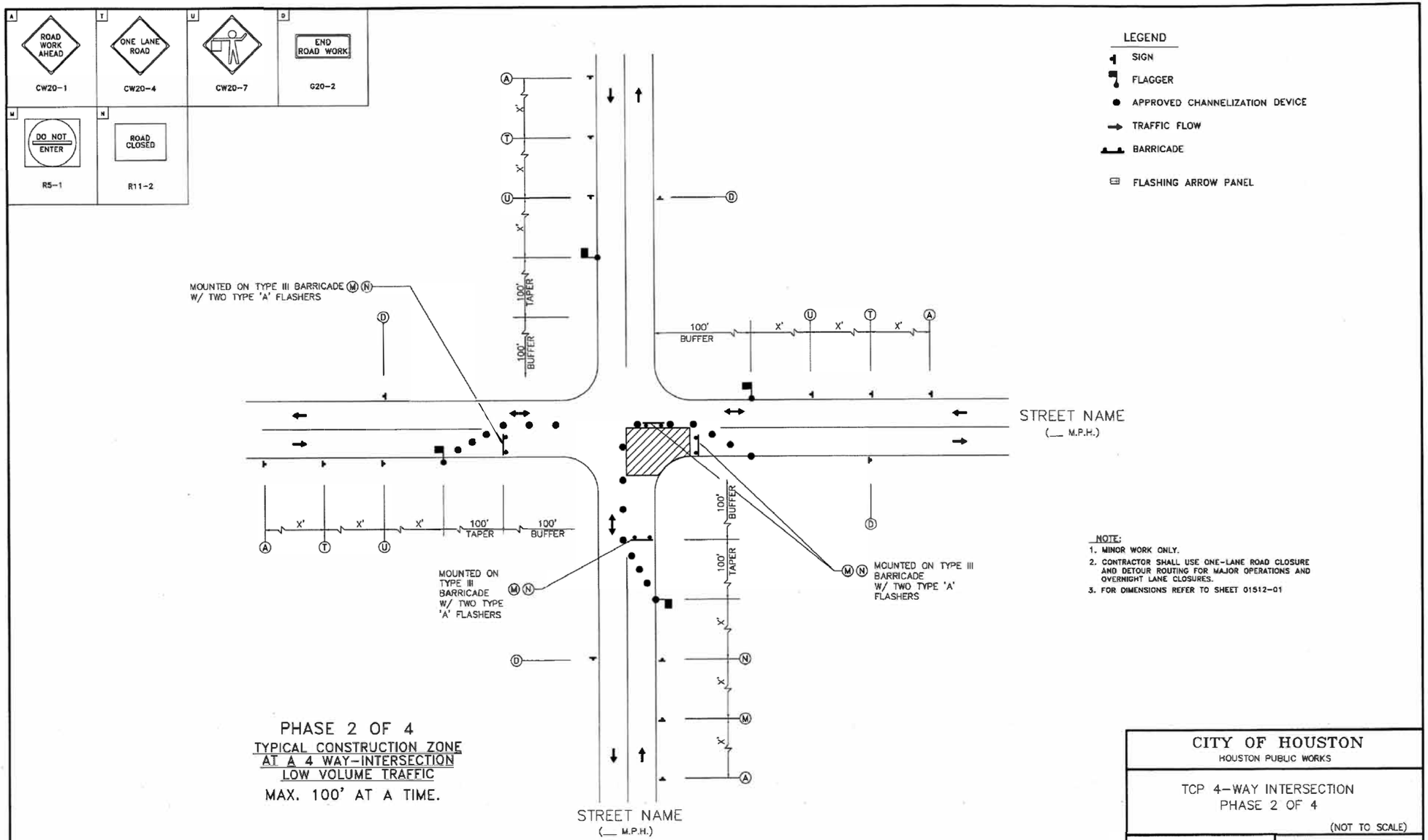
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TCP 4-WAY INTERSECTION
TCP-2A

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 90 OF 159	

SP ENGINEERING, INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

$TIME$
$DATE$
$FILE$



NOTE:
1. MINOR WORK ONLY.
2. CONTRACTOR SHALL USE ONE-LANE ROAD CLOSURE AND DETOUR ROUTING FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01512-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP 4-WAY INTERSECTION
PHASE 2 OF 4

(NOT TO SCALE)

CITY TRAFFIC ENGINEER / CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01512-10

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TCP 4-WAY INTERSECTION
TCP-2B

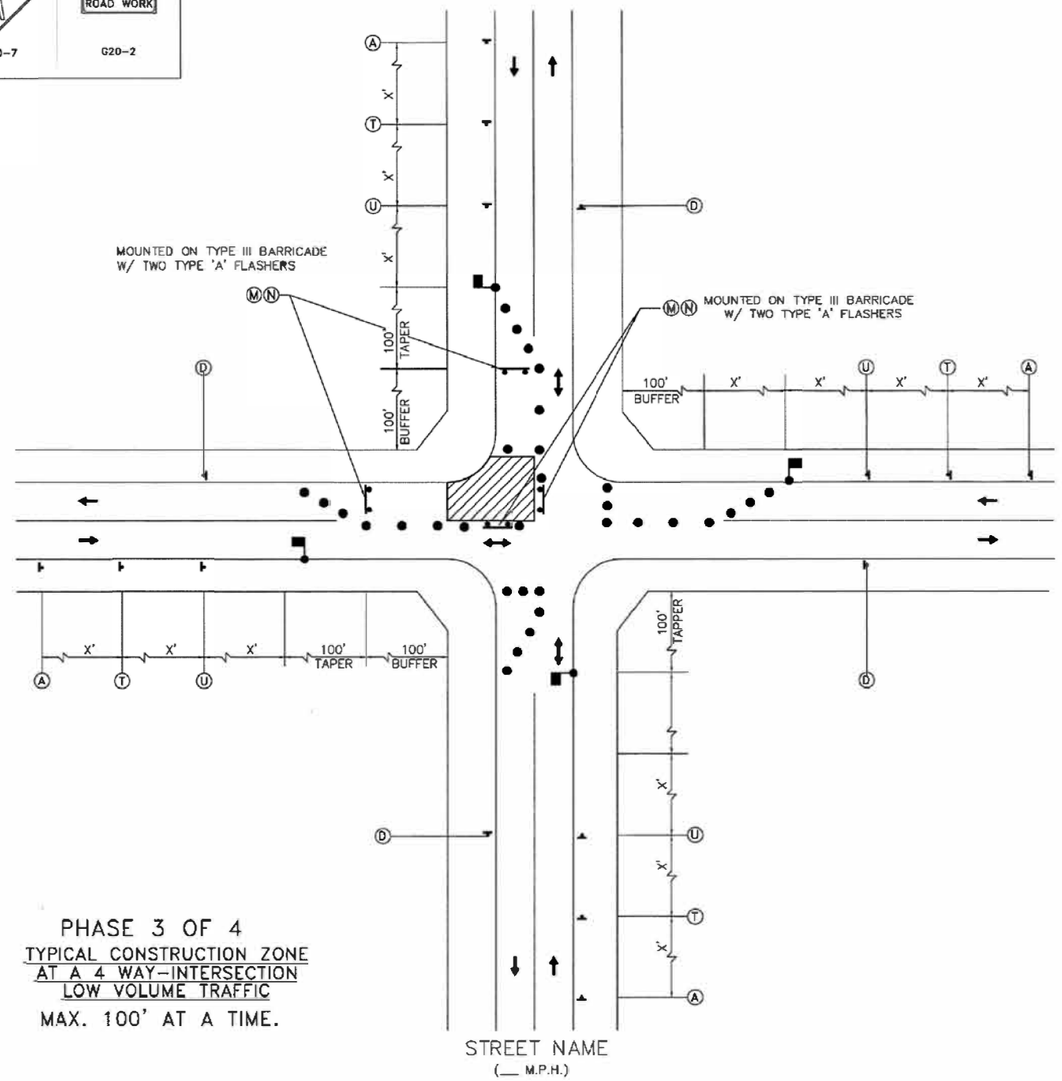
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITYOF HOUSTON PM	
A	
SHEET NO. 91 OF 159	

SP ENGINEERING,INC
4918 Bluebonne Dr., Suite 406 Stafford, Texas 77477
832.867.2522

$TIME$
$DATE$
$FILE$

A	T	U	D
ROAD WORK AHEAD	ONE LANE ROAD		END ROAD WORK
CW20-1	CW20-4	CW20-7	G20-2

M	N
DO NOT ENTER	ROAD CLOSED
R5-1	R11-2



PHASE 3 OF 4

TYPICAL CONSTRUCTION ZONE AT A 4 WAY-INTERSECTION LOW VOLUME TRAFFIC

MAX. 100' AT A TIME.

LEGEND

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- TRAFFIC FLOW
- BARRICADE
- FLASHING ARROW PANEL

NOTE:
1. MINOR WORK ONLY.
2. CONTRACTOR SHALL USE ONE-LANE ROAD CLOSURE AND DETOUR ROUTING FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01512-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP 4-WAY INTERSECTION
PHASE 3 OF 4

(NOT TO SCALE)

CITY TRAFFIC ENGINEER / CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01512-11

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

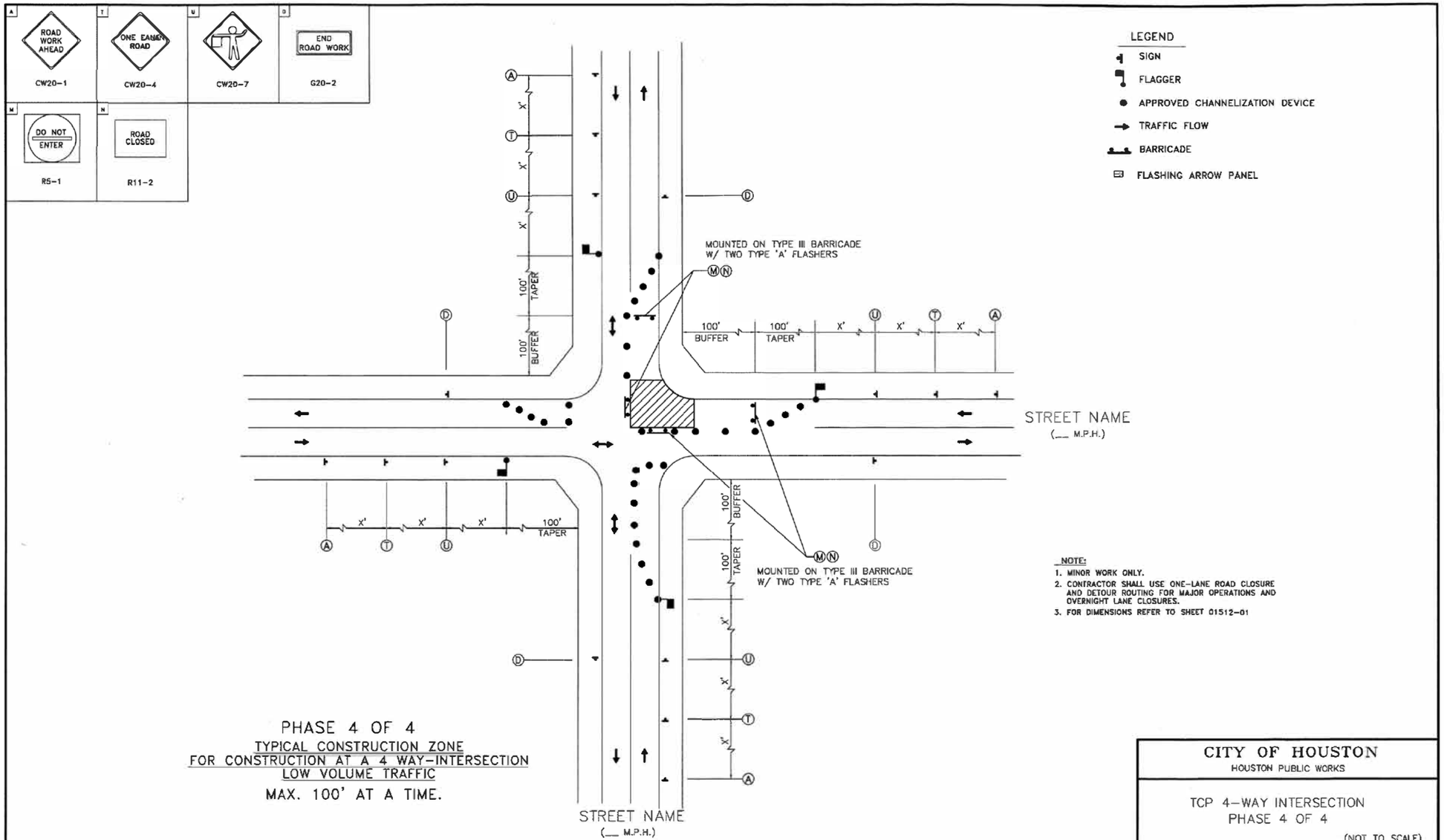
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TCP 4-WAY INTERSECTION
TCP-2C

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 92 OF 159	

SP ENGINEERING, INC
4418 Bluebonne Dr., Suite 406 Stafford, Texas 77477
832.867.2522

$TIME$
$DATE$
$FILE$



PHASE 4 OF 4

TYPICAL CONSTRUCTION ZONE
FOR CONSTRUCTION AT A 4 WAY-INTERSECTION
LOW VOLUME TRAFFIC

MAX. 100' AT A TIME.

NOTE:

1. MINOR WORK ONLY.
2. CONTRACTOR SHALL USE ONE-LANE ROAD CLOSURE AND DETOUR ROUTING FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01512-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP 4-WAY INTERSECTION
PHASE 4 OF 4

(NOT TO SCALE)

CITY TRAFFIC ENGINEER / CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01512-12

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS · SHAIKAT KHAN · 90195 · REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TCP 4-WAY INTERSECTION
TCP-2D

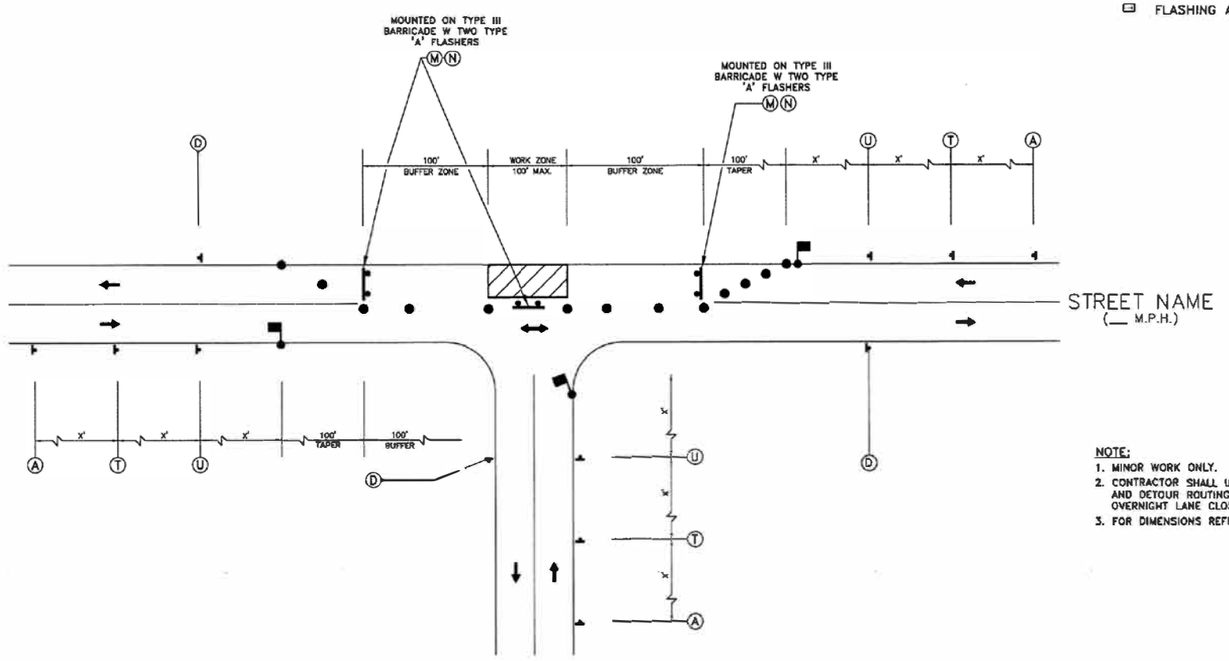
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 93 OF 159	

SP ENGINEERING,INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

$TIME$
$DATE$
$FILE$

A	T	U	D	M	N
ROAD WORK AHEAD	ONE LANE ROAD		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
- TRAFFIC FLOW
- BARRICADE
- FLASHING ARROW PANEL



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

NOTE:
1. MINOR WORK ONLY.
2. CONTRACTOR SHALL USE ONE-LANE ROAD CLOSURE AND DETOUR ROUTING FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01512-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP TYPICAL 3-WAY INTERSECTION
PHASE 1 OF 3
(NOT TO SCALE)

CITY TRAFFIC ENGINEER
CITY ENGINEER

DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: JUL-01-2018

DWG NO: 01512-06

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TCP 3-WAY INTERSECTION
TCP-3A

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 94 OF 159	

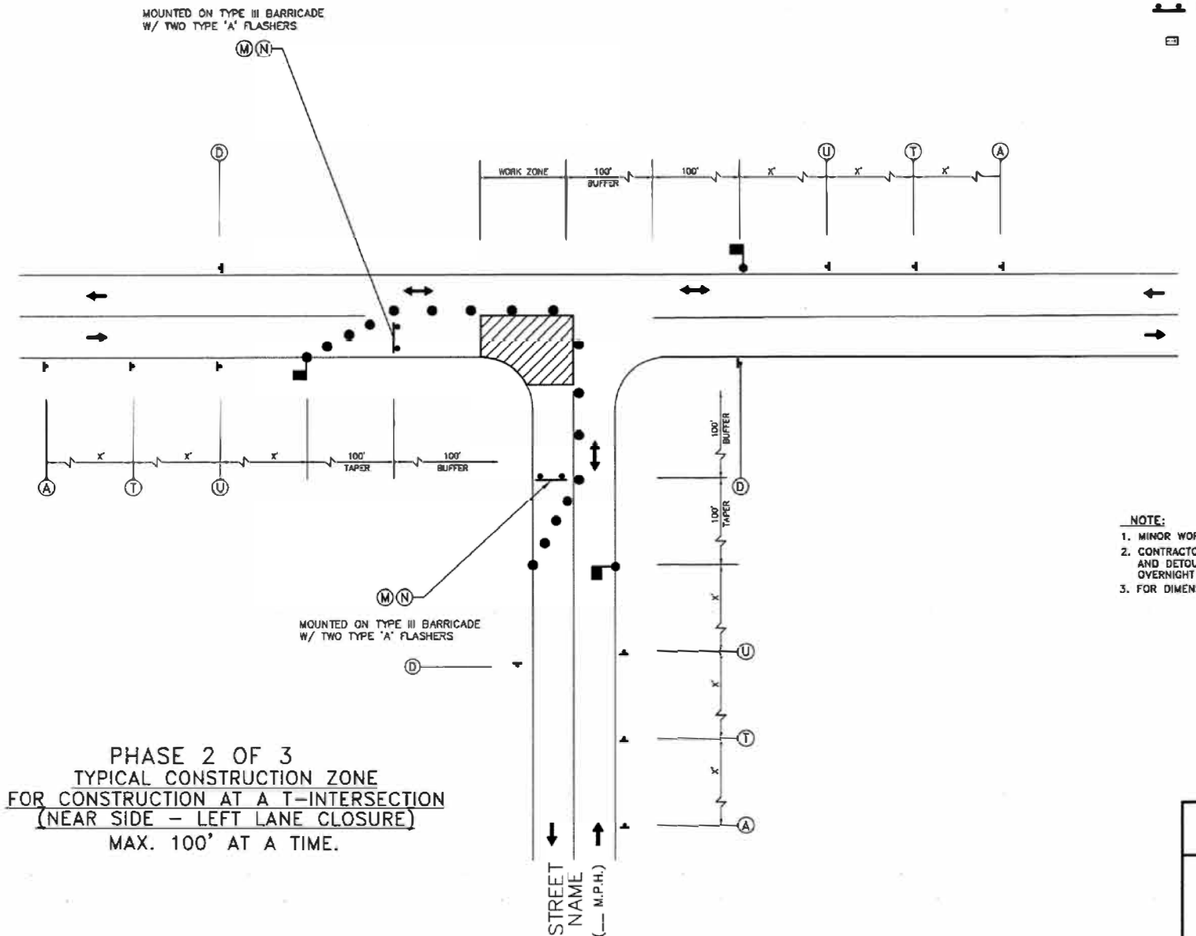
SP ENGINEERING,INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

$TIME$
$DATE$
$FILE$

A	T	U	D	M	N
ROAD WORK AHEAD	ONE LANE ROAD		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
- TRAFFIC FLOW
- BARRICADE
- FLASHING ARROW PANEL



PHASE 2 OF 3
TYPICAL CONSTRUCTION ZONE
FOR CONSTRUCTION AT A T-INTERSECTION
(NEAR SIDE – LEFT LANE CLOSURE)
MAX. 100' AT A TIME.

NOTE:

1. MINOR WORK ONLY.
2. CONTRACTOR SHALL USE ONE-LANE ROAD CLOSURE AND DETOUR ROUTING FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01512-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP TYPICAL 3-WAY INTERSECTION
PHASE 2 OF 3
(NOT TO SCALE)

CITY TRAFFIC ENGINEER / CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01512-07

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER
04-05-2020

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TCP 3-WAY INTERSECTION
TCP-3B

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 95 OF 159	

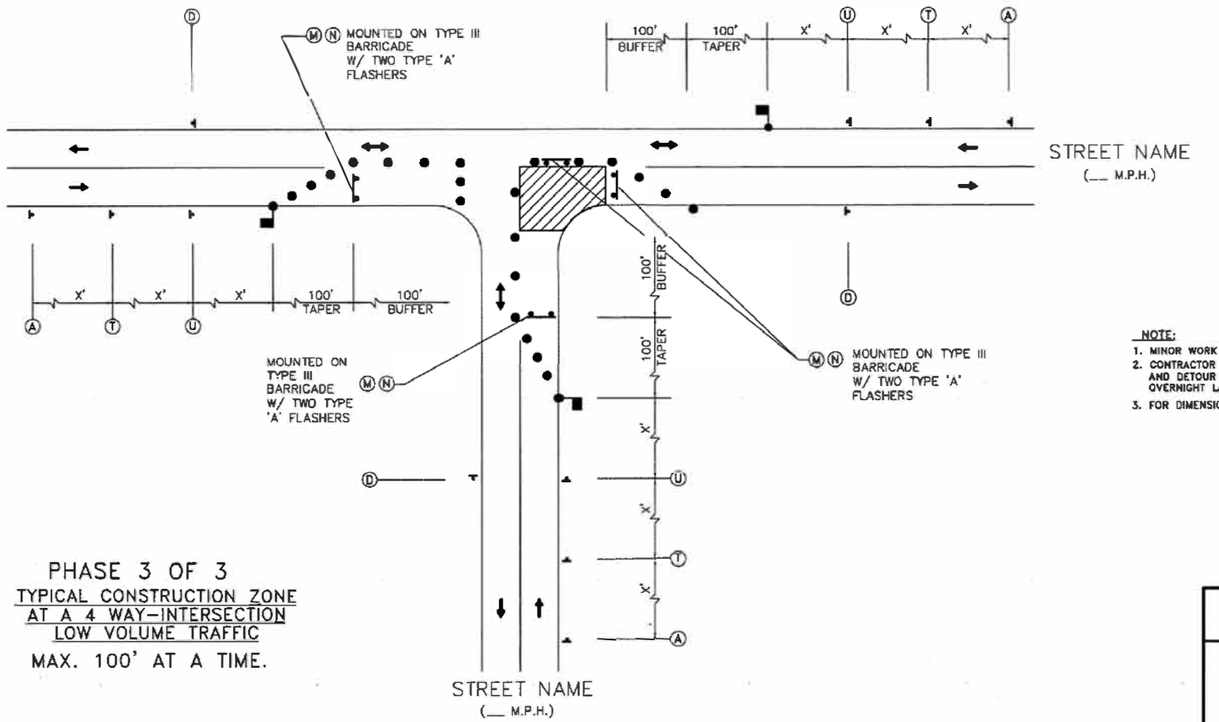
SP ENGINEERING,INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

$TIME$
$DATE$
$FILE$

A	T	U	D	M	N
ROAD WORK AHEAD	ONE LANE ROAD		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
- TRAFFIC FLOW
- BARRICADE
- FLASHING ARROW PANEL



PHASE 3 OF 3

TYPICAL CONSTRUCTION ZONE AT A 4 WAY-INTERSECTION LOW VOLUME TRAFFIC

MAX. 100' AT A TIME.

NOTE:

1. MINOR WORK ONLY.
2. CONTRACTOR SHALL USE ONE-LANE ROAD CLOSURE AND DETOUR ROUTING FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 01512-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP TYPICAL 3-WAY INTERSECTION
PHASE 3 OF 3

(NOT TO SCALE)

CITY TRAFFIC ENGINEER / CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01512-08

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS · SHAIKAT KHAN · 90095 · REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TCP 3-WAY INTERSECTION
TCP-3C

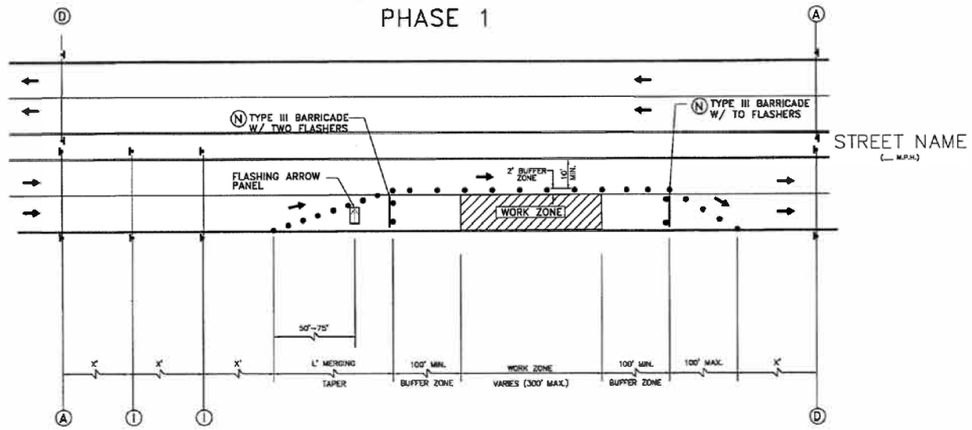
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 96 OF 159	

SP ENGINEERING,INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

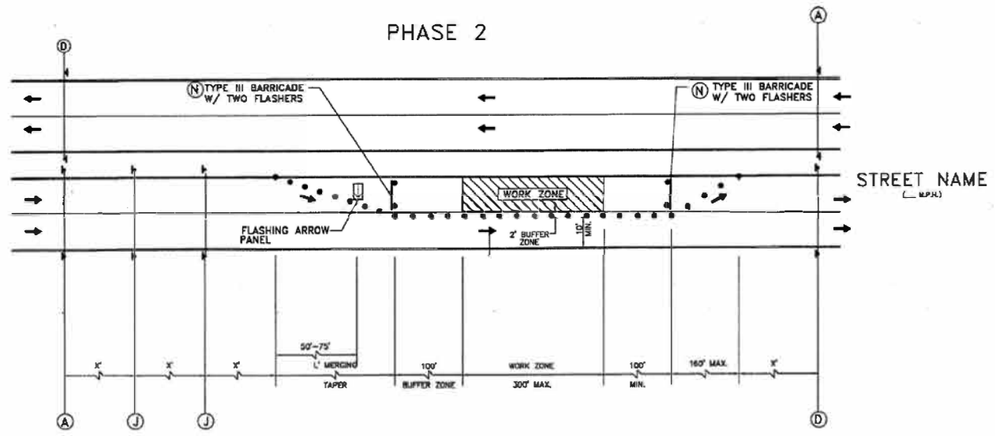
$TIME$
$DATE$
$FILE$

A	D	I	J	N
ROAD WORK AHEAD	END ROAD WORK	RIGHT LANE CLOSED AHEAD	LEFT LANE CLOSED AHEAD	ROAD CLOSED
CW20-1	G20-2	CW20-5(2) CW16-3	CW20-5(1) CW16-3	R11-2

PHASE 1



PHASE 2



LEGEND

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- TRAFFIC FLOW
- CONSTRUCTION AREA

NOTE:

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 01512-01.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

TCP ONE LANE CLOSURE
PHASE 1 & 2

(NOT TO SCALE)

CITY TRAFFIC ENGINEER / CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01512-04

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
SHAUKAT KHAN
90195
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

TCP 3-WAY INTERSECTION
TCP-4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CI TYOF HOUSTON PM	
SHEET NO. 97 OF 159	

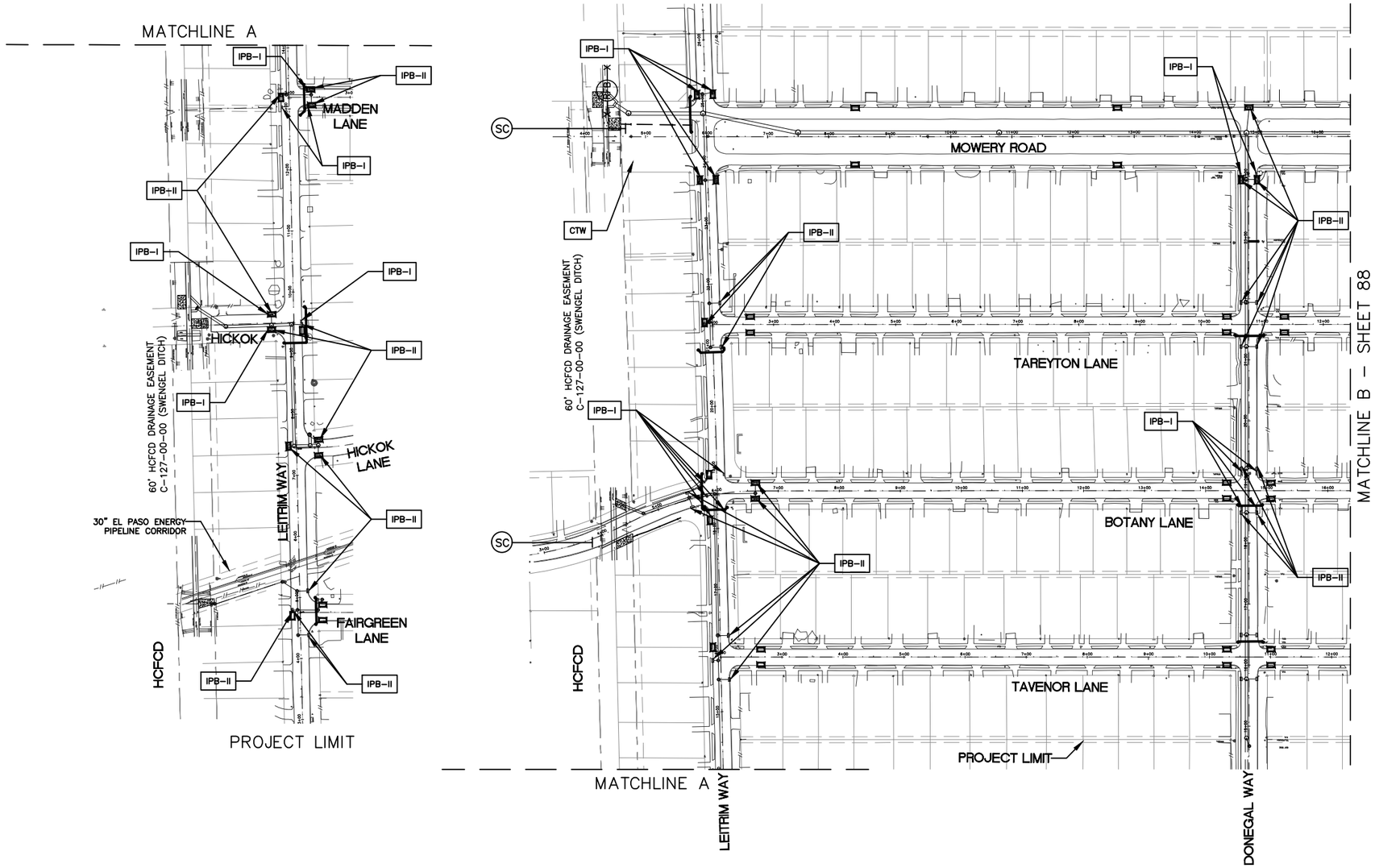
SP ENGINEERING,INC
4418 Bluebonne Dr.,
Suite 406 Stafford,
Texas 77477
832.867.2522

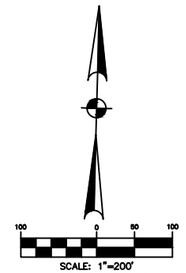
$TIME$
$DATE$
$FILE$

NO.	DATE	REVISIONS	BY

LEGEND

- LIMITS OF REINFORCED FILTER FABRIC BARRIER (RFB)
- FILTER FABRIC FENCE (FF)
- IPB–I — CURB INLETS PROTECTION BARRIER (STAGE I)
- IPB–II — CURB INLETS PROTECTION BARRIER (GRAVEL BAG – STAGE II)
- CTW — CONCRETE TRUCK WASH DOWN AREA
- SC — STABILIZED CONSTRUCTION EXIT





FULL–SIZE (22"X34"): 1" = 100'
HALF–SIZE (11"X17"): 1" = 200'

NOTE: CONTRACTOR SHALL PROVIDE A STABILIZED CONSTRUCTION ACCESS/EXIT INCLUDING TRUCK WASH AREA, VERIFIED IN THE FIELD AND AUTHORIZED BY CITY ENGINEER.

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F–12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
MICHAEL BAGSTAD
81193
REGISTERED PROFESSIONAL ENGINEER
6-24-20

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

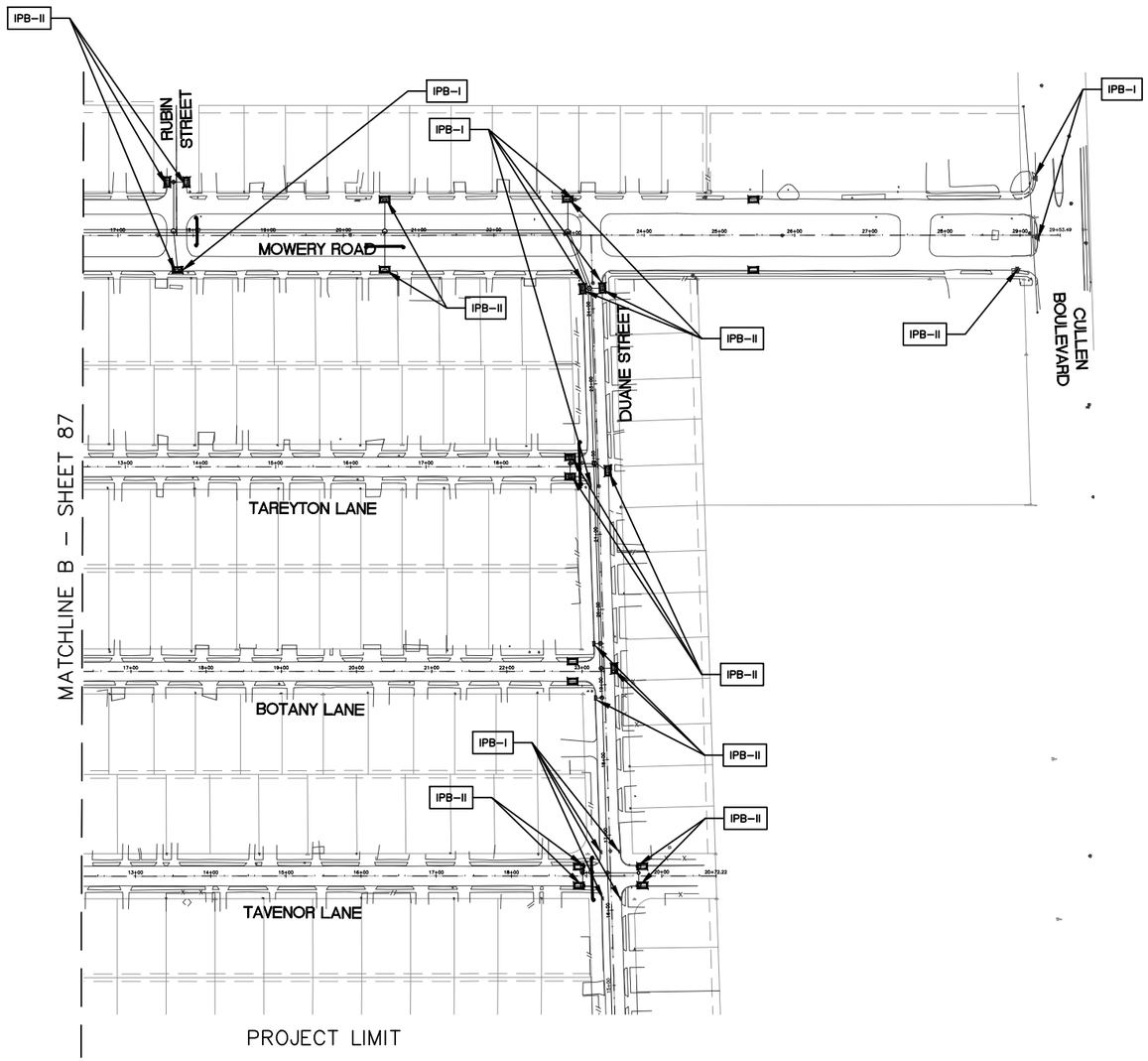
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

STORM WATER POLLUTION PREVENTION PLAN

SHEET 1 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 98 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\98 – 99 SWPPP PLANS.DWG APR. 09, 2020–8:14am JAMES GAIBORT



LEGEND

- RFB — LIMITS OF REINFORCED FILTER FABRIC BARRIER
- FF — FILTER FABRIC FENCE
- IPB–I — CURB INLETS PROTECTION BARRIER (STAGE I)
- IPB–II — CURB INLETS PROTECTION BARRIER (GRAVEL BAG – STAGE II)
- CTW — CONCRETE TRUCK WASH DOWN AREA
- SC — STABILIZED CONSTRUCTION EXIT

100 0 50 100

SCALE: 1"=200'

FULL–SIZE (22"X34"): 1" = 100'
HALF–SIZE (11"X17"): 1" = 200'

NO.	DATE	REVISIONS	BY

NOTE: CONTRACTOR SHALL PROVIDE A STABILIZED CONSTRUCTION ACCESS/EXIT INCLUDING TRUCK WASH AREA, VERIFIED IN THE FIELD AND AUTHORIZED BY CITY ENGINEER.

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F–12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS — MICHAEL BASSTAD — 81193 — REGISTERED PROFESSIONAL ENGINEER — 3-24-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

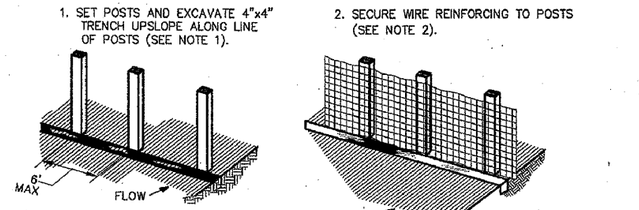
STORM WATER POLLUTION PREVENTION PLAN

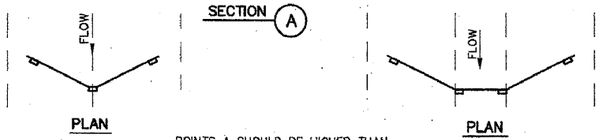
SHEET 2 OF 2

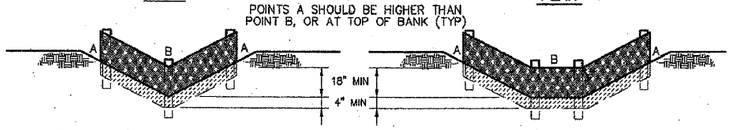
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 99 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\98 – 99 SWPPP PLANS.DWG APR. 09, 2020–8:15am JAMES GAIBORT

NO.	DATE	REVISIONS	BY





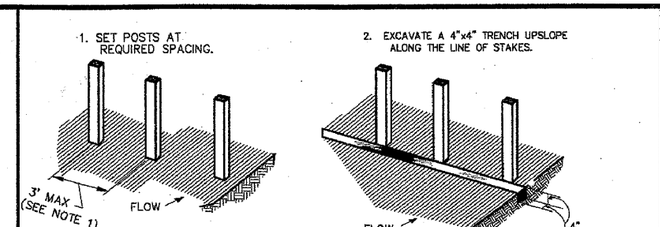


CONSTRUCTION NOTES:

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

SYMBOL

REINFORCED FILTER FABRIC BARRIER

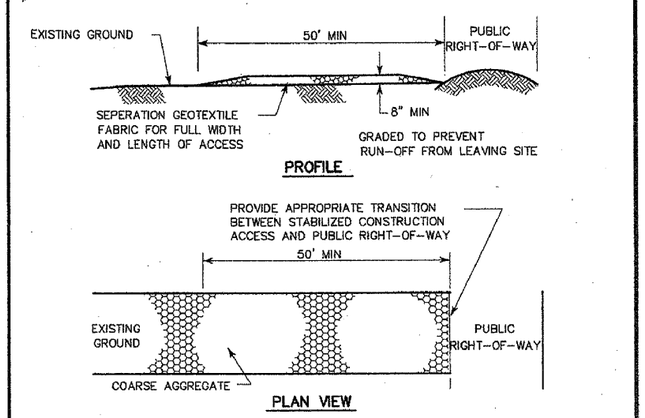


CONSTRUCTION NOTES:

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

FF
SYMBOL

FILTER FABRIC BARRIER

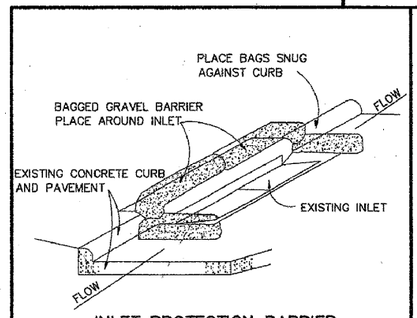


CONSTRUCTION NOTES:

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

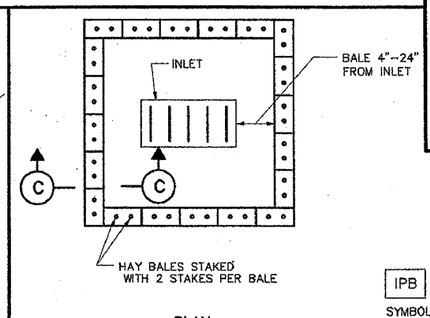
SC
SYMBOL

STABILIZED CONSTRUCTION ACCESS

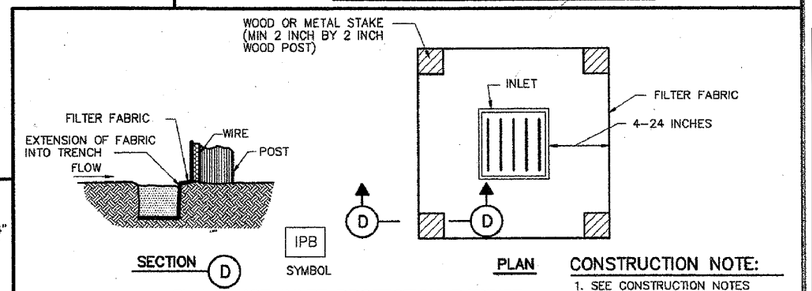


INLET PROTECTION BARRIER

(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER



HAY BALE INLET PROTECTION BARRIER



SILT FENCE INLET PROTECTION BARRIER

CONSTRUCTION NOTE:

1. SEE CONSTRUCTION NOTES FOR RFB.

TRW ENGINEERS, INC.
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MICHAEL BASTAD
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STATE OF TEXAS
6-24-19

SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

STORM WATER POLLUTION PREVENTION DETAIL SHEET

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS

(NOT TO SCALE)

APPROVED
CITY ENGINEER

APPROVED
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY-01-2010

DWG NO: 01571-01

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 100 OF 159	

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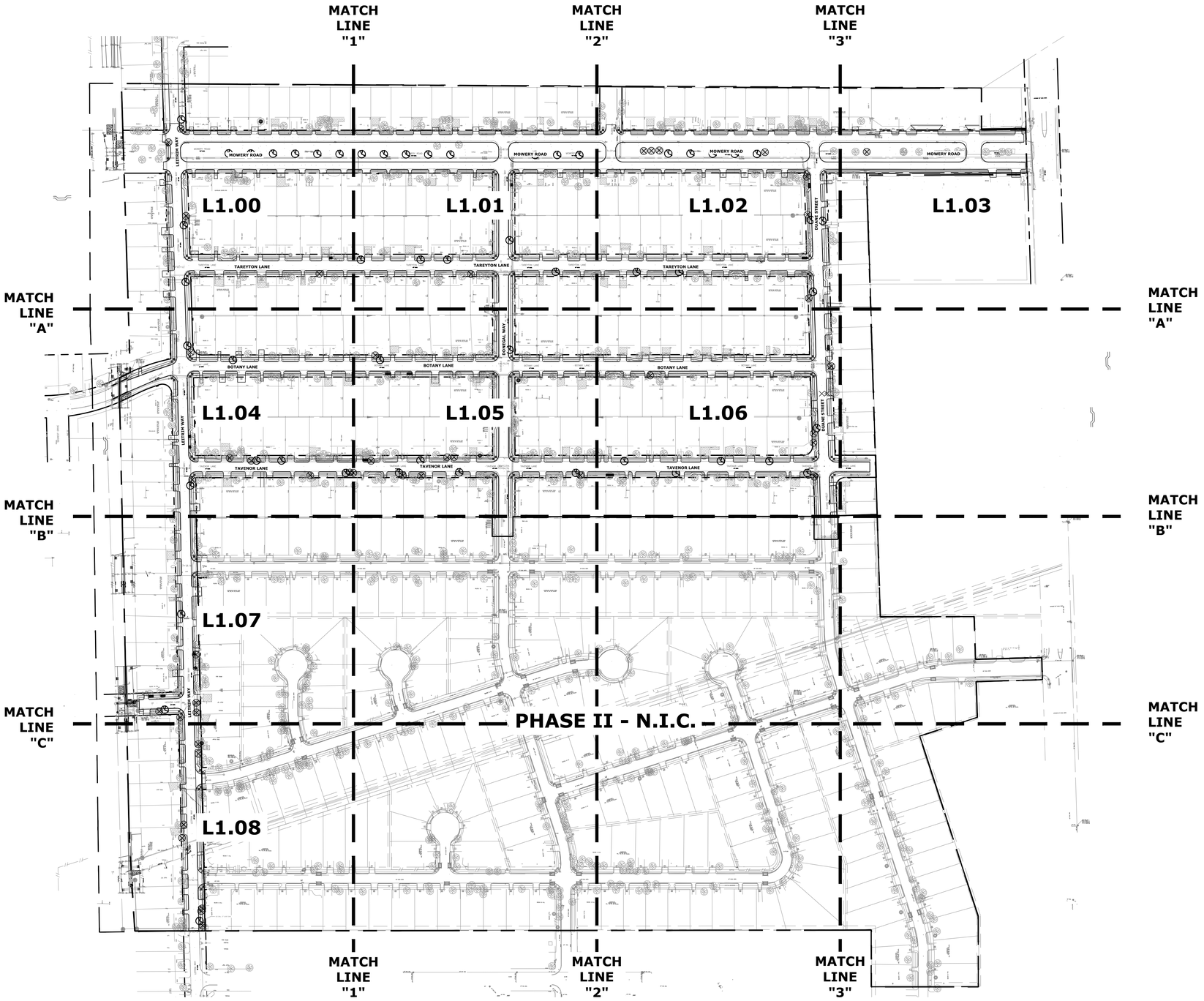

1 **PHASE I - REFERENCE PLAN**

SCALE: 1" = 150'-0"

NO.	DATE	REVISIONS	BY

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR. BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "B":
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ELEVATION = 39.90 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

TBM "C":
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ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON JULY 1, 2019.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES.

100% DESIGN REVIEW

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.

PRIVATE UTILITY LINES SHOWN

AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

Date:
CenterPoint Energy/Electric Facilities
Signature indicates underground electric lines are properly shown. No approval for construction is given.

Date:
Approved for SBC underground conduit facilities only.
Signature valid for one year.

Date:
CenterPoint Energy/Gas Facilities/ENTEX Incorporated
(Gas service lines are not shown)

CABLE COMPANY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

ASAKURA ROBINSON
2500 Summer Street, Suite 3228
Houston Texas 77007
P: 713.337.5330

100% DESIGN REVIEW SUBMITTAL

KEIJI ASAKURA 91170 LICENSED PROFESSIONAL ENGINEER
07.28.2026

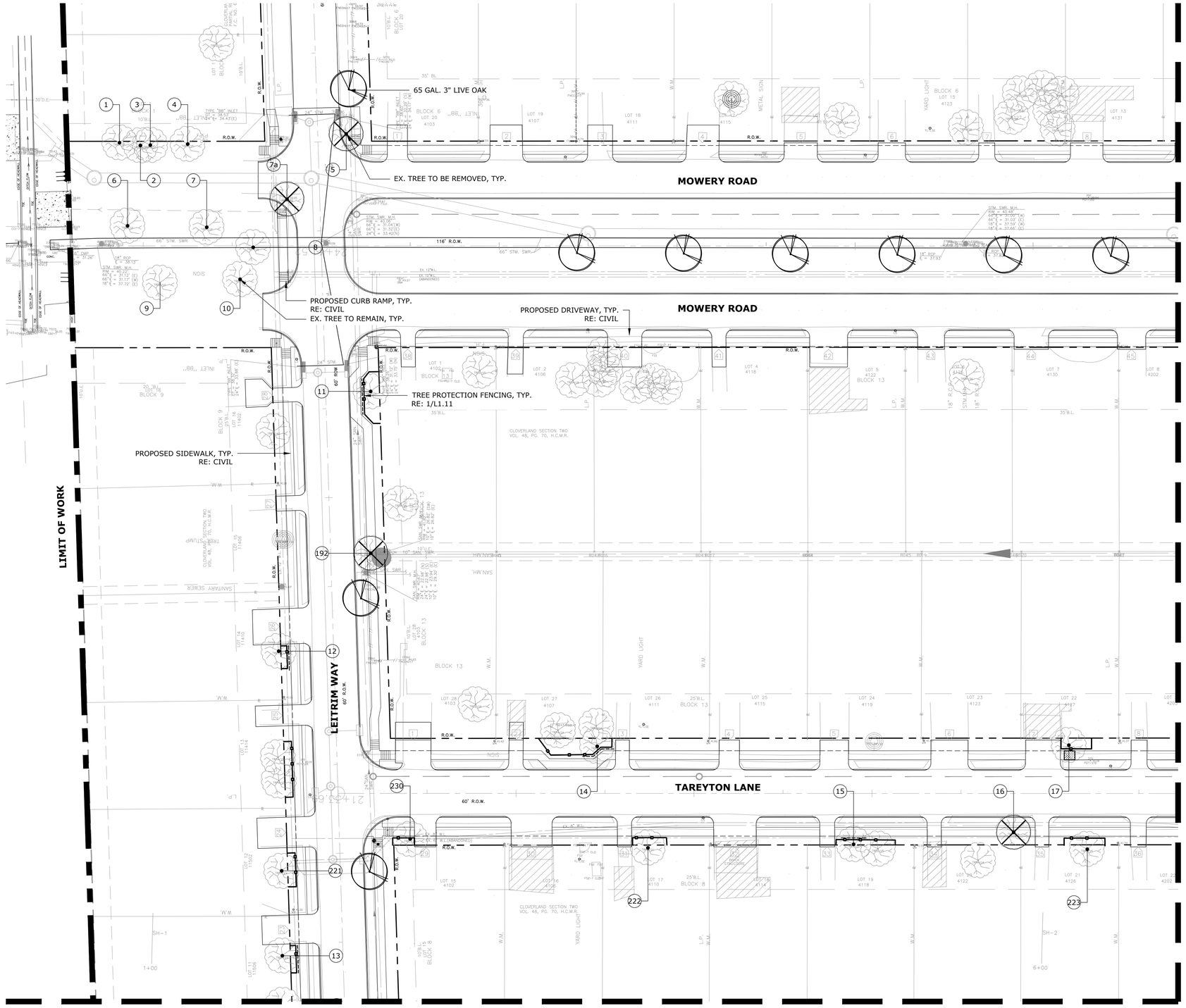
SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L0.00
REFERENCE PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 101 OF 159	



1 **TREE PROTECTION PLAN**
SCALE: 1" = 30'-0"

LEGEND

- EX. TREE TO REMAIN
- EX. TREE TO BE REMOVED
- 65 GAL. 3" CAL. - LIVE OAK
- EX. STUMP
- TREE PROTECTION FENCING RE: 1/L1.11
- ROOT PRUNE RE: 2/L1.11
- ZERO CURB CUT RE: 4/L1.11
- PROPOSED CHECKER PLATE AREAS RE: L1.10, NOTE 14/L1.11

TREE MITIGATION CHART ON L1.09

NO.	DATE	REVISIONS	BY

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
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100% DESIGN REVIEW

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PRIVATE UTILITY LINES SHOWN

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Date:
CenterPoint Energy/Electric Facilities
Signature indicates underground electric lines are properly shown. No approval for construction is given.

Date:
Approved for SBC underground conduit facilities only.
Signature valid for one year.

Date:
CenterPoint Energy/Gas Facilities/ENTEX Incorporated
(Gas service lines are not shown)

CABLE COMPANY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

ASAKURA ROBINSON
2500 Summer Street, Suite 3228
Houston Texas 77007
P: 713.337.5330

SURVEYED BY:
FB NO. 00000

100% DESIGN REVIEW SUBMITTAL

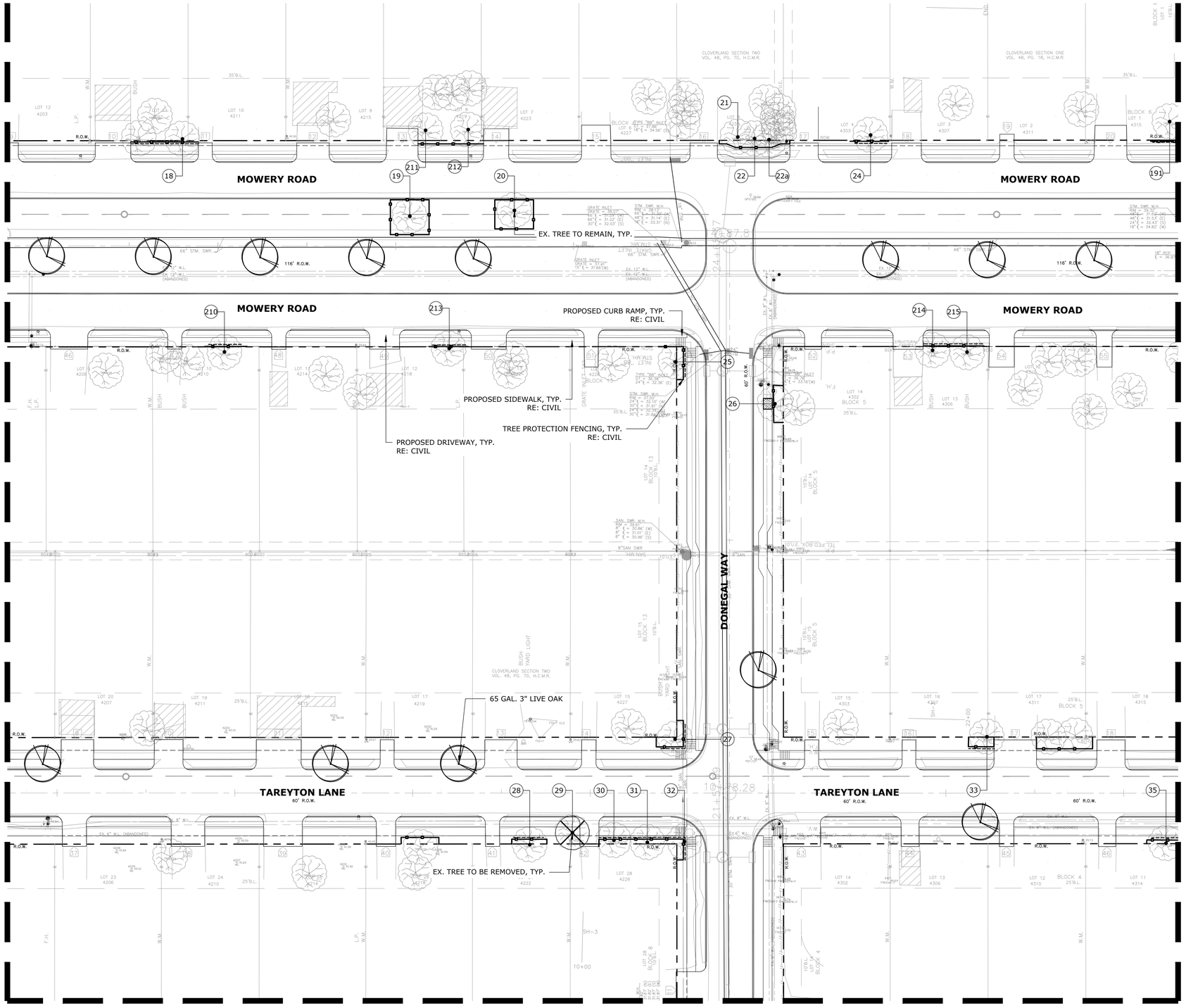
07.28.2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.00
TREE PROTECTION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 102 OF 159	



1 **TREE PROTECTION PLAN**
SCALE: 1" = 30'-0"

LEGEND

- EX. TREE TO REMAIN
- EX. TREE TO BE REMOVED
- 65 GAL. 3" CAL. - LIVE OAK
- EX. STUMP
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- ROOT PRUNE RE: 2/L1.11
- ZERO CURB CUT RE: 4/L1.11
- PROPOSED CHECKER PLATE AREAS RE: L1.10, NOTE 14/L1.11

TREE MITIGATION CHART ON L1.09

NO.	DATE	REVISIONS	BY

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CO CULLEN BOULEVARD ON THE EAST.

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ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
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Signature indicates underground electric lines are properly shown. No approval for construction is given.

Date:
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Date:
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(Gas service lines are not shown)

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P: 713.337.5330

100% DESIGN REVIEW SUBMITTAL

KEIJI ASAKURA 1170 LICENSED PROFESSIONAL ENGINEER
07.28.2026

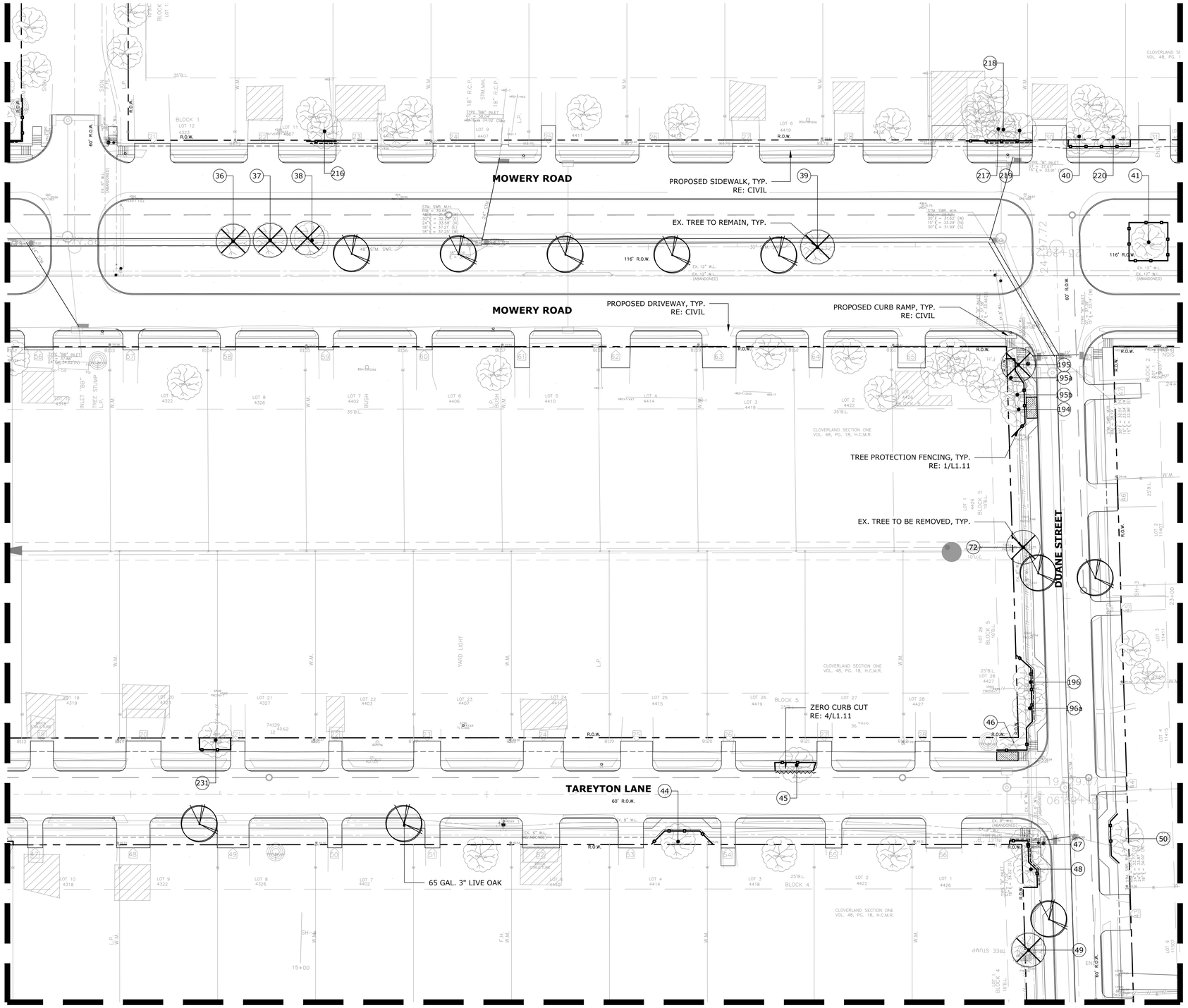
SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.01
TREE PROTECTION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 103 OF 159	



1 **TREE PROTECTION PLAN**
SCALE: 1" = 30'-0"

LEGEND

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TREE MITIGATION CHART ON L1.09

NO.	DATE	REVISIONS	BY

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Date:
Approved for SBC underground conduit facilities only. Signature valid for one year.

Date:
CenterPoint Energy/Gas Facilities/ENTEX Incorporated
(Gas service lines are not shown)

CABLE COMPANY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

ASAKURA ROBINSON
2500 Summer Street, Suite 3228
Houston Texas 77007
P: 713.337.5330

SURVEYED BY:
FB NO. 00000

100% DESIGN REVIEW SUBMITTAL

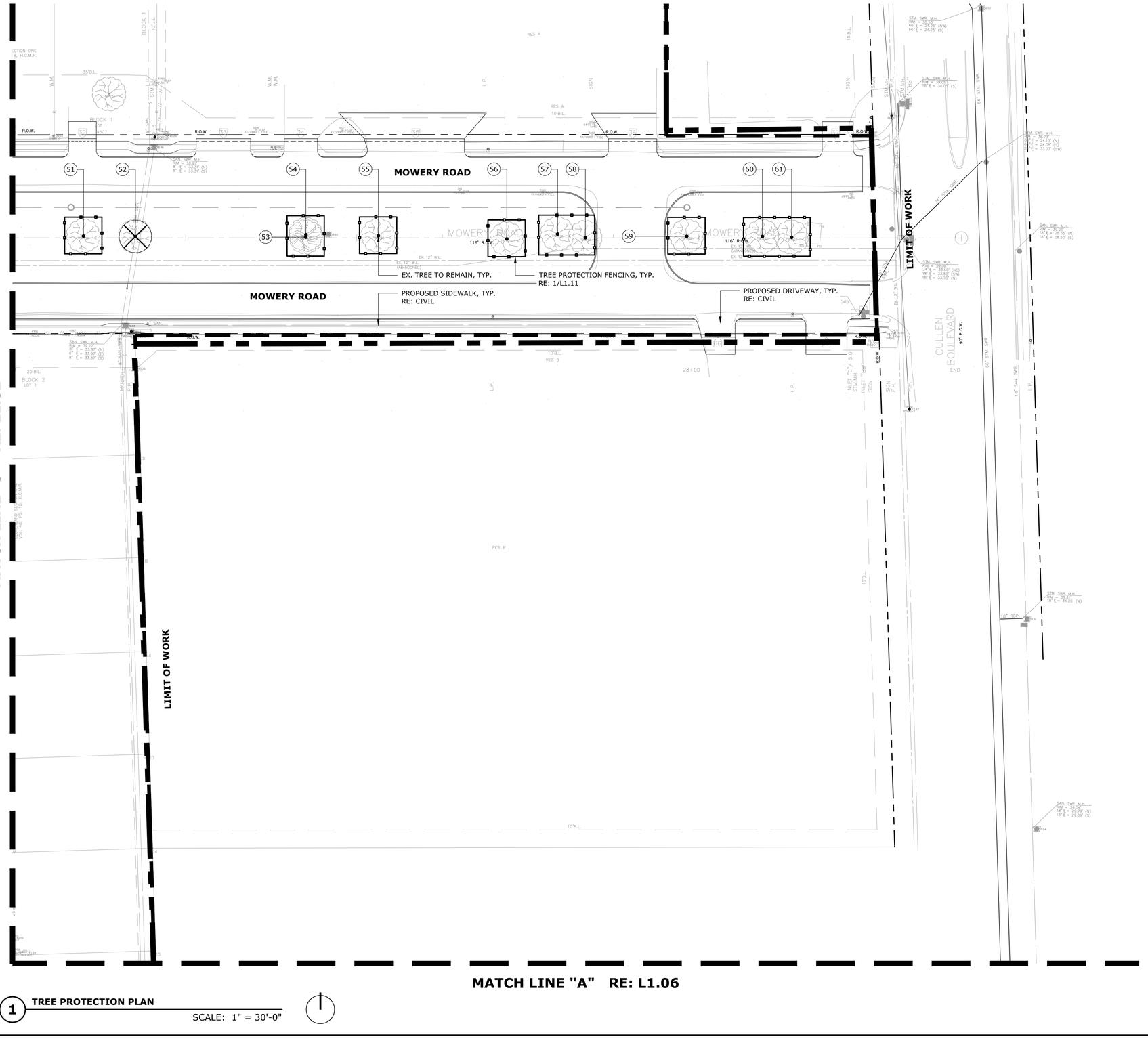
KEIJI ASAKURA 170 07.28.2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.02
TREE PROTECTION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 104 OF 159	



1 **TREE PROTECTION PLAN**

SCALE: 1" = 30'-0"

LEGEND

- EX. TREE TO REMAIN
- EX. TREE TO BE REMOVED
- 65 GAL. 3" CAL. - LIVE OAK
- EX. STUMP
- TREE PROTECTION FENCING RE: 1/L1.11
- ROOT PRUNE RE: 2/L1.11
- ZERO CURB CUT RE: 4/L1.11
- PROPOSED CHECKER PLATE AREAS RE: L1.10, NOTE 14/L1.11

TREE MITIGATION CHART ON L1.09

NO.	DATE	REVISIONS	BY

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 0300065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR. BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

TBM "B":
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ELEVATION = 39.90 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

TBM "C":
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ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

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100% DESIGN REVIEW

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PRIVATE UTILITY LINES SHOWN

AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

Date:

CenterPoint Energy/Electric Facilities
Signature indicates underground electric lines are properly shown. No approval for construction is given.

Date:

Approved for SBC underground conduit facilities only.
Signature valid for one year.

Date:

CenterPoint Energy/Gas Facilities/ENTEX Incorporated
(Gas service lines are not shown)

CABLE COMPANY

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dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

ASAKURA ROBINSON
2500 Summer Street, Suite 3228
Houston Texas 77007
P: 713.337.5330

100% DESIGN REVIEW SUBMITTAL

KEIJI ASAKURA
1170
07.28.2026

SURVEYED BY:
FB NO. 00000

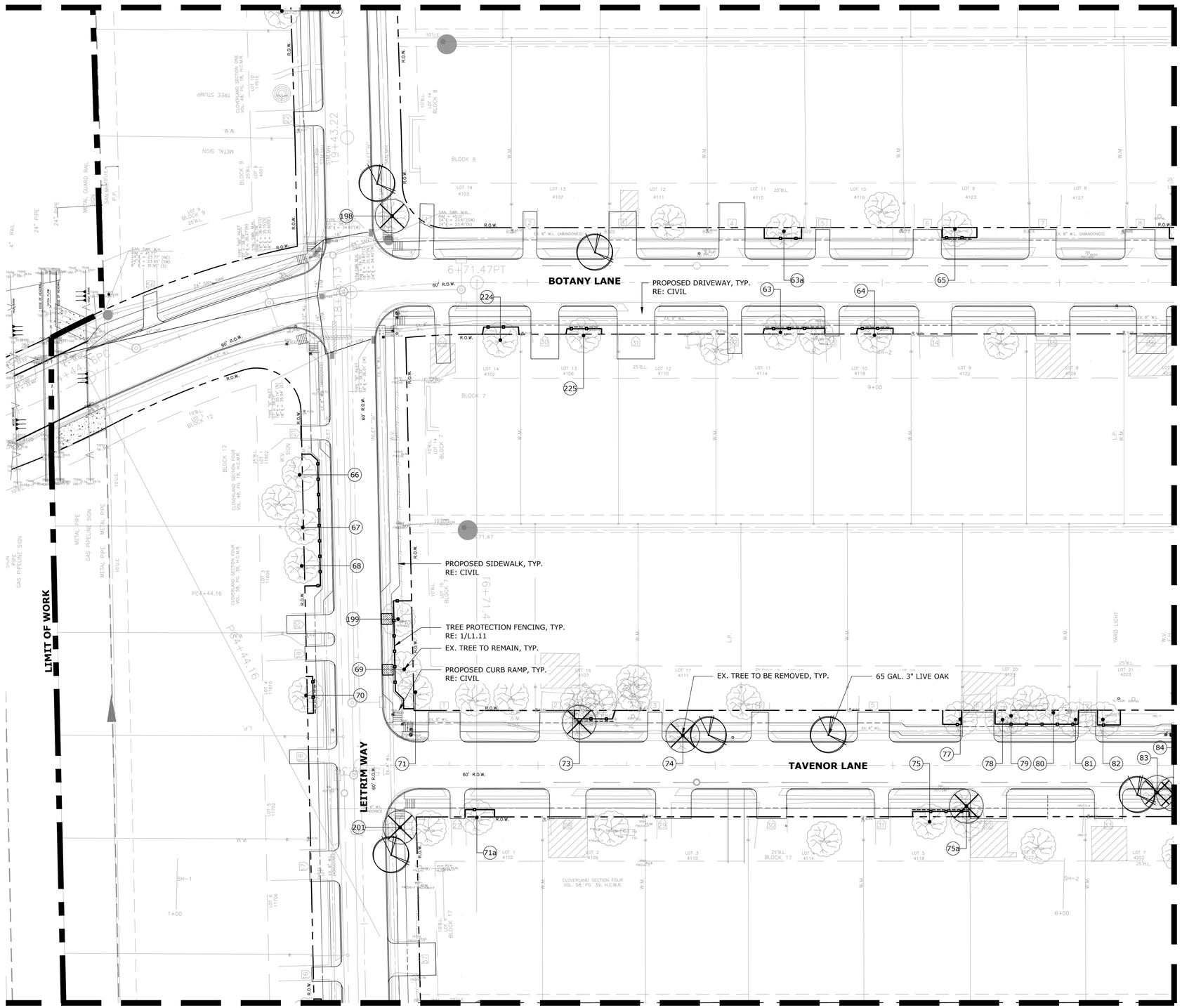
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.03
TREE PROTECTION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 105 OF 159	

MATCH LINE "A" RE: L1.00



1 TREE PROTECTION PLAN
SCALE: 1" = 30'-0"

LEGEND

- EX. TREE TO REMAIN
- EX. TREE TO BE REMOVED
- 65 GAL. 3" CAL. - LIVE OAK
- EX. STUMP
- TREE PROTECTION FENCING RE: 1/L1.11
- ROOT PRUNE RE: 2/L1.11
- ZERO CURB CUT RE: 4/L1.11
- PROPOSED CHECKER PLATE AREAS RE: L1.10, NOTE 14/L1.11

TREE MITIGATION CHART ON L1.09

NO.	DATE	REVISIONS	BY

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
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100% DESIGN REVIEW

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TEXAS REGISTERED FIRM F-12428

ASAKURA ROBINSON
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Houston Texas 77007
P: 713.337.5330

100% DESIGN REVIEW SUBMITTAL

KEIJI ASAKURA 117D 07.28.2026

SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.04
TREE PROTECTION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 106 OF 159	

MATCH LINE "A" RE: L1.01

MATCH LINE "1" RE: L1.04

MATCH LINE "2" RE: L1.06

BOTANY LANE

TAVENOR LANE

DONEGAL WAY

TREE PROTECTION FENCING, TYP.
RE: 1/L1.11

PROPOSED DRIVEWAY, TYP.
RE: CIVIL

EX. TREE TO REMAIN, TYP.

PROPOSED CURB RAMP, TYP.
RE: CIVIL

PROPOSED SIDEWALK, TYP.
RE: CIVIL

65 GAL. 3" LIVE OAK

EX. TREE TO BE REMOVED, TYP.

1 TREE PROTECTION PLAN
SCALE: 1" = 30'-0"

LEGEND

- EX. TREE TO REMAIN
- EX. TREE TO BE REMOVED
- 65 GAL. 3" CAL. - LIVE OAK
- EX. STUMP
- TREE PROTECTION FENCING RE: 1/L1.11
- ROOT PRUNE RE: 2/L1.11
- ZERO CURB CUT RE: 4/L1.11
- PROPOSED CHECKER PLATE AREAS RE: L1.10, NOTE 14/L1.11

TREE MITIGATION CHART ON L1.09

NO.	DATE	REVISIONS	BY

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FEMA RM 030065
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(Gas service lines are not shown)

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TEXAS REGISTERED FIRM F-12428

ASAKURA ROBINSON
2500 Summer Street, Suite 3228
Houston Texas 77007
P: 713.337.5330

100% DESIGN REVIEW SUBMITTAL

SURVEYED BY:
FB NO. 00000

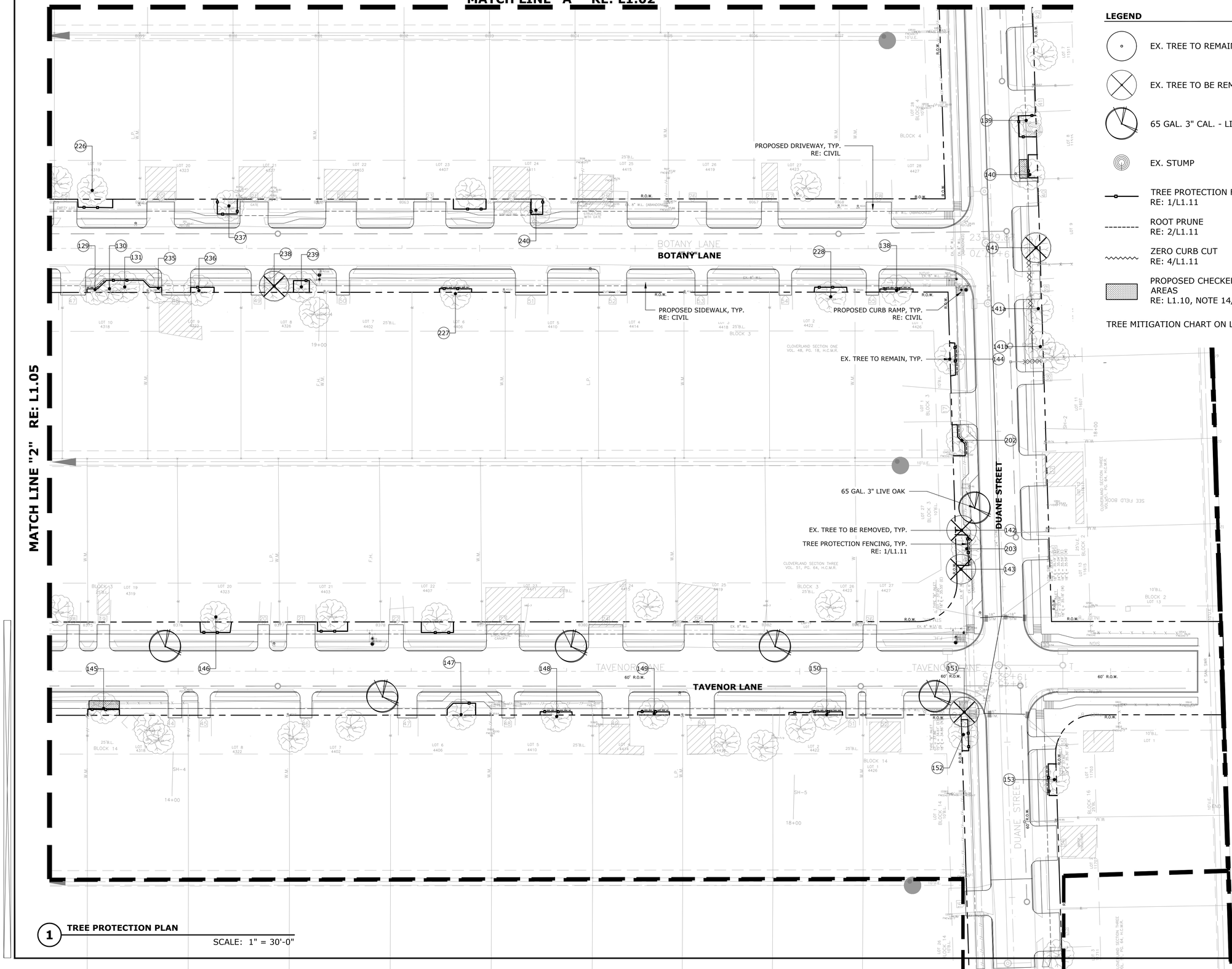
KEIJI ASAKURA 117170 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS
07.28.2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.05
TREE PROTECTION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 107 OF 159	



1 **TREE PROTECTION PLAN**

SCALE: 1" = 30'-0"

LEGEND

- EX. TREE TO REMAIN
- EX. TREE TO BE REMOVED
- 65 GAL. 3" CAL. - LIVE OAK
- EX. STUMP
- TREE PROTECTION FENCING RE: 1/L1.11
- ROOT PRUNE RE: 2/L1.11
- ZERO CURB CUT RE: 4/L1.11
- PROPOSED CHECKER PLATE AREAS RE: L1.10, NOTE 14/L1.11

TREE MITIGATION CHART ON L1.09

NO.	DATE	REVISIONS	BY

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BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

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ASAKURA ROBINSON
2500 Summer Street, Suite 3228
Houston Texas 77007
P: 713.337.5330

100% DESIGN REVIEW SUBMITTAL

SURVEYED BY:
FB NO. 00000

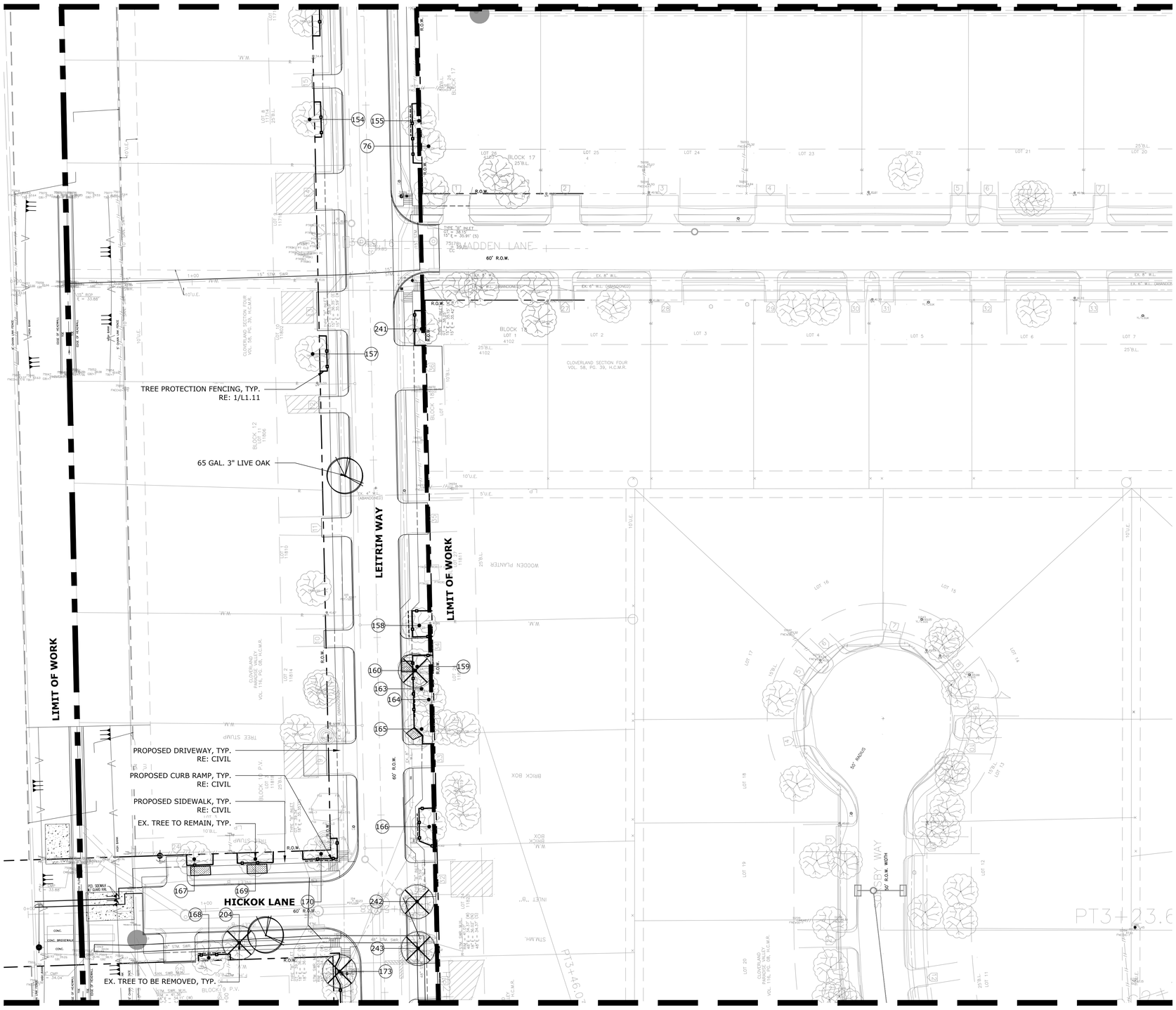
07.28.2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.06
TREE PROTECTION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 108 OF 159	



1 **TREE PROTECTION PLAN**

SCALE: 1" = 30'-0"

LEGEND

- EX. TREE TO REMAIN
- EX. TREE TO BE REMOVED
- 65 GAL. 3" CAL. - LIVE OAK
- EX. STUMP
- TREE PROTECTION FENCING RE: 1/L1.11
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TREE MITIGATION CHART ON L1.09

NO.	DATE	REVISIONS	BY

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100% DESIGN REVIEW SUBMITTAL

KEVI ASAKURA 170
07.28.2026

SURVEYED BY:
FB NO. 00000

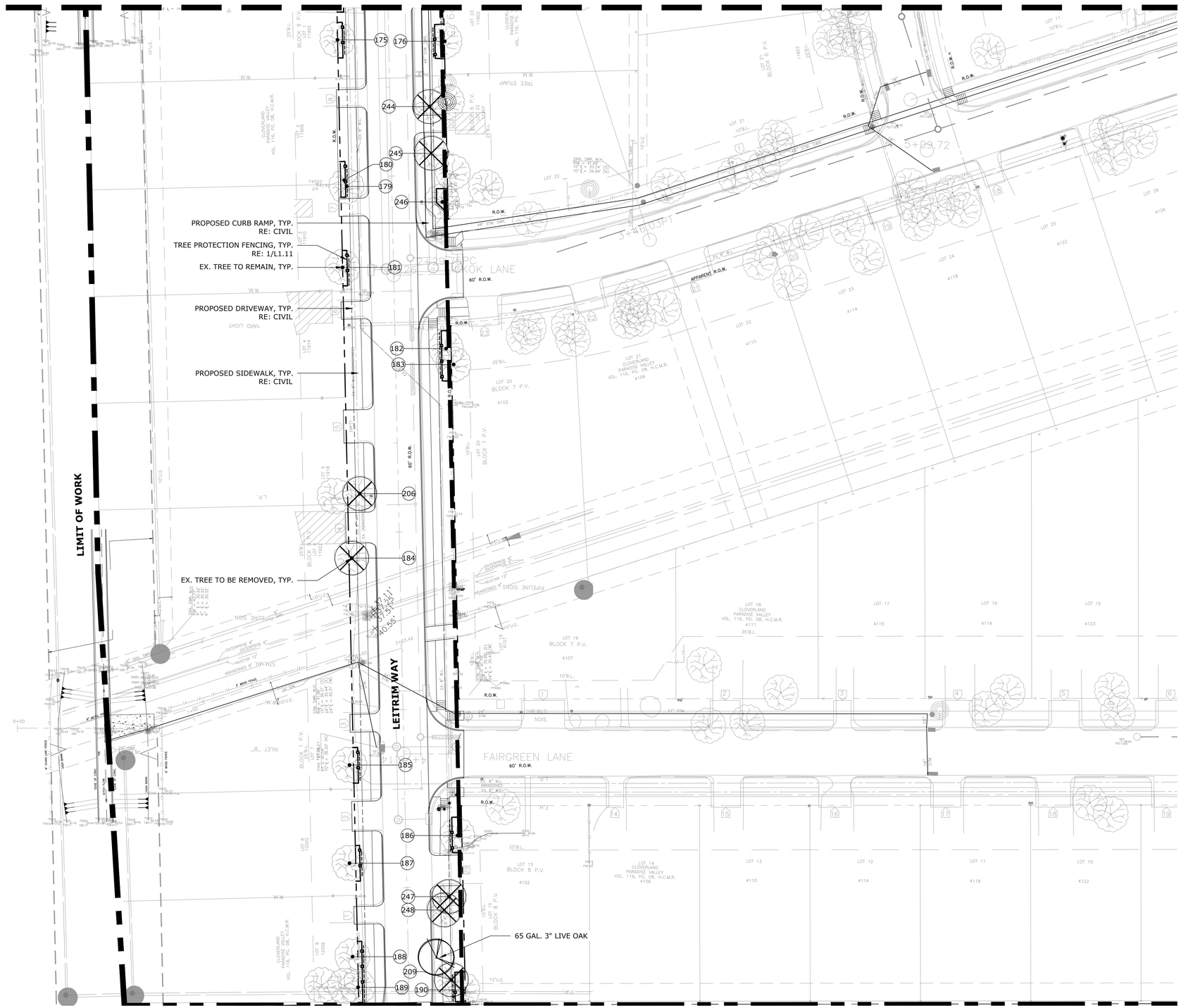
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.07
TREE PROTECTION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 109 OF 159	

MATCH LINE "C" RE: L1.07



1 **TREE PROTECTION PLAN**

SCALE: 1" = 30'-0"

LEGEND

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- EX. TREE TO BE REMOVED
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TREE MITIGATION CHART ON L1.09

NO.	DATE	REVISIONS	BY

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3" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED +/- 50FT OF THE INTERSECTION OF CULLEN BLVD. AND BUNGALOW LN.
ELEVATION = 39.90 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

TBM "C":
3" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS LOCATED AT THE NW CORNER OF MADDEN LN AND DONEGAL WAY.
ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON JULY 1, 2019.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES.

100% DESIGN REVIEW

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.

PRIVATE UTILITY LINES SHOWN

AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

Date:

CenterPoint Energy/Electric Facilities
Signature indicates underground electric lines are properly shown. No approval for construction is given.

Date:

Approved for SBC underground conduit facilities only.
Signature valid for one year.

Date:

CenterPoint Energy/Gas Facilities/ENTEX Incorporated
(Gas service lines are not shown)

CABLE COMPANY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

ASAKURA ROBINSON
2500 Summer Street, Suite 3228
Houston Texas 77007
P: 713.337.5330

100% DESIGN REVIEW SUBMITTAL

KEIJI ASAKURA 117070 LICENSED PROFESSIONAL ENGINEER
07.28.2026

SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.08
TREE PROTECTION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 110 OF 159	

TREE MITIGATION TABLE

Tree Number	Caliper	Species	Street Name	Location	Status	Action	Mitigation Required	Additional Recommendations
1	15"	Live Oak	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
2	26"	Live Oak	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
3	12"	Elm	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
4	15"	Live Oak	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
5	12"	Magnolia	Leitrim Way	IN ROW	POOR	REMOVE	N	
6	12"	Live Oak	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
7	12"	Live Oak	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
7a	21"	Cedar Elm	Mowery Road	IN ROW	AVERAGE	REMOVE	21 "	
8	16"	Crepemyrtle	Mowery Road	IN ROW	GOOD	TO REMAIN		
9	12"	Live Oak	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
10	12"	Live Oak	Mowery Road	IN ROW	GOOD	TO REMAIN		
11	24"	Tallow	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
12	24"	Elm	Leitrim Way	NEAR ROW	AVERAGE	TO REMAIN		
13	24"	Live Oak	Tareyton Lane	NEAR ROW	GOOD	TO REMAIN		
14	12"	Live Oak	Tareyton Lane	IN ROW	GOOD	TO REMAIN		
15	15"	Hackberry	Tareyton Lane	IN ROW	AVERAGE	TO REMAIN		
16	6"	Hackberry	Tareyton Lane	IN ROW	POOR	REMOVE	N	
17	15"	Magnolia	Tareyton Lane	IN ROW	AVERAGE	TO REMAIN		
18	12"	Pecan	Mowery Road	IN ROW	GOOD	TO REMAIN		
19	8"	Crepemyrtle	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
20	15"	Crepemyrtle	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
21	12"	Tallow	Mowery Road	NEAR ROW	AVERAGE	TO REMAIN		
22	12"	Tallow	Mowery Road	NEAR ROW	AVERAGE	TO REMAIN		
22a	12"		Mowery Road	NEAR ROW	AVERAGE	TO REMAIN		
23	24"	Live Oak	Leitrim Way	NEAR ROW	GOOD	TO REMAIN		
24	36	Cedar	Mowery Road	NEAR ROW	GOOD	TO REMAIN		Root Prune
25	36"	Live Oak	Donegal Way	IN ROW	GOOD	TO REMAIN		Root Prune
26	24"	Pine	Donegal Way	IN ROW	GOOD	TO REMAIN		Checker plate
27	18"	Tallow	Tareyton Lane	IN ROW	AVERAGE	TO REMAIN		
28	30"	Willow Oak	Tareyton Lane	NEAR ROW	GOOD	TO REMAIN		
29	12"	Hackberry	Tareyton Lane	IN ROW	AVERAGE	REMOVE	N	
30	18"	Tree	Tareyton Lane	IN ROW	AVERAGE	TO REMAIN		
31	6"	Tree	Tareyton Lane	IN ROW	AVERAGE	TO REMAIN		
32	18"	Crepemyrtle	Donegal Way	IN ROW	GOOD	TO REMAIN		
33	15"	Citrus Tree	Tatreyton Lane	IN ROW	GOOD	TO REMAIN		
35	24"	Tallow	Tareyton Lane	IN ROW	AVERAGE	TO REMAIN		
36	12"	Oak	Mowery Road	IN ROW	AVERAGE	REMOVE	N	Poor Form
37	18"	Crepemyrtle	Mowery Road	IN ROW	AVERAGE	REMOVE	N	Bush Form
38	18"	Crepemyrtle	Mowery Road	IN ROW	AVERAGE	REMOVE	N	Bush Form
39	18"	Crepemyrtle	Mowery Road	IN ROW	AVERAGE	REMOVE	18 "	
40	24"	Crepemyrtle	Mowery Road	NEAR ROW	AVERAGE	TO REMAIN		Root Prune
41	8"	Oak	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
44	36"	Ash		IN ROW	AVERAGE	TO REMAIN		Prune canopy
45	18"	Pine	Tareyton Lane	IN ROW	GOOD	TO REMAIN		
46	36"	Live Oak	Tareyton Lane	IN ROW	GOOD	TO REMAIN		Checker plate
47	12"	Live Oak	Duane Street	IN ROW	GOOD	TO REMAIN		Root Prune
48	12"	Water Oak	Duane Street	IN ROW	GOOD	TO REMAIN		Root Prune
49	36"	Ash	Duane Street	IN ROW	DANGEROUS	REMOVE	N	
50	36"	Ash	Duane Street	IN ROW	AVERAGE	TO REMAIN		Checker plate
51	6"	Live Oak	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
52	6"	Live Oak	Mowery Road	IN ROW	AVERAGE	REMOVE	6 "	
53	6"	Hackberry	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
54	8"	Hackberry	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
55	8"	Hackberry	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
56	12"	Hackberry	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
57	12"	Hackberry	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
58	12"	Hackberry	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
59	12"	Hackberry	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
60	12"	Hackberry	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
61	12"	Hackberry	Mowery Road	IN ROW	AVERAGE	TO REMAIN		
62	36"	Pecan	Tavenor Lane	NEAR ROW	GOOD	TO REMAIN		
63	12"	Japanese Yew	Botany Lane	IN ROW	GOOD	TO REMAIN		
63a		Oak	Botany Lane	NEAR ROW	AVERAGE	TO REMAIN		
64	48"	Live Oak	Botany Lane	IN ROW	GOOD	TO REMAIN		
65	36"	Oak	Botany Lane	IN ROW	DEAD	TO REMAIN		
66	18"	Pittosporum	Leitrim Way	NEAR ROW	GOOD	TO REMAIN		
67	24"	Crepemyrtle	Leitrim Way	IN ROW	GOOD	TO REMAIN		
68	24"	Crepemyrtle	Leitrim Way	NEAR ROW	GOOD	TO REMAIN		
69	15"	White Oak	Leitrim Way	IN ROW	GOOD	TO REMAIN		Checker plate
70	12"	Live Oak	Leitrim Way	IN ROW	GOOD	TO REMAIN		Root Prune
71	18"	Live Oak	Leitrim Way	NEAR ROW	AVERAGE	TO REMAIN		Checker plate
71a	15"	Palm	Tavenor Lane	NEAR ROW	AVERAGE	TO REMAIN		
72	16"	Hackberry	Duane Street	IN ROW	POOR	REMOVE	N	
73	12"	Palm	Tavenor Lane	IN ROW	AVERAGE	REMOVE	N	
74	24"	Tallow	Tavenor Lane	IN ROW	AVERAGE	REMOVE	N	
75	36"	Pecan	Tavenor Lane	NEAR ROW	POOR	TO REMAIN		
75a	8"	Crepemyrtle	Tavenor Lane	IN ROW	AVERAGE	REMOVE	N	Bush Form
76	24"	Arborvitae	Leitrim Way	NEAR ROW	AVERAGE	TO REMAIN		Clearance prune
77	8"	Crepemyrtle	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
78	8"	Crepemyrtle	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
79	8"	Crepemyrtle	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
80	8"	Crepemyrtle	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
81	12"	Palm	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
82	12"	Palm	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
83	6"	Cedar	Tavenor Lane	IN ROW	AVERAGE	REMOVE	N	
84	6"	Cedar	Tavenor Lane	IN ROW	AVERAGE	REMOVE	N	
85	18"	Palm	Botany Lane	IN ROW	AVERAGE	TO REMAIN		
86	36"	N/A	Botany Lane	IN ROW	DEAD	REMOVE	N	
87	24"	Pine	Botany Lane	IN ROW	GOOD	TO REMAIN		Checker plate
88	15"	Pine	Botany Lane	IN ROW	GOOD	TO REMAIN		Checker plate
89	18"	Magnolia	Botany Lane	IN ROW	GOOD	TO REMAIN		
90	8"	Red Oak	Botany Lane	IN ROW	GOOD	TO REMAIN		Checker plate
91	36"	Tallow	Botany Lane	IN ROW	AVERAGE	TO REMAIN		
92	24"	Pine	Botany Lane	IN ROW	GOOD	TO REMAIN		
95	36"	Chinaberry	Botany Lane	IN ROW	AVERAGE	TO REMAIN		
96	18"	Cedar	Botany Lane	IN ROW	GOOD	TO REMAIN		
97	18"	Crepemyrtle	Botany Lane	IN ROW	GOOD	TO REMAIN		
98	18"	Crepemyrtle	Botany Lane	IN ROW	GOOD	TO REMAIN		
99	24"	Pine	Botany Lane	IN ROW	GOOD	TO REMAIN		
100	24"	Pine	Donegal Way	IN ROW	GOOD	TO REMAIN		
101	18"	Crepemyrtle	Botany Lane	IN ROW	GOOD	TO REMAIN		
102	24"		Botany Lane	IN ROW	AVERAGE	TO REMAIN		
104	18"	Catalpa	Botany Lane	IN ROW	AVERAGE	TO REMAIN		
105	10"	Hackberry	Botany Lane	IN ROW	AVERAGE	TO REMAIN		
106	30"	Ash	Botany Lane	IN ROW	AVERAGE	TO REMAIN		
107	15"	Willow Oak	Botany Lane	IN ROW	GOOD	TO REMAIN		
108	24"	Crepemyrtle	Donegal Way	IN ROW	AVERAGE	TO REMAIN		
108a	18"	Cedar	Donegal Way	IN ROW	AVERAGE	TO REMAIN		
109	24"	Crepemyrtle	Donegal Way	IN ROW	AVERAGE	TO REMAIN		
110	24"	Crepemyrtle	Donegal Way	IN ROW	AVERAGE	TO REMAIN		
111	8"	Water Oak	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
112	12"	Holly	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		Checker plate
113	18"	Catalpa	Tavenor Lane	IN ROW	AVERAGE	REMOVE	N	
114	8"	Wax Myrtle	Tavenor Lane	IN ROW	POOR	TO REMAIN		
115	12"	Ligustrum	Tavenor Lane	IN ROW	AVERAGE	REMOVE	N	
116	24"	Live Oak	Tavenor Lane	IN ROW	GOOD	REMOVE	24 "	
117	18"	Tallow	Tavenor Lane	IN ROW	AVERAGE	REMOVE	N	
118	24"	Crepemyrtle	Tavenor Lane	IN ROW	AVERAGE	REMOVE	24 "	
119	24"	Crepemyrtle	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
121	12"	Crepemyrtle	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
122	12"	Crepemyrtle	Donegal Way	IN ROW	AVERAGE	TO REMAIN		
123	18"	Crepemyrtle	Donegal Way	NEAR ROW	GOOD	TO REMAIN		
124	24"		Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
125	30"	Oak	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
127	24"	Tallow	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
128	24"	Tallow	Tavenor Lane	IN ROW	AVERAGE	REMOVE	24 "	
129	10"	Crepemyrtle	Botany Lane	IN ROW	AVERAGE	TO REMAIN		
130	10"	Crepemyrtle	Botany Lane	IN ROW	AVERAGE	TO REMAIN		
131	10"	Crepemyrtle	Botany Lane	IN ROW	AVERAGE	TO REMAIN		
138	12"	Magnolia	Botany Lane	IN ROW	GOOD	TO REMAIN		
139	15"	Palm	Duane Street	IN ROW	AVERAGE	TO REMAIN		
140	28"	Crepemyrtle	Duane Street	IN ROW	GOOD	TO REMAIN		
141	24"	Sycamore	Duane Street	IN ROW	DEAD	REMOVE	N	
141a	24"	Oak	Duane Street	IN ROW	AVERAGE	TO REMAIN		Behind existing fence
141b	24"	Oak	Duane Street	IN ROW	AVERAGE	TO REMAIN		Behind existing fence
142	X	Hackberry	Duane Street	IN ROW	DEAD	REMOVE	N	
143	X	Crepemyrtle	Duane Street	IN ROW	DEAD	REMOVE	N	
145	24"	Pine	Tavenor Lane	IN ROW	GOOD	TO REMAIN		
146	30"	Pecan	Tavenor Lane	NEAR ROW	GOOD	TO REMAIN		
147	28"	Red Oak	Tavenor Lane	IN ROW	GOOD	TO REMAIN		
148	24"	Willow Oak	Tavenor Lane	IN ROW	GOOD	TO REMAIN		
149	24"	Live Oak	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
150	15"	Ash	Tavenor Lane	IN ROW	AVERAGE	TO REMAIN		
151	18"	Ash	Tavenor Lane	IN ROW	POOR	REMOVE	N	
152	36"	Oak	Duane Street	IN ROW	AVERAGE	TO REMAIN		
153	24"	Tallow	Duane Street	IN ROW	AVERAGE	TO REMAIN		
154	15"	Red Oak	Leitrim Way	NEAR ROW	GOOD	TO REMAIN		
155	15"	Water Oak	Leitrim Way	IN ROW	GOOD	TO REMAIN		
157	20"	Tallow	Leitrim Way	NEAR ROW	AVERAGE	TO REMAIN		
158	20"	Pecan	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		Prune canopy
159	24"	Pecan	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
160	12"	Crape Myrtle	Leitrim Way	IN ROW	AVERAGE	REMOVE	12 "	
163	24"	Oak	Leitrim Way	IN ROW	POOR	TO REMAIN		Diseased
164	24"	Tallow	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
165	18"	Oak	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
166	12"	Pecan	Leitrim Way	IN ROW	GOOD	TO REMAIN		
168	18"	Ash	Hickock Lane	IN ROW	POOR	TO REMAIN		
169	24"	Tallow	Hickock Lane	IN ROW	AVERAGE	TO REMAIN		
170	24"	Magnolia	Hickock Lane	IN ROW	AVERAGE	TO REMAIN		
173	12"	Live Oak	Leitrim Way	IN ROW	AVERAGE	REMOVE	12 "	
175	28"	Elm	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
176	36"	Magnolia	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
179	24"	White Oak	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
180	15"	Oak	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
181	28"	Live Oak	Leitrim Way	IN ROW	GOOD	TO REMAIN		
183	24"	Arborvitae	Leitrim Way	NEAR ROW	GOOD	TO REMAIN		
184	24"	Ash	Leitrim Way	IN ROW	AVERAGE	REMOVE	N	
185	36"	Pecan	Leitrim Way	NEAR ROW	GOOD	TO REMAIN		
186	8"	Plum	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
187	36"	Pecan	Leitrim Way	NEAR ROW	GOOD	TO REMAIN		
188	24"	Pecan	Leitrim Way	NEAR ROW	GOOD	TO REMAIN		
189	18"	Ash	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
190	12"	Pecan	Leitrim Way	IN ROW	AVERAGE	TO REMAIN		
191	24"	Oak	Mowery Road	IN ROW	AVERAGE	TO REMAIN		Root Prune
192	24"	Mulberry	Leitrim Way	IN ROW	AVERAGE	REMOVE	N	
194	15"	Live Oak	Duane Street	IN ROW	GOOD	TO REMAIN		Checker plate
195	15"	Pine	Duane Street	IN ROW	N/A	REMOVE	N	Tree is already removed.
195a	12"	Oak	Duane Street	IN ROW	AVERAGE	TO REMAIN		
195b	15"	Palm	Duane Street	IN ROW	AVERAGE	TO REMAIN		
196	12"	Oak	Duane Street	IN ROW	AVERAGE	TO REMAIN		Root Prune
196a	12"	Oak	Duane Street	IN ROW	AVERAGE	TO REMAIN		
198	24"	Sycamore	Leitrim Way	IN ROW	POOR	REMOVE	N	
199	24"	Live Oak	Leitrim Way	IN ROW	GOOD	TO REMAIN		Checker plate
201	18"	Live Oak	Leitrim Way	IN ROW	AVERAGE	REMOVE	18 "	
202	15"	Mulberry	Duane Street	IN ROW	GOOD	TO REMAIN		
203	24"	Oak	Duane Street	IN ROW	AVERAGE	TO REMAIN		
204	8"	Cedar	Hickock Lane	IN ROW	AVERAGE	REMOVE	N	
206	24"	Ash	Leitrim Way	IN ROW	POOR	REMOVE	N	
209	12"	Crepemyrtle	Leitrim Way	IN ROW	AVERAGE	REMOVE	N	
210	8"	NA	Mowery Road	NEAR ROW	Poor	TO REMAIN		
211	48"	Oak	Mowery Road	NEAR ROW	Good	TO REMAIN		
212	15"	Palm	Mowery Road	NEAR ROW	Poor	TO REMAIN		
213	6"	Crepe Myrtle	Mowery Road	NEAR ROW	Average	TO REMAIN		
214	12"	Palm	Mowery Road	NEAR ROW	Poor	TO REMAIN		
215	12"	Palm	Mowery Road	NEAR ROW	Poor	TO REMAIN		
216	18"	Pine	Mowery Road	NEAR ROW	Good	TO REMAIN		
217	15"	Crepe Myrtle	Mowery Road	NEAR ROW	Average	TO REMAIN		
218	15"	Crepe Myrtle	Mowery Road	NEAR ROW	Average	TO REMAIN		
219	12"	Crepe Myrtle	Mowery Road	NEAR ROW	Average	TO REMAIN		
220	12"	Crepe Myrtle	Mowery Road	NEAR ROW	Average	TO REMAIN		
221	24"	Palm	Leitrim Way	NEAR ROW	Good	TO REMAIN		
222	12"	Magnolia	Tareyton Lane	NEAR ROW	Good	TO REMAIN		
223	15"	Magnolia	Tareyton Lane	NEAR ROW	Average	TO REMAIN		
224	18"	Cedar	Botany Lane	NEAR ROW	Good	TO REMAIN		
225	36"	Cedar Elm	Botany Lane	NEAR ROW	Good	TO REMAIN		
226	24"	Oak	Botany Lane	NEAR ROW	Good	TO REMAIN		
227	18"	Cedar Elm	Botany Lane	NEAR ROW	Average	TO REMAIN		
228	24"	Oak	Botany Lane	NEAR ROW	Good	TO REMAIN		
229	12"	Magnolia	Tavenor Lane	NEAR ROW	Average	TO REMAIN		
230	24"	Crepe Myrtle	Tareyton Lane	IN ROW	Poor	TO REMAIN		
231	12"	Palm	Tareyton Lane	IN ROW	Average	TO REMAIN		
232	8"	Palm	Botany Lane	IN ROW	Average	TO REMAIN		
233	8"	Palm	Botany Lane	IN ROW	Average	TO REMAIN		
234	12"	Palm	Botany Lane	IN ROW	Poor	TO REMAIN		
235	10"	Crepe Myrtle	Botany Lane	IN ROW	Average	TO REMAIN		
236	24"	Crepe Myrtle	Botany Lane	IN ROW	Average	TO REMAIN		
237	15"	Palm	Botany Lane	IN ROW	Average	TO REMAIN		
238	15"	Palm	Botany Lane	IN ROW	Average	REMOVE	N	
239	15"	Palm	Botany Lane	IN ROW	Poor	TO REMAIN		
240	10"	Palm	Botany Lane	IN ROW	Average	TO REMAIN		
241	24"	Palm	Leitrim Way	IN ROW	Average	TO REMAIN		
242	18"	Palm	Leitrim Way	IN ROW	Poor	REMOVE	N	
243	18"	Palm	Leitrim Way	IN ROW	Poor	REMOVE	N	
244	12"	Palm	Leitrim Way	IN ROW	Good	REMOVE	N	
245	15"	Palm	Leitrim Way	IN ROW	Good	REMOVE	N	
246	15"	Palm	Leitrim Way	IN ROW	Good	TO REMAIN		
247	12"	Large Shrub	Leitrim Way	IN ROW	Poor	REMOVE	N	
248	12"	Large Shrub	Leitrim Way	IN ROW	Poor	REMOVE	N	
					TOTAL REQUIRING MITIGATION (inches)		159 "	
					TOTAL PROPOSED (inches)		159 "	

TREE REPLACEMENT LIST			
QUANTITY	CALIPER SIZE	SPECIES	CONTAINER SIZE
53	3"	LIVE OAK - QUERCUS VIRGINIANA	65 GAL.
		TOTAL REPLACEMENT REQUIRED	159"
		TOTAL REPLACEMENT PROVIDED	159"

TREE REPLACEMENT NOTE:

TREE REPLACEMENT LOCATIONS SHOWN ON PLANS MUST BE COORDINATED WITH ADJACENT PROPERTY OWNER AND CITY OF HOUSTON URBAN FORESTRY AND PWE PRIOR TO PURCHASING AND EXCAVATION FOR PLANTING. COORDINATION SHALL BE COMPLETED BY CONSTRUCTION CONTRACTOR'S CERTIFIED ARBORIST. TREES 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.

NO.	DATE	REVISIONS	BY

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 0300065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

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Date:
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Signature indicates underground electric lines are properly shown. No approval for construction is given.

Date:
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Date:
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(Gas service lines are not shown)

CABLE COMPANY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

ASAKURA ROBINSON
2500 Summer Street, Suite 3228
Houston Texas 77007
P: 713.337.5330

100% DESIGN REVIEW SUBMITTAL

KEVI ASAKURA 170 07.28.2026

SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.09

TREE MITIGATION CHART

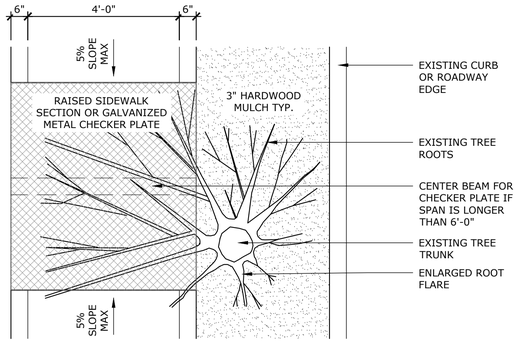
WBS NUMBER
N-210004-0001-4

FOR CITY OF HOUSTON USE ONLY

DRAWING SCALE
VERT. HORIZ.

CITY OF HOUSTON PM
JAMES BIELSTEIN, P.E.

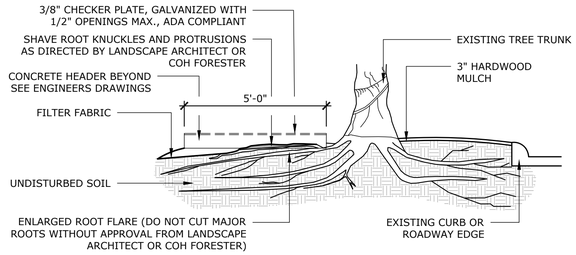
SHEET NO. 111 OF 159



1 ROOT FLARE OVER SIDEWALK INSTALLATION DETAIL

SCALE: 1/2" = 1'-0"

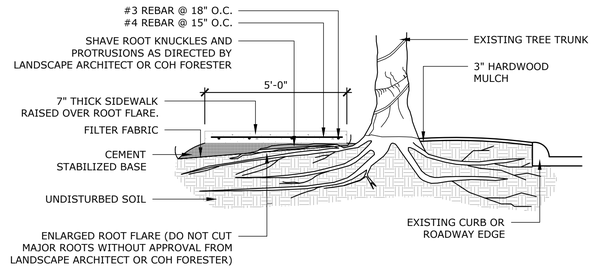
NOTES:
1. PROVIDE CONCRETE BEAM IF SPAN IS GREATER THAN 6'-0".
2. ALL IRON WORK SHALL BE HOT DIPPED GALVANIZED
3. THE DISTANCE OF THE CHECKER PLATE VARIES FOR EACH TREE ROOT CONDITION. ALL DISTANCES SHOWN ARE APPROXIMATE MEASUREMENTS. CHECKER PLATE AND CENTER BEAM SUPPORT IS INCIDENTAL TO THE INSTALLATION.



2 CHECKER PLATE OVER ROOT FLARE

SCALE: 3/8" = 1'-0"

NOTES:
CONTRACTOR SHALL NOT CUT ROOT FLARE OR MAJOR ROOTS. IF ROOT SYSTEM NEEDS TO BE PRUNED CONTRACTOR SHALL CONTACT COH FORESTER PRIOR TO ANY PRUNING FOR APPROVAL.



3 SIDEWALK OVER ROOT FLARE

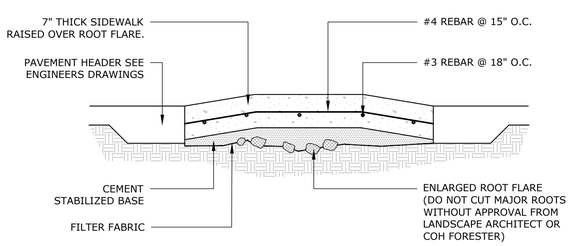
SCALE: 3/8" = 1'-0"

4 CENTER BEAM ATTACHMENT AT SIDEWALK

SCALE: 3/4" = 1'-0"

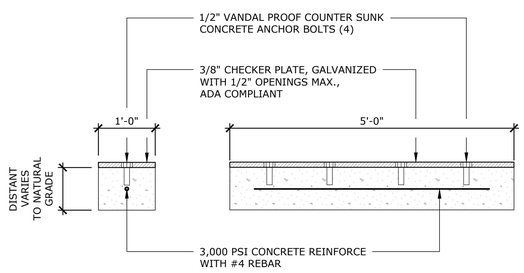
5 CHECKER PLATE ATTACHMENT DETAIL

SCALE: 3/4" = 1'-0"



6 RAISED SIDEWALK OVER ROOT FLARE

SCALE: 3/4" = 1'-0"



7 CHECKER PLATE CENTER BEAM SUPPORT

SCALE: 3/4" = 1'-0"

NO.	DATE	REVISIONS	BY

LEGAL DESCRIPTION:
BEING A 112.90 ACRES BOUNDED BY MOWERY ROAD ON THE NORTH, HARRIS COUNTY FLOOD CONTROL DITCH C127-00-00 (SWENGEL DITCH) ON THE WEST, FAIRGREEN LANE ON THE SOUTH, AND CULLEN BOULEVARD ON THE EAST.

FLOODPLAIN:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48201C0890L, REVISED DATE JUNE 18, 2017 THE SURVEYED PROPERTY DOES NOT LIE WITHIN SHADED ZONE "AE", DEFINED AS SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT.

BENCHMARK:
FEMA RM 030065
MONUMENT IS LOCATED ON EAST SIDE OF CULLEN BOULEVARD BRIDGE OVER SIMS BAYOU IN THE DOWNSTREAM SIDE OF THE BRIDGE ON THE SIDEWALK AT CENTERLINE STREAM.
ELEVATION = 43.43 FEET (NAVD88, 2001 ADJ.). GEOID99 (CONUS)

TBM "A":
3" IR WITH 3" BRASS CAP IN CONCRETE. CONTROL POINT IS +/- 150FT OF THE INTERSECTION OF OREM DR. AND SEGREST DR, BEING +/- 50FT NORTH OF OREM DR. BRIDGE
ELEVATION = 44.41 FEET (NAVD88, 2001 ADJ.). GEOID12A (CONUS)

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TBM "C":
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ELEVATION = 39.26 FEET (NAVD88, 2001 ADJ.), GEOID12A (CONUS)

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON JULY 1, 2019.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES.

100% DESIGN REVIEW

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PRIVATE UTILITY LINES SHOWN

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Date:
CenterPoint Energy/Electric Facilities
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TEXAS REGISTERED FIRM F-12428

ASAKURA ROBINSON
2500 Summer Street, Suite 3228
Houston Texas 77007
P: 713.337.5330

100% DESIGN REVIEW SUBMITTAL

KEIJI ASAKURA 1170 LICENSED PROFESSIONAL ENGINEER
07.28.2026

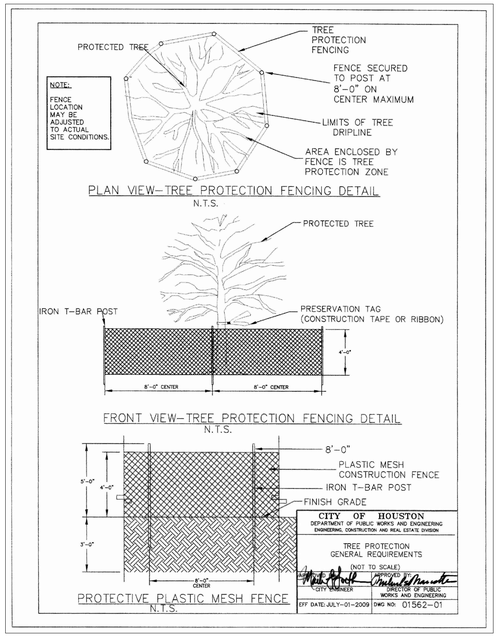
SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

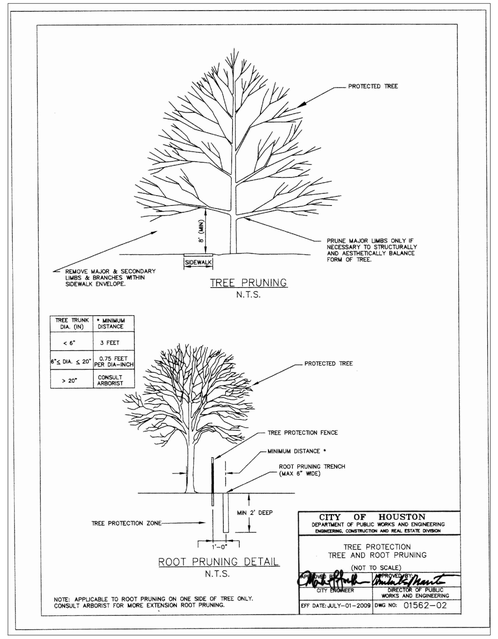
L1.10
TREE PROTECTION DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 112 OF 159	



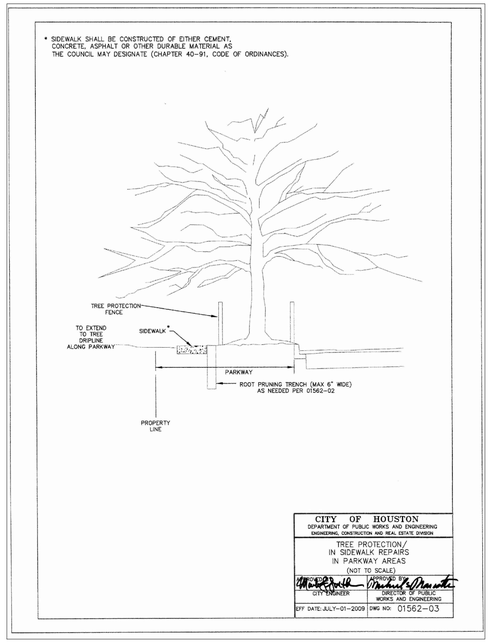
1 CITY OF HOUSTON
TREE PROTECTION FENCING DETAIL

SCALE: NTS



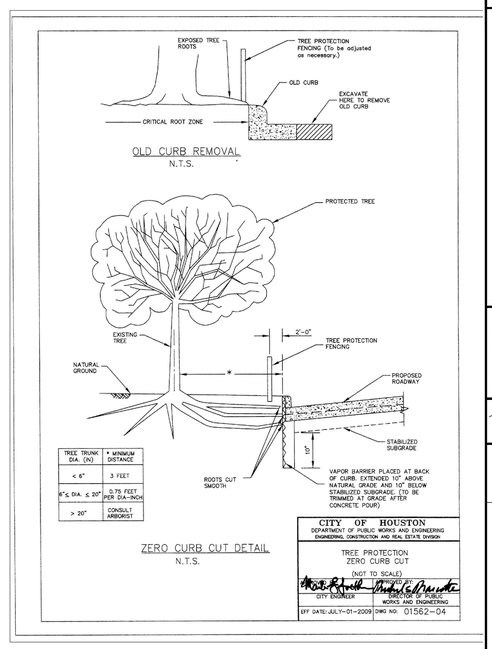
2 CITY OF HOUSTON
TREE AND ROOT PRUNING DETAIL

SCALE: NTS



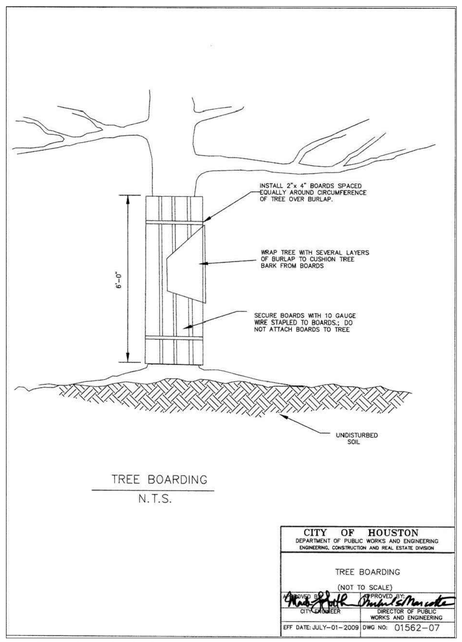
3 CITY OF HOUSTON
SIDEWALK REPAIR & PARKWAY AREAS

SCALE: NTS



4 CITY OF HOUSTON
ZERO CURB CUT DETAIL

SCALE: NTS



5 CITY OF HOUSTON
TREE BOARDING DETAIL

SCALE: NTS

TREE PROTECTION NOTES:

1. IT IS CRUCIAL THAT TREE PROTECTION FENCE MUST BE ERECTED PRIOR TO ANY SITE DEMOLITION BEGIN.

2. IT IS CRUCIAL THAT TREE PROTECTION FENCE MUST BE ERECTED PRIOR TO ANY SITE DEMOLITION BEGIN.

3. PROTECTION FENCE SHALL BE PLACED AROUND CRITICAL ROOT ZONE OF ALL TREES TO BE RETAINED.

4. UNDER NO CIRCUMSTANCES, DO NOT DRIVE OR PARK MACHINERY ON TREE ROOTS OR UNDER THE DRIPLINE.

5. AVOID DISTURBING ROOTS IN CRITICAL ROOT ZONE. IF ROOT CUTTING IS NECESSARY OR ANY DAMAGED ROOTS OCCURRED, THEY SHALL BE CUT CLEANLY WITH AN AXE A FEW INCHES CLOSER TO THE TRUNK. ANY COVERED/EXPOSED OR PRUNED TREE ROOTS MUST BE COVERED IMMEDIATELY WITH DIRT AND MULCH TO PREVENT ROOTS FROM DRYING OUT.

6. NO STORAGE OR CONCRETE DUMPING IS PERMITTED ON TREE ROOTS AND/OR UNDER DRIPLINE.

7. NO BUILDING MATERIALS ARE TO BE STACKED OR STOCKPILED WITHIN THE DRIP LINE OR WITHIN 6 FEET OF ANY TREE TO BE PRESERVED, WHICHEVER IS GREATER.

8. TOPSOIL SHALL NOT BE STOCKPILED WITHIN THE DRIP LINE OR WITHIN 6 FEET OF ANY TREE TO BE PRESERVED, WHICHEVER IS GREATER.

9. TREE BOARDING SHALL BE USED IS WORK IS REQUIRED WITH IN FENCING.

10. AVOID DISTURBING ROOTS IN CRITICAL ROOT ZONE. ANY DAMAGED ROOTS SHALL BE CUT CLEANLY WITH AN AXE A FEW INCHES CLOSER TO THE TRUNK.

11. ANY UNCOVERED/EXPOSED TREE ROOTS SHALL BE IMMEDIATELY COVERED WITH MULCH.

12. ANY UNDERSTORY CLEARING WITHIN SIX FEET OF EXISTING TREE TRUNKS SHOULD BE DONE BY HAND.

13. CITY OF HOUSTON URBAN FORESTER MUST BE PRESENT AND APPROVE ANY ROOT CUTTING.

14. CONTRACTOR IS REQUIRED TO HIRE AN URBAN FORESTER TO MONITOR AND ASSIST WITH FIELD LAYOUT (EXACT LOCATIONS OF FENCING, ROOT PRUNING, AND ZERO CURB CUTBACK) OF THE TREE PRESERVATION PROGRAM DURING DEMOLITION AND CONSTRUCTION TO ENSURE TREE PROTECTION PROCEDURES AND TECHNIQUES ARE PRACTICED AS SPECIFIED TO ADDRESS CONCERNS AND CONDITIONS WHICH OCCUR IN THE FIELD. AT A MINIMUM, THE INDIVIDUAL RESPONSIBLE FOR MONITORING AND FIELD LAYOUT OF THE TREE PROTECTION SHALL HAVE A MINIMUM OF 5 YEARS OF EXPERIENCE AS A CONSULTANT,AND SHALL NOT BE AFFILIATED WITH A TREE CARE CONTRACTOR IN THE HOUSTON AREA. QUALIFICATIONS OF THE SELECTED URBAN FORESTER SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT AND CITY OF HOUSTON URBAN FORESTRY DEPARTMENT.

15. THE DISTANCE OF THE CHECKER PLATE VARIES FOR EACH TREE ROOT CONDITION. ALL DISTANCES SHOWN ARE APPROXIMATE MEASUREMENTS. CHECKER PLATE AND CENTER BEAM SUPPORT IS INCIDENTAL TO THE INSTALLATION.

NO.	DATE	REVISIONS	BY

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dba TSC Engineering
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HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

ASAKURA ROBINSON
2500 Summer Street, Suite 3228
Houston Texas 77007
P: 713.337.5330

SURVEYED BY:
FB NO. 00000

100% DESIGN REVIEW SUBMITTAL

KEIJI ASAKURA 1170 REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT
07.28.2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

L1.11

TREE PROTECTION DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 113 OF 159	

NO.	DATE	REVISIONS	BY

Ⓐ STOP R1-1 36"X36" / ALL WAY R1-3P 18"X6" Ⓑ

Ⓒ NO THRU TRUCKS R5-2(2) 24"X30"

Ⓓ W3-1 30"X30"

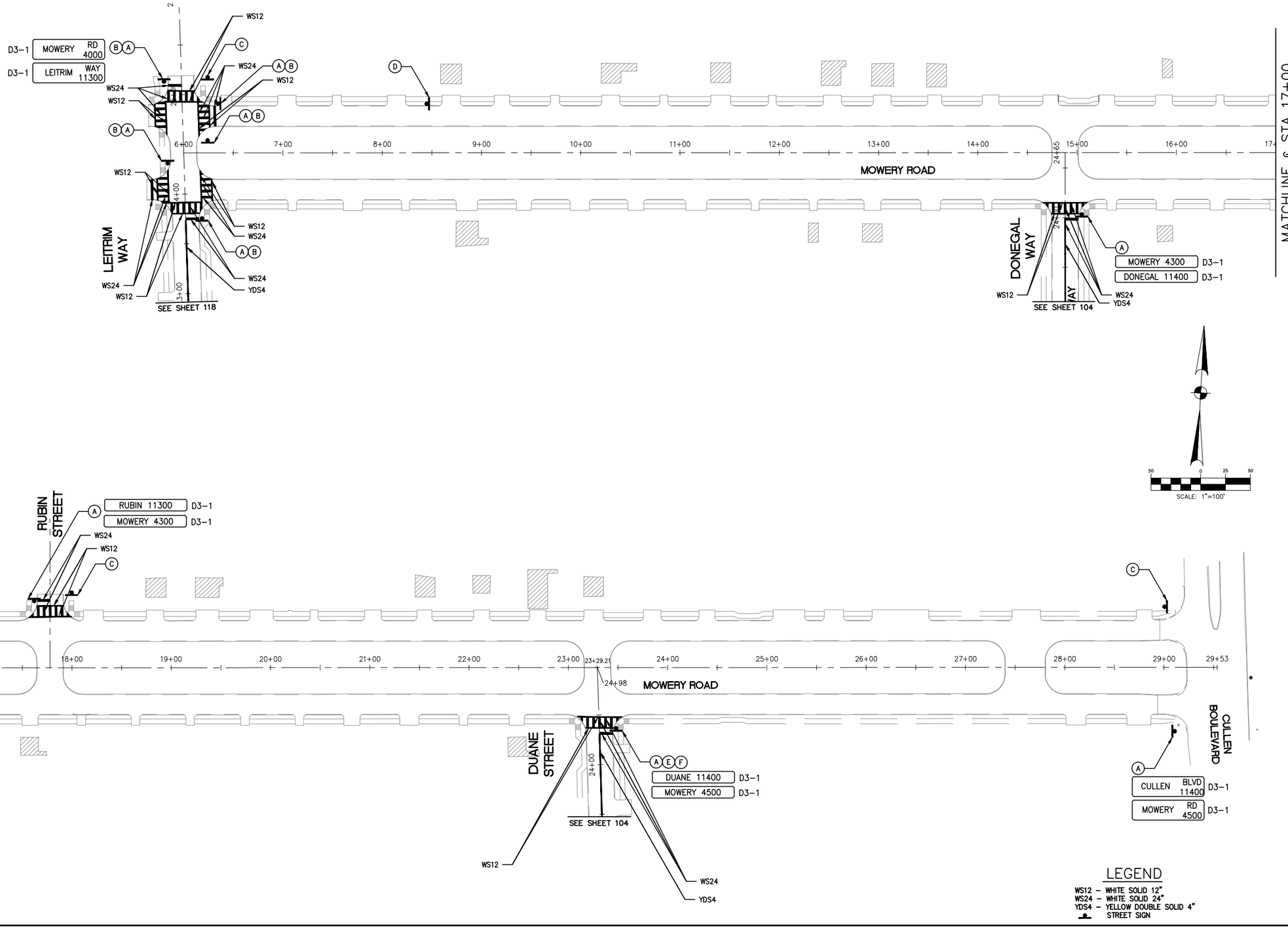
Ⓔ ONE WAY R6-2R 30"X36"

Ⓕ ONE WAY R6-2L 30"X36"

Ⓖ LOAD ZONED BRIDGE R12a-T 36"X36"

Ⓗ DEAD END W14-1 30"X30"

Ⓘ SPEED LIMIT 30 R2-1 30"X36"



LEGEND

WS12 – WHITE SOLID 12"
WS24 – WHITE SOLID 24"
YDS4 – YELLOW DOUBLE SOLID 4"
STREET SIGN

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS · MICHAEL BAGSTAD · 81193 · REGISTERED PROFESSIONAL ENGINEER · 4-24-20

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

PAVEMENT MARKINGS AND SIGNAGE PLANS

SHEET 1 OF 8

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 114 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\114 - 118 PAVEMENT MARKINGS & SIGNAGE PLANS.DWG APR. 09, 2020-8:17am JAMES GAIBORT

NO.	DATE	REVISIONS	BY

Ⓐ STOP R1-1 36"X36" — Ⓑ ALL WAY R1-3P 18"X6"

Ⓒ NO THRU TRUCKS R5-2(2) 24"X30"

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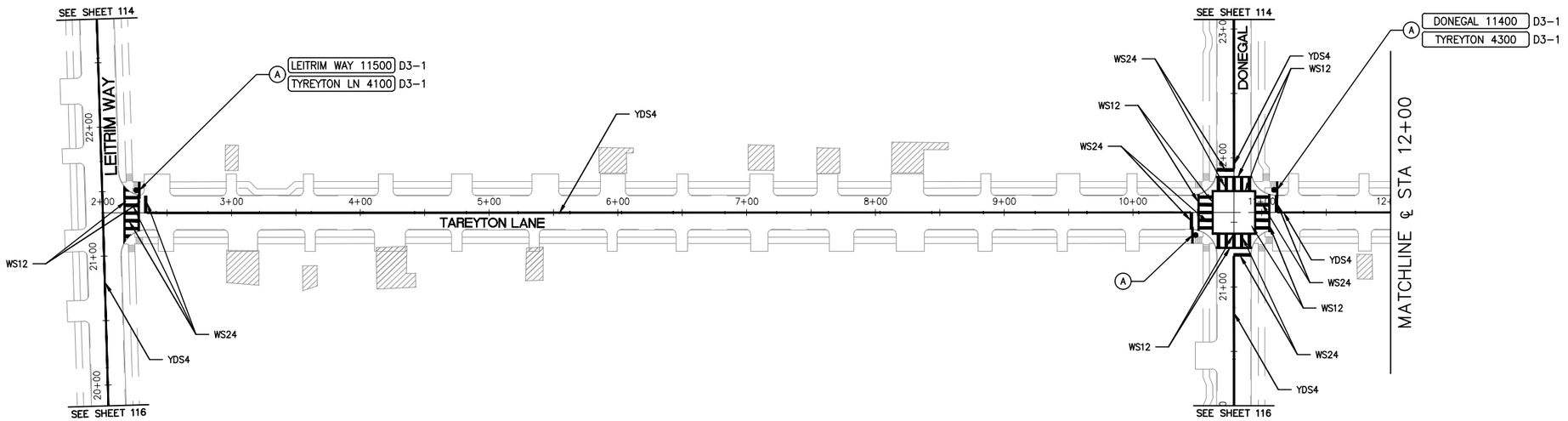

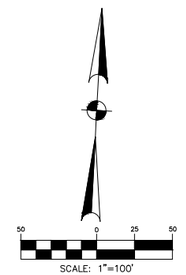

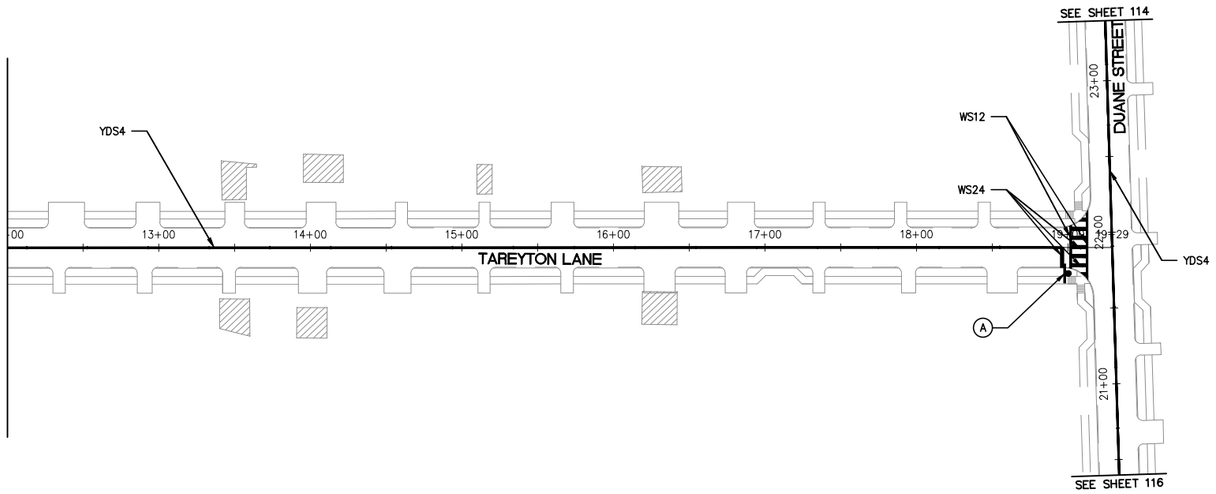

LEGEND

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STREET SIGN

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

STATE OF TEXAS — MICHAEL BAGSTAD — 81193 — REGISTERED PROFESSIONAL ENGINEER — 4/24/20

SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

PAVEMENT MARKINGS AND SIGNAGE PLANS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 115 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\114 - 118 PAVEMENT MARKINGS & SIGNAGE PLANS.DWG APR. 09, 2020-8:18am JAMES GAIBORT

NO.	DATE	REVISIONS	BY

Ⓐ STOP R1-1 36"X36" — Ⓑ ALL WAY R1-3P 18"X6"

Ⓒ NO THRU TRUCKS R5-2(2) 24"X30"

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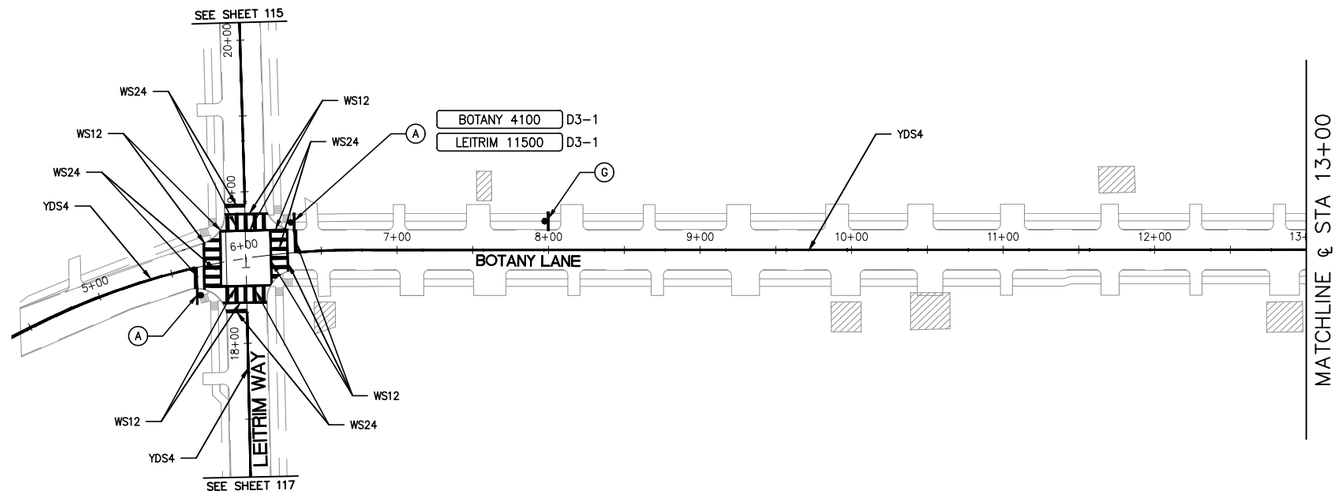

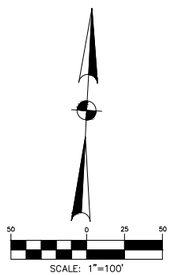

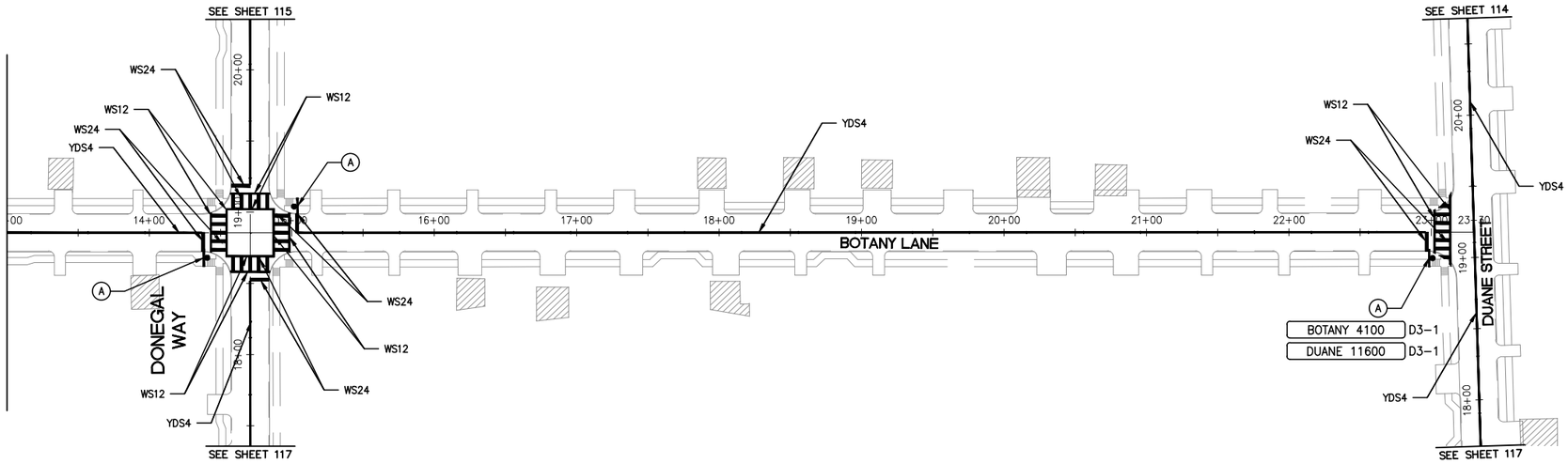

LEGEND

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STATE OF TEXAS
MICHAEL BAGSTAD
81193
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Michael Bagstad 6-24-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

PAVEMENT MARKINGS AND SIGNAGE PLANS

SHEET 3 OF 8

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 116 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\114 - 118 PAVEMENT MARKINGS & SIGNAGE PLANS.DWG APR. 09, 2020-8:18am JAMES GAIBORT

NO.	DATE	REVISIONS	BY

Ⓐ STOP R1-1 36"X36" — Ⓑ ALL WAY R1-3P 18"X6"

Ⓒ NO THRU TRUCKS R5-2(2) 24"X30"

Ⓓ W3-1 30"X30"

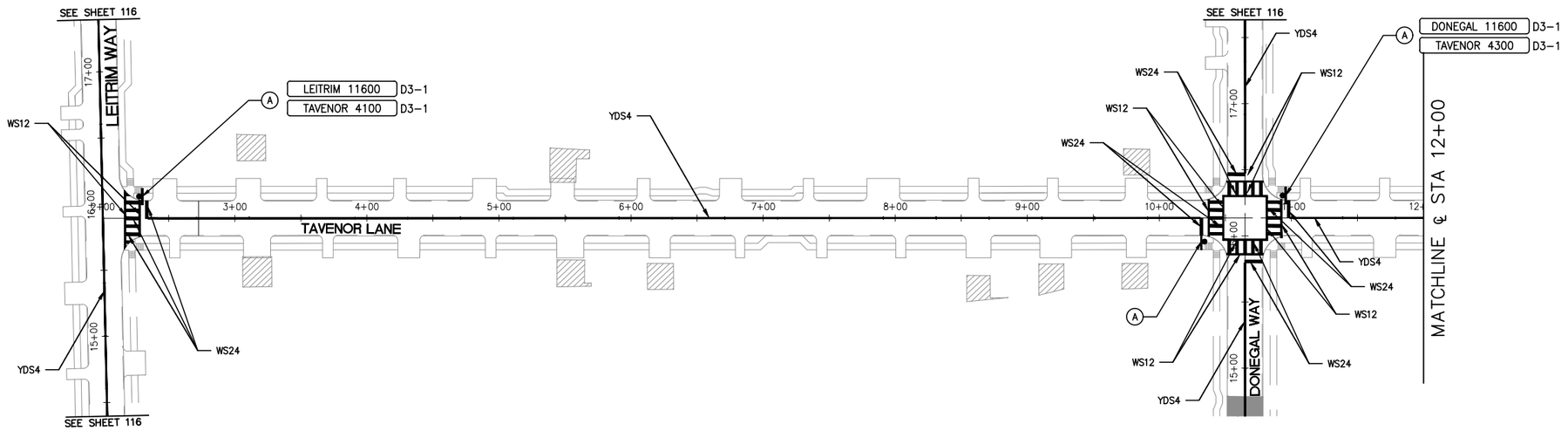
Ⓔ ONE WAY R6-2R 30"X36"

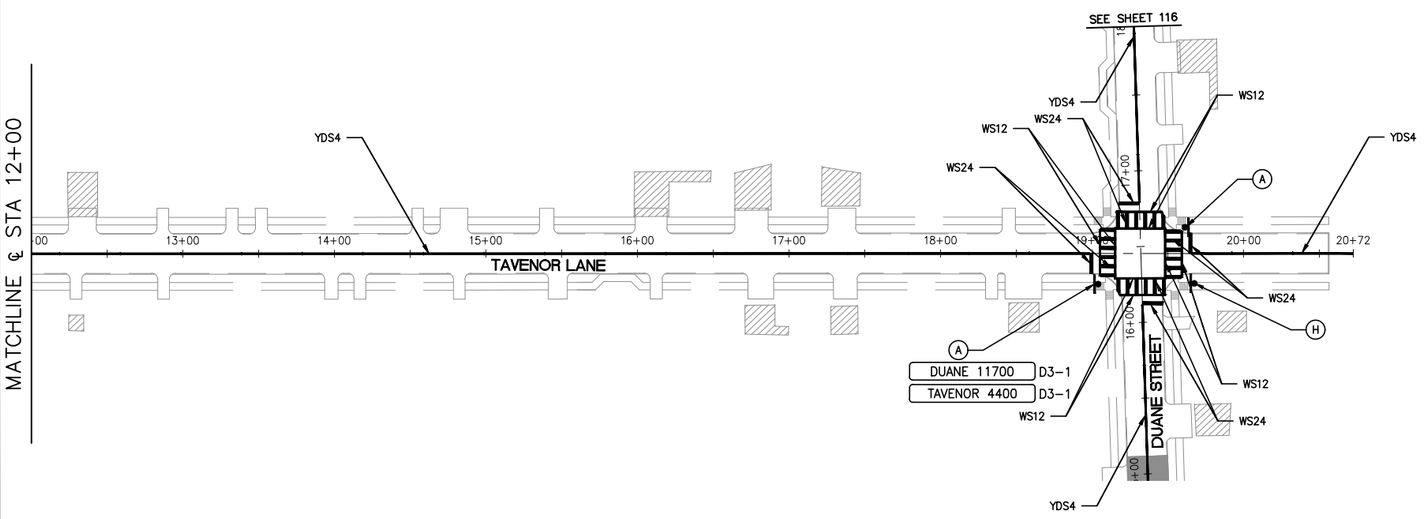
Ⓕ ONE WAY R6-2L 30"X36"

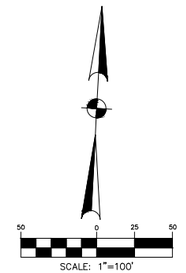
Ⓖ LOAD ZONED BRIDGE R12a-T 36"X36"

Ⓗ DEAD END W14-1 30"X30"

Ⓘ SPEED LIMIT 30 R2-1 30"X36"







LEGEND

WS12 – WHITE SOLID 12"
WS24 – WHITE SOLID 24"
YDS4 – YELLOW DOUBLE SOLID 4"
STREET SIGN

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
MICHAEL BAGSTAD
81193
REGISTERED PROFESSIONAL ENGINEER
Michael Bagstad 6-24-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

PAVEMENT MARKINGS AND SIGNAGE PLANS

SHEET 4 OF 8

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 117 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\114 - 118 PAVEMENT MARKINGS & SIGNAGE PLANS.DWG APR. 09, 2020-8:18am JAMES GAIBORT

NO.	DATE	REVISIONS	BY

Ⓐ STOP R1-1 36"X36" / Ⓑ ALL WAY R1-3P 18"X6"

Ⓒ NO THRU TRUCKS R5-2(2) 24"X30"

Ⓓ W3-1 30"X30"

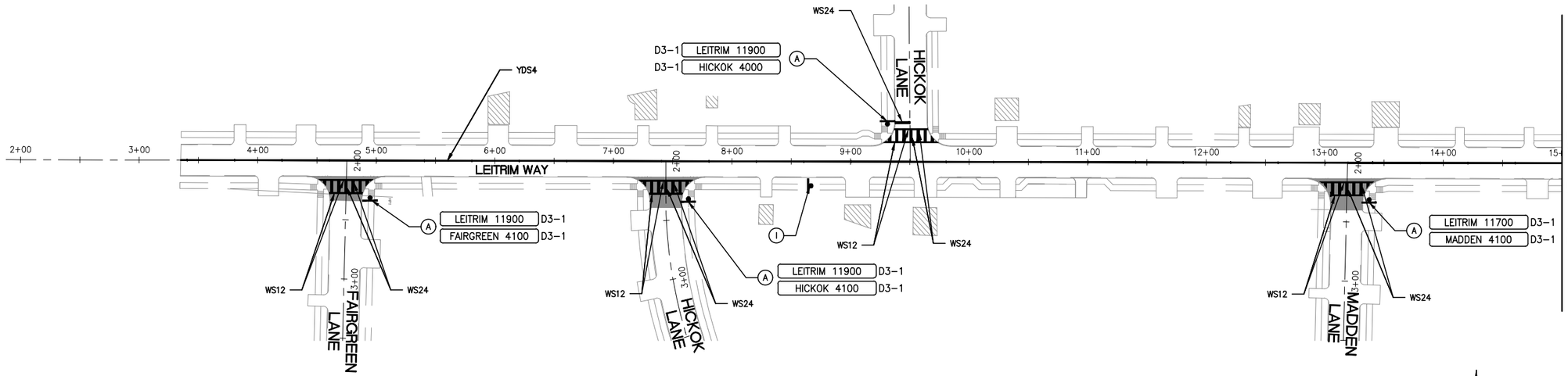
Ⓔ ONE WAY R6-2R 30"X36"

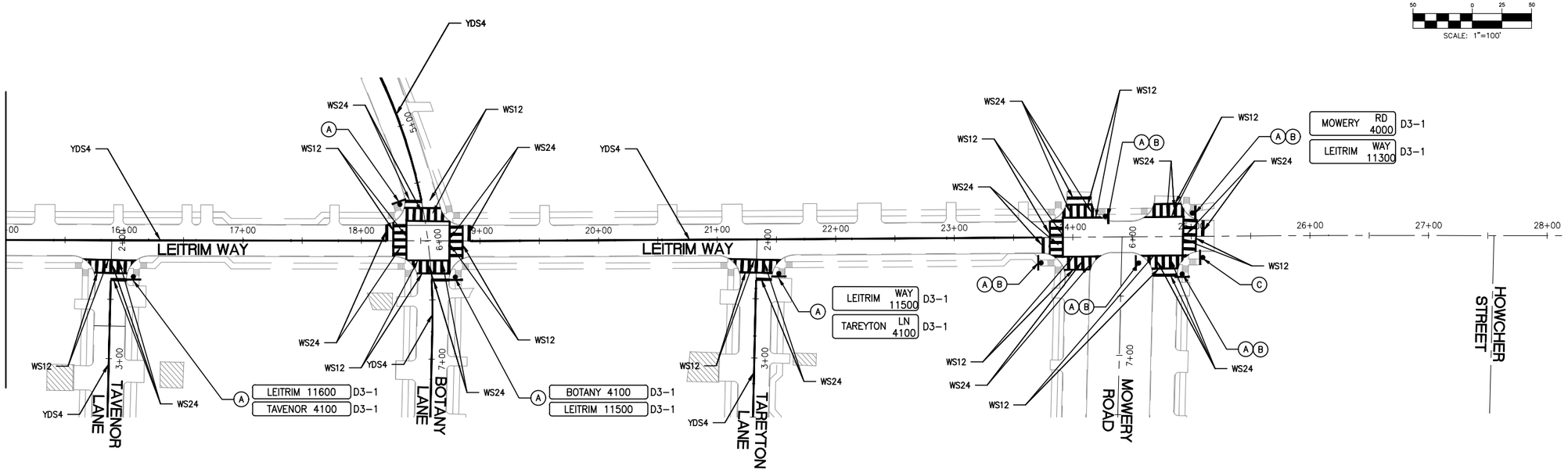
Ⓕ ONE WAY R6-2L 30"X36"

Ⓖ LOAD ZONED BRIDGE R12a-T 36"X36"

Ⓗ DEAD END W14-1 30"X30"

Ⓘ SPEED LIMIT 30 R2-1 30"X36"





SCALE: 1"=100'

LEGEND

WS12 – WHITE SOLID 12"
WS24 – WHITE SOLID 24"
YDS4 – YELLOW DOUBLE SOLID 4"
STREET SIGN

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
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SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
MICHAEL BAGSTAD
81193
LICENSED PROFESSIONAL ENGINEER
6-26-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

PAVEMENT MARKINGS AND SIGNAGE PLANS

SHEET 5 OF 8

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 118 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\114 - 118 PAVEMENT MARKINGS & SIGNAGE PLANS.DWG APR. 09, 2020-8:19am JAMES GAIBORT

NO.	DATE	REVISIONS	BY

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 TRAFFIC OPERATIONS DIVISION REPRESENTATIVE (713-803-3054).

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" 6" 12" 24" 24" 12", 24"	- Edge lines to delineate the right edge of the roadway. - Left edge of bicycle lane and lane lines between travel lanes in the same direction where changing of lanes is discouraged. - Perpendicular crosswalk lines. - Stop bars at intersections (signalized and unsignalized). - Hatching at high visibility crosswalks. - Diagonal hatching used in gores between same direction of travel lanes.
WG	White	Guide (2' stripe w/6' gap)	6" 6"	- Guide lines through intersections. - Taper lines for turn lanes.
YS	Yellow	Solid	4" 12", 24"	- Edge lines to delineate the left edge of a divided roadway, a one-way road, or ramp. - 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.
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).

Description and Application of Reflective Raised Pavement Markers (RRPM)

RRPM Types	Color	COH Stand. Spec. Sec. 02764 Equivalent	Description
C	Clear	Type I-C	- Approach face that reflects white light, and the other side does not reflect.
R	Clear & Red	Type II-C-R	- Approach face that reflects white light, and the other side reflects red light.
A	Amber & Amber	Type II-A-A	- Approach face and the other side both reflect amber light.

Line Style Designation : YSB4 - A40/A40

- YSB4: Color, Pattern, Width of stripe
- A40/A40: RPM spacing, RPM type, RPM spacing, RPM Type

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

GENERAL NOTES AND LEGENDS

(NOT TO SCALE)

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

EFF DATE: JUL-01-2012 | DWG NO: 01510-01

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
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TEXAS REGISTRATION NO: F-4270

STATE OF TEXAS — MICHAEL BASTAD — 81193 — REGISTERED PROFESSIONAL ENGINEER — 3-24-19

SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

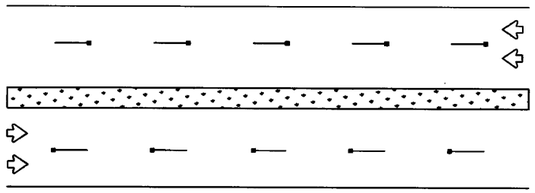
GENERAL NOTES AND LEGENDS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 119 OF 159	

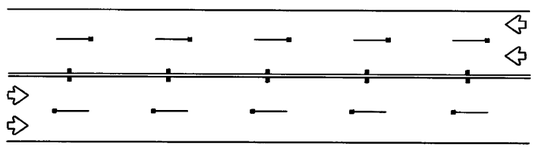
Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\119 - PAVEMENT MARKINGS GENERAL NOTES.DWG APR. 09, 2020-8:19am JAMES GAIBORT

NO.	DATE	REVISIONS	BY

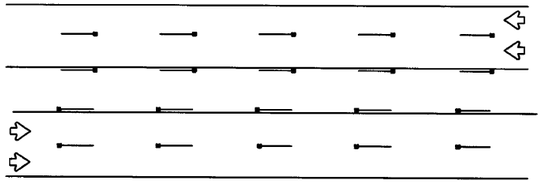
LANE LINES FOR DIVIDED STREET



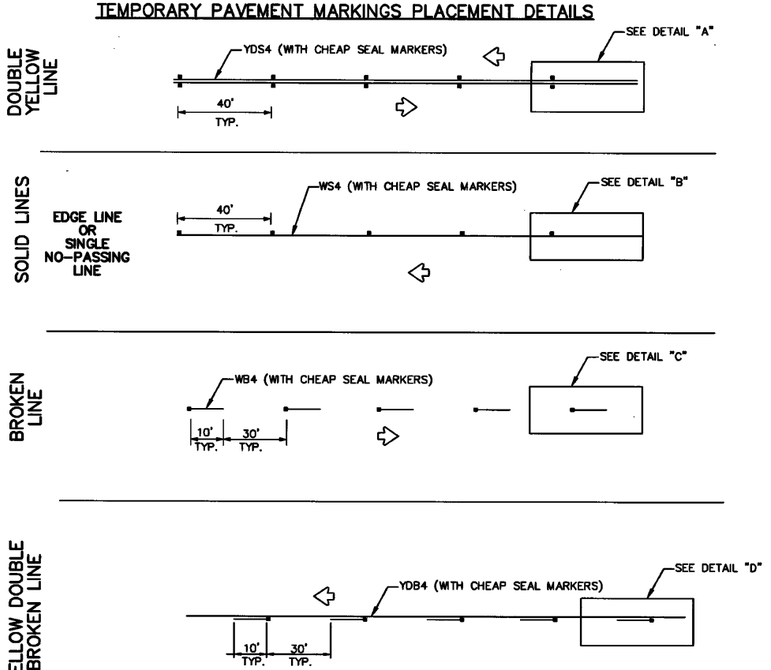
LANE & CENTER LINES FOR MULTILANE UNDIVIDED STREETS



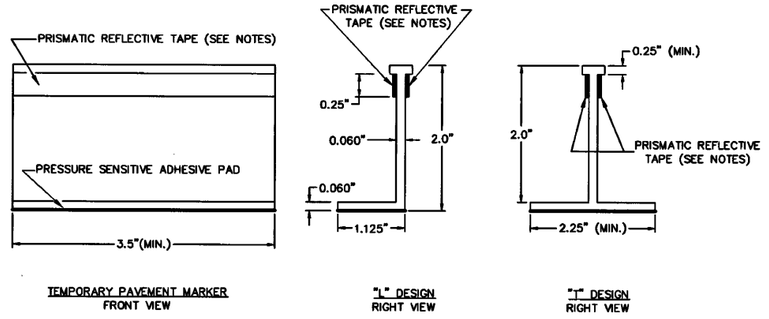
TWO-WAY LEFT TURN LANE



TEMPORARY PAVEMENT MARKINGS PLACEMENT DETAILS



TEMPORARY CHIP SEAL MARKER DETAIL

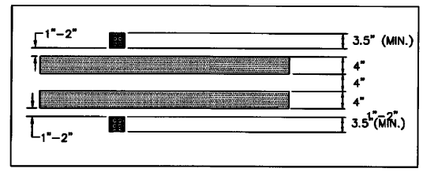


TEMPORARY PAVEMENT MARKER FRONT VIEW

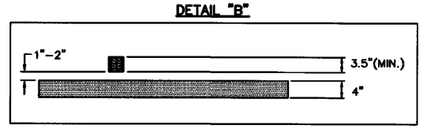
"L" DESIGN RIGHT VIEW

"T" DESIGN RIGHT VIEW

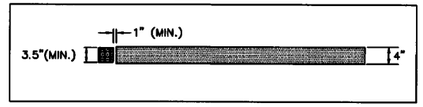
DETAIL "A"



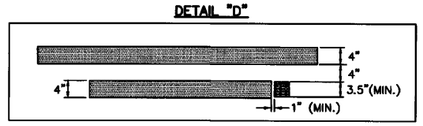
DETAIL "B"



DETAIL "C"



DETAIL "D"



NOTES:

1. YELLOW MARKERS SHALL HAVE YELLOW BODIES AND YELLOW REFLECTIVE TAPE.
2. WHITE MARKERS SHALL HAVE WHITE BODIES AND WHITE REFLECTIVE TAPE.
3. ONE-WAY OR TWO-WAY REFLECTIVE SHALL BE USED AS NECESSARY FOR APPLICATION.
4. THE CLEAR PLASTIC COVER MAY VARY FROM ONE MANUFACTURER TO ANOTHER IF DEEMED NECESSARY BY SPECIFIC PROJECT.
5. ALL TEMPORARY PAVEMENT MARKERS SHALL BE PLACED WITH REFLECTIVE SIDE FACING ON COMING TRAFFIC.
6. ALL TEMPORARY STRIPING SHALL BE WATER BASED PAINT.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REFLECTIVE CHIP SEAL MARKER
USE FOR TEMPORARY MARKINGS
(NOT TO SCALE)

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

EFF DATE: JUL-01-2012 DWG NO: 01510-06

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
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Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

ZARINKELK ENGINEERING SERVICES, INC.
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Phone (832) 242-2426
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TEXAS REGISTRATION NO: F-4270

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS — MICHAEL BAGSTAD — 81193 — LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

REFLECTIVE CHIP SEAL MARKER
USE FOR TEMPORARY MARKINGS

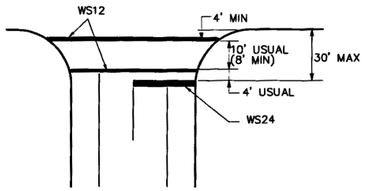
SHEET 7 OF 8

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 120 OF 159	

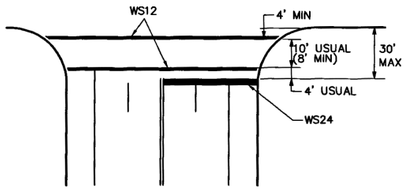
Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\120 - PAVEMENT MARKINGS REFL MRKRSDWG.DWG APR. 09, 2020-8:19am JAMES GAIBORT

NO.	DATE	REVISIONS	BY

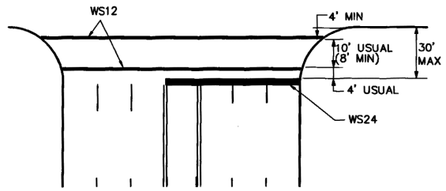
TWO LANES WITH SHOULDERS



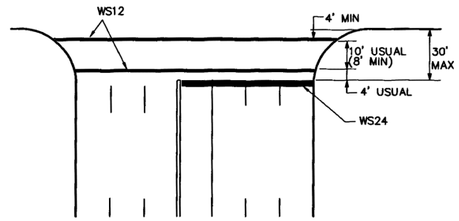
FOUR LANES WITH SHOULDERS



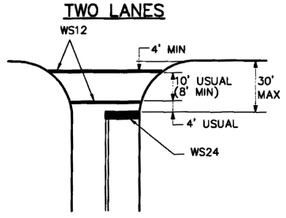
MULTI – LANES



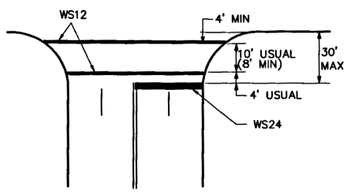
MULTI – LANE WITH MEDIAN



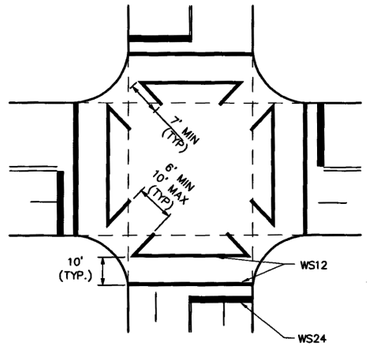
TWO LANES



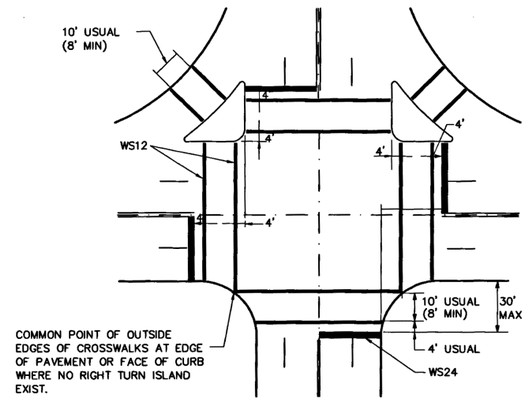
FOUR LANES



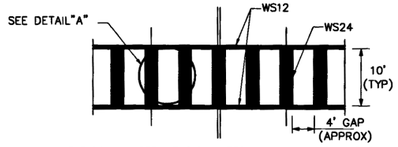
EXCLUSIVE PEDESTRIAN PHASE



INTERSECTION WITH RIGHT – TURN ISLANDS

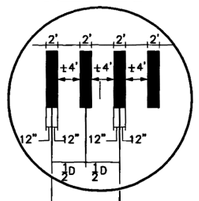


HIGH VISIBILITY CROSSWALK DETAIL



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

DETAIL "A"



D = LANE WIDTH

NOTES:

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

TYPICAL CROSSWALK DETAILS

(NOT TO SCALE)

APPROVED BY: CITY ENGINEER

APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JUL–01–2012

DWG NO: 01510–10

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6-26-19

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HOUSTON PUBLIC WORKS

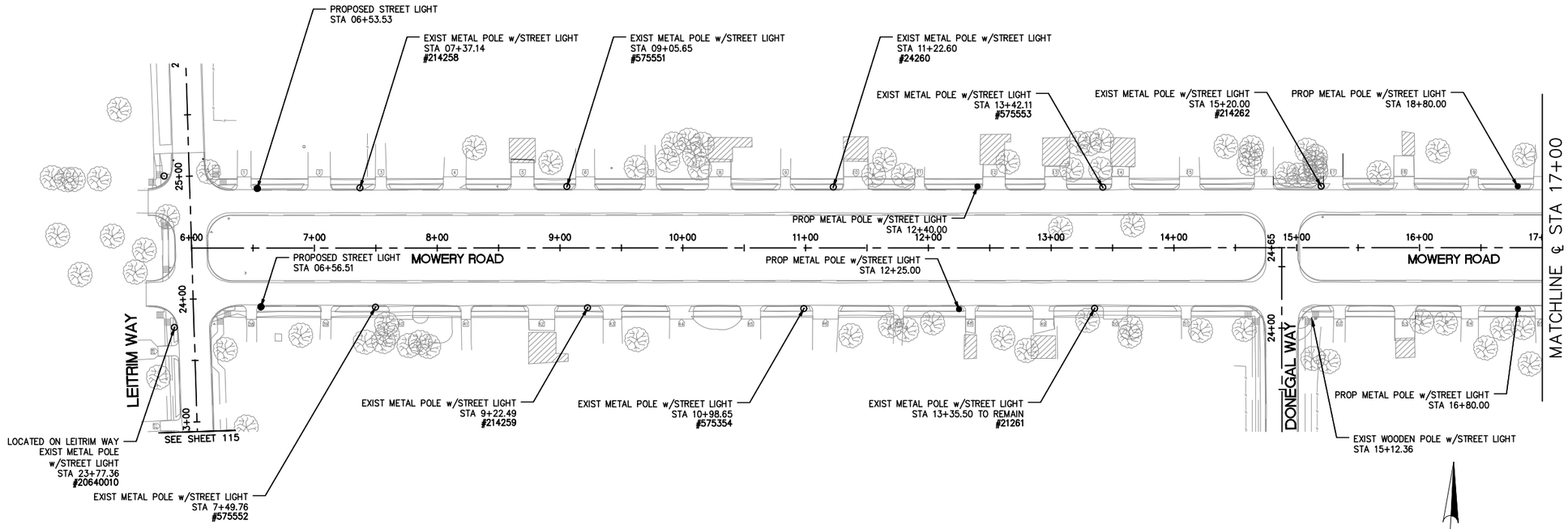
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

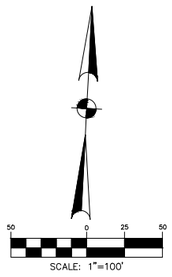
TYPICAL CROSSWALK DETAILS

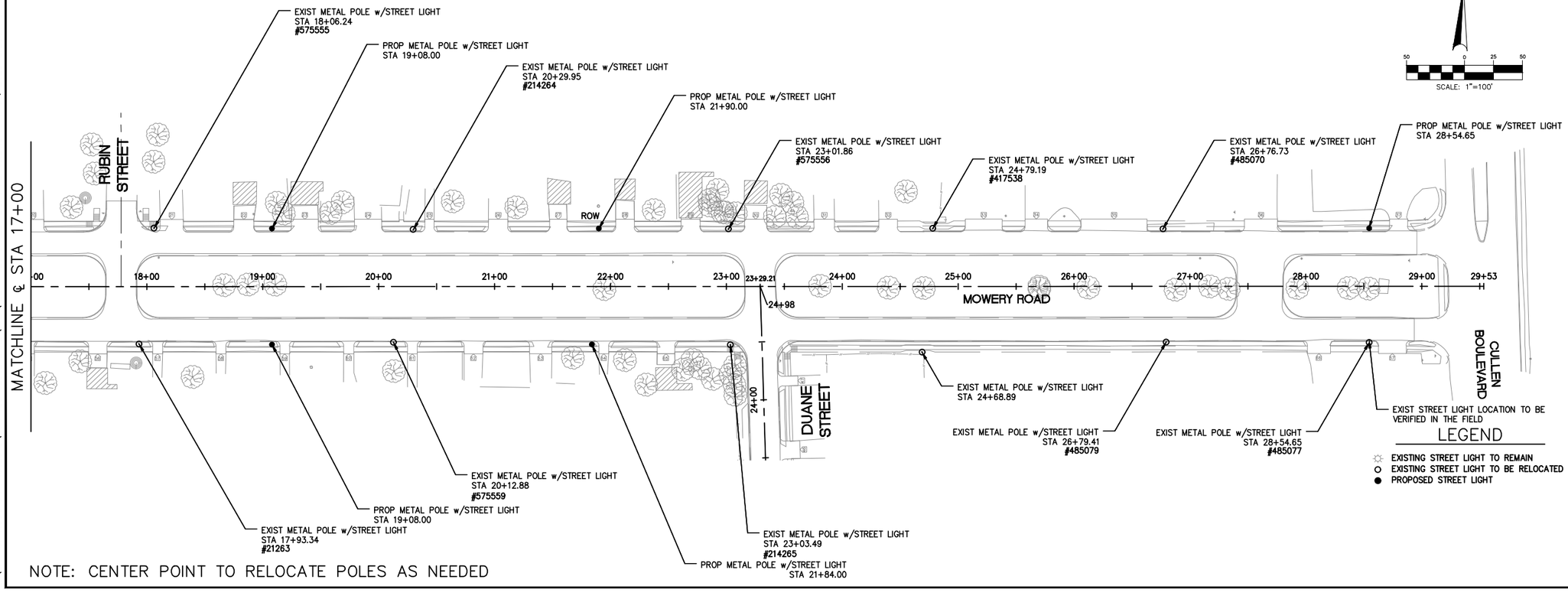
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 121 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\121 - PAVEMENT MARKINGS TYP CROSSWALK DETAILS.DWG APR. 09, 2020–8:20am JAMES GAIBORT

NO.	DATE	REVISIONS	BY







NOTE: CENTER POINT TO RELOCATE POLES AS NEEDED

LEGEND

- EXISTING STREET LIGHT TO REMAIN
- EXISTING STREET LIGHT TO BE RELOCATED
- PROPOSED STREET LIGHT

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
MICHAEL BAGSTAD
81193
REGISTERED
PROFESSIONAL ENGINEER
6-26-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

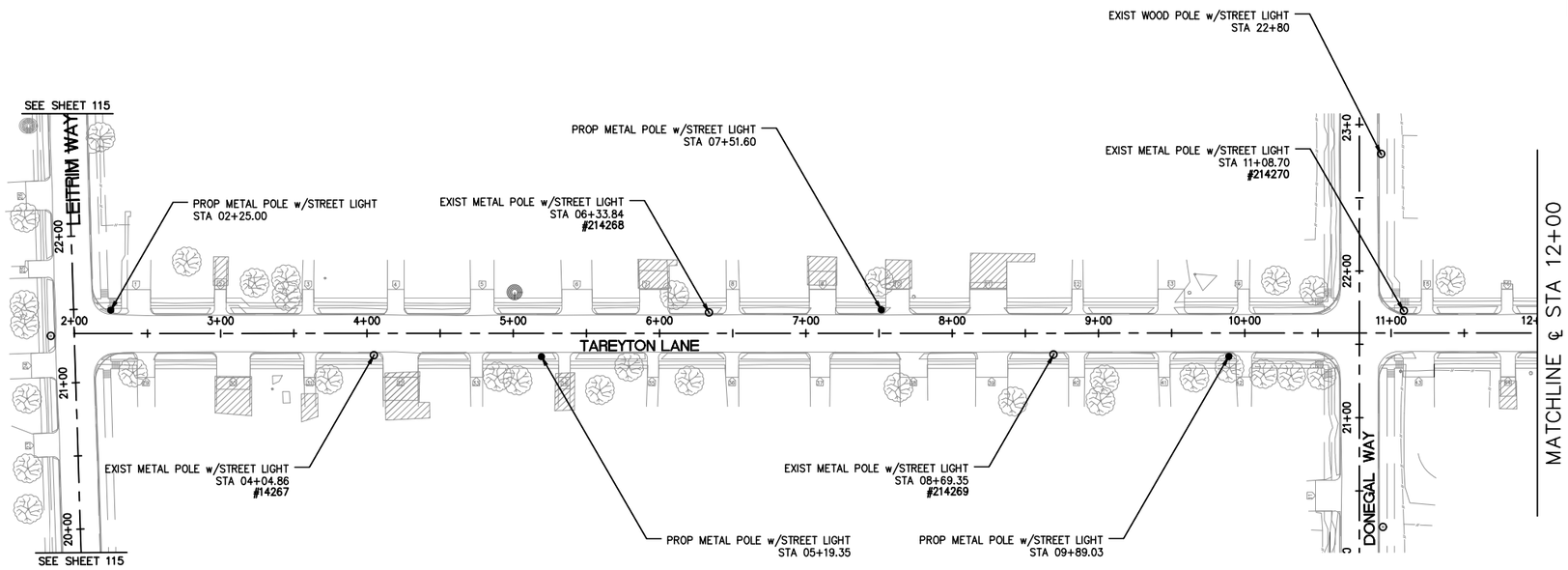
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1
STREET LIGHT PLANS

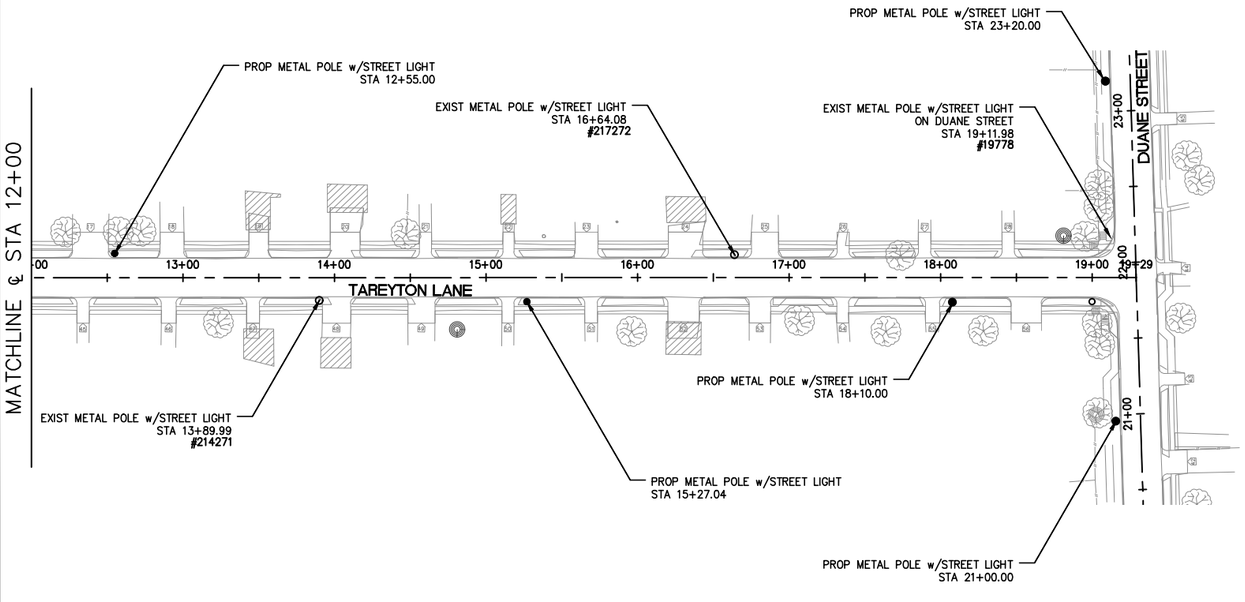
SHEET 1 OF 5

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 122 OF 159	

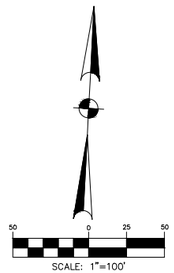
Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\122 - 126 STREET LIGHT PLANS.DWG APR. 09, 2020-8:23am JAMES GAIBORT

NO.	DATE	REVISIONS	BY
		SEE SHEET 105	





NOTE: CENTER POINT TO RELOCATE POLES AS NEEDED



LEGEND

- ☼ EXISTING STREET LIGHT TO REMAIN
- O EXISTING STREET LIGHT TO BE RELOCATED
- ● PROPOSED STREET LIGHT

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

STATE OF TEXAS
MICHAEL BAGSTAD
81193
REGISTERED PROFESSIONAL ENGINEER
6-26-19

SURVEYED BY:
FB NO. 00000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

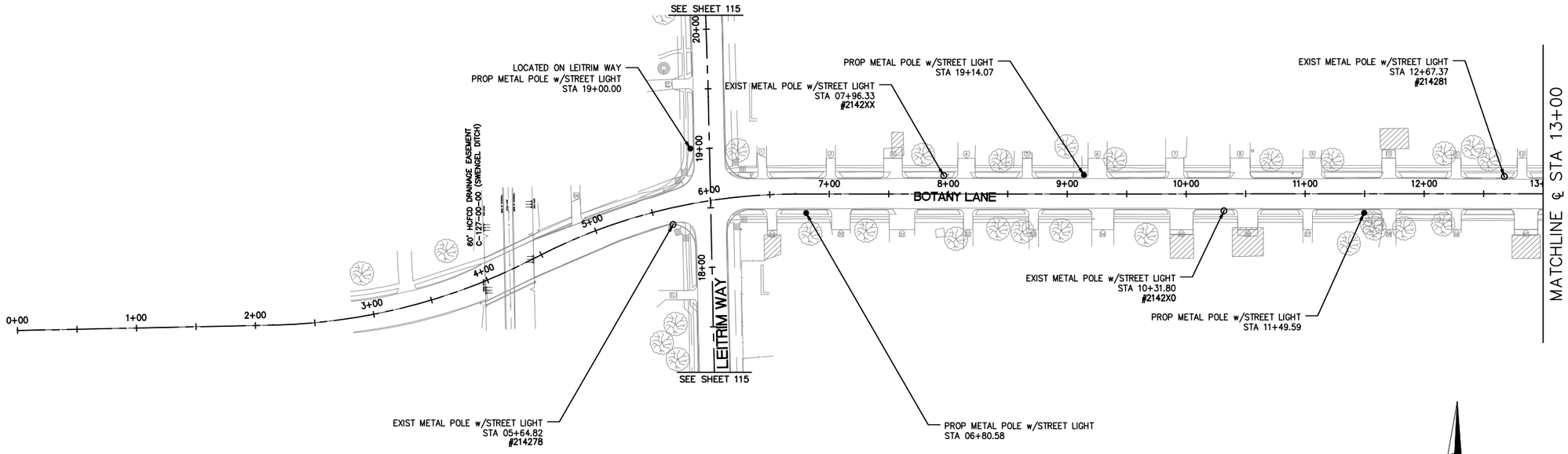
STREET LIGHT PLANS

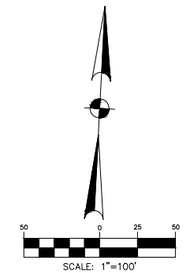
SHEET 2 OF 5

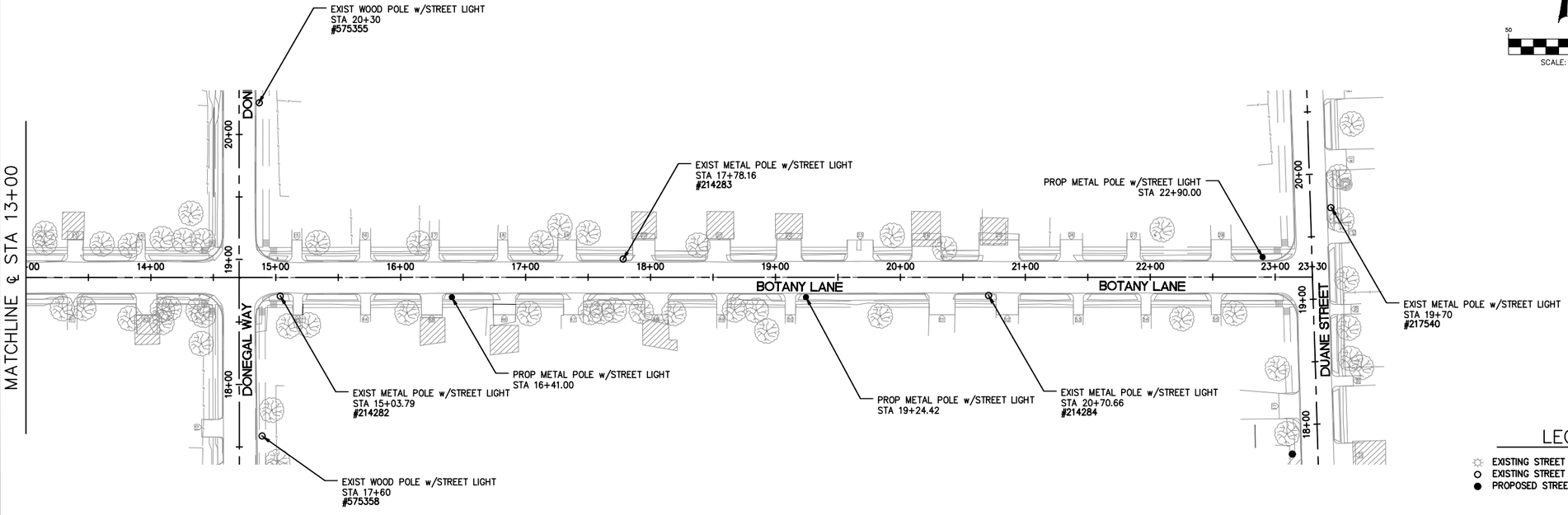
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 123 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\122 - 126 STREET LIGHT PLANS.DWG APR. 09, 2020-8:23am JAMES GAIBORT

NO.	DATE	REVISIONS	BY







LEGEND

- ☼ EXISTING STREET LIGHT TO REMAIN
- O EXISTING STREET LIGHT TO BE RELOCATED
- ● PROPOSED STREET LIGHT

NOTE: CENTER POINT TO RELOCATE POLES AS NEEDED

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
MICHAEL BAGSTAD
81193
REGISTERED PROFESSIONAL ENGINEER
6-26-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA PAVING AND DRAINAGE IMPROVEMENTS SUB-PROJECT 1

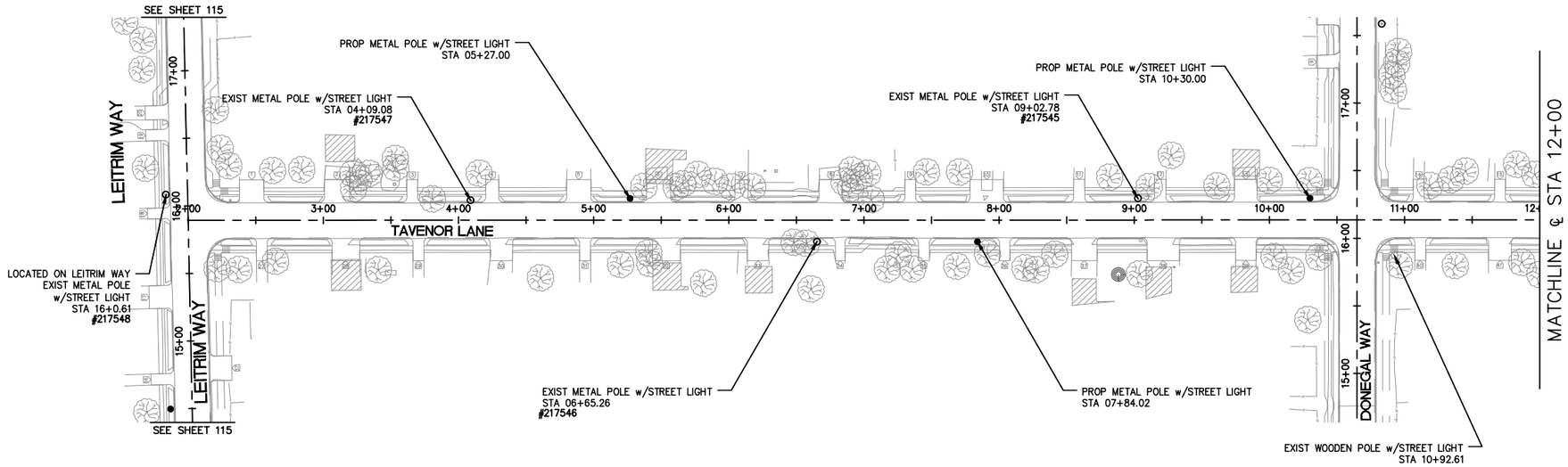
STREET LIGHT PLANS

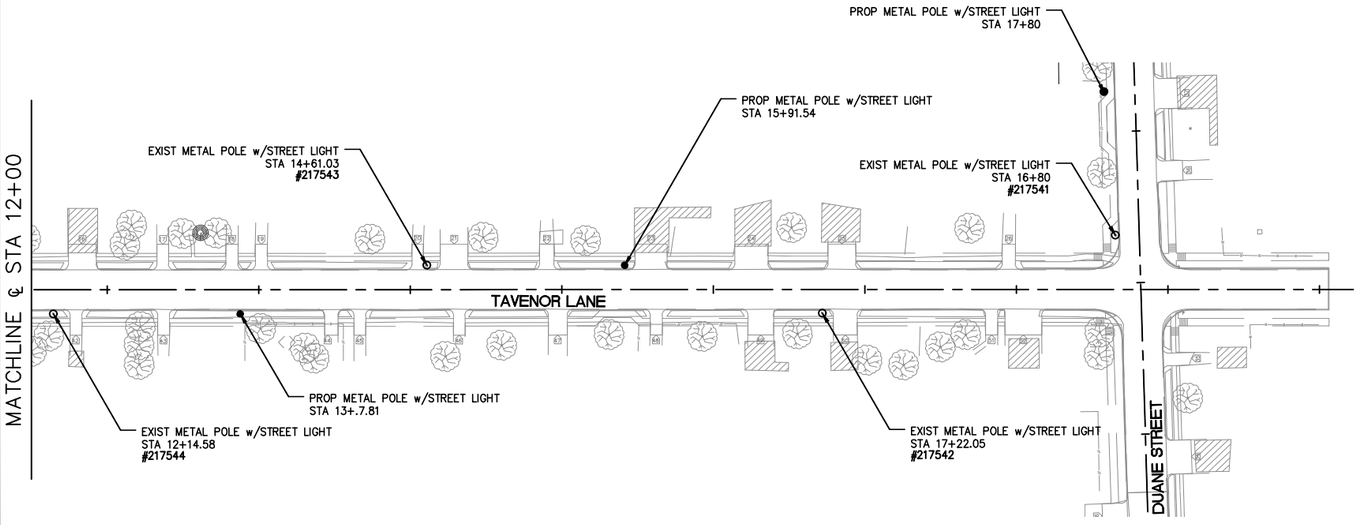
SHEET 3 OF 5

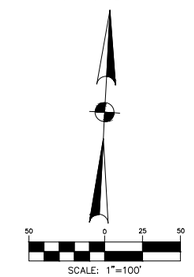
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 124 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\122 - 126 STREET LIGHT PLANS.DWG APR. 09, 2020-8:24am JAMES GAIBORT

NO.	DATE	REVISIONS	BY







LEGEND

- ☼ EXISTING STREET LIGHT TO REMAIN
- ○ EXISTING STREET LIGHT TO BE RELOCATED
- ● PROPOSED STREET LIGHT

NOTE: CENTER POINT TO RELOCATE POLES AS NEEDED

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
MICHAEL BAGSTAD
81193
REGISTERED PROFESSIONAL ENGINEER
Michael Bagstad 6-26-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

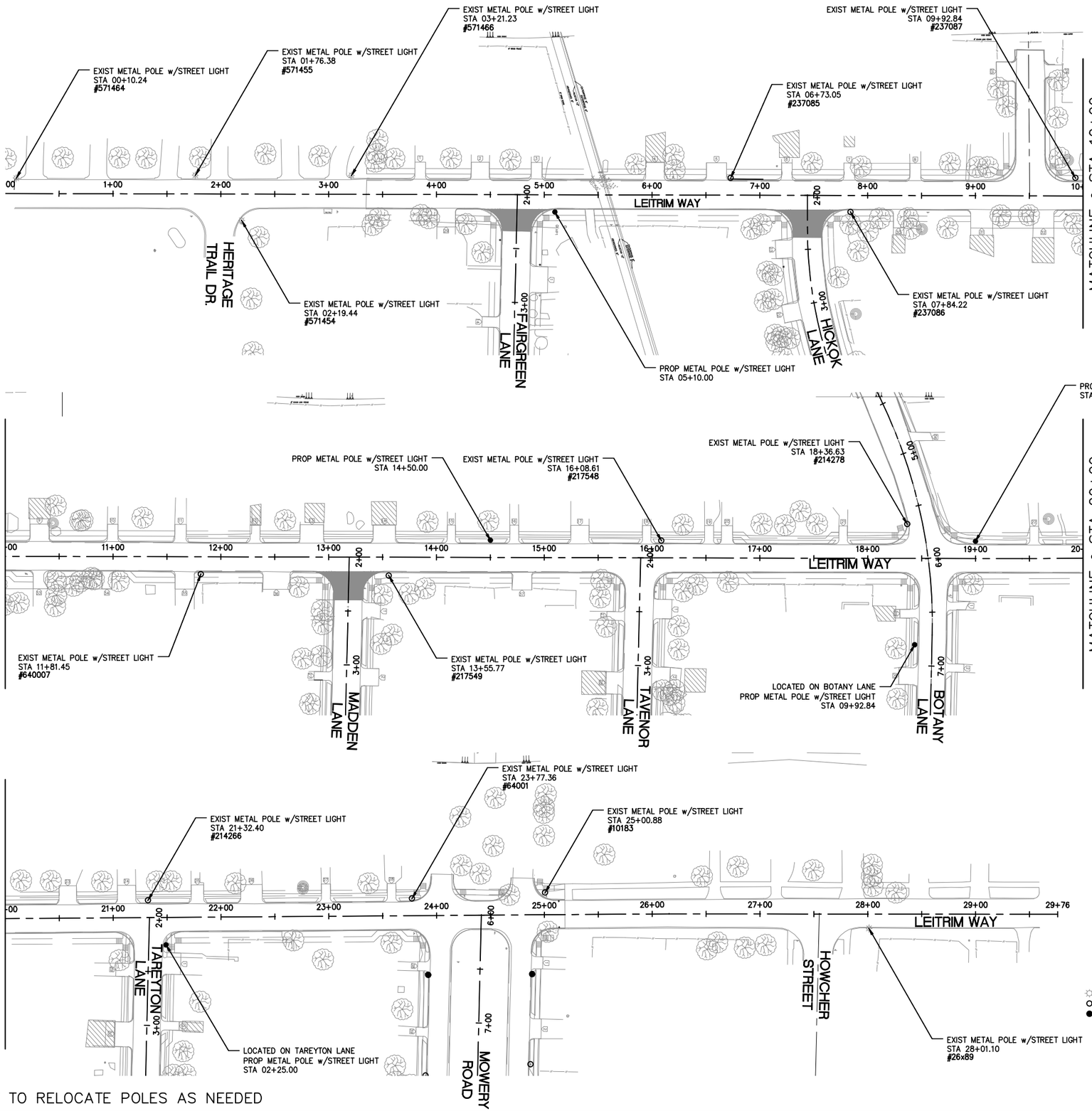
STREET LIGHT
PLANS

SHEET 4 OF 5

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 125 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\122 - 126 STREET LIGHT PLANS.DWG APR. 09, 2020-8:24am JAMES GAIBORT

NO.	DATE	REVISIONS	BY



LEGEND

- ☼ EXISTING STREET LIGHT TO REMAIN
- ○ EXISTING STREET LIGHT TO BE RELOCATED
- ● PROPOSED STREET LIGHT

NOTE: CENTER POINT TO RELOCATE POLES AS NEEDED

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.7777
TEXAS REGISTERED FIRM F-12428

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

SURVEYED BY:
FB NO. 00000

STATE OF TEXAS
MICHAEL BASTAD
81193
REGISTERED PROFESSIONAL ENGINEER
6-24-19

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

STREET LIGHT PLANS

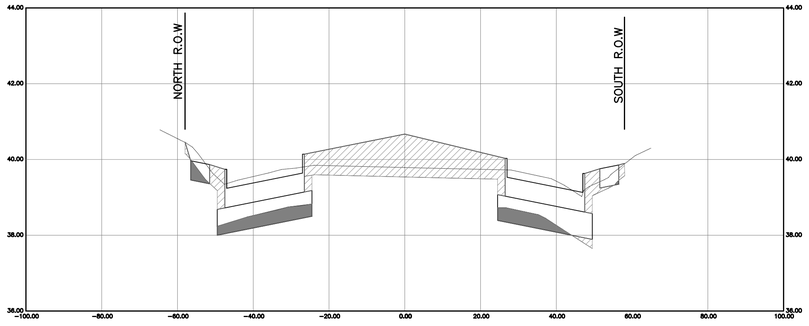
SHEET 5 OF 5

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
JAMES BIELSTEIN, P.E.	
SHEET NO. 126 OF 159	

Z:\CITY OF HOUSTON PROJECTS\COH TSC CLOVERLAND\CAD\122 - 126 STREET LIGHT PLANS.DWG APR. 09, 2020-8:25am JAMES GAIBORT

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\127- CROSS SECTIONS MOWERY ROAD SHEET 1 OF 6.DWG AUG. 03, 2026-12:10pm

6+35.00



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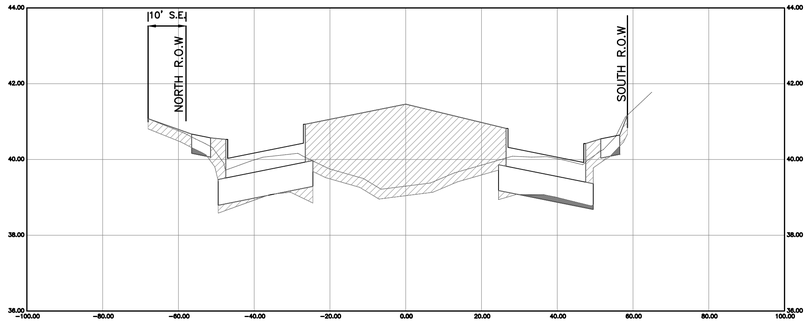

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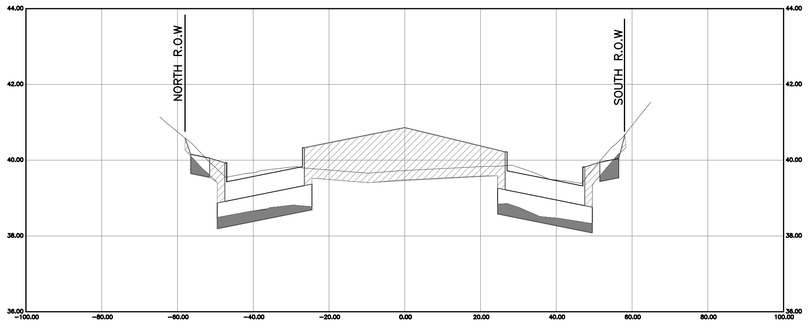

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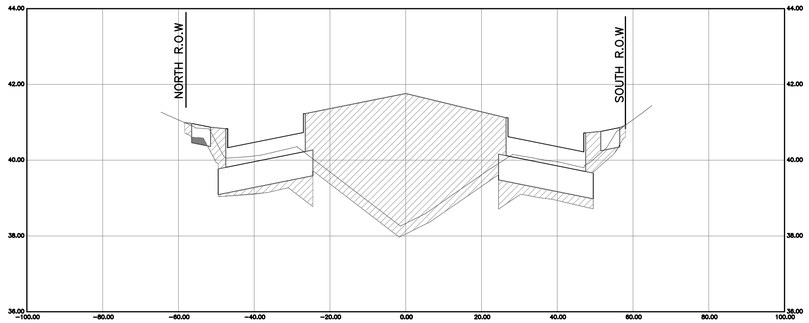
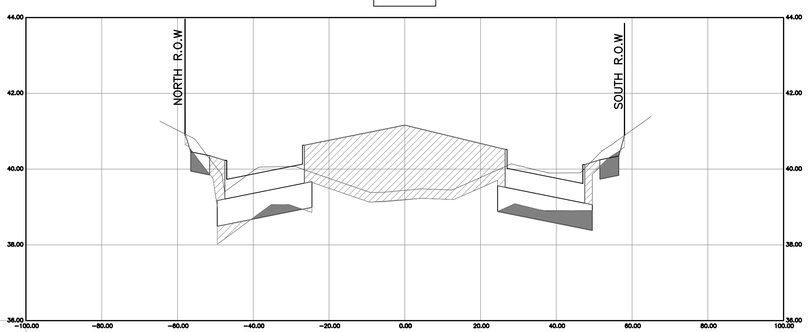


LEGEND

CUT

FILL

8+00.00



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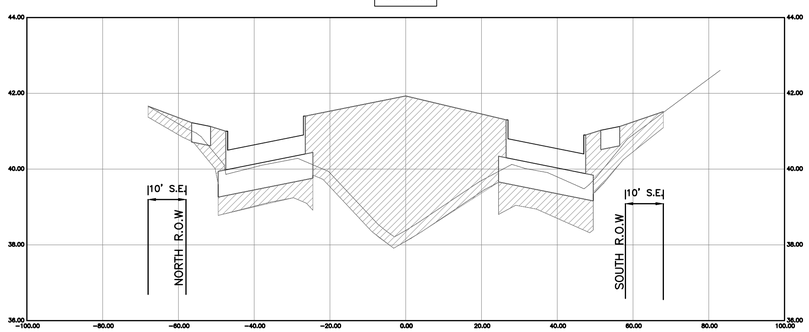

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
MOWERY ROAD
SHEET 1 OF 6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 127OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\128- CROSS SECTIONS MOWERY ROAD SHEET 2 OF 6.DWG AUG. 03, 2026-12:11pm

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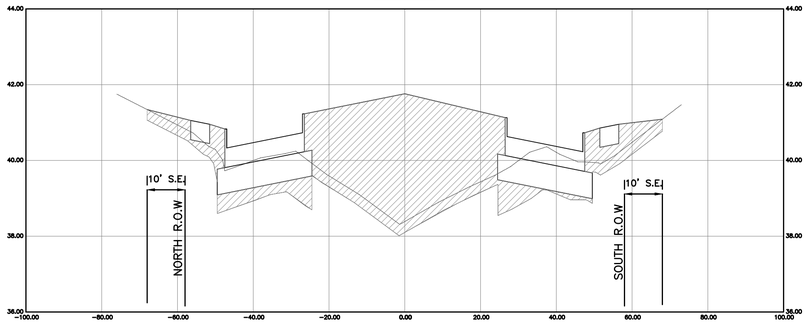

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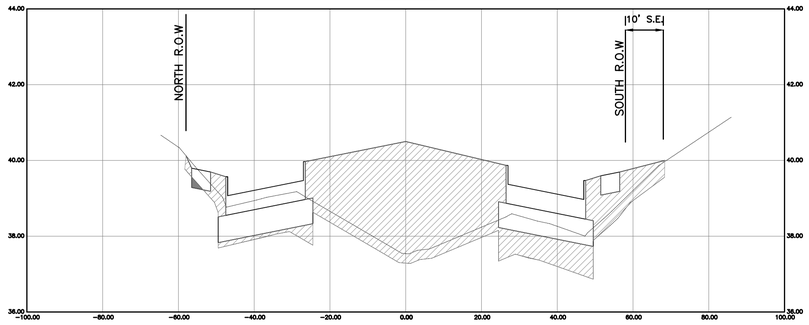
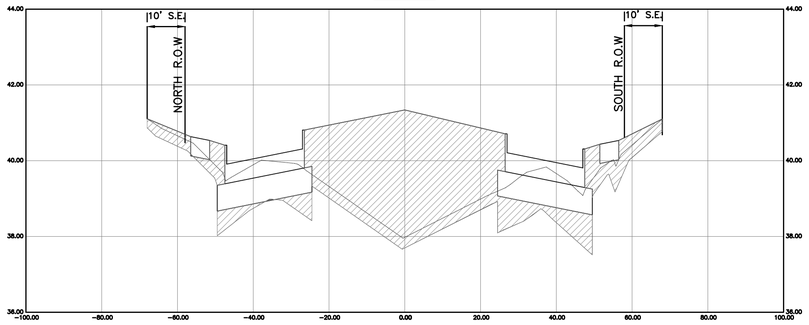
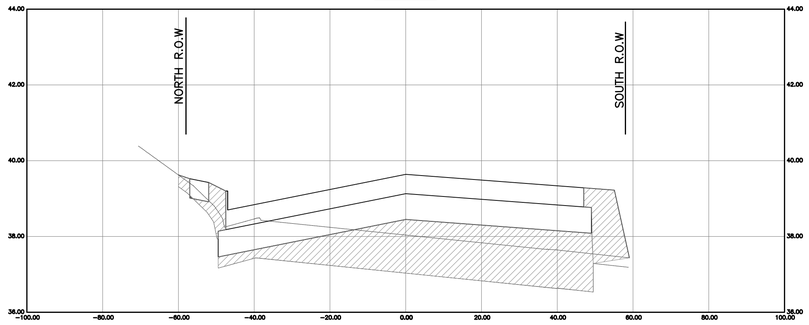


12+00.00



DONEGAL WAY
14+88.00

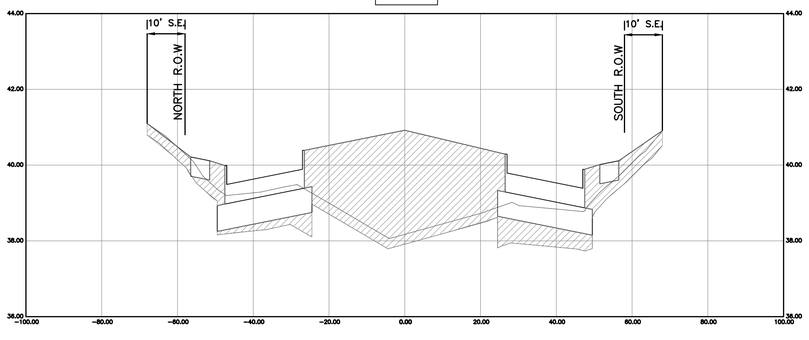


LEGEND

CUT

FILL

13+00.00



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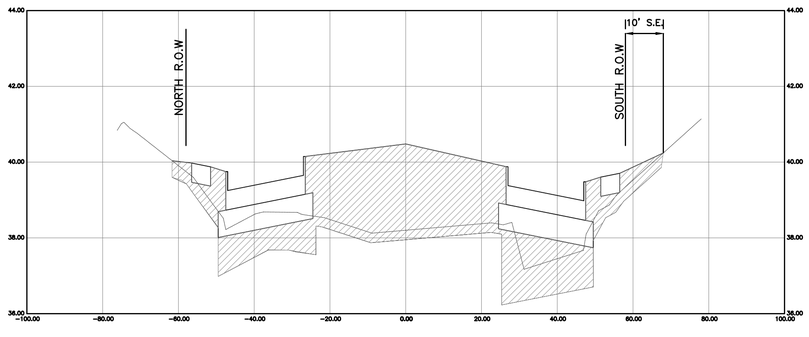


THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

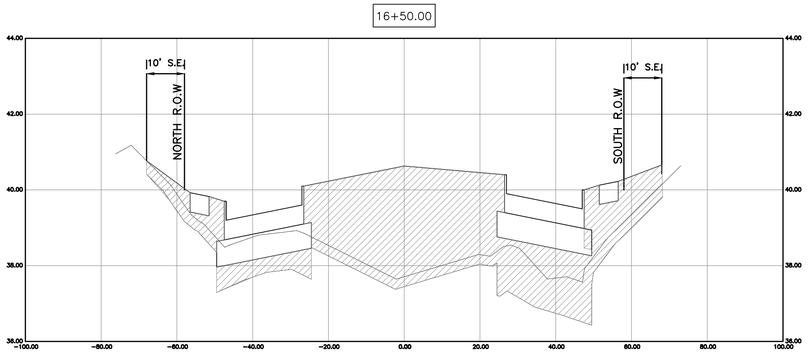
CITY OF HOUSTON

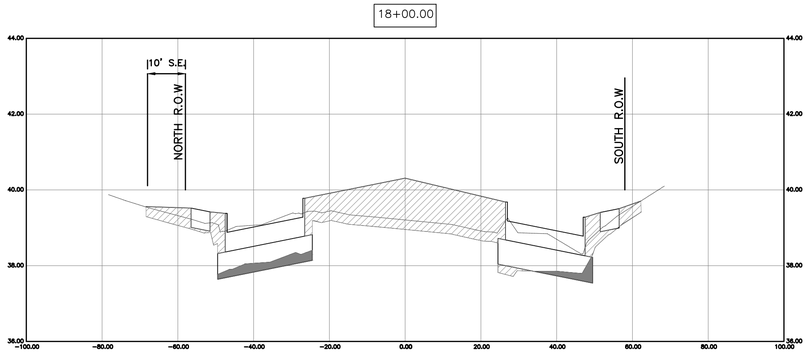
HOUSTON PUBLIC WORKS

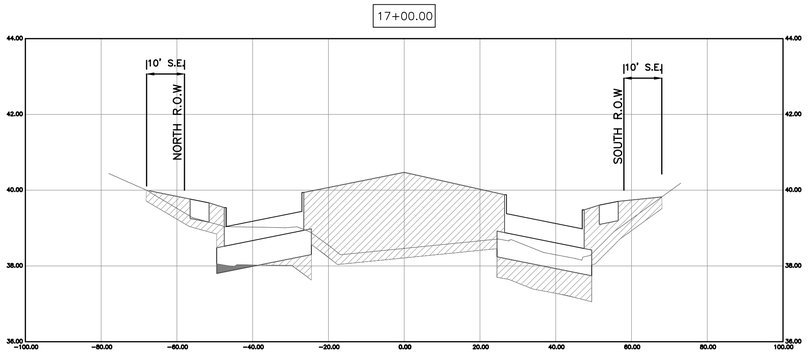
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

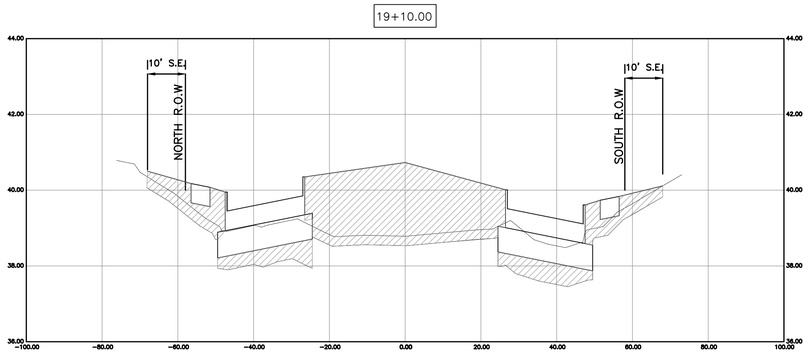
CROSS SECTIONS
MOWERY ROAD
SHEET 2 OF 6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.---~~OF~~ 159	





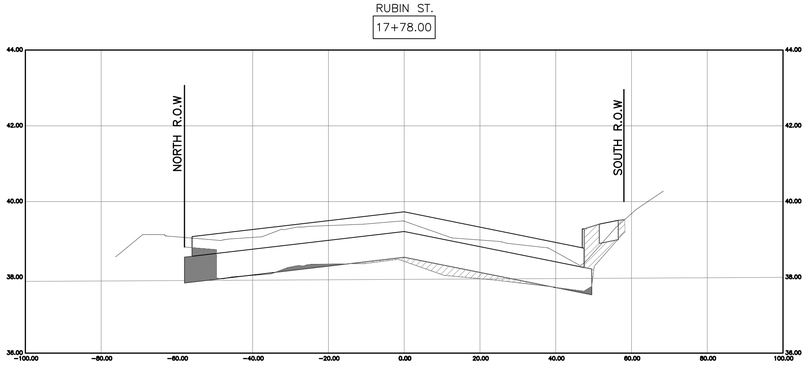


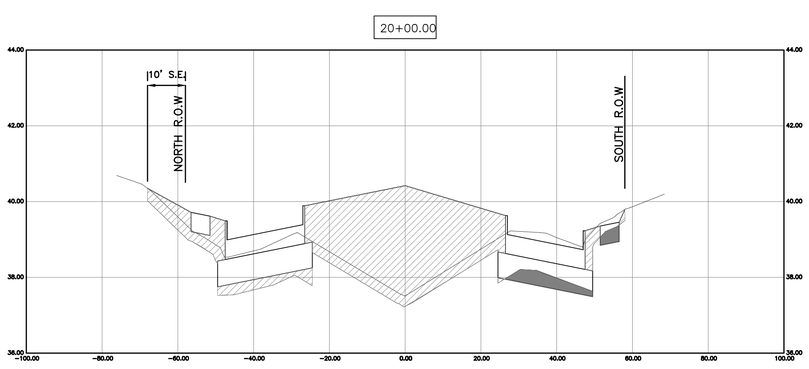


LEGEND

CUT

FILL





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TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

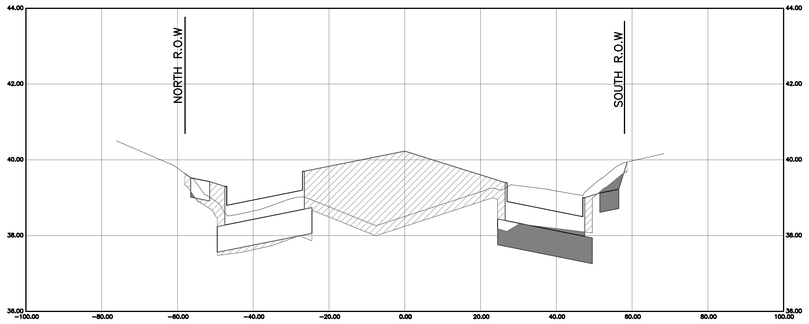
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
MOWERY ROAD
SHEET 3 OF 6

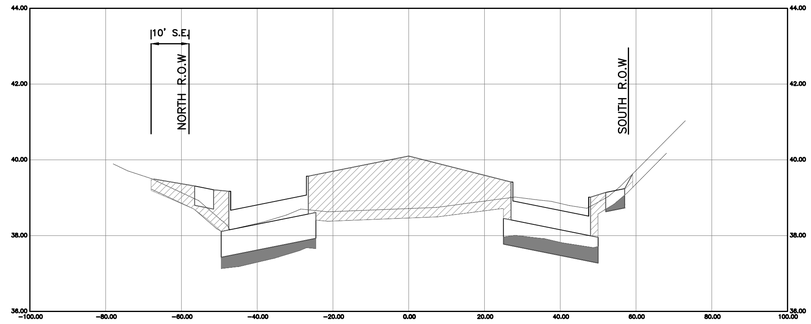
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\129- CROSS SECTIONS MOWERY ROAD SHEET 3 OF 6.DWG AUG. 03, 2026-12:11pm

20+55.00



22+00.00



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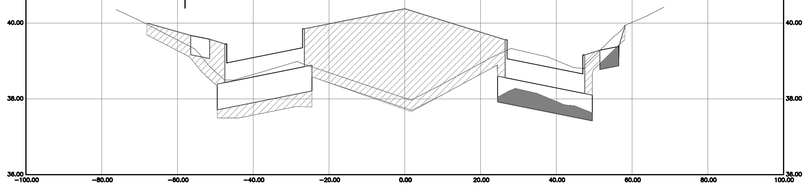

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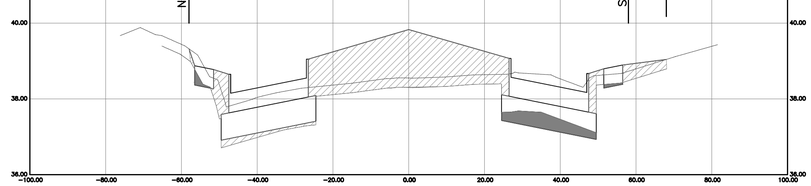
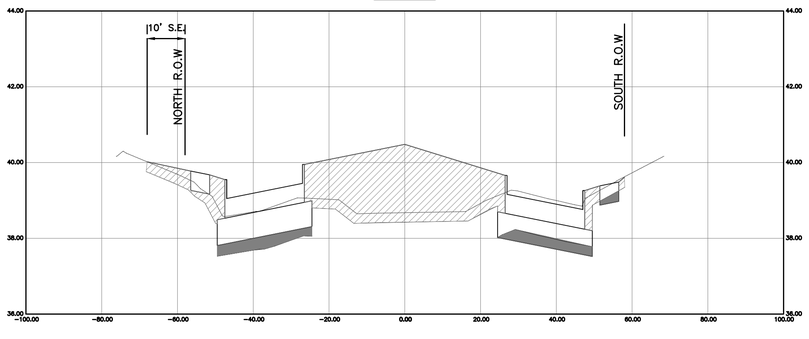


LEGEND

CUT

FILL

21+30.00



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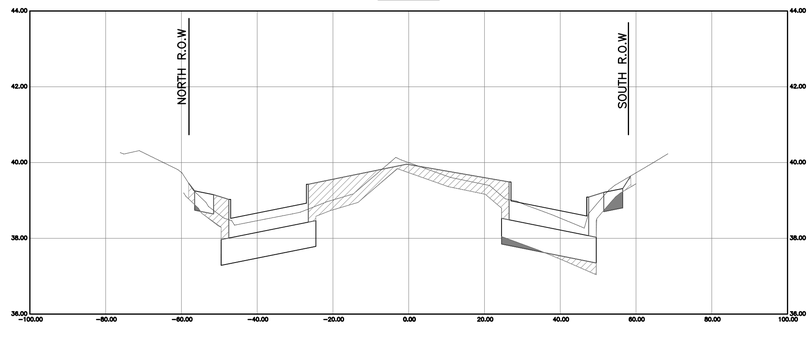


THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

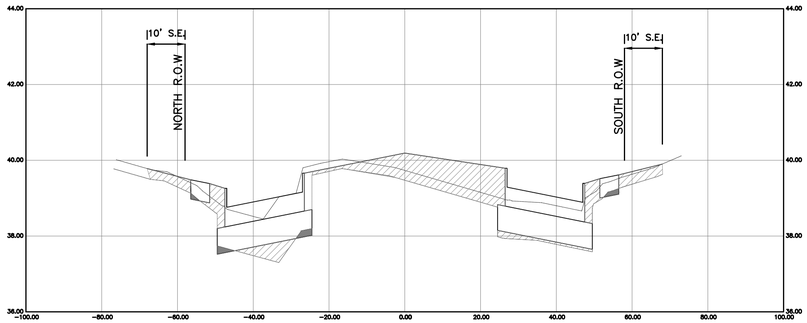
CROSS SECTIONS
MOWERY ROAD
SHEET 4 OF 6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.---~~OF~~ 159	

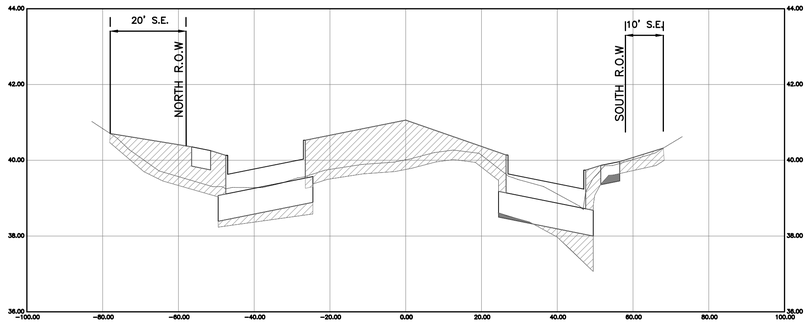
K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\130- CROSS SECTIONS MOWERY ROAD SHEET 4 OF 6.DWG AUG. 03, 2026-12:12pm

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\31- CROSS SECTIONS MOWERY ROAD SHEET 5 OF 6.DWG AUG. 03, 2026-12:14pm

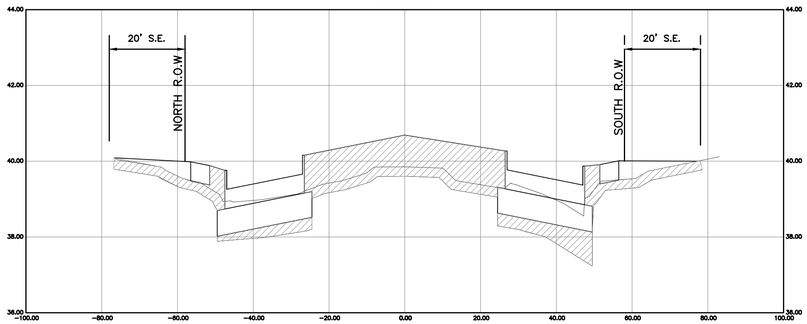
25+00.00



27+00.00



26+00.00



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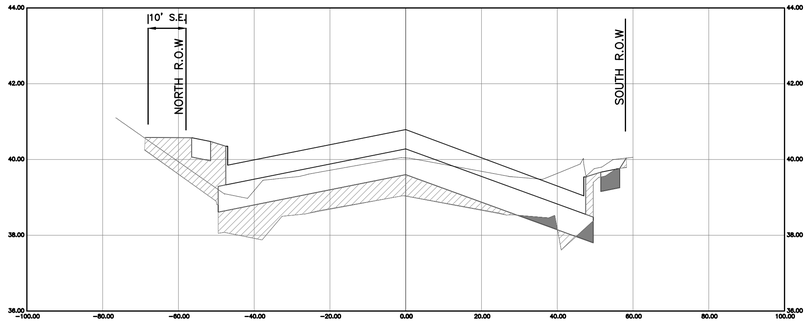
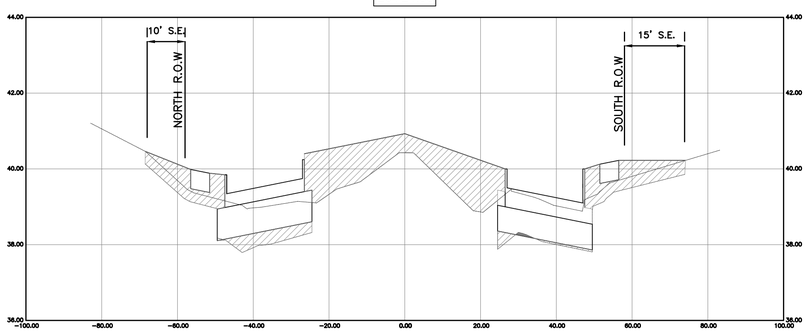


LEGEND

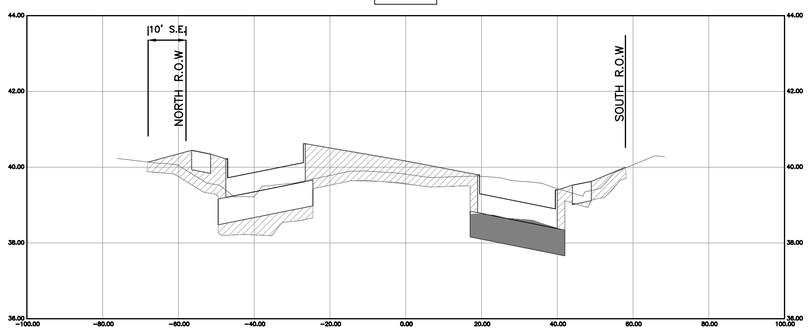
CUT

FILL

26+24.00



28+00.00



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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER

8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

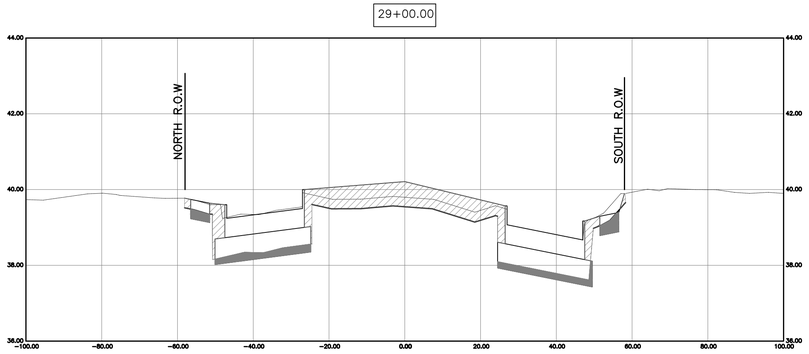
CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
MOWERY ROAD
SHEET 5 OF 6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- OF 159	



LEGEND

CUT

FILL

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\132- CROSS SECTIONS MOWERY ROAD SHEET 6 OF 6.DWG AUG. 03, 2026-12:14pm

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NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY:GEOSURV, INC.
FB NO.

8/3/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

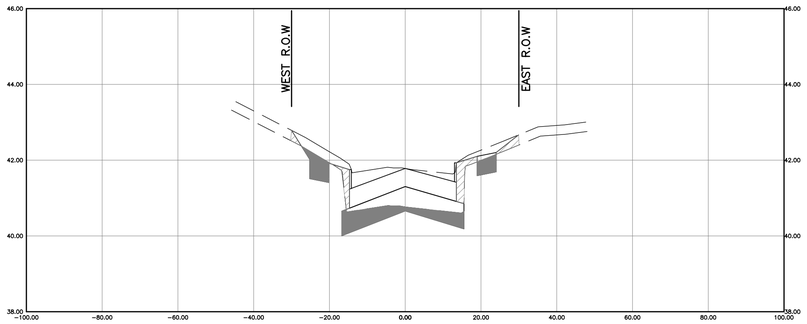
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
MOWERY ROAD
SHEET 6 OF 6

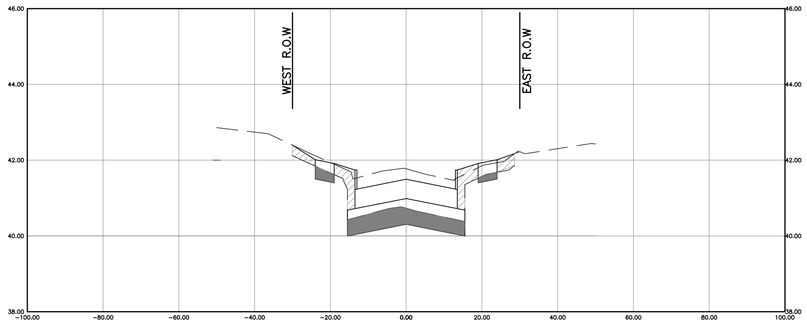
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\133- CROSS SECTIONS LEITRIM WAY SHEET 1 OF 6.DWG AUG. 03, 2026-12:12pm

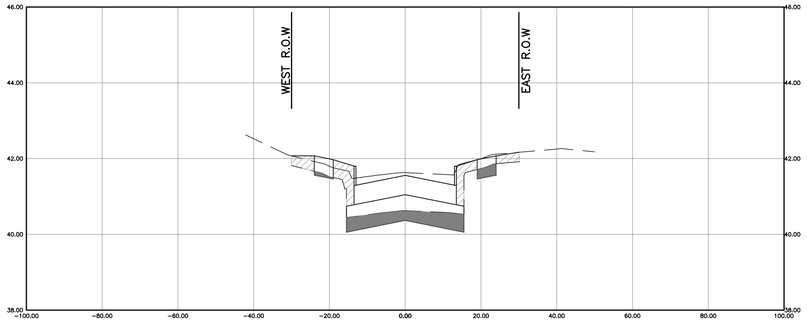
3+35.00



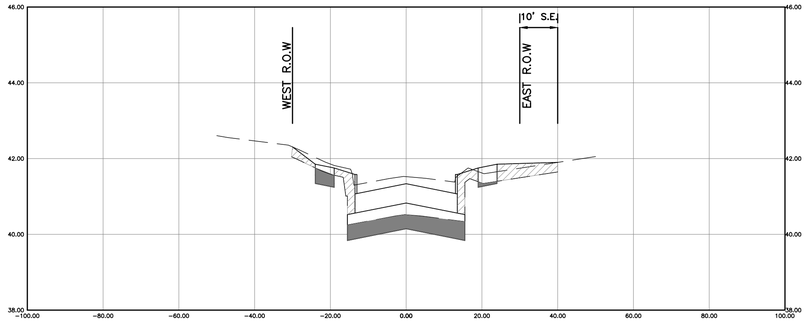
5+73.00



4+00.00

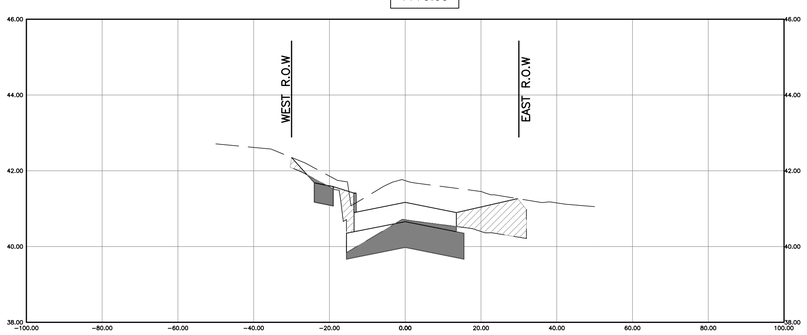


6+00.00

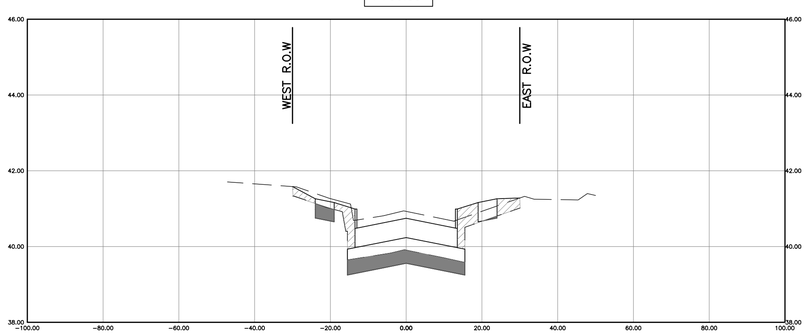


FAIRGREEN LN.

4+79.00



7+00.00



LEGEND

CUT

FILL

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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

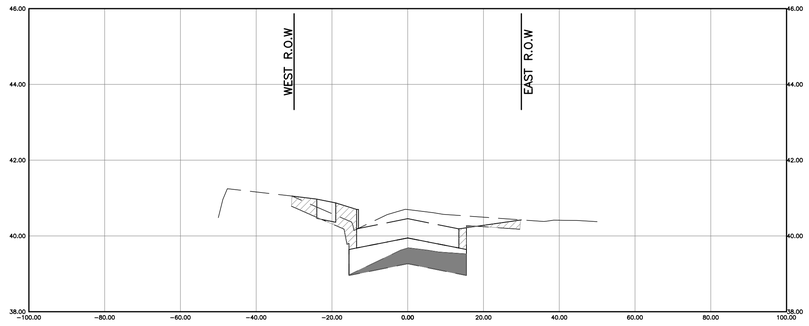
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
LEITRIM WAY
SHEET 1 OF 6

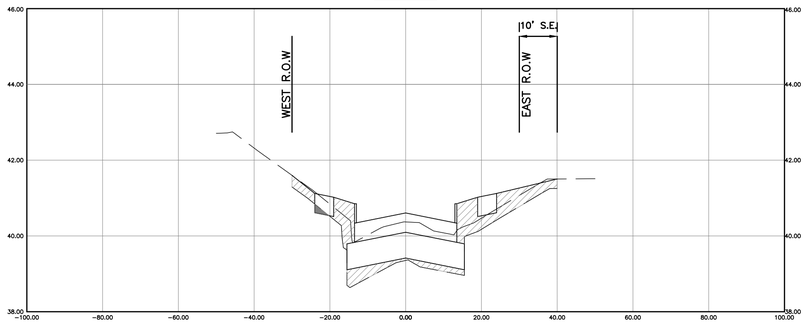
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.---~~OF~~ 159	

HICKOK LN.

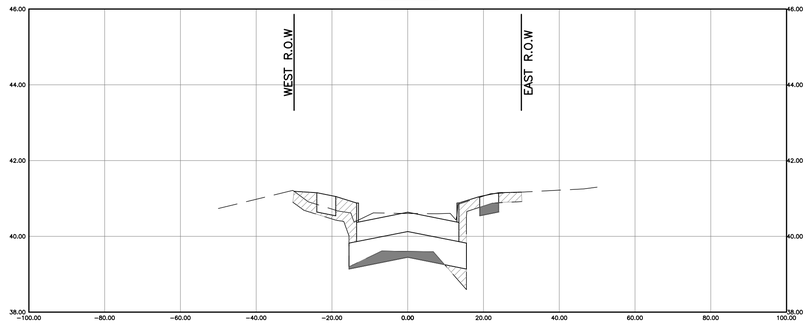
7+48.00



9+00.00

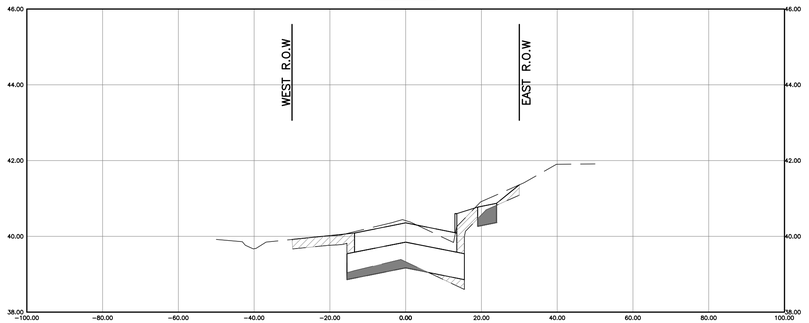


8+00.00



HICKOK LN.

9+46.00

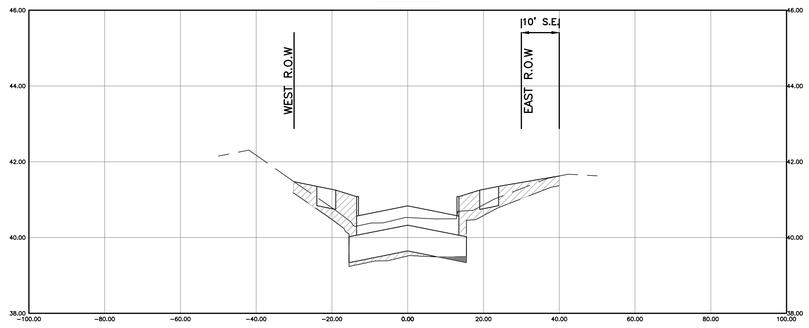


LEGEND

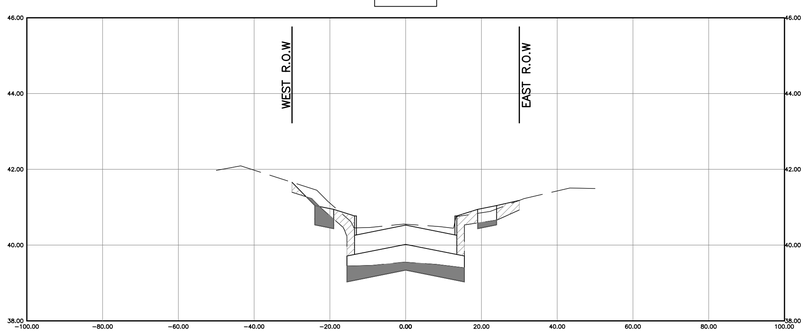
CUT

FILL

8+56.00



10+00.00



K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\134- CROSS SECTIONS LEITRIM WAY SHEET 2 OF 6.DWG AUG. 03, 2026-12:13pm

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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

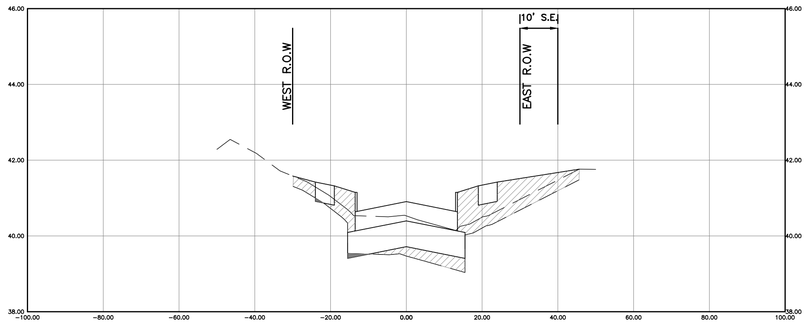
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
LEITRIM WAY
SHEET 2 OF 6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

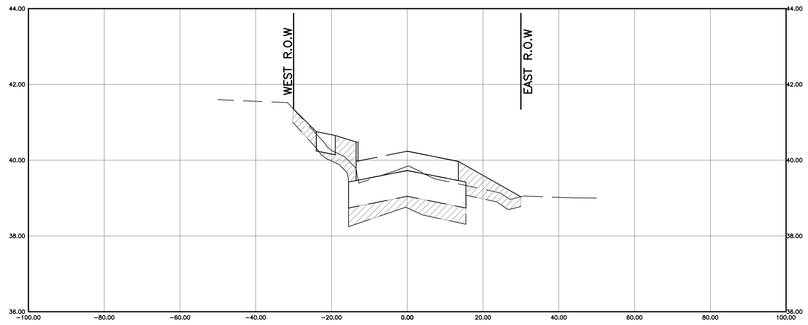
K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\135- CROSS SECTIONS LEITRIM WAY SHEET 3 OF 6.DWG AUG. 03, 2026-12:12pm

11+00.00

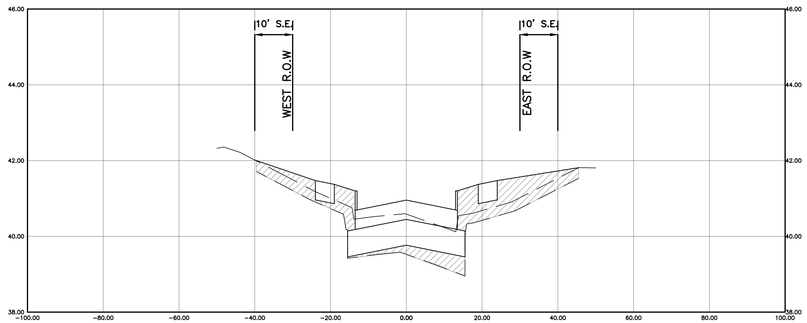


MADDEN LN.

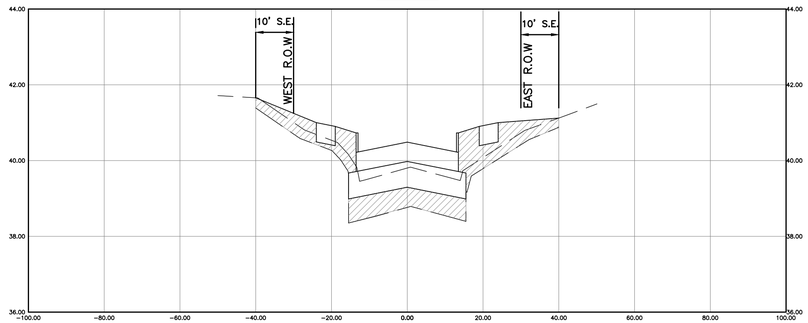
13+23.00



11+15.00



14+00.00

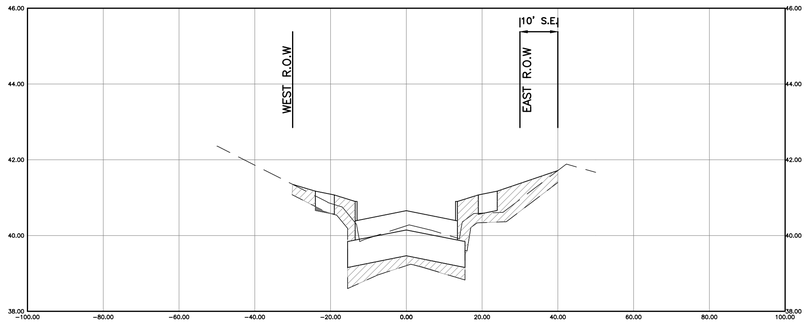


LEGEND

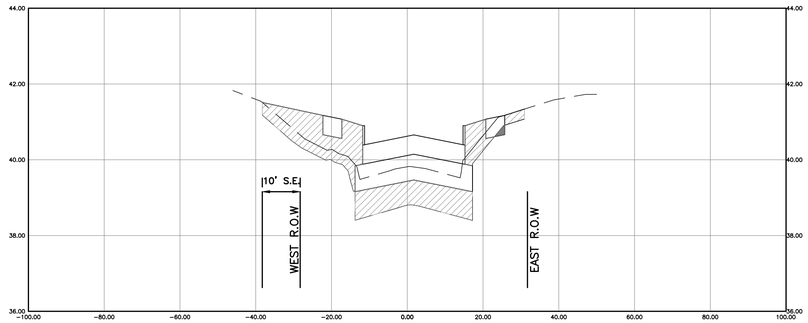
CUT

FILL

12+00.00



14+54.00



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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93826
LICENSED
PROFESSIONAL
ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

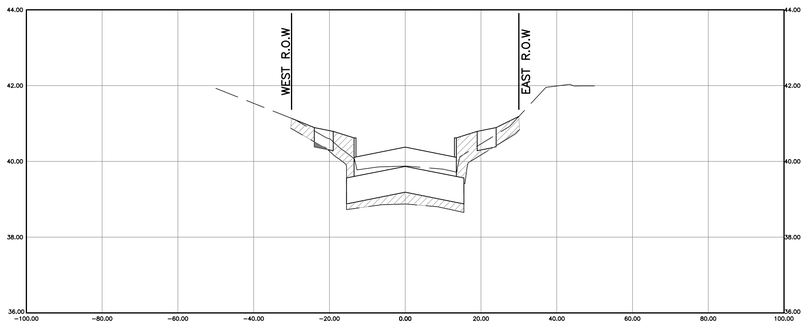
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

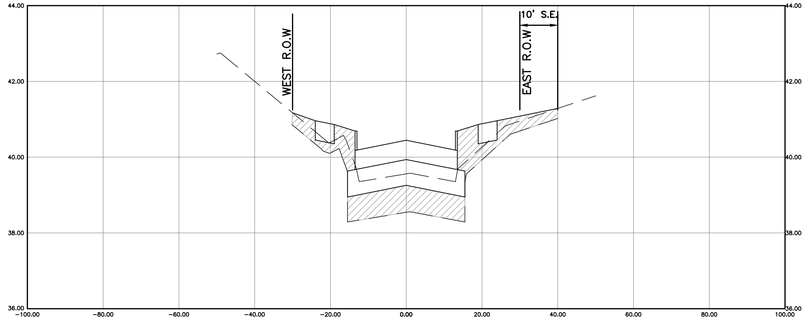
CROSS SECTIONS
LEITRIM WAY
SHEET 3 OF 6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- OF 159	

15+00.00

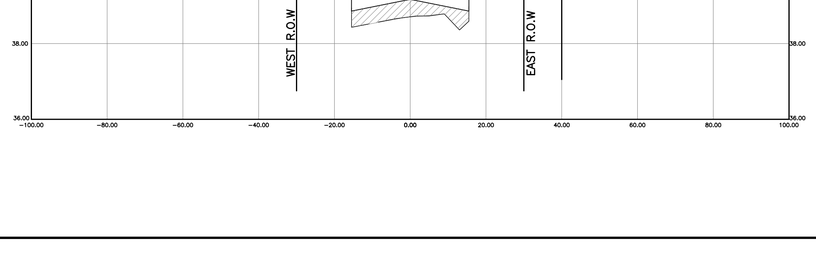


17+24.00

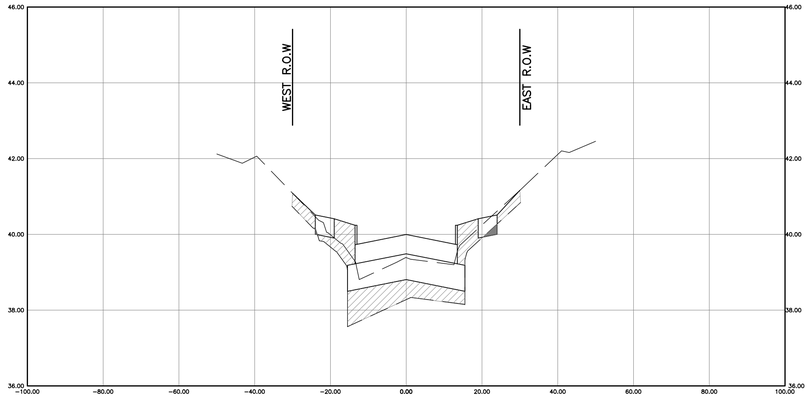


TAVENOR LN.

15+84.00



18+00.00

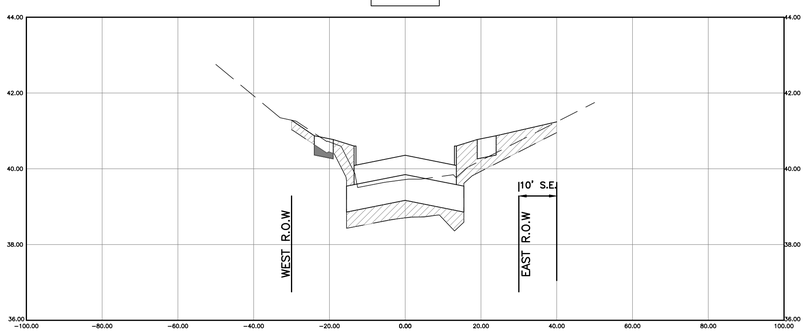


LEGEND

CUT

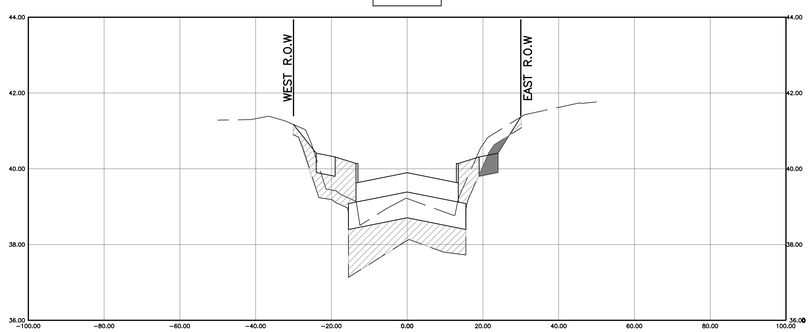
FILL

17+00.00



BOTANY LN.

18+18.00



THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK–UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F–12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB–PROJECT 1

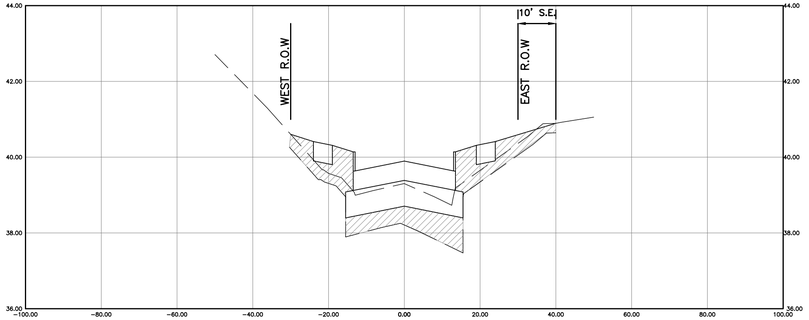
CROSS SECTIONS
LEITRIM WAY
SHEET 4 OF 6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N–210004–0001–4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.–––~~OF~~ 159	

K:\331052–CLOVERLAND AREA P&D–COH FY15\DWG\DESIGN DRAWINGS\SUB–PROJECT–1\CROSS SECTIONS\136– CROSS SECTIONS LEITRIM WAY SHEET 4 OF 6.DWG AUG. 03, 2026–12:13pm

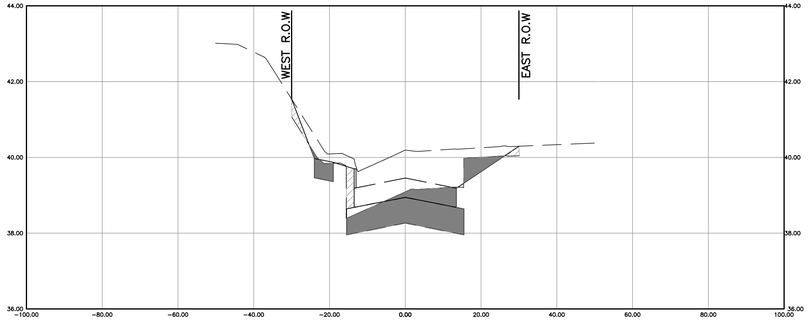
BOTANY LN.

18+98.00

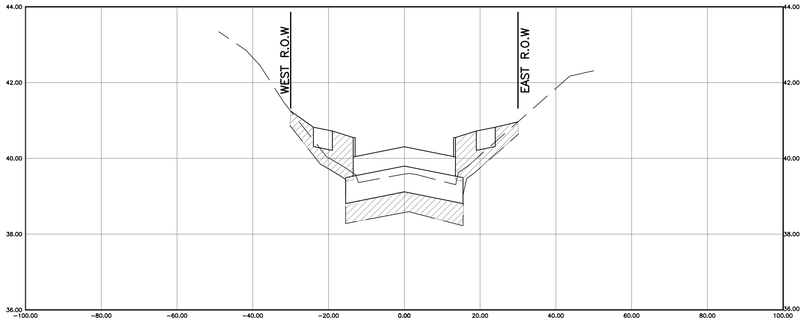


TAREYTON LN.

21+34.00



19+98.00



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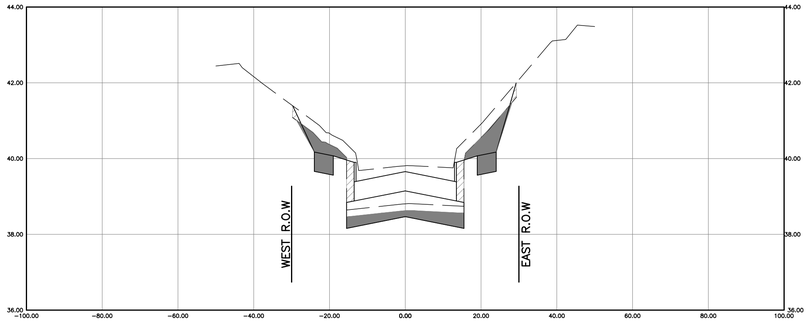
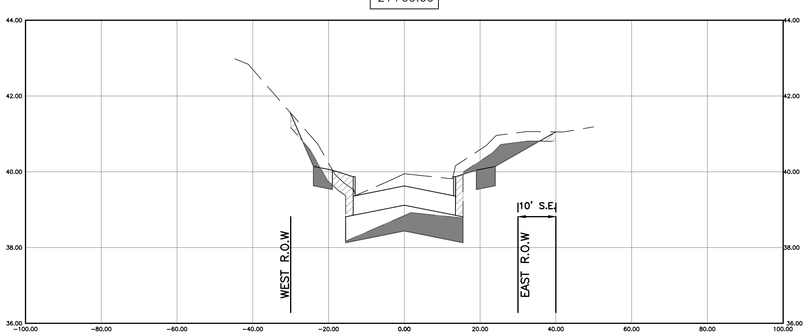


LEGEND

CUT

FILL

21+00.00



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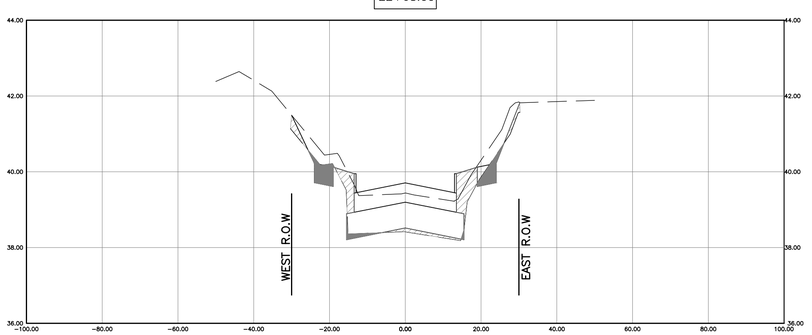

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\137- CROSS SECTIONS LEITRIM WAY SHEET 5 OF 6.DWG AUG. 03, 2026-12:12pm

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93826
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

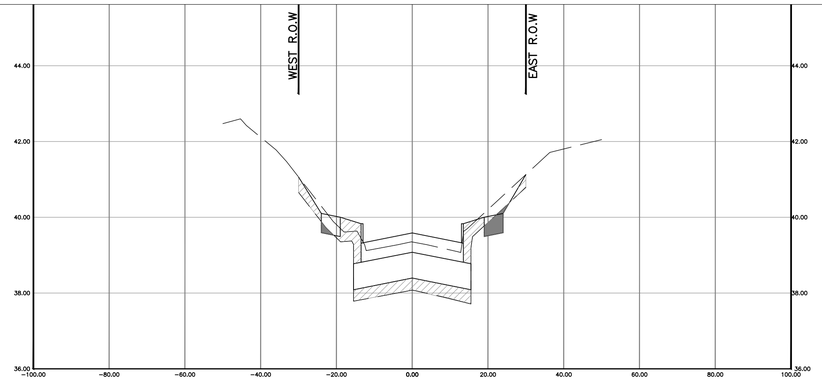
CITY OF HOUSTON

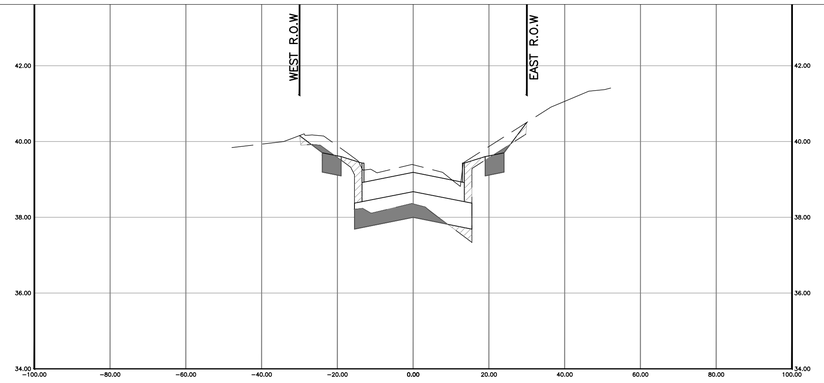
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

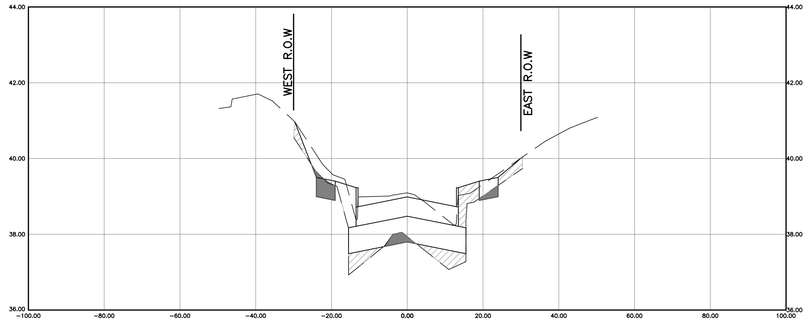
CROSS SECTIONS
LEITRIM WAY
SHEET 5 OF 6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- OF 159	

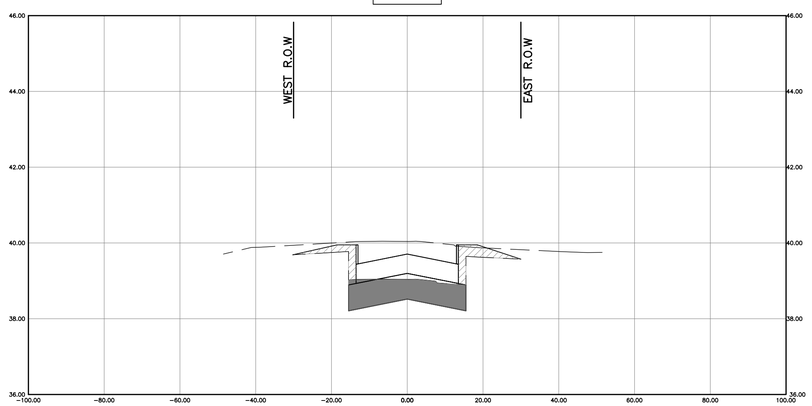




23+73.00



MOWERY RD.
24+40.00



LEGEND

CUT

FILL

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90% DESIGN REVIEW

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TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

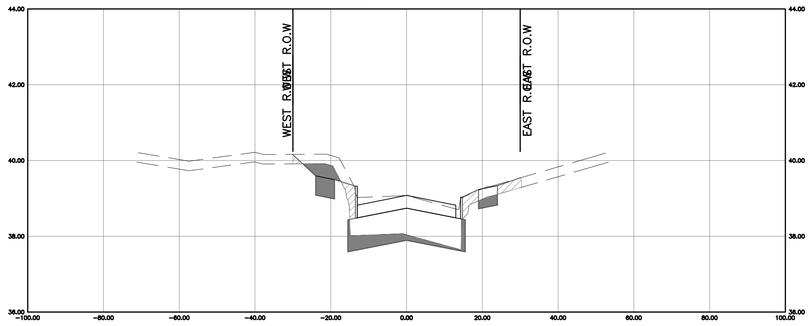
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
LEITRIM WAY
SHEET 6 OF 6

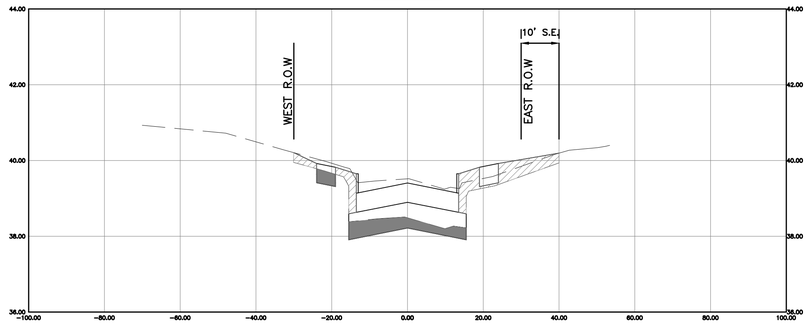
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\138- CROSS SECTIONS LEITRIM WAY SHEET 6 OF 6.DWG AUG. 03, 2026-12:14pm

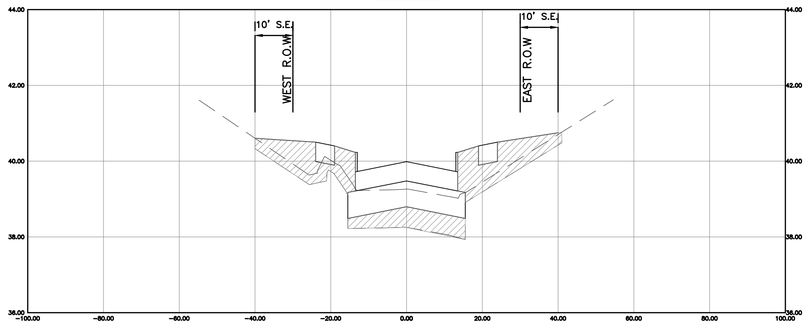
14+28.50



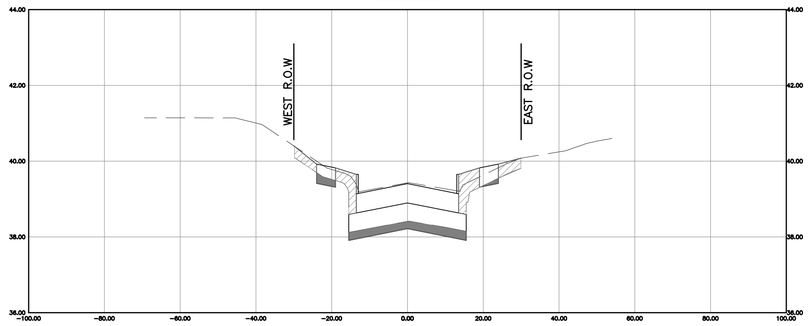
TAVENOR LN.
15+78.00



14+78.50



TAVENOR LN.
16+50.00



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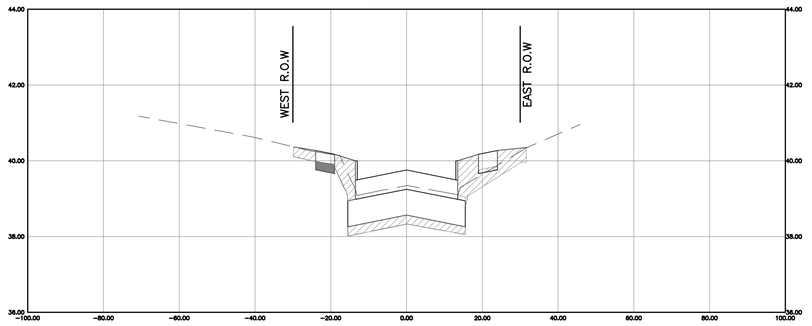

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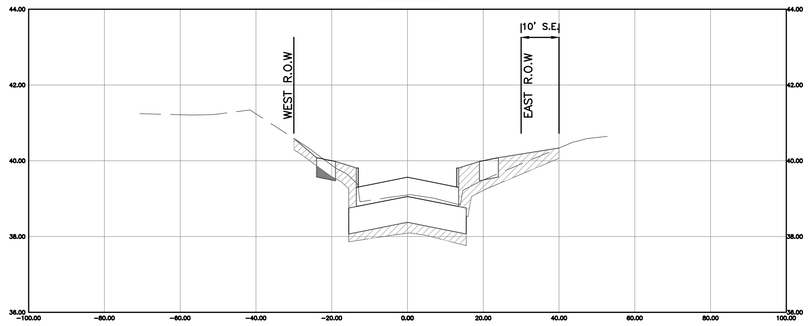

LEGEND

CUT

FILL

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\139- CROSS SECTIONS DONEGAL WAY SHEET 1 OF 3.DWG AUG. 03, 2026-12:13pm

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER

SURVEYED BY:GEOSURV, INC.
FB NO.

8/3/2026

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

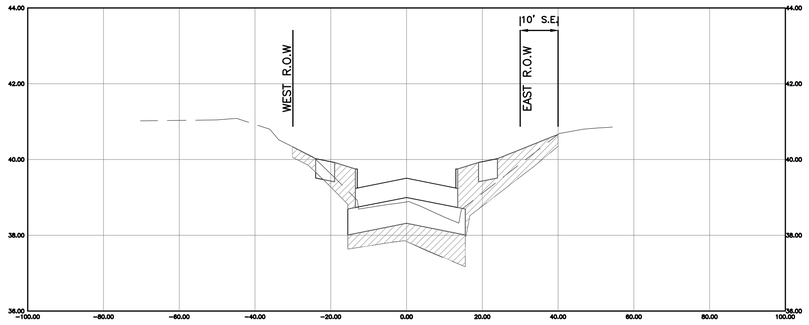
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
DONEGAL WAY
SHEET 1 OF 3

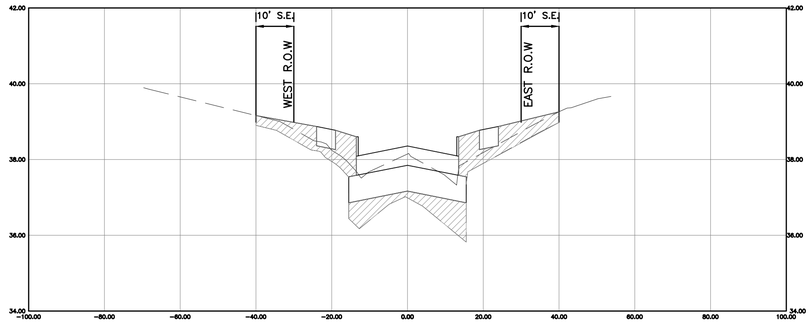
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\140- CROSS SECTIONS DONEGAL WAY SHEET 2 OF 3.DWG AUG. 03, 2026-12:13pm

17+47.00



BOTANY LN.
19+22.00



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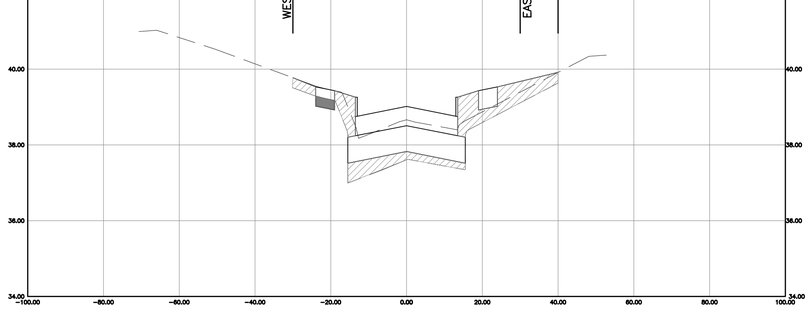

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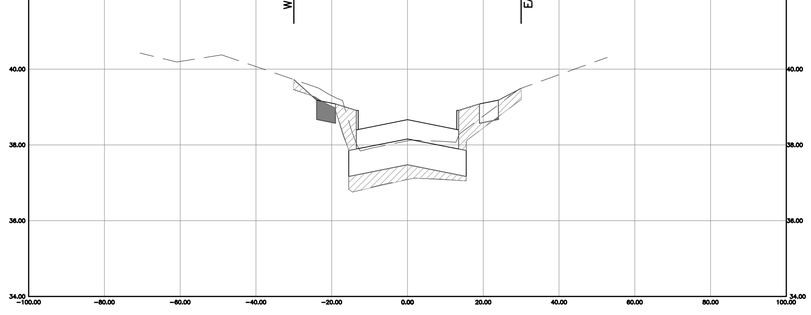
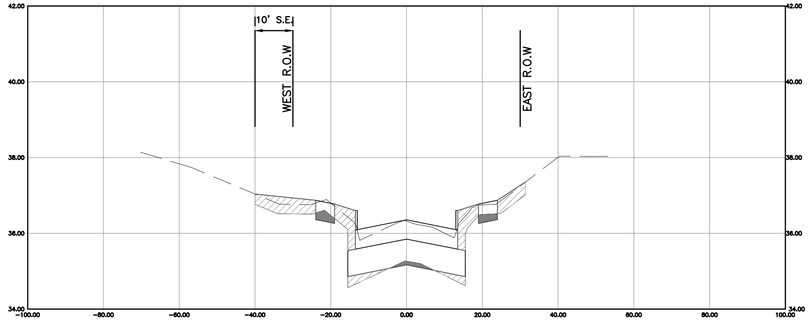


LEGEND

CUT

FILL

BOTANY LN.
18+50.00



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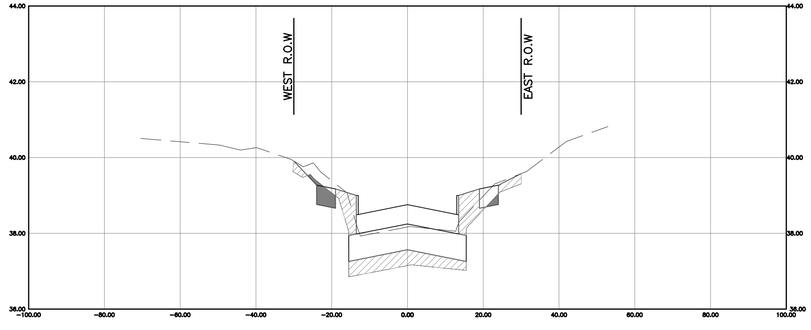

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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

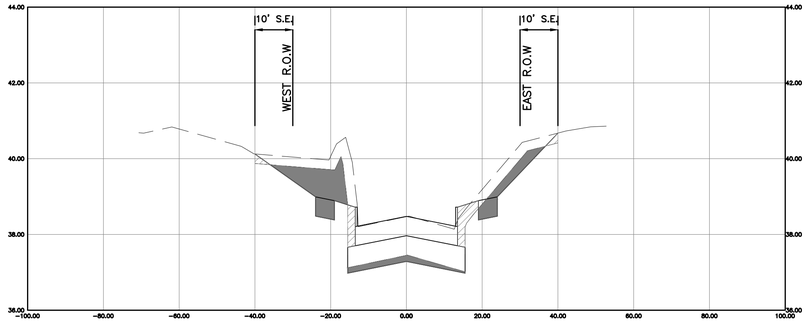
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

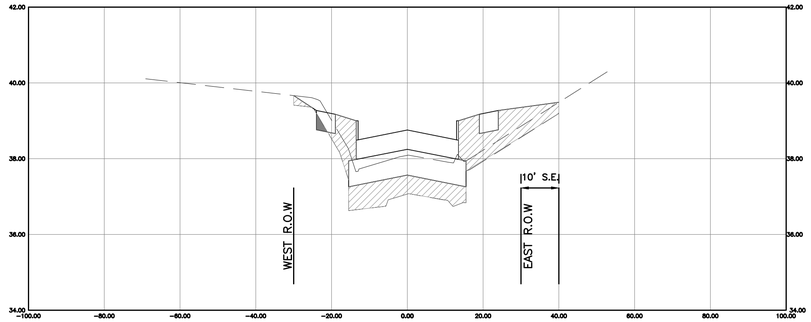
CROSS SECTIONS
DONEGAL WAY
SHEET 2 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 140 OF 159	

21+00.00

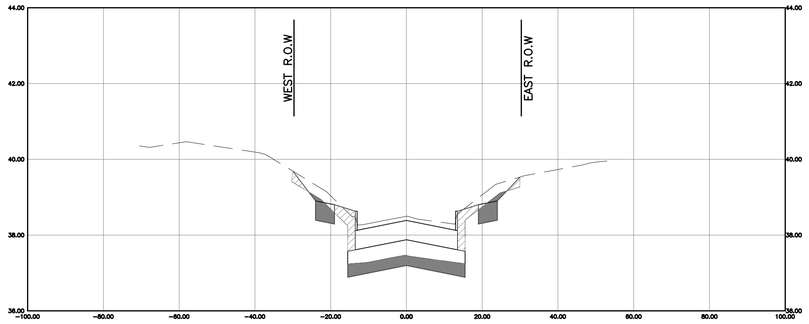


22+93.00



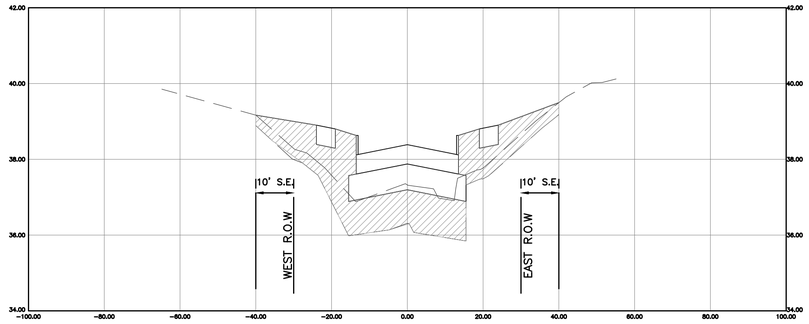
TAREYTON LN.

21+24.00



MOWERY DR.

23+95.00



TAREYTON LN.

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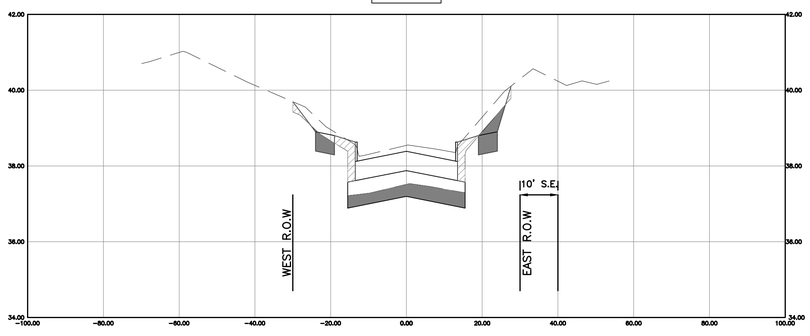

LEGEND

CUT

FILL

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TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

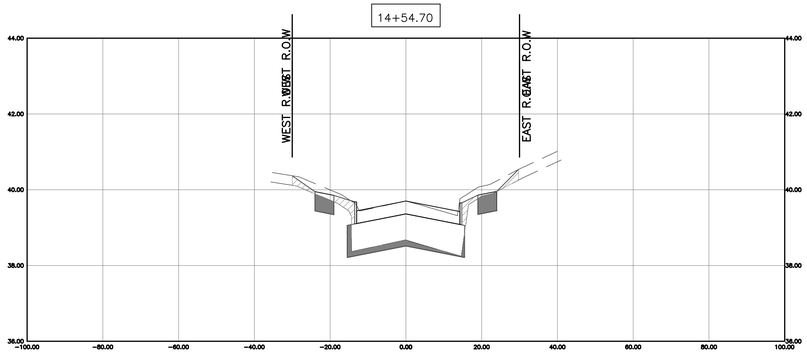
HOUSTON PUBLIC WORKS

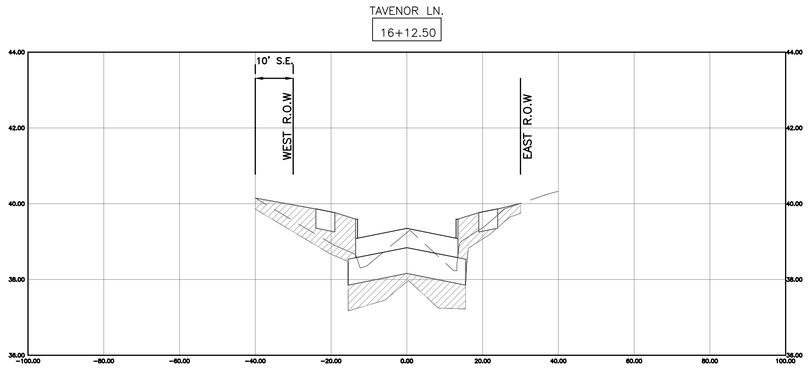
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

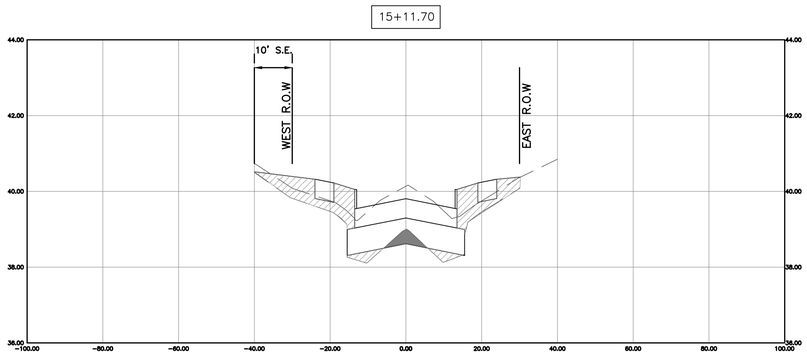
CROSS SECTIONS
DONEGAL WAY
SHEET 3 OF 3

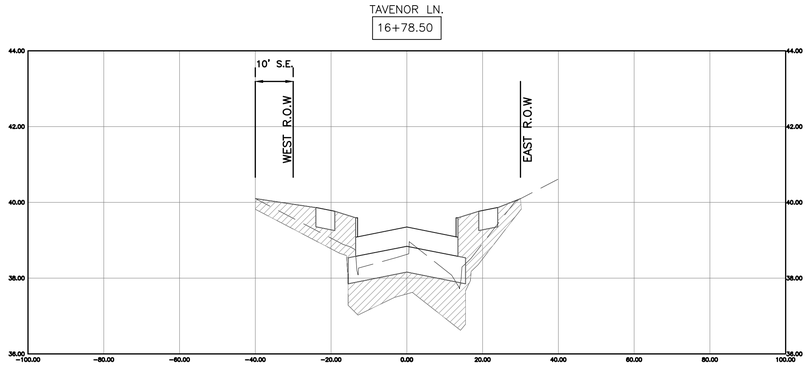
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

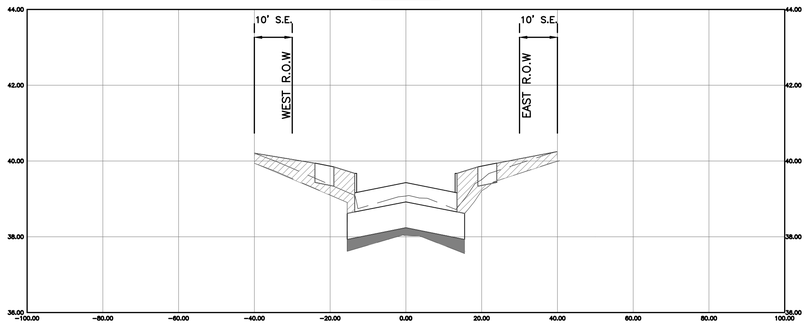
K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\141- CROSS SECTIONS DONEGAL WAY SHEET 3 OF 3.DWG AUG. 03, 2026-12:12pm

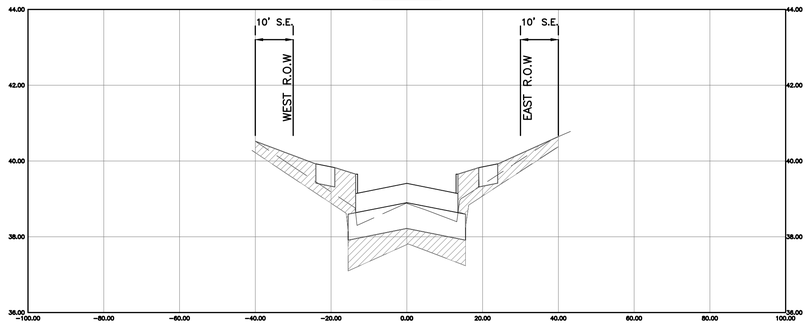












LEGEND

CUT

FILL

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TEXAS REGISTERED FIRM F-12428

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DARIUOSH S. KERMANY
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ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

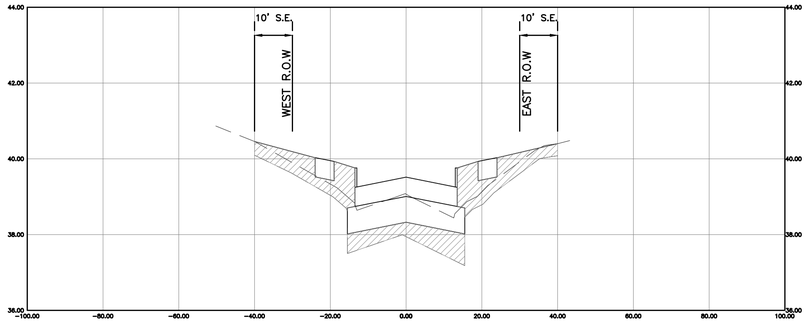
CROSS SECTIONS
DUANE STREET
SHEET 1 OF 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\142- CROSS SECTIONS DUANE STREET SHEET 1 OF 3.DWG AUG. 03, 2026-12:13pm

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\143- CROSS SECTIONS DUANE STREET SHEET 2 OF 3.DWG AUG. 03, 2026-12:11pm

17+81.00



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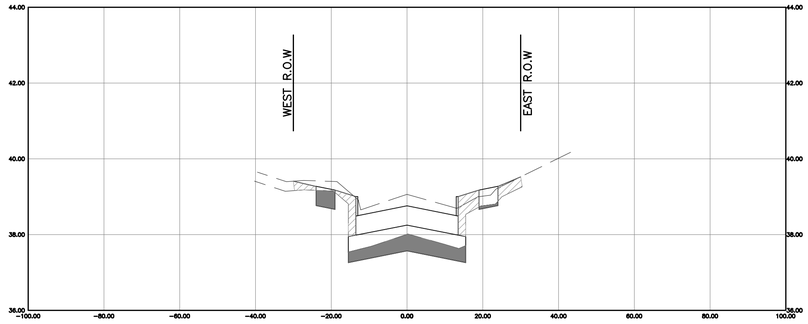

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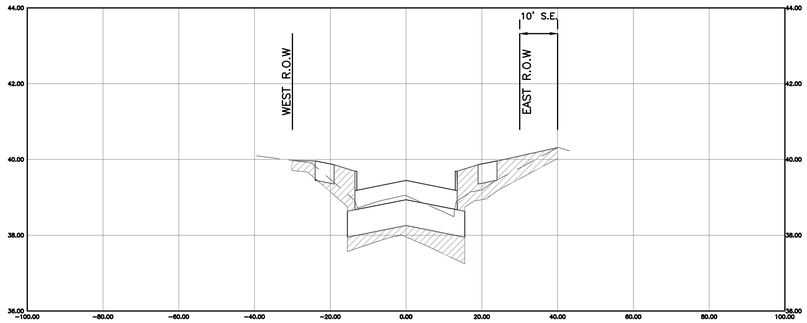

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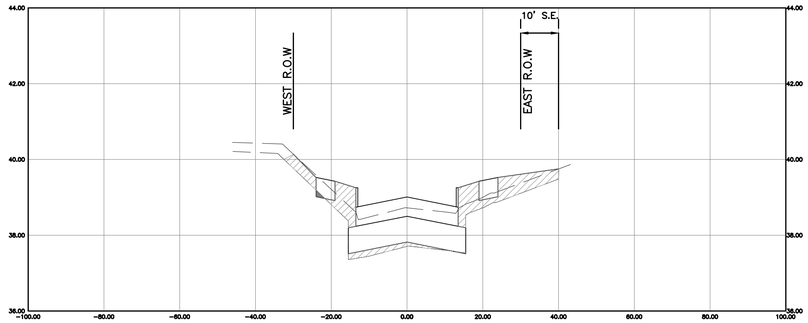
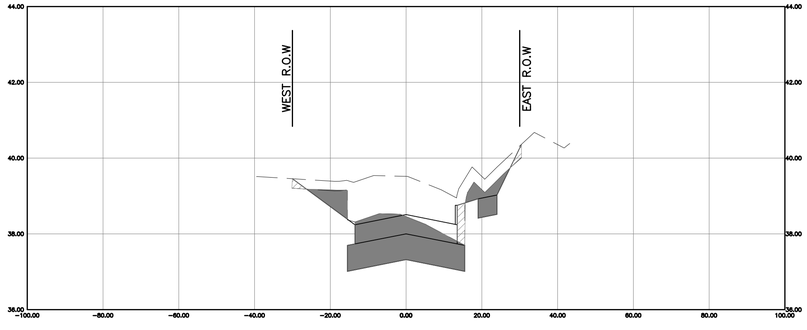


BOTANY LN.

19+21.50



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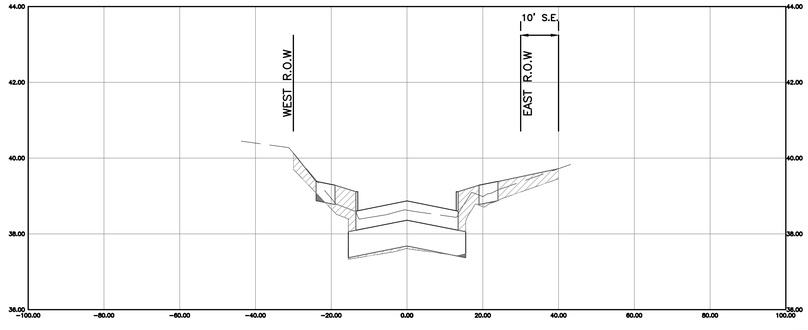


LEGEND

CUT

FILL

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

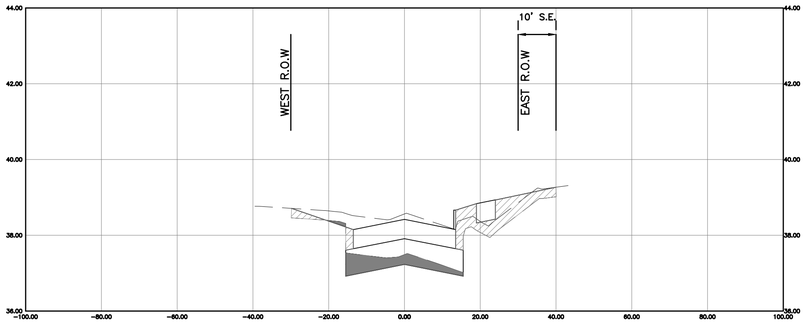
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
DUANE STREET
SHEET 2 OF 3

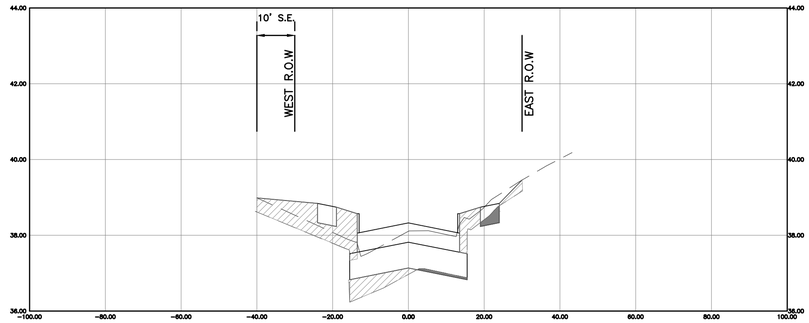
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.---~~OF~~ 159	

TAREYTON LN.

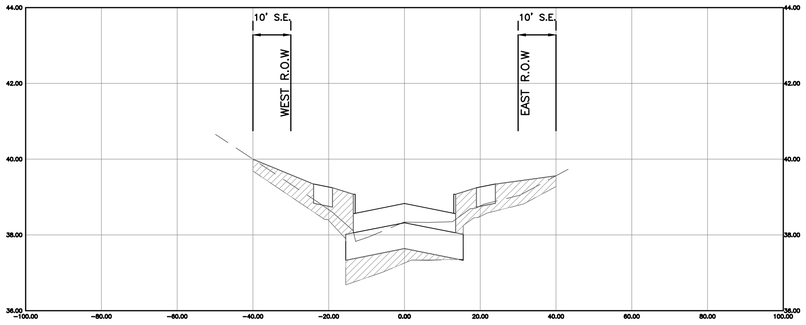
21+84.00



24+00.00

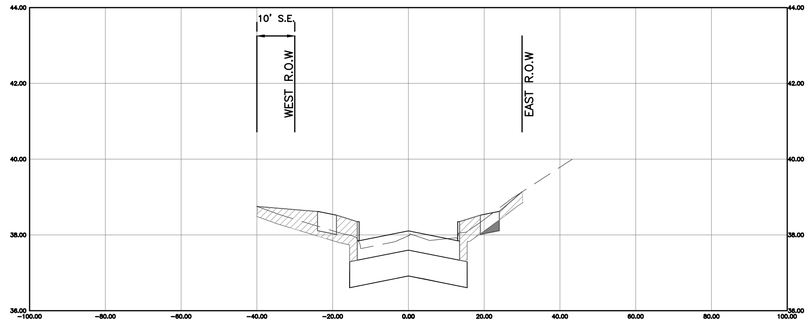


23+00.00



MOWERY RD.

24+27.00



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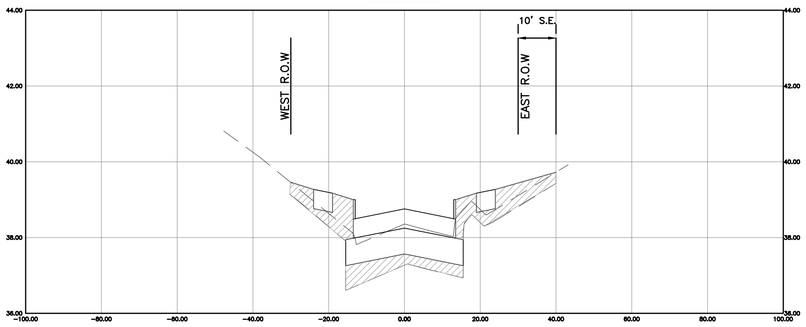

LEGEND

CUT

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TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
DUANE STREET
SHEET 3 OF 3

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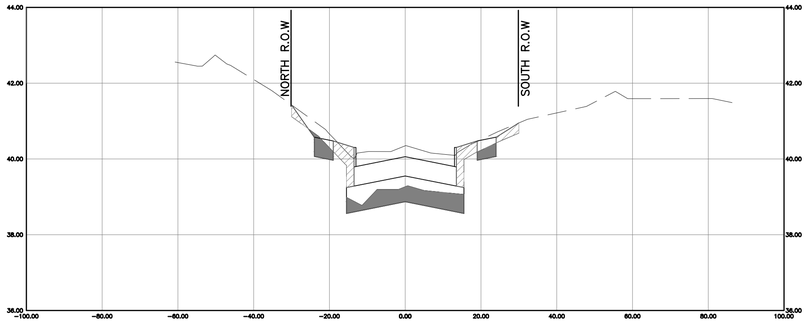
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.---~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\144- CROSS SECTIONS DUANE STREET SHEET 3 OF 3.DWG AUG. 03, 2026-12:14pm

LEITRIM WAY

2+33.00



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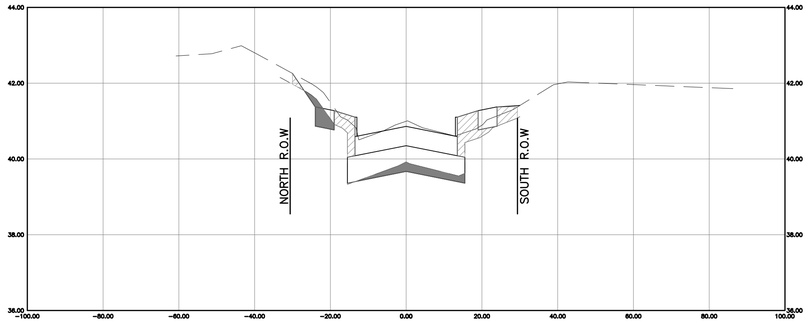
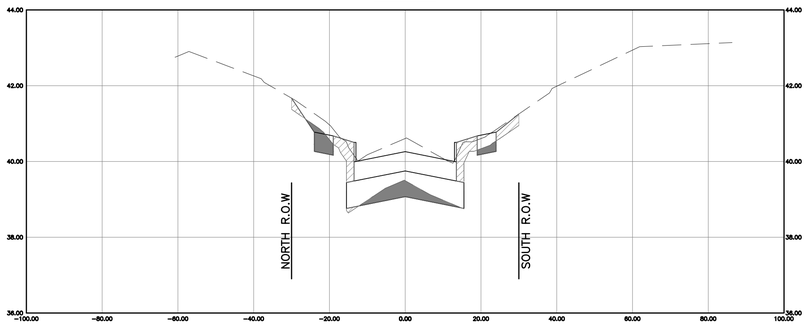


3+00.00



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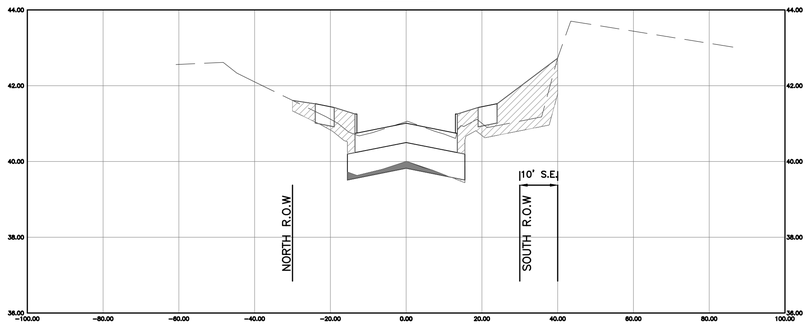

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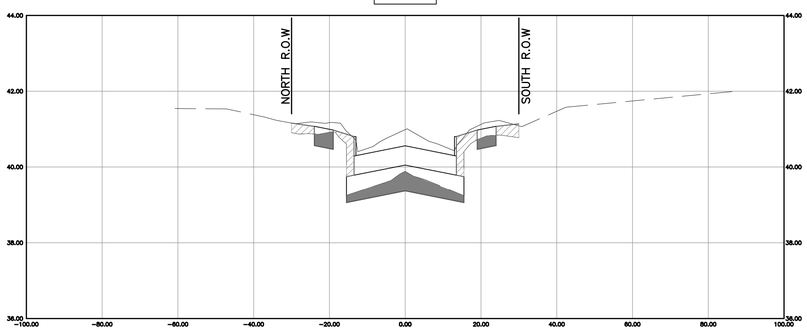

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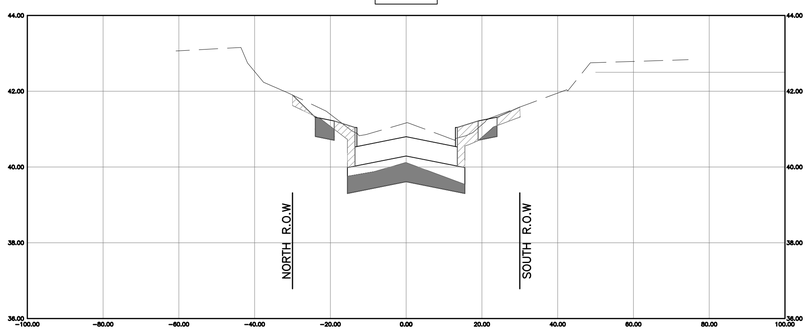

LEGEND

CUT

FILL

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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
FB NO.

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

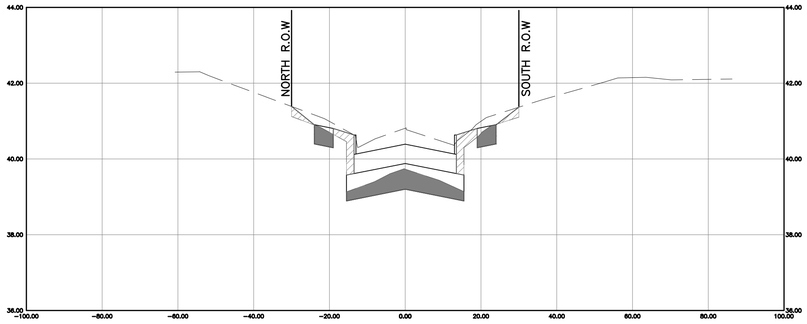
CROSS SECTIONS
TAREYTON LANE
SHEET 1 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\145- CROSS SECTIONS TAREYTON LANE SHEET 1 OF 4.DWG AUG. 03, 2026-12:13pm

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\146- CROSS SECTIONS TAREYTON LANE SHEET 2 OF 4.DWG AUG. 03, 2026-12:12pm

7+00.00



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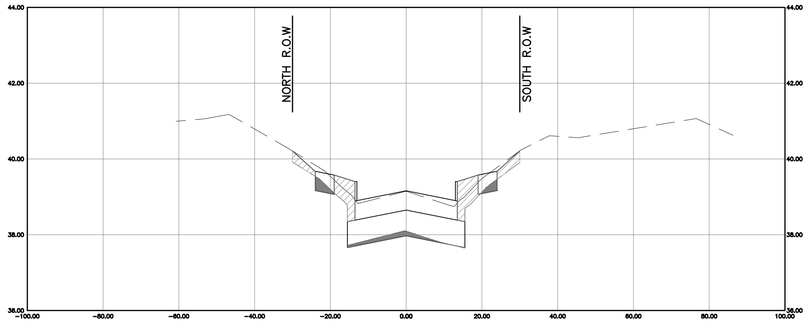

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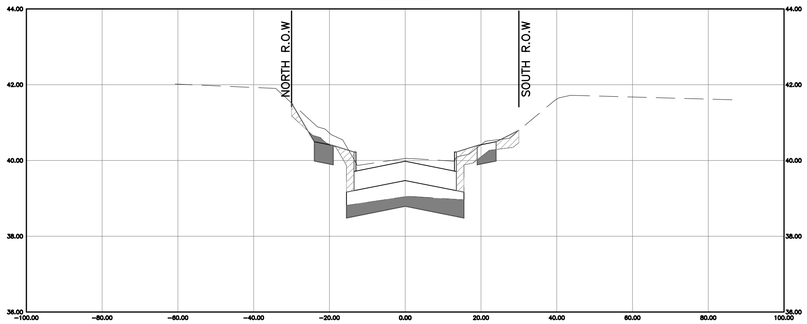
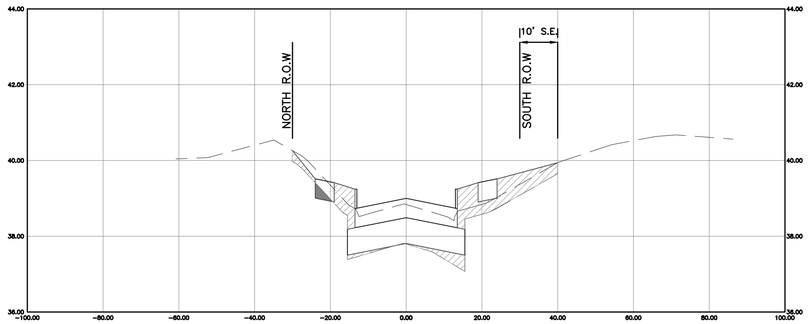


DONEGAL WAY

11+11.00



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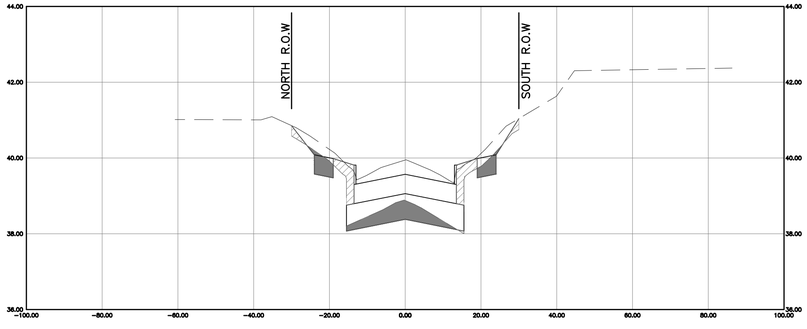

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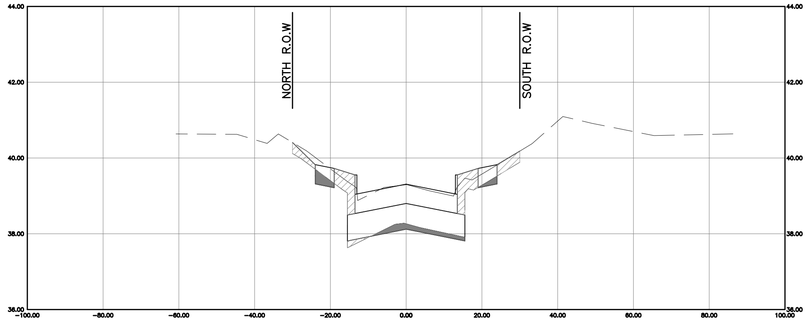

LEGEND

CUT

FILL

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TRW ENGINEERS, INC.
dba TSC Engineering
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Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

SURVEYED BY:GEOSURV, INC.
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93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

CITY OF HOUSTON

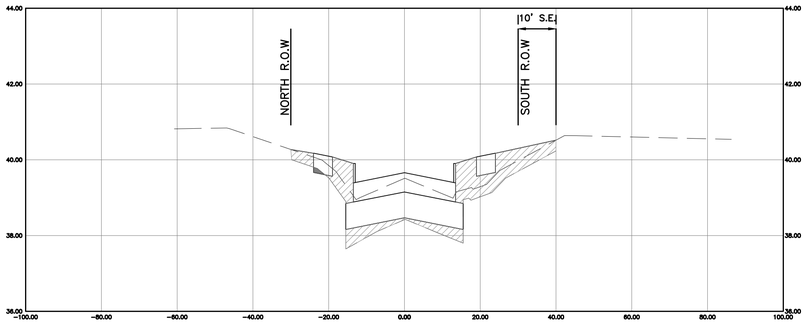
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
TAREYTON LANE
SHEET 2 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.---~~OF~~ 159	

13+00.00



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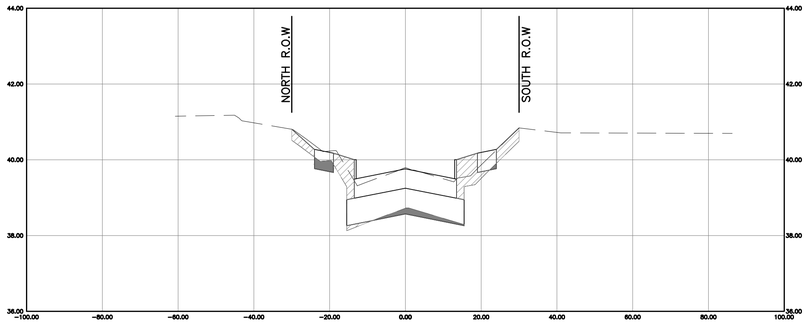

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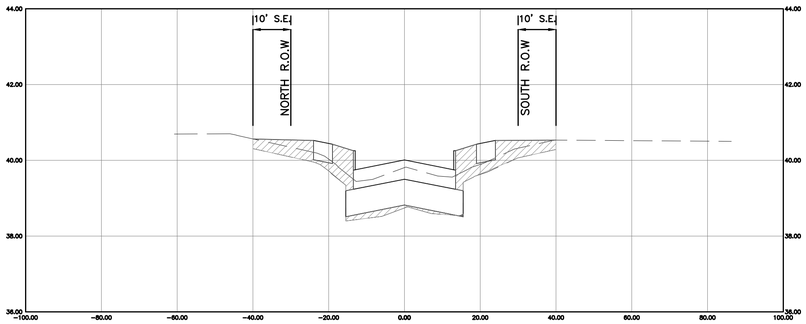

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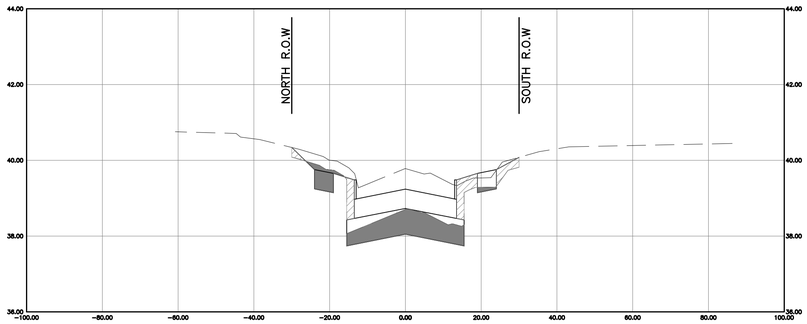

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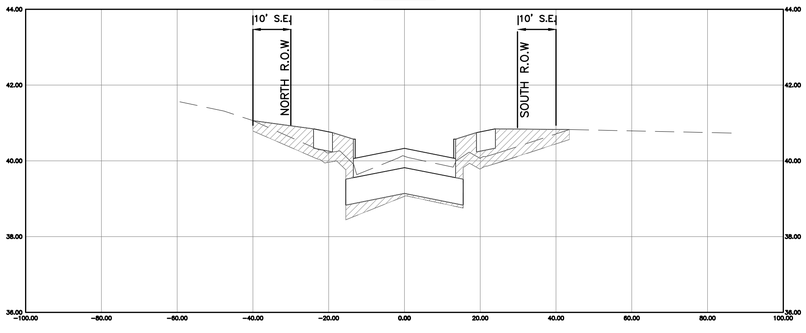

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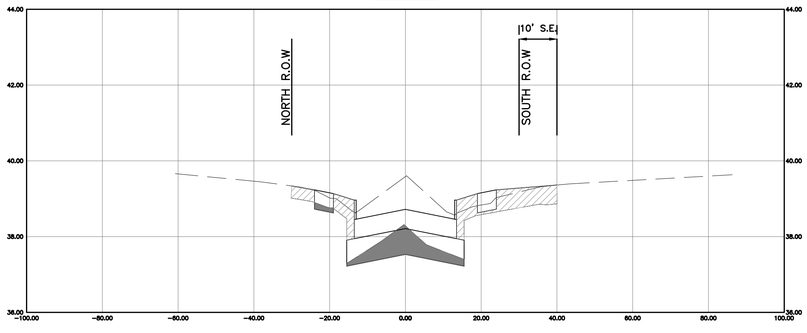

LEGEND

CUT

FILL

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\147- CROSS SECTIONS TAREYTON LANE SHEET 3 OF 4.DWG AUG. 03, 2026-12:14pm

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HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
TAREYTON LANE
SHEET 3 OF 4

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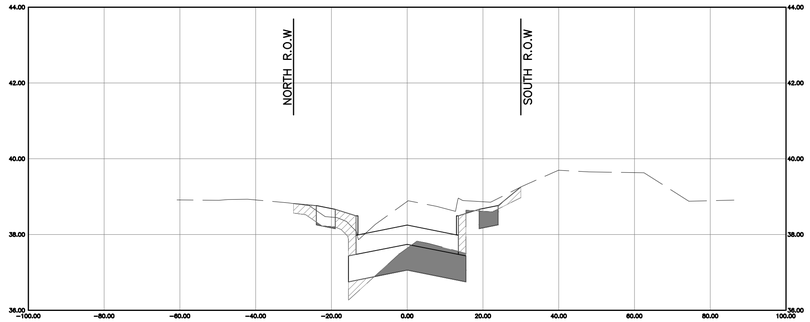
SHEET NO.--- ~~OF~~ 159	

DUANE ST.

18+92.00



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HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
TAREYTON LANE
SHEET 4 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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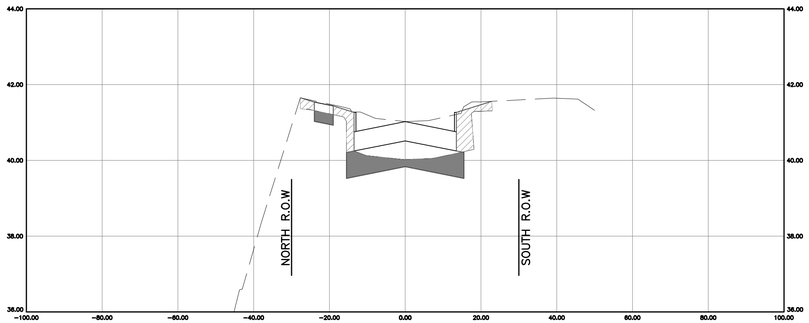
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

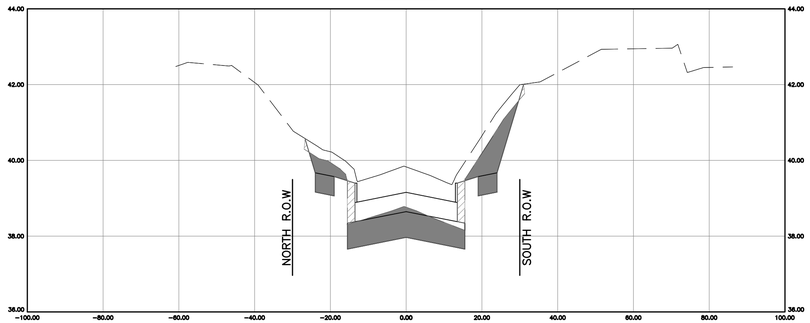
K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\148- CROSS SECTIONS TAREYTON LANE SHEET 4 OF 4.DWG AUG. 03, 2026-12:13pm

4+44.00



LEITRIM WAY

6+63.00



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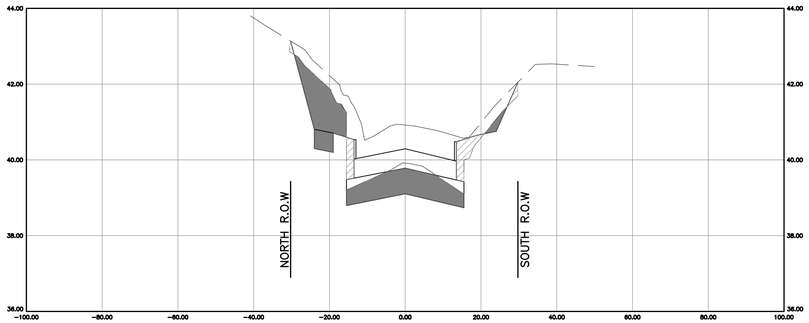

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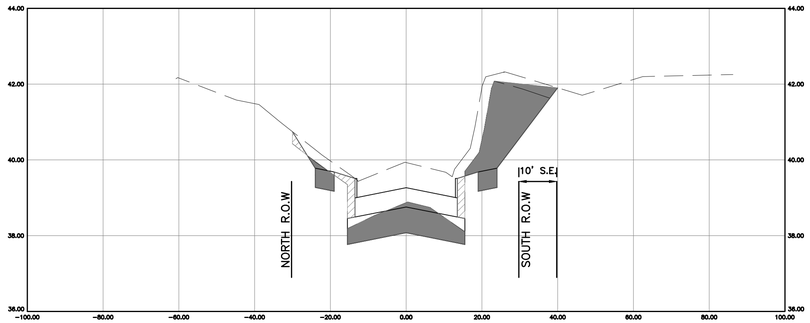
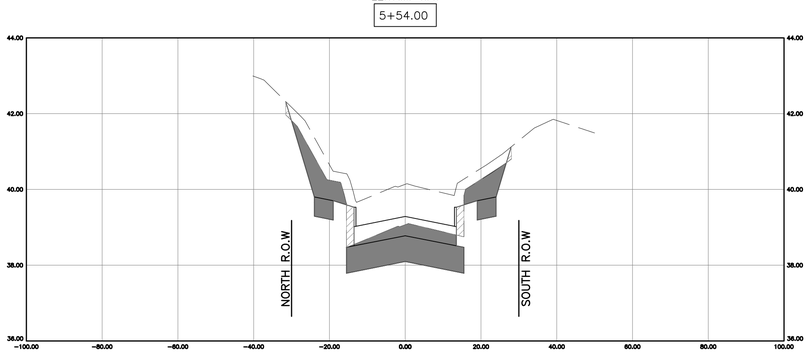


LEITRIM WAY

5+54.00



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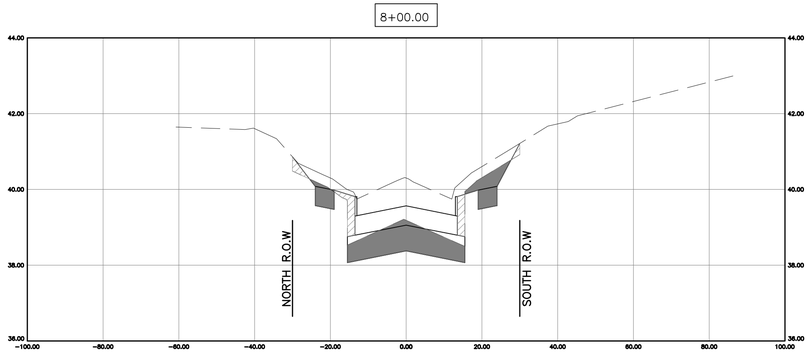


LEGEND

CUT

FILL

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK−UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
THIS DOCUMENMT SHOULD NOT BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F−12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

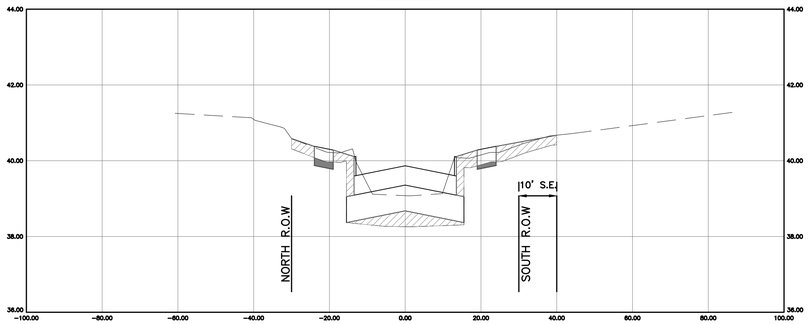
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB−PROJECT 1

CROSS SECTIONS
BOTANY LANE
SHEET 1 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N−210004−0001−4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.−−−~~OF~~ 159	

K:\331052−CLOVERLAND AREA P&D−COH FY15\DWG\DESIGN DRAWINGS\SUB−PROJECT−1\CROSS SECTIONS\149− CROSS SECTIONS BOTANY LANE SHEET 1 OF 4.DWG AUG. 03, 2026−12:11pm

9+00.00



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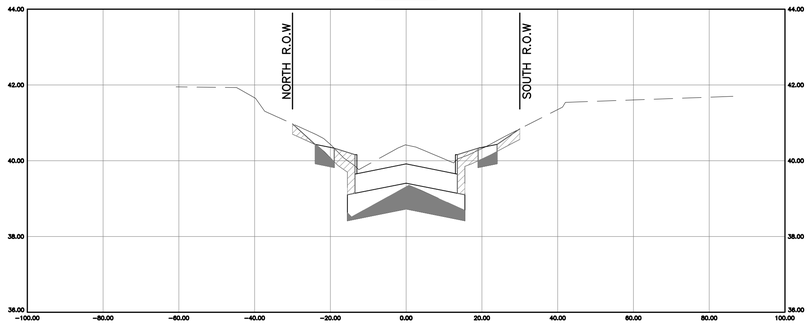

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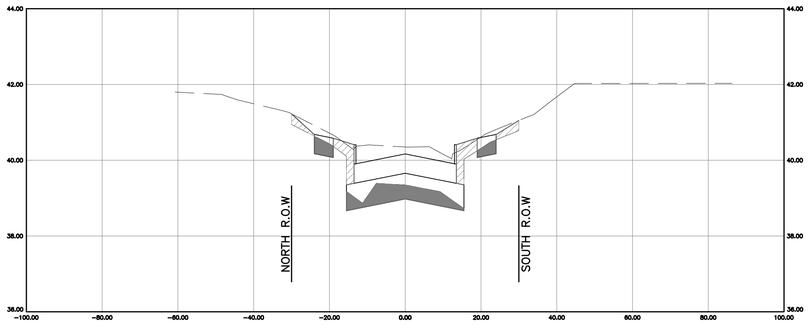

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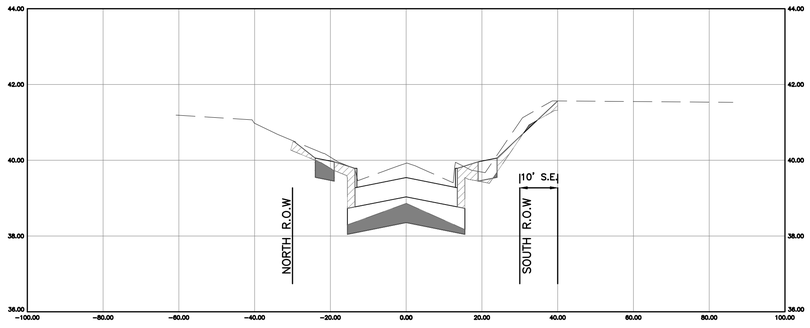

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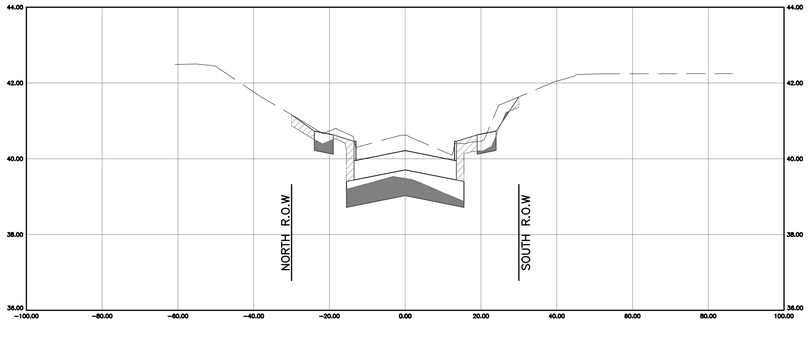

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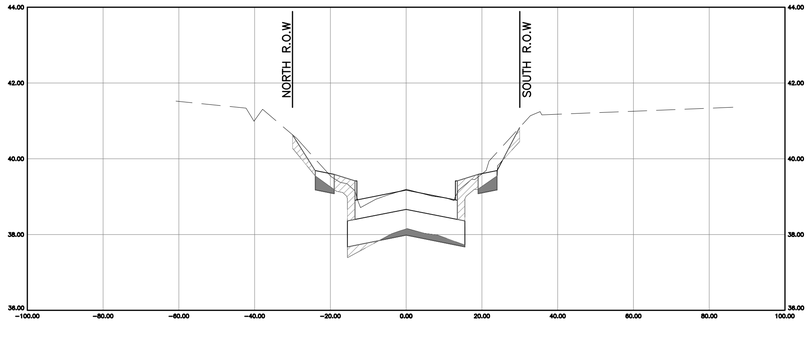

LEGEND

CUT

FILL

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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

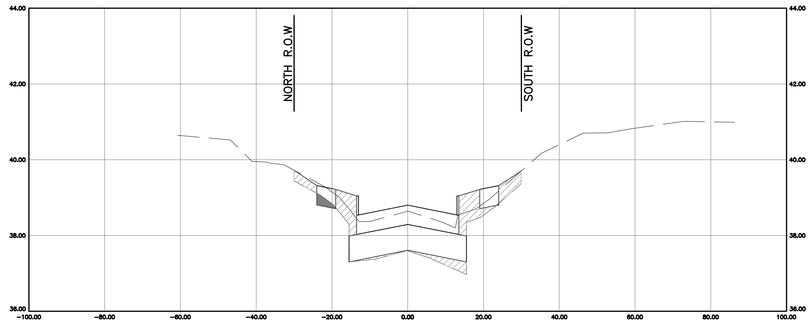
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
BOTANY LANE
SHEET 2 OF 4

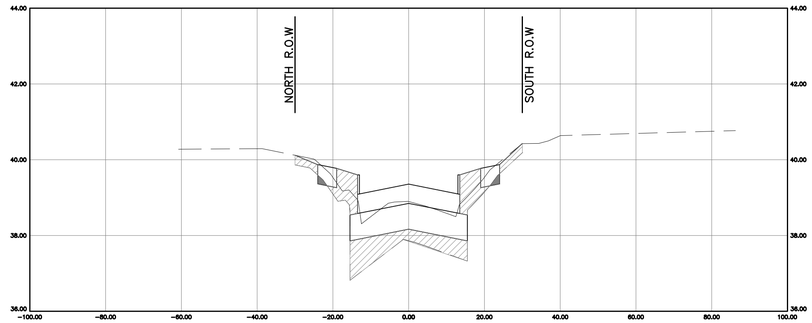
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.---~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\150- CROSS SECTIONS BOTANY LANE SHEET 2 OF 4.DWG AUG. 03, 2026-12:12pm

14+00.00

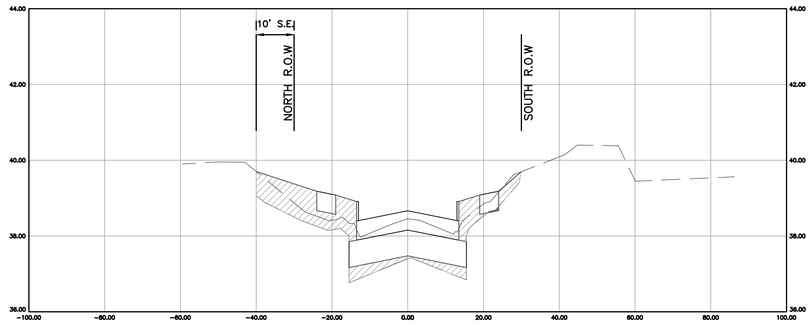


17+00.00



DONEGAL WAY

15+04.00



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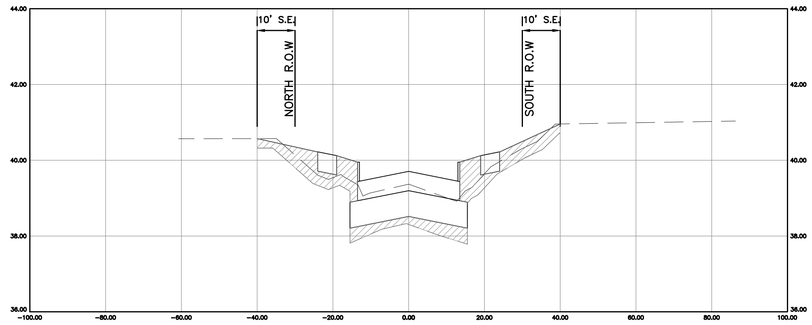

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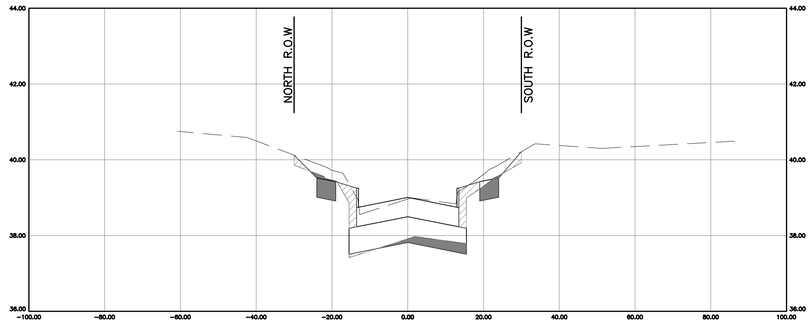

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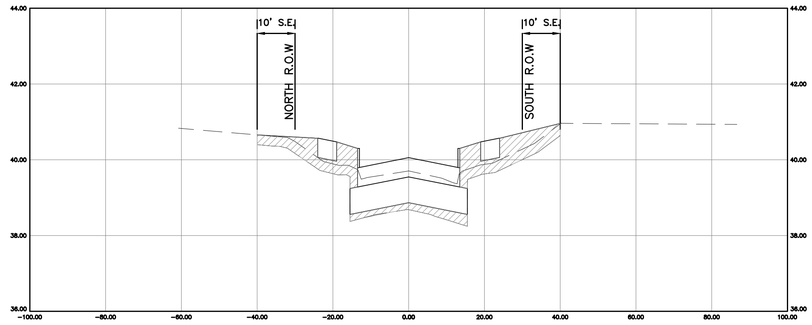

LEGEND

CUT

FILL

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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER

8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

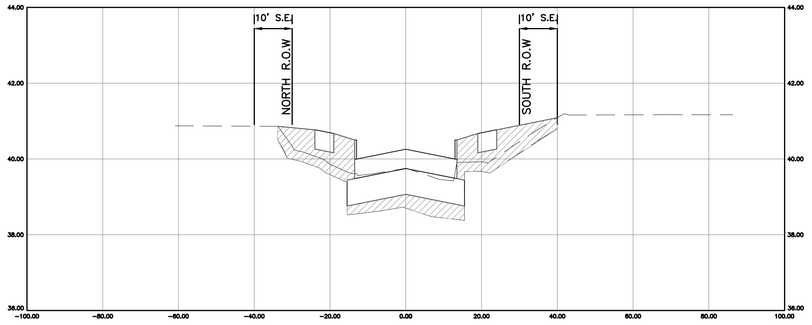
CROSS SECTIONS
BOTANY LANE
SHEET 3 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\151- CROSS SECTIONS BOTANY LANE SHEET 3 OF 4.DWG AUG. 03, 2026-12:10pm

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\152- CROSS SECTIONS BOTANY LANE SHEET 4 OF 4.DWG AUG. 03, 2026-12:14pm

19+60.00



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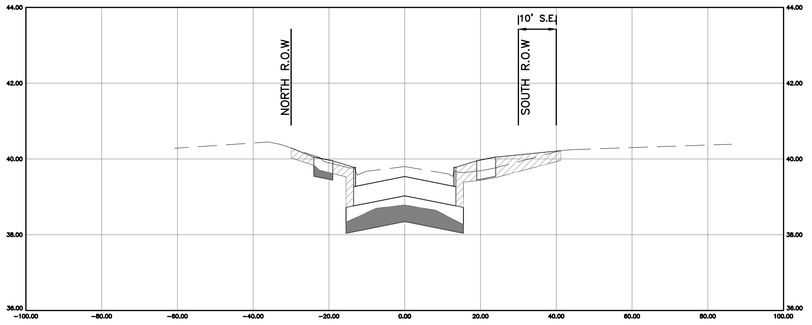

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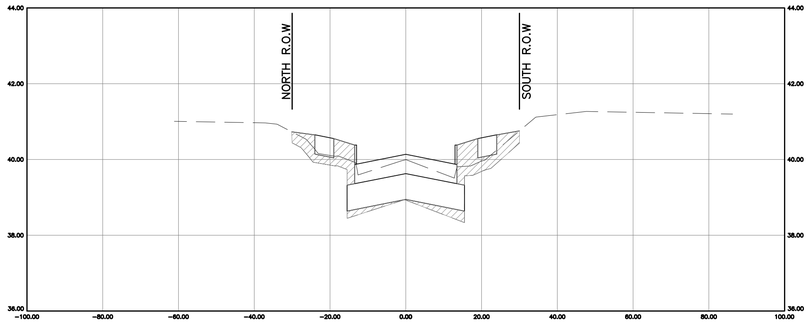
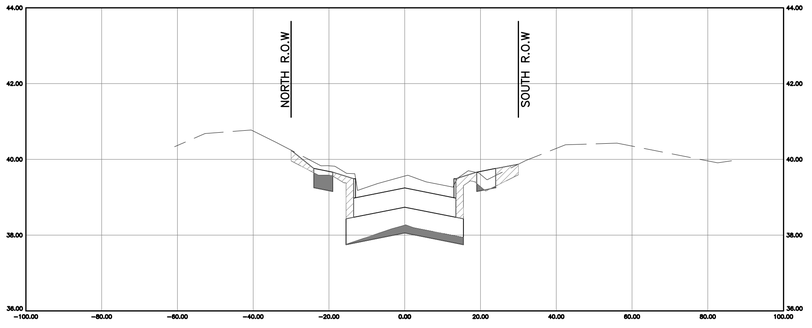


DUANE ST.
22+95.00



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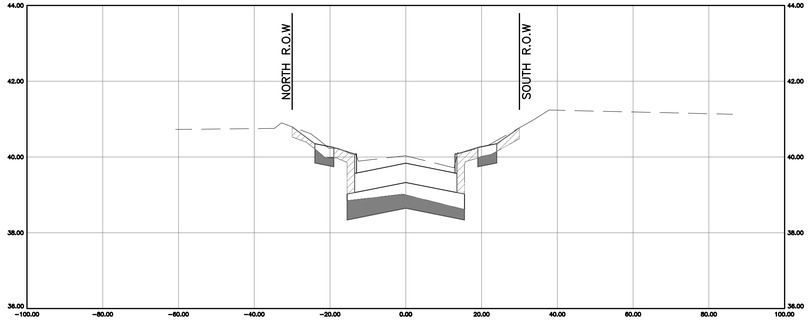

LEGEND

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TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
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TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

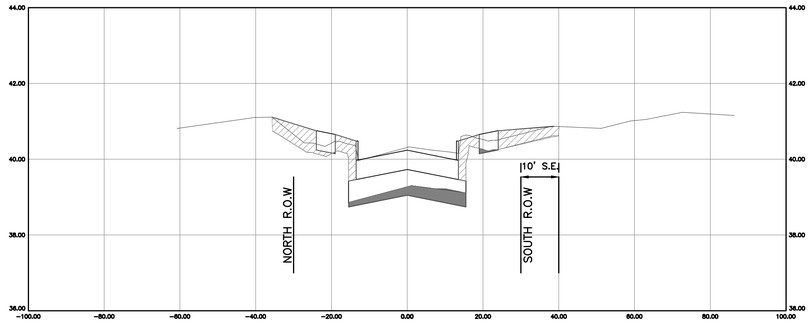
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
BOTANY LANE
SHEET 4 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

LEITRIM WAY

2+33.00



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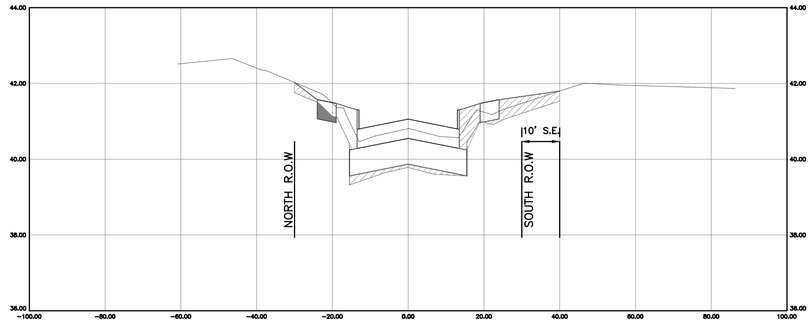

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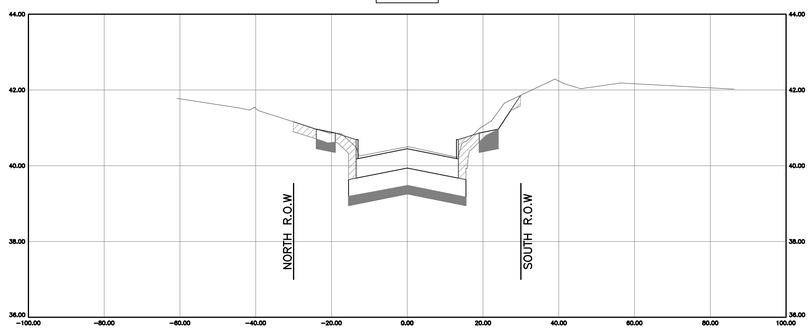

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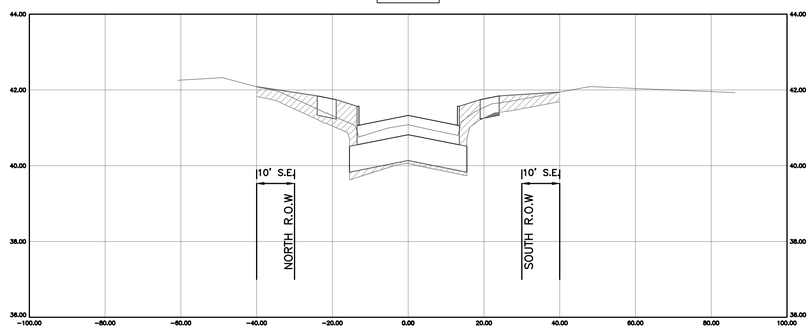

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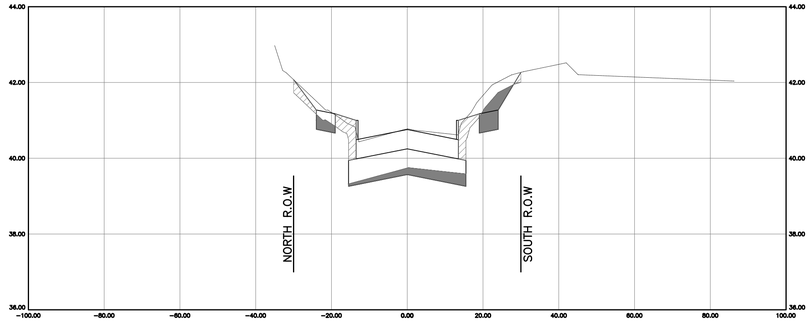

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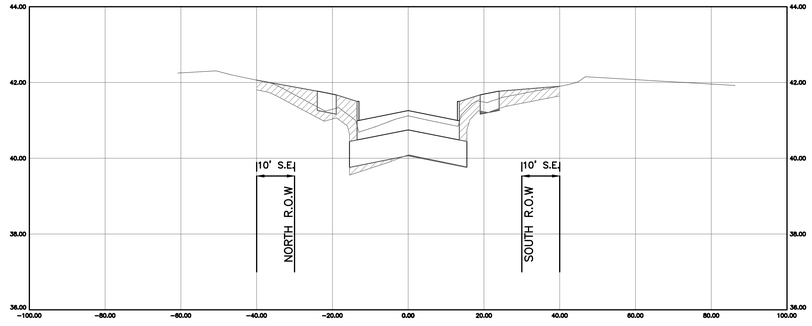

LEGEND

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10970 STANCLIFF RD
HOUSTON, TEXAS 77099
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TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

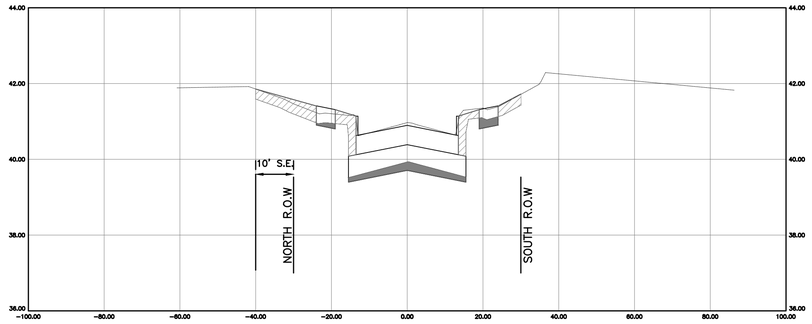
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
TAVENOR LANE
SHEET 1 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.---~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\153- CROSS SECTIONS TAVENOR LANE SHEET 1 OF 4.DWG AUG. 03, 2026-12:12pm

7+00.00



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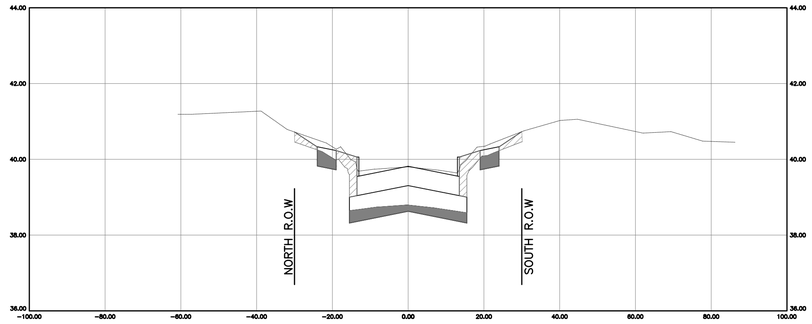

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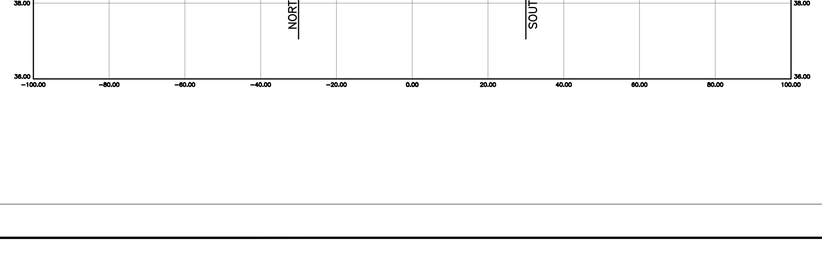
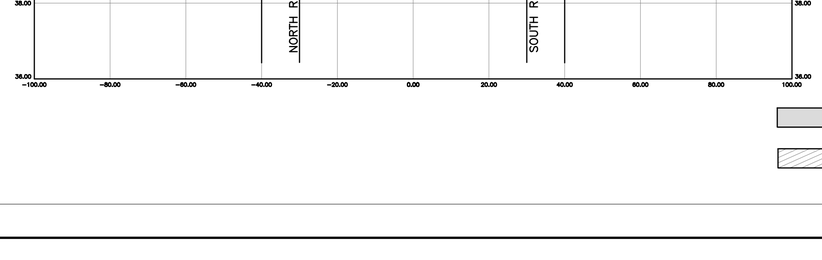
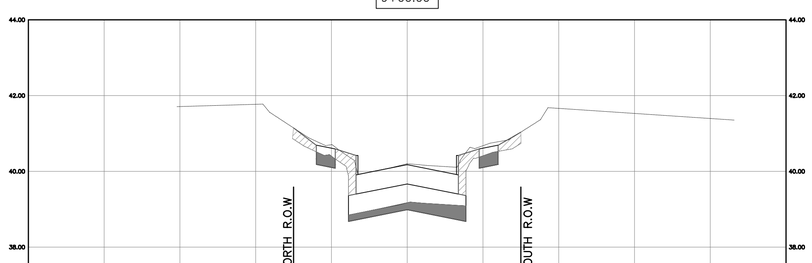


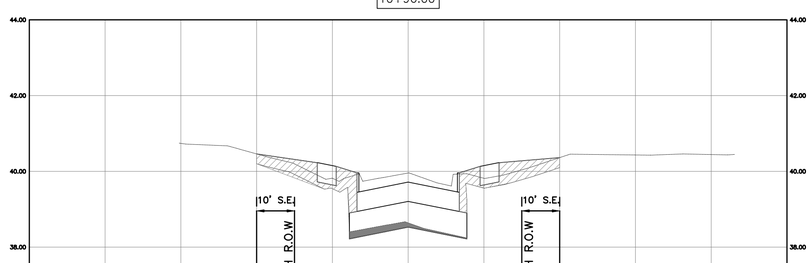
DONEGAL WAY
10+32.00



9+00.00



DONEGAL WAY
10+96.00



LEGEND

CUT

FILL

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\154- CROSS SECTIONS TAVENOR LANE SHEET 2 OF 4.DWG AUG. 03, 2026-12:11pm

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STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

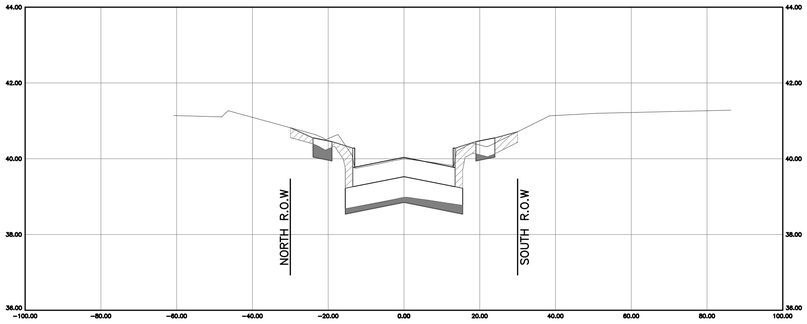
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
TAVENOR LANE
SHEET 2 OF 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

12+00.00



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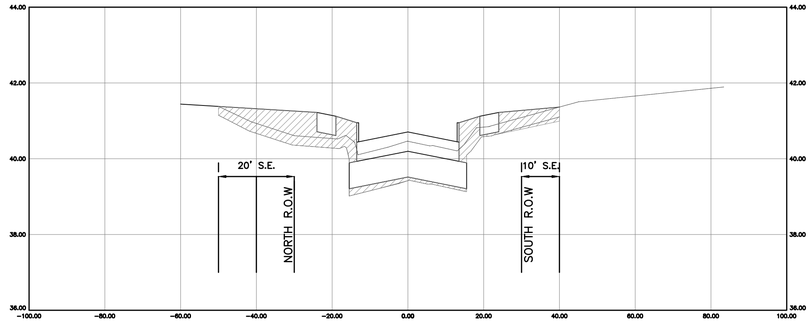
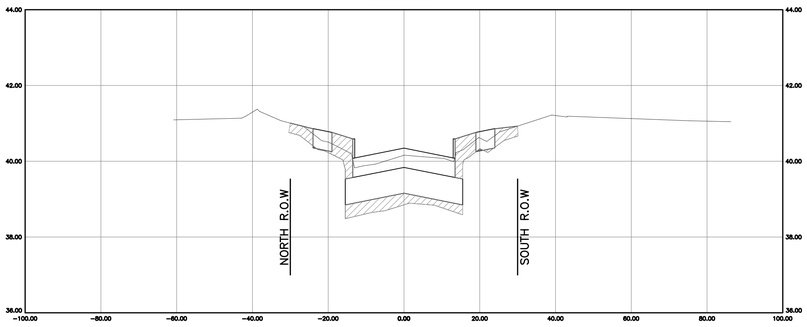
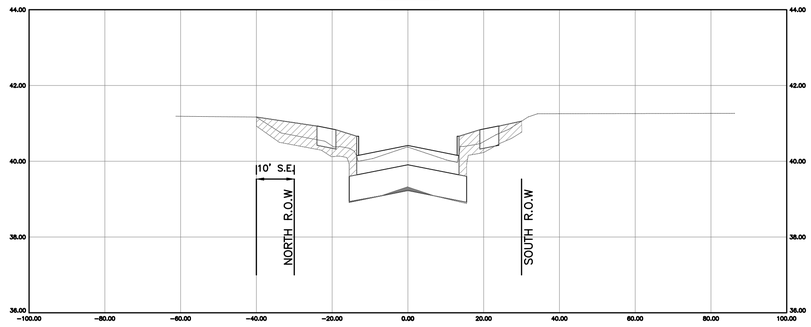


13+00.00



15+00.00



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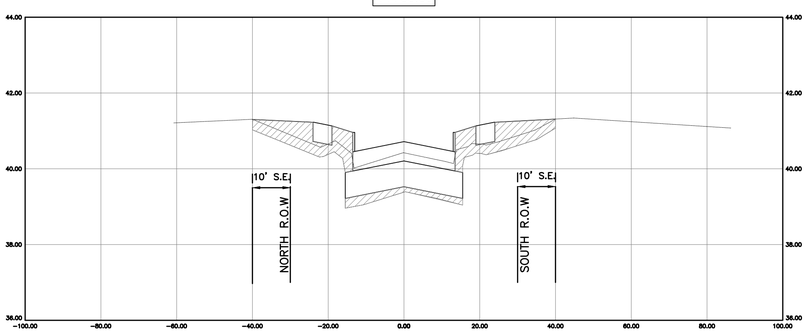

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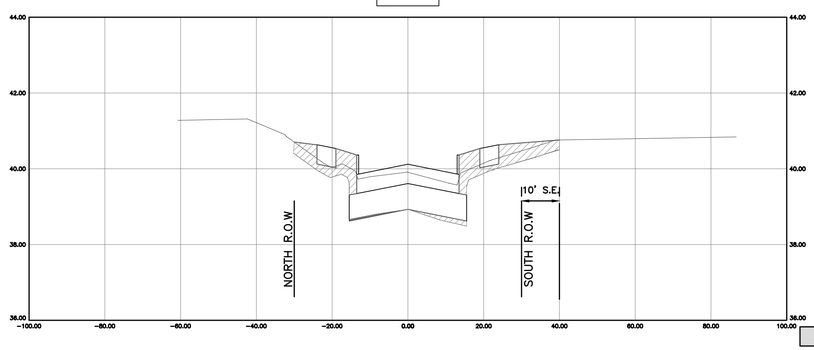

LEGEND

CUT

FILL

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
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90% DESIGN REVIEW

NO.	DATE	REVISIONS	BY

TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER

8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON

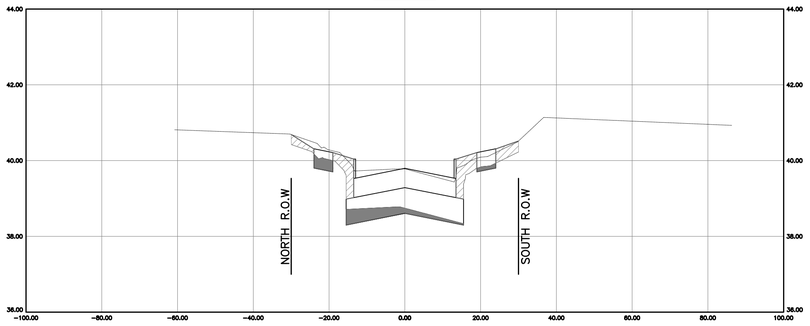
HOUSTON PUBLIC WORKS

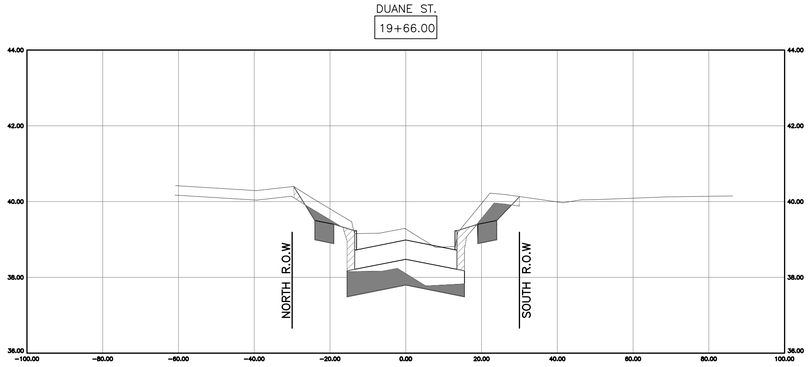
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

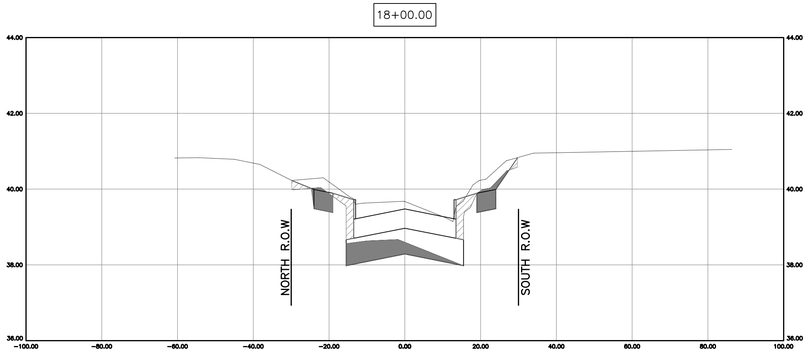
CROSS SECTIONS
TAVENOR LANE
SHEET 3 OF 4

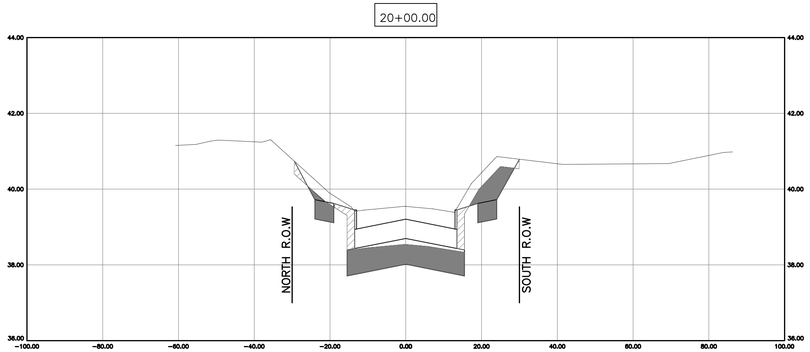
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.---~~OF~~ 159	

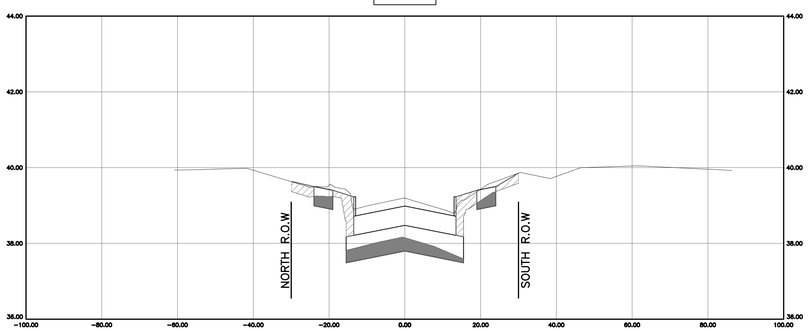
K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\155- CROSS SECTIONS TAVENOR LANE SHEET 3 OF 4.DWG AUG. 03, 2026-12:14pm

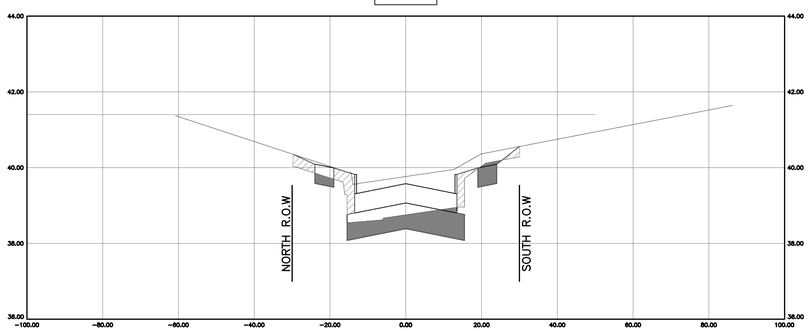












LEGEND

CUT

FILL

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90% DESIGN REVIEW

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TRW ENGINEERS, INC.
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10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

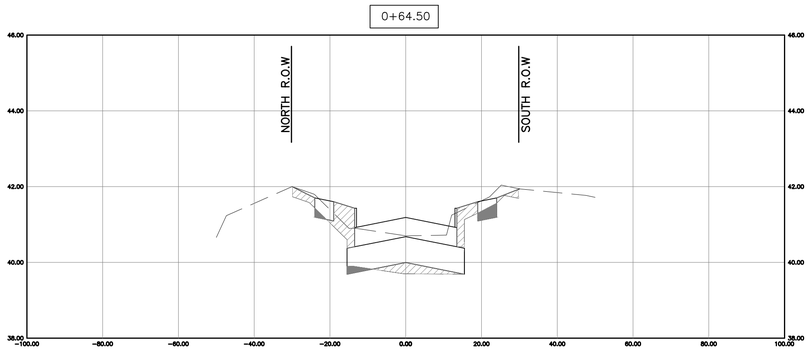
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

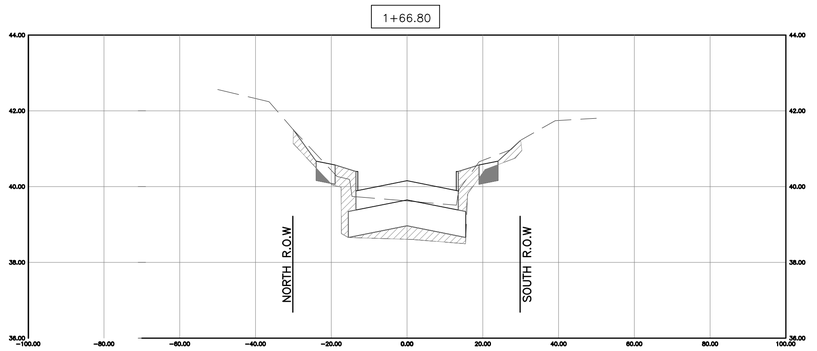
CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

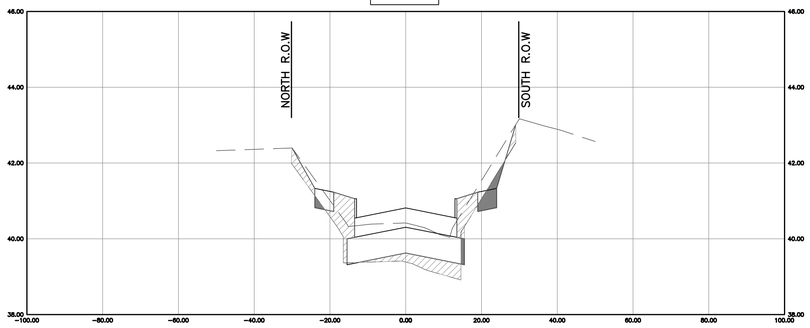
CROSS SECTIONS
TAVENOR LANE
SHEET 4 OF 4

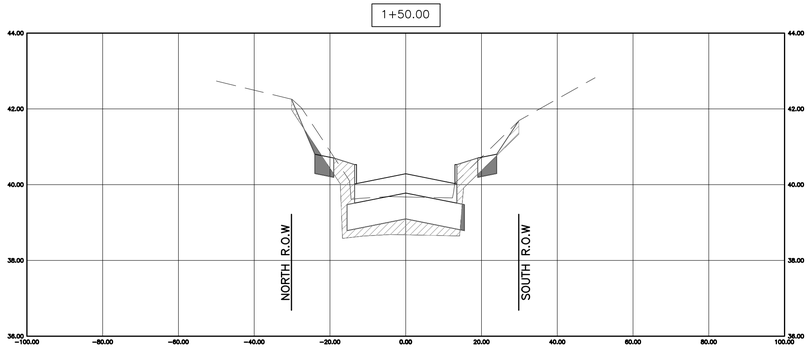
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\156- CROSS SECTIONS TAVENOR LANE SHEET 4 OF 4.DWG AUG. 03, 2026-12:14pm









LEGEND

CUT

FILL

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DARIUOSH S. KERMANY
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LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

CROSS SECTIONS
HICKOK LANE
SHEET 1 OF 1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT.1" = 2' HORIZ. 1" = 20'	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO.--- ~~OF~~ 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\157- CROSS SECTIONS HICKOK LANE SHEET 1 OF 1.DWG AUG. 03, 2026-12:13pm

Instructions

MOWERY ROAD

	Cross Sectional Areas				Average				Distance between stations (FT)	Volumes				
Station	Total Roadway Excavation (SF)	Embankment Area (SF)	3" Stripping (SF)	12"Pavement & Base Excavation (SF)	Average Total Roadway Excavation (SF)	Average Embankment Area (SF)	Average 3" Stripping (SF)	Average 12" Pavement & Base Excavation (SF)	Distance between stations (FT)	TOTAL ROADWAY EXCAVATION (CY) PAY	3" Stripping (CY) PAY	12" Pavement & Base Excavation (CY) PAY	ROADWAY EMBANKMENT (CY)	BORROW (CY) PAY
	A	B	C	C		F	G	G	I	J	K	K	O	P
	ROADWAY													
6+38 BEGIN	15.26	54.53	17.90	54.19										
					15.35	59.65	18.23	53.09	62.00	35.24	42	122	137	102
7+00	15.43	64.76	18.56	52.00										
					14.77	77.45	18.81	53.71	100.00	54.72	70	199	287	232
8+00	14.12	90.15	19.05	55.42										
					7.98	100.98	19.29	54.13	100.00	29.56	71	200	374	344
9+00	1.85	111.82	19.53	52.84										
					1.23	857.23	20.50	53.25	100.00	4.55	76	197	3175	3170
10+00	0.61	1602.63	21.46	53.66										
					0.30	900.45	24.54	53.83	60.00	0.68	55	120	2001	2000
10+60	0.00	198.27	27.61	54.00										
					0.00	189.68	23.69	54.88	40.00	0.00	35	81	281	281
11+00	0.00	181.09	19.78	55.76										
					0.03	180.52	20.68	58.58	100.00	0.13	77	217	669	668
12+00	0.07	179.96	21.59	61.41										
					0.03	171.08	20.45	56.71	100.00	0.13	76	210	634	634
13+00	0.00	162.21	19.32	52.01										
					0.21	165.18	22.38	52.83	100.00	0.79	83	196	612	611
14+00	0.43	168.15	25.43	53.65										
					0.23	149.53	15.33	77.02	88.00	0.74	50	251	487	487
14+88	0.03	130.90	5.24	100.38										
					0.01	162.74	15.44	80.16	112.00	0.06	64	333	675	675
16+00	0.00	194.58	25.63	59.94										
					0.00	211.92	24.60	58.84	50.00	0.00	46	109	392	392
16+50	0.00	229.27	23.56	57.75										
					0.62	189.15	22.12	55.01	50.00	1.14	41	102	350	349
17+00	1.23	149.03	20.68	52.27										
					4.87	80.30	13.18	75.67	78.00	14.08	38	219	232	218
17+78	8.52	11.57	5.68	99.08										
					8.46	43.19	14.31	74.13	22.00	6.89	12	60	35	28
18+00	8.40	74.80	22.93	49.19										
					4.20	110.18	20.30	51.66	110.00	17.10	83	210	449	432
19+10	0.00	145.55	17.67	54.13										
					4.05	138.84	18.61	54.40	90.00	13.49	62	181	463	449
20+00	8.09	132.12	19.54	54.67										
					14.29	108.24	18.95	53.44	55.00	29.11	39	109	220	191
20+55	20.48	84.36	18.35	52.21										
					15.36	101.40	18.81	52.64	45.00	25.59	31	88	169	143
21+00	10.23	118.45	19.26	53.07										
					12.44	108.27	18.79	52.77	30.00	13.82	21	59	120	106
21+30	14.65	98.09	18.31	52.48										
					15.69	91.00	20.71	52.07	70.00	40.68	54	135	236	195
22+00	16.74	83.90	23.10	51.65										
					12.83	80.25	20.63	54.19	98.00	46.57	75	197	291	245
22+98	8.92	76.59	18.17	56.73										
					5.76	55.60	18.80	55.67	102.00	21.74	71	210	210	188
24+00	2.59	34.61	19.44	54.61										
					1.51	42.90	19.89	56.30	100.00	5.59	74	209	159	153
25+00	0.43	51.19	20.34	57.98										
					0.22	75.23	19.20	56.49	100.00	0.80	71	209	279	278
26+00	0.00	99.26	18.07	55.00										
					0.12	93.90	21.59	54.16	24.00	0.10	19	48	83	83
26+24	0.23	88.54	25.10	53.31										
					0.81	83.26	24.24	54.20	76.00	2.27	68	153	234	232
27+00	1.38	77.99	23.38	55.09										
					3.25	69.40	16.60	82.69	60.00	7.22	37	184	154	147
27+60	5.12	60.82	9.82	110.29										
					11.31	60.96	16.39	78.93	40.00	16.76	24	117	90	74
28+00	17.51	61.10	22.96	47.58										
					15.01	50.00	22.13	49.79	100.00	55.59	82	184	185	130
29+00	12.51	38.90	21.30	52.00										
									Total	445	1644	4908	13685	13240

LEITRIM WAY

	Cross Sectional Areas				Average				Distance between stations (FT)	Volumes				
Station	Total Roadway Excavation (SF)	Embankment Area (SF)	3" Stripping (SF)	12"Pavement & Base Excavation (SF)	Average Total Roadway Excavation (SF)	Average Embankment Area (SF)	Average 3" Stripping (SF)	Average 12" Pavement & Base Excavation (SF)	Distance between stations (FT)	TOTAL ROADWAY EXCAVATION (CY) PAY	3" Stripping (CY) PAY	12" Pavement & Base Excavation(CY) PAY	ROADWAY EMBANKMENT (CY)	BORROW (CY) PAY
	A	B	C	C		F	G	G	I	J	K	K	O	P
	ROADWAY													
3+35 BEGIN	16.21	5.92	7.79	34.10										
					14.40	8.13	7.74	33.05	65.00	34.65	19	80	20	-15
4+00	12.58	10.33	7.68	32.00										
					17.30	13.80	8.40	40.33	79.00	50.60	25	118	40	-10
4+79	22.01	17.27	9.12	48.67										
					18.92	13.54	8.63	40.58	94.00	65.86	30	141	47	-19
5+73	15.82	9.81	8.14	32.49										
					15.48	11.40	8.10	32.51	27.00	15.48	8	33	11	-4
6+00	15.15	12.99	8.06	32.54										
					14.09	11.74	8.07	32.47	100.00	52.18	30	120	43	-9
7+00	13.03	10.50	8.09	32.40										
					12.09	10.12	8.00	32.61	48.00	21.49	14	58	18	-3
7+48	11.14	9.74	7.91	32.83										
					8.13	11.89	7.90	34.93	52.00	15.66	15	67	23	7
8+00	5.12	14.04	7.89	37.03										
					2.88	18.60	8.16	34.50	56.00	5.97	17	72	39	33
8+56	0.63	23.16	8.43	31.97										
					0.53	24.89	8.93	33.27	44.00	0.87	15	54	41	40
9+00	0.44	26.61	9.43	34.56										
					3.05	18.19	8.75	34.56	46.00	5.19	15	59	31	26
9+46	5.66	9.76	8.06	34.57										
					9.04	9.45	8.22	33.42	54.00	18.08	16	67	19	1
10+00	12.43	9.15	8.37	32.28										
					6.44	22.79	8.36	32.22	100.00	23.86	31	119	84	61
11+00	0.46	36.43	8.34	32.16										
					0.23	38.89	8.24	32.92	15.00	0.13	5	18	22	21
11+15	0.00	41.36	8.14	33.68										
					0.09	37.41	8.49	34.38	85.00	0.28	27	108	118	117
12+00	0.18	33.46	8.85	35.09										
					0.09	31.30	8.88	34.54	123.00	0.40	40	157	143	142
13+23	0.00	29.14	8.90	34.00										
					0.00	39.22	10.32	33.94	77.00	0.00	29	97	112	112
14+00	0.00	49.31	11.74	33.88										
					0.19	50.57	10.84	34.06	54.00	0.37	22	68	101	101
14+54	0.37	51.84	9.93	34.24										
					0.32	36.71	9.48	33.56	46.00	0.54	16	57	63	62
15+00	0.27	21.58	9.02	32.89										
					12.53	12.92	8.66	32.47	84.00	38.99	27	101	40	1
15+84	24.80	4.27	8.31	32.04										
					12.86	18.71	11.17	33.17	116.00	55.23	48	142	80	25
17+00	0.91	33.15	14.04	34.29										
					0.46	38.49	11.94	34.26	24.00	0.41	11	30	34	34
17+24	0.00	43.83	9.84	34.23										
					0.28	38.34	10.14	34.23	76.00	0.79	29	96	108	107
18+00	0.56	32.84	10.44	34.23										
					1.76	37.77	10.98	36.12	18.00	1.17	7	24	25	24
18+18	2.95	42.69	11.53	38.01										
					1.48	43.94	10.47	36.61	80.00	4.37	31	108	130	126
18+98	0.00	45.19	9.41	35.21										
					0.00	42.71	9.79	34.26	100.00	0.00	36	127	158	158
19+98	0.00	40.23	10.17	33.32										
					11.39	23.57	10.16	33.79	102.00	43.03	38	128	89	46
21+00	22.78	6.91	10.15	34.27										
					27.12	5.37	9.63	33.97	34.00	34.16	12	43	7	-27
21+34	31.47	3.82	9.12	33.67										
					26.86	4.40	9.56	33.92	66.00	65.66	23	83	11	-55
22+00	22.25	4.97	9.99	34.17										
					14.18	7.79	9.99	34.17	68.00	35.71	25	86	20	-16
22+68	6.11	10.60	9.99	34.17										
					4.49	15.54	10.12	38.30	32.00	5.32	12	45	18	13
23+00	2.87	20.48	10.25	42.42										
					3.93	16.74	10.70	42.42	73.00	10.63	29	115	45	35
23+73	5.00	13.00	11.15	42.41										
					12.44	10.67	9.21	36.82	67.00	30.86	23	91	26	-4
24+40	19.88	8.35	7.26	31.23										
					16.86	7.94	7.89	34.13	71.00	44.33	21	90	21	-23
25+11	13.84	7.52	8.53	37.02										
									Total	682	746	2804	1787	1105

Instructions

DONEGAL WAY

	Cross Sectional Areas				Average				Distance between stations (FT)	Volumes				
Station	Total Roadway Excavation (SF)	Embankment Area (SF)	3" Stripping (SF)	12"Pavement & Base Excavation (SF)	Average Total Roadway Excavation (SF)	Average Embankment Area (SF)	Average 3" Stripping (SF)	Average 12" Pavement & Base Excavation (SF)	Distance between stations (FT)	TOTAL ROADWAY EXCAVATION (CY) PAY	3" Stripping (CY) PAY	12" Pavement & Base Excavation(CY) PAY	ROADWAY EMBANKMENT (CY)	BORROW (CY) PAY
	A	B	C	C		F	G	G	I	J	K	K	O	P
	ROADWAY													
14+28 BEGIN	13.44	5.38	10.70	28.70										
					6.72	30.54	13.37	30.35	50.00	12.44	25	56	57	44
14+78	0.00	55.71	16.04	32.00										
					0.57	40.15	14.81	32.39	22.00	0.47	12	26	33	32
15+00	1.15	24.59	13.59	32.79										
					6.35	19.83	10.66	32.59	78.00	18.34	31	94	57	39
15+78	11.55	15.07	7.73	32.39										
					9.81	13.06	8.05	32.48	72.00	26.15	21	87	35	9
16+50	8.06	11.05	8.37	32.57										
					4.44	19.47	8.61	33.13	50.00	8.22	16	61	36	28
17+00	0.82	27.90	8.85	33.68										
					0.41	35.97	9.03	33.90	47.00	0.71	16	59	63	62
17+47	0.00	44.05	9.21	34.12										
					0.65	36.80	9.07	34.20	53.00	1.27	18	67	72	71
18+00	1.30	29.55	8.93	34.28										
					2.13	24.32	7.30	35.47	50.00	3.94	14	66	45	41
18+50	2.96	19.10	5.67	36.66										
					1.48	31.76	7.14	38.14	72.00	3.94	19	102	85	81
19+22	0.00	44.42	8.61	39.61										
					1.24	33.43	9.31	35.96	78.00	3.58	27	104	97	93
20+00	2.48	22.45	10.01	32.31										
					2.77	22.41	10.06	33.03	23.00	2.36	9	28	19	17
20+23	3.06	22.38	10.11	33.75										
					13.63	14.45	10.71	35.35	77.00	38.88	31	101	41	2
21+00	24.21	6.51	11.31	36.95										
					19.46	6.89	10.04	34.92	24.00	17.30	9	31	6	-11
21+24	14.72	7.28	8.77	32.89										
					15.84	6.86	9.26	33.04	70.00	41.05	24	86	18	-23
21+94	16.95	6.45	9.75	33.18										
					8.79	30.32	9.87	33.47	99.00	32.24	36	123	111	79
22+93	0.64	54.18	9.98	33.76										
					0.32	68.06	11.06	34.07	102.00	1.21	42	129	257	256
23+95	0.00	81.94	12.14	34.38										
									Total	212	348	1219	1031	819

Instructions

DUANE STREET

	Cross Sectional Areas				Average				Distance between stations (FT)	Volumes				
Station	Total Roadway Excavation (SF)	Embankment Area (SF)	3" Stripping (SF)	12"Pavement & Base Excavation (SF)	Average Total Roadway Excavation (SF)	Average Embankment Area (SF)	Average 3" Stripping (SF)	Average 12" Pavement & Base Excavation (SF)	Distance between stations (FT)	TOTAL ROADWAY EXCAVATION (CY) PAY	3" Stripping (CY) PAY	12" Pavement & Base Excavation (CY) PAY	ROADWAY EMBANKMENT (CY)	BORROW (CY) PAY
	A	B	C	C		F	G	G	I	J	K	K	O	P
	ROADWAY													
14+54.70 BEGIN	9.10	4.50	10.30	28.20										
		e			5.75	15.15	10.76	33.20	57.00	12.15	23	70	32	20
15+11.70	2.41	25.80	11.21	38.19										
					4.97	25.60	10.39	36.39	88.30	16.26	34	119	84	67
16+00	7.53	25.41	9.56	34.59										
					3.77	34.83	9.17	37.40	12.50	1.74	4	17	16	14
16+12.50	0.00	44.25	8.79	40.21										
					0.00	50.30	9.54	39.16	66.00	0.00	23	96	123	123
16+78.50	0.00	56.36	10.30	38.11										
					0.00	51.99	9.66	37.08	21.50	0.00	8	30	41	41
17+00	0.00	47.63	9.01	36.05										
					0.00	48.46	8.77	35.66	81.00	0.00	26	107	145	145
17+81	0.00	49.30	8.53	35.26										
					0.00	42.68	8.56	35.33	19.00	0.00	6	25	30	30
18+00	0.00	36.06	8.58	35.41										
					21.47	19.62	8.80	34.65	121.00	96.21	39	155	88	-8
19+21	42.94	3.17	9.02	33.90										
					28.47	6.30	8.52	33.79	79.00	83.30	25	99	18	-65
20+00	14.00	9.43	8.03	33.68										
					7.12	16.62	8.84	33.18	76.00	20.03	25	93	47	27
20+76	0.23	23.81	9.65	32.68										
					0.30	21.50	9.36	32.62	24.00	0.27	8	29	19	19
21+00	0.37	19.20	9.07	32.56										
					4.88	17.32	8.58	32.63	84.00	15.17	27	102	54	39
21+84	9.38	15.45	8.09	32.70										
					4.69	28.57	10.01	33.05	116.00	20.15	43	142	123	103
23+00	0.00	41.69	11.93	33.39										
					0.00	39.27	12.49	34.38	26.00	0.00	12	33	38	38
23+26	0.00	36.86	13.05	35.36										
					1.04	33.27	10.73	35.43	74.00	2.86	29	97	91	88
24+00	2.09	29.68	8.42	35.51										
					1.42	24.10	8.33	35.57	27.00	1.42	8	36	24	23
24+27	0.76	18.53	8.24	35.64										
									Total	270	341	1249	974	704

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\158- EARTHWORK CALCULATIONS SHEET 1 OF 2.DWG AUG. 03, 2026-12:11pm

THIS DOCUMENT IS RELEASE FOR THE PURPOSE OF INTRIM REVIEW AND MARK-UP UNDER THE AUTHORITY OF DARIUOSH KERMANY, P.E. REGISTRATION #93626 ON OCTOBER 6, 2026.
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90% DESIGN REVIEW

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TRW ENGINEERS, INC.
dba TSC Engineering
10970 STANCLIFF RD
HOUSTON, TEXAS 77099
Tel. 713.784.4466
TEXAS REGISTERED FIRM F-12428

STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

EARTHWORK
CALCULATIONS
SHEET 1 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 158 OF 159	

K:\331052-CLOVERLAND AREA P&D-COH FY15\DWG\DESIGN DRAWINGS\SUB-PROJECT-1\CROSS SECTIONS\159- EARTHWORK CALCULATIONS SHEET 2 OF 2.DWG AUG. 03, 2026-12:11pm

TARREYTON LANE

Station	Cross Sectional Areas: Total Roadway Excavation (SF)	Embankment Area (SF)	3" Stripping (SF)	12"Pavement & Base Excavation (SF)	Average: Average Total Roadway Excavation (SF)	Average Embankment Area (SF)	Average 3" Stripping (SF)	Average 12" Pavement & Base Excavation (SF)	Distance between stations (FT)	Volumes: TOTAL ROADWAY EXCAVATION (CY) PAY	3" Stripping (CY) PAY	12" Pavement & Base Excavation (CY) PAY	ROADWAY EMBANKMENT (CY)	BORROW (CY) PAY
	A	B	C	C		F	G	G	I	J	K	K	O	P
	ROADWAY													
2+23 BEGIN	15.97	8.82	8.86	33.56										
					12.86	9.07	9.07	35.33	77.00	36.67	26	101	26	-11
3+00	9.75	9.33	9.28	37.09										
					11.54	9.22	9.41	36.45	100.00	42.73	35	135	34	-9
4+00	13.32	9.12	9.54	35.80										
					10.28	10.24	9.27	34.86	100.00	38.08	34	129	38	0
5+00	7.24	11.37	8.99	33.93										
					5.13	22.06	11.03	33.64	50.00	9.50	20	62	41	31
5+50	3.02	32.76	13.07	33.35										
					9.47	21.09	10.75	33.21	50.00	17.54	20	62	39	22
6+00	15.92	9.43	8.42	33.07										
					16.39	8.53	8.39	33.91	100.00	60.69	31	126	32	-29
7+00	16.85	7.62	8.36	34.74										
					15.75	8.25	8.76	33.41	100.00	58.34	32	124	31	-28
8+00	14.65	8.89	9.16	32.08										
					14.15	8.16	9.34	34.22	100.00	52.41	35	127	30	-22
9+00	13.65	7.44	9.52	36.36										
					8.87	9.47	9.42	34.71	100.00	32.87	35	129	35	2
10+00	4.10	11.51	9.32	33.06										
					2.53	17.70	10.73	33.85	111.00	10.41	44	139	73	62
11+11	0.96	23.89	12.14	34.64										
					2.81	17.52	10.50	34.66	89.00	9.28	35	114	58	48
12+00	4.66	11.15	8.86	34.68										
					2.46	21.40	10.41	34.86	100.00	9.11	39	129	79	70
13+00	0.26	31.65	11.96	35.04										
					0.15	30.30	12.67	33.67	100.00	0.55	47	125	112	112
14+00	0.04	28.95	13.37	32.29										
					0.02	33.36	15.91	33.14	90.00	0.07	53	110	111	111
14+90	0.00	37.77	18.45	34.00										
					1.87	25.59	14.12	33.96	110.00	7.61	58	138	104	97
16+00	3.74	13.41	9.80	33.93										
					12.13	10.54	8.99	34.40	100.00	44.91	33	127	39	-6
17+00	20.52	7.66	8.18	34.87										
					16.82	13.10	10.95	36.65	100.00	62.30	41	136	49	-14
18+00	13.13	18.54	13.72	38.42										
					15.04	14.52	10.94	38.30	92.00	51.24	37	131	49	-2
18+92	16.95	10.51	8.16	38.18										
									Total	**544**	**654**	**2143**	**980**	**436**

TAVENOR LANE

Station	Cross Sectional Areas: Total Roadway Excavation (SF)	Embankment Area (SF)	3" Stripping (SF)	12"Pavement & Base Excavation (SF)	Average: Average Total Roadway Excavation (SF)	Average Embankment Area (SF)	Average 3" Stripping (SF)	Average 12" Pavement & Base Excavation (SF)	Distance between stations (FT)	Volumes: TOTAL ROADWAY EXCAVATION (CY) PAY	3" Stripping (CY) PAY	12" Pavement & Base Excavation (CY) PAY	ROADWAY EMBANKMENT (CY)	BORROW (CY) PAY
	A	B	C	C		F	G	G	I	J	K	K	O	P
	ROADWAY													
2+33 BEGIN	8.18	19.35	10.28	33.50										
					9.31	14.05	10.99	33.27	67.00	23.10	27	83	35	12
3+00	10.44	8.75	11.70	33.04										
					11.15	8.49	10.74	33.18	100.00	41.31	40	123	31	-10
4+00	11.87	8.24	9.79	33.32										
					6.61	12.27	10.92	33.21	100.00	24.47	40	123	45	21
5+00	1.35	16.30	12.06	33.09										
					0.78	20.73	12.64	33.28	80.00	2.32	37	99	61	59
5+80	0.22	25.16	13.22	33.47										
					0.36	24.31	13.35	33.62	20.00	0.26	10	25	18	18
6+00	0.49	23.46	13.48	33.78										
					3.87	18.56	12.00	34.24	100.00	14.34	44	127	69	54
7+00	7.26	13.66	10.51	34.69										
					3.97	17.48	11.39	33.69	100.00	14.69	42	125	65	50
8+00	0.67	21.31	12.26	32.68										
					5.68	15.43	10.33	32.74	100.00	21.04	38	121	57	36
9+00	10.69	9.56	8.39	32.80										
					10.95	9.19	8.48	32.57	100.00	40.57	31	121	34	-7
10+00	11.22	8.82	8.57	32.33										
					5.93	15.26	10.96	32.66	32.00	7.03	13	39	18	11
10+32	0.64	21.70	13.34	32.99										
					2.03	22.46	13.41	37.27	64.00	4.81	32	88	53	48
10+96	3.42	23.23	13.48	41.55										
					5.25	16.45	13.61	37.47	104.00	20.20	52	144	63	43
12+00	7.07	9.68	13.75	33.39										
					3.58	15.56	11.10	37.40	100.00	13.25	41	139	58	44
13+00	0.09	21.44	8.45	41.42										
					0.04	28.93	10.80	37.62	100.00	0.16	40	139	107	107
14+00	0.00	36.43	13.15	33.82										
					0.00	33.56	11.90	33.37	20.00	0.00	9	25	25	25
14+20	0.00	30.69	10.65	32.93										
					0.42	25.67	10.55	33.29	80.00	1.25	31	99	76	75
15+00	0.84	20.66	10.46	33.65										
					0.65	21.52	10.76	33.26	100.00	2.40	40	123	80	77
16+00	0.46	22.38	11.06	32.86										
					4.29	16.25	9.67	32.88	100.00	15.88	36	122	60	44
17+00	8.12	10.12	8.27	32.91										
					12.22	8.25	9.68	33.67	100.00	45.25	36	125	31	-15
18+00	16.31	6.38	11.09	34.44										
					14.41	7.96	9.67	34.14	100.00	53.38	36	126	29	-24
19+00	12.51	9.53	8.26	33.83										
					16.24	7.61	8.71	33.90	66.00	39.71	21	83	19	-21
19+66	19.98	5.69	9.16	33.97										
					24.54	5.67	10.95	33.04	34.00	30.91	14	42	7	-24
20+00	29.11	5.64	12.75	32.12										
					24.48	6.70	12.47	32.09	56.00	50.77	26	67	14	-37
20+56	19.85	7.76	12.19	32.05										
									Total	**467**	**738**	**2305**	**1056**	**589**

BOTANY LANE

Station	Cross Sectional Areas: Total Roadway Excavation (SF)	Embankment Area (SF)	3" Stripping (SF)	12"Pavement & Base Excavation (SF)	Average: Average Total Roadway Excavation (SF)	Average Embankment Area (SF)	Average 3" Stripping (SF)	Average 12" Pavement & Base Excavation (SF)	Distance between stations (FT)	Volumes: TOTAL ROADWAY EXCAVATION (CY) PAY	3" Stripping (CY) PAY	12" Pavement & Base Excavation (CY) PAY	ROADWAY EMBANKMENT (CY)	BORROW (CY) PAY
	A	B	C	C		F	G	G	I	J	K	K	O	P
	ROADWAY													
4+44 BEGIN	14.63	9.49	10.665	20.657										
					24.82	8.04	10.99	29.64	56.00	51.48	23	61	17	-35
5+00	35.01	6.59	11.313	38.63										
					41.00	5.37	10.95	36.73	54.00	82.00	22	73	11	-71
5+54	46.99	4.15	10.577	34.82										
					42.46	4.44	10.61	35.05	109.00	171.41	43	141	18	-153
6+63	37.93	4.72	10.65	35.27										
					45.28	5.08	13.19	35.74	37.00	62.04	18	49	7	-55
7+00	52.63	5.44	15.72	36.22										
					40.68	5.64	12.13	36.16	100.00	150.67	45	134	21	-130
8+00	28.73	5.85	8.54	36.11										
					15.10	13.26	9.35	35.02	100.00	55.92	35	130	49	-7
9+00	1.47	20.68	10.16	33.94										
					7.92	14.77	9.21	34.70	100.00	29.33	34	129	55	25
10+00	14.37	8.86	8.26	35.46										
					14.83	8.47	8.83	35.79	18.00	9.89	6	24	6	-4
10+18	15.30	8.07	9.41	36.13										
					15.20	8.70	8.95	40.11	82.00	46.16	27	122	26	-20
11+00	15.10	9.34	8.49	44.09										
					14.03	9.52	10.46	40.04	100.00	51.98	39	148	35	-17
12+00	12.97	9.71	12.44	35.98										
					9.09	10.22	11.40	35.92	100.00	33.66	42	133	38	4
13+00	5.21	10.74	10.36	35.85										
					3.07	13.62	9.74	34.99	100.00	11.38	36	130	50	39
14+00	0.94	16.49	9.12	34.12										
					0.47	25.11	11.76	34.66	104.00	1.80	45	134	97	95
15+04	0.00	33.73	14.39	35.21										
					4.57	20.60	11.58	34.92	96.00	16.25	41	124	73	57
16+00	9.14	7.48	8.77	34.64										
					4.92	18.55	9.16	36.57	100.00	18.22	34	135	69	50
17+00	0.70	29.63	9.56	38.50										
					0.35	33.34	12.26	36.52	100.00	1.29	45	135	123	122
18+00	0.00	37.06	14.95	34.54										
					0.00	36.90	14.27	35.18	100.00	0.00	53	130	137	137
19+00	0.00	36.75	13.59	35.83										
					0.00	41.57	13.81	34.47	60.00	0.00	31	77	92	92
19+60	0.00	46.39	14.03	33.11										
					0.00	34.59	11.37	33.96	40.00	0.00	17	50	51	51
20+00	0.00	22.79	8.71	34.82										
					7.21	12.12	8.40	33.99	100.00	26.69	31	126	45	18
21+00	14.41	1.46	8.10	33.17										
					14.20	8.54	9.13	33.50	100.00	52.57	34	124	32	-21
22+00	13.98	15.61	10.16	33.83										
					10.48	12.31	9.16	38.07	95.00	36.86	32	134	43	6
22+95	6.97	9.00	8.16	42.32										
									Total	**910**	**733**	**2444**	**1095**	**185**

HICKOK LANE

Station	Cross Sectional Areas: Total Roadway Excavation (SF)	Embankment Area (SF)	3" Stripping (SF)	12"Pavement & Base Excavation (SF)	Average: Average Total Roadway Excavation (SF)	Average Embankment Area (SF)	Average 3" Stripping (SF)	Average 12" Pavement & Base Excavation (SF)	Distance between stations (FT)	Volumes: TOTAL ROADWAY EXCAVATION (CY) PAY	3" Stripping (CY) PAY	12" Pavement & Base Excavation (CY) PAY	ROADWAY EMBANKMENT (CY)	BORROW (CY) PAY
	A	B	C	C		F	G	G	I	J	K	K	O	P
	ROADWAY													
0+64 BEGIN	2.60	13.90	8.77	33.55										
					3.37	16.71	11.16	32.83	36.00	4.49	15	44	22	18
1+00	4.14	19.52	13.56	32.11										
					4.27	19.93	12.90	32.37	50.00	7.91	24	60	37	29
1+50	4.40	20.34	12.24	32.63										
					3.38	20.39	11.29	32.62	17.00	2.13	7	21	13	11
1+67	2.35	20.45	10.35	32.62										
									Total	**15**	**46**	**124**	**72**	**58**

TOTAL EARTHWORK QUANTITIES

	MOWERY ROAD	LEITRIM WAY	DONEGAL WAY	DUANE STREET	TARREYTON LANE	BOTANY LANE	TAVENOR LANE	HICKOK LANE	TOTAL
EXCAVATION (CY)	445	682	212	270	544	910	467	15	3545
EMBANKMENT (CY)	13685	1787	1031	974	980	1095	1056	72	20679
BORROW (CY)	13240	1105	819	704	436	185	589	58	17135
3"STRIPPING (CY)	1644	746	348	341	654	733	738	46	5250
12"PAVEMENT & BASE EXCAVATION (CY)	4908	2804	1219	1249	2143	2444	2305	124	17197

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STATE OF TEXAS
DARIUOSH S. KERMANY
93626
LICENSED
PROFESSIONAL ENGINEER
8/3/2026

SURVEYED BY:GEOSURV, INC.
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

CLOVERLAND AREA
PAVING AND DRAINAGE IMPROVEMENTS
SUB-PROJECT 1

EARTHWORK
CALCULATIONS
SHEET 2 OF 2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
N-210004-0001-4	
DRAWING SCALE	
VERT. HORIZ.	
CITY OF HOUSTON PM	
OMAR ABDULKAREEM, P.E.	
SHEET NO. 159 OF 159	